



Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

November 15, 2016

Mr. Joseph D'Antonio
Senior Operations Engineer
Operations Branch - Division of Reactor Safety
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713

SUBJECT: Licensed Operator Examination Outlines

Pilgrim Nuclear Power Station
Docket No. 50-293
Renewed License No. DPR-35

LETTER NUMBER: 2.16.070

Dear Mr. D'Antonio:

In accordance with your request in letter dated July 28, 2016, enclosed please find two copies of the following licensed operator examination outlines.

1. ES-201 -2, Exam Outline Quality Checklist and ES-301-4 Simulator Scenario quality Checklist
2. ES-201 -3, Exam Security Agreement showing all personnel currently under the Pilgrim initial licensing exam security agreement
3. ES-301 -1, Administrative Topics Outlines with separate forms for the RO and SRO candidates
4. ES-301 -2, Control Room/In-Plant Systems outline with separate forms for RO and SRO candidates
5. ES-301 -5, Transients and Event Checklist completed for the previously mentioned scenarios and the current 8 candidates
6. ES-D1 forms for Pilgrim Scenarios Number 1, 2, 3, 4 and 5

NOTE: THE ENCLOSURE TO THIS LETTER CONTAINS LICENSED OPERATOR TEST INFORMATION AND MUST BE WITHHELD FROM PUBLIC DISCLOSURE UNTIL EXAMINATIONS ARE COMPLETE. UPON REMOVAL OF THE ENCLOSURE, THIS LETTER IS "UNCONTROLLED."

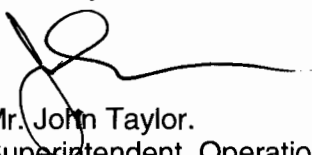
7. ES-401 -1, Written Exam Outline which was developed using the Western Technical Services (WTS) NRC Written Exam development software
8. ES-401-3, Generic K/A outlines
9. ES-401 -4, Record of Rejected K/As, for any changes made to the original outline
10. A description of the random selection process used to develop the written examination outline
11. A list of suppressed K/As
12. A proposed schedule for simulator examinations to be performed during the week of 2/27/17
13. A list of proposed actions the STA may perform during ILO NRC examination scenarios

These materials must be withheld from public disclosure until after the examinations are complete.

If you have any questions or require additional information, please contact me at (508) 830-8159.

There are no regulatory commitments contained in this letter.

Sincerely,



Mr. John Taylor.
Superintendent, Operation Training
Facility Reviewer



Mr. Charles McDonald
Manager, Training

JT/CM/fm

NOTE: THE ENCLOSURE TO THIS LETTER CONTAINS "PERSONALLY IDENTIFIABLE INFORMATION" AND MUST BE PROTECTED ACCORDINGLY. UPON REMOVAL OF THE ENCLOSURE, THIS LETTER IS "UNCONTROLLED."

Enclosure to

Letter Number 2.16.070

REQUESTED OPS EXAM OUTLINE MATERIALS

1. ES-201 -2, Exam Outline Quality Checklist and ES-301-4 Simulator Scenario quality Checklist.
2. ES-201-3, Exam Security Agreement showing all personnel currently under the Pilgrim initial licensing exam security agreement
3. ES-301 -1, Administrative Topics Outlines with separate forms for the RO and SRO candidates
4. ES-301-2, Control Room/In-Plant Systems Outline with separate forms for RO and SRO candidates
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6. ES-D1 forms for Pilgrim Scenarios Number 1, 2, 3, 4 and 5
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8. ES-401-3, Generic K/A outlines
9. ES-401-4, Record of Rejected K/As, for any changes made to the original outline
10. A description of the random selection process used to develop the written examination outline
11. A list of suppressed K/As
12. A proposed schedule for simulator examinations to be performed during the week of February 27, 2017
13. A list of proposed actions the STA may perform during ILO NRC examination scenarios

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Pilgrim Station
2017 NRC Initial License Written Examination
Written Examination Outline Methodology

The written examination outline was developed using a proprietary electronic random outline generator developed by Western Technical Services, Inc.

The software was designed to provide a written examination outline in accordance with the criteria contained in NUREG 1021, Revision 9, Supplement 1.

