Final Submittal
(Blue Paper)

MCGUIRE AUGUST/SEPTEMBER 2002
50-369 & 50-370/2002-302

FINAL WRITTEN SRO EXAM
WITH ANSWERS & KAs

1. Senior Operator Written Examination

The following questions will have reference material provided.

- 34.1 Tech Specs. 3.6.1 and 3.6.3
- 93.1 Data Book Curve 1.10B, E-1 and Steam Tables
- 311.1 Steam Tables
- 1011 E-1, Steam Tables and Data Book Curve 1.10B

Bank Question: 959 **Answer: B**

1 Pt(s) The NCPs are limited to 3 consecutive starts in any 2-hour period. There is an additional requirement of a minimum idle period of 30 minutes between restarts. What is the reason for these limitations?

A. This restriction assures that the oil temperature will decrease to design specifications between restart attempts.

B. This restriction prevents overheating the motor windings due to high starting currents.

C. This restriction allows the NCP seals to fully reseat between NCP oil lift pump cycles.

D. This restriction ensures that natural circulation is reestablished between starts to prevent a cold-water addition accident.

Distracter Analysis:

A. **Incorrect**: The reason is stator-winding temperatures
Plausible: if the candidate remembers this as a high temperature concern - another adverse consequence of multiple starts on motors

B. **Correct Answer**:

C. **Incorrect**: The reason is stator-winding temperatures
Plausible: NCP seal seating is the basis for a different cold start precaution – seal leakoff limit after seal replacement

D. **Incorrect**: The reason is stator-winding temperatures
Plausible: if the candidate is confused regarding the basis for the precaution.

Level: RO & SRO

KA: 000015/17 AK3.01 (2.5/3.1)

Source: BANK

Level of Knowledge: Memory

Lesson Plan Objective PS-NCP-Obj. 10

References:

1. OP-MC-PS-NCP page 35
2. OP/1/A/6150/002A

Bank Question: 967 **Answer: D**

1 Pt(s) Unit 1 is responding to a feed line break inside containment. Given the following events and conditions:

- Completed EP/1/A/5000/E-0 *(Reactor Trip or Safety Injection)*
- Entering EP/1/A/5000/E-1 *(Loss of Reactor or Secondary Coolant)*
- The STA reported the following valid Critical Safety Functions:
  - Subcriticality - yellow path
  - Containment Pressure - orange path
  - Heat Sink - orange path
  - All other CSFs are green or yellow

Which one of the following statements correctly describes the proper procedure flow path?

A. **Remain in E-1** ***(Loss of Reactor or Secondary Coolant)***

B. **Transition immediately to FR-S.2** ***(Response to Loss of Core Shutdown)***

C. **Transition immediately to FR-Z.1** ***(Response to High Containment Pressure)***

D. **Transition immediately to FR-H.1** ***(Response to Loss of Secondary Heat Sink)***

Distracter Analysis:

A. **Incorrect**: - must transition to CSFs
Plausible: - if candidate does not know restrictions and applicability of F-0

B. **Incorrect**: - Orange path does not have priority over red paths
Plausible: - if candidate does not know rules of usage

C. **Incorrect**: -
Plausible: - if candidate does not know CSF rules of usage

D. **Correct answer**: - Heat sink has priority over integrity

Level: SRO Only

KA: WE/05 EA2.1 (3.2/4.4)

Source: **NEW**

Level of Knowledge: Analysis

Lesson Plan Objective: OP-MC-EP-INTRO Objs. 1,3,11

References
1. OMP 4-3 pages 16-19

Bank Question: 969 ***Answer: C***

1 Pt(s) Following a Small Break LOCA inside containment the following conditions exist:

- Containment Temperature is 145 degrees F.
- Containment Pressure is 3.2 psig
- Reactor Coolant temperature is 500 degrees F.
- Lower Containment humidity is 100%

Adverse Containment Conditions are determined by:

A. Calculating the containment saturation pressure.

B. The operator taking into account the containment temperature.

C. The operator through the use of containment pressure.

D. The saturation temperature of the Reactor Coolant System versus containment pressure.

Distracter Analysis:

A. Incorrect:.
Plausible:.
B. Incorrect:.
Plausible:.
C. Correct:
D. Incorrect:.
Plausible:.

Level: RO&SRO

KA: EAPE09.K3.16 (3.8/4.1)

Lesson Plan Objective:

Source: New

Level of knowledge: memory

References: EP/E-0, Step 13

Bank Question: 971 **Answer: B**

1 Pt(s) Unit 2 has experienced a load rejection from 100% R.T.P. due to the trip of the "2A" FWPT. As a result of the transient the following conditions exist:

- Pressurizer level is greater than setpoint
- 2NV-238 *(Charging Line Flow Control)* is closing
- NC pump seal injection is <5 gpm per pump

Which one of the following statements correctly describes the required operator action to restore adequate and proper NC pump seal injection flowrate?

A. Open 2NV-241 *(Seal Inj. Flow Control)*

B. Close 2NV-241

C. Close 2NV-238 while opening 2NV-241.

D. Open 2NV-238 while opening 2NV-241.

Distracter Analysis:

A. Incorrect:
Plausible:

B. Correct:

C. Incorrect:
Plausible

D. Incorrect:
Plausible:

Level: RO&SRO

KA: APE 000022 AA1.01(3.4/3.3)

Lesson Plan Objective: PS-NV SEQ 3

Source: New

Level of knowledge: Memory

References: OP-MC-PS-NV page 117

Bank Question: 984 ***Answer: A***

1 Pt(s) Which one of the following pre-planned activities that has been evaluated and approved in advance by Operations can take place during shift turnover?

A. Dilution to ECB

B. ZPPT

C. Drain to Mid-Loop

D. Reactor Startup

Distracter Analysis:

A. **Correct**:
B. **Incorrect**: Should not be scheduled during turnover
Plausible:
C. **Incorrect**:Should not be scheduled during turnover
Plausible
D. **Incorrect**: Should not be scheduled during turnover
Plausible:.

Level: RO&SRO

KA: G2.1.3 (3.0/3.4)

Lesson Plan Objective: OP-MC-ADM-OMP Obj 2

Source: New

Level of knowledge: memory

References:
1. OMP 2-2 page 33

Bank Question: 034.1 **Answer: B**

1 Pt(s) Unit 1 is heating up in Mode 4 with NCS temperature at 230°F.

Which one of the following conditions would violate containment integrity if the condition existed for 42 hours in the current mode?

REFERENCES PROVIDED: Tech Spec 3.6.1 & 3.6.3

A. 1KF-122 (*Fuel Transfer Tube*) is known to be leaking by its seat.

B. 1RN-253A (*RB Non ESS Sup Cont Inside Isol*) failed its stroke-timing test, but can be closed from the control room.

C. 1KC-429B (*Rx Bldg Drain Hdr Cont Inside Isol*) power supply has failed, and is closed.

D. 1VQ-1A (*Cont Air Rel Inside Isol)* has its air supply removed and has failed closed.

Distracter Analysis:

A. **Incorrect**: 1KF-122 is normally open, and not automatically closed
Plausible: if the candidate does not recognize that integrity is provided by the blind flange.

B. **Correct**:

C. **Incorrect**: Closed without power retains containment integrity
Plausible: This is an automatic cont. isolation valve that is inoperable

D. **Incorrect**: closed with air isolated retains containment integrity.
Plausible: This is an automatic cont. isolation valve that is inoperable

Level: SRO Only 10CFR55.43(b)(2)

KA: APE069A2.01 (3.7 / 4.3)

Lesson Plan Objective: CNT-CNT SEQ 9

Source: Bank; Ques_34.1 McGuire NRC 2002

Level of knowledge: Comprehension

References:
1. OP-MC-CNT-CNT page 31
2. Tech Spec 3.6.1 and 3.6.3 - PROVIDED

Bank Question: 037.2 **Answer: A**

1 Pt(s) Unit 1 was conducting a reactor startup following a refueling outage. Given the following conditions during the reactor startup:

- N-31 indicates 2.1×10^4 cps
- N-32 indicates 2.0×10^4 cps
- N-35 indicates 5.5×10^{-11} amps
- N-36 indicates 1.0×10^{-10} amps
- Rods are in manual with no rod motion
- SR and IR NIs are slowly increasing
- T_{ave} is holding steady

Which one of the following best explains the indications?

A. N-35 compensating voltage is set too high

B. N-35 compensating voltage is set too low

C. N-36 compensating voltage is set too high

D. N-36 compensating voltage is set too low

Distracter Analysis:

A. **Correct**: N-35 reads too low for the conditions given, compensating voltage is too high.

B. **Incorrect**: N-35 reads too low.
Plausible: candidate reverses the effect of compensation.

C. **Incorrect**: overlap is proper for N-36
Plausible: If candidate does not know that P6 = 1x10-10 IR is about 2x104 CPS SR.

D. **Incorrect**: overlap is proper for N-36
Plausible: If candidate does not know that P6 = 1x10-10 IR is about 2x104 CPS SR.

Level: RO&SRO

KA: SYS 015 K5.02(2.7/2.9)

Lesson Plan Objective: IC-ENB SEQ 7

Source: Bank

Level of Knowledge: analysis

References:
1. OP-MC-IC-ENB pages 25, 69, 79

Bank Question: 093.1 **Answer: C**

1 Pt(s)

Unit 1 was responding in E-1 *(Loss of Reactor or Secondary Coolant)* to small break LOCA.

Given the following parameters at the indicated times:

Parameter	0200	0205	0210
• NCS pressure (psig)	1500	1550	1600
• Core exit T/C temp (°F)	576	584	586
• T_{ave} (°F)	567	569	572
• T_{hot} (°F)	570	574	578
• T_{cold} (°F)	563	564	566
• Pressurizer level (%)	10%	19%	28%
• Containment pressure (psig)	0.7	0.9	1.1

CA flow to all 4 S/Gs exceeds 450 gpm from 0200 to 0210.

What is the earliest time (if any) when adequate subcooling exist such that the operators can transition to ES-1.1 *(Safety Injection Termination)*?

REFERENCES PROVIDED:
E-1
Databook Curve 1.10B
Steam Tables

A. Transition to ES-1.1 at 2:00

B. Transition to ES-1.1 at 2:05

C. Transition to ES-1.1 at 2:10

D. Remain in E-1, SI flow may be not terminated

Distracter Analysis:

The objective of this question is to determine if the candidates can apply the SI termination criteria and assess saturation conditions in the NC system. **Use of the Unit 1 Databook curve 1.10B is NECESSARY.** Accurate use of the steam tables will lead to an incorrect answer due to a failure to consider the instrument errors involved. If Steam Tables are used to determine subcooling, then at 0205 the candidates have met the criteria to terminate SI.

From the steam tables:

1500 psig + 14.6 = 1514.6 psia
597 °F = 1510 psia saturation pressure

A. **Incorrect:** Not >11% PZR level. saturated using curve 1.10B, which accounts for instrument error and must be used to determine all EOP transitions.
Plausible: if the candidate uses Databook, this point is subcooled – < 578 °F.

B. **Incorrect**: - not saturated - by curve book - >582 °F
Plausible: - if the candidate does not determine Psat correctly - or if he uses RTD temperatures in place of T/C temperatures for core temperature determination.

C. **Correct answer:** by the curve book, the core is < 588°F.

D. **Incorrect**: meets the criteria at 0210.
Plausible: - if the candidate does not determine P-sat correctly thinks ACC values come in at 1 psig containment pressure.

Level: SRO Only 55.43b(5)

KA: 000074 K1.01 (4.3/4.7)

Lesson Plan Objective: IC-ICM SEQ 9

Source: Bank

Level of knowledge: analysis

References:
1. OP-MC-IC-ICM pages 33, 35
2. EP/1/A/5000/E-1 page 5
3. Unit 1 Databook Curve 1.10B
4. Steam Tables
5. OMP 4-3 page 9

Bank Question: 125.1 ***Answer: C***

1 Pt(s) A worker is preparing to enter a 'High Radiation Area' to work on a valve in the reactor building. During the pre-job briefing, RP states that the expected whole body radiation levels are as follows:

- Dose rate in the center of the room = 100 mrem/hr
- Dose rate 18 inches from valve = 200 mrem/hr
- Contact reading = 1100 mrem/hr

How should the area around the valve be classified?

A. The room is a 'Radiation Area'; the valve is a HOT SPOT

B. The room is a 'High Radiation Area'; valve is NOT a HOT SPOT

C. The room is a 'High Radiation Area'; the valve is a HOT SPOT

D. The room is an 'Extra High Radiation Area'; the valve is NOT a HOT SPOT

Distracter Analysis:

A. **Incorrect**: 100 mrem/hr general area dose rate > 100 mrem/hr = high radiation area
Plausible: if the candidate does not know that the lower limit for a high radiation area is 100 mrem/hr – and the valve is a hot spot

B. **Incorrect**: The valve is a hot spot
Plausible: the room is a high radiation area – if the candidate thinks that the definition of a hot spot is > 5x general area dose rate when measured 18 inches from the contact reading

C. **Correct Answer**:

D. **Incorrect:** The room is not an extra high radiation area
Plausible: if the candidate thinks that the definition of a hot spot is > 5x general area dose rate when measured 18 inches from the contact reading

Level: RO&SRO

KA: G 2.3.10

Source: BANK
Level of Knowledge: Memory

Lesson Plan Objective: OP-MC-RAD-RP Obj 71

Reference:
1. GET Student Guide pages 109-114

Bank Question: 143.2 **Answer: B**

1 Pt(s)

Today, you are directed to complete a valve lineup on Unit 1in accordance with enclosure 4.10 to OP/1/A/6200/005, *Spent Fuel Cooling System*. The controlled copy of the procedure has a restricted change noted for valve 1KF-145. This normally open valve has been locked open in accordance with a special order that remains in effect until October 1st.

Which one of the following statements describes the correct action needed to validate your working copy of the procedure? (Your copy of the procedure is in other respects identical to the controlled copy.)

A. Replace your working copy with an updated procedure printed from the NEDL system.

B. Annotate the working copy with a pen and ink change for the valve position for 1KF-145; change to "Locked Open", annotate the restricted change number and initial the change.

C. Annotate the working copy with just the restricted change number (as a cross reference) next to the 1KF-145 line item, and initial the change.

D. Use the working copy as is since restricted changes of this nature are not required to be written into working copies.

Distracter Analysis:

A. **Incorrect**: Cannot print because NEDL will not list this procedure as issued.
Plausible: NEDL is an approved source of working copies for non-changed procedures.

B. **Incorrect**: Must write in the actual change language.
Plausible: The controlled copy is annotated with only the restricted change #.

C. **Correct**:

D. **Incorrect**: Must write in the actual change language.
Plausible: It is not necessary to annotate working copies if the change does not affect the job or no longer applies – would be true after October 1st.

Level: RO&SRO

KA: G2.1.21 (3.1/3.2)

Lesson Plan Objective: ADM-OP Obj 8

Source: BANK

Level of knowledge: memory

References:
1. OMP 4-1 pages 11-12

Bank Question: 191.2 **Answer: B**

1 Pt(s)

Unit 1 was operating at 100% power when a total loss of feedwater occurred. The operators reached Step 7 of FR-H.1 *(Response to Loss of Secondary Heat Sink)*, which attempts to establish CA flow to at least one S/G. Sub-step 7.k states:

> ***Maintain feed flow rate less than or equal to 100 GPM until S/G WR level is greater than 12% (17% ACC).***

Given the following conditions:

	Loop A	Loop B	Loop C	Loop D
S/G (WR) [%]	0	15	9	10
NC T_{Hot} [°F]	150	555	530	545

- Containment pressure is 3.4 psig
- The TD CA pump is available to feed the S/Gs

Which one of the following statements correctly describes the bases for the restrictions for restoring feedwater flow following feed and bleed in FR-H.1?

A. **Restore flow to the 'A' S/G because loop 'A' T-hot is the lowest of the loops and this will reduce the chance of thermal shocking the S/G. Flow should not be restored to the 'B' and 'C' S/Gs because they will be reserved for use later to provide a steam supply for the TD CA pump.**

B. **Restore flow to the 'B' S/G because 'B' S/G level is the highest and this will reduce the chance of thermal shocking the S/G. Flow should be preferentially restored to the 'B' or 'C' S/G to maintain the TD CA pump steam supply.**

C. **Restore flow to the 'C' S/G because loop 'C' T-hot is less than loop 'B' T-hot and this will reduce the chance of thermal shocking the S/G. Flow should be preferentially restored to the 'B' or 'C' S/G to maintain the TD CA pump steam supply.**

D. **Restore flow to the 'D' S/G because the 'D'S/G is higher than 'A' S/G level, which will reduce the risk of thermal shock. Flow should not be restored to the 'B' and 'C' S/Gs because they will be reserved for use later to provide a steam supply for the TD CA pump.**

Distracter Analysis: There was a change in this procedure since the last NRC exam. The previous guidance was to select the B and C S/Gs for restoration of flow. Now the guidance is to select the S/G that has the highest apparent level and to preferentially select the B or C S/G.

A. **Incorrect**: T-hot should not be used to determine which S/G should receive flow. It is not a reliable means of determining S/G shell temp in a dry stagnant loop.
Plausible: The apparent temp of the A loop is the lowest and it may appear that the chance of thermal shock is lessened.

B. **Correct answer**: feed the S/G that has the highest level and preferentially feed B & C S/Gs to maintain steam supply to the TD CA pump.

C. **Incorrect**: C S/G has a lower S/G level than B S/G
Plausible: C S/G has a lower T-hot than B S/G

D. **Incorrect:** No basis for reserving the B & C S/Gs for restoring flow
Plausible: There is a high probability that restoring feed to a dry S/G could rupture the tube sheet due to thermal stress. It makes sense to select a S/G that is NOT used to supply steam to the TD CA pump for the initial restoration of the heat sink.

Level: RO&SRO

KA: 2.4.18 (2.7/3.6)

Level of Knowledge: Analysis

Lesson Plan Objective: OP-MC-EP-FRH, Obj.4

Source: BANK (7/8/2002)

References:
1. EP/FR-H.1, Step 7.k (NOTE prior)

Bank Question: 195.4 **Answer: D**

1 Pt(s) Unit 1 was conducting a plant start up. At 1% power, an instrument malfunction caused an inadvertent reactor trip. Given the following indications:

- Two rod bottom lights are NOT lit
- Reactor trip and bypass breakers are open
- IR amps = $2x10^{-8}$
- IR SUR = -0.3 DPM

Which one of the following response actions is required?

