Form 3.2-1 Administrative Topics Outline

Facility: Nine Mile Point Unit 1		Date of Examination: AUG 2024
Examination Level: RO		Operating Test Number: 2024
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations	Perform Daily Checks – RPV Level Instruments K/A 2.1.19 (3.9), N1-ST-D0	S, D
Conduct of Operations	Perform Heat-up Rate Determination K/A 2.1.7 (4.4), N1-OP-43A	R, P, D
Equipment Control	Develop Clearance - RBCLC K/A 2.2.15 (3.9), OP-AA-109-101	R, D
Radiation Control	Radiological Requirements - Drywell K/A 2.3.12 (3.2), RP-AA-203	R, N
Emergency Plan		

Location:

(C)ontrol room, (S)imulator, or Class(R)oom

Source and Source Criteria:

(P)revious two NRC exams (no more than one JPM that is **randomly selected** from last two NRC exams)

(D)irect from bank (no more than three for ROs, no more than four for SROs and RO retakes)

(N)ew or Significantly (M)odified from bank (no fewer than one)

Form 3.2-1 Administrative Topics Outline

Facility: Nine Mile Point Unit 1		Date of Examination: AUG 2024
Examination Level: SRO		Operating Test Number: 2024
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations	Determine Operator Qualifications Using LMS K/A 2.1.8 (4.1), OP-AA-109-101	R, D
Conduct of Operations	Reactivate SRO Licenses K/A 2.1.4 (3.8), OP-AA-105-102	R, D
Equipment Control	Review Completed Surveillance N1-ST-M8 K/A 2.2.12 (4.1), N1-ST-M8	R, N
Radiation Control	Determine Actions for Inoperable Stack Radiation Monitor K/A 2.3.11 (4.3), CY-NM-170-301	R, D
Emergency Plan	Complete Part 1 Notification Fact Sheet K/A 2.4.44 (4.4), EP-CE-111, EP-CE-114	R, N

Location:

(C)ontrol room, (S)imulator, or Class(R)oom

Source and Source Criteria:

(P)revious two NRC exams (no more than one JPM that is **randomly selected** from last two NRC exams)

(D)irect from bank (no more than three for ROs, no more than four for SROs and RO retakes)

(N)ew or Significantly (M)odified from bank (no fewer than one)

Form 3.2-2 Control Room/In-Plant Systems Outline

Facility: Nine Mile Point Unit 1 Date of Examination: Aug 2024

Operating Test Number: LC1 23-1NRC

Exam Level: RO / SRO-I / **SRO-U**

System/JPM Title	Type Code	Safety Function
Control Room Systems		
a. Shift Reactor Building Operating Exhaust and Supply Fans K/A 288000 A4.01 (3.2), N1-OP-10	P, D, S, A	9
b. **Place 11 Shutdown Cooling Loop in Service** **K/A 205000 A4.01 (3.9), N1-OP-4**	**P, D, S, A, L**	4
c. Secure a Reactor Recirculation Pump, Pump Trips K/A 202001 A4.01 (4.0), N1-OP-1, N1-SOP-1.3	D, A, S	1
d. Sequential Loss of Service Water K/A 295018 AA1.01 (3.3), N1-SOP-18.1	D, A, S	8
e. Swap from EPR to MPR at power K/A 241000 A1.14 (3.7), N1-OP-31, N1-SOP-31.2	D, S	3
f. Vent Torus through RBEVS **K/A 223001 K1.17 (3.2), N1-EOP-4.1**	**N, E, S, EN**	**5**
g. Adjust MVAR followed by Grid Disturbance **K/A 700000 AA2.11 (3.5), N1-OP-31, N1-SOP-31.2**	**N, A, E, S**	**6**
h. Lineup and Inject Containment Spray Raw Water into Core Spray Loop 11 (RO only) K/A 209001, AA4.01 (4.3), N1-EOP-1, Att. 5	D, S, EN	2
In-Plant Systems		
i. **Transfer Reactor Trip Bus 141 to I&C Bus 130A** K/A 295003 AA1.01 (4.0), N1-SOP-30.2	**D, E, R**	**7**

j. **Lineup Liquid Poison to inject to RPV from the Demin Tank** **K/A 295031 EA1.08 (3.9), N01-EOP-1, Att. 12**	**M, E, R**	**2**
k. Lineup Lake Water to Supply the Emergency Condenser Makeup Tanks using the Electric Fire Pump K/A 295016 AA1.09 (4.0), N1-SOP-21.2	D, E, A, R	4

Code	License Level Criteria		
	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 (for control room system)	≥ 1	≥ 1	**≥ 1**
(L)ow power/shutdown	≥ 1	≥ 1	≥ 1
(N)ew or (M)odified from bank (must apply to at least one alternate path JPM)	≥ 2	≥ 2	≥ 1
(P)revious two exams (randomly selected)	≤ 3	≤ 3	≤ 2
(R)adiologically controlled area	≥ 1	≥ 1	≥ 1
(S)imulator			

Form 3.3-1 Scenario Outline

Facility:	Nine Mile Point Unit 1	Scenario #:	NRC-1
Scenario Source:	New	Op. Test #:	2024
Examiners:		Applicants/ Operators:	
Initial Conditions:	The plant is operating at approximately 100% power. Containment Spray Pump 111 is out of service for maintenance.		
Turnover:	Cross-tie PB 16A to PB 16B per N1-OP-30 starting at H.21.1.c. PB-11 will remain aligned to reserve power. Then, reduce reactor power approximately 5% using Reactor Pumps per provided instructions.		
Critical Tasks:	CT-1: Given an inadvertently open ERV at power, close the ERV or insert a manual scram prior to Torus temperature exceeding 110°F, in accordance with N1-SOP-1.4. CT-2: Given the plant with a primary system discharging outside the primary and secondary containments, which cannot be isolated, and the offsite release rate is projected to exceed the E-Plan "General Emergency" level, the crew will perform an RPV blowdown before the offsite release rate reaches the Emergency Plan “General Emergency” level in accordance with N1-EOP-RR (1-2), and N1-EOP-C2 (1-2).		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Cross-tie PB 16A to PB 16B N1-OP-30
2	N/A	R - ATC	Reduce reactor power with Reactor Recirculation Pumps N1-OP-43B
3	RR72	I – All MC - BOP TS-SRO	Respond to Flow Oscillations on RRP #13, Discharge valve fails to close N1-SOP-1.5, N1-SOP-1.3; Technical Specification
4	AD05A	C – All TS – SRO	Stuck Open ERV 111 **(2020 Scenario 3)** N1-SOP-1.4, Technical Specifications
5	EG13	C = All	Rising Generator Stator Water Cooling Conductivity N1-ARP-A2, N1-SOP-31.1, N1-SOP-1, N1-EOP-RPV
6	ED27	C-All MC-ATC	Power Board 12 fails to Fast Transfer, FW Pump 11 Trips **(2020 Scenario 1)** N1-SOP-30.2
7	MS12	M – All	Main Steam Line Break in Turbine Building with Fuel Element Failure N1-EOP-SC/RR
8	MS13A/C	C – All MC - BOP	MSIV fail to close and isolate the steam leak to the Turbine Building **(2020 Scenario 1)** N1-EOP-SC/RR, N1-EOP-C2
9	HV07E/F	C – ATC	Turbine Building Ventilation Exhaust Fans Trip **(2020 Scenario 1)** N1-EOP-SC/RR, N1-EOP-C2

