# Scenario Outline

| Nine Mile Point 1 | Scenario No. 1 | Operating Test No. 1 |
|---|---|---|

| Examiners: | Candidates: | | |
|---|---|---|---|
| | SRO | SRO-1 | SRO-4 |
| | RO | SRO-2 | SRO-5 |
| | BOP | SRO-3 | RO-1 |

**Objectives:** Evaluate candidates ability to change reactor power and perform normal plant equipment operations including shifting TBCLC pumps. Then respond to a TBCLC Controller failure. The temporary cooling water flow disturbance will initiate an overheating of the Recirc MG Set, which will require removing it from service. During the power change an APRM will fail requiring the channel be bypassed. After the power change there will be a Recirc Pump Seal failure. A second seal failure will require removing the plant from service. When this is done the leak becomes larger and a loss of Off-Site power with a failure of the 102 Emergency Diesel occur. Candidates must execute normal, abnormal and emergency procedures; ensure compliance with Technical Specifications.

**Initial Conditions:** 100% Power (IC-14)

**Turnover:** Continue power operations. Shift operating TBCLC Pumps per N1-OP-24, Sect. F.1

| Event No. | Malf. No. | Type | Event Description |
|---|---|---|---|
| 1 | | N | (BOP/SRO) Shift operating TBCLC Pumps per N1-OP-24, Sect. F.1 |
| 2 | CW14 | I | (BOP/SRO) TBCLC Controller TCV 71-88, Fails Low. Results in Annunciator: H1 (3-4), operator must control TBCLC temps manually. |
| 3 | Ann. OVRD | C | (BOP) Reactor Recirc Pump Motor Generator (RRMG) 13 High Motor Temperature, Annunciator F2 (2-3), REACT RECIRC MG SET 13, Operator confirms temperatures rising, monitors pump, lowers flow and removes pump from service |
| 4 | | R | (RO) Power reduction to remove RRMG 13 from service due to high component temperature.<br><br>Check T.S. 3.1.7 for 4 loop operational restrictions. |

# Scenario Outline

| | | | |
|---|---|---|---|
| 5 | NM37B | I | (RO/SRO) APRM Channel 12 Failure INOP, Ann F3 (1-1)<br><br>Bypass APRM in accordance with N1-OP-38C, Sect. H.1.0, reset scram, check T.S.3.6.2 |
| 6 | RR33 | C | (BOP/SRO) Recirc Pump Seal Lower (Inner), Annunciator F2 (1-1), REACT RECIRC PUMP-MOTOR<br>Monitor Drywell Equipment Drain Tank |
| 7 | RR34<br>OVRD | C | (BOP) Recirc Pump Seal Upper (Outer) Failure<br><br>Causes Hi Drywell leakage and High Drywell pressure<br>Operator reduce flow and remove the recirc pump from service, the pump discharge isolation valve will NOT isolate (Overrride RX RECIRC PUMP 11 DISC VALVE, State – POS 2. (05S063-DI-008-05) |
| 8 | ED01A<br>ED01B<br>DG01A | M | (CREW) Reactor scram is required because of rising Drywell pressure and leakage when the turbine trips - Loss of Off-Site 115KV Power Sources (JAF-LINE 4 and SOUTH OSWEGO-LINE 1) and 102 Emergency Diesel fails to start.<br><br>Enters N1-SOP-5, N1-EOP-2, RPV CONTROL, N1-EOP-PRIMARY CONTAINMENT CONTROL<br><br>*PRA: Respond to Drywell pressure ≥ 3.5 psig*<br>*PRA: Respond to loss of off-site power with the unit on-line*<br>*PRA: Manually initiate containment spray*<br>*PRA: (SRO) Direct actions to assure adequate core cooling / containment integrity* |
| | | | |

# Scenario Outline

| Nine Mile Point 1 | Scenario No. 2 | Operating Test No. 1 |
|---|---|---|

| Examiners: | Candidates: | | |
|---|---|---|---|
| | SRO | SRO-2 | SRO-5 |
| | RO | SRO-3 | RO-1 |
| | BOP | SRO-1 | SRO-4 |

**Objectives:** Evaluate candidates ability to control and lower reactor power. Perform routine operating tasks such as the Reactor Building Emergency Ventilation (EVS) monthly surveillance testing. During the test the EVS flowmeter will fail requiring the operators to back out of the procedure. After the surveillance the Recirc Master Controller will fail upscale causing power to rise by several percent and then not respond to operator control. This will require operating all five recirc pump controllers in manual. A subsequent feedwater pump trip will require lowering power using the five recirc pump controllers. Slowly trash will buildup on the intake structure due to the high wind conditions, causing a loss of all cooling water. During the response to the loss of all cooling water the reactor will be manually scrammed. A hydraulic lock will cause a failure to scram. Actions must be taken to lower power and heat input into the Torus because there is no cooling available. The #11 Liquid Poison Pump will fail to start, Candidates must execute normal, abnormal and emergency procedures, and insure compliance with Technical Specifications.

**Initial Conditions:** 90% Power (IC-14)

**Turnover:** Continue power operations. High wind conditions exist at the site. Perform Reactor Building Emergency Ventilation System Operability Test, N1-ST-M8.

| Event No. | Malf. No. | Type | Event Description |
|---|---|---|---|
| 1 | | N | (BOP/SRO) Perform Reactor Building Emergency Ventilation System (RBEVS) Operability Test, N1-ST-M8. |
| 2 | OVRD | I | (BOP/SRO) RBEVS Flow Meter Fails low during testing. Operator secures fan. SRO declares the RBEVS train INOP, enters T.S. 3.4.4 |
| 3 | OVRD | I | (RO/SRO) Master Recirculation Flow Controller fails higher and then as is. Recirc flow slowly rises. Operators must recognize failure then lower power by placing all five individual MG Recirc Controllers in MANUAL and lower flow to return power to 90%. Enters N1-SOP-2, N1-OP-1 |

# Scenario Outline

| | | | |
|---|---|---|---|
| 4 | FW36B | C | (BOP/SRO) Feedwater Pump 12 Low Suction Pressure Trip, Ann. H3 (2-7). Lower power to within the capacity of the Shaft Driven Pump,N1-OP-43A. T.S. 3.1.8 (HPCI). |
| 5 | | R | (RO/SRO) Power reduction with Recirc flow in accordance with N1-OP-43A to prevent automatic low RPV water level trip. |
| 6 | CW12 | M/C | (BOP/RO/SRO) Trash buildup on the intake structure clogs the inlet resulting in a low level in the Intake Structure.<br>Enter N1-SOP-7, will require a manual scram, N1-SOP-1<br><br>*PRA: Loss of SW*<br>*PRA: Loss of RBCLC*<br>*PRA: Loss of TBCLC* |
| 7 | LP01A<br>RD33A<br>RD33B<br>RD33C<br>RD33D<br>RD33E | M | (CREW) ATWS, lower level to control power, close ERVs, manually insert control rods, recognize the failure if the #11 Liquid poison Pump and start the alternate pump.<br>Enter, N1-EOP-2, RPV CONTROL, N1-EOP-3, FAILURE TO SCRAM, N1-EOP-4, PRIMARY CONTAINMENT CONTROL<br><br>*PRA: Respond to an ATWS*<br>*PRA: Respond to a Torus temperature $\geq$ 110 °F*<br>*PRA: Startup containment spray and torus cooling*<br>*PRA: Execute EOP-3.1*<br>*PRA: (SRO) Direct actions to assure adequate core cooling / containment integrity* |

# Scenario Outline

| Nine Mile Point 1 | Scenario No. 3 | Operating Test No. 1 |
|---|---|---|

| Examiners: | Candidates: | | |
|---|---|---|---|
| | SRO | SRO-3 | SURROGATE |
| | RO | SRO-1 | SRO-4 |
| | BOP | SRO-2 | SRO-5 |

**Objectives:** Evaluate candidates ability to lower power under normal and abnormal conditions. During a routine surveillance test of the Emergency Diesel Generator (EDG) there will be a governor failure when the EDG is paralleled to the grid. The master feedwater controller will fail as-is. A malfunction of the turbine reheaters steam system will cause unbalanced LP Turbine operation, this will cause Main Turbine high vibration. Steam heating must be removed from the second stage reheaters, which requires lowering power (during this power reduction the feedwater control failure will become apparent). After the power reduction the turbine will fail as it adjusts to the loss of re-heating. Turbine blades will penetrate the turbine casing and damage the condenser this will cause a Turbine Trip, loss of vacuum and failure of the Condenser Hotwell. The turbine trip and scram cause a large coolant leak in the Drywell. With limited high pressure injection (feedwater/HPCI is lost when the hotwell empties) and a coolant leak in the Drywell RPV level will be challenged, requiring an RPV Blowdown to allow the use of low pressure injection. Candidates must execute normal, abnormal and emergency procedures; ensure compliance with Technical Specifications.

