Docket No. 50-336
B18097

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Senior Reactor And Reactor Operator Initial Examinations
Examination Material

June 2000

1 ☑ RO ☑ SRO Question ID: 0054316 Origin Bank ☑ Memory? (Check=Yes)

The plant has experienced an Excess Steam Demand Event. The following conditions exist:

* EOP 2525 has been completed and the appropriate Event Specific EOP entered.
* All ESAS equipment has fully actuated.
* Pressurizer pressure = 1665 psia and stable.
* Pressurizer level = 15% and rising.
* Reactor vessel level = 100%.
* Th = 485°F and stable.
* Tc = 450°F and stable.
* Containment pressure = 9.75 psig and slowly dropping.
* S/G #1 = depressurized and empty.
* S/G #2 level is 30% and rising.
* All RCPs secured.

Based on these indications, which of the following actions is appropriate?

A Reset and secure CTMT Spray. ☐

B Secure Low Pressure Safety Injection (LPSI) pumps. ☑

C Throttled or stopped High Pressure Safety Injection (HPSI) pumps. ☐

D Blocked and reset SIAS, CIAS, and EBFAS actuation modules. ☐

Justification #1 & #4 - Containment pressure is too high to stop spray pumps or to reset SIAS, CIAS, and EBFAS modules.
#2 - EOP 2536 states that when pressurizer pressure is greater than 360 psia, stop LPSI pumps.
#3 - Pressurizer level is insufficient to meet HPSI termination criteria.

Reference MP2 LOIT E36-01-C MB-5845 2536, 2306, ESF, ESD, EOP, ECCS

NRC K/A System/E/A NRC K/A Generic

System 040 Steam Line Rupture

Number AA2.05

Ability to determine and interpret the following as they apply to the Steam Line Rupture: When ESFAS systems may be secured

Importance RO/SRO 4.1 4.5

10CFR Link (CFR: 43.5 / 45.13)

2 ☑ RO ☑ SRO Question ID: 0054362 Origin Bank ☐ Memory? (Check=Yes)

While operating at 100% power, a plant trip occurs. While carrying out EOP-2525, Standard Post Trip Actions, the operators observe the following plant conditions:

* All CEAs are inserted.
* All buses are energized.
* Pressurizer Level is 10%, lowering.
* Pressurizer Pressure is 1700 psia, lowering.
* Tavg is 505 °F, lowering.
* RCS subcooling is 100 °F, rising.
* Feeding both SGs with Main Feedwater.
* #1 SG level 15% and dropping.
* #2 SG level 42% and stable.
* #1 SG pressure 450psia and dropping.
* #2 SG pressure 650 psia and dropping.
* Containment pressure 1.5 psig, rising.
* NO Rad Monitors in alarm, NONE going up.

Which procedure will the operators implement next?

A EOP 2532, Loss of Coolant Accident ☐

B EOP 2534, S/G Tube Rupture ☐

C EOP 2536, Excess Steam Demand ☑

D EOP 2537, Loss Of All Feedwater. ☐

Justification EOP 2541 Diagnostic Flowchart
Both SGs are less than 800 psia and subcooling is rising, therefore ESD and not LOCA. Main feewater is available, therefore no LOAF. No rad monitors, therefore no SGTR and no LOCA.

Reference MP2 LOIT E25-01-C MB-2532

NRC K/A System/E/A NRC K/A Generic

System A11 RCS Overcooling

Number AA2.1

Ability to determine and interpret the following as they apply to the (RCS Overcooling) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Importance RO/SRO 2.9 3.3

10CFR Link (CFR: 43.5 / 45.13)

# 3	☑ RO	☑ SRO	Question ID: 0054508	Origin Bank	☐ Memory? (Check=Yes)

A small circulating water leak has occurred in the 'B' main condenser bay.

In what order should the condenser bay conductivity recorders respond to this leak?

A 'A' and 'B' bays at approximately the same time, followed by 'C' and 'D' ☐

B "B bay first, 'A' second, 'D' third, 'C' fourth ☐

C 'B' bay first, 'D' second, 'A' third, 'C' fourth ☑

D 'B' bay first, 'D' second, 'C' third, 'A' fourth ☐

Justification 'B' bay first because that is the location of the leak.
'D' bay second because it is x-tied to the leaking bay ('B').
The 'A' bay is third because the 'B' bay "spills" into the 'A' bay.
The 'C' is fourth because it is x-tied to the 'A' bay and will, therefore, eventually show the contamination.

Reference MP2 LOIT CON-01-C MB-1185 2319A,

NRC K/A System/E/A

NRC K/A Generic

System 016 Non-Nuclear Instrumentation System (NNIS)

Number A4.02

Ability to manually operate and/or monitor in the control room: Recorders

Importance RO/SRO 2.7 2.6

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

4 ☑ RO ☑ SRO Question ID: 0054733 Origin Bank ☐ Memory? (Check=Yes)

The following conditions exist:

* The plant is in Mode 5.
* A Containment Purge is in progress.
* RM-8262B (Containment Gaseous Radiation Monitor) alarm setpoint is 7.0 E 4.
* Primary Plant Operator reports that RM-8262B is currently reading 8.1 E 4.
* NO alarms attributable to any Containment Radiation Monitoring are present.

What immediate action should you take in response to the report?

A Request chemistry sample Containment atmosphere. ☐

B Ensure purge supply fan, F-23, automatically stops. ☐

C Determine the cause of the gaseous activity increase. ☐

D Close or verify closed the purge isolation valves. ☑

Justification OP-2314B and T.S. 3.3.4 (CTMT Purge Valve Isolation Signal)
Rad reading above setpoint should be believed until proven wrong. Therefore, manually perform Purge Isolation as ESAS should have.
F-23 does not auto trip and any investigation as to the cause or legitimacy high rad reading should occur after action to isolate.

Reference MP2 LOIT CCS-01-C MB-2229 2314,

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.11
	SEE GENERIC K/A	Ability to control radiation releases.
Importance RO/SRO		2.7 3.2
10CFR Link		(CFR: 45.9 / 45.10)

5 ☑ RO ☑ SRO Question ID: 0054780 Origin Bank ☑ Memory? (Check=Yes)

Which of the following condenser circulating valve positions is required in order to start a circulating water pump?

A The condenser INLET valve must be between 20 and 25% open. ☑

B The condenser OUTLET valve must be between 20 and 25% open. ☐

C The condenser OUTLET valve must be between 5 and 10% open. ☐

D The condenser INLET valve must be between 5 and 10% open. ☐

Justification Position the associated condenser inlet valve to between 20 and 25% open to satisfy one of the interlocks in the Circ. Pump start circuit.
The condenser outlet valve (or an outlet X-tie) must be full open.

Reference MP2 LOIT CWS-01-C MB-1172

NRC K/A System/E/A		NRC K/A Generic
System	075 Circulating Water System	2.2 Equipment Control
Number	GS	2.2.2
	SEE GENERIC K/A	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
Importance RO/SRO		4.0 3.5
10CFR Link		(CFR: 45.2)

6 ☑ RO ☑ SRO Question ID: 0054862 Origin Bank ☑ Memory? (Check=Yes)

The plant has tripped from 100% power and the following conditions exist:

* A major plant casualty has occurred and the applicable EOP has been entered.
* Subcooled margin has been lost.
* Core Exit Thermocouples (CETs) are increasing, with some in excess of 800 °F.

What plant status is indicated by this CET response?

A CETs are failing (reading above steam "critical point"). ☐

B Steam Generator tube voiding is imminent. ☐

C Core heat removal is inadequate. ☑

D RCS is in stable two-phase Natural Circulation. ☐

Justification EOP-2532; CETs above 800°F is indicative of core uncovery and tototally inadequate heat removal. More than one CET in this condition, combined with loss of subcooling, discounts failing CETs as the cause. SG tube voiding or NC flow would not cause CET temps. >800°F.

Reference MP2 LOIT 532-01-B MB-2596 2532, EOP, LOCA,

NRC K/A System/E/A

System 017 In-Core Temperature Monitor System (ITM)

Number A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ITM system controls including: Core exit temperature

Importance RO/SRO 3.7 3.9

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

7 ☑ RO ☑ SRO Question ID: 0055052 Origin Bank ☐ Memory? (Check=Yes)

The plant is operating at 100% power, with all secondary system controls in automatic mode and with normal, expected setpoints.

The pressure TRANSMITTER that feeds the #1 Atmospheric Dump Valve controller, fails HIGH such that the dump valve controller "sees" a main steam pressure input of 940 psia.

How will the #1 S/G level respond to this malfunction, assuming no operator action?

A It will slowly rise until indicated feed flow is less than indicated steam flow. ☐

B It will remain at setpoint until indicated feed flow begins to change. ☐

C It will stabilize when indicated feed flow equals indicated steam flow. ☐

D It will slowly drop until indicated feed flow is greater than indicated steam flow. ☑

Justification The higher sensed pressure will cause the controller to open the #1 ADV to some value less than full open. Since the steam flow detector is downstream of the ADV, and the S/G is more than capable of supplying enough steam to the "break" while still being able to keep up with loads downstream of the steam flow detector, the detector will not "see" the increase in steam flow even though actual steam demand has gone up. Therefore, the level in #1 S/G will drop until the S/G level component of the Feed Control System is sufficient to open the FRV an additional amount and stop the level decrease at some lower value. At this point, indicated feed flow must be greater than "indicated" (not actual) steam flow. Eventually (LONG term), with feed flow > steam flow, the S/G level component of the Feed control system will bring level back up to the setpoint value.

Reference MP2 LOIT MSS-01-C MB-2522 2316A,

NRC K/A System/E/A

System 035 Steam Generator System (S/GS)

Number A2.03

Ability to (a) predict the impacts of the following malfunctions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Pressure/level transmitter failure

Importance RO/SRO 3.4 3.6

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.5)

NRC K/A Generic

8 ☑ RO ☑ SRO Question ID: 0055166 Origin Bank ☐ Memory? (Check=Yes)

The plant is at 100% power with a resin transfer to the spent resin tank in progress.

A flange in the resin transfer line begins to leak spent resin to the floor of the -25 Aux. Building. The "VENT STACK RADMONITOR HI/FAIL" annunciator on C-06/7 is one of the radiation alarms received. On the Unit 2 Stack High Range KAMAN rad. monitor (RM-8168) on C-101, the following lights are flashing:

* HIGH-ACK
* ALERT-ACK
* RATE-ACK
* EQUIP FAIL

All controls on the Kaman rad. monitor are aligned normally.

As radiation levels in the Aux. Building continue to rise, how will the Unit 2 Stack Low Range gaseous rad. monitor (RM-8132B) recorder on C-06 trend over the next five minutes?

A Rise consistent with the rising radiation levels. ☐

B Begin to lower, even as radiation levels continue to rise. ☑

C Remain constant, with the Unit 2 Stack Low Range gaseous rad. monitor (RM-8132B) failed "as-is". ☐

D Pegged low, indicating the Unit 2 Stack Low Range gaseous rad. monitor (RM-8132B) has electronically failed low. ☐

Justification With the indications given, RM-8168 has failed high. When the alarm setpoint is reached and with the STACK GAS EFFLUENT PURGE VALVE RV-8168 switch in its "ENABLE" position (normal), a purge of RM-8132 will occur. This will cause RM-8132B's reading to lower substantially, but not to indicate a total failure of the detector.

Reference MP2 LOIT RMS-01-C MB-3121 2383, RM

NRC K/A System/E/A NRC K/A Generic

System 059 Accidental Liquid Radwaste Release

Number AK2.02

Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-gas monitors

Importance RO/SRO 2.7 2.7

10CFR Link (CFR 41.7 / 45.7)

9 ☑ RO ☑ SRO Question ID: 0055194 Origin Bank ☑ Memory? (Check=Yes)

A plant trip has occurred, and the following conditions exist:

- o RCS is in the process of developing normal Natural Circulation flow.
- o Both MSIV's are open.
- o All other plant systems are responding normally.

Which of the following actions is required to prevent a sudden, non-controlled RCS cooldown from occurring?

A Tave controller for the Condenser Dump valves is placed in manual and closed. ☑

B Pressure controller for the Condenser Dump valves is placed in manual and closed. ☐

C Pressure controllers for the Atmospheric Dump valves are placed in manual and closed. ☐

D Quick Open selector switch is placed on "OFF". ☐

Justification As NC develops, Th and Tc must rise, which will result in an elevated Tavg. Eventually, Tavg will reach the setpoint where the Reactor Reg. System signals the Tavg controller to open the condenser steam dumps. If the Tave controller was not shifted to manual, the B, C and D Condenser Dump valves would be open and cause a "non-controlled" cooldown making RCS temperature control in NC very difficult. The pressure controllers for the "A" condenser steam dump and the ADVs will operate normally based on main steam header pressure (choice #2 & #3 are wrong). With normal NC flow developing, Tavg should never get close to the quick open setpoint (choice #4 is wrong).

Reference MP2 LOIT E25-01-C MB-5425 2316A,

	NRC K/A System/E/A	NRC K/A Generic
System	A13 Natural Circulation Operations	2.4 Emergency Procedures /Plan
Number	GA	2.4.48
	SEE GENERIC K/A	"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."
Importance RO/SRO		3.5 3.8
10CFR Link		(CFR: 43.5 / 45.12)

10 ☑ RO ☑ SRO Question ID: 0055381 Origin Bank ☑ Memory? (Check=Yes)

Which of the following statements correctly describes Service Water System response on a SIAS?

A Service Water inlet valves to the TBCCW Heat Exchangers get an open signal. ☐

B Service Water valves to non-vital chillers, X-196A and X-196B, get an open signal. ☐

C All three RBCCW Heat Exchanger TCVs get a full open signal. ☑

D All three Service Water pumps start. ☐

Justification SW inlets to TBCCW get a close signal.
SW to X-196A/B gets isolated.
All three RBCCW HX TCV's get an open signal, even though only two are in service at a time.
One SW pump must be in pull-to-lock, therefore it will not get a start signal.

Reference MP2 LOIT RBC-01-C MB-3015 2326A, SW,

NRC K/A System/E/A

NRC K/A Generic

System 076 Service Water System (SWS)

Number K4.03

Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following: Automatic opening features associated with SWS isolation valves to CCW heat exchanges

Importance RO/SRO 2.9 3.4

10CFR Link (CFR: 41/7)

 # 11 ☑ RO ☑ SRO Question ID: **0055424** Origin Bank ☑ Memory? (Check=Yes)

AOP 2569 (Steam Generator Tube Leak) directs verification of automatic actions if a SJAE or S/G Blowdown RM alarms.

Which of the following valves must be verified automatically closed based on the above RM alarm?

A S/G Blowdown Primary Sample Sink Sample Isolation (2-MS-191A & 2-MS-191B). ☐

B Atmospheric Drain Collection Tank Drain to Long Island Sound (2-CN-334). ☐

C Blowdown Tank Discharge Isolation (2-MS-15). ☑

D Condenser Air Removal to Unit 2 Stack (2-EB-57). ☐

Justification AOP 2569 Step 4.4
#1 closes on CIAS
#2 is a manual valve that is checked closed by procedure
#3 closes on high rad in SG, via SJAE or B/D rad monitor.
#4 is already closed during normal operation & receives no auto signals.

Reference MP2 LOIT MSS-01-B MB-2895 2569, AOP,

	NRC K/A System/E/A	NRC K/A Generic
System	037 Steam Generator (S/G) Tube Leak	2.4 Emergency Procedures /Plan
Number	GA	2.4.11
	SEE GENERIC K/A	Knowledge of abnormal condition procedures.
Importance RO/SRO		3.4 3.6
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

12 ☑ RO ☑ SRO Question ID: 0055532 Origin Bank ☑ Memory? (Check=Yes)

The plant is in MODE 6 for REFUELING with all necessary equipment operable. Fuel movement is in progress.

Under these conditions, which of the following VIOLATES "containment closure"?

A One personnel airlock door is open. ☐

B Containment purge is in progress. ☐

C Equipment hatch is closed using only four bolts. ☐

D An electrical penetration has been removed for repair. ☑

Justification If the airlock is operable the interlock is working and it only allows ONE door to be open at a time.
CTMT will auto isolate and therefore can be open.
Four bolts is acceptable per Tech Spec 3.9.4;
However, an electrical penetration, although small, provides a direct access to the atmosphere.

Reference MP2 LOIT CCV-01-C MB-2226 2313,

NRC K/A System/E/A

System 069 Loss of Containment Integrity

Number AK2.03

Knowledge of the interrelations between the Loss of Containment Integrity and the following: Personnel access hatch and emergency access hatch

Importance RO/SRO 2.8 2.9

10CFR Link (CFR 41.7 / 45.7)

NRC K/A Generic

 # 13 ☑ RO ☑ SRO Question ID: 0055557 Origin Bank ☐ Memory? (Check=Yes)

The plant is on Shutdown Cooling using the "B" LPSI pump.
The following conditions exist:

* RCS level is at the Reactor Vessel Flange and slowly decreasing.
* RCS temperature is 100 degrees F.
* RCS pressure is 15 psia.
* PDT level is steady.
* RWST level is slowly increasing.
* RBCCW Surge Tank level is steady.

Which of the following is the most likely leakage path causing the RCS level to lower?

A RCS cold leg drain valve leakage. ☐

B PORV leakage. ☐

C "B" LPSI Pump minimum flow recirc leakage. ☑

D 'B' SDC Heat Exchanger tube leakage. ☐

Justification #1 - PDT level is not rising, therefore no drain leakage.
#2 - RCS is open to atmosphere, no PORV leakage.
#3 - On SDC, minimum flow could (and has) leak by to the RWST (which is rising).
#4 - SDC leakage in the HX would put the water in the RBCCW surge tank (not rising).

Reference MP2 LOIT SDC-01-B MB-3178 2572, AOP,

NRC K/A System/E/A NRC K/A Generic

System 005 Residual Heat Removal System (RHRS)

Number K1.11

Knowledge of the physical connections and/or cause-effect relationships between the RHRS and the following systems: RWST

Importance RO/SRO 3.5 3.6

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 14 ☑ RO ☑ SRO Question ID: 0055985 Origin Bank ☐ Memory? (Check=Yes)

A plant cooldown is in progress. The US has directed you to establish a cooldown rate that will result in the MAXIMUM allowable rate per Technical Specifications, for the hour between 0900 and 1000.

During the plant cooldown, RCS temperature dropped from 500 °F to 490 °F from 0900 to 0910.

What should the cooldown rate be changed to in order to reach the Technical Specification MAXIMUM allowable RCS cooldown limit for the rest of the hour?

A Raising the cooldown rate to 1.8 °F/min. ☐

B Lowering the cooldown rate to 0.8 °F/min. ☐

C Raising the cooldown rate to 1.4 °F/min. ☑

D Lowering the cooldown rate to 0.4 °F/min. ☐

Justification T.S. 3.4.9.1; with RCS > 230°F, C/D rate </= 80°F/hr.
In the first 10 minutes, RCS cooled down from 500 - 490 = 10; therefore only 70°F more allowed in the next 50 minutes. 70/50 = 1.4 °F/hr. rate.

Reference MP2 LOIT RCS-01-C MB-2964 2301, RCS, T.S.,

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.23
	SEE GENERIC K/A	Ability to track limiting conditions for operations.
Importance RO/SRO		2.6 3.8
10CFR Link		(CFR: 43.2 / 45.13)

 # 15 ☑ RO ☑ SRO Question ID: 0056520 Origin Bank ☑ Memory? (Check=Yes)

Which of the following is the purpose of the Safety Function Status Check in an EOP?

A Verifies the procedure in use is appropriate for the event in progress. ☑

B Determines which Optimal Recovery Procedure should be implemented. ☐

C Specifies which Functional Recovery Success Paths should be followed. ☐

D Ensures the operator has performed all continuously applicable steps of an EOP. ☐

Justification Per OP-2260
#1 - SFSC are used to check the status of the safety functions and ensure actins being taken are approp.
#2 - Function of the Diagnostic Flow Chart.
#3 - Function of the Resource Assesment Trees.
#4 - Function of the Placekeeper pages or the Safety Function Tracking Page.

Reference MP2 LOIT EOP-01-C MB-5275 CEN152, EOP,

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.21
	SEE GENERIC K/A	Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control.
Importance RO/SRO		3.7 4.3
10CFR Link		(CFR: 43.5 / 45.12)

 # 16 ☑ RO ☑ SRO Question ID: 0056644 Origin Bank ☑ Memory? (Check=Yes)

Which of the following items fall within the classification of Bypasses, Jumpers, and Lifted Leads?

1) Plugged floor drain

2) Hose connected from a system drain to a floor drain

3) Temporary scaffolding

4) Gagged safety valve

5) Portable airborne radiation monitor

6) Pulled annunciator circuit card (nuisance alarm do to faulty level switch)

7) Use of the Alarming Remote Transmitter (ART)

A 1, 3, and 7 ☐

B 2, 5, and 6 ☐

C 3, 4, and 7 ☐

D 1, 4, and 6 ☑

Justification WC-10 & NGP 8.05; items 1, 4 & 6 clearly meet the definition of an item requiring a bypass/jumper. Items 2, 3, 5 & 7 do not meet the definition per WC-10 of an item requiring a bypass, jumper, or lifted lead.

Reference MP2 LOIT ADMIN MB-2028 ADMIN, WC-10, NGP-8.05, ACP, SRO,

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.11
	SEE GENERIC K/A	Knowledge of the process for controlling temporary changes.
Importance RO/SRO		2.5 3.4
10CFR Link		(CFR: 41.10 / 43.3 / 45.13)

 # 17 ☑ RO ☑ SRO Question ID: 0056738 Origin Bank ☑ Memory? (Check=Yes)

The following conditions exist:

o A loss of coolant accident occurred, resulting in Containment pressure exceeding 40 psig and rising.
o One containment spray pump failed to start when CSAS actuated.

With only one (1) containment spray pump operating, what is the MINIMUM number of CAR fans that must be running to provide adequate cooling for the Containment?

A 1 in Slow ☐

B 1 in Fast ☐

C 2 in Slow ☑

D 2 in Fast ☐

Justification Technical Specifications 3.6.2.1 defines the minimum requirements for an operable train of a CTMT cooling system. This requirement is based on the capability of the CARs in combination with an operable CTMT Spray train.

Reference MP2 LOIT CCV-01-C MB-2311 2306-9, ECCS,

NRC K/A System/E/A

System 103 Containment System

Number A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature, and humidity

Importance RO/SRO 3.7 4.1

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

 # 18 ☑ RO ☑ SRO Question ID: 0056804 Origin Bank ☐ Memory? (Check=Yes)

The following conditions exist:

* A Large Break Loss of Coolant Accident occurred ~5 minutes ago.
* RCS pressure has bottomed out at ~50 psia.
* RVLMS indicates 0% on both channels.
* All ICCS points indicate saturated conditions.
* CTMT pressure peaked at ~40 psig and is slowly going down, (presently 36 psig).

What is the flowpath by which decay heat is presently being removed from the core and transferred to the environment?

A Rx Core --> RCS --> ECCS break flow --> CTMT atmosphere --> CTMT Spray --> SDC heat exchangers --> RBCCW --> SW --> LIS. ☐

B Rx Core --> RCS --> SG's w/Aux. Feed --> steam flow --> Steam Dumps --> Atmosphere. ☐

C Rx Core --> RCS --> ECCS break flow --> CTMT atmosphere --> CAR coolers --> RBCCW --> SW --> LIS. ☑

D Rx Core --> RCS --> SG's w/Aux. Feed --> steam flow --> Steam Dumps --> Condenser --> Circ. Water --> LIS. ☐

Justification Containment Spray System takes suction from the RWST at the onset of a LOCA. The SDC HXs are not cooled by RBCCW until SRAS actuates (#1 is wrong). For the SG's, the SG tubes would be empty on the primary side, therefore the SG pressure would be well below the point for the ADV's to remove much heat from the RCS (#2 & #4 are wrong). Also, the condenser steam dump valves are isolated by MSIV closure on MSIS.

Reference MP2 LOIT ECC-01-C MB-2454 2306-9, ECCS,

NRC K/A System/E/A NRC K/A Generic

System 011 Large Break LOCA

Number EA1.10

Ability to operate and monitor the following as they apply to a Large Break LOCA: AFW and SWS pumps

Importance RO/SRO 4.1 3.8

10CFR Link (CFR 41.7 / 45.5 / 45.6)

 # 19 ☑ RO ☑ SRO Question ID: 0056833 Origin Bank ☑ Memory? (Check=Yes)

Which of the following is the proper method for verifying the position of an unlocked throttle valve per WC-6, "Determination and Performance of Independent and Dual Verification"?

A Two operators, each at a different time, verify the valve to be in its throttled position by checking the valve stem position or mechanical position indicator. ☐

B The first operator closes the valve and counts the number of turns to close it. Then, at a different time, the second operator re-opens the valve to its original position. ☐

C Two operators, each at a different time, verify the valve to be in its throttled position by observing the process parameters affected by the valve to be within the desired range. ☐

D One operator closes the valve and counts the number of turns to close it, then the operator re-opens the valve to its original position, while the second operator observes the manipulation. ☑

Justification WC-6, Attachment 5, Page 13. In order to have a "dual verification" of a valve throttled to a specific position, two people must observe the valve being put in that position - together. If done independently (different times), the valve is just verified to be throttled twice and the second adjustment erases the first.

Reference MP2 LOIT WC MB-2101 ADMIN, ACP, WC-6,

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.29
	SEE GENERIC K/A	Knowledge of how to conduct and verify valve lineups.
Importance RO/SRO		3.4 3.3
10CFR Link		(CFR: 41.10 / 45.1 / 45.12)

 # 20 ☑ RO ☑ SRO Question ID: 0071544 Origin Bank ☑ Memory? (Check=Yes)

The plant is operating in MODE 1 at 100% power with the following conditions:

* Injection temperature is 68°F
* "A" and "C" Service Water Pumps are supplying Facility 1 and 2, respectively.
* "B" Service Water Pump is out of service for planned maintenance.

The "C" Service Water (SW) Pump trips on overload. Within a few minutes, the "B" RBCCW Header high temperature alarm annunciates and the SPO informs the US that the "C" RBCCW heat exchanger outlet temperature is reading 122°F and rising.

Which of the following describes an action required due to the above conditions?

A Immediately reduce heat loads to allow time for repairs. ☐

B Cross-tie the "A" Service Water Pump to supply both SW headers. ☐

C Log into Tech Spec 3.0.3 and commence a rapid downpower to Mode 3. ☐

D Immediately trip the plant and carry out EOP-2525. ☑

Justification Per AOP-2564, if SW flow to RBCCW HXs is lost and RBCCW heat exchanger outlet temperature approaches 120°F (or higher), the associated RBCCW pump must be tripped. With a 68°F injection temp. this will occur rather rapidly.
#1 - RBCCW heat loads cannot be appreciably redoced at power.
#2 - X-tie of SW headers is not allowed at power.
#3 - There is not enough time to perform a downpower of any significance.

Reference MP2 LOIT MB-3253 2565, SW, AOP

NRC K/A System/E/A

System 062 Loss of Nuclear Service Water

Number AA2.04

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The normal values and upper limits for the temperatures of the components cooled by SWS

Importance RO/SRO 2.5 2.9

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

 # 21 ☑ RO ☑ SRO Question ID: 0071630 Origin Bank ☑ Memory? (Check=Yes)

The Refuel Machine operator is moving a fuel assembly when it drops into the South saddle area of the Refuel Pool. A large amount of gas is bubbling up from the dropped fuel assembly.

Under these conditions, which of the following actions should the Refuel Machine operator take?

A Notify the Control Room and then discuss options on recovering the fuel assembly with the Refueling SRO and HP Technician. ☐

B Notify the HP Tech on the refueling floor to take a Containment air sample. ☐

C Notify the Control Room and immediately evacuate Containment. ☑

D Sound the Containment Evacuation Alarm from the Refuel Machine then contact control room for additional instructions ☐

Justification A0P 2577 Step 4.1;
CTMT is evacuated first, THEN a recovery plan is formulated (#1 is wrong).
HP is notified to ensure CTMT evac. (#2 s wrong).
#3 is correct per AOP-2577, step 4.1.1
Evac. Alarm cannot be sounded from refuel machine.

Reference MP2 LOIT A77-01-C MB-5552 2577

NRC K/A System/E/A

System 034 Fuel Handling Equipment System (FHES)

Number A2.01

Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Dropped fuel element

Importance RO/SRO 3.6 4.4

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

 # 22 ☑ RO ☑ SRO Question ID: 0071941 Origin Bank ☐ Memory? (Check=Yes)

The plant is shutdown and a "Backfeeding" lineup is being used for the In-House Electrical and 345KV Systems. For this condition, what is the expected status of 345KV equipment associated with the Main Transformer and the Main Generator?

A Breakers 15G-8T-2 and 15G-9T-2 are open, Main Transformer MOD 15G-2X1-4 is open, the MOD 15G-2X1-9 is closed and the Main Generator Disconnect Links are removed. ☐

B Breakers 15G-8T-2 and 15G-9T-2 are open, Main Transformer MOD 15G-2X1-4 is closed, the MOD 15G-2X1-9 is closed and the Main Generator Disconnect Links are installed. ☐

C Breakers 15G-8T-2 and 15G-9T-2 are closed, Main Transformer MOD 15G-2X1-4 is open, the MOD 15G-2X1-9 is open and the Main Generator Disconnect Links are installed. ☐

D Breakers 15G-8T-2 and 15G-9T-2 are closed, Main Transformer MOD 15G-2X1-4 is closed, the MOD 15G-2X1-9 is open and the Main Generator Disconnect Links are removed. ☑

Justification Breakers 15G-8T-2, 15G-9T-2 and MOD 15G-2X1-4 are closed (#3 is wrong) to send power through the Main Transformer. The MOD 15G-2X1-9 is opened to prevent grounding of the energized transformer (#1 & #2 are wrong).

