Draft Submittal

OCONEE JUNE 2005 EXAM
50-269, 270, & 287/2005-301

JUNE 20 - 24, 2005
JUNE 30, 2005 (WRITTEN)

DRAFT Written Exam Quality Checklist (ES-401-6)

& Written Exam Sample Plan

DRAFT

ES-401, Rev. 9E **Written Examination Quality Checklist** **Form ES-401-6**

Facility: **DRAFT Oconee SRO** Date of Exam: **6/30/2005**
Exam Level: RO/**SRO**

Item Description					Initial a	Initial b*	Initial c*
1.	Questions and answers are technically accurate and applicable to the facility.						
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.						
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401						
4.	The ~~facility licensee~~ NRC's sampling process was random and systematic (i.e., no more than 4 RO and/or 2 SRO questions were repeated from the last 2 NRC licensing exams).						
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed __ the audit exam was completed before the license exam was started X the examinations were developed independently __ the licensee certifies that there is no duplication __ other (explain)						
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank: 10	Modified: 3	New: 12			
7.	Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory: 24%	C/A: 76%				
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.						
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.						
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.						
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.						

	Printed Name / Signature	Date
a. Author	GEORGE W. LASICA /	6/2/2005
b. Facility Reviewer (*)		
c. NRC Chief Examiner (#)		
d. NRC Regional Supervisor		

Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

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ES-401, Rev. 9E **Written Examination Quality Checklist** **Form ES-401-6**

Facility: **DRAFT Oconee RO** 2005-301 Date of Exam: **6/30/2005** Exam Level: **RO** /SRO

Item Description					Initial a	Initial b*	Initial c#
1.	Questions and answers are technically accurate and applicable to the facility.						
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.						
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401				N/A	N/A	N/A
4.	The NRC's sampling process was random and systematic (i.e., no more than 4 RO and/or 2 SRO questions were repeated from the last 2 NRC licensing exams).						
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed __ the audit exam was completed before the license exam was started X the examinations were developed independently __ the licensee certifies that there is no duplication __ other (explain)						
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank	Modified	New			
		31	15	29			
7.	Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory	C/A				
		46.67%	53.33%				
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.						
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.						
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.						
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.						

	Printed Name / Signature	Date
a. Author	GERARD W. LASKE	6/2/2005
b. Facility Reviewer (*)		
c. NRC Chief Examiner (#)		
d. NRC Regional Supervisor		

Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

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FS-401 DRAFT PWR Examination Outline Form ES-401 2

RO

Facility: Oconee Date of Exam JUNE 30

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	Total
1. Emergency & Abnorma Plant Evoulutions	1	2	3	3				4	3			3	18					
	2	3	1	2				1	1			1	9					
	Tier Totals	5	4	5				5	4			4	27					
2. Plant Systems	1	3	3	2	3	3	2	2	1	3	3	3	28					
	2	1	1	1	1	1	1	1	2	0	1	0	10					
	Tier Totals	4	4	3	4	4	3	3	3	3	4	3	38					
3. Generic Knowledge and Abilities Category					1		2		3		4			1	2	3	4	
					3		3		2		2		10					

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1. 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.
2. 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.
3. 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.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6.* 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.
7. 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.
8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Reactor Trip - Stabilization - Recovery / 1	0	1	0	0	0	0	007EK2.02	Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Breakers, relays and disconnects	2.6	2.8
Pressurizer Vapor Space Accident / 3	0	0	0	0	1	0	008AA2.04	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	High-temperature computer alarm and alarm type	3.2	3.4
Small Break LOCA / 3	0	0	1	0	0	0	009EK3.07	Knowledge of the reasons for the following responses as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Increasing indication on CCWS process monitor: indicates in-leakage of radioactive liquids	3.3	3.6
Large Break LOCA / 3	0	1	0	0	0	0	011EK2.02	Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Pumps	2.6	2.7
RCP Malfunctions / 4	0	0	0	1	0	0	015AA1.12	Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	Reactor coolant loop flow meters	2.8	3.1
Loss of Rx Coolant Makeup / 2	0	0	0	1	0	0	022AA1.05	Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	RCP seal back pressure regulator valves and flow indicators	2.9	2.8
Loss of RHR System / 4	0	0	1	0	0	0	025AK3.02	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Isolation of RHR low-pressure piping prior to pressure increase above specified level	3.3	3.7
Loss of Component Cooling Water / 8	0	0	0	0	0	0	026AK1	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT	K/A Randomly Rejected	0	0

