

Facility: **GRAND GULF NUCLEAR STATION** Date of Examination: **8/26/2002 - 8/30/2002**Examination Level (circle one): **RO** / SRO Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	Knowledge / Ability	IMP	Additional K/A's	ORIGIN	NOTES
A.1	Plant Drawings	JPM GJPM-OP-ADM21 Given a component, determine the fuse(s) to be removed to de-energize the component and how the component will fail.	2.1.25	2.8		BANK NRC 5/2000	
	Operator Responsibilities (Condition Reports)	JPM GJPM-OP-ADM42 Given a plant discrepancy, initiate a condition report.	2.1.2	3.0		NEW	
A.2	Protective Tagging	JPM GJPM-OP-ADM41 Given an installed equipment clearance, perform the duties of an independent verifier.	2.2.13	3.6	2.1.2: 3.0	MOD	NRC 6/01 HPCS changed to LPCS
A.3	Radiation Control	JPM GJPM-OP-ADM34 Perform required actions to access the Controlled Access Area (CAA), determine requirements to enter a Contamination Area, and exit the CAA.	2.3.1	2.6		MOD Changed to Contam. Area	NRC 6/01 was entry and exit with entry rqmts to high contam area CFR 55.45 (a) 9 & 10
A.4	Emergency Plan Assessment	JPM GJPM-OP-ADM25 Given initial notification form, perform notification of offsite agencies using the Operational Hotline.	2.4.43	2.8	2.4.39: 3.3 2.4.30: 3.6	BANK NRC 5/2000	CFR 55.45 (a) 11

Facility: GRAND GULF NUCLEAR STATION		Date of Examination: 8/26/2002 - 8/30/2002				
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: <u>1</u>						
System / JPM Title / Type Codes*	Safety Function	Knowledge / Ability	IMP.	Additional K/A's	ORIGIN	NOTES
B.1. CONTROL ROOM SYSTEMS						
1. 241000 REACTOR / TURBINE PRESSURE REGULATING SYSTEM (N) (S) (L) (A) Operate the Turbine Pressure Control System to Lower Reactor Pressure (Pressure Regulator fault requiring use of Manual Jack) GJPM-RO-N3202	3	A4.06	3.9	A1.07: 3.8 A2.03: 4.1 A3.08: 3.8	NEW	CFR 55.45(a) 3, 4, 5 & 8
2. 204000 REACTOR WATER CLEANUP SYSTEM (RWCU) (D) (S) (L) (A) Align RWCU for Vessel Level Control (Faulted - Valve Failure) GJPM-RO-G3301	2	A1.01	3.1	A1.04: 2.8 A1.06: 2.8 A2.01: 3.2	BANK NRC 5/2000	Failure of G3-F234 CFR 55.45(a) 3 & 8
3. 295029 SUPPRESSION POOL LEVEL HIGH (D) (S) Lower Suppression Pool Level with HPCS GJPM-RO-E2209	5	EA1.02	3.1	209002 A3.01: 3.3 A4.01: 3.7 A4.02: 3.6 A4.14: 3.0	BANK NRC 3/1998	CFR 55.45(a) 8
4. 261000 STANDBY GAS TREATMENT SYSTEM (D) (S) (A) Place SBT Train in Standby with an Auto Start Signal Present (Faulted - High Rad) GJPM-RO-T4801	9	A4.03	3.0	A4.02: 3.1 A4.09: 2.7	BANK NRC 6/2001	CFR 55.45(a) 9
5. 295021 LOSS OF SHUTDOWN COOLING (ADHR) (M) (S) (A) Startup Alternate Decay Heat Removal in Reactor to Reactor Mode (E12-F042C fail on stroke) GJPM-RO-E1231	4	AA1.04	3.7	205000 A4.01: 3.7 A4.02: 3.6 A4.03: 3.6 A4.09: 3.1 A2.10: 2.9	MOD Added Valve failure	CFR 55.45(a) 5 & 8 NRC 5/2000

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System / JPM Title / Type Codes*	Safety Function	Knowledge / Ability	IMP.	Additional K/A's	ORIGIN	NOTES
6. 262001 AC ELECTRICAL DISTRIBUTION (N) (S) Transfer Electrical Loads from Service Transformer 21 to Service Transformer 11 GJPM-RO-R2730	6	A4.01	3.4	A4.02: 3.4 A4.04: 3.6 A4.05: 3.3 2.1.31: 4.2 2.1.30: 3.9	NEW	CFR 55.45(a) 8
7. 201005 ROD CONTROL AND INFORMATION SYSTEM (RCIS) (D) (C) Defeat Rod Control and Information System per EP2 Attachment 20. GJPM-RO-EP030	7	A2.03	3.2	A2.06: 3.2 295037 EA1.08: 3.6 295015 AA1.04: 3.4	BANK NRC 5/2000	CFR 55.45(a) 3 & 6 Also Safety Function 1
B.2. FACILITY WALK-THROUGH						
8. 295016 CONTROL ROOM ABANDONMENT (D) (P) (R) Align the Remote Shutdown Panel Alternate Shutdown Panels for a Fire in the Control Room GJPM-RO-C6108	7	AA1.07	4.2		BANK NRC 6/2001	CFR 55.45(a) 8 9, & 12 Emergency/ Abnormal
9. 201001 CONTROL ROD DRIVE (CRD) HYDRAULIC SYSTEM (D) (P) (R) Rotate the CRD Drive Water Filters GJPM-NLO-C1102	1	2.1.30	3.9	2.1.29: 3.4	BANK	CFR 55.45(a) 8 & 9
10. 286000 FIRE PROTECTION SYSTEM (D) (P) (A) Perform Local Start of Fire Pump Diesel after Failure to Start (Faulted) GJPM-NLO-P6401	8	A4.06	3.4	2.1.20: 4.3 2.1.30: 3.9	BANK NRC 5/2000	CFR 55.45(a) 6
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA						

Facility: **GRAND GULF NUCLEAR STATION** Date of Examination: **8/26/2002 - 8/30/2002**Examination Level (circle one): RO / **SRO** Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	Knowledge / Ability	IMP	Additional K/A's	ORIGIN	NOTES
A.1	Technical Specifications	JPM GJPM-SRO-ADM43 Given a component, determine Limiting Condition for Operations and complete LCO documentation.	2.1.12	4.0	2.2.23: 3.8	BANK	Different component
	Plant Safety Index (EOOS)	JPM GJPM-SRO-ADM46 Given plant conditions, determine the Plant Safety Index (EOOS).	2.1.19	3.0		BANK NRC 6/2001	Different component
A.2	Protective Tagging	JPM GJPM-SRO-ADM45 Given a clearance, perform the supervisory review of the clearance for adequacy and issue.	2.2.13	3.8	2.1.2: 4.0	NEW	
A.3	Radiation Control	JPM GJPM-SRO-ADM44 Perform required actions to access the Controlled Access Area (CAA), determine requirements to enter a High Radiation Area in an Emergency and authorization required, and exit the CAA.	2.3.1	3.0	2.3.4: 3.1	MOD	Changed to Planned Special Exposures CFR 55.45 (a) 9 & 10
A.4	Emergency Plan Action Levels	JPM GJPM-SRO-A&E40 Given conditions, determine the appropriate emergency classification and complete the required notification form.	2.4.41	4.1	2.4.30: 3.6	NEW	CFR 55.45 (a) 11

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Exam Level (circle one): RO / SRO(I) / SRO (U)		Operating Test No.: <u>1</u>					
System / JPM Title / Type Codes*	Safety Function	Knowledge / Ability	IMP.	Additional K/A's	ORIGIN	NOTES	
B.1. CONTROL ROOM SYSTEMS							
1. 295021 LOSS OF SHUTDOWN COOLING (ADHR) (M) (S) (A) Startup Alternate Decay Heat Removal in Reactor to Reactor Mode (E12-F042C fail on stroke) GJPM-RO-E1231	4	AA1.04	3.7	205000 A4.01: 3.7 A4.02: 3.6 A4.03: 3.6 A4.09: 3.1 A2.10: 2.9	MOD Added Valve failure	CFR 55.45(a) 5 & 8 NRC 5/2000	
2. 262001 AC ELECTRICAL DISTRIBUTION (N) (S) Transfer Electrical Loads from Service Transformer 21 to Service Transformer 11 GJPM-RO-R2730	6	A4.01	3.7	A4.02: 3.4 A4.04: 3.7 A4.05: 3.3 2.1.31: 3.9 2.1.30: 3.4	NEW	CFR 55.45(a) 8	
B.2. FACILITY WALK-THROUGH							
3. 295016 CONTROL ROOM ABANDONMENT (D) (P) (R) Align the Remote Shutdown Panel Alternate Shutdown Panels for a Fire in the Control Room GJPM-RO-C6108	7	AA1.07	4.3		BANK NRC 6/2001	CFR 55.45(a) 8 9, & 12 Emergency/ Abnormal	
4. 201001 CONTROL ROD DRIVE (CRD) HYDRAULIC SYSTEM (D) (P) (R) Rotate the CRD Drive Water Filters GJPM-NLO-C1102	1	2.1.30	3.4	2.1.29: 3.3	BANK	CFR 55.45(a) 8 & 9	
5. 286000 FIRE PROTECTION SYSTEM (D) (P) (A) Perform Local Start of Fire Pump Diesel after Failure to Start (Faulted) GJPM-NLO-P6401	8	A4.06	3.4	2.1.20: 4.2 2.1.30: 3.4	BANK NRC 5/2000	CFR 55.45(a) 6	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA							

BWR RO EXAMINATION OUTLINEFacility: **GRAND GULF NUCLEAR STATION**Date of Exam: **23 AUGUST 2002**

TIER	GROUP	K/A CATEGORY POINTS											POINT TOTAL
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G *	
1. Emergency & Abnormal Plant Evolutions	1	2	3	3				2	2			1	13
	2	3	4	3				4	4			1	19
	3	0	0	1				1	2			0	4
	TIER TOTAL	5	7	7				7	8			2	36
2. Plant Systems	1	5	2	2	3	3	4	1	3	2	1	2	28
	2	1	1	2	2	1	1	2	4	4	1	0	19
	3	1	0	0	0	0	0	1	2	0	0	0	4
	TIER TOTAL	7	3	4	5	4	5	4	9	6	2	2	51
3. Generic Knowledge & Abilities					CAT 1		CAT 2		CAT 3		CAT 4		13
					4		2		2		5		
Note:	1.	Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the “Tier Totals” in each K/A category shall not be less than two)											
	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 exam must total 100 points.											
	3.	Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant specific priorities.											
	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 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.											
	7.	On the following pages, enter the K/A numbers, a brief description of each topic, the topics’ importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.											