**Initial Conditions:** 100% Power (IC-14)

**Turnover:** Continue power operations. Perform EDG/ED 102 and 103 Operability Test N1-ST-M4

| Event No. | Malf. No. | Type | Event Description |
|---|---|---|---|
| 1 | | N | (BOP/SRO) Perform EDG/ED 102 and 103 Operability Test (Loaded run tied to Bus) N1-ST-M4<br>*PRA: Startup and load an EDG* |
| 2 | OVRD | I | (BOP/SRO) EDG will not respond to load (Governor Failure). EDG declared INOP and T.S. checked (KW, Kvar, Amp Meters overridden) |
| 3 | FW015 | I | (BOP/SRO) Feedwater Master Controller Failure AS-IS). Enter N1-OP-16, Sect. F.6.0, Operator must take Manual Control of Shaft Driven Feedwater Pump. (This may not be noticed until power is lowered) |

# Scenario Outline

| | | | |
|---|---|---|---|
| 4 | MS08<br>TU02 | C | (BOP) Closure of 2nd Stage Reheater Steam Supply Valve results in Main Turbine High Vibration.<br>Responds per ARP A2 (3-5)<br>Confirms alarm on computer<br>Check vibration detector<br>Notify Tech Support and ISI (they will recommend reducing load)<br>Investigate reheater, determine steam to one 2nd stage reheater isolated in accordance with N1-OP-41, Sect. H.1.0 |
| 5 | | R | (RO/SRO) Lower power with Recirculation Flow to 80% to permit removing 2nd stage reheaters from service. |
| 6 | TC01<br>MC01 | M/C | (Crew) Main Turbine throws turbine blades, causes a turbine trip, loss of vacuum, hotwell damage which drains the hotwell over 2 min. Turbine building sumps alarm high level H2-(11-18 and 11-18)<br>Reactor Scrams, enter N1-SOP-1 |
| 7 | FW01<br>A,B,C<br>RR29<br>15% | M | (CREW) Large reactor coolant leak in the Drywell, Condensate/Feedwater system pumps trip.<br>Drywell pressures and temperatures rise to where sprays are required. RPV level lowers to <TAF requiring RPV Blowdown to establish LP injection. Enter N1-EOP-2, RPV CONTROL, N1-EOP-PRIMARY CONTAINMENT CONTROL, N1-EOP-8, RPV BLOWDOWN<br><br>*PRA: Respond to a LOCA*<br>*PRA: Manually initiate containment spray*<br>*PRA: (SRO) Direct actions to assure adequate core cooling / containment integrity* |

# Scenario Outline

| Nine Mile Point 1 | Scenario No. Alternate | Operating Test No. 1 |
|---|---|---|

| Examiners: | Candidates: |
|---|---|

**Objectives:** Evaluate candidates' ability to lower reactor power and perform normal evolutions. The crew will perform Control Rod Exercising surveillance test. During the test they will respond to a control rod drift. This will delay test completion. After the appropriate actions are taken. An LPRM effected by the control rod movement will fail, making its' associated APRM inoperative. An inadvertent HPCI initiation will occur requiring a power reduction to remove HPCI from service. After this power change the Electric Pressure Control Regulator (EPR) will begin to oscillate, after actions are taken to establish control both pressure regulators will fail. The crew must recognize a failure of RPS 11 to automatically scram and manually insert a scram on RPS Channel 11. After the scram the Scram Discharge Volume will rupture discharging radioactive steam into the Reactor Building. The crew must perform an RPV Blowdown to stop the discharge. Candidates must execute normal, abnormal and emergency operating procedures and comply with Technical Specifications.

**Initial Conditions:** 90% Power (IC-14)

**Turnover:** Waiting 12 hours during a startup for a 12 hour soak, perform Control Rod Exercising Operability Test, N1-ST-W1

| Event No. | Malf. No. | Type | Event Description |
|---|---|---|---|
| 1 | | N | (RO) Perform Control Rod Exercising Operability Test, N1-ST-W1 (starts with rods 02-35, 02-31, 02-27, 02-23) |
| 2 | RD09 02-27 | C | (RO) When the operator moves rod 02-27 it drifts IN. Ann F3 (2-6) Insert 02-27 and valve out HCU, T.S. 3.1.1 |
| 3 | NM25 | I | (RO) LPRM 04-33A fails downscale. Determine which LPRM has failed, check T.S. 3.6.2 for APRM operability. |

# Scenario Outline

| | | | |
|---|---|---|---|
| 4 | FW29 | C | (BOP) Inadvertent HPCI injection When FDWTR Pump 12 shifts to HPCI mode. Ann F4 (4-1) secure HPCI mode using N1-OP-16, Sect. H.10.0, but, pump will NOT operate in feedwater mode and must be shutdown, , T.S. 3.1.8 |
| 5 | | R | (RO) Power reduction to remove HPCI from service. |
| 6 | TC06 | I | EPR Oscillates, Crew takes action by lowering the MPR setpoint and raising EPR out of the way allowing MPR to control. |
| 7 | TC05<br>TC08<br>RP04A<br>RD41<br>RX01 | M | (CREW) EPR and MPR fail low causing Reactor Pressure and power to spike. A Manual scram must be inserted to trip the reactor. During the pressure spike the Scram Discharge Water Volume ruptures in the Reactor Building, If the operators attempt to reset the scram to isolate the SDV the scram will not reset. Temperatures in the Reactor Building rise until RPV Blowdown is performed.<br>Enter N1-EOP-2, RPV CONTROL, N1-EOP-5, SECONDARY CONTAINMENT CONTROL<br><br>*PRA: Operate Bypass Valves to cool down and depressurize*<br>*PRA: Place Emergency Condenser in serevice*<br>*PRA: Respond to a loss of reactor trip bus* |

NMPC NMP SIMULATOR SCENARIO

**NRC Exam Scenario - July 2000 / Revision 0** **No. of Pages: 7**

LOSS OF FEEDWATER HEATING / EMERGENCY POWER REDUCTION

| | | |
|---|---|---|
| PREPARER | | 7/26/00 |
| VALIDATED | P. Farsaci | 7-26-00 |
| CONFIGURATION CONTROL | N/A (FOR NRC EXAM) | N/A JB 7/26/00 |
| GEN SUPERVISOR OPS TRAINING | | 7-26-00 |
| OPERATIONS MANAGER UNIT 1 | Acting OM | 7/27/00 |

SCENARIO SUMMARY

Length: 15 minutes

The crew assumes the shift with the plant at rated power and no equipment out of service. A voltage regulator malfunction causes a trip of the 141 MG set . This results in a loss of feedwater heating. The crew is expected to respond per N1-SOP-2, Unexplained Reactor Power Change, and reduce reactor power using recirculation flow to within the limits of N1-OP-16. Once reactor power is reduced the scenario will be terminated. Although other actions for the loss of the 141 MG set may be directed, it is not necessary to complete these actions to terminate the scenario.

Major Procedures: N1-SOP-2, N1-OP-16, N1-OP-43A

Emergency Declaration: None

Termination Criteria: Reactor power reduced within to within the limits of N1-OP-16 for the loss of feedwater heating.

I. SIMULATOR SETUP

A. IC Number: IC-24

B. Presets / Function Key Assignments

1. Malfunctions:

a. RP01B, Trip MG 141= TRUE **(F4)**

2. Remotes:

None.

3. Overrides:

None.

4. Annunciators:

None.

C. Equipment Out of Service

None

D. Support Documentation

None

E. Miscellaneous

None

TASKS AND PERFORMANCE OBJECTIVES

A. Critical Tasks

CT-1.0 Given the plant in a condition requiring a rapid decrease in reactor power, the crew shall perform an emergency power reduction using recirculation and/or manual rod insertion (if necessary) in accordance with approved procedures.

B. Performance Objectives

PO-1.0 Given the plant in any operating mode, the crew shall demonstrate effective communications in accordance with GAP-OPS-01 on verbal communications.

PO-2.0 Given the plant in any operating condition, the crew shall demonstrate "Self-Checking" work practice techniques for all control action in accordance with Operations Department instructions. (LER 50-410/88-50, NRC IR 50-410/88-01)

PO-3.0 Given the plant during any operating condition, SROs shall direct appropriate conservative action stabilizing the plant within acceptable limits, including scramming the reactor or tripping the turbine manually when necessary.

PO-4.0 Given the plant after any transient or event, SROs shall establish and modify control bands for key plant parameters, to direct actions maintaining parameters within prescribed limits.