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
								EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)			
Pressurizer Pressure Control System Malfunction / 3	0	1	0	0	0	0	027AK2.03	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Controllers and positioners	2.6	2.8
ATWS / 1	0	0	0	0	0	1	029EG2.2.22	This is a Generic, no stem statement is associated.	Knowledge of limiting conditions for operations and safety limits.	3.4	4.1
Steam Gen. Tube Rupture / 3	0	0	0	0	0	0	038EA1.25	Ability to operate and / or monitor the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	K/A Randomly Rejected	2.6	2.4
Steam Line Rupture - Excessive Heat Transfer / 4	0	0	0	0	0	0	040AK1.02	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	K/A Randomly Rejected	3.2	3.6
Loss of Main Feedwater / 4	0	0	0	1	0	0	054AA1.02	Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	Manual startup of electric and steam-driven AFW pumps	4.4	4.4
Station Blackout / 6	0	0	0	0	0	0	055EA2.01	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.4	3.7
Loss of Off-site Power / 6	1	0	0	0	0	0	056AK1.04	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Definition of saturation conditions implication for the systems	3.1	3.2

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Loss of Vital AC Inst. Bus / 6	0	0	0	0	1	0	057AA2.13	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	VCT level and pressure indicators and recorders	3	3.4
Loss of DC Power / 6	0	0	0	0	0	0	058AK1.01	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	K/A Randomly Rejected	2.8	3.1
Loss of Nuclear Svc Water / 4	0	0	0	0	1	0	062AA2.01	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Location of a leak in the SWS	2.9	3.5
Loss of Instrument Air / 8	0	0	0	0	0	1	065AG2.1.27	This is a Generic, no stem statement is associated.	Knowledge of system purpose and or function.	2.8	2.9
Reactor Trip - Stabilization - Recovery / 1	0	0	1	0	0	0	BE02EK3.2	Knowledge of the reasons for the following responses as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Normal, abnormal and emergency operating procedures associated with (Vital System Status Verification).	3	4
Reactor Trip - Stabilization - Recovery / 1	1	0	0	0	0	0	BE10EK1.1	Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Components, capacity, and function of emergency systems.	4	4
Steam Line Rupture - Excessive Heat Transfer / 4	0	0	0	1	0	0	BE05EA1.1	Ability to operate and / or monitor the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	4.2	4.2

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	0	0	0	0	0	1	BE04EG2.4.6	This is a Generic. no stem statement is associated.	Knowledge symptom based EOP mitigation strategies.	3.1	4

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Continuous Rod Withdi	0	0	0	0	0	0	001AK1.23	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	K/A Randomly Rejected	2.6	2.9
Dropped Control Rod /	0	0	0	0	0	0	003AK2.05	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	K/A Randomly Rejected	2.5	2.8
Inoperable/Stuck Contr	0	0	0	0	0	0	005AA2.03	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.5	4.4
Emergency Boration / 1	1	0	0	0	0	0	024AK1.01	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Relationship between boron addition and change in T-ave	3.4	3.8
Pressurizer Level Malfu	0	0	0	0	0	0	028AK1.01	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	K/A Randomly Rejected	2.8	3.1
Loss of Source Range	0	0	0	0	0	0	032AK3.02	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	K/A Randomly Rejected	3.7	4.1
Loss of Intermediate Ri	0	0	0	0	0	0	033AK3.02	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	K/A Randomly Rejected	3.6	3.9
Fuel Handling Accident	0	0	0	0	0	0	036AK3.03	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 /	K/A Randomly Rejected	3.7	4.1

