



REVISED
SUBMITTAL

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Entergy Nuclear Generating Company
Chiltonville Training Center
46 Sandwich Road
Plymouth, MA 02360-2505

August 30, 2000

Mr. Julian Williams
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Williams:

Enclosed are the following in support of the Licensed Operator Examination scheduled for November 6, 2000 at the Pilgrim Nuclear Power Station:

- ✓ Form ES-401-1, BWR SRO Examination Outline (as revised per our discussion of 08/25/00)
- BWR K/A Database User's Guide Developed by WD Associates
- Form ES-201-2, Examination Outline Quality Checklist

Per ES-201 Attachment 1, regarding exam security, I would request that the enclosed materials be withheld from public disclosure until after the examinations have been completed.

If I can provide any additional assistance, please feel free to call me at (508) 830-7638.

Sincerely yours,

A handwritten signature in black ink, appearing to read "D. Scott Willoughby".

D. Scott Willoughby
Senior Facility Representative

DSW/mg
00923

Enclosures:

- Form ES-401-1, BWR SRO Examination Outline
- BWR K/A Database User's Guide Developed by WD Associates
- Form ES-201-2, Examination Outline Quality Checklist

Facility: Pilgrim Nuclear Power Station

Form ES-401-1

Exam Date: 11/06/2000

Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	3	5	5				6	4			3	26
	2	2	4	1				2	3			5	17
	Tier Totals	5	9	6				8	7			8	43
2. Plant Systems	1	2	3	1	1	1	1	0	5	1	4	4	23
	2	0	1	1	1	1	2	1	1	1	2	2	13
	3	0	0	0	1	0	1	1	0	1	0	0	4
	Tier Totals	2	4	2	3	2	4	2	6	3	6	6	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					5		4		4		4		17

Note:

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

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295003	Partial or Complete Loss of A.C. Power / 6			X				AK3.06 - Containment isolation	3.7	1
295003	Partial or Complete Loss of A.C. Power / 6	X						AK1.02 - Load shedding	3.4	1
295006	SCRAM / 1				X			AA1.02 - Reactor water level control system	3.8	1
295006	SCRAM / 1			X				AK3.05 - Direct turbine generator trip: Plant-Specific	4.0	1
295007	High Reactor Pressure / 3				X			AA1.02 - HPCI: Plant-Specific	3.7*	1
295009	Low Reactor Water Level / 2 10 CFR 55.43.5					X		AA2.01 - Reactor water level	4.2	1
295010	High Drywell Pressure / 5		X					AK2.04 - Nitrogen makeup system: Plant-Specific	2.8	1
295013	High Suppression Pool Temperature / 5			X				AK3.02 - Limiting heat additions	3.8	1
295014	Inadvertent Reactivity Addition / 1						X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
295014	Inadvertent Reactivity Addition / 1 10 CFR 55.43.2				X			AA1.02 - Recirculation flow control system	3.8	1
295015	Incomplete SCRAM / 1		X					AK2.11 - Instrument air	3.7	1
295016	Control Room Abandonment / 7			X				AK3.03 - Disabling control room controls	3.7*	1
295016	Control Room Abandonment / 7		X					AK2.02 - Local control stations: Plant-Specific	4.1*	1
295017	High Off-Site Release Rate / 9 10 CFR 55.43.5					X		AA2.01 - Off-site release rate: Plant-Specific	4.2*	1

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8 10 CFR 55.43.7						X	2.1.12 - Ability to apply technical specifications for a system.	4.0	1
295023	Refueling Accidents / 8		X					AK2.05 - Secondary containment ventilation	3.7	1
295024	High Drywell Pressure / 5 10 CFR 55.43.5	X						EK1.01 - Drywell integrity: Plant-Specific	4.2*	1
295025	High Reactor Pressure / 3				X			EA1.03 - Safety/relief valves: Plant-Specific	4.4*	1
295026	Suppression Pool High Water Temperature / 5					X		EA2.03 - Reactor pressure	4.0	1
295030	Low Suppression Pool Water Level / 5 10 CFR 55.43.5						X	2.4.38 - Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.	4.0	1
295030	Low Suppression Pool Water Level / 5				X			EA1.01 - ECCS systems (NPSH considerations): Plant-Specific	3.8	1
295031	Reactor Low Water Level / 2		X					EK2.11 - Reactor Protection System	4.4*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA2.03 - SBLC tank level	4.4*	1
295038	High Off-Site Release Rate / 9 10 CFR 55.43.5			X				EK3.01 - †Implementation of site emergency plan	4.5*	1
500000	High Containment Hydrogen Concentration / 5				X			EA1.03 - Containment Atmosphere Control System	3.2	1
500000	High Containment Hydrogen Concentration / 5	X						EK1.01 - Containment integrity	3.9	1

