

1. TECH SPECS 482

Given the following plant conditions:

Time 12:00:

- 100% power.
- Control Bank "A" Rod K-2 dropped to 40 steps withdrawn.

Time 12:45:

- QPTR on IPCS indicates 1.01, stable.
- 70% power.
- Shutdown Margin has been verified.
- The rod has been verified **trippable**.
- The plant **will remain at power**.

Which ONE of the following identifies the **highest** allowed setting for the High Flux Trip setpoint and how safety analyses are validated accordance with T.S. 3.1.3, MOVABLE CONTROL ASSEMBLIES?

- A. 75%;
Safety analyses affected by rod misalignment will be re-analyzed.
- B✓ 85%;
Safety analyses affected by rod misalignment will be re-analyzed.
- C. 75%;
Remaining rods will be verified above Rod Insertion Limits.
- D. 85%;
Remaining rods will be verified above Rod Insertion Limits.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must recall the basis for the compensatory measures contained in T.S. 3.1.3.1 Action d.3. for maintaining the reactor at power with a dropped rod. This includes the knowledge that power is limited to 85% as part of compensatory measures.

A. The first part is plausible because power must be reduced and/or maintained less than 75% in accordance with Technical Specification action statements as well as per actions of AOP-403.6 for dropped rod. The second part is correct; Safety analyses affected by rod misalignment must be re-analyzed.

Incorrect because 85% is the correct high flux trip setpoint.

B. CORRECT. The new high flux trip setpoint must be reduced to 85% in accordance with 3.1.3.1.d.3.d) and safety analyses affected by rod misalignment must be re-analyzed as identified in the T.S. 3.1.3.1 basis.

C. The first part is plausible because power must be reduced and/or maintained less than 75% in accordance with Technical Specification action statements as well as per actions of AOP-403.6 for dropped rod. The second part is plausible because verifying rods are above the rod insertion limits are a method of ensuring that hot channel factor limits are maintained between surveillances.

Incorrect because 85% is the correct high flux trip setpoint and safety analyses affected by rod misalignment must be re-analyzed.

D. The first part is correct; The high flux trip setpoint must be reduced to 85%. The second part is plausible because verifying rods are above the rod insertion limits are a method of ensuring that hot channel factor limits are maintained between surveillances

Incorrect because safety analyses affected by rod misalignment must be re-analyzed.

K/A: 003AA2.02 K/A: 003 Dropped Control Rod AA2: Ability to determine and interpret the following as they apply to the Dropped Control Rod: 2.02: Signal inputs to rod control system.

K/A Match: the KA is matched because it requires knowledge of the change to the trip setpoint at which the rod control system will deenergize the CRDMs in accordance with Technical Specifications.

Selection criteria: NEW

Tier: 1 **Group:** 2
Importance Rating: RO 2.7 SRO 2.8
Technical Reference: T.S. 3.1.3.1 basis

Proposed references to be provided to applicants during examination: None

Question Cognitive Level: **Memory or Fundamental Knowledge** __X__
Comprehension or Analysis _____

Learning Objective: SB-4A-02 INTERPRET the applicability of Technical Specifications including the surveillance requirements and bases.

10 CFR Part 55 Content: 43(b) 2. Facility operating limitations in the TS and their bases.

SRO Justification: SRO Only because the question tests knowledge the Technical Specification basis to identify requirements required due to a misaligned rod and the application of Required Actions (Section 3) greater than one hour.

Comments from 10 question sample:

Edit: Remove the 's' from rods in the stem.

Operations to verify that 2nd part is required operator memory item.

Removed s from rods and adjusted stem to be closer to the statements contained in the Technical Specification basis.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

2. TECH SPECS 224

Given the following plant conditions:

- Mode 3
- Operators have recovered from a loss of secondary heat sink.
- General Operating Procedures are in effect.
- All RCPs are OPERABLE.
 - "A" RCP is **running**.
 - "B" and "C" RCPs are OFF.
- Wide Range Steam Generator levels:

"A"	51%
"B"	50%
"C"	7%
- The 12 hour Surveillances for T.S. 3.4.1.2, REACTOR COOLANT SYSTEM, HOT STANDBY were **last performed at 0730, today**.

Which ONE (1) of the following describes the number of RCS loops that are currently OPERABLE in accordance with T.S. 3.4.1.2 and the **latest** time at which the surveillances can be performed before they are considered missed surveillances?

- A. One (1) OPERABLE loop; 2230 today.
- B. One (1) OPERABLE loop; 0730 tomorrow.
- C✓ Two (2) OPERABLE loops; 2230 today.
- D. Two (2) OPERABLE loops; 0730 tomorrow.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the SRO applicant must determine the operability of steam generators based on surveillance values for Wide Range Steam Generator Levels and, in addition, determine that 15 hours is the longest span that the surveillance can be performed prior to being missed in accordance with T.S. 4.0.2 requirements.

A. Plausible because with only "A" RCS loop in operation (RCP operating) this may be confused with the definition for an OPERABLE loop. The second part correctly states the latest time to perform the surveillance.

Incorrect because there are two operable loops.

B. Plausible because with only "A" RCS loop in operation (RCP operating) this may be confused with the definition for an OPERABLE loop. The second part is plausible because it reflects the 24 hour allowance for actions to perform a missed surveillance per T.S. 4.0.3.

Incorrect because there are two operable loops and the surveillance must be performed by 2230 today.

C. CORRECT. There are two operable loops with Wide Range SG levels greater than 10% and the surveillance must be performed within the surveillance period plus 25% . The surveillance was last performed at 0730. 12 hour surveillance period + 3 hour extension is 15 hours ->0730 + 15 hours = 2230.

D. Plausible because the first part correctly states that there are two operable loops. The second part is plausible because it reflects the 24 hour allowance for actions to perform a missed surveillance per T.S. 4.0.3.

Incorrect because the surveillance must be performed by 2230 today.

3. EOPS 829

Given the following plant conditions:

- Initially at 100% power.
- Steam Generator "A" faulted.
- EOP-3.0, FAULTED STEAM GENERATOR ISOLATION in progress.
- XCP-616, 4-2, PZR RLF LINE TEMP HI in alarm.
- XCP-616, 4-4, PRT LVL LO/TEMP/LVL/ PRESS HI in alarm.
- PRT pressure 35 psig, rising.
- PZR pressure 1735 psig, lowering.
- RCS subcooling 48°F, lowering.
- Pressurizer level 100%.

Which ONE of the following describes the next procedure and action the CRS will direct to mitigate plant conditions?

- A. Verify SI flow not required in accordance with EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.
- B✓ Close PZR PORV Block valves in accordance with EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.
- C. Close PZR PORV Block valves in accordance with EOP-1.2, SAFETY INJECTION TERMINATION.
- D. Verify SI flow not required in accordance with EOP-1.2, SAFETY INJECTION TERMINATION.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must assess plant conditions and determine that conditions are no longer met for termination of safety injection due to indications of leakby on a PZR PORV and select a procedure that will close PORVs to mitigate the event.

- A. Plausible because the pressurizer level is at 100% and in the case of only a faulted steam generator, SI termination is implemented as soon as possible to mitigate a high rising pressurizer level. Also plausible because EOP-2.0 checks for SI termination criteria in step 10 and is the correct transition for the current conditions.

Incorrect because SI termination will not be performed under the current conditions.

- B. CORRECT. Lowering RCS subcooling and rising PRT pressure indicates that PORVs must be shut to mitigate the event. The correct procedure transition when conditions for SI termination are not met is to EOP-2.0.
- C. The first part is correct; Lowering RCS subcooling and rising PRT pressure indicates that PORVs must be shut to mitigate the event. The second part is plausible because the normal transition for a faulted steam generator without other complications is from EOP-3.0 to EOP-1.2 to terminate SI.

Incorrect because conditions are not met for transfer to EOP-1.2.

- D. Plausible because the pressurizer level is at 100% and in the case of only a faulted steam generator, SI termination is implemented as soon as possible to mitigate a high rising pressurizer level. The normal procedure transition for a faulted steam generator without other complications is from EOP-3.0 to EOP-1.2 to terminate SI.

Incorrect because SI termination will not be performed under the current conditions and conditions are not met for transfer to EOP-1.2.

4. REACTOR PROT SYSTEM 062

Given the following plant conditions:

- 100% power initially.
- Reactor Protection System testing was in progress.
- All offsite power was lost (115 KV and 230 KV)
- Large Break LOCA occurred after the trip.
- Reactor Trip Bypass Breaker "B" is **racked-in**, **closed** and will **not** open locally.
- All other reactor trip breakers are OPEN.
- Operators are taking actions directed by EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION.
- Operators are attempting to reset Safety Injection.

Which ONE of the following describes the consequence of the Reactor Trip Bypass Breaker "B" failure to open and the procedure and action that will be used to mitigate that consequence?

A. **Only** ONE (1) train of SI can be reset from the main control board.

SOP-112, SAFETY INJECTION SYSTEM will be used to manually reset Safety Injection relays.

B. **Neither** train of SI can be reset from the main control board.

SOP-112, SAFETY INJECTION SYSTEM will be used to manually reset Safety Injection relays.

C. **Only** ONE (1) train of SI can be reset from the main control board.

SOP-313, LOCAL SWITCHGEAR BREAKER OPERATIONS will be used to rack out Reactor Trip Bypass Breaker "B".

D. **Neither** train of SI can be reset from the main control board.

SOP-313, LOCAL SWITCHGEAR BREAKER OPERATIONS will be used to rack out Reactor Trip Bypass Breaker "B".

QUESTION USAGE

MODIFIED FROM RPS 19

QUESTION HISTORY

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS

In order to answer this question correctly, the applicant must recall that an SI train requires an input of a train-specific open signal from the Reactor Trip and/or Bypass breakers in order to reset or in lieu of that condition, requires resetting of relays in accordance with an SOP. It also requires selection of the correct SOP.

- A. CORRECT. The input from open trip breakers is train-specific which will allow resetting one train of SI under the current condition. The procedure that will reset SI relays for the case of a stuck-closed trip breaker is SOP-112, SAFETY INJECTION SYSTEM.
- B. Plausible but incorrect. Certain ESF and Reactor Protection functions require operation of 2 out of 2 channels or trains to complete. Examples are blocking of Nuclear Instrument trip signals, unblocking of Low Pressurizer pressure SI and manual actuation of RB Spray. Incorrect because P-4 input to SI reset is train-specific so one train of SI can be reset. The second part is correct; The procedure that will reset SI relays for the case of a stuck-closed trip breaker is SOP-112, SAFETY INJECTION SYSTEM.