Reference MP2 LOIT IHE-00-C MB-3979 , Backfeeding, 2347, SWYD

NRC K/A System/E/A NRC K/A Generic

System 045 Main Turbine Generator (MT/G) System

Number A4.02

Ability to manually operate and/or monitor in the control room: T/G controls, including breakers

Importance RO/SRO 2.7 2.6

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

 # 23 ☑ RO ☑ SRO **Question ID: 0153334** **Origin Modified** ☐ Memory? (Check=Yes)

During a Loss Of Coolant Accident, the following conditions exist:

* Containment Pressure peaked at 3.8 psig and is now slowly lowering.
* Reactor Coolant System temperature is 440 °F and stable.

What is the approximate MINIMUM RCS pressure required to satisfy the subcooling margin requirements for the existing condition?

A 382 psia ☐

B 515 psia ☑

C 540 psia ☐

D 2225 psia ☐

Justification 440 + 30 = 470°F (30°F subcooling). Minimum Pressure for 470°F = ~515 psia

Reference MP2 LOIT MB-1379 2532, LOCA, SCM

NRC K/A System/E/A NRC K/A Generic

System 009 Small Break LOCA

Number EK1.02

Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: Use of steam tables

Importance RO/SRO 3.5 4.2

10CFR Link (CFR 41.8 / 41.10 / 45.3)

☑ RO ☑ SRO | Question ID: 0153334 | Origin Parent | ☐ Memory? (Check=Yes)

During a Loss Of Coolant Accident, the following conditions exist: - Containment Pressure is 7 psig and slowly lowering. - Reactor Coolant System temperature is 440 degrees F and stable. What is the MINIMUM RCS pressure required to satisfy the subcooling margin requirements for the existing condition?

A 382 psia ☐

B 515 psia ☐

C 540 psia ☑

D 2060 psia ☐

Justification Minimum Pressure for degraded CTMT (>5psig).

Reference MP2*LORT*2278 [000 532-01-B 1159] (1/13/97) 2532, LOCA, SCM

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 24 ☑ RO ☑ SRO Question ID: 0153383 Origin Modified ☐ Memory? (Check=Yes)

Which of the following describe a potential impact to Unit Two systems, if the site fire main were unavailable for any purpose other than fire fighting?

A On a plant trip with a Loss-Of-Normal-Power, the instrument air system MUST be x-tied with another unit to ensure long term availability. ☐

B On a loss of the Condensate Storage Tank inventory, the Auxiliary Feedwater system will NOT have any source of water available. ☑

C The hard-piped emergency makeup supply for the Spent Fuel Pool and for SFP cooling is NOT available. ☐

D The emergency makeup supply for the Refueling Water Storage Tank is unavailable. ☐

Justification #1 - wrong; although not as desirable, RBCCW can provide cooling to the IA compressors.
#2 - correct; AFW has two sources of water, CST (normal) and fire main x-tie (emergency).
#3 - wrong; AFW is the emergency makeup supply.
#4 - wrong; there is no emergency makeup to the RWST.

Reference MP2 LOIT FPS-01-C MB-0567 T.S., 2341, FIRE

NRC K/A System/E/A

System 086 Fire Protection System (FPS)

Number K3.01

Knowledge of the effect that a loss or malfunction of the Fire Protection System will have on the following: Shutdown capability with redundant equipment

Importance RO/SRO 2.7 3.2

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

☑ RO ☑ SRO Question ID: 0153383 Origin Parent ☐ Memory? (Check=Yes)

The Unit #1 Control Room reports that a forklift has ruptured the North Fire Tank approximately three feet (3') above grade level. The tank is draining at a rapid rate and is expected to be down to the three foot (3') level shortly. What is your concern, if any, regarding Tech Specs for MP2?

A The tanks are the backup source of water to AFW and they have to be operable for the AFW system. ☐

B Two tanks with a minimum of 200,000 gallons each are required to be operable for the Fire Water System. ☑

C The tanks are emergency makeup supply for the Spent Fuel Pool and have to be operable for SFP cooling. ☐

D These tanks are only a concern to Unit 1, that is why they have level indication for these tanks. ☐

Justification T.S. 3.7.9.1.b

Reference MP2*LORT*2531 [086 FPS-01-C 3834] (1/21/97) T.S., 2341, FIRE

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 25 ☑ RO ☑ SRO Question ID: 0153394 Origin Modified ☐ Memory? (Check=Yes)

If the actual Reactor Coolant System (RCS) dose equivalent I-131 activity is 75 uCi/gm, which one of the following power levels is the maximum thermal power the reactor is allowed to attain?

A 76% ☑

B 78% ☐

C 80% ☐

D 100% ☐

Justification Tech. Spec. 3.4.8, Figure 3.4-1 [MUST BE PROVIDED TO LOIT STUDENTS!!]

Reference MP2 LOIT TAA-01-C MB-1632 I-131, T.S., CHEM

NRC K/A System/E/A

System 076 High Reactor Coolant Activity

Number AA2.02

Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: Corrective actions required for high fission product activity in RCS

Importance RO/SRO 2.8 3.4

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

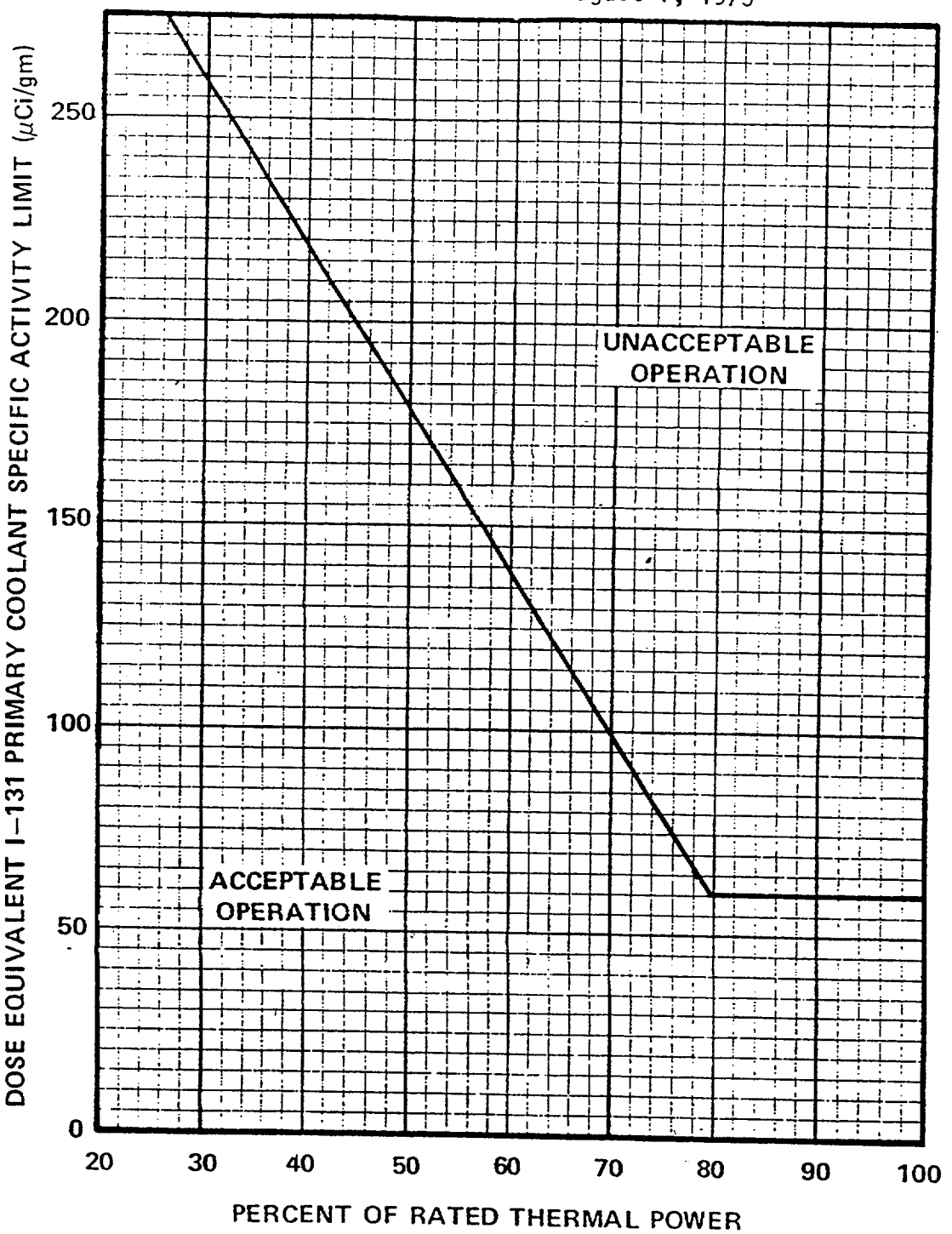


FIGURE 3.4-1

DOSE EQUIVALENT I–131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 1.0 μCi/gram Dose Equivalent I-131

☑ RO ☑ SRO | Question ID: 0153394 | Origin Parent | ☐ Memory? (Check=Yes)

If the actual Reactor Coolant System (RCS) dose equivalent I-131 activity is 65 uCi/gm, which one of the following power levels is the maximum thermal power the reactor is allowed to attain?

A 76% ☐

B 78% ☑

C 80% ☐

D 100% ☐

Justification Tech. Spec. 3.4.8, Figure 3.4-1 [MUST BE PROVIDED TO LOIT STUDENTS!!]

Reference MP2 LORT*2955 [150 TSI-01-C 7582] (1/30/97) I-131, T.S., CHEM

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 26 ☑ RO ☑ SRO Question ID: 0153415 Origin Modified ☑ Memory? (Check=Yes)

The plant is operating normally at 100% power with the "A" Emergency Diesel Generator (EDG) tagged out for PMs.
As the "A" EDG breaker is racked up for return to service, a mechanical failure in the breaker causes a fault on bus 24C.
The 24A-to-24C tie breaker trips due to the fault and 24C is deenergized. All other plant components and systems respond as expected.

Which of the following plant components is in danger of being damaged without prompt operator action?

A "A" & "C" RCPs. ☑

B CVCS Ion exchangers. ☐

C Main Generator stator. ☐

D Main Condenser. ☐

Justification #1 - Correct, due to loss of RBCCW cooling to the RCP seals.
#2 - Wrong, letdown HX is cooled by "B" RBCCW header.
#3 - Wrong, Stator water cooling or TBCCW has not been lost (24C/22E only buses deenergized).
#4 - Wrong, Circ water has not been effected (24C/22E only buses lost).

Reference MP2 LOIT RBC-01-C MB-3005 RSST, 24D, EDG, 2347, IHES, SW

NRC K/A System/E/A NRC K/A Generic

System 003 Reactor Coolant Pump System (RCPS)

Number K2.02

Knowledge of bus power supplies to the following: CCW pumps

Importance RO/SRO 2.5 2.6

10CFR Link (CFR: 41.7)

☑ RO ☑ SRO | Question ID: 0153415 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is operating in Mode 4. "A" and "C" Reactor Coolant Pumps (RCP's) are running, and bus 24E is being powered from bus 24C, when the following indications are received: - "RSST LOCKOUT" - "C" Service Water (SW) pump trip - zero amps on the "C" SW pump - zero flow on the "B" SW header Immediate attempts to start the "C" SW pump fail. All automatic actions expected on a Reserve Station Services Transformer (RSST) lockout have occurred. Which one of the following plant components is in danger of being severely damaged without prompt operator action?

A The "A" & "C" Reactor Coolant Pumps (RCP's) due to loss of seal cooling. ☐

B The Ion exchangers within the Chemical and Volume Control System (CVCS). ☐

C The Main Generator stator due to loss of stator water cooling. ☐

D The "B" Emergency DieselGenerator (EDG). ☑

Justification The "B" Emergency Diesel Generator (EDG)$$$$REF: EOP 2540B, ARP 2591A (E-7)$$$$RELATED K/A'S: 14034504C901 140.0 345.0$$$$TIME: 7.5 MIN$$$$APPROVAL: RNS [Q#001985]

Reference MP2*LORT*2993 [064 EDG-01-C 3621] (1/3/97) RSST, 24D, EDG, 2347, IHES, SW, 2540B

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 27 ☑ RO ☑ SRO Question ID: 0153466 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress, with the following containment (CTMT) equipment status:

* "A", "B" and "C" CAR fans are running in fast speed; "D" CAR fan is secured.
* 10" RBCCW outlet isolations on "A", "C" and "D" CAR fans are open.
* 10" RBCCW outlet isolation on "B" CAR fan is closed.
* Both CTMT Auxiliary Circulation fans are secured.

The CTMT atmosphere begins to heat up.

Which of the following actions could be taken to stop the CTMT temperature rise?

A Start both CTMT Auxiliary Circulation fans in fast speed. ☐

B Start the fourth CAR fan in fast speed. ☐

C Lower "B" RBCCW Header temperature. ☐

D Open the "B" CAR fan 10" RBCCW outlet isolation. ☑

Justification #1 - Wrong, only used for rad. monitor flow.
#2 - Wrong, cannot run more than three car fans in fast, due to duct work limitations.
#3 - Wrong, "B" RBCCW header supplies the "B" & "D" CAR fans, "B" CAR fan is not aligned with RBCCW and "D" CAR fan is not running.
#4 - Correct, CAR 10" outlets open to supply max. flow of RBCCW to CARs for designed CTMT heat sink.

Reference MP2 LOIT CCS-01-C MB-3366 2330A, CARS, ECCS, RBCCW, 2313

NRC K/A System/E/A NRC K/A Generic

System 022 Containment Cooling System (CCS)

Number A4.04

Ability to manually operate and/or monitor in the control room: Valves in the CCS

Importance RO/SRO 3.1 3.2

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

☑ RO ☑ SRO | Question ID: 0153466 | Origin Parent | ☐ Memory? (Check=Yes)

Which of the following components is actuated by a SIAS in order to provide a heat removal path from inside containment to the outside environment during a LOCA?

A Shutdown Cooling Heat Exchanger RBCCW outlet (2-RB-13.1). ☐

B "B" RBCCW Hx. Out. to Hdr. "B" (2-RB-4.1D). ☐

C SIT Outlet Isolation valves. ☐

D "C" CAR Clr. RBCCW 10" Out. Isol. (2-RB-28.3C). ☑

Justification #1 - Wrong, valve opens on a SRAS.
#2 - Wrong, valve does not get SIAS signal.
#3 - Wrong, SITs do not remove heat from CTMT to environment.
#4 - Correct, CAR 10" outlets open to supply max. flow of RBCCW to CARs for designed CTMT heat sink.

Reference MP2*LORT*3344 [3 CCV-01-C 2814] (1/14/97) 2330A, CARS, ECCS, RBCCW, 2313

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 28 ☑ RO ☑ SRO Question ID: 0153546 Origin Modified ☐ Memory? (Check=Yes)

While conducting a plant cooldown the following plant conditions exist:

* RCS Temperature 250 °F.
* RCS pressure 250 psia.
* 'A' LPSI Pump supplying Shutdown Cooling.
* All electrical supplies are normal.

If a LOCA were to now occur, which of the following operator actions should take place?

A Ensure automatic SIAS actuation and verify adequate Safety Injection flow. ☐

B Initiate Safety Injection flow by starting both Facility HPSI Pumps and 'B' LPSI Pump with a flow path from the RWST. ☑

C Manually initiate SIAS using C01 pushbuttons for both facilities of Safety Injection. ☐

D Initiate Safety Injection flow using both LPSI Pumps and all three HPSI Pumps with a flowpath from the RWST. ☐

Justification #1 - wrong; SIAS is blocked on low RCS pressure and a high CTMT pressure auto SIAS would not realign manually positioned valves.
#2 - correct; OP 2207, PRECAUTION; Available ECCS equipment should be started on a LOCA , to include 1 LPSI pump and 1 HPSI pump.
#3 - wrong; manual SIAS also will not reposition valves which have been closed due to plant mode (SDC operation).
#4 - wrong; never use three HPSI pumps, especially while in Mode 4. Also, only one LPSI and HPSI should be available.

Reference MP2 LOIT G07-01-C MB-2951 2207, HPSI, LOCA, LPSI

	NRC K/A System/E/A	NRC K/A Generic
System	038 Steam Generator Tube Rupture (SGTR)	2.4 Emergency Procedures /Plan
Number	GA	2.4.9
	SEE GENERIC K/A	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
Importance RO/SRO		3.3 3.9
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

☑ RO ☑ SRO | Question ID: 0153546 | Origin Parent | ☐ Memory? (Check=Yes)

While conducting a plant cooldown the following plant conditions exist: - RCS Temperature 250 deg. F - RCS pressure 250 psia - 'A' LPSI Pump supplying Shutdown Cooling - All electrical supplies are normal If a Loss of Primary Coolant Accident occurs inside containment, what operator action should take place?

A Ensure automatic SIAS actuation and verify adequate Safety Injection flow. ☐

B Manually initiate Safety Injection flow using 'B' LPSI Pump and both Facility HPSI Pumps with a flow path from the RWST. ☐

C Manually initiate SIAS and ensure all Safety Injection Pumps are operating with a flow path from the RWST. ☐

D Manually initiate Safety Injection flow using 'B' LPSI Pump and one HPSI Pump with a flowpath from the RWST. ☑

Justification OP 2207, PRECAUTION $$Available ECCS equipment should be started on a LOCA , to include 1 LPSI pump and 1 HPSI pump.

Reference MP2*LORT*3994 [121 207-01-B 531] (1/16/97) 2207, HPSI, LOCA, LPSI

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 29 ☑ RO ☑ SRO Question ID: 0153572 Origin Modified ☑ Memory? (Check=Yes)

The plant has experienced a loss of all Feedwater (both main and auxiliary) and the crew has initiated Once-Through-Cooling (OTC).

Which of the following describe when OTC may be terminated?

A Only after subcooling has been restored to greater than 30 °F. ☐

B Immediately after feed flow has been restored to at least one steam generator. ☐

C As soon as RCS pressure is low enough to allow adequate HPSI injection flow. ☐

D Only after feed flow has restored at least one steam generator to greater than 70" of level. ☑

Justification #1 - wrong; subcooling is not expected to be restored in 2540 space.
#2 - wrong; restoring feedflow is not enough, SG level must be above 70" and recovering to 40% with steaming capabilities.
#3 - wrong; HPSI injection is required for success in OTC, not criteria to terminate it.
#4 - correct; Per 2540, O-T-C success path can be exited only when at least 1 S/G is available to remove heat, (e.g. feedwater flow is available to the S/G, a steaming flowpath exists, and the S/G level is >70" WR).

Reference MP2 LOIT E37-01-C MB-2537 2540D, LOFW, PORV

NRC K/A System/E/A NRC K/A Generic

System E09 Functional Recovery

Number EA1.3

Ability to operate and/or monitor desired operating results during abnormal and emergency situations as they apply to the Functional Recovery.

Importance RO/SRO 3.6 3.8

10CFR Link (CFR: 41.7 / 45.5 / 45.6)

☑ RO ☑ SRO | Question ID: 0153572 | Origin Parent | ☐ Memory? (Check=Yes)

The RCS has experienced a high pressure transient due to a loss of all Feedwater (both main and auxiliary). On the trip, one of the PORVs lifted and stuck open. The block valve for the stuck open PORV was subsequently closed.

Plant conditions 20 minutes into the event are as follows:

* PZR Pressure = 1350 psia
* Head Level = 61%
* PZR Level = 60%
* CET Max = 506 °F and slowly going down
* Both Steam Generators (S/G) are off scale low on the narrow range
* All S/G wide range levels are dropping; #1 S/G WR = 80", #2 S/G WR = 70"

At this point, the stuck open PORV is unisolated to allow initiation of Once-Through-Cooling.

When should the stuck open PORV be isolated again?

A When subcooling has been restored to greater than 30 °F. ☐

B Immediately. It should have never have been unisolated. ☐

C As soon as RCS pressure is low enough to allow adequate HPSI injection. ☐

D Only after feed flow has been restored to at least one SG and level in that SG is greater than 70". ☑

Justification On the conditions presented, HR 2 (O-T-C) would be the only appropriate HR success path in 2540, since HR-1 and HR-3 would immediately have the operators exit to HR-2. The crew would establish O-T-C and would exit this success path only when at least 1 S/G is available to remove heat, (e.g. feedwater flow is available to the S/G, a steaming flowpath exists, and the S/G level is >70" WR).

Reference MP2*LOIT*4047 [000 540-01-B 1260] (11/24/97) 2540D, LOFW, PORV

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 30 ☑ RO ☑ SRO Question ID: 0153615 Origin Modified ☐ Memory? (Check=Yes)

The plant had been operating at 100% when it tripped due to a stuck open Pressurizer Safety Valve.

Which of the following are expected conditions for this event?

A ACTUAL pressurizer level rise is indication of RCS inventory recovery. ☐

B Safety injection flow ALONE will provide sufficient core heat removal. ☐

C RCS delta-T will drop as steam generator pressure drops. ☐

D Inventory loss rate will lower as RCS pressure lowers throughout the event. ☑

Justification #1 - wrong; PZR level will rise with void formation.
#2 - wrong; SI flow is not enough with a SBLOCA.
#3 - wrong; delta-T and SG pressure are loosely coupled, but a direct cause-effect correlation can not be concluded.
#4 - correct; pressure is the driving force for inventory loss.

Reference MP2 LOIT E32-01-B MB-5939 2532, LOCA, NC, HTFF

NRC K/A System/E/A NRC K/A Generic

System 008 Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

Number AK1.02

Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Change in leak rate with change in pressure

Importance RO/SRO 3.1 3.7

10CFR Link (CFR 41.8 / 41.10 / 45.3)

☑ RO ☑ SRO | Question ID: 0153615 | Origin Parent | ☐ Memory? (Check=Yes)

A Small Break LOCA has occurred. The following stable conditions exist: PZR Pressure: 1250 psia Head Level: 43% PZR Level: 30% Max CET: 533 °F Both SGs Operable Three Charging Pumps Injecting Two HPSI Pumps Running RCPs are secured At this time, a cooldown of 70 °F/hr and appropriate lowering of RCS pressure is begun. As a result of commencing the cooldown and depressurization, how will loop DT change?

A Grow larger, due to the rise in the rate of heat transfer from the Steam Generators. ☑

B Grow smaller, due to the more efficient cooling of the colder feedwater entering the Steam Generators. ☐

C Grow smaller, due to the rise in safety injection flow as RCS pressure is reduced. ☐

D Remain the same, due to DT being dependent only on the amount of decay heat in the core. ☐

Justification Q = M Cp (Th - Tc) = U A (Tc - Tsg); heat transfer in the SG goes up, heat transfer from RCS to SG must go up. Heat transfer RCS to SG goes up, heat transfer from core must go up. Heat transfer from core goes up, delta T in RCS must go up. Note RCS is subcooled and loops are full (43% head level).

Reference MP2*LORT*4302 [000 532-01-B 9000] (1/20/97) 2532, LOCA, NC, HTFF

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 31 ☑ RO ☑ SRO Question ID: 0153683 Origin Modified ☑ Memory? (Check=Yes)

The plant is operating at 100% power, normal electrical line-up, when the "A" Battery Charger fails and all of its output breakers open.

Which of the following describes the control room indication of this malfunction on the 125VDC System?

A ALL breaker indicating lights for 24A and 24C are deenergized. ☐

B 201A Battery bus amp meter indicates a discharge, with slightly below normal bus voltage. ☑

C 201A Battery bus amp meter indicates zero (0) amps, with normal indicated bus voltage. ☐

D Alarms are received for VA-10 and VA-30 being powered by their alternate source. ☐

Justification With the "A" Charger deenergized, all of the distribution panels will be kept energized by the battery (#1, #3 & #4 are wrong). There will be no change in the status as long as the Battery lasts, but it will indicate a "discharge" on the bus amp meter.

Reference MP2 LOIT LVD-01-C MB-4959 2345, 125VDC, 120VAC,

NRC K/A System/E/A

System 063 DC Electrical Distribution System

Number A4.02

Ability to manually operate and/or monitor in the control room: Battery voltage indicator

Importance RO/SRO 2.8 2.9

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0153683 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is operating at 100% power, normal electrical line-up, when the "A" Battery Charger fails. What is the initial effect on the Facility 1 (Z1) 125VDC and 120VAC Systems?

A The Vital and Non-Vital DC panels are deenergized, and the Vital and Non-Vital AC panels are energized. ☐

B All of the Vital and Non-Vital AC and DC panels are energized. ☑

C All of the Vital AC and DC panels are energized, and the Non-Vital AC and DC panels are deenergized. ☐

D All of the Vital AC panels are energized, and the all the DC panels are deenergized. ☐

Justification With the "A" Charger deenergized, all of the distribution panels will be kept energized by the battery. There will be no change in the status as long as the Battery lasts.

Reference MP2*LORT*4649 [063 LVD-01-C 972] (2/1/97) 2345, 125VDC, 120VAC,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 32 ☑ RO ☑ SRO Question ID: 0153964 Origin Modified ☐ Memory? (Check=Yes)

The crew is in the process of performing the operability run on the 'C' charging pump. The 'B' charging pump is aligned to Fac. 1 (B51).

A major fire occurs in the control room requiring evacuation. The control switch for the 'C' charging pump on C02 is left in the 'Pull-to-lock' (SIAS start only) position, when control is shifted to C10.

How many charging pumps can be manually controlled from C10 at this time? (Assume no other operator action.)

A None ☐

B One ☑

C Two ☐

D Three ☐

Justification Only Facility Two pumps ("C" and possibly "B") can be controlled from C10. Since "B" is presently aligned to Fac. 1, it is not available from C10 at this time. When control is shifted to C-10, this bypasses all other switches in the circuit. Therefore, "C" is available even though it's switch is in PTL on C02.

Reference MP2 LOIT CVC-01-C MB-2360, A51-01-C MB-5676 , Appendix R, LOIT

NRC K/A System/E/A NRC K/A Generic

System 068 Control Room Evacuation

Number AK2.01

Knowledge of the interrelations between the Control Room Evacuation and the following: Auxiliary shutdown panel layout

Importance RO/SRO 3.9 4.0

10CFR Link (CFR 41.7 / 45.7)

☑ RO ☑ SRO | Question ID: 0153964 | Origin Parent | ☐ Memory? (Check=Yes)

The crew was in the process of performing the operability run on the 'C' charging pump ('B' charging pump was aligned to B51) when a major fire occurred in the control room requiring evacuation. The control switch for the 'C' charging pump was left in the 'Pull-to-lock' (SIAS start only) position. When control is shifted to C-10, what will be the make-up capability to the RCS? (Assume no other operator action.)

A 0 gpm ☐

B 44 gpm ☑

C 88 gpm ☐

D 132 gpm ☐

Justification $$$$When control is shifted to C-10, this bypasses all other switches in the circuit.

Reference MP2*LORT*5189 [000 79R-01-C 1611] (1/14/97) Appendix R

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

33 ☑ RO ☑ SRO Question ID: 0154039 Origin Modified ☐ Memory? (Check=Yes)

The following conditions exist:

* The plant is at NOP/NOT, Mode 3.
* A special test of RPS is being performed by I&C.
* The Zero Power Mode Bypass (ZPMB) is in effect (light is lit on RPS) on all four channels.
* All four Reactor Coolant Pumps (RCPs) are running.
* All TCBs are closed and all CEDMs are energized.

A breaker fault on the "B" RCP causes the pump to trip.

Which of the following would then occur?

A No protective action occurs because all four channels are currently bypassed. ☑

B No protective action occurs because trip logic coincidence is shifted from 2/4 to 3/4 with ZPMB in effect. ☐

C A trip occurs because >2/4 trip logic coincidence has occurred. ☐

D A trip occurs because trip logic coincidence is shifted from 2/4 to 1/4 with ZPMB in effect. ☐

Justification ZPMB bypasses Low Flow, RCP underspeed and TM/LP trips. When the "B" RCP trips, a Low RCS Flow is sensed by all four channels of RPS. However, if the bypass keys remain in the bypass position, the ZPMB will prevent RPS from processing a trip on Low RCS Flow. This makes Choice #1 correct and Choice #3 & #4 wrong. Choice #2 is wrong because ZPMB does NOT change the trip logic to a 3/4 coincidence.

Reference MP2 LOIT RPS-01-C MB-3145 RPS, 2380

NRC K/A System/E/A

NRC K/A Generic

System 015/ Reactor Coolant Pump (RCP) Malfunctions

Number AA1.16

Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Low-power reactor trip block status lights

Importance RO/SRO 3.2 3.5

10CFR Link (CFR 41.7 / 45.5 / 45.6)

☑ RO ☑ SRO | Question ID: 0154039 | Origin Parent | ☐ Memory? (Check=Yes)

The Zero Power Mode Bypass (ZPMB) is in effect for Low Power Physics Testing. The following conditions exist: The "A" and "C" Reactor Coolant Pumps are running The "B" and "D" are secured. All TCBs are closed and all CEDMs are energized. Due to spurious noise signals, Wide Range Nuclear Instrument (WRNI) power spikes to 1E-3% on channels "A" and "C", then returns to its normal value of 1E-5%. Which one of the following occurs?

