

Facility: Waterford 3		Date of Exam: July 29, 2002										Exam level: RO	
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	2	2	3				4	3			2	16
	2	3	3	5				2	3			1	17
	3	1	0	1				0	1			0	3
	Tier Totals	6	5	9				6	7			3	36
2. Plant Systems	1	4	2	2	3	3	2	1	2	2	1	1	23
	2	2	1	1	4	0	2	2	3	2	1	2	20
	3	1	0	1	0	1	0	0	2	2	0	1	8
	Tier Totals	7	3	4	7	4	4	3	7	6	2	4	51
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		13
					3		3		3		4		
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>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.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>6. The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>													

ES-401

PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000005 Inoperable/Stuck Control Rod / 1			X				AK3.04 - Knowledge of the reasons for the following responses as they apply to the Inoperable/Stuck Control Rod: Tech Spec Limits for inoperable rods. (CFR: 41.5.41.10/45.6/45.13)	3.4	1
000015/17 RCP Malfunctions / 14				X			AA1.22 - Ability to operate and/or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): RCP seal failure/malfunction (CFR: 41.7/45.5/45.6)	4.0	1
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4	X						AK1.3 - Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations): Annunciators and conditions indicating signals, and remedial actions associated with the (Natural Circulation Operations). (CFR: 41.8/41.10/45.3)	3.1	1
000024 Emergency Boration / 1					X		AA2.05 - Ability to determine and interpret the following as they apply to the Emergency Boration: Amount of boron to add to achieve required SDMI. (CFR: 43.5/45.13)	3.3	1
000026 Loss of Component Cooling Water / 8			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: The automatic actions (alignments) within the CCWS resulting from the actuation of the ESFAS. (CFR: 41.5/41.10/45.13)	3.6	1
000027 Pressurizer Pressure Control System Malfunction / 3							Not used.	N/A	0
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4	X						AK1.07 - Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: Effects of feedwater introduction on dry S/G. (CFR: 41.8/41.10/45.3)	3.4	1
CE/A11; W/E08 RCS Overcooling - PTS / 4		X					AK2.2 - Knowledge of the interrelations between the (RCS Overcooling) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and the relations between the proper operation of these systems to the operation of the facility. (CFR: 41.7/45.7)	3.2	1
000051 Loss of Condenser Vacuum / 4						X	G2.4.11 - Emergency Procedures/Plan: Knowledge of abnormal condition procedures. (CFR: 41.10/43.5/45.13)	3.4	1
000055 Station Blackout / 6			X				EK3.02 - Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions contained in EOP for loss of offsite and onsite power (CFR: 41.5/41.10/45.6/45.13)	4.3	1
000057 Loss of Vital AC Elec. Inst. Bus / 4					X		AA2.03 - Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: RPS panel alarm annunciators and trip indicators. (CFR: 43.5/45.13)	3.7	1
000062 Loss of Nuclear Service Water / 4				X			AA1.02 - Ability to operate and/or monitor the following as they apply to the Loss of Nuclear Service Water: Loads on the SWS in the control room. (CFR: 41.7/45.5/45.6)	3.2	1

PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1											Form ES-401-4
ES-401	E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)		Imp.	Points
000067	Plant Fire On-site / 9				X			AA1.09 – Ability to operate and/or monitor the following as they apply to the Plant Fire on Site: Plant fire zone panel (including detector location) (CFR: 41.7/45.5/45.6)		3.0	1
000068	(BW/A06) Control Room Evac. / 8		X					AK2.07 - Knowledge of interrelations between the Control Room Evacuation and the following: ED/G (CFR: 41.7/45.7)		3.3	1
000069	(W/E14) Loss of CTMT Integrity / 5					X		AA2.02 - Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Verification of automatic and manual means of restoring integrity. (CFR: 43.5/45.13)		3.9	1
000074	(W/E06&E07) Inad. Core Cooling / 4				X			EA1.12 - Ability to operate and monitor the following as they apply to a Inadequate Core Cooling: RCS temperature and pressure indicators. (CFR: 41.7/45.5/45.6)		4.1	1
BW/E03	Inadequate Subcooling Margin / 4										
000076	High Reactor Coolant Activity / 9						X	G2.2.25 - Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (CFR: 43.2)		2.5	1
BW/A02&A03	Loss of NNI-X/Y / 7										
K/A Category Totals:		2	2	2	3	4	3	2	Group Point Total:		16