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1							ES-401-2	
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:		
295005 Main Turbine Generator Trip / 3 CFR41.5/41.6					05		Given a spurious Main Turbine Generator trip, determine the initial affect on Reactor Power and Reactor Pressure.	3.8	553 q 001	BOTH	AA2.04: 3.7 AA2.03: 3.1	BANK NRC 6/01			
295006 SCRAM / 1 CFR41.6/41.10/43.5					02		Describe the position of control rods following a reactor scram and how position is determined.	4.3	10 q002	BOTH	201005 A3.02: 3.5 A4.02: 3.7 201003 K4.05: 3.2 A3.01: 3.7 A4.02: 3.5	BANK NRC 6/01	Rx SCRAM Immediate Actions		
295007 High Reactor Pressure / 3 CFR41.5		01					Describe the response of the Turbine Pressure Control System on an increasing reactor pressure.	3.5	69 q003	BOTH	241000 K4.01: 3.8 A2.02: 3.7	BANK NRC 6/01			
295009 Low Reactor Water Level / 2 CFR41.5/43.5		03					Given plant conditions, identify the status of Recirculation pumps originally operating in fast speed with a lowering water level.	3.1	121 q004	BOTH	AK1.02: 3.0 AA1.03: 3.0	BANK NRC 3/98			
295010 High Drywell Pressure / 5 CFR41.5			04				Given plant parameters and elevated in-leakage into the Drywell, determine the status of reactor coolant system integrity.	3.5	286 q005	BOTH	AK3.05: 3.5 2.4.21: 3.7	BANK NRC 4/00	GGNS Drywell air leak		
295014 Inadvertent Reactivity Addition / 1 CFR41.1/41.2/41.6/43.6			01				With the reactor in startup conditions such that the reactor has dropped subcritical, what are the operator actions if a high worth control rod is withdrawn fully.	4.1	204 q006	BOTH		BANK NRC 6/01	Susquehanna reactivity event 7/98		
295015 Incomplete SCRAM / 1 CFR41.6/43.6			01				Describe the method to be used to allow the insertion of control rods using RCIS during an ATWS.	3.4	203 q007	BOTH		BANK NRC 6/01			
295024 High Drywell Pressure / 5 CFR41.9/41.10/43.5		14					Given conditions, determine ability to initiate Containment Spray per EOPs.	3.9	601 q008	BOTH		NEW	High Drywell pressure is EOP entry for CTMT Press Control		
295025 High Reactor Pressure / 3 CFR41.3/43.2	05						State the Reactor Vessel pressure Safety Limit and its basis.	4.4	30 q076	RO	EK1.02: 4.1 2.2.22: 3.4 2.2.25: 2.5	BANK NRC 12/00			
295031 Reactor Low Water Level / 2 CFR41.2/41.3/41.10/43.5	01						Given plant conditions and a low reactor water level, determine core cooling mechanism and adequacy.	4.6	309 q009	BOTH	2.1.1: 3.7 2.4.21: 3.7	BANK NRC 12/00			
PAGE 1 TOTAL TIER 1 GROUP 1	2	3	3	0	2	0	PAGE TOTAL # QUESTIONS	10							

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1			CONT.	ES-401-2			
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 CFR41.1/41.2/41.6/43.6				04			Determine when plant conditions allow the termination of Standby Liquid Control with multiple control rods stuck out and what is the basis.	4.5	216 q010	BOTH	EK1.04: 3.4 EK1.05: 3.4 EA2.03: 4.3	BANK NRC 4/00		
500000 High Containment Hydrogen Conc. / 5 CFR41.10/43.5						2. 1. 20	Given applicable SOP, graph, and plant conditions, determine the power settings for the Hydrogen Recombiners and time to full power.	4.3	219 q011	BOTH	EA1.03: 3.4 2.1.25: 2.8	BANK NRC 4/00	① moved to Generics	
295014 Inadvertent Reactivity Addition / 1 CFR41.6/43.6				02			Determine effects on the reactor of the fast opening a Recirc Flow Control Valve.	3.6	116 q012	BOTH	202002 K1.02: 4.2 K3.02: 4.0	BANK NRC 3/98		
PAGE 2 TOTAL TIER 1 GROUP 1	0	0	0	2	0	1	PAGE TOTAL # QUESTIONS	3						
PAGE 1 TOTAL TIER 1 GROUP 1	2	3	3	0	2	0	PAGE TOTAL # QUESTIONS	10						
K/A CATEGORY TOTALS:	2	3	3	2	2	1	TIER 1 GROUP 1 GROUP POINT TOTAL	13						

① 500000 random selection was EA. Topic covers both EA 1.03 operation of CTMT Atmosphere control system and Generic procedure usage; moved to Generics due to higher importance.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2					ES-401-2		
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 CFR41.5/41.10/43.5						2. 4. 11	Given plant conditions and the power to flow map, determine the actions to be taken.	3.4	602 q013	BOTH	2.4.1: 4.3 AA2.01: 3.5	MOD NRC 4/00	② moved to Generics	
295002 Loss of Main Condenser Vacuum / 3 CFR41.4/43.4				04			Describe the basis for the isolation of the Main Steam Isolation Valves on a loss of condenser vacuum.	3.3	220 q015	BOTH	AK3.05: 3.4	BANK NRC 4/00		
295003 Partial or Complete Loss of AC Power/ 6 CFR41.7		03					Given a lockout on BOP Transformer 12B, determine the configuration of the AC Distribution System.	3.7	507 q014	BOTH	AA1.01: 3.7	BANK NRC 6/01		
295004 Partial or Complete Loss of DC Power / 6														
295008 High Reactor Water Level / 2 CFR41.4/41.5	01						Identify the affects of a high Reactor Water Level on the Main Turbine and Reactor Feed Pump Turbines.	3.0	275 q016	BOTH	245000 A3.01: 3.6 259001 K6.07: 3.8	BANK NRC 6/01		
295011 High Containment Temperature / 5														
295012 High Drywell Temperature / 5														
295013 High Suppression Pool Water Temp. / 5 CFR41.5/41.10/43.2/43.5					01		During a surveillance operating RCIC, determine how often Suppression Pool Temperature is required to be monitored and the threshold for alternate actions.	3.8	q018	BOTH	AA1.02: 3.9 2.1.33: 3.4	NEW		
295016 Control Room Abandonment / 7 CFR41.5/41.10/43.5					02		Given parameters from the Remote Shutdown Panel indications, determine actual and Narrow Range RPV level.	4.2	603 q017	BOTH	2.1.25: 2.8 2.4.11: 3.4	MOD NRC 6/01		
295017 High Offsite Release Rate / 9 CFR41.11/41.13/43.4				08			Given plant conditions with MSIV Leakage Control System operating, determine the mechanism for monitoring radiological release to locations outside the Auxiliary Building.	3.1	q019	BOTH	AA1.09: 3.6	NEW		
PAGE 1 TOTAL TIER 1 GROUP 2	1	1	0	2	2	1	PAGE TOTAL # QUESTIONS	7						

② 295001 random selection was AA2. Topic moved to Generics that are in addition to the random selection.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2			CONT.		ES-401-2		
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295018 Partial or Complete Loss of CCW / 8 CFR41.4/41.10/43.5			03				Given a partial loss of Component Cooling Water, determine actions to be taken and their basis.	3.1	314 q020	BOTH		BANK NRC 12/00		
295019 Partial or Complete Loss of Inst. Air / 8 CFR41.4/41.10/43.5		14					Given a reduction in Instrument Air Header pressure, determine a possible cause.	3.2	q021	BOTH		NEW	New Air Dryers ③moved to AK2	
295020 Inadvertent Cont. Isolation / 5 & 7 CFR41.4/41.7/41.9		03					Given a loss of Instrument Air System pressure to the Auxiliary Building, determine the effects on the ability to remove heat from the Containment.	3.1	q022	BOTH	AK3.03: 3.2	NEW		
295022 Loss of CRD Pumps / 1 CFR41.5				04			Describe the effects on reactor water level during a reactor startup with minimal decay heat and a loss of CRD Pumps. (RWCU is lined up to blowdown to the main condenser to compensate for CRD flow.)	2.5	55 q023	BOTH	AK2.04: 2.5	BANK NRC 6/01		
295026 Suppression Pool High Water Temp. / 5 CFR41.7/41.9/41.10/41.14/43.5		01					Given plant conditions, determine when Suppression Pool Cooling is no longer effective and alternate actions are required.	3.9	301 q024	BOTH		BANK NRC 12/00		
295027 High Containment Temperature / 5 CFR41.9/41.10/43.2			03				Given plant conditions, determine the Technical Specification Bases for shutting down the Reactor due to a high Containment Temperature.	3.7	512 q025	BOTH	2.2.25: 2.5	BANK NRC 6/01		
295028 High Drywell Temperature / 5 CFR41.4/41.7				03			Given rising temperatures in the Reactor lower cavity area, determine the response of the Drywell Cooling system.	3.9	q26	BOTH	EK2.04: 3.6 EK3.04: 3.6	NEW		
295029 High Suppression Pool Water Level / 5 CFR41.9/41.10	01						Identify the bases for Emergency RPV Depressurization when Suppression Pool Level cannot be maintained below 24.4 feet.	3.4	513 q027	BOTH		BANK NRC 6/01		
295030 Low Suppression Pool Water Level / 5 CFR41.9/41.10/43.5					02		Evaluate Suppression Pool Temperature, with a Low Suppression Pool Level.	3.9	8 q028	BOTH		BANK NRC 6/01	Caution 2 EOP-2	
PAGE 2 TOTAL TIER 1 GROUP 2	1	3	2	2	1	0	PAGE TOTAL # QUESTIONS	9						

③ 295019 random selection AK1 has NONE. Moved selection to AK2 to support question concerning new Instrument Air Dryer System failures.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2			CONT.	ES-401-2			
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295033 High Secondary Containment Area Radiation Levels / 9 CFR41.12/43.4					03		Given operations during a Refueling outage, determine the cause of elevated radiation levels in the area of the Fuel Pool Cooling Heat Exchangers.	3.7	q029	BOTH		NEW	Fuel Pool HX in an open area of Sec CTMT	
295034 Secondary Containment Ventilation High Radiation / 9														
295038 High Offsite Release Rate / 9 CFR41.10/41.12/43.4/43.5	02						Given plant conditions and procedures, determine the protective action recommendations to be recommended to the state and local officials in an emergency.	4.2	q030	BOTH		BANK		
600000 Plant Fire On Site / 8 CFR41.10/43.5			04				Given a fire at the Hydrogen Bulk Storage Facility describe the actions to be taken to combat the fire.	2.8	q031	BOTH	2.4.25: 2.9 2.1.32: 3.4	NEW	④ moved to AK3	
PAGE 3 TOTAL TIER 1 GROUP 2	1	0	1	0	1	0	PAGE TOTAL # QUESTIONS	3						
PAGE 1 TOTAL TIER 1 GROUP 2	1	1	0	2	2	1	PAGE TOTAL # QUESTIONS	7						
PAGE 2 TOTAL TIER 1 GROUP 2	1	3	2	2	1	0	PAGE TOTAL # QUESTIONS	9						
K/A CATEGORY TOTALS:	3	4	3	4	4	1	TIER 1 GROUP 2 GROUP POINT TOTAL	19						