The application was developed using Visual Basic code, relying on a true random function based on the PC system clock. The random generator selects topics in a Microsoft Access Database containing Revision 2, Supplement 1 of the BWR K&A catalogue. The selected data is then written to a separate data table. The process for selection of topics is similar to the guidance in ES-401, Attachment 1.

The attached outline report is written directly from the data tables created by the software. Electronic copies of the data tables are on file.

The process used to develop the outlines is as follows:

- For Tier 1 and Tier 2 generic items, only the items required to be included in accordance with ES-401, Attachment 2 are included in the generation process.
- Outline is generated for all topics with KA importance ≥ 2.5 .
- 25 SRO topics are randomly selected from Tier 1 AA2 and required generic items, Tier 2 A2 and required generic items, (including all System 034 topics) and Tier 3 generic items (All with ties to 10CFR55.43). 75 RO topics are randomly selected to complete the outline, 100 topics total.
- The exam report generated lists the topic (Question) number in the far right column. RO topics are numbered 1-75, and SRO topics are numbered 76–100.
- Items that are rejected after the initial generation process are automatically placed on the rejected items page. The software tracks whether items are added manually or by random generation, and a report of outline modification may be generated.
- Disposition of any item randomly selected but not included in the outline is documented and included.
- A report of items suppressed (not made available during the selection process) is included with the outline submittal documentation

List of Suppressed Topics and K/As for 2017 Pilgrim NRC Exam

Tier 1 APE/EPE Topics Suppressed

295027 High Containment Temperature (Mark III Containment Only) – Facility utilizes a Mark 1 Containment

295011 High Containment Temperature (Mark III Containment Only) – Facility utilizes a Mark 1 Containment

Tier 2 Systems Suppressed

201005 Rod Control and Information System – Facility's design does not include this system

209002 High Pressure Core Spray System– Facility's design does not include this system

207000 Isolation (Emergency) Condenser– Facility's design does not include this system

201004 Rod Sequence Control System (Plant Specific) – Facility's design does not include this system

239003 Main Steam Isolation Valve Leakage Control System– Facility's design does not include this system

Tier 3 K/As Suppressed:

Generic 2.2.3 (multi-unit license) Knowledge of the design, procedural, and operational differences between units.

Generic 2.2.4 (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.

Facility: Pilgrim		Date of Exam: To Be Determined																
Tier	Group	RO KA 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.	1	3	4	3				3	4				3	20	3	4	7	
Emergency & Abnormal	2	1	1	1	NA			1	1	NA			2	7	2	1	3	
Plant Evolutions	Tier Totals	4	5	4				4	5				5	27	5	5	10	
2.	1	2	3	3	2	2	2	2	2	3	3	2	26	2	3	5		
Plant Systems	2	1	1	1	1	1	1	2	1	1	1	1	12	0	1	3		
	Tier Totals	3	4	4	3	3	3	4	3	4	4	3	38	3	5	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4				1	2	3	4
					3		3		2		2		10		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). (One Tier 3 Radiation Control K/A is allowed if the K/A is replaced by a K/A from another Tier 3 Category.)
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 with justification; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the 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 (IRs) 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 a category 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 10 CFR 55.43.

G* Generic K/As

Emergency and Abnormal Plant Evolutions - Tier 1/ Group 1 (RO/SRO)

EAPE# / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295028 High Drywell Temperature / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Reactor pressure	3.9	76
295018 Partial or Total Loss of CCW / 8					X		AA2.03 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Cause for partial or complete loss	3.5	77
700000 Generator Voltage and Electric Grid Disturbances					X		AA2.10 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Generator overheating and the required actions.	3.8	78
295016 Control Room Abandonment / 7						X	2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	4.1	79
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						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.	4.7	80
295025 High Reactor Pressure / 3						X	2.2.22 - Equipment Control: Knowledge of limiting conditions for operations and safety limits.	4.7	81
295005 Main Turbine Generator Trip / 3						X	2.2.39 - Equipment Control: Knowledge of less than or equal to one hour technical specification action statements for systems.	4.5	82
295018 Partial or Total Loss of CCW / 8	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Effects on component/system operations	3.5	39
295024 High Drywell Pressure / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : Drywell integrity: Plant-Specific	4.1	40
600000 Plant Fire On-site / 8	X						AK1.02 - Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site: Fire Fighting	2.9	41
295004 Partial or Total Loss of DC Pwr / 6		X					AK2.02 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: Batteries	3.0	42
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4		X					AK2.06 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION and the following: Reactor power	3.8	43
295003 Partial or Complete Loss of AC / 6		X					AK2.01 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: Station batteries	3.2	44
295006 SCRAM / 1			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to SCRAM : Reactor power response	4.1	45