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
								45.6 / 45.13)			
Steam Generator Tube	0	0	0	0	0	0	037AK2	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	K/A Randomly Rejected	0	0
Loss of Condenser Vac	0	0	0	0	0	0	051AA2.02	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.9	4.1
Accidental Liquid RadV	1	0	0	0	0	0	059AK1.01	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Types of radiation, their units of intensity and the location of the sources of radiation in a nuclear power plant	2.7	3.1
Accidental Gaseous Ra	0	0	0	0	0	0	060AG2.4.31	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.3	3.4
ARM System Alarms /	0	0	0	0	0	0	061AA1.01	Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	K/A Randomly Rejected	3.6	3.6
Plant Fire On-site / 9 8	0	0	1	0	0	0	067AK3.04	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Actions contained in EOP for plant fire on site	3.3	4.1
Control Room Evac. / 8	0	0	0	0	0	0	068AK2.01	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	K/A Randomly Rejected	3.9	4
Loss of CTMT Integrity	0	0	0	0	1	0	069AA2.01	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 /	Loss of containment integrity	3.7	4.3

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
								45.13)			
Inad. Core Cooling / 4	0	0	0	0	0	0	074EK2.01	Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	K/A Randomly Rejected	3.6	3.8
High Reactor Coolant A	0	0	0	0	0	0	076AK3.06	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	K/A Randomly Rejected	3.2	3.8
23 Plant Runback / 1	0	0	0	1	0	0	BA01AA1.2	Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	Operating behavior characteristics of the facility.	3.2	3.5
Loss of NNI-X/Y / 7	0	0	0	0	0	0	BA02AA2.2	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	4	4
Turbine Trip / 4	0	0	0	0	0	0	BA04AK2.1	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	K/A Randomly Rejected	3.5	3.3
Emergency Diesel Actu	0	0	0	0	0	0	BE05EK3.3	Knowledge of the reasons for the following responses as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	K/A Randomly Rejected	4.2	3.8
24 Flooding / 8	0	1	0	0	0	0	BA07AK2.2	Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Facility s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.3	3.3

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Inadequate Subcooling	0	0	0	0	0	0	BE03EG2.4.6	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.1	4
LOCA Cooldown - Dep.	0	0	0	0	0	0	BE08EA1.1	Ability to operate and / or monitor the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	K/A Randomly Rejected	4	3.7
Natural Circ. / 4	0	0	0	0	0	0	BE09EG2.1.28	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.2	3.3
EOP Rules and Enclos	0	0	0	0	0	1	BE13EG2.4.4	This is a Generic, no stem statement is associated.	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4	4.3
Loss of NNI-X/Y / 7	0	0	1	0	0	0	BA03AK3.3	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.	2.5	3
EOP Rules and Enclos	1	0	0	0	0	0	BE14EK1.1	Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Components, capacity, and function of emergency systems.	3.4	3.4
Control Room Evac. / 8	0	0	0	0	0	0	BA06AK3.3	Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	K/A Randomly Rejected	4.2	4.2
Fuel Handling Accident	0	0	0	0	0	0	BA08AK1.1	Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	K/A Randomly Rejected	3.7	3.8

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO

Tier 2 Group 1

	Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
28	Reactor Coolant Pump	0	0	0	0	1	0	0	0	0	0	0	Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Effects of RCP coastdown on RCS parameters	003K5.02	2.8	3.2
29	Chemical and Volume Control	0	0	1	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	PZR level and pressure	004K3.07	3.8	4.1
30	Residual Heat Removal	1	0	0	0	0	0	0	0	0	0	0	Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	SIS	005K1.13	3.3	3.5
31	Emergency Core Cooling	0	1	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	Valve operators for accumulators	006K2.02	2.5	2.9
32	Pressurizer Relief/Quench Tank	0	0	1	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Containment	007K3.01	3.3	3.6
33	Component Cooling Water	0	0	0	0	0	0	1	0	0	0	0	Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	CCW temperature	008A1.02	2.9	3.1
34	Pressurizer Pressure Control	0	0	0	0	0	0	0	0	0	1	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	PZR spray valve	010A4.01	3.7	3.5
35	Reactor Protection	0	0	0	0	0	0	0	0	1	0	0	Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	Bistables	012A3.02	3.6	3.6
36	Engineered Safety	0	0	0	1	0	0	0	0	0	0	0	Knowledge of (SYSTEM) design	Continuous testing	013K4.15	2.6	3.2