A No protective action occurs because all four channels are currently bypassed. ☐

B No protective action occurs because trip logic coincidence is shifted from 2/4 to 3/4 with ZPMB in effect. ☐

C A trip occurs because 2/4 trip logic coincidence has occurred. ☑

D A trip occurs because trip logic coincidence is shifted from 2/4 to 1/4 with ZPMB in effect. ☐

Justification ZPMB bypasses Low Flow, RCP underspeed and TM/LP trips. When power goes above 1E-4% ZPMB is automatically removed. If the bypass keys remain in the bypass position, the ZPMB will be reinstated when power returns to less than 1E-4%. In this question with 2 RCPs operating, when power goes above 1E-4% channel "A" and "C" will process a reactor trip on Low Flow then will automatically reinstate the bypass when power lowers.

[Copied from Item No '2050' on 8/23/96]

Reference MP2*LORT*5503 [012 RPS-01-C 5103] (1/7/97) RPS, 2380

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 34 ☑ RO ☑ SRO Question ID: 0154054 Origin Modified ☑ Memory? (Check=Yes)

While performing EOP 2525, Standard Post Trip Actions, the Secondary Plant Operator (SPO) discovers that Bus 24C did not transfer to the Reserve Station Services Transformer (RSST) and the "A" emergency diesel generator (EDG) will NOT start.

Which of the following actions must the SPO take?

A Discuss the impact of the loss of 24C with the Primary Plant Operator and then continue with EOP 2525 Immediate and Subsequent Actions. ☐

B Immediately send a PEO to investigate the "A" EDG and report status before continuing in EOP 2525. ☐

C Continue implementing EOP 2525 Immediate and Subsequent Actions and inform the SM/US of the situation when queried. ☑

D Immediately inform the SM/US of the need to reference EOP 2528, Electrical Emergency, contingency actions, before continuing in EOP 2525. ☐

Justification EOP 2525, Step ; OP 2260, Step 1.21.3; "..AFTER the PPO and SPO have been queried, safety functions which are no longer being met should be prioritized and then communicated immediately to the US when discovered".

Reference MP2 LOIT EOP-01-C MB-0760 2525, RSST, EOP,2260

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.15
	SEE GENERIC K/A	Knowledge of communications procedures associated with EOP implementation.
Importance RO/SRO		3.0 3.5
10CFR Link		(CFR: 41.10 / 45.13)

☑ RO ☑ SRO | Question ID: 0154054 | Origin Parent | ☐ Memory? (Check=Yes)

While performing EOP 2525, Standard Post Trip Actions, the Secondary Plant Operator (SPO) discovers that Bus 25A did not transfer to the Reserve Station Services Transformer (RSST). Which of the following actions must the SPO take?

A Continue implementing EOP 2525 Immediate and Subsequent Actions while referring to EOP 2528, Electrical Emergency. ☐

B Immediately attempt to energize bus 25A from the RSST before continuing in EOP 2525. ☐

C Inform the SM/US of the situation when queried and continue implementing EOP 2525 Immediate and Subsequent Actions. ☐

D Inform the SM/US that EOP 2528, Electrical Emergency, contingency actions to restore power must be completed before continuing in EOP 2525. ☐

Justification EOP 2525, Step 2.2; OP 2260, Step 6.2.3.
OP 2260 states "If the contingency actions ... are not provided, then the user must proceed to the next step or substep in the left column". EOP 2525 does not provide instructions for a failure of Bus 25A to transfer; therefore, EOP 2525 implementation must continue.

Reference MP2*LORT*5518 [000 25A-01-B 1088] (1/2/97) 2525, RSST, EOP,2260

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 35 ☑ RO ☑ SRO Question ID: 0154074 Origin Modified ☑ Memory? (Check=Yes)

The following conditions exist:

* Fuel stored in the Spent Fuel Pool (SFP) meets the criteria for each storage region.
* Fuel stored in the SFP meets the storage pattern criteria for each region.
* All fuel burnup requirements are currently satisfied.
* Fuel movement is presently occurring within the SFP.

Then, a spent fuel bundle is dropped while being moved over the fuel storage racks.

Which of the following ensures shutdown margin is maintained in the SFP, regardless of where the fuel bundle lands?

A The cell blocking devices in one-out-of-four cells in the SFP fuel storage racks. ☐

B The height of borated water above the fuel bundles in the SFP. ☐

C >/= 800 ppm boron concentration throughout the SFP water. ☑

D The poison plates contained in the SFP fuel storage racks. ☐

Justification #3 - correct; Technical Specification 3.9.17, states that there is a minimum concentration of 800 ppm boron if fuel is to be moved in the SFP. This ensures the effects of a dropped, misplaced or mis-handled assembly will not raise Keff > 0.95.
#1 & #4 - wrong; Technical Specifications 3.9.18 and 3.9.19 ensure that the reactivity condition of the Region B storage racks and SFP Keff will remain less than or equal to 0.95 with fuel PLACED in the SFP for storage. This does not take nto account an accidental misplacement.
#2 - wrong; the height of water is for shielding purposes only.

Reference MP2 LOIT SFP-01-C MB-3203 2305, SFP, TS, Fuel Accident

---

NRC K/A System/E/A NRC K/A Generic

System 036 Fuel Handling Incidents

Number AK1.02

Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents : SDM

Importance RO/SRO 3.4 3.8

10CFR Link CFR 41.8 / 41.10 / 45.3)

☑ RO ☑ SRO | Question ID: 0154074 | Origin Parent | ☐ Memory? (Check=Yes)

The following conditions exist: - Fuel stored in the SFP meets the criteria for each storage region. - Fuel stored in the SFP meets the storage pattern criteria for each region. - All fuel burnup requirements are currently satisfied. - No movement of any kind is occurring or planned within the SFP for the next 48 hours. At these conditions, what is the minimum boron concentration REQUIRED to be maintained in the SFP by Tech. Specs.?

A 0 ppm ☑

B 400 ppm ☐

C 800 ppm ☐

D 1720 ppm ☐

Justification Technical Specification 3.9.17, states that there is a minimum concentration only if fuel is to be moved in the SFP. Technical Specifications 3.9.18 and 3.9.19 ensure that the reactivity condition of the Region B storage racks and SFP Keff will remain less than or equal to 0.95.
[Copied from Item No '2988' on 8/23/96]

Reference MP2*LORT*5542 [033 SFP-01-C 917] (10/1/97) 2305, SFP, TS

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 36 ☑ RO ☑ SRO Question ID: 0154390 Origin Modified ☐ Memory? (Check=Yes)

The following events have occurred:

The Charging Header has ruptured in CTMT requiring all charging and letdown to be secured. The leak is NOT isolable.

The plant is then tripped due to the rupture.
On the trip, the RSST is lost and three (3) CEAs are stuck fully withdrawn.
All other equipment responded normally per the above conditions.

Based on these conditions, the appropriate EOP directs that a plant cooldown be immediately initiated and that RCS pressure be reduced.

Which of the following is the reason for this procedural guidance?

A Recover reactivity control using Thot-leg injection. ☐

B Recover inventory control using safety injection. ☐

C Recover reactivity control using HPSI injection. ☑

D Mitigate the consequences of a Type-V LOCA. ☐

Justification Three CEAs are stuck out on the trip with no charging available for Emergency Boration. This means that Reactivity is the highest safety function challenged (#2 and #4 are wrong).
With the charging header rupture unisolable, Thot injection (via Aux spray) is unavailable (#1 is wrong).
Reactivity control by boration using HPSI pumps is the only option(#3 is correct).

Reference MP2 LOIT E40-01-C MB-5975 EOP, 2540A

NRC K/A System/E/A

System 029 Anticipated Transient Without Scram (ATWS)

Number EK3.12

Knowledge of the reasons for the following responses as the apply to the ATWS: Actions contained in EOP for ATWS

Importance RO/SRO 4.4 4.7

10CFR Link (CFR 41.5 / 41.10 / 45.6 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0154390 | Origin Parent | ☐ Memory? (Check=Yes)

The Charging Header has ruptured, requiring all charging and letdown be secured. Subsequent to this, the plant trips due to problems in the switchyard and the RSST is lost. On the trip, 3 CEAs are stuck fully withdrawn. Based on the above conditions, which one of the following actions should the Crew take upon implementing the appropriate EOP?

A Initiate a plant cooldown and open both PORVs. ☐

B Open both PORVs and initiate HPSI flow. ☐

C Initiate a plant cooldown and reduce RCS pressure. ☑

D Initiate Emergency Boration via charging from the RWST. ☐

Justification With a reactivity control problem, Figure 3.2 directs the operator to 2540. In EOP 2540A RC-3, boration using HPSI pumps, step 2.18 directs the operator to reduce RCS pressure to <1200 psia by spraying down or cooling down. Since spraying is not available, the crew would cooldown and reduce pressure to inject borated water into the RCS.$$[Copied from Item No '4986' on 10/28/97 By RLC]

Reference MP2*LORT*6622 [000 540-01-B 1235] (12/5/97) EOP 2540A

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 37 ☑ RO ☑ SRO Question ID: 0154752 Origin Bank ☐ Memory? (Check=Yes)

Following a Loss of Main Feedwater, the Auxiliary Feedwater (AFW) System automatically started. The Secondary Plant Operator (SPO) shifted the "A" Aux Feed Reg Valve Controller to Manual and a 50% output signal.

What additional control manipulations must be performed to allow the SPO to throttle AFW to the #1 Steam Generator (S/G)?

A Momentarily place #1 S/G Auxiliary Feedwater Regulating Valve "RESET NORM OVRD" switch to "OVRD", then to the "RESET" position and allow it to return to "NORM". ☐

B Momentarily place #1 S/G Auxiliary Feedwater Regulating Valve "RESET NORM OVRD" switch in the "RESET" position and allow it to return to "NORM". ☐

C Place Facility 1 Auto Aux. Feedwater Override Switch (C05, Apron section) in "Pull to Lock" position. ☐

D Momentarily place #1 S/G Auxiliary Feedwater Regulating Valve "RESET NORM OVRD" switch to "OVRD", then allow it to return to "NORM". ☑

Justification #1 - wrong; going back to the "RESET" position negates the action of going to the "OVERERIDE" position.
#2 - wrong; the "RESET" position is designed to remove any override condition, should that be desired.
#3 - wrong; the Fac. 1 Override Switch on the apron section will only override the Fac. 1 signal. The Fac. 2 signal still fails the #1 AFRV open.
#4 - correct; with the controller shifted to manual, all that remains is placing the RNO switch to "OVERRIDE".

Reference MP2 LOIT AFW-01-C MB-2185/2164 AFW, 2322, REF: OP-2322/4.7.5 and EOP-2525/7b.1.2

NRC K/A System/E/A

System 061 Auxiliary / Emergency Feedwater (AFW) System

Number A3.03

Ability to monitor automatic operation of the AFW, including: AFW S/G level control on automatic start

Importance RO/SRO 3.9 3.9

10CFR Link (CFR: 41.7 / 45.5)

NRC K/A Generic

38 ☑ RO ☑ SRO Question ID: 0154817 Origin Modified ☑ Memory? (Check=Yes)

The plant is at 100% power, with condenser air removal aligned to the Unit One stack.
A major event then occurs resulting in the following conditions:

* Pressurizer pressure = 1750 psia and dropping
* Containment pressure = 5.5 psig and rising

All plant systems and equipment has responding normally per the above conditions. NO operator actions have yet been taken.

How would the Condenser Air Removal be aligned?

A Discharging to the Unit 2 stack. ☐

B Discharging to the Unit 1 stack. ☐

C Discharging to the Main Exhaust System. ☐

D Discharge path is totally isolated. ☑

Justification Per OP 2384; EB-55 & 56 close on an EBFAS (#4 is correct), which is generated from the SIAS on either the low PZR pressure or the high CTMT pressure. (#1&#3 are wrong).
Normally, EB-57 is closed and must be opened to line-up an exhaust path (#2 is wrong).

Reference MP2 LOIT CAR-01-C MB-2207 2329, 2314,

NRC K/A System/E/A

System 055 Condenser Air Removal System (CARS)

Number A3.03

Ability to monitor automatic operation of the CARS, including: Automatic diversion of CARS exhaust

Importance RO/SRO 2.5 2.7

10CFR Link (CFR: 41.7 / 45.5)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0154817 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power, when a LOCA occurs in containment, resulting in a SIAS actuation.

Without operator action, to what destination (if any) will the Condenser Air Removal exhaust now be aligned?

A Unit 2 stack ☐

B Unit 1 stack ☐

C EBFS System ☐

D Exhaust is isolated. ☑

Justification OP 2384; EB-55 & 56 close on an EBFAS (which is generated from the SIAS). Normally, EB-57 is closed and must be opened to line-up an exhaust path.

Reference MP2 LOIT, 2329, 2314,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 39 ☑ RO ☑ SRO Question ID: 0154968 Origin Modified ☐ Memory? (Check=Yes)

The plant is at 90% power, steady state, with the SP-2601D surveillance in progress.

Power Range Safety Channel NI power is manually raised above the RPS Delta-T power using the "Nuclear PWR Calibration" potentiometer on the RPS.
ALL other plant parameters are maintained constant.

Which of the following items are directly affected by this manual adjustment to the NI calibration potentiometer?

A Safety Channel Power Indication on the NI drawers. ☐

B Variable High Power Trip Setpoint. ☐

C Wide Range Log Power Indication on RPS. ☐

D Variable TM/LP Trip setpoint. ☑

Justification PerSP-2601D OP 2380;
#1 - wrong; adjustment pot is downstream of the NI drawer power meters.
#2 - wrong; the high power trip SETPOINT only goes down automatically, it will not rise as NI power is raised.
#3 - wrong; Safety Range NIs are not the Wide Range NIs, they are the Narrow Range NIs.
#4 - correct; Raising the Safety Range NIs with NI power > Delta-T power will cause Q-power to go up. This will raise the TM/LP setpoint.

Reference MP2 LOIT RPS-01-C MB-3152 RPS

NRC K/A System/E/A NRC K/A Generic

System 015 Nuclear Instrumentation System

Number K1.01

Knowledge of the physical connections and/or cause- effect relationships between the NIS and the following systems: RPS

Importance RO/SRO 4.1 4.2

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

☑ RO ☑ SRO | Question ID: 0154968 | Origin Parent | ☐ Memory? (Check=Yes)

Which of the following groups contains ONLY those indications that are DIRECTLY affected by adjustments made to the NI or Delta-T power calibration potentiometers? (Assume that only the calibration adjustments are made, with no other operator actions.)

A 1) Indicated Linear Range power 2) TM/LP trip setpoint 3) RC loop 2A cold leg temperature ☐

B 1) CEAPDS PDIL indication 2) Margin to the Variable High Power setpoint 3) T-ave /T-ref recorder indications ☐

C 1) Margin to the Variable High Power setpoint 2) TM/LP trip setpoint 3) Wide Range Log Power indications ☐

D 1) LPD trip setpoint 2) Margin to the Variable High Power setpoint 3) CEAPDS PDIL indication ☑

Justification SP-2601D OP 2380$

Reference MP2 LOIT RPS

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 40 ☑ RO ☑ SRO Question ID: 0154999 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with the plant at 25% power and the RSST still in service.

Then, a total loss of Bus 201A occurs resulting in a plant trip.
Plant procedures direct the "A" emergency diesel generator (EDG) be tripped and secured.

Which of the following explains why the "A" EDG is secured at this time?

A The EDG is running without control power or protection. ☑

B The EDG is running unloaded and it should not be run unloaded for long periods of time. ☐

C The EDG is running without a cooling water supply. ☐

D The EDG is running without auto voltage control, requiring a "dedicated operator" on manual control. ☐

Justification #1 - correct; loss of bus 201A causes a loss of DC to the "A" EDG.
#2 - wrong; true, but in this situation the EDG is TRIPPED. For unloaded conditions only it is simply shut down.
#3 - wrong; The RSST was still in service. Therefore, on the trip, even with a loss of 201A, there is no need for an auto transfer from the NSST and no AC busses lose power.
#4 - wrong; Procedure does not allow for continued EDG operation without DC control power.

Reference MP2 LOIT A05-01-C MB-5615 2322, AFAS, AFW,

NRC K/A System/E/A NRC K/A Generic

System 058 Loss of DC Power

Number AK3.02

Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Actions contained in EOP for loss of dc power

Importance RO/SRO 4.0 4.2

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.1)

☑ RO ☑ SRO Question ID: 0154999 Origin Parent ☐ Memory? (Check=Yes)

A total loss of Bus 201B has occurred with the following result: o Plant trip o Loss of Facility 2, 6.9 & 4.16 KV busses o Loss of Facility 2, 120 VAC & 125 VDC The only feed pump available to the steam generators is the 'A' Auxiliary Feedwater (AFW) Pump. What must be done to throttle feed flow to the #2 Steam Generator?

A Place both Facilities of Auto Aux Feedwater in PULL-TO-LOCK and the #2 AFW FRV controller in MANUAL. ☐

B Place Fac. 2 Auto Aux Feedwater in PULL-TO-LOCK and the #2 AFW FRV controller in MANUAL. ☐

C Place the #2 AFW FRV Override-Normal-Reset switch in OVERRIDE then spring return to NORMAL. ☐

D Locally control the #2 AFW FRV, using the valve handwheel. ☑

Justification With a loss of DC, #2 AFW FRV will fail open and must be controlled locally.$$$$$$$$$$$

Reference MP2*LOIT*2251 [061 AFW-01-C 2534] (8/19/96) 2322, AFAS, AFW,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 41 ☑ RO ☑ SRO Question ID: 0155013 Origin Modified ☑ Memory? (Check=Yes)

The plant is at 100% power and a discharge of the "A" Waste Gas Decay Tank is in progress. A control room operator has just noted the link between the Met Tower and the Plant Process Computer is NOT working (the Met Tower is off-line).

Which of the following actions is required?

A Ensure the time of the Met Tower loss is recorded on the ongoing Waste Gas discharge permit and continue the discharge. ☐

B Commence logging the local weather conditions posted on the company intranet every 15 minutes for the duration of the discharge. ☐

C Solicit weather conditions from CONVEX every 15 minutes for the duration of the discharge. ☐

D Immediately secure the discharge, close out the permit and log the time of the Met Tower loss occurred. ☑

Justification Per SP2617B, Precautions; If continued communication with the MET data is lost, the discharge must be immediately secured and the time of data loss noted in the log.

Reference MP2 LOIT DSP-02-C MB-0001 SP-2617B,

NRC K/A System/E/A

System 071 Waste Gas Disposal System (WGDS)

Number A4.06

Ability to manually operate and/or monitor in the control room: Meteorological charts and recorders, along with the stop-time and waste-gas release number

Importance RO/SRO 2.8 3.3

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0155013 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is at 100% power and a discharge of the "A" Waste Gas Decay Tank is in progress. The Aux Building PEO reports that the waste gas FLOW recorder (FR 9097) is NOT working. What action (if any) is required?

A No action is required, continue the discharge. ☐

B Commence logging the "A" WGDT pressure every 15 minutes for the duration of the discharge. ☐

C Use Unit 1 stack flow recorder data for the discharge permit entry. ☐

D Secure the discharge. ☐

Justification SP2617B, Step 5.1.d

Reference MP2*LOIT*2350 [119 DSP-02-C 3460] (12/5/94) 2617B,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 42 ☑ RO ☑ SRO Question ID: 0155142 Origin Modified ☐ Memory? (Check=Yes)

A reactor startup is in progress with power presently at 1X10-6%. While withdrawing Regulating Group 5 to 45 steps, a malfunction causes a Group 5 CEA to drop into the core.

Which of the following interlocks would be expected to cause a CEA Motion Inhibit (CMI) at this time BECAUSE OF the dropped CEA?

A PDIL ☐

B Out-Of-Sequence ☐

C Group Deviation ☑

D MIRG ☐

Justification #1 - wrong; the PDIL interlock is automatically bypassed a power level of 1X10-4%.
#2 - wrong; with Gr. 5 at only 45 steps withdrawn, Gp. 6 has not yet started withdrawing. Therefore the OOS interlock would not arm.
#3 - correct; with the rest of the group at 45 steps, a deviation of >8 steps is achieved, which will arm the Group Dev. Interlock.
#4 - wrong; MIRG is armed when the first Reg rod is above 14 steps. However, it only affects the Shutdown CEAs.

Reference MP2 LOIT CED-01-C MB-2254 2302A, CEDS, CWP,

NRC K/A System/E/A

System 003 Dropped Control Rod

Number AA2.04

Ability to determine and interpret the following as they apply to the Dropped Control Rod: Rod motion stops due to dropped rod

Importance RO/SRO 3.4 3.6

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0155142 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power. The CEAPDS has been taken out of service and deenergized by I&C for repair. A malfunction causes a Regulating Group 7 CEA to drop into the core.

Which of the following conditions would activate an interlock, preventing the PPO from withdrawing the dropped CEA?

A TM/LP pre-trips on 3 channels of the Reactor Protection System (RPS). ☑

B Shutdown CEAs being above the Lower Electrical Limit. ☐

C Dropped CEA being > 8 steps below the highest CEA in Group 7. ☐

D Local Power Density (LPD) pretrips on 3 channels of the RPS. ☐

Justification $$"A" would cause a CWP which will stop CEA motion through interlock action in the logic cabinets.$$"B" has no effect without CEAPDS.$$"C" has no effect on CWP (TM/LP or High Power Pre-trips on RPS).

Reference MP2*LOIT*2484 [001 CED-01-C RO-6d] (8/15/96) 2302A, CEDS, CWP,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 43 ☑ RO ☑ SRO Question ID: 0155243 Origin Modified ☐ Memory? (Check=Yes)

The plant is operating at 100% power, steady state when the following alarms are received:

* "INVERTER INV-3 TROUBLE" (C08).
* "VA-30 ON ALTERNATE SUPPLY VR-11" (C08)
* "High Temperature Alarm" (INV-3 local)

A scan of the control room reveals Channel "C" safety instruments are still energized.

Which of the following describe the status of VA-30 based on the above alarms?

A VA-30 is NOT operable, and will temporarily deenergize if a Loss-Of-Offsite-Power occurred. ☑

B VA-30 is operable, and will NOT be affected by a Loss-Of-Offsite-Power. ☐

C VA-30 is NOT operable, and safety channel "C" is being powered from a battery backup source. ☐

D VA-30 is NOT operable, and will NOT be affected by a Loss-Of-Offsite-Power. ☐

Justification The ARP-2590F for VA-10, 20, 30, or 40 cautions that if aligned to the alternate power supply, the VA's are NOT operable (#2 is wrong).
Also, the Caution in the ARP-2592B.3 states that when a 120 VAC Panel is powered from an Alternate source it is not OPERABLE. This is because the T.S. Surveillance 4.8.2.1 states the A.C. Busses must be energized from NORMAL A.C. sources.
None of the safety channels have a battery backup, only channel "Y" of PRZ level control (#3 is wrong).
Loss of Normal Power will deenergize the alternate power, which comes from VR-11 (#4 is wrong).

Reference MP2 LOIT LVD-00-C MB-4880 2345

	NRC K/A System/E/A	NRC K/A Generic
System	057 Loss of Vital AC Electrical Instrument Bus	2.4 Emergency Procedures /Plan
Number	GA	2.4.10
	SEE GENERIC K/A	Knowledge of annunciator response procedures.
Importance RO/SRO		3.0 3.1
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

☑ RO ☑ SRO Question ID: 0155243 Origin Parent ☐ Memory? (Check=Yes)

Annunciator C-08 B-25, "INVERTER INV-2 TROUBLE" is energized. The PEO reports Inverter 2 is running with a "High Temperature Alarm." The US directs a PEO to manually transfer VA-20 to its alternate source. What is the status of VA-20 after the above actions are taken?

A VA-20 is energized from Inverter 6 and is inoperable. ☑

B VA-20 is energized from Inverter 6 and is operable. ☐

C VA-20 is energized from VR-21 and is operable. ☐

D VA-20 is energized from VR-21 and is inoperable. ☐

Justification The Precaution in 2345B states that when a 120 VAC Panel is powered from an Alternate source it is not OPERABLE. This is because the T.S. Surveillance 4.8.2.1 states the A.C. Busses must be energized from NORMAL A.C. sources.

Reference MP2*LOIT*1514* [063 LVD-00-C 4158] (6/3/97) 2345

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 44 ☑ RO ☑ SRO **Question ID: 0155248** **Origin Bank** ☐ Memory? (Check=Yes)

Which of the following conditions will directly cause the Station Air to Instrument Air Cross-tie Valve (2-SA-10.1) to OPEN and the Station Air Isolation Valve (2-SA-11.1) to CLOSE?

A Instrument Air Receiver Tank pressure lowers to less than 85 psig. ☑

B Station Air header pressure lowers to less than 85 psig. ☐

C Instrument Air header pressure by "C" air compressor lowers to less than 85 psig. ☐

D Turbine Building header pressure lowers to less than 85 psig ☐

Justification The pressure switch that operates 2-SA-10.1 and 2-SA-11.1 senses the pressure of the Instrument Air Receiver Tank (# 3 & #4 are wrong). This is done so all of the Station Air capacity is supplied to Instrument Air if the I.A. supply to all I.A. headers is threatened. This swap-over will occur regardless of Station Air pressure (#2 is wrong).

Reference MP2 LOIT ISA-01-C MB-2642 2332B, I/A,

NRC K/A System/E/A		NRC K/A Generic	
System	079 Station Air System (SAS)	2.1	Conduct of Operations
Number	GS	2.1.28	
	SEE GENERIC K/A	Knowledge of the purpose and function of major system components and controls.	
Importance RO/SRO		3.2	3.3
10CFR Link		(CFR: 41.7)	

 # 45 ☑ RO ☑ SRO **Question ID: 0155326** **Origin Modified** ☑ Memory? (Check=Yes)

Which of the following could be a direct result of having LESS than the required amount of Trisodium Phosphate (TSP) inside containment, in a post-LOCA environment?

A Containment spray water could induce higher levels of corrosion in the wetted containment surfaces. ☑

B The containment spray nozzles will have a higher probability of clogging from boric acid coming out of solution. ☐

C The ability of containment spray to remove fission product gases through water absorption would be substantially reduced. ☐

D The optimum "window" for boron precipitation control could be substantially reduced (smaller window for success). ☐

Justification #1 - correct; T.S. 3.5.5, Bases for TSP.
#2 - wrong; High temp. and press. Greatest concern for instruments.
#3 - wrong; No such purpose of TSP, spray will function in this manner, regardless.
#4 - wrong; Boron precip. control for long term cooling is not impacted by pH level of CTMT spray.

Reference MP2 LOIT CCS-01-C MB-2219 2306-9, ECCS,

NRC K/A System/E/A

System 026 Containment Spray System (CSS)

Number K4.02

Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Neutralized boric acid to reduce corrosion and remove inorganic fission product iodine from steam (NAOH) in containment spray

Importance RO/SRO 3.1 3.6

10CFR Link (CFR: 41.7)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0155326 | Origin Parent | ☐ Memory? (Check=Yes)

Why is Trisodium Phosphate (TSP) added to the Containment Spray System?

A Lowers sump pH to limit corrosion of piping inside the containment. ☐

B Facilitates the converting of soluble iodine into insoluble iodine. ☐

C Minimizes the amount of hydrogen generated during a LOCA. ☐

D Strips elemental iodine from the containment atmosphere. ☐

Justification Minimizes the amount of hydrogen generated during a LOCA.

Reference MP2*LOIT*2613 [006 ECC-01-C 3502] (8/16/96) 2306-9, ECCS,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 46 ☑ RO ☑ SRO Question ID: 0155348 Origin Modified ☐ Memory? (Check=Yes)

The plant is at 100% power with VA-20 on it's alternate source, due to maintenance on the normal inverter.

Then, a problem in the Turbine Building deenergizes the Turbine Battery Bus.

Which of the following is a result of the above conditions?

A Four Trip Circuit Breakers (TCBs) will open, the rest will remain closed. ☑

B The plant will trip when eight of the TCBs open. ☐

C RPS will be in a 2/3 trip logic. ☐

D The Comparater Averager alarms on channel "B" of RPS will be lit. ☐

Justification The loss of the Turbine Battery will deenergize INV-6 which is the alternate source for VA-20. The static switch will not automatically transfer back to the normal inverter. This will cause channel "B" (ONLY) of RPS to deenergize, resulting in RPS being in a 1/3 trip logic (choice #3 is wrong). With Ch. "B" dead, the comparater averager for that channel is deenergized (choice #4 is wrong). Also, loosing VA-20 causes the loss of three logic matrix power supplies, resulting in the tripping of four TCBs, not all eight (choice #2 is wrong).

Reference MP2 LOIT RPS-01-C MB-3144 2345, , NLIT

NRC K/A System/E/A

System 012 Reactor Protection System

Number K2.01

Knowledge of bus power supplies to the following: RPS channels, components, and interconnections

Importance RO/SRO 3.3 3.7

10CFR Link (CFR: 41.7)

NRC K/A Generic

☑ RO ☑ SRO Question ID: 0155348 Origin Parent ☐ Memory? (Check=Yes)

VA-10 is on it's alternate source, due to maintenance on the normal inverter. A problem in the Turbine Building deenergizes the Turbine Battery Bus. What is the effect of this condition on the 125 VDC/120 VAC System?

A VA-40 is deenergized. ☐

B VA-30 is deenergized. ☐

C VA-20 is deenergized. ☐

D VA-10 is deenergized. ☑

Justification The loss of the Turbine Battery will deenergize INV-5 which is the alternate source for VA-10. The static switch will not automatically transfer back to the normal inverter.

Reference MP2*LOIT*2634 [063 LVD-01-C 972] (8/27/96) 2345, , NLIT

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 47 ☑ RO ☑ SRO Question ID: 0155635 Origin Bank ☐ Memory? (Check=Yes)

The plant has the following Instrument Air Compressor lineup:

* "A" Compressor in Lead
* "B" Compressor in Lag
* "C" Compressor in Standby

What will be the proper loading sequence of the three (3) compressors?

