Facility:	Nine Mile Point Unit 2	Date of Exam:	March 2014

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 & Plant Evolutions	1	4	4	3				3	3			3	20	3		4		7
	2	1	1	2				1	1			1	7	2		1		3
	Tier Totals	5	5	5				4	4			4	27	5		5		10
2. Plant Systems	1	2	2	3	3	3	2	2	2	2	3	2	26	2		3		5
	2	1	1	1	1	1	1	1	1	1	1	2	12	0	1	2		3
	Tier Totals	3	3	4	4	4	3	3	3	3	4	4	38	3		5		8
3. Generic Knowledge & Abilities Categories		1			2			3			4		10	1	2	3	4	7
		2			3			3			2			2	1	2	2	

Note

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
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. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to section D.1.b of ES-401, for guidance regarding elimination of inappropriate K/A statements.
4. 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.
5. Absent a plant specific priority, only those KAs 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.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7.* 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/A's
8. 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. 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.
9. 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 10CFR55.43

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295004 Partial or Complete Loss of DC Power / 6					X		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	76
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	77
295021 Loss of Shutdown Cooling / 4					X		AA2.01 - Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water heatup/cooldown rate	3.6	78
295018 Partial or Complete Loss of CCW / 8						X	2.4.46 - Emergency Procedures / Plan: Ability to verify that the alarms are consistent with the plant conditions.	4.2	79
295025 High Reactor Pressure / 3						X	2.2.25 – Equipment Control: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	80
295003 Partial or Complete Loss of AC Power / 6						X	2.4.41 - Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications.	4.6	81
700000 Generator Voltage and Electric Grid Disturbances						X	2.4.8 - Emergency Procedures / Plan: Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	82
295006 SCRAM / 1	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to SCRAM: Shutdown margin	3.4	39
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	X						AK1.04 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Limiting cycle oscillation: Plant-Specific	2.5	40

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295018 Partial or Complete Loss of CCW / 8	X						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	41
295038 High Off-site Release Rate / 9		X					EK2.03 - Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Plant ventilation systems	3.6	42
295028 High Drywell Temperature / 5		X					EK2.04 - Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell ventilation	3.6	43
295003 Partial or Complete Loss of AC Power / 6		X					AK2.06 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: D.C. electrical loads	3.4	44
700000 Generator Voltage and Electric Grid Disturbances			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Actions contained in abnormal operating procedure for voltage and grid disturbances	3.6	45
295021 Loss of Shutdown Cooling / 4			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING: Feeding and bleeding reactor vessel	3.3	46
295024 High Drywell Pressure / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization	3.7	47
295016 Control Room Abandonment / 7				X			AA1.01 - Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: RPS	3.8	48

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
600000 Plant Fire On-site / 8				X			AA1.08 - Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: Fire fighting equipment used on each class of fire	2.6	49
295005 Main Turbine Generator Trip / 3				X			AA1.07 - Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: A.C. electrical distribution	3.3	50
295026 Suppression Pool High Water Temperature / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level	3.8	51
295025 High Reactor Pressure / 3					X		EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Suppression pool level	3.9	52
295031 Reactor Low Water Level / 2					X		EA2.02 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL: Reactor power	4.0	53
295019 Partial or Complete Loss of Instrument Air / 8						X	2.1.20 - Conduct of Operations: Ability to interpret and execute procedure steps.	4.6	54
295030 Low Suppression Pool Water Level / 5						X	2.1.27 - Conduct of Operations: Knowledge of system purpose and / or function.	3.9	55
295023 Refueling Accidents / 8						X	2.1.32 – Conduct of Operations: Ability to explain and apply system limits and precautions.	3.8	56
295004 Partial or Complete Loss of DC Power / 6	X						AK1.05 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Loss of breaker protection	3.3	57

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1		X					EK2.11 - Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: RMCS: Plant-Specific	3.8	58
K/A Category Totals:	4	4	3	3	**3/3**	**3/4**	Group Point Total:		20/7

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
500000 High Containment Hydrogen Concentrations / 5					X		EA2.04 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Combustible limits for wetwell	3.3	83
295029 High Suppression Pool Water Level / 5						X	2.4.47 – Emergency Procedures / Plan: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	84
295022 Loss of CRD Pumps / 1					X		AA2.01 - Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS: Accumulator pressure	3.6	85
295020 Inadvertent Containment Isolation / 5 & 7	X						AK1.05 - Knowledge of the operational implications of the following concepts as they apply to INADVERTENT CONTAINMENT ISOLATION: Loss of drywell/containment cooling	3.3	59
295029 High Suppression Pool Water Level / 5		X					EK2.08 - Knowledge of the interrelations between HIGH SUPPRESSION POOL WATER LEVEL and the following: Drywell/suppression chamber ventilation	2.6	60
295022 Loss of CRD Pumps / 1			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: Reactor SCRAM	3.7	61
295009 Low Reactor Water Level / 2				X			AA1.03 - Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL: Recirculation system: Plant-Specific	3.0	62
295032 High Secondary Containment Area Temperature / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Area temperature	3.8	63

Nine Mile Point Unit 2
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295010 High Drywell Pressure / 5						X	2.4.11 – Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.0	64
500000 High Containment Hydrogen Concentrations / 5			X				EK3.03 - Knowledge of the reasons for the following responses as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Operation of hydrogen and oxygen recombiners	3.0	65
K/A Category Totals:	1	1	2	1	1/ 2	1/ 1	Group Point Total:		7/3

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
209001 LPCS								X				A2.03 - Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY 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	3.6	86
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	87
262002 UPS (AC/DC)											X	2.1.23 – Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	88
218000 ADS											X	2.4.6 – Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	4.7	89
261000 SGTS											X	2.2.12 - Equipment Control: Knowledge of surveillance procedures.	4.1	90
215004 Source Range Monitor	X											K1.01 - Knowledge of the physical connections and/or cause-effect relationships between SOURCE RANGE MONITOR (SRM) SYSTEM and the following: Reactor protection system	3.6	1

