

Draft Submittal

(Pink Paper)

1. Written Exam Sample outlines

**CRYSTAL RIVER AUGUST
EXAM 50-302/2003-301**

AUGUST 25 - 29, 2003

Facility: CRYSTAL RIVER UNIT 3		Date of Exam: AUGUST 25, 2003																			
Tier	Group	RO K/A Category Points											Total	SRO-Only Points							
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *		K	A	A 2	G*	Total			
1. Emergency & Abnormal Plant Evolutions	1	2	3	3				4	4				2	18					7		
	2	1	2	2				1	2				1	9					5		
	Tier Totals	3	5	5				5	6				3	27					12		
2. Plant Systems	1	3	2	3	2	2	2	1	4	3	3	3	28					4			
	2	1	0	2	2	1	0	1	1	1	1	0	10					2			
	Tier Totals	4	2	5	4	3	2	2	5	4	4	3	38					6			
3. Generic Knowledge and Abilities Categories				1		2		3		4		10	1		2		3		4		7
				3		2		2		3											
<p>Note:</p> <ol style="list-style-type: none"> Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling. 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. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system or evolution unless they relate to plant-specific priorities. Systems/evolutions within each group are identified on the associated outline. The shaded areas are not applicable to the category/tier. * 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the table above; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A." Use duplicate pages for RO and SRO-only exams. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements. 																					

The random sampling guidance provided in ES-401, Attachment 1, was used to generate this outline.

Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000007 or E02/E10 Reactor Trip - Stabilization - Recovery / 1					X		007EA2.02 - Ability to determine or interpret the following as they apply to a reactor trip: Proper actions to be taken if the automatic safety functions have not taken place	4.3	1
000008 Pressurizer Vapor Space Accident / 3	X						008AK1.01 - Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves	3.2	1
000009 Small Break LOCA / 3		X					009EK2.03 - Knowledge of the interrelations between the small break LOCA and the S/Gs.	3.0	1
000011 Large Break LOCA / 3						X	011G2.4.20 - Knowledge of operational implications of EOP warnings, cautions, and notes.	3.3	1
000015/17 RCP Malfunctions / 4		X					015AK2.07 - Knowledge of the interrelations between Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the RCP seals.	2.9	1
000022 Loss of Rx Coolant Makeup / 2					X		022AA2.04 - Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Pump Makeup: How long PZR level can be maintained within limits	2.9	1
000025 Loss of RHR System / 4		X					025AK2.05 - Knowledge of the interrelations between the Loss of Decay Heat Removal System and the following: Reactor building sump	2.6	1
000026 Loss of Component Cooling Water / 8				X			026AA1.04 - Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Services / Decay Heat Closed Cycle Cooling: CRDM high-temperature alarm system	2.7	1
000027 Pressurizer Pressure Control System Malfunction / 3				X			027AA1.05 - Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: Transfer of heaters to backup power supply.	3.3	1
000029 ATWS / 1			X				029EK3.11 - Knowledge of the reasons for the following responses as they apply to the ATWS: Initiating emergency boration	4.2	1
000038 Steam Gen. Tube Rupture / 3					X		038EA2.08 - Ability to determine or interpret the following as they apply to a SGTR: Viable alternatives for placing plant in safe condition when condenser is not available	3.8	1
000040 or E05 Steam Line Rupture - Excessive Heat Transfer / 4				X			E05EA1.2 - Ability to operate and / or monitor the following as they apply to the (Excessive Heat Transfer): Operating behavior characteristics of the facility.	3.6	1
000054 Loss of Main Feedwater / 4				X			054AA1.02 - 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 EFW pumps	4.4	1

Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000055 Station Blackout / 6			X				055EK3.02 - 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
000056 Loss of Off-site Power / 6						X	056G2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	3.7	1
000057 Loss of Vital AC Inst. Bus / 6									
000058 Loss of DC Power / 6					X		058AA2.02 - Ability to determine and interpret the following as they apply to the Loss of DC Power: 125V dc bus voltage, low alarm	3.3	1
000062 Loss of Nuclear Svc Water / 4			X				062AK3.02 - Knowledge of the reasons for the following responses as they apply to the Loss of Raw Water: The automatic actions (alignments) within the RWS resulting from the actuation of the ESFAS	3.6	1
000065 Loss of Instrument Air / 8									
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc / 4									
E04 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	X						E04EK1.3 - Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer): Annunciators and conditions indicating signals, and remedial actions associated with the (Inadequate Heat Transfer).	4.0	1
K/A Category Totals:	2	3	3	4	4	2	Group Point Total:		18/7

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#	
000001 Continuous Rod Withdrawal / 1										
000003 Dropped Control Rod / 1			X				003AK3.07 - Knowledge of the reasons for the following responses as they apply to the Dropped Control Rod: Tech-Spec limits for T-ave	3.8	1	
000005 Inoperable/Stuck Control Rod / 1										
000024 Emergency Boration / 1										
000028 Pressurizer Level Malfunction / 2		X					028AK2.02 - Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: Sensors and detectors	2.6	1	
000032 Loss of Source Range NI / 7										
000033 Loss of Intermediate Range NI / 7					X		033AA2.04 - Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Satisfactory overlap between source-range, intermediate-range and power-range instrumentation	3.2	1	
000036 (BW/A08) Fuel Handling Accident / 8										
000037 Steam Generator Tube Leak / 3			X				037AK3.05 - Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: Actions contained in procedures for radiation monitoring, RCS water inventory balance, S/G tube failure, and plant shutdown	3.7	1	
000051 Loss of Condenser Vacuum / 4										
000059 Accidental Liquid RadWaste Rel. / 9										
000060 Accidental Gaseous Radwaste Rel. / 9										
000061 ARM System Alarms / 7										
000067 Plant Fire On-site / 8										
000068 (BW/A06) Control Room Evac. / 8										
000069 (WE14) Loss of CTMT Integrity / 5						X	069G2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1	
000074 (WE06&E07) Inad. Core Cooling / 4										
000076 High Reactor Coolant Activity / 9										
W/E01 & E02 Rediagnosis & S/T Termination / 3										

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#	
W/E13 Steam Generator Over-pressure / 4										
W/E15 Containment Flooding / 5										
W/E16 High Containment Radiation / 9										
BW/A01 Plant Runback / 1					X		A01AA2.2 - Ability to determine and interpret the following as they apply to the (Plant Runback): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.5	1	
BW/A02&A03 Loss of NNI-X/Y / 7										
BW/A04 Turbine Trip / 4				X			A04AA1.1 - Ability to operate and / or monitor the following as they apply to the (Turbine Trip): Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.5	1	
BW/A05 Emergency Diesel Actuation / 6										
BW/A07 Flooding / 8	X						A07AK1.2 - Knowledge of the operational implications of the following concepts as they apply to the (Flooding): Normal, abnormal and emergency operating procedures associated with (Flooding).	3.3	1	
BW/E03 Inadequate Subcooling Margin / 4										
BW/E08; W/E03 LOCA Cooldown - Depress. / 4										
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4										
BW/E13&E14 EOP Rules and Enclosures		X					E13EK2.1 - Knowledge of the interrelations between the (EOP Rules) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.6	1	
CE/A11; W/E08 RCS Overcooling - PTS / 4										
CE/A16 Excess RCS Leakage / 2										
CE/E09 Functional Recovery										
K/A Category Point Totals:	1	2	2	1	2	1	Group Point Total:	9/5		