④ 600000 random selection was AA1. Topic was moved to AK3 due to limited discriminatory value of AA1 for Licensed Operators. AK3 allows testing of precaution.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 3					ES-401-2		
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:	
295021 Loss of Shutdown Cooling / 4 CFR41.5/41.10/43.5					01		Given plant parameters and the graphs from the Inadequate Decay Heat Removal ONEP, determine time to boil.	3.5	604 q032	BOTH	AK1.01: 3.6	MOD NRC 3/98	Multiple graphs for various conditions.	
295023 Refueling Accidents / 8														
295032 High Secondary Containment Area Temperature / 5 CFR41.4/41.10/43.5			03				Determine the systems affected by high temperatures in the RHR 'A' Pump Room.	3.8	48 q033	BOTH	EK3.07: 3.6 219000 A1.08: 3.7 A2.14: 4.1	BANK NRC 3/98	Steam leak at GGNS in Steam Condensing piping	
295035 Secondary Containment High Differential Pressure / 5 CFR41.4/41.7				02			Describe the operation of the Standby Gas Treatment System with regard to Auxiliary Building and Enclosure Building Pressures.	3.8	q034	BOTH		BANK		
295036 Secondary Containment High Sump/Area Water Level / 5 CFR41.4/41.10/43.5					03		Given a rising water level in an ECCS Pump Room, determine appropriate actions to be taken with regard to the overall plant operation.	3.4	58 q035	BOTH	EK3.03: 3.5 EA2.02: 3.1	BANK NRC 3/98	EOP-4	
K/A CATEGORY TOTALS:	0	0	1	1	2	0	TIER 1 GROUP 3 GROUP POINT TOTAL	4						

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1								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	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:			
201001 CRD Hydraulic CFR41.5/41.6					02							During a reactor scram with scram signals not reset, determine the CRD System flow rates.	2.6	q036	BOTH		MOD				
201005 RCIS CFR41.6/43.6						01						Given a failure of the Turbine First Stage pressure signal to RCIS, determine the mode of control rod movement.	3.2	q037	BOTH		NEW				
202002 Recirculation Flow Control CFR41.6								01				Given plant conditions following an actuation of EOC-RPT, determine the Recirculation Pump circuit breaker configuration.	3.4	q038	BOTH	202001 A2.15: 3.7	NEW	EOC-RPT changes 2002			
203000 RHR/LPCI: Injection Mode CFR41.8	17											State the basis for monitoring reactor pressure when aligning the RHR system for injection into the vessel for the LPCI mode.	4.0	60 q039	BOTH	K4.01: 4.2 K4.02: 3.3 A3.01: 3.8 A3.08: 4.1 A4.08: 4.3	BANK NRC 6/01	Where is pressure sensed on LPCI for operation of the injection valve			
209001 LPCS CFR41.7			02									Describe the method of operation of the ADS logic given LPCS and LPCI ‘A’ out of service during a LOCA.	3.8	q040	BOTH	218000 K6.01: 3.9 K6.02: 4.1	NEW	⑤ moved to K3			
209002 HPCS CFR41.7/41.8			01									Given a spurious initiation of the HPCS system, determine the effect on Reactor water level.	3.9	519 q041	BOTH	259002 A2.08: 4.5	BANK NRC 6/01				
211000 SLC CFR41.1/41.6/41.7/43.6										04		Given the initiation of Standby Liquid Control in an ATWS, discern the parameters indicating injection to the reactor.	4.5	q042	BOTH	A4.01: 3.9 A4.03: 4.1 A4.06: 3.9 A4.07: 3.6	NEW				
212000 RPS CFR41.6						01						Describe the response of the RPS Power System upon an ESF inverter loss.	3.6	102 q043	BOTH	K1.04: 3.4	BANK NRC 3/98				
215003 IRM CFR41.6		01										Identify the power supply to the Intermediate Range Nuclear Instrumentation.	2.5	q044	BOTH		NEW				
PAGE 1 TOTAL TIER 2 GROUP 1	1	1	2	0	1	2	0	1	0	1	0	PAGE TOTAL # QUESTIONS	9								

Ⓢ 209001 random selection K5. Topic moved to K3 due to low discriminatory value and importance values of Topic K5.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1							CONT.				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	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:
215004 Source Range Monitor CFR41.5/41.6											2.1.32	Determine the conditions that would allow the operation of Source Range Monitor detector drives.	3.4	q046	BOTH	A4.04: 3.2		@ moved to generics
215005 APRM / LPRM CFR41.6/41.7						03						Determine the affects on APRMs with reduced LPRM inputs.	3.1	326 q045	BOTH		BANK NRC 12/00	
216000 Nuclear Boiler Instrumentation CFR41.5	23											Determine the ability of the Recirculation Pumps to start based on Reactor Temperature.	3.3	122 q047	BOTH	202001 A4.01: 3.7	BANK NRC 3/98	
217000 RCIC CFR41.5/41.7/41.10							01					Given plant conditions, determine the operation of RCIC and indications of injection.	3.7	328 q048	BOTH		BANK NRC 12/00	
218000 ADS CFR41.7				03								Given plant conditions determine automatic operation of Automatic Depressurization.	3.8	q049	BOTH		NEW	
223001 Primary CTMT and Auxiliaries CFR41.7/41.8		08										Given plant conditions and electrical busses that are unavailable, determine which components are available.	2.7	528 q050	BOTH	K2.09: 2.7 K2.10: 2.7	BANK NRC 6/01	
223002 PCIS / Nuclear Steam Supply Shutoff CFR41.7/41.9								09				Given plant conditions, evaluate the systems that should actuate or isolate.	3.6	385 q051	BOTH	2.4.21: 3.7 2.4.4: 4.0	BANK NRC 12/00	
239002 SRVs CFR41.3	05											Describe the operation of the Safety Relief Valves in different modes of operation. (system air pressure or reactor pressure)	3.1	337 q052	BOTH		BANK NRC 12/00	
241000 Reactor / Turbine Pressure Regulator CFR41.5						11						Describe the response of the plant with a failure of the Main Stop and Control Valves closed with the reactor at power.	3.4	244 q053	BOTH	A1.01: 3.9 A1.02: 4.1 A1.07: 3.8	BANK NRC 4/00	
259001 Reactor Feedwater CFR41.5/41.10/43.5					03							Given a set of plant conditions, determine the operational limitations for the Reactor Feed Pump Turbines	2.8	548 q077	RO		BANK NRC 6/01	
259002 Reactor Water Level Control CFR41.5				10								Describe the operation of the Feedwater Level Control System on a failure of the Feed Flow input signal.	3.4	273 q078	RO	K6.04: 3.1	BANK NRC 4/00	
PAGE 2 TOTALS TIER 2 GROUP 1	2	1	0	2	1	2	1	1	0	0	1	PAGE 2 TOTAL # QUESTIONS	11					

© 215004 random section A4. Topic moved to generic that covers both the random selection A4.04 and generic 2.1.32.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1								CONT.		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	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:					
261000 SGTS CFR41.7/41.11				01								Given conditions determine the automatic operation of Standby Gas Treatment.	3.7	q054	BOTH		NEW						
264000 EDGs CFR41.4/41.7	04											Identify the signal that will automatically start the associated Standby Service Water System and align it to the Diesel Generator.	3.2	q079	RO		NEW						
217000 RCIC CFR41.7									01			Determine the indications of RCIC following overspeed trip and attempting to open the trip throttle valve.	3.5	676 q080	RO	A3.02: 3.6	MOD Aud 6/01						
202002 Recirculation Flow Control CFR41.6									01			Given plant conditions, identify the plant response to a Recirc Flow Control Runback.	3.6	235 q055	BOTH		BANK NRC 4/00	Recirc Pumps in abnormal pump configuration					
239002 SRVs CFR41.7					06							Describe the purpose of the SRV tailpipe vacuum breakers.	2.7	q081	RO	2.1.28: 3.2	NEW						
259001 Reactor Feedwater CFR41.4								01				Given a failure of the RFPT Lube Oil System, identify the Reactor Feedwater System response.	3.7	q056	BOTH	K1.11: 2.7 K4.06: 2.5 K6.09: 2.8	BANK						
259002 Reactor Water Level Control CFR41.4/41.7	03											Describe the effects on the Reactor Water Level Control System from a failure of the Narrow Range Reactor Water level signal.	3.8	q057	BOTH		BANK						
264000 EDGs CFR41.8											2. 4. 4	During degraded grid conditions, determine the response of the diesel generators.	4.0	11 q058	BOTH	K4.05: 3.2 A3.05: 3.4	BANK NRC 6/01						
PAGE 3 TOTALS TIER 2 GROUP 1	2	0	0	1	1	0	0	1	2	0	1	PAGE TOTAL # QUESTIONS	8										
PAGE 1 TOTALS TIER 2 GROUP 1	1	1	2	0	1	2	0	1	0	1	0	PAGE TOTAL # QUESTIONS	9										
PAGE 2 TOTALS TIER 2 GROUP 1	2	1	0	2	1	2	1	1	0	0	1	PAGE TOTAL # QUESTIONS	11										
K/A CATEGORY TOTALS:	5	2	2	3	3	4	1	3	2	1	2	TIER 2 GROUP 1 GROUP POINT TOTAL	28										

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2				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	TOPIC(S)	IMP	REC #	SRO/RO / BOTH	RELATED K/A	ORIGIN	NOTES:
201003 Control Rod and Drive Mechanism CFR41.6/41.10/43.5								08				Given conditions of the HCU, determine its status.	3.8	341 q082	RO		BANK NRC 12/00	
202001 Recirculation CFR41.3/41.5								10				Given plant conditions in regard to Reactor Recirc. Pump seals, determine the failed mechanism.	3.5	540 q059	BOTH	A1.09: 3.3 A1.10: 2.6	BANK NRC 6/01	
204000 RWCU CFR41.4			02									During a reactor startup and heatup, determine the effects on reactor water level with a loss of Reactor Water Cleanup operation.	3.1	q083	RO		NEW	
205000 Shutdown Cooling CFR41.2/41.3/41.4/41.5	03											Given plant conditions and configuration lineup, determine valid method for determining Reactor coolant temperature.	3.4	541 q060	BOTH	K3.03: 3.8 A1.03: 3.3 A1.06: 3.7 A1.08: 3.1	BANK NRC 6/01	
219000 RHR /LPCI Suppression Pool Cooling Mode CFR41.7					04							Describe the method used to control Suppression Pool Temperature and cooldown rate.	2.9	q061	BOTH	A4.12: 4.1	NEW	⑦ moved to K5
226001 RHR/LPCI: CTMT Spray Mode CFR41.7/41.8									07			Determine conditions that would result in automatic initiation of RHR Containment Spray mode.	3.5	q062	BOTH	A3.01: 3.0	BANK	⑧ moved to A3
239001 Main and Reheat Steam CFR41.4/41.14			03									Following an isolation of the Main Steam Isolation Valves, describe the operation of the Condensate and Feedwater Systems.	3.2	q084	RO	K1.22: 3.1	NEW	
245000 Main Turbine Gen. and Auxiliaries CFR41.4/41.10/43.5									10			Discuss the basis for the limit on Main Generator Reactive loading at GGNS.	2.5	44 q063	BOTH	K4.06: 2.7 A4.14: 2.5	BANK NRC 3/98	GGNS generator has lower limits due to reverse power
PAGE 1 TOTAL TIER 2 GROUP 2	1	0	2	0	1	0	0	2	2	0	0	PAGE TOTAL # QUESTIONS	8					

⑦ 219000 random selection K2. Topic moved to K5 due to low discriminatory value of K2 topic for RHR Suppression Pool Cooling.