PO-5.0 Given the plant in any operating condition, the SRO shall conduct crew updates to inform crew members of plant status, on-going or planned mitigation activities, and to solicit feedback from the team.

PO-6.0 Given the plant in any operating condition, SROs shall prioritize crew actions to address plant conditions using a systematic process.

PO-7.0 Given the plant in any operating condition, the crew shall monitor and communicate values and trends for key plant parameters and equipment status.

PO-8.0 Given the plant in any operating condition, the crew shall focus personnel resources to maintain effective control board attention.

PO-9.0 Given the plant in a condition requiring a rapid decrease in reactor power, the crew shall perform an emergency power reduction using recirculation and/or manual rod insertion (if necessary) in accordance with approved procedures.

PO-10.0 Given the plant operating at power, the crew will recognize and respond to a trip of RPS Trip Bus MG 141 in accordance with plant alarm response and operating procedures.

| | |
|---|---|
| 2000400401 | Perform corrective actions for mispositioned control rod |
| 2009060401 | Investigate unexplained reactivity changes |
| 2129050401 | Respond to a Rx Trip Bus MG Set 131(141) trip |
| 3419030103 | Monitor functions in the control room |
| 3440070303 | Direct corrective actions to mitigate the consequences of the abnormal event (PRA) |
| 3440250303 | Direct shift personnel actions to correct the cause of the emergency, abnormal event (PRA) |
| 3440370303 | Analyze indications to determine that an off-normal plant event is in progress (PRA) |
| 3440380303 | Direct shift personnel actions to ensure plant safety during off normal conditions (PRA) |
| 3440410303 | Analyze indications to determine the cause of the off normal event (PRA) |

Take the simulator out of FREEZE before the crew enters for pre-shift walkdown and briefing

T=0 minutes
Allow no more than 5 minutes to walkdown panels and perform annunciator checks

Crew
- Walkdown panels
- Perform annunciator checks
- Conduct shift turnover brief
- Assume the shift

Wait one minute after shift turnover before inserting the first malfunction

T=1 minutes
Insert Malfunction:
**RP01B=TRUE** **(F4)**

Trip of MG 141

*F4 (3-2) RX TRIP BUS M-G SET 141 TROUBLE*
*F4 (2-8) RPS CH 12 AUTO REACTOR TRIP*
*F4 (3-8) RPS CH 12 MAN REACTOR TRIP*

*RPS Channel 12 will trip and #12 FW heating string will trip.*

PO-10.0

RO
- Recognize / report half scram on Channel 12
- Recognize /report RPS MG set 141 tripped
- Recognize / report loss of #12 FW heating string
- Recognize / report FW temperature

PO-9.0 / CT-1.0
PO-10.0

SRO
- Acknowledge report of RPS MG set trip
- Direct emergency power reduction to less than 80% using reactor recirculation flow (40 mlbm/hr is target).
- Provide reactivity oversight during power reduction

PO-9.0 / CT-1.0

RO
- Acknowledge direction from ASSS
- Perform emergency power reduction to 40 mlbm/hr using reactor recirculation flow

PO-10.0

SRO

- Direct response to annunciator F4-3-2
- Direct investigation of MG 141 trip
- Notify Reactor Engineer

PO-10.0

RO

- Acknowledge direction from ASSS
- Dispatch NAO to transfer RPS trip bus 12 to I&C bus 130A using N1-OP-48
- Dispatch NAO to investigate trip of MG 141

PO-10.0

BOP

- Monitor Feedwater temperature

Role play: As NAO when directed to transfer RPS trip bus 141 to maintenance supply wait three minutes and insert remote function:

**RP02=MAINT** **(F7)**

RPS Trip Bus 141 Power Source switch to I&C 130A

Report to Control Room that RPS Trip Bus 141 has been transferred

RO

- Acknowledge report from NAO
- Report to ASSS that RPS Trip Bus 141 has been transferred to maintenance supply

SRO

- Acknowledge report from RO
- Direct rest of half SCRAM on RPS channel 12

**Terminating Cues:**

- Reactor power reduced to 80% or less.
- Actions for loss of MG Set 141 directed.

Facility: Nine Mile Point # 1 Date of Examination: 07/24/2000
Examination Level (circle one): **RO** Operating Test Number: Cat A Test 1

| Administrative Topic/Subject Description | | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |
|---|---|---|
| A.1 | Procedures | 2.1.20<br><br>Q.1. An operator you have been dispatched to a remote location to perform N1-ST-Q6A, CONTAINMENT SPRAY SYSTEM LOOP #111 QUARTERLY OPERABILITY TEST, in parallel with steps performed in the Control Room. All communications have been established. What are the requirements for procedural use?<br><br>Ref. NIP-PRO-01, Section 3 |
| | | 2.1.20<br><br>Q.2. During the performance of N1-ST-Q6A, CONTAINMENT SPRAY SYSTEM LOOP #111 QUARTERLY OPERABILITY TEST, step 8.2.10 containment spray raw water flow is determined to be 155 x $10^4$ lbm/hr. What actions are required?<br><br>Ref. NIP-PRO-01, Section 3 |
| | Parameter Verification | 2.1.7, 2.1.10, 2.1.19, 2.1.33, 2.2.22<br><br>Q.1. Following the isolation of a recirculation loop it is required to verify Technical Specifications power flow relationship (T.S.3.1.7d). With Core Flow indicating 85%, describe how this limit is verified?<br><br>References: T.S. 3.1.7d and N1-RESP-1<br>*LER: 1-99-06* |
| | | 2.1.7, 2.1.10, 2.1.19, 2.1.33, 2.2.22<br><br>Q.2. If the Full Power Adjusted Power Density Ratio (FPAPDR) is greater than 1.0, what Technical Specification limit is being exceeded?<br><br>References: T.S. 2.1.2a N1-RESP-1<br>*LER 1-99-03* |

| | | |
|---|---|---|
| A.2 | Tagging | 2.2.13<br><br>Q.1. During a refueling outage a markup will be issued on the Hydrogen Seal Oil system for cleaning the tank. Other work will also be performed under this markup, including:<br>• Replacing the differential pressure controller<br>• Rebuilding the main and emergency seal oil pumps<br><br>What are your responsibilities as an independent verifier (what is checked) when verifying a markup prior to it being issued?<br><br>References: GAP-OPS-02, Section 3.4.4, 3.4.3, 3.2.1 |
| | | 2.2.13<br><br>Q.2. Review a markup request for completeness.<br><br>Reference: GAP-OPS-02 |
| A.3 | Radiation Control | 2.3.1, 2.3.4<br><br>Q.1. Identify the specific radiation hazards on the attached survey map of the Reactor Building 261' RWCU Corridor and RWCU Heat Exchanger Room **and** state what radiological postings are required at the entrance to the area.<br><br>Reference: GAP-RPP-08, S-RAP-RPP-0103, S-RAP-RPP-0801 |
| | | 2.3.1, 2.3.10<br><br>Q.2. You are required to enter the drywell to check freeze seals. Radiation Protection directs you to sign on and use RWP 507, DW VLV REPACKS, FREEZE SEALS AND ASSOCIATED WORK.<br><br>From the attached RWP 507 identify the requirements and restrictions that apply prior to and during the entry.<br><br>References: GAP-RPP-02 |
| A.4 | Emergency Procedures | JPM: Medical Emergency (CSO Actions) – Contaminated injured worker requiring transport to Oswego hospital – in accordance with EPIP-EPP-04. K/A 2.4.39 (3.3) |