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
400000 Component Cooling Water	X											K1.02 - Knowledge of the physical connections and / or cause-effect relationships between CCWS and the following: Loads cooled by CCWS	3.2	2
212000 RPS		X										K2.01 - Knowledge of electrical power supplies to the following: RPS motor-generator sets	3.2	3
262001 AC Electrical Distribution		X										K2.01 - Knowledge of electrical power supplies to the following: Off-site sources of power	3.3	4
264000 EDGs			X									K3.02 - Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on following: A.C. electrical distribution	3.9	5
215005 APRM / LPRM			X									K3.07 - Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM will have on following: Rod block monitor: Plant-Specific	3.2	6
203000 RHR/LPCI: Injection Mode				X								K4.07 - Knowledge of RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Emergency generator load sequencing	3.7	7

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
215003 IRM				X								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	8
300000 Instrument Air					X							K5.13 - Knowledge of the operational implications of the following concepts as they apply to the INSTRUMENT AIR SYSTEM: Filters	2.9	9
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	10
223002 PCIS/Nuclear Steam Supply Shutoff						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF: D.C. electrical distribution	3.0	11
262002 UPS (AC/DC)						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): D.C. electrical power	2.8	12

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
218000 ADS							X					A1.04 - Ability to predict and/or monitor changes in parameters associated with operating the AUTOMATIC DEPRESSURIZATION SYSTEM controls including: Reactor pressure	4.1	13
211000 SLC							X					A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Reactor power	4.3	14
205000 Shutdown Cooling								X				A2.09 - Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reactor low water level	3.6	15
209002 HPCS								X				A2.02 - Ability to (a) predict the impacts of the following on the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Pump trips: BWR-5,6	3.6	16
209001 LPCS									X			A3.01 - Ability to monitor automatic operations of the LOW PRESSURE CORE SPRAY SYSTEM including: Valve operation	3.6	17

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
263000 DC Electrical Distribution									X			A3.01 - Ability to monitor automatic operations of the D.C. ELECTRICAL DISTRIBUTION including: Meters, dials, recorders, alarms, and indicating lights	3.2	18
261000 SGTS										X		A4.06 - Ability to manually operate and/or monitor in the control room: Reactor building differential pressure	3.3	19
217000 RCIC										X		A4.09 - Ability to manually operate and/or monitor in the control room: System pressure	3.7	20
264000 EDGs											X	2.4.9 - Emergency Procedures / Plan: Knowledge of low power / shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	3.8	21
223002 PCIS/Nuclear Steam Supply Shutoff											X	2.4.6 - Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	3.7	22
211000 SLC				X								K4.02 - Knowledge of STANDBY LIQUID CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Component and system testing	3.0	23
212000 RPS			X									K3.07 - Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: Reactor power (thermal heat flux)	3.8	24
239002 Safety Relief Valves										X		A4.01 - Ability to manually operate and/or monitor in the control room: SRVs	4.4	25

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
262001 AC Electrical Distribution					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Breaker control	2.6	26
K/A Category Totals:	2	2	3	3	3	2	2	2/ 2	2	3	2/ 3	Group Point Total:		26/5

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q #
215002 RBM								X				A2.04 - Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply losses: BWR-3,4,5	2.8	91
272000 Radiation Monitoring											X	2.2.22 - Equipment Control: Knowledge of limiting conditions for operations and safety limits.	4.7	92
241000 Reactor/Turbine Pressure Regulating System											X	2.1.31 - Conduct of Operations: Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.3	93
245000 Main Turbine Generator and Auxiliary Systems	X											K1.06 - Knowledge of the physical connections and/or cause-effect relationships between MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS and the following: Component cooling water systems	2.6	27
286000 Fire Protection		X										K2.02 - Knowledge of electrical power supplies to the following: Pumps	2.9	28
202002 Recirculation Flow Control			X									K3.04 - Knowledge of the effect that a loss or malfunction of the RECIRCULATION FLOW CONTROL SYSTEM will have on following: Reactor/turbine pressure regulation system	2.9	29

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q #
204000 RWCU				X								K4.04 - Knowledge of REACTOR WATER CLEANUP SYSTEM design feature(s) and/or interlocks which provide for the following: System isolation upon receipt of isolation signals	3.5	30
271000 Offgas					X							K5.04 - Knowledge of the operational implications of the following concepts as they apply to OFFGAS SYSTEM: Hydrogen concentration measurement	2.9	31
230000 RHR/LPCI: Torus/Pool Spray Mode						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE: A.C. electrical	3.3	32
226001 RHR/LPCI: Containment Spray Mode							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE controls including: Containment/drywell pressure	3.6	33
202001 Recirculation								X				A2.23 - Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve closures	3.2	34
259001 Reactor Feedwater									X			A3.03 - Ability to monitor automatic operations of the REACTOR FEEDWATER SYSTEM including: System flow	3.3	35

Nine Mile Point Unit 2
Written Examination Outline
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q #
223001 Primary Containment and Auxiliaries										X		A4.12 - Ability to manually operate and/or monitor in the control room: Drywell coolers/chillers	3.5	36
268000 Radwaste											X	2.1.7 – Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	37
239001 Main and Reheat Steam											X	2.2.44 - Equipment Control: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.2	38
K/A Category Totals:	1	1	1	1	1	1	1	1/ 1	1	1	2/ 2	Group Point Total:		12/3

Facility:	Nine Mile Point Unit 2	Date:	March 2014			
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.20	Ability to interpret and execute procedure steps.			4.6	94
	2.1.42	Knowledge of new and spent fuel movement procedures.			3.4	98
	2.1.44	Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9	66		
	2.1.45	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	67		
	Subtotal			2		2
2. Equipment Control	2.2.6	Knowledge of the process for making changes to procedures.			3.6	95
	2.2.43	Knowledge of the process used to track inoperable alarms.	3.0	68		
	2.2.7	Knowledge of the process for conducting special or infrequent tests.	2.9	69		
	2.2.37	Ability to determine operability and / or availability of safety related equipment.	3.6	74		
	Subtotal			3		1
3. Radiation Control	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.7	96
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			3.1	100
	2.3.11	Ability to control radiation releases.	3.8	70		