PWR RO Examination Outline										Form ES-401-4
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000001 Continuous Rod Withdrawal / 1	X						AK1.04 – Knowledge of the operational implications of the following concepts as they apply to Continuous Rod Withdrawal: Effect of continuous rod withdrawal on insertion limits and SDM. (CFR: 41.8/41.10/45.3)	3.7	1	
000003 Dropped Control Rod / 1					X		AA2.03 – Ability to determine and interpret the following as they apply to the Dropped Control Rod: Dropped rod, using in-core/ex-core instrumentation, in-core or loop temperature instrumentation. (CFR: 43.5/45.13)	3.6	1	
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1			X				EK3.01 – Knowledge of the reasons for the following as they apply to a reactor trip: Actions contained in EOP for reactor trip. (CFR: 41.5/41.10/45.6/45.13)	4.0	1	
BW/A01 Plant Runback / 1										
BW/A04 Turbine Trip / 4										
000008 Pressurizer Vapor Space Accident / 3	X						AK1.02 – Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Change in leak rate with change in pressure. (CFR: 41.8/41.10/45.3)	3.1	1	
000009 Small Break LOCA / 3		X					EK2.03 - Knowledge of the interrelations between the small break LOCA and the following: S/Gs (CFR: 41.7/45.7)	3.0	1	
000011 Large Break LOCA / 3					X		EA2.13 - Ability to determine or interpret the following as they apply to a Large Break LOCA: Difference between overcooling and LOCA indications. (CFR: 43.5/45.13)	3.7*	1	
W/E04 LOCA Outside Containment / 3										
BW/E08; W/E03 LOCA Cooled/Depress. / 4										
W/E11 Loss of Emergency Coolant Recirc. / 4										
W/E02 SI Termination / 3										
000022 Loss of Reactor Coolant Makeup / 2				X			AA1.08 – Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: VCT level. (CFR: 43.5/45.13)	3.4	1	
000025 Loss of RHR System / 4		X					AK2.02 – Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: LPI or Decay Heat Removal/RHR pumps. (CFR: 41.7/45.7)	3.2*	1	
000029 Anticipated Transient w/o Scram / 1			X				EK3.10 - Knowledge of the reasons for the following responses as they apply to the ATWS: Manual rod insertion. (CFR: 41.5/41.10/45.6/45.13)	4.1	1	
000032 Loss of Source Range NI / 7				X			AA1.01 – Ability to operate and/or monitor the following as they apply to the loss of source range instrumentation: Manual restoration of power. (CFR: 41.7/45.5/45.6)	3.1*	1	
000033 Loss of Intermediate Range NI / 7							Not Used	N/A	0	

PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2											Form ES-401-4
ES-401	E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000037	Steam Generator Tube Leak / 3						X	G2.3.11 – Radiation Control: Ability to control radiation releases. (CFR: 45.9/45.10)	2.7	1	
000038	Steam Generator Tube Rupture / 3					X	EA2.09 - Ability to determine or interpret the following as they apply to a SGTR: Existence of natural circulation using plant parameters. (CFR: 43.5/45.13)	4.2	4.2	1	
000054	(CE/E06) Loss of Main Feedwater / 4		X					CE/E06 EK2.1 – Knowledge of the interrelations between the (Loss of Feedwater) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. (CFR: 41.7/45.7)	3.3	1	
BW/E04; W/E05	Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4										
000058	Loss of DC Power / 6	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: Battery charger equipment and instrumentation. (CFR: 41.8/41.10/45.3)	2.8	1	
000059	Accidental Liquid RadWaste Rel. / 9							Not Used	N/A	0	
000060	Accidental Gaseous Radwaste Rel. / 9			X				AK3.01 – Knowledge of the reasons for the following responses as they apply to the Accidental Gaseous Radwaste: Implementation of the E-Plan. (CFR: 41.5, 41.10/45.6/45.13)	2.9	1	
000061	ARM System Alarms / 7			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to the Area Radiation Monitoring (ARM) System Alarms: Guidance contained in alarm response for ARM system. (CFR: 41.5, 41.10/45.6/45.13)	3.4	1	
W/E16	High Containment Radiation / 9										
CE/E09	Functional Recovery			X				EK3.2 – Knowledge of the reason for the following responses as they apply to the (Functional Recovery): Normal, abnormal and emergency operating procedures associated with (Functional Recovery). (CFR: 41.5/41.10, 45.6, 45.13)	3.0	1	
K/A Category Point Totals:		3	3	5	2	3	1	Group Point Total:		17	

