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1.

Unit 1 has experienced a Safety Injection due to the 'A' PRZR Safety Valve opening. The following conditions exist:

- Tavg is 537°F.
- RCS Pressure is 1270 psig and rising.
- Subcooling is 40°F.
- AFW flow is 485 gpm.
- SG NR LVLS are:
  1A SG - 21%, 1B SG - 18%, 1C SG -19% and ALL are rising.
- PRZR level is 90% and rising.
- 'A' PRZR Safety Valve position red and green indicating lights are both LIT.
- Containment pressure is 0 psig.
- PRT level is rising.
- PRT pressure is rising.
- EEP-1.0, Loss Of Reactor Or Secondary Coolant, has just been entered.

Which one of the following is the correct procedure flowpath for this condition from step 7 of EEP-1.0?

EEP-1.0 step numbers and actions are as follows:

Step 7 [CA] Check SI termination criteria.
AND
Step 11, Check RCS pressure.

A. Transition to ESP-1.1, SI Termination at step 7, since all SI Termination criteria are met.

B. Continue in EEP-1 at step 7, but return to step 1 of EEP-1 at step 11, since RCS pressure is rising.

C. Continue in EEP-1 at step 7, and continue in EEP-1 at step 11, then transition to ESP-1.2, Post Loca Cooldown And Depressurization, from EEP-1 since a LOCA is in progress.

D. Continue in EEP-1 at step 7, and continue in EEP-1 at step 11, then transition to ESP-1.3, Transfer To Cold Leg Recirculation, from EEP-1 since a LOCA is in progress.

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SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: EEP-1, Revision 29

Learning Objective: 3. State the basis for all cautions, notes, and actions associated with EEP-1. (OPS52530B03)
8. Evaluate plant conditions and determine if transition to another section of EEP-1 or to another procedure is required. (OPS52530B08)

Comments: k/a match: This questions tests knowledge of two different notes in the EEP-1 procedure relating to the steam space break and the difference in the procedural actions for a steam space LOCA rather than for another type LOCA or a steam Generator Fault. The SRO only knowledge is the procedure flowpaths affected by the PRZR Safety stuck open, and the notes direct this procedure flowpath to differ from the flowpath of another type LOCA or SG fault.

NOTE for technical and operational validity:

Ran on simulator with 'A' PRZR Safety stuck open, and at 1030 psig closed the safety to 5% open, simulating a Safety lifting BELOW its normal setpoint, and then only partially reseating at a lower pressure. At this point, SI flow was greater than break flow, and RCS pressure started rising (with a known LOCA still in progress). The PRT had not ruptured yet, so adverse numbers were not in effect.

2.

A Large Break LOCA has occurred on Unit 1, and conditions are as follows:

- ECP-1.1, Loss Of Emergency Coolant Recirculation, is in progress due to the loss of recirc capability.
- ALL RCPs are secured.
- Normal Charging has been established with suctions lined up from the RWST.
- RVLIS indicates 16% Upper Plenum Level.
- Core Exit T/Cs are stable.

Which one of the following describes the condition of core cooling, and what is required by ECP-1.1 due to these conditions?

Core Cooling is:_____

A. adequate. Go to procedure and step in effect.

B. NOT adequate. Increase RCS makeup flow to raise RVLIS level to > 72% UPPER PLENUM level.

C. adequate. Maintain at least the current RCS makeup flow rate.

D. NOT adequate. Increase RCS makeup flow to maintain Core Exit T/Cs falling.

SRO level 10 CFR 55.43(b) (5)
This question tests the SRO knowledge of recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: ECP-1.1 Rev. 27

Learning Objective: Evaluate plant conditions to determine if any system components need to be operated while performing ECP-1.1 and ECP-1.3 (OPS52532D06).

Comments: k/a match: Determining adequate core cooling in a LBLOCA is determined in ECP-1.1 (loss of recirc capability) as CETCs stable or falling and RVLIS level (different level requirements for RCPs running or not). This question requires an SRO to know these criteria and procedure flowpaths well past the entry conditions and initial steps of the major EEPs in the ERG network.

3.

Unit 1 is at 8% reactor power.

The following conditions exist:

- At 1000 the Pressurizer level loop for LT-459 is put in Test by I&C.
- At 1010 the Pressurizer LT-460 fails high.

Which one of the following correctly states whether or not the Reactor Trips, and correctly states the applicability for the Pressurizer Water Level Function and reason per TS BASIS for TS 3.3.1, Reactor Trip System (RTS) Instrumentation.

A. ✓
- The Reactor does **NOT** trip.
- TS 3.3.1 is **NOT** APPLICABLE since the transients that could raise the pressurizer water level will be slow and the operator will have sufficient time to take corrective actions.

B.
- The Reactor does **NOT** trip.
- TS 3.3.1 is **NOT** APPLICABLE since one pressurizer water level channel may be in test for up to 4 hours.

C.
- The Reactor trips.
- TS 3.3.1 is APPLICABLE since the Pressurizer Water Level Function protects from overpressurization as a backup to the Pressure function.

D.
- The Reactor trips.
- TS 3.3.1 is APPLICABLE since the Pressurizer Water Level Function is needed to protect against water relief through the pressurizer safeties.

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SRO level 10 CFR 55.43(b) (2)

The SRO knowledge of the TS BASIS for the LCO 3.3.1 Water Level Function 9 is required to answer this question in the second part. One of the distractors contains the 4 hour allowance to place a channel in test for a surveillance per note in LCO 3.3.1 condition M, which is in the ACTIONS below the double line of LCO 3.3.1.

Technical Reference: TS 3.3.1 & BASIS Amendments 146 (U1), 137 (U2)
FNP-1-EEP-0.0, Revsion 36 (Reactor Trip setpoints)

Learning Objective: 2. Evaluate plant conditions to determine if entry into EEP-0/ESP-0.0 is required. (OPS52530A02)

6. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Reactor Protection System (OPS52201I10).
   - 3.3.1 Reactor Trip System (RTS) Instrumentation
   - 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

Comments: k/a match: The K/A requires strictly RO knowledge of Reactor Protection system setpoints, interlocks (P-7 automatically allows a reactor trip on hi pressurizer level >10% power and automatically defeats the Reactor trip on High Pressurizer Level below 10% power). P-7 is an interlock and and it has a setpoint and automatic actions associated with EOP entry conditions.

4.

Unit 1 is in **Mode 4** with conditions as follows:

- A Train RHR is in service in the cooldown alignment.
- B Train RHR is secured and in the cooldown alignment.
- B Train RHR pump room cooler will not start.
- Charging flow is increasing in auto.
- Pressurizer level has just started dropping.
- PG3, CTMT SUMP LVL HI-HI OR TRBL, is in alarm.
- The Health Physics Technician on the 105' CTMT reports that a lot of water is on the floor of the 105' coming from the area of the penetrations outside the Bio Shield.

Which one of the following correctly states the actions required by the event in progress per AOP-12, Residual Heat Removal System Malfunction, and what is the Tech Spec requirements?

A. ✓ • Isolate both trains of RHR.

• Enter LCO 3.5.3, ECCS shutdown.

B. • Isolate both trains of RHR.

• A Loss of Safety Function (LOSF) Evaluation is required to determine LCO applicability.

