

Facility: CRYSTAL RIVER 3		Date of Exam: SEPTEMBER 2011															
Tier	Group	RO K/A Category Points												SRO-Only Points			
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total	
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A			3	18	3	3	6
	2	2	1	2	N/A			2	1	N/A			1	9	2	2	4
	Tier Totals	5	4	5	N/A			5	4	N/A			4	27	5	5	10
2. Plant Systems	1	2	3	3	3	2	2	3	2	3	3	2	28	3	2	5	
	2	1	1	1	1	1	1	0	1	1	1	1	10	0	2	3	
	Tier Totals	3	4	4	4	3	3	3	3	4	4	3	38	5	3	8	
3. Generic Knowledge and Abilities Categories					1	2	3	4	10				1	2	3	4	7
					3	3	2	2					2	2	1	2	

Note:

- Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
- 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.
- Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
- Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
- Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- * The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
- On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
- For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

007EK3.01	Reactor Trip - Stabilization - Recovery / 1	4	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for reactor trip
008AK3.02	Pressurizer Vapor Space Accident / 3	3.6	4.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Why PORV or code safety exit temperature is below RCS or PZR temperature
009EK1.01	Small Break LOCA / 3	4.2	4.7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Natural circulation and cooling, including reflux boiling
011EK2.02	Large Break LOCA / 3	2.6	2.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pumps
015AG2.4.46	RCP Malfunctions / 4	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ability to verify that the alarms are consistent with the plant conditions.
025AK1.01	Loss of RHR System / 4	3.9	4.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of RHRS during all modes of operation
027AA2.14	Pressurizer Pressure Control System Malfunction / 3	2.8	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP injection flow
029EK2.06	ATWS / 1	2.9	3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Breakers, relays, and disconnects.
038EA1.44	Steam Gen. Tube Rupture / 3	3.4	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Level operating limits for S/Gs
040AG2.4.35	Steam Line Rupture - Excessive Heat Transfer / 4	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects
054AA1.04	Loss of Main Feedwater / 4	4.4	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HPI, under total feedwater loss conditions

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

055EK3.01	Station Blackout / 6	2.7	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Length of time for which battery capacity is designed
056AK1.04	Loss of Off-site Power / 6	3.1	3.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Definition of saturation conditions implicating for the systems
058AG2.4.1	Loss of DC Power / 6	4.6	4.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of EOP entry conditions and immediate action steps.
062AA2.02	Loss of Nuclear Svc Water / 4	2.9	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The cause of possible SWS loss
065AA2.01	Loss of Instrument Air / 8	2.9	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cause and effect of low-pressure instrument air alarm
077AA1.03	Generator Voltage and Electric Grid Disturbances / 6	3.8	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Voltage regulator controls
BE04EK2.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	4.2	4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

	RO	SRO																		
003AK3.06			Dropped Control Rod / 1	2.7	3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reset of demand position counter to zero
005AK1.06			Inoperable/Stuck Control Rod / 1	2.9	3.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bases for power limit for rod misalignment
028AA1.02			Pressurizer Level Malfunction / 2	3.4	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CVCS
032AK2.01			Loss of Source Range NI / 7	2.7	3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power supplies, including proper switch positions
069AK3.01			Loss of CTMT Integrity / 5	3.8	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Guidance contained in EOP for loss of containment integrity
BA02AA1.2			Loss of NNI-X / 7	3.4	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operating behavior characteristics of the facility.
BA07AK1.2			Flooding / 8	3.3	3.7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Normal, abnormal and emergency operating procedures associated with (Flooding).
BE03EA2.2			Inadequate Subcooling Margin / 4	3.5	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.
BE09EG2.4.30			Natural Circ. / 4	2.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

003A3.01	Reactor Coolant Pump	3.3	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Seal injection flow
004K1.35	Chemical and Volume Control	2.5	2.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Understanding of interface with LRS
005A1.06	Residual Heat Removal	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relationship (dependence) of time available to perform system isolation surveillance test to time for decay heat to reach high limit
005A4.05	Residual Heat Removal	2.8	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Position of RWST recirculation valve (locked when not in use, continuously monitored when in use).
006K4.18	Emergency Core Cooling	3.6	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Valves normally isolated from their control power
007A1.03	Pressurizer Relief/Quench Tank	2.6	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Monitoring quench tank temperature
007K5.02	Pressurizer Relief/Quench Tank	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Method of forming a steam bubble in the PZR
008K2.02	Component Cooling Water	3.0	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CCW pump, including emergency backup
008K3.01	Component Cooling Water	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loads cooled by CCWS
010A1.07	Pressurizer Pressure Control	3.7	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS pressure
012K6.04	Reactor Protection	3.3	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bypass-block circuits

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

013K5.02 Engineered Safety Features Actuation 2.9 3.3 Safety system logic and reliability

022K2.01 Containment Cooling 3.0 3.1 Containment cooling fans

026K1.01 Containment Spray 4.2 4.2 ECCS

026K4.02 Containment Spray 3.1 3.6 Neutralized boric acid to reduce corrosion and remove inorganic fission product iodine from steam (NAOH) in containment spray