A "A", then "B", then "C". ☐

B "A", then "C", then "B" ☑

C "C", then "A", then "B" ☐

D "C", then "B", then "A" ☐

Justification The discussion section of OP-2332B itemizes the pressures that the compressors load and unload in the "Lead" and "Lag" condition.
The "C" compressor is designed to load before the "B", but not run continuously, because of it's higher capacity.

Reference MP2 LOIT ISA-01-C MB-0609 2332B, I/A,

NRC K/A System/E/A NRC K/A Generic

System 078 Instrument Air System (IAS)

Number A3.01

Ability to monitor automatic operation of the IAS, including: Air pressure

Importance RO/SRO 3.1 3.2

10CFR Link (CFR: 41.7 / 45.5)

 # 48 ☑ RO ☑ SRO Question ID: 0155773 Origin Modified ☐ Memory? (Check=Yes)

A Reactor startup is in progress with the following conditions:

* All Wide Range channels are indicating approximately 100 cps and rising.
* "Extended Range OFF" light is NOT lit (deenergized) on all channels of RPS.
* "Extended Range" light is lit (energized) on all channels of RPS.

Reactor power is then raised above 1000 cps and continues to rise slowly. NO control manipulations are made on any of the RPS or Nuclear Instrument channels.

Which of the following is an expected condition CAUSED BY raising reactor power above 1000 cps?

A The "Extended Range OFF" light will turn ON (energize) on all four channels. ☐

B The "Extended Range" light is still lit (energized) on all four channels. ☐

C All four wide range power meters on C04 have shifted from "CPS" to "Percent Power" indication. ☑

D All four wide range power meters on C04 momentarily drop by half (1000 cps --> 500 cps) and then continue to rise in CPS. ☐

Justification The Wide Channel NIs automatically shift out of "extended range" at ~1E 03 CPS and shift to reading in % power on the C04 meters.
Choice "1" WRONG; this light must be MANUALLY turned off.
Choice "2" WRONG; this light will auto deenergize at 1000 cps.
Choice "4" WRONG; meters do NOT drop by half, they shift to % power display.

Reference MP2 LOIT NIS-01-C MB-1440 2380-2, NI,

NRC K/A System/E/A

System 032 Loss of Source Range Nuclear Instrumentation

Number AA2.03

Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: Expected values of source range indication when high voltage is automatically removed

Importance RO/SRO 2.8 3.1

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0155773 | Origin Parent | ☐ Memory? (Check=Yes)

A Reactor startup is in progress. Which of the following conditions would be indicative of a Wide Range Nuclear Instrument failure?

A 3 channels indicate ~ 9.8 E 02 cps and 1 channel indicates ~ 1 E -07 % power. ☐

B 3 channels indicate ~ 1 E -07 % power and 1 channel indicates ~ 3 E 03 cps. ☑

C The reactor is just being stabilized at 1 E -04 % power for critical data recording, when 3 of the 4 Level 1 Bistables on RPS wide range channels reset. ☐

D Reactor is being raised to the Point of Adding Heat, when it is noted that the PDIL CMI is no longer bypassed. ☐

Justification The Wide Channel NI's swap from CPS to % power at ~1E 03 CPS. Therefore, a reading of ~3,000 CPS should never be seen on a Wide Range NI (it should have already swapped to % power).$$Choice "A" indicates that one channel has already swapped to % power, with the other three reading about 20 CPS below where they too should swap.$$Choice "C" does not indicate a problem because 1 E -04 % power is when the Level 1 Bystables are suppose to reset.$$Choice "D" does not indicate a problem because the Point of Adding Heat is about 1 E -02 % power and the PDIL CMI bypass is disabled at ~ 1 E -04 % power with the resetting of the Level 1 Bystables.$$$$$$$$

Reference MP2*LOIT*3075 [015 NIS-01-C 4731] (10/6/97) 2380-2, NI,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 49 ☑ RO ☑ SRO Question ID: 0155945 Origin Modified ☑ Memory? (Check=Yes)

The plant has tripped due to a COMPLETE loss of condenser vacuum.

Which of the following describes the REASON for automatic response of the Condenser Steam Dump and Bypass Valves (SDBVs)?

A Prevent steam cutting of turbine gland seals. ☐

B Prevent over-cooling of the RCS. ☐

C Prevent over-pressurizing of the main condenser. ☑

D Prevent violation of main condenser delta-T limits. ☐

Justification #1 - wrong; this is why vacuum is manually broken, by opening the condenser vacuum breaker, when gland sealing steam is lost.
#2 - wrong; control of the SDBVs is not lost when condenser vacuum is lost, therefore, the valves should continue to operate normally.
#3 - correct; the loss of vacuum could be cause by loss of cooling to the condenser. The main condenser rupture disk will blow at only 5 psig if steam continues to flow into the condenser without cooling.
#4 - wrong; the delta-T limit is not a function of the main condenser but of the Circ. Water discharge through it.

Reference MP2 LOIT MSS-01-C MB-2896 2386, RRS,

NRC K/A System/E/A

System 051 Loss of Condenser Vacuum

Number AK3.01

Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum

Importance RO/SRO 2.8 3.1

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0155945 | Origin Parent | ☐ Memory? (Check=Yes)

The plant was operating at 65% power, when a complete loss of condenser vacuum caused a turbine trip. Which of the following describes the initial automatic response of the Atmospheric Steam Dump Valves (ADVs) and Steam Dump and Bypass Valves (SDBVs)?

	ADVs	SDBVs	-------	----------	
A	Quick Open	Quick Open			☐
B	Normal Open	Normal Open			☐
C	Quick Open	Remain Closed			☑
D	Normal Open	Remain Closed			☐

Justification Quick Open Remain Closed

Reference MP2*LOIT*3178 [041 RRS-01-C 5129] (8/27/96) 2386, RRS,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 50 ☑ RO ☑ SRO Question ID: 0156262 Origin Modified ☐ Memory? (Check=Yes)

The plant is in Mode 1, steady state, with all components in their normal position.
While setting up staging in the enclosure building, the instrument air supply for containment (CTMT) purge valve 2-AC-4 is severed.

Which of the following describes the possible consequences of 2-AC-4 being stuck in its normal, Mode 1 position?

A If during a LOCA, post incident hydrogen control is required, CTMT purge will NOT be an available option. ☐

B The enclosure building will immediately be exposed to any energy release inside CTMT. ☐

C Venting of CTMT while making preparations for a refueling outage will require 2-AC-4 be manually opened. ☑

D 2-AC-4 must be verified open within 15 minutes or the requirements of Tech. Spec. 3.0.3 must be implemented. ☐

Justification #1 - wrong; post-LOCA CTMT purge is made through the CTMT H2 purge system, which uses a different flow path and set of valves.
#2 - wrong; AC-4 is in series with another valve inside CTMT, which would prevent any discharge into the Aux. Building.
#3 - correct; AC-4 must be disabled in the closed position above Mode 4. When the air supply was severed, it had no effect on the valve's present position, but would make it impossible to operate remotely.
#4 - wrong; Cannot open above Mode 4 per Tech. Specs.

Reference MP2 LOIT CCS-01-J MB-3831 2026, TAA, 2532,

NRC K/A System/E/A

System 029 Containment Purge System (CPS)

Number K3.01

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: Containment parameters

Importance RO/SRO 2.9 3.1

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0156262 | Origin Parent | ☐ Memory? (Check=Yes)

A LOCA has occurred inside Containment and both Hydrogen Recombiners are inoperable. According to EOP 2532, "Loss of Primary Coolant", the Containment must be purged using OP 2313C, "Containment Post Incident Hydrogen Control", when the Containment hydrogen concentration exceeds a MINIMUM value of:

A 1% ☐

B 1.5% ☐

C 3% ☑

D 4.5% ☐

Justification 3%$$$$$$

Reference MP2*LOIT*3486 [164 026-01-C RO-18] (8/26/96) 2026, TAA, 2532,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 51 ☑ RO ☑ SRO **Question ID: 0053550** **Origin Bank** ☐ Memory? (Check=Yes)

'A' HPSI Pump is aligned and being used to fill #1 SIT when a large-break LOCA occurs.

What is the post-SIAS status of flow from the 'A' HPSI pump?

A Flow to #1 SIT only. ☐

B Flow to RCS only. ☑

C Flow to #1 SIT and RCS. ☐

D No flow to RCS or #1 SIT. ☐

Justification OP 2384, FIG.8.2, 2-SI-618 will go closed and HPSI Injection valves will go open, thus stopping flow to the SIT. With a LBLOCA, HPSI injection to the RCS is assured because no SI valves are overridden or realigned to fill a SIT.

Reference MP2 LOIT HPI-01-C MB-2570 SIAS, HPSI, SIT, 2384, 2306

NRC K/A System/E/A

System 006 Emergency Core Cooling System (ECCS)

Number A3.03

Ability to monitor automatic operation of the ECCS, including: ESFAS-operated valves

Importance RO/SRO 4.1 4.1

10CFR Link (CFR: 41.7 / 45.5)

NRC K/A Generic

 # 52 ☑ RO ☑ SRO Question ID: 0156296 Origin Modified ☐ Memory? (Check=Yes)

The following plant conditions exist:

* A Station Blackout has occurred.
* The Instrument Air System has depressurized.
* A full decay heat load is present.
* To conserve Vital DC power, bus 201A has been deenergized.
* All other equipment is operating as expected or designed.

Which of the following describes where local manual control MUST be established to ensure continued RCS heat removal by natural circulation over the next two to three hours?

A Turbine Driven Auxiliary Feedwater Pump ☐

B Letdown Flow Control Valves ☐

C Atmospheric Dump Valves ☑

D Auxiliary Feedwater Control Valves ☐

Justification #1 - Wrong, Vital DC is maintained to the TDAFP in these conditions.
#2 - Wrong, Letdown is manually isolated per EOP-2530 and would have isolated due to the loss of IA and power.
#3 - Correct, ADVs will fail shut on loss of IA and need to be opened to maintain heat sink.
#4 - Wrong, AFVs fail open on total loss of IA, but feed flow can be controlled by TDAFP speed. Also, valves have their own backup air supply.

Reference MP2 LOIT RBC-01-C MB-3015 2530, MSSVs, ADV, controlling RCS temperature

---

NRC K/A System/E/A

System 055 Loss of Offsite and Onsite Power (Station Blackout)

Number EK1.02

Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling

Importance RO/SRO 4.1 4.4

10CFR Link (CFR 41.8 / 41.10 / 45.3)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0156296 | Origin Parent | ☐ Memory? (Check=Yes)

The following plant conditions exist: o A Station Blackout has occurred. o The Instrument Air System has depressurized. o A full decay heat load is present. o Heat removal under natural circulation is satisfactory. Predict the approximate RCS average temperature that should exist PRIOR to establishing local manual control of the Atmospheric Dump Valves?

A 532 °F ☐

B 544 °F ☐

C 555 °F ☑

D 569 °F ☐

Justification EOP 2530 Step 2.6.c.iv

Reference MP2*LOIT*3551 2530 MSSVs controlling RCS temperature

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 53 ☑ RO ☑ SRO Question ID: 0166021 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress following a 45 day refueling outage. "A" and "B" RCPs are running in concurrent operation with Shutdown Cooling (SDC).

Then, a failure in the ESAS cabinet results in an inadvertent SIAS signal on both facilities.

Assuming NO operator action, which of the following components would see a temperature RISE as a result of this SIAS signal?

A SDC system temperature return to the RCS. ☐

B "A" & "B" RCP seals. ☐

C Spent Fuel Pool Cooling Heat Exchanger outlet. ☑

D Containment atmosphere. ☐

Justification In the short term, SFP Cooling is an unnecessary heat load on the RBCCW System during accident conditions, so the SFP Heat Exchanger outlet valves close on an ESAS (#3 is correct).
RBCCW flow to the RCPs and the CAR coolers is not effected by an ESAS (#2 & #4 are wrong).
Service Water supply to the RBCCW HX goes to max., so RBCCW temp. will drop dramatically without an actual need for SIAS actuation. This will cause SDC return to the RCS to drop (#1 is wrong).

Reference MP2 LOIT A64-01-C MB-3011 2330A, RBCCW

NRC K/A System/E/A

System 026 Loss of Component Cooling Water (CCW)

Number AK3.02

Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: The automatic actions (alignments) within the CCWS resulting from the actuation of the ESFAS

Importance RO/SRO 3.6 3.9

10CFR Link (CFR 41.5,41.10 / 45.6 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO Question ID: 0166021 Origin Parent ☐ Memory? (Check=Yes)

Which of the following automatic actions in the Reactor Building Closed Cooling Water (RBCCW) System would result from a SIAS signal?

A SDC Heat Exchanger outlet valves open. ☐

B Spare RBCCW Pump starts and runs on minimum flow. ☐

C Spent Fuel Pool Heat Exchanger outlet isolation valves close. ☑

D Vessel Support Concrete Cooler isolation valves close. ☐

Justification SFP Heat Exchanger outlet valves close. In the short term, SFP Cooling is an unncessary heat load on the RBCCW System during accident conditions.

Reference MP2*LOIT*3211 [008 RBC-01-C 4837] (8/22/96) 2330A, RBCCW

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 54 ☑ RO ☑ SRO Question ID: 0166910 Origin Modified ☐ Memory? (Check=Yes)

Preparations for a reactor startup are being performed when an I&C technician informs the on shift crew that the pulse height discrimination on all Wide Range Nuclear Instrument (NI) drawers was inadvertently set too high (little or no pulse height discrimination will occur throughout their operating range).

IF the reactor startup were to continue, which of the following describes the effect of a loss of pulse height discrimination?

A During the reactor startup, count rate doublings will be masked by high levels of detector noise. ☑

B At the power level the NIs shift to % power indication, the wide range channels will respond accurately. ☐

C The PDIL interlock will NOT be armed until reactor power exceeds the point of adding heat. ☐

D The Local Power Density trip will be armed at a higher power level than that allowed by Technical Specifications. ☐

Justification #1 - correct; Discrimination is the process of eliminating signal noise and gamma or alpha signals that are not proportional to power. The magnitude of any rise neutron flux could be masked if the discrimination circuit was adjusted incorrectly such that alpha and gamma pulses were also counted.
#2 - wrong; This occurs at ~1000 cps, which is still in the range where noise from alpha and gamma signals will corrupt the neutron signal.
#3 - wrong; PDIL arms at 1X10-4%, which is above the point where the neutron signal is effected by alpha or gamma.
#4 - wrong; LPD arms at ~14 % power, well above any alpha or gamma noise.

Reference MP2 LOIT NIS-01-C MB-4064 NIS

NRC K/A System/E/A

System 033 Loss of Intermediate Range Nuclear Instrumentation

Number AA2.02

Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Indications of unreliable intermediate-range channel operation

Importance RO/SRO 3.3 3.6

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0166910 | Origin Parent | ☐ Memory? (Check=Yes)

Why is gamma compensation required in the Wide Range Nuclear Instrumentation channels?

A At low power, decay gamma contribute a significant portion of the total power signal ☑

B At high power, a signal proportional to gamma must be added to ensure the wide range channels responds accurately ☐

C At high power, the gamma field at the detectors is not proportional to power ☐

D A signal proportional to gamma must be added to ensure the wide range channels responds accurately over the full range ☐

Justification Discrimination is the process of eliminating signal noise and gamma or alpha signals that are not proportional to power. Discrimination is important for safe reactor operation, especially for shutdown conditions and reactor startup operation. The neutron flux could be masked if the discrimination circuit was adjusted incorrectly such that alpha and gamma pulses were also counted. This could mean that reactor power level could increase without the control room operator having any means off promptly becoming aware of the change. Similar situations could occur if the discriminator were set up to eliminate the large fission fragment pulses.

Reference MP2*LOIT*NIS

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 55 ☑ RO ☑ SRO Question ID: 0054192 Origin Bank ☑ Memory? (Check=Yes)

A plant start up is in progress. The reactor has been brought critical with power being held steady at 1x10-3% power to obtain critical data.

While installing the opening coil in an MSIV Bypass valve breaker, a malfunction in the breaker causes the valve to open temporarily, until closed by operator action.

Due to the valve opening, RCS Tavg lowers to 512 °F before stabilizing.

Based on Technical Specifications, which of the following operator actions are required be taken? (Your answer should be based ONLY on Technical Specification requirements.)

A Immediately trip the plant and secure at least one Reactor Coolant Pump. ☐

B Power may be raised to less than 5% and held at that level until Tavg is greater than 525 °F. ☐

C Immediately commence Emergency Boration and continue until Tavg is greater than 525 °F. ☐

D Tavg must be raised to greater than 515 °F within 15 minutes or be in MODE 3 within the next 15 minutes. ☑

Justification TSAS 3.1.1.5 requires Tave to be restored to greater than 515 °F within 15 min. or be in HOT SHUTDOWN within the next 15 minutes.

Reference MP2 LOIT N03-01-C MB-5371 S/U, OP 2203, TS

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.12
	SEE GENERIC K/A	Ability to apply technical specifications for a system.
Importance RO/SRO		2.9 4.0
10CFR Link		(CFR: 43.2 / 43.5 / 45.3)

 # 56 ☑ RO ☑ SRO Question ID: 0167070 Origin Modified ☐ Memory? (Check=Yes)

The plant is at 100% power, steady state, with the forcing of pressurizer spray flow in operation.

Then, a pressurizer backup heater group breaker trips due to a breaker failure.

Which of the following describe how the pressurizer will respond to this failure, assuming NO operator action?

A RCS pressure will stabilize at some lower pressure with less spray flow. ☑

B RCS pressure will remain relatively constant at the desired pressure while the spray valves throttle closed. ☐

C The proportional heater output will rise as RCS pressure lowers, spray flow will remain constant. ☐

D RCS pressure will continue to drop without operator action and spray flow will remain constant. ☐

Justification #1 - correct; with less heat input from the heaters, pressure will slowly drop. The PZR pressure control system will respond to the lowering pressure and auto adjust spray flow accordingly. As the controller is a proportional-only controller, it will still settle out with pressure slightly above setpoint, just to a lesser amount. Pressure must settle out above setpoint because THREE backup heaters are still energized, which is easily enough energy input to raise pressure enough to open the spray valves (#2, #3 & #4 are wrong).

Reference MP2 LOIT PLC-01-C MB-2325 PLPCS, 2304

NRC K/A System/E/A

System 027 Pressurizer Pressure Control System (PZR PCS) Malfunction

Number AK2.03

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners

Importance RO/SRO 2.6 2.8

10CFR Link (CFR 41.7 / 45.7)

NRC K/A Generic

☑ RO ☑ SRO Question ID: 0167070 Origin Parent ☐ Memory? (Check=Yes)

In forcing Pressurizer spray flow, the applicable procedure directs that all backup heaters be energized and that the selected pressure controller setpoint be lowered to achieve an output of approximately 50%. What is the main reason for lowering the setpoint as prescribed while forcing sprays?

A Ensures both spray valves fully open to maximize the amount of flow through the Pressurizer spray nozzle. ☐

B Maintains RCS pressure relatively constant at the desired pressure while the spray valves throttle open. ☑

C Maintains proportional heater output at maximum while the backup heaters are on. ☐

D Ensures pressurizer level rise caused by increased spray flow does not trip the backup heaters. ☐

Justification Lowering press. controller setpoint allows the spray valves to open at a lower pressure, cancelling out the added energy from the backup heaters.
#1 is wrong because both spray valves would open even if setpoint wasn't lowered, just at a higher pressure.
#3 Lowering the controller setpoint would MINIMIZE the proportional heater output.
#4 Level does not rise when the spray valves open at power. This would only happen if the RCS was at saturation and voided.
or outsurge.

Reference MP2*LORT MB-00171 C98305
OP 2204

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 57 ☑ RO ☑ SRO **Question ID: 0170314** **Origin Modified** ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power with the controlling pressurizer pressure controller setpoint set at 2250 psia. The pressurizer level insurge bistable (which actuates ~3.6% above setpoint) has failed such that it will NOT actuate on a pressurizer insurge.

Then, a perturbation in a secondary system causes a pressurizer insurge that raises pressurizer level to 70% and causes a corresponding rise in pressurizer pressure.

What action will the Pressurizer Level and Pressure Control System take to automatically stop the rise in pressure?

A The spray valves will start to open immediately and any backup charging pumps running in Manual will automatically stop. ☐

B The spray valves will start to open and all heaters will deenergize at 2300 psia. ☐

C The proportional heaters will go to minimum at 2275 psia, and the spray valves will start to open at 2300 psia. ☑

D The proportional heaters will remain at maximum, and the spray valves will start to open at 2300 psia. ☐

Justification Per OP-2204 Attachment 3;
#1 - wrong; at 50psi above setpoint (2300 psia here), spray valves will start to open.
#2 - wrong; the proportional heaters will cut back (NOT deenergize) as pressure rises due to the PZR level insurge, however, the BACKUP heaters will not deenergize until pressure reaches 2350 psia.
#3 - correct; proportional heaters go to min. ~25psi > setpoint and the spray valves will open 50psi > setpoint.
#4 - wrong; due to the failed bistable, the proportional heaters will not respond this way, but will respond normally (per choice #3).

Reference MP2 LOIT PLC-01-C MB-2325 2304A, PLPCS,

NRC K/A System/E/A

System 011 Pressurizer Level Control System (PZR LCS)

Number K6.03

Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Relationship between PZR level and PZR heater control circuit

Importance RO/SRO 2.9 3.3

10CFR Link (CFR: 41.7 / 45.7)

NRC K/A Generic

☑ RO ☑ SRO | Question ID: 0170314 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power with the controlling pressurizer pressure controller setpoint set at 2250 psia. A perturbation in the Main Steam system causes a Pressurizer insurge that raises level to 70%, energizes all heaters, and causes a corresponding rise in Pressurizer pressure. What action will the Pressurizer Level and Pressure Control System take to automatically stop the rise in pressure?

A The spray valves will start to open and all heaters will deenergize at 2350 psia. ☐

B The spray valves will start to open and all heaters will deenergize at 2300 psia. ☐

C The proportional heaters will go to minimum at 2275 psia, and the spray valves will start to open at 2300 psia. ☐

D The proportional heaters will remain at maximum, and the spray valves will start to open at 2300 psia. ☑

Justification Per OP-2204 Attachment 3; at 50psi above setpoint (2300 psia here), spray valves will start to open. However, the proportional heaters will stay at maximum due to the PZR level insurge. The heaters are at maximum to ensure pressure is maintained when the level control system eventually drops level to normal.

Reference MP2*LOIT 2304A, PLPCS,
[from LOIT #2175]

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 58 ☑ RO ☑ SRO Question ID: 0171249 Origin Modified ☑ Memory? (Check=Yes)

If all of the following conditions exist, LIMIT feedwater flow to each steam generator (SG) to 300 gpm (150 klbm/hr):

* SG water temperature is greater than 212°F
* SG water level is below feedwater sparger (equivalent to less than 45% corrected level indicated on C-05)
* All feedwater flow has been lost for greater than 5 minutes

Which of the following conditions is this precaution trying to prevent?

A Water hammer in the SG feed ring. ☑

B Loss of RCS inventory control. ☐

C Loss of core reactivity control. ☐

D Steam Generator tube cracking. ☐

Justification #1 - correct; ths event has been proven in the industry to cause water hammer and substancial damage to the SG feed ring.
#2 - wrong; Although this action will preclude excessive cooldown/shrinkage of the RCS, it is not the reason for the guideance. Limiting feed flow to this value may or may not prevent a cooldown.
#3 - wrong; as long as reactivity control is being met per normal OP or EOP guideance, feed induced cooldown should not be a concern.
#4 - wrong; limiting feed flow to </= 300 gpm has not been shown to effect tube cracking.

Reference MP2 LOIT MFW-01-C MB-2663 2205

NRC K/A System/E/A NRC K/A Generic

System 054 Loss of Main Feedwater (MFW)

Number AK1.02

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): Effects of feedwater introduction on dry S/G

Importance RO/SRO 3.6 4.2

10CFR Link (CFR 41.8 / 41.10 / 45.3)

☑ RO ☑ SRO | Question ID: 0171249 | Origin Parent | ☐ Memory? (Check=Yes)

In order to prevent water hammer the feedwater flow may be limitied to 300 gpm, if a set of conditions are all present. Which one of the following conditions is not one of those required conditions.

A SG water temperature is greater than 212oF ☐

B Feedwater flow aligned to the Auxiliary Feedwater Pumps ☑

C The SG water level is below the feedwater sparger ☐

D All feedwater flow has been lost for greater than 5 minutes ☐

Justification

Reference MP2*LOIT*2205
Conditons required to limit feedwater flow to prevent water hammer.

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance
RO/SRO

10CFR Link

 # 59 ☑ RO ☑ SRO Question ID: 0171497 Origin Modified ☐ Memory? (Check=Yes)

A reactor trip has occurred and numerous alarms are received, including:

* RSST Lockouts I & II (C08).
* Loss of Power alarms for the following busses: 22A/B/C/D & 22F (C08).
* A & B EDG trouble alarms (C08).
* Low RBCCW Flow on the "B" header (C06/7).
* Low Service Water (SW) Flow on the "B" header (C06/7).
* SIAS, CIAS, EBFAS, MSI, CSAS & UV on Fac. 1 & 2 (C01).
* Low Pressurizer Level & Low Pressurizer Pressure (numerous channels).
* High CTMT Pressure on Ch. A-D (C01).
* High-High CTMT Pressure on Ch. A-D (C01).

CTMT pressure indicates 22 psig and rising (C01).
The "A" EDG is running loaded (C08).
The "B" EDG is running but its breaker is open with NO breaker alarms (C08).
24E is aligned to 24C.
There are NO fault alarms on 24D.

Which of the following is an appropriate response to this event?

A Close the "B" EDG breaker and verify flow to Fac. 2 RBCCW and SW restored. ☐

B Start the "B" RBCCW and "B" SW pumps and verify flow to Fac. 2 RBCCW and SW is restored. ☐

C Place the "C" RBCCW pump in PULL-TO-LOCK, then close the "B" EDG breaker and verify flow to Fac. 2 SW is restored. ☑

D Trip the "B" EDG and utilize Loss of 24D AOP to restore Fac. 2 RBCCW and SW flow. ☐

Justification #1 - wrong; with CTMT pressure >/=20 psig, RBCCW flow should NOT be restarted if if has been lost in the outset of a plant casualty.
#2 - wrong; see #1
#3 - correct; restoring of Fac. 2 power should not be prevented solely to ensure RBCCW is not restored with these conditions.
#4 - wrong; see #1 & #3.

Reference MP2 LOIT E25-01-C MB-5424 2526

	NRC K/A System/E/A	NRC K/A Generic
System	007 Reactor Trip	2.4 Emergency Procedures /Plan
Number	GA	2.4.45
	SEE GENERIC K/A	Ability to prioritize and interpret the significance of each annunciator or alarm.
Importance RO/SRO		3.3 3.6
10CFR Link		(CFR: 43.5 / 45.3 / 45.12)

☑ RO ☑ SRO Question ID: 0171497 Origin Parent ☐ Memory? (Check=Yes)

A reactor trip occurred which the crew diagnosed as a non-complicated trip and transitioned to EOP 2526. The following plant and equipment conditions exist: RCS Tavg = 532 degrees F Normal PLCS and PPCS operation Pressurizer Pressure = 2100 psia and slowly trending up Pressurizer Level = 25% and slowly trending up A loss of the RSST occurs while performing recovery actions EOP 2526. What is the appropriate response to this event while in EOP 2526?

A Continue with EOP 2526, since optimal EOPs are designed to accomodate a loss of the RSST. ☐

B Perform EOP 2525 again to reestablish plant conditions prior to returning to EOP 2526. ☐

C Rediagnose the event due to a jeopardized safety function, then exit to an EOP more appropriate for the plant conditions. ☑

D Refer to 2528 (Electrical Emergency) to recover the electrical busses. ☐

Justification Since the Vital Auxilliaries safety function is no longer being satisfied (OPS Form 2526-1) due to a loss of Buses 25A and 25B, The actions should be to identify the Safety function is in jeopardy, rediagnose the event and transisition to the appropriate EOP. In this case, the appropriate EOP is 2528.

Reference MP2*LOIT*2526
EOP Trip recovery applicability

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 60 ☑ RO ☑ SRO Question ID: 0171736 Origin Bank ☑ Memory? (Check=Yes)

Which of the following impacts must a fire have on the plant for the fire to be classified as an "Appendix R" fire?

A Prevents a plant startup or requires a shutdown. ☐

B Results in the release of offsite radiation through smoke or spill. ☐

C Affects the capability to achieve and maintain safe shutdown. ☑

D Causes the violation of EPA standards or requirements. ☐

Justification Per AOP 2579A Entry Conditions; the fire MUST effect the capability to achieve and maintain safe shutdown.

Reference MP2 LOIT A79-01-C MB-5670 2579 Factors used to determine App. R

NRC K/A System/E/A NRC K/A Generic

System 067 Plant fire on site

Number AK1.02

Knowledge of the operational implications of the following concepts as they apply to Plant Fire on Site: Fire fighting

Importance RO/SRO 3.1 3.9

10CFR Link (CFR 41.8 / 41.10 / 45.3)

 # 61 ☑ RO ☑ SRO Question ID: 0171892 Origin Modified ☐ Memory? (Check=Yes)

The following plant conditions exist:

* Plant has just been stabilized at 68% power after a CEA dropped to the fully inserted position.
* The I&C technicians investigating state repairs will take approximately two (2) hours.

