

FACILITY SUBMITTED OUTLINE

Facility: Waterford 3			Date of Exam: October 1, 1999			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	3	2	3				3	4			1	16
	2	3	2	3				3	4			2	17
	3	0	1	0				1	0			1	3
	Tier Totals	6	5	6				7	8			4	36
2. Plant Systems	1	2	1	2	3	2	2	2	2	2	2	3	23
	2	2	1	2	3	1	2	2	2	2	2	1	20
	3	1	1	1	1	1	0	1	1	0	0	1	8
	Tier Totals	5	3	5	7	4	4	5	5	4	4	5	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>													

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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 / I					X		AA2.03 Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod: Required actions if more than one rod is stuck or inoperable.	3.5	1
000015/17 RCP Malfunctions / IV	X						AK1.02 Knowledge of the operational implications of the following concepts as they apply to Reactor Coolant Pump Malfunctions (Loss of RC Flow): Consequences of an RCPS failure.	3.7	1
BW/E09; CE/A13; W/E09&E10 Natural Circ. / IV		X					AK2.2 Knowledge of the interrelations between the (Natural Circulation Operations) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.4	1
000024 Emergency Boration / I					X		AA2.02 Ability to determine and interpret the following as they apply to the Emergency Boration: When use of manual boration valve is needed	3.9	1
000026 Loss of Component Cooling Water / VIII				X			AA1.02 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: Loads on the CCWS in the control room.	3.2	1
000027 Pressurizer Pressure Control System Malfunction / III		X					AK2.03 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.	2.6	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV				X			EA1.2 Ability to operate and / or monitor the following as they apply to the (Excess Steam Demand): Operating behavior characteristics of the facility.	3.5	1
CE/A11; W/E08 RCS Overcooling - PTS / IV	X						AK1.1 Knowledge of the operational implications of the following concepts as they apply to the (RCS Overcooling): Components, capacity, and function of emergency systems.	3.1	1
000051 Loss of Condenser Vacuum / IV			X				AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum.	2.8	1
000055 Station Blackout / VI			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	4.3	1
000057 Loss of Vital AC Elec. Inst. Bus / VI					X		AA2.17 Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: System and component status, using local or remote controls	3.1	1
000062 Loss of Nuclear Service Water / IV				X			AA1.03 Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water: SWS as a backup to the CCWS	3.6	1
000067 Plant Fire On-site / IX			X				AK3.04 Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site: Actions contained in EOP for plant fire on site	3.3	1
000068 (BW/A06) Control Room Evac. / VIII					X		AA2.05 Ability to determine and interpret the following as they apply to the Control Room Evacuation: Availability of heat sink	4.2	1

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Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

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E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000069 (W/E14) Loss of CTMT Integrity / V						X	2.4.35. Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.	3.3	1
000074 (W/E06&E07) Inad. Core Cooling / IV	X						EK1.02 Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling: Potential consequences of uncovering the core	4.6	1
BW/E03 Inadequate Subcooling Margin / IV									
000076 High Reactor Coolant Activity / IX							Not Used		
BW/A02&A03 Loss of NNI-X/Y / VII									
K/A Category Totals:	3	2	3	3	4	1	Group Point Total:		16

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PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000001 Continuous Rod Withdrawal / I			X				AK3.02 – Knowledge of the reasons for the following responses as they apply to the Continuous Rod Withdrawal: Tech Spec limits on rod operability.	3.2	1
000003 Dropped Control Rod / I					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.	3.6	1
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / I				X			EA1.03 - Ability to operate and monitor the following as they apply to a reactor trip: RCS pressure and temperature	4.2	1
BW/A01 Plant Runback / I									
BW/A04 Turbine Trip / IV									
000008 Pressurizer Vapor Space Accident / III	X						AK1.01 – Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open leaking valves.	3.2	1
000009 Small Break LOCA / III		X					EK2.03 - Knowledge of the interrelations between the small break LOCA and the following: S/Gs	3.0	1
000011 Large Break LOCA / III					X		EA2.09 - Ability to determine or interpret the following as they apply to a Large Break LOCA: Existence of adequate natural circulation	4.2	1
W/E04 LOCA Outside Containment / III									
BW/E08; W/E03 LOCA Cooledown/Depress. / IV									
W/E11 Loss of Emergency Coolant Recirc. / IV									
W/E02 SI Termination / III									
000022 Loss of Reactor Coolant Makeup / II	X						AK1.03 – Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: Relationship between charging flow and PZR level	3.0	1
000025 Loss of RHR System / IV						X	2.4.9 - Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	1
000029 Anticipated Transient w/o Scram / I			X				EK3.12 - Knowledge of the reasons for the following responses as they apply to the ATWS: Actions contained in EOP for ATWS.	4.4	1
000032 Loss of Source Range NI / VII				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.	3.1*	1
000033 Loss of Intermediate Range NI / VII							Not Used	N/A	0
000037 Steam Generator Tube Leak / III					X		AA2.04 - Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Comparison of RCS fluid inputs and outputs, to detect leaks.	3.4	1
000038 Steam Generator Tube Rupture / III					X		EA2.02 - Ability to determine or interpret the following as they apply to a SGTR: Existence of an S/G tube rupture and its potential consequences.	4.5	11

