

Facility: Nine Mile Point Unit 1														Date of Exam: May 2013				
Tier	Group	RO K/A Category Points												SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolution	1	2	3	4				4	3				4	20	3	4	7	
	2	2	0	2	N/A			1	1	N/A			1	7	2	1	3	
	Tier Totals	4	3	6				5	4				5	27	5	5	10	
2. Plant Systems	1	3	2	3	4	3	0	2	3	3	1	2	26	2	3	5		
	2	0	0	0	2	1	3	1	1	0	2	2	12	0	1	3		
	Tier Totals	3	2	3	6	4	3	3	4	3	3	4	38	3	5	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		3		2		2			2	1	2	2	

Note:

- Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
- The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by  $\pm 1$  from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
- Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
- Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
- Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- \* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
- On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
- For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						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	#
295026 Suppression Pool High Water Temperature / 5						X	2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	76
295030 Low Suppression Pool Water Level / 5						X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	77
295003 Partial or Complete Loss of AC Power / 6					X		AA2.04 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: System lineups	3.7	78
295005 Main Turbine Generator Trip / 3					X		AA2.08 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Reactor power	3.9	79
295023 Refueling Accidents / 8					X		AA2.03 - Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS: Airborne contamination levels	3.8	80
295016 Control Room Abandonment / 7						X	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	81
600000 Plant Fire On Site / 8						X	2.4.11 - Knowledge of abnormal condition procedures.	4.2	82
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Idle loop flow	2.8	1
295003 Partial or Complete Loss of AC Power / 6				X			AA1.01 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: A.C. electrical distribution system	3.7	2
295004 Partial or Complete Loss of DC Power / 6		X					AK2.02 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: Batteries	3.0	3
295005 Main Turbine Generator Trip / 3		X					AK2.08 - Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: A.C. electrical distribution	3.2	4
295006 SCRAM / 1						X	2.4.6 - Knowledge of EOP mitigation strategies.	3.7	5
295016 Control Room Abandonment / 7				X			AA1.08 - Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Reactor pressure	4.0	6
295018 Partial or Complete Loss of CCW / 8					X		AA2.02 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Cooling water temperature	3.1	7
295019 Partial or Complete Loss of Instrument Air / 8				X			AA1.01 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Backup air supply	3.5	8
295021 Loss of Shutdown Cooling / 4					X		AA2.06 - Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor pressure	3.2	9

295023 Refueling Accidents / 8		X					AK2.02 - Knowledge of the interrelations between REFUELING ACCIDENTS and the following: Fuel pool cooling and cleanup system	2.9	10
295024 High Drywell Pressure / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell temperature	3.9	11
295025 High Reactor Pressure / 3						X	2.1.27 - Knowledge of system purpose and/or function.	3.9	12
295026 Suppression Pool High Water Temperature / 5				X			EA1.03 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Temperature monitoring	3.9	13
295028 High Drywell Temperature / 5	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE: Equipment environmental qualification	2.9	14
295030 Low Suppression Pool Water Level / 5						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	15
295031 Reactor Low Water Level / 2	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling	4.6	16
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1			X				EK3.01 - Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Recirculation pump trip/runback: Plant-Specific	4.1	17
295038 High Off-site Release Rate / 9			X				EK3.03 - Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Control room ventilation isolation: Plant-Specific	3.7	18
600000 Plant Fire On Site / 8			X				AK3.04 - Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site	2.8	19
700000 Generator Voltage and Electric Grid Disturbances / 6						X	2.4.45 - Ability to prioritize and interpret the significance of each annunciator or alarm.	4.1	20
K/A Category Totals:	2	3	4	4	3	4	Group Point Total:	20 / 7	
					3	4			