Facility: Nine Mile Point # 1 Date of Examination: 07/24/2000
Examination Level (circle one): **SRO** Operating Test Number: Cat A Test 1

| Administrative Topic/Subject Description | | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |
|---|---|---|
| A.1 | Parameter Verification | 2.1.7, 2.1.10, 2.1.19, 2.1.33, 2.2.22<br><br>Q.1. During operation at 96% power a core performance edit (3-D Monicore) indicates Core Maximum Fraction of Limiting Power Density (CMFLPD) is 0.98. What actions are required and what options are available?<br><br>References: N1-REP-12, T.S. 3.1.7, 2.1.2<br>*LER 1-99-03* |
| | | 2.1.7, 2.1.10, 2.1.19, 2.1.33, 2.2.22<br><br>Q.2. For this specific case (adjusting APRM gains) How is the APRM adjusted?<br><br>Reference: N1-OP-43A, Attachment 9, N1-REP-12 |
| | Procedures | 2.1.20<br><br>Q.1. An operator you have been dispatched to a remote location to perform N1-ST-Q6A, CONTAINMENT SPRAY SYSTEM LOOP #111 QUARTERLY OPERABILITY TEST, in parallel with steps performed in the Control Room. All communications have been established. What are the requirements for procedural use?<br><br>Ref. NIP-PRO-01, Section 3 |
| | | 2.1.20<br><br>Q.2. During the performance of N1-ST-Q6A, CONTAINMENT SPRAY SYSTEM LOOP #111 QUARTERLY OPERABILITY TEST, step 8.2.10 containment spray raw water flow is determined to be 155 x $10^4$ lbm/hr. What actions are required?<br><br>Ref. NIP-PRO-01, Section 3 |

| | | |
|---|---|---|
| A.2 | Tagging | 2.2.13<br><br>Q.1. During a refueling outage a markup had been issued for the Hydrogen Seal Oil system for cleaning the tank. Other work is also being performed under this markup, including:<br>• Replacing the differential pressure controller<br>• Rebuilding the main seal oil pump motor<br>The markup person has left site and is unavailable when the electrician rebuilding the main seal oil pump motor requests a partial clearance to allow a quick starting of the pump motor to insure it's correctly wired. The pump motor is NOT connected to the pump.<br><br>How should this situation be handled?<br><br>Reference: GAP-OPS-02 |
| | | 2.2.13<br><br>Q.2. During an outage to replace Service Water Piping a contractor wants to weld under a service water markup for pipe replacement. What must this individual do to work under a markup?<br><br>Reference: GAP-OPS-02 |
| A.3 | Radiation Control | 2.3.1, 2.3.4<br><br>Q.1. Identify the specific radiation hazards on the attached survey map of the Reactor Building 261' RWCU Corridor and RWCU Heat Exchanger Room **and** state what radiological postings are required at the entrance to the area.<br><br>Reference: GAP-RPP-08, S-RAP-RPP-0103, S-RAP-RPP-0801 |
| | | 2.3.1, 2.3.10<br><br>Q.2. You are required to enter the drywell to check freeze seals. Radiation Protection directs you to sign on and use RWP 507, DW VLV REPACKS, FREEZE SEALS AND ASSOCIATED WORK.<br><br>From the attached RWP 507 identify the requirements and restrictions that apply prior to and during the entry.<br><br>References: GAP-RPP-02 |
| A.4 | Emergency Communications / Protective Action Recommendations | JPM: Given plant conditions, meteorological data, and the declaration of a General Emergency complete a NRC Event Notification Worksheet per EPIP-EPP-20 and EPIP-EPP-08. K/A 2.4.38 (4.0), 2.4.38 (4.0), 2.4.44 (4.0) |

Facility: Nine Mile Point #1 Date of Examination: _____
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: 1

B.1 Control Room Systems

| | System / JPM Title | Type Code* | Safety Function |
|---|---|---|---|
| 1-1 | Transfer House Loads to Station Reserve Transformers (262001, A4.04, 3.6/3.7)<br>01-REQ-SJE-262-1-01 | D, S, L | 6 |
| 1-2 | Bypass LPRM to an APRM (215005 A2.02, A4.03, A4.04)<br>01-REQ-SJE-215-1-01 | D, S | 7 |
| 1-3 | Startup Control Room Ventilation System (290003 A3.01, A4.01)<br>New | N, S | 9 |
| 1-4 | RPV Blowdown (ERVs fail) and RPV depress through the Emergency Condenser vents (207000, A1.05, A4.05, A4.07)<br>(N1-EOP-1, ATTACHMENT 14)<br>New | N, A, S | 3 |
| 1-5 | Switching CRD Flow Control Valves Alternate Path Respond to control rod drifts. (201001, A2.07, 201002, A2.02)<br>New | N, A, S | 1 |
| 1-6 | Vent Drywell through RBEVS (295024, EA1.19, 3.3/3.4)<br>*PRA: Vent primary containment through RBEVS*<br>01-REQ-SJE-200-1-06 | D, A, S | 5 |
| 1-7 | Start a Reactor Recirc Pump (202001 A4.01)<br>01-REQ-SJE/SJT-202-1-01 | S | 4 |

| B.2 Facility Walk-Through | | | |
|---|---|---|---|
| 1-8 | Manually Vent the Scram Air Header (295015, AA1.01, 3.8/3.9)<br>*PRA: Execute EOP-3.1*<br>01-OPS-PJE-200-1-26 | D, R | 1 |
| 1-9 | Diesel Fire Pump start with no control power (295031 EA 1.08)<br>(N1-OP-21A, section H) | N, A | 8 |
| 1-10 | Lineup Raw Water to Core Spray Pump per N1-EOP-1 (209001 A4.01, A4.02, A4.03, A4.11, A4.12)<br>*PRA: Supply containment spray raw water to Core Spray*<br>01-REQ-SJE-209-1-02 | D | 2 |
| * Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA | | | |

Facility: Nine Mile Point 1

Date of Exam: 07/21/00 Exam Level: RO

| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G * | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 1 | 4 | 3 | | | | 1 | 2 | | | 2 | 13 |
| | 2 | 3 | 3 | 3 | | | | 5 | 2 | | | 3 | 19 |
| | 3 | 1 | 0 | 0 | | | | 1 | 2 | | | 0 | 4 |
| | Tier Totals | 5 | 7 | 6 | | | | 7 | 6 | | | 5 | 36 |
| 2. Plant Systems | 1 | 2 | 1 | 1 | 4 | 1 | 3 | 3 | 4 | 2 | 5 | 2 | 28 |
| | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 3 | 0 | 1 | 19 |
| | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| | Tier Totals | 5 | 3 | 4 | 6 | 3 | 4 | 6 | 5 | 5 | 6 | 4 | 51 |

| 3. Generic Knowledge and Abilities | Cat 1 | Cat 2 | Cat 3 | Cat 4 | |
|---|---|---|---|---|---|
| | 4 | 3 | 3 | 3 | 13 |

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6.* The generic 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295005 Main Turbine Generator Trip / 3 | | X | | | | | AK2.07 – Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Reactor pressure control. | 3.6 | 1 |
| 295006 SCRAM / 1 | | | | | | X | 2.4.11 – Knowledge of abnormal condition procedures. | 3.4 | 1 |
| 295007 High Reactor Pressure / 3 | | | X | | | | AK3.05 – Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE: Low pressure system isolation. | 3.0 | 1 |
| 295009 Low Reactor Water Level / 2 | | X | | | | | AK2.01 – Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: water level indication | 3.9 | 1 |
| 295010 High Drywell Pressure / 5 | | X | | | | | AK2.05 – Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Drywell cooling and ventilation. | 3.7 | 1 |
| 295014 Inadvertent Reactivity Addition / 1 | | | | | X | | AA2.03 – Ability to determine and interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of Reactivity Addition. | 4.0 | 1 |
| 295015 Incomplete SCRAM / 1<br>*PRA: execute EOP-3.1* | | X | | | | | AK2.04 – Knowledge of the interrelations between INCOMPLETE SCRAM and the following: RPS | 4.0 | 1 |
| 295024 High Drywell Pressure / 5 | | | X | | | | EK3.04 – † Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization | 3.7 | 1 |
| 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 | 1 |
| 295031 Reactor Low Water Level / 2 | | | | | X | | EA2.04 –Ability to determine and interpret the following as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling. | 4.6 | 1 |
| 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 the SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Shutdown margin. | 3.4 | 1 |
| 295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: SBLC injection. | 4.3 | 1 |
| 500000 High Containment Hydrogen Conc. / 5 | | | | | | X | 2.4.6 – Knowledge symptom based EOP mitigation strategies. | 3.1 | 1 |
| K/A Category Totals: | 1 | 4 | 3 | 1 | 2 | 2 | Group Point Total: | | 13 |