	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	71		
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	75		
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable fire fighting equipment usage.			3.6	97
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.			4.6	99
	2.4.31	Knowledge of annunciator alarms, indications, or response procedures.	4.2	72		
	2.4.19	Knowledge of EOP layout, symbols, and icons.	3.4	73		
	Subtotal			2		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
[illegible]		
1 / 1	295027 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark II containment.
1 / 2	295011 High Containment Temp	This topic applies to plants with Mark III containments only. The facility has a Mark II containment.
2 / 1	206000 HPCI	This system is not installed at the facility.
2 / 1	207000 Isolation (Emergency) Condenser	This system is not installed at the facility.
2 / 2	201005 RCIS	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:		
1 / 1	Question 56 295023 Refueling Accidents 2.4.41 - Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Additionally, the randomly sampled generic K/A overlapped with that of question #73. Randomly re-selected K/A 295023 Refueling Accidents 2.1.32 – Conduct of Operations: Ability to explain and apply system limits and precautions.
2 / 1	Question 10 259002 Reactor Water Level Control K5.08 - Knowledge of the operational implications of the following concepts as they apply to REACTOR WATER LEVEL CONTROL SYSTEM: Heat removal mechanisms: FWCI	The facility does not have a FWCI mode of the Feedwater system. Randomly re-selected K/A 259002 Reactor Water Level Control 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
2 / 1	Question 7 203000 RHR/LPCI: Injection Mode K4.15 - Knowledge of RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Pump runout protection: Plant-Specific	An adequate question meeting the K/A could not be constructed, as the facility ultimately ensures pump runout protection by adhering to procedural pump limitations, not a design feature or interlock. Randomly re-selected K/A 203000 RHR/LPCI: Injection Mode K4.07 - Knowledge of RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Emergency generator load sequencing
1 / 2	Question 84 295029 High Suppression Pool Water Level 2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Randomly re-selected K/A 295029 High Suppression Pool Water Level 2.4.47 – Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

2 / 2	Question 92 272000 Radiation Monitoring 2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Randomly re-selected K/A 272000 Radiation Monitoring 2.2.22 - Knowledge of limiting conditions for operations and safety limits.
2 / 1	Question 88 262002 UPS (AC/DC) 2.1.19 - Conduct of Operations: Ability to use plant computers to evaluate system or component status.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Randomly re-selected K/A 262002 UPS (AC/DC) 2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.
2 / 1	Question 89 218000 ADS 2.4.1 - Emergency Procedures / Plan: Knowledge of EOP entry conditions and immediate action steps.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Randomly re-selected K/A 218000 ADS 2.4.6 - Knowledge of EOP mitigation strategies.
2 / 2	Question 38 239001 Main and Reheat Steam 2.2.40 - Equipment Control: Ability to apply technical specifications for a system.	A discriminating question at the appropriate license level could not be developed for the randomly sampled generic K/A. Randomly re-selected K/A 239001 Main and Reheat Steam 2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.
3	Question 96 2.3.4 - Knowledge of radiation exposure limits under normal or emergency conditions.	The randomly sampled generic K/A overlaps with Question 71. Randomly re-selected K/A 2.3.12 - Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

1 / 1	Question 80 295025 High Reactor Pressure 2.2.12 - Equipment Control: Knowledge of surveillance procedures.	The randomly sampled generic K/A is identical to that for Question 90 and not well suited for a discriminating and valid question. Randomly re-selected K/A 295025 High Reactor Pressure 2.2.25 – Equipment Control: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
1 / 1	Question 81 295003 Partial or Complete Loss of AC Power 2.2.12 - Equipment Control: Knowledge of surveillance procedures.	The randomly sampled generic K/A is identical to that for Question 90 and not well suited for a discriminating and valid question. Randomly re-selected K/A 295003 Partial or Complete Loss of AC Power 2.4.41 – Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications.
1 / 1	Question 47 295024 High Drywell Pressure EK3.09 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Auxiliary building isolation: Plant-Specific	The facility does not have an Auxiliary Building. Randomly re-selected K/A 295024 High Drywell Pressure EK3.04 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization.
2 / 2	Question 37 268000 Radwaste 2.4.18 - Emergency Procedures / Plan: Knowledge of the specific bases for EOPs.	There are no specific bases in the EOPs that relate to Radwaste to support construction of a valid question with the randomly sampled K/A. Randomly re-selected K/A 268000 Radwaste 2.1.7 – Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

1 / 1	Question 57 295004 Partial or Complete Loss of DC Power AK1.04 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Effect of battery discharge rate on capacity	An acceptable question could not be developed without either significant overlap with Question 44 or testing Generic Fundamentals. Randomly re-selected K/A 295004 Partial or Complete Loss of DC Power AK1.05 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Loss of breaker protection
1 / 2	Question 65 500000 High Containment Hydrogen Concentrations EK3.06 - Knowledge of the reasons for the following responses as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Operation of wet well vent	An acceptable question could not be developed without significant overlap with either Question 60 or Question 83. Randomly re-selected K/A 500000 High Containment Hydrogen Concentrations EK3.03 - Knowledge of the reasons for the following responses as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Operation of hydrogen and oxygen recombiners
1 / 1	Question 45 700000 Generator Voltage and Electric Grid Disturbances AK3.01 - Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Reactor and turbine trip criteria	An acceptable question could not be developed because the procedures associated with Generator voltage and electrical grid disturbance (N2-SOP-70, Major Grid Disturbances, and associated alarm response procedures) do not contain explicit Reactor and Turbine trip criteria. Randomly re-selected K/A 700000 Generator Voltage and Electric Grid Disturbances AK3.02 - Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Actions contained in abnormal operating procedure for voltage and grid disturbances
3	Question 73 2.4.41 - Knowledge of the emergency action level thresholds and classifications.	An acceptable question could not be developed at the RO license level for the randomly selected K/A. Randomly re-selected K/A 2.4.19 – Knowledge of EOP layout, symbols, and icons.