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						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	#
295015 Incomplete SCRAM / 1						X	2.4.8 - Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	83
295036 Secondary Containment High Sump/Area Water Level / 5					X		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	3.2	84
295007 High Reactor Pressure / 3					X		AA2.03 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Reactor water level	3.7	85
295010 High Drywell Pressure / 5						X	2.1.31 - Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	21
295012 High Drywell Temperature / 5	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE: Pressure/temperature relationship	3.3	22
295013 High Suppression Pool Temperature / 5			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Limiting heat additions	3.6	23
295014 Inadvertent Reactivity Addition / 1			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to INADVERTENT REACTIVITY ADDITION: Control rod blocks	3.7	24
295020 Inadvertent Containment Isolation / 5 & 7	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to INADVERTENT CONTAINMENT ISOLATION: Power/reactivity control	3.5	25
295033 High Secondary Containment Area Radiation Levels / 9				X			EA1.02 - Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Process radiation monitoring system	3.7	26
500000 High Containment Hydrogen Concentration / 5					X		EA2.01 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Hydrogen monitoring system availability	3.1	27
K/A Category Point Totals:	2	0	2	1	1 / 2	1 / 1	Group Point Total:	7 / 3	

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											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	#
207000 Isolation (Emergency) Condenser											X	2.4.18 - Knowledge of the specific bases for EOPs.	4.0	86
215005 APRM / LPRM											X	2.4.47 - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	87
206000 HPCI								X				A2.04 - 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: A.C. failures: BWR-2,3,4	3.0	88
212000 RPS								X				A2.03 - Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Surveillance testing	3.5	89
211000 SLC											X	2.2.38 - Knowledge of conditions and limitations in the facility license.	4.5	90
205000 Shutdown Cooling							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) controls including: Heat exchanger cooling flow	3.3	28
205000 Shutdown Cooling				X								K4.01 - Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: High temperature isolation: Plant-Specific	3.4	29
206000 HPCI											X	2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	4.2	30
207000 Isolation (Emergency) Condenser							X					A1.05 - Ability to predict and/or monitor changes in parameters associated with operating the ISOLATION (EMERGENCY) CONDENSER controls including: Reactor pressure: BWR-2,3	4.0	31
209001 LPCS		X										K2.01 - Knowledge of electrical power supplies to the following: Pump power	3.0	32
211000 SLC								X				A2.02 - Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure of explosive valve to fire	3.6	33
212000 RPS					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM: Specific logic arrangements	3.3	34

215003 IRM										X		A3.02 - Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: Annunciator and alarm signals	3.3	35
215004 Source Range Monitor	X											K1.02 - Knowledge of the physical connections and/or cause-effect relationships between SOURCE RANGE MONITOR (SRM) SYSTEM and the following: Reactor manual control	3.4	36
215004 Source Range Monitor										X		A3.01 - Ability to monitor automatic operations of the SOURCE RANGE MONITOR (SRM) SYSTEM including: Meters and recorders	3.2	37
215005 APRM / LPRM			X									K3.01 - Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM will have on following: RPS	4.0	38
218000 ADS					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to AUTOMATIC DEPRESSURIZATION SYSTEM: ADS logic operation	3.8	39
223002 PCIS/Nuclear Steam Supply Shutoff				X								K4.03 - Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Manual initiation capability: Plant-Specific	3.5	40
223002 PCIS/Nuclear Steam Supply Shutoff	X											K1.14 - Knowledge of the physical connections and/or cause-effect relationships between PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF and the following: Containment drainage system	2.8	41
239002 SRVs		X										K2.01 - Knowledge of electrical power supplies to the following: SRV solenoids	2.8	42
259002 Reactor Water Level Control					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to REACTOR WATER LEVEL CONTROL SYSTEM: GEMAC/Foxboro/Bailey controller operation: Plant-Specific	3.1	43
261000 SGTS			X									K3.02 - Knowledge of the effect that a loss or malfunction of the STANDBY GAS TREATMENT SYSTEM will have on following: Off-site release rate	3.6	44
262001 AC Electrical Distribution										X		A4.01 - Ability to manually operate and/or monitor in the control room: All breakers and disconnects (including available switch yard): Plant-Specific	3.4	45
262002 UPS (AC/DC)			X									K3.14 - Knowledge of the effect that a loss or malfunction of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) will have on following: Rx power: Plant-Specific	2.8	46
262002 UPS (AC/DC)				X								K4.01 - Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies	3.1	47