March 12, 2005

Tier 2 oup 1

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Features Actuation												feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)				
Containment Cooling	0	0	0	1	0	0	0	0	0	0	0	Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Automatic containment isolation	022K4.03	3.6	4.0
Ice Condenser	0	0	0	0	0	0	0	0	0	0	0		K/A Rejected	025GG2.4.31	0	0
Containment Spray	1	0	0	0	0	0	0	0	0	0	0	Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	ECCS	026K1.01	4.2	4.2
Main and Reheat Steam	0	0	0	0	1	0	0	0	0	0	0	Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Bases for RCS cooldown limits	039K5.05	2.7	3.1
Main Feedwater	0	0	0	0	0	0	1	0	0	0	0	Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Feed Pump speed, including normal control speed for ICS	059A1.07	2.5	2.6
Auxiliary/Emergency Feedwater	0	0	0	0	1	0	0	0	0	0	0	Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Feed line voiding and water hammer	061K5.04	2.7	3.2
AC Electrical Distribution	1	0	0	0	0	0	0	0	0	0	0	Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Off-site power sources	062K1.04	3.7	4.2

March 12, 2005

Tier 2 Group 1

	Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
28	DC Electrical Distribution	0	0	0	0	0	0	0	0	0	0	1	This is a Generic. no stem statement is associated.	Ability to locate and operate components, including local controls.	063GG2.1.30	3.9	3.4
44	Emergency Diesel Generator	0	0	0	0	0	0	0	0	0	0	1	This is a Generic, no stem statement is associated.	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	064GG2.4.49	4.0	4.0
45	Process Radiation Monitoring	0	0	0	0	0	0	0	0	0	1	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	Effluent release	073A4.01	3.9	3.9
46	Service Water	0	0	0	0	0	0	0	0	0	0	1	This is a Generic, no stem statement is associated.	Knowledge of annunciators alarms and indications and use of the response instructions.	076GG2.4.31	3.3	3.4
47	Instrument Air	0	1	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	Instrument air compressor	078K2.01	2.7	2.9
48	Containment	0	0	0	0	0	0	0	0	0	1	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	Flow control, pressure control and temperature control valves, including pneumatic valve controller	103A4.01	3.2	3.3
	Ice Condenser	0	0	0	0	0	0	0	0	0	0	0		K/A Rejected	025GG2.1.28	0	0
49	Pressurizer Relief/Quench Tank	0	0	0	1	0	0	0	0	0	0	0	Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Quench tank cooling	007K4.01	2.6	2.9
50	Auxiliary/Emergency Feedwater	0	0	0	0	0	0	0	0	1	0	0	Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	Automatic AFW isolation	061A3.03	4.1	4.2
51	Containment	0	0	0	0	0	0	0	0	1	0	0	Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 /	Containment isolation	103A3.01	3.9	4.2

Tier 2 .oup 1

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
												45.5)				
Emergency Core Cooling	0	1	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	ESFAS-operated valves	006K2.04	3.6	3.8
Pressurizer Pressure Control	0	0	0	0	0	1	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	Pressure detection systems	010K6.01	2.7	3.1
Reactor Protection	0	0	0	0	0	1	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	Redundant channels	012K6.02	2.9	3.1
Pressurizer Relief/Quench Tank	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Overpressurization of the waste gas vent header	007A2.04	2.5	2.9

