ES-401 BWR Examination Outline Form ES-401-1

Facility: **Nine Mile Point Unit 1** Date of Exam: **November 18, 2004 (tentative)**

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	K	A	A 2	G *	Total
1. Emergency & Abnormal Plant Evolutions	1												20	0	0	4	4	8
	2												7	0	0	2	2	4
	Tier Totals												27	0	0	6	6	12
2. Plant Systems	1												26	0	0	1	3	4
	2												12	0	0	1	1	2
	Tier Totals												38	0	0	2	4	6
3. Generic Knowledge and Abilities Categories					1		2		3		4			1	2	3	4	
													10	2	2	1	2	7

Note:
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.

ES-401	BWR Examination Outline							Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)								
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295004 Partial or Total Loss of DC Pwr / 6					0 3		AA2.03 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Battery voltage.	2.9	1
295021 Loss of Shutdown Cooling / 4					0 4		AA2.04 Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water temperature.	3.6	1
295023 Refueling Acc Cooling Mode / 8						X	2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
295025 High Reactor Pressure / 3						X	2.4.6 Knowledge symptom based EOP mitigation strategies.	4.0	1
295028 High Drywell Temperature / 5					0 1		EA2.01 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell temperature.	4.1	1
295030 Low Suppression Pool Wtr Lvl / 5						X	2.4.6 Knowledge symptom based EOP mitigation strategies.	4.0	1
295031 Reactor Low Water Level / 2					0 4		EA2.04 Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling.	4.8	1
600000 Plant Fire On Site / 8						X	2.1.2 Knowledge of operator responsibilities during all modes of plant operation.	4.0	1
K/A Category Totals:	0	0	0	0	4	4	Group Point Total:		8

ES-401	BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295013 High Suppression Pool Temp. / 5						X	2.2.22 Knowledge of limiting conditions for operations and safety limits.	4.1	1
~~295015 Incomplete SCRAM / 1~~ 295007 High Reactor Pressure / 3						X	~~2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.~~ 2.2.22 Knowledge of limiting conditions for operations and safety limits.	~~4.0~~ 4.1	1
295017 High Off-site Release Rate / 9					0 1		AA2.01 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE : Off-site release rate.	4.2	1
~~295036 Secondary Containment High Sump/Area Water Level / 5~~ 295033 High Secondary Containment Area Radiation Levels / 9					0 1		~~EA2.01 Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Operability of components within the affected area.~~ EA2.01 Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Area Radiation Levels.	~~3.2~~ 3.8	1
K/A Category Point Totals:	0	0	0	0	2	2	Group Point Total:		4

ES-401	BWR Examination Outline											Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 2/Group 1 (SRO)													
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
207000 Isolation (Emergency) Condenser											X	2.2.22 Knowledge of limiting conditions for operations and safety limits.	4.1	1
211000 SLC											X	2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
215004 Source Range Monitor								0 2				A2.02 Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: SRM inop condition.	3.7	1
~~223002 PCIS/Nuclear Steam Supply Shutoff~~ 262001 AC Electrical Distributionb											X	~~2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.~~ 2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.	~~4.0~~ 3.6	1
K/A Category Point Totals:	0	0	0	0	0	0	0	1	0	0	3	Group Point Total:		4

ES-401	BWR Examination Outline												Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 2/Group 2 (SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
~~215001 Traversing In-core Probe~~								~~0 1~~				~~A2.01 Ability to (a) predict the impacts of the following on the TRAVERSING IN-CORE PROBE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low reactor water level: Mark I&II.~~	~~2.9~~	1
201006 RWM								0 7				A2.07 Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RWM hardware/software failure.	2.8	
290001 Secondary CTMT											X	2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
K/A Category Point Totals:	0	0	0	0	0	0	0	1	0	0	1	Group Point Total:		2

ES-401	Generic Knowledge and Abilities Outline (Tier 3)					Form ES-401-3
Facility:	**Nine Mile Point Unit 1**	Date of Exam: **November 18, 2004 (tentative)**				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.10	Knowledge of conditions and limitations in the facility license.			3.9	1
	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component status.			3.0	1
	Subtotal					2
2. Equipment Control	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.			3.3	1
	2.2.29	Knowledge of SRO fuel handling responsibilities.			3.8	1
	Subtotal					2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized.			3.1	1
	Subtotal					1
4. Emergency Procedures / Plan	2.4.18	Knowledge of the specific bases for EOPs.			3.6	1
	2.4.44	Knowledge of emergency plan protective action recommendations.			4.0	1
	Subtotal					2
Tier 3 Point Total						7

