Facility: Pilgrim		Date of Examination:	2/2014
Examination Level:	RO	Operating Test Number:	N14-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations (A1a)	N, R	2.1.7 (4.4)	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
		JPM:	Evaluate Temperature Data following Receipt of a Relief /Safety Leaking Alarm
Conduct of Operations (A1b)	N, S	2.1.31 (4.6)	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.
		JPM:	Conduct a Shift Turnover Panel Walkdown
Equipment Control (A2)	N, R	2.2.41 (3.5)	Ability to obtain and interpret station electrical and mechanical drawings.
		JPM:	Using mechanical drawings determine the isolation boundaries for a leak on the RHR system.
Emergency Procedures/Plan (A4)	D, S	2.4.39 (3.9)	Knowledge of RO responsibilities in emergency plan implementation.
		JPM:	Call Out the Emergency Response Organization

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

*Type Codes & Criteria:

(C)ontrol room, **(0)** (S)imulator, **(2)** or Class(R)oom **(2)**
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) **(1)**
(N)ew or (M)odified from bank (≥ 1) **(3)**
(P)revious 2 exams (≤ 1; randomly selected) **(0)**

RO Admin JPM Summary

A1a This is a New JPM. The candidate will be told that the plant is at full power and that a "Relief/Safety Valve Leaking" Alarm has just been received. The candidate will be told to respond IAW the ARP. The candidate is expected to determine that SRV-203-3B is leaking by evaluating SRV tailpipe temperature data and enter PNPS 2.2.23, Automatic Depressurization System, Attachment 6. The candidate will then evaluate the SRV 1st and 2nd stage temperature data from the Kaye Computer against SRV baseline data and determine that the 1st stage (Pilot) is leaking. The candidate will then compare the results to trigger points contained in PNPS 2.2.23, Attachment 6, and recommend to the CRS the required action.

A1b This is a New JPM. The operator will be told that the plant is operating at power, that they are the on-coming BOP, and that a Shift Turnover is in progress in accordance with PNPS 1.3.34, Operations Administrative Policies and Processes. As part of the turnover the operator will be told that the off-going shift successfully completed HPCI Pump and Valve Operability Surveillance and a Monthly Diesel Operability Surveillance. The operator will be directed to conduct a Control Room panel walkdown beginning with panel C903 in accordance with of PNPS 1.3.34, Section 6.7.3.5, Step 7. The operator will be expected to identify that three system alignments are not aligned properly and report these to the CRS.

A2 This is a new JPM. The initial condition for this JPM is that RHR is in its normal standby lineup. The operator will be told that RHR Pump Discharge Valve MO-1001-16B, is leaking into the "B" RHR quad. The operator will be directed to determine the valves that must be closed to stop the leak using station P&IDs. The operator will also be told to stop the leak while maintaining the "A" loop of RHR Containment Cooling and Sprays operational. A minimum of 4 valves must be identified as needing to be closed. The operator may identify other valves that should be verified closed but with RHR in its normal standby lineup these potential flow paths are normally isolated.

A3 Radiation Control – Not Selected.

A4 This is a New JPM. The operator will be told that a Site Area Emergency has been declared and that he/she is the designated shift communicator. The operator will be directed to notify the Emergency Response Organization and offsite agencies of the event in accordance with EP-IP-100, Emergency Classification and Notification. Actions will include making site wide announcements, activating the Everbridge Pager system to notify off-site personnel of the event and notifying offsite agencies of the event using the Digital Notification Network. This JPM is time critical.

Facility: Pilgrim		Date of Examination:	2/2014
Examination Level:	SRO	Operating Test Number:	N14-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations (A1a)	M, R	2.1.18 (3.8)	Ability to make clear, accurate and concise logs, records, status boards, and reports.
		JPM:	Review a Portion of the Control Room Daily Logs
Conduct of Operations (A1b)	D, R	2.1.2 (4.4)	Knowledge of operator responsibilities during all modes of plant operation.
		JPM:	Determine Reportability and actions associated with a Tech Spec Required Shutdown.
Equipment Control (A2)	N, R	2.2.12 (4.1)	Knowledge of surveillances procedures.
		JPM:	Review EDG Fuel Oil Surveillance
Radiation Control (A3)	N, S	2.3.6 (3.8)	Ability to Approve Release Permits.
		JPM:	Evaluate a Liquid Rad Release Permit
Emergency Procedures/Plan (A4)	D, S	2.4.44 (4.4)	Knowledge of emergency plan protective action recommendations.
		JPM:	Perform Dose Assessment Using DAPAR Software

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

*Type Codes & Criteria:

(C)ontrol room, **(0)** (S)imulator, **(2)** or Class(R)oom **(3)**
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) **(2)**
(N)ew or (M)odified from bank (≥ 1) **(3)**
(P)revious 2 exams (≤ 1; randomly selected) **(0)**

SRO Admin JPM Summary

A1a This is a modified Bank JPM that was used previously on the 2011 NRC Exam. The operator will be told that the plant is at approximately 100% power, and provided with a completed portion of Attachment 1 - OPER-09, 0700 - 1900 (Day Watch) Surveillance Log, of PNPS 2.1.15, Daily Surveillance Log. The operator will be directed to perform a review of Attachment 1, Test #20 through Test #40 and identify any concerns. The operator will be expected to identify specific parameters on three different Tests (23, 31 and 36) that are not within their required or allowable band, and all additional action that must be taken. Two of the three tests that the operator needs to identify as being outside the allowable band are different from the JPM administered during the 2011 NRC Exam.

- A1b This is a Bank JPM. The operator will be told that the plant is at rated power, that an RHR pump was declared inoperable 5 days ago. The operator will also be informed that an Emergency Diesel was just declared inoperable and that it will take at least 36 hours to repair. The operator will be directed to determine what actions are required. After the operator has determined that a 24 hour plant shutdown is required, the operator will be asked the following questions associated with the plant shutdown and to justify their responses using station procedures:

    - When the Shutdown must be commenced
    - What constitutes "Initiation of a Plant Shutdown"
    - Any NRC reportability requirements (a 4 hour report is required.)

A2 This is a New JPM. The operator will be provided with an initial set of plant conditions, and a completed Attachment 3, Emergency Diesel Generators On-Site Fuel Oil Quantity, of PNPS 8.9.1, Emergency Diesel Generator and Associated Emergency Bus Surveillance. The operator will be directed to perform the Acceptance Verification Signoff in accordance with Step 4.1 of PNPS 8.9.1. The operator will be expected to discover that the surveillance has been incorrectly completed, and for the given plant conditions Technical Specification 3.5.F.1, Minimum Low Pressure Cooling and Diesel Generator Availability is NOT met.

A3 This is a New JPM. The operator will be placed on the simulator with a specific set of plant conditions and given RETDAS-generated Waste Liquid Release Permit for a planned release. The operator will be directed to review Attachment 1, Liquid Radwaste Verification and Discharge, of PNPS 7.9.12, Liquid Effluent Releases with RETDAS, and approve the liquid release; or identify any issues that may prevent its authorization. The operator will be expected to identify that three issues currently exist on the Discharge Permit that will prevent its authorization.

A4 This is a Bank JPM. The operator will be provided with access to a computer with DAPAR software installed, and listing of pertinent plant parameters. The operator will be directed to perform an offsite dose assessment using the DAPAR computer software in accordance with Section 5.2 of EP-IP-300, Offsite Radiological Dose Assessment. The operator will be expected to determine the Protective Action Recommendation from the DAPAR Quick Assessment option.