2 / 1	Question 87 212000 RPS A2.18 - 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: SCRAM air header low pressure	An acceptable question could not be developed at the SRO license level for the randomly selected K/A without overlapping Question 9. Randomly re-selected K/A 212000 RPS 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.
2 / 1	Question 26 262001 AC Electrical Distribution K5.01 - Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Principle involved with paralleling two A.C. sources	An acceptable question could not be developed for the randomly selected K/A without testing generic fundamentals knowledge. Randomly re-selected K/A 262001 AC Electrical Distribution K5.02 - Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Breaker control.

Facility: NMP2 - NRC Date of Examination: March 2014

Examination Level: **RO** Operating Test Number: NRC

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	**Determine Containment Water Level** The applicant will calculate Containment Water Level and take actions based on the results 2.1.25 (3.9) Ability to interpret reference materials, such as graphs, curves, tables, etc. N2-EOP-6.23
Conduct of Operations	N, R	**Develop and get approval for a Temporary Note** The applicant will develop and get approval for a Temporary Note for a malfunctioning control switch. 2.1.15 (2.7) Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, operations memos, etc. CNG-OP-1.01-1005
Equipment Control	N, R	**Defeat the Reactor Building Ventilation LOCA Isolation Signals** The applicant will use prints and drawings to explain how to defeat the Reactor Building Ventilation LOCA Isolation Signals. 2.2.41 (3.5) Ability to obtain and interpret station electrical and mechanical drawings N2-EOP-6.26

Emergency Plan	D, S	**Fire Fighting Response for a Fire in the Protected Area** The applicant will make the appropriate announcements for a fire in the protected area. 2.4.39 (3.9) Knowledge of RO responsibilities in emergency plan implementation EPIP-EPP-28

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 (≤3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥1) (P)revious 2 exams (≤1; randomly selected)

Facility: NMP2-NRC		Date of Examination: March 2014
Examination Level: **SRO**		Operating Test Number: NRC
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, D	**Determine the Severity of a Reactivity Event and Actions Required** Given a mispositioned control rod, the applicant will assess a the Reactivity Severity Level and take appropriate corrective actions K/A 2.1.37 (4.6) Knowledge of procedures, guidelines, or limitations associated with reactivity management. CNG-OP-3.01-1000 and N2-OP-96
Conduct of Operations	R, M	**Determine Plant Impact for Inoperable Unit Cooler** Given a failed closed service water inlet valve to 2HVC*UC103A, the applicant will determine the effect on the unit cooler and Division 1 Chiller operability per N2-OP-53E and Technical Specifications 2.1.32 (4.0) Ability to explain and apply system limits and precautions. N2-OP-53E and Technical Specifications
Equipment Control	R, N	**Determine Components Which Need Protection** The applicant will review plant conditions and determine which components need to be protected 2.2.14 (4.3) Knowledge of the process for controlling equipment configuration or status. S-ODP-OPS-0122

Radiation Control	R, D, P	**Inspection of High Radiation Areas** Given radiological conditions related to an area where work is to be performed as shown on a survey map, and other applicable conditions such as the RWP, ensure the appropriate radiological aspects of the job are met prior to sending the operator into the area. 2.3.12 (3.7) Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc GAP-RPP-01, 02, 07 and 08; S-RAP-RPP-0703
Emergency Plan	R, D	**Event Classification and Notifications** Given a plant event, the applicant will determine classification and notification requirements. (Time Critical) 2.4.41 (4.6) Knowledge of the emergency action level thresholds and classifications. EPIP-EPP-02

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 (≤3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥1)
(P)revious 2 exams (≤1; randomly selected)

Facility:	Nine Mile Point Unit 2 NRC	Date of Examination:	March 2014
Exam Level: RO/SRO		Operating Test No.:	NRC

Control Room Systems@ (8 for RO; 2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title	Type Code*	Safety Function
S-1	**Rotate Drywell Unit Coolers from UC3A to 3B** The applicant will start UC3B and secure UC3A. When UC3A is shutdown, UC3B will develop high vibration which will require executing ARP 873213. ARP 873213 will direct shutting down UC3B by placing the control switch in Pull-To Lock. K/A 223001, A4.12. 3.5/3.6 N2-OP-60, Section 2.0 and ARP 873213	A, N, S	5 CONTAINMENT INTEGRITY
S-2	**Perform Weekly RPS Surveillance** The applicant will perform a RPS Weekly Surveillance on RPS Channels A. During the surveillance, two control rods will scram. The operator will take action to place the Mode Switch to Shutdown per N2-SOP-08. K/A 212000, A4.02 3.6/3.7 N2-OSP-RPS-W002, N2-SOP-08	A, M, S	7 INSTRUMENTATION
S-3	**Maximize RDS Flow After Scram** The applicant will maximize RDS flow by starting RDS-P1B and opening both the Flow Control Valve and Drive Water Control Valve. Once flow is maximized, suction strainer clogging will cause annunciator 603318 to alarm. The applicant will call for an operator to open the bypass lines around the filters per N2-OP-30 K/A 201001, A4.01 3.1/3.1 N2-OP-30, Section H.3.0 and ARP 603318	A, M, L, S	1 REACTIVITY CONTROL
S-4	**Reset LV10B Lockout and Place FWLC Back in Automatic** The applicant will reset a lockout on LV10B and place FWLC back in automatic. Once the lockout is reset, the FWLC Master controller will fail causing RPV Level to Change. The applicant will be required to take manual control of FWLC and restore level to normal band. K/A 259001, A4.05, 4.0/3.9 N2-SOP-06, Attachment 1, Section 1.3	A, N, S	2 REACTOR WATER INVENTORY CONTROL