Incorrect because one train of SI can be reset.

- C. The first part is correct in stating that one SI train can be reset. The second part is plausible because SOP-313, LOCAL SWITCHGEAR BREAKER OPERATIONS can be used to rack out Trip and Bypass breaker. Racking the breaker provides an open signal which would make up P-4 via the breaker cell switch (33) contacts. In addition SOP-313 contains a passage to notify I&C to perform surveillances for P-4 OPERABILITY. It should be noted that the breaker is not under load; current through the breaker would not affect plausibility.

Incorrect because SOP-313 is not used to provide a P-4 signal and SOP-313 requires the breaker to be open prior to attempting racking of the breaker..

- D. Plausible because certain ESF and Reactor Protection functions require operation of 2 out of 2 channels or trains to complete (see examples above). The second part is plausible; SOP-313, LOCAL SWITCHGEAR BREAKER OPERATIONS can be used to rack Trip and Bypass breaker and racking the breaker provides an open signal remotely although this procedure requires the breaker to be open prior to racking.

Incorrect because one train of SI can be reset and SOP-313 is not the correct procedure selection.

K/A: 007EA2.02 K/A: EPE: 007 Reactor Trip EA2: Ability to determine or interpret the following as they apply to a reactor trip: 2.02: Proper actions to be taken if the automatic safety functions have not taken place.

K/A Match: the KA is matched because it requires knowledge that SI reset requires open signals from the Reactor Trip and Bypass breakers and the correct procedure to mitigate conditions if automatic opening of a trip breaker fails to occur.

Selection criteria: MODIFIED FROM RPS 19

Tier: 1 **Group:** 1

Importance Rating: RO 4.3 SRO 4.6

Technical Reference(s): Drawing 1MS -41-011 Sheet 8,
EOP-2.2, TRANSFER TO COLD-LEG RECIRCULATION.
IC-9 REACTOR PROTECTION AND SAFEGUARDS ACTUATION
SYSTEM

Proposed references to be provided to applicants during examination: None

Learning Objective: IC-9-41 DESCRIBE the effects of various failures of the Reactor Protection and Safeguards Actuation System, including the following: 2. Failure of P-4 on a reactor trip

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: SRO Only because the question requires assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

In this case it requires assessing the failure one RX trip breaker train and selection of SOP-112 to mitigate a breaker auto failure and reset SI.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

5. EOPS 805

Given the following plant conditions:

Initial conditions:

- FCV-122 failed closed.
- Reactor was manually tripped.

Current conditions:

- PZR Spray Valve PCV-444D has failed OPEN and **cannot** be closed manually.
- Step 5 of EOP-1.0 REACTOR TRIP/ SAFETY INJECTION ACTUATION has just been completed.
- Safety Injection is **not** required.
- RCS pressure 2050 psig, lowering.

Which ONE of the following describes the actions the CRS will direct to successfully mitigate the uncontrolled depressurization?

- A. Manually initiate a Safety Injection, continue in EOP-1.0 and stop RCP "A" as directed if PCV-444D is still open.
- B. Manually initiate a Safety Injection, continue in EOP-1.0 and stop RCP "C" as directed if PCV-444D is still open.
- C. Transfer to EOP-1.1, REACTOR TRIP RECOVERY and energize pressurizer heaters as directed.
- D✓ Transfer to EOP-1.1, REACTOR TRIP RECOVERY and stop RCP "A" as directed.

QUESTION USAGE:

BANK QUESTION - REVISED VERSION OF EOPS 67

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must identify the RCPs that must be stopped in order to stop spray flow through PCV-444D and the procedure in the EOP network that will provide the necessary guidance.

A. Plausible because pressure is lowering toward a Safety Injection (SI) setpoint and EOP-1.0 contains actions to trip "A" RCP for a stuck open spray valve. Additionally, the candidate may think that actuation of a Phase A isolation and securing air to the RB may close the spray valve.

Incorrect because early actuation of a SI is not allowed and implementation of EOP-1.1 would trip "A" RCP without a SI actuated.

B. Plausible because pressure is lowering toward a Safety Injection (SI) setpoint and EOP-1.0 contains actions to trip "A" RCP for a stuck open spray valve. Additionally, the candidate may think that actuation of a Phase A isolation and securing air to the RB may close the spray valve.

Incorrect because early actuation of a SI is not allowed and implementation of EOP-1.1 would trip "A" RCP without a SI actuated.

C. The first part is plausible because EOP-1.1 contains guidance for restoring pressurizer pressure and energizing heaters and because this action would successfully raise pressure to normal if a spray valve was not stuck open.

Incorrect because energizing pressure heaters will not successfully mitigate a full open spray valve.

D. CORRECT. The correct guidance to trip RCP "A" is contained in EOP-1.1.

K/A: 011A2.06 K/A 011 Pressurizer Level Control System (PZR LCS) A2: Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: 06: Inadvertent PZR Spray Actuation, Replace with A2.06 on 12 19 12 per KS.

K/A Match: the KA is matched because it requires knowledge of the correct procedure and actions necessary to mitigate a stuck open spray valve after a level control system malfunction.

Selection criteria: BANK QUESTION - REVISED VERSION OF EOPS 67

Tier: 2 **Group:** 2
Importance Rating: RO 3.7 SRO 3.9

Technical Reference: EOP-1.1, REACTOR TRIP RESPONSE

Proposed references to be provided to applicants during examination: None

Learning Objective: EOP-1.1 06 Apply EOP-1.1 by predicting a discrete path through EOP-1.1 given a set of plant conditions.

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 43(b)5 Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: SRO Only because the question tests knowledge of specific content of a procedure beyond the purpose, overall sequence or mitigation strategy. The required knowledge is of an alternate action contained in an event-specific emergency procedure.

In this case the candidate must know that EOP-1.1 will provide the guidance necessary to check spray valves closed and provide the order to stop RCPs to stop spray.

Comments from 10 question sample:

Stem Focus: Add an RCS pressure under current conditions. Something ~ 1900 psig.

Cred Dist: 1st part of A&B not plausible due to using an SOP during a reactor trip because there are criteria in at least two EOP sections. Recommend using EOP 1.0 as the procedure portion of A&B.

Replaced SOP-101 references to EOP-1.0 per comments.

Also adjusted distracter to include operation of pressurizer heaters to address a validator comment.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

6. EOPS 816

Given the following plant conditions:

- A loss of coolant accident has occurred.
- EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.
- RB pressure 31 psig, lowering.
- NR RVLIS 32%, lowering.
- Core Exit Thermocouples 670°F, rising.
- RCS T_{HOT} Indications 580°F, rising.
- All RCPs are off.

Which ONE of the following describes the procedure that will be used and the condition of coolant in the reactor vessel?

- A✓ EOP-14.1 RESPONSE TO DEGRADED CORE COOLING; Collapsed liquid level is within the bottom 3.5 feet of core.
- B. EOP-14.1 RESPONSE TO DEGRADED CORE COOLING; Void fraction is greater than 50%.
- C. EOP-14.0 RESPONSE TO INADEQUATE CORE COOLING; Void fraction is greater than 50%.
- D. EOP-14.0 RESPONSE TO INADEQUATE CORE COOLING; Collapsed liquid level is within the bottom 3.5 feet of core.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine that CSFST indications warrant a transfer to EOP-14.0 and identify the basis for the indicators used for that transfer.

A. CORRECT; RVLIS narrow range level is less than the 34% and CET indications are less than 725°F. An Orange path on Core Cooling is indicated and a transfer to EOP-14.1 RESPONSE TO DEGRADED CORE COOLING is required. NR RVLIS <34% means level is less than 3.5 ft above the bottom of the core.

B. First part is correct plausible because RVLIS narrow range level is less than 34% and CET indications are less than 725°F. A transfer to EOP-14.1 is required. Second part is plausible because RVLIS wide range indications on the CSFST are based on 50% void fraction.

Incorrect because 34% RVLIS represents 3.5 ft above the bottom of the core.

C. The first part is plausible because RVLIS NR is less than 34% and CETs are high and at the value of 670°F which is the basis for 725°F before instrument errors are applied. NR RVLIS below the limit and CETs above the limit would indicate a transfer to EOP-14.0 is required. The second part is plausible because RVLIS wide range indications on the CSFST are based on 50% void fraction.

Incorrect because a transfer to EOP-14.0 is not required and NR RVLIS <34% means level is <3.5 ft above the bottom of the core.

D. The first part is plausible because RVLIS NR is less than 34% and CETs are high and at the value of 670°F which is the basis for 725°F before instrument errors are applied. NR RVLIS below the limit and CETs above the limit would indicate a transfer to EOP-14.0 is required. The second part is correct. NR RVLIS <34% means level is less than 3.5 ft above the bottom of the core.

Incorrect because a transfer to EOP-14.0 is not required.

K/A: 011EA2.10 K/A: 011 Large Break LOCA EA2: Ability to determine or interpret the following as they apply to a Large Break LOCA: 2.10: Verification of adequate core cooling

K/A Match: The KA is matched because it requires identification that core cooling is not adequate.

Selection criteria: NEW

Tier: 1 **Group:** 1
Importance Rating: RO 4.5 SRO 4.7

Technical Reference: EOP-12.0, MONITORING OF CRITICAL SAFETY FUNCTIONS
ERG BASIS F-0.2

Proposed references to be provided to applicants during examination: None

Learning Objective: EOP-12.0 03 STATE the bases or reasons for each action contained in EOP-12.0 as well as each of the decision blocks of each status tree in EOP-12.0, Attachment 1 through 6.

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: Knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific sub- procedures or emergency contingency procedures. Requires knowledge of EOP basis above and beyond that required of a reactor operator.

Comments from 10 question sample:

Stem Focus: This is a three part question so you only have to know two parts to answer. Need to get it down to two answers.

Q: Is the void fraction > 50% and if so, are you superheated?

Q: If I am 50 degrees greater than saturated conditions, why would I be not certain about being superheated?