263000 DC Electrical Distribution										X					A2.01 - Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Grounds	2.8	48
263000 DC Electrical Distribution														X	2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1	49
264000 EDGs										X					A2.09 - Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of A.C. power	3.7	50
264000 EDGs	X														K1.06 - Knowledge of the physical connections and/or cause-effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and the following: Starting system	3.2	51
300000 Instrument Air				X											K4.02 - Knowledge of (INSTRUMENT AIR SYSTEM) design feature(s) and or interlocks which provide for the following: Cross-over to other air systems	3.0	52
400000 Component Cooling Water											X				A3.01 - Ability to monitor automatic operations of the CCWS including: Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS	3.0	53
K/A Category Point Totals:	3	2	3	4	3	0	2	3	3	1	2	3	Group Point Total:			26 / 5	

BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)													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	#
202002 Recirculation Flow Control											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.7	91
201001 CRD Hydraulic								X				A2.14 - Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low drive header pressure	2.8	92
233000 Fuel Pool Cooling/Cleanup											X	2.4.31 - Knowledge of annunciator alarms, indications, or response procedures.	4.1	93
201001 CRD Hydraulic										X		A4.06 - Ability to manually operate and/or monitor in the control room: SDV isolation valve test switch	2.8	54
201002 RMCS											X	2.1.20 - Ability to interpret and execute procedure steps.	4.6	55
201006 RWM				X								K4.02 - Knowledge of ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Withdraw blocks/errors: P-Spec (Not-BWR6)	3.5	56
202001 Recirculation							X					A1.04 - Ability to predict and/or monitor changes in parameters associated with operating the RECIRCULATION SYSTEM controls including: Reactor water level	3.3	57
216000 Nuclear Boiler Instrumentation						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER INSTRUMENTATION: A.C. electrical distribution	3.1	58
219000 RHR/LPCI: Torus/Pool Cooling Mode										X		A4.02 - Ability to manually operate and/or monitor in the control room: Valve lineup	3.7	59
226001 RHR/LPCI: Containment Spray Mode											X	2.4.20 - Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	60
239001 Main and Reheat Steam								X				A2.11 - 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: Steam line break	4.1	61
271000 Offgas						X						K6.11 - Knowledge of the effect that a loss or malfunction of the following will have on the OFFGAS SYSTEM: Condenser vacuum	3.2	62
288000 Plant Ventilation				X								K4.03 - Knowledge of PLANT VENTILATION SYSTEMS design feature(s) and/or interlocks which provide for the following: Automatic starting and stopping of fans	2.8	63



290001 Secondary Containment						X							K6.08 - Knowledge of the effect that a loss or malfunction of the following will have on the SECONDARY CONTAINMENT: Plant air systems	2.7	64
290003 Control Room HVAC						X							K5.03 - Knowledge of the operational implications of the following concepts as they apply to CONTROL ROOM HVAC: Temperature control	2.6	65
K/A Category Point Totals:	0	0	0	2	1	3	1	1 / 1	0	2	2 / 2	Group Point Total:	12 / 3		

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.6	Ability to manage the control room crew during plant transients.			4.8	94
	2.1.20	Ability to interpret and execute procedure steps.			4.6	95
	2.1.32	Ability to explain and apply system limits and precautions.	3.8	66		
	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1	67		
	2.1.30	Ability to locate and operate components, including local controls.	4.4	68		
	Subtotal			3		2
2. Equipment Control	2.2.6	Knowledge of the process for making changes to procedures.			3.6	96
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.6	69		
	2.2.20	Knowledge of the process for managing troubleshooting activities.	2.6	70		
	2.2.13	Knowledge of tagging and clearance procedures.	4.1	71		
	Subtotal			3		1
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			2.9	97
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.			3.7	98
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	72		
	2.3.11	Ability to control radiation releases.	3.8	73		
	Subtotal			2		2
4. Emergency Procedures / Plan	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information).			4.1	99
	2.4.44	Knowledge of emergency plan protective action recommendations.			4.4	100
	2.4.14	Knowledge of general guidelines for EOP usage.	3.8	74		
	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	2.7	75		
	Subtotal			2		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
The following topics / K/As were excluded from the system and are not subject to review.		
1 / 1	295027 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark I containment.
1 / 2	295011 High Containment Temp	This topic applies to plants with Mark III containments only. The facility has a Mark I containment.
2 / 1	203000 RHR/LPCI: Injection Mode	This system is not installed at the facility.
2 / 1	209002 HPCS	This system is not installed at the facility.
2 / 1	217000 RCIC	This system is not installed at the facility.
2 / 2	201004 RSCS	This system is not installed at the facility.
2 / 2	201005 RCIS	This system is not installed at the facility.
2 / 2	215002 RBM	This system is not installed at the facility.
2 / 2	230000 RHR/LPCI: Torus/Pool Spray Mode	This system is not installed at the facility.
2 / 2	239003 MSIV Leakage Control	This system is not installed at the facility.
G	2.2.3 Knowledge of the design, procedural, and operational differences between units.	This K/A applies to multi-unit facilities only.