Emergency and Abnormal Plant Evolutions - Tier 1/ Group 1 (RO/SRO)

EAPE# / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295038 High Off-site Release Rate / 9			X				EK3.02 - Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: System isolations	3.9	46
295019 Partial or Total Loss of Inst. Air / 8			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Standby air compressor operation	3.5	47
295025 High Reactor Pressure / 3				X			EA1.07 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: ARI/RPT/ATWS: Plant-Specific	4.1	48
295016 Control Room Abandonment / 7				X			AA1.03 - Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : RPIS	3.0	49
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.09 - Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.8	50
295030 Low Suppression Pool Water Level / 5					X		EA2.03 - Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Reactor pressure	3.7	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
295005 Main Turbine Generator Trip / 3					X		AA2.03 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Turbine valve position	3.1	53
295023 Refueling Accidents / 8						X	2.4.6 - Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	3.7	54
295021 Loss of Shutdown Cooling / 4						X	2.4.1 - Emergency Procedures / Plan: Knowledge of EOP entry conditions and immediate action steps.	4.6	55
295026 Suppression Pool High Water Temp. / 5						X	2.4.18 - Emergency Procedures / Plan: Knowledge of the specific bases for EOPs.	3.3	56
295028 High Drywell Temperature / 5		X					EK2.02 - Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Components internal to the drywell	3.2	57
295031 Reactor Low Water Level / 2					X		EA2.01 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor water level	4.6	58
K/A Category Totals	3	4	3	3	4/3	3/4	Group Point Total:	20/7	

Emergency and Abnormal Plant Evolutions - Tier 1/ Group 2 (RO/SRO)

EAPE# / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295022 Loss of CRD Pumps / 1					X		AA2.02 - Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS : CRD system status	3.4	83
295034 Secondary Containment Ventilation High Radiation / 9						X	2.4.2 - Emergency Procedures / Plan: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.6	84
500000 High Containment Hydrogen Concentration / 5					X		EA2.01 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Hydrogen monitoring system availability	3.5	85
295033 High Secondary Containment Area Radiation Levels / 9	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection	3.9	59
295022 Loss of CRD Pumps / 1		X					AK2.07 - Knowledge of the interrelations between LOSS OF CRD PUMPS and the following: Reactor pressure (SCRAM assist): Plant-Specific	3.4	60
295034 Secondary Containment Ventilation High Radiation / 9			X				EK3.01 - Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION : Isolating secondary containment ventilation	3.8	61
295009 Low Reactor Water Level / 2				X			AA1.03 - Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL : Recirculation system: Plant-Specific	3.0	62
295020 Inadvertent Cont. Isolation / 5 & 7					X		AA2.06 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION : Cause of isolation	3.4	63
295014 Inadvertent Reactivity Addition / 1						X	2.4.2 - Emergency Procedures / Plan: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	64
295029 High Suppression Pool Water Level / 5						X	2.1.32 - Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.8	65
K/A Category Totals	1	1	1	1	1/2	2/1	Group Point Total:	7/3	

ES-401		8										Form ES-401-1			
ES-401		BWR Examination Outline										Form ES-401-1			
Plant System - Tier 2/Group 1 (RO/SRO)															
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#	
203000 RHR/LPCI: Injection Mode								X				A2.16 - Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident	4.5	86	
217000 RCIC								X				A2.01 - Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System initiation signal	3.7	87	
300000 Instrument Air											X	2.4.46 - Emergency Procedures / Plan: Ability to verify that the alarms are consistent with the plant conditions.	4.2	88	
262001 AC Electrical Distribution											X	2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.2	89	
264000 EDGs											X	2.1.31 - Conduct of Operations: Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.3	90	
209001 LPCS	X											K1.14 - Knowledge of the physical connections and/or cause- effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: Reactor vessel	3.7	1	
262001 AC Electrical Distribution	X											K1.02 - Knowledge of the physical connections and/or cause- effect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: D.C. electrical distribution	3.3	2	
263000 DC Electrical Distribution		X										K2.01 - Knowledge of electrical power supplies to the following: Major D.C. loads	3.1	3	