Edit: 2nd part of A&D should be collapsed I believe.

Removed superheat aspect and corrected spelling of collapsed per comments.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

7. CONTAINMENT CLG SYS 014

Given the following plant conditions:

- Large Break LOCA in the Reactor Building.
- RB pressure 18 psig, rising.
- "A" and "B" RB Spray pumps are OFF and cannot be started.
- "1A" RBCU is running.
- "2B" RBCU is running.
- XCP-604, 2-3, SWBP A DISCH FLOW LO in alarm.
- XCP-604, 3-1, SW FR 1A/ 2A FLO LO in alarm.
- SWBP "A" failed to start automatically.
- XVB-3107 A, RBCU 64A/ 65A RTN TO SW is OPEN.

Which ONE of the choices below answers both of the following:

- 1) Is a full train of containment depressurization equipment operating as evaluated for the Fission Product Barrier Matrix?
- 2) What is the correct action to address the conditions that caused XCP-604, 2-3 and XCP-604, 3-1 to alarm?

REFERENCE PROVIDED

- A. 1) Full train is available.
2) Fill "A" Train RBCUs per SOP-117, SERVICE WATER SYSTEM then start "A" SWBP.
- B✓ 1) Full train is **not** available.
2) Fill "A" Train RBCUs per SOP-117, SERVICE WATER SYSTEM then start "A" SWBP.
- C. 1) Full train available.
2) Start "A" SWBP per EOP-1.0, REACTOR TRIP SAFETY INJECTION ACTUATION, Attachment 3.
- D. 1) Full train is **not** available.
2) Start "A" SWBP per EOP-1.0, REACTOR TRIP SAFETY INJECTION ACTUATION, Attachment 3.

QUESTION USAGE:

NEW for 2013 NRC.

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must assess plant conditions and alarms and determine that a full train of containment depressurization equipment is not available. and that filling the RBCUs is the correct response in accordance with the supplemental actions of XCP-604, 2-3 and 3-1.

A. The first part is plausible because two (2) RBCUs are running but only one has adequate Service Water flow. This does not satisfy one train of containment depressurization capability as defined in EPP-108. In accordance with EAL criteria, 2 operable RBCUs are required. The second part is correct; with XVB-3107 A open, filling the RBCUS per SOP-117 is required.

Incorrect because a full train of containment depressurization is not available since both RB Spray pumps are off and 1A RBCU is running without Service Water cooling.

B. CORRECT. A full train of containment depressurization is not available since both RB Spray pumps are off and 1A RBCU is running without Service Water cooling and with XVB-3107 A open, filling the RBCUS per SOP-117 is required.

C. The first part is plausible because two (2) RBCUs are running but only one has adequate Service Water flow. This does not satisfy one train of containment depressurization capability as defined in EPP-108. In accordance with EAL criteria, 2 operable RBCUs are required. The second part is plausible because starting SWBP "A" would be the correct action if XVB-3107A were closed.

Incorrect because a full train of containment depressurization is not available since both RB Spray pumps are off and 1A RBCU is running without Service Water cooling and with XVB-3107 A open, filling the RBCUS per SOP-117 is required.

D. The first part is correct; A full train of containment depressurization is not available since both RB Spray pumps are off and 1A RBCU is running without Service Water cooling. The second part is plausible because starting SWBP "A" would be the correct action if XVB-3107A were closed.

Incorrect because XVB-3107 A is open and filling the RBCUS per SOP-117 is required.

8. TECH SPECS 227

Given the following plant conditions:

- Mode 6
- "A" RHR loop aligned for shutdown cooling.
- "A" RHR pump running.
- "B" RHR loop aligned for shutdown cooling.
- "B" RHR pump OFF.
- Refueling cavity level 461', 6", stable.
- RH HX "A" flow indicator 2250 gpm, stable.

Which ONE of the following describes the basis for a Technical Specification limit that is **in effect AND not met** in the current condition?

- A✓ Coolant circulation is less than the limit to minimize the effects of an inadvertent boron dilution event.
- B. Water level in the Refueling cavity is less than the minimum requirement to ensure adequate heat sink if RHR is lost and restoration is in progress.
- C. Water level in the Refueling cavity is less than the minimum requirement to ensure adequate removal of iodine from the rupture of an irradiated fuel assembly.
- D. Loops in operation are less than minimum required to ensure decay heat can be removed in the event of a loss of one RHR pump.

QUESTION USAGE:

MODIFIED FROM TECH SPECS 399

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must assess Refueling Cavity level to determine the applicable specification and the RHR component configurations and flow to determine that TS requirements are not met in accordance with T.S. 3.9.7.1 due to flow less than required AND identify the statement that describes the basis for that requirement.

A. CORRECT. Per T.S. 3.9.7 basis, satisfactory operation ensures that sufficient circulation exists to minimize the effect of an inadvertent dilution and the requirement is not met since flow is less than the 2800 gpm required by surveillance 4.9.7.1.

B. Plausible because it states the basis for refueling cavity level to ensure adequate heat sink and this would be correct if level were <23' above the reactor vessel flange (T.S.3.9.7.2).

Incorrect because the basis does not apply to the given conditions.

C. Plausible because it states the basis for refueling cavity level to ensure iodine removal (T.S.3.9.9).

Incorrect because the basis does not apply to the given conditions.

D. Plausible because the basis statement is correct for required RHR loops in operation when refueling cavity level is less than 23 feet above the flange.

Incorrect because the basis does not apply to the given conditions.

9. CCW SYSTEM 058

Given the following plant conditions:

Time 1100, 8/19/13.

- 100% power
- "A" Charging pump is in service.
- "B" Charging pump was declared INOPERABLE.
- "B" Charging Pump breaker XPP0043B **cannot** be racked down due to a problem with the breaker racking mechanism.
- "C" Charging pump breaker XPP0043C is racked up on "B" train.

Time 1300, 8/19/13.

- XCP-614, 2-6, CCW TO CHG PP A VLV NOT FULL OPEN, is in alarm.
- Valve XVG-9684A-CC, CC WTR TO CHG PP A, indicates shut.
- "A" Charging pump temperatures are being locally monitored using Attachment 3 of AOP-118.1, TOTAL LOSS OF COMPONENT COOLING WATER as a reference
- "A" Charging pump temperatures are stable.

Which ONE of the following describes ECCS trains that are INOPERABLE based on the status of Charging pumps and the **latest time** by which the plant must be placed in HOT STANDBY in accordance with Technical Specifications?

REFERENCE PROVIDED

- A. **Both** ECCS Trains are INOPERABLE; 1900, 8/19/13.
- B. **Both** ECCS Trains are INOPERABLE; 2000, 8/19/13.
- C. "B" ECCS Train is INOPERABLE **only**; 1700, 8/22/13.
- D. "A" ECCS Train is INOPERABLE **only**; 1900, 8/22/13.

QUESTION USAGE:

MODIFIED FROM CCW 54

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine that "A" Train Charging is INOPERABLE due to a loss of CCW cooling and that "B" train Charging is INOPERABLE due to inability to rack down "B" Charging pump breaker. Additionally, the applicant must determine that 3.0.3 is in effect and determine the requirements to be in Hot Standby in accordance with Technical Specifications.

- A. The first part is correct; Both trains of charging are INOPERABLE. The second part is plausible as it states the time to Mode 4 is time that 3.0.3 went into effect plus 6 hours.-> 1900, 8/19/13 = 1300 + 6 hours.

Incorrect because 1900, 8/19/13 does not account for the 1 hour allowance for preparation to change modes. The correct time to HSB is 2000, 8/19/13.

- B. CORRECT. 3.0.3 is in effect as of the 2nd pump INOPERABILITY at 1300, 8/19/13. The unit must be in HOT STANDBY by 1300 + 1 hour + 6 hours = 2000, 8/19/13.

- C. Plausible because the candidate may not realize that "A" Charging pump is INOPERABLE even though operation without CCW is temporarily allowed by AOP-118.1. If 3.0.3 is not recognized then, then under an assumption that only the "B" train is INOPERABLE as of 1100, 8/19/13, the Unit would have to be in HOT STANDBY by 1700, 8/22/13 (1100, 8/19/13 + 72 hours + 6 hours).

Incorrect because T.S. 3.0.3 is the limiting specification and the correct time to HSB is 2000, 8/19/13.

- D. Plausible because the candidate may not realize that "B" train is INOPERABLE because "C" Charging pump is racked up on that train. If 3.0.3 is not recognized then, under an assumption that only "A" train is INOPERABLE as of 1300, 8/19/13, the Unit would have to be in HOT STANDBY by 1900, 8/22/13 (1300, 8/19/13 + 72 hours + 6 hours).

Incorrect because T.S. 3.0.3 is the limiting specification and the correct time to HSB is 2000, 8/19/13.

K/A Match: the KA is matched because it requires the applicant to determine from plant indications that "A" Train Charging is inoperable due to a loss of CCW cooling and that "B" train Charging is inoperable due to inability to rack up ONLY one operable charging pump. Additionally, the applicant must determine that 3.0.3 is in effect and indentify the actions necessary to avoid placing the plant in HOT STANDBY in accordance with Technical Specifications.

Tier: 1 Group: 1
Importance Rating: RO 4.2 SRO 4.4
Technical Reference: T.S. 3.0.3 and 3/4.5.2.
AOP-118.1, TOTAL LOSS OF COMPONENT COOLING WATER
SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM

T.S.3/4.5.2, FIRST PAGE ONLY.

Question Cognitive Level:

Memory or Fundamental Knowledge	<u> </u>
Comprehension or Analysis	<u> X </u>

SRO Justification: SRO Only because the question tests knowledge and application of Required Actions (Section 3) in accordance with rules of application requirements (Section 1).

Facility Response:

Comments;

10. PZR LEVEL CNTRL SYS 025

Given the following plant conditions:

- Mode 3.
- T_{AVG} 557°F, stable.
- Pressurizer level indications are as follows:
 - LI-459A 25%, stable.
 - LI-460 20%, stable.
 - LI-461 25%, stable.
- FCV-122, CHG FLOW controller is in AUTO, output is 36%, stable.

Which ONE of the following describes the status of the High Pressurizer Level trip Functional Unit and the **highest** plant Mode that can be attained in accordance with Technical Specifications?