Which of the following describes the concern for staying at 68% power until repairs are made?

A Radial power distribution will bring the Thermal Margin/Low Pressure trip setpoint closer to actual pressure. ☐

B Possible automatic trip on Local Power Density due to the xenon transient caused by the dropped CEA. ☐

C Colder Tcold entering the bottom of the core will cause thermal contraction of the lower CEA guide tubes, making it increasingly difficult to withdraw the dropped CEA. ☐

D The development of excessive radial power peaks as xenon returns to equilibrium. ☑

Justification Per AOP-2556 Discussion Section;
#1 - wrong; Axial power distribution could have an effect on the TM/LP setpoint, but radial will not.
#2 - wrong; at 68% power, the LPD trip setpoints are an order of magnitude higher than any ASI shift that could be caused by xenon in only two hours.
#3 - wrong; this is theoretically posible, IF temperature were allowd to drop a substantial amount. The new equil. Xenon value should not have enough additional negative reactivity to cause such a temperature drop.
#4 - correct; xenon change around the dropped CEA will magnify the negative reactivity from the rod, causing an even greater effect on power distribution.

Reference MP2 LOIT A56-01-C MB-5813 2556

NRC K/A System/E/A NRC K/A Generic

System 005 Inoperable/Stuck Control Rod

Number AK1.03

Knowledge of the operational implications of the following concepts as they apply to Inoperable / Stuck Control Rod: Xenon transient

Importance RO/SRO 3.2 36

10CFR Link (CFR 41.8 / 41.10 / 45.3)

☑ RO ☑ SRO | Question ID: 0171892 | Origin Parent | ☐ Memory? (Check=Yes)

The following plant conditions exist: o Plant has just been stabilized at 68% power after a dropped Control Element Assembly (CEA). o Instrumentation and Controls (I&C) technician investigating had previously noted the cause as a failed power supply. o An I&C technician trainee attempts to remove the old power supply, but opens the breaker for the CEA adjacent to the dropped CEA. This causes it to also drop into the core. Which of the following operator actions is required in this situation?

A Maintain reactor power level less than or equal to the initial power level and call the Reactor Engineer. ☐

B Have the I&C Trainee close the breaker for the adjacent CEA, select the CEA, and begin the withdrawal sequence. ☐

C Immediately reduce power to less than or equal to 50%. ☐

D Trip the Reactor and complete Standard Post Trip Actions. ☑

Justification AOP-2556 Step 4.2

Reference MP2*LOIT*2556

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 62 ☑ RO ☑ SRO Question ID: 1000003 Origin New ☐ Memory? (Check=Yes)

The plant is at 100% power with all CEAs fully withdrawn. An I&C technician performing a routine check of the coil power programmer (CPP) power supplies reports that the main CPP power supply to #1 CEA is dead (zero power output) and that the alternate CPP power supply is at minimum output.

What would be the result of the alternate CPP power supply also failing completely (zero power output) before the main power supply is replaced?

A The CEA will immediately drop to the zero rod position. ☑

B CEAPDS will NOT be able to generate a CEA Motion Inhibit (CMI) for the CEA. ☐

C Pulse counting position indication for the CEA will be inaccurate. ☐

D The CEDM will "lockup", preventing the CEA from being moved from the fully withdrawn position. ☐

Justification #1 is correct because deenergizing both CPP power supplies will cause the CEDM to deenergize and drop the rod.
#2 is wrong because CEAPDS will still see the rod's position via the reed switches, which are not powered by the CPP, and therefore still generate a CMI.
#3 is wrong because the pulse counting for a CEA is not powered by the CPP and when the CEA drops to 0-steps the PPC will reset to zero indication.
#4 is wrong because the CEDM does NOT "lockup" when it loses power, it releases the CEA.

Reference MP2 LOIT CED-01-C MB-2250/2265 2556, AOP, 2302A, CEDS, NRC

NRC K/A System/E/A NRC K/A Generic

System 001 Control Rod Drive System

Number K1.03

Knowledge of the physical connections and/or cause -effect relationships between the CRDS and the following systems: CRDM

Importance RO/SRO 3.4 3.6

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 63 ☑ RO ☑ SRO **Question ID: 0053448** **Origin Bank** ☑ Memory? (Check=Yes)

Which of the following conditions will result in the Control Room Ventilation System shifting automatically into the Recirculation Mode of operation?

A Control Room area radiation monitor (RM-7899) in alarm. ☐

B Control Room gaseous process radiation monitor (RM-8011) in alarm. ☐

C Control Room ventilation intake duct radiation monitor (RM-9799A) fails high. ☑

D Control Room ventilation intake duct smoke detector fails high. ☐

Justification Per ARP 2590A, C-40; only the ventilation intake duct rad monitor will cause a shift to recirc.

Reference MP2 LOIT CRA-01-C MB-2292 2315A, CRAC, RM

NRC K/A System/E/A

System 061 Area Radiation Monitoring (ARM) System Alarms

Number AK2.01

Knowledge of the interrelations between the Area Radiation Monitoring (ARM) System Alarms and the following: Detectors at each ARM system location

Importance RO/SRO 2.5 2.6

10CFR Link (CFR 41.7 / 45.7)

NRC K/A Generic

 # 64 ☑ RO ☑ SRO Question ID: 1000004 Origin New ☐ Memory? (Check=Yes)

A reactor startup is in progress. The Primary Plant Operator (PPO) has just started withdrawing regulating group CEAs in Manual-Sequential mode, when the "Withdraw-Insert" switch fails in the WITHDRAW mode (indicative of holding the switch in the withdraw position). The PPO releases the control switch and notes that regulating group CEAs are continuing to withdraw.

Which of the following conditions applies to this transient?

A Two TM/LP pre-trips activating at the same time will stop the CEA movement. ☑

B CEAPDS will indicate the uncontrolled withdrawal but the plant process computer (PPC) will NOT. ☐

C The CEA Motion Inhibit (CMI) activating on group deviation will NOT stop the uncontrolled withdrawal. ☐

D The uncontrolled withdrawal will completely stop when the first regulating group reaches the Upper Core Stop. ☐

Justification #1 - correct; ths will cause a CEA Withdrawal Prohibit interlock, which will stop all outward rod motion, and cannot be bypassed.
#2 - wrong; as CEDS is really moving the CEAs out, the PPC should display the motion as it would for any "normal" rod motion.
#3 - wrong; this failure has NO effect on any CMI functionality.
#4 - wrong; the upper core stop will ONLY stop the outward motion of the group that activates it (group specific) and it also triggers when the LAST rod in the group reaches the setpoint.

Reference MP2 LOIT CED-01-C MB-2244 2302A, CEDS, NRC

NRC K/A System/E/A

System 001 Continuous Rod Withdrawal

Number AA1.02

Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal: Rod in-out-hold switch

Importance RO/SRO 3.6 3.4

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

65 ☑ RO ☑ SRO Question ID: 1000005 Origin New ☐ Memory? (Check=Yes)

Which of the following set of pressurizer conditions would be expected immediately following a pressurizer insurge?
(Consider each set of conditions separately, with the plant in a mode consistent with the conditions)

A Pressurizer Pressure = 1550 psia ☑
Steam Space Temperature = 602 °F
Pressurizer Water Temperature = 598 °F

B Pressurizer Pressure = 1950 psia ☐
Steam Space Temperature = 630 °F
Pressurizer Water Temperature = 635 °F

C Pressurizer Pressure = 2000 psia ☐
Steam Space Temperature = 600 °F
Pressurizer Water Temperature = 600 °F

D Pressurizer Pressure = 2200 psia ☐
Steam Space Temperature = 647 °F
Pressurizer Water Temperature = 648 °F

Justification #1 - Correct, RCS temp rise causes a PZR insurge => superheated PZR steam space => Steam space hotter than water and slightly hotter than Psat.
#2 - Wrong, water is shown hotter than steam.
#3 - Wrong, water and steam shown equal. Steam must be hotter due to cold water insurge from RCS.
#4 - Wrong, water is shown hotter than steam and temps. don't match pressure.

Reference MP2 LOIT RCS-01-C MB-3034 2304A, PLPCS

NRC K/A System/E/A

System 010 Pressurizer Pressure Control System (PZR PCS)

Number K5.01

Knowledge of the operational implications of the following concepts as the apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables

Importance RO/SRO 3.5 4.0

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

 # 66 ☑ RO ☑ SRO Question ID: 1000006 Origin New ☐ Memory? (Check=Yes)

The plant is at 100% power with all systems operating normally when an excess steam demand (ESD) event occurs inside containment (CTMT).
The following plant conditions then exist:

* CTMT Pressure = 45 psig and slowly dropping.
* CTMT Temperature = 280 °F and slowly dropping.
* RCS Pressure = 1250 psia and stable.

Injection flow has refilled the pressurizer to an indicated level of 45%.

Which of the following is the expected effect on pressurizer (PZR) level indication and control due to the degraded CTMT conditions?

A Indicated PZR level (LI-110 X/Y) will be higher than ACTUAL PZR level. ☑

B Indicated PZR level (LI-110 X/Y) will equal ACTUAL PZR level. ☐

C PZR Level-Cold Calibrated indication (LI-103) will be higher than ACTUAL PZR level. ☐

D Indicated PZR level (LI-110 X/Y) and the PZR Level-Cold Calibrated indication (LI-103) will be equal. ☐

Justification #1 - Correct, indicated level will reflect the lower density in the reference leg of the PZR, causing indicated level to be higher than actual.
#2 - Wrong, indicated level will be higher than level
#3 - Wrong, lower density in the reference leg of the PZR has the same effect as higher density in the PZR, which is what LI-103 is calib. to.
#4 - Wrong, Cold cal. is calibrated to a different temp. than normal level, therefore, the two can never equal unless both are failed high or low.

Reference MP2 LOIT SAMG-01-C MB-1973, MCD-01-C MB-5109 2304, PLPCS, EOP

NRC K/A System/E/A NRC K/A Generic

System 028 Pressurizer (PZR) Level Control Malfunction

Number AA2.14

Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: The effect on indicated PZR levels, given a change in ambient pressure and temperature of reflux boiling

Importance RO/SRO 2.6 2.8

10CFR Link (CFR: 43.5 / 45.13)

67 ☑ RO ☑ SRO Question ID: 0053711 Origin Bank ☑ Memory? (Check=Yes)

Which of the following statements describes the design feature that prevents inadvertent draining of the spent fuel pool through the Spent Fuel Pool cooling (SPFC) System?

A The deepest SFPC suction piping extends only halfway down into the pool. ☐

B The SFPC discharge piping has a siphon breaker near the normal water level. ☑

C The SFPC normal suction piping has a siphon breaker near the normal water level. ☐

D All piping in the SFPC system which could drain the SFP have loop-seals to prevent draining the SFP. ☐

Justification #1 - the deep suction extends to the bottom of the pool but is normally isolated and administratively controlled.
#2 - the siphon breaker on the DISCHARGE line is specifically installed to prevent siphoning of the pool because this line extends deep into the pool.
#3 - the suction line only extends a short distance into the pool and does not require a siphon breaker.
#4 - there are NO loop seals in any of the SFPC system piping.

Reference MP2 LOIT SFP-01-C MB-3446 OP-2305

NRC K/A System/E/A

System 033 Spent Fuel Pool Cooling System (SFPCS)

Number K4.01

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Maintenance of spent fuel level

Importance RO/SRO 2.9 3.2

10CFR Link (CFR: 41.7)

NRC K/A Generic

68 ☑ RO ☑ SRO Question ID: 1000007 Origin New ☑ Memory? (Check=Yes)

The plant is at 100% power when a condensate pump trips on breaker overload.

Which of the following describes a correct mitigating action for the loss of the Condensate Pump?

A Open the Condensate Polishing Facility (CPF) bypass valve. ☑

B Raise the speed (rpm) of the slower running main feed pump. ☐

C Open the heater drain pump subcooling valve. ☐

D Take manual control of both Main Feedwater Regulating Valves and open to the pre-event position. ☐

Justification #1 - correct; this will lower the CPF delta-P and raise main feed pump suction pressure. Three condensate pumps are only required with the dP of CPF.
#2 - wrong; this will raise pump flow and drop suction pressure even more, possibly leading to a low suction pressure trip.
#3 - wrong; corrective action for a tripped heater drain pump and takes discharge water from the running condensate pumps.
#4 - wrong; this will have the same effect as raising feed pump speed.

Reference MP2 LOIT CON-01-C MB-2291 2319,

NRC K/A System/E/A

NRC K/A Generic

System 056 Condensate System

Number A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations Loss of condensate pumps

Importance RO/SRO 2.6 2.8

10CFR Link (CFR: 41.5/43.5/45.3/45.13)

 # 69 ☑ RO ☑ SRO Question ID: 1000008 Origin New ☑ Memory? (Check=Yes)

The plant is operating normally at 100% power, MOL conditions. Main feedwater line to the #1 steam generator (SG) has developed a 100gpm leak in the enclosure building.

Which of the following is indicative of the automatic plant response to the main feedwater leak over the FIRST MINUTE?

A RCS Tcold temperature begins to rise. ☑

B Nuclear power on RPS begins to rise. ☐

C #1 main feed regulating valve opens to match feed flow with steam flow. ☐

D Condensate pump amps begin to lower. ☐

Justification #1 - correct; with a lowering of cold feed input to the SG, the required RCS heat input will be less, resulting in an initial rise in RCS temp.
#2 - wrong; per #1, RCS Tc will rise, therefore, NI power will drop with a negative MTC (MOL).
#3 - wrong; the feed flow sensors are in the turbine building, upstream of the leak. Therefore, level control will not respond until level starts to drop, which will tke more than a couple minutes.
#4 - wrong; condensate flow will eventually go up, which will raise pump amps (pumps doing more work).

Reference MP2 LOIT MFW-01-C MB-1391 MFW, Main Feed,

NRC K/A System/E/A NRC K/A Generic

System 059 Main Feedwater (MFW) System

Number K3.04

Knowledge of the effect that a loss or malfunction of the MFW will have on the following: RCS

Importance RO/SRO 3.6 3.8

10CFR Link (CFR: 41.7 / 45.6)

 # 70 ☑ RO ☑ SRO **Question ID: 1000009** **Origin New** ☐ Memory? (Check=Yes)

The three highest core exit thermocouples (CETs) on channel 1 read as follows:

* G18 = 569
* S11 = 565
* V15 = 565

CET G18 has just failed due to an OPEN in its circuit. All other CET outputs remain unchanged.

Which of the following describe the effect that this CET failure will have on Channel 1 subcooled margin indication?

A Superheated conditions will be indicated. ☐

B Subcooled margin indication will NOT change. ☑

C Subcooled margin will indicate higher than actual. ☐

D Subcooled margin will indicate as an "error" only. ☐

Justification A CET that develops an OPEN will fail LOW (#1 is wrong). The ICC uses the SECOND highest CET for the subcooled calc (#2 & #3 are wrong). With the given readings, the second highest has not changed due to the failure (#2 is correct).

Reference MP2 LOIT ICC-01-C MB-2584

NRC K/A System/E/A

System 017 In-Core Temperature Monitor System (ITM)

Number A2.01

Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Thermocouple open and short circuits

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.5)

NRC K/A Generic

 # 71 ☑ RO ☑ SRO Question ID: 0054015 Origin Bank ☑ Memory? (Check=Yes)

The following conditions exist:

* A small break LOCA is in progress.
* RCS pressure has stabilized near the shutoff head of the HPSI pumps.
* RVLMS indicates 29% and is dropping.
* Containment pressure is 7 psig and rising.

Which of the following is the correct method for ensuring that HPSI flow will become greater than break flow, (i.e. RCS inventory will recover)?

A Start the third HPSI pump and align to supplement a running Pump. ☐

B Commence an RCS cooldown utilizing the atmospheric dump valves. ☑

C Depressurize the RCS utilizing pressurizer auxiliary spray flow. ☐

D Depressurize the RCS utilizing the reactor vessel head vents. ☐

Justification #1 - Starting third HPSI will not significantly increase flow if near shutoff head;
#2 - steaming reduces RCS temperature and pressure and is directed in all 2532 evolutions;
#3 - Aux spray will not be effective deepresurizing the RCS without the pressurizer controlling pressure (29% level is centerline of hot leg);
#4 - Opening PORVs or head vents may not reduce pressure enough to ensure adequate HPSI flow and also results in further inventory loss;
(REF EOP-2532 and CEN 152)

Reference MP2 LOIT E32-01-C MB-5939 CEN 152, EOP 2532, LOCA

NRC K/A System/E/A NRC K/A Generic

System 074 Inadequate Core Cooling

Number EA2.08

Ability to determine or interpret the following as they apply to a Inadequate Core Cooling: The effect of turbine bypass valve operation on RCS temperature and pressure

Importance RO/SRO 3.8 4.6

10CFR Link (CFR 43.5 / 45.13)

72 ☑ RO ☑ SRO Question ID: 1000014 Origin New ☑ Memory? (Check=Yes)

Which of the following is applicable to announcing the start of a Service Water pump using the plant page?

A Any control room, non-dedicated, dial phone can be used. ☑

B The Unit Supervisor's phone MUST NOT be in use. ☐

C Call block for shift turnover ("shields up") must NOT be active. ☐

D The outside page switch on the Unit Supervisor's desk MUST be in the "outside page" position. ☐

Justification #1 - correct; all will allow dialing/use of a normal plant page for MP2.
#2 - wrong; has no effect on control room paging capabilities.
#3 - wrong; same as #2
#4 - wrong; outside page is NOT required for announcing the starting of the Service water pump.

Reference MP2 LOIT ADM-01-C MB-2243 Page, Phone

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.16
	SEE GENERIC K/A	"Ability to operate plant phone, paging system, and two-way radio."
Importance RO/SRO		2.9 2.8
10CFR Link		(CFR: 41.10 / 45.12)

 # 73 ☑ RO ☑ SRO Question ID: 1000020 Origin New ☐ Memory? (Check=Yes)

A plant startup is in progress with power presently being held at 12%. Charging and letdown have been isolated to repair a packing leak in the "C" charging pump discharge isolation valve. All other systems are aligned and operating normally for the power level.

The operators note that pressurizer level is dropping at the rate of approximately 15 minutes per percent (15 min./%). Pressurizer level is presently exactly equal to the setpoint for 12% power level with Tavg = 535°F.

Which of the following states the time it will take for pressurizer level to reach the minimum level allowed by Technical Specifications?

A 60 minutes. ☐

B 75 minutes. ☑

C 150 minutes. ☐

D 600 minutes. ☐

Justification At 12% power (Tavg=535°F), the PZR setpoint is still 40%. The minimum T.S. limit is 35%. Therefore, 40% - 35% = 5%; 5% X 15 min./% = 75 minutes.

Reference MP2 LOIT PLC-01-C MB-2331/2327 CVCS, 2568

NRC K/A System/E/A

System 022 Loss of Reactor Coolant Makeup

Number AA2.04

Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Pump Makeup: How long PZR level can be maintained within limits

Importance RO/SRO 2.9 3.8

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

 # 74 ☑ RO ☑ SRO Question ID: 1000023 Origin New ☐ Memory? (Check=Yes)

The plant is operating at 100% power, one (1) charging pump running, normal letdown flow and all components normally aligned.

Then, the pressure transmitter feeding the letdown backpressure controller slowly fails LOW. All components respond as designed to the malfunction.

Which of the following describe an effect of this malfunction, over the next several minutes?

A VCT level will slowly go down. ☑

B Letdown flow control valve will throttle closed. ☐

C A standby charging pump will start. ☐

D Indicated letdown flow will oscillate rapidly. ☐

Justification #1 - correct; backpressure valves try to maintain pressure above a preset value. If input fails low, they will CLOSE to attempt to return pressure to setpoint.
#2 - wrong; letdown changes based on PZR level changes and level will remain constant (due to a relief lifting in the letdown line when valves close).
#3 - wrong; if PZR level does not change, charging pump status does not change.
#4 - wrong; this would imply the backpressure valves went OPEN on the instrument failure and letdown is "flashing" in the line.

Reference MP2 LOIT CVC-01-C MB-2357/2360 CVCS, Backpressure

NRC K/A System/E/A

System 004 Chemical and Volume Control System

Number K6.05

Knowledge of the effect of a loss or malfunction on the following CVCS components: Sensors and detectors

Importance RO/SRO 2.5 2.5

10CFR Link (CFR: 41.7 / 45.7)

NRC K/A Generic

 # 75 ☑ RO ☑ SRO Question ID: 1000024 Origin New ☑ Memory? (Check=Yes)

A highly radioactive, Aerated Radwaste Discharge final filter is being transported from the filter block house to the Solid Radwaste storage location in the auxiliary building railroad access. Shortly after the control room is notified that the cask containing the filter is being moved, various area radiation monitors in the auxiliary building begin to rise and then lower, with some alarming.

Which of the following would cause these radiation monitors to respond in this fashion?

A The cask is moving closer to, or past, the affected radiation monitors. ☑

B The cask must have broke open and the filter has fallen out. ☐

C The cask being used has an unacceptable low amount of shielding. ☐

D The radioactive contamination contained in the cask must have a short half-life. ☐

Justification #1 - correct; rad levels rise then fall, indicating something changed and returned to normal. The cask rolled past.
#2 - wrong; rad levels would continue to rise everywhere gravity carried the radioactive spill from the cask.
#3 - wrong; there is only one lead cask that is used for filter transport, and rad. monitors would respond regardless of shielding levels.
#4 - wrong; high rates of decay do not in an of themselves equate to high energy levels of radiation which would penetrate the cask.

Reference MP2 LOIT RMS-01-C MB-3116/0622 Rad. Waste,

NRC K/A System/E/A

System 072 Area Radiation Monitoring (ARM) System

Number K5.02

Knowledge of the operational implications of the following concepts as they apply to the ARM system: Radiation intensity changes with source distance

Importance RO/SRO 2.5 3.2

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

 # 76 ☑ RO ☐ SRO Question ID: 0053369 Origin Bank ☐ Memory? (Check=Yes)

The plant is operating in Mode 5 with excess purification in progress. Routine Chemistry samples indicate the 'A' RBCCW Pump suction header has significantly higher activity than the 'C' RBCCW Pump suction header.

Which of the following components is the possible source of the in-leakage?

A 'A' SDC heat exchanger ☑

B Letdown Heat Exchanger ☐

C Primary sample coolers ☐

D 'A' SFP Cooling Heat Exchanger ☐

Justification In this mode of operation, the 'A' SDC Heat Exchanger is the only component listed on the "A" RBCCW header AND with pressure on the primary side higher than RBCCW pressure.

Reference MP2 LOIT RBC-01-C MB-3006 2330A, RBCCW, RM

NRC K/A System/E/A

System 008 Component Cooling Water System (CCWS)

Number K1.04

Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: RCS, in order to determine source(s) of RCS leakage into the CCWS

Importance RO/SRO 3.3 3.3

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.9)

NRC K/A Generic

77 ☑ RO ☐ SRO Question ID: 0053376 Origin Bank ☐ Memory? (Check=Yes)

Maintenance Department has just replaced a failed starting air solenoid on the "B" Emergency Diesel Generator (EDG). The on-shift Plant Equipment Operator (PEO) then performs the following tasks to prepare the EDG for surveillance testing:

* Clears all tags.
* Performs all necessary valve lineups.
* Opens the isolation valves for the air start solenoid valves.
* Resets the annunciator on C-39 for "LUBE OIL LO LEVEL".

The PEO returns to the Control Room and informs the US that the "B" EDG is ready for the surveillance test. The SPO then notes that the "DIESEL GEN, 13U DISABLED" annunciator on C-08 is still lit.

Which of the following statements describes the status of the "B" EDG?

A The EDG CANNOT be test run or will NOT auto start on an LNP until the skid mounted alarm reset button is pressed. ☑

B The EDG will auto start on an LNP but CANNOT be test run prior to pressing the skid mounted alarm reset button. ☐

C The EDG can be test run AND can auto start on an LNP, but the skid mounted alarm reset button must be pressed to clear the disabled alarm. ☐

D The EDG must be manually started and loaded in order to clear the disabled alarm. ☐

Justification The shutdown relay, which prevents the diesel from manual or auto starting, is energized by a low air pressure condition when the air isolation valves are closed and tagged. When air pressure is restored, the shutdown relay must be reset for the EDG to start for ANY reason. This is done by pressing the 'alarm reset' button on the skid mounted gageboard.

Reference MP2 LOIT EDG-01-C MB-2434 EDG, 2346A, C98605

NRC K/A System/E/A NRC K/A Generic

System 064 Emergency Diesel Generators (ED/G)

Number A4.06

Ability to manually operate and/or monitor in the control room: Manual start, loading, and stopping of the ED/G

Importance RO/SRO 3.9 3.9

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

 # 78 ☑ RO ☐ SRO **Question ID: 0053423** **Origin Bank** ☑ Memory? (Check=Yes)

The plant is operating in Mode 1.

When may the ONE licensed operator "at the controls" leave the surveillance area of the Control Room without obtaining a normal watch relief?

A Initiate a surveillance. ☐

B Monitor maintenance inside the Control Room. ☐

C Verify receipt of an annunciator. ☑

D Use the restroom in the Unit One control room. ☐

Justification Per U2 OP 200.1; only to verify the cause/receipt of an annunciator.

Reference MP2 LOIT ADM-01-C MB-2133/2131 COP200.1, ACP, C/R, ADMIN

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.2
	SEE GENERIC K/A	Knowledge of operator responsibilities during all modes of plant operation.
Importance RO/SRO		3.0 4.0
10CFR Link		(CFR: 41.10 / 45.13)

 # 79 ☑ RO ☐ SRO **Question ID: 0053588** **Origin Bank** ☑ Memory? (Check=Yes)

Why are all surveillances on operating and safety related pumps and motors secured during a degraded voltage condition?

A The surveillance data will be invalid. ☐

B Overheating of the motor cabling and windings could occur. ☑

C The motor speed could lower, resulting in insufficient pump minimum flow. ☐

D The motor speed could rise, resulting in pump cavitation. ☐

Justification When voltage drops, current will increase to maintain power requirements of the motor, thus overheating of windings and cabling will occur. As frequency does not change appreciably when voltage degrades, pump speed will not change enough to affect minimum flow requirements (#2 is wrong), pump cavitation (#4 is wrong) or surveillance data (#1 is wrong).

Reference MP2 LOIT A80-01-C MB-5530 2580, IHES

NRC K/A System/E/A

System 062 A.C. Electrical Distribution

Number A2.08

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of exceeding voltage limitations

Importance RO/SRO 2.7 3.0

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

 # 80 ☑ RO ☐ SRO Question ID: 0053749 Origin Bank ☐ Memory? (Check=Yes)

Given the following:

* Unit 2 is in REFUELING.
* Wide Range Instrument channels "B" and "D" are out of service for maintenance.
* Wide Range Instrument channel "A" is in service with its associated audible indication in containment OPERABLE.
* Wide Range Instrument channel "C" has just failed offscale HIGH.
* Core alterations are in progress.

Which of the following actions should be implemented?

A Suspend all operations involving positive reactivity changes. ☑

B Initiate emergency boration to ensure an adequate shutdown margin is maintained. ☐

C Establish continuous monitoring of the operable wide range channel. ☐

D Immediately evacuate all personnel from CTMT. ☐

Justification #1 - correct; Tech. Specs. require that at least 2 channels of wide range detection be operable whenever core alterations (positive reactivity change is considered a core alteration) are taking place.
#2 - wrong; count rate rise was due to an obvious instrument failure, therefore boron addition is not necessary.
#3 - wrong; this is insufficient, choice #1 must still be occur.
#4 - wrong; unnecessary with a failed instrument.

Reference MP2 LOIT NIS-01-C MB-1435 2303, T.S.

	NRC K/A System/E/A	NRC K/A Generic
System	015 Nuclear Instrumentation System	2.2 Equipment Control
Number	GS	2.2.26
	SEE GENERIC K/A	Knowledge of refueling administrative requirements.
Importance RO/SRO		2.5 3.7
10CFR Link		(CFR: 43.5 / 45.13)

 # 81 ☑ RO ☐ SRO Question ID: 0054311 Origin Bank ☑ Memory? (Check=Yes)

Which of the following actions may be performed by the licensed Reactor Operator WITHOUT prior approval from the Shift Manager or Unit Supervisor?

A Reset the second trip of an auxiliary building ventilation control circuit breaker if the cause of the trip is understood and 30 minutes has elapsed since the first breaker reset. ☐

B Start a second charging pump and balance charging and letdown flows when the letdown radiation monitor indicates a crud burst has just occurred. ☐

C Change the setpoint of the pressurizer pressure controller during steady state power operation to prevent intermittent TM/LP pre-trip alarms. ☐

D Manually trip the reactor after the loss of one main feed pump causes Steam Generator level to decrease to 42% and an automatic trip did not occur. ☑

Justification #1 - wrong; The SM must approve reset of protective devices per section 1.16.
#2 - wrong; shifting a system to manual control must be cleared through the SM/US.
#3 - wrong; see choice #2.
#4 - correct; COP 200.1 requires the Control Operator to "verify automatic system initiations and isolations ... If at any time, a manual scram, trip or safeguards action becomes necessary, communicate ... intention to take action, then perform action. No response from SM/US is required."

Reference MP2 LOIT ADM-01-J MB-2133 ADMIN, COP

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.14
	SEE GENERIC K/A	Knowledge of system status criteria which require the notification of plant personnel.
Importance RO/SRO		2.5 3.3
10CFR Link		(CFR: 43.5 / 45.12)

 # 82 ☑ RO ☐ SRO Question ID: 0054915 Origin Bank ☐ Memory? (Check=Yes)

The plant has experienced a Loss Of Instrument Air and efforts to re-establish it have been unsuccessful.