A. **Implement AP/14, (*Control Rod Misalignment*) and respond to the stuck rods.**

B. **Implement E-0, (*Reactor Trip or Safety Injection*), and immediately transition to FR-S.2, (*Response to Loss of Core Shutdown*).**

C. **Implement E-0, (*Reactor Trip or Safety Injection*) and immediately transition to FR-S.1, (*Response to Nuclear Power Generation/ATWS*).**

D. **Implement E-0, (*Reactor Trip or Safety Injection*), and then transition to ES-0.1, (*Reactor Trip Response*).**

Distracter Analysis: A recent change to E-0 has the operator performing the RNO for step 2 – trip the reactor – if 2 rods are stuck out of the core. However, the RNO will evaluate the need to transition to FR-S.1 based on indications of reactor criticality. Transition is not appropriate unless reactor power is > 5% and not decreasing.

A. **Incorrect**: If above P-11 (1955 psig) must use E-0.
Plausible: This would be the correct answer for a reactor trip below P-11.

B. **Incorrect**: There is no yellow path because SUR < -0.2dpm. In addition, F-0 is not in effect at this point in the procedure
Plausible: This would be the correct response if SUR > -0.2 dpm.

C. **Incorrect**: inappropriate to enter FR-S.1 because the reactor is subcritical and F-0 is not in effect
Plausible: If the candidate makes a literal reading of E-0 without knowledge of the ERG background positions on what constitutes a tripped reactor. Some plants enter FR-S.1 for two rods stuck out.

D. **Correct:**

Level: SRO Only 55.43.(b)6

KA: EAPE 007 EA1.06 (4.4/4.5)

Lesson Plan Objective: EP-EO LPSO 10

Source: BANK

Level of knowledge: Memory

References:
1. OP-MC-IC-IRE page 35
2. OP-MC-EP-FRS page 15, 17
3. OP-MC-EP-E0 pages 19, 27
4. F-0 page 1
5. E-0 page 3
6. AP-14 page 2

Bank Question: 243.1 **Answer: D**

1 Pt(s) Unit 1 is in Mode 1 conducting a plant startup. The operators have reached 11% R.T.P. when a momentary electrical transient on the '1A' Main Bus Line occurs resulting in the following conditions:

Bus	1TA	1TB	1TC	1TD
Frequency (Hz)	55	60	55	60
Voltage (VAC)	6410	6900	6410	6900

Which one of the following sequences would occur?

A. **NCPs 1A and 1C trip because of Under-Frequency while NCPs 1B and 1D continue running and a reactor trip does NOT occur.**

B. **NCPs 1A and 1C trip because of Under-Voltage while NCPs 1B and 1D continue running and a reactor trip occurs.**

C. **All 4 NCPs trip because of Under-Frequency and a reactor trip does NOT occur.**

D. **All 4 NCPs trip because of Under-Frequency and a reactor trip occurs.**

Distracter Analysis: When 2/4 NCP U.F. relays actuate, all 4 NCP supply breakers open.

A. **Incorrect**: all 4 NCPs trip due to the NC pump monitor system action
Plausible: only 2 pumps have a low frequency condition

B. **Incorrect**: all 4 NCPs trip due to the NC pump monitor system action - the reactor does trip as power is above P-7 (10%)
Plausible: only 2 pumps have a low voltage condition

C. **Incorrect :** the reactor does trip above P-7

D. **Correct**: the reactor does trip above P-7 (10%)
Plausible: all four NCPs trip due to under-frequency on 2/4 NCPs

Level: RO&SRO
KA: SYS 012 K6.10 (3.3/3.5)
Lesson Plan Objective: OP-MC-IC-IPE Obj. 10
Source: BANK
Level of Knowledge: Analysis
Reference:
1. OP-MC-IC-IPE page 79

Bank Question: 307.1 ***Answer: C***

1 Pt(s) Unit 1 was operating at 100% power when a crud burst occurred. Given the following events and conditions:

- 1EMF-48 (Reactor Coolant Hi Rad) Trip 2 alarm
- 1EMF-18 (Reactor Coolant Filter 1A) Trip 2 alarm

Which one of the following actions per AP/1/A/5500/18 (Activity in the Reactor Coolant System) is required to reduce coolant activity due to a crud burst in the NC system? (Assume no clad damage has occurred.)

A. Purge the VCT with nitrogen

B. Place/ensure both mixed bed demineralizers are in service

C. Increase letdown flow

D. Add hydrogen to the reactor coolant

Distracter Analysis:

A. **Incorrect**: Will not correct a high NC activity from a crud burst
Plausible: One of the subsequent actions in AP/18 is to purge the VCT to the waste gas system with Hydrogen. In addition, Nitrogen is used to purge the VCT for shutdown. It is likely that a candidate could mix up these purges.

B. **Incorrect**: Do not want to load crud particles into BOTH mixed bed demineralizers
Plausible: Mixed bed demins will filter crud particles and remove fission product ionic impurities - this action required for fuel element failure/high fission product activity in AP/18 - but not for crud burst

C. **Correct**: Will increase removal rate of crud particles by increased filtration.

D. **Incorrect**: Will not remove crud burst particulate activity
Plausible: Used to scavenge Oxygen from the NC coolant and thus reduce the corrosion rates and crud production in the RCS. However, this does not affect crud burst particulates that are already in the NC system coolant.

Level: SRO ONLY 10CFR50.43

KA: 076 AA2.03 (2.5/3.0)

Source: BANK

Level of Knowledge: Memory

Lesson Plan Objective: OP-MC-CH-PC Obj.12

Reference:
1. AP/1/A/5500/18 page 2
2. OP-MC-CH-PC pages 73 and 75

Bank Question: 308.1 ***Answer: D***

1 Pt(s) Unit 1 is operating at 100% power. Given the following conditions:

- Rod control is in 'MANUAL'
- Control Bank D is at 200 steps

If the rods in control bank D start stepping out at 8 steps per minute, which one of the following actions is required at this time?

A. **Select Control Bank D on the rod selector switch and manually insert Control Bank D**

B. **Select "AUTO" on the Bank Select Switch and see if rod motion stops**

C. **Commence emergency boration**

D. **Trip the reactor**

Distracter Analysis:

A. **Incorrect**: The correct response is to trip the reactor for a rod withdrawal
Plausible: this action could stop the rod withdrawal, as the rods in signal should over-ride the rods out signal

B. **Incorrect**: Trip the reactor is the correct response.
Plausible: If the malfunction was in the manual section of the rod control circuitry, this could stop the rods. If the rod control was in auto – then going to manual would be the correct answer. This reverses that thought process.

C. **Incorrect**: Trip the reactor is the correct response
Plausible: This action would be required to insert negative reactivity if the trip did not work

D. **Correct answer**: Immediate action in step 3 of AP-14

Level: RO&SRO

KA: SYS 014 A4.01 (3.3/3.1)

Level of Knowledge: Memory

Source: BANK

Lesson Plan: OP-MC-AP-14 Obj. 4

References:
1. AP/1/A/5500/14 page 3
2. OP-MC-AP-14 page 4

Bank Question: 311.1 ***Answer: A***

1 Pt(s) Unit 1 is operating at 50% power. Given the following conditions:

- Pressurizer pressure is 2235 psig
- Pressurizer Relief Tank (PRT) pressure is 20 psig
- PRT temperature is 125 °F
- PRT level is 81%
- The PRT is being cooled by spraying from the RMWST
- A pressurizer code safety valve is suspected of leaking by it's seat

What temperature would be indicated on the associated safety valve discharge RTD if the code safety were leaking by?

REFERENCES PROVIDED: Steam Tables

A. 258-262 °F

B. 227-231 °F

C. 161-165 °F

D. 123 -127°F

Distracter Analysis:

A. Correct answer

B. Incorrect: Temp is too low - the correct temp is 260 °F
Plausible: If the candidate makes the mistake of not correcting for atmospheric pressure by failing to adding 14.6 psi to the PRT pressure and uses 20 psia.

C. Incorrect: Temp is too low - the correct temp is 260 °F
Plausible: If the candidate reverses the correction for atmospheric pressure by subtracting 14.6 psi from PRT pressure of 20 psig to get 5 psia.

D. Incorrect: Temp is too low - the correct temp is 260 °F
Plausible: If the candidate thinks that the discharge temperature will be at the same temperature as the PRT fluid.
Level: RO&SRO
KA: SYS 010 K5.01 (3.5/4.0)
Source: BANK
Level of Knowledge: Analysis
Objective: OP-MC-THF-EB Obj. 8
Reference: OP-MC-THF-EB pages 23-26

Bank Question: 353.1 **Answer: D**

1 Pt(s) A male worker needs to repack a valve in an area that has the following radiological characteristics:

- The worker's present exposure is 1800 mrem for the year.
- General area dose rate = 65 mrem/hr
- Airborne contamination concentration = 20 DAC

The job will take 4 hours with a mechanic wearing a full-face respirator. It will only take 2 hours if the mechanic does NOT wear the respirator.

Which of the following choices for completing this job would maintain the workers exposure within the Station ALARA requirements?

A. **The worker should wear the respirator otherwise he will exceed 25% of the DAC limit.**

B. **The worker should NOT wear the respirator because the dose received will exceed neither NRC nor site dose limits.**

C. **The worker should wear the respirator because the total TEDE dose received will be less than if he does not wear one.**

D. **The worker should NOT wear the respirator because the total TEDE dose received will be greater if he wears one.**

Distracter Analysis:

Radiation exposure comparison:
Without respirator
DDE = 65 mrem/hr x 2 hr = 130 mrem
From airborne contamination:
CEDE = 20 DAC 2 hr x 2.5 mrem/DAC-hr = 100 mrem
TEDE = 130 + 100 = 230 mrem from job
Total exposure for year = 1800 + 230 = 2030 mrem

With respirator
DDE = 65 mrem/hr x 4 hr = 260 mrem
CEDE = 0
TEDE = 260 mrem
Total exposure for year = 260 + 1800 = 2060 mrem

(with respirator) (without respirator)

TEDE = 2060 mrem > 2030 mrem = do NOT use a respirator

A. **Incorrect**: Will not exceed 25% the DAC limit - this is not how DAC is applied to exposure limits
Plausible: 25% DAC is the limit at which an area requires posting as a high airborne contamination area.

B. **Incorrect**: The dose will exceed station admin limits of 2000 mrem
Plausible: if the candidate does not know the station admin limit or miscalculates the dose received

C. **Incorrect**: The exposure will be greater if you wear the respirator
Plausible: If the candidate incorrectly computes the exposure - this was the correct answer on the 1997 Catawba NRC exam

D. Correct answer

Level: RO&SRO

Source: BANK

Level of Knowledge: Analysis

KA: G2.3.4 (2.5/3.1)

Lesson Plan Objective: RAD-RP Obj 59,60

Reference:
1. GET Rad Worker Training Guide pages 90,91

Bank Question: 398.1 ***Answer: B***

1 Pt(s) Unit 2 is in the process of starting up the reactor in accordance with all controlling procedures. Given the following conditions and events:

- 2 EMF-3 *(CONTAINMENT REFUELING BRIDGE MONITOR)* Trip 1 setpoint is $7x10^{1}$ mR/hr and Trip 2 setpoint is $1.5x10^{2}$ mR/hr.

	0200	**0205**	**0210**	**0215**
2EMF 3 (mR/hr)	$5x10^{1}$	$1.1x10^{2}$	$1.6x10^{2}$	$2.7x10^{2}$
N-31 (CPS)	$1.2x10^{4}$	$1.7x10^{4}$	$2x10^{4}$	0
N-32 (CPS)	$9.2x10^{3}$	$1.1x10^{4}$	0	0
N-35 (amps)	$9.1x10^{-11}$	$1.0x10^{-10}$	$1.2x10^{-10}$	$1.2x10^{-10}$
N-36 (amps)	$9.3x10^{-11}$	$1.1x10^{-10}$	$1.3x10^{-10}$	$1.3x10^{-10}$

If channel N-32 is deenergized due to a SR detector failure at 0210, what is the earliest time (if any) that the containment evacuation alarm will actuate in Unit 2 during the startup?

A. 0205

B. 0210

C. 0215

D. The containment evacuation alarm will not actuate

Distracter Analysis:

A. **Incorrect**: - both SR high flux trips are active, but the EMF is still below Trip 2.
Plausible: - if the candidate thinks that Trip 1 actuation causes the alarm

B. **Correct answer**

C. **Incorrect**: Both SR high flux trips are blocked
Plausible: - if the candidate reverses the logic that BOTH SR high flux trips must be blocked

D. **Incorrect:** - alarm actuates at 0210
Plausible: - if candidate thinks that some other action or interlock blocks the alarm

Level: RO&SRO

KA: W/E 16 EA1.0(2.9/3.3)

Lesson Plan Objective: WE-EMF Obj. 3

Source: Bank

Level of knowledge: analysis

References:
1. OP-MC-WE-EMF page 43
2. OP-MC-IC-ENB pages 21-23

Bank Question: 404.1 **Answer: A**

1 Pt(s) Unit 1 was responding to a small break LOCA. Containment pressure reached 3.5 psig. The Subcooling Margin Monitor currently indicated +35 °F. Which of the following statements correctly describes the status of subcooling in the core?

A. **The core is subcooled by 35 °F**

B. **The core is superheated by 35 °F**

C. **The core is superheated by more than 35 °F due to the effects of adverse containment conditions**

D. **The core is subcooled by more than 35 °F due to the effects of adverse containment conditions**

Distracter Analysis: This is a modified question from a previous NRC exam. The original question asked what the core conditions were if ICCM was reading –35 °F. The original answer was "C". Note: the upper limit for measuring superheat is –35 °F. The lower limit is +200 F.

Although the ICCM was designed for ACC inputs, this option was never used because the pressure transmitters were located outside of containment

A. **Correct:**

B. **Incorrect**: - subcooling is 35 °F
Plausible: - if the candidate reverses the meaning of the indication (i.e. – means subcooled, + means superheated)

C. **Incorrect**: - subcooling is 35 °F -
Plausible: - if the candidate reverses the meaning of the indication – this was the answer on the NRC exam in 1997.

D. **Incorrect**: - subcooling is 35 °F
Plausible: - if the candidate reverses the meaning of the indication.

Level: RO&SRO
KA: 017 A4.01 (3.8/4.1)
Lesson Plan Objective: OP-MC-IC-ICM, Obj. 9,10
Source: BANK
References: Op-MC-IC-ICM, p. 33-35
Level of Knowledge: Memory

Bank Question: 407.1 ***Answer: D***

1 Pt(s) Unit 1 has initiated a liquid radioactive waste release from the Ventilation Unit Condensate Drain Tank (VUCDT) through the RC system. All lineups and authorizations have been properly made in accordance with OP/0/B/6200/35 using the normal path. Two RC pumps are the minimum required under the LWR document.

Given the following initial conditions:

- 3 RC pumps are running
- 1EMF-44 *(CONT VENT DRN TANK OUT)* correctly set for trip 1 and trip 2 activity limits
- MRIRR = 75 GPM based on boron concentration
- No other releases are in progress

If the release automatically terminates 40 seconds after initiation, which one of the following conditions could have terminated the release and what is the proper operator response?

A. **1WM-46 *(LIQUID WASTE DISCH VALVE)* closing automatically if 1 RC pump tripped, and the release may not be restarted until Chemistry resamples the tank.**

B. **1WM-46 closing automatically if 1EMF-44 reached the trip 2 setpoint, the release may be restarted two additional times.**

C. **1WP-35 *(WMT & VUCDT TO RC CNTRL)* closing automatically if 1 RC pump tripped, and the release may not be restarted until Chemistry resamples the tank.**

D. **1WP-35 closing automatically if 1EMF-44 reached the trip 2 setpoint, the release may be restarted two additional times.**

Distracter Analysis:

A. **Incorrect**: - RC pump interlock will not actuate - set at 2 pumps (minimum required on LWR document). WM-46 is isolated and not used anymore as a release path.
Plausible: - this was formerly the normal release path

B. **Incorrect**: - WM-46 receives a closing signal from EMF-44 but this is not the normal path for a release. WM-46 is isolated and not used anymore.
Plausible: - this was formerly the normal release path

C. **Incorrect**: - RC pump interlock will not actuate - set at 2 pumps (minimum required on LWR document).
Plausible: - if the candidate misunderstands the RC pump interlock--this was the correct answer on a prior NRC exam -

D. **Correct answer**

Level: RO & SRO

KA: SYS 68 G2.4.31 (3.3/3.4)

Lesson Plan Objective: WE-WL Obj. 3

Source: Bank;

Level of knowledge: comprehension

References:
1. OP-MC-WE-WL pages 21, 27, 59
2. OP-MC-WE-EMF page 31

Bank Question: 415.2 ***Answer: B***

1 Pt(s) Unit 1 is operating at 80% power when an electrical transient causes several condensate system pumps to trip. Given the following conditions and events:

	Start	10 sec	20 sec	30 sec	40 sec
CF pump 1A Suction Pressure (psig)	451	238	232	229	227
CF pump 1B Suction Pressure (psig)	448	227	224	240	238
# Hotwell Pumps running	2	2	3	2	1
# Condensate Booster Pumps running	2	1	0	2	1

Which one of the following is the earliest time and the reason that BOTH main feedwater pumps will have tripped?

A. 10 seconds, due to 2/3 Condensate Booster Pumps Tripped

B. 20 seconds, due to 3/3 Condensate Booster Pumps Tripped

C. 30 seconds, due to suction pressure

D. 40 seconds, due to 2/3 Condensate Booster Pumps and 2/3 Hotwell Pumps Tripped

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Distracter Analysis: This is the 1999 version of the question with slight modifications. It was used in different versions in 2000 and 2001(Catawba).

A. **Incorrect**: - CF pump 1A continues to run as suction pressure remains > 230 psig
Plausible: - CF pump 1B will trip on low suction pressure

B. **Correct answer**: - both CF pumps trip when 3/3 condensate booster pumps trip - trip is irrespective of suction pressure

C. **Incorrect**: - CF pump 1A trip criteria met but trip occurred earlier at 20 sec.
Plausible: - if candidate does not know that the CBPs are interlocked with the CF pumps

D. **Incorrect:** - tripping criteria are met at 20 sec
Plausible: - if candidate does not know CF pump trips

Level: RO&SRO

KA: SYS 056K1.03 (2.6/2.6)

Lesson Plan Objective: CF Obj 4

Source: Modified; Ques_415.1, McGuire NRC 2002

Level of knowledge: analysis

References:
1. OP-MC-CF-CF page 19

Bank Question: 432.2 ***Answer: A***

1 Pt(s) Unit 1 has just entered Mode 5 in preparation for refueling. Given the following conditions and events:

- A lower containment entry is planned for the next shift.
- The SRO directs the RO to purge the containment in preparation for the containment entry.
- Currently the VP system is secured with all fans off and containment purge and exhaust valves closed

Which one of the following describes the proper alignment of the containment purge system?