ES-401		8										Form ES-401-1			
ES-401		BWR Examination Outline										Form ES-401-1			
Plant System - Tier 2/Group 1 (RO/SRO)															
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#	
215005 APRM / LPRM		X										K2.02 - Knowledge of electrical power supplies to the following: APRM channels	2.6	4	
206000 HPCI			X									K3.02 - Knowledge of the effect that a loss or malfunction of the HIGH PRESSURE COOLANT INJECTION SYSTEM will have on following: Reactor pressure control: BWR-2,3,4	3.8	5	
261000 SGTS			X									K3.06 - Knowledge of the effect that a loss or malfunction of the STANDBY GAS TREATMENT SYSTEM will have on following: Primary containment oxygen content: Mark-I&II	3.0	6	
215004 Source Range Monitor				X								K4.04 - Knowledge of SOURCE RANGE MONITOR (SRM) SYSTEM design feature(s) and/or interlocks which provide for the following: Changing detector position	2.8	7	
217000 RCIC				X								K4.06 - Knowledge of REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) design feature(s) and/or interlocks which provide for the following: Manual initiation	3.5	8	
212000 RPS					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM : Specific logic arrangements	3.3	9	
211000 SLC					X							K5.06 - Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM : Tank level measurement	3.0	10	
262002 UPS (AC/DC)						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) : A.C. electrical power	2.7	11	

ES-401		8										Form ES-401-1			
ES-401		BWR Examination Outline										Form ES-401-1			
Plant System - Tier 2/Group 1 (RO/SRO)															
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#	
215003 IRM						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM : 24/48 volt D.C. power: Plant-Specific	3.6	12	
259002 Reactor Water Level Control							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including: Reactor water level	3.8	13	
264000 EDGs							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: Lube oil temperature	3.0	14	
239002 SRVs								X				A2.05 - Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low reactor pressure	3.2	15	
300000 Instrument Air								X				A2.01 - Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions	2.9	16	
205000 Shutdown Cooling									X			A3.01 - Ability to monitor automatic operations of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) including: Valve operation	3.2	17	
203000 RHR/LPCI: Injection Mode									X			A3.06 - Ability to monitor automatic operations of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) including: Indicating lights and alarms	3.7	18	

ES-401		8										Form ES-401-1		
ES-401		BWR Examination Outline										Form ES-401-1		
Plant System - Tier 2/Group 1 (RO/SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#
218000 ADS										X		A4.10 - Ability to manually operate and/or monitor in the control room: Lights and alarms	3.8	19
400000 Component Cooling Water										X		A4.01 - Ability to manually operate and/or monitor in the control room: CCW indications and control	3.1	20
223002 PCIS/Nuclear Steam Supply Shutoff											X	2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	21
212000 RPS											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.	4.4	22
211000 SLC										X		A4.06 - Ability to manually operate and/or monitor in the control room: RWCU system isolation	3.9	23
217000 RCIC									X			A3.06 - Ability to monitor automatic operations of the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) including: Lights and alarms	3.5	24
223002 PCIS/Nuclear Steam Supply Shutoff			X									K3.06 - Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: Turbine building radiation	2.8	25
209001 LPCS		X										K2.01 - Knowledge of electrical power supplies to the following: Pump power	3.0	26
K/A Category Totals	2	3	3	2	2	2	2	2/2	3	3	2/3	Group Point Total:	26/5	