What effect would this event have on Pressurizer Level Control System?

A 2-CH-089, Letdown Header isolation valve fails open. ☐

B Letdown Flow Control Valves fail to the Letdown Limiter minimum position. ☐

C Charging Header Isolation Valves fail closed. ☐

D Letdown Isolation Valves fail closed. ☑

Justification #1; 2-CH-089 is a CIAS valve and must fail closed.
#2; The Letdown Flow Control Valves also fail completely closed on a loss of IA, the limiter is part of the control circuit, not mechanical.
#3; The Charging Header Isolation Valves fail open on a loss of IA to ensure an injection flow path.
#4 - correct; letdown isolation valves get a SIAS/CIAS signal to close and, therefore, are designed to fail in that mode.

Reference MP2 LOIT A63-01-C MB-5705 2563, AOP,

NRC K/A System/E/A

System 065 Loss of Instrument Air

Number AA1.02

Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: Components served by instrument air to minimize drain on system

Importance RO/SRO 2.6 2.8

10CFR Link (CFR 41.7 / 45.5 / 45.6)

NRC K/A Generic

83 ☑ RO ☐ SRO Question ID: 0055197 Origin Bank ☑ Memory? (Check=Yes)

The plant has been started up after a nine day forced outage for maintenance, and is currently at 70% power.
The following equipment is in service

* 'A' and 'C' Condensate pumps.
* Both Heater Drain Tank pumps.
* Both Main Feed Pumps.

The flow transmitter for the Condensate Pump Minimum Flow controller fails low.

Without any operator action, what effect does this failure have on the Condensate/Main Feed System?

A Feedwater Regulating Valve D/P rises ☐

B SGFP suction pressure lowers ☑

C Condenser hotwell level lowers ☐

D S/G level rises ☐

Justification The controller failing low causes the minimum flow control valve to go to its full open position. At least 3200 gpm of condensate pump discharge flow will be diverted to the condenser. This action lowers the suction pressure to the Main Feed pumps (#2 is correct). FRV D/P would lower due to lower SGFP discharge pressure (#1 is wrong). Condenser level would remain constant due to the water being recirced back to it, vice going to S/G (#3 is wrong). S/G level would lower due to less flow to it(#4 is wrong).

Reference MP2 LOIT CON-01-C MB-2291 2319A,

NRC K/A System/E/A NRC K/A Generic

System 056 Condensate System

Number K1.03

Knowledge of the physical connections and/or cause-effect relationships between the Condensate system and the following systems: MFW

Importance RO/SRO 2.6 2.6

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 84 ☑ RO ☐ SRO **Question ID: 0055426** **Origin Bank** ☐ Memory? (Check=Yes)

Which of the following should be verified if the Containment Post-Incident Area Radiation Monitor, RM-8240, were to fail high (assume RM-8241 is operating normally)?

A Any pre-outage containment cleanup operation involving 2-AC-4 and 2-AC-6 is automatically terminate. ☐

B Any pre-outage containment cleanup operation involving 2-AC-5 and 2-AC-7 is automatically terminate. ☐

C Containment Hydrogen Purge using the Facility 1valves ONLY is automatically terminate. ☐

D Containment Hydrogen Purge using the Facility 1 OR Facility 2 valves is automatically terminate. ☑

Justification When either of these RMs reaches its first setpoint of 10R/hr., the associated hydrogen purge valves (EB-92 & EB-99 for 8240 and EB-91 & EB-100 for 8241) receive a close signal and will close if purging operations are in progress. EB-92 & EB-99 are the outside valves for both facilities.

Reference MP2 LOIT RMS-01-J MB-3666/0619 RM, 2383, MB-00105

NRC K/A System/E/A

System 073 Process Radiation Monitoring (PRM) System

Number A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels

Importance RO/SRO 3.2 3.5

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

85 ☑ RO ☐ SRO Question ID: 0055505 Origin Bank ☑ Memory? (Check=Yes)

The plant has been manually tripped due to a loss of ALL Feedwater. EOP 2525 has been completed and the appropriate EOP for Loss of All Feedwater has been entered. The controlling EOP then directs stopping all RCPs.

What is the BASIS for stopping all RCPs once the Loss of All Feedwater EOP has been entered?

A Reduce heat input into the Reactor Coolant System. ☑

B Reduce Reactor Coolant System pressure. ☐

C Reduce RCS flow to improve heat transfer in the Steam Generators. ☐

D Reduce decay heat removal in the Steam Generators. ☐

Justification Per EOP 2537 Change Basis Document; A LOAF results in a reduction of the ability of the S/Gs to remove heat from the RCS. Heat input to the RCS is minimized by tripping all four RCPs. Natural circulation heat removal is adequate to remove the decay heat generated in the core.

Reference MP2 LOIT E37-01-C MB-5957 2537, EOP,

NRC K/A System/E/A

System 003 Reactor Coolant Pump System (RCPS)

Number K3.03

Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: Feedwater and emergency feedwater

Importance RO/SRO 2.8 3.1

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

 # 86 ☑ RO ☐ SRO Question ID: 0056098 Origin Bank ☐ Memory? (Check=Yes)

A loss of Shutdown Cooling (SDC) has occurred due to a loss of all AC power. According to AOP 2572, Loss Of Shutdown Cooling, RWST gravity feed makeup to the RCS is time sensitive.

What is the BASIS for this Precaution?

A Diminishing DC battery capacities for valve and breaker operation. ☐

B Diminishing Instrument Air system receiver capacity for valve operation. ☐

C RCS heatup and possible pressurization preventing gravity feed. ☑

D RCS heatup driving gasses out of solution and vapor binding SDC. ☐

Justification #1 - wrong; DC battery capacity is well over 8 hours, the RCS pressure buildup could prevent gravity feed by then.
#2 - wrong; valves have manual operators in case of failure or IA loss.
#3 - correct; heatup could choke off gravity feed capability in a few minutes.
#4 - wrong; item #3 would occur before gasses became a problem.

Reference MP2 LOIT A72-01-C MB-5830 2572, AOP,

NRC K/A System/E/A NRC K/A Generic

System 002 Reactor Coolant System (RCS)

Number K1.01

Knowledge of the physical connections and/or cause-effect relationships between the RCS and the following systems: RWST

Importance RO/SRO 3.7 3.9

10CFR Link (CFR: 41.2 to 41.9 / 45.7 to 45.8)

 # 87 ☑ RO ☐ SRO **Question ID: 0056301** **Origin Bank** ☐ Memory? (Check=Yes)

VA-10 is de-energized.

What effect will this have on the ability of 2-FW-51A (#1 Main FRV) to respond to a subsequent MSI signal?

A Will respond to the Facility 1 MSI signal ONLY. ☐

B Will respond to the Facility 2 MSI signal ONLY. ☐

C Will respond to EITHER a Facility 1 OR Facility 2 MSI signal. ☐

D Will NOT respond to ANY MSI signal. ☑

Justification The power to actuation cabinet 5 is VA-10. VA-10 is also the power supply to the lockup solenoids for 2-FW-51A. When VA-10 is lost the FRV will lock in its present position and cannot respond to ANY signal.

Reference MP2 LOIT MFW-01-C MB-2666 2384, ESAS,

NRC K/A System/E/A

System 013 Engineered Safety Features Actuation System (ESFAS)

Number K2.01

Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control

Importance RO/SRO 3.6 3.8

10CFR Link (CFR: 41.7)

NRC K/A Generic

88 ☑ RO ☐ SRO Question ID: 0056581 Origin Bank ☐ Memory? (Check=Yes)

Which of the following is an indication that the Aerated Radwaste Discharge Valves have been OVERRIDDEN open?

A The "Hi Rad/Inst. Fail" annunciator is alarming and the Aerated Radwaste Discharge Final Filter delta P is reading 20 psig. ☑

B The "Hi Rad/Inst. Fail" annunciator is alarming and the Aerated Radwaste Monitor Tank Pump is still running. ☐

C A Radwaste Discharge is in progress and NO Circulating Water Pumps are operating. ☐

D The Aerated Radwaste Flush Valves are open and the Sample Pump is still running. ☐

Justification #1 - correct; If the "Hi Rad/Inst. Fail" annunciator is alarming, the discharge should have automatically secured. However, if the Aerated Radwaste Discharge Final Filter delta P is reading 20 psig, then there must still be flow out the discharge valves. Therefore, the valves must be overridden open.
#2 - wrong; rad monitor has no control over the pump.
#3 - wrong; lack of circ pumps does not require the discharge valves be overriden open because PIOPS (rad monitor) does not sense dillution flow.
#4 - wrong; flush valve being open will close discharge valves regardless of override status.

Reference MP2 LOIT RLD-01-C MB-0537 2617A,

NRC K/A System/E/A NRC K/A Generic

System 068 Liquid Radwaste System (LRS)

Number A3.02

Ability to monitor automatic operation of the Liquid Radwaste System including: Automatic isolation

Importance RO/SRO 3.6 3.6

10CFR Link (CFR: 41.7 / 45.5)

 # 89 ☑ RO ☐ SRO Question ID: 0056641 Origin Bank ☑ Memory? (Check=Yes)

A plant heatup is in progress with Shutdown Cooling in operation and RCPs secured. The PPO reports annunciator "SI-652 OPEN" and RCS pressure at 285 psia.

Which of the following actions is required be taken?

A Reduce RCS pressure to < 280 psia. ☑

B Secure running LPSI Pumps and close 2-SI-652. ☐

C Verify 2-SI-652 auto closed. ☐

D Verify SI minimum flow valves (2-SI-659 and -660) open. ☐

Justification Directions for actions given in ARP 2590.
#1 - correct; RCS pressure will cause SDC to exceed design pressure with a LPSI pump running.
#2 - wrong; this will result in a loss of TS required RCS flow.
#3 - wrong; valve no longer auto closes on this condition (past plant modification).
#4 - wrong; valves do not auto open, only auto close.

Reference MP2 LOIT G07-01-C MB-2966 2201,

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.50
	SEE GENERIC K/A	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
Importance RO/SRO		3.3 3.3
10CFR Link		(CFR: 45.3)

 # 90 ☑ RO ☐ SRO **Question ID: 0154223** **Origin Modified** ☑ Memory? (Check=Yes)

Which of the following is a potential consequence of running only one CEDM cooling fan during 100% power operation?

A Eventual dropped rod. ☑

B RVLMS electronic components overheating. ☐

C Reactor vessel head solenoid valve leakby. ☐

D Reactor vessel upper head void formation. ☐

Justification #1 - Correct, loss of cooling will cause the mag-jacks to overheat and fail, dropping the affected CEA.
#2 - Wrong, RVLMS components are inside the upper head region and not cooled by the CEDM cooling fans.
#3 - Wrong, Rx head solenoid valves fail shut (normal position) and are isolated at power.
#4 - Wrong, Upper head cannot void at NOP/NOT because Th is 50°F below PZR temp. (saturation).

Reference MP2 LOIT CCS-01-C MB-2222 CEDM Cooling, 2302

NRC K/A System/E/A

System 022 Containment Cooling System (CCS)

Number K4.04

Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Cooling of control rod drive motors

Importance RO/SRO 2.8 3.1

10CFR Link (CFR: 41.7)

NRC K/A Generic

☑ RO ☐ SRO | Question ID: 0154223 | Origin Parent | ☐ Memory? (Check=Yes)

During the implementation of EOP 2534, why is it important to start all available CEDM cooling fans during the cooldown?

A Ensure CEDM's are available for startup. ☐

B Prevent RVLMS electronic components from overheating. ☐

C Provide heat removal from the vessel head in an attempt to reduce void formation. ☑

D Prevent CEDM reed switches from overheating. ☐

Justification Provide heat removal from the vessel head in an attempt to reduce void formation.

Reference MP2*LORT*5761 [000 534-01-B 1040] (1/27/97) 2534, SGTR

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 91 ☑ RO ☐ SRO Question ID: 0154438 Origin Modified ☑ Memory? (Check=Yes)

A plant startup is in progress.

Which of the following describes when the INTERLOCK is reset to allow opening of the second stage reheat supply to the Moisture Separators?

A When the turbine is reset ☐

B At >10% turbine load ☑

C At >20% turbine load ☐

D At >20% reactor power ☐

Justification The Second Stage RHSSVs are interlocked shut until 10% turbine load (#3 is wrong), the first stage is placed in service at 1800 RPM (#1 is wrong). The MSRs are placed in service corresponding to turbine load, not reactor power (#4 is wrong).

Reference MP2 LOIT MSR-01-C MB-2713 2317/8,

NRC K/A System/E/A

System 039 Main and Reheat Steam System (MRSS)

Number A3.02

Ability to monitor automatic operation of the MRSS, including: Isolation of the MRSS

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 41.5 / 45.5)

NRC K/A Generic

☑ RO ☐ SRO | Question ID: 0154438 | Origin Parent | ☐ Memory? (Check=Yes)

A plant shutdown is in progress.

When does the second stage reheat supply to the Moisture Separators automatically secure?

A When the turbine is shutdown ("valves closed" selected) ☐

B At 10% turbine load ☐

C At 15% turbine load ☑

D At 15% reactor power ☐

Justification The Second Stage RHSSVs are interlocked shut until 10% turbine load, the first stage is placed in service at 1800 RPM. The MSRs are placed in service corresponding to turbine load, not reactor power.

Reference MP2*LOIT*0139 [043 MSR-01-C 4368] (8/19/96) 2317/8,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 92 ☑ RO ☐ SRO Question ID: 0154974 Origin Bank ☐ Memory? (Check=Yes)

The plant is on Sump Recirculation following a large-break LOCA. All automatic actions occurred as a result of the SRAS, with the EXCEPTION of the automatic closure of 2-SI-659 and 2-SI-660. Both valves are still OPEN.

Which of the following statements describes the effect of these valves NOT being closed at this time?

A An unmonitored radioactive release path now exists, by way of the RWST vent, to the environment. ☑

B There is a possibility of inadequate injection flow to the RCS from the remaining ECCS pumps. ☐

C Pump "run out" could occur due to the change of HPSI pump suction. ☐

D There is a possibility of inadequate flow for boron precipitation control when utilizing Facility I HPSI pump. ☐

Justification Per OP-2350/6.2 P&ID 25302-26015 SH. 1;
#1 - correct; SI pump minimum flow returns directly to the RWST. With the source of water now coming from the core, highly contaminated water would be sent back to the RWST, which is vented to atmosphere through an unmonitored line.
#2 - wrong; minimum flow recirc would result in a negligible loss of flow to core (and is normally taking place until SRAS anyway).
#3 - wrong; see #2.
#4 - wrong; see #2

Reference MP2 LOIT E32-01-C MB-5939 2306-9, ECCS, SRAS,

NRC K/A System/E/A

System 013 Engineered Safety Features Actuation System (ESFAS)

Number K3.03

Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following: Containment

Importance RO/SRO 4.3 4.7

10CFR Link (CFR: 41.7 / 45.6)

NRC K/A Generic

 # 93 ☑ RO ☐ SRO Question ID: 0155657 Origin Modified ☐ Memory? (Check=Yes)

The plant is in Mode 3 with a heatup in progress. The following conditions exist:

* Tavg = 420 degrees
* Pressurizer pressure = 1500 psia
* 'B' and 'D' RCPs running
* Bus 24E is aligned to Bus 24D

Then, the 'A' RBCCW Pump trips on overload and the overload alarm is received.

Which of the following actions should be performed within the next two minutes?

A Secure the 'B' and 'D' RCPs until 24E can be realigned to 24C. ☐

B Secure Charging until RBCCW flow can be reestablished to the letdown heat exchanger. ☐

C Attempt to restart the 'A' RBCCW Pump at least once before proceeding with other system realignments. ☐

D Realign 24E to 24C and start the 'B' RBCCW Pump on the 'A' RBCCW header. ☑

Justification 'A' RBCCW Header lost flow. This does NOT affect the running RCPs (#1 is wrong) or Letdown (#2 is wrong), which are on the 'B' RBCCW header. Should not restart the "A" RBCCW pump with an overload alarm present (#3 is wrong). Procedurally, the only action required is to restore flow to the 'A" Header. Therefore, the 'B' RBCCW Pump must be started on the 'A' header.

Reference MP2 LOIT A64-01-C MB-5023 2564, AOP,

NRC K/A System/E/A

System 2.4 Emergency Procedures /Plan

Number G

SEE GENERIC K/A

Importance RO/SRO

10CFR Link

NRC K/A Generic

2.4 Emergency Procedures /Plan

2.4.24

Knowledge of loss of cooling water procedures.

3.3 3.7

(CFR: 41.10 / 45.13)

☑ RO ☐ SRO | Question ID: 0155657 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is in Mode 3 with a heatup in progress. The following conditions exist: w Tavg = 420 degrees w Pressurizer pressure = 1500 psia w 'B' and 'D' RCPs running w Bus 24E is aligned to Bus 24D Approximately one minute ago, the 'A' RBCCW Pump tripped and would NOT restart. Which of the following actions should be performed within the next two minutes?

A Trip the 'B' and 'D' RCPs. ☐

B Secure Charging due to loss of Letdown. ☐

C Ensure 'B' and 'D' CAR Coolers are running. ☐

D Start the 'B' RBCCW Pump on the 'A' RBCCW header. ☑

Justification 'A' RBCCW Header lost flow. This does NOT affect the running RCPs or Letdown, which are on the 'B' RBCCW header. Containment Air Temperature will NOT increase appreciably within the next two minutes. Procedurally, the only action required is to restore flow to the 'A" Header. Therefore, the 'B' RBCCW Pump must be started on the 'A' header.$$$$ $$

Reference MP2*LOIT*2985 [000 565-01-B 6074] (9/9/96) 2564, AOP,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 94 ☑ RO ☐ SRO **Question ID: 0155746** **Origin Modified** ☐ Memory? (Check=Yes)

A plant shutdown is in progress with power level presently at 50% and Tavg on program. The "A" condenser steam dump valve pressure controller (PIC-4216) in manual-closed due to a failed pressure transmitter. All other equipment and systems are aligned and operating normally.

Then, an uncomplicated Reactor/Turbine trip occurs.

What is the expected response of the Atmospheric Dump Valves (ADVs) and Steam Dump and Bypass Valves (SDBPVs) immediately following the trip?

A The ADVs and SDBPVs will quick-open and then close when Tave drops below the Quick Open setpoint. ☐

B The ADVs will quick-open, and then close when Tave drops below the Quick Open setpoint; the SDBPVs will modulate to maintain 535 - 540 °F. ☐

C All of the ADVs and SDBPVs will initially open on steam pressure and Tavg, respectively; the ADVs will then close as pressure drops below their setpoint and the SDBPVs will modulate to maintain 535 - 540 °F. ☑

D The ADVs and the "A" SDBPV will initially open on steam pressure and the remaining SDBPVs will open on Tavg; the ADVs and SDBPVs will then close as pressure and temperature drops below their setpoints; the "A" SDBPVs will then modulate to maintain 532 - 533 °F. ☐

Justification With power @50% and on program, this means that Tave is at 552 °F (50% power). With Tave less than 557°F, there is no Quick-open signal to any of the valves(#1 & #2 are wrong).
The ADVs modulate open and close on steam pressure first, then the SDBPVs will respond normally on temperature and pressure. However, with the PIC-4216 OOC, the "A" dump only modulates on Tavg, with B, C & D (#4 is wrong and #3 is correct).

Reference MP2 LOIT RRS-01-C MB-3162 2386, RRS,

NRC K/A System/E/A

System 041 Steam Dump System (SDS) and Turbine Bypass Control

Number A4.08

Ability to manually operate and/or monitor in the control room: Steam dump valves

Importance RO/SRO 3.0 3.1

10CFR Link (CFR: 41.7 / 45.5 to 45.8)

NRC K/A Generic

☑ RO ☐ SRO | Question ID: 0155746 | Origin Parent | ☐ Memory? (Check=Yes)

The following plant conditions exist: o A plant shutdown is in progress, with no equipment out of service and normal equipment lineups. o Tcold is being maintained on program at 540.5 °F, using Channel "A" RPS indication. o An uncomplicated Reactor/Turbine trip occurs. What is the expected response of the Atmospheric Dump Valves (ADVs) and Steam Dump and Bypass Valves (SDBPVs)?

A ADVs and SDBPVs will quick-open, and then close when Tave drops below the Quick Open setpoint. ☐

B ADVs will quick-open, and then close when Tave drops below the Quick Open setpoint; the SDBPVs will modulate to maintain 535 - 540 °F. ☐

C SDBPVs will initially open on steam pressure, and then close as pressure drops to the no-load value; the ADVs will modulate to maintain 535 - 540 °F. ☐

D ADVs will initially open on steam pressure, and then close as pressure drops to the no-load value; the SDBPVs will modulate to maintain 535 - 540 °F. ☑

Justification With Tc at 540.5 °F and on program, this means that Tave is at 552 °F (50% power). With Tave less than 557°F, there is no Quick-open signal to any of the valves, therefore, "A" and "B" are wrong.
The ADVs modulate open and close on steam pressure first, then the SDBPVs will respond normally on temperature and pressure. This eliminates "C" and makes "D" correct.

Reference MP2*LOIT*3052 [041 RRS-01-C 5129] (8/27/96) 2386, RRS,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 95 ☑ RO ☐ SRO Question ID: 0156330 Origin Modified ☐ Memory? (Check=Yes)

The following conditions exist:

* Reactor power is stable at 85%
* The "C" charging pump is selected as the running pump.
* The "A" charging pump has been manually started.
* Charging and letdown flows have been balanced per procedure after the "A" charging pump start.
* All other CVCS, Pressurizer Level and Pressure Control components are operating in normal mode for the stated conditions.

Then, the "A" charging pump (previously started in manual) TRIPS.

Which of the following responses will then occur, assuming NO operator action?

A The "B" charging pump will immediately start on the trip of the "A" pump, holding pressurizer level at setpoint. ☐

B Pressurizer level will remain stable at setpoint, but VCT level will slowly lower as letdown flow throttles down. ☐

C Pressurizer level will initially lower until the "B" charging pump starts and returns pressurizer level to setpoint. ☐

D Pressurizer level will slowly lower and be maintained by the system at some value below setpoint. ☑

Justification #1 - Wrong, letdown flow cannot return to the original, pre-trip value.
#2 - Wrong, PZR level must lower for letdown flow to lower.
#3 - Wrong, the backup CCP may start and raise PZR level but, as level rises the pump will auto secure before level reaches setpoint. Level will then cycle between the setpoints of the backup charging pump.
#4 - Correct, the PZR level controller is a proportional controller and needs an error signal to change letdown flow and/or start backup charging pumps.

Reference MP2 LOIT PLC-01-C MB-2326 2304A, PLPCS,

NRC K/A System/E/A

System 004 Chemical and Volume Control System

Number K3.07

Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: PZR level and pressure

Importance RO/SRO 3.8 4.1

10CFR Link (CFR: 41.7/45/6)

NRC K/A Generic

☑ RO ☐ SRO | Question ID: 0156330 | Origin Parent | ☐ Memory? (Check=Yes)

The following conditions exist: o Reactor power is stable at 85%. o The second charging pump has been manually started. o The bias on Letdown Flow Controller HIC-110 is NOT adjusted after the pump start. Which of the following responses will occur?

A Letdown Flow Control Valve will throttle down. ☐

B Pressurizer level will increase. ☑

C Letdown will divert to the radwaste system. ☐

D Pressurizer level will decrease. ☐

Justification Pressurizer level will increase.$$$$$$

Reference MP2*LOIT*3604 [011 PLC-01-C 4819] (8/16/96) 2304A, PLPCS,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 96 ☑ RO ☐ SRO Question ID: 0156689 Origin Modified ☑ Memory? (Check=Yes)

The plant is at 100% power, when a leak to atmosphere develops in the Waste Gas Surge Tank. Before Maintenance personnel begin to repair the leak, the tank is purged with nitrogen.

What personnel safety hazard is driving the need to purge the tank?

A Substantial rise in the surface contamination on normally clean component surfaces. ☐

B Potentially flammable, or possibly explosive, gas hazard in occupied spaces. ☑

C The potential displacement of oxygen in normally open areas. ☐

D The unexpected presence of a severe eye irritant in the general area. ☐

Justification The waste gas system is designed to collect gasses from the Clean Liquid Radwaste system, which usually contains dissolved hydrogen from the RCS.

Reference MP2 LOIT GRW-04-C MB-0504/0508 2337, GRW,

NRC K/A System/E/A

System 071 Waste Gas Disposal System (WGDS)

Number K5.04

Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System: Relationship of hydrogen/oxygen concentrations to flammability

Importance RO/SRO 2.5 3.1

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

☑ RO ☐ SRO | Question ID: 0156689 | Origin Parent | ☐ Memory? (Check=Yes)

Which of the following tanks is CONTINUOUSLY vented to the Waste Gas Surge Tank?

A Clean Waste Monitor Tank "B" ☐

B Equipment Drain Sump Tank ☑

C Aerated Waste Drain Tank "B" ☐

D Clean Waste Receiver Tank "B" ☐

Justification $$1) AWDT "B" is vented to the Main Exhaust System.$$$$2) CWMT "B" is pressurized with Nitrogen, a relief valve on the CWMT relieves back to the WGST.$$$$3) P & ID 25203-26021 sheet 2$$$$$$

Reference MP2*LOIT*4114 [071 GRW-04-C NLO-2b] (8/22/96) 2337, GRW,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

97 ☑ RO ☐ SRO Question ID: 1000010 Origin New ☑ Memory? (Check=Yes)

The following conditions exist:

* The plant has just shutdown for refuel.
* High noble gas concentrations exist in containment.
* A containment purge/vent is required to allow for containment entry.

Which of the following components must be used to perform this containment purge/vent?

A Enclosure Building Filtration System (EBFAS). ☑

B Containment auxiliary circulation fan(s). ☐

C Purge Supply Fan (F-23). ☐

D Condenser Air Removal fan F-55A. ☐

Justification #1 - correct; to remove any gas contamination EBFAS must be used.
#2 - wrong; only circulate gasses within CTMT.
#3 - wrong; Purge Supply Fan (F-23) cannot be run if using EBFAS due to the potential for supplying air to CTMT faster than EBFAS can exhaust, thereby causing an inadvertent rad release.
#4 - wrong; only used when excesive gasses are removed from the condenser.

Reference MP2 LOIT RMV-01-C MB-3075 2314B, , CTMT Purge

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.9
	SEE GENERIC K/A	Knowledge of the process for performing a containment purge.
Importance RO/SRO		2.5 3.4
10CFR Link		(CFR: 43.4 / 45.10)

 # 98 ☑ RO ☐ SRO **Question ID: 1000012** **Origin New** ☑ Memory? (Check=Yes)

The Turbine Driven Auxiliary Feedwater Pump (TDAFP) has just inadvertently tripped on overspeed. It must be restarted due to a plant emergency. A PEO has been dispatched to the TDAFP to assist in resetting the overspeed trip.

Which of the following control board actions is mechanically/electrically required to RESET the TDAFP overspeed trip?

A Fully close the terry turbine auxiliary feed pump steam supply valve, SV-4188 ☑

B Close both steam supply valves, "TDAFP SPLY VLV, MS-201" and "TDAFP SPLY VLV, MS-202". ☐

C Fully lower the TDAFP governor control switch, "SPD CNTL", to minimum. ☐

D Cycle the TDAFP key lock control power switches from the normal facility to the alternate facility. ☐

Justification #1 - correct; SV-4188 must be fully closed in order to allow resetting of the trip mechanism.
#2 - wrong; would only isolate steam supply to the TDAFP.
#3 - wrong; should be done before restart is attempted, but will not help in resetting the trip mechanism.
#4 - wrong; used only for a loss of facility 2 DC control power to the TDAFP (allows swapping to fac. 1).

Reference MP2 LOIT AFW-01-C MB-2167/0265 2322, AFW, TDAFP

NRC K/A System/E/A

System 061 Auxiliary / Emergency Feedwater (AFW) System

Number K4.07

Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Turbine trip, including overspeed

Importance RO/SRO 3.1 3.3

10CFR Link (CFR: 41.7)

NRC K/A Generic

 # 99 ☑ RO ☐ SRO **Question ID: 1000022** **Origin New** ☐ Memory? (Check=Yes)

The plant is at 100% power with all CEAs withdrawn to 180 steps. The monthly CEA Partial Movement surveillance in progress on the shutdown group CEAs. The RO has just inserted a shutdown CEA five (5) steps when the CEA slips to 170 steps withdrawn.

Which of the following is a definite indication that the CEA being moved had just slipped to 170 steps withdrawn?

A The RED light on the core mimic for the shutdown CEA is now out. ☐

B CEAPDS indication for the shutdown group containing the CEA is now RED. ☑

C The PPC indication for the shutdown CEA is less than 175 steps withdrawn. ☐

D The BLUE light on the core mimic for the shutdown CEA is now energized. ☐

Justification #1 - wrong; red light goes out as soon as CEA is not at the fully withdrawn position.
#2 - correct; CEA has greater than an 8 step deviation with the other CEAs in the group, causing a Group Deviation alarm, which turns the affected group display red.
#3 - wrong; the PPC counts the number of pulses the respective CEA was given when moved. This could have been more than five, but the CEA did not pulse when it slipped, so the PPC would not see this motion, regardless of what it indicates.
#4 - wrong; the blue light is energized when the PPC "sees" the SD CEA < 175 steps withdrawn. See #3 for a possible explaination for this condition.