Facility: Pilgrim	Date of Examination: 2/2014
Exam Level (circle one): RO ☒ SRO-I ☐ SRO-U ☐	Operating Test No.: N14-1

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1 201003 Control Rod and Drive Mechanism [A2.02 (3.7/3.8)] Control Rod Exercise	S, D, P, A	1
S2 202001 Recirculation System [A4.08 (3.2/3.1)] Startup an Idle Recirc Pump with Other Pump Running	S, D	4
S3 217000 Reactor Core Isolation Cooling System [A4.03 (3.4/3.3)] Manual Start of RCIC	S, N, A, EN, L	2
S4 241000 Reactor/Turbine Pressure Regulating System [A2.03 (4.1/4.2)] Establish a Reactor Pressure Band	S, D, A, L	3
S5 295013 High Suppression Pool Water Temperature [AA1.01 (3.9/3.9)] Place RHR in Torus Cooling	S, D, A	5
S6 264000 Emergency Generators [A3.04 3.1/3.1)] EMERGENCY DIESEL GENERATOR SURVEILLANCE	S, D, A, EN	6
S7 261000 Standby Gas Treatment System [A4.07 (3.1/3.2)] Main Stack Dilution Flow Fan Trip	S, N, A	9
S8 215005 Average Power Range Monitor/Local Power Range Monitor [A4.04 (3.2/3.2)] Bypass a Failed LPRM	S, N	7
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
P1 295018 Partial or Complete Loss of Component Cooling Water [AA1.01 (3.3/3.4)] Cross-Tie RBCCW Cooling Loops	D, P, R, E	8

P2	212000 Reactor Protection System [A2.01 (3.7/3.9)] Transfer of RPS Bus "A" from Alternate Power to the "A" RPS MG Set	D	7
P3	295003 Partial or Complete Loss of AC Power [AA1.03 (4.1/4.1)] Manual Transfer of B-6	D, E	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 Required For RO, 6 Actual
(C)ontrol room	
(D)irect from bank	≤ 9 Required for RO, 8 Actual
(E)mergency or abnormal in-plant	≥ 1 Required for RO, 2 Actual
(EN)gineered Safety Feature	N/A for RO
(L)ow-Power / Shutdown	≥ 1 Required for RO, 2 Actual
(N)ew or (M)odified from bank including 1(A)	≥ 2 Required for RO, 3 Actual
(P)revious 2 exams	≤ 3 Randomly Selected for RO, 2 Actual
(R)CA	≥ 1 Required for RO, 1 Actual
(S)imulator	

JPM Summary

JPM S1 This is a Bank JPM previously used on the 2011 NRC Exam. The operator will be told that the plant is at 100% power, and that the Weekly Control Rod exercising is to be performed in accordance with PNPS 8.3.2, Control Rod Exercise. The operator will be directed to commence the weekly control rod exercising in accordance with Section 8.1 of PNPS 8.3.2. When a coupling check is performed on a rod being withdrawn, the rod will go into an overtravel condition (**Alternate Path**). The operator will be expected to recouple the rod per off-normal procedure 2.4.11, Control Rod Positioning Malfunctions.

JPM S2 This is a Bank JPM. The operator will be told that the "A" Recirc pump tripped two days ago, that the reactor was placed into single loop operation, that the problem has been repaired and post work tested, and that preparations to restart the pump are underway. The operator will be provided with a set of initial plant conditions and a mostly completed OPER-19 (Reactor Recirculation Pump Start Checklist). The operator will be directed to start the "A" recirc pump IAW section 7.4, of PNPS 2.2.84 (Startup of Reactor Recirculation Pump(s) (Reactor Pressurized and/or at Power Conditions)), and to match speeds with the operating pump. The operator will be expected to start the "A" Recirc pump on the first attempt and then match speeds with the "B" Recirc pump pump.

JPM S3 This is a New JPM. The operator will be placed in a situation that requires the manual startup of Reactor Core Isolation Cooling System (RCIC). The operator will be directed to place RCIC in the Injection Mode and raise water level in

accordance with PNPS 2.2.22.5, RCIC Injection and Pressure Control, Attachment 1, RCIC Injection. The operator will be expected to use Section 1.0, Injection, of Attachment 1 and discover that the RCIC System Injection Mode pushbutton fails to start the system (**Alternate Path**). The operator will be expected to go to Section 2.0, Manual Injection, of Attachment 1 and manually start the RCIC System.

JPM S4 This is a modified Bank JPM. The operator will be told that the the plant is shutdown following a manual Reactor scram, that all control rods are inserted, that the EPR is controlling Reactor pressure at ≈940 psig, and that another operator is controlling Reactor water level in the normal band. The operator will be directed to take control of Reactor pressure with the Bypass Valve Opening Jack (BVOJ) and establish a pressure band between 800 and 950 psig in the lower part of the band in accordance with Section 4.2, RPV Cooldown and Depressurization Under Emergency Conditions, of PNPS 5.3.35.2, Operations Emergency and Transient Response Strategies. The operator will be expected to use the BVOJ to establish and maintain a Reactor pressure band between 800 to 950 psig. When this pressure is established a new pressure band will be directed. During the establishment of this reactor pressure one Bypass Valve will fail fully open (**Alternate Path**). The operator will be expected to respond to this event using Steps 4.3.2 of PNPS 2.4-47, Turbine Control System Malfunctions. The use of the BVOJ Control Switch and the Vacuum Trip Monitor (Trip#2) Pushbutton will not close the Bypass Valve, and the operator will be required to close the MSIVs to limit the cooldown.

JPM S5 This is a Bank JPM. The operator will be told that the plant is at 100% power, Torus temperature is >80°F, and that RBCCW cooling has been maximized by another operator. The operator will be directed to maximize Torus cooling by initially placing the "A" RHR loop in torus cooling in accordance with Attachment 14, Maximize Torus Cooling Checklist, of PNPS 5.3.35.1, Transient Response Hardcards for Operating Crews. The operator will be expected to align the RHR System for Torus Cooling. When the "A" RHR Pump is started the operator will observe indications that there is potential blockage of the ECCS Suction Strainers (**Alternate Path**). The operator will be expected to address PNPS 2.2.19.5, RHR Modes of Operation for Transients, Attachment 8, Mitigative Actions for Potential ECCS Suction Strainer Blockage, and determine that the indications are associated with blockage of the ECCS Suction Strainers.

JPM S6 This is a Bank JPM. The operator will be told that the reactor is at power with all house loads aligned to the Unit Aux Transformer. The monthly operability run of the "A" EDG is in progress. The Operator parallelthe EDG and commence the EDG operability run. As KW loading is increased, the EDG governor will become unstable as indicated by KW swings on the engine (**Alternative Path**). The operator is expected to recognize indications of unstable operation and IAW the precautions of procedure 8.9.1 unload the engine and open its output breaker.

JPM S7 This is a New JPM. The operator will directed to respond to a C7 Misc Alarm on a Control Room back panel. The operator will discover that the "A" Main Stack Dilution Flow Fan has tripped and diagnose that the "B" Fan failed to start. IAW

the ARP, the operator is expected to start the "B" fan. Shortly thereafter the "B" Fan will also trip and the operator is expected to enter PNPS 2.4.45, Loss/Reduction of Main Stack Dilution Flow at Stack Building (**Alternate Path**). The operator will be expected to execute the actions of PNPS 2.4.45, and manually start one train of Standby Gas Treatment in accordance with PNPS 2.2-50, Standby Gas Treatment.

JPM S8 This is a New JPM. The operator will be told that with the plant operating at power an LPRM failure occurred; and that the crew is implementing PNPS 2.4.38, LPRM Failure. The operator will be directed to bypass LPRM 20-29B by performing Attachment 4 of PNPS 2.2.66, Local Power Range Monitoring Systems. The operator will be expected to complete Steps 1-10 of Attachment 4 of PNPS 2.2.66.

JPM P1 This is a Bank JPM previously used on the 2009 NRC Exam. The operator will be told that the plant was operating at 100% power when bus A5 locked out due to a ground fault and as a result, the RBCCW loop 'A' pumps have been lost. The operator will also be told that Off-Normal procedure 2.4.A5, Loss of Electrical Bus A5, has been entered. The operator will be directed to Cross-tie Reactor Building Closed Cooling Water with the 'B' loop supplying, in accordance with PNPS 2.4.42, Loss of RBCCW, Attachment 5, RBCCW Loop Crosstie. The operator will be expected to cross-tie the 'A' and 'B' Reactor Building Closed Cooling Water loops.

JPM P2 This is a Bank JPM. The operator will be told that RPS "A" was transferred to its alternate power supply to support repairs to the "A" RPS MG set, that repairs have been completed and the "A" RPS MG set has been restarted, and that RPS "A" needs to be transferred back to its normal supply. The operator will be directed to transfer RPS bus "A" back to "A" RPS MG Set in accordance with PNPS 2.2.79, Reactor Protection System. The operator will be expected to complete Section 7.1.4[1] of PNPS 2.2.79.

JPM P3 This is a Bank JPM. The operator will be told that with the plant operating at 100% power, a momentary loss of B1 has occurred, that B-6 failed to transfer to Bus B-2, and that PNPS 2.4.B6, Loss of Bus B6, has been entered. The operator will be directed to transfer B6 to B1 in accordance with PNPS 2.4.B6. The operator will be expected to transfer B6 to B1 in accordance with Section 4.2.1 of PNPS 2.4.B6.