ES-401		10										Form ES-401-1		
ES-401		BWR Examination Outline										Form ES-401-1		
Plant System - Tier 2/Group2 (RO/SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#
234000 Fuel Handling Equipment								X				A2.02 - Ability to (a) predict the impacts of the following on the FUEL HANDLING EQUIPMENT ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of refueling platform air system	3.6	91
215001 Traversing In-core Probe											X	2.4.50 - Emergency Procedures / Plan: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.0	92
214000 RPIS											X	2.1.20 - Conduct of Operations: Ability to interpret and execute procedure steps.	4.6	93
219000 RHR/LPCI: Torus/Pool Cooling Mode	X											K1.06 - Knowledge of the physical connections and/or cause- effect relationships between RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE and the following: Keep fill system	3.2	27
201001 Control Rod Drive Hydraulic System		X										K2.03 - Backup SCRAM valve solenoids	3.5	28
201002 RMCS			X									K3.03 - Knowledge of the effect that a loss or malfunction of the REACTOR MANUAL CONTROL SYSTEM will have on following: Ability to process rod block signals	2.9	29
215001 Traversing In-core Probe				X								K4.01 - Knowledge of TRAVERSING IN-CORE PROBE design feature(s) and/or interlocks which provide for the following: Primary containment isolation: Mark-I&II(Not-BWR1)	3.4	30
234000 Fuel Handling Equipment					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to FUEL HANDLING EQUIPMENT : Crane/hoist operation	2.9	31

ES-401	10											Form ES-401-1		
ES-401	BWR Examination Outline											Form ES-401-1		
Plant System - Tier 2/Group2 (RO/SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	IR	#
272000 Radiation Monitoring						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the RADIATION MONITORING SYSTEM : D.C. power	2.5	32
201006 RWM							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) controls including: Rod position: P-Spec(Not-BWR6)	3.2	33
202002 Recirculation Flow Control								X				A2.01 - Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation pump trip	3.4	34
256000 Reactor Condensate									X			A3.08 - Ability to monitor automatic operations of the REACTOR CONDENSATE SYSTEM including: Feedwater temperature	3.1	35
202001 Recirculation										X		A4.02 - Ability to manually operate and/or monitor in the control room: System valves	3.5	36
288000 Plant Ventilation											X	2.1.30 - Conduct of Operations: Ability to locate and operate components, including local controls.	4.4	37
290003 Control Room HVAC							X					A1.04 - Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROOM HVAC controls including: Control room pressure	2.5	38
K/A Category Totals	1	1	1	1	1	1	2	1/1	1	1	1/2	Group Point Total:	12/3	

ES-401		Generic Knowledges and Abilities (Tier 3)				ES-401-3	
Facility: Pilgrim		Date of Exam:				TBD	
Category	KS #	Topic	RO		SRO		
			IR	#	IR	#	
1. Conduct of Operations	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.			3.9	94	
	2.1.27	Knowledge of system purpose and / or function.	3.9	66			
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, no-solo operation, maintenance of active license status, 10CFR55, etc.	3.3	67			
	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	75			
	Subtotal			3		1	
2. Equipment Control	2.2.6	Knowledge of the process for making changes to procedures.			3.6	95	
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	99	
	2.2.14	Knowledge of the process for controlling equipment configuration or status.	3.9	68			
	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	4.5	69			
	2.2.7	Knowledge of the process for conducting special or infrequent tests	2.9	74			
Subtotal			3		2		
3. Radiation Control	2.3.11	Ability to control radiation releases.			4.3	96	
	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	98	
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	70			
	2.3.12	Knowledge of Radiological Safety Principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2	71			
	Subtotal			2		2	
4. Emergency Procedures / Plan	2.4.6	Knowledge of EOP mitigation strategies.			4.7	97	
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.			4.4	100	
	2.4.25	Knowledge of fire protection procedures.	3.3	72			
	2.4.31	Knowledge of annunciator alarms, indications, or response procedures.	4.2	73			
	Subtotal			2		2	
Tier 3 Point Total				10		7	