⑧ 226001 random selection K5. Topic moved to A3 due to low discriminatory value of K5 topic for RHR Containment Spray Mode.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2												CONT.		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	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:									
256000 Reactor Condensate CFR41.4								08				Describe the effects of Low Pressure Feedwater Heater isolation on the Condensate System operation and plant operations.	3.1	294 q064	BOTH	A3.01: 2.7 A3.04: 3.0 A3.07: 2.9	BANK NRC 4/00										
262001 AC Electrical Distribution CFR41.4/41.7									04			Given a loss of offsite power and plant conditions, determine the type of load sequencing to occur on ESF busses.	3.4	q065	BOTH		MOD										
262002 UPS (AC/DC) CFR41.7/41.10/43.5									01			Concerning the ESF Static Inverters, identify the correct response of the inverter on a loss of normal power supply.	2.8	544 q066	BOTH	A2.01: 2.6 A1.01: 2.4	BANK NRC 6/01										
263000 DC Electrical Distribution CFR41.4		01										Identify the power supply to the DC Turbine Building Cooling Water Pump and its start signal.	3.1	q085	RO		NEW	⑨ moved to K2 Plant modification									
271000 Offgas CFR41.7/41.13										09		Determine the startup sequence of the Offgas system to prevent explosive mixtures from forming.	3.3	q086	RO	2.1.32: 3.4	NEW										
272000 Radiation Monitoring CFR41.10/41.11/43.4/43.5							01					Identify the normal radiation monitoring alarms received on a reactor down power from full power and their cause. (Hydrogen Water Chemistry)	3.2	q067	BOTH		NEW										
286000 Fire Protection CFR41.4								08				Discern the response of the Diesel Driven Fire Pumps on an auto start signal with a failure to start.	3.2	3 q068	BOTH	K5.05: 3.0 K4.07: 3.3 A3.01: 3.4 A4.06: 3.4	BANK NRC 3/98										
290001 Secondary CTMT CFR41.9						09						Describe the ability of Auxiliary Building Fire Protection system to be restored following Auxiliary Building isolation in conjunction with a loss of AC power.	3.4	264 q069	BOTH	A2.06: 3.7 286000 A2.09: 2.7	BANK NRC 4/00										
PAGE 2 TOTAL TIER 2 GROUP 2	0	1	0	0	0	1	1	2	2	1	0	PAGE TOTAL # QUESTIONS	8														

® 263000 random selection A3. Topic moved to K2 due to low discriminatory value of A3 and plant modification supports question from K2.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2				CONT.				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	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:			
290003 Control Room HVAC CFR41.7/41.11/43.4							05					Identify the response of the Control Room HVAC system upon receipt of radiation alarms.	3.2	q070	BOTH		NEW				
300000 Instrument Air CFR41.4/41.10/43.5				02								Describe the crosstie between Service and Instrument Air and when it occurs.	3.0	q071	BOTH		BANK	@ moved to K3			
400000 Component Cooling Water CFR41.4				01								Discuss the status of the standby feature of the ESF powered CCW pump during a LOCA.	3.4	105 q072	BOTH		BANK NRC 3/98				
PAGE 3 TOTALS	0	0	0	2	0	0	1	0	0	0	0	PAGE 3 TOTAL # QUESTIONS	3								
PAGE 1 TOTALS	1	0	2	0	1	0	0	2	2	0	0	PAGE 1 TOTAL # QUESTIONS	8								
PAGE 2 TOTALS	0	1	0	0	0	1	1	2	2	1	0	PAGE 2 TOTAL # QUESTIONS	8								
K/A CATEGORY TOTALS:	1	1	2	2	1	1	2	4	4	1	0	TIER 2 GROUP 2 GROUP POINT TOTAL	19								

Ⓢ 300000 random selection A4. Topic moved to K3 due to low discriminatory value of single subject in A4.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR RO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 3							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	TOPIC(S)	IMP	REC #	SRO/RO / BOTH	RELATED K/A	ORIGIN	NOTES:		
215001 Traversing In-core Probe																				
233000 Fuel Pool Cooling and Cleanup CFR41.7								07				Identify the Tech Spec Limits on Spent Fuel Pool Temperature.	3.0	q087	RO		NEW			
234000 Fuel Handling Equipment																				
239003 MSIV Leakage Control																				
268000 Radwaste CFR41.13/43.4							02					Given conditions and a Liquid Radwaste discharge in progress, determine whether a release will continue.	2.6	110 q073	BOTH	272000 A3.03: 3.0	BANK NRC 3/98	Process Rad Monitor isolation		
288000 Plant Ventilation CFR41.7	05											Describe the response of the Auxiliary Building Ventilation System on High Radiation.	3.3	q074	BOTH	K1.02: 3.4	NEW			
290002 Reactor Vessel Internals CFR41.3/41.14/43.2								05				Identify the consequence of exceeding a thermal limit.	3.7	q075	BOTH	K5.01: 3.5	NEW	♣moved to A2		
K/A CATEGORY TOTALS:	1	0	0	0	0	0	1	2	0	0	0	TIER 2 GROUP 3 GROUP POINT TOTAL	4							

♣290002 random selection A1. Topic moved to A2 due to no subjects in A1.

GRAND GULF NUCLEAR STATION AUGUST 2002					BWR RO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES TIER 3					ES-401-5	
CATEGORY	C1	C2	C3	C4	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:
CONDUCT OF OPERATIONS – Mode of Operation CFR41.10/43.1	2.1.22				Given plant conditions determine the Tech Spec Operational Mode of the plant.	2.8	585 q088	RO		BANK NRC 6/01	
CONDUCT OF OPERATIONS – Conduct of Operations Requirements CFR41.10/43.5	2.1.1				Given components, determine components that are CONTROLS of the facility.	3.7	q089	RO		NEW	
CONDUCT OF OPERATIONS – Shift Turnover CFR41.10/43.5	2.1.3				Given a change of operators at other than normal shift turnover, identify requirements for relief.	3.0	q090	RO		NEW	
CONDUCT OF OPERATIONS – Component purpose CFR41.4	2.1.28				Identify the purpose for injecting Oxygen into the Condensate System.	3.2	q091	RO		NEW	
EQUIPMENT CONTROL – Configuration Control CFR41.10/43.5		2.2.11			Given a component temporarily out of normal alignment per system operating instructions, determine the tracking mechanism to be employed.	2.5	387 q092	RO		BANK NRC 12/00	SOER 98-1 Safety System Status Control
EQUIPMENT CONTROL – Protective Tagging CFR41.10/43.5		2.2.13			Identify the proper method of tagging an air-operated component for system isolation.	3.6	q093	RO		NEW	
RADIATION CONTROL - Radiation Reduction CFR41.12/43.4			2.3.10		Identify methods of reducing radiation levels in work areas.	2.9	q094	RO		NEW	
RADIATION CONTROL – ALARA CFR41.10/43.4			2.3.2		Describe the personnel hazards when operating RHR in Suppression Pool Cooling mode. (ALARA)	2.5	287 q095	RO	2.1.32: 3.4	BANK NRC 6/01	Internal Hazard to personnel
EMERGENCY PROCEDURES / PLAN – EOP/SAP CFR41.10/43.5				2.4.4	Given plan conditions, identify the Emergency Operating Procedures (SAP) requiring implementation.	4.0	298 q096	RO		BANK NRC 4/00	Entry into SAP
EMERGENCY PROCEDURES / PLAN – Local Operator Emergency Response CFR41.10/43.5				2.4.35	Describe the response of Non-Licensed Operators during implementation of the Emergency Plan	3.3	577 q097	RO		BANK NRC 6/01	E-Plan changes 2/2001
EMERGENCY PROCEDURES / PLAN – AOP Immediate Operator Actions CFR41.10/43.5				2.4.49	Given plant conditions, identify the immediate operator actions to be taken.	4.0	q098	RO		NEW	AOP Immediate actions
EMERGENCY PROCEDURES / PLAN – Communications CFR41.10/43.5				2.4.43	Identify methods and times for notification of Offsite agencies in the event of Emergency Plan activation.	2.8	q099	RO		NEW	
EMERGENCY PROCEDURES / PLAN – Fire Protection actions CFR41.10/43.5				2.4.25	Describe the Control Room Operator Actions for a fire in Division I Diesel Generator Room.	2.9	578 q100	RO		BANK NRC 6/01	
K/A CATEGORY TOTALS:	4	2	2	5	TIER 3 GROUP POINT TOTAL	13					

BWR SRO EXAMINATION OUTLINEFacility: **GRAND GULF NUCLEAR STATION**Date of Exam: **23 AUGUST 2002**

TIER	GROUP	K/A CATEGORY POINTS											POINT TOTAL
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G *	
1. Emergency & Abnormal Plant Evolutions	1	4	5	4				7	5			1	26
	2	2	3	3				4	4			1	17
	TIER TOTAL	6	8	7				11	9			2	43
2. Plant Systems	1	3	1	2	2	0	5	1	2	3	2	2	23
	2	1	1	0	2	2	0	3	3	1	0	0	13
	3	1	0	0	0	0	0	1	2	0	0	0	4
	TIER TOTAL	5	2	2	4	2	5	5	7	4	2	2	40
3. Generic Knowledge & Abilities					CAT 1		CAT 2		CAT 3		CAT 4		17
					5		4		2		6		
Note:	<div><div>1.</div><div>Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the “Tier Totals” in each K/A category shall not be less than two)</div></div> <div><div>2.</div><div>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 exam must total 100 points.</div></div> <div><div>3.</div><div>Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant specific priorities.</div></div> <div><div>4.</div><div>Systems / evolutions within each group are identified on the associated outline.</div></div> <div><div>5.</div><div>The shaded areas are not applicable to the category tier.</div></div> <div><div>6.*</div><div>The generic K/As in Tiers 1 and 2 shall be selected from section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</div></div> <div><div>7.</div><div>On the following pages, enter the K/A numbers, a brief description of each topic, the topics’ importance ratings for the SRO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</div></div>												