Facility: Pilgrim			Date of Examination:	2/2014
Exam Level (circle one): RO ☐ SRO-I ☒ SRO-U ☐			Operating Test No.:	N14-1
Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)				
	System / JPM Title		Type Code*	Safety Function
S1	201003 Control Rod and Drive Mechanism [A2.02 (3.7/3.8)] Control Rod Exercise		S, D, P, A	1
S2	**Not Used for SRO-I**			
S3	217000 Reactor Core Isolation Cooling System [A4.03 (3.4/3.3)] Manual Start of RCIC		S, N, A, EN, L	2
S4	241000 Reactor/Turbine Pressure Regulating System [A2.03 (4.1/4.2)] Establish a Reactor Pressure Band		S, D, A, L	3
S5	295013 High Suppression Pool Water Temperature [AA1.01 (3.9/3.9)] Place RHR in Torus Cooling		S, D, A	5
S6	264000 Emergency Generators [A3.04 3.1/3.1)] EMERGENCY DIESEL GENERATOR SURVEILLANCE		S, D, A, EN	6
S7	261000 Standby Gas Treatment System [A4.07 (3.1/3.2)] Main Stack Dilution Flow Fan Trip		S, N, A	9
S8	215005 Average Power Range Monitor/Local Power Range Monitor [A4.04 (3.2/3.2)] Bypass a Failed LPRM		S, N	7
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)				
P1	295018 Partial or Complete Loss of Component Cooling Water [AA1.01 (3.3/3.4)] Cross-Tie RBCCW Cooling Loops		D, P, R, E	8

P2	212000 Reactor Protection System [A2.01 (3.7/3.9)] Transfer of RPS Bus "A" from Alternate Power to the "A" RPS MG Set	D	7
P3	295003 Partial or Complete Loss of AC Power [AA1.03 (4.1/4.1)] Manual Transfer of B-6	D, E	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 Required For SRO-I, 6 Actual
(C)ontrol room	
(D)irect from bank	≤ 8 Required for SRO-I, 7 Actual
(E)mergency or abnormal in-plant	≥ 1 Required for SRO-I, 2 Actual
(EN)gineered Safety Feature	N/A for SRO-I
(L)ow-Power / Shutdown	≥ 1 Required for SRO-I, 2 Actual
(N)ew or (M)odified from bank including 1(A)	≥ 2 Required for SRO-I, 3 Actual
(P)revious 2 exams	≤ 3 Randomly Selected for SRO-I, 2 Actual
(R)CA	≥ 1 Required for SRO-I, 1 Actual
(S)imulator	

JPM Summary

JPM S1 This is a Bank JPM previously used on the 2011 NRC Exam. The operator will be told that the plant is at 100% power, and that the Weekly Control Rod exercising is to be performed in accordance with PNPS 8.3.2, Control Rod Exercise. The operator will be directed to commence the weekly control rod exercising in accordance with Section 8.1 of PNPS 8.3.2. When a coupling check is performed on a rod being withdrawn, the rod will go into an overtravel condition (**Alternate Path**). The operator will be expected to recouple the rod per off-normal procedure 2.4.11, Control Rod Positioning Malfunctions.

JPM S2 Not Used For SRO-I

JPM S3 This is a New JPM. The operator will be placed in a situation that requires the manual startup of Reactor Core Isolation Cooling System (RCIC). The operator will be directed to place RCIC in the Injection Mode and raise water level in accordance with PNPS 2.2.22.5, RCIC Injection and Pressure Control, Attachment 1, RCIC Injection. The operator will be expected to use Section 1.0, Injection, of Attachment 1 and discover that the RCIC System Injection Mode pushbutton fails to start the system (**Alternate Path**). The operator will be expected to go to Section 2.0, Manual Injection, of Attachment 1 and manually start the RCIC System.

JPM S4 This is a modified Bank JPM. The operator will be told that the the plant is shutdown following a manual Reactor scram, that all control rods are inserted,

that the EPR is controlling Reactor pressure at ≈940 psig, and that another operator is controlling Reactor water level in the normal band. The operator will be directed to take control of Reactor pressure with the Bypass Valve Opening Jack (BVOJ) and establish a pressure band between 800 and 950 psig in the lower part of the band in accordance with Section 4.2, RPV Cooldown and Depressurization Under Emergency Conditions, of PNPS 5.3.35.2, Operations Emergency and Transient Response Strategies. The operator will be expected to use the BVOJ to establish and maintain a Reactor pressure band between 800 to 950 psig. When this pressure is established a new pressure band will be directed. During the establishment of this reactor pressure one Bypass Valve will fail fully open (**Alternate Path**). The operator will be expected to respond to this event using Steps 4.3.2 of PNPS 2.4-47, Turbine Control System Malfunctions. The use of the BVOJ Control Switch and the Vacuum Trip Monitor (Trip#2) Pushbutton will not close the Bypass Valve, and the operator will be required to close the MSIVs to limit the cooldown.

JPM S5 This is a Bank JPM. The operator will be told that the plant is at 100% power, Torus temperature is >80°F, and that RBCCW cooling has been maximized by another operator. The operator will be directed to maximize Torus cooling by initially placing the "A" RHR loop in torus cooling in accordance with Attachment 14, Maximize Torus Cooling Checklist, of PNPS 5.3.35.1, Transient Response Hardcards for Operating Crews. The operator will be expected to align the RHR System for Torus Cooling. When the "A" RHR Pump is started the operator will observe indications that there is potential blockage of the ECCS Suction Strainers (**Alternate Path**). The operator will be expected to address PNPS 2.2.19.5, RHR Modes of Operation for Transients, Attachment 8, Mitigative Actions for Potential ECCS Suction Strainer Blockage, and determine that the indications are associated with blockage of the ECCS Suction Strainers.

JPM S6 This is a Bank JPM. The operator will be told that the reactor is at power with all house loads aligned to the Unit Aux Transformer. The monthly operability run of the "A" EDG is in progress. The Operator parallelthe EDG and commence the EDG operability run. As KW loading is increased, the EDG governor will become unstable as indicated by KW swings on the engine (**Alternative Path**). The operator is expected to recognize indications of unstable operation and IAW the precautions of procedure 8.9.1 unload the engine and open its output breaker.

JPM S7 This is a New JPM. The operator will directed to respond to a C7 Misc Alarm on a Control Room back panel. The operator will discover that the "A" Main Stack Dilution Flow Fan has tripped and diagnose that the "B" Fan failed to start. IAW the ARP, the operator is expected to start the "B" fan. Shortly thereafter the "B" Fan will also trip and the operator is expected to enter PNPS 2.4.45, Loss/Reduction of Main Stack Dilution Flow at Stack Building (**Alternate Path**). The operator will be expected to execute the actions of PNPS 2.4.45, and manually start one train of Standby Gas Treatment in accordance with PNPS 2.2-50, Standby Gas Treatment.

JPM S8 This is a New JPM. The operator will be told that with the plant operating at power an LPRM failure occurred; and that the crew is implementing PNPS

2.4.38, LPRM Failure. The operator will be directed to bypass LPRM 20-29B by performing Attachment 4 of PNPS 2.2.66, Local Power Range Monitoring Systems. The operator will be expected to complete Steps 1-10 of Attachment 4 of PNPS 2.2.66.

JPM P1 This is a Bank JPM previously used on the 2009 NRC Exam. The operator will be told that the plant was operating at 100% power when bus A5 locked out due to a ground fault and as a result, the RBCCW loop 'A' pumps have been lost. The operator will also be told that Off-Normal procedure 2.4.A5, Loss of Electrical Bus A5, has been entered. The operator will be directed to Cross-tie Reactor Building Closed Cooling Water with the 'B' loop supplying, in accordance with PNPS 2.4.42, Loss of RBCCW, Attachment 5, RBCCW Loop Crosstie. The operator will be expected to cross-tie the 'A' and 'B' Reactor Building Closed Cooling Water loops.

JPM P2 This is a Bank JPM. The operator will be told that RPS "A" was transferred to its alternate power supply to support repairs to the "A" RPS MG set, that repairs have been completed and the "A" RPS MG set has been restarted, and that RPS "A" needs to be transferred back to its normal supply. The operator will be directed to transfer RPS bus "A" back to "A" RPS MG Set in accordance with PNPS 2.2.79, Reactor Protection System. The operator will be expected to complete Section 7.1.4[1] of PNPS 2.2.79.

JPM P3 This is a Bank JPM. The operator will be told that with the plant operating at 100% power, a momentary loss of B1 has occurred, that B-6 failed to transfer to Bus B-2, and that PNPS 2.4.B6, Loss of Bus B6, has been entered. The operator will be directed to transfer B6 to B1 in accordance with PNPS 2.4.B6. The operator will be expected to transfer B6 to B1 in accordance with Section 4.2.1 of PNPS 2.4.B6.