Facility: **Nine Mile Point Unit 1** Date of Exam: **November 18, 2004 (tentative)**

ES-401 Record of Rejected K/As Form ES-401-4

Tier / Group	Randomly Selected K/A	Reason for Rejection
Per ES-401, Attachment 1, #1: Review each group and delete those items [Emergency/Abnormal Plant Evolutions (E/APEs) for Tier 1 and systems for Tier 2] that clearly do not apply to the facility for which the examination is being written. They are:		
T1G1	NA	295027 High Containment Temperature (Mark III Containment Only). Not applicable to facility. (Mark I containment).
T1G2	NA	295011 High Containment Temperature (Mark III Containment Only). Not applicable to facility. (Mark I containment).
T2G1	NA	203000 RHR/LPCI: Injection Mode (Plant Specific). Not applicable to facility design.
T2G1	NA	209002 High Pressure Core Spray System (HPCS). Not applicable to facility design.
T2G1	NA	217000 Reactor Core Isolation Cooling System (RCIC). Not applicable to facility design.
T2G2	NA	210004 Rod Sequence Control System (Plant Specific). Not applicable to facility design.
T2G2	NA	201005 Rod Control and Information System (RCIS). Not applicable to facility design.
T2G2	NA	215002 Rod Block Monitor System. Not applicable to facility design.
T2G2	NA	230000 RHR/LPCI: Torus/Suppression Pool Spray Mode. Not applicable to facility design.
T2G2	NA	239003 MSIV Leakage Control System. Not applicable to facility design.
Per ES-401, Attachment 2 #5: Except as noted in ES-401, Attachment 2, Item 1, all KA statements that are eliminated after they are have been randomly selected to fill an examination outline shall be documented on Form ES-401-4, "Record of Rejected KAs," or equivalent. They are:		
T1G1	295023. 2.1.27	Knowledge of system purpose and or function. (CFR: 41.7) IMPORTANCE RO 2.8 SRO 2.9 Very low cognitive level.
T1G2	295015 2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies. 2.4.30 was previously selected; see T1G1 295023. Rejected to avoid over sampling and double jeopardy for event reporting.
T1G2	295015 2.1.28	Knowledge of the purpose and function of major system components and controls. (CFR: 41.7) Not SRO Only knowledge level.
T2G1	223002 2.4.50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. Not SRO Only knowledge level.
T2G2	215001 A2.04	Ability to (a) predict the impacts of the following on the TRAVERSING IN-CORE PROBE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. failure: (Not-BWR1) ..... 1.8* 2.0* Importance rating <2.5.
T3	2.1.6	Ability to supervise and assume a management role during plant transients and upset conditions. (CFR: 43.5 / 45.12 / 45.13) IMPORTANCE RO 2.1 SRO 4.3 Better evaluated during operating test (simulator scenarios).
T3	2.2.30	Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area / communication with fuel storage facility / systems operated from the control room in support of fueling operations / and supporting instrumentation. IMPORTANCE RO 3.5 SRO 3.3 Not SRO Only knowledge.
T3	2.4.25	Knowledge of fire protection procedures. Rejected to avoid over sampling and double jeopardy. See T1G1 600000 2.1.2.