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR SRO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1							ES-401-1	
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:		
295003 Partial or Complete Loss of AC Power/ 6 CFR41.7				01			Given a lockout on BOP Transformer 12B, determine the configuration of the AC Distribution System.	3.8	507 q014	BOTH	AK2.03: 3.9	BANK NRC 6/01			
295006 SCRAM / 1 CFR41.6/41.10/43.5					02		Describe the position of control rods following a reactor scram and how position is determined.	4.4	10 q002	BOTH	201005 A3.02: 3.5 A4.02: 3.7 201003 K4.05: 3.3 A3.01: 3.6 A4.03: 3.5	BANK NRC 6/01	Rx SCRAM Immediate Actions		
295007 High Reactor Pressure / 3 CFR41.5		01					Describe the response of the Turbine Pressure Control System on an increasing reactor pressure.	3.7	69 q003	BOTH	241000 K4.01: 3.8 A2.02: 3.7	BANK NRC 6/01			
295009 Low Reactor Water Level / 2 CFR41.5/43.5	02						Given plant conditions, identify the status of Recirculation pumps originally operating in fast speed with a lowering water level.	3.1	121 q004	BOTH	AK2.03: 3.2 AA1.03: 3.1	BANK NRC 3/98			
295010 High Drywell Pressure / 5 CFR41.5			04				Given plant parameters and elevated in-leakage into the Drywell, determine the status of reactor coolant system integrity.	3.8	286 q005	BOTH	AK3.05: 3.4 2.4.21: 4.3	BANK NRC 4/00	GGNS Drywell air leak		
295013 High Suppression Pool Water Temp. / 5 CFR41.5/41.10/43.2/43.5					01		During a surveillance operating RCIC, determine how often Suppression Pool Temperature is required to be monitored and the threshold for alternate actions.	4.0	q018	BOTH	AA1.02: 3.9 2.1.33: 4.0	NEW			
295014 Inadvertent Reactivity Addition / 1 CFR41.1/41.2/41.6/43.6			01				With the reactor in startup conditions such that the reactor has dropped subcritical, what are the operator actions if a high worth control rod is withdrawn fully.	4.1	204 q006	BOTH		BANK NRC 6/01	Susquehanna reactivity event 7/98		
295015 Incomplete SCRAM / 1 CFR41.6/43.6			01				Describe the method to be used to allow the insertion of control rods using RCIS during an ATWS.	3.7	203 q007	BOTH		BANK NRC 6/01			
295016 Control Room Abandonment / 7 CFR41.7/41.10/43.5				04			Determine the impact of operation of circuit breakers during operations from the Remote Shutdown Panel.	3.2	701 q076	SRO	239001 K2.01: 3.3	MOD NRC 3/98			
295017 High Offsite Release Rate / 9 CFR41.11/41.13/43.4				08			Given plant conditions with MSIV Leakage Control System operating, determine the mechanism for monitoring radiological release to locations outside the Auxiliary Building.	3.1	q019	BOTH	AA1.09: 3.6	NEW			
PAGE 1 TOTAL TIER 1 GROUP 1	0	2	3	3	2	0	PAGE TOTAL # QUESTIONS	10							

GRAND GULF NUCLEAR STATION AUGUST 2002				BWR SRO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1				CONT.		ES-401-1			
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:
295023 Refueling Accidents / 8 CFR41.2/41.6/43.6/43.7				03			Describe the requirements to ensure proper positioning of spent fuel bundles being moved on the Refueling Platform Grapple.	3.6	187 q077	SRO		BANK NRC 6/01	Damaged Fuel at RBS
295024 High Drywell Pressure / 5 CFR41.9/41.10/43.5		14					Given conditions determine ability to initiate Containment Spray per EOPs.	3.9	601 q008	BOTH		NEW	High Drywell Pressure is EP entry for CTMT Press. Control
295025 High Reactor Pressure / 3 CFR41.3/43.2	05						State the Reactor Vessel pressure Safety Limit and its basis and actions to be taken if violated.	4.7	q080	SRO	2.2.22: 4.1 2.2.25: 3.7 EK1.02: 4.2	MOD	
295026 Suppression Pool High Water Temp. / 5 CFR41.7/41.9/41.10/41.14/43.5		01					Given plant conditions, determine when Suppression Pool Cooling is no longer effective and alternate actions are required.	4.0	301 q024	BOTH		BANK NRC 12/00	
295027 High Containment Temperature / 5 CFR41.9/41.10/43.2			03				Given plant conditions, determine the Technical Specification Bases for shutting down the Reactor due to a high Containment Temperature.	3.7	512 q025	BOTH	2.2.25: 3.7	BANK NRC 6/01	
295030 Low Suppression Pool Water Level / 5 CFR41.9/41.10/43.5				04			Given plant conditions, determine the method to use to makeup inventory to the Suppression Pool.	4.0	q079	SRO		NEW	
295031 Reactor Low Water Level / 2 CFR41.2/41.3/41.10/43.5	01						Given plant conditions and a low reactor water level, determine core cooling mechanism and adequacy.	4.7	309 q009	BOTH	2.1.1: 3.8 2.4.21: 4.3	BANK NRC 12/00	
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 CFR41.1/41.2/41.6/43.6				04			Determine when plant conditions allow the termination of Standby Liquid Control with multiple control rods stuck out and what is the basis.	4.5	216 q010	BOTH	EK1.04: 3.6 EK1.05: 3.6 EA2.03: 4.4	BANK NRC 4/00	
295038 High Offsite Release Rate / 9 CFR41.10/41.12/43.4/43.5	02						Given plant conditions and procedures, determine the protective action recommendations to be recommended to the state and local officials in an emergency.	4.4	q030	BOTH	2.4.44: 4.0	BANK	
500000 High Containment Hydrogen Conc. / 5 CFR41.10/43.5	01						Determine the bases for the Hydrogen Control leg of EP 3.	3.9	505 q078	SRO	2.4.18: 3.6	BANK NRC 6/01	
295009 Low Reactor Water Level / 2 CFR41.7/43.5					02		Given a steam flow / feed flow mismatch and plant conditions, determine the reactor water level response and response of Reactor Water Level control.	3.7	q081	SRO		NEW	♠ moved to AA2
PAGE 2 TOTAL TIER 1 GROUP 1	4	2	1	3	1	0	PAGE TOTAL # QUESTIONS	11					

♠ 295009 random selection AK3. Topic is adequately covered on other questions, moved to topic AA2.

GRAND GULF NUCLEAR STATION AUGUST 2002				BWR SRO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1				CONT.				ES-401-1		
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295003 Partial or Complete Loss of AC Power / 6 CFR41.4/43.5		03					During a station blackout with DG 13 available, determine the alignment to supply power from 17AC to 16AB.	3.9	q082	SRO	AK1.06: 4.0 AA1.01: 3.8	NEW		
295016 Control Room Abandonment / 7 CFR41.5/41.10/43.5					02		Given parameters from the Remote Shutdown Panel indications, determine actual and Narrow Range RPV level.	4.3	603 q017	BOTH	2.1.25: 3.1 2.4.4: 3.6	MOD NRC 6/01		
295014 Inadvertent Reactivity Addition / 1 CFR41.6/43.6				02			Determine effects on the reactor of the fast opening a Recirc Flow Control Valve.	3.8	116 q012	BOTH	202002 K1.02: 4.2 K3.02: 4.0	BANK NRC 3/98		
295030 Low Suppression Pool Water Level / 5 CFR41.7/41.9					02		Evaluate Suppression Pool Temperature, with a Low Suppression Pool Level.	3.9	8 q028	BOTH		BANK NRC 6/01	Caution 2 EOP-2	
500000 High Containment Hydrogen Conc. / 5 CFR41.10/43.5						2. 1. 20	Given applicable SOP, graph, and plant conditions, determine the power settings for the Hydrogen Recombiners and time to full power.	4.2	219 q011	BOTH	EA1.03: 3.2 2.1.25:3.1	BANK NRC 4/00	① moved to Generics	
PAGE 3 TOTAL TIER 1 GROUP 1	0	1	0	1	2	1	PAGE TOTAL # QUESTIONS	5						
PAGE 1 TOTAL TIER 1 GROUP 1	0	2	3	3	2	0	PAGE TOTAL # QUESTIONS	10						
PAGE 2 TOTAL TIER 1 GROUP 1	4	2	1	3	1	0	PAGE TOTAL # QUESTIONS	11						
K/A CATEGORY TOTALS:	4	5	4	7	5	1	TIER 1 GROUP 1 GROUP POINT TOTAL	26						

① 500000 random selection was EA. Topic covers both EA 1.03 operation of CTMT Atmosphere control system and Generic procedure usage; moved to Generics due to higher importance.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR SRO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2							ES-401-1	
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:		
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 CFR41.5/41.10/43.5						2. 4. 11	Given plant conditions and the power to flow map, determine the actions to be taken.	3.6	602 q013	BOTH	2.4.1: 4.6 AA2.01: 3.8 2.1.25: 3.1	MOD NRC 4/00	② moved to Generics		
295002 Loss of Main Condenser Vacuum / 3 CFR41.4/43.4				04			Describe the basis for the isolation of the Main Steam Isolation Valves on a loss of condenser vacuum.	3.4	220 q015	BOTH	AK3.05: 3.4	BANK NRC 4/00			
295004 Partial or Complete Loss of DC Power / 6															
295005 Main Turbine Generator Trip / 3 CFR41.5/41.6					05		Given a spurious Main Turbine Generator trip, determine the initial effect on Reactor Power and Reactor Pressure.	3.9	553 q001	BOTH	AA2.04: 3.8 AA2.03: 3.1	BANK NRC 6/01			
295008 High Reactor Water Level / 2 CFR41.4/41.5	01						Identify the effects of a High Reactor Water Level on the Main Turbine and Reactor Feed Pump Turbines.	3.2	275 q016	BOTH	245000 A3.01: 3.6 259001 K6.07: 3.8	BANK NRC 6/01			
295011 High Containment Temperature / 5															
295012 High Drywell Temperature / 5															
295018 Partial or Complete Loss of CCW / 8 CFR41.4/41.10/43.5			03				Given a partial loss of Component Cooling Water, determine actions to be taken and their basis.	3.3	314 q020	BOTH		BANK NRC 12/00			
295019 Partial or Complete Loss of Inst. Air / 8 CFR41.4/41.10/43.5		14					Given a reduction in Instrument Air Header pressure, determine a possible cause.	3.2	q021	BOTH		NEW	New Air Dryers ③moved to AK2		
295020 Inadvertent Cont. Isolation / 5 & 7 CFR41.4/41.7/41.9		03					Given a loss of Instrument Air System pressure to the Auxiliary Building, determine the effects on the ability to remove heat from the Containment.	3.3	q022	BOTH	AK3.03: 3.2	NEW			
295021 Loss of Shutdown Cooling / 4 CFR41.5/41.10/43.5					01		Given plant parameters and the graphs from the Inadequate Decay Heat Removal ONEP, determine time to boil.	3.6	604 q032	BOTH	AK1.01: 3.8	MOD NRC 3/98	Multiple graphs for various conditions.		
PAGE 1 TOTAL TIER 1 GROUP 2	1	2	1	1	2	1	PAGE TOTAL # QUESTIONS	8							

② 295001 random selection was AA2. Topic moved to Generics that are in addition to the random selection.