REFERENCE PROVIDED

- | | | |
|----|-------------|---------|
| A✓ | OPERABLE; | Mode 1. |
| B. | OPERABLE; | Mode 3. |
| C. | INOPERABLE; | Mode 2. |
| D. | INOPERABLE; | Mode 3. |

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine the programmed Pressurizer level for the RCS temperature, diagnose that channel 460 is in error and that channels 459A and 461 are OPERABLE, and that with the provisions of 3.0.4 not applicable, the unit can be taken to Mode 1.

- A. CORRECT. Programmed pressurizer level for 557°F is 25%. Channel 460 has drifted low outside of the 4% tolerance of OAP-106.1, OPERATING ROUNDS but the two other channels remain OPERABLE. This meets the MINIMUM CHANNELS OPERABLE requirement for T.S. 3/4 3-6 for the Pressurizer Water Level - High Functional. The provisions of T.S. 3.0.4 do not apply so the unit can be taken to Mode 1 even with action statement 6 in effect.

- B. Plausible because the first part is correct. Programmed pressurizer level for 557°F is 25%. Channel 460 has drifted low outside of the 4% tolerance of OAP-106.1, OPERATING ROUNDS but the two other channels remain OPERABLE. This meets the MINIMUM CHANNELS OPERABLE requirement for T.S. 3/4 3-6 for the Pressurizer Water Level - High Functional. The second part is plausible because the candidate may not note that 3.0.4 is not applicable on the given reference or know the meaning of that statement. If it is only recalled that Technical Specifications generally do not allow mode changes while in an action statement for equipment required in the higher mode, then this answer is plausible.

Incorrect because the unit can be taken to Mode 1.

- C. Plausible because channels 459A and 461 are both at 25%. If the candidate thinks that these two channels are in error and INOPERABLE, then it may be assumed that the MINIMUM CHANNEL OPERABLE requirements are not met. The second part is plausible because the MODE OF APPLICABILITY for the Pressurizer Water Level- High Function al Unit is Mode 1. In error, the candidate may think that the unit must be held in Mode 2 until OPERABILITY is restored.

Incorrect because the High PZR level trip function is OPERABLE and the unit can be taken to Mode 1.

- D. Plausible because channels 459A and 461 are both at 25%. If the candidate thinks that these two channels are in error and INOPERABLE, then it may be assumed that the MINIMUM CHANNEL OPERABLE requirements are not met. The second part is plausible because the candidate may not note that 3.0.4 is not applicable on the reference or know the meaning of that statement. If it is only recalled that Technical Specifications generally do not allow mode changes while in an action statement for equipment required in the higher mode, then this answer is plausible.

Incorrect because the High PZR level trip function is OPERABLE and the unit can be taken to Mode 1.

11. EPPS/FEPS 051

Given the following plant conditions:

Time 0900:

- Mode 1
- Fuel movement in progress in the Fuel Handling Building.

Time 0930:

- Trembling felt in the Control Room.

Time 0935:

- XCP-638, 3-6, SEIS RDCDR SYS START/ PWR LOSS in alarm.

Time 0955:

- XCP-608, 1-2, SFP LVL HI/LO in alarm.
- Fuel Handling Operators report that a fuel assembly was dropped and bubbles were observed rising from the assembly.
- RM-G8, SPENT FUEL POOL AREA alarms, indication rising.
- RM-A6, FUEL HANDLING BLDG EXHAUST alarms, indication rising.

Time 1000:

- XCP-638, 3-5, RB FOUND SEIS SWITCH OBE EXCEED in alarm.

Which ONE of the choices below completes the following:

The **earliest times** at which conditions were **met** for UE and ALERT classifications were _____ and _____.

Do **not** consider Emergency Director Judgment as a basis for emergency classification.

REFERENCE PROVIDED

	UE	ALERT
A.	0930	0955
B.	0930	1000
C✓	0935	0955
D.	0935	1000

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must

- A. First part is plausible because trembling was felt in the control room at 0930 which is 1/2 conditions necessary for HU1.1. Second half is correct; ALERT condition RA2.2 existed at 0955 when RM-A6 went into alarm coincident with fuel damage.

Incorrect because HU1.1 was not met until 0935.

- B. First part is plausible because trembling was felt in the control room at 0930 which is 1/2 conditions necessary for HU1.1. Second half is plausible because HA1.1 was met at 1000 due to a combination of XCP-638, 3-5, RB FOUND SEIS SWITCH OBE EXCEED in alarm and earthquake felt in the plant.

Incorrect because HU1.1 was not met until 0935 and because an ALERT was in effect prior to 1000.

- C. CORRECT. Conditions for HU1.1 were met at 0935 when the alarm on XCP-638, 1-2, SEIS RDCDR SYS START/ PWR LOSS occurred and the earthquake was felt in the plant. ALERT condition RA2.2 existed at 0955 when RM-A6 went into alarm coincident with fuel damage.

- D. The first part is correct; Conditions for HU1.1 were met at 0935 when the alarm on XCP-638, 1-2, SEIS RDCDR SYS START/ PWR LOSS occurred and the earthquake was felt in the plant. Second half is plausible because HA1.1 was met at 1000 due to a combination of XCP-638, 3-5, RB FOUND SEIS SWITCH OBE EXCEED in alarm and earthquake felt in the plant.

Incorrect because ALERT declaration condition RA2.2 was met at 0955.

12. EOPS 838

Given the following plant conditions:

- All offsite power was lost (115 KV and 230 KV)
- Both EDGs **failed** to start.
- EOP-6.0, LOSS OF ALL ESF AC POWER, in progress.
- Operators are depressurizing Steam Generators.
- 1DA and 1DB indicate 0 VAC.

Which ONE of the following identifies a condition that requires a transfer out of EOP-6.0 with 1DA and 1DB **still deenergized** and the procedure to which operators will transfer?

- A. Reactor Building pressure is 56 psig and stable;
Transfer to EOP-17.0 RESPONSE TO HIGH REACTOR BUILDING PRESSURE.
- B. Reactor Building pressure is 56 psig and stable;
Transfer to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE.
- C. Core Exit Thermocouple temperatures at 1220°F and rising;
Transfer to EOP-14.0 RESPONSE TO INADEQUATE CORE COOLING.
- D. Core Exit Thermocouple temperatures at 1220°F and rising;
Transfer to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE.

QUESTION USAGE:

MODIFIED FROM QUESTION 73 ON 2009 NRC EXAM

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine that Core Exit Thermocouples >1200°F is a CSFST Red Path that requires transfer out of EOP-6.0 with ESF busses still deenergized.

- A. The first part is plausible RB pressure is high and within 1 psig of RB design pressure. Additionally, the primary goal of the SAMGs is to protect fission product boundaries. The second part is plausible because when implementation of Function Restoration Procedures is in effect, EOP-17.0 would be the procedure transfer for a Red or Orange path on RB pressure.

Incorrect because a transfer out of EOP-6.0 is not made for high RB pressure.

- B. The first part is plausible RB pressure is high and within 1 psig of RB design pressure. Additionally, the primary goal of the SAMGs is to protect fission product boundaries. The second part is correct; SACRG-1 is a procedure transfer performed even with 1DA and 1DB still at 0 VAC.

Incorrect because a transfer out of EOP-6.0 is not made for high RB pressure.

- C. The first part is correct; A transfer out of EOP-6.0 is made for CETs >1200°F with ESF busses still deenergized. The second part is plausible because when implementation of Function Restoration Procedures is in effect, EOP-14.0 would be the procedure transfer for CETs >1200°F.

Incorrect because a transfer to EOP-14.0 is not made while in EOP-6.0.

- D. CORRECT; A transfer out of EOP-6.0 is made for CETs >1200°F and rising with ESF busses still deenergized. The correct transfer is to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE.

13. AOPS 612

Given the following plant conditions:

Initial conditions:

- "A" CCW is the active loop.
- "C" Service Water pump is INOPERABLE.
- All offsite power was lost (115 KV and 230 KV).

Current conditions:

- Steam Generator (SG) Tube Rupture on "B" SG occurred.
- Operators have just completed the last step of EOP-4.0, STEAM GENERATOR TUBE RUPTURE.
- "B" SG NR level is 97%, stable.
- Steam Generator blowdown is **not** available.
- "A" Service Water Pump tripped and **cannot** be restarted.
- XCP-613, 1-2, DEMIN FLO DIVERT TEMP HI in alarm.

Which ONE of the following describes the correct transfer out of EOP-4.0 and the action that will be performed as a result of the loss of Service Water?

A✓ Transfer to EOP-4.1A, POST-SGTR COOLDOWN BY BACKFILLING THE REACTOR COOLANT SYSTEM;

Swap the active CCW loop to "B" train using AOP-117.1, LOSS OF SERVICE WATER **in parallel** with actions of EOP-4.1A.

B. Transfer to EOP-4.1A, POST-SGTR COOLDOWN BY BACKFILLING THE REACTOR COOLANT SYSTEM;

Swap the active CCW loop to "B" train in accordance with AOP-117.1, LOSS OF SERVICE WATER **after** recovery actions of EOP-4.1A are complete.

C. Transfer to EOP-4.1C, POST-SGTR COOLDOWN USING STEAM DUMPS:

Swap the active CCW loop to "B" train using AOP-117.1, LOSS OF SERVICE WATER **in parallel** with actions of EOP-4.1C.

D. Transfer to EOP-4.1C, POST-SGTR COOLDOWN USING STEAM DUMPS;

Swap the active CCW loop to "B" train in accordance with AOP-117.1, LOSS OF SERVICE WATER **after** recovery actions of EOP-4.1C are complete.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine how AOP-117.1, LOSS OF SERVICE WATER should be used in conjunction with the Emergency Operating Procedures to most effectively proceed to COLD SHUTDOWN.

A. CORRECT. With only "B" Service Water pump available, the Active CCW loop must be swapped to "B" train in order to provide CCW for letdown. EOP-4.1A is the only procedure that can be used since Blowdown is not available for EOP-4.1b and Steam Generator level precludes the use of EOP-4.1 C. and H level >preferred procedure for use and this method requires cooled letdown to enable processing of backfilled water through the CVCS demineralizers and for operation of RHR.