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 | | | | | X | | AA2.06 – Ability to determine and interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Nuclear boiler instrumentation. | 3.2 | 1 |
| 295002 Loss of Main Condenser Vacuum / 3 | | X | | | | | AK2.02 – Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following: Main turbine | 3.1 | 1 |
| 295003 Partial or Complete Loss of AC Pwr / 6 *PRA: supply lake water to EC makeup tanks* | | | | | X | | AA2.04 – Ability to determine and interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: System lineups | 3.5 | 1 |
| 295004 Partial or Complete Loss of DC Pwr / 6 *PRA: loss of 125 VDC* | X | | | | | | AK1.02 – Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF D.C. POWER: Redundant D.C. power supplies. | 3.2 | 1 |
| 295008 High Reactor Water Level / 2 | | | | X | | | AA1.02 – Ability to operate and/or monitor the following as they apply to HIGH REACTOR WATER LEVEL: Reactor Water Cleanup (ability to drain): Plant-Specific | 3.3 | 1 |
| 295012 High Drywell Temperature / 5 | | | | X | | | AA1.02 – Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell cooling system. | 3.8 | 1 |
| 295013 High Suppression Pool Temp. / 5 *PRA: startup containment spray in torus cooling* | | | | X | | | AA1.01 – Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Suppression pool cooling. | 3.9 | 1 |
| 295016 Control Room Abandonment / 7 | | | | X | | | AA1.01 – Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: RPS | 3.8 | 1 |
| 295017 High Off-site Release Rate / 9 | | | X | | | | AK3.04 – Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Power reduction | 3.6 | 1 |
| 295018 Partial or Complete Loss of CCW / 8 *PRA: respond to loss of RBCLC* | | X | | | | | AK2.01 – Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: System loads. | 3.3 | 1 |
| 295019 Part. Or Comp. Loss of Inst. Air / 8 *PRA: respond to loss of instrument air* | | | | | | X | 2.4.4 – Ability to recognize abnormal indications for system operating parameters which are entry level conditions for emergency and abnormal operating procedures. | 4.0 | 1 |
| 295020 Inadvertent Cont. Isolation / 5 & 7 | | | | | | X | 2.1.20 – Ability to execute procedure steps. | 4.3 | 1 |
| 295022 Loss of CRD Pumps / 1 | X | | | | | | AK1.01 – Knowledge of the operational implications of the following concepts as they apply to the LOSS OF CRD PUMPS: Reactor pressure vs. rod insertion capability | 3.3 | 1 |
| 295026 Suppression Pool High Water Temperature/ 5 | X | | | | | | EK1.01 – Knowledge of the operational implications of the following concepts as they apply to the SUPPRESSION POOL HIGH WATER TEMPERATURE: Pump NPSH. | 3.0 | 1 |

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295028 High Drywell Temperature / 5 | | | | X | | | EA1.01 – Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell spray: Mark – I & II. | 3.8 | 1 |
| 295029 High Suppression Pool Water Level/ 5 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Lowering suppression pool water level. | 3.6 | 1 |
| 295030 Low Suppression Pool Water Level / 5 | | X | | | | | EK2.07 – Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: Downcomer/horizontal vent submergence. | 3.5 | 1 |
| 295033 High Secondary Containment Area Radiation Levels/ 9 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Reactor SCRAM. | 3.5 | 1 |
| 600000 Plant Fire On Site / 8 | | | | | | X | 2.4.27 – Knowledge of fire in the plant procedure. | 3.0 | 1 |
| K/A Category Point Totals: | 3 | 3 | 3 | 5 | 2 | 3 | Group Point Total: | | 19 |

Emergency and Abnormal Plant Evolutions – Tier 1/Group 3

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295021 Loss of Shutdown Cooling / 4 | | | | | X | | AA2.04 – Ability to determine and interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water temperature. | 3.6 | 1 |
| 295023 Refueling Accidents / 8 | | | | | X | | AA2.04 – † Ability to determine and interpret the following as they apply to REFUELING ACCIDENTS: Occurrence of fuel handling accident. | 3.4 | 1 |
| 295035 Secondary Containment High Differential Pressure / 5 | X | | | | | | EK1.01 – Knowledge of the operational implications of the following concepts as they apply to the SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment integrity. | 3.9 | 1 |
| 295036 Secondary Containment High Sump/Area Water Level / 5 | | | | X | | | EA1.01 – Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH SUM/AREA WATER LEVEL: Secondary containment equipment and floor drain systems. | 3.2 | 1 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| K/A Category Point Totals: | 1 | 0 | 0 | 1 | 2 | 0 | Group Point Total: | | 4 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201001 CRD Hydraulic System | | | | | | | | X | | | | A2.04 – † Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Scram conditions. | 3.8 | 1 |
| 201002 RMCS | | | | | | | X | | | | | A1.02 – Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Control rod position. | 3.4 | 1 |
| 202002 Recirculation Flow Control | | | | | | | | X | | | | A2.05 – Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Scoop tube lockup: BWR-2, 3, 4. | 3.1 | 1 |
| 206000 High Pressure Coolant Injection System/ 2 | | | | | | | | | | X | | A4.14 – Ability to manually operate and/or monitor in the control room: System auto start control: BWR-2, 3, 4 (P-Spec) | 4.2 | 1 |
| 207000 Isolation (Emergency) Condenser/ 4 | | | X | | | | | | | | | K3.01 – Knowledge of the effect that a loss or malfunction of the ISOLATION (EMERGENCY) CONDENSER will have on the following: Reactor pressure control during conditions in which the reactor vessel is isolated: BWR-2, 3 | 4.2 | 1 |
| 207000 Isolation (Emergency) Condenser/ 4 | | | | X | | | | | | | | K4.05 – Knowledge of ISOLATION (EMERGENCY) CONDENSER design feature(s) and or interlock(s) which provide for the following: Detection of a tube bundle leak: BWR-2, 3 | 4.0 | 1 |
| 209001 LPCS | X | | | | | | | | | | | K1.10 – Knowledge of physical connections and/or cause-effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: Emergency Generator. | 3.7 | 1 |
| 209001 LPCS | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Pump power. | 3.0 | 1 |
| 211000 SLC<br>*PRA: inject poison solution into reactor vessel* | | | | | | | X | | | | | A1.02 – Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Explosive valve indication | 3.8 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 212000 RPS<br>*PRA: transfer RPS to alternate supply* | | | | X | | | | | | | | K4.01 – Knowledge of REACTOR PROTECTION SYSTEM design feature(s) and or interlock(s) which provide for the following: System redundancy and reliability. | 3.4 | 1 |
| 212000 RPS | | | | | | X | | | | | | K6.01 – Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR PROTECTION SYSTEM: A.C. electrical distribution. | 3.6 | 1 |
| 215003 IRM | | | | | | | | | | X | | A4.07 – Ability to manually operate and/or monitor in the control room: Verification of proper functioning/operability. | 3.6 | 1 |
| 215003 IRM | X | | | | | | | | | | | K1.01 – Knowledge of physical connections and/or cause-effect relationships between INTERMEDIATE RANGE MONITOR SYSTEM and the following: RPS | 3.9 | 1 |
| 215004 SRM | | | | | | | | | | | X | 2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 3.7 | 1 |
| 215004 SRM | | | | | | | | | | X | | A4.07 – Ability to manually operate and/or monitor in the control room: Verification of proper functioning/ operability. | 3.4 | 1 |
| 215005 APRM/LPRM | | | | | | | | | | | X | 2.4.10 – Knowledge of annunciator response procedures. | 3.0 | 1 |
| 216000 Nuclear Boiler Instrumentation | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the NUCLEAR BOILER INSTRUMENTATION including: Relationship between meter/ recorder readings and actual parameter values: Plant-Specific. | 3.4 | 1 |
| 216000 Nuclear Boiler Instrumentation | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER INSTRUMENTATION: Temperature compensation: Plant-Specific. | 2.8 | 1 |
| 218000 Automatic Depressurization System/ 3 | | | | | X | | | | | | | K5.01 – Knowledge of the operational implications of the following concepts as they apply to the AUTOMATIC DEPRESSURIZATION SYSTEM: ADS logic operation | 3.8 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 223001 Primary Containment System and Auxiliaries/ 5 | | | | | | | | | | X | | A4.03 – Ability to manually operate and/or monitor in the control room: Air dilution valves to drywell and suppression pool: Plant-Specific. | 3.4 | 1 |
| 223002 Primary Containment Isolation system/ Nuclear Steam Supply Shut-Off/ 5 | | | | | | | X | | | | | A1.02 – Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/ NUCLEAR STEAM SUPPLY SHUT-OFF controls including: Valve closures. | 3.7 | 1 |
| 239002 Relief/Safety Vales/ 3 *PRA: manually operate ERVs* | | | | | | | | | | X | | A4.01 – Ability to manually operate and/or monitor in the control room: SRV's. | 4.4 | 1 |
| 241000 Reactor/ Turbine Pressure Regulating System/ 3 | | | | X | | | | | | | | K4.19 – Knowledge of REACTOR/TURBINE PRESSURE REGULATING SYSTEM design feature(s) and or interlock(s) which provide for the following: Steam bypass valve control. | 3.6 | 1 |
| 259001 Reactor Feedwater System/ 2 | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM: A.C. electrical power. | 2.9 | 1 |
| 259002 Reactor Water Level Control System/ 2 | | | | | | | | | X | | | A3.02 – Ability to monitor automatic operations of the REACTOR WATER LEVEL CONTROL SYSTEM including: Changes in reactor water level. | 3.4 | 1 |
| 259002 Reactor Water Level Control System/ 2 | | | | X | | | | | | | | K4.12 – Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and or interlock(s) which provide for the following: Manual and automatic control of the system. | 3.5 | 1 |
| 261000 Standby Gas Treatment System/ 2 | | | | | | | | X | | | | A2.11 – Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: High containment pressure. | 3.2 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 264000 Emergency Generators (Diesel/Jet) / 6 | | | | | | | | X | | | | A2.10 – Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: LOCA | 3.9 | 1 |
| K/A Category Point Totals: | 2 | 1 | 1 | 4 | 1 | 3 | 3 | 4 | 2 | 5 | 2 | Group Point Total: | | 28 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201003 Control Rod and Drive Mechanism | | | | | | | X | | | | | A1.01 – Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROD AND DRIVE MECHANISM controls including: Reactor power. | 3.7 | 1 |
| 202001 Recirculation | X | | | | | | | | | | | K1.14 – Knowledge of physical connections and/or cause-effect relationships between RECIRCULATION SYSTEM and the following: Rod block monitor: Plant-Specific. | 3.0 | 1 |
| 204000 RWCS | | | | | | | | | | | X | 2.4.48 – Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions. | 3.5 | 1 |
| 205000 Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE: Recirculation system. | 3.1 | 1 |
| 214000 Rod Position Information System/ 7 | | | | | | | | | X | | | A3.03 – Ability to monitor automatic operations of the ROD POSITION INFORMATION SYSTEM including: Verification of proper functioning/ operability. | 3.5 | 1 |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode | | | X | | | | | | | | | K3.01 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: TORUS/ SUPPRESSION POOL COOLING MODE will have on the following: Suppression Pool temperature control. | 3.9 | 1 |
| 226001 RHR/LPCI: Containment Spray System Mode / 5 | | | | | | | X | | | | | A1.06 – Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE controls including: System flow. | 3.2 | 1 |
| 230000 RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | | | | | | | X | | | | | A1.10 – Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE controls including: System lineup. | 3.7 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 230000 RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | X | | | | | | | | | | | K1.05 – Knowledge of physical connections and/or cause-effect relationships between RHR/LPCI: TORUS SUPPRESSION POOL SPRAY MODE and the following: A.C. Electrical. | 3.2 | 1 |
| 239001 Main and Reheat Steam | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the SECONDARY CONTAINMENT including: Isolation of main steam system. | 4.2 | 1 |
| 262001 AC Electrical Distribution | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Off-site sources of power. | 3.3 | 1 |
| 262002 UPS (AC/DC) | | | | X | | | | | | | | K4.01 – Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C. / D.C.) design feature(s) and or interlock(s) which provide for the following: Transfer from preferred power to alternate power supplies. | 3.1 | 1 |
| 263000 DC Electrical Distribution | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Major D.C. loads. | 3.1 | 1 |
| 271000 Offgas | | | | | | | | X | | | | A2.04 – Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Offgas System high radiation. | 3.7 | 1 |
| 272000 Radiation Monitoring | | | | X | | | | | | | | K4.02 – Knowledge of RADIATION MONITORING SYSTEM design feature(s) and or interlock(s) which provide for the following: Automatic actions to contain the radioactive release in the event that the predetermined release rates are exceeded. | 3.7 | 1 |
| 286000 Fire Protection | | | | | X | | | | | | | K5.04 – Knowledge of the operational implications of the following concepts as they apply to the FIRE PROTECTION SYSTEM: Valve Operation | 2.9 | 1 |
| 290003 Control Room HVAC | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the CONTROL ROOM HEATING, VENTILATION AND AIR CONDITION including: Initiation/reconfiguration | 3.3 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300000 Instrument Air | | | X | | | | | | | | | K3.02 – Knowledge of the effect that a loss or malfunction of the INSTRUMENT AIR SYSTEM will have on the following: Systems having pneumatic valves and controls. | 3.3 | 1 |
| 400000 Component Cooling Water System (CCWS)/ 8 | X | | | | | | | | | | | K1.02 – Knowledge of physical connections and/or cause-effect relationships between COMPONENT COOLING WATER SYSTEM and the following: Loads cooled by CCWS. | 3.2 | 1 |
| K/A Category Point Totals: | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 3 | 0 | 1 | Group Point Total: | | 19 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 233000 Fuel Pool Cooling and Clean-up/ 9 | | | X | | | | | | | | | K3.01 – Knowledge of the effect that a loss or malfunction of the FUEL POOL COOLING AND CLEAN-UP will have on the following: Fuel pool temperature. | 3.2 | 1 |
| 234000 Fuel Handling Equipment/ 8 | | | | | | | | | | X | | A4.02 – Ability to manually operate and/or monitor in the control room: Control rod drive system. | 3.4 | 1 |
| 288000 Plant Ventilation Systems/ 9 | | | | | X | | | | | | | K5.03 – Knowledge of the operational implications of the following concepts as they apply to the PLANT VENTILATION SYSTEMS: Temperature Control. | 2.5 | 1 |
| 290002 Reactor Vessel Internals/ 5 | | | | | | | | | | | X | 2.1.32 – Ability to explain and apply system limits and precautions. | 3.4 | 1 |
| K/A Category Point Totals: | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | Group Point Total: | | 4 |