③ 295019 random selection AK1 has NONE. Moved selection to AK2 to support question concerning new Instrument Air Dryer System failures.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR SRO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2			CONT.		ES-401-1		
E/APE #/NAME/SAFETY FUNCTION	K 1	K 2	K 3	A 1	A 2	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:	
295022 Loss of CRD Pumps / 1 CFR41.5				04			Describe the affects on reactor water level during a reactor startup with minimal decay heat and a loss of CRD Pumps. (RWCU is lined up to blowdown to the main condenser to compensate for CRD flow.)	2.6	55 q023	BOTH	AK2.04: 2.7 AK2.05: 2.5	BANK NRC 6/01		
295028 High Drywell Temperature / 5 CFR41.4/41.7				03			Given rising temperatures in the Reactor lower cavity area, determine the response of the Drywell Cooling system.	3.9	q026	BOTH	EK2.04: 3.6 EK3.04: 3.8	NEW		
295029 High Suppression Pool Water Level / 5 CFR41.9/41.10	01						Identify the bases for Emergency RPV Depressurization when Suppression Pool Level cannot be maintained below 24.4 feet.	3.7	513 q027	BOTH		BANK NRC 6/01		
295032 High Secondary Containment Area Temperature / 5 CFR41.4/41.10/43.5			03				Determine the systems affected by high temperatures in the RHR 'A' Pump Room.	3.9	48 q033	BOTH	EK2.07: 3.8 219000 A1.08: 3.6 A2.14: 4.3	BANK NRC 3/98	Steam leak at GGNS in Steam Condensing piping	
295033 High Secondary Containment Area Radiation Levels / 9 CFR41.12/43.4					03		Given operations during a Refueling outage, determine the cause of elevated radiation levels in the area of the Fuel Pool Cooling Heat Exchangers.	3.7	q029	BOTH		NEW	Fuel Pool HX in an open area of Sec CTMT	
295034 Secondary Containment Ventilation High Radiation / 9 CFR41.4/41.10/41.13/43.4		05					Given plant conditions, determine the configuration of the Fuel Handling area Ventilation system.	3.7	q083	SRO		NEW		
295035 Secondary Containment High Differential Pressure / 5 CFR41.4/41.7				02			Describe the operation of the Standby Gas Treatment System with regard to Auxiliary Building and Enclosure Building Pressures.	3.8	q034	BOTH		BANK		
295036 Secondary Containment High Sump/Area Water Level / 5 CFR41.4/41.10/43.5					03		Given a rising water level in an ECCS Pump Room, determine appropriate actions to be taken with regard to the overall plant operation.	3.8	58 q035	BOTH	EK3.03: 3.6 EA2.02: 3.1	BANK NRC 3/98	EOP-4	
600000 Plant Fire On Site / 8 CFR41.10/43.5			04				Given a fire at the Hydrogen Bulk Storage Facility describe the actions to be taken to combat the fire.	3.4	q031	BOTH	2.4.25: 3.4 2.1.32: 3.8	NEW	④ moved to AK3	
PAGE 2 TOTAL TIER 1 GROUP 2	1	1	2	3	2	0	PAGE TOTAL # QUESTIONS	9						
PAGE 1 TOTAL TIER 1 GROUP 2	1	2	1	1	2	1	PAGE TOTAL # QUESTIONS	8						
K/A CATEGORY TOTALS:	2	3	3	4	4	1	TIER 1 GROUP 2 GROUP POINT TOTAL	17						

④ 600000 random selection was AA1. Topic was moved to AK3 due to limited discriminatory value of AA1 for Licensed Operators. AK3 allows testing of precaution.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1							ES-401-1	
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:		
201005 RCIS CFR41.6/43.6						01						Given a failure of the Turbine First Stage pressure signal to RCIS, determine the mode of control rod movement.	3.2	q037	BOTH		NEW			
202002 Recirculation Flow Control CFR41.6								01				Given plant conditions following an actuation of EOC-RPT, determine the Recirculation Pump circuit breaker configuration.	3.4	q038	BOTH	202001 A2.15: 3.9	NEW	EOC-RPT changes 2002		
203000 RHR/LPCI: Injection Mode CFR41.8										08		State the basis for monitoring reactor pressure when aligning the RHR system for injection into the vessel for the LPCI mode.	4.3	60 q039	BOTH	K4.01: 4.2 K4.02: 3.3 A3.01: 3.8 A3.08: 4.1 K1.17: 4.0	BANK NRC 6/01	Where is pressure sensed on LPCI for operation of the injection valve		
209001 LPCS CFR41.7			02									Describe the method of operation of the ADS logic given LPCS and LPCI ‘A’ out of service during a LOCA.	3.9	q040	BOTH	218000 K6.01: 4.1 K6.02: 4.1	NEW	⑤ moved to K3		
209002 HPCS CFR41.7/41.8			01									Given a spurious initiation of the HPCS system, determine the effect on Reactor water level.	3.9	519 q041	BOTH	259002 A2.08: 4.5	BANK NRC 6/01			
211000 SLC CFR41.1/41.6/41.7/43.6										04		Given the initiation of Standby Liquid Control in an ATWS, discern the parameters indicating injection to the reactor.	4.6	q042	BOTH	A4.01: 3.9 A4.03: 4.1 A4.06: 3.9 A4.07: 3.6	NEW			
212000 RPS CFR41.6						01						Describe the response of the RPS Power System upon an ESF inverter loss.	3.8	102 q043	BOTH	K1.04: 3.6	BANK NRC 3/98			
215004 Source Range Monitor CFR41.6/41.5											2. 1. 32	Determine the conditions that would allow the operation of Source Range Monitor detector drives.	3.4	q046	BOTH	A4.04: 3.2		⑥ moved to generics		
PAGE 1 TOTAL TIER 2 GROUP 1	0	0	2	0	0	2	0	1	0	2	1	PAGE TOTAL # QUESTIONS	8							

⑤ 209001 random selection K5. Topic moved to K3 due to low discriminatory value and importance values of Topic K5.

⑥ 215004 random section A4. Topic moved to generic that covers both the random selection A4.04 and generic 2.1.32.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1 CONT.					ES-401-1	
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:
215005 APRM / LPRM CFR41.6/41.7						03						Determine the affects on APRMs with reduced LPRM inputs.	3.3	326 q045	BOTH		BANK NRC 12/00	
216000 Nuclear Boiler Instrumentation CFR41.5	23											Determine the ability of the Recirculation Pumps to start based on Reactor Temperature.	3.4	122 q047	BOTH	202001 A4.01: 3.7	BANK NRC 3/98	
217000 RCIC CFR41.5/41.7/41.10							01					Given plant conditions, determine the operation of RCIC and indications of injection.	3.7	328 q048	BOTH		BANK NRC 12/00	
218000 ADS CFR41.7				03								Given plant conditions determine automatic operation of Automatic Depressurization.	4.0	q049	BOTH		NEW	
223001 Primary CTMT and Auxiliaries CFR41.7/41.8		08										Given plant conditions and electrical busses that are unavailable, determine which components are available.	3.0	528 q050	BOTH	K2.09: 2.9 K2.10: 2.9	BANK NRC 6/01	
223002 PCIS / Nuclear Steam Supply Shutoff CFR41.7/41.9								09				Given plant conditions, evaluate the systems that should actuate or isolate.	3.7	385 q051	BOTH	2.4.21: 4.3 2.4.4: 4.3	BANK NRC 12/00	
226001 RHR/LPCI: CTMT Spray Mode CFR41.7/41.8									07			Determine conditions that would result in automatic initiation of RHR Containment Spray mode.	3.5	q062	BOTH	A3.01: 3.0	BANK	® moved to A3
239002 SRVs CFR41.3	05											Describe the operation of the Safety Relief Valves in different modes of operation. (system air pressure or reactor pressure)	3.3	337 q052	BOTH		BANK NRC 12/00	
241000 Reactor / Turbine Pressure Regulator CFR41.5						11						Describe the response of the plant with a failure of the Main Stop and Control Valves closed with the reactor at power.	3.4	244 q053	BOTH	A1.01: 3.8 A1.02: 3.9 A1.07: 3.7	BANK NRC 4/00	
PAGE 2 TOTALS TIER 2 GROUP 1	2	1	0	1	0	2	1	1	1	0	0	PAGE 2 TOTAL # QUESTIONS	9					

® 226001 random selection K5. Topic moved to A3 due to low discriminatory value of K5 topic for RHR Containment Spray Mode.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1								CONT.		ES-401-1	
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:					
259002 Reactor Water Level Control CFR41.4/41.7	03											Describe the effects on the Reactor Water Level Control System from a failure of the Narrow Range Reactor Water level signal.	3.8	q057	BOTH		BANK						
261000 SGTS CFR41.7/41.11				01								Given conditions determine the automatic operation of Standby Gas Treatment.	3.8	q054	BOTH		NEW						
262001 AC Electrical Distribution CFR41.1/41.7									04			Given a loss of offsite power and plant conditions, determine the type of load sequencing to occur on ESF busses.	3.6	q065	BOTH		MOD						
264000 EDGs CFR41.8											2. 4. 4	During degraded grid conditions, determine the response of the diesel generators.	4.3	11 q058	BOTH	K4.05: 3.2 A3.05: 3.4	BANK NRC 6/01						
290001 Secondary CTMT CFR41.9						09						Describe the ability of Auxiliary Building Fire Protection system to be restored following Auxiliary Building isolation in conjunction with a loss of AC power.	3.6	264 q069	BOTH	A2.06: 4.0 286000 A2.09: 2.8	BANK NRC 4/00						
202002 Recirculation Flow Control CFR41.6									01			Given plant conditions, identify the plant response to a Recirc Flow Control Runback.	3.4	235 q055	BOTH		BANK NRC 4/00	Recirc Pumps in abnormal pump configuration					
PAGE 3 TOTALS TIER 2 GROUP 1	1	0	0	1	0	1	0	0	2	0	1	PAGE TOTAL # QUESTIONS	6										
PAGE 1 TOTALS TIER 2 GROUP 1	0	0	2	0	0	2	0	1	0	2	1	PAGE TOTAL # QUESTIONS	8										
PAGE 2 TOTALS TIER 2 GROUP 1	2	1	0	1	0	2	1	1	1	0	0	PAGE TOTAL # QUESTIONS	9										
K/A CATEGORY TOTALS:	3	1	2	2	0	5	1	2	3	2	2	TIER 2 GROUP 1 GROUP POINT TOTAL	23										

