

Facility: <u> NMP2-NRC </u>		Date of Examination: <u> March 08 </u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u> 1 </u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,P,R	Perform administrative actions for single loop operation.
Conduct of Operations	N,R	Review a completed portion of control room daily logs. Identify deficiencies and TS requirements.
Equipment Control	N,R	Review a tagging request for the "A" RHR pump. Address Tech Specs.
Radiation Control	D,R	Generate and approve an Emergency Exposure Authorization
Emergency Plan	N,R	Determine EAL and complete initial notification paperwork.
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)		

A1A The candidate will perform administrative actions for single loop operation. This is a modified JPM used previously on the 2002 NRC exam.

A1B The candidate will review a completed portion of control room daily logs. Identify deficiencies and TS requirements. This is a new JPM

A2 The candidate will review a tagging request for the "A" RHR pump (or other piece of TS equipment). The request will contain several errors and TS will be addressed. This is a new JPM.

A3 The candidate will generate and approve an Emergency Exposure Authorization. This is a bank JPM

A4 The candidate will perform an EAL determination given plant conditions and complete initial notification paperwork. This is a time critical modified JPM.

Facility:	NMP2	Date of Examination:	MARCH 2008
Exam Level (circle one):	SRO	Operating Test No.:	1
Control Room Systems [®] (8 for RO; 2 or 3 for SRO-U , including 1 ESF) SRO-U in BOLD #'s S-4,6,7/P-1,2			
	System / JPM Title	Type Code*	Safety Function
S-1	Reactor/Turbine Pressure Regulating / Place Main Turbine Shell Warming in service IAW N2-OP-21-Rev.8 K/A 241000 A4.18 2.9/2.8	N,S,L,A	3
S-2	Primary Containment / Initiate Division I H2/O2 monitoring to monitor sample path 4, post LOCA restart required. K/A 223001 A4.04 3.5/3.6, A4.05 3.6/3.6	N,S,E	9
S-3	Reactor Feedwater / Transfer Feedwater Level Control to FWS-LV55A at approximately 2% power IAW N2-OP-3. K/A 259001 A4.05 4.0/3.9	N,S,L	2
S-4	RCIC / Place RCIC in service due to a level transient, RCIC fails to isolate on isolation signal. K/A 217000 A2.01 3.8/3.7 A4.01 3.7/3.7, A3.06 3.5/3.5	D,S,E,A	4
S-5	Standby Gas Treatment / Align SBGTS Train "A" to reduce Drywell pressure IAW N2-OP-61A K/A 295024 EA1.20 3.5/3.6 (02-OPS-SJE-261-2-02)	D,S	5
S-6	Emergency Diesel Generators / Manual start and load of the Division III EDG from Panel P-852 IAW N2-OP-100B. EDG overspeeds. K/A 264000 A4.04 3.7/3.7 (02-OPS-SJE-264-2-67)	M,S,E,A	6
S-7	Resetting a Reactor Scram K/A 212000 A4.14 3.8/3.8	N,L,S	7
S-8	N/A		

In-Plant Systems [@] (3 for RO; 3 or 2 for SRO-U)			
P-1	Instrument Air / Startup of Air Dryer 2IAS –DRY1B IAW N2-OP-19 K/A 300000 A2.01 2.9/28	N,R	8
P-2	Standby Liquid Control / Boron Injection with Hydro Pump IAW EOP-16, Att.15 K/A 295037 EA1.10 3.7/3.9 (02-OPS-PJE-211-2-01)	D,R,E	1
P-3	D.C. Distribution / Place Battery Charger 2BYS-CHGR1A1 is placed in service. K/A 263000 A1.01 2.5/2.8 (02 –OPS-PJE-263-2-03 Rev1)	M,A	6

@	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	
	(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		