Facility: **Nine Mile Point Unit 1** Date of Exam: **November 18, 2004 (tentative)**

POST NRC REVIEW CHANGES		
T1G2	295015 2.1.23	Rejected based on inability to write a SRO level question that provides an appropriate level of discrimination. Randomly selected 295007 2.2.22.
T1G2	295036 EA2.01	Rejected based on inability to write a SRO level question that provides an appropriate level of discrimination. Randomly selected 295033 EA2.01.
T2G1	223002 2.1.23	Rejected based on inability to write a SRO level question that provides an appropriate level of discrimination. Randomly selected 262001 2.4.30.
T2G2	215001 A2.01	Rejected based on inability to write a SRO level question that provides an appropriate level of discrimination. Randomly selected 201006 A2.07

ES-401 BWR Examination Outline Form ES-401-1

Facility: **Nine Mile Point Unit 1** Date of Exam: **2004**

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	K	A	A 2	G *	Total
1. Emergency & Abnormal Plant Evolutions	1	3	2	4				2	4			5	20					8
	2	0	~~0~~ 1	1				2	~~2~~ 1			2	7					4
	Tier Totals	3	~~2~~ 3	5				4	~~5~~ 5			7	27					12
2. Plant Systems	1	~~3~~ 4	2	~~2~~ 1	2	~~2~~ 3	1	4	4	1	~~2~~ 1	3	26					4
	2	0	0	1	1	1	1	~~1~~ 0	2	~~2~~ 3	1	2	12					2
	Tier Totals	~~3~~ 4	2	~~3~~ 2	3	~~3~~ 4	2	~~5~~ 4	6	~~3~~ 4	~~3~~ 2	5	38					6
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		3		2		2							

Note:
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.

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			05				AK3.05 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Reduced loop operating requirements.	3.2	1
295003 Partial or Complete Loss of AC / 6					04		AA2.04 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: System lineups.	3.5	1
295003 Partial or Complete Loss of AC / 6						X	2.1.32 Ability to explain and apply system limits and precautions.	3.4	1
295004 Partial or Total Loss of DC Pwr / 6			01				AK3.01 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Load shedding.	2.6	1
295005 Main Turbine Generator Trip / 3		09					AK2.09 Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Feedwater - HPCI: BWR-2.	4.0	1
295006 SCRAM / 1				02			AA1.02 Ability to operate and/or monitor the following as they apply to SCRAM: Reactor water level control system.	3.9	1
295016 Control Room Abandonment / 7				07			AA1.07 Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Control room/local control transfer mechanisms.	4.2	1
295018 Partial or Total Loss of CCW / 8	01						AK1.01 Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on component/system operations.	3.5	1
295019 Partial or Total Loss of Inst. Air / 8					01		AA2.01 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Instrument air system pressure.	3.5	1
295021 Loss of Shutdown Cooling / 4						X	2.1.2 Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
295023 Refueling Acc Cooling Mode / 8	01						AK1.01 Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS: Radiation exposure hazards.	3.6	1
295024 High Drywell Pressure / 5			04				EK3.04 Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization.	3.7	1
295025 High Reactor Pressure / 3		08					EK2.08 Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor/turbine pressure regulating system.	3.7	1
295026 Suppression Pool High Water Temp. / 5			05				EK3.05 Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Reactor SCRAM.	3.9	1
295028 High Drywell Temperature / 5						X	2.4.6 Knowledge symptom based EOP mitigation strategies.	3.1	1

2.1.33 - Ability to recognize indications for system parameters entry conditions for T

295030 Low Suppression Pool Wtr Lvl / 5						X	~~2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.~~	3.9	1
295031 Reactor Low Water Level / 2	0 1						EK1.01 Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling.	4.6	1
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1					0 3		EA2.03 Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: SBLC tank level.	4.3	1
295038 High Off-site Release Rate / 9					0 4		EA2.04 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of off-site release.	4.1	1
600000 Plant Fire On Site / 8						X	2.4.31 Knowledge of annunciators alarms and indications / and use of the response instructions.	3.3	1
K/A Category Totals:	3	2	4	2	4	5	Group Point Total:		20