GRAND GULF NUCLEAR STATION AUGUST 2002											BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2						ES-401-1	
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO / BOTH	RELATED K/A	ORIGIN	NOTES:
201001 CRD Hydraulic CFR41.5/41.6					02							During a reactor scram with scram signals not reset, determine the CRD System flow rates.	2.6	q036	BOTH		MOD	
202001 Recirculation CFR41.3/41.5								10				Given plant conditions in regard to Reactor Recirc. Pump seals, determine the failed mechanism.	3.9	540 q059	BOTH	A1.09: 3.3 A1.10: 2.7	BANK NRC 6/01	
204000 RWCU																		
205000 Shutdown Cooling CFR41.2/41.3/41.4/41.5	03											Given plant conditions and configuration lineup, determine valid method for determining Reactor coolant temperature.	3.5	541 q060	BOTH	K3.03: 3.9 A1.03: 3.3 A1.06: 3.7 A1.08: 2.9	BANK NRC 6/01	
215003 IRM CFR41.6		01										Identify the power supply to the Intermediate Range Nuclear Instrumentation.	2.7	q044	BOTH		NEW	
219000 RHR /LPCI Suppression Pool Cooling Mode CFR41.7					04							Describe the method used to control Suppression Pool Temperature and cooldown rate.	2.9	q061	BOTH	A4.12: 4.1	NEW	⌚ moved to K5
234000 Fuel Handling Equipment																		
239003 MSIV Leakage Control																		
245000 Main Turbine Gen., and Auxiliaries CFR41.4/41.10/43.5									10			Discuss the basis for the limit on Main Generator Reactive loading at GGNS.	2.6	44 q063	BOTH	K4.06: 2.8 A4.14: 2.5	BANK NRC 3/98	GGNS generator has lower limits due to reverse power.
259001 Reactor Feedwater CFR41.4								01				Given a failure of the RFPT Lube Oil System, identify the Reactor Feedwater System response.	3.7	q056	BOTH	K1.11: 2.7 K4.06: 2.6 K6.09: 2.9	BANK	
PAGE 1 TOTAL TIER 2 GROUP 2	1	1	0	0	2	0	0	2	1	0	0	PAGE TOTAL # QUESTIONS	7					

⌚ 219000 random selection K2. Topic moved to K5 due to low discriminatory value of K2 topic for RHR Suppression Pool Cooling.

GRAND GULF NUCLEAR STATION AUGUST 2002							BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2					CONT.		ES-401-1				
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO/ BOTH	RELATED K/A	ORIGIN	NOTES:
262002 UPS (AC/DC) CFR41.7/41.10/43.5							01					Concerning the ESF Static Inverters, identify the correct response of the inverter on a loss of normal power supply.	2.6	544 q066	BOTH	A2.01: 2.8 A3.01: 3.1	BANK NRC 6/01	
263000 DC Electrical Distribution																		
271000 Offgas																		
272000 Radiation Monitoring CFR41.10/41.11/43.4/43.5							01					Identify the normal radiation monitoring alarms received on a reactor down power from full power and their cause. (Hydrogen Water Chemistry)	3.2	q067	BOTH		NEW	
286000 Fire Protection CFR41.4								08				Discern the response of the Diesel Driven Fire Pumps on an auto start signal with a failure to start.	3.3	3 q068	BOTH	K5.05: 3.1 K4.07: 3.3 A3.01: 3.4 A4.06: 3.4	BANK NRC 3/98	
290003 Control Room HVAC CFR41.7/41.11/43.4							05					Identify the response of the Control Room HVAC system upon receipt of radiation alarms.	3.2	q070	BOTH		NEW	
300000 Instrument Air CFR41.4/41.10/43.5				02								Describe the crosstie between Service and Instrument Air and when it occurs.	3.0	q071	BOTH		BANK	ⓐ moved to K3
400000 Component Cooling Water CFR41.4				01								Discuss the status of the standby feature of the ESF powered CCW pump during a LOCA.	3.9	105 q072	BOTH		BANK NRC 3/98	
PAGE 2 TOTALS	0	0	0	2	0	0	3	1	0	0	0	PAGE 3 TOTAL # QUESTIONS	6					
PAGE 1 TOTALS	1	1	0	0	2	0	0	2	1	0	0	PAGE 1 TOTAL # QUESTIONS	7					
K/A CATEGORY TOTALS:	1	1	0	2	2	0	3	3	1	0	0	TIER 2 GROUP 2 GROUP POINT TOTAL	13					

ⓐ 300000 random selection A4. Topic moved to K3 due to low discriminatory value of single subject in A4.

GRAND GULF NUCLEAR STATION AUGUST 2002												BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 3							ES-401-1	
SYSTEM #/NAME	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	TOPIC(S)	IMP	REC #	SRO/RO / BOTH	RELATED K/A	ORIGIN	NOTES:		
201003 Control Rod and Drive Mechanism																				
215001 Traversing In-core Probe																				
233000 Fuel Pool Cooling and Cleanup																				
239001 Main and Reheat Steam																				
256000 Reactor Condensate CFR41.4								08				Describe the effects of Low Pressure Feedwater Heater isolation on the Condensate System operation and plant operations.	3.1	294 q064	BOTH	A3.01: 2.7 A3.04: 3.0 A3.07: 2.9	BANK NRC 4/00			
268000 Radwaste CFR41.13/43.4							02					Given conditions and a Liquid Radwaste discharge in progress, determine whether a release will continue.	3.6	110 q073	BOTH	272000 A3.03: 3.5	BANK NRC 3/98	Process Rad Monitor isolation		
288000 Plant Ventilation CFR41.7	05											Describe the response of the Auxiliary Building Ventilation System on High Radiation.	3.6	q074	BOTH	K1.02: 3.4	NEW			
290002 Reactor Vessel Internals CFR41.3/41.14/43.2								05				Identify the consequence of exceeding a thermal limit.	4.2	q075	BOTH	K5.01: 3.9	NEW	♣moved to A2		
K/A CATEGORY TOTALS:	1	0	0	0	0	0	1	2	0	0	0	TIER 2 GROUP 3 GROUP POINT TOTAL	4							

♣ 290002 random selection A1. Topic moved to A2 due to no subjects in A1.

GRAND GULF NUCLEAR STATION AUGUST 2002					BWR SRO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES TIER 3					ES-401-5	
CATEGORY	C1	C2	C3	C4	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:
CONDUCT OF OPERATIONS – Deviations from Approved documents in emergency conditions CFR41.10/43.3/43.5	2.1.1				Given plant conditions that require a deviation from procedures, describe the process and when this action can be taken.	3.8	135 q084	SRO	2.1.2: 4.0	BANK NRC 12/00	50.54x
CONDUCT OF OPERATIONS – Shift Manning CFR41.10/43.1/43.2/43.5	2.1.4				Determine requirements for fire brigade and conditions when the fire brigade may be less than required.	3.4	486 q085	SRO	2.4.26: 3.3	BANK NRC 6/01	
CONDUCT OF OPERATIONS – Chemistry Limits CFR41.10/43.2/43.5	2.1.34				Given plant conditions, procedures, and coolant samples, determine actions to be taken based on chemistry results.	2.9	197 q086	SRO		BANK NRC 6/01	Use of EPRI Guidelines vs Tech Specs.
CONDUCT OF OPERATIONS – Facility License CFR43.1	2.1.10				Given reactor thermal power, determine acceptability with regard to the Station Operating License.	3.9	q087	SRO		NEW	
CONDUCT OF OPERATIONS – Station Graphs CFR41.6/41.10/43.2/43.5	2.1.25				Given plant parameters and Tech Specs determine operability of Standby Liquid Control.	3.1	q088	SRO	2.1.33: 4.0 2.2.22: 4.1	NEW	SLC concentration graphs
EQUIPMENT CONTROL – Refueling Procedures & Limitations CFR41.10/43.6/43.7		2.2.26			Describe the permissions required for all lifting on the Containment Refuel Floor during Core Alterations.	3.7	702 q089	SRO	2.2.27: 3.5	NEW	
EQUIPMENT CONTROL – Refueling CFR41.9/41.10/43.2/43.4/43.6/43.7		2.2.28			Given an evolution to be performed in Containment during fuel handling operations, evaluate the allowances of the evolution.	3.5	411 q090	SRO		BANK NRC 12/00	
EQUIPMENT CONTROL – Troubleshooting CFR41.10/43.5		2.2.20			Given a situation in the plant, apply the rules concerning MAIs vs allowed troubleshooting.	3.3	492 q091	SRO		BANK NRC 6/01	
EQUIPMENT CONTROL – Core Alterations CFR43.6/43.7		2.2.32			Given a situation during refueling operations, apply the Criticality Rules.	3.3	491 q092	SRO	2.2.28: 3.5	BANK NRC 6/01	
RADIATION CONTROL – ALARA CFR41.12/43.4			2.3.2		Given a situation requiring independent verification in a high radiation area determine allowances for waiving verification based on ALARA and requirements for meeting verification.	2.9	127 q093	SRO	2.1.29: 3.3 2.2.11: 3.4 2.2.13: 3.8	BANK NRC 6/01	
RADIATION CONTROL – Radiation Work Permits CFR41.10/41.12/43.4/43.5			2.3.7		Given conditions and procedures, determine applicability of radiation work permits.	3.3	q094	SRO		NEW	
PAGE 1 TOTAL TIER 3	5	4	2	0	PAGE TOTAL # QUESTIONS	11					