Facility:	Pilgrim	Date of Examination:	2/2014
Exam Level (circle one):	RO ☐ SRO-I ☐ SRO-U ☒	Operating Test No.:	N14-1

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
	System / JPM Title	Type Code*	Safety Function
S1	**Not Used for SRO-U**		
S2	**Not Used for SRO-U**		
S3	**Not Used for SRO-U**		
S4	241000 Reactor/Turbine Pressure Regulating System [A2.03 (4.1/4.2)] Establish a Reactor Pressure Band	S, D, A, L	3
S5	**Not Used for SRO-U**		
S6	264000 Emergency Generators [A3.04 3.1/3.1)] EMERGENCY DIESEL GENERATOR SURVEILLANCE	S, D, A, EN	6
S7	261000 Standby Gas Treatment System [A4.07 (3.1/3.2)] Main Stack Dilution Flow Fan Trip	S, N, A	9
S8	**Not Used for SRO-U**		
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	295018 Partial or Complete Loss of Component Cooling Water [AA1.01 (3.3/3.4)] Cross-Tie RBCCW Cooling Loops	D, P, R, E	8
P2	212000 Reactor Protection System [A2.01 (3.7/3.9)] Transfer of RPS Bus "A" from Alternate Power to the "A" RPS MG Set	D	7
P3	**Not Used for SRO-U**		

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	2-3 Required For SRO-U, 3 Actual
(C)ontrol room	
(D)irect from bank	≤ 4 Required for SRO-U, 4 Actual
(E)mergency or abnormal in-plant	≥ 1 Required for SRO-U, 1 Actual
(EN)gineered Safety Feature (control room system)	≥ 1 Required for SRO-U, 1 Actual
(L)ow-Power / Shutdown	≥ 1 Required for SRO-U, 1 Actual
(N)ew or (M)odified from bank including 1(A)	≥ 1 Required for SRO-U, 1 Actual
(P)revious 2 exams	≤ 2 Randomly Selected for SRO-U, 1 Actual
(R)CA	≥ 1 Required for SRO-U, 1 Actual
(S)imulator	

JPM Summary

JPM S1 Not Used For SRO-U

JPM S2 Not Used For SRO-U

JPM S3 Not Used For SRO-U

JPM S4 This is a modified Bank JPM. The operator will be told that the the plant is shutdown following a manual Reactor scram, that all control rods are inserted, that the EPR is controlling Reactor pressure at ≈940 psig, and that another operator is controlling Reactor water level in the normal band. The operator will be directed to take control of Reactor pressure with the Bypass Valve Opening Jack (BVOJ) and establish a pressure band between 800 and 950 psig in the lower part of the band in accordance with Section 4.2, RPV Cooldown and Depressurization Under Emergency Conditions, of PNPS 5.3.35.2, Operations Emergency and Transient Response Strategies. The operator will be expected to use the BVOJ to establish and maintain a Reactor pressure band between 800 to 950 psig. When this pressure is established a new pressure band will be directed. During the establishment of this reactor pressure one Bypass Valve will fail fully open (**Alternate Path**). The operator will be expected to respond to this event using Steps 4.3.2 of PNPS 2.4-47, Turbine Control System Malfunctions. The use of the BVOJ Control Switch and the Vacuum Trip Monitor (Trip#2) Pushbutton will not close the Bypass Valve, and the operator will be required to close the MSIVs to limit the cooldown.

JPM S5 Not Used For SRO-U

JPM S6 This is a Bank JPM. The operator will be told that the reactor is at power with all house loads aligned to the Unit Aux Transformer. The monthly operability run of the "A" EDG is in progress. The Operator parallelthe EDG and commence the EDG operability run. As KW loading is increased, the EDG governor will become unstable as indicated by KW swings on the engine (**Alternative Path**). The operator is expected to recognize indications of unstable operation and IAW the precautions of procedure 8.9.1 unload the engine and open its output breaker.

JPM S7 This is a New JPM. The operator will directed to respond to a C7 Misc Alarm on a Control Room back panel. The operator will discover that the "A" Main Stack Dilution Flow Fan has tripped and diagnose that the "B" Fan failed to start. IAW the ARP, the operator is expected to start the "B" fan. Shortly thereafter the "B" Fan will also trip and the operator is expected to enter PNPS 2.4.45, Loss/Reduction of Main Stack Dilution Flow at Stack Building (**Alternate Path**). The operator will be expected to execute the actions of PNPS 2.4.45, and manually start one train of Standby Gas Treatment in accordance with PNPS 2.2-50, Standby Gas Treatment.

JPM S8 Not Used For SRO-U

JPM P1 This is a Bank JPM previously used on the 2009 NRC Exam. The operator will be told that the plant was operating at 100% power when bus A5 locked out due to a ground fault and as a result, the RBCCW loop 'A' pumps have been lost. The operator will also be told that Off-Normal procedure 2.4.A5, Loss of Electrical Bus A5, has been entered. The operator will be directed to Cross-tie Reactor Building Closed Cooling Water with the 'B' loop supplying, in accordance with PNPS 2.4.42, Loss of RBCCW, Attachment 5, RBCCW Loop Crosstie. The operator will be expected to cross-tie the 'A' and 'B' Reactor Building Closed Cooling Water loops.

JPM P2 This is a Bank JPM. The operator will be told that RPS "A" was transferred to its alternate power supply to support repairs to the "A" RPS MG set, that repairs have been completed and the "A" RPS MG set has been restarted, and that RPS "A" needs to be transferred back to its normal supply. The operator will be directed to transfer RPS bus "A" back to "A" RPS MG Set in accordance with PNPS 2.2.79, Reactor Protection System. The operator will be expected to complete Section 7.1.4[1] of PNPS 2.2.79.

JPM P3 Not Used For SRO-U

Facility: PILGRIM	Scenario No.: 1	Op Test No.: 2014 NRC
Examiners:	Operators:	SRO -
		RO -
		BOP -

Initial Conditions:
- IC-6 Reactor Approach to Run, Mode Switch in Startup.
- Open LP NRC Scenario 1
- Execute LP Steps labeled "Initial Condition 1" **AND** "Initial Condition 2"
- Place RBCCW Pump "A" in PTL and hang Danger Tag on CS
- Adjust Startup FRV output to 30%
- Place RPV Level Recorder on C905 to Fast Speed

Turnover:
- A Rx Startup is in progress IAW PNPS 2.1.1
- The Reactor Mode Switch is in Startup
- Rx power is approximately 4% with the IRMs on Range 9.
- Reactor Pressure is 940 psig, with ½ bypass valve open. RPV pressure control is on the EPR.
- RPV level control is via the Startup FRV
- Current Rod position is TBD
- Procedure 2.1.1 is complete through step [92]
- RBCCW Pump "A" is OOS and is not available. All other RBCCW pumps are operable and a Tracking LCO has been initiated.
- The running Steam Packing Exhaust Blower is vibrating excessively.
- Directions to the shift are to shift Blowers IAW 2.2.93, section 7.1.3 and continue the startup.

Critical Tasks:
1. When a primary system is discharging into the secondary containment through an un-isolable break, scram the reactor per EOP-04 and EOP-01 prior to commencing Emergency Depressurization.
2. During failure to scram conditions, insert control rods using one or more methods contained within 5.3.23 and / or EOP-02 to achieve Rx. Shutdown under all conditions
3. When a primary system is discharging into the secondary containment through an un-isolable break, execute Emergency Depressurization per EOP-17/27 when max safe operating values are exceeded in two or more areas.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N - BOP N - SRO	Shift Steam Packing Exhaust Blowers IAW 2.2.93, section 7.1.3.
2.	N/A	R – RO R - SRO	Power ascension per Plant Startup Procedure 2.1.1, using control rod withdraw.