A. **The *NORMAL-REFUEL SELECTOR* switch is placed in the "*NORM*" position and ratio of supply air is 2/1 (Upper/Lower Containment).**

B. **The *NORMAL-REFUEL SELECTOR* switch is placed in the "*NORM*" position and ratio of supply air is 4/1 (Upper/Lower Containment).**

C. **The *NORMAL-REFUEL SELECTOR* switch is placed in the "*REFUEL*" position and ratio of supply air is 2/1 (Upper/Lower Containment).**

D. **The *NORMAL-REFUEL SELECTOR* switch is placed in the "*REFUEL*" position and ratio of supply air is 4/1 (Upper/Lower Containment).**

Distracter Analysis:

A. **Correct**: - this is the proper position for this operation.
B. **Incorrect**: Air ratio is 2/1 not 4/1
Plausible: -
C. **Incorrect** : - this will over-pressurize the upper containment
D. **Incorrect:** - this will over-pressurize the upper containment.
Plausible: .

Level: RO&SRO

KA: G2.3.9 (2.5/3.4)

Lesson Plan Objective: CNT-VP Obj. 2

Source: BANK

Level of knowledge: comprehension

References:
1. OP-MC-CNT-VP pages 19, 21, 27

Bank Question: 447.1 ***Answer: D***

1 Pt(s) Unit 1 is shutdown, Mode 6, in a refueling outage. Given the following conditions:

- Containment airlock doors are both open
- A full shift of qualified maintenance personnel are available inside containment
- The Refueling SRO is in the control room
- The Fuel Handling Supervisor is inside containment

Refueling has been completed and the Fuel Handling Supervisor (who is not a qualified SRO) requests permission to latch all control rods to prepare for the reactor startup. What additional requirements must be met (if any) to proceed with latching rods?

A. Latching rods may proceed at the discretion of the Fuel Handling Supervisor.

B. Latching rods may not proceed until after containment integrity has been restored.

C. Latching control rods may not proceed until after the Refueling SRO arrives inside containment to supervise.

D. Latching control rods may not proceed until after the Refueling SRO arrives inside containment and containment integrity has been restored.

Distracter Analysis:

A. **Incorrect**: - the Refueling SRO is required to supervise this evolution and containment integrity must be restored
Plausible: - if the candidate does not recognize that latching rods is a core alteration or doesn't recognize that this requires containment integrity to be established

B. **Incorrect:** - the Refueling SRO is required to supervise this evolution
Plausible: - if the candidate does not recognize that latching rods is a core alteration

C. **Incorrect**: - containment integrity must first be established
Plausible: - core alterations requires SRO coverage and containment integrity

D. **Correct answer**

Level: SRO Only 55.43b(7)

KA: G2.2.26

Level of Knowledge: Memory

Lesson Plan Objective: OP-MC-FH-FC, Obj. 2

Source: BANK

Referemces: 1. OP-MC-FH-FC, p. 9

Bank Question: 451.1 ***Answer: B***

1 Pt(s) Unit 1 is shutdown in a refueling outage. Given the following events and conditions:

- The VI system was in a normal lineup.
- The VS system was in a normal lineup.
- A VI header rupture occurs.
- 'VI Low' and 'Low Low Pressure' Annunicators alarm
- The VI system completely depressurizes.

What effect does a total loss of the VI system have on the VS system?

A. **VI-820 will auto-close as VI header pressure decreases below 82 psig and the VS air compressor will start automatically to maintain VS header pressure.**

B. **VI-820 will auto-close as VI header pressure decreases below 90 psig and the VS air compressor must be manually started to maintain VS header pressure.**

C. **Check valves in the VI - VS cross-connect line will close to isolate VS system pressure before it drops below 90 psig.**

D. **VS pressure in the Fire Protection Pressurizer Tank will be lost until a VS air compressor can be started.**

Distracter Analysis:

A. **Incorrect**: - the VS air compressor does not automatically start to maintain pressure
Plausible: - The VI system is safety significant, VI-820 used to close 82 psig but the setpoint was recently changed from 82 psig to 90 psig. There is a separate VS air compressor, which has an automatic startup feature – but is normally in "off" and requires operator action to start.

B. **Correct answer**

C. **Incorrect**: - there are no check valves in this line
Plausible: - this is another possible method to prevent depressurizing the VS header at some plants.

D. **Incorrect**: - the RF system tank is pressurized with VS air - but is maintained isolated from the VI header
Plausible: - if the candidate does not know that the RF system air tank is isolated from the VS header.

Level: SRO Only

KA: APE 000065 AA2.01 (2.9/3.2)

Lesson Plan Objective: SS-VI LPRO 7

Source: Bank; NRC McGuire 1999 Ques_451

Level of Knowledge: comprehension

References:
1. OP-MC-SS-VI page 67

Bank Question: 460.1 ***Answer: B***

1 Pt(s) If a fire was reported in the McGuire Office Complex (MOC), which one of the following responses is correct by station procedures?

A. **Offsite fire departments are responsible for all fire suppression activities at the scene. The Fire Brigade must be held in reserve for station fires inside the protected area.**

B. **Offsite fire departments are responsible for all fire suppression activities at the scene. The Fire Brigade may provide limited support if resources allow.**

C. **The Fire Brigade is responsible for the initial response at the scene. They are required to turn over control of the scene as soon as an offsite fire department arrives and immediately return to the protected area.**

D. **The Fire Brigade is responsible for fire suppression activities at the scene. An offsite fire department may be called to provide support if additional resources are required.**

Distracter Analysis:

A. **Incorrect**: - the Fire Brigade is allowed to leave the protected area.
Plausible: - they have restrictions regarding leaving the site.

B. **Correct answer**

C. **Incorrect**: - the Fire Brigade is not responsible for initial response and they are not required to return to the protected area.
Plausible: - if the candidate thinks that they cannot remain outside the protected area.

D. **Incorrect:** - The Fire Brigade is not primarily responsible to fight fire outside the protected area.
Plausible: - If the candidate does not understand fire brigade responsibilities.

Level: RO&SRO
KA: APE 067 K3.02 (2.5/3.3)
Lesson Plan Objective: None
Source: Bank;
Level of knowledge: memory
References:
1. RP/1/A/5700/025 Enclosure 4.1 page 5

Bank Question: 469.1 **Answer: B**

1 Pt(s) Unit 1 is in the process of making a radioactive gaseous waste release from the waste gas decay tank in accordance with OP/0/A/6200/19 (*Waste Gas Decay Tank Release*). Given the following conditions:

- Most Restrictive Instantaneous Release Rate (MRIRR) = 35 CFM
- EMF-50(L) trip 1 setpoint = 1.0E5 CPM
- EMF-50(L) trip 2 setpoint = 2.0E5 CPM
- EMF-36(L) is out of service
- The operators reset 1EMF-50(L) whenever procedural direction allows

Time	0200	0215	0230	0245
Release rate (CFM)	22	37	32	41
EMF-50(L) (CPM)	1.1E5	2.1E5	2.2E5	2.2E5

What was the earliest time that the operators were required to terminate (and not restart) the gaseous release.

A. 0200 - cannot release with 1EMF-36(L) out of service

B. 0215 - must terminate due to exceeding MRIRR

C. 0230 - must terminate due to 2nd trip of EMF-50(L)

D. 0245 - must terminate after 3rd trip of EMF-50(L)

Distracter Analysis:

A. **Incorrect:** - allowed to conduct this release as long as EMF-50(L) is in service
Plausible: - 1EMF-36(L) is the plant vent monitor and is normally in the release path. This has an automatic trip associated with it.

B. **Correct answer** - release rate > MRIRR and EMF-50 trips and closes release path

C. **Incorrect**: - release already stopped at 0215
Plausible: - and this is only the 2nd trip of EMF-50 - the operators could reset EMF-50 and restart this release at 0215 if they had not exceeded MRIRR

D. **Incorrect**: - release already stopped at 0215 due to exceeding allowed release rate
Plausible: - This action would be allowed if 1EMF-36(L) was in service

Level: RO&SRO

KA: 073 A1.01 (3.2/3.5)

Source: BANK

Level of Knowledge: Analysis

Lesson Plan Objective: 5

References:
1.OP-MC-WEW-RGR pages 13.15

Bank Question: 479.2 **Answer: B**

1 Pt(s) Unit 1 is in the process of making a radioactive gaseous waste release from the waste gas decay tank in accordance with OP/0/A/6200/18 *(Waste Gas Operation)*. Given the following conditions:

- Most Restrictive Instantaneous Release Rate (MRIRR) = 31 CFM
- Maximum Observed System Release Rate (MOSRR) = 40 CFM
- EMF-50 *(WASTE GAS DISCH)* trip 1 setpoint = 2.0E5 CPM
- EMF-50 trip 2 = 3.0E5 CPM
- EMF-36 *(UNIT VENT GAS)* is in service

Time	**0200**	**0215**	**0230**	**0245**
Release rate (CFM)	30	32	41	27
EMF-50 (CPM)	2.8E5	3.2E5	3.1E5	4.2E5

If the operators reset EMF-50 whenever allowed by procedure, what is the earliest time that the operators are **required** to terminate (and not immediately restart) the gaseous release?

A. 0200

B. 0215

C. 0230

D. 0245

Distracter Analysis:

A. **Incorrect**: - neither Trip 2 nor MRIRR exceeded at 0200.
Plausible: If candidate thinks Trip 1 is sufficient to terminate.

B. **Correct**: the release rate (32 CFM) > MRIRR (31 CFM) (most restrictive instantaneous release rate)

C. **Incorrect**: - exceeded MRIRR at 0215.
Plausible: - exceeded MOSRR (maximum observed system release rate) - if the candidate thinks he/she can reset EMF-50 once before being required to terminate the release - this is the 2nd time EMF-50 has reached trip 2.

D. **Incorrect**: - exceeded MRIRR at 0215
Plausible: - exceeded trip 2 on EMF-50 for the 3rd time - allowed to reset this trip 2 times before terminating release

Level: RO/SRO

KA: APE 000060 AK2.01(2.6/2.9*)

Lesson Plan Objective: WE-RGR SEQ 5

Source: Bank; Ques_479.1, McGuire NRC 2002

Level of knowledge: analysis

References:
1. OP-MC-WE-RGR page 15

Bank Question: 512.1 ***Answer: B***

1 Pt(s) Unit 2 was in the process of starting up the reactor following a refueling outage. Given the following plant conditions and events:

- Reactor trip breakers are closed
- Withdrawal of 'A' control bank has commenced
- Train A of Wide Range Shutdown Monitoring is inoperable

If source range N-32 fails low, which one of the following actions is required?

A. **Startup may continue with train B of the Gamma-Metrics Shutdown Monitor System substituting for the failed N-32 source range channel**

B. **Immediately stop withdrawal of shutdown banks**

C. **Immediately open the reactor trip breakers**

D. **Immediately reinsert shutdown banks and open the reactor trip breakers**

Distracter Analysis:

A. **Incorrect**: Cannot substitute gamma metrics for SR channel
Plausible: Allowed to substitute SR channels for gamma metrics

B. **Correct answer**: Required by Tech Specs

C. **Incorrect**: Not required unless 2 SR channels fail
Plausible: This is the immediate action step 1 of AP/16 if BOTH SR channels fail

D. **Incorrect**: Not a tech spec action
Plausible: If candidate does not know tech spec requirements

Level: RO/SRO

Subject: APE000032 K3.01 (3.2/3.6)

Level of Knowledge: Analysis

Source: BANK

References:

- OP-MC-IC-ENB pages 41-43
- AP/1A/5500/16 page 2,3
- ITS 3.3.1.5 (Condition 'I')

Bank Question: 547.2 ***Answer: B***

1 Pt(s) Unit 1 was operating at 100% power when main condenser vacuum dropped suddenly from 25 inches vacuum to 23 inches vacuum. Given the following events and conditions:

- All 3 condenser steam air ejectors (CSAEs) are in service
- Both primary and secondary jets are operating
- The system lineup is in the normal configuration

Which one of the following statements correctly describes the cause of this problem?

A. Loss of YM supply to the condenser boot seals

B. CM flow to all CSAE inter-coolers has been obstructed

C. Loss of the main steam supply to the CSAEs

D. A CSAE drain was left open

Distracter Analysis:

A. **Incorrect**: A recent change no longer runs seals water to the condenser boot seals.
Plausible: Seal water to the boot seals was originally designed to prevent condenser leakage

B. **Correct answer** - reduces effectiveness of steam jets and causes vacuum to decrease.

C. **Incorrect**: Main steam does not supply the CSAEs
Plausible: There are physical connections for main steam to be the back up supply for aux steam – but these connections are not used.

D. **Incorrect**: CSAE drains are normally open to allow condensate to drain out of the air ejectors.
Plausible: If the drain is left closed, the condensate will build up and flood out the CSAE, which could cause a loss of vacuum. This is the reverse of the distracter.

Level: RO&SRO

KA: SYS 055K3.01 (2.5 / 2.7)

Lesson Plan Objective: MT-ZM SEQ 4, 5, 9

Source: Bank

Level of knowledge: comprehension

References:
1. OP-MC-MT-ZM pages 11, 13, 15, 23, 27

Bank Question: 613.1 ***Answer: B***

1 Pt(s) Unit 2 is responding to an ATWS without Safety Injection actuation. Given the following indications:

- Pressurizer level begins to go down
- The 2A NV pump ammeter indicates running amps are low

If all automatic control systems operated normally, which one of the following conditions would cause the 2A NV pump running amps to decrease to the lowest value?

A. **2NV-238 *(CHARGING LINE FLOW CONTROL)* failed open**

B. **2NV-238 *(CHARGING LINE FLOW CONTROL)* failed closed**

C. **2NV-241 *(SEAL INJ FLOW CONTROL)* failed open**

D. **2NV-241 *(SEAL INJ FLOW CONTROL)* failed closed**

Distracter Analysis:

A. **Incorrect**: pump amps and pressurizer level would initially increase
Plausible: If the candidate does not understand the charging flow path or does not understand the relationship between pump amps and flow.

B. **Correct answer:** This would block the charging flow path and pumps amps would reduce to minimum as the reduced charging flow was diverted through the NV-150 and NV-151 mini-flow valves

C. **Incorrect**: this would increase charging flow, which would increase charging pump amps. It would also increase pressurizer level, which would cut back on charging flow and stabilize the pressurizer level. Pump amps would not go to minimum value.
Plausible: If the candidate thought that this could divert charging flow or did not understand the relationship between pump amps and flow.

D. **Incorrect**: NV-241 closing would increase backpressure on the charging system, which would divert more charging flow through the NCP seals. However, the drop in pressurizer level would act to open 2NV-238 to compensate for the flow reduction. The overall effect would be to increase pump amps as flow tried to remain the same but at a higher backpressure.
Plausible: If the candidate does not consider the effect of the PZR level control circuit.

Level: SRO Only

KA: 000029 EA2.03(2.9*/3.1*)

Lesson Plan Objective: OP-MC-PS-NV Obj 6

Source: Bank; Ques_613, McGuire NRC 2000

Level of knowledge: comprehension

References:
1. OP-MC-PS-NV pages 37, 115

Bank Question: 617.2 ***Answer: A***

1 Pt(s) Unit 2 was operating at 90% power after a start-up from a refueling outage. A pressurizer PORV is found to be leaking and the associated PORV block valve was shut. The PRT was cooled down to the following PRT conditions:

- PRT Level – 65%
- PRT Pressure – 9 psig
- PRT Temperature – 100°F
- Lower Containment Temperature - 118 °F

What actions are required to restore and maintain normal operating conditions to the PRT for the long term?

A. Vent the PRT to the waste gas system.

B. Vent the PRT to containment.

C. Cool the PRT by pressurizing with nitrogen and initiating spray flow from the NCDT.

D. Cool the PRT by initiating spray flow through the sparger line from the RWST

Distracter Analysis: With PRT pressure > 8 psig and temperature < containment temp, cooling the PRT will only result in the PRT heating back up again.

A. **Correct:**

B. **Incorrect**: cannot be performed at power as the vent valve is inside containment and is inaccessible at power
Plausible: venting to containment would accomplish the required action

C. **Incorrect**: Lower Containment temp is 118 °F. Cooling the tank further would only delay the time when it would heat back up again and require further cooling. The PRT can be cooled by pressurizing the PRT with nitrogen - but then spray flow must be initiated from the RMWST not the NCDT.
Plausible: Cooling will reduce pressure temporarily but will not allow the PRT to reheat to its normal limit of 114°F without getting a high-pressure condition (containment temp is 118°F). In addition, recirculating through the NCDT using the NCDT pumps cools the PRT and pressure would be reduced – temporarily.

D. **Incorrect:** Cannot cool the PRT through the sparger line
Plausible: can cool the PRT by recircing through the RWST – must pressurize with N2 and recirculate RWST water through the spray and drain connections.

Level: SRO Only 10CFR55.43(b) 5

KA: SYS 007 A2.02 (2.6/3.2)

Lesson Plan Objective: PS-NC SEQ 20, 24

Source: BANK; NRC McGuire 2002 Ques_617.1

Level of knowledge: memory

References:
1. OP-MC-PS-NC pages 41, 43
2. OP/1/A/6150/004 pages 3
3. OP/1/A/6150/004 Encl 4.1 page 1

Bank Question: 681.1 ***Answer: C***

1 Pt(s) Unit 2 was operating at 100% when a "FLOOR COOLING GLYCOL HIGH TEMPERATURE" annunciator is received. A review of the RTD panel reveals that several ice condenser floor slabs have high temperature indicated.

Which one of the following statements correctly describes the operational concern raised by this annunciator?

A. **High glycol temperatures will cause the in-service glycol compressor to trip causing a loss of NF cooling and excessive ice sublimation.**

B. **Low floor cooling glycol temperatures could cause cracks in the ice condenser thermal barrier.**

C. **Slab freeze and thaw cycles could result in floor buckling that could interfere with lower door operation.**

D. **Slab freeze and thaw cycles could cause gaps between the floor and the intermediate deck doors resulting in a bypass flow path.**

Distracter Analysis:

A. **Incorrect**: none of the compressors trip on high glycol temperature
Plausible: if the candidate does not know the basis for the temperature limits - low glycol temperature can cause a compressor trip.

B. **Incorrect**: not the problem – glycol floor cooling does not effect the thermal barrier.
Plausible: low temperatures can cause cracks in some systems due to thermal stress

C. **Correct Answer**: this has been a problem as described in PIP 2-M97-2686 (July 1997)

D. **Incorrect**: the intermediate deck doors are not physically located near the floor slab.
Plausible: if the candidate does not know the mechanism for floor buckling.

Level: RO&SRO

KA: SYS 025k4.02(2.8*/3.0*)

Lesson Plan Objective: CNT-NF SEQ 15

Source: Bank;

Level of knowledge: memory

References:
1. OP-MC-CNT-NF pages 21, 37, 41

Bank Question: 771.2 ***Answer: D***

1 Pt(s) Unit 1 is operating at full power and Unit 2 is refueling. Unit 1 is releasing a minimally decayed waste gas decay tank when a significant packing leak starts on isolation valve 1WG-160, (*WG Decay Tank Outlet to Unit Vent Control).*

Which one of the following statements correctly describes the automatic actions required to assure that the leak is contained and filtered?