K/A Category Totals: 3 5 5 6 4 3

Group Point Total: 26

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295002	Loss of Main Condenser Vacuum / 3				X			AA1.01 - Condensate system	2.6	1
295004	Partial or Complete Loss of D.C. Power / 6 10 CFR 55.43.3						X	2.2.7 - Knowledge of the process for conducting tests or experiments not described in the safety analysis report.	3.2	1
295005	Main Turbine Generator Trip / 3				X			AA1.04 - Main generator controls	2.8	1
295008	High Reactor Water Level / 2					X		AA2.02 - Steam flow/feedflow mismatch	3.4	1
295012	High Drywell Temperature / 5	X						AK1.01 - Pressure/temperature relationship	3.5	1
295018	Partial or Complete Loss of Component Cooling Water / 8		X					AK2.01 - System loads	3.4	1
295019	Partial or Complete Loss of Instrument Air / 8 10 CFR 55.43.5						X	2.4.38 - Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.	4.0	1
295020	Inadvertent Containment Isolation / 5 34-ED-26.3						X	2.2.15 - Ability to identify and utilize as-built design and configuration change documentation to ascertain expected current plant configuration and operate the plant.	2.9	1
295021	Loss of Shutdown Cooling / 4		X					AK2.07 - Reactor recirculation	3.2	1
295022	Loss of CRD Pumps / 1					X		AA2.01 - Accumulator pressure	3.6	1
295028	High Drywell Temperature / 5	X						EK1.01 - Reactor water level measurement	3.7	1
295032	High Secondary Containment Area Temperature / 5						X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1

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Facility: 1 Nuclear Power Station

BWR S' Examination Outline

Printed: 08 90

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295033	High Secondary Containment Area Radiation Levels / 9					X		EA2.03 - †Cause of high area radiation	4.2	1
295034	Secondary Containment Ventilation High Radiation / 9 10 CFR 55.43.5						X	2.4.38 - Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.	4.0	1
295035	Secondary Containment High Differential Pressure / 5		X					EK2.02 - SBTG/FRVS	3.8	1
295036	Secondary Containment High Sump/Area Water Level / 5			X				EK3.04 - Pumping secondary containment sumps	3.4	1
600000	Plant Fire On Site / 8		X					AK2.04 - Breakers, relays, and disconnects	2.6	1

K/A Category Totals: 2 4 1 2 3 5

Group Point Total: 17

BWR SRO Examination Outline

Facility: Pilgrim Nuclear Power Station

ES-401

Plant Systems – Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System/Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
202002	Recirculation Flow Control System / 1										X		A4.07 – Recirculation pump speed: BWR-2, 3, 4, 5, 6	3.2	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2										X		A4.05 – Manual initiation controls	4.1*	1
206000	High Pressure Coolant Injections System / 2 10 CFR 55.43.2								X				A2.12 – Loss of room cooling: BWR-2, 3, 4	3.5	1
209001	Low Pressure Core Spray System / 2		X										K2.03 – Initiation logic	3.1*	1
211000	Standby Liquid Control System / 1 10 CFR 55.43.2				X								K4.03 – Keeping sodium pentaborate in solution	3.9	1
212000	Reactor Protection System / 7 10 CFR 55.43.2			X									K3.09 – The magnitude of heat energy that must be absorbed by the containment during accident/transient conditions	3.6	1
215004	Source Range Monitor (SRM) System / 7								X				A2.05 – Faulty or erratic operation of detectors/system	3.5	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7 10 CFR 55.43.2						X						K6.04 – Trip units	3.2	1
216000	Nuclear Boiler Instrumentation / 7											X	2.4.1 – Knowledge of EOP entry conditions and immediate action steps.	4.6	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2		X										K2.02 – RCIC initiation signals (logic)	2.9*	1
218000	Automatic Depressurization System / 3 10 CFR 55.43.3											X	2.2.5 – Knowledge of the process for making changes in the facility as described in the safety analysis report.	2.7	1

Facility: Pngim Nuclear Power Station

ES-401

Plant Systems – Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System/Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
218000	Automatic Depressurization System / 3	X											K1.01 – RHR/LPCI: Plant Specific	4.1	1
223001	Primary Containment System and Auxiliaries / 5								X				A2.07 – High drywell pressure	4.3*	1
223002	Primary Containment Isolation System / Nuclear Steam Supply Shut-Off / 5											X	2.1.9 – Ability to direct personnel activities inside the control room	4.0	1
226001	RHR/LPCI: Containment Spray System Mode / 5										X		A4.20 – Drywell pressure	3.8	1
226001	RHR/LPCI: Containment Spray System Mode / 5 10 CFR 55.43.5								X				A2.20 – †Loss of coolant accident	4.1	1
239002	Relief/Safety Valves / 3 10 CFR 55.43.5		X										K2.01 SRV solenoids	3.2*	1
241000	Reactor/Turbine Pressure Regulating System / 3										X		A4.02 – Reactor pressure	4.1*	1
259002	Reactor Water Level Control System / 2					X							K5.03 – Water level measurement	3.2	1
261000	Standby Gas Treatment System / 9 10 CFR 55.43.2											X	2.1.33 – Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications	4.0	1
262001	A.C. Electrical Distribution / 6	X											K1.03 – Off-site power sources	3.8	1
264000	Emergency Generators (Diesel/Jet) / 6								X				A2.06 – Opening normal and/or alternate power to emergency bus	3.4	1
290001	Secondary Containment / 5									X			A3.01 – Secondary containment isolation	4.0	1