3.	RD09	C – RO C - SRO	During initial rod withdraw, Stuck Rod. Crew responds IAW PNPS 2.4.11.1. Rod un-sticks when drive pressure is raised 150 pounds.
4.	MT09	C – BOP C - SRO	Steam Seal Pressure Regulator fails closed. BOP responds IAW ARP C2C-A7 and establishes manual control using the bypass valve and unloading valve as required.
5.	RP09 (A) NM20"C"	I/C – ALL TS - SRO	RPS MG set "A" trip. Crew shifts RPS "A" to the backup power supply IAW PNPS 2.2.79. APRM "C" fails upscale when the bus is re-energized. RO diagnoses APRM failure bypasses APRM, and resets RPS as directed by the SRO. BOP resets Rad Monitors. SRO consults T.S. Table 3.1.1 and FSAR Appendix B, Table 3.2.C.1.,for the APRM failure (Tracking LCO).
6.	ED05	TS - SRO	Loss of 23 KV line. TS 3.9.B.1
7.	PC02 (25% initially, 100% post scram) PC13 Overrides to prevent manual closure of RWCU 2 5 & 80 valves	M - All	Un-isolable RWCU leak that leads to high area temperatures requires a manual scram and eventual emergency depressurization. EOP-01, EOP-04 and EOP-17.
8.	RD12 at 100% for 4 withdrawn rods	C – RO C - SRO	Incomplete scram. 4 control rods fail to insert but can be inserted manually IAW PNPS 5.3.23, Alternate Rod Insertion. Transition to EOP-02 required.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario Summary:

The plant is at approximately 4% power with a reactor plant startup in progress following a two day outage. Procedure 2.1.1, Startup from Shutdown is complete up through step [92]. RBCCW pump "A" is out of service. The running Steam Packing Exhaust Blower has been reported as vibrating excessively. The directions to the shift are to shift Steam Packing Exhaust Blowers IAW PNPS 2.2.93, Main Condenser Vacuum System and then continue the plant startup IAW PNPS 2.1.1.

After assuming the watch, the BOP will shift Steam Packing Exhaust Blowers as directed. The RO will commence control rod withdraw and raise power in preparation for transferring the Reactor Mode Switch to Run. While raising power, the RO will encounter a control rod that cannot be moved with normal drive pressure. The crew is expected to respond IAW PNPS 2.4.11.1, CRD System Malfunctions. The RO is expected to increase drive water pressure in 50 pound increments and attempt to move the rod at each increment. The rod will move when drive pressure has been increased by 150 pounds.

Then the Steam Seal Pressure Regulator will fail closed. The BOP is expected to diagnose the failure and respond IAW ARP C2C-A7, Steam Seal Header Press LO and take manual control of header pressure via the regulator bypass valve and steam seal unloading valve. The crew may also refer to PNPS 2.4.36, Lowering Condenser Vacuum.

Next the crew will be informed that a bearing problem is indicated on the "A" RPS MG set. As the crew prepares to secure the MG set, the MG set will trip causing a ½ scram and loss of power to various Nuclear Instruments and Radiation Monitors. The crew is expected to diagnose the failure and direct the field operator to place RPS "A" on the backup power supply IAW PNPS 2.2.79, Reactor Protection System. When the bus is re-energized, APRM "C" will fail upscale. The RO is expected to diagnose the failure, bypass the APRM as directed and reset the ½ scram. The SRO is expected to consult T.S. Table 3.1.1 and FSAR Appendix B, Table 3.2.C.1., conclude that the minimum number of operable APRMs is met and enter a Tracking LCO. The BOP is expected to reset the rad monitors that were impacted by the power loss.

Then the 23KV Circuit Switcher supplying the Shutdown Transformer will trip. The SRO is expected to declare the Shutdown Transformer Inop, refer to TS 3.9.B.1 and declare a 7 day LCO.

The scenario ending event begins when a primary system leak occurs in the secondary containment from the RWCU system. The leak will result in rising area temperatures. The crew is expected to enter EOP-04, Secondary Containment Control, when area temperatures exceed EOP-04 entry conditions. The automatic PCIS isolation will fail and various valve failures will prevent manual isolation. Before any area temperature reaches its max safe operating value, the crew is expected to enter EOP-01 RPV Control and insert a manual scram (**Critical Task #1**). Four control rods will fail to insert following the scram. The SRO is expected to transition to EOP-02, RPV Control, Failure to Scram. Boron injection is not expected. The RO is expected to manually insert the

control rods IAW PNPS 5.3.23, Alternate Rod Insertion and achieve reactor shutdown status under all conditions (**Critical Task #2**).

The crew is expected to perform an aggressive cooldown IAW PNPS 5.3.35.2, Operations Emergency and Transient Response Strategies and rapidly lower pressure to 450 to 550 psig in order to reduce the effects of the leak. However area temperatures will continue to rise. The crew may anticipate an Emergency Depressurization IAW EOP-01 and open all turbine bypass valves. Regardless of any mitigating action, area temperatures will exceed their max safe operating values in two or more areas of the secondary containment. The crew is then expected to enter EOP-17, Emergency RPV Depressurization, open all SRVs and depressurize the reactor (**Critical Task #3**).

The scenario will be terminated when all SRVs have been opened, and RPV water level has been stabilized

Facility:	PILGRIM	Scenario No.: 2	Op Test No.: 2014 NRC
Examiners:		Operators:	SRO -
			RO -
			BOP -

Initial Conditions:
- Initialize to IC-13, 50% Power
- Increase power to ~ 55%
- Manually isolate RWCU
- Verify both RWCU filters are on hold
- Place "B" CS pump in PTL and danger tag CS pump control switch
- Open LP NRC Scenario 2 and execute LP step labeled "Initial Conditions"
- Bypass APRM "C" and reset the ½ scram
- Hang Caution Tag on APRM Joystick
- Place an additional Cond Demin in service

Turnover:
- RX power is approximately 55% following a power reduction for a main condenser backwash.
- The backwash has been completed and the seawater system has been returned to a normal lineup IAW PNPS 2.2.94.5.
- "B" CS pump is OOS to allow for replacement of the pump's breaker charging motor.
- The plant is on day 2 of a 7 day LCO IAW TS 3.5.A.2 due to the CS breaker repair.
- APRM "C" has failed upscale and is bypassed. All other APRMs are operable and a Tracking LCO has been initiated.
- RWCU is isolated following an equipment failure during a surveillance last shift. The equipment failure has been repaired.
- Directions to the shift are to:
  - Restore RWCU to service IAW PNPS 2.2.83, Reactor Cleanup System, section 7.2 commencing at step [6].
  - Place "A" RWCU Filter Demin in service. "B" Filter Demin will be backwashed later in the shift.
  - Restore power to 100% IAW PNPS 2.1.14, Station Power Changes, Section 7.3, Step [8]. Raise flow to 63 Mlbm/hr.

Critical Tasks:
1. Initiate drywell sprays when torus bottom pressure exceeds 16 psig.
2. When RPV level cannot be restored and maintained >-150 inches, Emergency Depressurize the reactor.
3. When systems required to maintain core cooling do not automatically start or inject, manually align the systems for injection.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N - BOP N - SRO	BOP restores RWCU to service IAW PNPS 2.2.83, Reactor Cleanup System, section 7.2 commencing at step [6].
2.	N/A	R – RO R - SRO	RO commences power ascension using Recirc flow control IAW PNPS 2.1.14, Station Power Changes, section 7.3.
3.	Ovrd for HPCI Manual Initiation PB Ovrd for HPCI AOP	C – BOP C – SRO TS - SRO	HPCI inadvertent initiation. BOP secures HPCI IAW 2.4.35, Inadvertent Initiation of CSCS. SRO refers to TS 3.5.C.3 and declares a 24 hour Cold S/D LCO. Note: After the BOP places the HPCI AOP in PTL, the switch is to be overridden in the PTL position.
4.	RD05 (A) RD08 for rod 10-39	C – RO C – SRO TS - SRO	CRD Pump trip. RO starts standby pump IAW 2.4.4, Loss of CRD Pumps. Control Rod Accumulator Trouble alarm annunciates prior to pump start. Alarm does not clear after the pump start. After investigation the crew determines that the accumulator cannot be recharged. SRO declares the accumulator Inop, refers to TS 3.3.D and declares the associated control rod "Slow".
5.	CW03 (A) Ovrd for "B" pump control switch in STOP	C – All	Running TBCCW trips. Standby pump fails to auto start and cannot be started manually. Crew responds IAW PNPS 2.4.41, Loss of TBCCW. RO manually scrams and performs scram actions. BOP trips all feed and condensate pumps, closes MSIVs and injects with RCIC.
6.	PC01 ramped to ~ 2200 gpm over 15 min.	M – All	Small break LOCA that requires entry into EOP-01 and EOP-03. Break overcomes ability of CRD and RCIC to maintain level. Emergency Depressurization required to allow low pressure ECCS injection. Drywell sprays will be required.
7.	CS01 (A) RH04 (B)	C – BOP	CS pump "A" trips when pump starts to inject following opening of CS injection valve. LPCI injection valve fails to auto open when RPV pressure lowers to < 400 psig. Operator action required to manually open the valve and inject with RHR to establish adequate core cooling.

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

Scenario Summary:

RX power is approximately 55% following a power reduction for a main condenser backwash. The backwash has been completed and the seawater system has been returned to a normal lineup IAW PNPS 2.2.94.5.