ES-401		Record of Rejected K/As	ES-401-4
Tier / Group	Randomly Selected K/A	Reason for Rejection	
1 / 1	295037 / EA1.08 Replaced by 295037 / EA1.09	The original K/A involved the ability to interpret a Rod Control Information system. The facility does not utilize a Rod Control Information System.	
2 / 1	300000 / 2.2.38 Replaced by 300000 / 2.4.46	The original K/A tested knowledge of conditions or limitations contained within the facility's operating license as they related to the Instrument Air System. There are no conditions or limitations within the facility's license that relate to the Instrument Air system.	
2 / 2	230000 / K2.02 Replaced by 201001 / K2.03	The original K/A tested knowledge of the power supply to the RHR pumps. Question # 26 tested the knowledge of the power supply to the Core Spray pumps. Since all LP ECCS pumps are powered from the same two buses, this K/A would create an unacceptable overlap with question number 26.	
3	Conduct of Ops Generic 2.1.9 Replaced by Conduct of Ops Generic 2.1.23	The original K/A tested the ability of Licensed ROs to direct personnel activities inside the control room. All PNPS ROs are members of a bargaining unit that does not differentiate between ROs (ex: PNPS does not utilize Lead ROs as do some plants). Only Licensed Control Room Supervisors direct activities within the control room. Therefore this K/A is not applicable to PNPS.	
1 / 1	295016 / 2.4.1 Replaced by 295016 / 2.1.28	<p>The original K/A tested the SRO's knowledge of the interrelationship between EOP entry conditions and immediate action steps as they apply to a Control Room Abandonment event. Pilgrim procedure 2.4.143, Shutdown From Outside the Control Room, governs the actions for this event.</p> <p>As discussed in section 5.0 of this procedure, procedure 2.4.143 is an event-based procedure that is not meant to be used in conjunction with the Emergency Operating Procedures (EOPs). This procedure alone provides direction on actions that must be taken in the event of the symptoms noted in Section 1.0. The procedure also assumes that no other accident condition occurs simultaneously or subsequently, other than a loss of offsite power, during the event which causes Control Room evacuation.</p> <p>Finally, the only immediate action associated with this procedure is a plant wide announcement. As a result it is not possible to generate an SRO level question that addresses only the 2nd part of the generic K/A. Therefore the generic Emergency Procedures/ Plan K/A is not appropriate for this event.</p>	

Facility: PilgrimDate of Examination: Feb/March 2017Examination Level: ROOperating Test Number: 2017

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, R	Work Hour Restrictions EN-OM-123, K/A 2.1.5 (2.9)
Conduct of Operations	N, S	RHR Lineup Verification 8.C.43, K/A 2.1.29 (4.1)
Equipment Control	P, D, R 2011 NRC	Determine Isolation Boundary for RBCCW Pump Shaft Seal Replacement EN-OP-102, K/A 2.2.13 (4.1)
Radiation Control	D, R	Determine Offsite Release Rate 2.1.15, K/A 2.3.11 (3.8)
Emergency Procedures/Plan		
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: <ul style="list-style-type: none"> (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected) 		

JPM Descriptions

JPM COO1: Work hour data will be given for three operators. The candidate will determine which of the operators is eligible to cover an extra shift. Two operators will be eligible and one will not. An explanation will need to be given regarding the ineligible operator.

JPM COO2: The candidate will perform the monthly RHR lineup surveillance test per 8.C.43 Attachment 1 Section 1. A minimum flow valve, a heat exchanger bypass valve, and a Radwaste block valve will be out of the required position.

JPM EC: The candidate will determine the isolations (component and position) required for maintenance work to replace the shaft seal on RBCCW pump E.

JPM RC: Indications of a fuel element failure will be given. The candidate will complete a portion of the daily logs that calculates offsite release rate. The calculated value will be in excess of ODCM limits.

Facility: PilgrimDate of Examination: Feb/March 2017Examination Level: SROOperating Test Number: 2017

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, R	Work Hour Restrictions EN-OM-123, K/A 2.1.5 (3.9)
Conduct of Operations	P, D, R 2014 NRC	Determine Reportability and Actions Associated with Technical Specification Required Shutdown 1.3.3, 1.3.6, 1.3.12, K/A 2.1.2 (4.4)
Equipment Control	M, R	Review Proposed Isolation Boundary for RBCCW Pump Shaft Seal Replacement and Determine Technical Specification Impact EN-OP-102, K/A 2.2.13 (4.3)
Radiation Control	D, R	Determine Offsite Release Rate and ODCM Actions 2.1.15, K/A 2.3.11 (4.3)
Emergency Procedures/Plan	M, S	Determine Emergency Classification and Complete Required Notifications EP-IP-100, K/A 2.4.40 (4.5)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)		

JPM Descriptions

JPM COO1: Work hour data will be given for three operators. The candidate will determine which of the operators is eligible to cover an extra shift. Two operators will be eligible and one will not. An explanation will need to be given regarding the ineligible operator. The candidate will then determine the actions that would be required to allow the ineligible operator to cover the shift if neither of the other two operators were available.