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000028 Pressurizer Level Malfunction / 2			X				AK3.04 – Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: Change in PZR level with power change, even though RCS T-ave. constant; due to loop size difference. (CFR: 41.5, 41.10/45.6/45.13)	2.9*	1
000036 (BW/A08) Fuel Handling Accident / 8							Not Used	N/A	0
000056 Loss of Off-site Power / 6							Not Used	N/A	0
000065 Loss of Instrument Air / 8					X		AA2.06 – Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Whether to trip reactor if instrument air pressure is de-creasing. (CFR: 43.5/45.13)	3.6*	1
BW/E13&E14 EOP Rules and Enclosures									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
CE/A16 Excess RCS Leakage / 2	X						AK1.3 – Knowledge of the operational implications of the following concepts as they apply to the (Excess RCS Leakage): Annunciators and conditions indicating signals, and remedial action associated with the (Excess RCS Leakage). (CFR: 41.8/41.10/45.3)	3.2	1
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5									
K/A Category Point Totals:	1	0	1	0	1	0	Group Point Total:		3

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PWR RO Examination Outline
Plant Systems - Tier 2/Group 1

Form ES-401-4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
001 Control Rod Drive				X								K4.01 – Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: Rod position indication. (CFR: 41.7)	3.5	1
001 Control Rod Drive					X							K5.85 – Knowledge of the following operational implications as they apply to the CRDS: Estimation of xenon reactivity based on time to reach peak xenon after trip/shutdown, approximate xenon reactivities after shutdown from various power levels, approximate xenon worth during the decay process following peak worth. (CFR: 41.5/45.7)	3.5	1
003 Reactor Coolant Pump						X						K6.04 – Knowledge of the effect of a loss or malfunction on the following will have on the RCPs: Containment isolation valves affecting RCP operation. (CFR: 41.7/45.5)	2.8	1
004 Chemical and Volume Control			X									K3.06 – Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: RCS temperature and pressure. (CFR: 41.7/45.6)	3.4	1
004 Chemical and Volume Control							X					A2.07 – Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Isolation of letdown/makeup. (CFR: 41.5/43.5/45.3/45.5)	3.4	1
013 Engineered Safety Features Actuation	X											K2.01 – Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control. (CFR: 41.7)	3.6*	1
013 Engineered Safety Features Actuation							X					A2.06 – Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent ESFAS actuation (CFR: 41.5/43.5/45.3/45.13)	3.7*	1
015 Nuclear Instrumentation					X							K5.05 – Knowledge of the operational implications of the following concepts as they apply to the NIS: Criticality and its indications. (CFR: 41.5/45.7)	4.1	1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
015 Nuclear Instrumentation									X			A3.03 – Ability to monitor automatic operation of the NIS, including verification of proper functioning/operability. (CFR: 41.7/45.5)	3.9	1
017 In-core Temperature Monitor					X							K5.03 – Knowledge of the operational implications of the following concepts as they apply to the ITM system: Indication of superheating. (CFR: 41.5/45.7)	3.7	1
022 Containment Cooling	X											K2.01 – Knowledge of the power supplies to the following: Containment Cooling fans (CFR: 41.7)	3.0*	1
022 Containment Cooling				X								K4.04 – Knowledge of CCS design feature(s) and/or interlocks which provide for the following: Cooling of control rod drive motors. (CFR: 41.7)	2.8	1
025 Ice Condenser														
056 Condensate	X											K1.03 – Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: MFW (CFR: 41.2 to 41.9/45.7 to 45.8)	2.6*	1
056 Condensate											X	G2.1.24 – Conduct of Operations: Ability to obtain and interpret station electrical and mechanical drawings. (CFR: 45.12/45.13)	2.8	1
059 Main Feedwater				X								K4.16 – Knowledge of MFW design feature(s) and/or interlock(s) which provide the following: Automatic trips for MFW pumps. (CFR: 41.7)	3.1*	1
059 Main Feedwater							X					A1.03 – Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Power level restrictions for operation of MFW pumps and valves. (CFR: 41.5/45.5)	2.7*	1
061 Auxiliary/Emergency Feedwater	X											K1.07 – Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: Emergency water source. (CFR: 41.2 to 41.9/45.7 to 45.8)	3.6	1
061 Auxiliary/Emergency Feedwater						X						K6.02 – Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Pumps (CFR: 41.7/45.7)	2.6	1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
068 Liquid Radwaste	X											K1.02 – Knowledge of the physical connections and/or cause effect relationships between the Liquid Radwaste System and the following systems: Waste Gas Vent Header. (CFR: 41.2 to 41.9/45.7 to 45.8)	2.5	1
071 Waste Gas Disposal			X									K3.04 – Knowledge of the effect that a loss or malfunction of the Waste Gas Disposal System will have on the following: Ventilation system. (CFR: 41.7/45.6)	2.7	1
071 Waste Gas Disposal										X		A4.06 – Ability to manually operate and/or monitor in the control room: Meteorological charts and recorders, along with the stop time and waste-gas release number. (CFR: 41.7/45.5 to 45.8)	2.8	1
072 Area Radiation Monitoring	X											K1.03 – Knowledge of the physical connection and/or cause effect relationship between the ARM system and the following systems: Fuel building isolation. (CFR: 41.2 to 41.9/45.7 to 45.8)	3.6*	1
072 Area Radiation Monitoring									X			A3.01 – Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment. (CFR: 41.7/45.5)	2.9*	1
K/A Category Point Totals:	4	2	2	3	3	2	1	2	2	1	1	Group Point Total:		23