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

Facility: **Nine Mile Point Unit 1** Scenario No.: **NRC-1** Op-Test No.: **2024**		
1. Malfunctions after EOP entry (1-2) **Events 6, 7, 8, 9**	4	
2. Abnormal events (2-4) **Events 3, 4, 5, 6**	4	
3. Major transients (1-2) **Event 7**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RPV, EOP-SC/RR**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set) **EOP-C2**	1	
6. Pre-identified critical tasks (≥2)	2	

Critical Task Justifications

Critical Task (#1)	**Given an inadvertently open ERV at power, close the ERV or insert a manual scram prior to Torus temperature exceeding 110°F, in accordance with N1-SOP-1.4.**
CT-1.0 Justification:	
Safety Significance	*A manual Reactor scram is required before Torus temperature exceeds 110°F. This reduces the rate of energy production and thus heat input to the Torus. Additionally, this allows evaluating the success of the Reactor scram before boron injection would be required due to Torus temperature in the event of a failure to scram. Closing the ERV prior to the need for the scram avoids the need for these more substantial actions, prevents challenging the plant with a scram, and stops heat input to the Torus.*
Initiating Cue:	*ERV position, ERV acoustic monitors, ERV tailpipe temperature, Torus temperature, Reactor pressure, and steam flow indicate an open ERV. N1-SOP-1.4 provides direction to close the ERV or scram the Reactor.*
Success Path:	*The crew will perform the actions of N1-SOP-1.4 to successfully close the affected ERV.*
Performance Feedback:	*ERV position, ERV acoustic monitors, ERV tailpipe temperature, Torus temperature, Reactor pressure, and steam flow will provide performance feedback regarding success of crew actions to close the ERV. Control rod position and Reactor power will provide performance feedback regarding success of crew actions to scram the Reactor.*
Measurable Performance Standard:	*Pulling ERV fuses, directing an operator to pull ERV fuses in the field, rotating the depressing the manual scram pushbuttons, and/or Mode Switch to SHUTDOWN will provide observable actions for the evaluation team.* ***Bounding Criteria:*** *Based on procedure requirements of N1-SOP-1.4 to scram the reactor prior to Torus temperature exceeding 110°F.*

Critical Task (#2)	**Given the plant with a primary system discharging outside the primary and secondary containments, which cannot be isolated, and the offsite release rate is projected to exceed the E-Plan "General Emergency" level, the crew will perform an RPV blowdown before the offsite release rate reaches the Emergency Plan "General Emergency" level in accordance with N1-EOP-RR (1-2), and N1-EOP-C2 (1-2).**
CT-2.0 Justification:	
Safety Significance	*With an unisolable main steam isolation valve and a steam leak into the Turbine Building, a primary system is discharging outside both the primary and secondary containment. This discharge is approaching E-Plan general emergency levels which is an indication that all 3 fission product barriers have been breached and that dose to the public is in progress. Blowing down the RPV will both take away the driving head and send the radionuclides through the Torus to be "scrubbed", thus reducing the release to the public.*
Initiating Cue:	*The Offsite release rate has already exceeded the "Alert" level of the Emergency Plan and release rate calculations are projected to exceed the "General Emergency" Emergency Plan level.*
Success Path:	*The crew will perform a RPV blowdown in accordance with N1-EOP-C2 (1-2) to lower pressure within the capacity of all available injection sources.*
Performance Feedback:	*Emergency Condenser and ERV instrumentation will provide indication that these systems are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the blowdown.*
Measurable Performance Standard:	*Manipulation of Emergency Condenser valve and ERV control switches will provide observable actions for the evaluation team.* ***Bounding Criteria:*** *Based on procedural requirements to perform an RPV Blowdown prior to the offsite release rate reaches the Emergency Plan "General Emergency" level in accordance with N1-EOP-RR (1-2)*

Form 3.3-1 Scenario Outline

Facility:	Nine Mile Point Unit 1	Scenario #:	NRC-2
Scenario Source:	New	Op. Test #:	2024
Examiners:		Applicants/ Operators:	
Initial Conditions:	The plant is operating at approximately 90% power. Containment Spray Pump 111 is out of service for maintenance.		
Turnover:	Place RBCLC pump 13 in service and place RBCLC pump 12 in standby per N1-OP-11. Then, raise power to 100% utilizing Reactor Recirculation pumps per given instructions.		
Critical Tasks:	CT-1: Given an un-isolable RWCU leak outside primary containment and one general area temperature approaching a maximum safe limit, the crew will insert a manual scram prior to any general area he field report indicating one general area temperature exceeding a max safe limit in accordance with N1-EOP-SC (1-2). CT-2: Given an un-isolable RWCU leak outside primary containment with two general area temperature above the maximum safe limit, the crew will execute N1-EOP-C2, RPV Blowdown (1-2), in accordance with N1-EOP-SC (1-2) within 15 minutes of receiving the field report of two general area temperatures exceeding max safe limits.		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Place RBCLC pump 13 in service and place RBCLC pump 12 to standby. N1-OP-11
2	N/A	R – ATC	Raise reactor power with Reactor Recirculation Pumps N1-OP-1
3	CW04C	C - BOP, SRO	RBCLC pump 13 trips ARP
4	RM51A	TS-SRO	Main Steam Radiation Monitor Failure ARP F1-2-7, Technical Specifications
5	ED06	C – All TS-SRO	Power Board 101 Fault N1-SOP-1.3, Technical Specifications
6	RP10	C – All MC - BOP TS - SRO	CRD Flow Control Valve (FCV) fails closed N1-SOP-5.2; Technical Specification
7	CU11	M – All	RWCU break in the Secondary Containment requiring reactor scram; RWCU Isolation Valves fail to fully isolate N1-EOP-RPV, N1-EOP-C2, N1-EOP-SC
8	OVR – DI-4113, 4114	C – All MC - ATC	RPS pushbuttons fail to scram the reactor; Mode Switch and ARI are successful in scramming the reactor N1-SOP-1
9	TC12	C - All	All TBV's fail closed

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

Facility: **Nine Mile Point Unit 1** Scenario No.: **NRC-2** Op-Test No.: **2024**		
1. Malfunctions after EOP entry (1-2) **Events 8, 9**	2	
2. Abnormal events (2-4) **Events 3, 5, 6**	3	
3. Major transients (1-2) **Event 7**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RPV, EOP-SC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set) **EOP-C2**	1	
6. Pre-identified critical tasks (≥2)	2	