A. **1EMF-50 *(WASTE GAS DISCH HI RAD)* automatically closes 1WG-160, and 1EMF-41 *(AUX BLDG VENT HI RAD)* automatically stops the auxiliary building ventilation unfiltered exhaust fans.**

B. **1EMF-41 automatically stops the auxiliary building ventilation unfiltered exhaust fans, and 1EMF-36 *(UNIT VENT HI RAD)* automatically closes 1WG-160.**

C. **1EMF-36 automatically closes 1WG-160, and 1EMF-35 *(UNIT VENT PART HI RAD)* automatically aligns the auxiliary building ventilation filter trains.**

D. **1EMF-35 automatically stops the auxiliary building ventilation unfiltered exhaust fans, and 1EMF-41 automatically aligns the auxiliary building ventilation filter trains.**

Distracter Analysis:

A. **Incorrect**: EMF-50 will not get to Trip 2 because it is set for the activity being released, and EMF-41 does not automatically stop these fans.
Plausible: These are valid automatic actions for EMF monitors.

B. **Incorrect**: EMF-41 does not automatically stop these fans.
Plausible: if the candidates do not recognize that this is not an automatic action for EMF-41 but for 35/37.

C. **Incorrect**: EMF-35 does not realign ventilation filters.
Plausible: partially correct – EMF 36-will close 1WG-160.

D. **Correct answer**: EMF-35 will secure VA fans, and EMF-41 will realign filter trains to contain and filter the release in the Aux Bldg.

Level: RO&SRO

KA: SYS 071K1.06(3.1*/3.1)

Lesson Plan Objective: WE-EMF Obj. 2,3

Source: Bank

Level of knowledge: comprehension

References:
1. OP-MC-PSS-VA pages 29, 45
2. OP-MC-WE-EMF pages 21 - 27

Bank Question: 859.2 ***Answer: A***

1 Pt(s) Unit 2 is in Mode 6 with refueling activities in progress. Given the following events and conditions:

- A containment purge is in progress
- A fuel element was rammed into the side of the reactor vessel
- 2EMF-3 *(CONTAINMENT REFUELING BRIDGE)* and 2EMF-38 *(CONTAINMENT PARTICULATE)* are in Trip 2 alarm

Which one of the following actions should occur, assuming that operators follow the required procedure steps?

A. The containment evacuation alarm sounds automatically. The containment purge stops automatically.

B. The containment evacuation alarm can only be actuated by the control room. The containment purge stops automatically.

C. The containment evacuation alarm sounds automatically. The containment purge is stopped manually.

D. The containment evacuation alarm can only be actuated by the control room. The containment purged is stopped manually.

Distracter Analysis:

A. **Correct**: Containment purge will stop and containment alarm will actuate when the EMF goes into trip 2.

B. **Incorrect**: a plant page is made by the control room.
Plausible: If the candidate confuses the plant page with the containment evacuation.

C. **Incorrect**: containment purge stops automatically
Plausible: candidate knows the alarm, but fails to realize purge will stop automatically.

D. **Incorrect:** both occur automatically
Plausible: candidate does not know the auto actions for the EMFs

Level: RO&SRO

KA: APE 000036 AA1.01 (3.3/3.8)

Lesson Plan Objective: WE-EMF SEQ 3

Source: BANK

Level of knowledge: Comprehension

References:
1. OP-MC-WE-EMF pages 43, 105
2. OP-MC-CNT-VP page 21
3.AP/2/A/5500/25 page 2-3
4. GET RAD Worker Training Manual page 124

Bank Question: 860.1 ***Answer: D***

1 Pt(s) Unit 1 has experienced four CRUD bursts this month. Given the following events and conditions:&

1A reactor coolant filter d/p was indicating 40 psid.
1EMF-18 *(REACTOR COOLANT FILTER 1A)* reads 5 times its normal value.
1A reactor coolant filter was taken out of service.
1B reactor coolant filter was placed in service.
1B reactor coolant filter d/p is 10 psid.
1A mixed bed demineralizer is in service.
1EMF-48 *(REACTOR COOLANT)* reads its normal value.
Local radiation readings near reactor coolant filter 1B are 3 times normal.

If the detector for 1EMF-19 *(REACTOR COOLANT FILTER 1B)* fails, what actions (if any) are the operators required to take in response to these conditions?

A. Switch mixed bed demineralizers.

B. Shift back to 1A reactor coolant filter until 1EMF-19 is returned to service.

C. Place both mixed bed demineralizers in service until 1EMF-19 is returned to service.

D. No action is required.

Distracter Analysis:

A. **Incorrect**: No action is required.
Plausible: If the candidate believes that the filters and demineralizers are train related.

B. **Incorrect**: No action is required.
Plausible: If the candidate thought that procedures called for using a filter with an operable RAD monitor.

C. **Incorrect**: No action is required. EMF-48 indicates no crud burst
Plausible: This action would be required if another crud burst were to occur.

D. **Correct answer**

Level: SRO Only

KA: APE 076A2.07(2.4/2.7*)

Lesson Plan Objective: None

Source: BANK

Level of knowledge: Comprehension

References:
1. OP-MC-WE-EMF pages 43, 45
2. OP/1/A/6100/010S window D4

Bank Question: 882.1 ***Answer: B***

1 Pt(s) Unit 2 is operating at 100% power. Given the following events and conditions:

- Operators started RV pumps 'A' & 'B' due to rising containment temperatures.
- Containment Upper temperature is 90 °F, decreasing.
- Containment Lower temperature is 119 °F, decreasing.
- At 0200, a station blackout occurs on both Units 1 and 2
- Operators implement the appropriate procedures.

Which one of the following pumps provides the assured source of cooling water to maintain containment temperature within Tech Spec limits?

A. '2C' RV pump only

B. '2A' RN pump only

C. '2B' RN pump only

D. Either '2A' or '2B' RN pumps.

Distracter Analysis:

A. **Incorrect**: RN pump 2A supplies. RV pumps could lose power post blackout.
Plausible: RV pump C could be considered the supply since it will try to start on loss of cooling water pressure.

B. **Correct**: on blackout signal, B train RN supply valves close, but the 42A does not, leaving cooling from the A RN pump.

C. **Incorrect**: RN pump 2A supplies RV post blackout.
Plausible: if the candidate thinks supply comes from the B RN train.

D. **Incorrect**: RN pump 2A supplies RV post blackout.
Plausible: if the candidate does not realize one train of valves close on blackout.

Level: RO/SRO

KA: SYS 076 K3.07 (3.7/3.9)

Lesson Plan Objective: CNT-RV Obj. 13

Source: BANK

Level of knowledge: Memory

References:
1. OP-MC-PSS-RN pages 57, 85
2. OP-MC-CNT-RV page 29

Bank Question: 891.1 ***Answer: D***

1 Pt(s) Unit 1 has experienced a rupture of the RN piping inside containment. Emergency procedures prescribe successful response mechanisms if containment water level remains between 3.5 and 10.5 feet.

Why is safe plant recovery not assured for a design basis large break LOCA when containment water level exceeds 10.5 feet?

A. Operation of the ND system is compromised by high suction pressure.

B. Operation of the NS pumps is endangered by excess debris fouling the containment suction strainers.

C. Operation of the hydrogen purge system is compromised by loss of direct access to the containment atmosphere.

D. Operation of critical ECCS components needed for safe recovery is endangered by submersion.

Distracter Analysis:

A. **Incorrect**: 10.5 feet of water will not lift the ND suction relief, or if it did the relief returns to the PRT.
Plausible: High containment level increases ND suction pressure.

B. **Incorrect**: Submergence beyond the reference flood plane will not cause excess debris nor will it transport debris to the suction strainers, which are at the very bottom of the containment sump. Debris is generated by impingement of high energy releases against containment SSCs – the design basis will prevent excess debris if containment is maintained free of foreign material.
Plausible: Clogged suction strainers could occur if submergence of components was a mechanism, which could lift debris. This is a reason to keep foreign material out of containment.

C. **Incorrect**: The hydrogen purge system is far above the 10.5 ft flood plane and would not be compromised.
Plausible: If the hydrogen purge system was submerged, it would fail to operate.

D. **Correct**: The containment flood plane reference is at 10.5 ft. Submersion beyond this level will expose unqualified components to a hostile environment that they are not qualified for.

Level: RO&SRO

KA: EPE W/E 15 EK2.10 (2.7/3.2)

Lesson Plan Objective: EP-FRZ SEQ 4

Source: BANK

Level of knowledge: Memory

References:
1. OP-MC-EP-FRZ page 47

Bank Question: 892.2 ***Answer: A***

1 Pt(s) Unit 1 is operating at 100% power when the OAC registers a low spent fuel pool level alarm. Given the following events and conditions:

- The operators read –2.1 ft SFP level and stable on the main control board.
- The operating KF pump has tripped.
- An NLO reports a large leak in the auxiliary building has stopped.
- Normal SFP makeup is not available.

Which one of the following statements correctly describes the corrective action for this event?

A. **Implement AP/1/A/5500/41 (*Loss of Spent Fuel Cooling or Level*), find and isolate the leak on the KF discharge piping.**

B. **Implement AP/1/A/5500/41 (*Loss of Spent Fuel Cooling or Level*) Find and isolate the leak on the KF suction piping.**

C. **Implement AP/1/A/5500/40 (*Loss of Refueling Canal Level*), and initiate assured makeup due a leak on the discharge piping.**

D. **Implement AP/1/A/5500/40 (*Loss of Refueling Canal Level*), and initiate assured makeup due to a leak on the suction piping.**

Distracter Analysis:

A. **Correct**:

B. **Incorrect**: The leak is on the discharge piping.
Plausible: If the candidate confuses the piping immersion depth with the suction pipes, which are at 4 feet.

C. **Incorrect**:
Plausible:.

D. **Incorrect**: Do not use the assured source, and the leak is on the discharge piping.
Plausible:.

Level: SRO Only

KA: SYS 033 A2.02(2.8/3.3)

Lesson Plan Objective: FH-KF Obj. 4/5/14

Source: BANK

Level of knowledge: comprehension

References:
1. OP-MC-FH-KF pages 19, 23, 49

Bank Question: 894.1 ***Answer: A***

1 Pt(s) Unit 2 is operating at 100 % power. Given the following events and conditions:

- "B" Train of essential operating equipment (RN, KC, NV) is in service.
- 2A RN train is in operation for surveillance testing.
- The RN trains are separated with 2RN-41B *(TRAIN B TO NON-ESS HDR ISOL)* **CLOSED**.

Which one of the following statements correctly describes the potential consequence if 2RN-190B *(RN TO B KC HX CONTROL)* failed to perform its automatic function associated with decreasing B train RN flow?

A. Overheating 2B RN pump.

B. 2B RN strainer goes to 'Backwash' mode due to hi d/p.

C. Overheating the running B train KC pumps.

D. 2RN-41B will open to restore flow to the heat exchanger.

Distracter Analysis:

A. **Correct**: Lose mini-flow protection for RN pump 2B.

B. **Incorrect**: flow would decrease thus reducing d/p.
Plausible: candidate believes that flow through the strainer would increase, causing an auto backwash.

C. **Incorrect**: B train pumps cooled by separate supply.
Plausible: candidate believes heat exchanger and pump cooling come from the same place.

D. **Incorrect**: no auto open signal for RN41B.
Plausible: candidate feels there is some reason for the stated position of 41B in the setup and guesses it can auto open. Valve closes on blackout signal.

Level: RO&SRO

KA: APE 000062 AA1.06(2.9/2.9)

Lesson Plan Objective: PSS-RN Obj 7

Source: Bank

Level of knowledge: Comprehension

References:
1. OP-MC-PSS-RN pages 23, 41, 73, 85
2. OP-MC-PSS-KC page 39

Bank Question: 902.1 ***Answer: A***

1 Pt(s) Unit 2 has just begun to shutdown (decreasing 2MWe/min) for refueling. Given the following events and conditions:

- Pressurizer level is at program level and in 'automatic'.
- The controlling pressurizer level transmitter fails at its current output.
- No operator action is taken.

Which one of the following statements correctly describes the system response as plant load is reduced?

A. Charging flow decreases
Letdown isolates
Pressurizer heaters turn off

B. Charging flow increases
Pressurizer heaters energize
Pressurizer level increase to the trip setpoint

C. Charging flow decreases
Letdown will not isolate
Pressurizer level decreases until the pressurizer is empty

D. Charging flow increases
Pressurizer heaters will not energize
Pressurizer level increases to the trip setpoint.

Distracter Analysis: As load is reduced, Tave will decrease, Program Pressurizer level will decrease. The system will see the controlling channel maintaining a high level and decrease charging in an effort to reduce level. Actual level will decrease. The backup channel will decrease and at 17%, letdown will isolate and heaters will de energize.

A. **Correct**:
B. **Incorrect**: charging flow will decrease.
Plausible: candidate believes charging flow will increase in an effort to maintain the higher level
C. **Incorrect**: letdown will isolate from the bakup channel.
Plausible: if the candidate believes the low level interlock will not be satisfied only from the controlling channel.
D. **Incorrect**: charging flow will decrease.

Plausible: candidate believes charging flow will increase to maintain the higher level

Level: RO&SRO

KA: APE 028 K3.04 (2.9*/3.0*)

Lesson Plan Objective: PS-ILE Obj. 12

Source: BANK

Level of knowledge: Comprehension

References:
1. OP-MC-PS-ILE page 33 (Figure 7.2)

Bank Question: 906.1 ***Answer: C***

1 Pt(s) A station emergency battery is supplying DC bus loads without a battery charger online. If the load on the DC bus does not change, which one of the following statements correctly describes a vital battery's discharge rate (amps) as the battery is expended?

A. **The discharge rate will be fairly constant until the design battery capacity (amp-hours) is exhausted and then will rapidly decrease.**

B. **The discharge rate will decrease steadily until the design battery capacity is exhausted.**

C. **The discharge rate will increase steadily until the design battery capacity is exhausted.**

D. **The discharge rate will initially decrease until approximately 50% design capacity had been expended and then increase until the battery has been exhausted.**

Distracter Analysis:

A. **Incorrect**: The discharge rate increases.
Plausible: This is a typical response for many design systems - If the candidate does not recall that V= IxR.

B. **Incorrect**: The discharge rate increases.
Plausible: If the candidate reverses the effect of decreasing voltage on discharge rate.

C. **Correct**:

D. **Incorrect**: The discharge rate increases.
Plausible: If the candidate does not understand battery theory.

Level: RO&SRO

KA: EPE 055 EK1.01 (3.3/3.7)

Lesson Plan Objective: EL-EPL Obj 12/20

Source: BANK

Level of knowledge: Memory

References:
1. OP-MC-EP-EPL pages 65-67

Bank Question: 911.1 ***Answer: B***

1 Pt(s) The crew has verified natural circulation in ES-0.1 *(Reactor Trip Response)* based on decreasing core exit thermocouple readings and subcooling > 0 °F. Ten minutes later, the operator notes that the thermocouple input to both plasma displays is malfunctioning.

Which one of the following correctly describes a valid indication that natural circulation is continuing?

A. S/G saturation temperatures are decreasing and *REACTOR VESSEL UR LEVEL* indication is greater than 100 %.

B. S/G pressures are decreasing and T_{cold} is at S/G saturation temperature.

C. S/G pressures are decreasing and *REACTOR VESSEL D/P* indication is greater than 100%.

D. S/G pressure is at saturation pressure for T_{cold} and *REACTOR VESSEL D/P* indication is greater than 100 %.

Distracter Analysis:

A. **Incorrect**: There is no indication of coupling between primary and secondary.
Plausible: These are important indications during natural circulation.

B. **Correct**:

C. **Incorrect**: RVLIS is unavailable during natural circulation.
Plausible: S/G pressure decreases during natural circulation and RVLIS is one of the other plasma display indications.

D. **Incorrect**: RVLIS is unavailable during natural circulation.
Plausible: S/G pressure will remain close to saturation for Tcold during natural circulation and RVLIS is one of the other plasma display indications.

Level: RO&SRO

KA: EPE W/E09 EK2.1 (3.2/3.4)

Lesson Plan Objective: EP-E0 Obj. 6

Source: BANK

Level of knowledge: Memory

References:
1. OP-MC-EP-E0 pages 117, 123
2. ES-0.1 page 15
3. ES-0.1 Enclosure 2 page 31

Bank Question: 958 ***Answer:A***

1 Pt(s) Given the following Unit 1 initial conditions:

- Reactor power is at 40%
- Power range NIS indicate:
  - 40% (N41), 41% (N42), 41% (N43), 41% (N44)
- Tave for each loop indicates:
  - 567° F ('A'), 567° F ('B'), 568 ° F ('C'), 568° F ('D')
- Turbine power is at 481 MWe
- Rod control is in automatic
- Group demand counters and DRPI indicate Control Bank 'D' at 140 steps.

Control Bank 'D' Rod L-12 drops fully into the core and the following conditions now exist:

- Power range NIS indicate:
  - 40% (N41), 38% (N42), 42% (N43), 42% (N44)
- Tave for each loop indicates:
  - 564° F ('A'), 564° F ('B'), 563° F ('C'), 564° F ('D')
- Turbine power is 478 MWe

The effect of the dropped rod on the Rod Control System is that rods will initially:

A. **Move out due to the Tave signal providing the largest error signal.**

B. **Move out due to the Power Range NIS input processed by the Mismatch Rate Comparator creating the largest error signal.**

C. **Move in due to Power Range NIS input processed by the Mismatch Rate Comparator creating the largest error signal.**

D. **Move in due to the Tave signal providing the largest error signal.**

Distracter Analysis:

A. **Correct**: Rods move out..
Plausible:.

B. **Incorrect**:.
Plausible:.

C. **Incorrect**:

D. **Incorrect**:

Plausible: .

Level: SRO Only

KA: 000003.AA2.02 (2.7/2.8)

Lesson Plan Objective: IC-IRX OBJ 5/10

Source: New

Level of knowledge: memory

References:
1. OP-MC-IC-IRX page 17

Bank Question: 960 ***Answer: A***

1 Pt(s) Unit 1 is in Mode 6 and fuel reload is complete. Given the following events and conditions:

- Source range counts have increased in the past 45 minutes.
- The Source Range Hi Flux at Shutdown alarm has began to alarm intermittently for the past 30 minutes
- Chemistry has reported boron in the refueling cavity 2650 ppm.
- Only one Charging Pump is available

Which one of the following actions must be implemented under these conditions?