ES-401	BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295008 High Reactor Water Level / 2						X	~~2.4.31 Knowledge of annunciators alarms and indications / and use of the response instructions.~~ 2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.	~~3.3~~ 3.9	1
295009 Low Reactor Water Level / 2						X	2.1.32 Ability to explain and apply system limits and precautions.	3.4	1
~~295012 High Drywell Temperature / 5~~					~~0 1~~		~~AA2.03 AA2.01 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell Humidity Temperature~~	~~2.8~~ ~~3.8~~	~~1~~
295014 Inadvertent Reactivity Addition / 1		0 3					AK2.03 Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: Fuel temperature.	3.3	1
295015 Incomplete SCRAM / 1				0 3			AA1.03 Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM: RMCS.	3.6	1
295022 Loss of CRD Pumps / 1				0 2			AA1.02 Ability to operate and/or monitor the following as they apply to LOSS OF CRD PUMPS: RPS.	3.6	1
295032 High Secondary Containment Area Temperature / 5			0 2				EK3.02 Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Reactor SCRAM.	3.6	1
295036 Secondary Containment High Sump/Area Water Level / 5					0 2		EA2.02 Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Water level in the affected area.	3.1	1
K/A Category Point Totals:	0	~~0~~ 1	1	2	~~2~~ 1	2	Group Point Total:		7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 2/Group 1 (RO)											Form 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	K/A Topic(s)	IR	#
205000 Shutdown Cooling					02							K5.02 Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): Valve operation.	2.8	1
206000 HPCI		01										K2.01 Knowledge of electrical power supplies to the following: system valves.	3.2	1
207000 Isolation (Emergency) Condenser					09							K5.09 Knowledge of the operational implications of the following concepts as they apply to ISOLATION (EMERGENCY) CONDENSER: Cooldown rate: BWR-2,3.	3.7	1
207000 Isolation (Emergency) Condenser							03					A1.03 Ability to predict and/or monitor changes in parameters associated with operating the ISOLATION (EMERGENCY) CONDENSER controls including: Steam flow: BWR-2,3.	3.3	1
209001 LPCS				10								K4.10 Knowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s) and/or interlocks which provide for the following: Testability of all operable components.	2.8	1
209001 LPCS							08					A1.08 Ability to predict and/or monitor changes in parameters associated with operating the LOW PRESSURE CORE SPRAY SYSTEM controls including: System lineup.	3.3	1
211000 SLC								03				A2.03 Ability to (a) predict the impacts of the following on the STANDBY LIQUIDCONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. power failures.	3.2	1
211000 SLC										08		A4.08 Ability to manually operate and/or monitor in the control room: System initiation.	4.2	1
212000 RPS	01											K1.01 Knowledge of the physical connections and/or cause-effect relationships between REACTOR PROTECTION SYSTEM and the following: Nuclear instrumentation.	3.7	1
215003 IRM				05								K4.05 Knowledge of INTERMEDIATE RANGE MONITOR (IRM) SYSTEM design feature(s) and/or interlocks which provide for the following: Changing detector position.	2.9	1
215004 Source Range Monitor							05					A1.05 Ability to predict and/or monitor changes in parameters associated with operating the SOURCE RANGE MONITOR (SRM) SYSTEM controls including: SCRAM, rod block, period alarm trip setpoints.	3.6	1

215005 APRM / LPRM									0 5			A3.05 Ability to monitor automatic operations of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM including: Flow converter/comparator alarms.	3.3	1
215005 APRM / LPRM											X	2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
218000 ADS											X	2.4.31 Knowledge of annunciators alarms and indications / and use of the response instructions.	3.3	1
223002 PCIS/Nuclear Steam Supply Shutoff							0 2					A1.02 Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF controls including: Valve closures.	3.7	1
239002 SRVs	0 8											K1.08 Knowledge of the physical connections and/or cause-effect relationships between RELIEF/SAFETY VALVES and the following: Automatic depressurization system.	4.0	1
239002 SRVs			~~0 2~~		0 4							~~K3.02 Knowledge of the effect that a loss or malfunction of the RELIEF/SAFETY VALVES will have on following: Reactor Over-pressurization~~ K5.04 Knowledge of the operational implications of the following concepts as they apply to RELIEF/SAFETY VALVES: Tail pipe temperature monitoring.	~~4.2~~ 3.3	1
259002 Reactor Water Level Control						0 3						K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Main steam flow input.	3.1	1
~~259002 Reactor Water Level Control~~ 205000 Shutdown Cooling											~~X~~ X	~~2.4.50 Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.~~ 2.1.32 Ability to explain and apply system limits and precautions.	~~3.3~~ 3.4	1
261000 SGTS								0 5				A2.05 Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Fan trips.	3.0	1
262001 AC Electrical Distribution	0 1											K1.01 Knowledge of the physical connections and/or cause-effect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: Emergency generators (diesel/jet) ***LER: TIE TO LINE#4 and MOD OPEN***	3.8	1
262002 UPS (AC/DC)								0 1				A2.01 Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage.	2.6	1
263000 DC Electrical Distribution		0 1										K2.01 Knowledge of electrical power supplies to the following: Major D.C. loads	3.1	1

