QUESTIONS REPORT
for NRC 2011 RO EXAM BANK REV 8

1. 001K5.88 001/OPS 2-30 OBJ 4/2-2/REV 1/C/A 2.9/3.4/04-12-11/RO/NO/NEW

Which ONE of the following describes the effect, if any, on the neutron error signal to the Control Rod Drive System (CRDS) due to changes in letdown temperature? [assume current neutron error is zero (0)]

If letdown temperature rises the makeup demins will ___(1)___ more boron which results in the neutron error signal to the CRDS becoming ___(2)___ .

A. (1) absorb
(2) positive

B. (1) absorb
(2) negative

C. (1) release
(2) positive

D.✔ (1) release
(2) negative

001K5.88 – Knowledge of the following operational implications as they apply to the CRDS: Effects of boron on the temperature coefficient. (Effects of temperature change on boron concentration (makeup demins) / relationship to rod movement. OK per Mark Bates, 02-23-11)

Reasons:

When letdown temperature lowers the Makeup Demins will absorb more boron. When letdown temperature rises the Makeup Demins will release boron. Neutron error is calculated as actual power minus demand (i.e. as actual power rises above demand the neutron error will become more positive regardless of the initial neutron error).

A., B. & C. All plausible answers. Question requires the students to analyze the effect changes in letdown temperature have on demins and determine how this change affects core reactivity.

D. Correct. When letdown temperature rises the Makeup Demins will release boron. This adds negative reactivity to the core. Eventually neutron error will reach -1% and control rods will withdraw.

OPS 2-30 OBJ 4; OPS 2-30 Section 1-13.0.B.4; OPS 4-14 Section 4.0.I.5.a & e; OP-408 Caution at Step 4.46

RO - New

Reference(s) provided: None

2. 003A3.01 001/OPS 4-09 OBJ 7/2-1/REV 1/MEM 3.3/3.2/02-01-11/RO/NO/NEW

Which ONE of the following identifies the effect on MUV-16, RCP Seal Injection Control Valve, if a total loss of NNI-X power were to occur?

On a total loss of NNI-X power, ___(1)___ valve control will be lost. Seal injection flow will ___(2)___ .

A. (1) ONLY automatic
(2) rise

B. ✔ (1) ONLY automatic
(2) remain the same

C. (1) automatic AND manual
(2) rise

D. (1) automatic AND manual
(2) remain the same

003A3.01 - Ability to monitor automatic operation of the RCPS including: Seal injection flow.

Reasons:

A. First part of distractor correct. Second part of distractor is plausible since multiple control valves fail open on a loss of power or air.

B. Correct. Automatic control is lost however manual control is still available due to the backup power supply from VBDP-3. A memory module in the control circuitry for MUV-16 maintains current valve position.

C. Plausible since multiple control valves lose automatic and manual control on a loss of power. Second part of distractor is also plausible since multiple control valves fail open on a loss of power or air.

D. Plausible since multiple control valves lose automatic and manual control on a loss of power. Second part of distractor is correct.

OPS 4-09 OBJ 7; OPS 4-09 Section 8.0.B.4.g; AP-581 Note at Step 3.13

RO - New

Reference(s) provided: None

3. 003AK3.06 001/OPS 4-28 OBJ 7 & 10/1-2/REV 1/MEM 2.7/3.0/01-26-11/RO/NO/NEW

Reactor power is at 60% following a dropped rod event. Rod recovery efforts are in progress IAW OP-502, Control Rod Drive System. Prior to withdrawing the control rod RPI is reset to 0.

Which ONE of the following identifies the reason for this action?

This action is necessary to:

A. extinguish the "Sequence Inhibit" lamp.

B. clear the "CRD Asymmetric Fault" alarm.

C. ✔ comply with Technical Specification requirements.

D. restore good data input to the "Rod Withdrawal Insertion Limit" calculation.

003AK3.06 - Knowledge of the reasons for the following responses as they apply to the Dropped Control Rod: Reset of relative position indication to zero

Reasons:

A. Plausible since RPI inputs to the Sequence Inhibit circuit but this action will not extinguish the Sequence Inhibit lamp.