C. • Isolate 'A' train RHR.

• Enter LCO 3.5.3, ECCS shutdown.

D. • Isolate 'A' train RHR.

• A Loss of Safety Function (LOSF) Evaluation is required to determine LCO applicability.

SRO level 10 CFR 55.43(b) (2 & 5)
This question tests the SRO knowledge of recalling what strategy or action is written into a plant procedure, including when the strategy or action is required. The distractors require knowledge of proper use of support system operability affects and Loss of safety function evaluations which are both SRO only knowledge.

Technical Reference: FNP-1-AOP-12.0 Residual Heat Removal System Malfunction Revision 18.0,
FNP-0-SOP-0.13 Version 11.0, steps 3.1.10 & 4.0 & FIG. 2
TS 3.5.3, Amendment No. 170 (Unit 1), Amendment No. 163 (Unit 2)

Learning Objective: 6. Evaluate plant conditions to determine if any system components need to be operated while performing AOP-12.0. (OPS52520L06)

1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Residual Heat Removal System (OPS52101K01).
   - 3.4.3, RCS Pressure and Temperature (P/T) Limits
   - 3.4.6, RCS Loops – MODE 4
   - 3.4.7, RCS Loops - MODE 5, Loops Filled
   - 3.4.8, RCS Loops - MODE 5, Loops Not Filled
   - 3.4.12, Low Temperature Overpressure Protection (LTOP) System
   - 3.4.14, RCS Pressure Isolation Valve (PIV) Leakage
   - 3.5.2, ECCS – Operating
   - 3.4.3, ECCS – Shutdown
   - 3.9.4, Residual Heat Removal (RHR) and Coolant Circulation - High Water Level
   - 3.9.5, Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level
   - TR 13.5.1, Emergency Core Cooling System (ECCS)

Comments: k/a match: This question provides indications for a leak from the RHR system into Containment. The applicant must correctly interpret a list of indications, and from the indications determine what is the course of action required to mitigate the conditions, and interpret what LCO requirements are in effect.

5.

Unit 1 has experienced a LOCA, and the following conditions exist:

- EEP-1, Loss Of Reactor Or Secondary Coolant, is in progress.
- Startup of the 1A Post Accident H2 Recombiner is in progress.

	CTMT Temperature (°F)	CTMT Pressure (psig)
Pre-event	100°F	0.0 psig
Current	120°F	1.5 psig

Which one of the following is the proper Power Out Setting (kw) per EEP-1, Loss Of Reactor Or Secondary Coolant, Attachment 3, Figure 1, and the **MAXIMUM** allowed Containment Hydrogen concentration at which EEP-1.0 allows the H2 recombiners to be started?

REFERENCE PROVIDED

A. 49.0 kw, 3.9%

B. 49.0 kw, 3.4%

C. 51.0 kw, 3.9%

D. 51.0 kw, 3.4%

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SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: FNP-1-SOP-10.0 Version 33, FNP-1-EEP-1.0, Revision 29

Learning Objective: 10. Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Post LOCA Atmospheric Control System including (OPS40302E11):

- Hydrogen Recombiners
- Hydrogen Recombiner Control Panel

3. Identify any special considerations such as safety hazards and plant condition changes that apply to the Post LOCA Atmospheric Control System (OPS52102D04).

Comments: k/a match: The electric Post LOCA recombiner power out setting is addressed by a curve in EEP-1, and also in SOP-10.0. Recombiner operation is an RO function, and to meet the k/a the first part is at the RO level. The power setting is determined by a curve in the procedure, and the reference curve is provided for this question. Then, the proper setting based on parameters given must be obtained from the curve. The second part is testing SRO Knowledge of procedure strategy of when the recombiner operation is allowed based on H2 concentration. This limit is provided in the EEP-1 procedure steps but not the SOP ('normal' System operating procedure).

6.

A Unit 2 startup is in progress with plant conditions as follows:

- Reactor Power is 54%.
- 'A' RCS temperature LOOP is in test for a Surveillance and the corresponding Tavg 412D, Tavg 2A RCS LOOP, output is failed high.
- The B RCS Loop Tcold RTD fails high at the same time.
- An LCO evaluation is in progress
  - TS 3.3.**2**, ESFAS instrumentation, has been entered.
  - TS 3.3.**1**, RTS Instrumentation, is being evaluated.

Which one of the following is the correct pressurizer level response, with no operator action, and which Tech Spec required actions will the SRO direct after evaluation of Tech Spec 3.3.1?

A. ✓
- Pressurizer level will stabilize at approximately 50%.
- Enter LCO 3.0.3. Return the 'A' RCS temperature LOOP to service. Then, remain in LCO 3.3.1.

B.
- Pressurizer level will stabilize at approximately 36%.
- Enter LCO 3.3.1. Bypass the inoperable channel up to 4 hours to complete the Surveillance.

C.
- Pressurizer level will stabilize at approximately 50%.
- Enter LCO 3.3.1. Bypass the inoperable channel up to 4 hours to complete the Surveillance.

D.
- Pressurizer level will stabilize at approximately 36%.
- Enter LCO 3.0.3. Return the 'A' RCS temperature LOOP to service. Then, remain in LCO 3.3.1.

SRO level 10 CFR 55.43(b) (2)
This question tests the SRO knowledge of TS Beyond the RO level due to needing to have knowledge of actions below the double line of the LCOs & application of generic LCO requirement 3.0.3.

Technical Reference: FNP-2-AOP-100, Version 4.0,
TSs 3.3.1, 3.0.3, & 3.3.2, Amendment No. 146 (Unit 1),
Amendment No. 137 (Unit 2)

Learning Objective: 4. Predict and explain the following instrument/equipment response expected when performing TAVG, ΔT, and PIMP System evolutions including the fail condition, alarms, trip setpoints (OPS52201J08):
- Thot RTD fails high
- Thot RTD fails low
- Tcold RTD fails high
- Tcold RTD fails low

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- PT-446 failures
- PT-447 failures
- High TAVG Alarm
- TAVG Deviation Alarm
- Rod Insertion Limit Computer
- ΔT Deviation Alarm
- Steam Dump control
- Pressurizer Level Control

5. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the TAVG, ΔT, and PIMP System (OPS52201J10):
   - 3.3.1 Reactor Trip Instrumentation
   - 3.3.2 Engineered Safety Features Actuation Instrumentation
   - 2.1.1 Reactor Core Safety Limits

Comments: k/a match: This question provides a failure of a Temp instrument which will affect the PRZR level setpoint. The given conditions require an evaluation to determine how this will affect the PRZR Level Control system. A PRZR Level Control Malfunction will be caused. This is RO required knowledge, and to test at the SRO level, Application of appropriate Tech Specs including 3.0.3 is added for a second part to the question and choices. Knowledge of actions below the double line in the LCOs (must know that there are no actions for 2 channels inoperable in 3.3.1, even though there is a two channel inoperable condition in 3.3.2) is required to determine that 3.0.3 is applicable for TS 3.3.1, and how to properly apply the note allowing bypassing the inoperable channel for 3.3.1.

NOTE: TS 3.3.2 Has been put in the stem intentionally and is not part of the evaluation required from memory. it has 4.e. condition D requiring 3.0.3 if 2 channels are inop, and 7.d. condition K which allows 2 channels inoperable without invoking 3.0.3. There was no desire nor need to add 3.3.2 and that much more complexity to a written test question.