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PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000054 (CE/E06) Loss of Main Feedwater / IV				X			AA1.02 - Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): Manual startup of electric and steam-driven AFW pumps.	4.4	1
BW/E04: W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / IV									
000058 Loss of DC Power / VI	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.	2.8	1
000059 Accidental Liquid RadWaste Rel. / IX		X					AK2.01 - Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors.	2.7	1
000060 Accidental Gaseous Radwaste Rel. / IX							Not Used	N/A	0
000061 ARM System Alarms / VII			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.	3.4	1
W/E16 High Containment Radiation / IX									
CE/E09 Functional Recovery						X	2.4.6 - Knowledge of symptom based EOP mitigation strategies.	3.1	1
K/A Category Point Totals:	3	2	3	3	4	2	Group Point Total:		17

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PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000028 Pressurizer Level Malfunction / II		X					AK2.03 - Knowledge of the interrelations between the PZR level control malfunctions and the following: Controllers and positioners	2.6	1
000036 (BW/A08) Fuel Handling Accident / VIII							Not Used	N/A	0
000056 Loss of Off-site Power / VI				X			AA1.37 - Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: Instrument air.	3.4	1
000065 Loss of Instrument Air / VIII							Not Used	N/A	0
BW/E13&E14 EOP Rules and Enclosures									
BW/A05 Emergency Diesel Actuation / VI									
BW/A07 Flooding / VIII									
CE/A16 Excess RCS Leakage / II						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	1
W/E13 Steam Generator Over-pressure / IV									
W/E15 Containment Flooding / V									
K/A Category Point Totals:	0	1	0	1	0	1	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		A4.05 - Ability to manually operate and/or monitor in the control room: Determination of the amount of boron needed to back the rods out of the core, including xenon effects if equilibrium is not yet achieved.	3.7	1
001 Control Rod Drive									X			A3.02 - Ability to monitor automatic operation of the CRDS, including: Rod height..	3.7	1
003 Reactor Coolant Pump											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	3.4	1
003 Reactor Coolant Pump							X					A1.07 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: RCS temperature and pressure.	3.4*	1
004 Chemical and Volume Control				X								K4.12 - Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: Minimum level of VCT.	3.1	1
004 Chemical and Volume Control	X											K1.01 - Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: PZR LCS.	3.6	1
013 Engineered Safety Features Actuation					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Safety system logic and reliability.	2.9	1
013 Engineered Safety Features Actuation	X											K1.01 - Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: Initiation signals for ESF circuit logic.	4.2	1
015 Nuclear Instrumentation											X	2.1.11 - Knowledge of less than one hour technical specification action statements for systems.	3.0	1
015 Nuclear Instrumentation						X						K6.04 - Knowledge of the effect of a loss or malfunction of the following will have on the NIS: Bistables and logic circuits.	3.1	1
017 In-core Temperature Monitor								X				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Thermocouple open and short circuits.	3.1	1

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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
017 In-core Temperature Monitor											X	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	1
022 Containment Cooling				X								K4.02 - Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Correlation of fan speed and flowpath changes with containment pressure.	3.1*	1
022 Containment Cooling			X									K3.01 - Knowledge of the effect that a loss or malfunction of the CCS will have on the following: Containment equipment subject to damage by high or low temperature, humidity, and pressure.	2.9*	1
025 Ice Condenser														
056 Condensate								X				A2.04 - Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps.	2.6	1
059 Main Feedwater							X					A1.07 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Feed Pump speed, including normal control speed for ICS.	2.5*	1
059 Main Feedwater			X									K3.03 - Knowledge of the effect that a loss or malfunction of the MFW will have on the following: S/GS.	3.5	1
061 Auxiliary/Emergency Feedwater		X										K2.01 - Knowledge of bus power supplies to the following: AFW system MOVs.	3.2*	1
061 Auxiliary/Emergency Feedwater				X								K4.11 - Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Automatic level control.	2.7*	1
068 Liquid Radwaste						X						K6.10 - Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System: Radiation monitors	2.5	1
068 Liquid Radwaste										X		A4.03 - Ability to manually operate and/or monitor in the control room: Stoppage of release if limits exceeded.	3.9	1

