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ES-401, Rev. 9E

PWR Examination Outline

Form ES-401-2

Facility: Oconee 2011-302 October 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	2	1				1	2				1	9	2	2	4
	Tier Totals	5	5	4				4	5				4	27	5	5	10
2. Plant Systems	1	3	3	2	2	3	2	3	2	3	3	2	28	2	3	5	
	2	1	0	1	1	1	1	1	1	1	1	10	1	1	1	3	
	Tier Totals	4	4	3	3	2	4	4	4	4	2	4	38	4	4	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:1. 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  $\pm 1$  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 that are not included on the outline should be added. Refer to ES-401, Attachment 2, 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.
- 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. 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.

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ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		007EA2.06 Ability to determine or interpret the following as they apply to a reactor trip: Occurrence of a reactor trip	4.3/4.5	
000008 Pressurizer Vapor Space Accident / 3		X					008AK2.02 Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: sensors and detectors	2.7/2.7	
000009 Small Break LOCA / 3									
000011 Large Break LOCA / 3 (SRO)					X		011EA2.01 Ability to determine or interpret the following as they apply to a Large Break LOCA: Actions to be taken based on RCS temperature and pressure-saturated and superheat	4.2/4.7	
000015/17 RCP Malfunctions / 4		X					015AK2.08 Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: CCWS	2.6/2.6	
000022 Loss of Rx Coolant Makeup / 2					X		022AA2.01 Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: whether charging line leak exists	3.4/3.3	
000022 Loss of Rx Coolant Makeup / 2 (SRO)					X		022AA2.04 Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: How long pressurizer level can be maintained within limits	2.9/3.8	
000025 Loss of RHR System / 4		X					025AK2.03 Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: service water or closed cooling water pumps	2.7/2.7	
000025 Loss of RHR System / 4 (SRO)						X	025G2.4.35 Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects	3.8/4.0	
000026 Loss of Component Cooling Water / 8				X			026AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: CCW temperature indications	3.1/3.1	
000027 Pressurizer Pressure Control System Malfunction / 3						X	027AG2.2.3 Knowledge of the design, procedural and operational differences between units	3.8/3.9	

000027 Pressurizer Pressure Control System Malfunction / 3 (SRO)						X	027AG2.2.22 Knowledge of limiting conditions for operations and safety limits	4.0/4.7	
000029 ATWS / 1				X			029EA1.13 Ability to operate and monitor the following as they apply to a ATWS: manual trip of main turbine	4.1/3.9	
000038 Steam Gen. Tube Rupture / 3 (SRO)						X	038EG2.1.20 Ability to execute procedure steps	4.6/4.6	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4			X				BE05EK3.4 Knowledge of the reasons for the following responses as they apply to the (Excessive Heat Transfer) RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.	3.8/3.8	
000054 (CE/E06) Loss of Main Feedwater / 4			X				054AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Actions contained in EOPs for loss of MFW	4.4/4.6	
000055 Station Blackout / 6				X			055EA1.01 Ability to operate and monitor the following as they apply to a Station Blackout:  Incore thermocouple temperatures	3.7/3.9	
000056 Loss of Off-site Power / 6	X						056AK1.03 Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Definition of subcooling: use of steam tables to determine it	3.1/3.4	
000057 Loss of Vital AC Inst. Bus / 6						X	057AG2.4.46 Ability to verify that the alarms are consistent with the plant conditions	4.2/4.2	
000057 Loss of Vital AC Inst. Bus / 6 (SRO)					X		057AA2.20 Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: Interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed to restore normal equipment operation	3.6/3.9	
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/critical low, alarm	3.3/3.6	
000062 Loss of Nuclear Svc Water / 4			X				062AK3.01 Knowledge of the reasons for the following responses as they apply to the loss of Nuclear Service Water: the conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.	3.2/3.5	

000065 Loss of Instrument Air / 8						X	065AG2.4.6 Knowledge of symptom based EOP mitigation strategies	3.7/4.7	
000077 Generator Voltage and Electric Grid Disturbances / 6	X						077AK1.02 Knowledge of the operational implications of the following concepts as they apply to Generator Voltage and Electric Grid Disturbances: Over-excitation	3.3/3.4	
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4									
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	X						BE04EK1.3 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).	4.0/4.0	
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									
WE11; Loss of Emergency Coolant Recirculation									
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18
SRO K/A Category Totals:					3	3	Group Point Total:		6