Ran on simulator to ensure this is what happens. Verified correct. As long as the Temperature element fails gradually (over two minutes was tested), OPDT AND OTDT do not cause a reactor trip which would change the answer and put the plant in mode 3 where the TS is not applicable. If the TE failed instantly, the rate compensation part of the OTDT and OPDT calc caused the setpoint to lower faster than the Delta T due to TAVG changing so quickly and penalizing the setpoint.

7.

Unit 1 was at 100% power. The following conditions exist:

- AOP-14.0, Secondary System Leakage, is in progress.
- Reactor power rose to 101.8% prior to a ramp down to 99.5% power.
- The Rover reports steam coming out the grating of the MSVR and he cannot safely approach the leak in the MSVR to investigate further.

Which one of the following is the proper sequence of actions IAW AOP-14.0?

Procedure names are as follows:

AOP-14.0, Secondary System Leakage
EEP-0.0, Reactor Trip Or Safety Injection
UOP-3.1, Power Operation
UOP-2.1, Shutdown Of Unit From Minimum Load To Hot Standby
UOP-2.2, Shutdown Of Unit From Hot Standby To Cold Shutdown

A. Shutdown the Reactor per AOP-14.0, UOP-3.1, UOP-2.1 and UOP-2.2.

B. Trip the Reactor, initiate Safety Injection, perform EEP-0.0 immediate actions.

C. Trip the Reactor, **BOTH** operators perform EEP-0.0 immediate actions, then the Unit Operator closes MSIVs.

D. Trip the Reactor, the UO closes MSIVs while the OATC completes EEP-0.0 immediate actions, then the Unit Operator completes the immediate operator actions.

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SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: FNP-1-AOP-14.0, Rev. 4, FNP-1-EEP-0.0, Rev. 36

Learning Objective(s): 8. Evaluate plant conditions and determine if transition to another section of AOP-14.0 or to another procedure is required. (OPS52521O08)
2. Evaluate plant conditions to determine if entry into EEP-0/ESP-0.0 is required. (OPS52530A02)

Comments: k/a match: This k/a is strictly RO knowledge: entry conditions and immediate actions of EOPs, combined with the Main Steam and Reheat system. To answer this question, the applicant must know both that this main steam system leak is an entry condition for EEP-0 requiring a manual trip (Even though it does not approach or exceed any automatic setpoints), and that the normal sequence of immediate actions are not followed due to AOP-14 direction. This question provides an entry condition to EEP-0 from a failed open valve in the Main Steam System. Since it is from the AOP-14 procedure, the choices involve SRO only knowledge of the procedure flowpath of the AOP (past the entry conditions and there are no immediate actions in AOP-14), and knowledge of the need to enter EEP-0 and the order of the immediate actions of EEP-0.

8.

Unit 1 is at 28% power, and KK1, TURB COND VAC LO, annunciator has come into alarm. System Operators were sent to investigate.

The following parameters are observed on the Integrated Plant Computer (IPC), PPC 14, CONDENSER DETAIL page:

POINT ID	DESCRIPTION	VALUE	UNITS
PT0214	CONDENSER A PRESSURE	2.421	PSIA
PT0215	CONDENSER B PRESSURE	2.383	PSIA

Which one of the following is required by procedures based on these IPC parameters while attempts continue to restore condenser vacuum?

Procedure names are as follows:

AOP-8.0, Partial Loss Of Condenser Vacuum
AOP-3.0, Turbine Trip Below P-9 Setpoint
AOP-17.0, Rapid Load Reduction

A. ✓
- Manually trip the Main Turbine per AOP-8.0 and perform AOP-3.0 in parallel with AOP-8.0.
- Reduce reactor power to 8%, and transfer Steam Dumps to STM PRESS mode.

B.
- Reduce load rapidly per AOP-8 and AOP-17.0 until either the Main Turbine is off-line or annunciator KK1 is clear.
- Reduce reactor power to 8%, and transfer Steam Dumps to STM PRESS mode.

C.
- Manually trip the Main Turbine per AOP-8.0 and perform AOP-3.0 in parallel with AOP-8.0.
- Stabilize reactor power, verify Steam Dumps are working properly in the Tavg mode. When condenser vacuum returns to normal, adjust rods and load until Steam Dumps have closed, then reset the LOSS OF LOAD INTERLOCK, C-7A.

D.
- Reduce Load rapidly per AOP-8 and AOP-17.0 until either the Main Turbine is off-line or annunciator KK1 is clear.
- Stabilize Reactor power, verify Steam Dumps are working properly in the Tavg mode. When condenser vacuum returns to normal, adjust rods and load until Steam Dumps have closed, then reset the LOSS OF LOAD INTERLOCK, C-7A.

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SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: SOP-18, Ver. 9, AOP-3, Ver. 15, AOP-8, Rev. 16, AOP-17, Rev. 16, UOP-1.2, Ver. 87, UOP-3.1, Ver. 93

Learning Objective:
4. Describe the sequence of major actions associated with AOP-8.0 (OPS52520H04).
5. Assess plant conditions to determine if any system components need to be operated while performing AOP-8.0 (OPS52520H06).
6. Analyze plant indications to determine the successful completion of any step in AOP-8.0 (OPS52520H07).
7. Assess plant conditions and determine if transition to another section of AOP-8.0 or to another procedure is required (OPS52520H08).

Comments: k/a match: there are no plant computer points that monitor specific valves, pressures, temperatures, or flows in the condenser air removal system. Condenser pressure does have computer points, and is a direct indication of the condenser air removal system operation. Condenser pressure is used to evaluate system or component status (determines whether the CARS is working correctly or not). These parameters are provided for evaluation in this question. Course of action on the SRO level is determined by the evaluation of the condenser vacuum, procedure selection based on the parameters, and knowledge of the procedure actions within the procedures.

9.

Unit 2 was at 100% power. Conditions are as follows:

- The 2B DG is tagged out for maintenance.
- The HVSYD feeds to 2A and 2B Startup Transformers have just become deenergized causing an LOSP and Reactor Trip.

Which one of the following is correct IAW Tech Spec 3.8.1, AC Sources—Operating, and associated **MAXIMUM** time allowed to be in mode 5?

A. Enter LCO 3.0.3 and be in Mode 5 in 31 hours.

B. ✔ Enter LCO 3.0.3 and be in Mode 5 in 37 hours.

C. Enter LCO 3.8.1 and be in Mode 5 in 30 hours.

D. Enter LCO 3.8.1 and be in Mode 5 in 36 hours.

SRO level 10 CFR 55.43(b) (2)
This question tests the SRO knowledge of TS requiring evaluation of operability of electrical sources and application of the generic Tech Specs (3.0.1 - 3.0.8, in this case 3.0.3).

Technical Reference: TS LCO 3.8.1 AC Sources—Operating,
Amendment No. 170 (Unit 1)
Amendment No. 163 (Unit 2)

Learning Objective: 1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Intermediate and Low Voltage AC Distribution System (OPS52103B01).