**2007 NRC Examination
Summary Description of JPMs**

- S-1 This is a new alternate path JPM in the Reactor Pressure Control safety function area. The candidate will place Main Turbine Chest Warming in service IAW N2-OP-21-Rev.8, Section 3.0 and the Main Turbine will roll off the turning gear requiring additional operator actions.
- S-2 This is a new JPM in the Radioactive Release safety function area. The candidate will initiate Division I H2/O2 monitoring to monitor sample path 4 (suppression chamber), post LOCA, IAW N2-OP-82, Section H.1.0.
- S-3 This is a new JPM in the Reactor Water Inventory Control safety function area. The candidate will Transfer Feedwater Level Control to FWS-LV55A at approximately 2% power IAW N2-OP-3, Section E.3.16
- S-4 This is a bank alternate path JPM in the Heat Removal From Reactor Core Safety Function area. The candidate will be required to place RCIC in service due to a level transient. A valid isolation signal will occur and RCIC will fail to isolate. Operator action is required to isolate and trip RCIC.
- S-5 This is a bank JPM in the Containment Integrity safety function area. The candidate will align SBGTS Train "A" to reduce Drywell pressure IAW N2-OP-61A, Section H.
- S-6 This is a modified bank alternate path JPM in the Electrical safety function area. The candidate will perform a Manual start and load of the Division III EDG from Panel P-852 IAW N2-OP-100B, Section F.2.0. EDG will overspeed but will not trip requiring operator actions to trip the EDG.
- S-7 This is a new JPM in the Instrumentation safety function area. The candidate will reset a reactor scram and RRCS/ARI following a scram which had occurred due to a loss of feedwater IAW N2-OP-SOP-101C and N2-OP-36B, Section H.3.0.
- P-1 This is a new JPM in the Plant Systems safety function area. The candidate will startup Air Dryer 2IAS –DRY1B, IAW N2-OP-19, Section E.2.0.
- P-2 This is a bank JPM in the Reactivity Control safety function area. The candidate will establish a flowpath from SLS tank to the Reactor Vessel using a hydro pump and hoses staged, complete with an air supply to the pump and then commence Boron injection.
- P-3 This is an alternate path bank JPM in the Electrical safety function area. The candidate will place Battery Charger 2BYS-CHGR1A1 in service IAW N2-OP-73A Section E.4.0. Alternate actions will be required due to high charger current.

Facility:		NMP2 NRC		Date of Exam:									March 2008				
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	3	3				3	3			4	20	4	3	7	
	2	2	1	1				1	1			1	7	1	2	3	
	Tier Totals	6	4	4				4	4			5	27	5	5	10	
2. Plant Systems	1	3	2	2	2	3	3	2	2	2	3	2	26	2	3	5	
	2	1	1	1	1	1	1	1	1	1	1	2	12	0	1	3	
	Tier Totals	4	3	3	3	4	4	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	2	1	2	
<p>Note:</p> <ol style="list-style-type: none"> Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two). The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±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 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
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#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					X		AA2.06 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Nuclear boiler instrumentation	3.3	76
295006 SCRAM / 1					X		AA2.01 - Ability to determine and/or interpret the following as they apply to SCRAM : Reactor power	4.6	77
295019 Partial or Total Loss of Inst. 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	78
295021 Loss of Shutdown Cooling / 4						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.	4.2	79
295025 High Reactor Pressure / 3						X	2.1.20 - Conduct of Operations: Ability to interpret and execute procedure steps.	4.6	80
295026 Suppression Pool High Water Temp. / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	4.2	81
700000 Generator Voltage and Electrical Grid Disturbances / 6						X	2.4.4 - Emergency Procedures / Plan: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.7	82
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Natural circulation	3.5	39
295003 Partial or Complete Loss of AC / 6						X	2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.0	40
295004 Partial or Total Loss of DC Pwr / 6			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Load shedding: Plant-Specific	2.6	41
295005 Main Turbine Generator Trip / 3					X		AA2.06 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Feedwater temperature	2.6	42
295006 SCRAM / 1	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to SCRAM : Decay heat generation and removal	3.7	43
295016 Control Room Abandonment / 7		X					AK2.01 - Knowledge of the interrelations between CONTROL ROOM ABANDONMENT and the following: Remote shutdown panel: Plant-Specific	4.4	44
295018 Partial or Total Loss of CCW / 8					X		AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Component temperatures	3.3	45