G	2.2.4 Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.	This K/A applies to multi-unit facilities only.
The following K/As were rejected following the systematic and random sampling process.		
2 / 1	Question 29 205000 K4.02 - Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: High pressure isolation	The facility does not have a high pressure isolation for Shutdown Cooling.  Randomly re-selected K/A 205000 K4.01 - Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: High temperature isolation: Plant-Specific
2 / 1	Question 51 264000 K1.02 - Knowledge of the physical connections and/or cause-effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and the following: D.C. electrical distribution	The K/A overlaps with Question 49 (263000 DC Electrical Distribution - 2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.) and DC Electrical Distribution is heavily sampled on the written exam.  Randomly re-selected K/A 264000 K1.06 - Knowledge of the physical connections and/or cause-effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and the following: Starting system
1 / 1	Question 82 600000 Plant Fire On Site 2.1.19 - Ability to use plant computers to evaluate system or component status.	An operationally relevant question at the appropriate license level could not be written due to lack of relationship between Plant Fire On Site and use of the Plant Process Computer.  Randomly re-selected Generic K/A 2.4.11 – Knowledge of abnormal condition procedures.

1 / 1	<p>Question 79</p> <p>295005 Main Turbine Generator Trip</p> <p>AA2.08 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Electrical distribution status</p>	<p>An operationally relevant question at the appropriate license level could not be written for the randomly sampled K/A.</p> <p>Randomly re-sampled K/A 295005 AA2.05 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Reactor power.</p>

Facility: <u>Nine Mile Point Unit 1</u>		Date of Examination: <u>May 2013</u>
Examination Level: <u>RO</u>		Operating Test Number: <u>LC1 11-01</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	P, D, S 2010 NRC	Perform Reactor Water Level Instrument Checks N1-ST-D0, K/A 2.1.18 (3.6)
Conduct of Operations	N, R	Perform Heat-up Rate Determination N1-OP-43A Attachment 18, K/A 2.1.7 (4.4)
Equipment Control	M, R	Explain RPS Manual Scram Circuit Using Prints C-19859-C, K/A 2.2.41 (3.5)
Radiation Control		
Emergency Procedures/Plan	N, S	Conduct Alert Emergency Announcement and Evacuation EPIP-EPP-18, K/A 2.4.43 (3.2)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

Facility: <u>Nine Mile Point Unit 1</u>		Date of Examination: <u>May 2013</u>
Examination Level: <u>SRO</u>		Operating Test Number: <u>LC1 11-01</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	Review Reactor Water Level Instrument Checks and Determine Technical Specification Impact  N1-ST-D0, K/A 2.1.7 (4.7)
Conduct of Operations	D, R	Determine Reportability Requirements for Loss of Offsite Power with EDG Failure  CNG-NL-1.01-1004, NUREG 1022, K/A 2.1.18 (3.8)
Equipment Control	M, R	Explain RPS Manual Scram Circuit Using Prints and Determine Technical Specification Requirements for RPS Manual Scram Pushbutton  C-19859-C, K/A 2.2.41 (3.9)
Radiation Control	N, R	Determine Actions for Inoperable Stack Radiation Monitor  ODCM, K/A 2.3.11 (4.3)
Emergency Procedures/Plan	N, S	Post-Scenario Emergency Event Classification  EPIP-EPP-18, K/A 2.4.29 (4.4)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