S-5	**Energize 2ENS*SWG103 from Division 2 EDG and Energize 2NNS-SWG015 (Stub Bus) from 2ENS*SWG103 During a Station Blackout** The applicant will energize 2ENS*SWG103 from Division 2 EDG and energize 2NNS-SWG014 (Stub Bus) from 2ENS*SWG103. K/A 262001, A4.01 3.4/3.7 N2-SOP-03, Attachment 5, Section 5.3	D, P, L, S	6 ELECTRICAL
S-6	**Bypass RCIC Room High Temperature Isolation** The applicant will bypass the RCIC Room High Temperature Isolation during a station blackout. RCIC will trip requiring the trip to be reset. K/A 217000, A4.02 3.9/3.9 N2-SOP-02, Attachment 4	A, D, L, S	4 HEAT REMOVAL FROM THE CORE
S-7	**Override the Control Room Envelope ACU Cross-Divisional Operating Interlock** The applicant will override the Division 1 Control Room Envelope ACU Cross-Divisional Operating Interlocks. K/A 290003 A3.01 3.3/3.5 N2-OP-53A, H.15.0	D, S	9 RADIOACTIVITY RELEASE
S-8 **(RO Only)**	**Respond to an Inadvertent Closure of 2SWP*MOV50B** The applicant will respond to an inadvertent closure of 2SWP*MOV50B. K/A 400000, A4.01 3.1/3.0 N2-SOP-11, Flowchart and Attachment 1.	N, S	8 PLANT SERVICE SYSTEMS
In-Plant Systems@ (3 for RO; 3 or 2 for SRO-U)			
P-1	**Local Start of Division 1 Diesel Generator** The applicant will locally start the Division 1 Emergency Diesel Generator. After locally starting, a low lube oil pressure alarm will require the EDG to be shutdown. Initial efforts to shutdown the EDG will not be successful requiring the applicant to perform an Emergency Shutdown. K/A 264000, A4.04 3.7/3.7 N2-OP-100A, Section F.5.0 and H.1.0	A, D	6 ELECTRICAL

P-2	**Isolate a Hydraulic Control Unit with Cooling Water** The applicant will isolate an HCU with cooling water per N2-OP-30. K/A 201003, A2.01 3.4/3.6 N2-OP-30, Section F.8.0	D, R	1 REACTIVITY CONTROL
P-3	**Align Firewater to RHS B** The applicant will align Firewater to RHS B per N2-EOP-6.6 K/A 203000, A2.02 3.5/3.5 N2-EOP-6.6, Section 6.2	D, E, R	2 REACTOR WATER INVENTORY CONTROL

@	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	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Nine Mile Point 2** Scenario No.: **NRC- 1** Op-Test No: **March 2014**
Examiners: _____ Operators: _____

Initial Conditions: Simulator IC-150

1. Reactor Power is at 90%
2. 2WCS-P1B is out of service for maintenance.

Turnover:

1. The crew will be required to raise power to 95% using recirculation flow

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (SRO) R (RO)	The crew will raise reactor power to 95% using recirculation flow. **N2-OP-101D**
2	CW01A CW10E	C (BOP) C (SRO) TS (SRO)	Service Water Pump 1A trips on motor electric fault requiring the crew to manually start a standby service water pump. While starting the standby pump, the associated discharge valve will fail to automatically open requiring the operator to manually open the valve. The CRS will declare the pump inoperable and evaluate TS 3.7.1. **ARP's, N2-OP-11, TS 3.7.1**
3	CS01B	C (BOP) C (SRO) TS (SRO)	HPCS inadvertently initiates and injects into the core. FWLC will respond correctly and maintain RPV level below the Level 8 trip setpoint. The HPCS malfunction will prevent the system from being returned to standby which will required the crew to place the HPCS pump in pull to lock (PTL). With HPCS in PTL, the CRS will declare HPCS inoperable and evaluate TS 3.5.1. **N2-OP-33, TS 3.5.1**
4	RD12A	C (RO) C (SRO)	Suction strainer clogging will cause the running RDS pump to trip. The crew will respond per the SOP to swap suction strainers and restart the RDS pump. **N2-SOP-30**
5	ED02A ED02B DG04B ED05A	C (BOP) C (SRO) C (RO)	A complete loss of offsite power will occur. The Division 1 EDG will auto start, however it will not close in on the bus because of an electrical fault on the Division 1 Switchgear. The Division 2 EDG will fail to automatically start. The crew must take action to manually start the Division 2 EDG **(CRITICAL TASK)** and power the Division 2 switchgear. Due to the loss of Division 1 switchgear, the crew will manually scram the reactor, trip the turbine, and trip both recirculation pumps per N2-SOP-11. **N2-SOP-03, N2-SOP-11**

6	RR20	M (All)	A small LOCA will occur causing drywell pressure to rise. The crew will respond to control RPV level and Pressure and begin actions to control Primary Containment (PC) pressure. **N2-EOP-RPV, N2-EOP-PC**
7	CS05 SL03A RC01 RC06	C (RO/BOP) C(SRO)	While attempting to maintain RPV level above the TAF, the crew will attempt to restart HPCS which will trip a few seconds after the crew takes the pump out of PTL. RCIC will fail to automatically start once the manual initiation switch is depressed. The crew will manually start RCIC. Once RCIC is started, RCIC will trip due to an instrument failure. **N2-EOP-RPV, N2-EOP-HC**
8	N/A	C (RO/BOP) C(SRO)	Due to the LOCA and failure of adequate high pressure injection sources, the crew will blowdown the reactor **(CRITICAL TASK)** once RPV level reaches the TAF. The crew will then align appropriate low pressure ECCS injection sources to raise RPV level above the TAF. Once RPV level has recovered sufficiently, the scenario may be terminated. **N2-EOP-RPV, N2-EOP-C2**

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

Facility: **Nine Mile Point 2**	Scenario No: **NRC- 1**	Op-Test No: **March 2014**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 2, 3, 4, 5, 6, 7**	6	
2. Malfunctions after EOP entry (1-2) **Event 7**	1	
3. Abnormal events (2-4) **Events 4, 5**	2	
4. Major transients (1-2) **Event 6**	1	
5. EOPs entered/requiring substantive actions (1-2) **Event 6, 8**	2	
6. EOP contingencies requiring substantive actions (0-2) **Event 8**	2	
7. Critical tasks (2-3)	2	
CRITICAL TASK DESCRIPTIONS:		**CRITICAL TASK JUSTIFICATION:**
CT-1.0: Given a failure of the Division 2 EDG to start, the crew will take action to manually start the Division 2 EDG IAW N2-SOP-03		*This task is identified as critical because without operator action to manually start the Division 2 EDG, the station would be in Station Blackout conditions.*
CT- 2.0: Given RPV water level at or below the TAF but above the MSCWL, the crew will open 7 ADS valves IAW N2-EOP-C2		*This task is identified as critical because without operator action to open the 7 ADS valves, RPV water level would continue to lower until the fuel is no longer adequately cooled.*

SCENARIO SUMMARY

The plant is operating at 90% power with 2WCS-P1B out of service for maintenance. The crew will take the shift and raise reactor power to 95% using recirculation flow. After the reactivity maneuver, Service Water Pump 1A will trip on motor electric fault. The crew will take action to start a standby service water pump per N2-OP-11. When starting the standby pump, the discharge valve will fail to automatically open requiring the crew to manually open the valve.