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Hydrogen Recombiner and Purge Control	0	0	1	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Hydrogen concentration in containment	028K3.01	3.3	4.0
Containment Purge	0	0	0	0	0	0	0	0	0	0	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	K/A Randomly Rejected	029A4.04	3.5	3.6
Spent Fuel Pool Cooling	0	0	0	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	K/A Randomly Rejected	033K3.02	2.8	3.2
Fuel Handling Equipment	1	0	0	0	0	0	0	0	0	0	0	Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	NIS	034K1.04	2.6	3.5
Steam Generator	0	0	0	0	0	0	0	0	0	1	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	Fill of dry S/G	035A4.02	2.7	2.8
Steam Dump/Turbine Bypass Control	0	0	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	K/A Randomly Rejected	041K2.01	2.8	2.9
Main Turbine Generator	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Control rod insertion limits exceeded (stabilize secondary)	045A2.12	2.5	2.8
Condenser Air Removal	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	055GG2.1.27	2.8	2.9

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Liquid Radwaste	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	068GG2.1.14	2.5	3.3
Waste Gas Disposal	0	0	0	0	0	0	0	0	0	0	0	Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	K/A Randomly Rejected	071A3.02	2.8	2.8
Area Radiation Monitoring	0	0	0	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	K/A Randomly Rejected	072K6	0	0
Circulating Water	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	075GG2.1.33	3.4	4.0
Station Air	0	0	0	0	0	0	0	0	0	0	0	Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	K/A Randomly Rejected	079A4.01	2.7	2.7
Fire Protection	0	0	0	0	0	0	0	0	0	0	0	Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	K/A Randomly Rejected	086K1.03	3.4	3.5
Control Rod Drive	0	0	0	0	0	1	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	Location and operation of RPIS	001K6.13	3.6	3.7
Reactor Coolant	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	002GG2.1.2	3.0	4.0
Pressurizer Level Control	0	0	0	1	0	0	0	0	0	0	0	Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	PZR level controller	011K4.02	3.3	3.4

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Rod Position Indication	0	0	0	0	0	0	1	0	0	0	0	Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Control rod position indication on control room panels	014A1.02	3.2	3.6
Nuclear Instrumentation	0	0	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	K/A Randomly Rejected	015K2.01	3.3	3.7
Non-nuclear Instrumentation	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Detector failure	016A2.01	3.0	3.1
In-core Temperature Monitor	0	0	0	0	1	0	0	0	0	0	0	Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Saturation and subcooling of water	017K5.02	3.7	4.0
Containment Iodine Removal	0	1	0	0	0	0	0	0	0	0	0	Knowledge of electrical power supplies to the following:(CFR: 41.7)	Fans	027K2.01	3.1	3.4
Condensate	0	0	0	0	0	0	0	0	0	0	0	Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	K/A Randomly Rejected	056K3	0	0

Tier 3

Group	KA	Topic	RO	SRO
Conduct of Operations	G2.1.10	Knowledge of conditions and limitations in the facility license.	2.7	3.9
Conduct of Operations	G2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or comp	3	3
Conduct of Operations	G2.1.29	Knowledge of how to conduct and verify valve lineups.	3.4	3.3
Equipment Control	G2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	2.6	3.8
Equipment Control	G2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety	2.5	3.7
Equipment Control	G2.2.3	(multi-unit) Knowledge of the design, procedural and operational differences between units.	3.1	3.3
Radiation Control	G2.3.2	Knowledge of facility ALARA program.	2.5	2.9
Radiation Control	G2.3.9	Knowledge of the process for performing a containment purge.	2.5	3.4
Emergency Procedures/Plan	G2.4.32	Knowledge of operator response to loss of all annunciators.	3.3	3.5
Emergency Procedures/Plan	G2.4.4	Ability to recognize abnormal indications for system operating parameters which are entry-level	4	4.3

ES-401 **DRAFT** PWR Examination Outline Form ES-4012

SRO

Facility: Ciconee Date of Exam June 99

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	Total
1. Emergency & Abnorma Plant Evoulution	1															4	2	6
	2															1	3	4
	Tier Totals															5	5	10
2. Plant Systems	1															3	2	5
	2															2	1	3
	Tier Totals															5	3	8
3. Generic Knowledge and Abilities Category					1		2		3		4			1	2	3	4	
														2	2	1	2	7