Critical Task Justifications

Critical Task (#1)	**Given an un-isolable RWCU leak outside primary containment and one general area temperature approaching a maximum safe limit, the crew will insert a manual scram prior to any general area he field report indicating one general area temperature exceeding a max safe limit in accordance with N1-EOP-SC (1-2).**
CT-1.0 Justification:	
Safety Significance	With an un-isolable primary system discharging outside of Primary Containment resulting in general area temperature approaching the maximum safe limit, the Reactor must be scrammed. This reduces the rate of energy production and thus the heat input, radioactivity release, and break flow into the Secondary Containment. This also ensures the Reactor is shutdown prior to need for a blowdown.
Success Path:	The crew will be able to scram the reactor utilizing the Mode Switch and ARI pushbuttons per N1-SOP-1
Initiating Cue:	*Annunciators, field reports, and RWCU flow and temperature changes, failure of isolation valves to isolate, will provide indication of the leak coming from the RWCU system.*
Measurable Performance Standard:	*Manipulation of Reactor Scram Pushbuttons, Mode Switch, and ARI pushbuttons, will provide observable actions for the evaluation team.* ***Bounding Criteria****: Before exceeding any maximum safe temperature in accordance with N1-EOP-SC..*
Performance Feedback:	*Control rod position and Reactor power indications will provide performance feedback regarding the success rod insertion.*

Critical Task (#2)	**Given an un-isolable RWCU leak outside primary containment and two general area temperatures above the maximum safe limit, within 15 minutes the crew will commence an RPV Blowdown in accordance with N1-EOP-C2.**
CT-2.0 Justification:	
Safety Significance	An un-isolable primary system discharging outside of Primary Containment resulting in two general area temperatures above the maximum safe limit indicates a wide-spread problem posing a direct and immediate threat to Secondary Containment. A blowdown minimizes flow through the break, rejects heat to the suppression pool in preference to outside the containment, and places the primary system in the lowest possible energy state.
Success Path:	The crew will open 4 ERVs in accordance with N1-EOP-SC (1-2), Secondary Containment Control for Modes 1 and 2, and N1-EOP-C2 (1-2), RPV Blowdown for Modes 1 and 2, to rapidly lower the energy released into the Secondary Containment.
Initiating Cue:	*Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. Field reports will provide indication that two general area temperature limits are above the maximum safe value. N1-EOP-SC (1-2) provides direction to perform an RPV Blowdown per N1-EOP-C2 (1-2).*
Measurable Performance Standard:	*The crew will manually initiate Emergency Condensers and open ERVs. This will provide observable actions for the evaluation team.* ***Bounding Criteria:*** *Based on procedural requirements in N1-EOP-SC (1-2) to perform an RPV Blowdown once 2 or more General areas have exceeded their Maximum Safe Values. Time requirement based on Operations representative recommendation.*
Performance Feedback:	*Emergency Condenser and ERV instrumentation will provide indication that these systems are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the blowdown.*

Form 3.3-1 Scenario Outline

Facility:	Nine Mile Point Unit 1	Scenario #:	NRC-3
Scenario Source:	New	Op. Test #:	2024
Examiners:		Applicants/ Operators:	
Initial Conditions:	The plant is operating at approximately 1% power. Containment Spray Pump 111 is out of service for maintenance.		
Turnover:	Place Feedwater Booster Pump #13 in service per N1-OP-16. Raise reactor power to greater than the POAH. Establish and maintain a 75°F/Hr HUR.		
Critical Tasks:	CT-1: Given indications of an Emergency Condenser tube leak, the crew will isolate the Emergency Condenser within 15 minutes of receiving indications of the tube leak per N1-ARP-K1-1-4. CT-2: Given a coolant leak inside the Containment, lowering Reactor water level, and failure of injection systems to automatically inject to the Reactor, the crew will inject to the Reactor to restore and maintain Reactor water level above -84", in accordance with N1-EOP-RPV. Reactor water level must not be below -84" for more than 10 minutes.		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Place Feedwater Booster Pump #13 in service N1-OP-16
2	N/A	R – ATC	Raise reactor power with rods to establish a 75ºF/hr HUR N1-OP-43A
3	RD42	C – ATC, SRO	Control Rod Double notches during startup, N1-OP-5
4	RM73/ HV04	I – BOP, SRO **TS - SRO**	RB Vent rad monitor fails upscale, RB vent FTI ARP; Technical Specification(TS)
5	NM11A	I – ATC, SRO	IRM 11 Fails Downscale, N1-ARP-F2, N1-OP-38B
6	EC06	C – BOP, SRO **TS – SRO**	Emergency Condenser #11 Tube Leak - Isolable **(2022 Scenario 4)** ARP; Technical Specifications
7	RP10	I – BOP, SRO MC - BOP	Running TBCLC pump trips. TBCLC pump fails to auto start ARP; Technical Specification (TS)
8	CU11	M – All	Loss of all Turbine Building Closed Loop Cooling N1-SOP-24.1,N1-EOP-RPV
9	LP01	C – All MC - ATC	Loss of Coolant Leak into the Primary Containment N1-EOP-PC,
10	FW01, CS06	C – All M - BOP	All Condensate Pumps trip and all Core Spray pumps fail to auto start **(2022 Scenario 4)** N1-ARP-H3, N1-EOP-1, Attachment 4

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

Facility: **Nine Mile Point Unit 1** Scenario No.: **NRC-3** Op-Test No.: **2024**		
1. Malfunctions after EOP entry (1-2) **Events 9 & 10**	2	
2. Abnormal events (2-4) **Events 3, 4, 5, 6, 7**	5	
3. Major transients (1-2) **Event 8**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RPV, EOP-SC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0	
6. Pre-identified critical tasks (≥2)	2	

Critical Task Justifications

Critical Task (#1)	**Given indications of an Emergency Condenser tube leak, the crew will isolate the Emergency Condenser within 15 minutes of receiving indications of the tube leak per N1-ARP-K1-1-4.**
CT-1.0 Justification:	
Safety Significance	*The EC tube leak results in a radiological release to the atmosphere. The crew will isolate the EC steam line to terminate the release before an emergency declaration is required.*
Success Path:	*The crew will isolate the affected EC in accordance with N1-ARP-K1 to minimize the release or radioactivity to the public.*
Initiating Cue:	*Multiple annunciators will provide indications of a tube leak in the Emergency Condenser. Rising water temperatures and rad levels on the Emergency Condenser Vents will provide indication on the affected Emergency Condenser. Field reports will provide indication of steam coming from the EC vent on the North side of the Reactor Building. N1-ARP-K1 provides direction to isolate the Emergency Condenser.*
Measurable Performance Standard:	*The crew will manually isolate the EC's will provide observable actions for the evaluation team.* ***Bounding Criteria:*** *Time based on Operations Representative recommendation to allow the crew time to evaluate the validity of the tube leak and to take the actions required in N1-ARP-K1-1-4.*
Performance Feedback:	*Emergency Condenser pressure lowering, lowering Rad Levels on the EC vents will provide performance feedback regarding the successful isolation of the Emergency Condenser.*