Once the standby service water pump is started, HPCS inadvertently initiates and injects into the RPV. FWLC will respond and automatically maintain RPV level below the Level 8 setpoint. The crew will attempt to reset HPCS and place it back in standby per N2-OP-33, however the HPCS malfunction will prevent the system from being returned to standby. The crew will be required to place HPCS in pull to lock (PTL). After the HPCS pump is in PTL, suction strainer clogging will cause the running Control Rod Drive Pump to trip. The crew will take action per N2-SOP-30 and swap suction strainers. Once the suction strainers have been swapped, the crew will restart the Rod Drive pump.

Following the restoration of the Control Rod Drive Pump, a loss of both Line 5 and 6 will occur. An electrical fault will cause a complete loss of the Division 1 electrical switchgear. A fault on the Division 2 EDG will prevent it from automatically starting. The crew will take actions per N2-SOP-03 and manually start the Division 2 EDG and power the Division 2 electrical switchgear **(CRITICAL TASK)**. The loss of Division 1 switchgear will require the crew to manually scram the reactor, trip the turbine, and trip both recirculation pumps. The crew will enter N2-EOP-RPV and begin actions to stabilize RPV pressure and level.

After the reactor is scrammed, a small LOCA will occur. The LOCA will cause RPV level to lower. The crew will attempt to maintain level using HPCS, however once HPCS is taken out of PTL, it will trip on motor electric fault. The crew will attempt to start RCIC for level control, however it will fail to automatically start using the initiation pushbutton. Once the crew manually starts up RCIC, it will trip on a failed pressure transmitter. The crew will manually start the Standby Liquid Control system (SLS). When RPV level reaches the TAF, the CRS will enter N2-EOP-C2 and direct all 7 ADS valves be opened. The crew will open the ADS valves and blowdown the reactor **(CRITICAL TASK)**. As RPV pressure lowers, the low pressure ECCS systems will begin to inject and recover RPV level. The crew will control the low pressure ECCS systems to raise RPV level back to the normal band. The scenario will be terminated when RPV level has been recovered sufficiently.

Termination Criteria:	RPV water level has been recovered to above the top of active fuel.
Major Procedures Exercised:	N2-SOP-30, N2-SOP-03, N2-SOP-11, N2-EOP-RPV, N2-EOP-PC, N2-EOP-C2, N2-EOP-6
Mitigation Strategy:	**RL 2-** Small break LOCA or loss of high pressure injection, RPV level cannot be maintained above the top of active fuel, RPV Blowdown, recover level above TAF with low pressure systems and / or alternate coolant injection systems.

Facility: **Nine Mile Point 2** Scenario No.: **NRC- 2** Op-Test No: **March 2014**
Examiners: _____ Operators: _____

Initial Conditions: Simulator IC-151

1. Reactor power is ~65% in the process of shutting down
2. The shutdown is on hold awaiting the results of surveillance results
3. Instrument Air Compressor C is out of service due to maintenance.

Turnover:

1. IAS Compressor C is out of service due to maintenance.
2. The Reactor shutdown will recommence following surveillance testing.

Event No.	Malf. No.	Event Type*	Event Description
1	ED01	R (RO) R (SRO)	A malfunction in the normal station service transformer cooling system causes transformer temperatures to rise. The crew will coordinate with a Plant Operator at the transformer and lower power using N2-SOP-101D to stabilize transformer temperatures. **ARP's, N2-SOP-101D**
2	NM11B	I (RO) I (SRO) TS (SRO)	APRM 2 will fail upscale. The crew will take action to bypass APRM 2. The CRS will declare APRM 2 inoperable and evaluate TS 3.3.1.1. **ARP's, N2-OP-92, TS 3.3.1.1**
3	MS20A	C (BOP) C (SRO)	Gland Seal Exhaust Fan trips on motor electric fault. The crew will take action per the ARP's and N2-OP-25 to isolate the tripped Gland Seal Exhaust Fan and start a standby fan. **ARP's, N2-OP-25**
4	RP06B	C (BOP) C (SRO) TS (SRO)	The RPS B Motor Generator will trip causing a half scram on RPS B side. The crew will enter N2-SOP-97 and align the RPS B solenoids to their alternate power supply. While resetting the EPA's per N2-SOP-97, the Plant Operator will report that the undervoltage trip relay had to be bypassed in order to reset one of the EPA's. The CRS will declare the associated EPA inoperable and evaluate TS 3.3.8.3. **N2-SOP-97, TS 3.3.8.3**