The "B" CS pump is OOS to allow for replacement of the pump's breaker charger motor. The plant is on day 2 of a 7 day LCO IAW TS 3.5.A.2 due to the CS breaker repair. APRM "C" has failed upscale and is bypassed. All other APRMs are operable. RWCU is isolated following an equipment failure during a surveillance last shift. The equipment failure has been repaired.

The directions to the shift are to restore RWCU service IAW PNPS 2.2.83, Reactor Cleanup System, section 7.2 commencing at step [6] and then restore power to 100% IAW PNPS 2.1.14, Station Power Changes.

After assuming the watch, the BOP will restore RWCU to service IAW PNPS 2.2.83. After RWCU is in service the RO will commence a power ascension by raising Recirc Flow IAW PNPS 2.1.14 section 7.5.

During the power ascension, HPCI will inadvertently start and inject. The crew is expected to respond IAW 2.4.35, Inadvertent Initiation of CSCS. The BOP will be required to secure HPCI and complete subsequent actions such as assisting in determining whether any fuel damage has occurred. The RO may be directed to reduce power during the transient. After stabilizing the plant the SRO is expected to refer to Tech Spec TS 3.5.C.3 and declare a 24 hour Cold S/D LCO due to HPCI being OOS in conjunction with CS "B" being OOS.

Next, the running CRD Pump trips. The RO is expected to enter PNPS 2.4.4, Loss of CRD Pumps and start the standby pump. A Control Rod Accumulator Trouble alarm annunciates prior to the pump start. The alarm does not clear after restoring charging water pressure. Following investigation the crew will determine that the accumulator cannot be recharged. The SRO is expected to declare the accumulator Inop, refer to TS 3.3.D and declare the associated control rod "Slow". Alternatively the SRO may declare the associated control rod Inop and initiate action to fully insert the rod and disarm the rod but this is not expected.

The scenario ending event begins with a trip of the running TBCCW pump. The standby pump fails to auto start and cannot be started manually. The crew is expected to respond IAW PNPS 2.4.41, Loss of TBCCW. The RO is expected to manually scram the reactor and perform required scram actions. The BOP is expected to trip all feed and condensate pumps, close the MSIVs, and inject with RCIC. RPV pressure will be controlled using SRVs. Entry conditions for EOP-01, RPV Control will be exceeded.

The transient results in a reactor coolant leak that progresses in size over time. Drywell pressure will exceed the entry conditions of EOP-01 and EOP-03, Primary Containment Control. EOP-03 will direct the use of Torus and Drywell sprays (**Critical Task #1**).

IAW PNPS 5.3.35.2, Operations Emergency and Transient Response Strategies, the crew is expected to rapidly lower pressure to 450 to 550 psig in order to reduce the effects of the leak. Regardless of any mitigating action, RPV level will continue to lower and drop below the Top of

the Active Fuel (TAF). The crew is then expected to enter EOP-17, Emergency RPV Depressurization, open all SRVs and depressurize the reactor in order to allow the Low Pressure ECCS to restore vessel level (**Critical Task #2**).

When RPV pressure lowers below 400 psig one of the LPCI injection valves will fail to auto open. The "A" CS pump will trip when it starts to inject. Operator action will be required to manually open the LPCI injection valve to allow the RHR system to recover RPV level and adequate core cooling (**Critical Task #3**).

The scenario will be terminated when all SRVs have been opened, water level has been restored to the normal range and primary containment parameters are stabilized or lowering.

Facility:	PILGRIM	Scenario No.:	3	Op Test No.:	2014 NRC

Examiners: _____ Operators: SRO -
_____ RO -
_____ BOP -

Initial Conditions:
- Initialize to IC-15 Full Power Operations
- Open LP NRC Scenario 3
- Execute LP step labeled "Initial Conditions"
- Place "B" CS pump in PTL
- Hang danger tag on CS pump control switch
- Bypass APRM "C" and reset the ½ scram
- Caution tag the APRM Joystick

Turnover:
- RX power is 100%.
- A plant shutdown has been directed by plant management due to rising drywell leakage. Unidentified leakage has risen by 1.6 gpm over the last 24 hours. Unidentified leakage is currently 3.8 gpm.
- "B" CS pump is OOS to allow for replacement of the pump's breaker charger motor. The plant is on day 2 of a 7 day LCO IAW TS 3.5.A.2 due to the CS breaker repair.
- APRM "C" has failed upscale and is bypassed. All other APRMs are operable and a Tracking LCO has been initiated.
- PNPS 2.1.5, Controlled Shutdown From Power, Section F has been initiated. Preliminary de-inerting activities have commenced but actual de-inertion has not yet started
- I&C has just completed the IRM and SRM calibrations IAW PNPS 2.1.5, Section F, steps [2](b) and (c).
- The directions to the shift are to:
  - Commence de-inerting the containment beginning at step [6] of PNPS 2.2.70, Attachment 11, section 4.1. Use the "B" SBGT Train only.
  - When de-inerting has commenced, begin the power reduction. ISO NE has been notified of the power reduction.
  - The Shift Manager has determined that it is not necessary to place a FRV in manual.

Critical Tasks:
1. Inject SBLC before torus water temperature exceeds the BIIT or in response to core oscillations.
2. During failure to scram conditions, insert control rods using one or more methods contained within 5.3.23 and / or EOP-02 to achieve Rx. Shutdown under all conditions
3. During failure to scram conditions terminate and prevent injection from all sources (except CRD, RCIC, and SBLC) and lower level to < -25 inches prior to recommencing injection.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N - BOP N - SRO	The BOP will lineup the PCAC system and commence de-inerting the primary containment IAW PNPS 2.2.70, Attachment 11, Section 4.1
2.	N/A	R – RO R - SRO	The RO will commence a power reduction using Recirc Flow Control IAW PNPS 2.1.5, step [3] and PNPS 2.1.14, Station Power Changes.
3.	RD01	C – RO C - SRO	In-service CRD Flow Control Valve (FCV) fails open. The RO responds IAW PNPS 2.4.11.1, CRD System Malfunctions, Attachment 5, and places the standby CRD FCV in service.
4.	TC06	C – BOP C – SRO TS - SRO	In-service Pressure Regulator (EPR) oscillates. The BOP determines that the EPR is oscillating and responds IAW PNPS 2.4.37, Turbine Control System Malfunctions and removes the EPR from service. The SRO determines that the MCPR LCO is not satisfied due to loss of backup pressure regulation and enters TS LCO 3.11.C.1.
5.	CW16A 10% severity	C – BOP C – SRO TS - SRO	SSW Loop "A" Leak. The crew responds IAW PNPS 2.4.43, Loss of One Salt Service Water Loop. BOP Cross Connects RBCCW and isolates Loop "A" SSW. SRO declares Loop "A" SSW inoperable and a 24 Hr Cold S/D LCO due to RBCCW Cross Tie valves being Open. T.S. 3.5.B.3.C.1
6.	MS14 (A)	C – All	SRV "A" fails open. The crew will respond IAW PNPS 2.4.29, Stuck Open SRV. When all efforts to close the valve are unsuccessful, the crew will insert a manual scram before 5 minutes have elapsed. The SRV will reclose when RPV pressure lowers to 850 psig.
7.	Remote functions for both SDIV levels at 98.5% severity	M- All	Large Hydraulic Lock ATWS following manual scram. Rx, Power will remain above 3%. The Crew will respond IAW EOP-02, RPV Control Failure to scram. All injection will be terminated and prevented to lower level below the feedwater spargers. SBLC injection will be required.
8.	LP01	C – RO C – SRO	The squib valve will fail to fire when the 1st SBLC Train is started. The RO will be required diagnose the failure and initiate the standby train.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario Summary:

The plant is at approximately 100% power with a plant shutdown in progress due to increased drywell leakage. "B" CS pump is OOS to allow for replacement of the pump's breaker charger motor. The plant is on day 2 of a 7 day LCO IAW TS 3.5.A.2 due to the CS breaker repair. APRM "C" has failed upscale and is bypassed. All other APRMs are operable.

The directions to the shift are to commence de-inerting the primary containment and commence the power reduction IAW PNPS2.1.5, Controlled Shutdown From Power, Section F.

After assuming the watch the BOP will align the PCAC system, start Standby Gas and commence de-inerting the primary Containment. The RO will then commence the power reduction by lowering Recirc Flow to 43 Mlbm/hr as required.

After a sufficient power reduction has occurred the in-service CRD Flow Control Valve (FCV) fails open. The RO is expected to respond IAW PNPS 2.4.11.1, CRD System Malfunctions, Attachment 5 and place the standby CRD FCV in service.