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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 Total Loss of Inst. Air / 8			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Standby air compressor operation	3.5	46
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	3.5	47
295023 Refueling Acc / 8						X	2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	4.1	48
295024 High Drywell Pressure / 5						X	2.4.50 - Emergency Procedures / Plan: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	49
295025 High Reactor Pressure / 3				X			EA1.03 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: Safety/relief valves: Plant-Specific	4.4	50
295026 Suppression Pool High Water Temp. / 5				X			EA1.02 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool spray: Plant-Specific	3.6	51
295028 High Drywell Temperature / 5		X					EK2.03 - Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Reactor water level indication	3.8	52
295030 Low Suppression Pool Water Level / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: HPCS operation: Plant-Specific	3.5	53
295031 Reactor Low Water Level / 2						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 effect plant and system conditions.	4.2	54
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	X						EK1.07 - Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Shutdown margin	3.4	55
295038 High Off-site Release Rate / 9		X					EK2.05 - Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Site emergency plan	3.7	56
600000 Plant Fire On-site / 8	X						AK1.02 - Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site: Fire Fighting	2.9	57
700000 Generator Voltage and Electric Grid Disturbances				X			AA1.03 - Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Voltage regulator Controls	3.8	58
K/A Category Totals:	4	3	3	3	3/4	4/3	Group Point Total:		20/7

NMP2
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#
295002 Loss of Main Condenser Vac / 3						X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.1	83
295009 Low Reactor Water Level / 2					X		AA2.02 - Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL : Steam flow/feed flow mismatch	3.7	84
500000 High CTMT Hydrogen Conc. / 5						X	2.4.6 Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	4.7	85
295008 High Reactor Water Level / 2					X		AA2.05 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL : Swell	2.9	59
295015 Incomplete SCRAM / 1						X	2.4.2 - Emergency Procedures / Plan: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	60
295020 Inadvertent Cont. Isolation / 5 & 7	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to INADVERTENT CONTAINMENT ISOLATION : Loss of normal heat sink	3.7	61
295029 High Suppression Pool Water Level / 5		X					EK2.03 - Knowledge of the interrelations between HIGH SUPPRESSION POOL WATER LEVEL and the following: HPCS: Plant-Specific	3.3	62
295033 High Secondary Containment Area Radiation Levels / 9	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection	3.9	63
295035 Secondary Containment High Differential Pressure / 5				X			EA1.02 - Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: SBTG/FRVS	3.8	64
295036 Secondary Containment High Sump/Area Water Level / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL : Pumping secondary containment sumps	3.1	65
K/A Category Totals:	2	1	1	1	1/1	1/2	Group Point Total:	7/8	

NMP2
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	A 2	A 3	A 4	G	Imp.	Q#	
215003 IRM											X	2.2.40 – Equipment Control: Ability to apply Technical Specifications for a system.	4.7	86
209001 LPCS								X				A2.07 - 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: Core Spray Line Break	3.6	87
211000 SLC											X	2.2.25 - Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	4.2	88
217000 RCIC								X				A2.12 - Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve openings	3.0	89
239002 SRVs											X	2.2.12 - Equipment Control: Knowledge of surveillance procedures.	4.1	90
203000 RHR/LPCI: Injection Mode										X		A4.01 - Ability to manually operate and/or monitor in the control room: Pumps	4.3	1
205000 Shutdown Cooling									X			A3.03 - Ability to monitor automatic operations of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) including: Lights and alarms	3.5	2
205000 Shutdown Cooling					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) : Valve operation	2.8	3
209001 LPCS						X						K6.05 - Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM : ECCS room cooler(s)	2.8	4
209002 HPCS					X							K5.04 - Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE CORE SPRAY SYSTEM (HPCS): Adequate core cooling: BWR-5,6	3.8	5
211000 SLC		X										K2.02 - Knowledge of electrical power supplies to the following: Explosive valves	3.1	6
212000 RPS				X								K4.06 - Knowledge of REACTOR PROTECTION SYSTEM design feature(s) and/or interlocks which provide for the following: Select rod insertion: Plant-Specific	3.0	7

NMP2
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	A 2	A 3	A 4	G	Imp.	Q#
215003 IRM	X											3.9	8
215003 IRM					X							2.6	9
215004 Source Range Monitor							X					3.1	10
215005 APRM / LPRM		X										2.6	11
217000 RCIC						X						3.5	12
218000 ADS									X			4.2	13
223002 PCIS/Nuclear Steam Supply Shutoff								X				3.6	14
239002 SRVs	X											3.6	15
239002 SRVs										X		3.3	16
259002 Reactor Water Level Control							X					3.6	17
261000 SGTS										X		3.9	18
262001 AC Electrical Distribution										X		3.4	19