Facility: Nine Mile Point Unit 1  
Exam Level: RO/SRO-I/SRO-U

Date of Examination: May 2013  
Operating Test No.: LC1 11-01

Control Room Systems<sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Rapid RWCU System Restoration for Level Control K/A 204000 A4.06 (3.0/2.9), N1-EOP-HC	P, D, L, S 2010 NRC	2
b. Cool RBEVS Charcoal Filter K/A 261000 A4.03 (3.0/3.0), N1-OP-10	P, D, L, EN, S 2009 NRC	9
c. <b>Re-Open MSIVs With Reactor Pressurized and Lower Pressure</b> K/A 239001 A4.01 (4.2/4.0), N1-EOP-HC	N, L, S	3
d. <b>Transfer Torus Water to WCT</b> K/A 295029 EA1.03 (2.9/3.0), N1-EOP-1	D, EN, S	5
e. <b>Control Room Evacuation, Manual Scram Fails, ARI Works, One Main Steam Line Fails to Isolate, Powerboard 11 Fails to Fast Transfer</b> K/A 295016 AA1.01 (3.8/3.9), N1-SOP-21.2	M, A, EN, S	7
f. Restore Emergency Condenser To Service K/A 207000 A4.05 (3.5/3.7), N1-OP-13	D, A, EN, S	4
g. EDG 103 S/D – PB 103 Return to Normal Power K/A 264000 A4.04 (3.7/3.7), N1-OP-45	D, A, S	6
h. Reset Reactor Scram (RO Only) K/A 295006 AA1.07 (4.1/4.1), N1-SOP-1	M, L, S	1

In-Plant Systems<sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. <b>Initiate Emergency Condenser Locally</b> K/A 207000 A2.08 (3.8/3.8), N1-OP-13	M, A, L, E, R	4
j. Respond to RBCLC Makeup Tank Level Alarm K/A 295018 AA2.04 (2.9/2.9), N1-ARP-H1	D, A, E, R	8
k. <b>Lineup to Flood the Reactor Vessel Using the Diesel Fire Pump</b> K/A 295031 EA1.08 (3.8/3.9)	D, E, R	2



@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / $\geq 1$ (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Pairings:

A and B

C and D

E then F

G alone

H, possibly with RO admin JPM

**Appendix D****Scenario Outline****Form ES-D-1**Facility: Nine Mile Point Unit 1Scenario No.: NRC-1Op-Test No.: LC1 11-01Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Initial Conditions: The plant is operating at approximately 95% power. Containment Spray pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is caution tagged due to high vibrations.

Turnover: Secure Reactor Recirculation pump 12. Maintain Reactor power near the initial level while securing the pump.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO R – ATC	Secure Reactor Recirculation Pump 12 While Maintaining Reactor Power N1-OP-1, Technical Specifications
2	FW02A Override	C – BOP, SRO	Feedwater Booster Pump 11 Trips with Failure of Feedwater Booster Pump 13 to Auto-start N1-SOP-16.1, Technical Specifications
3	ED04	C – All	Powerboard 11 Electrical Fault N1-SOP-30.1, N1-SOP-1.3, N1-SOP-1.1, Technical Specifications
4	EC01	M – All	Steam Leak in Primary Containment N1-SOP-1, N1-EOP-2, N1-EOP-4, N1-EOP-8
5	PC10A PC10C	C – All	Torus to Drywell Vacuum Breaker Inadvertently Opens N1-EOP-4
6	FW28A FW28B FW06 CS07	C – BOP, SRO	HPCI Fails to Auto-Initiate, Feedwater Pump 13 Disengages, and Core Spray Valves Fail to Auto-Open N1-EOP-2
7	Overrides	C – ATC, SRO	Partial Primary Containment Isolation Failure N1-SOP-40.2
8	CT01A	C – All	Containment Spray Pump 111 Trips N1-EOP-4