- 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation
- 3.8.1 AC Sources – Operating
- 3.8.2 AC Sources – Shutdown
- 3.8.9 Distribution Systems - Operating
- 3.8.10 Distribution Systems - Shutdown

Comments: k/a match: Question provides a loss of Off site and an operationally valid scenario in which one DG was tagged out for maintenance. Evaluating and applying Tech Specs is required.

10.

Unit 2 is at 100% power and the following events have occurred:

- At 1000, the 2A Inverter Manual Bypass Switch is placed in the BYPASS SOURCE TO LOAD position for maintenance.

Which one of the following is correct considering the OPERABILITY of the 2A Inverter and the 2A 120V Vital AC Panel?

At 1000 prior to any maintenance or further actions:
- the 2A Inverter is __(1)__, and
- the 2A 120V Vital AC Panel is __(2)__.

A. (1) **NOT** OPERABLE
(2) OPERABLE

B. (1) OPERABLE
(2) **NOT** OPERABLE

C. (1) OPERABLE
(2) OPERABLE

D. (1) **NOT** OPERABLE
(2) **NOT** OPERABLE

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SRO level 10 CFR 55.43(b) (2)

This question requires knowledge of requirements for OPERABLE as defined in the basis for 2 Tech Specs: 3.8.7 & 3.8.9.

Technical Reference: TSs & TS Basis for 3.8.7 & 3.8.9 Amendment No. 146 (Unit 1), Amendment No. 137 (Unit 2), FNP-2-SOP-37.1 Version 39.0

Learning Objective: 1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the DC Distribution System (OPS52103C01).

- 3.8.4 DC Sources - Operating
- 3.8.5 DC Sources – Shutdown
- 3.8.6 Battery Cell Parameters
- 3.8.9 Distribution Systems – Operating
- 3.8.10 Distribution Systems - Shutdown

1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the 120 Volt AC Distribution System (OPS52103D01).

- 3.8.7- Inverters-Operating
- 3.8.8- Inverters- Shutdown
- 3.8.9- Distribution System -Operating
- 3.8.10- Distribution System –Shutdown

Comments: k/a match: The inverter maintenance activity requires placing the manual bypass switch in bypass, and thus makes the inverter inoperable. This degrades the redundancy and thus the reliability of the electrical system. This question tests at an SRO level requiring analysis of the effect of the maintenance activity of this degraded power source condition (classifying the inverter as a connection from the DC Battery source to the 120V Vital AC bus), as it relates to LCOs and operability as defined in the TS Basis. A degraded DC source is not required for this k/a based on the words: ..."such as" a degraded power source..., but the maintenance activity affecting LCOs is required and present in this question.

11.

Unit 1 is at 100% power, and conditions are as follows:

- 1A Aux Building Battery has an equalizing charge in progress.
- LG3, 1A BATT RM EXH FAN FAULT, has come into alarm.
- The Rover is dispatched and reports that the flow indicator for 1A BATT RM EXH FAN reads low out of spec.
- Upon investigation, maintenance has determined that the 1A BATT RM EXH FAN has a seized bearing and cannot be returned to service.
- Electrical Maintenance has removed the 1A Aux Building Battery from the equalizing charge IAW LG3.

Which one of the following describes the potential impact of this condition, and the **minimum actions required** by SOP-37.1, 125 Volt D.C Auxiliary Building Distribution System and SOP-58.0, Auxiliary Building HVAC System?

A.
- Toxic Gas production can render the Battery Room uninhabitable.
- Notify the Shift Chemist to commence taking air samples. Then prop open the 1A Battery room door, establish temporary ventilation and station a qualified continuous watch to prevent entry into the room.

B.
- Hydrogen production can cause a flammable or explosive mixture to accumulate.
- Notify the Shift Chemist to commence taking air samples. Then prop open the 1A Battery room door, establish temporary ventilation and station a qualified continuous watch to prevent entry into the room.

C.
- Toxic Gas production can render the Battery Room uninhabitable.
- Prop open the 1A Battery room door to establish temporary ventilation. Then declare the 1A Aux Building Battery INOPERABLE due to the loss of the exhaust fan.

D.
- Hydrogen production can cause a flammable or explosive mixture to accumulate.
- Prop open the 1A Battery room door to establish temporary ventilation. Then declare the 1A Aux Building Battery INOPERABLE due to the loss of the exhaust fan.

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SRO level: 10 CFR 55.43(b) (5), RO IR of < 2.5

This question tests the SRO knowledge of procedure actions in an Annunciator response procedure and compensatory actions for which there are no immediate operator actions, for a loss of a Battery Exhaust fan. It is strictly an SRO job function to arrange for compensatory actions and know the limitations for what the actions allow.

Technical Reference: FNP-1-SOP-58.0 Ver. 64.0, FNP-1-ARP-3.1 Ver. 26 LG3 & LH3

Learning Objective: 4. Identify any special considerations such as safety hazards and plant condition changes that apply to the Auxiliary Building Ventilation System (OPS52107B04).

Comments: k/a match: This question provides a loss of ventilation fan during battery charging, and requires prediction of the impacts on the DC system (Battery) and requires knowledge of the procedure requirements for this condition to mitigate the consequences of the loss of the ventilation fan.

12.

Unit 2 is at 100% power, and the following conditions occurred:

- At **1001**: The crew entered AOP-6.0, Loss of Instrument Air, due to instrument air pressure at 70 psig and decreasing on PI-4004B, INST AIR PRESS.
- At **1002**: Various air operated valves in the Turbine Building, Containment and MSVR begin to operate erratically.
- At **1003**: SG levels are all at 55% NR and decreasing.
- At **1005**: 2A SG levels are at 30% NR level and decreasing.
- At **1008**: Instrument air is 0 psig with all available Air Compressors running.
- At **1015**: Backup Nitrogen is aligned to the PORVs.

Which one of the following is:

1) the earliest time that a manual trip is required by AOP-6.0,
   AND
2) the status of the PRZR PORV OPERABILITY at 1015 after the Backup Nitrogen is aligned to the PORVs?

A. 1) 1005
   2) OPERABLE

B. 1) 1002
   2) OPERABLE

C. 1) 1005
   2) **NOT** OPERABLE

D. 1) 1002
   2) **NOT** OPERABLE

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43(b) (2 & 5)

The first part of the question requires recalling what strategy or action is written into a plant procedure, including when the strategy or action is required. The second part of this question requires knowledge of requirements for OPERABLE as listed in the basis for Tech Spec 3.4.11.

Technical Reference: FNP-2-AOP-6.0, Ver.24.0,
TS and BASIS 3.4.11, Pressurizer PORVs.
Amendment No. 170 (Unit 1), Amendment No. 163 (Unit 2)

Learning Objective: 7. Evaluate plant conditions and determine if transition to another section of AOP-6.0 or to another procedure is required (OPS52520F08).

Comments: k/a match: This question provides a loss of instrument air and a time line with a combination of indications. A judgement of when to trip the reactor if instrument air pressure is decreasing is required in accordance with the applicable procedure. This first part is not an entry condition nor is it an immediate action. A second part is added to the question which is also at the SRO only level which deals with the definition of OPERABILITY of the PORVs from TS Basis.

13.

The Unit 2 Control Room Crew is stationed at the Hot Shutdown Panel, and AOP-28.0, Control Room Inaccessibility, is in progress at the step to "Borate the RCS to the hot standby boron concentration".