A. Start emergency boration of the NCS.

B. Block Source Range High Flux Reactor Trip.

C. Have IAE adjust Hi Flux at Shutdown setpoints up ½ decade

D. Start alternate boration of the NCS

Distracter Analysis: Note that in the question stem, the given that the Unit is in Mode 6 with core reload complete infers that the rx vessel head is removed or less than fully tensioned.

A. Correct:

B. Incorrect:.
Plausible:

C. Incorrect:.
Plausible: .

D. Incorrect:
Plausible:

Level: RO/SRO

KA: EAPE 000024 G2.2.30(3.5/3.3)

Lesson Plan Objective: OP-MC-AP-AP38 Obj. 3

Source: New

Level of knowledge: comprehension

References: AP/38, Step 11

Bank Question: 961 ***Answer: A***

1 Pt(s) Given the following events and conditions:

The Component Cooling Water System piping has just severed where the Reactor Coolant Pump Component Cooling return combines with the Excess Letdown Heat Exchanger.

Which one of the following statements correctly describes the control room indication(s) that you would see for this failure?

A. NCP Thermal Barrier Outlet valve(s) CLOSED.

B. Containment Sump 'A' level increasing.

C. Seal Water Return flow increasing.

D. Reactor Coolant Pump motor bearing(s) temperature increasing.

Distracter Analysis:

A. Correct:.

B. Incorrect:.
Plausible: Piping junction is located outside of containment.

C. Incorrect:
Plausible: Hi KC flow due to the break will cause the Thermal Barrier valve to auto-close .

D. Incorrect:
Plausible: High KC flows through the motor bearing coolers will cause temps to decrease

Level: RO&SRO
KA: APE 000026.AA1.06 (2.9/2.9)
Lesson Plan Objective: (None)
Source: INPO Exam Bank
Question History: New
Level of knowledge: Comprehension
References: KC Flow Diagram
1.

Bank Question: 962 ***Answer: C***

1 Pt(s) Unit 1 was operating at 100%. Given the following events and conditions:

- The following fans were in operation:
  - Pipe Tunnel Booster Fans
  - Return Air Fans
  - Lower Containment Fans
  - Upper Containment Fans

- A LOCA occurs
- All systems functioned as designed
- Fan switches selected to low speed

Which one of the following describes the alignment of the above containment cooling systems?

A. Pipe Tunnel Booster Fans start and run in low speed

B. Return Air Fans fans start.

C. Lower Containment Fans start and run in high speed

D. Upper Containment Fans start and go to "MAX" position.

Distracter Analysis:

A. **Incorrect**: These fans will not continue to operate since SI.
Plausible: These fans are Shunt tripped off during SI.

B. **Incorrect**: These fans will not continue to operate since SI.
Plausible: These fans are Shunt tripped off during SI

C. **Correct**:
Plausible:

D. **Incorrect**: These fans will not continue to operate since SI
Plausible: These fans are Shunt tripped off during SI.

Level: SRO Only
KA: EPE 000011 EA2.06 (3.7*/4.0*)
Lesson Plan Objective: CNT-VUL Obj 5
Source: Bank
Level of knowledge: memory
References:
1. OP-MC-CNT-VUL page 39, 41

Bank Question: 963 ***Answer: D***

1 Pt(s) Unit 2 was at 75% R.T.P. when a loss of condenser vacuum occurred. Given the following conditions:

- Rods are in automatic
- The steam dump select switch is selected to 'Tave' mode
- Condenser vacuum is slowly decreasing
- No component or instrument failures occurred
- No operator action taken

Which one of the following sequences best describes the actuation of the control rods to this event?

A. Control rods move in due to decreased condenser back pressure

B. Control rods move out due to decreased condenser back pressure

C. Control rods move in due to increased condenser back pressure

D. Control rods move out due to increased condenser back pressure

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Distracter Analysis:

A. Incorrect:
Plausible:

B. Incorrect: -
Plausible:.

C. Incorrect:
Plausible: -

D. Correct

Level: RO/SRO

KA: APE 000051 AK1.04 (2.5*/2.5*)

Lesson Plan Objective: OP-MC-STM-IDE Obj. 9

Source: Modified

Level of Knowledge: Comprehension

References:
1.OP-MC-STM-IDE pages 17-33 (odd only)

Bank Question: 964 ***Answer: D***

1 Pt(s) Unit 1 was at 100% R.T.P. when the following transient occurs:

- A Loss of Offsite Power occurs
- A reactor trip occurs due to failure of the turbine to successfully runback to in house loads
- Diesel Generator "A" fails to start
- Diesel Generator "B" successfully loads bus ETB

What is the basis in E-0 *(Reactor Trip or Safety Injection)* Step 4 RNO for restoration of power to ETA when time allows and continuing with E-0?

A. Minimum shift crews are assumed in the EOPs and manpower is not available to restore power to ETA.

B. The action to restore power to ETA is directed by the TSC only

C. The actions to restore power to ETA will be addressed after transition to ECA 0.0 *(Loss of All AC Power).*

D. Only one train of safeguard equipment is required to deal with the emergency condition.

Distracter Analysis:

A. Incorrect:.
Plausible:
B. Incorrect:
Plausible
C. Incorrect:
D. Correct:

Level: RO&SRO

KA: EAPE 000057 AK3.01 (4.1/4.2)

Lesson Plan Objective: OP-MC-EP-E0 Obj 6

Source: New

Level of knowledge: memory

References:
1. OP-MC-EP-E0 pages 27
2. E-0 Reactor Trip or Safety Injection Step 4

Bank Question: 965 ***Answer: C***

1 Pt(s) Unit 1 was operating at 100% power when the following occurred:

- "1B" FWPT was manually tripped due to an oil leak
- AP/1/A/5500/03 (*Load Rejection*) has been implemented and completed through step 10.

Step 10 has the operator perform the following:

- Place CF pump in manual
- Check "CF Header Pressure at least 100 psig above steam header pressure".
- If CF Header pressure is low the RNO states:

  *"**WHEN** S/G levels are greater than or equal to program level (and CF valves begin closing), **THEN** adjust CF Pump speed to maintain CF HEADER PRESSURE 100-120 psig above "STEAM HEADER PRESSURE".*

What is the basis for this step?

A. As S/G levels are restored the FWPT suction flow decreases and FWPT speed control is slow to decrease FWPT speed.

B. As S/G levels are restored the FWPT suction flow increases and FWPT speed control is slow to decrease FWPT speed..

C. As S/G levels are restored the CF control valves start to close down and FWPT speed control is slow to decrease FWPT speed.

D. As S/G levels are restored the CF control valves start to open and FWPT speed control is slow to decrease FWPT speed.

Distracter Analysis:

A. Incorrect:
Plausible:.

B. Incorrect:.
Plausible:.

C. Correct:

D. Incorrect:.
Plausible:.

Level: RO&SRO

KA: APE 000054 AK3.02 (3.4*/3.7*)

Lesson Plan Objective: OP-MC-AP-AP03, Obj. 3

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-AP-AP03
2. AP/1/A/3300/03 Load Rejection

Bank Question: 966 **Answer: B**

1 Pt(s) Unit 1 is responding to a large-break loss of coolant accident inside containment. Given the following events and conditions:

- Operators have implemented E-0 (*Reactor Trip or Safety Injection*), and are implementing Step 22 (Check if NC System **INTACT**), RNO.
- The RO has just energized the Hydrogen Igniters
- Containment hydrogen pressure spikes to 5 psig and then *immediately* returns to 1.5 psig.

Which one of the following statements correctly describes the correct procedural flow path?

A. **Go to EP/1/A/5000/E-1 *(Loss of Reactor or Secondary Coolant)* and then EP/1/A/5000/FR-Z.1 *(Response to High Containment Pressure)***

B. **Go to E-1**

C. **Go to FR-Z.1**

D. **Implement Generic Enclosure 4 (*Start Hydrogen Recombiners)***

Distracter Analysis:

A. **Incorrect:** .
Plausible:

B. **Correct:**
Plausible:

C. **Incorrect:**
Plausible:

D. **Incorrect:**

Level: SRO ONLY
KA: SYS 028 A2.03(3.4/4.0)
Lesson Plan Objective: VE SEQ 11
Source: NEW
Level of knowledge: Comprehension

References:
1. OP-MC-CNT-VE pages 11, 19, 31

Bank Question: 968 ***Answer: C***

1 Pt(s)

A fire has occurred in the auxiliary building affecting Unit 1 equipment. Transfer of plant control to the auxiliary shutdown panel is not possible due to the fire. AP/1/A/5500/24 (*Loss of Plant Control Due to Fire or Sabatoge*) has been implemented. Transfer of plant control for Unit 1 to the SSF is complete. The OSM asks you to determine natural circulation.

As SRO located at the SSF what indications could you use to determine natural circulation?

A. Steam Generator Pressure and Core Exit Thermocouples

B. NC Loop W/R Pressure and Steam Generator Pressure

C. Incore Thermocouples and NC Loop W/R Pressure

D. NC Loop Tcold and Pressurizer level

Distracter Analysis:

A. Incorrect:
Plausible:

B. Incorrect:
Plausible:

C. Correct:

D. Incorrect:.
Plausible:

Level: SRO Only

KA: APE 068 AA2.11 (4.3/4.4)

Lesson Plan Objective: OP-MC-CP-AD Obj. 8

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-CP-AD page 33

Bank Question: 970 **Answer: D**

1 Pt(s)

A reactor trip and safety injection has occurred and E-0 (*Reactor Trip or Safety Injection*) is in progress. When Safety Injection termination criteria are met, the crew is directed to stop all but one NV pump in Step 25. After securing one NV Pump , plant conditions are as follows:

- S/G N/R levels are at 30% and decreasing
- Pzr Level is stable at 12%
- Pzr Pressure is going down
- Subcooling based on Core Exit Thermocouples is 10 degrees
- FWST level is 185 inches

Select the appropriate procedure for these conditions:

A. **ES-1.3** ***(Transfer to Cold Leg Recirc).***

B. **E-2** ***(Faulted S/G Isolation).***

C. **E-1** ***(Loss of Reactor or Secondary Coolant)***

D. **ES-1.2** ***(Post LOCA Cooldown and Despressurization).***

Distracter Analysis:

A. **Incorrect**: .
Plausible:.

B. **Incorrect**:.
Plausible:.

C. **Incorrect**:
Plausible:.

D. **Correct**:

Level: SRO ONLY
KA: W/E03.EA2.01 (3.4/4.2)
Lesson Plan Objective: OP-MC-EP-E1, Obj. #2
Source: NEW
Level of knowledge: Analysis
References: EP/E-0, Step 26.

Bank Question: 1000 ***Answer:D***

1 Pt(s) Unit 1 has experienced a Loss of All AC Power. EP/1/A/5000/ECA-0.0 (Loss of All AC Power) is in effect. The attempted start of the Standby Make-up Pump was unsuccessful. The crew is at Step 24 of ECA 0.0. This step directs the crew to "*Depressurize intact S/Gs to 210 psig*". Prior to Step 24 of ECA-0.0 there is a NOTE that reads:

"*Pzr level may be lost and reactor vessel head voiding may occur due to depressurization of the S/Gs. Depressurization should not be stopped to prevent these occurrences.*"

Which one of the following describes the bases for this caution?

A. S/Gs should be depressurized to allow the establishment of natural circulation.

B. Reducing NC pressure and temperature maximizes NCP seal life.

C. S/Gs should be depressurized to allow more CA flow to help with cooldown.

D. Reducing NC pressure and temperature minimizes NC inventory loss out of the seals.

Distracter Analysis:

A. **Incorrect:**.
Plausible:

B. **Incorrect**: NCP seals are not the main concern here. Inventory is the concern.
Plausible:

C. **Incorrect**: Turbine Driven CA pump is available. This is not the basis of the step. Inventory is the concern.
Plausible:

D. **Correct**:.

Level: RO&SRO
KA: G 2.4.20 (3.3/4.0)
Lesson Plan Objective: OP-MC-EP-ECA-0 Obj. 4
Source: New
Level of knowledge: Memory
References:
1. OP-MC-EP-ECA-0 pages 45-47

Bank Question: 1001 ***Answer: C***

1 Pt(s)

Unit 2 has just tripped as a result of a loss of offsite power. The following plant conditions exist:

- "2A" D/G failed to start
- "2B" D/G started and loaded bus 2ETB
- Four rods fail to fully insert into the core.
- Reactor Trip Breaker "2B" is closed.
- Intermediate Range SUR is ZERO
- Pressurizer pressure is 2150 psig and slowly decreasing
- Containment pressure is .4 psig and slowly increasing.

EP/2/A/5000/E-0 (*Reactor Trip or Safety Injection*) Immediate Actions are being performed.

Based on the above conditions which one of the following would be the correct procedure flow path?

A. **GO TO AP/2/A/5500/07 (*Loss of Electrical Power*)**

B. **Stay in E-0 (*Reactor Trip or Safety Injection*)**

C. **GO TO EP/2/A/5000/ES-0.1 (*Reactor Trip Response*)**

D. **GO TO EP/2/A/5000/FR-S.1 (*Response to Nuclear Generation*)**

Distracter Analysis:

A. **Incorrect:.**
Plausible:

B. **Incorrect:**
Plausible:

C. **Correct:**

D. **Incorrect:.**
Plausible:

Level: SRO Only

KA: G 2.4.4 (3.3/3.7)

Lesson Plan Objective: OP-MC-EP-E0 Obj. 3

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-EP-E0 pages 25-29
2. EP/2/A/5000/E-0 page 3,4

Bank Question: 1003 ***Answer C***

1 Pt(s) Unit 1 has just experienced a Safety Injection due to a failed open Pressurizer Power Operated Relief Valve (PORV). During the process of implementing EP/1/A/5000/E-0 *(Reactor Trip Safety Injection),* the STA notices that Train "B" of Phase 'A' did not actuate automatically. Which one of the following describes the communication process that should take place to ensure Phase 'A' Train "B" is actuated?

A. **The STA should directly tell the BOP to actuate Train "B" of Phase 'A'.**

B. **The STA should directly tell the Control Room SRO to instruct the BOP to actuate Train "B" of Phase 'A'.**

C. **The STA should tell the OSM who will instruct the Control Room SRO to tell the BOP to actuate Train "B" of Phase 'A'.**

D. **The STA should tell the OSM and Control Room SRO that he/she (the STA) is going to actuate Train "B" of Phase 'A'.**

Distracter Analysis: All communication from the STA should go to the OSM, who relays the communication to the Control Room SRO

A. **Incorrect:.**
Plausible:
B. **Incorrect:**
Plausible:
C. **Correct:**
D. **Incorrect:.**
Plausible:

Level: RO&SRO

KA: G 2.4.15 (3.0/3.5)

Lesson Plan Objective: None

Source: New

Level of knowledge: Memory

References:
1. OMP 4-3 page 25

Bank Question: 1004 **Answer: B**

1 Pt(s)

Unit 1 has experienced a 50% load rejection which resulted in Control Bank "D" Group 1 being greater than 12 steps misaligned from its associated step counter. Tech Spec 3.1.4 Rod Control Group Alignment Limits states:

"All shutdown and control rods shall be OPERABLE; with all individual indicated rod positioners within12 steps of their group step counter demand position".

Which one of the following is the basis for this Tech Spec?

A. Ensure SDM limits are maintained and QPTR is maintained within limits.

B. Ensure power distribution and SDM limits are preserved.

C. Ensure QPTR is maintained within limits and rod alignments are correct.

D. Ensure AFD is maintained and limit power distribution.

Distracter Analysis:

A. Incorrect:.
Plausible:
B. Correct:
C. Incorrect:
Plausible:
D. Incorrect:.
Plausible:

Level: SRO ONLY 55.43b(2)

KA: EAPE 00001AK3.02 (3.2/4.3)

Lesson Plan Objective:OP-MC-IC-IRX Obj. 14

Source: New

Level of knowledge: Memory

References:
1.T.S. 3.1.4 Bases

Bank Question: 1005 ***Answer: A***

1 Pt(s) During RCCA Movement Testing, a 'ROD CONTROL URGENT FAILURE' annunciator alarms.

IAE investigates and reports that two control rods are untrippable.

Which one of the following describes the Action Statement per Tech Specs?

A. **Within one (1) hour verify SDM is within the limits of the COLR AND Be in Mode 3 in six (6) hours**

B. **Initiate boration to restore SDM to within limits AND Be in Mode 3 in four (4) hours.**

C. **Within one (1) hour verify SDM is within the limits of the COLR OR Be in Mode 4 in six (6) hours**

D. **Initiate boration to restore SDM to within limits OR Be in Mode 4 in four (4) hours**

Distracter Analysis:

A. **Correct**:.
B. **Incorrect**: Must be in Mode 3 in 6 hours
Plausible:
C. **Incorrect**: Tech Spec is Mode 3
D. **Incorrect**:. Tech Spec is Mode 3 and Six hours

Level: SRO ONLY

KA: 00001 SYS2.24 (2.6/3.8)

Lesson Plan Objective: OP-MC-IC-IRX Obj.16

Source: New

Level of knowledge: Comprehension

References: T.S. Bases
1. OP-MC-

Bank Question: 1006 ***Answer: D***

1 Pt(s) An NLO has been dispatched to recirculate the Ventilation Unit Condensate Drain Tank (VUCDT) in preparation for doing a release. As recirculation is being established, the 1EMF-44 flow meter ruptures and '1EMF-44 LOSS OF SAMPLE FLOW' annunciator alarms.

Which one of the following describes the reason for this incident?

A. Both Unit 1 VUCDT pumps were simultaneously started.

B. 1WL-359 (*VUCDT Pump Recirc Throttle)* was opened too far and too much flow was initiated.

C. Radwaste Chemistry failed to open 1WM-222 (VUCDT to RC Disch Hdr).

D. 1WL-359 was not throttled prior to VUCDT pump start.

Distracter Analysis:

A. Incorrect:.
Plausible:
B. Incorrect:
Plausible:
C. Correct:
Plausible
D. Correct:.

Level: RO&SRO

KA: EAPE 000059 AA1.03 (3.0/2.9)

Lesson Plan Objective: OP-MC-WE-RLR Obj. 5

Source: New

Level of knowledge: Memory

References:
1. OP-MC-WE-RLR page 17
2. OP/1/A/6500/01A page 16

Bank Question: 1007 ***Answer: B***

1 Pt(s) A Unit 1 reactor trip results in an autostart of the #1 Turbine Driven Auxiliary Feedwater (#1 TDCA) Pump.

Which one of the following describes the design feature that provides for initiation of cooling water to the #1 Turbine Driven CA Pump turbine bearing oil cooler?