Plant Systems - Tier 2/Group 1 (RO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump			X									003K3.05 - Knowledge of the effect that a loss or malfunction of the RCPs will have on the following: ICS	3.6	1
						X						003K6.04 - Knowledge of the effect of a loss or malfunction of Reactor Building isolation valves on RCP operation.	2.8	1
004 Chemical and Volume Control							X					004A1.12 - Ability to predict and/or monitor changes in the rate of boron concentration reduction in RCS as a function of letdown flow while deborating demineralizer is in service (to prevent exceeding design limits) associated with operating the MUPS controls.	2.8	1
005 Residual Heat Removal				X								005K4.08 - Knowledge of Decay Heat System design feature(s) and/or interlock(s) which provide for the following: Lineup for piggy-back mode with high-pressure injection (Makeup System)	3.1	1
006 Emergency Core Cooling				X								006K4.05 - Knowledge of ECCS design feature(s) and/or interlock(s) which provide for autostart of HPI/LPI.	4.3	2
											X	006G2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.2	
007 Pressurizer Relief/Quench Tank											X	007A4.10 - Ability to manually operate and/or monitor in the control room: Recognition of leaking PORV/code safety	3.6	1
008 Component Cooling Water											X	008A4.07 - Ability to manually operate and/or monitor in the control room: Control of minimum level in the SWS / DCS surge tank	2.9	1

Plant Systems - Tier 2/Group 1 (RO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
010 Pressurizer Pressure Control					X							010K5.01 - Knowledge of the operational implications of the following concepts as the apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables	3.5	1
012 Reactor Protection	X											012K1.03 - Knowledge of the physical connections and/or cause-effect relationships between the RPS and the CRDS.	3.7	1
013 Engineered Safety Features Actuation						X						013K6.01 - Knowledge of the effect of a loss or malfunction of ESFAS related sensors and detectors.	2.7	2
	X											013K1.13 - Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the HVAC systems.	2.8	
022 Containment Cooling								X				022A2.04 - Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of cooling water	2.9	1
025 Ice Condenser														
026 Containment Spray									X			026A3.01 - Ability to monitor automatic operation of the BSS, including: Pump starts and correct MOV positioning	4.3	1

Plant Systems - Tier 2/Group 1 (RO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
039 Main and Reheat Steam			X									039K3.04 - Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: MFW pumps	2.5	2
								X				039A2.05 - Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Increasing steam demand, its relationship to increases in reactor power	3.3	
056 Condensate	X											056K1.03 - Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: MFW	2.6	1
059 Main Feedwater										X		059A4.10 - Ability to manually operate and monitor in the control room: ICS	3.9	2
											X	059G2.1.22 - Ability to determine Mode of Operation.	2.8	
061 Auxiliary/Emergency Feedwater		X										061K2.01 - Knowledge of bus power supplies to the following: EFW system MOVs	3.2	1
062 AC Electrical Distribution			X									062K3.01 - Knowledge of the effect that a loss or malfunction of the AC distribution system will have on the following: Major system loads	3.5	2
											X	062G2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.1	
063 DC Electrical Distribution									X			063A3.01 - Ability to monitor automatic operation of the dc electrical system, including: Meters, annunciators, dials, recorders, and indicating lights	2.7	1

Plant Systems - Tier 2/Group 1 (RO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
064 Emergency Diesel Generator								X				064A2.08 - Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of opening/closing breaker between buses (VARS, out-of-phase, voltage)	2.7	2
073 Process Radiation Monitoring					X							073K5.02 - Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Radiation intensity changes with source distance	2.5	1
076 Service Water								X				076A2.02 -Ability to (a) predict the impacts of the following malfunctions or operations on the RWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: RW header pressure	2.7	1
078 Instrument Air		X										078K2.01 - Knowledge of bus power supplies to the following: Instrument air compressor	2.7	1
103 Containment									X			103A3.01 - Ability to monitor automatic operation of the reactor building system, including: Reactor Building isolation	3.9	1
K/A Category Point Totals:	3	2	3	2	2	2	1	4	3	3	3	Group Point Total:		28/4

Plant Systems - Tier 2/Group 2 (RO)

