

Facility: Nine Mile Point Unit 2

Scenario No.: NRC-1

Op-Test No.: LC2 16-1

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at approximately 4.5% power with a reactor startup in progress. Narrow range 'C' level transmitter has failed high and CRD-P1B is out of service due to high pump vibrations.

Turnover: Continue reactor startup and raise power to 8%

Critical Tasks: See page 2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R-ATC, SRO	Continue the reactor startup by withdrawing rods per N2-OP-101A. N2-OP-101A
2	RD07	C-ATC, SRO	Stuck Control Rod N2-OP-30
3	NM06	I-ATC, SRO TS-SRO	IRM D Fails Upscale ARP's, N2-OP-97, T.S. 3.3.1.1
4	RC10	C-BOP, SRO TS-SRO	Inadvertent Initiation of RCIC ARP's, T.S. 3.5.3
5	IA02A IA04A IA04B	C-BOP, SRO	Trip of Instrument Air Compressor A N2-SOP-19
6	RH13A RH15	C-BOP, SRO TS-SRO	Inadvertent initiation of Division 1 ECCS systems with minimum flow valve failure. N2-OP-31, T.S. 3.5.1, T.S. 3.6.1.6, T.S. 3.6.2.3, T.S. 3.6.2.4
7	MT01 FW08	C-ATC, SRO	Seismic Event causes FWLC failure. N2-SOP-90, N2-SOP-6
8	RC12	M (All)	RCIC Steam Leak in Reactor Building N2-EOP-RPV, N2-EOP-SC
9	Overrides	C-BOP, SRO	RCIC Isolation valves fail to close leading to degrading Secondary Containment conditions. N2-EOP-SC, N2-EOP-C2

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

Facility: Nine Mile Point Unit 2

Scenario No.: NRC-2

Op-Test No.: LC2 16-1

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at approximately 92% power. It is required to perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012. 2IAS-C3C, Instrument air compressor 3C is out of service.

Turnover: Perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012.

Critical Tasks: See page 2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP, SRO	Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012. N2-OP-71B
2	N/A	R-ATC, SRO	Raise reactor power to 98%. N2-OP-101D
3	RR52A	C-ATC, SRO, TS-SRO	'A' RCS FCV fails open. N2-SOP-08, N2-SOP-101D, ARP's, T.S. 3.4.1
4	MS20A	C-BOP, SRO	Gland seal exhaust fan TME-FN1A trip. N2-OP-25
5	ED04D	C-All, TS-SRO	Loss of NNS-SWG014 switchgear. Restore CRD, and other lost loads with HCU accumulator trouble. N2-SOP-03, SOP-30, SOP-68, SOP-19, SOP-97, T.S. 3.1.5
6	Overrides MS13	M-All	EHC Regulator slow failure causes Reactor Pressure to lower, crew must scram and shut MSIV's. N2-SOP-23, N2-SOP-101C, N2-EOP-RPV
7	ED02A & B DG04B	C-All	Loss of all offsite power with Div II EDG failing to start. Crew will manually start Div II EDG. N2-SOP-03
8	RR20	M-All	LOCA in Drywell. N2-EOP-RPV, N2-EOP-PC
9	RH01A(B)	C-All	First RHR pump used for Drywell sprays trips.

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

Facility: Nine Mile Point Unit 2

Scenario No.: NRC-3

Op-Test No.: LC2 16-1

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at 100% power. It is required to complete N2-OSP-EGS-M@001 for Division I EDG. 2TMB-P1B, EHC Fluid Pump 1B is out of service for maintenance.

Turnover: Complete N2-OSP-EGS-M@001 for Division I EDG. Next step to be performed is 8.2.22.