264000 EDGs			0 3								K3.03 Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on following: Major loads powered from electrical buses fed by the emergency generator(s).	4.1	1
300000 Instrument Air							0 1				A2.01 Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions.	2.9	1
400000 Component Cooling Water	0 4									~~0~~ ~~1~~	~~A4.01 Ability to manually operate and / or monitor in the control room: CCW indications and control.~~ K1.04 Knowledge of the physical connections and/or cause-effect relationships between CCWS and the following: Reactor coolant system, in order to determine source(s) of RCS leakage into CCWS.	~~3.1~~ 2.9	1
K/A Category Point Totals:	~~3~~ 4	2	~~2~~ 1	2	~~2~~ 3	1	4	4	1	~~2~~ 1	3	Group Point Total:	26

ES-401	BWR Examination Outline												Form ES-401-1	
	Emergency and Abnormal Plant Evolutions - Tier 2/Group 2 (RO)													
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic			03									K3.03 Knowledge of the effect that a loss or malfunction of the CONTROL ROD DRIVE HYDRAULIC SYSTEM will have on following: control rod drive mechanisms.	3.1	1
201006 RWM									03			A3.03 Ability to monitor automatic operations of the ROD WORTH MINIMIZER SYSTEM (RWM) including: Annunciator and alarm signals.	3.1	1
202002 Recirculation Flow Control											X	2.4.6 Knowledge symptom based EOP mitigation strategies.	3.1	1
214000 RPIS								01				A2.01 Ability to (a) predict the impacts of the following on the ROD POSITION INFORMATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failed reed switches.	3.1	1
216000 Nuclear Boiler Inst.				05								K4.05 Knowledge of NUCLEAR BOILER INSTRUMENTATION design feature(s) and/or interlocks which provide for the following: Initiation of the emergency core cooling systems.	3.9	1
226001 CTMT Spray Mode											X	2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.	3.9	1
239001 Main and Reheat Steam								05				A2.05 Ability to (a) predict the impacts of the following on the MAIN AND REHEAT STEAM SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Main steam line high radiation.	3.9	1
~~241000 Reactor/Turbine Pressure Regulator~~							~~15~~		02			~~A1.15 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR/TURBINE PRESSURE REGULATING SYSTEM controls including: Maximum combined flow limit.~~	~~3.1~~	1
234000 Fuel Handling Equipment												A3.02 Ability to monitor automatic operations of the FUEL HANDLING EQUIPMENT including: Interlock operation.	3.1	
259001 Reactor Feedwater										04		A4.04 Ability to manually operate and/or monitor in the control room: System valves.	3.1	1
272000 Radiation Monitoring						01						K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the RADIATION MONITORING SYSTEM: Reactor Protection System.	3.0	1
288000 Plant Ventilation					02							K5.02 Knowledge of the operational implications of the following concepts as they apply to PLANT VENTILATION SYSTEMS: Differential pressure control.	3.2	1

290003 Control Room HVAC									0 1			A3.01 Ability to monitor automatic operations of the CONTROL ROOM HVAC including: Initiation/reconfiguration.	3.3	1
K/A Category Point Totals:	0	0	1	1	1	1	~~1~~ 0	2	~~2~~ 3	1	2	Group Point Total:		12

ES-401	Generic Knowledge and Abilities Outline (Tier 3) (RO)				Form ES-401-3	
Facility: **Nine Mile Point Unit 1**		Date of Exam: **November 18, 2004 (tentative)**				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.10	Knowledge of conditions and limitations in the facility license.	2.7	1		
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	2.8	1		
	2.1.29	Knowledge of how to conduct and verify valve lineups.	3.4	1		
	Subtotal			3		
2. Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.0	1		
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	1		
	2.2.26	Knowledge of refueling administrative requirements.	2.5	1		
	Subtotal			3		
3. Radiation Control	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1		
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1		
	Subtotal			2		
4. Emergency Procedures / Plan	2.4.7	Knowledge of event based EOP mitigation strategies.	3.1	1		
	2.4.24	Knowledge of loss of cooling water procedures. ***PRA: LOSS OF ESW***	3.3	1		
	Subtotal			2		
Tier 3 Point Total				10		