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
001 Control Rod Drive					X							001K5.28 - Knowledge of boron reactivity worth vs. boron concentration, (i.e.; amount of boron needed (ppm) to change core reactivity to desired amount).	3.5	1
002 Reactor Coolant	X											002K1.09 - Knowledge of the physical connections and/or cause-effect relationships between the RCS and the Pressurizer (PZR).	4.1	1
011 Pressurizer Level Control														
014 Rod Position Indication				X								014K4.05 - Knowledge of RPIS design feature(s) and/or interlock(s) which provide rod hold interlocks.	3.1	1
015 Nuclear Instrumentation							X					015A1.04 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the NIS controls including: Quadrant power tilt ratio	3.5	1
016 Non-nuclear Instrumentation									X			016A3.01 - Ability to monitor automatic operation of the NNIS, including: Automatic selection of NNIS inputs to control systems	2.9	1
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														

Plant Systems - Tier 2/Group 2 (<u>RO</u>)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
029 Containment Purge														
033 Spent Fuel Pool Cooling														
034 Fuel Handling Equipment														
035 Steam Generator				X								035K4.01 - Knowledge of S/GS design feature(s) and/or interlock(s) which provide for S/G level control.	3.6	1
041 Steam Dump/Turbine Bypass Control								X				041A2.02 - Ability to (a) predict the impacts of the following malfunctions or operations on the Turbine Bypass Valves; and (b) based on those predictions or mitigate the consequences of those malfunctions or operations: Steam valve stuck open	3.6	1
045 Main Turbine Generator			X									045K3.01 - Knowledge of the effect that a loss or malfunction of the MT/G system will have on the remainder of the plant.	2.9	1
055 Condenser Air Removal														
068 Liquid Radwaste														
071 Waste Gas Disposal			X									071K3.04 - Knowledge of the effect that a loss or malfunction of the Waste Gas Disposal System will have on the following: Ventilation system	2.7	1
072 Area Radiation Monitoring														

Plant Systems - Tier 2/Group 2 (<u>RO</u>)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
075 Circulating Water														
079 Station Air														
086 Fire Protection										X		086A4.06 - Ability to manually operate and/or monitor in the control room: Halon system	3.2	1
K/A Category Point Totals:	1	0	2	2	1	0	1	1	1	1	0	Group Point Total:		10/2

Facility: Crystal River Unit #3						
Date of Exam: August 25, 2003						
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.4	Knowledge of shift staffing requirements.			3.4	1
	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	1		
	2.1.12	Ability to apply technical specifications for a system.			4.0	1
	2.1.20	Ability to execute procedure steps.	4.3	1		
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	2.8	1		
	Subtotal			3		2
2. Equipment Control	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	1		
	2.2.12	Knowledge of surveillance procedures.	3.0	1		
	2.2.22	Knowledge of limiting conditions for operations and safety limits.			4.1	1
	2.2.27	Knowledge of the refueling process.			3.5	1
	Subtotal			2		2
3. Radiation Control	2.3.1	Knowledge of 10CFR20 and related facility radiation control requirements.	2.6	1		
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1		
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.			3.1	1
	Subtotal			2		1

Facility: Crystal River Unit #3			Date of Exam: August 25, 2003			
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
4. Emergency Procedures / Plan	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.3	1		
	2.4.6	Knowledge of symptom based EOP mitigation strategies.			4.0	1
	2.4.11	Knowledge of abnormal condition procedures.	3.4	1		
	2.4.35	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.3	1		
	2.4.41	Knowledge of the emergency action level thresholds and classifications.			4.1	1
	Subtotal			3		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	015AK2.05	K/A = 1.9
1/2	003K3.06	K/A = 2.2
1/2	028AK2.07	K/A = 1.8
2/1	006K4.02	Not applicable at CR #3
2/1	007A4.02	K/A = 2.2
2/1	007A4.05	K/A = 2.4
2/1	008A4.11	Not applicable at CR #3
2/1	013K6.03	K/A = 2.4
2/1	039A2.02	K/A = 2.4
2/1	056	Only 2 RO K/As ≥ 2.5 in whole system – flipped coin.
2/1	059A4.02	K/A = 2.3
2/1	064K6.02	K/A = 2.4
2/1	064K6.06	K/A = 2.3
2/2	002K1.15	K/A = 2.2
2/2	035K4.04	Not applicable at CR #3
2/2	035K4.08	Not applicable at CR #3 and K/A = 1.9
2/2	071K3.01	K/A = 2.0
2/2	071K3.03	K/A = 2.2
Generic	2.3.5	RO K/A = 2.3
Generic	2.4.36	RO K/A = 2.0