Critical Tasks: See page 2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP, SRO	Complete N2-OSP-EGS-M@001 for Division I EDG. N2-OSP-EGS-M@001
2	DG02A	TS-SRO	Division I EDG lockout trip. T.S. 3.8.1.B
3	RR08B	I-ATC, SRO, TS-SRO	Loss of recirculation flow input to APRM #2. ARP's, T.S. 3.3.1.1
4	RD09-10-31	R-ATC, SRO, TS-SRO	Control rod 10-31 scram. N2-SOP-08, N2-SOP-101D, T.S. 3.1.3
5	CW14	C-BOP, SRO	RBCLC TCW fails causing a reduction in cooling. N2-SOP-13
6	FW36B FW03B	C-BOP, ATC, SRO	Feed pump trip causes recirculation flow control valve runback. N2-SOP-06, N2-SOP-29
7	RD09	C-ATC SRO	Two additional control rods scram, manual scram required. N2-SOP-08, N2-SOP-101C, N2-EOP-RPV
8	RD17Z TC15	M-All	ATWS with a loss of EHC pumps resulting in heat addition to Suppression Pool. N2-EOP-PC, N2-EOP-C5
9	SL03	C-All	RRCS 98 Second Timer Failure. N2-EOP-6.13
10	RH36/37	C-All	RHR Suppression Pool Cooling Valve Supply breaker trip.

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

Facility: Nine Mile Point Unit 2

Scenario No.: NRC-4

Op-Test No.: LC2 16-1

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at 100% power. HPCS is out of service for pump seal replacement.

Turnover: HPCS is out of service for pump seal replacement. Perform 2ISC*RV33A Exercise and Position Indication Test per N2-OSP-ISC-M@002, section 8.2 only.

Critical Tasks: See page 2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP, SRO	Perform 2ISC*RV33A Exercise and Position Indication Test. N2-OSP-ISC-M@002
2	RR43A	I-ATC, SRO	FWLC Steam Flow Instrument Fails Downscale. N2-SOP-6
3	RC01 (Remote)	C-BOP, TS-SRO	RCIC Turbine Trip Throttle valve trip and reset. ARP's, N2-OP-35, T.S. 3.5.1, 3.5.3
4	RD12A	C-ATC SRO	CRD Pump Trip P1A on Motor Electrical Fault. N2-SOP-30
5	OVR-13S02DI 2014	R-ATC, SRO C-BOP TS-SRO	Inadvertent ADS SRV opening which can be closed. N2-SOP-34, 101D, T.S. 3.5.1, 3.6.2.1
6	RR20	M-All	LOCA with degraded high pressure injection systems. RPV blowdown. Restore and maintain RPV water level above the MSCRWL with low pressure injection sources. N2-EOP-RPV, N2-EOP-PC, N2-EOP-C2
7	RH14A	I-All	Division I LP ECCS fails to automatically initiate. N2-EOP-RPV
8	AD08F	C-All	ADS SRV (2MSS*PSV130) fails to open requiring the crew to open an additional non-ADS SRV to achieve a total of 7 SRV's open. N2-EOP-C2

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

Facility: <u>Nine Mile Point Unit 2</u>		Date of Examination: <u>December 2017</u>
Examination Level: <u>RO</u>		Operating Test Number: <u>LC2 16-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, S	Perform an APRM Gain Adjust N2-OSP-NMS-@004 KA 2.1.31 (4.6)
Conduct of Operations	D, R	Determine Operator Overtime Availability LS-AA-119, KA 2.1.5 (3.9)
Equipment Control	N, R	Develop a clearance boundary for a Standby Liquid Control Pump OP-CE-109-101 KA 2.2.13 (4.1)
Radiation Control		
Emergency Procedures/Plan	D, S	Perform RO Actions for an Injured and Contaminated Person OP-NM-106-300 KA 2.4.12 (4.0)
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: <u>Nine Mile Point Unit 2</u> Examination Level: <u>SRO</u>		Date of Examination: <u>December 2017</u> Operating Test Number: <u>LC2 16-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Single Loop Thermal Limit Review Technical Specifications, KA 2.1.7 (4.7)
Conduct of Operations	D, R	Determine Operator Overtime Availability LS-AA-119, KA 2.1.5 (3.9)
Equipment Control	N, R	Review a clearance boundary for a Standby Liquid Control Pump and determine Technical Specification impact. OP-CE-109-101, K/A 2.2.13 (4.3)
Radiation Control	D, R	Offsite Dose Calculation Manual (ODCM) Assessment for Inoperable Equipment N2-OP-42, ODCM, KA 2.3.15 (3.1)
Emergency Procedures/Plan	D, R	Determine NRC and On-Site Notification Requirements EPIP-EPP-02-EAL, LS-AA-1400, OP-AA-106-101, KA 2.4.30 (4.1)
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 2Date of Examination: December 2017Exam Level: RO/SRO-IOperating Test No.: LC2 16-1 NRC