5	CW09 CW26	C (BOP) C (SRO)	A clogging of the Service Water Traveling Screens will cause service water intake bay level to lower. The crew will take action per N2-SOP-11 and attempt to clean the traveling screens. Intake bay will continue to lower to 234 feet. The intake bay bypass valves 2SWP*MOV77A/B will fail to automatically open requiring the crew to take manual action to open the valves **(CRITICAL TASK)**. Once MOV77A and B are open, intake bay level will recover. **N2-SOP-11**
6	FW03A FW03B	M (All)	A loss of all feed pumps will occur. The crew will place the mode switch in shutdown and begin taking action to stabilize RPV level and pressure. **N2-SOP-06**
7	RD12	C (RO) C (SRO)	RPV level control will be complicated by malfunctions in the RDS and Feedwater systems which will force the crew to use HPCS, RCIC, and/or FW Booster Pumps to maintain RPV level. **N2-EOP-RPV, N2-SOP-101C**
8	RR20 RH14A	C (RO/BOP) C (SRO)	A LOCA will occur. The Division 1 ECCS system fails to automatically initiate. The crew will manually initiate Division 1 ECCS system, however RHS Pump A will not start due to a broken control switch. **N2-EOP-PC, N2-EOP-6**
9	RHS10B	C (RO/BOP) C (SRO)	Primary containment parameters will continue to degrade. Suppression chamber sprays will be initiated. Once suppression chamber pressure reaches 10 psig, the crew will attempt to spray the drywell using RHS B. While the crew is attempting to align drywell sprays, 2RHS*MOV25B will stick shut. Plant Operators will be dispatched in an attempt to manually open MOV25B. While the POs are attempting to manually open MOV25B, primary containment parameters continue to degrade. The CRS will determine that Suppression Chamber Pressure cannot be restored and maintained within the Pressure Suppression Limit and will enter N2-EOP-C2 and direct 7 ADS valve be opened. The crew will open 7 ADS valves and blowdown the reactor (**CRITICAL TASK**). The scenario may be terminated once 7 ADS valves are opened. **N2-EOP-PC, N2-EOP-6, N2-EOP-C2**

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

Facility: **Nine Mile Point 2**	Scenario No: **NRC- 2**	Op-Test No: **March 2014**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 1, 2, 3, 4, 5, 6, 7, 8**	8	
2. Malfunctions after EOP entry (1-2) **Event 7, 8**	2	
3. Abnormal events (2-4) **Events 4, 5**	2	
4. Major transients (1-2) **Event 6**	1	
5. EOPs entered/requiring substantive actions (1-2) **Events 7, 9**	2	
6. EOP contingencies requiring substantive actions (0-2) **Event 9**	1	
7. Critical tasks (2-3)	2	
CRITICAL TASK DESCRIPTIONS:		**CRITICAL TASK JUSTIFICATION:**
CT-1.0: Given service water intake bay level less than 234 ft and a failure of 2SWP*MOV77A & 77B to automatically open, the crew will take action to manually open 2SWP*MOV77A & 77B per N2-SOP-11.		*This task is identified as critical because without operator action, the plant will lose its ultimate heat sink.*
CT- 2.0: Given Suppression Chamber Pressure unable to be restored and maintained within the Pressure Suppression Limit, the crew will open 7 SRV's IAW N2-EOP-C2.		*This task is identified as critical because without operator action, the primary containment pressure suppression function would continue to degrade and would not be able to accept a full blowdown of the reactor.*

SCENARIO SUMMARY

The crew will take the shift at ~65% power. The shutdown is on hold pending surveillance results. Instrument Air Compressor C is out of service due to maintenance. After the crew takes the shift, a malfunction in the normal station service transformer cooling system causes transformer temperatures to rise. The crew will dispatch a PO to investigate. The PO will report that several of the transformer cooling fans are not running and cannot be started. The crew will coordinate with the PO and lower power per N2-SOP-101D to stabilize transformer temperatures. Once temperatures are under control, APRM 2 will fail upscale. The crew will take action per the ARP's and N2-OP-92 to bypass APRM 2. The CRS will evaluate TS 3.3.1.1 for the inoperable APRM.

Once APRM 2 is bypassed, the running Gland Seal Exhaust Fan will trip on motor electric fault. The crew will take action per the ARP's and N2-OP-25 to isolate the tripped Gland Seal Exhaust Fan and start a standby fan. After the Gland Seal Exhaust Fan is started, the RPS B Motor Generator will trip causing a half scram on RPS B side. The crew will enter N2-SOP-97 and align the RPS B solenoids to their alternate power supply. While resetting the EPA's per N2-SOP-97, the Plant Operator will report that the undervoltage trip relay had to be bypassed in order to reset one of the EPA's. The CRS will declare the associated EPA inoperable and evaluate TS 3.3.8.3.

After the RPS B solenoids are powered from their alternate power supply, Service Water intake clogging will occur causing Service Water intake bay level to lower. The crew will take action per N2-SOP-11 and attempt to clean the traveling screens. Intake bay will continue to lower to 234 feet. The intake bay bypass valves 2SWP*MOV77A/B will fail to automatically open requiring the crew to take manual action to open the valves **(CRITICAL TASK)**. Once MOV77A and B are open, intake bay level will recover.

Once Service Water intake bay level is restored, a loss of all feed pumps will occur. The loss will require the crew to place the Mode Switch in shutdown. Once RPV level has been stabilized using alternate level control systems, a LOCA will occur. The LOCA will cause Primary Containment (PC) parameters to degrade and the crew will enter N2-EOP-PC to stabilize PC parameters. Malfunctions in the Division 1 RHS systems will prevent RHS A from being used for primary containment control and the crew will be required to use RHS B to spray the suppression chamber. As PC conditions continue to degrade, the crew will attempt to spray the drywell using RHS B. While the crew is attempting to align drywell sprays, 2RHS*MOV25B (Drywell Spray Valve) will stick shut. Plant Operators will be dispatched in an attempt to manually open MOV25B. While the PO's are attempting to manually open MOV25B, primary containment parameters will continue to degrade. The CRS will determine that Suppression Chamber Pressure cannot be restored and maintained within the Pressure Suppression Limit and will enter N2-EOP-C2 and direct 7 ADS valve be opened. The crew will open 7 SRV's and blowdown the reactor **(CRITICAL TASK)**. The scenario may be terminated once 7 SRV's are opened.