NMP2
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	A 2	A 3	A 4	G	Imp.	Q#
262002 UPS (AC/DC)			X									2.6	20
262002 UPS (AC/DC)							X					2.8	21
263000 DC Electrical Distribution				X								3.1	22
264000 EDGs			X									4.2	23
264000 EDGs										X		3.7	24
300000 Instrument Air								X				2.9	25
400000 Component Cooling Water	X											3.2	26
K/A Category Totals:	3	2	2	2	3	3	2	2	2	3	2	Group Point Total: 26/5	

NMP2
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#
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214000 RPIS								X					A2.03 - Ability to (a) predict the impacts of the following on the ROD POSITION INFORMATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Overtravel/in-out	3.9	91
245000 Main Turbine Gen. / Aux.											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	92
202001 Recirculation											X		2.4.41 – Conduct of operations: Ability to apply technical specifications for a system	4.0	93
201001 CRD Hydraulic										X			A4.06 - Ability to manually operate and/or monitor in the control room: SDV isolation valve test switch	2.8	27
215002 RBM						X							K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the ROD BLOCK MONITOR SYSTEM : APRM reference channel: BWR-3,4,5	2.8	28
204000 RWCU	X												K1.16 - Knowledge of the physical connections and/or cause- effect relationships between REACTOR WATER CLEANUP SYSTEM and the following: CRD system: Plant-Specific	2.8	29
214000 RPIS									X				A3.01 - Ability to monitor automatic operations of the ROD POSITION INFORMATION SYSTEM including: Full core display	3.4	30
256000 Reactor Condensate		X											K2.01 - Knowledge of electrical power supplies to the following: System pumps	2.7	31
216000 Nuclear Boiler Inst.								X					A2.04 - Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Detector diaphragm failure or leakage	2.9	32
226001 RHR/LPCI: CTMT Spray Mode					X								K5.02 - Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE : Water hammer	2.6	33
234000 Fuel Handling Equipment											X		2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	34
239001 Main and Reheat Steam							X						A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the MAIN AND REHEAT STEAM SYSTEM controls including: Main steam pressure	3.6	35

NMP2
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#
259001 Reactor Feedwater				X								3.5	36
268000 Radwaste											X	3.4	37
271000 Off-gas			X									3.5	38
K/A Category Totals:	1	1	1	1	1	1	1	1 / 1	1	1	2 / 2	Group Point Total: 12/3	

Facility:		9 Mile Point Unit II Outline 1		Date:		March 2008	
Category	K/A #	Topic	RO		SRO-Only		
			IR	Q#	IR	Q#	
1. Conduct of Operations	2.1.25	Ability to interpret reference materials, such as graphs, curves, tables, etc.			4.2	94	
	2.1.35	Knowledge of fuel handling responsibilities for SROs			3.9	95	
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.	3.3	66			
	2.1.41	Knowledge of the refueling process.	2.8	67			
		Subtotal		2		2	
2. Equipment Control	2.2.43	Knowledge of the process used to track inoperable alarms.			3.3	96	
	2.2.23	Ability to track Technical Specification limiting conditions for operations.			4.6	97	
	2.2.39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	68			
	2.2.12	Knowledge of surveillance procedures.	3.7	69			
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.6	70			
		Subtotal		3		2	
3. Radiation Control	2.3.11	Ability to control radiation releases.			4.3	98	
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions	3.7	71			
	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.	3.4	72			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	73			