Control Room Systems* (8 for RO); (7 for SRO-I)

System / JPM Title	Type Code*	Safety Function
a. Swap Mechanical Vacuum Pumps K/A 256000 A4.13 (3.3/3.4) N2-OP-9	N,L,S	2
b. Place SWP*RE23A in service K/A 272000 A4.02 (3.0/3.0) N2-OP-79	N,S	9
c. Depressurizing the RPV to the Main Condenser. (Alternate Path) K/A 239001 A4.09 (3.9/3.9) N2-EOP-6.18	A,D,L,S	3
d. HPCS Pump Run Following Maintenance. (Alternate Path) K/A 209002 A4.01 (3.7/3.7) N2-OP-33	A,N,S	4
e. Determine containment water level. K/A 295029 EA2.03 (3.4/3.5) N2-EOP-6.23	D,L,S	5
f. Transfer House Loads from Normal Station Service to the Reserve Station Transformers. K/A 262001 A4.01 (3.4/3.7) N2-OP-71A	D,S	6
g. Manual Actions for Group 8 Isolation Failure on Valid RPS Signal. (Alternate Path) K/A 212000 A2.09 (4.1/4.3) N2-SOP-83	A,D,EN,S	7
h. Restore 2SWP*MOV50B from Inadvertent Closure (RO Only) K/A 400000 A4.01 (3.1/3.0) N2-SOP-11	D,P,S (NRC 2014)	8

In-Plant Systems* (3 for RO); (3 for SRO-I)

i. Transfer to 2VBA*UPS2C Maintenance and Shutdown K/A 262002 A3.01 (2.8/3.1) N2-OP-71D	N	6
j. Diesel Fire Pump Local Start (Alternate Path) K/A 286000 A4.06 (3.4/3.4) N2-OP-43	A,D	8
k. Vent Scram Air Header, ARI Function Not Available. K/A 295037 EA1.05 (3.9/4.0) N2-EOP-6.14	D,E,R	1

* 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

Facility:		Nine Mile Point Unit 2		Date of Exam:		2017 NRC											
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	3	3	3				3	4			4	20	3	4	7	
	2	1	1	1				1	2			1	7	1	2	3	
	Tier Totals	4	4	4				4	6			5	27	4	6	10	
2. Plant Systems	1	2	2	2	3	3	3	1	2	2	3	3	26	3	2	5	
	2	1	1	1	1	1	1	1	1	2	1	1	12	0	1	3	
	Tier Totals	3	3	3	4	4	4	2	3	4	4	4	38	4	4	8	
3. Generic Knowledge & Abilities Categories				1		2		3		4		10	1	2	3	4	7
				2		3		2		3			1	2	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). (One Tier 3 Radiation Control K/A is allowed if the K/A is replaced by a K/A from another Tier 3 Category.)
 - 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.
 - 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 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 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.
 - 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/A's
 - 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.
 - 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.

NMP2 2017 NRC
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#
295019 Partial or Complete Loss of Instrument Air / 8					X		AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Instrument air system pressure	3.6	76
295038 High Off-site Release Rate / 9					X		EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of off-site release	4.5	77
295021 Loss of Shutdown Cooling / 4					X		AA2.03 - Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water level	3.5	78
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	79
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	80
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						X	2.1.25 - Conduct of Operations: Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	81
295031 Reactor Low Water Level / 2						X	2.1.7 – Conduct of Operation: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	82
295003 Partial or Complete Loss of AC Power / 6	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Effect of battery discharge rate on capacity	2.7	39
700000 Generator Voltage and Electric Grid Disturbances	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES and the following: Definition of terms: volts, watts, amps, VARs, power factor	3.3	40
600000 Plant Fire On-site / 8	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to Plant Fire On Site: Fire Fighting	2.9	41
295024 High Drywell Pressure / 5		X					EK2.06 - Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Emergency generators	3.9	42
295031 Reactor Low Water Level / 2		X					EK2.08 - Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: Automatic depressurization system	4.2	43
295025 High Reactor Pressure / 3		X					EK2.05 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Safety/relief valves: Plant-Specific	4.1	44
295006 SCRAM / 1			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to SCRAM: Reactor pressure response	3.8	45