Facility: CRYSTAL RIVER UNIT 3		Date of Exam: AUGUST 25, 2003																					
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	2	1	2	2				1	2				1	9		1	2	2	5				
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3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1		2		3		4		7	
				3		2		2		3				2		2		1		2			
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Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000007 or E02/E10 Reactor Trip - Stabilization - Recovery / 1									
000008 Pressurizer Vapor Space Accident / 3									
000009 Small Break LOCA / 3			X				009EK3.06 - Knowledge of the reasons for the following responses, as they apply to the small break LOCA: RCS inventory balance	4.0	1
000011 Large Break LOCA / 3									
000015/17 RCP Malfunctions / 4									
000022 Loss of Rx Coolant Makeup / 2									
000025 Loss of RHR System / 4	X						025AK1.01 - Knowledge of the operational implications of the following concepts as they apply to Loss of Decay Heat Removal System: Loss of DH System during all modes of operation	4.3	1
000026 Loss of Component Cooling Water / 8						X	026G2.4.47 - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	3.7	1
000027 Pressurizer Pressure Control System Malfunction / 3									
000029 ATWS / 1					X		029EA2.09 - Ability to determine or interpret the following as they apply to a ATWS: Occurrence of a main turbine/reactor trip	4.5	1
000038 Steam Gen. Tube Rupture / 3					X		038EA2.13 - Ability to determine or interpret the following as they apply to a SGTR: Magnitude of rupture	3.7	1
000040 or E05 Steam Line Rupture - Excessive Heat Transfer / 4			X				040AK3.2 - Knowledge of the reasons for the following responses as they apply to the (Excessive Heat Transfer): Normal, abnormal and emergency operating procedures associated with (Excessive Heat Transfer).	4.0	1
000054 Loss of Main Feedwater / 4									
000055 Station Blackout / 6						X	055G2.4.7 - Knowledge of event based EOP mitigation strategies.	3.8	1
000056 Loss of Off-site Power / 6									

Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000057 Loss of Vital AC Inst. Bus / 6									
000058 Loss of DC Power / 6									
000062 Loss of Nuclear Svc Water / 4									
000065 Loss of Instrument Air / 8									
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc / 4									
E04 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									
K/A Category Totals:	1		2		2	2	Group Point Total:		18/7

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#	
000001 Continuous Rod Withdrawal / 1										
000003 Dropped Control Rod / 1										
000005 Inoperable/Stuck Control Rod / 1					X		005AA2.01 - Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod: Stuck or inoperable rod from in-core and ex-core NIS, incore temperature measurements	4.1	1	
000024 Emergency Boration / 1										
000028 Pressurizer Level Malfunction / 2										
000032 Loss of Source Range NI / 7										
000033 Loss of Intermediate Range NI / 7										
000036 (BW/A08) Fuel Handling Accident / 8										
000037 Steam Generator Tube Leak / 3										
000051 Loss of Condenser Vacuum / 4										
000059 Accidental Liquid RadWaste Rel. / 9										
000060 Accidental Gaseous Radwaste Rel. / 9										
000061 ARM System Alarms / 7						X	061G2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1	
000067 Plant Fire On-site / 8										
000068 (BW/A06) Control Room Evac. / 8										
000069 (W/E14) Loss of CTMT Integrity / 5										
000074 (W/E06&E07) Inad. Core Cooling / 4					X		074EA2.03 - Ability to determine or interpret the following as they apply to a Inadequate Core Cooling: Availability of turbine bypass valves for cooldown	4.1	1	
000076 High Reactor Coolant Activity / 9										
W/E01 & E02 Rediagnosis & SI Termination / 3										
W/E13 Steam Generator Over pressure / 4										
W/E15 Containment Flooding / 5										
W/E16 High Containment Radiation / 9										
BW/A01 Plant Runback / 1										