Which one of the following describes how boration flow will be verified per AOP-28.0, and to which procedure transition is made after AOP-28.0 is complete?

A. • FI-113, MAKEUP FLOW TO CHG/VCT BA (in East Stairwell).
   • EEP-0, Reactor Trip Or Safety Injection.

B. • FI -110A, BORIC ACID EMERG BORATE (100 ft, AUX BLDG charging pump hallway).
   • UOP-2.3, Shutdown Of Unit Following Reactor Trip.

C. • FI -110A, BORIC ACID EMERG BORATE (100 ft, AUX BLDG charging pump hallway).
   • EEP-0, Reactor Trip Or Safety Injection.

D. • FI -113 , MAKEUP FLOW TO CHG/VCT BA (in East Stairwell).
   • UOP-2.3, Shutdown Of Unit Following Reactor Trip.

SRO level 10 CFR 55.43(b) (5)
This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: FNP-2-AOP-28.0 Ver. 12, FNP-2-AOP-28.2 Ver. 23

Learning Objective: 7. Analyze plant indications to determine the successful completion of any step in AOP-28.0. (OPS52521B07)
8. Evaluate plant conditions and determine if transition to another section of AOP-28.0 or to another procedure is required. (OPS52521B08)

Comments: k/a match: The question provides a Control Room evacuation condition and emergency borate flowpath required to be established outside of the control room. It requires knowledge of which flowpath is used in this procedure, what indication is used to verify flow, and where it is located. This knowledge is required in order to determine and interpret local boric acid flow during a control room evacuation. The question has a third part to ensure it tests at the SRO level. Knowledge of the procedure transition out of AOP-28.0 is required.

14.

Unit 1 is in Mode 2 with reactor power at 3%. Conditions are as follows:

- 1A SGFP in service and preparations to go to 12% power are in progress.
- The Waste Gas system is scheduled to be started up on #3 WGDT **bypassing** the Recombiners for a Surveillance Test Procedure (STP).
- Grab sample results for WGDT #3 are as follows:
  - O2 = 2.5%
  - H2 = 4.5%

Which one of the following is correct concerning the REQUIRED ACTION with the maximum COMPLETION TIME for this condition AND the conditions under which a Mode 1 entry may be made per TRM 13.12.3, Waste Gas Monitoring?

REFERENCE PROVIDED

A.
- Reduce oxygen concentration to $\leq$ 2% by volume in 48 hours or less.
- Raising power to 12% may occur.

B.
- Reduce oxygen concentration to $\leq$ 2% by volume in 48 hours or less.
- Raising power to 12% may **NOT** occur.

C.
- Analyze grab samples from #3 waste decay tank during addition of waste gas within 4 hours AND reduce oxygen concentration to $\leq$ 1% by volume within 4 hours.
- Raising power to 12% may occur.

D.
- Analyze grab samples from #3 waste decay tank during addition of waste gas within 4 hours AND reduce oxygen concentration to $\leq$ 1% by volume within 4 hours.
- Raising power to 12% may **NOT** occur.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43(b) (2)

This question tests the SRO knowledge of TS Beyond the RO level due to needing to apply TRM for actions > 1 hr, and apply the generic Technical Requirements 13.0.4b & 13.0.4c which are strictly SRO functions.

Technical Reference: TR 13.12.3 Ver. 8, FNP-1-SOP-51, Version 45.0

Learning Objective:

1. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Waste Gas System (OPS52106B01).
   - TR 13.12.1, Waste Gas Monitoring Instrumentation
   - TR 13.12.3, Waste Gas Monitoring
   - TR 13.12.4, Gas Storage Tanks
3. Identify any special considerations such as safety hazards and plant condition changes that apply to the Waste Gas System (OPS52106B04).

Comments: k/a match: Precaution and Limitation 3.7 of SOP-51.0 directs refering to TR 13.12.3 IF limiting values of H2 and O2 are exceeded. This question tests the SRO level knowledge and application of the procedure under conditions given in which the procedure directs application of the TRM. The TRM gives the only guidance at FNP for directing actions to respond to H2 &/or O2 exceeding limits in the Waste Gas System.

Attempts to write this question without "references provided" failed to produce a question with a difficulty of less than 5 on the SRO level. This was partly due to the potential overlap with other questions and the operating exam which already test Gas Release requirements/knowledge.

15.

Unit 2 has operated at 100% power for 6 months, and conditions are as follows:

- Earlier in the shift, 2A SGFP tripped.
- Reactor power was rapidly reduced to 50%, and is being maintained at that level.
- The results of an RCS activity sample taken 3 hours after the load reduction were:
  - Gross (beta-gamma) specific activity is 175/$\overline{E}$ µCi/gm.
  - Dose-equivalent I-131 specific activity (DEI) is 140 µCi/gm.

Which one of the following TS ACTIONS would allow the **longest** power operation and still satisfy Technical Specifications requirements, and what is the basis for the requirement?

REFERENCE PROVIDED

A. ✔
- Be in Mode 3 with T_{avg} <500°F within the following 6 hours.
- Prevent release of activity in the event of a Steam Generator Tube Rupture.

B.
- Remain at 50% power indefinitely and restore DEI to ≤ 0.5 µCi/gm in 48 hours.
- Allow time to obtain and analyze Reactor Coolant Samples and monitor for iodine spiking values to return to normal.

C.
- Decrease power below 43% within 4 hours and restore DEI to ≤ 0.5 µCi/gm in 48 hours.
- Allow time to obtain and analyze Reactor Coolant Samples and monitor for iodine spiking values to return to normal.

D.
- Remain at 50% power for 4 hours, then be in Mode 3 with T_{avg} <500°F within the following 6 hours.
- Prevent release of activity in the event of a Steam Generator Tube Rupture.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level: 10 CFR 55.43(b) (2)

This question tests the SRO knowledge of TS beyond the RO required knowledge by requiring the application of TS actions below the double line of the LCOs of > 1hr. TSs, and application of the SR limit to determine if the LCO is met for one of the Conditions. The LCO is NOT met for 2 conditions, and the applicant must correctly determine the most limiting one. TS Basis knowledge is also tested by this question.

Technical Reference: TS 3.4.16, RCS Specific Activity
Amendment No. 170 (Unit 1), Amendment No. 163 (Unit 2)

Learning Objective: 7. Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Gross Failed Fuel Detector (OPS52106E10).
- Technical Specification 3.4.16, RCS Specific Activity

Comments: k/a match: The limits for RCS Specific Activity are found in TS 3.4.16. Knowledge of how to apply and explain these limits is tested by requiring TS application from the values given to compare to the limit of CONDITIONS A.1, A.2, & B, & C while also requiring the use of SR 3.4.16.1. Applying the limits is required to determine the correct most limiting ACTION that is applicable in the TS, and identifying the correct TS Basis is required to explain the limits.

16. Unit 1 is shutdown, Mode 6, in a refueling outage. Given the following conditions:

- Refueling has been completed.
- Containment airlock doors are both open.
- The Equipment Hatch is open.
- A Maintenance Closure Response Team (MCRT) is available in the maintenance break area.
- The Fuel Handling Coordinator is inside containment.
- The Fuel Handling Supervisor is in the control room.

The Fuel Handling Coordinator requests permission to start core alterations.