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System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
071 Waste Gas Disposal									X			A3.02 - Ability to monitor automatic operation of the Waste Gas Disposal System including: Pressure-regulating system for waste gas vent header.	2.8	1
072 Area Radiation Monitoring					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to the ARM system: Radiation theory, including sources, types, units, and effects.	2.7	1
K/A Category Point Totals:	2	1	2	3	2	2	2	2	2	2	3	Group Point Total:		23

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

Form ES-401-4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
002 Reactor Coolant							X					A1.03 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCS controls including: Temperature	3.7	1
006 Emergency Core Cooling							X					A1.13 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration)	3.5	1
006 Emergency Core Cooling	X											K1.03 Knowledge of the physical connections and/or cause-effect relationships between the ECCS and the following systems: RCS	4.2	1
010 Pressurizer Pressure Control									X			A3.02 Ability to monitor automatic operation of the PZR PCS, including: PZR pressure	3.6	1
011 Pressurizer Level Control						X						K6.03 Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Relationship between PZR level and PZR heater control circuit	2.9	1
012 Reactor Protection				X								K4.06 Knowledge of RPS design feature(s) and/or interlock(s) which provide for the following: Automatic or manual enable/disable of RPS trips	3.7	1
014 Rod Position Indication				X								K4.06 Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: Individual and group misalignment	3.4	1
016 Non-nuclear Instrumentation			X									K3.02 Knowledge of the effect that a loss or malfunction of the NNIS will have on the following: PZR LCS	3.4	1
026 Containment Spray				X								K4.08 Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Automatic swapover to containment sump suction for recirculation phase after LOCA (RWST low-low level alarm)	4.1	1
026 Containment Spray											X	2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
029 Containment Purge	X											K1.03 Knowledge of the physical connections and/or cause-effect relationships between the Containment Purge System and the following systems: Engineered safeguards	3.6	1
033 Spent Fuel Pool Cooling									X			A3.02 Ability to monitor automatic operation of the Spent Fuel Pool Cooling System including: Spent fuel leak or rupture	2.9	1

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System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
035 Steam Generator								X				A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the SG; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulted or ruptured S/Gs	4.5	1
039 Main and Reheat Steam					X							K5.08 Knowledge of the operational implications of the following concepts as the apply to the MRSS: Effect of steam removal on reactivity	3.6	1
055 Condenser Air Removal												Not Used	N/A	N/A
062 AC Electrical Distribution		X										K2.01 Knowledge of bus power supplies to the following: Major system loads	3.3	1
063 DC Electrical Distribution			X									K3.02 Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power	3.5	1
064 Emergency Diesel Generator						X						K6.08 Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks	3.2	1
073 Process Radiation Monitoring										X		A4.01 Ability to manually operate and/or monitor in the control room: Effluent release	3.9	1
075 Circulating Water								X				A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Safety features and relationship between condenser vacuum, turbine trip, and steam dump	2.5	1
079 Station Air												Not Used	N/A	N/A
086 Fire Protection											X	2.1.30 Ability to locate and operate components, including local controls.	3.9	1
K/A Category Point Totals:	2	1	2	3	1	2	2	2	2	2	1	Group Point Total:	20	

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System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal	X											K1.04 - Knowledge of the physical connections and/or cause-effect relationships between the RHRS and the following systems: CVCS.	2.9	1
007 Pressurizer Relief/Quench Tank								X				A2.03 - Ability to (a) predict the impacts of the following malfunctions or operations on the PS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Overpressurization of the PZR.	3.6	1
008 Component Cooling Water							X					A1.04 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including: Surge tank level.	3.1	1
027 Containment Iodine Removal												Not Used	N/A	0
028 Hydrogen Recombiner and Purge Control					X							K5.03 - Knowledge of the operational implications of the following concepts as they apply to the HRPS: Sources of hydrogen within containment..	2.9	1
034 Fuel Handling Equipment												Not Used	N/A	0
041 Steam Dump/Turbine Bypass Control				X								K4.17 - Knowledge of SDS design feature(s) and/or interlock(s) which provide for the following: Reactor trip	3.7	1
045 Main Turbine Generator												Not Used	N/A	0
076 Service Water (Auxiliary Component Cooling Water)		X										K2.01 - Knowledge of bus power supplies to the following: Service water.	2.7*	1
078 Instrument Air											X	2.4.11 - Knowledge of abnormal condition procedures.	3.4	1
103 Containment			X									K3.03 - Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under refueling operations.	3.7	1
K/A Category Point Totals:	1	1	1	1	1	0	1	1	0	0	1	Group Point Total:		8