Reference MP2 LOIT CED-01-C MB-2246 CEDS, RPIS, CEA

NRC K/A System/E/A

System 014 Rod Position Indication System (RPIS)

Number K4.06

Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: Individual and group misalignment

Importance RO/SRO 3.4 3.7

10CFR Link (CFR: 41.5 / 45.7)

NRC K/A Generic

 # 100 ☑ RO ☐ SRO **Question ID: 1000025** **Origin New** ☑ Memory? (Check=Yes)

The plant is at 100% power when the following occurs:

* The #1 Feedwater Reg. Valve (FRV) Lockup Circuit fails in the actuate (locked) mode.
* "FEEDWATER REGULATING VALVE 1 LOCKED" annunciator is alarming.
* NONE of the FRV Lockup alarm lights are in alarm.

Subsequent I&C investigation reveals that the #1 FRV Lockup Circuit is ARMED, but further investigation is required to determine a cause.

What is the impact of this armed lockup signal on the #1 Feedwater Regulating Valve?

A On a plant downpower, the main feedwater regulating valve will remain in a "three element" control configuration regardless of power level and will therefore respond erratically at low power levels. ☐

B The main feedwater regulating valve will NOT respond to position change signals from the control board controllers, but will respond to manual control at the valve. ☑

C The main feedwater regulating valve will automatically throttle as necessary to maintain steam generator level, but the "ramp" signals on a main turbine trip will NOT function. ☐

D The main feedwater regulating valve will NOT respond to remote or local-manual changes in position, but will trip closed on an MSI actuation or turbine trip. ☐

Justification #1 - wrong; The lockup has no function with regard to 1/3-element control signal.
#2 - correct; The FRV lockup circuit "locks up" the valve so remote control from C05 is not possible, but local-manual control does not utilize the locked up positioner, thereby totally defeating the lockup signal.
#3 - wrong; The valve is locked up and cannot respond to feed water control signals.
#4 - wrong; MSI can bypass the lockup but turbine trip CANNOT.

Reference MP2 LOIT FWC-01-C MB-2512 2385, 2321, 2203, MFW

NRC K/A System/E/A NRC K/A Generic

System 059 Main Feedwater (MFW) System

Number A2.11

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of feedwater control system

Importance RO/SRO 3.0 3.3

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

 # 76 ☐ RO ☑ SRO **Question ID: 0054070** **Origin Bank** ☐ Memory? (Check=Yes)

The following plant conditions exist:

* The plant is operating at 100% power.
* The Instrument Air (IA) supply line to all three RBCCW Heat Exchanger Temperature Control Valves (TCVs) ruptures.
* The rupture is isolated by closing 2-IA-255, isolating IA to all RBCCW TCVs.
* To control temperature, Service Water from the "A" and "C" RBCCW heat exchangers has been manually throttled.
* No dedicated operator is available to attend the valves.

Which of the following describes the Technical Specification Requirement while repairs are being completed on the IA rupture?

A If repairs can not be completed within one (1) hour, the plant must be placed in HOT SHUTDOWN within the next hour. ☐

B If all repairs and testing are completed within one (1) hour, a plant shutdown does NOT have to be initiated. ☑

C Once a plant cooldown is commenced, all Tech. Spec. time requirements are met. ☐

D If repairs are completed within 48 hours, the reactor may remain critical. ☐

Justification The actions taken to recover control of RBCCW temp. will cause BOTH RBCCW headers to become inoperable. This will require entry into Technical Specifications, LCO 3.0.3, which allows 1 hour to fix the problem or initiate action to perform a plant shutdown AND an additional six hours to achieve MODE 3 (HOT SHUTDOWN).

Reference MP2 LOIT A65-01-C MB-5048 RBCCW, SW, I/A, AOP, SRO

	NRC K/A System/E/A	NRC K/A Generic
System	062 Loss of Nuclear Service Water	2.4 Emergency Procedures /Plan
Number	GA	2.4.35
	SEE GENERIC K/A	Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.
Importance RO/SRO		3.3 3.5
10CFR Link		(CFR: 43.5 / 45.13)

77 ☐ RO ☑ SRO Question ID: 0054119 Origin Bank ☐ Memory? (Check=Yes)

The following conditions exist:

* A Large Break LOCA occurred approximately 9 hours ago.
* SRAS was initiated approximately 7.5 hours ago.
* An RCS sample taken 4 hours ago indicated a boron concentration of 1945 ppm.
* Chemistry Department reports the current RCS sample indicates 1500 ppm boron concentration.

Given these conditions, which of the following is the PREFERED operator action?

A Continue to Emergency Borate to the RCS to use any remaining borated water. ☐

B Secure all charging pumps and the 'B' HPSI pump, then align 'A' HPSI pump to auxiliary spray. ☐

C Realign charging to inject to the RCS through 'A' HPSI header. ☐

D Utilize the 'B' LPSI pump to inject to the RCS hot leg through the SDC suction line. ☑

Justification Boron precipitation is expected. The PREFERED method utilizes a LPSI pump to establish reverse flow in the core region such that water in the core is flushed out the cold leg break. Flow via this path is required to prevent the boric acid concentration in the fuel region from reaching the level at which crystallization would occur. This allows the HPSI pumps to continue to inject into the core providing long term cooling.

Reference MP2 LOIT E32-01-B MB-5944 ECCS, 2532, ESF, LOCA, EOP

NRC K/A System/E/A NRC K/A Generic

System 002 Reactor Coolant System (RCS)

Number A2.01

Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of coolant inventory

Importance RO/SRO 4.3 4.4

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.5)

78 ☐ RO ☑ SRO Question ID: 0054312 Origin Bank ☑ Memory? (Check=Yes)

Which of the following conditions will allow the Shift Manager to approve the resetting of a tripped AFW pump motor breaker?

A If the cause of the tripped motor breaker is unknown and the AFW pump is required to prevent boiling a S/G dry. ☑

B If the cause of a second trip of the motor breaker is unknown, however the second trip occurred only TWO (2) minutes after resetting of the breaker the first time. ☐

C If the cause of a second trip of the motor breaker is the same as the cause of the initial trip and the second trip occurred TEN (10) minutes after the initial trip during AFW pump testing. ☐

D If the cause of the tripped motor breaker is known but cannot be corrected, then Instrument and Controls or Maintenance Supervisor permission is required. ☐

Justification COP 200.1 states "To protect the plant ..., the SM is authorized to reset any tripped protective device considered necessary without knowing the cause ... If a protective device other than a fuse trips a second time immediately following reset (within 15 min.), no additional reset shall be attempted until ... an engineering evaluation has been performed."

Reference MP2 LOIT ADM-02-J MB-2123 SRO, ADMIN, COP

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G SEE GENERIC K/A	2.1.1 Knowledge of conduct of operations requirements.
Importance RO/SRO		3.7 3.8
10CFR Link		(CFR: 41.10 / 45.13)

 # 79 ☐ RO ☑ SRO **Question ID: 0054366** **Origin Bank** ☑ Memory? (Check=Yes)

On the day shift during routine maintenance on a Unit 2 breaker, a worker receives an electrical shock and is unconscious. Plant operations are NOT affected by the electrical discharge.

Which of the following will take the lead and coordinate the Emergency Plan Implimentation Plan requirements?

A Unit One Shift Manager ☐

B Unit Two Shift Manager ☑

C Unit Three Shift Manager ☐

D Station Duty Officer ☐

Justification Per C-OP 204, Unit 2 control room personnel are designated to perform the notification and emergency response coordination for personnel injuries which do not occur during a Site Emergency Response Organization (SERO) activated event.

Reference MP2 LOIT ADM-01-C MB-3861 , ADMIN, COP, EMERG

NRC K/A System/E/A		NRC K/A Generic	
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan	
Number	G	2.4.12	
	SEE GENERIC K/A	Knowledge of general operating crew responsibilities during emergency operations.	
Importance RO/SRO		3.4	3.9
10CFR Link		(CFR: 41.10 / 45.12)	

 # 80 ☐ RO ☑ SRO Question ID: 0071157 Origin Bank ☐ Memory? (Check=Yes)

The plant is at 75% power, shutting down for a refuel outage, when VR-11 deenergizes.

Then, the PPO requests permission to insert CEAs for ASI control.

What automatic protection (if any) will CEDS provide to prevent CEA motion from violating Tech. Spec. Shutdown Margin requirements?

A NO protection is provided, regardless of CEA insertion. ☑

B The RPS interface with the CEDS logic cabinets will prevent CEA motion that endangers shutdown margin. ☐

C ISH will prevent CEA insertion from altering power distribution such that it violates shutdown margin. ☐

D PDIL Violation Backup will occur, if CEA insertion reaches the PDIL setpoint. ☐

Justification A CMI from PDIL would normally ensure Shutdown Margin is not violated by CEA motion. However, CEAPDS is deenergized due to the loss of VR-11 and, therefore, cannot generate a CMI. ISH has no effect on the Reg. rods being inserted and the RPS interface with CEDS does not function to protect shutdown margin, especially without CEAPDS.

Reference MP2 LOIT CED-01-C MB-2248 2302A, CEDS,

NRC K/A System/E/A

System 014 Rod Position Indication System (RPIS)

Number A2.06

Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of LVDT

Importance RO/SRO 2.6 3.0

10CFR Link (CFR: 41.5/43.5/45.3/45.13)

NRC K/A Generic

 # 81 ☐ RO ☑ SRO **Question ID: 0153290** **Origin Modified** ☐ Memory? (Check=Yes)

Which one of the following indications, by procedure, would result in plant conditions that would require outside agencies be notified within one hour?

A Condenser backpressure rises to 4.5" while mussel cooking. ☐

B Loss of the "C" charging pump with 24E aligned to 24C. ☐

C Instrument Air (IA) header pressure lowers to 75 psig due to a rupture in the turbine building. ☑

D Group 7 Control Element Assemblies (CEAs) at the Pre Power Dependent Insertion Limit (PRE-PDIL) ☐

Justification #1 is a mussle cooking procedural concern, but does not require a trip or report.
#2 - Loss of a charging pump requires a Tech. Spec. entry, not a one hour report.
#3 - AOP-2563 requires the plant be tripped if Instrument Air pressure lowers to <80 psig, therefore a 75 psig will necessitate a trip. Any plant trip requires a radio pager message be put out (Echo).
#4 - The rods are close to violating shutdown margin, but are not doing so until the "actual" PDIL is violated.

Reference MP2 LOIT S99201 MB-1471 2332B, I/A, 2563, 2525

NRC K/A System/E/A		NRC K/A Generic	
System	065 Loss of Instrument Air	2.4	Emergency Procedures /Plan
Number	GA	2.4.30	
	SEE GENERIC K/A	Knowledge of which events related to system operations/status should be reported to outside agencies.	
Importance RO/SRO		2.2	3.6
10CFR Link		(CFR: 43.5 / 45.11)	

☐ RO ☑ SRO Question ID: 0153290 Origin Parent ☐ Memory? (Check=Yes)

Which one of the following indications requires, by procedure, that the reactor be manually tripped?

A Condenser backpressure increases to 5 ". ☐

B No level indicated in the Reactor Building Component Cooling Water (RBCCW) surge tank ☐

C Instrument Air (IA) header pressure lowers to 78 psig ☑

D Group 7 Control Element Assemblies (CEA's) at the Pre Power Dependent Insertion Limit (PRE-PDIL) ☐

Justification Instrument Air pressure lowers to 78 psig$$$$REFERENCE: AOP-2563/3.1$$$$RELATED K/A's: 000/065/00.11-3.4/3.5$$$$TIME: 2.5 MIN$$$$APPROVAL: RNS$$$$REVIEWED: 5/93

Reference MP2*LORT*1923 [000 563-01-B No Obj] (8/31/94) 2332B, I/A, 2563, 2525

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 82 ☐ RO ☑ SRO **Question ID: 0153375** **Origin Modified** ☑ Memory? (Check=Yes)

While preparing for an Aerated Waste Discharge, the PEO reported to the Shift Manager that during the initial setup of the Aerated Waste System radiation monitor (RM-9116), the rad. monitor appears to be failed such that the discharge isolation valves will NOT close on a high rad. alarm. I&C trouble-shooting reveals a three (3) day repair time for the control circuit.

Based on ADMINISTRATIVE Requirements, which of the following actions must be taken to COMPLETE this discharge?

A A SECOND sample must be drawn and analysis results verified by a SECOND Chemist, before the tank may be discharged. ☑

B The Chemist must resample the tank and calculate a new discharge LIMIT for the existing permit based on the maximum allowed by 10CFR20. ☐

C The Aerated Waste Monitor Tank must be discharged at a flow rate based on the quantity of the radioactive isotope with the GREATEST concentration. ☐

D I&C must repair or replace the rad monitor BEFORE the Aerated Waste Monitor Tank may be discharged. ☐

Justification SP 2617A; If the rad monitor fails any pre-discharge check, it must be considered inoperable and the applicable actions taken. Tech. Specs. require a second sample be drawn and calculated by a second Chemist for an inop. rad. Monitor (#2 is wrong).
It is not necessary to repair or replace the rad. monitor in order to perform the discharge (#4 is wrong).
There is no difference in the way the "limits" are calculated when the rad. monitor is inop (#3 is wrong).
ALL isotopes must be considered when calculating a discharge permit, regardless of the rad. monitor status (#3 is really wrong).

Reference MP2 LOIT DSP-02-C MB-0001 2617A, 2617, ARW, RM, T.S.

NRC K/A System/E/A

NRC K/A Generic

System 068 Liquid Radwaste System (LRS)

Number A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of automatic isolation

Importance RO/SRO 3.3 3.3

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

☐ RO ☑ SRO | Question ID: 0153375 | Origin Parent | ☐ Memory? (Check=Yes)

While preparing for an Aerated Waste Discharge, the PEO reported to the Shift Manager that during the source check of the Aerated Waste System radiation monitor (RM-9116) there was no change in the indicated count rate. I&C trouble-shooting reveals a three (3) day repair/replace time for RM-9116. Based on ADMINISTRATIVE Requirements, which one of the following actions must be taken to COMPLETE this discharge?

A A second sample must be drawn and analysis results verified by a second Chemist BEFORE the tank may be discharged. ☑

B The Chemist must resample the tank and calculate a new discharge LIMIT for the permit based on an inoperable detector. ☐

C The Aerated Waste Monitor Tank must be discharged at a flow rate based on the quantity of the most radioactive isotope. ☐

D I&C must repair or replace the radmonitor BEFORE the Aerated Waste Monitor Tank may be discharged. ☐

Justification SP 2617A; If the radmonitor fails the source check it must be considered inoperable and the applicable actions taken. Tech. Specs. require a second sample be drawn and calculated by a second Chemist for an inop. rad. monitor.$$It is not necessary to repair/replace the rad. monitor in order to perform the discharge.$$There is no difference in the way the "limits" are calculated when the rad. monitor is inop.$$ALL isotopes must be considered when calculating a discharge permit, regardless of the rad. monitor status.

Reference MP2*LORT*2513 [069 PIO-04-C 4799] (11/21/97) 2617A, 2617, ARW, RM, T.S.

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 83 ☐ RO ☑ SRO **Question ID: 0153748** **Origin Modified** ☐ Memory? (Check=Yes)

The plant is operating at 100% power when a failure in the selected pressurizer pressure controller causes actual pressure to drop to 2200 psia.

Operator action must be taken to prevent which of the following design concerns of operating at this pressure (2200 psia)?

A Potential for severe damage to the fuel due to centerline melt. ☐

B Loss of RCS integrity and potential release of radionuclides to the containment atmosphere. ☐

C Fuel cladding may exceed 2200 °F in the event of a LOCA. ☐

D Invalidate the accident and transient analysis by operating outside the assumed initial conditions. ☑

Justification Operating at 2200 psia is in violation of the DNB Tech. Spec. The basis for this T.S. is stated in answer #4

Reference MP2 LOIT PLC-01-C MB-2327 2304A, PLPCS

NRC K/A System/E/A

System 027 Pressurizer Pressure Control System (PZR PCS) Malfunction

Number AA2.16

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Actions to be taken if PZR pressure instrument fails low

Importance RO/SRO 3.6 3.9

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

☐ RO ☑ SRO | Question ID: 0153748 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is operating at 100% power when the selected pressurizer pressure transmitter (PI-100Y) fails high, causing actual pressure to drop to 2225 psia. Channel 'X' of pressure control is unavailable. Which one (1) of the following describes the action required to RAISE the heat output of the proportional heaters to help return pressure to 2250 psia?

A Shift Channel 'Y' to Manual and RAISE the controller output. ☐

B Shift Channel 'Y' to Manual and LOWER the controller output. ☑

C Select LOCAL MODE and raise the pressure setpoint. ☐

D Leave as is and LOWER the Auto setpoint. ☐

Justification Raising output will open the spray valves. Lowering output will raise prop. heater output. The pressure controller has no "local mode" (that's the LEVEL controller).$$$$[This question is also validated for objective # 5345]

Reference MP2*LORT*4755 [010 PLC-01-C 4818] (7/5/97) 2304A, PLPCS

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 84 ☐ RO ☑ SRO **Question ID: 0153881** **Origin Modified** ☐ Memory? (Check=Yes)

The plant has just tripped due to a Loss Of Offsite Power and the RCS is stabilizing in Natural Circulation, with steam generator levels at ~195" each. The SPO has not noticed that an Auto Aux. Feed Actuation has occurred and feed flow has risen to ~350 gpm per steam generator (SG). Actual required feed flow at this time is ~200 gpm per SG.

Which of the following describe how Heat Removal, RCS Th, and RCS delta-T will respond to this event over the next 10-15 minutes?

A Heat removal rate goes up RCS Th goes down RCS delta-T goes up ☑

B Heat removal rate is stable RCS Th goes down RCS delta-T goes down ☐

C Heat removal rate goes up RCS Th is stable RCS delta-T goes up ☐

D Heat removal rate goes down RCS Th goes up RCS delta-T goes up ☐

Justification RCS Tc goes down causing delta-T to go up, thereby increasing Natural Circulation flow, so heat removal goes up. Within 5 minutes, Th is going down due to heat removal in excess of heat input.

Reference MP2 LOIT E37-01-C MB-5967 EOP, AFW, LNP, HTFF, 2528, NC

NRC K/A System/E/A NRC K/A Generic

System 056 Loss of Offsite Power

Number AA2.88

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Necessary S/G water level for natural circulation

Importance RO/SRO 4.1 4.2

10CFR Link (CFR: 43.5 / 45.13)

☐ RO ☑ SRO Question ID: 0153881 Origin Parent ☐ Memory? (Check=Yes)

Post-trip, due to an LNP, the RCS is stabilized in Natural Circulation with the following conditions: Th - stable at 544F Tc - stable at 520F Aux Feed Flow - 110 gpm per S/G Atmospheric Dump Valves - each 5% open PZR Level - 40% PZR Pressure - 2260 psia Due to instrumentation problems, both channels of Auto Aux Feedwater actuate causing Aux Feed flow to rise to 350 gpm per S/G. Seven minutes pass before the excessive feed situation is identified and the SPO returns Aux feed flow to 110 gpm. How will heat removal rate, RCS Th, and PZR pressure respond to this event until the effects of the SPO's action is seen?

A Heat removal rate goes up RCS Th goes down PZR Pressure goes down ☑

B Heat removal rate is stable RCS Th goes down PZR Pressure goes down ☐

C Heat removal rate goes up RCS Th is stable PZR Pressure goes up ☐

D Heat removal rate goes down RCS Th goes up PZR Pressure goes up ☐

Justification RCS delta T increases thereby increasing Natural Circulation flow, so heat removal goes up. Within 5 minutes, Th is decreasing. Decreasing temperatures contract the RCS volume, thus decreasing PZR level and thusly PZR pressure.

Reference MP2*LORT*4995 [000 528-01-B 1005] (1/10/97) EOP, AFW, LNP, HTFF, 2528, NC

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 85 ☐ RO ☑ SRO Question ID: 0154212 Origin Modified ☐ Memory? (Check=Yes)

The plant is stable at 98% power following the loss of VA-10 (deenergized).
Plant personnel are trouble-shooting the deenergized bus when the following occurs:

* "A" main steam header breaks in containment (CTMT) and the plant is tripped.
* On the trip, 24C fails to transfer to the RSST due to a failure of the RSST-to-24C Feeder breaker.
* ALL other equipment operates as appropriate for the above conditions.
* 2-FW-44 (Aux. Feed Header X-tie) has been closed.
* Aux. Feed is aligned to #2 steam generator (SG) using the Turbine Driven Aux. Feed Pump.
* Both electric Aux. Feed Pumps are secured.

Which of the following actions should the Unit Supervisor direct to prevent over-feeding the #1 SG?

A Manually actuate Facility 1 SIAS, CIAS and EBFAS. ☐

B Reenergize Facility 1 4160 VAC busses via Unit 1. ☐

C Manually isolate #1 Aux. Feed Regulating Valve. ☐

D Ensure all running Condensate Pumps are secured. ☑

Justification The loss of VA-10 locks up the #1 Main Feed Reg. Valve (FRV) in the 100% power position. On the trip, the loss of the RSST to 24C will deenergize 24A and therefore 22A&22C. These 480 load centers power the motor operated valves that are normally used to isolate the locked up #1 FRV. As power to these valves was lost BEFORE any signal could close them, they are all fully open.
As power is still lost to these valves, no ESAS signal can effect them (#1 is wrong).
As soon as the #1 SG depressurizes to </= 500 psia, any running condensate will start feeding it and accelerate the depressurization (#4 is correct).
This deepressurization (and subsequent feeding) will occurr long before any lost bus can be reenergized (#2 is wrong).
With the electric Aux feed pumps secured and FW-44 closed, Aux feed is effectively isolated from the #1 SG (#3 is wrong).

Reference MP2 LOIT FWC-01-B MB-2512 2536, 2525, AFAS, AFW, MSLB

NRC K/A System/E/A

System 059 Main Feedwater (MFW) System

Number A2.03

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Overfeeding event

Importance RO/SRO 2.7 3.1

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

☐ RO ☑ SRO | Question ID: 0154212 | Origin Parent | ☐ Memory? (Check=Yes)

The plant was operating at 100% power when a main steam line breaks in containment. - At the time of the trip, the fast transfer from the NSST to the RSST failed to occur. - Both diesels started and energized their respective buses. Without operator intervention, Auxiliary Feedwater will automatically initiate. Which of the following safety functions will be adversely affected as a result of automatic Auxiliary Feed initiation?

A Vital Auxiliaries & Containment Integrity ☐

B Reactivity Control & Vital Auxiliaries ☐

C RCS Inventory & Containment Integrity ☐

D Reactivity Control & Containment Integrity ☑

Justification Reactivity Control is affected due to the continued cooldown adding positive reactivity. Containment Integrity is affected due to the continued release of energy to Containment.

Reference MP2*LOIT*5735 [000 TAA-01-B 7517] (12/29/97) 2536, 2525, AFAS, AFW, MSLB

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 86 ☐ RO ☑ SRO **Question ID: 0155434** **Origin Modified** ☑ Memory? (Check=Yes)

The plant was at 100% power when DV-10 is lost, resulting in the loss of several components, including the following:

* Loss of breaker indication on C08 for Bus 24C
* Plant trip on closure of both MSIVs.

Which of the following directions is the unit supervisor required to give in response to this loss of DC power?

A Have all four RCPs secured due to loss of control bleedoff flow path. ☐

B Send a PEO to locally trip the "A" Emergency Diesel Generator. ☑

C Reenergize 24C through 24E and 14H. ☐

D Send a PEO to restore Instrument Air by cross-tying with Unit One. ☐

Justification Loss of DV-10 will cause a loss of 24A & 24C, due to no DC to shut the RSST-24C breaker or the "A" D/G output breaker on the trip caused by the MSIVs closing. It will also start the "A" EDG on loss of DC with only overspeed protection.
#1 is not correct because 'C' RBCCW pp, which supplies 'B' & 'D' RCPs, still has power.
#3 is not correct because there is no control power for Buses 24C or 24E (if aligned to 24C).
#4 is not correct because "B" IA compressor will be running fine

Reference MP2 LOIT A06-01-C MB-5725 2345,

NRC K/A System/E/A

System 013 Engineered Safety Features Actuation System (ESFAS)

Number A2.05

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of dc control power

Importance RO/SRO 3.7 4.2

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

☐ RO ☑ SRO | Question ID: 0155434 | Origin Parent | ☐ Memory? (Check=Yes)

The plant was at 100% power when DV-10 is lost, resulting in the following: o Loss of breaker indication on C08 for Bus 24C o Plant trip on closure of both MSIVs. Which of the following statements correctly describes other plant system/component response to this loss of DC power?

A Both "B" and "D" RCPs are running WITHOUT cooling water. ☐

B "A" EDG is running with ONLY overspeed trip protection. ☑

C Both SGFP's have tripped due to loss of ALL Circulating Water pumps. ☐

D ALL 3 Condensate pumps are deenergized. ☐

Justification Loss of DV-10 will cause a loss of 24A & 24C, due to no DC to shut the RSST-24C breaker or the "A" D/G output breaker on the trip caused by the MSIVs closing. It will also start the "A" EDG on loss of DC with only overspeed protection. 'A' is not correct because 'C' RBCCW pp, which supplies 'B' & 'D' RCPs, still has power. 'C' is not correct because the Condensate pps are powered from Buses 25A & B, which still have power.

Reference MP2*LOIT*2796 [063 LVD-01-C 972] (8/27/96) 2345,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

87 ☐ RO ☑ SRO Question ID: 0155871 Origin Bank ☑ Memory? (Check=Yes)

Which of the following includes the administrative requirements for making a temporary change (non-intent) to a plant procedure which is needed to support required plant activities?

A Must be approved by the Unit Director and one (1) SRO before using the procedure; with final documentation, review and approval obtained within 30 days. ☐

B Must be approved by one (1) SRO only before using the procedure; with final documentation, review and approval obtained within 14 days. ☐

C Any member of plant management staff must fully document, review and approve the changed procedure before using the procedure. ☐

D Must be approved by any member of plant management staff and an SRO before using the procedure; with final documentation, review and approval obtained within 14 days. ☑

Justification Per T.S. 6.8.3b. & c. and MP-05-DC-SAP01; any nonintent change to a procedure must be approved by an SRO (#3 is wrong) and a member of plant management staff (#2 is wrong), but not necessarily the Unit Director. Also, it must be approved within 14 days (#1 is wrong).

Reference MP2 LOIT ADM-02-J MB-4824 DC-1, ADMIN,

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G SEE GENERIC K/A	2.2.6 Knowledge of the process for making changes in procedures as described in the safety analysis report.
Importance RO/SRO		2.3 3.3
10CFR Link		(CFR: 43.3 / 45.13)

 # 88 ☐ RO ☑ SRO **Question ID: 0156586** **Origin Modified** ☑ Memory? (Check=Yes)

Which of the following actions is NOT the responsibility of the Shift Manager/Unit Supervisor during the process of reviewing/installing a Bypass/Jumper?

A Assurance that the bypass/jumper is compatible for the use intended. ☐

B Determine whether the verification method will be visual inspection or functional check. ☐

C Determination of the operational conditions or modes that the bypass/jumper will be limited to. ☐

D Performance of the Safety Evaluation and the Integrated Safety Evaluation. ☑

Justification WC-10; Responsibilities of SM/US when reviewing bypass/jumpers for installation.

Reference MP2 LOIT ADM-01-C MB-1426 ADMIN, ACP WC-10,

	NRC K/A System/E/A	NRC K/A Generic
System	2.2 Equipment Control	2.2 Equipment Control
Number	G	2.2.9
	SEE GENERIC K/A	"Knowledge of the process for determining if the proposed change, test or experiment increases the probability of occurrence or consequences of an accident during the change, test or experiment."
Importance RO/SRO		2.0 3.3
10CFR Link		(CFR: 43.3 / 45.13)

☐ RO ☑ SRO Question ID: 0156586 Origin Parent ☐ Memory? (Check=Yes)

Who must complete a Technical/Safety assessment required for a Bypass/Jumper request?

A Any Shift Manager OR Tech Support Engineering. ☐

B Any Shift Manager AND Tech Support Engineering. ☐

C Any Duty Officer OR the Department Head of the requesting department. ☐

D Any Duty Officer AND the Department Head of the requesting department. ☐

Justification WC-10, Attachment 4

Reference MP2*LOIT*3934 [119 WC 2063] (9/9/96) ADMIN, ACP WC-10,

---

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

89 ☐ RO ☑ SRO Question ID: 0156762 Origin Modified ☑ Memory? (Check=Yes)

Which of the following conditions would require implementation of the Functional Recovery Procedure, EOP 2540?

A While performing actions of EOP 2534 (SGTR), it is determined that the radiation release cannot be terminated because both steam generators have tube ruptures. ☐

B After the affected steam generator blows dry during an excess steam demand event in CTMT, it is noted that pressurizer level is not recovering with full safety injection flow and CTMT rad monitors are slowly rising. ☑

C EOP 2525 Diagnostic Flowchart recommends considering EOP 2532 and EOP 2528 due to indications of a LOCA with concurrent loss of offsite power. ☐

D EOP 2532 (LOCA) is being implemented with concurrent indication of severe fuel damage, necessitating a classification of Site Area Emergency. ☐

Justification EOP 2540 Entry Conditions; OP-2260, EOP Users Guide;
#1 - wrong; still just a SGTR, only one SG can be isolated which is covered in the Event Specific EOP.
#2 - correct; conditions given are clear evidence of a loss of RCS inventory by something other than shrinkage on the ESD cooldown.
#3 - wrong; LOOP does not complicate a LOCA to the state that 2540 is necessary and 2540 will offer no better guidance in this situation.
#4 - wrong; fuel damage does not in an of itself indicate that safety functions are not being met, which is the criteria for exiting to 2540.