	Subtotal			3		1
4. Emergency Procedures / Plan	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
	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			4.1	100
	2.4.14	Knowledge of general guidelines for EOP usage.	3.8	74		
	2.4.35	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects.	3.8	75		
	Subtotal			2		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	295027 / EK2.02	(#52) Mark III containment does not apply to NMP2. Randomly selected 295028 EK2.03
2 / 2	239003 / K4.01	(#36) MSIV Leakage system does not apply at NMP2. Randomly selected 259001 K4.11
2 / 1	215003 / K1.03	(#8) Topic does not apply at NMP2. Randomly selected K1.07. <i>Reselected K1.01, Could not write a discriminating RO level question for the initial topic reselection.</i>
2 / 1	218000 / A3.05	(#13) Overlap with other portions of the exam. Randomly reselected A3.01
2 / 1	223002 / A2.07	(#14) Overlap with scenario exams. Kept same System 223002, randomly reselected A2.09.
2 / 1	261000 / 2.1.25	(#18) Original selection not related to aspects of system operation. Kept same System 261000, randomly reselected statement 2.2.42.
2 / 2	201004 / K6.04	(#28) Turbine First Stage Pressure input to RSCS has been defeated at NMP2. RSCS has low operational impact. Randomly reselected System 215002.
2 / 2	215002 / K2.03	(#31) Double Jeopardy with Tier 2 Group 1 215005 K2.02. Both topics are APRM Power Supply. Randomly reselected 256000 K2.01
2 / 2	239001 / A1.05	(#35) MSL Radiation Monitors do not initiate Group 1 Isolations at NMP2. Randomly reselected statement A1.01
2 / 2	268000 / 2.1.30	(#37) Could not write a discriminating RO Level question for local operation of Radwaste controls. Randomly replaced with statement 2.1.32
1 / 1	700000 / AA1.05	(#58) Could not write an operationally oriented RO Level question. Randomly reselected statement AA1.03
1 / 2	295029 / EK2.09	(#62) Topic does not apply at NMP-2. Randomly reselected EK2.03
3	2.2.14	(#69) Could not write a discriminating RO Level question. Randomly reselected statement 2.2.12
1 / 1	295021 / 2.4.8	(#79) Topic not used in conjunction with EOPs. Randomly reselected 2.4.9.
1 / 1	700000 / 2.4.6	(#82) Topic not directly addressed in EOPs. Randomly reselected 2.4.4.
1 / 2	500000 / 2.2.38	(#85) Could not write a discriminating SRO Level question. Randomly reselected 2.4.6.
2 / 1	205000 / 2.2.40	(#86) Double Jeopardy with (#79), Shutdown Cooling Technical Specifications. Other Shutdown Cooling topics are covered on RO #2, #3, and #47. Randomly reselected System 215003.
2 / 1	300000 / 2.2.12	(#90) Could not write a discriminating SRO Level question pertaining to Instrument Air / Surveillance Procedures. Randomly reselected System 239002.
3	2.4.45	(#100) Topic covered extensively in scenarios. Randomly reselected statement 2.4.30

Facility: Nine Mile Point 2		Scenario No.: NRC-01		Op-Test No.: March 2008	
Examiners: _____		Operators: _____			
Initial Conditions: Simulator IC-241 Reactor Power 90%					
Turnover:					
1. Swap Service Water Pumps from the 2SWP*P1B to the 2SWP*P1F for normal equipment rotation. Pre-start checks have been completed and an AO is standing by at the "F" pump					
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N (BOP) N (SRO)	Swap operating Service Water Pumps N2-OP-11 Service Water		
2	CW02B CW16C	C (BOP) C (SRO)	RBCLCW Pump trips. Standby Pump fails to auto-start and must be started manually. N2-SOP-13 Loss or Degraded CCP System		
3	PC10B Overrides	C (BOP) R (RO) R/C (SRO) TS (SRO)	ADS/SRV fails opens. Valve closes when fuses are pulled. Drywell Vacuum Breaker fails open. Power decrease to 85%. N2-SOP-34 Stuck Open SRV		
4	FW03A RR30 RR31	C (ALL) TS (SRO)	Feedwater Pump Trip Partial Recirc Runback (B loop) N2-SOP-6, Feedwater Failures N2-SOP-29, Sudden Reduction in Core Flow		
5	RD05-18-31	C(RO) C(SRO)	One Control rod drifts out requiring a power decrease. N2-SOP-08 Unplanned Power Changes		
6	RD05-42-39	C (RO) C (SRO)	Another control rod drifts out requiring a reactor scram		
7	MS04	M	Steam Leak in Drywell. (EOP-RPV, EOP-PC)		
8	RH01B RH14A	I (BOP) I (RO)	DIV1 EDG, LPCS and RHR A fail to initiate and RHR B trips when Drywell pressure exceeds 1.68 psig; Both LPCS and RHR A can be started manually.		
9	RH09A	C (SRO) C (BOP)	DW Spray Valve MOV15A fails to open requiring Service Water in loop B for DW spray.		
10	N/A		PSP exceeded, RPV blowdown required (CT) EOP-C2		