May core alterations proceed, and if not, what additional requirements must be met to proceed with the core alterations?

The core alterations may _____.

A. proceed at the discretion of the Fuel Handling Coordinator.

B. **NOT** proceed until after at least one containment airlock door is closed and the equipment hatch is closed with 4 bolts in place.

C. **NOT** proceed until after the Fuel Handling Supervisor arrives inside containment and the equipment hatch is closed with 4 bolts in place.

D. **NOT** proceed until after the Fuel Handling Supervisor arrives inside containment and at least one containment airlock door is closed.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level RO importance rating of < 2.5. 10 CFR 55.43(b) (7)
Knowledge of required plant conditions for fuel handling and the SRO duties and responsibilities of who is required to be in containment to move fuel during a refueling outage.

Technical Reference: UOP-4.1 Version 41, FHP-0.0 Version 10,

Learning Objective: 3. Identify the requirements including documentation, alignment and actions required to verify containment penetrations and interior components are aligned correctly for the following conditions (OPS40503A03):

- Containment Integrity Refueling Verification
- Containment Integrity Mid Loop Verification
- Containment Closure

Comments: FNP BANK: UOP4.1-40503B03 02

k/a match: This question provides some plant conditions and a need for establishing the proper configuration of the containment system prior to work in containment (core alterations during refueling). Some, but not all, of the conditions must be corrected by appropriate procedures in order for refuling to commence.

NOTE: The choices have **3 NOT**s and only one proceed since there is no other way to say proceed than to proceed. If there are any additional requirements to meet other than proceed, it is a "NOT proceed", and then the requirements to be met prior to proceeding are listed.

17.

Unit 1 has experienced a Reactor Trip and Safety Injection. While in EEP-0, Reactor Trip or Safety Injection, transition was made to ECP-1.2, LOCA Outside Containment.

Which ONE of the following parameters is used to determine if the break is isolated, in accordance with ECP-1.2, AND which procedure will provide mitigation strategies when the leak is isolated?

A. • Pressurizer level increasing.
   • EEP-0, Reactor Trip or Safety Injection.

B. • RCS pressure increasing.
   • EEP-1, Loss Of Reactor Or Secondary Coolant.

C. • Auxiliary Building Radiation Levels decreasing.
   • ECP-1.1, Loss Of Emergency Coolant Recirculation.

D. • RCS subcooling increasing.
   • ESP-0.0, Rediagnosis.

SRO level 10 CFR 55.43(b) (5)
This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required. Even though EEP-1 is a major EEP, the entry to this procedure in the condition given is from a contingency procedure, ECP-1.2, and not through the more routine flowpath from the diagnostics of EEP-0, Reactor trip or Safety Injection.

Technical Reference: FNP-1-ESP-0.0 Version 12, FNP-1-EEP-0.0 Revision 36, FNP-1-ECP-1.2 Revision 7

Learning Objective:
7. Evaluate plant indications to determine the successful completion of any step in ECP-1.2 (OPS52532E07).
8. Evaluate plant conditions and determine if transition to another section of ECP-1.2 or to another procedure is required (OPS52532E08).

Comments: k/a match: This question provides a situation in EEP-0, with an SI in progress, during which a diagnoses of a LOCA outside of CTMT has been made. Knowledge of how to make the operational judgement of determining if the break is isolated based on, instrument interpretation is required to answer the question. SRO only knowledge is also tested by requiring the proper procedure flowpath selection.

18.

Unit 1 is performing a natural circulation cooldown in accordance with ESP-0.2, Natural Circulation Cooldown to Prevent Reactor Vessel Head Steam Voiding. The following conditions exist:

- RCS cold leg - 510°F.
- RCS pressure - 1850 psig.
- 1A and 1B CRDM fans are running.
- RCPs 1A, 1B, and 1C are tripped and cannot be restarted.
- CST level is 8.0 ft.
- AFW flow is 400 gpm
- RCS cooldown rate is 5°F/hr.

Which one of the following is the correct response IAW ESP-0.2?

Procedure names are as follows:

ESP-0.2, Natural Circulation Cooldown to Prevent Reactor Vessel Head Steam Voiding
ESP-0.3, Natural Circulation Cooldown With Allowance For Reactor Vessel Head Steam Voiding (With RVLIS)
UOP-2.2, Shutdown Of Unit From Hot Standby To Cold Shutdown

A. Continue with ESP-0.2 and increase cooldown rate to a maximum of < 25°F/hr, then transition to UOP-2.2 when directed.

B. Continue with ESP-0.2 and increase cooldown rate to a maximum of < 100°F in any 60 minute period, then transition to UOP-2.2 when directed.

C. Transition to ESP-0.3 when directed by ESP-0.2, then increase cooldown rate to a maximum of < 25°F/hr.

D. Transition to ESP-0.3 when directed by ESP-0.2, then increase cooldown rate to a maximum of < 100°F in any 60 minute period.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of assessing plant conditions, prescribing a procedure or section of a procedure, and recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: ESP-0.2 Rev. 18, ESP-0.3 Rev. 12

Learning Objective: Evaluate plant conditions and determine if transition to another section of ESP-0.2/0.3/0.4 or to another procedure is required (OPS52531C08).

Comments: k/a match: This question provides a scenario in the natural circ procedure. Indications exist which must be properly diagnosed and a selection of the appropriate procedure is required. The proper procedure selection is the Natural Circ Cooldown procedure WITH voidiing allowed, since it will speed up the cooldown and depressurization and cause voiding.

A discriminatory question would be difficult to write for choosing between ESP-0.2 (without voiding), ESP-0.3, Nat Circ cooldown w/ allowance for voiding with RVLIS & ESP-0.4, Nat Circ cooldown w/ allowance for voiding without RVLIS, since the names of the procedures are given with the procedure numbers and would potentially make the choice of procedure obvious to an incompentent applicant. The question was instead written to require diagnosing the need to speed up the cooldown and depressurization which would cause voiding, and to know what procedure flowpath and cooldown rate limits (procedure strategies) are required for the situation of the natural circ cooldown with voiding.

19.

The Unit 1 Shift Supervisor (U1 SS) is preparing to leave the control room for a plant tour of approximately 30 minutes. The following conditions exist:

- Three Shift Support Supervisors (SSS) are on shift and qualified as follows:
  - One SSS qualified Substitute Shift Supervisor and assigned as SSS-Plant.
  - One SSS with an in-active SRO license and assigned Fire Brigade Leader.
  - One SSS qualified Substitute Shift Supervisor and assigned as STA.

Which ONE of the following is correct concerning who the Unit 1 SS may turn over the Control Room command function to prior to leaving the control room, and does the Unit 1 SS maintain all responsibility while gone from the Control Room?

The U1 SS may leave if he turns over the control room command function to the _____, and the U1 SS _____ maintain all responsibility while out of the Control Room.

A. ✓
- SSS-Plant but **NOT** the STA
- does

B.
- SSS-Plant but **NOT** the STA
- does **NOT**

C.
- SSS-Plant **OR** the STA
- does

D.
- SSS-Plant **OR** the STA
- does **NOT**

SRO level: This question tests knowledge of turnover practices that are unique to the SRO position. The specific items tested in this question are performed during and after shift turnover by the SROs, but NOT by the ROs.