Plant-Specific Priorities

| System / Topic | Recommended Replacement for... | Reason | Points |
|---|---|---|---|
| Plant-Specific Priorities coincided with randomly selected KA's. | | | |
| | | | |
| | | | |
| | | | |
| Plant-Specific Priority Total: (limit 10) | | | |

| Category | K/A# | Topic | Imp. | Points |
|---|---|---|---|---|
| Conduct of Operations | 2.1.20 | Ability to execute procedure steps. | 4.3 | 1 |
| | 2.1.30 | Ability to locate and operate components, including local controls. | 3.9 | 1 |
| | 2.1.2 | Knowledge of operator responsibilities during all modes of plant operation. | 3.0 | 1 |
| | 2.1.29 | Knowledge of how to conduct and verify valve lineups. | 3.4 | 1 |
| | Total | | | 4 |
| Equipment Control | 2.2.22 | Knowledge of limiting conditions for operations and safety limits. | 3.4 | 1 |
| | 2.2.1 | Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. | 3.7 | 1 |
| | 2.2.13 | Knowledge of tagging and clearance procedures. | 3.0 | 1 |
| | Total | | | 3 |
| Radiation Control | 2.3.9 | Knowledge of the process of performing a containment purge. | 2.5 | 1 |
| | 2.3.10 | Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. | 2.9 | 1 |
| | 2.3.2 | Knowledge of facility ALARA program. | 2.5 | 1 |
| | Total | | | 3 |
| Emergency Procedures/Plan | 2.4.1 | Knowledge of EOP entry conditions and immediate action steps. | 4.3 | 1 |
| | 2.4.6 | Knowledge symptom based EOP mitigation strategies. | 3.1 | 1 |
| | 2.4.13 | Knowledge of crew roles and responsibilities during EOP flowchart use. | 3.3 | 1 |
| | Total | | | 3 |
| Tier 3 Point Total (RO/SRO) | | | | 13 |

Facility: Nine Mile Point 1

Date of Exam: 07/21/00 Exam Level: SRO

| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G * | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 3 | 5 | 6 | | | | 5 | 4 | | | 3 | 26 |
| | 2 | 4 | 2 | 3 | | | | 2 | 2 | | | 4 | 17 |
| | Tier Totals | 7 | 7 | 9 | | | | 7 | 6 | | | 7 | 43 |
| 2. Plant Systems | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 23 |
| | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 13 |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 4 |
| | Tier Totals | 3 | 3 | 2 | 5 | 2 | 4 | 5 | 4 | 4 | 4 | 4 | 40 |

| 3. Generic Knowledge and Abilities | Cat 1 | Cat 2 | Cat 3 | Cat 4 | |
|---|---|---|---|---|---|
| | 5 | 4 | 4 | 4 | 17 |