039A2.03 Main and Reheat Steam 3.4 3.7 Indications and alarms for main steam and area radiation monitors (during SGTR)

059A3.03 Main Feedwater 2.5 2.6 Feedwater pump suction flow pressure

061K2.01 Auxiliary/Emergency Feedwater 3.2 3.3 AFW system MOVs

062K3.03 AC Electrical Distribution 3.7 3.9 DC system

063K3.02 DC Electrical Distribution 3.5 3.7 Components using DC control power

063K4.01 DC Electrical Distribution 2.7 3.0 Manual/automatic transfers of control

064A3.02 Emergency Diesel Generator 3.4 3.7 Minimum time for load pickup

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

064K6.08 Emergency Diesel Generator 3.2 3.3 Fuel oil storage tanks

073A4.03 Process Radiation Monitoring 3.1 3.2 Check source for operability demonstration

073G2.4.3 Process Radiation Monitoring 3.7 3.9 Ability to identify post-accident instrumentation.

076G2.1.28 Service Water 4.1 4.1 Knowledge of the purpose and function of major system components and controls.

078A4.01 Instrument Air 3.1 3.1 Pressure gauges

103A2.05 Containment 2.9 3.9 Emergency containment entry

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

	RO	SRO													
001K5.88	2.9	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effects of boron on temperature coefficient
011K3.03	3.2	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PZR PCS	
014K4.06	3.4	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Individual and group misalignment	
017A4.01	3.8	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actual in-core temperatures	
027G2.4.6	3.7	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge symptom based EOP mitigation strategies.	
029K1.04	3.0	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Purge system	
034A2.03	3.3	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mispositioned fuel element	
041A3.05	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Main steam pressure	
068K6.10	2.5	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Radiation monitors	
075K2.03	2.6	2.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency/essential SWS pumps	

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

G2.1.19	Conduct of operations	3.9	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use plant computer to evaluate system or component status.
G2.1.23	Conduct of operations	4.3	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
G2.1.6	Conduct of operations	3.8	4.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to manage the control room crew during plant transients.
G2.2.17	Equipment Control	2.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for managing maintenance activities during power operations.
G2.2.2	Equipment Control	4.6	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
G2.2.21	Equipment Control	2.9	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of pre- and post-maintenance operability requirements.
G2.3.11	Radiation Control	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to control radiation releases.
G2.3.7	Radiation Control	3.5	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to comply with radiation work permit requirements during normal or abnormal conditions
G2.4.4	Emergency Procedures/Plans	4.5	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
G2.4.47	Emergency Procedures/Plans	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

RO	SRO	NAME / SAFETY FUNCTION	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC
007EA2.04	/1	Reactor Trip - Stabilization - Recovery	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If reactor should have tripped but has not done so, manually trip the reactor and carry out actions in ATWS EOP
038EG2.4.20		Steam Gen. Tube Rupture / 3	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of operational implications of EOP warnings, cautions and notes.
057AA2.06		Loss of Vital AC Inst. Bus / 6	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AC instrument bus alarms for the inverter and alternate power source
062AG2.2.36		Loss of Nuclear Svc Water / 4	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
077AG2.2.37		Generator Voltage and Electric Grid Disturbances / 6	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to determine operability and/or availability of safety related equipment
BE05EA2.1		Steam Line Rupture - Excessive Heat Transfer / 4	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

TOPIC:

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

RO SRO

003AA2.05 Dropped Control Rod / 1 2.5 3.2 Interpretation of computer in-core TC map for dropped rod location

005AG2.4.18 Inoperable/Stuck Control Rod / 1 3.3 4.0 Knowledge of the specific bases for EOPs.

051AA2.02 Loss of Condenser Vacuum / 4 3.9 4.1 Conditions requiring reactor and/or turbine trip

BA05AG2.2.12 Emergency Diesel Actuation / 6 3.7 4.1 Knowledge of surveillance procedures.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

008G2.4.41	Component Cooling Water	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the emergency action level thresholds and classifications.
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010A2.01	Pressurizer Pressure Control	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heater failures
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022A2.02	Containment Cooling	2.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fan motor vibration
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026A2.09	Containment Spray	2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Radiation hazard potential of BWST
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059G2.1.25	Main Feedwater	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.
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KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

015A2.05 Nuclear Instrumentation 3.3 3.8 Core void formation

029A2.01 Containment Purge 2.9 3.6 Maintenance or other activity taking place inside containment

071G2.2.38 Waste Gas Disposal 3.6 4.5 Knowledge of conditions and limitations in the facility license.