Technical Reference: SOP-0.14 Version 15, AP-16 Version 44

Learning Objective: 15. Identify the required items to be performed by the off-going and on-coming individuals to complete a shift turnover (OPS40502H15)

Comments: k/a match: This question requires knowledge of turnover practices, specifically the sequence of the SRO unique turnover reviews. There are 3 parts to the turnover, and this question contains items from all 3 of the parts, and requires knowledge of when each of the activities are required during and after turnover.

20.

Unit 1 is in MODE 4 making preparations to go to MODE 3, and the following conditions exist:

- RCS Temperature band is 300°F to 345°F.
- ALL three RCS WR Tc's = 340°F and the Control Room is cooling down to 330°F.
- 1A RHR is in service and B Train RHR is in standby.
- 1B RCP is running.
- FT-168, TOTAL MAKEUP FLOW TO CHG/VCT, is failed low.

A calculation has been performed and a dilution of 500 gallons to the charging pump suction header is directed per UOP-1.1, Startup Of Unit From Cold Shutdown To Hot Standby, at the step that says:

"IF necessary, THEN conduct a boron dilution of the RCS to one of the following conditions whichever is greater
- Cold shutdown boron concentration
- ARO critical boron concentration (Curve 1A)
- Estimated critical boron concentration"

Which one of the following is the correct method used for diluting per SOP-2.3, Chemical And Volume Control System Reactor Makeup Control System, and which one of the following is correct concerning RCS temperature while diluting?

A. • Perform a Manual Makeup to the charging pump suction. Verify the dilution automatically stops when batch integrator setpoint is reached.
   • Dilution is allowed with an RCS cooldown in progress.

B. • Perform a Manual Makeup to the charging pump suction. Verify the dilution automatically stops when batch integrator setpoint is reached.
   • Dilution will be allowed **ONLY** while RCS temperature is stable.

C. • Verify a RMW pump running; open RMW to Blender, FCV114B; Open MKUP TO CHC PUMP SUCTION, FCV113B; estimate the flow by VCT level rise; and calculate time for dilution, manually secure dilution when complete.
   • Dilution is allowed with an RCS cooldown in progress.

D. • Verify a RMW pump running; open RMW to Blender, FCV114B; Open MKUP TO CHC PUMP SUCTION, FCV113B; estimate the flow by VCT level rise; and calculate time for dilution, manually secure dilution when complete.
   • Dilution will be allowed **ONLY** while RCS temperature is stable.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43(b) (5)

The first and second part of this question requires recalling what strategy or action is written into a plant procedure, including when the strategy or action is required. Since the first part could be answered with system knowledge alone, the second part cannot be answered with fundamental or system knowledge and has been added to ensure this question is written to the SRO level.

Technical Reference: FNP-1-UOP-1.1 Version 83, FNP-1-SOP-2.3 Version 44

Learning Objective: 11. Discuss the operation and alignment of each major component including precautions and limitations of operation, and applicable procedures, associated with the Reactor Makeup and Chemical Addition System including (OPS-40301G11)

- Boric Acid Transfer Pumps
- Reactor Makeup Water Pumps
- Makeup to Charging Pump Suction Header, FCV-113B
- Makeup to VCT, FCV-114A
- Reactor Makeup Water to Boric Acid Blender, FCV-114B
- Boric Acid to Blender, FCV-113A
- Emergency Borate Valve, MOV-8104
- Manual Emergency Boration Valve, V-8439
- Chemical Addition System
- Chemical Mixing Tank and Orifice
- Makeup Mode Selector and Control Switches
- Boric Acid Batch Integrator, FIS-113
- Total Flow Batch Integrator, FIS-168
- Boric Acid Makeup Flow Controller, FK-113
- Primary Water Makeup Flow Controller, FK-168

Comments: k/a match: UOP-1.1, Startup Of Unit From Cold Shutdown To Hot Standby, is a procedure performed prior to a reactor Startup. UOP-1.1 directs a dilution prior to entering Mode 3 which will affect reactivity, and SOP-2.3 gives guidance for this task. This question requires knowledge of a requirement in UOP-1.1, knowledge of the dilution procedure, and manipulation of specific controls which will affect reactivity for a condition in which the normal method of dilution does not work.

21.

At 0500, to complete draining a system on an outage tag order, an MOV that performs a safety function to automatically open during a safety injection has to be manually closed due to power being Tagged out to the MOV.

At 1900, the work is complete and the following conditions exist:

- The system has been filled, vented, and Tagged in.
- The MOV is closed per the System Checklist.
- The Tagout has restored power to the MOV and the GREEN valve position light is lit.

Which one of the following correctly states the OPERABILITY of the MOV, and the reason for the determination?

A. The MOV is OPERABLE since no internal valve work was performed.

B. The MOV is OPERABLE since power has been restored, and a safety injection signal will automatically open the valve.

C. The MOV is **NOT** OPERABLE since it was not time stroked in the open direction.

D. The MOV is **NOT** OPERABLE since the valve was manually operated and has not been electrically stroked one full cycle.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level: 10 CFR 55.43(b) (2)

This question tests the SRO knowledge of TS beyond the RO required knowledge by requiring knowledge that manually stroking an MOV makes the MOV inoperable, and requires knowledge of the actions required to clear the LCO and return the MOV to OPERABLE. Both are SRO only functions, since they require OPERABILITY determinations.

Technical Reference: FNP-0-SOP-0.0 Version 118.0

Learning Objective: 6. Access plant conditions to determine the ability of plant equipment and structures to meet their intended, designated function (OPS52302A06).

Comments: k/a match: This question presents a maintenance activity which affects the operability of an MOV. Proper evaluation of the operability of the MOV after it has power restored and proper indication is verified is required to answer this question. Also Knowledge of the post-maintenance testing required to return the valve to operable is required to answer this question. There is no degraded power source in this question to preclude overlap with other questions on this exam. The words "**such as** [degraded power sources]" are used in this k/a to allow other types of maintenance affecting LCOs to meet this k/a, with degraded power sources used only as one example of a maintenance activity.

22.

Unit 2 has been in Mode 6 for 3 weeks, and the following conditions exist:

- Fuel movement is in progress.
- SFP and Refueling Cavity Levels are 152' and dropping.
- FH2, SFP LVL HI-LO, is in alarm.
- EC5, RCS LVL HI-LO, is in alarm.
- PG3, CTMT SUMP LVL HI-HI OR TRBL, is in alarm.
- Both CTMT Sump Pumps are running and Sump levels are rising.
- Leakage around the Reactor Cavity Seal has been reported from Containment.
- Carriage at Pit lamp is ON in SFP room.
- A used Fuel assembly is in the SFP side upender in the lowered position.

Which ONE of the following describes the correct responses to these conditions per AOP-30.0, Refueling Accident?

A. • Close fuel transfer tube gate valve and leave the fuel assembly in its current location.
   • Line up to fill the RCS from the boration flowpath IAW AOP-12.0, Residual Heat Removal System Malfunction.

B. ✓ • Close fuel transfer tube gate valve and leave the fuel assembly in its current location.
   • Line up to fill the reactor cavity from the RWST IAW SOP-7, Residual Heat Removal System.