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

Facility: <b>Nine Mile Point Unit 1</b>		Scenario No.: <b>NRC-1</b>	Op-Test No.: <b>LC1 11-01</b>
1. Total malfunctions (5-8) <b>Events 2, 3, 4, 5, 6, 7, 8</b>	7		
2. Malfunctions after EOP entry (1-2) <b>Events 5, 6, 7, 8</b>	4		
3. Abnormal events (2-4) <b>Events 2 &amp; 3</b>	2		
4. Major transients (1-2) <b>Event 4</b>	1		
5. EOPs entered/requiring substantive actions (1-2) <b>N1-EOP-2, N1-EOP-4</b>	2		
6. EOP contingencies requiring substantive actions (0-2) <b>N1-EOP-8</b>	1		
7. Critical tasks (2-3)	2		
<b>CRITICAL TASK DESCRIPTIONS:</b>  <b>CT-1 – Given a LOCA in the Drywell and a failure of HPCI to initiate, inject with preferred and alternate injection systems to restore and maintain RPV water level above -84 inches, in accordance with N1-EOP-2.</b>  <b>CT-2 – Given a LOCA in the Drywell and degraded Containment Spray capability, execute N1-EOP-8, RPV Blowdown, when it is determined Torus pressure cannot be maintained below the Pressure Suppression Pressure limit, in accordance with N1-EOP-4.</b>			

**Appendix D****Scenario Outline****Form ES-D-1**Facility: Nine Mile Point Unit 1Scenario No.: NRC-2Op-Test No.: LC1 11-01

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Initial Conditions: The plant is operating at approximately 55% power. Containment Spray pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is caution tagged due to high vibrations. Circulating Water pump 11 was returned to service earlier in the shift following waterbox cleaning.

Turnover: Raise Reactor power with Recirculation flow.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R – ATC, SRO	Raise Reactor Power With Recirculation Flow N1-OP-43B, N1-OP-1
2	NM36A	I – SRO	Recirculation Flow Unit Fails Upscale ARP F2-2-6, Technical Specifications
3	Report	C – ATC, SRO	Power Control Requests Emergency MVAR Support OP-32
4	EC03B	I – BOP, SRO	Emergency Condenser 12 Inadvertent Initiation ARP K1-1-5, N1-OP-13, Technical Specifications
5	CW17	C – All	Intake Grassing N1-SOP-18.1, N1-SOP-1.1
6	FW14C	I – BOP, SRO	Feedwater Level Control Fails As-is in Automatic N1-SOP-16.1
7	EC02	M – All	Emergency Condenser 11 Steam Leak in Reactor Building ARP K1-1-1, K1-4-3, N1-SOP-1, N1-EOP-2, N1-EOP-5
8	Overrides	C – ATC, SRO	Mode Switch Fails to Scram N1-SOP-1
9	EC07A EC08A EC08B	C – All	Emergency Condenser 11 Fails to Isolate N1-EOP-5, N1-EOP-8
10	Override	I – BOP, SRO	Bypass Opening Jack Fails to Open Turbine Bypass Valves N1-EOP-2

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

Facility: <b>Nine Mile Point Unit 1</b>		Scenario No.: <b>NRC-2</b>	Op-Test No.: <b>LC1 11-01</b>
1. Total malfunctions (5-8) <b>Events 2, 3, 4, 5, 6, 7, 8, 9, 10</b>	9		
2. Malfunctions after EOP entry (1-2) <b>Events 8, 9, 10</b>	3		
3. Abnormal events (2-4) <b>Events 4, 5, 6</b>	3		
4. Major transients (1-2) <b>Event 7</b>	1		
5. EOPs entered/requiring substantive actions (1-2) <b>N1-EOP-2, N1-EOP-5</b>	2		
6. EOP contingencies requiring substantive actions (0-2) <b>N1-EOP-8</b>	1		
7. Critical tasks (2-3)	3		
<b>CRITICAL TASK DESCRIPTIONS:</b>  <b>CT-1 – Given the plant at power with lowering intake water level, remove a Circulating Water pump from service in order to preserve use of the lake as a heat sink, in accordance with N1-SOP-18.1.</b>  <b>CT-2 – Given an un-isolable Emergency Condenser leak outside primary containment and one general area temperature above the maximum safe limit, insert a manual reactor scram, in accordance with N1-EOP-5.</b>  <b>CT-3 – Given an un-isolable Emergency Condenser leak outside primary containment and two general area temperatures above the maximum safe limit, execute N1-EOP-8, RPV Blowdown, in accordance with N1-EOP-5.</b>			

Facility: Nine Mile Point Unit 1Scenario No.: NRC-3Op-Test No.: LC1 11-01

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: The plant is operating at approximately 100% power. Containment Spray pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is caution tagged due to high vibrations.