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

G2.1.15	Conduct of operations	2.7	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of administrative requirements for temporary management directives such as standing orders, night orders, Operations memos, etc.
G2.1.31	Conduct of operations	4.6	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
G2.2.19	Equipment Control	2.3	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of maintenance work order requirements.
G2.2.7	Equipment Control	2.9	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for conducting special or infrequent tests
G2.3.4	Radiation Control	3.2	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.34	Emergency Procedures/Plans	4.2	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects
G2.4.8	Emergency Procedures/Plans	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

Facility: Crystal River Unit #3		Date of Exam: 09/12/11 thru 09/29/11
Examination Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: 1 (NRC)
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	RO & SRO – (CO1) – Perform an RCS boron change calculation. <i>K/A – G2.1.37 RO 4.3 SRO 4.6</i> OP-304
Conduct of Operations	D, R	RO & SRO – (CO2) – Calculate SDM with a misaligned rod. <i>K/A – G2.1.7 RO 4.4 SRO 4.7</i> SRO Only – After completing the SDM calculation determine required ITS actions, if any. <i>K/A – G2.2.40 SRO 4.7</i> SP-421
Equipment Control	M, R	RO & SRO – (EC1) – Perform a QPTR calculation. <i>K/A – G2.2.12 RO 3.7 SRO 4.1</i> SRO Only – After completing the QPTR calculation determine required ITS actions, if any. <i>K/A – G2.2.40 SRO 4.7</i> SP-303
Radiation Control	D, R	RO & SRO – (RC1) – Determine stay times using survey maps. <i>K/A – G2.3.4 RO 3.2 SRO 3.7</i> DOS-NGGC-0004
Emergency Procedures / Plan	D, P, R	SRO Only – (EP1) – Determine Emergency Action Level and Protective Action Recommendations. <i>K/A – 2.4.41 SRO 4.6</i> <i>K/A – 2.4.44 SRO 4.4</i> EM-202
Note:	All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.	
* Type Codes & Criteria:	(C)ontrol room, (S)imulator or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)	

Facility: Crystal River Unit #3		Date of Exam: 09/12/11 thru 09/23/11	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test Number: 1 (NRC)	
<i>Control Room systems[@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)</i>			
System / JPM Title		Type Code*	Safety Function
a.	CRDS – Perform actions of AP-504 K/A – 001A4.15 RO 3.1 SRO 3.1 (AP-504) [RO]	D, S	1
b.	ESFAS – Respond to an ES Actuation K/A – BW/E03EA1.1 RO 4.1 SRO 3.8 (EOP-3) [SRO-U] [RO, SRO-I]	A, EN, N, S	4 Primary
c.	PPCS – Respond to a stuck open PZR spray valve K/A – 010A4.01 RO 3.7 SRO 3.5 (AP-520) [RO, SRO-I]	A, D, L, P, S	3
d.	EFW – Establish Auxiliary Feedwater flow K/A – 061G2.1.20 RO 4.6 SRO 4.6 (EOP-04) [RO, SRO-I]	N, S	4 Secondary
e.	CSS – Initiate Reactor Building Spray K/A – 026A3.01 RO 4.3 SRO 4.5 (EM-225C) [SRO-U] [RO, SRO-I]	A, L, M, S	5
f.	EDG – Synchronize Off-Site Power with EDG-1A K/A – 064A4.09 RO 3.2 SRO 3.3 (AP-770) [RO, SRO-I]	D, S	6
g.	CWS – Start CWP-1C While at Power K/A – 075G2.1.31 RO 4.2 SRO 3.9 (OP-604) [SRO-U] [RO, SRO-I]	A, D, P, S	8
h.	WGS – Respond to a Waste Gas Header leak K/A – 060AA2.05 RO 3.7 SRO 4.2 (AP-250) [RO, SRO-I]	A, D, S	9
SPARE	MU – Restart a MUP following an RCS leak isolation K/A – 002A2.01 RO 4.3 SRO 4.4 (AP-520)	D, S	2
<i>In-Plant Systems* (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)</i>			
i.	ECCS – Respond to a CFT Low Pressure condition K/A – 006A1.13 RO 3.5 SRO 3.7 (AP-404) [SRO-U] [RO, SRO-I]	D, E, L, R	3
j.	HRPS – Place a Hydrogen Analyzer in Service K/A – 028A4.03 RO 3.1 SRO 3.3 (EOP-14) [RO, SRO-I]	A, D, E, L	5
k.	WGDS – Perform a Waste Gas Release to the RB K/A – 071G2.3.11 RO 3.8 SRO 4.3 (OP-412A) [SRO-U] [RO, SRO-I]	D, R	9
SPARE	FS/OTSG – Transfer excess secondary inventory to FST K/A – 038EK3.06 RO 4.2 SRO 4.5 (EOP-14, Enc. 9)	D, E	8
*	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes		Criteria for RO / SRO-I / SRO-U	
(A)lternate path			4-6 / 4-6 / 2-3
(C)ontrol room			
(D)irect from bank			$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant			$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	(control room system)		- / - / ≥ 1
(L)ow Power / Shutdown			$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1 (A)			$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	(randomly selected)		$\leq 3 / \leq 3 / \leq 2$
(R)CA			$\geq 1 / \geq 1 / \geq 1$
(S)imulator			