NMP2 2017 NRC
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#
295030 Low Suppression Pool Water Level / 5			X				EK3.06 - Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: Reactor SCRAM	3.6	46
295016 Control Room Abandonment / 7			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Disabling control room controls	3.5	47
295021 Loss of Shutdown Cooling / 4				X			AA1.01 - Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water cleanup system	3.4	48
295023 Refueling Accidents / 8				X			AA1.06 - Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Neutron monitoring	3.3	49
295004 Partial or Complete Loss of DC Power / 6				X			AA1.01 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: D.C. electrical distribution systems	3.3	50
295005 Main Turbine Generator Trip / 3					X		AA2.01 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Turbine speed	2.6	51
295018 Partial or Complete Loss of CCW / 8					X		AA2.04 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: System flow	2.9	52
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					X		AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Power/flow map	3.5	53
295038 High Off-site Release Rate / 9						X	2.1.19 - Conduct of Operations: Ability to use plant computers to evaluate system or component status.	3.9	54
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1						X	2.4.46 - Emergency Procedures / Plan: Ability to verify that the alarms are consistent with the plant conditions.	4.2	55
295019 Partial or Complete Loss of Instrument Air / 8						X	2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	4.1	56
295026 Suppression Pool High Water Temperature / 5						X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.2	57
295028 High Drywell Temperature / 5					X		EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure	4.1	58
K/A Category Totals:	3	3	3	3	4/3	4/4	Group Point Total:		20/7

NMP2 2017 NRC
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#
295013 High Suppression Pool Temperature / 5					X		AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Suppression pool temperature	4.0	83
295029 High Suppression Pool Water Level / 5						X	2.4.8 - Emergency Procedures / Plan: Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	84
295035 Secondary Containment High Differential Pressure / 5						X	2.1.19 - Conduct of Operations: Ability to use plant computers to evaluate system or component status.	3.8	85
295002 Loss of Main Condenser Vacuum / 3	X						AK1.04 - Knowledge of the operational implications of the following concepts as they apply to LOSS OF MAIN CONDENSER VACUUM: Increased offgas flow	3.0	59
295008 High Reactor Water Level / 2		X					AK2.04 - Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: PCIS/NSSSS: Plant-Specific	3.1	60
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	61
295007 High Reactor Pressure / 3				X			AA1.05 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: Reactor/turbine pressure regulating system	3.7	62
295033 High Secondary Containment Area Radiation Levels / 9					X		EA2.03 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Cause of high area radiation	3.7	63
295035 Secondary Containment High Differential Pressure / 5						X	2.2.40 - Equipment Control: Ability to apply technical specifications for a system.	3.4	64
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	65
K/A Category Totals:	1	1	1	1	2/1	1/2	Group Point Total:		7/3

NMP2 2017 NRC
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#
-----------------	--------	--------	--------	--------	--------	--------	--------	----	--------	--------	---	--	----------	----

NMP2 2017 NRC
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									3.4	5
223002 PCIS/Nuclear Steam Supply Shutoff			X									2.8	6
211000 SLC				X								2.8	7
215003 IRM				X								3.7	8
300000 Instrument Air					X							2.5	9
218000 ADS					X							3.8	10
209001 LPCS						X						3.4	11
203000 RHR/LPCI: Injection Mode						X						4.1	12
262002 UPS (AC/DC)						X						2.8	13
400000 Component Cooling Water							X					2.8	14

NMP2 2017 NRC
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#
205000 Shutdown Cooling								X				3.3	15
259002 Reactor Water Level Control								X				3.3	16
217000 RCIC									X			3.6	17
215004 Source Range Monitor									X			3.6	18
261000 SGTS										X		3.0	19
215005 APRM / LPRM										X		3.2	20
262001 AC Electrical Distribution											X	3.7	21
223002 PCIS/Nuclear Steam Supply Shutoff											X	3.8	22
205000 Shutdown Cooling										X		3.7	23
203000 RHR/LPCI: Injection Mode											X	3.9	24
212000 RPS					X							3.3	25

NMP2 2017 NRC
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								3.8	26
K/A Category Totals:	2	2	2	3	3	3	1	2/3	2	3	3/2	Group Point Total: 26/5	
K4.03 - Knowledge of AUTOMATIC DEPRESSURIZATION SYSTEM design feature(s) and/or interlocks which provide for the following: ADS logic control													