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1						X	001AG2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm	4.1/4.3	
000003 Dropped Control Rod / 1(SRO)						X	003AG2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions	4.0/4.6	
000005 Inoperable/Stuck Control Rod / 1(SRO)					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, in-core or loop temperature measurements	3.3/4.1	
000024 Emergency Boration / 1					X		024AA2.06 Ability to determine and interpret the following as they apply to the Emergency Boration: when boron dilution is taking place.	3.6/3.7	
000028 Pressurizer Level Malfunction / 2									
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7				X			033AA1.02 Ability to operate and / or monitor the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Level trip bypass	3.0/3.1	
000036 (BW/A08) Fuel Handling Accident / 8		X					036AK2.01 Knowledge of the interrelations between the Fuel Handling Incidents and the following: Fuel handling equipment	2.9/3.5	
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4(SRO)						X	051AG2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.2/4.4	
000059 Accidental Liquid RadWaste Rel. / 9									
000061 ARM System Alarms / 7					X		061AA2.04 Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Whether an alarm channel is functioning properly	3.1/3.5	

000067 Plant Fire On-site / 8			X					067AK3.04 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. (AOP action accepted).	3.3/4.1	
000068 (BW/A06) Control Room Evac. / 8										
000069 (W/E14) Loss of CTMT Integrity / 5										
000074 (W/E06&E07) Inad. Core Cooling / 4										
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 /										
BW/A02&A03 Loss of NNI-X/Y / 7										
BW/A04 Turbine Trip / 4			X					BA04AK2.1 Knowledge of the interrelations between the (Turbine Trip) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.5/3.3	
BW/A05 Emergency Diesel Actuation / 6 (SRO)						X		BA05AA2.2 Ability to determine and interpret the following as they apply to the (Emergency Diesel Actuation) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.5/3.8	
BW/A07 Flooding / 8	X							BA07AK1.2 Knowledge of the operational implications of the following concepts as (Flooding) Normal, abnormal and emergency operating procedures associated with (Flooding).	3.3/3.7	
BW/E03 Inadequate Subcooling Margin / 4										
BW/E08; W/E03 LOCA Cooldown - Depress. / 4	X							BE08EK1.1 Knowledge of the operational implications of the following concepts as they apply to the (LOCA Cooldown) Components, capacity, and function of emergency systems.	3.5/3.8	
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:	2	2	1	1	2	1	Group Point Total:			9
K/A Category Point Totals: (SRO)					2	2	Group Point Total:			4

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	
003 Reactor Coolant Pump			X									003K3.03 Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: Feedwater and emergency feedwater	2.8/3.1		
004 Chemical and Volume Control									X			004A3.01 Ability to monitor automatic operation of the CVCS, including: water and boron inventory	3.5/3.7		
004 Chemical and Volume Control										X		004A4.04 Ability to manually operate and/or monitor in the control room: calculation of boron concentration changes	3.2/3.6		
005 Residual Heat Removal											X	005G2.4.9 Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies	3.8/4.2		
006 Emergency Core Cooling									X			006A3.06 Ability to monitor automatic operation of the ECCS, including: Valve lineups	3.9/4.2		
006 Emergency Core Cooling		X										006K2.04 Knowledge of bus power supplies to the following: ESFAS-operated valves	3.6/3.8		
007 Pressurizer Relief/Quench Tank					X							007K5.02 Knowledge of the operational implications of the following concepts as they apply to PRTS: Method of forming a steam bubble in the PZR	3.1/3.4		
008 Component Cooling Water		X										008K2.02 Knowledge of bus power supplies to the following: CCW pump, including emergency backup	3.0/3.2		
010 Pressurizer Pressure Control					X							010K5.01 Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables	3.5/4.0		

010 Pressurizer Pressure Control						X							010K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: Pressure Detection systems	2.7/3.1	
012 Reactor Protection								X					012A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of instrument power	3.6/3.9	
012 Reactor Protection	X												012K1.06 Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: T/G	3.1/3.1	
013 Engineered Safety Features Actuation		X											013K2.01 Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control	3.6/3.8	
013 Engineered Safety Features Actuation					X								013K5.02 Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Safety system logic and reliability	2.9/3.3	
013 Engineered Safety Features Actuation (SRO)											X		013G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	3.2/4.2	
022 Containment Cooling	X												022K1.01 Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems: SWS/cooling system	3.5/3.7	
022 Containment Cooling (SRO)											X		022G2.4.31 Knowledge of annunciator alarms, indications or response procedures.	4.2/4.1	
025 Ice Condenser															
026 Containment Spray									X				026A3.01 Ability to monitor automatic operation of the CSS, including: Pump starts and correct MOV positioning	3.5/3.5	
026 Containment Spray (SRO)											X		026G2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2/4.2	