Turnover: Maintain operation at rated power.

Event No.	Malf. No.	Event Type*	Event Description
1	RP01A	C – BOP, SRO R – ATC	RPS MG Set 131 Trip ARP F1-3-7, N1-OP-48, N1-SOP-16.1, N1-SOP-1.1
2	RP16B	I – SRO	Reactor Pressure Instrument Fails Downscale ARP F4-4-2, Technical Specifications
3	RD36A	C – BOP, SRO	CRD Flow Control Valve Fails Closed N1-SOP-5.1, Technical Specifications
4	Override	I – All	MPR Setpoint Drifts Low N1-SOP-31.2, N1-SOP-1
5	RD33	M – All	Failure to Scram N1-EOP-2, N1-EOP-3
6	LP01A LP01B	C – All	Liquid Poison Pumps Trip N1-EOP-3, N1-EOP-3.2
7	RD35B	C – ATC, SRO	CRD Pump 12 Trips N1-EOP-3.1, N1-SOP-5.1
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: <b>Nine Mile Point Unit 1</b>		Scenario No.: <b>NRC-3</b>	Op-Test No.: <b>LC1 11-01</b>
1. Total malfunctions (5-8) <b>Events 1, 2, 3, 4, 5, 6, 7</b>	7		
2. Malfunctions after EOP entry (1-2) <b>Events 6 &amp; 7</b>	2		
3. Abnormal events (2-4) <b>Events 1, 3, 4</b>	3		
4. Major transients (1-2) <b>Event 5</b>	1		
5. EOPs entered/requiring substantive actions (1-2) <b>EOP-2</b>	1		
6. EOP contingencies requiring substantive actions (0-2) <b>EOP-3</b>	1		
7. Critical tasks (2-3)	2		
<b>CRITICAL TASK DESCRIPTIONS:</b>  <b>CT-1 – Given a failure of the Reactor to scram with power above 6% or unknown and RPV water level above -41 inches, lower power to below 6% by:</b> <ul style="list-style-type: none"> <li>• Tripping Reactor Recirculation pumps, and/or</li> <li>• Terminating and preventing all injection except boron and CRD,</li> </ul> <b>in accordance with N1-EOP-3.</b>  <b>CT-2 – Given a failure of the Reactor to scram, insert control rods, in accordance with N1-EOP-3.</b>			

Facility: Nine Mile Point Unit 1Scenario No.: NRC-4Op-Test No.: LC1 11-01

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: The plant is operating at approximately 100% power. Containment Spray pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is caution tagged due to high vibrations.

Turnover: Remove Line 4 from service.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Remove Line 4 from Service N1-OP-33A, Technical Specifications
2	AD05	C – BOP, SRO R – ATC	ERV Inadvertently Opens N1-SOP-1.4, N1-SOP-1.1, Technical Specifications
3	ED12A	C – BOP, SRO	Powerboard 16A Electrical Fault ARP L4-3-6, N1-EOP-4
4	CW04A CW04B CW04C	C – All	All RBCLC Pumps Trip N1-SOP-11.1, N1-SOP-1, N1-EOP-2
5	FW03A FW03B FW06	C – All	Feedwater Pumps Trip N1-EOP-2
6	CU01 EC01	M – All	Coolant Leak Inside Primary Containment N1-EOP-2, N1-EOP-4
7	RR87	I – All	Fuel Zone Level Instrument Flashing N1-EOP-2, N1-EOP-7
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