Termination Criteria:	7 SRV's are open
Major Procedures Exercised:	N2-SOP-97, N2-SOP-11, N2-EOP-RPV, N2-EOP-PC, N2-EOP-C2
Mitigation Strategy:	PC 4, High containment pressure approaching PCPL, exceeds PSP, RPV Blowdown required

Facility: **Nine Mile Point 2** Scenario No.: **NRC-4** Op-Test No: **March 2014**
Examiners: _____ Operators: _____

Initial Conditions: Simulator IC-153
1. Reactor power is ~3%
2. Reactor startup is in progress

Turnover:
1. Continue reactor startup and raise power to 10%

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (RO) R (SRO)	The crew will assume the watch and continue the startup by withdrawing rods per N2-OP-101A. **N2-OP-101A**
2	RD07	C (RO) C (SRO)	While withdrawing rods, one of the control rods will stick. The crew will respond per N2-OP-30 and raise drive water pressure. Once drive water pressure is raised, the rod will become unstuck. **N2-OP-30**
3	PC10A	TS (SRO)	One pair of Suppression Chamber to Drywell Vacuum Breakers will fail open. There are no operator actions; however the CRS will evaluate TS 3.6.1.7. **TS 3.6.1.7**
4	PC01	C (BOP) C (SRO)	A fault will cause a loss of all drywell cooling. The crew will respond per N2-SOP-60 and restart the drywell cooling fans in "Fan Only" mode. **N2-SOP-60**
5	IA02A IA04A IA04B	C (BOP) C (SRO)	A fault will occur on Instrument Air Compressor A. Compressors B and C will fail to auto start. The crew will take action per N2-SOP-19 and manually start either Compressor B or C **(CRITICAL TASK)** to restore air header pressure. **N2-SOP-19**
6	RH13A	C (BOP) C (SRO) TS (SRO)	An electrical failure causes a spurious initiation of Division 1 ECCS systems. The crew will take action to shutdown the Division 1 ECCS systems. The CRS will evaluate TS 3.5.1 and 3.8.1. **N2-OP-31, TS 3.5.1, TS 3.8.1**

7	MT01 FW08	C (RO) C (SRO)	A Seismic Event will occur. The event will cause a FWLC failure. The crew will take manual control of FWLC. **N2-SOP-90**
8	RC12	M (All)	A RCIC Steam Leak will require the crew to manually scram the reactor (**CRITICAL TASK).** The crew will take action to stabilize RPV level and pressure. **N2-EOP-RPV, N2-EOP-SC**
9	Overrides	C (BOP) C (SRO)	Secondary Containment conditions will degrade requiring the crew to either anticipate RPV blowdown per N2-EOP-RPV, or perform a blowdown per N2-EOP-C2 **(CRITICAL TASK)**. The scenario may be terminated when the RPV is being depressurized. **N2-EOP-SC, N2-EOP-C2**

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

Facility: **Nine Mile Point 2**	Scenario No: **NRC-4**	Op-Test No: **March 2014**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 2, 4, 5, 6, 7, 8, 9**	7	
2. Malfunctions after EOP entry (1-2) **Event 9**	1	
3. Abnormal events (2-4) **Events 4, 5, 7**	3	
4. Major transients (1-2) **Event 8**	1	
5. EOPs entered/requiring substantive actions (1-2) **Events 8, 9**	2	
6. EOP contingencies requiring substantive actions (0-2) **Event 9**	1	
7. Critical tasks (2-3)	3	

CRITICAL TASK DESCRIPTIONS:	**CRITICAL TASK JUSTIFICATION:**
CT-1.0: Given a trip of the running instrument air compressor and a failure of the lag and backup air compressors to automatically start, the crew will take action to manually start the lag or backup air compressor.	*This task is identified as critical because without operator action to start the lag or backup air compressor, instrument air header pressure will degrade until the reactor scrams due to low RPV level and/or loss of scram air header pressure.*
CT-2.0, Given secondary containment temperatures approaching a maximum safe value in one area, the crew will initiate a manual reactor scram IAW N2-EOP-RPV	*This task is identified as critical because without operator action to scram, the reactor will continue to provide energy to the RCIC steam line break and cause increased secondary containment temperatures and radiation levels.*
CT-3.0A Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves IAW N2-EOP-RPV	*This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to wait until two or more areas are above maximum safe values before depressurizing the reactor. If the crew chooses to depressurize the reactor via the SRVs, then CT-2.0A does not have to be evaluated.*
CT-3.0B Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves IAW N2-EOP-C2	*This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to "anticipate blowdown" and depressurize the reactor to the main condenser. If the crew chooses to depressurize the reactor to the main condenser and are successful in preventing two areas from exceeding the maximum safe temperatures, then CT-2.0B does not have to be evaluated.*

SCENARIO SUMMARY

The crew will take the shift at ~3% power. The RO will raise power using rods. While withdrawing rods, a control rod will stick. The crew will take action to raise drive water pressure per N2-OP-30. Raising drive water pressure will free the stuck rod and allow the startup to continue. After power has been sufficiently raised, an instrument failure will cause one pair of Suppression Chamber to Drywell Vacuum Breakers to fail open. There are no operator actions; however the CRS will evaluate TS 3.6.1.7.

Once TS 3.6.1.7 has been evaluated, an electrical fault will cause a loss of all drywell cooling. The crew will respond per N2-SOP-60 and restart the drywell cooling fans in "Fan Only" mode. After Drywell Cooling has been restored, an electrical fault will occur on Instrument Air Compressor A. Compressors B and C will fail to auto start. The crew will take action per N2-SOP-19 and manually start either Compressor B or C **(CRITICAL TASK)** to restore air header pressure.

After the loss of instrument air, an electrical failure will cause a spurious initiation of Division 1 ECCS systems. The crew will take action to shutdown the Division 1 ECCS systems. The CRS will evaluate TS 3.5.1 and 3.8.1. Following the inadvertent initiation of Division 1 ECCS systems, a seismic event occurs. The event will cause an unisolable RCIC steam leak and a FWLC failure. The crew will take action per N2-EOP-SC and enter N2-EOP-RPV to manually scram the reactor **(CRITICAL TASK)**. RPV level control will be complicated by the FWLC failure. Due to the RCIC steam leak, Secondary Containment conditions will continue to degrade requiring the crew to either anticipate RPV blowdown per N2-EOP-RPV, or perform a blowdown per N2-EOP-C2 **(CRITICAL TASK)**. The scenario may be terminated when the RPV is being depressurized.

Termination Criteria:	RPV pressure lowering due to anticipating blowdown or actually blowing down the reactor
Major Procedures Exercised:	N2-SOP-60, N2-SOP-19, N2-SOP-90, N2-EOP-RPV, N2-EOP-SC, N2-SOP-C2.
Mitigation Strategy:	SC1- Secondary containment leak. Blowdown Required.