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
002 Reactor Coolant						X						K6.02 – Knowledge of the effect of a loss or malfunction on the following RCS components: RCP. (CFR: 41.7/45.7)	3.6	1
006 Emergency Core Cooling				X								K4.21 – Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following: Bypassing/blocking ESF channels. (CFR: 41.7)	4.1	1
010 Pressurizer Pressure Control						X						K6.03 – Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: PZR sprays and heaters. (CFR: 41.7/45.7)	3.2	1
011 Pressurizer Level Control								X				A2.04 – Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of one, two or three charging pumps. (CFR: 41.5/43.5/45.3/45.13)	3.5	1
011 Pressurizer Level Control											X	G2.4.1 – Emergency Procedures/Plan: Knowledge of EOP entry conditions and immediate action steps. (CFR: 41.10/43.5/45.13)	4.3	1
012 Reactor Protection									X			A3.06 – Ability to monitor automatic operation of the RPS, including: Trip logic. (CFR: 41.7/45.5)	3.7	1
014 Rod Position Indication				X								K4.03 – Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: Rod bottom lights. (CFR: 41.5/45.7)	3.2	1
016 Non-nuclear Instrumentation								X				A2.01 – Ability to (a) predict the impacts of the following malfunctions or operations on the NNIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure. (CFR: 41.5/43.5/45.3/45.5)	3.0	1
026 Containment Spray							X					A1.03 – Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment sump level. (CFR: 41.5/45.5)	3.5	1
029 Containment Purge				X								K4.03 – Knowledge of design feature(s) and/or interlocks which provide for the following: Automatic Purge Isolation. (CFR: 41.7)	2.9	1
033 Spent Fuel Pool Cooling			X									K3.03 – Knowledge of the effect that a loss or malfunction of the Spent Fuel Cooling System will have on the following: Spent Fuel Temperature. (CFR: 41.7/45.6)	3.0	1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
035 Steam Generator	X											K1.14 – Knowledge of the physical connections and/or cause-effect relationships between the S/GS and the following systems: ESF. (CFR: 41.2 to 41.9/45.7 to 45.8)	3.9	1
035 Steam Generator									X			A4.06 – Ability to manually operate and/or monitor in the control room: S/G isolation on steam leak or tube rupture/leak. (CFR: 41.7/45.5 to 45.8)	4.5	1
039 Main and Reheat Steam								X				A2.04 - Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunctioning steam dump. (CFR: 41.5/43.5/45.3/45.13)	3.4	1
055 Condenser Air Removal												Not Used	N/A	N/A
062 AC Electrical Distribution	X											K1.04 – Knowledge of the physical connection and/or cause-effect relationship between the AC distribution system and the following systems: Off-site power sources. (CFR: 41.2 to 41.9)	3.7	1
063 DC Electrical Distribution		X										K2.01 – Knowledge of bus power supplies to the following: Major DC Loads. (CFR: 41.7)	2.9	1
064 Emergency Diesel Generator									X			A3.01 – Ability to monitor automatic ED/G system, including: Automatic start of compressor and ED/G. (CFR: 41.7/45.5)	4.1	1
073 Process Radiation Monitoring				X								K4.01 – Knowledge of PRM system design feature(s) and/or interlock(s) which provide for the following: Release termination when radiation exceeds setpoint. (CFR: 41.7)	4.0	1
075 Circulating Water											X	G2.1.20 – Conduct of Operations: Ability to execute procedure steps. (CFR: 41.10/43.5/45.12)	4.3	1
079 Station Air												Not Used	N/A	N/A
086 Fire Protection							X					A1.03 – Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with the Fire Protection System operating the controls including: Fire doors. (CFR: 41.5/45.5)	2.7	1
K/A Category Point Totals:												20		