Critical Task (#2)	**Given a coolant leak inside the Containment, lowering Reactor water level, and failure of injection systems to automatically inject to the Reactor, the crew will inject to the Reactor to restore and maintain Reactor water level above -84", in accordance with N1-EOP-RPV. Reactor water level must not be below -84" for more than 10 minutes.**
CT-2.0 Justification:	
Safety Significance	*Maintaining Reactor water level above -84 inches ensures adequate core cooling through the preferred method of core submergence. This protects the integrity of the fuel cladding.*
Success Path:	*The crew will inject with all available low-pressure preferred and alternate injection sources (Details E1 and E2) in accordance with N1-EOP-RPV (1-2).*
Initiating Cue:	*Multiple Reactor water level indicators and annunciators will provide indications of lowering Reactor water level. N1-EOP-RPV (1-2) provides multiple procedure steps directing injection with preferred and alternate injection systems.*
Measurable Performance Standard:	*Manipulation of pumps and/or valves in the preferred or alternate injection system(s) will provide observable actions for the evaluation team. As well as operating ERVs for depressurization.* ***Bounding Criteria:*** *Time requirement based on Operations representative recommendation to allow RPV pressure to lower to within the capacity of the low-pressure injection sources.*
Performance Feedback:	*Multiple Reactor water level indicators and annunciators will provide performance feedback regarding the success of injection with preferred and alternate injection systems.*

Form 4.1-BWR Boiling-Water Reactor Examination Outline

Facility:	Nine Mile Point 1	K/A Catalog Rev. 3	Rev. 07/16/2023	Date of Exam:	8/12/2024

Tier	Group	RO K/A Category Points												SRO-Only Points		
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2	G*	Total
1. Emergency and Abnormal Plant Evolutions	1	3	3	4				3	4			3	20	4	3	7
	2	1	1	1				1	1			1	6	1	2	3
	Tier Totals	4	4	5				4	5			4	26	5	5	10
2. Plant Systems	1	2	2	3	2	1	2	3	3	3	3	2	26	2	3	5
	2	1	1	0	1	2	1	1	1	1	1	1	11	0 / 1	2	3
	Tier Totals	3	3	3	3	3	3	4	4	4	4	3	37	3	5	8

3. Generic Knowledge and Abilities Categories	CO	EC	RC	EM	6	CO	EC	RC	EM	7
	2	2	1	1		2	2	1	2	

4. Theory	Reactor Theory	Thermodynamics	6	
	3	3		

Notes: CO = Conduct of Operations; EC = Equipment Control; RC = Radiation Control;
EM = Emergency Procedures/Plan

* These systems/evolutions may be eliminated from the sample when Revision 2 of the K/A catalog is used to develop the sample plan.

** These systems/evolutions are only included as part of the sample (as applicable to the facility) when Revision 2 of the K/A catalog is used to develop the sample plan.

ES-4.1-BWR BWR Examination Outline (Nine Mile Point 1)

Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO/**SRO**)

Item #	E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	Q#
1	(295001) (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION	**X**						(295001AK1.01) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Natural circulation	3.7	1
2	(295003) (APE 3) PARTIAL OR COMPLETE LOSS OF AC POWER						**X**	(295003) PARTIAL OR COMPLETE LOSS OF AC POWER (G2.4.16) Knowledge of emergency and abnormal operating procedures implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, or severe accident management guidelines	3.5	2
3	(295004) (APE 4) PARTIAL OR COMPLETE LOSS OF DC POWER			**X**				(295004AK3.01) Knowledge of the reasons for the following responses or actions as they apply to PARTIAL OR COMPLETE LOSS OF DC POWER: Load shedding	3.9	3
4	(295005) (APE 5) MAIN TURBINE GENERATOR TRIP	**X**						(295005AK1.03) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the MAIN TURBINE GENERATOR TRIP: Reactor level control	3.8	4
5	(295006) (APE 6) SCRAM		**X**					(295006AK2.03) Knowledge of the relationship between the SCRAM and the following systems or components: CRD hydraulic system	3.9	5
6	(295016) (APE 16) CONTROL ROOM ABANDONMENT						**X**	(295016) CONTROL ROOM ABANDONMENT (G2.4.3) Ability to identify post-accident instrumentation	3.7	6
7	(295018) (APE 18) PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER (CCW)				**X**			(295018AA1.04) Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER (CCW): Reactor water cleanup system	3.4	7
8	(295019) (APE 19) PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR					**X**		(295019AA2.01) Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Instrument air pressure	4.1	8
9	(295021) (APE 21) LOSS OF SHUTDOWN COOLING					**X**		(295021AA2.02) Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: RHR/shutdown cooling system flow	4.1	9
10	(295023) (APE 23) REFUELING ACCIDENTS			**X**				(295023AK3.03) Knowledge of the reasons for the following responses or actions as they apply to REFUELING ACCIDENTS: Ventilation isolation	3.7	10
11	(295024) (EPE 1) HIGH DRYWELL PRESSURE				**X**			(295024EA1.12) Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Suppression pool spray (Mark I, II)	4.2	11
12	(295025) (EPE 2) HIGH REACTOR PRESSURE		**X**					(295025EK2.01) Knowledge of the relationship between the HIGH REACTOR PRESSURE and the following systems or components: RPS	4.2	12
13	(295026) (EPE 3) SUPPRESSION POOL HIGH WATER TEMPERATURE				**X**			(295026EA1.09) Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Safety/relief valves	4.1	13

14	(295028) (EPE 5) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II ONLY)						X	(295028) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II ONLY) (G2.1.2) Knowledge of operator responsibilities during any mode of plant operation	4.1	14
15	(295030) (EPE 7) LOW SUPPRESSION POOL WATER LEVEL			X				(295030EK3.05) Knowledge of the reasons for the following responses or actions as they apply to LOW SUPPRESSION POOL WATER LEVEL: Suppression pool makeup system(s) operation	3.6	15
16	(295031) (EPE 8) REACTOR LOW WATER LEVEL	X						(295031EK1.01) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the REACTOR LOW WATER LEVEL: Adequate core cooling	4.7	16
17	(295037) (EPE 14) SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN		X					(295037EK2.14) Knowledge of the relationship between the SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following systems or components: RPIS (BWR 2, 3, 4, 5)	4	17
18	(295038) (EPE 15) HIGH OFFSITE RADIOACTIVITY RELEASE RATE					X		(295038EA2.05) Ability to determine and/or interpret the following as they apply to HIGH OFFSITE RADIOACTIVITY RELEASE RATE: Emergency plan implementation	3.6	18
19	(600000) (APE 24) PLANT FIRE ON SITE					X		(600000AA2.03) Ability to determine and/or interpret the following as they apply to PLANT FIRE ON SITE: Fire alarm	3.8	19
20	(700000) (APE 25) GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES			X				(700000AK3.01) Knowledge of the reasons for the following responses or actions as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Reactor and turbine trip criteria	3.8	20
21	**(295001) (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION**					X		**(295001AA2.13) Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Thermal limits**	**3.9**	**76**
22	**(295003) (APE 3) PARTIAL OR COMPLETE LOSS OF AC POWER**						X	**(295003) PARTIAL OR COMPLETE LOSS OF AC POWER (G2.4.47) Ability to diagnose and recognize trends in an accurate and timely manner using the appropriate control room reference material (reference potential)**	**4.2**	**77**
23	**(295005) (APE 5) MAIN TURBINE GENERATOR TRIP**					X		**(295005AA2.06) Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Feedwater temperature**	**2.9**	**78**
24	**(295024) (EPE 1) HIGH DRYWELL PRESSURE**						X	**(295024) HIGH DRYWELL PRESSURE (G2.4.22) Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations**	**4.4**	**79**
25	**(295028) (EPE 5) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II ONLY)**						X	**(295028) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II ONLY) (G2.4.14) Knowledge of general guidelines for emergency and abnormal operating procedures usage**	**4.5**	**80**