NMP2 2017 NRC
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 #
-----------------	--------	--------	--------	--------	--------	--------	--------	----	--------	--------	---	--	------	--------

NMP2 2017 NRC
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	A 2	A 3	A 4	G	Imp.	Q #
204000 RWCU								X				3.1	91
201006 RWM											X	4.0	92
286000 Fire Protection											X	4.2	93
290001 Secondary Containment	X											2.9	27
215002 RBM		X										2.5	28
290003 Control Room HVAC			X									2.8	29
239001 Main and Reheat Steam				X								2.9	30
202001 Recirculation					X							2.7	31
216000 Nuclear Boiler Instrumentation						X						2.8	32
256000 Reactor Condensate							X					3.1	33

NMP2 2017 NRC
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	A 2	A 3	A 4	G	Imp.	Q #
241000 Reactor/Turbine Pressure Regulator								X				3.1	34
202002 Recirculation Flow Control									X			3.4	35
230000 RHR/LPCI: Torus/Pool Spray Mode										X		3.7	36
226001 RHR/LPCI: Containment Spray Mode										X		4.0	37
272000 Radiation Monitoring									X			3.8	38
K/A Category Totals:	1	1	1	1	1	1	1	1/1	2	1	1/2	Group Point Total: 12/3	

Facility:		NMP2 2017 NRC		Date:		05/24/16	
Category	K/A #	Topic	RO		SRO-Only		
			IR	Q#	IR	Q#	
1. Conduct of Operations	2.1.34	Knowledge of primary and secondary plant chemistry limits.			3.5	94	
	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1	66			
	2.1.9	Ability to direct personnel activities inside the control room.	2.9	67			
		Subtotal		2		1	
2. Equipment Control	2.2.42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.			4.6	95	
	2.2.6	Knowledge of the process for making changes to procedures.			3.6	99	
	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	68			
	2.2.13	Knowledge of tagging and clearance procedures.	4.1	69			
	2.2.39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	74			
		Subtotal		3		2	
3. Radiation Control	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			3.1	96	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high radiation areas, aligning filters, etc.			3.8	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			
		Subtotal		2		2	

4. Emergency Procedures / Plan	2.4.1	Knowledge of EOP entry conditions and immediate action steps.			4.8	97
	2.4.18	Knowledge of the specific bases for EOPs.			4.0	98
	2.4.6	Knowledge of EOP mitigation strategies.	3.7	72		
	2.4.28	Knowledge of procedures relating to a security event.	3.2	73		
	2.4.18	Knowledge of the specific bases for EOPs.	3.3	75		
	Subtotal				3	
Tier 3 Point Total					10	7

Tier / Group	Randomly Selected K/A	Reason for Rejection
The systematic and random sampling process utilized the pre-approved Nine Mile Point Unit 2 K/A suppression list.		
The following K/As were rejected following the systematic and random sampling process:		
1 / 1	Question 80 295003 Partial or Complete Loss of AC Power 2.4.31 - Knowledge of annunciator alarms, indications, or response procedures.	An acceptable question could not be developed at the SRO level without testing minutia due to a lack of appropriate alarms. Randomly re-selected K/A 295003 Partial or Complete Loss of AC Power 2.4.41 - Knowledge of the emergency action level thresholds and classifications.
1 / 1	Question 82 295031 Reactor Low Water Level 2.4.45 - Ability to prioritize and interpret the significance of each annunciator or alarm.	An acceptable question could not be developed at the SRO level without testing minutia due to a lack of appropriate alarms. Randomly re-selected K/A 295031 Reactor Low Water Level 2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
2 / 1	Question 89 211000 SLC 2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	An acceptable question could not be developed at the SRO level due to lack of RO-specific tasks performed outside the Main Control Room related to SLC. Randomly re-selected K/A 211000 SLC 2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.