039 Main and Reheat Steam							X						039A1.10 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MRSS controls including: Air ejector PRM	2.9/3.0	
059 Main Feedwater			X										059K3.02 Knowledge of the effect that a loss or malfunction of the MFW will have on the following: AFW system	3.6/3.7	
059 Main Feedwater (SRO)								X					059A2.11 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of feedwater Control system	3.0/3.3	
061 Auxiliary/Emergency Feedwater						X							061K6.02 Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: pumps	2.6/2.7	
062 AC Electrical Distribution							X						062A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: significance of D/G load limits (May use Hydro Units or SSF)	3.4/3.8	
062 AC Electrical Distribution				X									062K4.10 Knowledge of ac distribution system design feature(s) and/or interlock(s) which provide for the following: Uninterruptable ac power sources	3.1/3.5	
063 DC Electrical Distribution										X			063A4.03 Ability to manually operate and/or monitor in the control room: Battery discharge rate	3.0/3.1	
064 Emergency Diesel Generator								X					064A2.09 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: Synchronization of the ED/G with other electric power supplies. (Use of Hydro unit acceptable)	3.1/3.3	

073 Process Radiation Monitoring				X											073K4.02 Knowledge of PRM system design feature(s) and/or interlock(s) which provide for the following: Letdown isolation on high-RCS activity	3.3/3.9	
076 Service Water											X				076A4.02 Ability to manually operate and/or monitor in the control room: SWS Valves	2.6/2.6	
076 Service Water	X														076K1.20 Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems: AFW	3.4/3.4	
078 Instrument Air												X			078G2.1.32 Ability to explain and apply system limits and precautions.	3.8/4.0	
103 Containment								X							103A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature, and humidity	3.7/4.1	
103 Containment (SRO)									X						103A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the containment system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations Containment evacuation (including recognition of the alarm)	3.5/3.6	
K/A Category Point Totals:	3	3	2	2	3	2	3	2	3	3	2	Group Point Total:				28	
K/A Category Point Totals: (SRO)								2			3	Group Point Total:				5	

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)										Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
001 Control Rod Drive						X						001K6.02 Knowledge of the effect of a loss or malfunction on the following CRDS components: Purpose and operation of sensors feeding into the CRDS	2.8/3.3	
002 Reactor Coolant				X								002K4.07 Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following: Contraction and expansion during heatup and cooldown	3.1/3.5	
011 Pressurizer Level Control														
014 Rod Position Indication														
015 Nuclear Instrumentation							X					015A1.07 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the NIS controls including: Changes in boron concentration	3.3/3.4	
016 Non-nuclear Instrumentation (SRO)											X	016G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4/4.7	
016 Non-nuclear Instrumentation			X									016K3.06 Knowledge of the effect that a loss or malfunction of the NNIS will have on the following: AFW system	3.5/3.7	
017 In-core Temperature Monitor														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge											X	029A4.04 Ability to manually operate and/or monitor in the control room: Containment evacuation signal	3.5/3.6	
033 Spent Fuel Pool Cooling											X	033G2.1.20 Ability to execute procedure steps	4.6/4.6	
034 Fuel Handling Equipment (SRO)					X							034K4.01 Knowledge of design feature(s) and/or interlock(s) which provide for the following: Fuel protection from binding and dropping	2.6/3.4	

035 Steam Generator																					
041 Steam Dump/Turbine Bypass Control																					
045 Main Turbine Generator																					
055 Condenser Air Removal																					
056 Condensate									X										056A2.04 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 mal-functions or operations: Loss of condensate pumps	2.6/2.8	
068 Liquid Radwaste																					
071 Waste Gas Disposal (SRO)									X										071A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Use of waste gas release monitors, radiation, gas flow rate, and totalizer	3.3/3.6	
071 Waste Gas Disposal					X														071K5.04 Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System: Relationship of hydrogen/oxygen concentrations to flammability	2.5/3.1	
072 Area Radiation Monitoring										X									072A3.01 Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment	2.9/3.1	
075 Circulating Water																					
079 Station Air	X																		079K1.01 Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems: IAS	3.0/3.1	
086 Fire Protection																					
K/A Category Point Totals:	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Group Point Total:		10
K/A Category Point Totals: (SRO)						1				1							1	1	Group Point Total:		3