JPM COO2: The candidate will be told that an EDG and RHR pump are both inoperable. The candidate will determine that Technical Specifications require a shutdown. The candidate will determine required actions for this shutdown, including the NRC reportability requirements.

JPM EC: The candidate will review a proposed list of isolations (component and position) required for maintenance work to replace the shaft seal on RBCCW pump E. Multiple errors will exist in the proposed isolation boundary. The candidate will identify and correct the errors. The candidate will also determine the Technical Specification impact of this maintenance.

JPM RC: Indications of a fuel element failure will be given. The candidate will complete a portion of the daily logs that calculates offsite release rate. The calculated value will be in excess of ODCM limits. The candidate will determine the actions required by the ODCM.

JPM EP: Plant conditions will be given that include a seismic event, a loss of offsite power, a loss of coolant accident, and an emergency RPV depressurization of low Reactor water level. The candidate will determine that a Site Area Emergency is the required emergency classification and completes the required notifications for the emergency event.

Facility: Pilgrim
Exam Level: RO

Date of Examination: Feb/March 2017
Operating Test No.: 2017

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
a. Emergency Diesel Generator Surveillance, Governor Malfunction 8.9.1, K/A 264000 A3.04 (3.1/3.1)	P, D, A, EN, S 2014 NRC	6
b. Isolate a Condenser Waterbox During Chloride Intrusion 2.4.33, K/A 256000 A2.15 (2.8/3.1)	P, D, S 2011 NRC	8
c. Reactor Recirculation Pump Start, Low Cooling Water Flow 2.2.84, K/A 202001 A4.01 (3.7/3.7)	N, A, L, S	1
d. Swap RHR Pumps in Shutdown Cooling 2.2.19.1, K/A 205000 A4.01 (3.7/3.7)	M, L, EN, S	4
e. Start HPCI for Injection, Pushbutton Start Fails, Flow Controller Fails Low in Auto 5.3.35.1 / 2.2.21.5, K/A 206000 A4.04 (3.7/3.7)	M, A, EN, S	2
f. Inert the Containment, Reactor Coolant Pressure Boundary Leakage Indicated 2.2.70, K/A 223001 A4.10 (3.2/3.2)	D, A, L, S	5
g. Perform APRM Functional Test 8.M.1-3.1, K/A 215005 A4.03 (3.2/3.3)	D, S	7
h. (ROs Only) Test MSIV Partial Closure 8.7.4.5, K/A 239001 A4.01 (4.2/4.0)	D, S	3

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Manually Transfer Bus B-6, Breaker Control Switch Fails to Work 2.4.B6, K/A 295003 AA1.01 (3.7/3.8)	D, A, E	6
j. Reactor Scram and Feedwater Pump Trip from Outside Control Room 2.4.143, K/A 295016 AA1.01 (3.8/3.9)	D, E	7
k. Shift CRD Flow Control Valves 2.4.11.1, K/A 201001 A2.07 (3.2/3.1)	D, E, R	1

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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 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

JPM Descriptions

JPM S1: The EDG is running for monthly surveillance testing. The candidate will load the EDG to establish the required test conditions. As loading rises, the governor will become unstable and cause KW oscillations (**Alternate Path**). The candidate will unload the EDG and open the output breaker.

JPM S2: The plant is operating at approximately 45% with indications of high conductivity in the 1-3 waterbox. The operator will isolate water box 1-3.

JPM S3: The candidate will start a Reactor Recirculation pump with the plant shutdown. During the evolution, cooling water flow to the pump will be isolated (**Alternate Path**). The candidate will secure the pump in response to or in anticipation of high temperatures.