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

Facility: Nine Mile Point 2		Scenario No.: NRC-01	Op-Test No.: March 2008
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) Events 2,3,4,5,6,8,9		7	
2. Malfunctions after EOP entry (1-2) Events 8, 9		2	
3. Abnormal events (2-4) Event 2 SOP-13 Event 3 SOP-34, Event 4 SOP-6,29 Event 5 SOP-8		4	
4. Major transients (1-2) Event 7		1	
5. EOPs entered/requiring substantive actions (1-2) Events 7, 8 EOP-RPV, EOP-PC		2	
6. EOP contingencies requiring substantive actions (0-2) Event 9 EOP-C2		1	
7. Critical tasks (2-3)		2	
CRITICAL TASK DESCRIPTIONS: CT-1.0 Initiate DW spray to control containment pressure CT-2.0 Initiate RPV Blowdown when PSP is exceeded and DW spray established			

Facility: Nine Mile Point 2 Scenario No.: NRC-02 Op-Test No.: March 2008			
Examiners: _____ Operators: _____			
Initial Conditions: Simulator IC-17 or equivalent			
1. Reactor Power 100%			
Turnover:			
2. All equipment operable.			
2. Perform RHR Pump Operability Test IAW N2-OSP-RHS-Q@006			
Event No.	Malf. No.	Event Type*	Event Description
9	RHS*P2	N (BOP) N (SRO) TS (SRO)	Perform RHR Pump Operability Test IAW N2-OSP-RHS-Q@006 RHS B/C Water Leg Pump breaker trip (TS)
10	IA02A,B IA04A,B	C (BOP) C (SRO)	Instrument Air Compressor "A" Trips, "B" will not start, "C" must be placed in service manually. N2-SOP-19, Loss of Instrument Air
11	TC03A	R (RO) R (SRO)	Power decrease to 85% due to EHC oscillation problem N2-SOP-23, EHC Press Reg Failure N2-SOP-101D, Rapid Power Reduction.
12	CS01B	C(BOP) C (SRO) TS (SRO)	HPCS spurious start. (TS)
13	FW15	I (RO) I (SRO)	Feedwater master controller fails as-is requiring manual control. N2-SOP-6, Feedwater Failures
14	RR10A,B	C (ALL)	Recirculation FCV failure causes FCV to open. N2-SOP-8, Unplanned Power Changes
15	TC02 FW03A, B RP02 RP14A, B	M (ALL)	EHC Regulator failure cause Reactor High Pressure, ATWS, Loss of Feedwater EOP-RPV, EOP-Failure to Scram EOP-6, Att.14
16	RC07	C (BOP) C (SRO)	RCIC controller failure. Requires manual actions to inject.
9	RP08A, B	C (BOP) C (SRO)	SLC pump fails to Auto-Start

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

Facility: Nine Mile Point 2		Scenario No.: NRC-02	Op-Test No.: March 2008
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) Events 2,3,4,5,6,8,9		7	
2. Malfunctions after EOP entry (1-2) Events 8,9		2	
3. Abnormal events (2-4) Event 2 –SOP-19, Event 3SOP-101D, SOP-23 Event 5 – SOP-6, Event 6 SOP-8		4	
4. Major transients (1-2) Event 7		1	
5. EOPs entered/requiring substantive actions (1-2) Events 7,8,9 EOP-RPV, EOP-PC		2	
6. EOP contingencies requiring substantive actions (0-2) Event 7,8,9 EOP-C5,		1	
7. Critical tasks (2-3)		4	
CRITICAL TASK DESCRIPTIONS: CT-1.0 Place ADS inhibit switches to ON to prevent injection under ATWS conditions CT-2.0 restore & maintain RPV level above the MSCWL precluding the need to perform a RPV Blowdown. CT-3.0 Inject SLC before exceeding HCTL CT-4.0 RO inserts all control rods			

SCENARIO SUMMARY

The scenario begins at 100% power. The RO will perform the surveillance test for the “C” RHR Pump, N2-OSP-RHS-Q006. While the pump is running, the breaker will trip for the RHS B/C Water Leg Pump RHS*P2 requiring a TS entry by the SRO (TS 3.5.1.C – 72 hours). Once TS are addressed, the in service Instrument Air Compressor will trip requiring operator action to manually start the “C” standby compressor. The “B” compressor will not start.