DRAFT

1. 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.
2. 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.
3. 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.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6.* 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.
7. 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.
8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Reactor Trip - Stabilization - Recovery / 1	0	0	0	0	1	0	007EA2.04	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	If reactor should have tripped but has not done so, manually trip the reactor and carry out actions in ATWS EOP	4.6	4.4
Pressurizer Vapor Space Accident / 3	0	0	0	0	0	1	008AG2.1.32	This is a Generic, no stem statement is associated.	Ability to explain and apply all system limits and precautions.	3.4	3.8
Small Break LOCA / 3	0	0	0	0	0	0	009EG2.4.6	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.1	4
Large Break LOCA / 3	0	0	0	0	0	0	011EG2.2.25	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.5	3.7
RCP Malfunctions / 4	0	0	0	0	0	1	015AG2.4.4	This is a Generic, no stem statement is associated.	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4	4.3
Loss of Rx Coolant Makeup / 2	0	0	0	0	0	0	022AG2.4.6	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.1	4
Loss of RHR System / 4	0	0	0	0	0	0	025AA2.06	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.2	3.4
Loss of Component Cooling Water / 8	0	0	0	0	0	0	026AA2.06	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	2.8	3.1
Pressurizer Pressure Control System Malfunction / 3	0	0	0	0	1	0	027AA2.17	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Allowable RCS temperature difference vs. reactor power	3.1	3.3

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
ATWS / 1	0	0	0	0	0	0	029EG2.2.25	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.5	3.7
Steam Gen. Tube Rupture / 3	0	0	0	0	0	0	038EG2.4.4	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4.3
Steam Line Rupture - Excessive Heat Transfer / 4	0	0	0	0	0	0	040AA2.02	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	4.6	4.7
Loss of Main Feedwater / 4	0	0	0	0	0	0	054AG2.1.33	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.4	4
Station Blackout / 6	0	0	0	0	0	0	055EG2.4.4	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4.3
Loss of Off-site Power / 6	0	0	0	0	0	0	056AA2.39	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.5	3.6
Loss of Vital AC Inst. Bus / 6	0	0	0	0	0	0	057AG2.4.49	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4
Loss of DC Power / 6	0	0	0	0	1	0	058AA2.01	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	That a loss of dc power has occurred; verification that substitute power sources have come on line	3.7	4.1
Loss of Nuclear Svc Water / 4	0	0	0	0	0	1	062AG2.4.1	This is a Generic, no stem statement is associated.	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	3.3

Tier 1 Group 1

Name/Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Loss of Instrument Air / 8	0	0	0	0	0	0	065AG2.4.49	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4
Reactor Trip - Stabilization - Recovery / 1	0	0	0	0	0	0	BE02EA2.2	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.2	3.8
Reactor Trip - Stabilization - Recovery / 1	0	0	0	0	0	0	BE10EA2.1	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	2.5	4
Steam Line Rupture - Excessive Heat Transfer / 4	0	0	0	0	0	0	BE05EA2.2	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.6	4
Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	0	0	0	0	0	0	BE04EA2.1	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.2	4.4

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Continuous Rod Withdr	0	0	0	0	0	0	001AG2.4.4	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4.3
Dropped Control Rod /	0	0	0	0	0	0	003AA2.04	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.4	3.6
Inoperable/Stuck Contr	0	0	0	0	0	0	005AG2.4.30	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.2	3.6
Emergency Boration / 1	0	0	0	0	0	0	024AG2.4.4	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4.3
Pressurizer Level Malfi	0	0	0	0	0	0	028AA2.10	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.3	3.4
Loss of Source Range	0	0	0	0	0	0	032AG2.1.32	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.4	3.8
Loss of Intermediate Ri	0	0	0	0	0	0	033AA2.13	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	2.2	2.8
Fuel Handling Accident	0	0	0	0	0	0	036AG2.4.30	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.2	3.6
Steam Generator Tube	0	0	0	0	0	0	037AA2.14	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	4	4.4