26	**(295030) (EPE 7) LOW SUPPRESSION POOL WATER LEVEL**					**X**		**(295030EA2.02) Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Suppression pool temperature**	**3.8**	**81**
27	**(295037) (EPE 14) SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN**					**X**		**(295037EA2.06) Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Reactor pressure**	**4.3**	**82**
K/A Category Totals:		3	3	4	3	8	6	Group Point Total:		27

ES-4.1-BWR

BWR Examination Outline (Nine Mile Point 1)

Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO/**SRO**)

Item #	E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	Q#
28	(295009) (APE 9) LOW REACTOR WATER LEVEL			X				(295009AK3.01) Knowledge of the reasons for the following responses or actions as they apply to LOW REACTOR WATER LEVEL: Recirculation runback	3.7	21
29	(295010) (APE 10) HIGH DRYWELL PRESSURE		X					(295010AK2.07) Knowledge of the relationship between the HIGH DRYWELL PRESSURE and the following systems or components: (Component cooling water	3.5	22
30	(295014) (APE 14) INADVERTENT REACTIVITY ADDITION	X						(295014AK1.09) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the INADVERTENT REACTIVITY ADDITION: Reactor power	4.4	23
31	(295020) (APE 20) INADVERTENT CONTAINMENT ISOLATION				X			(295020AA1.04) Ability to operate and/or monitor the following as they apply to INADVERTENT CONTAINMENT ISOLATION: SGTS/FRVS	3.6	24
32	(295032) (EPE 9) HIGH SECONDARY CONTAINMENT AREA TEMPERATURE						X	(295032) HIGH SECONDARY CONTAINMENT AREA TEMPERATURE (G2.1.14) Knowledge of criteria or conditions that require plantwide announcements, such as pump starts, reactor trips, and mode changes	3.1	25
33	(295035) (EPE 12) SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE					X		(295035EA2.03) Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Lights and alarms	3.7	26
34	**(295007) (APE 7) HIGH REACTOR PRESSURE**						**X**	**(295007) (APE 7) HIGH REACTOR PRESSURE (G2.4.6) Knowledge of emergency and abnormal operating procedures major action categories**	**4.7**	**83**
35	**(295022) (APE 22) LOSS OF CONTROL ROD DRIVE PUMPS**						**X**	**(295022) LOSS OF CONTROL ROD DRIVE PUMPS (G2.2.22) Knowledge of limiting conditions for operation and safety limits**	**4.7**	**84**
36	**(295029) (EPE 6) HIGH SUPPRESSION POOL WATER LEVEL**					**X**		**(295029EA2.03) Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Drywell/containment water level**	**3.6**	**85**
K/A Category Totals:		1	1	1	1	2	3	Group Point Total:		9

ES-4.1-BWR BWR Examination Outline (Nine Mile Point 1)

Plant Systems—Tier 2/Group 1 (RO/**SRO**)

Item #	System / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	Q#
37	(205000) (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE)								**X**				(205000A2.01) 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 operations: Recirculation loop high temperature	3.6	27
38	(206000) (SF2, SF4 HPCI) HIGH PRESSURE COOLANT INJECTION SYSTEM	**X**											(206000K1.17) Knowledge of the physical connections and/or cause and effect relationships between the HIGH PRESSURE COOLANT INJECTION SYSTEM and the following systems: Reactor protection system	2.8	28
39	(207000) (SF4 IC) ISOLATION (EMERGENCY) CONDENSER						**X**						(207000K6.07) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the ISOLATION (EMERGENCY) CONDENSER: AC electrical distribution	3.5	29
40	(209001) (SF2, SF4 LPCS) LOW PRESSURE CORE SPRAY SYSTEM			**X**									(209001K3.01) Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on the following systems or system parameters: Reactor water level	4.3	30
41	(209001) (SF2, SF4 LPCS) LOW PRESSURE CORE SPRAY SYSTEM					**X**							(209001K5.02) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the LOW PRESSURE CORE SPRAY SYSTEM: Abnormal differential pressure indication (leak detection)	3.4	31
42	(211000) (SF1 SLCS) STANDBY LIQUID CONTROL SYSTEM							**X**					(211000A1.05) Ability to predict and/or monitor changes in parameters associated with operation of the STANDBY LIQUID CONTROL SYSTEM including: Pump amps	2.9	32

43	(212000) (SF7 RPS) REACTOR PROTECTION SYSTEM									X			(212000A3.09) Ability to monitor automatic operation of the REACTOR PROTECTION SYSTEM including: System actuation	4.3	33
44	(215003) (SF7 IRM) INTERMEDIATE RANGE MONITOR SYSTEM			X									(215003K3.01) Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR SYSTEM will have on the following systems or system parameters: RPS	4.2	34
45	(215004) (SF7 SRMS) SOURCE RANGE MONITOR SYSTEM							X					(215004A1.01) Ability to predict and/or monitor changes in parameters associated with operation of the SOURCE RANGE MONITOR SYSTEM including: Detector position	3.3	35
46	(263000) (SF6 DC) DC Electrical Distribution							X					(263000A1.01) Ability to predict and/or monitor changes in parameters associated with operation of the DC Electrical Distribution, including: Battery charging/discharging rate	3.3	36
47	(215005) (SF7 PRMS) AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR			X									(215005K3.07) Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR will have on the following systems or system parameters: Rod block monitor system	3.7	37
48	(218000) (SF3 ADS) AUTOMATIC DEPRESSURIZATION SYSTEM										X		(218000A4.01) Ability to manually operate and/or monitor the AUTOMATIC DEPRESSURIZATION SYSTEM in the control room: ADS valves	4.5	38
49	(223002) (SF5 PCIS) PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF								X				(223002A2.13) Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Leak detection system failures	3.3	39
50	(223002) (SF5 PCIS) PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF						X						(223002K6.09) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF: Plant pneumatic systems	3.2	40