Facility: **Nine Mile Point Unit 1** Date of Exam: **November 18, 2004 (tentative)**

ES-401 Record of Rejected K/As (RO) Form ES-401-4

Tier / Group	Randomly Selected K/A	Reason for Rejection
Per ES-401, Attachment 1, #1: Review each group and delete those items [Emergency/Abnormal Plant Evolutions (E/APEs) for Tier 1 and systems for Tier 2] that clearly do not apply to the facility for which the examination is being written. They are:		
T1G1	NA	295027 High Containment Temperature (Mark III Containment Only). Not applicable to facility. (Mark I containment).
T1G2	NA	295011 High Containment Temperature (Mark III Containment Only). Not applicable to facility. (Mark I containment).
T2G1	NA	203000 RHR/LPCI: Injection Mode (Plant Specific). Not applicable to facility design.
T2G1	NA	209002 High Pressure Core Spray System (HPCS). Not applicable to facility design.
T2G1	NA	217000 Reactor Core Isolation Cooling System (RCIC). Not applicable to facility design.
T2G2	NA	210004 Rod Sequence Control System (Plant Specific). Not applicable to facility design.
T2G2	NA	201005 Rod Control and Information System (RCIS). Not applicable to facility design.
T2G2	NA	215002 Rod Block Monitor System. Not applicable to facility design.
T2G2	NA	230000 RHR/LPCI: Torus/Suppression Pool Spray Mode. Not applicable to facility design.
T2G2	NA	239003 MSIV Leakage Control System. Not applicable to facility design.
Per ES-401, Attachment 2 #5: Except as noted in Es-401, Attachment 2, Item 1, all KA statements that are eliminated after they are have been randomly selected to fill an examination outline shall be documented on Form ES-401-4, "Record of Rejected KAs," or equivalent. They are:		
T1G1	295024 EK3.03	Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Containment venting: Mark-III. Mark I Containment, not Mark III.
T1G1	295026 EK3.03	Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool spray. Have containment spray, not suppression pool spray.
T1G1	295028 2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies. IMPORTANCE RO 2.2 SRO 3.6. Offsite notifications are SRO Only. Importance rating is <2.5.
T1G1	295030 2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. TS bases are SRO Only
T1G1	600000 2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies. IMPORTANCE RO 2.2 SRO 3.6 Offsite notifications are SRO Only. Importance rating is <2.5.
T1G2	NA	295034 Secondary Containment Ventilation High Radiation After randomly and systematically selecting 295032, High Secondary Containment Area Temperature, and 295036, Secondary Containment High Sump/Area Water Level, then selected 295034, Secondary Containment Ventilation High Radiation. Rejected 295034 to avoid over sampling of secondary containment control.
T1G2	295009 2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies. IMPORTANCE RO 2.2 SRO 3.6 Offsite notifications are SRO Only. Importance rating is <2.5.
T2G1	206000 A2.15	Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of control oil pressure. No control oil system associated with HPCI per facility design.
T2G1	206000 A2.16	Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High drywell pressure. No specific relation between HPCI and high drywell pressure per facility design.
T2G1	207000 K5.01	Knowledge of the operational implications of the following concepts as they apply to ISOLATION (EMERGENCY) CONDENSER: Flow measurement across an elbow using differential pressure: BWR-2,3. Generic Fundamentals Concept.
T2G1	239002 K3.03	Knowledge of the effect that a loss or malfunction of the SAFETY/RELIEF VALVES will have on the following. Ability to rapidly depressurize the reactor. Double jeopardy with 239002 A1.08.
T2G1	261000 K5.01, K5.02	Knowledge of the operational implications of the following concepts as they apply to STANDBY GAS TREATMENT SYSTEM: K5.01 Heat removal mechanisms ..... 2.3* 2.6* K5.02 Air operated valves: Plant-Specific .....2.3* 2.5* Selected 261000 K5. Rejected K5.01 and K5.02 because importance rating is < 2.5.