Facility:	Watts Bar		Date of Exam:	8/23/2010 2010-301		
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1		3.1	
	2.1.27	Knowledge of system purpose and/or function.	3.9		4.0	
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.	2.9		3.9	
	2.1.1	Knowledge of conduct of operations requirements.			4.2	
	2.1.41	Knowledge of the refueling process.			3.7	
	Subtotal		3		2	
2. Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.7		4.1	
	2.2.13	Knowledge of tagging and clearance procedures.	4.1		4.3	
	2.2.36	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1		4.2	
	2.2.17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.			3.8	
	2.2.37	Ability to determine operability and/or availability of safety related equipment.			4.6	
	Subtotal		3		2	
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9		2.9	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4		3.8	
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.			2.9	
	Subtotal		2		1	
4. Emergency Procedures / Plan	2.4.16	Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.	3.5		4.4	
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6		4.4	
	2.4.18	Knowledge of the specific bases for EOPs.			4.0	
	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information)			4.1	
	Subtotal		2		2	
Tier 3 Point Total			10		7	

# DRAFT

**ES-301**

## Administrative Topics Outline

**Form ES-301-1**

Facility: <b>Oconee</b>		Date of Examination: <b>10/17/11</b>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <b>1</b>

  

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations Gen 2.1.7 (4.4/4.7)	<b>M, R</b>	Admin-130, <b>Perform manual RCS Leakage Calculation and TS determination</b> (SRO Only) (18 min)
Conduct of Operations Gen 2.1.45 (4.3/4.3)	<b>N, R</b>	Admin-137, <b>Determine Absolute Keowee lake Level and associated SLC requirements</b> (SRO Only) (10 min)
Equipment Control Gen 2.2.12 (3.7/4.1)	<b>M, R</b>	Admin-237, <b>Perform SG Downcomer Temperature Surveillance</b> (Both) (18 min)
Radiological Control Gen 2.3.4 (3.2/3.7)	<b>M, R</b>	Admin-330, <b>Calculate the Maximum Permissible Stay Time</b> (Both) (10 min)
Emergency Plan Gen 2.4.38 (2.4/4.4)	<b>M, R</b>	Admin-430, <b>Determine Emergency Classification and Protective Action Recommendations (Complete Emergency Notification Form)</b> (SRO Only) (20 min)

  

**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 ( $\leq 3$  for ROs;  $\leq 4$  for SROs & RO retakes)  
 (N)ew or (M)odified from bank ( $\geq 1$ )  
 (P)revious 2 exams ( $\leq 1$ ; randomly selected)

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ES-301

Administrative Topics Outline

Form ES-301-1

Facility: <b>Oconee</b>		Date of Examination: <b>10/17/11</b>
Examination Level: RO <input checked="checked" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <b>1</b>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations Gen 2.1.7 (4.4/4.7)	<b>M, R</b>	Admin-131, <b>Perform manual RCS Leakage Calculation</b> (RO Only) (18 min)
Conduct of Operations Gen 2.1.45 (4.3/4.3)	<b>N, R</b>	Admin-136, <b>Determine Absolute Keowee lake Level and SLC entry</b> (RO Only) (10 min)
Equipment Control Gen 2.2.12 (3.7/4.1)	<b>M, R</b>	Admin-237, <b>Perform SG Downcomer Temperature Surveillance</b> (Both) (18 min)
Radiological Control Gen 2.3.4 (3.2/3.7)	<b>M, R</b>	Admin-330, <b>Calculate the Maximum Permissible Stay Time</b> (Both) (10 min)
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 ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

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ES-301

Control Room/In-Plant Systems Outline

Form ES-301-2

Facility: <b>Oconee</b>		Date of Examination: <b>October, 2011</b>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <b>1</b>
Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. <b>CRO-111, Withdrawal of Safety Rod Gp 1 to 50%</b> OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10 min)	N, A, S, L	1
b. <b>CRO-207, Pressure makeup to CFT</b> Enclosure 4.7 of OP/1/A/1104/01 [KA: 006 A1.13 (3.5/3.7)] (10 min)	D, S	2
c. <b>CRO-302, Perform 1RC-66 Stroke Test</b> PT/1/A/0201/004 (1RC-66 Stroke Test) [KA: 010 A4.03 (4.0/3.8)] (10 min)	D, A, S, L	3
d. <b>CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)</b> EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. <b>CRO-407, Establish EFDW Flow Through Startup Valves</b> EOP, Encl. 5.27 (Alternate Methods for Controlling EFDW Flow) [KA: APE-054 AA2.04 (4.2/4.3)] (15 min)	D, A, S, E L	4S
f. <b>CRO-503, Perform Encl 5.35 (Cont. Isolation)</b> EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, A, S, L	5
g. <b>CRO-603, Perform a Manual Start of Keowee Hydro Unit 1</b> OP/0/A/1106/019, Encl 4.3 (KHU-1 Manual Startup) [KA: 062 A4.07 (3.1*/3.1*)] (15 min)	D, S	6
h. <b>CRO-901, Place RB Purge in Operation</b> OP/1/A/1102/014, Enclosure 4.1 [KA: 029 A2.03 (2.7/3.1)] (10 min)	D, L, S	9