Oscillations of the in service EHC pressure regulator will occur and require actions to swap to the alternate regulator and lower reactor pressure. Additionally, the RO will be required to lower reactor power to 85% IAW the SOP-23.

Once conditions stabilize, a HPCS spurious start will occur requiring operator action to terminate the initiation. The SRO will address TS for HPCS inoperability and 2 other ECCS pumps inoperable (3.0.3). After addressing TS, the Feedwater Master Controller will then fail “as-is”. The crew will enter SOP-6 and control feedwater in manual. Additionally, a failure of the Recirculation FCV will cause the FCV to open. Operator action will be required to control the FCV and reactor level. Cram rods may be inserted or Recirc flow lowered to lower reactor power to pre-transient levels.

The backup EHC pressure regulator will fail and result in a rapid RPV pressure rise. The reactor will automatically scrams, however, all control rods will not fully insert and “A” and “B” reactor feed pumps will trip. EOPs RPV, EOP-Failure-To-Scram will be entered. The RO must inhibit ADS to prevent injection during the ATWS (CT).

The RCIC turbine can be manually controlled after a controller malfunction. SLC pumps will fail to auto-start and must be manually started prior to exceeding the HCTL (CT). RPV level must be restored with “C” FW pump, RCIC (or Condensate Booster Pumps with RPV pressure lowered) precluding the need to perform a RPV Blowdown (CT). The RO will implement actions to insert control rods until all rods are inserted (CT).

The scenario can be terminated when RPV level is being controlled in the required band and all control rods are inserted.

Facility: Nine Mile Point 2		Scenario No.: NRC-03		Op-Test No.: March 2008	
Examiners: _____		Operators: _____			
Initial Conditions: Simulator IC-244					
1. Reactor Power = Startup @ 900 psig					
2. Rod 50-27 is the next rod to move					
3. BPV #1 is approximately 15% open					
4. Other operators will be performing SJAE startup at step 2.45 of N2-OP-101A					
5. N2-OP- 3 – signed off thru step 3.3.32					
6. N2-OP-101A – step 2.46.3 in progress					
7. N2-OP-101A - step 2.45 in progress (to b)e completed by other operators					
Turnover:					
3. Continue Power Increase to get one bypass valve open approximately 25%					
2. Transfer Reboiler Steam Supply to Main Steam IAW N2-OP-25, Section 5.0, then continue startup					
Event No.	Malf. No.	Event Type*	Event Description		
17	N/A	R (RO) R (SRO)	Continue startup N2-OP-101A		
18	N/A	N (BOP) N (SRO)	Transfer Reboiler Steam Supply to Main Steam N2-OP-25		
19	NM09A	I (RO) I (SRO)	IRM "A" Inop Trip N2-OP-92 Neutron Monitoring, N2-OP-97 RPS		
20	ED04F	C (BOP) TS (SRO)	Loss of power to Div I switchgear. (TS) Restore non-essential Service Water, Drywell Cooling. N2-SOP-3 Loss of AC Power		
21	MT01 (.085) CW01F NM06G	C (ALL) TS (SRO)	Small Seismic Event, Service Water Pump trip (TS); IRM "G" Fails Upscale (TS) N2-SOP-90 Seismic Event, N2-SOP-3 Loss of AC Power		
22	MT01 (.25) RR35A RR14B	M (ALL)	Seismic Aftershock Event, RPV Instrument Reference Line Rupture Inside Drywell; Division II ECCS fails to auto initiate N2-SOP-90 Seismic Event, EOP-RPV, EOP-PC		
23	RR34A RR20 (0.8%)	C (BOP) C (SRO)	Loss of Additional Level Instruments and increased RCS leakage requiring Suppression Chamber Spray		
24	RR27 AD08E AD08G	C (BOP) C (SRO)	All RPV level indication lost, RPV Blowdown Required, only 5 ADS valves open. EOP-C4		