A. **Nuclear Service Water (RN) flow from the RN Essential Header is initiated upon autostart when the RN cooling water supply valve to the #1 TDCA Pump turbine oil cooler automatically opens.**

B. **As the #1 TDCA Pump starts and rolls up to speed, Auxiliary Feedwater (CA) from the pump's own discharge piping begins to flow through the #1 TDCA Pump turbine oil cooler and is returned to the pump.**

C. **Component Cooling Water (KC) flow from the KC Essential Header is initiated upon autostart when the KC cooling water supply valve to the #1 TDCA Pump turbine oil cooler automatically opens.**

D. **No cooling water from any source is supplied to either the #1 TDCA Pump's turbine or pump bearings. 'Oilers' with level sightglasses are checked by Non-Licensed Operators on their rounds.**

Distracter Analysis:

A. **Incorrect:.**
Plausible: RN is the cooling water supply to other ESF pump oil coolers.

B. **Correct**:

C. **Incorrect**: KC is used to cool some ESF equipment and oil coolers.
Plausible:

D. **Incorrect:..**
Plausible: 'Oilers' are found on most ESF pump bearings.

Level: RO&SRO
KA: SYS 061 K4.13 (2.7/2.9)
Lesson Plan Objective: (None)
Source: New
Level of knowledge: memory
References:
1. MC 1592 - 1.02 (CA Flow Diagram)

Bank Question: 1008 ***Answer: B***

1 Pt(s) Given the following events and conditions:

- Unit 1 is operating at 37% power.
- Control Bank 'D' Rods are at 180 steps withdrawn
- All control systems are in automatic.
- An electrical fault trips the '1D' Reactor Coolant Pump

Which one of the following describes the prompt effects for **'D' LOOP ONLY** on the primary and secondary sides of the plant?

	Tave	S/G Press	DeltaT	S/G Level
A.	**Increase**	**Increase**	**No Effect**	**Decrease**
B.	**Decrease**	**No Effect**	**Decrease**	**Decrease**
C.	**Increase**	**Increase**	**No Effect**	**Increase**
D.	**Decrease**	**No Effect**	**Decrease**	**Increase**

Distracter Analysis: 'D' Loop flow quickly decreases and is promptly reversed in that loop (M^0 decreases). What was T-hot water now is coming from the T-cold region of the core. Tave will promptly decrease, causing 'D' S/G pressure to promptly decrease. Because loop flow has been decreased, less Q^0 is being removed from that loop and Loop DeltaT will promptly decrease. Because less Q^0 is being transferred into 'D' S/G, that S/G level will 'shrink' promptly.

A. **Incorrect:.**
Plausible:
B. **Correct:**
Plausible:
C. **Incorrect:**
D. **Incorrect:.**
Plausible:

Level: RO&SRO

KA: SYS 002 A1.07 (3.3/3.5)

Lesson Plan Objective: (none)

Source: New

Level of knowledge: Analysis

References: (None)

Bank Question:1009 ***Answer: C***

1 Pt(s) Given the following events and conditions:

- Unit 1 has experienced a Large Break LOCA
- Containment Pressure increased to 5 PSIG.
- NS system automatically started and reduced containment pressure to less than 0.35 PSIG.
- NS is secured (NS pumps stopped and NS discharge valves closed).
- NS has not been 'RESET'.
- Containment pressure returns to 1.1 PSIG.

Which one of the following describes the response of the NS system to the subsequent containment pressure increase?

A. **NS pump discharge valves will open at 0.35 PSIG and the NS pumps will auto start at 0.35 PSIG.**

B. **NS pump discharge valves will open at 0.8 PSIG and the NS pumps will auto start at 1.0 PSIG.**

C. **NS pump discharge valves will open at 0.35 PSIG and the NS pumps will auto start at 0.8 PSIG.**

D. **NS pump discharge valves will open at 0.8 PSIG and the NS pumps will auto start at 3.O PSIG.**

Distracter Analysis:

A. **Incorrect**:.Pump does not start until .8#
Plausible:

B. **Incorrect**: Discharge valves open at .35# and Pump starts at .8#
Plausible:

C. **Correct**:

D. **Incorrect**:. Discharge valves open at .35# and Pump start at .8#
Plausible:

Level: RO&SRO
KA: SYS 006 K1.13 (3.3*/3.6*)
Lesson Plan Objective: OP-MC-ECC-NS Objs. 5,6
Source: New
Level of knowledge: Analysis
References:
1. OP-MC-ECC-NS page 33

Bank Question: 1010 ***Answer: C***

1 Pt(s) Given the following events and conditions:&

Unit 1 is approaching Mode 5 to replace a leaking Pressurizer PORV
NC Cooldown is in progress
'A' Train ND is in the RHR mode.
'A' Train KC is in service at maximum design flow
'A' Train RN is in service
'1A1' KC Pump breaker trips (Overcurrent Relay)

Which one of the following describes the effect on the cooldown rate?

A. **The Reactor Coolant System heats up, the KC System is unaffected.**

B. **No effect on the Reactor Coolant System, the KC System begins to heat up.**

C. **The Reactor Coolant System cooldown rate decreases as the KC System heats up.**

D. **The KC System only begins to heat up, but the ND System maintains a stable Reactor Coolant System cooldown rate.**

Distracter Analysis:

A. **Incorrect:.**
Plausible:
B. **Incorrect:**
Plausible:
C. **Correct:**
D. **Incorrect:.**
Plausible:

Level: RO&SRO
KA: EPE 025 AA1.01 (3.4/3.3)
Lesson Plan Objective: OP-MC-PS-ND Obj.8
Source: New
Level of knowledge: Analysis
References:
1. OP-MC-PS-ND p.43

Bank Question: 1011 **Answer: D**

1 Pt(s) Unit 1 was responding in E-1 *(Loss of Reactor or Secondary Coolant)* to small break LOCA. The crew has just completed Step 8.f when the OATC observes the following parameters:

Given the following parameters at the indicated time:

Parameter	Value
• Stable NCS pressure (psig)	1650
• Core exit T/C temp (°F)	586
• T_{ave} (°F)	572
• T_{hot} (°F)	578
• T_{cold} (°F)	566
• Pressurizer level (%)	28%
• Containment pressure (psig)	1.1
• CA flow to all 4 S/Gs exceeds 450 gpm	

Which one of the following is the crew's next required action?

REFERENCES PROVIDED:
E-1
Databook Curve 1.10B
Steam Tables

A. Remain in E-1, stop NS pumps

B. Transition to ES-1.2 (*Post LOCA Cooldown and Despressurization)*

C. Transition to ES-1.1 (*Safety Injection Termination*)

D. Remain in E-1, return to step 7

Distracter Analysis:

The objective of this question is to determine if the candidates can apply the SI termination criteria and assess saturation conditions in the NC system. **Use of the Unit 1 Databook curve 1.10B is NECESSARY.** Accurate use of the steam tables will lead to an incorrect answer due to a failure to consider the instrument errors involved

From the steam tables:

1500 psig + 14.6 = 1514.6 psia
597 °F = 1510 psia saturation pressure

A. **Incorrect.**
Plausible:
B. **Incorrect:**
Plausible: .
C. **Incorrect answer:** .
D. **Correct:**
.

Level: SRO Only; 10CFR55.43(b)(5)

KA: WE 02 EK1.2(3.4/3.9)

Lesson Plan Objective: EP – E-1 Objective 2

Source: Bank Modified;

Level of knowledge: analysis

References:
1. OP-MC- EP E-1 page 16
2. EP/1/A/5000/E-1 page 5
3. Unit 1 Databook Curve 1.10B
4. Steam Tables

Bank Question: 1012 ***Answer: D***

1 Pt(s) Unit 1 is responding to a small break LOCA using E-1 *(Loss of Reactor or Secondary Coolant).* Given the following events and conditions:

- FWST Level indicates 340 inches
- Containment pressure indicates 1.5 psig
- Containment Sump Level indicates 1.05 ft
- 1EMF-41 (*AUX BLDG VENTILATION*) is in Trip 2 alarm
- Aux Building area radiation monitors are in alarm
- 1EMF-51A and B (*CONTAINMENT TRN A & B*) indicates 25 R/Hr
- Hydrogen Analyzer indicates 0.7% in containment
- NLO's report significant leakage at the seals of the "1A" ND pump

The crew determines that a transition to ECA-1.2 (*LOCA Outside Containment*) is required. Which one of the following actions of ECA-1.2 reduces excessive levels of radiation and guard against personnel exposure?

A. Monitor 1EMF-41 (*AUX BLDG VENTILATION)*

B. Dispatch NLO to energize Hydrogen Recombiners

C. Secure VA (Aux. Bldg. Ventilation System) to limit airborne contamination.

D. Identify and isolate the break

Distracter Analysis: The initial conditions provide a LOCA into containment and a leakage path outside of containment. The question is which of the problems take priority? The purpose is not to memorize procedure steps but to answer this from a broader perspective.

A. **Incorrect**: Monitoring of rad levels does not minimize exposure.
Plausible: If the candidate thinks that the abnormal radiation level requires priority action.

B. **Incorrect**: Energizing the Hydrogen Recombiners does not limit rad exposure in the Aux. Bldg.
Plausible: Small Hydrogen Concentration inside containment exists).

C. **Incorrect**: This is needed to limit personnel exposure..
Plausible: If the candidate thinks there is an airborne problem.

D. **Correct**:

Level: RO&SRO

KA: WE 04G3.10 (2.9/3.3)

Lesson Plan Objective: EP-E1 OBJ 3

Source: Mod;

Level of knowledge: comprehension

References:
1. OP-MC-EP-E1 page 233,235
2. EP/1/A/5000/ECA-1.2

Bank Question: 1013 **Answer:A**

1 Pt(s) Given the following conditions and events:

- Unit 1 has a very small S/G tube leak on S/G '1C'.
- Chemistry reports the leak is .075 gpm.
- 1EMF-73 (Unit 1 Steam Line '1C' Monitor) is in Trip 1 alarm
- 1EMF-33 (Unit 1 Condenser Air Ejector) is in Trip 1 alarm.

Which one of the following correctly describes how the flowpath for dilution of the Steam Jet Air Ejector (SJAE) exhaust is changed in response to this leak?

A. **No effects on SJAE exhaust alignment for dilution flowpath or EMF(s).**

B. **SJAE exhaust dilution is swapped to discharge to the Auxiliary Building Ventilation (VA) Filtered Exhaust and diluted with VA to the Unit Vent.**

C. **All Unit 1 and Unit 2 VA Filtered Exhaust Fans (VA-FXF) and all Unit 1 and Unit 2 Unfiltered Exhaust Fans (VA-UXF) are started to dilute the SJAE exhaust to the Unit Vent(s).**

D. **Unit 2 VA Supply Fans are secured and all Unit 1 and Unit 2 VA is routed to the Unit 1 Unit Vent to dilute the SJAE exhaust.**

Distracter Analysis: The Unit Vent has is own radiation monitoring system, and no changed is required for SJAE exhaust dilution.

A. **Correct:.**

B. **Incorrect:**
Plausible: This is an actual potential alignment for Catawba. If the ability to align the MNS system here existed, this would dilute the exhaust.

C. **Incorrect:**
Plausible:This would increase Unit Vent stack flow.

D. **Incorrect:.**
Plausible: This would increase Unit Vent stack flow.

Level: SRO ONLY 55.43(b)4
KA: EAPE 037 AA2.07 (3.1/3.6)
Lesson Plan Objective: OP-MC-WE-EMF Obj. 2
Source: New
Level of knowledge: Analysis
References: OP-MC-WE-EMF p. 19

Bank Question: 1014 **Answer:B**

1 Pt(s) Unit 2 has experienced a Steam Generator Tube Rupture on S/G '2B'. The operators are currently in EP/2/A/5000/E-3 (*Steam Generator Tube Rupture*). The NC System has been cooled down such that core exit T/Cs are less than required based upon the ruptured S/G pressure. '2B' S/G Narrow Range level indicates 100%. The operators are performing step 20, "Depressurize the NC System".

Which one of the following operational implications of E-3 has the most effect on primary-to-secondary leak rate and NC System pressure drop while maintaining NC subcooling?

A. Initiate NC Depressurization using maximum available Pzr spray flow.

B. Depressurize the NC System by opening one NC Pzr PORV.

C. Depressurize the NC System by opening all NC Pzr PORVs.

D. Open 1NV-21A (NV Spray To PZR Isol).

Distracter Analysis:

A. Incorrect:.
Plausible: Because S/G level is > 73%, is is urgent to rapidly reduce NC pressure and leak rate to preclude release to the environment through the S/G PORVs and Safetys.

B. Correct:

C. Incorrect:
Plausible: Only one PORV is used to control depressurization and maintain control over subcooling.

D. Incorrect:.
Plausible: Because S/G level is > 73%, is is urgent to rapidly reduce NC pressure and leak rate to preclude release to the environment through the S/G PORVs and Safetys.

Level: SRO ONLY 10CFR50.43(b)
KA: EPE 038 EK1.02 (3.9/4.2)
Lesson Plan Objective: OP-MC-EP-E3, Obj. 6
Source: New
Level of knowledge: Analysis
References:
1. OP-MC-EP-E3, pp. 84,85

2. EP/2/A/5000/E-3, Step 20

Bank Question: 1015 ***Answer: D***

1 Pt(s) A BLACKOUT has occurred on 1ETA. D/G '1A' failed to start due to an 86N relay actuation. On Annunciator Panel 1AD-11, 'Battery EVCA Undervoltage' is in alarm.

Per the Annunciator Response Procedure which one of the following addresses the Battery EVCA under voltage condition?

A. Cross tie EVDB to EVDA.

B. Cross tie EVDC to EVDA.

C. Swap Battery Charger Connection box to 2EMXH.

D. Swap Battery Charger Connection box to 2EMXA.

Distracter Analysis:

A. **Incorrect**:. No effect on the battery and can not cross connect EVDB and EVDA.
Plausible:

B. **Incorrect**: No effect on battery.
Plausible:

C. **Correct**:

D. **Incorrect**:.No effect on battery is power for Standby Charger EVCS
Plausible:

Level: RO&SRO

KA: EPE 058 AA2.02 (3.3*/3.6)

Lesson Plan Objective: OP-MC-EL-EPL Obj. 2

Source: New

Level of knowledge: Analysis

References:
1. Annunciator Response Procedure B4 - Battery EVCA Undervoltage

Bank Question: 1016 ***Answer:A***

1 Pt(s) Given the following conditions and events:&

Unit 2 has experienced a large break LOCA inside containment.
EP/2/A/5000/E-0 *(Reactor Trip or Safety Injection)* is complete and the crew has transitioned to EP/2/A/5000/FR-Z.1 (*Response to High Containment Pressure*).
While checking Phase 'B' HVAC equipment in service, the RO notices that the '2A' and '2B' Containment Air Return Fans are not running.

Which one of the following describes the reason the fans are NOT running and actions needed to start the fans?

A. **VX SYS CPCS TRAIN A/B INHIBIT status lights are LIT, dispatch operator to local panels to potentiometer to actuate relays.**

B. **VX SYS CPCS TRAIN A/B INHIBIT status lights are LIT, RO starts fans from control room switch.**

C. **VX SYS CPCS TRAIN A/B INHIBIT status lights are DARK, dispatch operator to local panels to potentiometer to actuate relays.**

D. **VX SYS CPCS TRAIN A/B INHIBIT status lights are DARK, dispatch operator to start fans from local panel on 767' elevation.**

Distracter Analysis:

A. **Correct**:.

B. **Incorrect**: Status light must be dark and can not start without CPCS signal in effect with is indicated by status light.
Plausible:

C. **Incorrect**:
Plausible: Fan would be running if status light was dark.

D. **Incorrect**:.
Plausible: Fan would be running if status light was dark.

Level: RO&SRO

KA: SYS 013 K1.03 (3.8/4.1)

Lesson Plan Objective: OP-MC-CNT-VX Obj.4

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-CNT-VX page 15
2. EP/1/A/5000/FR-Z.1

Bank Question: 1017 ***Answer: C***

1 Pt(s) Unit 2 is in Mode 6 loading fuel. Given the following plant alarms:

- 2EMF-3 *(Containment Refueling Bridge)* Trip 2 alarm.
- 2EMF-4 *(Spent Fuel Building BRDG)* Trip 2 alarm.
- "INCORE INST ROOM SUMP HI LEVEL" annunciator LIT.

Which one of the following procedures should be implemented?

A. **AP/2/A/5500/25 *(Spent Fuel Damage)***

B. **EP/2/A/5000/FR-Z.3 *(Response to High Containment Radiation Level)***

C. **AP/2/A/5500/40 *(Loss of Refueling Canal Level)***

D. **AP/2/A/5500/18 *(High Activity in Reactor Coolant)***

Distracter Analysis:

A. **Incorrect: Must implement AP-40**

B. **Incorrect: Must implement AP-40.**
Plausible:.

C. **Correct These symptoms are an indication of a loss of level in the refueling canal..**
Plausible:

D. **Incorrect: Must implement AP-40.**
Plausible

Level: RO&SRO

KA: SYS 034 A1.02 (2.9/3.7)

Lesson Plan Objective: OP-MC-FH-FC Obj. 6

Source: Bank; BANK

Level of knowledge: comprehension

References:
1. OP-MC-FH-FC page-19

Bank Question: 1018 ***Answer: D***

1 Pt(s) Unit 1 has just experienced a Loss of Offsite Power and the Unit 1 Turbine has tripped.

Which one of the following describes the effect this transient has on the Condenser Circulating Water (RC) and Vacuum Priming (ZP) Systems?

A. RC Waterbox Vacuum breaker valves remain closed if all RC pumps trip, to maintain vacuum in the RC piping.

B. RC Waterbox Vacuum breaker valves open automatically if all RC pumps trip, to prevent structural collapse of the RC piping.

C. RC Waterbox Vacuum breaker valves remain closed if all RC pumps trip, to prevent thermal shocking of the RC piping.

D. RC Waterbox Vacuum breaker valves open automatically if all RC pumps trip, to prevent water hammer of the RC piping.

Distracter Analysis:

A. **Incorrect:.**
Plausible:

B. **Incorrect:**
Plausible:

C. ~~**Correct:**~~ Incorrect

(**D.**) **Correct:.**
Plausible:

Level: RO&SRO

KA: SYS 075 G 2.1.28 (3.2/3.3)

Lesson Plan Objective: OP-MC-MT-RC Obj. 6

Source: New

Level of knowledge: Comprehension

References:
1. OP-MC-MC-RC page 19

Bank Question: 1019 ***Answer: B***

1 Pt(s) Unit 2 has experienced a Steam Generator Tube Rupture (SGTR) on the '1D' S/G. The crew has completed EP/2/A/5000/E-0 (*Reactor Tri or Safety Injection*) and has entered EP/2/A/5000/E-3 (*Steam Generator Tube Rupture*). The crew is performing Step 4 in E-3, which directs the RO to close the MSIV and MSIV bypass valves on the **RUPTURED** S/G. When the CLOSE push button is depressed the valve does not close.

Which one of the following describes the RNO step and the subsequent method of cooldown?