The in-service Pressure Regulator (EPR) then begins to oscillate. The BOP is expected to determine that the EPR is oscillating and respond IAW PNPS 2.4.37, Turbine Control System Malfunctions and remove the EPR from service. The SRO is expected to determine that the MCPR LCO is not met due to loss of backup pressure regulation and enter TS LCO 3.11.C.1.

Next an air leak results in one SDIV drain valve failing partially closed. The SRO is expected to refer to TS 3.3.G and declare a 7 day LCO to isolate the drain line.

Then a leak on Salt Service Water (SSW) loop "A" will occur. The crew is expected to respond IAW PNPS 2.4.43, Loss of One Salt Service Water Loop. The BOP will cross connect RBCCW loops and isolate SSW loop "A" to stop the leak. The SRO is expected to declare Loop "A" SSW inoperable and a 24 Hr Cold S/D LCO due to the RBCCW Cross Tie valves being open (T.S. 3.5.B.3.C.1).

The scenario ending event begins when a SRV fails open following the previous pressure oscillations. The crew is expected to respond IAW PNPs 2.4.29, Stuck Open SRV. All efforts to close the valve will be unsuccessful. The crew is expected to insert a manual scram before 5 minutes have elapsed. Water in the Scram Discharge Volumes will cause a hydraulic lock on the control rods and most will fail to insert.

The crew is expected to respond IAW EOP-02, RPV Control, Failure to Scram. The RO is expected to reduce both Recirc pumps to minimum speed and trip the pumps to lower power. The crew is expected to inject SBLC before the BIIT curve is exceeded (**Critical Task #1**). The Standby Liquid SQUIB valve will fail to fire. The RO is expected to recognize the failure and start the standby SBLC Train. Other actions will include inhibiting ADS and defeating the MSIV low RPV level isolation. Torus water temperature will exceed the EOP-03, Primary Containment Control, entry condition.

EOP-02 will require that injection be terminated and prevented and RPV level lowered to below -25 inches to mitigate /prevent core oscillations (**Critical Task # 2**). The RO is expected to

insert control rods utilizing PNPS 5.3.23 Alternate Rod Insertion and complete control rod insertion (**Critical Task #3**). In addition to manually driving rods, repeated manual scrams are expected.

The scenario will end when all rods are inserted, EOP-02 is exited, RPV level is in progress of being restored to the normal band and actions are in progress to lower Torus Water temperature.

Facility: Pilgrim		Date of Exam: 2014 NRC																
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 Evaluations	1	3	3	3				3	4			4	20	3		4		7
	2	2	1	1				1	1			1	7	2		1		3
	Tier Totals	5	4	4				4	5			5	27	5		5		10
2. Plant Systems	1	2	2	2	2	3	2	2	3	3	2	3	26	2		3		5
	2	1	1	1	2	1	1	1	1	1	1	1	12	0	1	2		3
	Tier Totals	3	3	3	4	4	3	3	4	4	3	4	38	3		5		8
3. Generic Knowledge & Abilities		1			2			3			4		10	1	2	3	4	7
		3			3			2			2			1	2	2	2	

Note

1. 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).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted 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.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant specific priority, only those 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.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. * The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/A's
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above. 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.
9. For Tier 3, select topics from Section 2 of the K/A Catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10CFR55.43

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BWR 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#
295023 Refueling Accidents / 8					X		AA2.04 - Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS : Occurrence of fuel handling accident	4.1	76
295030 Low Suppression Pool Water Level / 5					X		EA2.04 - Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Drywell/ suppression chamber differential pressure: Mark-I&II	3.7	77
295031 Reactor Low Water Level / 2					X		EA2.02 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor power	4.2	78
295018 Partial or Total Loss of CCW / 8						X	2.1.19 - Conduct of Operations: Ability to use plant computers to evaluate system or component status.	3.8	79
295025 High Reactor Pressure / 3						X	2.2.44 - Equipment Control: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives effect plant and system conditions.	4.4	80
295019 Partial or Total Loss of Inst. Air / 8						X	2.1.32 - Conduct of Operations: Ability to explain and apply all system limits and precautions.	4.0	81
295004 Partial or Total Loss of DC Pwr / 6						X	2.2.25 - Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	4.2	82
295023 Refueling Accidents / 8	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS : Radiation exposure hazards	3.6	39

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BWR 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#
295028 High Drywell Temperature / 5	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Equipment environmental qualification	2.9	40
295004 Partial or Total Loss of DC Pwr / 6	X						AK1.04 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Effect of battery discharge rate on capacity	2.8	41
600000 Plant Fire On-site / 8		X					AK2.01 - Knowledge of the interrelations between PLANT FIRE ON SITE and the following: Sensors, detectors and valves	2.6	42
295019 Partial or Total Loss of Inst. Air / 8		X					AK2.09 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Containment	3.3	43
295025 High Reactor Pressure / 3		X					EK2.10 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.9	44
295026 Suppression Pool High Water Temp. / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: SBLC injection	3.7	45
295021 Loss of Shutdown Cooling / 4			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING : Raising reactor water level	3.3	46

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BWR 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#
295024 High Drywell Pressure / 5			X				EK3.05 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE : RPV flooding	3.5	47
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.07 - Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : RMCS: Plant-Specific	3.9	48
295016 Control Room Abandonment / 7				X			AA1.05 - Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : D.C. electrical distribution	2.8	49
295003 Partial or Complete Loss of AC / 6				X			AA1.04 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : D.C. electrical distribution system	3.6	50
295038 High Off-site Release Rate / 9					X		EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE : Source of off-site release	4.1	51
700000 Generator Voltage and Electric Grid Disturbances					X		AA2.04 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: VARs outside capability curve.	3.6	52
295030 Low Suppression Pool Water Level / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Suppression pool level	4.1	53

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BWR 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#
295018 Partial or Total Loss of CCW / 8						X	2.4.47 - Emergency Procedures / Plan: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	54
295005 Main Turbine Generator Trip / 3						X	2.4.21 - Emergency Procedures / Plan: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.0	55
295006 SCRAM / 1						X	2.2.42 - Equipment Control:: Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	56
295031 Reactor Low Water Level / 2					X		EA2.03 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor pressure	4.2	57
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						X	2.2.25 - Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.2	58
K/A CategoryTotals	3	3	3	3	4/3	4/4	Group Point Total:		20/7

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BWR 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#
295020 Inadvertent Cont. Isolation / 5 & 7					X		AA2.02 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION : Drywell/containment temperature	3.4	83
500000 High CTMT Hydrogen Conc. / 5						X	2.4.8 - Emergency Procedures / Plan: Knowledge of how abnormal operating procedures are used in conjunction with EOP's.	4.5	84
295007 High Reactor Pressure / 3					X		AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE : Reactor pressure	4.1	85
295014 Inadvertent Reactivity Addition / 1	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to INADVERTENT REACTIVITY ADDITION : Prompt critical	3.7	59
295033 High Secondary Containment Area Radiation Levels / 9		X					EK2.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Process radiation monitoring system	3.8	60
295029 High Suppression Pool Water Level / 5			X				EK3.01 - Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL WATER LEVEL : Emergency depressurization	3.5	61
295012 High Drywell Temperature / 5				X			AA1.01 - Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell ventilation system	3.5	62

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BWR 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#
295034 Secondary Containment Ventilation High Radiation / 9					X		EA2.02 - Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION : Cause of high radiation levels	3.7	63
295036 Secondary Containment High Sump/Area Water Level / 5						X	2.2.14 - Equipment Control: Knowledge of the process for controlling equipment configuration or status.	3.9	64
295015 Incomplete SCRAM / 1	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM : Reactivity effects	3.8	65
K/A CategoryTotals	2	1	1	1	1/2	1/1	Group Point Total:		7/3

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
209001 LPCS								X				A2.05 - Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Core spray line break	3.6	86
203000 RHR/LPCI: Injection Mode								X				A2.12 - 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: Pump runout	2.7	87
215004 Source Range Monitor											X	2.4.30 - Emergency Procedures / Plan; Knowledge of events related to system operation / status that must be reported to internal organizations or external agencies, such as the state, the NRC, or the transmission system operator.	4.1	88
215003 IRM											X	2.2.38 - Equipment Control: Knowledge of conditions and limitations in the facility license.	4.5	89
264000 EDGs											X	2.2.40 - Equipment Control: Ability to apply technical specifications for a system.	4.7	90