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal					X							K5.01 – Knowledge of the operational implications of the following concepts as they apply to RHRs: Nil ductility transition temperature (brittle fracture). (CFR: 41.5/45.7)	2.6	1
007 Pressurizer Relief/Quench Tank			X									K3.01 – Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment. (CFR: 41.7/45.6)	3.3	1
008 Component Cooling Water									X			A3.08 – Ability to monitor automatic operation of the CCWS, including: Automatic actions associated with the CCWS that occur as a result of a safety injection signal. (CFR: 41.7/45.5)	3.6*	1
027 Containment Iodine Removal												Not Used	N/A	0
028 Hydrogen Recombiner and Purge Control								X				A2.02 – Ability to (a) predict the impacts of the following malfunctions or operations on the HRRS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: LOCA condition and related concern over hydrogen. (CFR: 41.5/43.5/45.3/45.13)	3.5	1
034 Fuel Handling Equipment												Not Used	N/A	0
041 Steam Dump/Turbine Bypass Control	X											K1.05 – Knowledge of the physical connections and/or cause-effect relationships between the SDS and the following systems: RCS. (CFR: 41.2 to 41.9/45.7 to 45.8)	3.5	1
045 Main Turbine Generator											X	G2.1.32 – Conduct of Operations: Ability to explain and apply all system limits and precautions. (CFR: 41.10/43.2/45.12)	3.4	1
076 Service Water (Auxiliary Component Cooling Water)								X				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS. (CFR: 41.5/43.5/45.3/45.13)	3.5*	0
078 Instrument Air									X			A3.01 – Ability to monitor automatic operation of the IAS, including: Air pressure. (CFR: 41.7/45.5)	3.1	1
103 Containment												Not Used	N/A	0

ES-401

PWR RO Examination Outline
Plant Systems - Tier 2/Group 3

Form ES-401-4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
K/A Category Point Totals:	1	0	1	0	1	0	0	2	2	0	1	Group Point Total:		8

Facility: Waterford 3		Date of Exam: July 29, 2002		Exam Level: RO	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements. (CFR: 41.10/45.13)	3.7	1	
	2.1.12	Ability to apply technical specifications to a system. (CFR: 43.2/43.5/45.3)	2.9	1	
	2.1.22	Ability to determine Mode of Operation. (CFR: 43.5/45.13)	2.8	1	
	Total			3	
Equipment Control	2.2.13	Knowledge of tagging and clearance procedures. (CFR: 41.10/45.13)	3.6	1	
	2.2.22	Knowledge of limiting conditions for operations and safety limits. (CFR: 43.2/45.2)	3.4	1	
	2.2.26	Knowledge of refueling administrative procedures. (CFR: 43.5/45.13)	2.5	1	
	Total			3	
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements. (CFR: 41.12/43.4/45.9/45.10)	2.6	1	
	2.3.2	Knowledge of facility ALARA program. (CFR: 41.12/43.4/45.9/45.10)	2.5	1	
	2.3.9	Knowledge of the process for performing a containment purge. (CFR: 43.4/45.10)	2.5	1	
	Total			3	
Emergency Procedures/ Plan	2.4.2	Knowledge of system setpoints, interlocks and automatic actions associated with EOP entry conditions. (CFR: 41.7/45.7/45.8)	3.9	1	
	2.4.17	Knowledge of EOP terms and definitions. (CFR: 41.10/43.5/45.13)	3.1	1	
	2.4.3	Ability to identify post-accident instrumentation. (CFR: 41.6/45.4)	3.5	1	
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operator action of system components and controls. (CFR: 41.10/43.2/45.6)	4.0	1	
	Total			4	
Tier 3 Point Total				13	