A. **Close MSIVs and MSIV bypass valves on remaining INTACT S/Gs and use ALL PORVs to cool down.**

B. **Close MSIVs and MSIV bypass valves on remaining INTACT S/Gs and use INTACT S/G PORVs to cool down.**

C. **Close MSIVs and MSIV bypass valves on INTACT 'A' and 'B" S/Gs and cool down using PORV on RUPTURED S/G.**

D. **Close MSIVs and MSIV bypass valves on INTACT 'B' and 'C' S/Gs and cool down using condenser dump valves from RUPTURED S/G.**

Distracter Analysis: (Note that "INTACT" and "RUPTURED" are W.O.G. constrained language words and should be **Bolded,** CAPITALIZED, and underlined.)

A. **Incorrect:.**
Plausible:

B. **Correct:**
Plausible:

C. **Incorrect:**

D. **Incorrect:.**
Plausible:

Level: RO&SRO

KA: SYS 035 AA4.06 (4.5/4.6)

Lesson Plan Objective: OP-MC-EP-E3 Obj. 4

Source: New

Level of knowledge: Comprehension

References:
1. OP-MC-EP-E-3 pages 79

Bank Question: 1020 ***Answer: D***

1 Pt(s) Unit 1 is beginning a cooldown to Mode 6 to enter a refueling outage.

Which one of the following describes the:&

Tech Spec/SLC cooldown limits on the NC system and Pressurizer
Reason why (if any) for the differences.

A. **Tech Spec cooldown limit for the NC System is 100 ° F /hour.**
SLC cooldown limit for the Pressurizer is 200 ° F /hour.
NC System cooldown rate is more limiting due to the decrease in the nil ductility reference temperature as exposure to neutron fluence in creases.

B. **Tech Spec cooldown limit for the NC System is 100 ° F /hour.**
SLC cooldown limit for the Pressurizer is 60 ° F /hour.
Pressurizer cooldown rate is more limiting due to the effects of insure/outsurge.

C. **Tech Spec cooldown limit for the NC System is 100 ° F /hour**
SLC cooldown limit for the Pressurizer is 60 ° F /hour
Pressurizer cooldown rate is more limiting due to the concern for non ductile failure of the pressurizer metal.

D. **Tech Spec cooldown limit for the NC System 100 ° F /hour.**
SLC cooldown limit for the Pressurizer is 200 ° F /hour.
NC System cooldown rate is more limiting due to the increase in the nil ductility reference temperature as exposure to neutron fluence increases.

Distracter Analysis: The limits are 100 degrees/hour cooldown rate for the NC System and 200 degrees/hour for the Pressurizer. The reason for the difference is the exposure of the NC system to neutron embrittlement and subsequent changes in the RTndt.

A. **Incorrect:.**
Plausible:

B. **Incorrect:**
Plausible:

C. **Incorrect:**

D. **Correct:.**
Plausible:

Level: RO&SRO

KA: EPE W/E08 EK2.1 (3.2/3.4)

Lesson Plan Objective:

Source: New

Level of knowledge: Comprehension

References:
1. OP-MC-
2. SLC 16.5.8
3. Tech Spec 3.4.3
4. Tech Spec Basis 3.4.3

Bank Question: 1021 ***Answer:D***

1 Pt(s) Given the following conditions and events:

- Unit 1 is at 55% power when a Full load rejection occurs due to the loss of '1A' and '1B' Buslines.
- Main Turbine Impulse Pressure Channel 2 fails "**AS IS**".

Which one of the following describes the correct response of the steam dumps to this event?

A. **Error signal develops between auctioneered Tave and Tref. Steam dumps open to reduce Tave until Tave = Tref.**

B. **Error signal develops between auctioneered Tave and Tref Steam dumps open and Tave reduces to 3 degrees above Tref.**

C. **No error signal developed between auctioneered Tave and Tref. Steam dumps do not open.**

D. **Error signal develops between auctioneered Tave and Tref Steam dumps do not open.**

Distracter Analysis:

A. **Incorrect:.**
Plausible:
B. **Incorrect:**
Plausible:
C. **Incorrect:**
D. **Correct:.**

Level: RO&SRO

KA: SYS 016 K6.01 (3.3/3.5)

Lesson Plan Objective: OP-MC-STM-IDE Obj. 9

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-STM-IDE pages 29,31

Bank Question: 972 ***Answer: C***

1 Pt(s) Unit 1 is at 100% power when the controlling Pressurizer Pressure instrument fails HIGH. Per AP/1A/5500/11 *(Pressurizer Pressure Anomalies)* the first action the operator must take is place "PZR PRESS CNTRL SELECT" switch to an operable channel.

What is the basis for this action?

A. This failure causes PORVs 1NC-32B & 36B to open and a fast response is required to prevent a reactor trip on low pressure.

B. This failure causes all the Pressurizer heaters to energize and a fast response is required to prevent a reactor trip on high pressure.

C. This failure causes PORV 1NC-34A and reactor coolant pump spray valves to open and a fast response is required to prevent a reactor trip on low pressure.

D. This failure causes the reactor coolant pump spray valves to fail closed and the backup heaters to energize and a fast response is required to prevent a reactor trip on high pressure.

Distracter Analysis:

A. Incorrect:.
Plausible:.
B. Incorrect:.
Plausible:
C. Correct:
D. Incorrect:.
Plausible:

Level: SRO Only
KA: APE 000027 AA2.15 (3.7/4.0)
Lesson Plan Objective: OP-MC-PS-IPE, Obj. 12
Source: Bank
Level of knowledge: Memory
References:
1. OP-MC-PS-IPE, p. 35
2. AP/1/A/5500/17, page 2

Bank Question: 973 ***Answer: C***

1 Pt(s) EMF 59 (Equipment Staging Building Ventilation Monitor) is in 'Trip 2'. Which one of the following describes the actions that occur as a result of the Trip 2 alarm?

A. **If VK *(Equipment Staging Building Vent.)* is in "Auto" the supply fans will trip.**

B. **If VK is in "On" the supply fans will trip**

C. **If VK is in "Auto" the exhaust and supply fans will trip.**

D. **If VK is in "On" the exhaust and supply fans will trip.**

Distracter Analysis:

A. **Incorrect**: The exhaust and supply fans trip..
Plausible:

B. **Incorrect**: No effect on system.
Plausible:.

C. **Correct**:

D. **Incorrect**: No effect on system in ON position.
Plausible:

Level: RO&SRO
KA: APE 061 AA1.01 (3.6/3.6)
Lesson Plan Objective: OP-MC-WE-EMF, Obj. 3
Source: New
Level of knowledge: memory
References: OP-MC-WE-EMF, p. 41

Bank Question: 974 ***Answer:D***

1 Pt(s) Unit 2 is operating at 100%, all control system components are in their normal configuration (1-2 position). The controlling pressurizer level channel slowly fails to sixteen percent (16%). Which one of the following describes the effect on the letdown valves?

A. **2NV-1A, 2NV-457A, 2NV-458A 2NV-35A close, and Pzr heaters energize.**

B. **2NV-1A, 2NV-457A, 2NV-458A, 2NV-35A close, and Pzr heaters de-energize.**

C. **2NV2A, 2NV-457A, 2NV-458A, 2NV-35A close and Pzr heaters energize.**

D. **2NV2A, 2NV-457A, 2NV-458A, 2NV-35A close and Pzr heaters de-energize.**

Distracter Analysis:

A. **Incorrect**:.Channel 1 failure closes NV-2A
Plausible.

B. **Incorrect**:.Channel 1 failure closed NV-2A
Plausible:.

C. **Incorrect**:Heaters de-energize
Plausible

D. **Correct**:.

Level: RO&SRO

KA: SYS 004 K4.15 (3.0*/3.4)

Lesson Plan Objective:OP-MC-PS-ILE Obj. 10

Source: New

Level of knowledge: memory

References:
1. OP-MC-PS-ILE pages 15. 23 and 33
2. OP-MC-PS-NV page 23

Bank Question: 975 ***Answer: A***

1 Pt(s) Unit 1 is responding to a LOCA from a trip at full power. Given the following events and conditions:

- A safety injection occurred at 0200.
- FWST level reaches 33 in. at 0246.
- S/I, Sequencers, and Containment Spray have been reset for both trains.
- The 1A NS pump has been successfully swapped to the containment sump.
- 1NS-1B (B NS Pump Suct From Cont Sump) will not open.

Which one of the following is the reason 1NS-1B will not open?

A. 1NI-184B (RB Sump to Train B ND & NS) is CLOSED

B. "NS SYS CPCS TRAIN B INHIBIT" light LIT

C. 1NS-38B (B ND to NS Containment Outside Isol) is CLOSED

D. 1NS-38B (B ND to NS Containment Outside Isol) is OPEN

Distracter Analysis:

A. Correct:.
B. Incorrect
Plausible:
C. Incorrect:.
Plausible:.
D. Incorrect:.
Plausible:.

Level: RO&SRO
KA: SYS 026K4.07(3.8*/4.1*)
Lesson Plan Objective: ECC-NS SEQ ,
Source: New
Level of knowledge: comprehension
References:
1. OP-MC-ECC-NS
2. OP-MC-PS-ND
3. EP/1/A/5000/ES-1.3 pages 10-11

Bank Question: 976 ***Answer: B***

1 Pt(s)

Unit 2 is in an outage. All the fuel is in the spent fuel pool. The spent fuel pool ventilation system is in normal system operation. A fuel shuffle is in progress in the spent fuel pool. During the shuffle a fuel assembly is accidentally damaged and 2EMF-42 (Fuel Building Ventilation Radiation Monitor) goes into Trip 2.

Which one of the following describes the effect on spent fuel pool ventilation system as a result of 2EMF-42 in Trip 2.

A. The VF supply and exhaust fans trip and the filter is placed in the filtration mode.

B. The VF Filter Train Bypass Damper valve closes and the Filter Train inlet and outlet open

C. The VF system is automatically placed in BYPASS MODE and the discharge dampers open and supply dampers close

D. The VF system is automatically placed in the FUEL HANDLING MODE OF OPERATION and the supply fans trip.

Distracter Analysis:

A. Incorrect:.
Plausible:.
B. Correct:
C. Incorrect:
Plausible:
D. Incorrect:
Plausible:.

Level: RO&SRO

KA: SYS 072 K4.02 (3.2*/3.4*)

Lesson Plan Objective: OP-MC-FH-VF Obj 8 & 9

Source: New

Level of knowledge: memory

References:
1. OP-MC-FH-VF pages 17

Bank Question: 977 ***Answer: C***

1 Pt(s) Unit 1 is at 100% power when indications are received of a "1B' Reactor Coolant Pump seal malfunction. AP/1/A/5500/08 *(Malfunction of NC Pump)* is implemented.

Which one of the following conditions describes a number two seal failure?

A. **# 1 Seal Leak off flow – GOING DOWN**
NC Pump number 2 Seal Standpipe low level alarm – LIT
NCDT input – STABLE, OR GOING DOWN

B. **# 1 Seal Leak off flow – GOING UP**
NC Pump number 2 Seal Standpipe high level alarm – LIT
NCDT input – STABLE, OR GOING DOWN

C. **# 1 Seal Leak off flow – GOING DOWN**
NC Pump number 2 Seal Standpipe high level alarm – LIT
NCDT input – GOING UP

D. **# 1 Seal Leak off flow – GOING UP**
NC Pump number 2 Seal Standpipe low level alarm – LIT
NCDT input – GOING UP

Distracter Analysis:

A. **Incorrect:**
Plausible: #1 Seal L/O WILL go down

B. **Incorrect:**
Plausible: High Standpipe level alarm WILL lite.

C. **Correct:**

D. **Incorrect:**
Plausible: NCDT input WILL go up

Level: RO&SRO
KA: SYS 003 (3.1/3.0)
Lesson Plan Objective: OP-MC-PS-NCP, Obj. 12
Source: New
Level of knowledge: Comprehension
References:
1. OP-MC-PS-NCP pages 25-29
2. AP/1/A/5500 Malfunction of NC Pump

Bank Question: 978 ***Answer:B***

1 Pt(s) Unit 2 was operating at 75% power when the following indications were observed:

- S/G Level Deviation Alarms for all S/Gs
- Feedflow/Steamflow Mismatch Alarms for all S/Gs
- FWPTs speed going down
- All Feedwater control switches are in normal position

Which one of the following correctly describes the failure affecting the main feedwater pumps?

A. Steam header pressure transmitter fails HIGH.

B. Steam header pressure transmitter fails LOW.

C. Feedwater header pressure transmitter fails LOW.

D. Feedwater pump d/p program fails HIGH.

Distracter Analysis:

A. Incorrect:.
Plausible:.
B. Correct:.
Plausible:.
C. Inorrect:
D. Incorrect:.
Plausible: .

Level: RO&SRO

KA: SYS 059 A3.04 (2.5*/2.6*)

Lesson Plan Objective: OP-MC-CF-IWE, Obj. 9

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-CF-IWE, p.11

Bank Question: 979 ***Answer:A***

1 Pt(s) The following conditions exist on Unit 2:&

100% power at 1180 MWe

The valve positioner for atmospheric dump valve 2SV-30 fails.

Control room indication shows the valve OPEN.

Which one of the following actions in AP/1A/5500/01 *(Steam Leak)* correctly describes the FIRST direction from the SRO that will CLOSE the open atmospheric dump valve?

A. Instruct the RO to select "OFF RESET" on the STEAM DUMP INTL BYPASS switches.

B. Instruct RO to depress the 'CLOSE' pushbutton on the atmospheric dump valve control room switch.

C. Instruct IAE to energize the P-12 solenoids to close the atmospheric dump valve.

D. Dispatch operator to isolate air to the atmospheric dump valve.

Distracter Analysis:

A. Correct:.
B. Incorrect:. This is the second action
C. Incorrect:
Plausible:
D. Incorrect:. This is the third action of the first two do not work.

Level: SRO Only
KA: SYS 041 A2.03(2.8/3.1)
Lesson Plan Objective: OP-MC-STM-ISE Obj. 4
Source: New
Level of knowledge: Comprehension
References:

1. OP-MC-STM-IDE page 57
2. AP/1/A/5500/01 Steam Leak page 5

Bank Question: 980 ***Answer:A***

1 Pt(s) Unit 1 is holding at 60% power. Pressurizer level and pressure control are selected to the "3-2" position. Given the following conditions:

- A leak develops on the low pressure (process) side of the transmitter for the controlling pressurizer level channel.

Assuming no operator action, which one of the following statements correctly describes the effect of this failure on the Pressurizer level and pressure control systems?

A. **Indicated pressurizer level decreases, NV-238 (*Charging Line Flow Control*) opens, actual pressurizer level increases and pressure goes up.**

B. **Indicated pressurizer level increases, NV-238 closes, actual pressurizer level decreases and pressure goes down.**

C. **Indicated pressurizer level decreases, the pressurizer level master output decreases to increase level and pressure goes up.**

D. **Indicated pressurizer level increases, the pressurizer level master output increases to decrease level, and pressure goes down.**

Distracter Analysis:

(A.) **Correct:** .
Plausible: .

B. **Incorrect:** .
Plausible:.

C. ~~**Correct:**~~ Incorrect

D. **Incorrect:**.
Plausible:.

Level: RO&SRO
KA: SYS 011 K3.03 (3.23.7)
Lesson Plan Objective:OP-MC-PS-ILE Obj. 12
Source: New
Level of knowledge: Analysis
References:
1. OP-MC-PS-ILE pages 27 & 39

Bank Question: 981 ***Answer: D***

1 Pt(s) Unit 1 is operating at 100% power when a leak develops in the tubes of the 1B1 feedwater heater.

Which one of the following describes the automatic actions that occur on an **'EMERGENCY HIGH LEVEL'** in the 1B1 feedwater heater?

A. **Close ALL "B" feedwater heater inlet steam isolations**
Close "B" bleed steam check valve
Close ALL 1st stage reheater steam vents
Close ALL "A" heater normal drain valves
Close 1st stage reheater drain control valves
Open ALL "B" heater bleed steam drain valves
Open 1st stage purge valve for 1B1 feedwater heater

B. **Close ALL "B" feedwater heater inlet steam isolations**
Close ALL "B" bleed steam check valves
Close ALL 1st stage reheater steam vents
Close ALL "A" heater normal drain valves
Close 1st stage reheater drain control valves
Close ALL "B" heater bleed steam drain valves
Open 2nd stage purge valve for 1B1 feedwater heater

C. **Close "1B1" feedwater heater inlet steam isolation**
Close "B" bleed steam check valve
Open ALL 1st stage reheater steam vents
Open 1A1 heater normal drain valve
Open ALL 1st stage drain control valves
Open All "B" heater bleed steam drain valves
Open All 1st stage "B" heater purge valves

D. **Close "1B1" feedwater heater inlet steam isolation valve**
Close "B" bleed steam check valve
Close 1A1 heater normal drain valve
Close All 1st stage reheater steam vents
Close 1A1 1st stage reheater drain control valve
Open "B" heater bleed steam drain valves
Open ALL 1st stage drain valves

Distracter Analysis:

A. **Incorrect:.**
Plausible:.
B. **Incorrect:.**
Plausible:.
C. **Incorrect:**
Plausible:
D. **Correct: .**
.

Level: RO&SRO

KA: SYS 039 A3.02 (3.1/3.5)

Lesson Plan Objective: OP-MC-MT-HAW

Source: New

Level of knowledge: memory

References:
1. OP-MC-MT-HAW page 19

Bank Question: 982 ***Answer:A***

1 Pt(s) Unit 2 has experienced a Steam Line Break inside containment. The "2C" S/G has depressurized to 100 psig and actual W/R level is approximately 10%.

Which one of the following describes the indicated "2C" S/G W/R level response?

A. **S/G W/R level reference leg density decreases, actual d/p goes down, indicated S/G level goes up.**

B. **S/G W/R level reference leg density increases, actual d/p goes down, indicated S/G level goes down**

C. **S/G W/R level reference leg density decreases, actual d/p goes up, indicated S/G level goes down**

D. **S/G W/R level reference leg density increases, actual d/p goes up, indicated S/G level goes up**

Distracter Analysis:

A. **Correct:**
Plausible:

B. **Incorrect:**
Plausible:

C. **Incorrect:**
Plausible:

D. **Incorrect:**
Plausible:

Level: RO&SRO
KA: 000040 K3.06 (3.4/3.9)
Lesson Plan Objective: Op-MC-CF-IFE, Obj. 8,11
Source: New
Level of knowledge: Analysis
References:
1. Data Book
2. OP-MC-CF-IFE p. 35

Bank Question: 983 **Answer: B**

1 Pt(s) "B" Train of essential equipment is in operation on Unit 1.

While performing OP/1/A/6350/002 (*Diesel Generator*) with the "1A' diesel running in parallel to the grid, the following sequence of events occurs:

- Load is reduced on the diesel to 200KW in anticipation of opening the EMERGENCY breaker.
- The RO accidentally OPENS the normal feeder breaker from 1ATC.