51	(239002) (SF3 SRV) SAFETY RELIEF VALVES									X			(239002A3.01) Ability to monitor automatic operation of the SAFETY RELIEF VALVES including: SRV operation after ADS actuation	4.1	41
52	(239002) (SF3 SRV) SAFETY RELIEF VALVES											X	(239002) SAFETY RELIEF VALVES (G2.1.45) Ability to identify and interpret diverse indications to validate the response of another indication	4.3	42
53	(259002) (SF2 RWLCS) REACTOR WATER LEVEL CONTROL SYSTEM		X										(259002K2.03) REACTOR WATER LEVEL CONTROL SYSTEM Knowledge of electrical power supplies to the following: Feedwater controllers	3.1	43
54	(510000) (SF4 SWS*) SERVICE WATER SYSTEM	X											(510000K1.13) SERVICE WATER SYSTEM Knowledge of the physical connections and/or cause and effect relationships between the Service Water System and the following systems: Feedwater system	2.7	44
55	(261000) (SF9 SGTS) STANDBY GAS TREATMENT SYSTEM		X										(261000K2.04) STANDBY GAS TREATMENT SYSTEM Knowledge of electrical power supplies to the following: Standby gas treatment system heaters	2.9	45
56	(262001) (SF6 AC) AC ELECTRICAL DISTRIBUTION									X			(262001A3.03) Ability to monitor automatic operation of the AC ELECTRICAL DISTRIBUTION including: Load shedding	3.8	46
57	(262001) (SF6 AC) AC ELECTRICAL DISTRIBUTION										X		(262001A4.01) Ability to manually operate and/or monitor the AC ELECTRICAL DISTRIBUTION in the control room: Breakers and disconnects	3.7	47
58	(262002) (SF6 UPS) UNINTERRUPTABLE POWER SUPPLY (AC/DC)				X								(262002K4.01) Knowledge of UNINTERRUPTABLE POWER SUPPLY (AC/DC) design features and/or interlocks that provide for the following: Transfer of power supplies	3.5	48
59	(263000) (SF6 DC) DC ELECTRICAL DISTRIBUTION				X								(263000K4.03) Knowledge o) DC ELECTRICAL DISTRIBUTION design features and/or interlocks that provide for the following: Ground detection	2.9	49

60	(264000) (SF6 EGE) EMERGENCY GENERATORS (DIESEL/JET)										X		(264000A4.07) Ability to manually operate and/or monitor the EMERGENCY GENERATORS (DIESEL/JET) in the control room: Transfer of control to local/remote panels	3.4	50
61	(300000) (SF8 IA) INSTRUMENT AIR SYSTEM											X	(300000) INSTRUMENT AIR SYSTEM (291001K1.04) Valves - The failed-valve positions for different operators (open, closed, and as-is positions; spring-loaded valves; hydraulically/ pneumatically controlled valves; electric motor-driven valves)	2.8	51
62	(400000) (SF8 CCS) COMPONENT COOLING WATER SYSTEM								X				(400000A2.08) Ability to (a) predict the impacts of the following on the COMPONENT COOLING WATER SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Residual heat removal system heat exchanger tube leak	3.5	52
63	**(205000) (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE)**								**X**				**(205000A2.05) 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 operations: System isolation**	**4**	**86**
64	**(212000) (SF7 RPS) REACTOR PROTECTION SYSTEM**								**X**				**(212000A2.18) 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 operations: SCRAM air header low pressure**	**3.9**	**87**
65	**(215003) (SF7 IRM) INTERMEDIATE RANGE MONITOR SYSTEM**											**X**	**(215003) INTERMEDIATE RANGE MONITOR SYSTEM (G2.2.21) Knowledge of pre- and post-maintenance operability requirements**	**4.1**	**88**

66	**(218000) (SF3 ADS) AUTOMATIC DEPRESSURIZATION SYSTEM**											**X**	**(218000) AUTOMATIC DEPRESSURIZATION SYSTEM (G2.2.19) Knowledge of maintenance work order requirements**	**3.4**	**89**
67	**(262002) (SF6 UPS) UNINTERRUPTABLE POWER SUPPLY (AC/DC)**											**X**	**(262002) UNINTERRUPTABLE POWER SUPPLY (AC/DC) (G2.2.36) Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operation**	**4.2**	**90**
K/A Category Totals:		2	2	3	2	1	2	3	5	3	3	5	Group Point Total:		31

ES-4.1-BWR BWR Examination Outline (Nine Mile Point 1)

Plant Systems—Tier 2/Group 2 (RO/**SRO**)

Item #	System / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	Q#
68	(202001) (SF1, SF4 RS) RECIRCULATION SYSTEM		**X**										(202001K2.01) RECIRCULATION SYSTEM Knowledge of electrical power supplies to the following: Recirculation pumps	3.5	53
69	(216000) (SF7 NBI) NUCLEAR BOILER INSTRUMENTATION							**X**					(216000A1.05) Ability to predict and/or monitor changes in parameters associated with operation of the NUCLEAR BOILER INSTRUMENTATION including: Lights and alarms	3.3	54
70	(223001) (SF5 PCS) PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES	**X**											(223001K1.16) Knowledge of the physical connections and/or cause and effect relationships between the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES and the following systems: Containment and drywell atmosphere monitoring system	3.5	55
71	(226001) (SF5 RHR CSS) RHR/LPCI: CONTAINMENT SPRAY MODE SYSTEM MODE									**X**			(226001A3.07) Ability to monitor automatic operation of the RHR/LPCI: CONTAINMENT SPRAY MODE SYSTEM MODE including: Pump start	3.9	56
72	(233000) (SF9 FPCCU) FUEL POOL COOLING/CLEANUP					**X**							(233000K5.03) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the FUEL POOL OOLING/CLEANUP: Spent fuel decay heat generation	3.3	57
73	(239001) (SF3, SF4 MRSS) MAIN AND REHEAT STEAM SYSTEM						**X**						(239001K6.08) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the MAIN AND REHEAT STEAM SYSTEM: Main condenser vacuum	3.5	58
74	(245000) (SF4 MTGEN) MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS								**X**				(245000A2.02) Ability to (a) predict the impacts of the following on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Loss of lube oil	3.8	59

75	(259001) (SF2 FWS) FEEDWATER SYSTEM				X								(259001K4.07) Knowledge of FEEDWATER SYSTEM design features and/or interlocks that provide for the following: RFP motor cooling: motor-driven-only	3	60
76	(268000) (SF9 RW) RADWASTE SYSTEM											X	(268000) RADWASTE SYSTEM (G2.2.43) Knowledge of the process used to track inoperable alarms	3	61
77	(271000) (SF9 OG) OFFGAS SYSTEM										X		(271000A4.09) Ability to manually operate and/or monitor the OFFGAS SYSTEM in the control room: Offgas system controls /components	3	62
78	(290003) (SF9 CRV) CONTROL ROOM VENTILATION					X							(290003K5.04) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the CONTROL ROOM VENTILATION: Control room habitability	3.7	63
79	**(272000) (SF7 RMS) Radiation Monitoring System**											**X**	**(272000) (SF7 RMS) Radiation Monitoring System (G2.3.12) Knowledge of radiological safety principles and 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, or alignment of filters**	**3.7**	**91**
80	**(256000) (SF2 CDS) CONDENSATE SYSTEM**								**X**				**(256000A2.01) Ability to (a) predict the impacts of the following on the CONDENSATE SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Pump trips**	**3.9**	**92**
81	**(290002) (SF4 RVI) REACTOR VESSEL INTERNALS**											**X**	**(290002) (SF4 RVI) REACTOR VESSEL INTERNALS (G2.4.21) Knowledge of the parameters and logic used to assess the status of emergency operating procedures critical safety functions or shutdown critical safety functions**	**4.6**	**93**
K/A Category Totals:		1	1	0	1	2	1	1	2	1	1	3	Group Point Total:		14