K/A Category Totals:

2 3 1 1 1 1 0 5 1 4 4

Group Point Total:

23

BWR SRO Examination Outline

Facility: Pilgrim Nuclear Power Station

ES-401

Plant Systems – Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System/Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1		X										K2.02 – Scram valve solenoids	3.7	1
201002	Reactor Manual Control System /1								X				A2.03 – Select block	2.8	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7 10CFR55.43.2				X								K4.03 – Select blocks/errors: Plant-Specific (Not BWR6)	3.4	1
214000	Rod Position Information System / 7						X						K6.01 – A.C. electric power	2.6	1
215002	Rod Block Monitor System / 7			X									K3.01 – Reactor manual control system: BWR-3, 4, 5	3.5	1
215003	Intermediate Range Monitor (IRM) System / 7					X							K5.01 – Detector Operation	2.7	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5 10CFR55.43.3											X	2.2.6 – Knowledge of the process for making changes in procedures as described in the safety analysis report	3.3	1
234000	Fuel Handling Equipment / 8							X					A1.03 – †core reactivity level	3.9	1
259001	Reactor Feedwater System / 2										X		A4.05 – Reactor water level	3.9	1
271000	Offgas System / 9										X		A4.06 – System indicating lights and alarms	3.2	1
272000	Radiation Monitoring System / 7									X			A3.07 – Recorder indications	2.9	1
290003	Control Room HVAC / 9						X						K6.02 – Component cooling water systems	2.9	1
300000	Instrument Air System (IAS) / 8											X	2.2.29 – Knowledge of SRO fuel handling responsibilities	3.8	1

K/A Category Totals:

0 1 1 1 1 2 1 1 1 2 2

Group Point Total:

13

Facility: Pilgrim Nuclear Power Station

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1							X					A1.01 - Reactor power	3.8	1
215001	Traversing In-Core Probe / 7									X			A3.01 - Detector position: P-Spec(Not-BWR1)	2.5*	1
239001	Main and Reheat Steam System / 3				X								K4.10 - Moisture removal from steam lines prior to admitting steam	3.0	1
288000	Plant Ventilation Systems / 9						X						K6.03 - Plant air systems	2.7	1

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

Group Point Total: 4

BWR SRO Examination Outline

Form ES-401-5

Facility: Pilgrim Nuclear Power Station

Generic Category	KA	KA Topic	Imp.	Points	
Conduct of Operations	83	2.1.6 Ability to supervise and assume a management role during plant transients and upset conditions. 10 CFR 55.43.5	4.3	1	SRO
	84	2.1.22 Ability to determine Mode of Operation. 10 CFR 55.43.2	3.3	1	SRO
	89	2.1.32 Ability to explain and apply system limits and precautions. 10 CFR 55.43.5	3.8	1	SRO
	80	2.1.19 Ability to use plant computer to obtain and evaluate parametric information on system or component status.	3.0	1	
	82	2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	3.1	1	
Category Total:			5		
Equipment Control	87	2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations. 10 CFR 55.43.5	3.6	1	SRO
	88	2.2.30 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area / communication with fuel storage facility / systems operated from the control room in support of fueling operations / and supporting instrumentation.	3.3	1	
	87	2.2.1 Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. 10 CFR 55.43.5	3.6	1	SRO
	88	2.2.21 Knowledge of pre and post maintenance operability requirements. 10 CFR 55.43.5	3.5	1	SRO
Category Total:			4		
Radiation Control	87	2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. 10 CFR 55.43.4	3.3	1	SRO
	88	2.3.6 Knowledge of the requirements for reviewing and approving release permits.	3.1	1	
	89	2.3.11 Ability to control radiation releases. 10 CFR 55.43.4	3.2	1	SRO
	88	2.3.2 Knowledge of facility ALARA program.	2.9	1	
Category Total:			4		

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 08/29/2

BWR SRO Examination Outline

Form ES-401-5

Facility: Pilgrim Nuclear Power Station

Generic Category	KA	KA Topic	Imp.	Points	
Emergency Plan	① ✓ 2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6	1	SRD
	① ✓ 2.4.2	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. 16 CFR 55.43, 5	4.1	1	
	① ✓ 2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.8	1	
	① ✓ 2.4.46	Ability to verify that the alarms are consistent with the plant conditions.	3.6	1	
Category Total:				4	
Generic Total:				17	