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Loss of Condenser Vac	0	0	0	0	0	1	051AG2.1.32	This is a Generic, no stem statement is associated.	Ability to explain and apply all system limits and precautions.	3.4	3.8
Accidental Liquid RadV	0	0	0	0	0	0	059AA2.06	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.5	3.8
Accidental Gaseous Ra	0	0	0	0	0	0	060AA2.05	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.7	4.2
ARM System Alarms /	0	0	0	0	0	0	061AA2.01	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.5	3.7
Plant Fire On-site / 8	0	0	0	0	0	0	067AG2.1.32	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.4	3.8
Control Room Evac. / 8	0	0	0	0	0	0	068AA2.11	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	4.3	4.4
Loss of CTMT Integrity	0	0	0	0	0	0	069AG2.2.25	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.5	3.7
Inad. Core Cooling / 4	0	0	0	0	0	0	074EA2.02	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	4.3	4.6
High Reactor Coolant A	0	0	0	0	0	0	076AG2.2.25	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.5	3.7

Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Plant Runback / 1	0	0	0	0	0	1	BA01AG2.2.22	This is a Generic, no stem statement is associated.	Knowledge of limiting conditions for operations and safety limits.	3.4	4.1
Loss of NNI-X/Y / 7	0	0	0	0	0	0	BA02AG2.4.1	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.3	3.3
Turbine Trip / 4	0	0	0	0	0	0	BA04AG2.4.6	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.1	4
Emergency Diesel Actu	0	0	0	0	0	0	BE05EA2.1	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3	4.2
Flooding / 8	0	0	0	0	0	0	BA07AG2.4.49	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4
Inadequate Subcooling	0	0	0	0	0	0	BE03EG2.4.4	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	4	4.3
LOCA Cooldown - Depi	0	0	0	0	1	0	BE08EA2.1	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	2.8	4.2
Natural Circ. / 4	0	0	0	0	0	0	BE09EG2.2.22	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.4	4.1
EOP Rules and Enclos	0	0	0	0	0	0	BE13EA2.1	Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.4	4

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Tier 1 Group 2

Name / Safety Function	K1	K2	K3	A1	A2	G	KA	Question Type	K/A Topic(s)	RO	SRO
Loss of NNI-X/Y / 7	0	0	0	0	1	0	BA03AA2.1	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.7	4
EOP Rules and Enclos	0	0	0	0	0	0	BE14EG2.1.32	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	3.4	3.8
Control Room Evac. / 8	0	0	0	0	0	0	BA06AG2.2.25	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	2.5	3.7
Fuel Handling Accident	0	0	0	0	0	0	BA08AA2.2	Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	K/A Randomly Rejected	3.8	4

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Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Reactor Coolant Pump	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	003A2.01	3.5	3.9
Chemical and Volume Control	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	004A2.28	3.7	4.3
Residual Heat Removal	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	RHR valve malfunction	005A2.04	2.9	2.9
Emergency Core Cooling	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Rupture of ECCS header	006A2.11	4.0	4.4
Pressurizer Relief/Quench Tank	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	007GG2.2.25	2.5	3.7
Component Cooling Water	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or	K/A Randomly Rejected	008A2.03	3.0	3.2

Tier 1 Group 1

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Pressurizer Pressure Control	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	010A2.03	4.1	4.2
Reactor Protection	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	012GG2.1.23	3.9	4.0
Engineered Safety Features Actuation	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	013GG2.4.49	4.0	4.0
Containment Cooling	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Fan motor over-current	022A2.01	2.5	2.7
Ice Condenser	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	025A2.04	3.0	3.2
Containment Spray	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	026GG2.2.25	2.5	3.7
Main and Reheat Steam	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those	K/A Randomly Rejected	039A2.04	3.4	3.7