B. Plausible because EOP-4.1A is the preferred procedure for use and this distracter provides eventual restoration of CCW.

Incorrect because CCW is required in EOP-4.1A for CVCS letdown, excess letdown and RHR.

C. Plausible because EOP-4.1C is a choice in EOP-4.1 and provides the fastest method for processing a rupture SG and proceeding to COLD SHUTDOWN. This distracter provides the correct method of restoring CCW.

Incorrect because the high SG level precludes the use of steam dumps for depressurizing the ruptured SG.

D. Plausible because EOP-4.1C is a choice in EOP-4.1 and provides the fastest method for processing a rupture SG and proceeding to COLD SHUTDOWN and this distracter provides restoration of CCW.

Incorrect because the high SG level precludes the use of steam dumps for depressurizing the ruptured SG and CCW trains would be swapped while proceeding with the EOP recovery procedure.

K/A: 062AG2.4.8 K/A: 062 Loss of Nuclear Service Water G2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

K/A Match: the KA is matched because it requires the determination of the most effective use of AOP-117.1 LOSS OF SERVICE WATER in conjunction with the EMERGENCY OPERATING PROCEDURES to proceed to COLD SHUTDOWN during a response to a SGTR.

Selection criteria: NEW

Tier: 1 Group: 1
Importance Rating: RO 3.8 SRO 4.5
Technical Reference: ERG E-3 Background Document
EOP-4.0, STEAM GENERATOR TUBE RUPTURE

Proposed references to be provided to applicants during examination: None

Learning Objective:EOP-4.0, 5. STATE the bases or reasons for each action contained in EOP-4.0. This should include, but not be limited to, the following

- Advantages and disadvantages of cooldown methods.

Question Cognitive Level:

Memory or Fundamental Knowledge __X__

Comprehension or Analysis _____

10 CFR Part 55 Content: 43(b)5 Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: SRO Only because the question involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed and knowledge of the content of the procedure versus knowledge of the procedure's overall mitigative strategy.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

14. EMERGENCY DIESEL GEN 007

Given the following plant conditions:

Time 2100, 8/25:

- Mode 1.
- Bus 1DA ALT FEED breaker has been declared INOPERABLE.

Time 0745, 8/26:

- "B" EDG is loaded in parallel with offsite sources for a Monthly Operability Test.
- Control power is lost to XSW1DB 10, EMERG DIESEL GEN B XEG0001B-DG.

Which ONE of the following describes the current OPERABILITY status of "B" EDG and a Technical Specification action that will be **required** due to the stated electrical malfunctions.

- A. "B" EDG is OPERABLE;
Verify operability of the Turbine-driven EFW pump.
- B. "B" EDG is OPERABLE;
Make preparations to lower load within ONE (1) hour.
- C✓ "B" EDG is **not** OPERABLE;
Verify operability of the Turbine-driven EFW pump.
- D. "B" EDG is **not** OPERABLE;
Make preparations to lower load within ONE (1) hour.

QUESTION USAGE:

NEW for 2013NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine that diesel is INOPERABLE based on the given information and that a check of TD EFW pump is required.

- A. The first part is plausible because the diesel is currently attached to the bus and the candidate may assume that the diesel function is therefore satisfied. This is incorrect since the breaker cannot open due to a trip and it is required to open if operating in parallel and a SI is actuated. The second part is correct; A diesel INOPERABILITY while in Mode 1 requires a check to ensure that the Turbine-driven EFW pump is OPERABLE.

Incorrect because "B" EDG is INOPERABLE due to the loss of 1HB DC power.

- B. The first part is plausible because the diesel is currently attached to the bus and the candidate may assume that the diesel function is therefore satisfied. This is incorrect since the breaker cannot open due to a trip and it is required to open if operating in parallel and a SI is actuated. The second part is plausible if the candidate assesses that the loss of breaker control power for bus 1DB also makes the offsite circuit to 1DB INOPERABLE and the 1DA is INOPERABLE due the loss of the ALT FEED breaker. In this case, the candidate may assume in error that 3.0.3 is warranted. Preparation to lower modes is required within 1 hour by 3.0.3.

Incorrect because "B" EDG is INOPERABLE due to the loss of 1HB DC power and 3.0.3 is not in effect.

- C. CORRECT; "B" EDG is INOPERABLE due to loss of control power to XSW1DB 10, EMERG DIESEL GEN B XEG0001B-DG. This breaker is required to open if "B" EDG is operating in parallel and a SI actuates. For an inoperability of a diesel, verification of the TD EFW pump operability is required per T.S 3.8.1.1 action B.3.
- D. The first part is correct; "B" EDG is INOPERABLE due to loss of control power to XSW1DB 10, EMERG DIESEL GEN B XEG0001B-DG. This breaker is required to open if "B" EDG is operating in parallel and a SI actuates. The second part is plausible because the candidate may assess that the loss of breaker control power for bus 1DB and the loss of the ALT FEED breaker result in a loss of OPERABILITY on 2 ESF buses and one diesel which requires entry into 3.0.3. Preparation to lower modes is required within 1 hour by 3.0.3.

Incorrect because 3.0.3 conditions are not met since offsite circuits to bus 1DA remain OPERABLE.

15. EPPS/FEPS 065

Given the following plant conditions:

- Plant fire in the cable spreading room was reported.
- Spurious Reactor trip occurred.
- Operators were taking actions as directed by EOP-1.1, REACTOR TRIP RECOVERY.
- FEP-4.0, CONTROL ROOM EVACUATION DUE TO FIRE in progress.
- A loss of secondary heat sink is in progress.

EOP-15.0, RESPONSE TO A LOSS OF SECONDARY HEAT SINK will be
_____(1)_____.

The CRS must transfer CREP switches to LOCAL within _(2)_ minutes after entering FEP-4.0.

- A. 1) read by the CRS and each step will be executed concurrently with actions of FEP-4.0.
2) 30
- B. 1) read by the CRS and each step will be executed concurrently with actions of FEP-4.0.
2) 42
- C✓ 1) used as guidance **only** while in FEP-4.0.
2) 30
- D. 1) used as guidance **only** while in FEP-4.0.
2) 42

QUESTION USAGE:

NEW for 2013 NRC.

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must understand the limits of use of Emergency Operating Procedures during implementation of FEP-4.0, CONTROL ROOM EVAUCUATION DUE TO A FIRE and also identify the maximum time allowed to transfer control switches at the CREP.

- A. The first part is plausible because Abnormal Operating Procedures such as AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI and AOP-118.1, TOTAL LOSS OF COMPONENT COOLING WATER are commonly used concurrently with EOPs. The second part is correct. The switches must be repositioned within 30 minutes

Incorrect because FEPs and EOPs are not used in parallel.

- B. The first part is plausible because Abnormal Operating Procedures such as AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI and AOP-118.1, TOTAL LOSS OF COMPONENT COOLING WATER are commonly used concurrently with EOPs. The second part is plausible because 42 minutes is the time to start a some components such as a charging pump and in FEP-4.0

Incorrect because FEPs and EOPs are not used in parallel and the CREP switches must be repositioned within 30 minutes.

- C. CORRECT. EOP-15.0 is used as a reference only and the CREP switches must be repositioned within 30 minutes.

- D. The first part is correct; EOP-15.0 is used as a reference only and the second part is plausible because 42 minutes is the time to start a some components such as a charging pump and in FEP-4.0

Incorrect because the CREP switches must be repositioned within 30 minutes.

K/A: 068AG2.4.8 K/A: 068 Control Room Evacuation G2.4.8: Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

K/A Match: the KA is matched because it requires knowledge that EOPs are used for reference only when FEP-4.0 is in use.

16. EOPS 839

Given the following plant conditions:

Initial conditions:

- 100% power initially.
- Steam Generator tube rupture occurred on "A" SG.
- EOP-4.0, STEAM GENERATOR TUBE RUPTURE in progress.
- RCS pressure is 1500 psig, lowering.
- Operators are performing a RCS cooldown using condenser steam dumps.

Current conditions:

- RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR goes into alarm.
- "B" EFW flow 200 gpm.
- "C" EFW flow 200 gpm.
- "B" NR SG level 57%, rising.
- "C" NR SG level 51%, lowering.

Which ONE of the choices below answers both of the following?

1) What is the **basis** for returning to Step 1 of EOP-4.0 for the current conditions?

2) Will RCP trip criteria designed for Small Break LOCAs be implemented as RCS pressure continues to lower, and why?

A. 1) Return to step 1 to evaluate a transfer to EOP-4.2, SGTR WITH LOSS OF REACTOR COOLANT: SUBCOOLED RECOVERY DESIRED.

2) Yes. RCP trip criteria contained in EOP-4.0 are intended to cover multiple tube rupture events.

B. 1) Return to step 1 to evaluate a Transfer to EOP-4.2, SGTR WITH LOSS OF REACTOR COOLANT: SUBCOOLED RECOVERY DESIRED.

2) No. RCP trip criteria for Small-break LOCAs ceased to apply after the Operator-controlled cooldown was previously started.

C. 1) Return to step 1 to re-perform Steam Generator isolation steps.

2) Yes. RCP trip criteria contained in EOP-4.0 are intended to cover multiple tube rupture events.

D. 1) Return to step 1 to re-perform Steam Generator isolation steps.

2) No. RCP trip criteria for Small-break LOCAs ceased to apply after the Operator-controlled cooldown was previously started.

QUESTION USAGE:

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must choose the answer that correctly describes the basis for returning back to Step 1 of EOP-4.0 upon indication of additional secondary radiation and why SBLOCA RCP trip criteria do not apply for the conditions given..

- A. First part is plausible because there is a transition to EOP-4.2 that occurs in step 3 if isolation cannot be completed between an intact and ruptured steam generator. The RM-A9 indication does not provide distinction between 1 or 2 more ruptured generators and if all three were ruptured this could conceivably require a transfer. The second part is plausible because the step to trip RCPs will be read a second time and the basis for that step is to provide trips for "multiple failure event scenarios". This would be applicable for conditions in which the primary event is a Small break LOCA that requires the RCP trip and there is accompanying secondary radiation that has caused operators to transfer to E-3(EOP-4.0).

Incorrect because evaluation of transition to EOP-4.2 is not the correct reason to return to Step 1 and RCP trip criteria ceased to apply after beginning the previous cooldown.