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6.* The generic 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the SRO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295003 Partial or Complete Loss of A.C. Power/ 6<br>*PRA: respond to loss of offsite and onsite power* | X | | | | | | AK1.06 – Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF A.C. POWER: Station blackout: Plant-Specific | 4.0 | 1 |
| 295006 SCRAM / 1 | | | | | | X | 2.4.11 – Knowledge of abnormal condition procedures. | 3.6 | 1 |
| 295007 High Reactor Pressure / 3 | | | X | | | | AK3.05 – Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE: Low pressure system isolation. | 3.2 | 1 |
| 295009 Low Reactor Water Level / 2 | | X | | | | | AK2.01 – Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: water level indication | 4.0 | 1 |
| 295009 Low Reactor Water Level / 2 | | | | X | | | AA1.03 – Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL: Recirculation system: Plant-Specific. | 3.1 | 1 |
| 295010 High Drywell Pressure / 5 | | X | | | | | AK2.05 – Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Drywell cooling and ventilation. | 3.8 | 1 |
| 295013 High Suppression Pool Temperature/ 5<br>*PRA: startup containment spray in torus cooling* | | | | X | | | AA1.01 – Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL WATER TEMPERATURE: Suppression pool cooling. | 3.9 | 1 |
| 295014 Inadvertent Reactivity Addition / 1 | | | | | X | | AA2.03 – Ability to determine and interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of Reactivity Addition. | 4.3 | 1 |
| 295014 Inadvertent Reactivity Addition / 1 | | X | | | | | AK2.06 – Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: Moderator temperature. | 3.5 | 1 |
| 295015 Incomplete SCRAM / 1<br>*PRA: execute EOP-3.1* | | X | | | | | AK2.04 – Knowledge of the interrelations between INCOMPLETE SCRAM and the following: RPS | 4.1 | 1 |
| 295016 Control Room Abandonment/ 7 | | | | X | | | AA1.01 – Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: RPS | 3.9 | 1 |
| 295016 Control Room Abandonment/ 7<br>*PRA: initiate emergency condenser from remote shutdown panel #11, #12* | | | | X | | | AA1.09 – Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Isolation/emergency condenser(s): Plant-Specific. | 4.0 | 1 |
| 295017 High Off-Site Release Rate/ 7 | | | X | | | | AK3.04 – Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Power Reduction. | 3.8 | 1 |
| 295017 High Off-Site Release Rate/ 7 | | | X | | | | AK3.02 – Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Plant ventilation. | 3.5 | 1 |
| 295023 Refueling Accidents/ 8 | | | | | X | | AA2.04 – † Ability to determine and interpret the following as they apply to REFUELING ACCIDENTS: Occurrence of fuel handling accident. | 4.1 | 1 |

Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295024 High Drywell Pressure / 5 | | | | | X | | EA2.01 – Ability to determine and interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell pressure | 4.4 | 1 |
| 295024 High Drywell Pressure / 5 | | | X | | | | EK3.04 – † Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization | 4.1 | 1 |
| 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 | 1 |
| 295026 Suppression Pool High Water Temperature/ 5 | X | | | | | | EK1.01 – Knowledge of the operational implications of the following concepts as they apply to the SUPPRESSION POOL HIGH WATER PRESSURE: Pump NPSH. | 3.4 | 1 |
| 295030 – Low Suppression Pool Water Level/ 5 | | X | | | | | EK2.07 – Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: Downcomer/horizontal vent submergence. | 3.8 | 1 |
| 295031 Reactor Low Water Level / 2 | | | | | X | | EA2.04 –Ability to determine and interpret the following as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling. | 4.8 | 1 |
| 295031 Reactor Low Water Level / 2 | | | X | | | | EK3.04 – Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL: Steam cooling. | 4.3 | 1 |
| 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 the SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Shutdown margin. | 3.8 | 1 |
| 295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: SBLC injection. | 4.5 | 1 |
| 295038 High Off-Site Release Rate/ 9 | | | | | | X | 2.3.9 – Knowledge of the process for performing a containment purge. | 3.4 | 1 |
| 500000 High Containment Hydrogen Conc. / 5 | | | | | | X | 2.4.6 – Knowledge symptom based EOP mitigation strategies. | 4.0 | 1 |
| K/A Category Totals: | 3 | 5 | 6 | 5 | 4 | 3 | Group Point Total: | | 26 |

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 | X | | | | | | AK1.03 – † Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Thermal limits. | 4.1 | 1 |
| 295002 Loss of Main Condenser Vacuum / 3 | | X | | | | | AK2.02 – Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following: Main turbine | 3.2 | 1 |
| 295004 Partial or Complete Loss of DC Pwr / 6 *PRA: loss of 125 VDC* | X | | | | | | AK1.02 – Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF D.C. POWER: Redundant D.C. power supplies. | 3.4 | 1 |
| 295005 Main Turbine Generator Trip/ 3 | | X | | | | | AK2.07 – Knowledge of the interrelations between MAIN TURBINE TRIP and the following: Reactor pressure control. | 3.7 | 1 |
| 295008 High Reactor Water Level / 2 | | | | X | | | AA1.02 – Ability to operate and/or monitor the following as they apply to HIGH REACTOR WATER LEVEL: Reactor Water Cleanup (ability to drain): Plant-Specific | 3.3 | 1 |
| 295012 High Drywell Temperature / 5 | | | | | X | | AA2.02 – Ability to determine and interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure. | 4.1 | 1 |
| 295018 Partial or Complete Loss of CCW / 8 *PRA: respond to TBCLC pump trip* | X | | | | | | AK1.01 – Knowledge of the operational implications of the following concepts as they apply to the PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on component/system operations. | 3.6 | 1 |
| 295019 Part. Or Comp. Loss of Inst. Air / 8 *PRA: respond to loss of instrument air* | | | | | | X | 2.4.4 – Ability to recognize abnormal indications for system operating parameters which are entry level conditions for emergency and abnormal operating procedures. | 4.3 | 1 |
| 295020 Inadvertent Cont. Isolation / 5 & 7 | | | | | | X | 2.1.20 – Ability to execute procedure steps. | 4.2 | 1 |
| 295021 Loss of Shutdown Cooling/ 4 | | | | | | X | 2.4.9 – Knowledge of low power/shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies. | 3.9 | 1 |
| 295022 Loss of CRD Pumps / 1 | | | X | | | | AK3.01 – Knowledge of the reasons for the following responses as they apply to LOSS OF CONTROL ROD DRIVE PUMPS: Reactor SCRAM. | 3.9 | 1 |
| 295028 High Drywell Temperature / 5 | | | | X | | | EA1.01 – Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell spray: Mark – I & II. | 3.9 | 1 |
| 295029 High Suppression Pool Water Level/ 5 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Lowering suppression pool water level. | 4.0 | 1 |

Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|
| 295032 High Secondary Containment Area Temperature / 5 | X | | | | | | EK1.03 – Knowledge of the operational implications of the following concepts as they apply to the HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Secondary containment leakage detection: Plant-Specific. | 3.9 | 1 |
| 295033 High Secondary Containment Area Radiation Levels/ 9 | | | X | | | | EK3.02 – Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Reactor SCRAM. | 3.6 | 1 |
| 295036 Secondary Containment High Sump/Area Water Level/ 5 | | | | | X | | EA2.01 – Ability to determine and interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Operability of components within the affected area. | 3.2 | 1 |
| 600000 Plant Fire On Site / 8 | | | | | | X | 2.4.27 – Knowledge of fire in the plant procedure. | 3.5 | 1 |
| K/A Category Point Totals: | 4 | 2 | 3 | 2 | 2 | 4 | Group Point Total: | | 17 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 202002 RMCS | | | | | | | | X | | | | A2.05 – Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Scoop tube lockup: BWR-2, 3, 4. | 3.1 | 1 |
| 206000 High Pressure Coolant Injection System/ 2 | | | | | | | | | | X | | A4.14 – Ability to manually operate and/or monitor in the control room: System auto start control: BWR-2, 3, 4 (P-Spec) | 4.1 | 1 |
| 207000 Isolation (Emergency) Condenser/ 4 | | | X | | | | | | | | | K3.01 – Knowledge of the effect that a loss or malfunction of the ISOLATION (EMERGENCY) CONDENSER will have on the following: Reactor pressure control during conditions in which the reactor vessel is isolated: BWR-2, 3 | 4.3 | 1 |
| 207000 Isolation (Emergency) Condenser/ 4 | | | | X | | | | | | | | K4.05 – Knowledge of ISOLATION (EMERGENCY) CONDENSER design feature(s) and or interlock(s) which provide for the following: Detection of a tube bundle leak: BWR-2, 3 | 4.2 | 1 |
| 209001 LPCS | X | | | | | | | | | | | K1.10 – Knowledge of physical connections and/or cause-effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: Emergency Generator. | 3.8 | 1 |
| 209001 LPCS | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Pump power. | 3.1 | 1 |
| 211000 SLC<br>*PRA: inject poison solution into reactor vessel* | | | | | | | X | | | | | A1.02 – Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Explosive valve indication | 3.9 | 1 |
| 212000 RPS<br>*PRA: transfer RPS to alternate supply* | | | | X | | | | | | | | K4.01 – Knowledge of REACTOR PROTECTION SYSTEM design feature(s) and or interlock(s) which provide for the following: System redundancy and reliability. | 3.6 | 1 |
| 212000 RPS | | | | | | X | | | | | | K6.01 – Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR PROTECTION SYSTEM: A.C. electrical distribution. | 3.8 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 215004 SRM | | | | | | | | | | | X | 2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 4.4 | 1 |
| 215005 APRM/LPRM | | | | | | | | | | | X | 2.4.10 – Knowledge of annunciator response procedures. | 3.1 | 1 |
| 216000 Nuclear Boiler Instrumentation | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the NUCLEAR BOILER INSTRUMENTATION including: Relationship between meter/ recorder readings and actual parameter values: Plant-Specific. | 3.4 | 1 |
| 216000 Nuclear Boiler Instrumentation | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER INSTRUMENTATION: Temperature compensation: Plant-Specific. | 2.8 | 1 |
| 218000 Automatic Depressurization System/ 3 | | | | | X | | | | | | | K5.01 – Knowledge of the operational implications of the following concepts as they apply to the AUTOMATIC DEPRESSURIZATION SYSTEM: ADS logic operation. | 3.8 | 1 |
| 223001 Primary Containment System and Auxiliaries/ 5 | | | | | | | | | | X | | A4.03 – Ability to manually operate and/or monitor in the control room: Air dilution valves to drywell and suppression pool: Plant-Specific. | 3.4 | 1 |
| 223002 Primary Containment Isolation system/ Nuclear Steam Supply Shut-Off/ 5 | | | | | | | X | | | | | A1.02 – Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/ NUCLEAR STEAM SUPPLY SHUT-OFF controls including: Valve closures. | 3.7 | 1 |
| 226001 RHR/LPCI: Containment Spray System Mode/ 5 | | | | | | | X | | | | | A1.06 – Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE controls including: System flow. | 3.2 | 1 |
| 239002 Relief/Safety Vales/ 3<br>*PRA: manually operate ERVs* | | | | | | | | | | X | | A4.01 – Ability to manually operate and/or monitor in the control room: SRV's. | 4.4 | 1 |
| 259002 Reactor Water Level Control System/ 2 | | | | | | | | | X | | | A3.02 – Ability to monitor automatic operations of the REACTOR WATER LEVEL CONTROL SYSTEM including: Changes in reactor water level. | 3.4 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 259002 Reactor Water Level Control System/ 2 | | | | X | | | | | | | | K4.12 – Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and or interlock(s) which provide for the following: Manual and automatic control of the system. | 3.4 | 1 |
| 261000 Standby Gas Treatment System/ 2 | | | | | | | | X | | | | A2.11 – Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: High containment pressure. | 3.3 | 1 |
| 262001 A.C. Electrical Distribution/ 6 | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Off-site sources of power. | 3.6 | 1 |
| 264000 Emergency Generators (Diesel/Jet) / 6 | | | | | | | | X | | | | A2.10 – Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: LOCA | 4.2 | 1 |
| K/A Category Point Totals: | 1 | 2 | 1 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | Group Point Total: | | 23 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 205000 Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE: Recirculation system. | 3.2 | 1 |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode | | | X | | | | | | | | | K3.01 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: TORUS/ SUPPRESSION POOL COOLING MODE will have on the following: Suppression Pool temperature control. | 4.1 | 1 |
| 230000 RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | | | | | | | X | | | | | A1.10 – Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE controls including: System lineup. | 3.7 | 1 |
| 230000 RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | X | | | | | | | | | | | K1.05 – Knowledge of physical connections and/or cause-effect relationships between RHR/LPCI: TORUS SUPPRESSION POOL SPRAY MODE and the following: A.C. Electrical. | 3.3 | 1 |
| 234000 Fuel Handling Equipment/ 8 | | | | | | | | | | X | | A4.02 – Ability to manually operate and/or monitor in the control room: Control rod drive system. | 3.7 | 1 |
| 259001 Reactor Feedwater System/ 2 | | | | | | X | | | | | | K6.03 – Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM: A.C. Electrical Power. | 3.1 | 1 |
| 262002 UPS (AC/DC) | | | | X | | | | | | | | K4.01 – Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C. / D.C.) design feature(s) and or interlock(s) which provide for the following: Transfer from preferred power to alternate power supplies. | 3.4 | 1 |
| 263000 DC Electrical Distribution | | X | | | | | | | | | | K2.01 – Knowledge of electrical power supplies to the following: Major D.C. loads. | 3.4 | 1 |
| 271000 Offgas | | | | | | | | X | | | | A2.04 – Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Offgas System high radiation. | 4.1 | 1 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 272000 Radiation Monitoring | | | | X | | | | | | | | K4.02 – Knowledge of RADIATION MONITORING SYSTEM design feature(s) and or interlock(s) which provide for the following: Automatic actions to contain the radioactive release in the event that the predetermined release rates are exceeded. | 4.1 | 1 |
| 286000 Fire Protection | | | | | X | | | | | | | K5.04 – Knowledge of the operational implications of the following concepts as they apply to the FIRE PROTECTION SYSTEM: Valve Operation | 2.9 | 1 |
| 290003 Control Room HVAC | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the CONTROL ROOM HEATING, VENTILATION AND AIR CONDITION including: Initiation/reconfiguration | 3.5 | 1 |
| 400000 Component Cooling Water System (CCWS)/ 8 | X | | | | | | | | | | | K1.02 – Knowledge of physical connections and/or cause-effect relationships between COMPONENT COOLING WATER SYSTEM and the following: Loads cooled by CCWS. | 3.4 | 1 |
| K/A Category Point Totals: | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | Group Point Total: | | 13 |

| System # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | Imp. | Points |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201003 Control Rod and Drive Mechanism/ 1 | | | | | | | X | | | | | A1.01 – Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROD AND DRIVE MECHANISM controls including: Reactor power. | 3.8 | 1 |
| 233000 Fuel Pool Cooling and Clean-up/ 9 | | | | | | | | | | | X | 2.1.10 – Knowledge of conditions and limitations in the facility license. | 3.9 | 1 |
| 239001 Main and Reheat Steam System/ 3 | | | | | | | | | X | | | A3.01 – Ability to monitor automatic operations of the MAIN AND REHEAT STEAM SYSTEM including: Isolation of main steam system. | 4.1 | 1 |
| 288000 Plant Ventilation Systems/ 9 | | | | | | | | | | | X | 2.1.12 – Ability to apply technical specifications for a system. | 4.0 | 1 |
| K/A Category Point Totals: | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | Group Point Total: | | 4 |

Plant-Specific Priorities

| System / Topic | Recommended Replacement for... | Reason | Points |
|---|---|---|---|
| Plant-Specific Priorities coincided with randomly selected KA's. | | | |
| | | | |
| | | | |
| | | | |
| Plant-Specific Priority Total: (limit 10) | | | |

| Category | K/A# | Topic | Imp. | Points |
|---|---|---|---|---|
| Conduct of Operations | 2.1.2 | Knowledge of operator responsibilities during all modes of plant operation. | 4.0 | 1 |
| | 2.1.32 | Ability to explain and apply system limits and precautions. | 3.8 | 1 |
| | 2.1.7 | Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation. | 4.4 | 1 |
| | 2.1.29 | Knowledge of how to conduct and verify valve lineups. | 3.3 | 1 |
| | 2.1.23 | Ability to perform specific system and integrated plant procedures during different modes of plant operation. | 3.3 | 1 |
| | Total | | | 5 |
| Equipment Control | 2.2.13 | Knowledge of tagging and clearance procedures. | 3.4 | 1 |
| | 2.2.22 | Knowledge of limiting conditions for operations and safety limits. | 4.1 | 1 |
| | 2.2.17 | Knowledge of the process for managing maintenance activities during power operations. | 3.5 | 1 |
| | 2.2.11 | Knowledge of the process for controlling temporary changes. | 3.4 | 1 |
| | Total | | | 4 |
| Radiation Control | 2.3.4 | Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized | 3.1 | 1 |
| | 2.3.11 | Ability to control radiation releases. | 3.2 | 1 |
| | 2.3.10 | Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. | 3.3 | 1 |
| | 2.3.2 | Knowledge of facility ALARA program. | 2.9 | 1 |
| | Total | | | 4 |
| Emergency Procedures/Plan | 2.4.1 | Knowledge of EOP entry conditions and immediate action steps. | 4.6 | 1 |
| | 2.4.6 | Knowledge symptom based EOP mitigation strategies. | 4.0 | 1 |
| | 2.4.13 | Knowledge of crew roles and responsibilities during EOP flowchart use. | 3.9 | 1 |
| | 2.4.40 | Knowledge of the SRO's responsibilities in emergency plan implementation | 4.0 | 1 |
| | Total | | | 4 |
| Tier 3 Point Total (RO/SRO) | | | | 17 |