Facility: <b>Nine Mile Point Unit 1</b>		Scenario No.: <b>NRC-4</b>	Op-Test No.: <b>LC1 11-01</b>
1. Total malfunctions (5-8) <b>Events 2, 3, 4, 5, 6, 7</b>	6		
2. Malfunctions after EOP entry (1-2) <b>Events 5 &amp; 7</b>	2		
3. Abnormal events (2-4) <b>Events 2, 3, 4</b>	3		
4. Major transients (1-2) <b>Event 6</b>	1		
5. EOPs entered/requiring substantive actions (1-2) <b>N1-EOP-2, N1-EOP-4</b>	2		
6. EOP contingencies requiring substantive actions (0-2) <b>N1-EOP-7</b>	1		
7. Critical tasks (2-3)	3		
<b>CRITICAL TASK DESCRIPTIONS:</b>  <b>CT-1 – Given an inadvertently open ERV at power, close the ERV or insert a manual scram prior to Torus temperature exceeding 110°F, in accordance with N1-SOP-1.4.</b>  <b>CT-2 – Given a LOCA in the Drywell, initiate Containment Sprays prior to exceeding the Pressure Suppression Pressure limit, in accordance with N1-EOP-4.</b>  <b>CT-3 – Given the plant with RPV water level unknown, execute N1-EOP-7, RPV Flooding, in accordance with N1-EOP-2.</b>			

Facility: Nine Mile Point Unit 1Scenario No.: NRC-5Op-Test No.: LC1 11-01

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: The plant is operating at approximately 5% power during a startup. Steam Packing Exhauster 12 is caution tagged due to high vibrations.

Turnover: Raise Reactor power by withdrawing control rods. Place the Mode Switch in RUN and withdraw the IRMs.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R – ATC, SRO	Raise Reactor Power with Control Rods N1-OP-5, N1-OP-43A
2	N/A	N – BOP, SRO	Place Mode Switch in RUN and Withdraw IRMs N1-OP-43A
3	ED02A	C – SRO	Loss of Line 1 ARP A8-1-1, Technical Specifications
4	MC01	C – All	Loss of Condenser Vacuum N1-SOP-25.1, N1-SOP-1
5	ED01A	C – All	Loss of Line 4 N1-SOP-33A.1, Technical Specifications
6	DG04A	C – BOP, SRO	Emergency Diesel Generator 102 Fails to Automatically Start N1-SOP-33A.1
7	RR29	M – All	Loss of Coolant Accident N1-EOP-2, N1-EOP-4, N1-EOP-8
8	CS06	C – All	Core Spray Fails to Auto-Start N1-EOP-2
9	EC04A EC04B	C – ATC, SRO	Emergency Condensers Fail to Operate from Control Room N1-EOP-2, N1-EOP-8
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: <b>Nine Mile Point Unit 1</b>		Scenario No.: <b>NRC-5</b>	Op-Test No.: <b>LC1 11-01</b>
1. Total malfunctions (5-8) <b>Events 3, 4, 5, 6, 7, 8, 9</b>	7		
2. Malfunctions after EOP entry (1-2) <b>Events 8 &amp; 9</b>	2		
3. Abnormal events (2-4) <b>Events 4 &amp; 5</b>	2		
4. Major transients (1-2) <b>Event 7</b>	1		
5. EOPs entered/requiring substantive actions (1-2) <b>N1-EOP-2, N1-EOP-4</b>	2		
6. EOP contingencies requiring substantive actions (0-2) <b>N1-EOP-2 Alternate Level Control, N1-EOP-8</b>	2		
7. Critical tasks (2-3)	3		
<b>CRITICAL TASK DESCRIPTIONS:</b>  <b>CT-1 – Given a LOCA in the Drywell, initiate Containment Sprays prior to exceeding the Pressure Suppression Pressure limit, in accordance with N1-EOP-4.</b>  <b>CT-2 – Given Reactor water level below the top of active fuel and Reactor pressure above the capacity of available low pressure systems, perform an emergency depressurization of the Reactor, in accordance with N1-EOP-2 and N1-EOP-8.</b>  <b>CT-3 – Given a LOCA in the Drywell and Reactor water level below the top of active fuel, inject with Preferred and Alternate Injection Systems to restore and maintain Reactor water level above -84 inches, in accordance with N1-EOP-2.</b>			