Form 4.1-COMMON Common Examination Outline

ES-4.1-COMMON	COMMON Examination Outline (Nine Mile Point 1)		
Facility:	Nine Mile Point 1	Date of Exam:	8/12/2024

Generic Knowledge and Abilities Outline (Tier 3) (RO/SRO)

Category	K/A #	Topic	Item #	RO IR	RO Q#	SRO-Only IR	SRO-Only Q#
1. Conduct of Operations	G2.1.21	(G2.1.21) Ability to verify that a copy of a controlled procedure is the proper revision	82	3.5	64		
	G2.1.32	(G2.1.32) Ability to explain and apply system precautions, limitations, notes, or cautions	83	3.8	65		
	G2.1.23	**(G2.1.23) Ability to perform general or normal operating procedures during any plant condition**	**84**			**4.4**	**94**
	G2.1.42	**(G2.1.42) Knowledge of new and spent fuel movement procedures (SRO Only)**	**85**			**3.4**	**95**
	Subtotal			N/A	2	N/A	**2**
2. Equipment Control	G2.2.2	(G2.2.2) Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels	86	4.6	66		
	G2.2.38	(G2.2.38) Knowledge of conditions and limitations in the facility license	87	3.6	67		
	G2.2.6	**(G2.2.6) Knowledge of the process for making changes to procedures**	**88**			**3.6**	**96**
	G2.2.37	**(G2.2.37) Ability to determine operability or availability of safety-related equipment (SRO Only)**	**89**			**4.6**	**97**
	Subtotal			N/A	2	N/A	**2**
3. Radiation Control	G2.3.11	(G2.3.11) Ability to control radiation releases	90	3.8	68		
	G2.3.6	**(G2.3.6) Ability to approve liquid or gaseous release permits**	**91**			**3.8**	**98**
	Subtotal			N/A	1	N/A	**1**
4. Emergency Procedures / Plan	G2.4.45	(G2.4.45) Ability to prioritize and interpret the significance of each annunciator or alarm	92	4.1	69		
	G2.4.29	**(G2.4.29) Knowledge of the emergency plan implementing procedures**	**93**			**4.4**	**99**
	G2.4.51	**(G2.4.51) Knowledge of emergency operating procedure exit conditions (e.g., emergency condition no longer exists or severe accident guideline entry is required)**	**94**			**4.0**	**100**
	Subtotal			N/A	1	N/A	**2**
Tier 3 Point Total				N/A	6	N/A	**7**

Form 4.1-COMMON Common Examination Outline

ES-4.1-COMMON	COMMON Examination Outline (Nine Mile Point 1)	
Facility: Nine Mile Point 1		Date of Exam: 8/12/2024

Theory (Tier 4) (RO)

Category	K/A #	Topic	Item #	RO IR	RO Q#
Reactor Theory	292005	(292005K1.10) Control Rods - State the purpose of flux shaping	95	3.3	70
	292004	(292004K1.10) REACTIVITY COEFFICIENTS) Define the void coefficient of reactivity	96	3.2	71
	292007	(292007K1.03) FUEL DEPLETION AND BURNABLE POISONS Given a curve of K-effective versus core age, state the reasons for maximum, minimum, and inflection points	97	2.7	72
	Subtotal				3
Thermodynamics	293003	(293003K1.16) STEAM Define the following term: Subcooling	98	2.8	73
	293006	(293006K1.05) FLUID STATICS AND DYNAMICS Explain operational implications of fluid/water hammer	99	3.3	74
	293010	(293010K1.06) BRITTLE FRACTURE AND VESSEL THERMAL STRESS State the operational concerns of uncontrolled cooldown	100	4.1	75
	Subtotal				3
Tier 4 Point Total				N/A	6

Form 4.1-1 Record of Rejected Knowledge and Abilities

Refer to Examination Standard (ES)-4.2, “Developing Written Examinations,” Section B.3, for deviations from the approved written examination outline.

Tier/Group	Randomly Selected K/A	Reason for Rejection
1 / 1	Question #2 295003 PARTIAL OR COMPLETE LOSS OF AC POWER 2.4.23 - Knowledge of the bases for prioritizing emergency operating procedures implementation	An acceptable question could not be developed for the randomly sampled generic K/A at the RO license level due limited tie to the given topic. Randomly reselected K/A 295003 PARTIAL OR COMPLETE LOSS OF AC POWER 2.4.16 - Knowledge of emergency and abnormal operating procedures implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, or severe accident management guidelines.
1 / 1	Question #10 295023 REFUELING ACCIDENTS AK3.01 - Knowledge of the reasons for the following responses or actions as they apply to REFUELING ACCIDENTS: Personnel evacuation	An acceptable question could not be developed for the randomly sampled K/A due to low level of difficulty of the topic. Randomly reselected K/A 295023 REFUELING ACCIDENTS AK3.03 - Knowledge of the reasons for the following responses or actions as they apply to REFUELING ACCIDENTS: Ventilation isolation.

1 / 1	Question #13 295026 SUPPRESSION POOL HIGH WATER TEMPERATURE EA1.04 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: HPCI	An acceptable question could not be developed for the randomly sampled K/A due to lack of a tie between HPCI and the Suppression Pool at this facility. Randomly reselected K/A 295026 SUPPRESSION POOL HIGH WATER TEMPERATURE EA1.09 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Safety/relief valves.
2 / 1	Question #30 209001 LOW PRESSURE CORE SPRAY SYSTEM K3.05 - Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on the following systems or system parameters: Drywell cooling	An acceptable question could not be developed for the randomly sampled K/A due to lack of a tie between Core Spray and Drywell Cooling at this facility. Randomly reselected K/A 209001 LOW PRESSURE CORE SPRAY SYSTEM K3.01 - Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on the following systems or system parameters: Reactor water level.

2 / 1	Question #31 209001 LOW PRESSURE CORE SPRAY SYSTEM K5.07 - Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the LOW PRESSURE CORE SPRAY SYSTEM: Adequate core cooling	An acceptable question could not be developed for the randomly sampled K/A without oversampling adequate core cooling topics across the exam. Randomly reselected K/A 209001 LOW PRESSURE CORE SPRAY SYSTEM K5.02 - Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the LOW PRESSURE CORE SPRAY SYSTEM: Abnormal differential pressure indication (leak detection).
2 / 1	Question #36 215004 SOURCE RANGE MONITOR SYSTEM A1.07 - Ability to predict and/or monitor changes in parameters associated with operation of the SOURCE RANGE MONITOR SYSTEM including: SRMS count rate and period	An acceptable question could not be developed for the randomly sampled K/A without oversampling SRM topics. Randomly reselected K/A 263000 DC Electrical Distribution A1.01 - Ability to predict and/or monitor changes in parameters associated with operation of the DC Electrical Distribution, including: Battery charging/discharging rate.