- B. First part is plausible because there is a transition to EOP-4.2 that occurs in step 3 if isolation cannot be completed between an intact and ruptured steam generator. The RM-A9 indication does not provide distinction between 1 or 2 more ruptured generators and if all three were ruptured this could conceivably require a transfer. The second part is correct; The SBLOCA RCP trip criteria ceased to apply after beginning the Operator controlled cooldown.

Incorrect because evaluation of transition to EOP-4.2 is not the correct reason to return to Step 1.

- C. The first part is correct; The basis for returning to Step 1 upon receipt of additional secondary radiation is to perform the isolation of the additional ruptured generator. The second half is plausible because the step to trip RCPs will be read a second time and the basis for that step is to provide trips for "multiple failure event scenarios". This would be applicable for conditions in which the primary event is a Small break LOCA that requires the RCP trip and there is accompanying secondary radiation that has caused operators to transfer to E-3(EOP-4.0).

Incorrect because RCP trip criteria ceased to apply after beginning the previous cooldown.

- D. CORRECT; The basis for returning to Step 1 upon receipt of additional secondary radiation is to perform the isolation of the additional ruptured generator. The SBLOCA RCP trip criteria ceased to apply after beginning the Operator controlled cooldown.

17. RADIATION MONITORING 073

Given the following plant conditions:

- Mode 4
- RM-A2, REACTOR BUILDING SAMPLE LINE MONITOR has been declared inoperable due to a detector failure at **2345, 8/19**.
- Manual leakrate calculations are being done to satisfy Surveillance 4.4.6.2.1.d in accordance with the associated action statement in T.S.3.4.6.1, REACTOR COOLANT SYSTEM LEAKAGE, LEAKAGE DETECTION SYSTEMS.
- The last calculation was performed at **0215, 8/20**.

Which ONE of the following describes the **latest** time for completion of the next leakrate calculation that will comply with Technical Specifications?

REFERENCE PROVIDED

- A. 2345, 8/20.
- B✓ 0215, 8/21.
- C. 0545, 8/21.
- D. 0815, 8/21.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the SRO applicant must determine that Surveillance requirement 4.4.6.2.1.d must be performed every 24 hours and that the 25% extension allowed by T.S. 4.0.2 does not apply because the surveillance is being performed to satisfy an action statement. The maximum time before the next performance must then be selected.

A. Plausible because 2345 is 24 hours after the declaration of INOPERABILITY.

Incorrect because the correct time is 24 hours after the last performance of the leakrate calculation.

B. CORRECT. The last performance of 4.4.6.2.1.d was at 0215, 8/20/13 and the 25% extension allowed by 4.0.2 does **not** apply. The surveillance must next be performed at 0215, 8/21/13. (0215, 8/20/13 + 24 hours).

C. Plausible because 0545 is 30 hours after the declaration of INOPERABILITY. This would represent the 24 hours after INOPERABILITY plus an additional 6 hours for a 25% extension.

Incorrect because the correct time is 24 hours after the last performance of leakrate calculation and the 25% extension is not allowed when the surveillance is being performed to satisfy an action statement.

D. Plausible because 0815 is 30 hours after the last performance of 4.4.6.2.1.d. This would represent the 24 hours after the last performance plus an additional 6 hours for a 25% extension.

Incorrect because the 25% extension is not allowed when the surveillance is being performed to satisfy an action statement.

18. EPPS/FEPS 082

Given the following plant conditions:

Time 1500:

- A fire in the Turbine Driven EFW Pump room was reported to the Control Room.
- The fire detector in the room **failed to detect the fire**.
- Automatic fire suppression failed to actuate.

Time 1520:

- The fire has been extinguished.
- The door to the Turbine Driven EFW Pump room is sprung from its frame due to fire-related damage.

Which ONE of the choices below answers both of the following:

- 1) What is the **highest** EAL declaration required for this event?
- 2) What type of door is the door to the Turbine Driven EFW Pump room?

REFERENCE PROVIDED

- A. 1) UE.
2) Fire Rated Assembly **only**.
- B. 1) UE.
2) Fire Rated Assembly **and** Steam Propagation Barrier.
- C✓ 1) Alert.
2) Fire Rated Assembly **only**.
- D. 1) Alert.
2) Fire Rated Assembly **and** Steam Propagation Barrier.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant assess the EAL declaration for a fire that cause damage to a safety related structure and use a drawing to obtain a door number for door IB-102. He must then use procedure excerpts to determine the type of door that was damaged.

- A. The first part is plausible because a fire lasted 20 minutes in the Intermediate Building and therefore meets conditions for a UE declaration. This is not the highest and therefore is not correct. The second part is correct; Per drawing D-101-017 G-6, the door to the Turbine -Driven EFW Pump Room is IB-102; Per FPP-025, Enclosure 6.3, page 2, door IB-102 is a Fire Rated Assembly (FRA).

Incorrect because a UE is not the highest EAL declaration.

- B. The first part is plausible because a fire lasted 20 minutes in the Intermediate Building and therefore meets conditions for a UE declaration. This is not the highest and therefore is not correct. The second part is plausible because CB-102 may be cross-referenced in error and it is a Fire Rated Assembly and a Steam Propagation Barrier (SPB) as indicated on page 1 of FPP-025, Enclosure 6.3.

Incorrect because a UE is not the highest EAL declaration and door IB-102 is not a SPB.

- C. CORRECT; With visible damage to a structure in a safety related area contained in table H-1, the correct classification is Alert and per drawing D-101-017 G-6, the door to the Turbine -Driven EFW Pump Room is IB-102; Per FPP-025, Enclosure 6.3, page 2, door IB-102 is a Fire Rated Assembly (FRA).

- D. The first part is correct; With visible damage to a structure in a safety related area contained in table H-1, the correct classification is Alert. The second part is plausible because CB-102 may be cross-referenced in error and it is a Fire Rated Assembly and a Steam Propagation Barrier (SPB) as indicated on page 1 of FPP-025, Enclosure 6.3.

Incorrect because door IB-102 is not an SPB.

K/A: 086A2.04 K/A: 086 Fire Protection System (FPS) A2: Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: 2.04: Failure to actuate the FPS when required, resulting in fire damage

K/A Match: the KA is matched because it requires the candidate to assess caused by a failure of automatic fire protection and determine the correct EAL classification.

Selection criteria: NEW

Tier: 2 **Group:** 2
Importance Rating: RO 3.3 SRO 3.9
Technical Reference: EPP-001, ACTIVATION AND IMPLEMENTATION OF
EMERGENCY PLAN.
Drawing D-101-017
FPP-023, Encl. 6.3

Proposed references to be provided to applicants during examination:

**EAL CLASSIFICATION MATRIX from EPP-001, ACTIVATION AND IMPLEMENTATION
OF EMERGENCY PLAN.**
Drawing D-101-017
FPP-023, Encl. 6.3

Question Cognitive Level: **Memory or Fundamental Knowledge** _____
Comprehension or Analysis **X**

Learning Objective: EPP-001 01 For a given set of conditions, DETERMINE which
Emergency Action Level applies

10 CFR Part 55 Content: 43(b)(5) Assessment of facility conditions and selection of
appropriate procedures during normal, abnormal, and emergency
situations.

SRO Justification: SRO Only because the question requires knowledge and application of
procedures that are the responsibility of the Shift Supervisor.

Comments from 10 question sample:

What is the reference provided?

A is checked as correct but the analysis for C is correct.

Why is the TD room NOT a steam propagation barrier?

*If there is a detector OOS on each side of the fire barrier, is that not an FRA-2 instead of an
FRA-1?*

*I need to have these questions answered and see what the reference is before I can make a
call on it.*

This question has been changed from the one submitted for sample but is similar. The
references will be:

- EAL CLASSIFICATION MATRIX from EPP-001, ACTIVATION AND
IMPLEMENTATION OF EMERGENCY PLAN.
- FPP-025, Enclosure 6.3, Door Barrier Type List.
- Drawing D-101-017

The door is not a SPB per enclosure 6.3 of FPP-025.

The new question no longer has an issue with zone operability.

NRC Form ES-401-9 Comments:

19. CVCS 196

Given the following plant conditions:

- Crew is preparing to start "C" RCP.
- Pressurizer level 94%.
- RCS T_{COLD} temperatures.

"A" 191°F

"B" 194°F

"C" 192°F

- Steam Generator Temperatures.

"A" 238°F

"B" 245°F

"C" 243°F

Which ONE the following identifies whether a start of "C" RCP is allowed in accordance with SOP-101, REACTOR COOLANT SYSTEM and the basis for evaluating steam generator temperatures and T_{COLD} temperatures prior to the start?

A. Start of "C" RCP is **not** allowed.

Limit the RCS pressurization so that RHR suction reliefs do not lift.

B✓ Start of "C" RCP is **not** allowed.

Limit the RCS pressurization so that brittle fracture limits are not exceeded.

C. Start of "C" RCP is allowed.

Limit the RCS pressurization so that RHR suction reliefs do not lift.

D. Start of "C" RCP is allowed.

Limit the RCS pressurization so that brittle fracture limits are not exceeded.

QUESTION USAGE:

MODIFIED FROM GOP480

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must recall the limit and its basis that preclude starting an RCP while the RCS is less than 300°F.

A. The first part is correct; When the RCS is less than 300°F and with Pressurizer level greater than 92%, a RCP cannot be started because "C" TCOLD is more than 50°F below "C" Steam Generator temperature. The second part is plausible because the specification ensures that the reliefs provide sufficient capacity, but not that reliefs do not lift.

Incorrect because the basis is for the potential for brittle fracture due to overpressurization.

B. CORRECT. When the RCS is less than 300°F and with Pressurizer level greater than 92%, a RCP cannot be started when the lowest TCOLD temperature is not within 50°F of the highest Steam Generator temperature and the basis for that requirement is to prevent brittle fracture due to overpressurization.

C. The first part is plausible because the highest TCOLD is within 50°F of "C" Steam Generator temperature. The second part is correct; the basis for the requirement is to prevent brittle fracture due to overpressurization.

Incorrect because all TCOLDS must be within 50°F of all Steam Generator temperatures and the basis is the potential for brittle fracture rather than to ensure that reliefs do not lift.