Tier 2 Group 1

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
												abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)				
Main Feedwater	0	0	0	0	0	0	0	0	0	0	1	This is a Generic, no stem statement is associated.	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	059GG2.1.23	3.9	4.0
Auxiliary/Emergency Feedwater	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	061GG2.1.23	3.9	4.0
AC Electrical Distribution	0	0	0	0	0	0	0	0	0	0	1	This is a Generic, no stem statement is associated.	Knowledge of system status criteria which require the notification of plant personnel.	062GG2.1.14	2.5	3.3
DC Electrical Distribution	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	063GG2.1.30	3.9	3.4
Emergency Diesel Generator	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	064GG2.1.33	3.4	4.0
Process Radiation Monitoring	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	073GG2.2.25	2.5	3.7
Service Water	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	076A2.02	2.7	3.1
Instrument Air	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those	K/A Randomly Rejected	078A2	0	0

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Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
												abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)				
Containment	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	103A2.05	2.9	3.9
Emergency Diesel Generator	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	064GG2.1.28	3.2	3.3

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Control Rod Drive	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	001GG2.1.30	3.9	3.4
Reactor Coolant	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Loss of forced circulation	002A2.03	4.1	4.3
Pressurizer Level Control	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	011GG2.1.2	3.0	4.0
Rod Position Indication	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	014GG2.2.25	2.5	3.7
Nuclear Instrumentation	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	015GG2.4.30	2.2	3.6
Non-nuclear Instrumentation	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	016GG2.1.27	2.8	2.9
In-core Temperature Monitor	0	0	0	0	0	0	0	1	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Core damage	017A2.02	3.6	4.1
Containment Iodine Removal	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 /	K/A Randomly Rejected	027A2.01	3.0	3.3

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
												45.3 / 45.13)				
Hydrogen Recombiner and Purge Control	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	028GG2.4.30	2.2	3.6
Containment Purge	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	029GG2.4.31	3.3	3.4
Spent Fuel Pool Cooling	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	033GG2.1.28	3.2	3.3
Fuel Handling Equipment	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	034A2.03	3.3	4.0
Steam Generator	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	035A2.02	4.2	4.4
Steam Dump/Turbine Bypass Control	0	0	0	0	0	0	0	0	0	0	1	This is a Generic, no stem statement is associated.	Ability to explain and apply all system limits and precautions.	041GG2.1.32	3.4	3.8
Main Turbine Generator	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	045GG2.4.30	2.2	3.6
Condenser Air	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the	K/A Randomly Rejected	055A2	0	0

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO
Removal												following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)				
Liquid Radwaste	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	068GG2.1.32	3.4	3.8
Waste Gas Disposal	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	071GG2.1.30	3.9	3.4
Area Radiation Monitoring	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	072A2.01	2.7	2.9
Circulating Water	0	0	0	0	0	0	0	0	0	0	0	Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	K/A Randomly Rejected	075A2.02	2.5	2.7
Station Air	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	079GG2.4.31	3.3	3.4
Fire Protection	0	0	0	0	0	0	0	0	0	0	0	This is a Generic, no stem statement is associated.	K/A Randomly Rejected	086GG2.4.30	2.2	3.6
Condensate	0	0	0	0	0	0	0	0	0	0	0		K/A Rejected	056GG2.1.27	0	0

Tier 2 Group 2

Name / Safety Functio	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Question Type	K/A Topic(s)	KA	RO	SRO

Tier 3

Group	KA	Topic	RO	SRO
Conduct of Operations	G2.1.4	Knowledge of shift staffing requirements.	2.3	3.4
Conduct of Operations	G2.1.32	Ability to explain and apply all system limits and precautions.	3.4	3.8
Equipment Control	G2.2.32	Knowledge of the effects of alterations on core configuration.	2.3	3.3
Equipment Control	G2.2.11	Knowledge of the process for controlling temporary changes.	2.5	3.4
Radiation Control	G2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels	2.5	3.1
Emergency Procedures/Plan	G2.4.36	Knowledge of chemistry / health physics tasks during emergency operations.	2	2.8
Emergency Procedures/Plan	G2.4.38	Ability to take actions called for in the facility emergency plan, including (if required), supporti	2.2	4