GRAND GULF NUCLEAR STATION AUGUST 2002					BWR SRO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES TIER 3		CONT.		ES-401-5		
CATEGORY	C1	C2	C3	C4	TOPIC(S)	IMP	REC #	SRO/RO /BOTH	RELATED K/A	ORIGIN	NOTES:
EMERGENCY PROCEDURES / PLAN – EOP’s and usage CFR41.10/43.5				2.4.20	Given conditions delineated in Caution 1 of the EOP’s, determine when EOP transition to contingencies is required.	4.0	415 q095	SRO	2.4.18: 3.6 2.4.22: 4.0 2.4.23: 3.8	BANK NRC 12/00	EOP usage
EMERGENCY PROCEDURES / PLAN – SRO Responsibilities Security Threat CFR41.10/43.5				2.4.40	Given a security threat taking over the Main Control Room, determine actions to be taken.	4.0	192 q096	SRO	2.1.2: 4.0 2.4.49: 4.0 2.4.11: 3.6 2.4.28: 3.3	BANK NRC 4/00	Control Room abandonment (terrorist attack)
EMERGENCY PROCEDURES / PLAN – EOP’s CFR41.10/43.5				2.4.7	Given plant conditions and EOPs, determine a course of action to be taken.	3.8	q097	SRO	2.4.14: 3.9	NEW	
EMERGENCY PROCEDURES / PLAN – Reportability CFR41.10/43.5				2.4.30	Given plant conditions, determine the reportability of plant conditions and time requirements.	3.6	q098	SRO		NEW	
EMERGENCY PROCEDURES / PLAN – SAPs CFR41.10/43.5				2.4.16	Given conditions requiring transition from EOPs to SAPs, identify implementation and responsibilities for implementation.	4.0	q099	SRO	2.4.8: 3.8 2.4.14: 3.9	NEW	EOP/SAP
EMERGENCY PROCEDURES / PLAN – Emergency Response Facilities CFR41.10/43.5				2.4.42	Given plant conditions, determine what emergency facilities are to be activated.	3.7	q100	SRO		NEW	E-Plan
PAGE 2 TOTAL TIER 3	0	0	0	6	PAGE TOTAL # QUESTIONS	6					
PAGE 1 TOTAL TIER 3	5	4	2	0	PAGE TOTAL # QUESTIONS	11					
K/A CATEGORY TOTALS:	5	4	2	6	TIER 3 GROUP POINT TOTAL	17					

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **1** Op-Test No.: **Day 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Operate Standby Service Water 'B' for chemical addition through all loads.
2. Respond to a failure of APRM 'A' upscale.
3. Take actions in response to a Low Pressure Feedwater Heater 3B Tube leak. Complete actions of the Loss of Feedwater Heating ONEP.
4. Analyze the affects of a reduction of Main Condenser Vacuum on plant operations and take required actions.
5. Take actions per the EOPs in response to an ATWS and mitigate the consequences of the ATWS with no Main Steam Bypass Valves.
6. Respond to a failure of Division I ECCS to manually initiate via the Manual Initiation pushbutton.
7. Take actions for a failure of Standby Liquid Control to inject to the Reactor during an ATWS.

Initial Conditions: Reactor Power is at 100 %.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
RHR 'C' Pump is tagged out of service for motor oil replacement
TBCW Pump 'C' is tagged out of service for pump seal replacement
Appropriate clearances and LCOs are written.

Turnover: The plant is operating at 100% power. Chemistry has requested SSW 'B' be operated through all loads for a chemical addition. There are scattered thundershowers reported in the Tensas Parish area.

Scenario 1 Day 1 (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	4, 5, 6	2.1.30	N (BOP)	Start SSW 'B' and operate through all loads (SOI 04-1-01-P41-1 section 4.3)
2	3, 5	215005 A2.02 2.1.12; 2.1.33	I (RO)	Respond to APRM 'A' failure upscale. Complete Technical Specification determinations.
3	2, 3, 4, 5, 6	2.4.49 295014 AA1.07; AA2.03	R/C (RO, BOP)	Respond to a tube failure in LP FW Heater 3B. Perform actions per ONEP 05-1-02-V-5. Lower Reactor power with Recirc flow.
4	3, 4, 5, 6	2.4.49 295002 AA1.02; AA1.05; AA2.01	C(RO, BOP)	Recognize and respond to a loss of Main Condenser vacuum. Take actions per ONEP 05-1-02-V-8.
	2, 3, 4, 7	2.4.4; 2.4.49 295006 AA1.01; AA1.05; AA1.07		When required initiate a manual Reactor Scram.
5	6, 8, 12, 13	295037 EA1.0; EA2.0 203000 A3.08 241000 A4.06	M (ALL)	Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS.
	3, 5	209001 A4.05; A3.01; A3.02 203000 A4.05; A3.01; A3.02; ; A2.14A3.08	I (BOP)	Upon orders to initiate and override Low Pressure ECCS, recognize the failure of Division I to initiate via Manual Initiation pushbutton. Take actions upon automatic initiation to override Division I Low Pressure ECCS.
	3, 4, 8	295037 EA1.04; EA1.10 211000 A1.0; A2.04; A3.0	C (BOP)	Recognize the failure of Standby Liquid Control to meet the parameters to inject into the Reactor when initiated and actions taken for Alternate Boron Injection.

All evolutions test 55.45(a)12 & 13.

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

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
- Identify the need for Alternate Standby Liquid Control injection.
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches –192”.
- Insert Control Rods in response to ATWS conditions.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **2** Op-Test No.: **Day 2**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Secure Diesel Generator 12 from diesel run.
2. Raise Reactor Power by withdrawing control rods.
3. Perform operator actions for a stuck control rod per ONEP.
4. Analyze a failure of Recirculation Pump 'B' Seal # 2 failure.
5. Respond to a loss of Bus 12HE and trip of Recirculation Pump 'B' per ONEPs.
6. Respond to a failure of Feedwater Line in the Drywell, initiate a reactor scram based on rising Drywell Pressure per EOPs.
7. Respond to a failure of Division 1 ECCS failure to initiate.
8. With a failure of Feedwater Line in the Drywell and reduced injection systems maintain reactor level per the EOPs.

Initial Conditions: Reactor Power is at 35 % bringing the plant up following an outage; Reactor Recirculation pumps are in Fast Slow Speed at 60 % core flow; a single Reactor Feed Pump in single element Master Level Control. Diesel Generator 12 operating at 2000KW load.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
RHR 'C' is tagged out of service for motor oil replacement
TBCW Pump 'C' is tagged out of service for pump seal replacement
Appropriate clearances and LCOs are written.

Turnover: Secure Diesel Generator 12 from service. Leave Standby Service Water 'B' in operation for chemistry. Then continue to bring the plant to full power per IOI-2. There are scattered thundershowers reported in the Tensas Parish area.

Scenario 2 Day 2 (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	3, 4, 5	264000 A4.0;	N (BOP)	Secure Diesel Generator 12 from operation (SOI 04-1-01-P75-1)
2	1, 2, 4, 5	201005 A3.01; A3.02; A3.03; A4.01 2.2.2	R(RO)	Withdraw control rods to raise power. (Control Rod Pull Sheet & IOI 03-1-01-2)
3	1, 2, 3, 5, 6, 8	201001 A4.04 2.4.4; 2.4.11; 2.4.48	C (RO, BOP)	Control Rod 32-09 is stuck, un-stick control rod per ONEP. (ONEP 05-1-02-IV-1)
4	3, 4, 7	202001 A2.10; A4.10; A4.11	C (RO)	Respond to a failure Seal # 2 of Recirculation Pump 'B'. (Tech Specs)
5	3, 4, 5, 6	202001 A2.03	C (RO, BOP)	Respond to Overcurrent lockout on bus 12HE and trip of Recirculation Pump 'B'. (SOI 04-1-01-R21-12 & 05-1-02-III-3)
6	3, 4, 5, 6, 7, 13	295031 EA1.0 203000 A3.08 241000 A4.06	M (ALL)	Feedwater Line 'B' ruptures in the Drywell with leakage from the reactor.
	3, 4, 7	2.4.4 295024 EA1.0	I (BOP)	Failure of Division 1 ECCS to automatically initiate on High Drywell Pressure
	3, 4, 5, 6	209002 A2.03; A3.01; A4.03	C (BOP)	HPCS injection valve failure to open on initiation

All evolutions test 55.45(a) 12 & 13.

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

Critical Tasks

- Recognize failure of Division 1 to initiate and manually initiate Division 1
- Isolate Feedwater line 'B' and reestablish feed through Feedwater line 'A' or Lower reactor pressure to allow injection from low pressure systems

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **3** Op-Test No.: **BACKUP**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Raise Reactor Power using Recirculation Flow.
2. Start 3rd Condensate and Condensate Booster Pumps.
3. Respond to a trip of RPS Motor Generator 'B'.
4. Determine the source and respond to a leak on the suction valve of RHR Pump 'B', EOP entry.
5. Respond to a steam leak in the Auxiliary Building Steam Tunnel and a failure of Group 1 to isolate.
6. Take actions per the EOPs in response to two stuck control rods following a Reactor Scram.
7. Take actions per EOPs to control RPV parameters with a failure the MSIVs to isolate the steam leak.

Initial Conditions: Reactor Power is at 83 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card

RHR Pump 'C' is tagged out of service for motor oil replacement

TBCW Pump 'C' is tagged out of service for pump seal replacement

Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Radwaste is prepared for full Condensate and Feedwater operation. There are scattered thundershowers reported in the Tensas Parish area.

Scenario **3 BACKUP** (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	1, 2, 4, 5, 6, 8	202001 A4.04 202002 A4.08 2.2.2	R (RO)	Raise Total Core Flow to >12.5 Mlbm/hr Feedwater Flow. (IOI 03-1-01-2)
2	2, 4, 5, 6	256000 A3.02; A4.01	N (RO)	Start 3 rd Condensate and Condensate Booster Pump. (SOI 04-1-01-N19-1)
3	3, 5, 6	212000 A1.11; A2.01; A4.07	C (RO, BOP)	Respond to trip of RPS Motor Generator 'B'. (ONEP 05-1-02-III-2)
4	3, 4, 5, 6	295036 EA1.02	C (BOP)	Determine the source and respond to a packing leak on E12-F004B RHR 'B' Suction Valve, with the valve failure determine unisolable and take actions per EOP – 3 & 4.
5	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49	M (ALL)	Recognize and respond to a steam leak in the Auxiliary Building Steam Tunnel.
	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49 290001 A2.06; A4.04	I (BOP)	Recognize the failure of Group 1 to automatically isolate and take actions to isolate the Main Steam Lines (ONEP 05-1-01-III-5)
	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49 290001 A2.06; A4.04		Recognize the failure of a single Main Steam line to isolate and take actions for mitigation of the leak.
	4, 6, 12, 13	295037 EA1.0; EA2.0 212000 A4.17	C (RO)	Recognize the failure of two control rods to fully insert on the Reactor Scram and take actions as necessary per procedures to insert the control rods.

All evolutions test 55.45(a) 12 & 13.

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

Critical Tasks

- Manually scram the reactor.
- Isolate the main steam lines.