Facility: Waterford 3		Date of Exam: October 1, 1999		Exam Level: RO	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	2.1.3	Knowledge of shift turnover practices.	3.0	1	
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.0	1	
	2.1.16	Ability to operate plant phone, paging system, and two-way radio.	2.9	1	
	Total			3	
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7	1	
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	1	
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	3.4	1	
	Total			3	
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1	
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1	
	2.3.11	Ability to control radiation releases.	2.7	1	
	Total			3	
Emergency Procedures/ Plan	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.3	1	
	2.4.15	Knowledge of communications procedures associated with EOP implementation.	3.0	1	
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions including: Reactivity control, Core cooling and heat removal, Reactor coolant system integrity, Containment conditions, and Radioactivity release control.	3.7	1	
	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	2.9	1	
	Total			4	
Tier 3 Point Total				13	

Facility: Waterford 3		Date of Examination: October 4, 1999
Examination Level: RO		Operating Test Number: 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Annunciator Response	List the conditions where referring to the Annunciator Response Procedure is not required when an annunciator is received. When removing an annunciator from service, when is an EOS required? Which panels fall into this classification?
	Plant Parameter Verification	JPM on tech spec surveillance Applicant will be given a page of mode 1-4 tech spec logs to complete. One of the readings will be for the Containment internal pressure. The reading will be < 0, requiring attachment 11.16, Containment Pressure Calculation to be completed.
A.2 Equipment Control	Clearance Review	JPM on performing the RO review of a clearance. Applicant must find 3 errors with the provided tagout.
A.3 Radiation Control	Radiation Work Permits	JPM on RCA entry Applicant must review appropriate RWP and know the dose and dose rate limits loaded on his electronic dosimeter.
A.4 Emergency Plan	Emergency Plan Implementing Procedures	What are the 4 emergency classifications? At what minimum classification is notification of the Union Pacific Railroad and the US Coast Guard required? Why?
		You have just been informed over the TIC radio that Union Carbide has just had a Naphtha tank fail. Where would you gather meteorological data to determine required actions? If the release started 10 minutes ago and the wind direction is 135° and wind speed is 8 mph, what are the required actions?

Facility: Waterford III

Date of Examination: 10/4/99

Exam Level (circle one): ☒ RO / SRO(I) / SRO(U)

Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Shutdown Margin Verification – Untrippable CEA	N, S	1
b. Start a Reactor Coolant Pump (High Vibration Occurs on Startup)	M, S, A, L	4
c. Reset SIAS/CIAS	M, C, L	7
d. Establish Charging and Letdown (In-service Letdown Flow Control Valve Fails)	M, S, A	2
e. Align a LPSI Pump to Replace a CS Pump	N, S, L	5
f. Unload , Stop, and Return EDG A(B) to Standby (Oil Leak)	M, S, A,	6
g. Restore from Control Room Isolation	M, S	2, 8

B.2 Facility Walk-Through

a. Operate the Atmospheric Dump Valves Locally	D, L	4
b. Aligning Essential Chiller A/B to Replace Essential Chiller A(B)	M, R	8
c. Startup A Safety Related Battery Charger (High Voltage Shutdown)	D, A	6

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: Waterford III

Scenario No.: 1

Op-Test No.: 1

Examiners: _____ Operators: _____

Objectives: To evaluate the applicants' ability to:

- a. perform required actions for a failure of an NI Safety channel,
- b. implement AOPs for a CCW pump trip, multiple RCP seal failures, and a FWCS malfunction,
- c. perform actions required for a power reduction,
- d. execute EOP steps for a small break LOCA with malfunctions in the HPSI system.

Initial Conditions: IC-20, 100%, MOC

Turnover: Charging Pump A has been OOS for 24 hours to rebuild the crosshead and repack the pump. The plant is in T.S. 3.1.2.4 due to the AB safety busses being energized from the B safety busses. Maintenance estimates another 24 hours to return Charging Pump A to service. EFW pump AB has been OOS for 66 hours to rebuild MS-416, EFW Pump AB Stop Valve. Maintenance estimates 2 hours to complete the required work. HPSI Pump A has been OOS for 4 hours due to a breaker failure, which occurred while on recirculation to fill SIT 2A.