Facility: **Nine Mile Point Unit 1** Date of Exam: **November 18, 2004 (tentative)**

T2G1	300000 A3.01, A3.02	Ability to monitor automatic operations of the INSTRUMENT AIR SYSTEM including: A3.01 Air pressure .....2.3 2.1 A3.02 Air temperature .....2.9 2.7 Rejected A3.02 because of inability to evaluate instrument air system air temperature. Rejected A3.01 because importance rating is < 2.5. Randomly and systematically selected another KA: 300000 A.1. Rejected because KA listed under A.1 is NONE. Randomly and systematically selected another KA: 300000 A.2. A2.01 selected because only KA available under A.2.
T3	2.1.17	Ability to make accurate / clear and concise verbal reports. Better evaluated during the operating test (simulator scenarios).
T3	2.1.21	Ability to obtain and verify controlled procedure copy. Better evaluated during the walkthrough examination (JPMs).
T3	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report. (CFR: 43.3 / 45.13) IMPORTANCE RO 2.3 SRO 3.3 SRO Only. Importance rating <2.5.
T3	2.2.23	Ability to track limiting conditions for operations. (CFR: 43.2 / 45.13) SRO Only.
T3	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications. Better evaluated during the walkthrough examination (In Plant JPMs). One in-plant JPM is required to be local actions in response to an abnormal/emergency condition.
Per ES-401 D.1.d: After completing the outline, check the selected K/As for balance of coverage within and across the three tiers. Ensure that every applicable K/A category is sampled at least twice within each of the three tiers.		
T2G1	206000 A2.02	A2.02 Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve closures. K2 under-sampled (only 1 K/A). Randomly selected 206000 HPCI from the 26 T2G1 and 12 T2G2 items, deselected 206000 A2.02, and randomly selected K2.01 from the available K2 K/As for 206000 HPCI.
T2G2	272000 A1.02	A1.02 Ability to predict and/or monitor changes in parameters associated with operating the RADIATION MONITORING SYSTEM controls including: Lights, alarms, and indications associated with surveillance testing. K6 under-sampled (only 1 K/A). Randomly selected 272000 Radiation Monitoring from the 26 T2G1 and 12 T2G2 items, deselected 272000 A1.02 and randomly selected K6.01 from the available K6 K/As for 272000 Radiation Monitoring.
Operations/Facility Outline Review		
T2G2	201001 K3.01	K3.01 Knowledge of the effect that a loss or malfunction of the CONTROL ROD DRIVE HYDRAULIC SYSTEM will have on following: Recirculation pumps. No interrelation between CRDH and recirc pumps. Randomly selected new K3 from those available and selected K3.03.
POST NRC OUTLINE REVIEW CHANGES		
T1G2	295008 2.4.31	Double jeopardy with 259002 2.4.50. Randomly selected 2.4.30 and rejected based on SRO only. Randomly selected 2.1.30 and rejected based on better evaluated during in-plant JPMs. Randomly selected 2.1.23 and will consider the recent level control and challenges experienced during NMP1 FCV13 oscillations and manual scram.
T1G2	295012 AA2.03	Rejected based on low level of difficulty. Randomly selected AA2.01
POST NRC OUTLINE REVIEW CHANGES		
T1G2	295012 AA2.01	Rejected based on low level of difficulty. Randomly selected 295010 AA1.06 and rejected based on same K/A as Audit SRO exam. Randomly selected 295014 AK2.03.
T2G1	239002 K3.02	Rejected based on low level of difficulty and inability to write a discriminating question. Randomly selected K5.04 in the same topic area.
T2G1	400000 A4.01	Rejected based on low level of difficulty and inability to write a discriminating question. Randomly selected K1.04 in the same topic area.
T2G2	241000 A1.15	Rejected based on low level of difficulty. This is a mechanical limit and not electrical limiting the questions to be asked that provide an appropriate level of discrimination. Randomly selected 234000 A3.02.
T2G1	259002 2.4.50	Rejected based on low level of difficulty and inability to write a discriminating question. Randomly selected 205000 2.1.32.

T1G1 295030 Duplication with Operating Test. (RO-16)