JPM S4: The plant will be shutdown with one RHR pump operating in the Shutdown Cooling lineup. The candidate will start the second pump in the RHR loop and then secure the other pump.

JPM S5: The plant is scrammed with low Reactor water level. Feedwater and RCIC are unavailable. The candidate will manually start HPCI for injection. The pushbutton will fail to start HPCI (**Alternate Path #1**). The candidate will start HPCI using the component by component method. Additionally, the HPCI flow controller will fail low while in AUTO (**Alternate Path #2**). The candidate will take manual control of HPCI flow to raise injection.

JPM S6: The candidate will lineup to inert the Containment. During this evolution, Reactor coolant pressure boundary leakage will be indicated (**Alternate Path**). The candidate will secure the inerting lineup.

JPM S7: The candidate will perform functional testing of an APRM.

JPM S8: The candidate will perform the partial closure test of multiple MSIVs. One MSIV will fail to fully re-open during the test. The candidate will recognize this failure and stop the test.

JPM P1: Following failure of an automatic transfer, the candidate will manually transfer Bus B-6 from B-1 to B-2 in the field. Breaker 52-102 will not open using the local control switch (**Alternate Path**). The candidate will open the breaker using the alternate pushbutton method.

JPM P2: The candidate will scram the Reactor from outside the Control Room by opening RPS breakers due to the need for a Control Room abandonment. The candidate will also trip two Feedwater pumps using local breaker control.

JPM P3: The candidate will shift CRD flow control valves in the field in response to failure of the in-service CRD flow control valve.

Facility: Pilgrim
Exam Level: SRO-I

Date of Examination: Feb/March 2017
Operating Test No.: 2017

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
a. Emergency Diesel Generator Surveillance, Governor Malfunction 8.9.1, K/A 264000 A3.04 (3.1/3.1)	P, D, A, EN, S 2014 NRC	6
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c. Reactor Recirculation Pump Start, Low Cooling Water Flow 2.2.84, K/A 202001 A4.01 (3.7/3.7)	N, A, L, S	1
d. Swap RHR Pumps in Shutdown Cooling 2.2.19.1, K/A 205000 A4.01 (3.7/3.7)	M, L, EN, S	4
e. Start HPCI for Injection, Pushbutton Start Fails, Flow Controller Fails Low in Auto 5.3.35.1 / 2.2.21.5, K/A 206000 A4.04 (3.7/3.7)	M, A, EN, S	2
f. Inert the Containment, Reactor Coolant Pressure Boundary Leakage Indicated 2.2.70, K/A 223001 A4.10 (3.2/3.2)	D, A, L, S	5
g. Perform APRM Functional Test 8.M.1-3.1, K/A 215005 A4.03 (3.2/3.3)	D, S	7
h.		

In-Plant Systems[®] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Manually Transfer Bus B-6, Breaker Control Switch Fails to Work 2.4.B6, K/A 295003 AA1.01 (3.7/3.8)	D, A, E	6
j. Reactor Scram and Feedwater Pump Trip from Outside Control Room 2.4.143, K/A 295016 AA1.01 (3.8/3.9)	D, E	7
k. Shift CRD Flow Control Valves 2.4.11.1, K/A 201001 A2.07 (3.2/3.1)	D, E, R	1

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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.

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(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
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(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

JPM Descriptions

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JPM S6: The candidate will lineup to inert the Containment. During this evolution, Reactor coolant pressure boundary leakage will be indicated (**Alternate Path**). The candidate will secure the inerting lineup.

JPM S7: The candidate will perform functional testing of an APRM.

JPM P1: Following failure of an automatic transfer, the candidate will manually transfer Bus B-6 from B-1 to B-2 in the field. Breaker 52-102 will not open using the local control switch (**Alternate Path**). The candidate will open the breaker using the alternate pushbutton method.

JPM P2: The candidate will scram the Reactor from outside the Control Room by opening RPS breakers due to the need for a Control Room abandonment. The candidate will also trip two Feedwater pumps using local breaker control.

JPM P3: The candidate will shift CRD flow control valves in the field in response to failure of the in-service CRD flow control valve.