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
300000 Instrument Air	X											K1.02 - Knowledge of the connections and / or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: Service air	2.7	1
262002 UPS (AC/DC)	X											K1.19 - Knowledge of the physical connections and/or cause- effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: Power range neutron monitoring system: Plant-Specific	2.9	2
203000 RHR/LPCI: Injection Mode		X										K2.02 - Knowledge of electrical power supplies to the following: Valves	2.5	3
215003 IRM		X										K2.01 - Knowledge of electrical power supplies to the following: IRM channels/detectors	2.5	4
211000 SLC			X									K3.02 - Knowledge of the effect that a loss or malfunction of the STANDBY LIQUID CONTROL SYSTEM will have on following: Core spray line break detection system: Plant-Specific	3.0	5
215005 APRM / LPRM			X									K3.07 - Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM will have on following: Rod block monitor: Plant-Specific	3.2	6

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
206000 HPCI				X								K4.14 - Knowledge of HIGH PRESSURE COOLANT INJECTION SYSTEM design feature(s) and/or interlocks which provide for the following: Control oil to turbine speed controls: BWR-2,3,4	3.4	7
209001 LPCS				X								K4.02 - Knowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s) and/or interlocks which provide for the following: Prevents water hammer	3.0	8
259002 Reactor Water Level Control					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to REACTOR WATER LEVEL CONTROL SYSTEM : GEMAC/Foxboro/Bailey controller operation: Plant-Specific	3.1	9
215004 Source Range Monitor					X							K5.03 - Knowledge of the operational implications of the following concepts as they apply to SOURCE RANGE MONITOR (SRM) SYSTEM : Changing detector position	2.8	10
264000 EDGs						X						K6.08 - Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : A.C. power	3.6	11

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
217000 RCIC						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): Electrical power	3.4	12
239002 SRVs							X					A1.08 - Ability to predict and/or monitor changes in parameters associated with operating the RELIEF/SAFETY VALVES controls including: Suppression pool water temperature	3.8	13
205000 Shutdown Cooling							X					A1.05 - Ability to predict and/or monitor changes in parameters associated with operating the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) controls including: Reactor water level	3.4	14
223002 PCIS/Nuclear Steam Supply Shutoff								X				A2.10 - Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accidents	3.9	15

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
262001 AC Electrical Distribution								X				A2.04 - Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Types of loads that, if deenergized, would degrade or hinder plant operation	3.8	16
400000 Component Cooling Water									X			A3.01 - Ability to monitor automatic operations of the CCWS including: Setpoints on instrument signal levels for normal operations,warnings, and trips that are applicable to the CCWS	3.0	17
261000 SGTS									X			A3.03 - Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: Valve operation	3.0	18
212000 RPS										X		A4.05 - Ability to manually operate and/or monitor in the control room: Reactor power	4.3	19
218000 ADS										X		A4.07 - Ability to manually operate and/or monitor in the control room: ADS valve acoustical monitor noise: Plant-Specific	3.5	20

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
262002 UPS (AC/DC)											X	2.1.7 - Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	2.7	21
400000 Component Cooling Water											X	2.1.2 - Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.	4.1	22
215004 Source Range Monitor								X				A2.05 - Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Faulty or erratic operation of detectors/system	3.3	23
262001 AC Electrical Distribution									X			A3.04 - Ability to monitor automatic operations of the A.C. ELECTRICAL DISTRIBUTION including: Load sequencing	3.4	24

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BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
215005 APRM / LPRM					X							K5.06 - Knowledge of the operational implications of the following concepts as they apply to AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM : Assignment of LPRM's to specific APRM channels	2.5	25
215003 IRM											X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.2	26
K/A Category Totals	2	2	2	2	3	2	2	**3/2**	3	2	**3/3**	Group Point Total:		26/5

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BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
256000 Reactor Condensate								X				A2.02 - Ability to (a) predict the impacts of the following on the REACTOR CONDENSATE SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve closures	2.9	91
202002 Recirculation Flow Control											X	2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.2	92
204000 RWCU											X	2.4.12 - Emergency Procedures / Plan: Knowledge of general operating crew responsibilities during emergency operations	4.3	93
204000 RWCU	X											K1.14 - Knowledge of the physical connections and/or cause- effect relationships between REACTOR WATER CLEANUP SYSTEM and the following: Process sample system	2.5	27
272000 Radiation Monitoring		X										K2.03 - Knowledge of electrical power supplies to the following: Stack gas radiation monitoring system	2.5	28
215002 RBM			X									K3.01 - Knowledge of the effect that a loss or malfunction of the ROD BLOCK MONITOR SYSTEM will have on following: Reactor manual control system: BWR-3,4,5	3.3	29

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BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
201002 RMCS				X								K4.07 - Knowledge of REACTOR MANUAL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Timing of rod insert and withdrawal cycles (rod movement sequence timer)	2.5	30
201001 CRD Hydraulic					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to CONTROL ROD DRIVE HYDRAULIC SYSTEM : Flow indication	2.6	31
214000 RPIS						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the ROD POSITION INFORMATION SYSTEM : Position indication probe	2.7	32
202001 Recirculation							X					A1.06 - Ability to predict and/or monitor changes in parameters associated with operating the RECIRCULATION SYSTEM controls including: Recirculation pump motor amps	2.5	33

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BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
286000 Fire Protection								X				A2.12 - Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low diesel fuel supply: Plant-Specific	3.1	34
288000 Plant Ventilation									X			A3.01 - Ability to monitor automatic operations of the PLANT VENTILATION SYSTEMS including: Isolation/initiation signals	3.8	35
241000 Reactor/Turbine Pressure Regulator										X		A4.11 - Ability to manually operate and/or monitor in the control room: Turbine speed	3.1	36
219000 RHR/LPCI: Torus/Pool Cooling Mode											X	2.1.32 - Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.8	37
259001 Reactor Feedwater				X								K4.04 - Knowledge of REACTOR FEEDWATER SYSTEM design feature(s) and/or interlocks which provide for the following: Dispersal of feedwater in the reactor vessel	2.5	38
K/A Category Totals	1	1	1	2	1	1	1	1/1	1	1	1/2	Group Point Total:		12/3

Facility: Pilgrim		Date: 2014 NRC				
Category	KA #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.20	Ability to interpret and execute procedure steps.	4.6	66		
	2.1.31	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	67		
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	3.6	74		
	2.1.25	Ability to interpret reference materials, such as graphs, curves, tables, etc.			4.2	94
	Subtotal			3		1
2. Equipment Control	2.2.40	Ability to apply technical specifications for a system.	3.4	68		
	2.2.6	Knowledge of the process for making changes to procedures.	3.0	69		
	2.2.15	Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.	3.9	75		
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.			4.1	95
	2.2.11	Knowledge of the process for controlling temporary design changes.			3.3	98
	Subtotal			3		2

3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	70		
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	71		
	2.3.13	Knowledge of Radiological Safety Procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high radiation areas, aligning filters, etc.			3.8	96
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			2.9	99
	Subtotal			2		2
4. Emergency Procedures / Plan	2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.4	72		
	2.4.29	Knowledge of the emergency plan.	3.1	73		
	2.4.35	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects.			4.0	97
	2.4.34	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.			4.1	100
	Subtotal			2		2
Tier 3 Point Total:				10		7

Tier / Group	Randomly Selected KA	Reason for Rejection
1 / 1	295016 / AA1.09 replaced by 295016 / AA1.05	Facility does not have an isolation/emergency condenser
1 / 1	600000 / AK2.03 replaced by 600000 / AK2.01	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
1 / 2	295036 / 2.2.22 replaced by 295036 / 2.2.14	There are no LCOs or safety limits that are directly impacted by Secondary Containment High Sump/Area water level.
2 / 1	259002 / K5.07 replaced by 259002 / K5.01	Facility does not have turbine driven feed pumps
2 / 1	215004 / K5.01 replaced by 215004 / K5.03	Unacceptable overlap with question 23
2 / 1	400000 / 2.2.39 replaced by 400000 / 2.1.2	There are no one hour Tech Spec action statements associated with Component Cooling water at Pilgrim
2 / 1	263000 / 2.1.7 replaced by 262002 / 2.1.7	Excessive topic overlap. 5 items related to DC power
3 / 1	G1 / 2.1.21 replaced by G1 / 2.1.18	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
2 / 1	203000 / K2.01 replaced by 203000 / K2.02	It isn't possible to prepare a psychometrically sound question related to the subject K/A. Any question developed directly to this KA would be LOD = 1
2 / 2	204000 / 2.4.34 replaced by 204000 / 2.4.12	The subject K/A isn't relevant at the subject facility. There are no RO tasks outside the control room associated with this system