2 / 1	Question #37 215005 AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR K3.09 - Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR will have on the following systems or system parameters: Recirculation flow control system	An acceptable question could not be developed for the randomly sampled K/A due to lack of an effect of a loss/malfunction of APRMs/LPRMs on Recirc flow control. Randomly reselected K/A 215005 AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR K3.07 - Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR will have on the following systems or system parameters: Rod block monitor system.
2 / 1	Question #42 239002 SAFETY RELIEF VALVES 2.1.37 - Knowledge of procedures, guidelines, or limitations associated with reactivity management	An acceptable question could not be developed for the randomly sampled K/A due to lack of a tie between the system and reactivity management. Randomly reselected K/A 239002 SAFETY RELIEF VALVES 2.1.45 - Ability to identify and interpret diverse indications to validate the response of another indication.

2 / 1	Question #45 261000 STANDBY GAS TREATMENT SYSTEM K2.02 - Knowledge of electrical power supplies to the following: Standby gas treatment system motor-operated valves/dampers	An acceptable question could not be developed for the randomly sampled K/A due to lack of motor-operated valves/dampers in this system at this facility. Randomly reselected K/A 261000 STANDBY GAS TREATMENT SYSTEM K2.04 - Knowledge of electrical power supplies to the following: Standby gas treatment system heaters.
2 / 1	Question #46 262001 AC ELECTRICAL DISTRIBUTION A3.05 - Ability to monitor automatic operation of the AC ELECTRICAL DISTRIBUTION including: Synchronization of AC sources	An acceptable question could not be developed for the randomly sampled K/A due to lack of automatic features related to synchronization of AC sources at this facility. Randomly reselected K/A 262001 AC ELECTRICAL DISTRIBUTION A3.03 - Ability to monitor automatic operation of the AC ELECTRICAL DISTRIBUTION including: Load shedding.
2 / 1	Question #51 300000 INSTRUMENT AIR SYSTEM 291004 PUMPS (POSITIVE DISPLACEMENT) K1.25 - Safety procedures and precautions associated with positive displacement pumps	An acceptable question could not be developed for the randomly sampled K/A due to lack of pumps in the Instrument Air system. Randomly reselected K/A 300000 INSTRUMENT AIR SYSTEM 291001 Valves K1.04 - The failed-valve positions for different operators (open, closed, and as-is positions; spring-loaded valves; hydraulically/pneumatically controlled valves; electric motor-driven valves).

4	Question #70 292001 NEUTRONS Identify characteristics of good moderators	An acceptable question could not be developed for the randomly sampled K/A due low operational relevance of the topic. Randomly reselected K/A 292005 Control Rods K1.10 - State the purpose of flux shaping.
4	Question #71 292004 REACTIVITY COEFFICIENTS K1.15 - Explain the differences between reactivity coefficients and reactivity defects	An acceptable question could not be developed for the randomly sampled K/A without testing minutia. Randomly reselected K/A 292004 REACTIVITY COEFFICIENTS K1.10 - Define the void coefficient of reactivity.
1 / 1	Question #77 295003 PARTIAL OR COMPLETE LOSS OF AC POWER 2.2.41 - Ability to obtain and interpret station electrical and mechanical drawings (reference potential)	An acceptable question could not be developed at the SRO level and within Tier 1 criteria for the randomly sampled generic K/A. Randomly reselected K/A 295003 PARTIAL OR COMPLETE LOSS OF AC POWER 2.4.47 - Ability to diagnose and recognize trends in an accurate and timely manner using the appropriate control room reference material (reference potential).

1 / 1	Question #79 295024 HIGH DRYWELL PRESSURE 2.2.17 - Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator	An acceptable question could not be developed for the combination of randomly sampled evolution and generic K/A. Randomly reselected K/A 295024 HIGH DRYWELL PRESSURE 2.4.22 - Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.
1 / 1	Question #80 295028 HIGH DRYWELL TEMPERATURE 2.4.31 - Knowledge of annunciator alarms, indications, or response procedures	An acceptable question could not be developed for the combination of randomly sampled evolution and generic K/A at the SRO level. Randomly reselected K/A 295028 HIGH DRYWELL TEMPERATURE 2.4.14 - Knowledge of general guidelines for emergency and abnormal operating procedures usage.
1 / 2	Question #83 295007 HIGH REACTOR PRESSURE 2.4.42 - Knowledge of emergency response facilities	An acceptable question could not be developed for the combination of randomly sampled evolution and generic K/A. Randomly reselected K/A 295007 HIGH REACTOR PRESSURE 2.4.6 - Knowledge of emergency and abnormal operating procedures major action categories.

1 / 2	Question #84 295022 LOSS OF CONTROL ROD DRIVE PUMPS 2.2.39 - Knowledge of less than or equal to 1 hour technical specification action statements (This K/A does not include action statements of 1 hour or less that follow the expiration of a completion time for a technical specification condition for which an action statement has already been entered.)	An acceptable question could not be developed for the randomly sampled generic K/A at the SRO level. Randomly reselected K/A 295022 LOSS OF CONTROL ROD DRIVE PUMPS 2.2.22 - Knowledge of limiting conditions for operation and safety limits.
2 / 1	Question #90 262002 UNINTERRUPTABLE POWER SUPPLY (AC/DC) 2.4.25 - Knowledge of fire protection procedures	An acceptable question could not be developed for the combination of randomly sampled generic K/A due to lack of relevant connection with the given system. Randomly reselected K/A 262002 UNINTERRUPTABLE POWER SUPPLY (AC/DC) 2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operation.
2 / 2	Question #91 233000 FUEL POOL COOLING/CLEANUP 2.1.30 - Ability to locate and operate components, including local controls	System 233000 was inadvertently oversampled and an acceptable question could not be developed for the randomly sampled generic K/A at the SRO level. Randomly reselected K/A 272000 Radiation Monitoring System 2.3.12 - Knowledge of radiological safety principles and 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, or alignment of filters.

3	Question #94 2.1.15 - Knowledge of administrative requirements for temporary management direction, such as standing orders, night orders, or operations memoranda	An acceptable question could not be developed for the randomly sampled generic K/A at the SRO level. Randomly reselected K/A 2.1.23 - Ability to perform general or normal operating procedures during any plant condition.
3	Question #99 2.4.12 - Knowledge of operating crew responsibilities during emergency and abnormal operations	An acceptable question could not be developed for the randomly sampled generic K/A at the SRO level. Randomly reselected K/A 2.4.29 - Knowledge of the emergency plan implementing procedures.
3	Question #100 2.4.17 - Knowledge of emergency and abnormal operating procedures terms and definitions	An acceptable question could not be developed for the randomly sampled generic K/A at the SRO level. Randomly reselected K/A 2.4.51 - Knowledge of emergency operating procedure exit conditions (e.g., emergency condition no longer exists or severe accident guideline entry is required).
2 / 2	Question #60 259001 FEEDWATER SYSTEM K4.06 - Knowledge of FEEDWATER SYSTEM design features and/or interlocks that provide for the following: RFP lubrication	Resampled K/A due to low level of difficulty of original question. Reselected K/A 259001 FEEDWATER SYSTEM K4.06 - Knowledge of FEEDWATER SYSTEM design features and/or interlocks that provide for the following: RFP motor cooling: motor-driven-only.