D. The first part is plausible because "C" TCOLD is within 50°F of "C" Steam Generator temperature. The second part is plausible because a cooldown of RCS portion of the steam generator will occur and the administrative cooldown limit is 50°/hr per GOP-6.

Incorrect because all TCOLDS must be within 50°F of all Steam Generator temperatures..

K/A: G2.1.32: Ability to explain and apply system limits and precautions.

K/A Match: the KA is matched because it requires knowledge of Technical specification basis for the limit contained in SOP-101, REACTOR COOLANT SYSTEM that precludes starting RCPs when the RCS is below 300°.

Selection criteria: MODIFIED FROM GOP480

Tier: 3 Group:

Importance Rating:

Technical Reference:

RO 3.8 SRO 4.0

T.S. 3.4.3.1 and associated basis

SOP-101, REACTOR COOLANT SYSTEM

Proposed references to be provided to applicants during examination: None

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

Learning Objective: SB-4A-02 INTERPRET the applicability of Technical Specifications including the surveillance requirements and bases.

10 CFR Part 55 Content: 43(b) 2. Facility operating limitations in the TS and their bases.

SRO Justification: SRO Only because the question tests knowledge the Technical Specification basis that precludes starting RCPs when the RCS is below 300° if conditions are present that would create an excess overpressurization.

401-9 comment from submittal of 10 question sample:

Cred Dist: The second part of A&C are not plausible because the temperatures are only 47, 51 & 51 °F apart to begin with so exceeding a cooldown rate limit would be impossible unless you have something going on to keep one of the temperatures constant.

The analysis states “the lowest TCOLD temperature is not within 50 °F of the highest Steam Generator”. The actual limit seems to state that it would apply to individual loops. Correct me if I’m wrong.

The second half of distracters A and C were changed to present a plausible reason for preventing overpressurization. With regard to the second comment, the actual specification is as follows:

Reactor Coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 300°F unless 1) the pressurizer water volume is. less than 1288 cubic- feet and/or 2) the secondary water -temperature of **each** steam generator is less than 50°F above **each** of the Reactor Coolant System cold leg temperatures.

The justification is correct as stated in that all tcolds must be within all SG temperatures.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

20. TECH SPECS 485

Given the following plant conditions:

- Date and time: **Monday** 8/5, 1945.
- The on-coming NROATC is running late but is expected at **2130**.
- The **off-going** NROATC has worked the following schedule :

NOTE: TIMES BELOW DO NOT INCLUDE TURNOVER TIME.

7/23 - 7/29, OFF

7/30, 0700 to 1900

7/31, 0700 to 2000

8/1, 0700 to 1800

8/2, 0700 to 1900

8/3, 1100 to 1800

8/4, OFF

8/5, began work at 0400

- **Only** the following personnel are present to perform Control Room duties:
 - On-coming Shift Supervisor
 - On-coming CRS
 - On-coming STA - (non-licensed).
 - Off-going** NROATC - (RO License).
 - On-coming BOP - (RO License).
- A power reduction is planned to start early in the next shift to comply with a Technical Specification action that requires the plant in Mode 3 by **Wednesday** 8/8, 1200.

Which ONE of the choices below completes the following statements in accordance with SAP-152, FATIGUE MANAGEMENT AND WORK HOUR LIMITS?

The off-going NROATC will reach the **first** 10 CFR 26 work hour limit at __ (1) __ .

A **valid** reason to authorize a work limit waiver for the off-going RO would be to ensure that _____ (2) _____.

- A✓ 1) 2000.
2) shift staffing meets Technical Specification minimum requirements.
- B. 1) 2000.
2) the planned power reduction is not delayed.
- C. 1) 2100.
2) shift staffing meets Technical Specification minimum requirements.
- D. 1) 2100.
2) the planned power reduction is not delayed.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant apply knowledge of work-hour requirements determine when a limit is reached and in accordance with SAP-152, FATIGUE MANAGEMENT AND WORK HOUR LIMITS and assess conditions to determine the proper basis for a waiver. This also requires knowledge that the 2 hour allowance of T.S. Section 6 to replace an unexpected absence does **not** apply for a late crewmember.

- A. CORRECT. A maximum of 16 hours can be worked within a 24 hour period. The RO will reach the 16th hour within 24 on 8/10. $0400 + 16 \text{ hours} = 2000$. Compliance with Technical Specification shift staffing requirements is an appropriate basis for a waiver.
- B. The first part is correct; A maximum of 16 hours can be worked within a 24 hour period. The RO will reach the 16th hour within 24 on 8/10. $0400 + 16 \text{ hours} = 2000$. The second part is plausible because SAP-152 identifies that causing a power reduction due to compliance with work hour limits is a valid basis for a waiver. This may be misinterpreted as that participation in a Tech Spec power reduction is a valid basis..

Incorrect because expected participation in a power reduction is not a valid basis for waiver

- C. The first part is plausible because at 2100 on 8/10, the RO will have worked 72 hours in a 7 day period. The calculation is as follows:

7/25 - 8/3	OFF
8/4,	0700 to 1900 12 hours
8/5,	0700 to 2000 13 hours
8/6,	0700 to 1800 11 hours
8/7,	0700 to 1900 12 hours
8/8,	1100 to 1800 7 hours
8/9,	OFF

55 hours worked from 8/3 to 8/9

The RO would reach 72 hours at the 17th hour on 8/10.

$0400 + 17 \text{ hours} = 2100$.

The second part is plausible because compliance with Technical Specification shift staffing requirements is an appropriate basis for a waiver

Incorrect because a work hour limit will be reached at 2030.

- D. The first part is plausible because at 2100 on 8/10, the RO will have worked 72 hours in a 7 day period. The second part is plausible because SAP-152 identifies that causing a power reduction due to compliance with work hour limits is a valid basis for a waiver. This may be

misinterpreted as that participation in a Tech Spec power reduction is a valid basis.

Incorrect because a work hour limit will be reached at 2030 and because expected participation in a power reduction is not a valid basis for waiver

21. ADMIN PROCEDURE 592

Given the following plant condition:

- 100% power.

Which ONE of the emergent maintenance items below **must** be considered Priority 1 maintenance in accordance with SAP-300, Conduct of Maintenance?

ASSUME ONLY THE STATED COMPONENT IS INOPERABLE IN EACH CASE.

- A. Replacement of "C" Charging pump motor.
- B. Replacement of outer containment air lock door seal.
- C. Repair of PCV-445B, PWR RELIEF auto-actuation circuitry.
- D✓ Repair of Turbine-driven EFW pump governor linkage.

QUESTION USAGE:

MODIFIED FROM ADMIN PROCEDURE 151

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must assess and select a condition that constitutes a Priority 1 maintenance item in accordance with SAP-300, CONDUCT OF MAINTENANCE.

- A. Plausible because a Charging Pump is required for an Operable ECCS train and an INOPERABILITY of one train would require entry into a 72 hour action statement and would be cause for a Priority 1 maintenance item.

Incorrect because both trains can still be maintained OPERABLE with "C" Charging pump out of service.

- B. Plausible because a loss of Containment Integrity due to INOPERABLE locks would require a Mode 3 within 6 hours and would warrant a Priority 1 maintenance item.

Incorrect because operation with loss of only one air lock can continue and would not require a priority 1 maintenance item.

- C. Plausible because if the block valve for the affected PORV cannot be closed, Mode 3 would be required within 6 hours and would warrant a Priority 1 maintenance item.

Incorrect because operation at power can continue with the block valve closed on a PORV that is INOPERABLE but can be manually cycled.

- D. CORRECT. An inoperable Turbine-driven EFW pump would require entry into a 72 hour action statement and would warrant a Priority 1 work order.

K/A: G2.2.17: Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.

K/A Match: the KA is matched because it requires knowledge of the priority 1 work activities.

Selection criteria: MODIFIED FROM ADMIN PROCEDURE 151

Tier: 3 Group:

Importance Rating: RO 2.6 SRO 3.8

Technical Reference: SAP-300, CONDUCT OF MAINTENANCE

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SAP-300-03 DESCRIBE the process for the following:Priority 1 Maintenance

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification:

SRO because Priority 1 Maintenance is performed at the direction of the Shift Supervisor.

NRC Form ES-401-9 Comments:

22. ADMIN PROCEDURE 595

Time 0730, 8/23:

- Mode 4.
- Plant cooldown in progress.
- "A" CCW train is the active train.
- A suspected maintenance problem on **only** CCW pump breakers will require a visual inspection of **each** breaker to determine OPERABILITY.
- "A", "B" and "C" CCW pumps are declared INOPERABLE.
- CC PUMP B XPP0001B, is tagged out and racked down.
 - The breaker is visually inspected without any disassembly.
 - **No** defects are found.

Time 1030, 8/23:

- Management directs that actions be taken to return "B" CCW train to an OPERABLE status.
- CC PUMP B XPP0001B is **racked up and tags are cleared**.
- No other actions are taken with "B" CCW pump.

Which ONE of the choices below answers both of the following:

A test start of "B" CCW pump __ (1) __ required to establish OPERABILITY of that pump.

The **latest** time by which the plant must be in Mode 5 with the breaker status at **10:30, 8/23** is ____ (2) ____ .

REFERENCE PROVIDED

	(1)	(2)
A✓	is	0830, 8/24.
B.	is	1430, 8/24.
C.	is not	1330, 8/27.
D.	is not	1930, 8/27.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must determine that the plant is under T.S. 3.0.3., identify that a test start of "B" CCW can reasonably be performed and is required after racking to establish OPERABILITY and calculate the latest time at which the plant must be in Mode 5 under the current conditions if 3.0.3. remains in effect.

- A. CORRECT. "B" CCW pump must be started to establish OPERABILITY and if not performed, the plant must be in Mode 5 by 0830 on 8/24 (0730, 8/23 + 1 hour prep+ 24 hours).
- B. The first part is correct; "B" CCW pump must be started to establish OPERABILITY. The second part is plausible because the time given, is 0730, 8/23 + 31 hours (in error based on 1 hour prep+ 6 hours to reach Hot Shutdown and 24 Hours to Cold Shutdown). If 3.0.3 is entered while in HOT SHUTDOWN, that 6 hours cannot be credited and therefore is not part of the total time.