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In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. <b>NLO-427, Reset an Emergency Feedwater Pump Turbine</b> EOP Enclosure 5.26 (Manual Start of TDEFDWP) [KA: 061 A2.04 (3.4/3.8)] (12 min)	D	4S
j. <b>NLO-710, Placing RB Hydrogen Analyzers in Service</b> EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3)] (15 min)	D, R, E	7
k. <b>NLO-801, Secure the operating Chiller and start standby Chiller</b> AP/1-2/A/1700/036 Encl 5.1 (Chiller Assessment and Restart) [KA: BW/E02 EA1.1 (4.0/3.6)] (15 min)	N, E	8
<p><sup>@</sup> 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.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	<p>4-6 / 4-6 / 2-3</p> <p><math>\leq 9 / \leq 8 / \leq 4</math>  <math>\geq 1 / \geq 1 / \geq 1</math>  - / - / <math>\geq 1</math> (control room system)  <math>\geq 1 / \geq 1 / \geq 1</math>  <math>\geq 2 / \geq 2 / \geq 1</math>  <math>\leq 3 / \leq 3 / \leq 2</math> (randomly selected)  <math>\geq 1 / \geq 1 / \geq 1</math></p>	

Facility: <b>Oconee</b>		Date of Examination: <b>October, 2011</b>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <b>1</b>
Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. <b>CRO-111, Withdrawal of Safety Rod Gp 1 to 50%</b> OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10 min)	N, A, S, L	1
b. <b>CRO-207, Pressure makeup to CFT</b> Enclosure 4.7 of OP/1/A/1104/01 [KA: 006 A1.13 (3.5/3.7)] (10 min)	D, S	2
c. <b>CRO-302, Perform 1RC-66 Stroke Test</b> PT/1/A/0201/004 (1RC-66 Stroke Test) [KA: 010 A4.03 (4.0/3.8)] (10 min)	D, A, S, L	3
d. <b>CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)</b> EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. <b>CRO-407, Establish EFDW Flow Through Startup Valves</b> EOP, Encl. 5.27 (Alternate Methods for Controlling EFDW Flow) [KA: APE-054 AA2.04 (4.2/4.3)] (15 min)	D, A, S, E, L	4S
f. <b>CRO-503, Perform Encl 5.35 (Cont. Isolation)</b> EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, A, S, L	5
g. <b>CRO-603, Perform a Manual Start of Keowee Hydro Unit 1</b> OP/0/A/1106/019, Encl 4.3 (KHU-1 Manual Startup) [KA: 062 A4.07 (3.1*/3.1*)] (15 min)	D, S	6
h. N/A		

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In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. <b>NLO-427, Reset an Emergency Feedwater Pump Turbine</b> EOP Enclosure 5.26 (Manual Start of TDEFDWP) [KA: 061 A2.04 (3.4/3.8)] (12 min)	D	4S
j. <b>NLO-710, Placing RB Hydrogen Analyzers in Service</b> EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3)] (15 min)	D, R, E	7
k. <b>NLO-801, Secure the operating Chiller and start standby Chiller</b> AP/1-2/A/1700/036 Encl 5.1 (Chiller Assessment and Restart) [KA: BW/E02 EA1.1 (4.0/3.6)] (15 min)	N, E	8
<sup>@</sup> 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 (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3  $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / $\geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$	

Facility: <b>Oconee</b>		Date of Examination: <b>October, 2011</b>
Exam Level: <b>RO</b> <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <b>1</b>
Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. <b>CRO-111, Withdrawal of Safety Rod Gp 1 to 50%</b> OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10min)	N, A, S, L	1
b. <b>N/A</b>		
c. <b>N/A</b>		
d. <b>CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)</b> EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. <b>N/A</b>		
f. <b>CRO-503, Perform Encl 5.35 (Cont. Isolation)</b> EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, A, S, L	5
g. <b>N/A</b>		
h. <b>N/A</b>		

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In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. <b>N/A</b>		
j. <b>NLO-710, Placing RB Hydrogen Analyzers in Service</b> EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3) (15 min)]	D, R, E	7
k. <b>NLO-801, Secure the operating Chiller and start standby Chiller</b> AP/1-2/A/1700/036 Encl 5.1 (Chiller Assessment and Restart) [KA: BW/E02 EA1.1 (4.0/3.6)] (15 min)	N, E	8
<b>@</b> 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 (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3  $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / $\geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$	