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

Facility: Nine Mile Point 2		Scenario No.: NRC-03	Op-Test No.: March 2008
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) Events 3,4,5,6,8,9		6	
2. Malfunctions after EOP entry (1-2) Events 8,9		2	
3. Abnormal events (2-4) Event 3 –SOP-97, Event 4 SOP-3, Event 4-SOP-90		3	
4. Major transients (1-2) Event 6		1	
5. EOPs entered/requiring substantive actions (1-2) Events 6 EOP-RPV, EOP-PC,		2	
6. EOP contingencies requiring substantive actions (0-2) Event 8 EOP-C4		1	
7. Critical tasks (2-3)		2	
CRITICAL TASK DESCRIPTIONS: CT-1.0 initiate an RPV blowdown when level indication is lost or if the PSP is exceeded. CT-2.0 flood the RPV to the elevation of the main steam lines IAW RPV flooding.			

Facility: Nine Mile Point 2		Scenario No.: NRC-04		Op-Test No.: March 2008	
Examiners: _____		Operators: _____			
Initial Conditions: Simulator IC-17 Reactor Power 100%					
Turnover:					
4. Reduce power to 90% for a rod line adjustment which will take place on the next shift.					
2. Perform N2-OSP-RMC-W@001 Control Rod Movement and Position Verification Surveillance Test					
Event No.	Malf. No.	Event Type*	Event Description		
25	N/A	R (RO) R (SRO)	Reduce power to 90% at approximately 2% per minute.		
26	N/A	N (RO) N (SRO)	Perform N2-OSP-RMC-W@001, Control Rod Movement & Position Verification test.		
27	RD18	C (RO) C (SRO)	CRD P1A suction filter clog causes pump trip. N2-SOP-30, CRD Failures		
4	RD11	TS (SRO)	Rod Position Indication Lost		
5	overrides	C (BOP) TS (SRO)	Control room AC unit trips (TS 3.7.2.A – 7 days, TS 3.7.3.A – 30 days.		
6	EG06A	C (BOP) C (SRO)	Stator water pump trip, failure of standby to auto start, Generator RB. Power reduction may be required. N2-SOP-68, Loss of Stator Cooling		
7	overrides	C (BOP) C (SRO)	Loss of NNS-SWG015, loss of one division of RPS solenoids N2-SOP-3, Loss of AC Power, N2-SOP-97 RPS Failures		
8	RP03 MS03	M (ALL)	Small containment leak, Mode Switch and RPS Manual PB fail, ARI successful. EOP-RPV, EOP-C5 Failure-To-Scram		
9	DG01A, C	C (RO) C (SRO)	Loss of Offsite Power with EDG auto-start failures (Station Blackout) N2-SOP-3, N2-SOP-1, N2-SOP-11, EOP-RPV, EOP-PC		
10	MS04		Steam Leak requires DW Spray before exceeding Pressure Suppression Pressure.		

Facility: Nine Mile Point 2		Scenario No.: NRC-04	Op-Test No.: March 2008
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) Events 3,5,6,7,9		5	
2. Malfunctions after EOP entry (1-2) Events 9		1	
3. Abnormal events (2-4) Event 3- SOP-30, Event 6-SOP-68, Event 7-3,13,60,97, Event 9 – SOP Station Blackout		4	
4. Major transients (1-2) Event 9		1	
5. EOPs entered/requiring substantive actions (1-2) EOP-RPV, EOP-PC		2	
6. EOP contingencies requiring substantive actions (0-2) EOP-Failure to Scram,		1	
7. Critical tasks (2-3)		3	
CRITICAL TASK DESCRIPTIONS: CT 1.0 – Upon Mode Switch and RPS PB Failure, Scram is accomplished with RRCS CT 2.0 – a Loss of Off-Site Power with a failure of the EDGs the operators will take actions to re-power at least one vital bus (either with a local EDG start or HPCS EDG cross tie) IAW SOP-03. CT 3.0 – drywell spray is initiated prior to exceeding the PSP.			