Reference MP2 LOIT E09-01-C MB-3570 2540, EOP,

	NRC K/A System/E/A	NRC K/A Generic
System	2.4 Emergency Procedures /Plan	2.4 Emergency Procedures /Plan
Number	G	2.4.8
	SEE GENERIC K/A	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.
Importance RO/SRO		3.0 3.7
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

☐ RO ☑ SRO Question ID: 0156762 Origin Parent ☐ Memory? (Check=Yes)

Which of the following conditions would require implementation of the Functional Recovery Procedure, EOP 2540?

A While performing actions of EOP 2534 (SGTR), it is determined that both S/Gs have tube ruptures. ☐

B EOP 2536 (ESD) is being implemented, but the safety function status check acceptance criteria are not being met. ☑

C EOP 2525 Diagnostic Flowchart recommends considering EOP 2532 and EOP 2528 due to indications of a LOCA with concurrent loss of offsite power. ☐

D EOP 2532 (LOCA) is being implemented with a concurrent loss of Fac. 1 vital AC. Fac. 2 vital AC is operable. ☐

Justification EOP 2540 Entry Conditions$$$$

Reference MP2*LOIT*4201 [000 540-01-B 1232] (12/12/96) 2540, EOP,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 90 ☐ RO ☑ SRO **Question ID: 0156794** **Origin Modified** ☐ Memory? (Check=Yes)

An event occurred in the plant which resulted in a reactor trip and entry into EOP 2525. During the performance of EOP 2525, it was determined that Reactivity Control was not being satisfied. Subsequently, entry was made into EOP 2540 with the following conditions:

* Pressurizer pressure = 1950 psia and rising.
* Pressurizer level = 36% and rising.
* RCS Tavg = 532 °F.

Once in EOP 2540, the Unit Supervisor made the determination that RC-3 (Boration Using Safety Injection) would be the most appropriate Reactivity Control success path.

Which of the following describe actions required to successfully complete boration using RC-3?

A Open both PORVs until adequate SI flow is achieved, and then SI flow will cool the plant providing additional pressure reduction. ☐

B Utilize a plant cooldown to depressurize the RCS until adequate SI flow is achieved. ☑

C Raise letdown flow to reduce RCS pressure until adequate SI flow is achieved. ☐

D Utilize the appropriate Inventory and Pressure Control success path for guidance to ensure adequate SI flow is achieved. ☐

Justification Per EOP 2540A, Step 3.4;
#1 - wrong; opening the PORVs under these conditions would put the reactor vessel in control of pressure and not sufficiently reduce it before voiding.
#2 - correct; plant cooldown is required to reduce RCS volume as well as pressure, thus ensuring sufficient volume for HPSI injection.
#3 - wrong; draining the PZR will not reduce pressure enough for HPSI injection (</= 1200 psia) before the PZR is emptied.
#4 - wrong; required guidance is contained in 2540A RC-3 success path. None of the IC or PC success paths consider the special requirements of Si for inventory control.

Reference MP2 LOIT E40-01-C MB-5980 2540, 2540A, EOP,

	NRC K/A System/E/A	NRC K/A Generic
System	024 Emergency Boration	2.4 Emergency Procedures /Plan
Number	GA	2.4.7
	SEE GENERIC K/A	Knowledge of event based EOP mitigation strategies.
Importance RO/SRO		3.1 3.8
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

☐ RO ☑ SRO | Question ID: 0156794 | Origin Parent | ☐ Memory? (Check=Yes)

An event occurred in the plant which resulted in a reactor trip and entry into EOP 2525. During the performance of EOP 2525, it was determined that Reactivity Control was not being satisfied. Subsequently, entry was made into EOP 2540. Once in EOP 2540, the Unit Supervisor made the determination that RC-3 would be the most appropriate Reactivity Control success path. RC-3, Boration using HPSI Pumps, requires that RCS pressure be less than 1200 psia to use this method of boration to the RCS. What methods (if any) are provided in RC-3 to reduce RCS pressure to less than 1200 psia?

A PORVs are used to reduce RCS pressure until SI flow is achieved, and then SI flow will cool the plant providing additional pressure reduction. ☐

B Pressurizer sprays or auxiliary sprays and/or plant cooldown are used to reduce RCS pressure. ☑

C Letdown flow is increased to reduce RCS pressure until SI flow is achieved, and then SI flow will cool the plant providing additional pressure reduction. ☐

D RC-3 doesn't address plant pressure control. This would be addressed by the appropriate Inventory and Pressure Control success path. ☐

Justification EOP 2540A, Step 2.18$$$$

Reference MP2*LOIT*4246 [000 540-01-B 1238] (8/30/96) 2540, 2540A, EOP,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 91 ☐ RO ☑ SRO Question ID: 0156991 Origin Modified ☐ Memory? (Check=Yes)

A pump component manufacturer has just notified plant management that the seal rings used in both containment spray pumps are defective and will cause the pumps to seize if they are run at temperatures of 150°F or more. All containment spray pumps are logged as inoperable and the appropriate action is taken.

All OTHER safety system components are functioning as designed.

Which of the following describes the concern for continued operation with the inoperable containment spray pumps, based on the Technical Specification Basis?

A Inability to limit the fuel cladding temperature to less than 2200 °F in the event of a LOCA. ☐

B Delay in the initial reflood of the reactor core under large break LOCA conditions. ☐

C The generation of larger amounts of hydrogen during a LOCA by the zirconium-water reaction. ☐

D Delay in the reduction of containment pressure during a large excess steam demand event. ☑

Justification #1 - wrong; Bases for Linear Heat Rate limit.
#2 - wrong; function of the SITs, which is a passive system unaffected by the given conditions.
#3 - wrong; Function of Safety Limits and LSSS's.
#4 - correct; CARs are available and more than adequate to meet design limits of a LG-LOCA or ESD in CTMT, but, CTMT spray is much more effective in dropping CTMT pressure post-ESD due to superheated steam that may be present.

Reference MP2 LOIT CSS-01-C MB-2311 2309, SD-12

	NRC K/A System/E/A	NRC K/A Generic
System	022 Containment Cooling System (CCS)	2.2 Equipment Control
Number	GS	2.2.25
	SEE GENERIC K/A	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.
Importance RO/SRO		2.5 3.7
10CFR Link		(CFR: 43.2)

☐ RO ☑ SRO | Question ID: 0156991 | Origin Parent | ☐ Memory? (Check=Yes)

Which of the following is a function of the Containment Spray System during a LOCA?

A Limit the fuel cladding temperature to less than 2200 F. ☐

B Keep the Rx Core covered under small break conditions. ☐

C Limit the amount of hydrogen generated by the zirconium-water reaction. ☐

D All the above ☑

Justification in SD-12$$$$$$$$

Reference MP2*NLO*2015 [026 (No Mod) 10648] (12/2/97) 2309, SD-12

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 92 ☐ RO ☑ SRO Question ID: 0159999 Origin Modified ☐ Memory? (Check=Yes)

A plant startup is in progress with power at 2% when the "A" Main Steam Header ruptures in CTMT. During the performance of EOP-2525, the Unit Supervisor (US) receives the following input:

* "A" Emergency Diesel Generator breaker would not close, "A" EDG manually tripped.
* 24A, 24C and 22E are deenergized, all other busses energized.
* All ESAS components capable of responding have done so.
* "B" Aux. Feed Pump is running feeding #1 SG @ 350 gpm.
* #1 Aux. Feed Regulating Valve appears to be failed OPEN due to a ruptured diaphram in the operator.
* CTMT pressure 28 psig and rising rapidly.

Which of the following should be one of the first actions directed by the US?

A Secure the "B" Aux. Feedwater pump and make preparations to feed #2 SG with the Turbine Driven Aux. Feedwater Pump. ☑

B Start the Turbine Driven Auxiliary Feedwater Pump to supplement the "B" Auxiliary Feedwater Pump. ☐

C Isolate air to the #1 Aux. Feed Regulating Valve by closing both normal and backup air supply valves. ☐

D Re-energize 24C, then restore Facility 1 CTMT Spray and CAR Fans. ☐

Justification #1 - correct; Securing of the feed input to the ruptured SG is a priority, especially with the rupture in CTMT.
#2 - wrong; the TDAFP supplimenting the "B" AFW pump would only degrade the situation faster.
#3 - wrong; the valve fails open on loss of air, this will continue feeding of the effected SG.
#4 - wrong; this will help recover CTMT pressure once Aux. Feed is secured to the ruptured SG.

Reference MP2 LOIT E25-01-S MB-5438 ESAS, 2384

NRC K/A System/E/A		NRC K/A Generic
System	040 Steam Line Rupture	2.4 Emergency Procedures /Plan
Number	GA	2.4.9
	SEE GENERIC K/A	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
Importance RO/SRO		3.3 3.9
10CFR Link		(CFR: 41.10 / 43.5 / 45.13)

☐ RO ☑ SRO | Question ID: 0159999 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is operating at 100% power with Turbine Battery Bus out of service for repairs on D0303. Shortly after the Turbine Battery is isolated, Inverter 2 fails (deenergizes) due to an internal fault. What affect does this have on ESAS?

A All equipment associated with Facility 2 ESAS will be prevented from starting automatically. ☑

B Facility 2 ESAS will be fully actuated and all associated equipment will go to its accident condition. ☐

C Both facilities of Containment Purge Valve Isolation will actuate ☐

D There is NO affect on ESAS due to the "dual" power supply setup. ☐

Justification With Turbine Battery Bus out to repair D0303, Inverters 5 & 6 are dead. The subsequent loss of Inverter 2 will result in the loss of Vital AC Bus VA20, which will deenergize Facility 2 ESAS Actuation Cabinet. With Facility 2 Actuation Cabinet deenergized, all associated equipment will be prevented from starting automatically.

Related KA: 000/057/EA206 - 3.2/3.7

Reference MP2*LORT [013 ESA-01-C 3977] (10/23/97) ESAS, 2384

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 93 ☐ RO ☑ SRO **Question ID: 0171902** **Origin Modified** ☐ Memory? (Check=Yes)

The plant is in normal operation at 65% power, all rods out (ARO), with the CEA Partial Movement surveillance in progress.
When CEA #4 in Group 5 is inserted to 175 steps, it suddenly slips to 80 steps withdrawn.

Then, while I&C is investigating CEA #4, the following NEW alarms are received:

* "CEA REG GP 1 PPDI LIMIT"
* "CEA REG GP 1 PDI LIMIT"
* "CEA REG GP 1 DEV"
* "CEA REG GP 1 GROSS DEV"
* "CEA DROPPED RD SW"

Which of the following actions should the Unit Supervisor direct be taken in this condition?

A Immediately commence an orderly shutdown until I&C completes all repairs on CEDS. ☐

B Immediately trip the plant and carry out EOP-2525. ☑

C Allow I&C to replace the power supply. Then, withdraw CEA #4 to at least 175 steps within the next 45 minutes or log into TSAS 3.0.3. ☐

D Allow I&C to replace the power supply. Then, withdraw CEA #4 AND the Group #1 CEA to at least 175 steps within the next 45 minutes or log into TSAS 3.0.3. ☐

Justification New alarms are indication of a SECOND dropped CEA, requiring immediate trip due to operation outside of design basis.

Reference MP2 LOIT CED-01-C MB-2246 2556

	NRC K/A System/E/A	NRC K/A Generic
System	005 Inoperable/Stuck Control Rod	2.4 Emergency Procedures /Plan
Number	GA	2.4.50
	SEE GENERIC K/A	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
Importance RO/SRO		3.3 3.3
10CFR Link		(CFR: 45.3)

☐ RO ☑ SRO | Question ID: 0171902 | Origin Parent | ☐ Memory? (Check=Yes)

The plant is in normal operation at 100% power, when CEA #4 in Group 5 is determined to be UNTRIPPABLE. What action should be taken in this condition?

A Commence an orderly shutdown immediately. ☐

B Commence boration immediately and increase RCS boron concentration by 350 ppm. within 1 hr., or log into TSAS 3.0.3. ☑

C Commence boration immediately and increase RCS boron concentration by 350 ppm within 1 hr., or trip the reactor. ☐

D Immediately trip the reactor and emergency borate. ☐

Justification AOP 2556 Step 4.8

Reference MP2*LOIT*2556

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

 # 94 ☐ RO ☑ SRO **Question ID: 0256689** **Origin Modified** ☑ Memory? (Check=Yes)

Maintenance personnel want to weld-repair a through-wall pipe leak on the outlet of the Waste Gas System Discharge Radiation Monitor.

Which of the following includes required actions that should be performed to ensure personnel safety before repairing this leak?

A A temporary glove box should be constructed to contain any leaking gas as the weld repair is being made. ☐

B All associated piping should be purged with nitrogen before any weld repair is attempted. ☑

C The Waste Gas System compressors must be tagged out to ensure flow through the rad. monitor is isolated. ☐

D The Waste Gas rad. monitor high voltage power supply needs to be deenergized with grounds installed before allowing work in the area. ☐

Justification #1 - wrong; this would CONTAIN the potentially explosive gas around the ignition source, raising the chance of an explosion.
#2 - correct; the potential for H2 in the lines must be accounted for.
#3 - wrong; compressors do not flow through the rad monitor, they discharge to decay tanks.
#4 - wrong; deenergizing the rad monitor is OK, but NOT necessary. Installing grounds is definitely NOT necessary.

Reference MP2 LOIT ADM-02-J MB-4765 2337, GRW,

	NRC K/A System/E/A	NRC K/A Generic
System	073 Process Radiation Monitoring (PRM) System	2.1 Conduct of Operations
Number	GS	2.1.26
	SEE GENERIC K/A	"Knowledge of non-nuclear safety procedures (e.g. rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen)."
Importance RO/SRO		2.2 2.6
10CFR Link		(CFR: 41.10 / 45.12)

☐ RO ☑ SRO Question ID: 0256689 Origin Parent ☐ Memory? (Check=Yes)

Which of the following tanks is CONTINUOUSLY vented to the Waste Gas Surge Tank?

A Clean Waste Monitor Tank "B" ☐

B Equipment Drain Sump Tank ☑

C Aerated Waste Drain Tank "B" ☐

D Clean Waste Receiver Tank "B" ☐

Justification $$1) AWDT "B" is vented to the Main Exhaust System.$$$$2) CWMT "B" is pressurized with Nitrogen, a relief valve on the CWMT relieves back to the WGST.$$$$3) P & ID 25203-26021 sheet 2$$$$$$

Reference MP2*LOIT*4114 [071 GRW-04-C NLO-2b] (8/22/96) 2337, GRW,

NRC K/A System/E/A NRC K/A Generic

System X

Number

Importance RO/SRO

10CFR Link

95 ☐ RO ☑ SRO Question ID: 1000011 Origin New ☐ Memory? (Check=Yes)

Which of the following manual actuations would be considered a NON-CONSERVATIVE action?

A Initiation of SRAS with the RWST level at 20% and dropping during a large-break LOCA. ☑

B Initiation of Once-Through-Cooling with both steam generators at 100" and dropping and only one HPSI pump available. ☐

C Maintaining the operating crew on station, past normal watch relief, with the reactor achieving its fifth (5th) doubling of counts on startup. ☐

D Maintaining the plant at power with a loss of all three Auxiliary Feedwater Pumps. ☐

Justification #1 - correct; Early initiation of SRAS is non-conserve because of the loss of inventory to the CTMT sump.
#2 - wrong; EOPs state early initiation of OTC should be attempted if less than optimal equipment is available.
#3 - wrong; reactor startup procedure states that shift turnover should NOT occur with the reactor approaching criticality.
#4 - wrong; loss of main feed post-trip would leave the plant without any source of SG feedflow.

Reference MP2 LOIT C97503 MB-0524 EOP, 2260, Conserve Decision

---

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.20
	SEE GENERIC K/A	Ability to execute procedure steps.
Importance RO/SRO		4.3 4.2
10CFR Link		(CFR: 41.10 / 43.5 / 45.12)

 # 96 ☐ RO ☑ SRO Question ID: 1000015 Origin New ☐ Memory? (Check=Yes)

Due to grid demand, Unit Two and Unit Three are carrying the maximum amount of vars. The surveillance run on the 'A' Emergency Diesel Generator (EDG) is being performed, with kvar loading on the EDG equal to approximately 75% of kW load.

Then, the following occurs:

* Unit Three is manually tripped due to secondary plant problems.
* The annunciator "DIESEL GEN 12U TROUBLE" alarms (window A-36, C-08).

The RO performing the surveillance reports that the 'A' EDG var loading has doubled.

Which of the following describe the actions required for continued EDG operation?

A Momentarily place the "A" DG "VOLTAGE CNTL REG AUTO CNTL" switch in the raise position. ☐

B Momentarily place the "A" DG "VOLTAGE CNTL REG AUTO CNTL" switch in the lower position. ☑

C Momentarily place the "A" DG "CNTL GOVERNOR CNTL switch in the lower position. ☐

D Momentarily place the "A" DG "CNTL GOVERNOR CNTL switch in the raise position. ☐

Justification #1 - wrong; power factor/var loading is exceeded. This will raise vars, making conditions worse.
#2 - correct; this will lower vars as required for the conditions.
#3 - wrong; this will lower EDG load, without changing vars, making the power factor worse.
#4 - wrong; raising EDG real load would also raise machine heating, making conditions worse for the EDG.

Reference MP2 LOIT ADM-02-J MB-4791 EDG, SRO

NRC K/A System/E/A

System 064 Emergency Diesel Generators (ED/G)

Number A2.19

Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of high VARS on ED/G integrity

Importance RO/SRO 2.5 2.7

10CFR Link (CFR: 41.5 / 43.5 / 45.3 / 45.13)

NRC K/A Generic

97 ☐ RO ☑ SRO Question ID: 1000017 Origin New ☑ Memory? (Check=Yes)

A plant cooldown is in progress.

* Shutdown Cooling has been initiated.
* RCS Temperature is 180°F.
* The steam generators are available.

A loss of Shutdown cooling occurs due to failure of the LPSI pumps.

When will you declare the plant has entered Mode 4?

A When any RCS Tcold is greater than 200°F. ☐

B When any RCS Thot is greater than 200°F. ☐

C When the average of both RCS cold leg temperatures and both hot leg temperatures are greater than 200°F. ☑

D When the average of the core exit thermocouple temperatures are greater than 200°F. ☐

Justification Loss of shutdown cooling flow will result in a heatup that results in development of natural circulation. Section 1 of the Technical Requirements Manual provides clarification of RCS temperatures for Mode determination. It specifies that the AVERAGE of both RCS cold leg temperatures and both hot leg temperatures are used when in natural circulation.

Reference MP2 LOIT A72-01-C MB-5821 SDC, 2572, T.S.

	NRC K/A System/E/A	NRC K/A Generic
System	2.1 Conduct of Operations	2.1 Conduct of Operations
Number	G	2.1.22
	SEE GENERIC K/A	Ability to determine Mode of Operation.
Importance RO/SRO		2.8 3.3
10CFR Link		(CFR: 43.5 / 45.13)

 # 98 ☐ RO ☑ SRO **Question ID: 1000018** **Origin New** ☑ Memory? (Check=Yes)

A plant event is in progress that substantially raised the radiation levels in the Auxiliary Building. In order to complete a required action in the governing EOP, a Plant Equipment Operator (PEO) must operate equipment in an "above normal" radiation field of the Auxiliary Building which will probably result in ten (10) Rem TEDE exposure. The event has been ongoing for two (2) hours and the SERO is fully manned.

Which of the following SERO positions is authorized to raise the exposure limits of the PEO needing to enter this radiation area?

A Assistant Director Technical Support (ADTS) ☑

B Manager Control Room Operations (MCRO) ☐

C Shift Manager/Unit Supervisor (SM/US) ☐

D Manager Operational Support Center (MOSC) ☐

Justification Per EPOP4411A, the ADTS is responsible for any emergency exposure upgrades up to a limit of 25 rem TEDE.

Reference MP2 LOIT LICOPR EP-0216 EPIP, EPOP, 4400, 4411

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.4
	SEE GENERIC K/A	"Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized."
Importance RO/SRO		2.5 3.1
10CFR Link		(CFR: 43.4 / 45.10)

99 ☐ RO ☑ SRO Question ID: 1000019 Origin New ☐ Memory? (Check=Yes)

The plant is in Mode 5 with the following conditions:

* Shutdown Cooling System is in operation
* Shutdown cooling return temperature T351X is 140°F.
* Both reactor coolant loops with associated steam generator and one associated RCP per loop is operable.

Then, a loss of shutdown cooling occurs and RCS temperature reaches 240°F before SDC flow is reestablished.

What does AOP 2572 "Loss of Shutdown Cooling" specify regarding the cooldown as you take actions to return the plant to the initial condition?

A Technical Specification cooldown limits may be exceeded if cooling back down following unplanned Mode changes. ☐

B A one hour "soak" is required following a heatup of > 100°F before starting to cool down. ☐

C The cooldown rate is limited to 30°F/hour until Mode 5 is achieved and then 5°F/hour ☐

D The cooldown rate is limited to 30°F/hour. ☑

Justification per AOP-2572 Loss Of SDC and restoration:
#1 - wrong; never allowed unless prescribed by EOPs.
#2 - wrong; no such requirement.
#3 - wrong; see #4
#4 - correct; T.S. on RCS Cooldown Limits when >230°F is 80 °F/hr. However, with RCS at 240 °F, 30 °F/hr.limit should be used to ensure TS limit <230°F is not violated once cooldown is started.

Reference MP2 LOIT A72-01-C MB-5840 2572, SDC

NRC K/A System/E/A

System 025 Loss of Residual Heat Removal System (RHRS)

Number AA2.05

Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Limitations on LPI flow and temperature rates of change

Importance RO/SRO 3.1 3.5

10CFR Link (CFR: 43.5 / 45.13)

NRC K/A Generic

 # 100 ☐ RO ☑ SRO **Question ID: 1000021** **Origin New** ☑ Memory? (Check=Yes)

A steam generator tube rupture (SGTR) has occurred in Unit 2. The Director of Station Emergency Operations has decided to have personnel seek shelter to limit exposure from the radioactive plume. The wind is blowing out of the southwest, from a heading of 240°.

Using the attached site map, in which of the following areas are personnel in danger of direct exposure to the blowing radioactive plume?

A North Access Point (NAP). ☐

B South Access Point (SAP). ☑

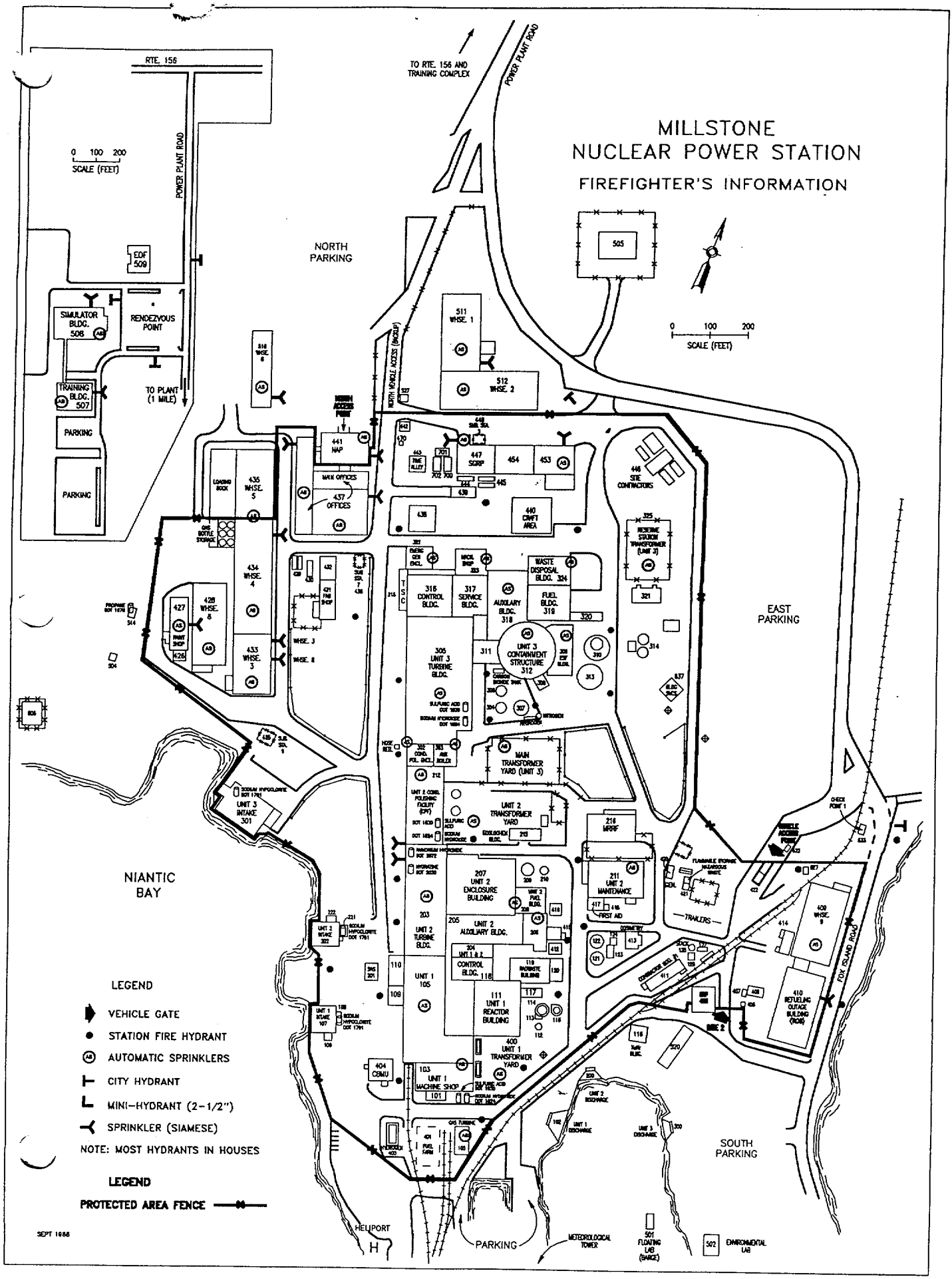
C Main Cafeteria (Bldg. 475). ☐

D Unit Two Turbine Building. ☐

Justification Per the supplied site map, and converting "from 240°" to a "blowing to" heading of 60°, the SAP is in the direct path of the plume.

Reference MP2 LOIT LICOPR EP-0212 EPIP, EPOP, 4400, 4411

	NRC K/A System/E/A	NRC K/A Generic
System	2.3 Radiation Control	2.3 Radiation Control
Number	G	2.3.10
	SEE GENERIC K/A	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.
Importance RO/SRO		2.9 3.3
10CFR Link		(CFR: 43.4 / 45.10)


MILLSTONE
NUCLEAR POWER STATION
FIREFIGHTER'S INFORMATION
RTE. 156
TO RTE. 156 AND TRAINING COMPLEX
POWER PLANT ROAD
0 100 200
SCALE (FEET)
NORTH PARKING
EAST PARKING
SOUTH PARKING
NIANTIC BAY
SIMULATOR BLDG. 506
RENDEZVOUS POINT
TRAINING BLDG. 507
TO PLANT (1 MILE)
PARKING
EOF 509
505
511 WHSE. 1
512 WHSE. 2
516 WHSE. 6
NORTH VEHICLE ACCESS (BACKUP)
MAIN ACCESS POINT
441 MAP
MAIN OFFICES
437 OFFICES
435 WHSE. 5
434 WHSE. 4
433 WHSE. 3
428 WHSE. 8
427
426
LOADING DOCK
GAS BOTTLE STORAGE
PAINT SHOP
WHSE. 3
WHSE. II
438
439
440 CRAFT AREA
445
447 SCRAP
454
453
446 SITE CONTRACTORS
325 RESERVE STATION TRANSFORMER (UNIT 3)
321
316 CONTROL BLDG.
317 SERVICE BLDG.
AUXILIARY BLDG. 318
FUEL BLDG. 319
320
WASTE DISPOSAL BLDG. 324
305 UNIT 3 TURBINE BLDG.
311
UNIT 3 CONTAINMENT STRUCTURE 312
310
313
314
MAIN TRANSFORMER YARD (UNIT 3)
UNIT 2 TRANSFORMER YARD
213
216 MRRF
207 UNIT 2 ENCLOSURE BUILDING
205 UNIT 2 AUXILIARY BLDG.
203 UNIT 2 TURBINE BLDG.
204 UNIT 1 & 2 CONTROL BLDG.
118
119 RADWASTE BUILDING
110
UNIT 1 105
111 UNIT 1 REACTOR BUILDING
400 UNIT 1 TRANSFORMER YARD
103 UNIT 1 MACHINE SHOP
404 CBMU
211 UNIT 2 MAINTENANCE
417 FIRST AID
TRAILERS
TURNABLE STORAGE HAZARDOUS WASTE
CHECK POINT 1
VEHICLE ACCESS POINT
409 WHSE. 9
410 REFUELING OUTAGE BUILDING (ROB)
FOX ISLAND ROAD
GATE 2
UNIT 3 INTAKE 301
UNIT 2 INTAKE 302
UNIT 1 INTAKE 107
SODIUM HYPOCHLORITE DOT 1791
HELIPORT
H
PARKING
METEOROLOGICAL TOWER
501 FLOATING LAB (BARGE)
502 ENVIRONMENTAL LAB
LEGEND
VEHICLE GATE
STATION FIRE HYDRANT
AUTOMATIC SPRINKLERS
CITY HYDRANT
MINI-HYDRANT (2-1/2")
SPRINKLER (SIAMESE)
NOTE: MOST HYDRANTS IN HOUSES
LEGEND
PROTECTED AREA FENCE
SEPT 1988