C. • Place fuel assembly in the SFP racks, then close the gate valve.
   • Line up to fill the RCS from the boration flowpath IAW AOP-12.0, Residual Heat Removal System Malfunction.

D. • Place fuel assembly in the SFP racks, then close the gate valve.
   • Line up to fill the refueling cavity from the RWST IAW SOP-7, Residual Heat Removal System.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43 (b) (5 & 6)

This question requires recalling what strategy or action is written into a plant procedure, including when the strategy or action is required. It also requires the SRO to know his unique responsibilities for radiological safety principles pertaining to his duties during fuel handling,

Technical Reference: FNP-1-AOP-30.0 Version 14, ARP-3.3 PG3, ARP-1.6 FH4 & FH5, AOP-12 Revision 18.0

Learning Objective: 3. Determine the appropriate action for given conditions during performance of UOP-4.1, [CONTROLLING PROCEDURE FOR REFUELING] (OPS40503B03).

Comments: k/a match: During fuel handling, the Refueling Supervisor (SRO in charge of fuel handling) has the sole responsibility for evaluating placement of fuel during a fuel handling accident. This evaluation is necessary to place the fuel in the event dependent location that will most likely preclude a high dose rate for the protection of personnel specifically mitigating potentially high dose rate conditions during a fuel handling accident OR leak which reduces the shielding above the high dose irradiated fuel.

23.

Unit 1 is operating at 100% power, and the following conditions exist:

- A release of the Waste Monitor Tank is planned.
- R-18, Liquid Radwaste Effluent Monitor is inoperable.

Which ONE of the following correctly states the required ODCM ACTIONS that the SRO who approves the release must ensure are completed?

A. R-18 must be returned to service.

B. Release rate calculations and sample results that show activity of the release liquid is $<1x10^{-7}$ microcuries per milliliter must be verified.

C. Two separate samples must be analyzed, two independent qualified members of facility staff must verify discharge valve lineup and release rate calculations.

D. The tank must be recirculated for two volumes and a Senior Reactor Operator must verify release rate calculations and discharge valve lineup.

SRO level 10 CFR 55.43(b) (2)
RO importance rating of < 2.5. Evaluating and applying ODCM requirements for inoperable equipment/instrumentation which must be met prior to a environmental release is an SRO only Job Function.

Technical Reference: ODCM, Version 22

Learning Objective: Identify and apply the following Technical Specifications or TRM requirements, including the bases and attendant equipment, associated with the Liquid and Solid Waste System (OPS52106A01).

- Technical Specification 5.5.1, Offsite Dose Calculation Manual (ODCM)

Comments: FNP BANK: LIQ SD WAST-40303A11 08
k/a match: The SRO must approve a release if ODCM actions are required to be met prior to the release, even though for a normal release the Chemistry Department approves the release after an SRO review of the permit. This question provides a scenario in which the release cannot be allowed until ODCM actions are accomplished as determined by the SRO, and the applicant must recall what completed actions allow approving the release.

24.

Unit 1 is in Mode 3 after a manual reactor trip due to a LOSP and loss of CCW. EEP-0, Reactor Trip or Safety Injection, and AOP-9, Loss of Component Cooling Water, are in progress. Conditions are as follows:

- 1F 4160V bus is de-energized and investigation is in progress.
- 1G 4160V bus is energized by 1B DG.
- B CCW Train is the "on service" Train.
- 1B CCW pump is Tagged Out for maintenance.
- 1A CCW pump tripped on overcurrent.
- 1C CHG PUMP is running.

Which one of the following actions are required by AOP-9.0 for these conditions, and what will be the effect?

Procedure name is as follows:

AOP-9.0, Attachment 1 Establishing Firewater Cooling To A Charging Pump.

A. • Secure 1C CHG pump. Align fire water to the 1B CHG pump using Attachment 1, then start the 1B CHG pump.

• RCP number 1 seal outlet temperature may rise to greater than 235°F during the alignment which requires isolating the Seal Injection line.

B. • Secure 1C CHG pump. Isolate CCW to the Thermal Barriers and the Seal injection and return flowpath.

• An engineering evaluation must be performed prior to reinitiating Seal Injection or CCW to the thermal barriers to prevent RCP seal damage.

C. • Maintain 1C CHG pump running. Align Fire Water to 1C Charging Pump using Attachment 1.

• 1C CHG pump CCW Piping will be chemically contaminated due to the alignment of Fire Water to the 1C CHG pump.

D. • Maintain 1C CHG pump running. Align Fire Water to 1B Charging Pump using Attachment 1.

• 1C CHG pump may be damaged due to insufficient cooling water during the alignment of Fire Water to the 1B CHG pump.

FARLEY 2008 SRO EXAM INITIAL SUBMITTAL

SRO level 10 CFR 55.43(b) (5)

This question tests the SRO knowledge of recalling what strategy or action is written into a plant procedure, including when the strategy or action is required.

Technical Reference: FNP-1-AOP-9.0 Revision 21.0

Learning Objective: 12. Evaluate abnormal plant or equipment conditions associated with the Component Cooling Water System and determine the local actions needed to mitigate the consequence of the abnormality (OPS40204A12).

Comments: k/a match: the alignment of firewater to the charging pumps is a local action in the Charging pump room area. Knowledge of the appendix actions and sequence of actions to align fire water to the charging pump is required to answer this question correctly. It is a priority to maintain seal injection even if the charging pumps have no CCW cooling, even though normally a Charging pump would not be run with no cooling, but this case is an exception. This appendix covers a unique situation: intentionally running a charging pump with no cooling while aligning fire water cooling to an idle pump, then starting the idle pump and securing the running pump. All of this is done locally except starting and stopping the pumps. The strategy of the procedure has undesired effects, but the desired effects outweigh the undesired. Knowledge of the effects are required to answer this question.

25.

A Site Area Emergency has been declared at midnight on January 1, 2008.

- The TSC has not yet been staffed.
- The Shift Manager is acting as the Emergency Director and has directed a team of two Maintenance personnel to work in a hazardous area of the Rad Side Aux Building.
- Personnel performing the work are expected to receive 5500 mrem TEDE.
- The HP Supervisor is standing by to assist.

Which one of the following correctly describes the SM's and HP Supervisor's responsibilities in accordance with EIP-14.0, Personnel Movement, Relocation, Re-entry, and Site Evacuation?

The work must be performed as a __A__.
The HP Supervisor __B__ the authority for approval of the team members to receive the 5500 mrem TEDE.

	A	B
A.	Relocation	does not have
B.	Relocation	has
C✓	Re-entry	does not have
D.	Re-entry	has

SRO level 10 CFR 55.43(b) (5)
RO importance rating of < 2.5. The Emergency Coordinator (Emergency Director, ED) is an SRO only job function, and thus the ED actions, and responsibilities for directing entries into hazardous areas during an emergency are SRO-only knowledge.

Technical Reference: EIP-14.0, Ver. 23

Learning Objective: • Using plant procedures/references, determine the appropriate actions that are to be performed by the SM/ED during a NOUE, Alert, Site Area, or General Emergency including the consequences of inadequate actions. (OPS53002C02)

Comments: k/a match: Question tests SRO only knowledge of ED actions in the emergency plan and the ED responsibilities for directing and authorizing relocations and re-entries, as well as authority that the ED and/or HP Manager does and does not have.