Incorrect because 2030, 8/24/13 is not the correct time requirement.

- C. The first part is plausible if the candidate considers "B" CCW pump OPERABLE upon being racked up. The second part is plausible because in this case the erroneous assumption is that the 3.7.3 action statement is applicable and the time given, is 0730, 8/23 + 102 hours = 1330, 8/27 (in error based on 72 hours to allow repair + 30 hours to reach Cold Shutdown).

Incorrect because "B" CCW pump must be started and the time is not correct.

- D. The first part is plausible if the candidate considers "B" CCW pump OPERABLE upon being racked up. The second part is plausible because in this case the erroneous assumption is that the 3.7.3 action statement is applicable and the time given, is 0730, 8/23 + 108 hours = 1930, 8/27 (in error based on 72 hours to allow repair + 6 hours credited for Hot Shutdown (conceptual error) + 30 hours to reach Cold Shutdown).

Incorrect because "B" CCW pump must be started and the time is not correct.

23. WASTE GAS DISPOSAL S 063

Given the following plant conditions:

Time 0900, 8/20/13.

- Waste Gas Decay Tank "H" sampled.
- A Release Permit was approved for a release of Waste Gas Decay Tank (WGDT) "H".
- WGDT "H" pressure 18 psig.

Time 0945, 8/20/13.

- Release was commenced.
- HCV-014, WASTE GAS DISCHARGE CONTROL VALVE **went closed** due to a leak on the valve operator diaphragm.

Time 1300, 8/20/13:

- WGDT "H" returned to normal service.
- Gas transferred from WGDT "C" to WGDT "H".

Time 0200, 8/21/13:

- HCV-014 has been repaired.
- WGDT "H" is aligned for release.
- WGDT "H" pressure 22 psig.
- RM-A3 reading Normal background.
- Wind direction From the West-Southwest.

Which ONE of the choices below correctly identifies whether the release can be restarted at 0200, 8/21/13, and if not, the reason why it must be delayed?

- A. The release may be re-started.
- B. The release must be delayed because activity could be drawn into the Auxiliary Building **only**.
- C. The release must be delayed because WGDT "H" must be re-sampled **and** because activity could be drawn into the Auxiliary Building.
- D. The release must be delayed because WGDT "H" must be re-sampled **only**.

QUESTION USAGE:

NEW for 2013 NRC.

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

- A. Plausible because a sample is normally in effect for 24 hours.
- Incorrect because "H" WGDТ must be re-sampled due to the addition since the last sample.
- B. Plausible because the release would be restricted if wind direction was from the East-Southeast per SOP-119, WASTE GAS PROCESSING. The given west-southwest is also from a southerly direction. and is similar in wording to "east -southeast".
- Incorrect because "H" WGDТ must be re-sampled due to the addition since the last sample and because there is no restriction due to wind direction.
- C. The first part is correct; Per HPP-709, the tank to be released must be re-sampled prior to release if there is any actual or suspected addition to the tank. The second part is plausible because the release would be restricted if wind direction was from the East-Southeast per SOP-119, WASTE GAS PROCESSING. The given west-southwest is also from a southerly direction. and is similar in wording to "east -southeast".
- Incorrect because "H" WGDТ must be re-sampled due to the addition since the last sample and because there is no restriction due to wind direction.
- D. CORRECT per HPP-709, the tank to be released must be re-sampled prior to release if there is any actual or suspected addition to the tank.

24. EPPS/FEPS 062

Which ONE of the following is the least severe event of those listed that meets the definition for **Hostile Action** in accordance with EPP-108, EMERGENCY ACTION LEVEL TECHNICAL BASIS DOCUMENT?

- A. Disgruntled employees stand in front of a truck carrying new fuel at the vehicular access to the owner-controlled area to prevent its entry.
- B. Two employees in the Turbine Building argue until one inflicts a lethal injury on the other that requires transport offsite for emergency treatment.
- C✓ A group of armed Intruders fire upon security in the owner-controlled area outside of the rock barriers and are subsequently disarmed and arrested.
- D. Armed intruders detonate a bomb that ruptures the RWST and seriously wounds two plant workers.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ

Ops Review: Nick O'Kimosh

Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must recall the definition of a Hostile Action in accordance with EPP-108, EMERGENCY ACTION LEVEL TECHNICAL BASIS DOCUMENT.

- A. Plausible because the candidate may assume that a HOSTILE ACTION may have occurred under the classic definition of "hostile" as follows (from Merriam Webster.com:)

- 1 a : of or relating to an enemy
- b: marked by malevolence: having or showing unfriendly feelings
- c: openly opposed or resisting

Incorrect because in accordance with EPP-108, a definition of HOSTILE ACTION is an act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidates the licensee to achieve an end. This includes attack by air, land or water using guns, explosives, projectiles, vehicles or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the plant. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area.

- B. Plausible because the candidate may assume that because a lethal act occurred within the Protected Area that this constitutes a Hostile Action.

Incorrect because a Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the plant.

- C. CORRECT. Armed intruders that act in concert with acts of violence upon personnel constitute a Hostile Action. This is less severe than distracter D in which explosives are actually detonated in the Protected area resulting in injury to employees and destruction of vital safety equipment.

- D. Plausible because armed intruders that act in concert with acts of violence upon personnel constitute a Hostile Action.

Incorrect because this is not the least severe since this results in injury to employees and damage to vital safety equipment inside the Protected Area.

K/A: G2.4.28: Knowledge of procedures relating to a security event (non-safeguards information).

K/A Match: the KA is matched because it requires knowledge of the definition of a Hostile Action which is used to make declarations based on Security-related events.

Selection criteria: NEW

Tier: 3 Group:

Importance Rating:

RO 3.2 SRO 4.1

Technical Reference:

EPP-108, EMERGENCY ACTION LEVEL TECHNICAL BASIS DOCUMENT

Proposed references to be provided to applicants during examination: None

Learning Objective: EPP-001 01 For a given set of conditions, determine which Emergency Action Level applies.

Question Cognitive Level:

Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content:

43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: SRO Only because the question requires application of procedures, and knowledge of their basis that are the responsibility of the Shift Supervisor.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

25. EPPS/FEPS 226

Given the following plant conditions:

- Large Break LOCA occurred.
- A release is in progress via a small breach in the Reactor Building Equipment Hatch.
- An ALERT was declared at 1500.
- A Site Area Emergency was declared at 1530.

Which ONE of the choices below answers **both** of the following:

In accordance with EPP-012, ONSITE PERSONNEL ACCOUNTABILITY AND EVACUATION;

- 1) What is the **latest** time by which a list of missing employees must be provided to the Emergency Director/ Interim Emergency Director?
- 2) What is the location to which Non-Essential personnel will be directed for evacuation?

- A. 1) 1530;
2) Non-essential personnel will be directed to their personal residences.
- B. 1) 1600;
2) Non-essential personnel will be directed to their personal residences.
- C. 1) 1530;
2) Non-essential personnel will be directed to an Offsite Holding Area.
- D✓ 1) 1600;
2) Non-essential personnel will be directed to an Offsite Holding Area.

QUESTION USAGE:

NEW for 2013 NRC

QUESTION HISTORY:

Rev. 0 submitted by RJ
Ops Review: Nick O'Kimosh
Approved: 6/17/13 Rick Garner

DISTRACTOR ANALYSIS:

In order to answer this question correctly, the applicant must use knowledge of EPP-012, ONSITE PERSONNEL ACCOUNTABILITY AND EVACUATION and determine the latest time by which evacuation and accountability has been completed and determine the requirement for the location where personnel will be directed.

- A. The first part is plausible because the Evacuation and accountability must be completed within 30 minutes during a SAE. If the applicant assumes in error that accountability is

required for Alert then $1500 + 30 \text{ min} = 1530$. The second part is plausible because employees may be directed to their residences if they are not or could not be contaminated.

Incorrect because the correct time for completion of Accountability is 1600 and non-essential personnel will be directed to a holding area when there is potential for personnel or vehicle contamination. Since there is a small breach in the reactor building, there is the potential for that to have occurred at the site.

- B. The first part is correct; The Evacuation and accountability must be completed within 30 minutes after declaration of a SAE. $1530 + 30 \text{ min} = 1600$. The second part is plausible because employees may be directed to their residences if they are not or could not be contaminated.

Incorrect because non-essential personnel will be directed to a holding area when there is potential for personnel or vehicle contamination. Since there is a small breach in the reactor building, there is the potential for that to have occurred at the site.

- C. The first part is plausible because the Evacuation and accountability must be completed within 30 minutes during a SAE. If the applicant assumes in error that accountability is required for Alert then $1500 + 30 \text{ min} = 1530$. The second part is correct; All non-essential personnel will be directed to a holding area when there is potential for personnel or vehicle contamination. Since there is a small breach in the reactor building, there is the potential for that to have occurred at the site.

Incorrect because evacuation and accountability must be completed by 1530.

- D. CORRECT. Evacuation and accountability must be completed within 30 minutes during a SAE ($1530 + 30 \text{ min} = 1600$) and non-essential personnel will be directed to a holding area when there is potential for personnel or vehicle contamination. Since there is a small breach in the reactor building, there is the potential for that to have occurred at the site.

K/A: G2.4.40: Knowledge of SRO responsibilities in emergency plan implementation.

K/A Match: the KA is matched because it requires the candidate to determine the time by which evacuation of the site and accountability and accountability must be completed during a Site Area Emergency and, in addition, recall the restrictions for the offsite holding areas during evacuation.

Selection criteria: NEW

Tier: 3 **Group:**

Importance Rating: RO 2.7 SRO 4.5

Technical Reference: **EPP-012, ONSITE PERSONNEL ACCOUNTABILITY AND EVACUATION**

Proposed references to be provided to applicants during examination: None

Learning Objective: EPP-OVERVIEW-ILO 20 List the responsibilities for the following positions in the onsite emergency response center. Emergency Director

Question Cognitive Level: **Memory or Fundamental Knowledge** _____

Comprehension or Analysis X

10 CFR Part 55 Content: 43(b)(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

SRO Justification: SRO Only because the question requires knowledge required of the Shift Supervisor when acting as Interim Emergency Director.

NRC Form ES-401-9 Comments:

Facility Response:

Comments;

You have completed the test!