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
BW/A02&A03 Loss of NNI-X/Y / 7				X			A02AA1.1 - Ability to operate and / or monitor the following as they apply to the (Loss of NNI-X): Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.8	1
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6						X	A05G2.2.20 - Knowledge of the process for managing troubleshooting activities.	3.3	1
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4									
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4									
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:				1	2	2	Group Point Total:		9/5

Plant Systems - Tier 2/Group 1 (SRO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump														
004 Chemical and Volume Control								X				004A2.09 - Ability to (a) predict the impacts of a high primary and/or secondary activity on the MUPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of these malfunctions.	3.9	1
005 Residual Heat Removal														
006 Emergency Core Cooling														
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water														
010 Pressurizer Pressure Control														
012 Reactor Protection											X	012G2.2.24 - Ability to analyze the affect of maintenance activities on LCO status.	3.8	1
013 Engineered Safety Features Actuation														
022 Containment Cooling														
025 Ice Condenser														
026 Containment Spray														

Plant Systems - Tier 2/Group 1 (SRO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
039 Main and Reheat Steam														
056 Condensate														
059 Main Feedwater														
061 Auxiliary/Emergency Feedwater								X				061A2.05 - Ability to (a) predict the impacts of the following malfunctions or operations on the EFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Automatic control malfunction.	3.4	1
062 AC Electrical Distribution														
063 DC Electrical Distribution														
064 Emergency Diesel Generator							X					064A1.03 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: Operating voltages, currents, and temperatures	3.3	1
073 Process Radiation Monitoring														
076 Service Water														
078 Instrument Air														
103 Containment														
K/A Category Point Totals:							1	2			1	Group Point Total:		28/4

Plant Systems - Tier 2/Group 2 (SRO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
001 Control Rod Drive														
002 Reactor Coolant														
011 Pressurizer Level Control											X	011G2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	3.6	1
014 Rod Position Indication														
015 Nuclear Instrumentation														
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge														
033 Spent Fuel Pool Cooling														
034 Fuel Handling Equipment											X	033G2.3.10 - Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1
035 Steam Generator														
041 Steam Dump/Turbine Bypass Control														

Plant Systems - Tier 2/Group 2 (SRO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
045 Main Turbine Generator														
055 Condenser Air Removal														
068 Liquid Radwaste														
071 Waste Gas Disposal														
072 Area Radiation Monitoring														
075 Circulating Water														
079 Station Air														
086 Fire Protection														
K/A Category Point Totals:											2	Group Point Total:		10/2

Facility: Crystal River Unit #3						
Date of Exam: August 25, 2003						
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.4	Knowledge of shift staffing requirements.			3.4	1
	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	1		
	2.1.12	Ability to apply technical specifications for a system.			4.0	1
	2.1.20	Ability to execute procedure steps.	4.3	1		
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	2.8	1		
	Subtotal			3		2
2. Equipment Control	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	1		
	2.2.12	Knowledge of surveillance procedures.	3.0	1		
	2.2.22	Knowledge of limiting conditions for operations and safety limits.			4.1	1
	2.2.27	Knowledge of the refueling process.			3.5	1
	Subtotal			2		2
3. Radiation Control	2.3.1	Knowledge of 10CFR20 and related facility radiation control requirements.	2.6	1		
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1		
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.			3.1	1
	Subtotal			2		1

Facility: Crystal River Unit #3			Date of Exam: August 25, 2003			
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
4. Emergency Procedures / Plan	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.3	1		
	2.4.6	Knowledge of symptom based EOP mitigation strategies.			4.0	1
	2.4.11	Knowledge of abnormal condition procedures.	3.4	1		
	2.4.35	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.3	1		
	2.4.41	Knowledge of the emergency action level thresholds and classifications.			4.1	1
	Subtotal			3		2
Tier 3 Point Total				10		7