Which one of the following describes the system response and the proper procedural response to deal with this situation?

A. **Degraded voltage is sensed on 1ETA and the BLACKOUT sequencer actuates, the crew will use AP/1/5500/07(Loss of Electrical Power).**

B. **The Diesel Generator Sequencer does not actuate, and the diesel generator assumes the load of the bus. The operator uses OP/1/A/6350/002 to return to normal alignment.**

C. **Undervoltage is sensed on 1ETA and the BLACKOUT sequencer actuates, the crew will use AP/1/5500/07.**

D. **The Diesel Generator BLACKOUT sequencer recloses the breaker from 1ATC. Crew reloads the bus using AP/1/A/5500/07, Enclosure 1 (*Manual Loading of Emergency Bus).***

Distracter Analysis:

A. **Incorrect:**
Plausible:

B. **Correct:**
Plausible:

C. **Incorrect:**

D. **Incorrect:.**
Plausible:.

Level: RO&SRO

KA: SYS 064 AA4.04 (2.7/3.0)

Lesson Plan OP-MC-DG-EQB Objective:5

Source: New

Level of knowledge: Comprehension

References:
1. OP-MC-DG-EQB pages 17, 23

Bank Question:985 ***Answer: A***

1 Pt(s) A work team of Maintenance and R.P. personnel have been dispatched to repack the seals on a pump. The work area around the pump is a 800 mrem/hr High Radiation Area. The R.P. personnel are monitoring the Maintenance crew from a low dose area of 60 mrem/hr.

Which one of the following work teams and estimated repair times would maintain worker exposure ALARA?

A. 6 Maintenance and 3 R.P. personnel (9 workers) working for 20 minutes

B. 5 Maintenance and 2 R.P. personnel (7 workers) working for 30 minutes

C. 4 Maintenance and 2 R.P. personnel (6 workers) working for 1 hour

D. 2 Maintenance and 2 R.P. personnel (4 workers) working for 2 hours

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Distracter Analysis:

A. **Correct**: [6x(800/3)] + [3x(60/3)] = 1660 mrem total dose.
B. **Incorrect**: [5x(800/2)] + [2x(60/2)] = 2060 mrem total dose.
Plausible: Fewer workers..
C. **Incorrect**: [4x800] + [2x60] = 3320 mrem total dose.
Plausible: Fewer workers.
D. **Incorrect**: [2x(800x2)] + [2x(60x2)] = 3440 mrem.
Plausible: Fewer workers.

Level: RO&SRO
KA: G2.3.2 (2.5/2.9)
Lesson Plan Objective: RAD-RP Obj. 27,29
Source: NEW;
Level of knowledge: comprehension
References:
1. OP-MC-RAD-RP page 135

Bank Question: 986 ***Answer: D***

1 Pt(s) Level in the "2C" S/G is slowly increasing due to a failure of the Channel 1 N/R S/G level transmitter.

Which one of the following describes the correct response of the S/G level control system to this failure?

A. **The flow error will initially be greater than the level error. A 1% level error will initially produce a 3% valve position change.**

B. **The flow error will initially be greater than the level error. A 1% level error will initially produce a 1% valve position change.**

C. **The level error will initially be greater than the flow error. A 1% level error will initially produce a 1% valve position change.**

D. **The level error will initially be greater than the flow error. A 1% level error will initially produce a 3% valve position change.**

Distracter Analysis:

A. **Incorrect:**. Level error is greater than flow error
Plausible:

B. **Incorrect**: A level error of 1% produces a 3% valve change
Plausible:

C. **Incorrect:** A level error of 1% produces a 3% valve change
Plausible:

D. **Correct**:.

Level: RO&SRO

KA: SYS 059 K3.03 (3.5/3.7)

Lesson Plan Objective: OP-MC-CF-IFE Objs.6,10

Source: New

Level of knowledge: Comprehension

References:
1. OP-MC-CF-IFE pages 23,47

Bank Question: 987 ***Answer: B***

1 Pt(s) The Diesel Generator DC Control Power Breaker for the "1A" D/G has failed and must be replaced by IAE.

Which one of the following components is affected by this failure?

A. D/G "1A" Diesel Fuel Oil Booster Pump

B. D/G "1A" Speed Switches

C. D/G "1A" Battery Charger 1EDGA

D. D/G "1A" Sump Pump Control Power

Distracter Analysis:

A. **Incorrect**:.This pump has its own DC breaker
Plausible:

B. **Correct**:

C. **Incorrect**:This is an AC load
Plausible

D. **Incorrect**:. This is an AC load
Plausible:

Level: RO&SRO

KA: SYS 055 K3.01 (3.7*/4.1)

Lesson Plan Objective: OP-MC-DG-EPQ Obj. 3

Source: New

Level of knowledge: memory

References:
1. OP-MC-DG-EPQ pages 13,19

Bank Question: 988 ***Answer: D***

1 Pt(s) PCB 7 and PCB 8 are part of the 230 KV switchyard. Which one of the following describes the RO's indication he/she has from the control room to monitor breaker position?

A. **Both PCB 7 and PCB 8 are on the OAC and Main Control Board**

B. **PCB 7 and PCB 8 are ONLY available on the OAC**

C. **Main Control Board indication ONLY for PCB 7 and OAC ONLY for PCB 8**

D. **Main Control Board and OAC indication for PCB 8 and OAC indication only for PCB 7**

Distracter Analysis:

A. **Incorrect**:. No control board indication for PCB 7
Plausible:

B. **Incorrect**: PCB 8 has a control board indication
Plausible:

C. **Incorrect**: PCB has no control board indication; PCB 8 is also on the control board
Plausible

D. **Correct**:.

Level: RO&SRO

KA: SYS 062 A4.04 (2.6/2.7)

Lesson Plan Objective: OP-MC-EL-EP Obj 8

Source: New

Level of knowledge: memory

References:
1. OP-MC-EP-EPL pages27,28

Bank Question: 989 ***Answer:D***

1 Pt(s)

There has been a fire in the Unit 2 turbine building basement. The "A' Main Fire Pump auto-started due to a low fire header pressure signal. The fire brigade has extinguished the fire after forty-five minutes.

- "1A" and "1B" Jockey Pumps are '**OFF**'
- "A" Main Fire Pump is running
- "B" and "C" Main Fire Pumps are '**OFF**'

Which one of the following describes the procedural process of recovering from a low fire header pressure and returning the Main Fire and Jockey pumps to normal alignment?

A. **Stop the "A" Main Fire Pump, place the Jockey pump to be started in "MAN", and place the other Jockey pump in "START".**

B. **Stop the "A" Main Fire Pump, place the Jockey pump to be started in "START", and place the other Jockey pump in "MAN".**

C. **Place the Jockey pump to be started in "START", the other Jockey pump in "MAN, and stop the "A" Main Fire Pump.**

D. **Place the Jockey Pump to be started in "MAN", "START" the Jockey Pump selected to "MAN", and stop the "A" Main Fire Pump.**

Distracter Analysis:

A. **Incorrect:.**
Plausible:

B. **Incorrect:**
Plausible:

C. **Incorrect:**
Plausible:

D. **Correct:.**

Level: RO&SRO
KA: SYS 086 A2.02 (3.0/3.3)
Lesson Plan Objective:
Source: New
Level of knowledge: memory
References: OP/1/A/6400/002A Encl. 4.1 page 6

Bank Question: 992 ***Answer: B***

1 Pt(s) Which one of the following describes the automatic operation of 1KC-122 (*KC Surge Tank Vent Valve*)?

A. **1EMF-46A (B) in Trip 1 alarm will cause the vent to close; when the alarm clears the valve will utomatically re-open (the "OPEN" position seals in).**

B. **1EMF-46A (B) in Trip 2 alarm will cause the vent to close; when the alarm clears the valve will automatically re-open (the "OPEN" position seals in).**

C. **1EMF-46A (B) in Trip 1 alarm will cause the vent to close and the "CLOSE" positions seals in; the valve must be locally re-opened.**

D. **1EMF-46A (B) in Trip 2 alarm will cause the vent to close and the "CLOSE" positions seals in; the valve must be locally re-opened.**

Distracter Analysis:

A. **Incorrect**:. Valve does not actuate on trip 1
Plausible:

B. **Correct**:

C. **Incorrect**: Valve does not actuate on trip 1

D. **Incorrect**:.Valve will re-open once signal has cleared
Plausible:

Level: RO&SRO

KA: SYS 008 K4.02 (2.9/2.7)

Lesson Plan Objective: OP-MC-PSS-KC Obj 10

Source: New

Level of knowledge: memory

References:
1. OP-MC-PSS-KC page 21
2. OP-MC-WE-EMF page 33

Bank Question: 993 ***Answer: A***

1 Pt(s) Which one of the following describes the power supply alignment during a BLACKOUT or SAFETY INJECTION for the following containment cooling fans?

A. **On a BLACKOUT the VU Fans (on the affected bus) start, on a SAFETY INJECTION the VU Fans (on the affected bus) are shunt tripped OFF.**

B. **On a BLACKOUT the VL Fans (on the affected bus) are shunt tripped OFF, on a SAFETY INJECTION the VL Fans (on the affected bus) start and run in low speed.**

C. **On a BLACKOUT the VR Fans (on the affected bus) swap to EMERGENCY power, on a SAFETY INJECTION the VR Fans (on the affected bus) are shunt tripped OFF.**

D. **On a BLACKOUT the RA Fans (on the affected bus) are shunt tripped OFF, on a SAFETY INJECTION the RA Fans (on the affected bus) start.**

Distracter Analysis:

A. **Correct**:.

B. **Incorrect**: The VL fans start on affected bus, are shunt tripped off and swap to emergency power on an SI
Plausible:

C. **Incorrect**: The VR fans start on affected bus, and swap to emergency power on an SI

D. **Incorrect**:. The RA fans start on affected bus on Blackout, and are shunt tripped off on SI.
Plausible:

Level: RO&SRO

KA: SYS 022 K2.01 (3.0*/3.1)

Lesson Plan Objective: OP-MC-CNT-VUL Obj. 5

Source: New

Level of knowledge: memory

References:
1. OP-MC-CNT-VUL pages 41

Bank Question: 994 ***Answer: D***

1 Pt(s) During the delivery of chlorine gas cylinders on site a cylinder fell from the truck and ruptured. All control room VC intakes closed except 1VC-9A and 1VC-11B which were mechanically bound and failed to close completely. Chlorine gas has entered the control room. AP/1/A/5500/17 (*Loss of Control Room*) has been implemented on both Units.

As SRO, which one of the following describes your instructions (per AP/17)?

A. **Direct one RO to the reactor trip breakers and immediately trip the reactor. Direct one operator to the front standard of the main turbine and standby.**

B. **Direct one RO to the reactor trip breakers and standby. Direct one operator to the front standard of the main turbine and immediately trip the turbine.**

C. **Direct one RO to the reactor trip breakers and immediately trip the reactor. Direct one operator to the front standard of the main turbine and immediately trip the turbine.**

D. **Direct one RO to the reactor trip breakers and standby. Direct one operator to the front standard of the main turbine and standby.**

Distracter Analysis:

A. **Incorrect:**. Do not trip reactor immediately.
Plausible:

B. **Incorrect**: Do not trip turbine immediately
Plausible:

C. **Incorrect**: Do not trip reactor and turbine until direct later in procedure.

D. **Correct:**.

Level: RO&SRO

KA: G 2.1.8 (3.8/3.6)

Lesson Plan Objective: None

Source: New

Level of knowledge: Memory

References:
1. OP-MC-PSS-VC page 15
2. AP/2/A/5500/17 page 3

Bank Question: 995 ***Answer: D***

1 Pt(s) Unit 2 is operating at 100% power with all rods out. Given the following events and conditions:

- Control Rod 'H-8' drops into the core.
- AP/2/A/5500/14 *(Rod Control Malfunction),* Enclosure 1 *(Response to Dropped Rod)* has being implemented.
- Control Rod 'H-8' has been pulled 150 steps off the bottom of the core.
- Rod 'K-14' drops into the core.

Which one of the following statements correctly describes the operator's response to this event?

A. Continue withdrawal of rod 'H-8'.

B. GO TO AP/1/A/5500/38 (Emergency Boration)

C. Return to Step one (1) of AP/1/A/5500/14.

D. Trip the reactor and GO TO E-0 (*Reactor Trip/Safety Injection*)

Distracter Analysis:

A. Incorrect.
Plausible: By definition, a rod misaligned by more than 50 steps is considered 'dropped'.

B. Incorrect:
Plausible: (See Above)

C. Incorrect:
Plausible: (See Above)

D. Correct:

Level: SRO ONLY
KA: APE 005 AA2.03 (3.5/4.4)
Lesson Plan Objective:
Source: New
Level of knowledge: Memory
References:
1. OP-MN-AP-14 background ENC. 2 step 5 page 32
2. AP-14 page 19
2. OP-MN-RT-RB page 27

Bank Question: 996 ***Answer: D***

1 Pt(s) Unit 1 has experienced a 50% runback due to the loss of Busline 1A. AP/1/A/5500/03 Load Rejection has been implemented and the Immediate Actions have been completed. Based on the indicated Power Mismatch (PMM) and Temperature Mismatch (TMM), which one of the following correctly describes rod movement?

A. **PMM = 0, TMM = +4.**
Rods OUT at 40 steps per minute

B. **PMM = -4, TMM = 0.**
Rods IN at 40 steps per minute

C. **PMM = +3, TMM = +3.**
Rods OUT at 72 steps per minute

D. **PMM = +1.5, TMM = +1.5.**
Rods IN at 8 steps per minute

Distracter Analysis: (Note that both PMM and TMM are measured in degrees.)

A. **Incorrect**:. Rods step IN
Plausible:

B. **Incorrect**: Rods step OUT
Plausible:

C. **Incorrect**: Rods step IN

D. **Correct**:.

Level: RO&SRO

KA: G 2.2.33 (2.5/2.9)

Lesson Plan Objective: OP-MC-IC-IRX Obj. 5,6,7,8

Source: New

Level of knowledge: Analysis

References:
1. OP-MC-IC-IRX pages 27,29,31

Bank Question: 997 ***Answer: B***

1 Pt(s) During the process of implementing a Temporary Modification (TM) affected drawings are notated to refer the Operators to the appropriate TM package.

Which one of the following describes the process for notating a Temporarily Modified on the drawing in the ontrol room?

A. **Flow diagrams and electrical one line drawings MUST always be red-marked to reflect the temporary modification.**

B. **Flow diagrams and electrical one line drawings should NOT be red-marked to reflect the temporary modification.**

C. **Flow diagrams MUST be red-marked to reflect the temporary modification, electrical one line drawings should NOT be red marked to reflect the temporary modification.**

D. **Flow diagrams should NOT be red-marked to reflect the temporary modification, electrical one line drawings MUST be red marked to reflect the temporary modification.**

Distracter Analysis: Flow diagrams and electrical one line drawings should NOT be red marked to reflect the temporary modification due to the temporary nature of such changes.

A. **Incorrect:.**
Plausible:

B. **Correct:**

C. **Incorrect:**
Plausible:

D. **Incorrect:.**
Plausible:

Level: RO&SRO
KA: G 2.2.11 (2.5/3.4)
Lesson Plan Objective:
Source: New
Level of knowledge: memory
References:
1. OMP 10-2, page 4

Bank Question: 998 ***Answer:D***

1 Pt(s) Which one of the following would require the use of an R&R for managing configuration control?

A. **Troubleshooting activities and needed to meet the intent of a procedure and is within the original system design.**

B. **Long term system alignments and needed to meet the intent of a procedure and is within the original system design**

C. **An alternate component or alignment which it NOT within the original design and intent of the system is desired.**

D. **The use of an alternate component or alignment is needed to meet the intent of a procedure and is within the original system design.**

Distracter Analysis:

A. **Incorrect:.**
Plausible:

B. **Incorrect:**
Plausible:

C. **Correct:**
Plausible:

D. **Correct:.**

Level: SRO ONLY

KA: G 2.2.14 (2.1/3.0)

Lesson Plan Objective:

Source: New

Level of knowledge: Memory

References:
1. OMP-7-1, page 7

Bank Question: 999 **Answer: B**

1 Pt(s) Which one of the following must the Control Room SRO ensure prior to authorizing a Liquid Waste Release from the Waster Monitor Tank (WMT)?

A. **A source check has been performed on EMF-44.**

B. **The required number of RC pumps is in operation.**

C. **The "Recommended Release Rate" is equal to the "Allowable Release Rate".**

D. **The "Expected CPM of EMF 44" and the "EMF 44 Trip 1 Setpoint" are less than the "EMF 44 Trip 2 Setpoint"**

Distracter Analysis:

A. **Incorrect:**. EMF 49 is used for WMT releases
Plausible:

B. **Correct:**

C. **Incorrect**: Recommended release rate must be less than allowable release rate

D. **Incorrect:**.EMF 49 is utilized
Plausible:

Level: SRO Only

KA: G 2.3.6 (2.1/3.1)

Lesson Plan Objective: OP-MC-WE-RLR Obj. 3

Source: New

Level of knowledge: Memory

References:
1. OP-MC-WE-RLR page 13

Bank Question: 991 ***Answer: A***

1 Pt(s) Which one of the following is a correct list of SAFTETY LIMITS?

A. **Thermal Power, RCS Highest Loop Tave and Pressurizer Pressure.**

B. **Thermal Power, AFD, Pressurizer Pressure.**

C. **AFD, QPTR and Reactor Power.**

D. **Li ear Heat Generation Rate, Thermal Power and QPTR.**

Distracter Analysis:

A. **Correct:.**
Plausible:
B. **Incorrect:**
Plausible:
C. **Incorrect:**
D. **Incorrect:.**
Plausible:

Level: SRO Only

KA: G 2.1.10 (2.2/3.9)

Lesson Plan Objective: (None)

Source: New

Level of knowledge: memory

References:
1. Tech Spec 2.1.1

Bank Question: 990 ***Answer: C***

1 Pt(s) Which one of the following is the power supply to the "2B" Safety Injection Pump?

A. **1ETB**

B. **1EMXB**

C. **2ETB**

D. **2EMXB**

Distracter Analysis:

A. **Incorrect**: Unit 1 power supply
Plausible:

B. **Incorrect**: Unit 1 power supply
Plausible:

C. **Correct**:

D. **Incorrect**:.Load center does not supply power to NI pump
Plausible:

Level: RO&SRO

KA: SYS 013 K2.01 (3.6/3.8)

Objective: Op-MC-ECC-NI, Obj. 5

Source: New

Level of knowledge: memory

References: OP-MC-ECC-NI, p. 13