Event No.	Malf. No.	Event Type*	Event Description
1	NI01E	I (PNPO)	ENI Safety Channel A Middle Detector Fails Low, energizing a source range channel NI.
2	CC03B	C (SNPO)	CC Pump B Bearing Seizure
3	RC09D	C (PNPO) R (PNPO) N (SNPO)	RCP 2B middle seal fails, as a result of CC malfunction, forcing a controlled shutdown.
4	SG05D	I (SNPO)	S/G 2 Level Transmitter Fails High requiring manual control of S/G Level.
5	RC08D, RC10D, RC23D, RD1101, RD1102, SI02B	M (All)	Remaining RCP seals fail, causing a small break LOCA. Two CEAs fail to insert on the reactor trip. HPSI Pump B fails to auto start on a SIAS signal; however, the pump can be started manually from CP-8.

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

Facility: Waterford III

Scenario No.: 2

Op-Test No.: 1

Examiners: _____ Operators: _____

Objectives: To Evaluate the applicants' ability to:

- a. perform a power reduction,
- b. recognize T.S. implications and perform required actions for a failure of a safety related S/G pressure instrument,
- c. perform actions within AOPs for a loss of charging, condenser air in-leakage, and failure of the controlling pressurizer pressure instrument,
- d. perform actions required to mitigate a Main Steam Line Break inside containment with a failure of one motor driven EFW pump to auto start and the turbine driven EFW pump OOS.

Initial Conditions: IC-20, 100%, MOC

Turnover: Charging Pump A has been OOS for 24 hours to rebuild the crosshead and repack the pump. The plant is in T.S. 3.1.2.4 due to the AB safety busses being energized from the B safety busses. Maintenance estimates another 24 hours to return Charging Pump A to service. EFW pump AB has been OOS for 66 hours to rebuild MS-416, EFW Pump AB Stop Valve. Maintenance estimates 2 hours to complete the required work. HPSI Pump A has been OOS for 4 hours due to a breaker failure, which occurred while on recirculation to fill SIT 2A. A power reduction to 90% must be performed to allow for turbine valve testing.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (PNPO) N (SNPO)	Power reduction to 90% power for turbine valve testing.
2	SG04E	I (SNPO)	S/G 1 Safety Pressure instrument fails low.
3	CV01B	C (PNPO)	Charging pump B trips on overcurrent.
4	FW21A	C (SNPO)	Condenser A air in-leakage.
5	RX14A	I (PNPO)	In-service PZR pressure control channel fails high.
6	MS11B, FW07A	M (All)	Main Steam Line Break inside containment with a failure of EFW Pump A to automatically start on an EFAS.

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

Facility: Waterford III

Scenario No.: 3

Op-Test No.: 1

Examiners: _____ Operators: _____

Objectives: to evaluate the applicants' ability to:

- a. place a Main Feedwater Pump in service,
- b. perform a power ascension,
- c. perform actions of AOPs for a pressurizer level setpoint malfunction, letdown malfunction, and an instrument air leak,
- d. recognize the implications of a failed wide range S/G instrument and closure of the Main Feedwater Isolation Valve at power
- e. Perform actions within EOPs to mitigate a SGTR.

Initial Conditions: 50-65%, MOC, one Main Feedwater Pump in service

Turnover: Charging Pump A has been OOS for 24 hours to rebuild the crosshead and repack the pump. The plant is in T.S. 3.1.2.4 due to the AB safety busses being energized from the B safety busses. Maintenance estimates another 24 hours to return Charging Pump A to service. EFW pump AB has been OOS for 66 hours to rebuild MS-416, EFW Pump AB Stop Valve. Maintenance estimates 2 hours to complete the required work. HPSI Pump A has been OOS for 4 hours due to a breaker failure, which occurred while on recirculation to fill SIT 2A.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (PNPO) N (SNPO)	Place second Main Feedwater Pump in service, perform power ascension.
2	RC21A	I (PNPO)	T _{hot} instrument fails low affecting pressurizer level setpoint.
3	CV05B1, IA04B	C (PNPO) C (SNPO)	In-service letdown backpressure regulating valve fails closed due to broken instrument air line.
4	SG06A	I (SNPO)	S/G 1 Wide Range level instrument fails high causing Main Feedwater Isolation Valve to close.
5	SG01B	M (All)	Reactor trip transient results in SGTR in S/G 2. S/G 1 EFW control is degraded due to the wide range level instrument failure.

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