Plant-Spec. Priorities			
System / Topic	Recommended Replacement for...	Reason	Points
295009 – AA2.01 Ability to determine and interpret the following as they apply to Low Reactor Water Level: Reactor Water Level.	295009 – AK1.03 Knowledge of the operational implications of the following concepts as they apply to the Low Reactor Water Level: Jet pump net positive suction head.	Jet pump NPSH is not a concern with lowering reactor water level due to an automatic recirc pump trip at –46" which ensures adequate NPSH for the recirc pump. Replace with a question related to Risk Significant Human Error Probabilities.	1
295023 - 2.1.12 Refueling Accidents - Ability to apply Technical Specifications for a system.	295023 – 2.4.26 Refueling Accidents - Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	A question that relates fire protection with refueling accidents would be disjointed. An SRO level question to evaluate operability or basis of refuel equipment necessary to prevent a refueling accident more applicable to an SRO position.	1
295025 – EA1.03 – Ability to operate and/or monitor the following as they apply to High Reactor Pressure: Safety Relief Valves.	295026 – 2.4.15 Suppression Pool High Temperature - Knowledge of communications procedures associated with EOP implementation.	No discriminating communications procedure exists associated with high suppression pool temperature. Replace with a question related to Risk Significant Human Error Probabilities.	1
295033 – EA2.03 – Ability to determine and interpret the following as they apply to High Secondary Containment Area Radiation Levels: Cause of High Radiation	295033 – EA2.02 Ability to determine and interpret the following as they apply to High Secondary Containment Area Radiation Levels: Equipment operability.	Interpreting equipment operability for a high area rad level would be primarily an engineering function. Evaluating the cause of a high area rad level in order to take corrective action is more applicable to SRO responsibilities.	1
203000 – A4.05 Ability to manually operate and/or monitor in the control room: Manual initiation controls.	203000 – K4.13 Knowledge of RHR/LPCI:Injection Mode design feature(s) and/or interlock(s) which provide for the following: The prevention of leakage to the environment through LPCI/RHR heat exchanger: Plant-Specific.	RHR Hx at PNPS is cooled with a closed loop cooling system reducing the impact of a heat exchanger leak. Replace with a question related to Risk Significant Human Error Probabilities.	1
223001 – A2.07 Ability to (a) predict the impacts of the following on the Primary Containment System and Auxiliaries and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High Drywell Pressure	223001 – A1.12 Ability to predict and/or monitor changes in parameters associated with operating the Primary Containment System and Auxiliaries including: Moisture concentration.	No limits or operational guidance are given in PNPS procedures for moisture concentration in the primary containment. Replace with a question related to Risk Significant Human Error Probabilities.	1
241000 – A4.02 Ability to manually operate and/or monitor in the control room: Reactor Pressure.	241000 – A2.23 Ability to (a) predict the impacts of the following on the Reactor Turbine Pressure Regulating System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Turbine high eccentricity.	PNPS has a detailed procedure for turbine malfunctions including operator actions for vibration; however, no definitive procedures exist regarding response for high turbine eccentricity. Replace with a question related to Risk Significant Human Error Probabilities.	1

Plant-Specific Priorities			
System / Topic	Recommended Replacement for...	Reason	Points
261000 - 2.1.33 - Standby Gas Treatment System - Ability to recognize indications for system operating parameters which are entry level conditions for Technical Specifications.	261000 – 2.2.34 - Standby Gas Treatment System - Knowledge of the process for determining the internal and external effects on core reactivity.	No relationship exists between SBT system and core reactivity. Replace with question that requires an evaluation of SBT operability.	1
264000 - A2.06 Ability to (a) predict the impacts of the following on the Emergency Diesel Generators and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Opening normal and/or alternate power to the emergency bus.	264000 – K6.06 Knowledge of the effect that a loss or malfunction of the following will have on the: Emergency Diesel Generators: Battery charger.	Emergency Diesel Generators (EDG's) do not have independent DC batteries and charges; therefore, a question relating EDG's to battery chargers would be disjointed. Replace with a question related to High Risk Human Error Probabilities.	1
2.2.21 Knowledge of pre and post maintenance operability requirements.	2.2.10 Knowledge of the process for determining if the margin of safety, as defined in the basis of any Technical Specification, is reduced by a proposed change, test or experiment.	Process for determining margin of safety is a lengthy process that is not practical to include on a 5 hour written exam. Replace with question related to determining pre and post maintenance operability requirements. Weaknesses in this area have led to a number of related industry events.	1
Plant-Specific Priority Total (limit 10):			10