2 / 2	<p>Question 92 201006 RWM</p> <p>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.</p>	<p>The randomly sampled generic K/A is also sampled on Question 37 and does not fit well with the RWM system.</p> <p>Randomly re-selected K/A 201006 RWM 2.1.32 - Ability to explain and apply system limits and precautions.</p>
3	<p>Question 99</p> <p>2.2.37 - Ability to determine operability and / or availability of safety related equipment.</p>	<p>The randomly sampled generic K/A is already tested on the SRO exam on Question 88.</p> <p>Randomly re-selected K/A 2.2.6 - Knowledge of the process for making changes to procedures.</p>
2 / 1	<p>Question 1 239002 SRVs</p> <p>K1.02 - Knowledge of the physical connections and/or cause-effect relationships between RELIEF/SAFETY VALVES and the following: SPDS/ERIS/CRIDS/GDS: Plant-Specific</p>	<p>An acceptable question could not be developed for the randomly sampled K/A because of limited and simplistic SRV indication on SPDS.</p> <p>Randomly re-selected K/A 239002 SRVs K1.06 - Knowledge of the physical connections and/or cause-effect relationships between RELIEF/SAFETY VALVES and the following: Drywell instrument air/ drywell pneumatics: Plant-Specific.</p>
2 / 1	<p>Question 6 223002 PCIS/Nuclear Steam Supply Shutoff</p> <p>K3.02 - Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: Fuel cladding temperature</p>	<p>An acceptable question could not be developed for the randomly sampled K/A without testing primarily GFES level knowledge.</p> <p>Randomly re-selected K/A 223002 PCIS/Nuclear Steam Supply Shutoff K3.19 - Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: Containment atmosphere sampling.</p>

2 / 1	<p>Question 7 211000 SLC</p> <p>K4.06 - Knowledge of STANDBY LIQUID CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Core plate differential pressure indication</p>	<p>Core plate D/P indication at NMP2 does not use any part of SLC system.</p> <p>Randomly re-selected K/A 211000 SLC K4.10 - Knowledge of STANDBY LIQUID CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Over pressure protection.</p>
2 / 1	<p>Question 25 212000 RPS</p> <p>K5.01 - Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM: Fuel thermal time constant</p>	<p>An acceptable question could not be developed for the randomly sampled K/A without testing primarily GFES level knowledge.</p> <p>Randomly re-selected K/A 212000 RPS K5.02 - Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM: Specific logic arrangements.</p>
1 / 1	<p>Question 46 295030 Low Suppression Pool Water Level</p> <p>EK3.07 - Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: NPSH considerations for ECCS pumps</p>	<p>An acceptable question could not be developed for the randomly sampled K/A without testing primarily GFES level knowledge. Additionally, NPSH considerations for ECCS pumps are already tested in a more operationally relevant way in Question 24.</p> <p>Randomly re-selected K/A 295030 Low Suppression Pool Water Level EK3.06 - Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: Reactor SCRAM.</p>
1 / 1	<p>Question 52 295018 Partial or Complete Loss of CCW</p> <p>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</p>	<p>An acceptable question could not be developed without testing very similar concepts as those already tested in Question 14.</p> <p>Randomly re-selected K/A 295018 Partial or Complete Loss of CCW AA2.04 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: System flow.</p>

1 / 1	<p>Question 56</p> <p>295019 Partial or Complete Loss of Instrument Air</p> <p>2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system</p>	<p>An acceptable question could not be developed for the randomly sampled generic K/A because N2-SOP-19, Loss of Instrument Air, does not have any immediate operator actions.</p> <p>Randomly re-selected K/A 295019 Partial or Complete Loss of Instrument Air 2.1.28 - Knowledge of the purpose and function of major system components and controls.</p>
1 / 2	<p>Question 64</p> <p>295035 Secondary Containment High Differential Pressure</p> <p>2.2.40 - Ability to apply technical specifications for a system.</p>	<p>An acceptable question could not be developed for the randomly sampled evolution without overlapping Question 85.</p> <p>Randomly re-selected K/A 295010 High Drywell Pressure 2.2.40 - Ability to apply technical specifications for a system.</p>
3	<p>Question 66</p> <p>2.1.14 - Knowledge of conservative decision making practices.</p>	<p>An acceptable RO question could not be developed for the randomly sampled generic K/A and this topic is already tested adequately on the Operating exam.</p> <p>Randomly re-selected K/A 2.1.14 - Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.</p>
1 / 1	<p>Question 79</p> <p>295025 High Reactor Pressure</p> <p>2.1.31 - Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.</p>	<p>An acceptable SRO question could not be developed for the randomly sampled generic K/A without overlapping the Operating exam.</p> <p>Randomly re-selected K/A 295025 High Reactor Pressure 2.2.25 - Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.</p>