B. Plausible since this will match RPI and API indications however this alarm won't clear until the rod is within 7" of it's group average.

C. Correct. Per TS SR 3.1.7.1 API and RPI must agree with the limit specified in the COLR.

D. Plausible since rod position is used to compare with this value but the actual calculation uses power level to determine the maximum rod insertion limit.

OPS 4-28 OBJ 7 & 10; OPS 4-28 Sections 4.0.G.6, 4.0.J.4, 10.D and Figure 13; TS SR 3.1.7.1; COLR; AR-502 EP 1242

RO - New

Reference(s) provided: None

4. 004A1.03 001/OPS 4-52 OBJ 11/2-1/REV 1/MEM 3.8/3.8/06-23-11/RO/NO/NEW

In accordance with TS 3.4.11, Low Temperature Overpressure Protection (LTOP) System, HPI must be de-activated in Mode 4 prior to RCS temperature reaching __(1)__° F and is accomplished in accordance with OP-209, Plant Cooldown, by __(2)__.

A. (1) 208
(2) opening and RED tagging ALL MUP DC knife switches

B. (1) 264
(2) opening and RED tagging ALL MUP DC knife switches

C. (1) 208
(2) selecting the "HPI Valve Emerg Power Sel" switches to "OFF" and RED tagging to remove power from ALL HPI valves

D. ✔ (1) 264
(2) selecting the "HPI Valve Emerg Power Sel" switches to "OFF" and RED tagging to remove power from ALL HPI valves

004A1.03 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: RCS pressure

0020102002 - Maintain RCS operating conditions within low temperature overpressure guidelines

Reasons:

A. The first part of the distractor is plausible since 208° F is an RCS temperature addressed in TS 3.4.11 Condition "D". The second part of the distractor is plausible since OP-209 directs opening the DC knife switches for the two non-running MUPs.

B. The first part of the distractor is correct. The second part of the distractor is plausible since OP-209 directs opening the DC knife switches for the two non-running MUPs.

C. The first part of the distractor is plausible since 208° F is an RCS temperature addressed in TS 3.4.11 Condition "D". The second part of the distractor is correct.

D. Correct. TS 3.4.11 requires the deactivation of HPI in Mode 4 when RCS temperature is $\leq$ 264° F. This is accomplished IAW OP-209 Step 4.2.3 by selecting the "HPI Valve Emerg Power Sel" switches to "OFF" which will remove power from all HPI valves.

OPS 4-52 OBJ 11; OPS 4-52 Slide 85; TS 3.4.11; OP-209 Step 4.2.3

RO - New

Reference(s) provided: None

5. 004K1.35 001/OPS 4-52 OBJ 2 & 3/2-1//C/A 2.5/2.8/02-02-11/RO/NO/NEW

Which ONE of the following identifies the status of letdown flow following a loss of *all* offsite power (LOOP)? (assume no operator actions)

Letdown flow ___(1)___ isolated downstream of the block orifice. This ___(2)___ create a release path from letdown to the AB sump.

A. ✔ (1) is
(2) will

B. (1) is
(2) will NOT

C. (1) is NOT
(2) will

D. (1) is NOT
(2) will NOT

004K1.35 – Knowledge of the physical connections and/or the cause-effect relationships between the MU & P system and the following system: Understanding of interface with the LRS (Liquid Radwaste System)

Reasons:

On a LOOP the letdown flowpath is isolated due to the MUDM isolation valves failing closed on a loss of power. The letdown line will pressurize until the letdown relief valves (MUV-76 & 150) lift. This water is directed to a floor drain that is routed to the AB sump. Once AP-770 is entered then MUV-49 (isolation valve upstream of the block orifice) is closed stopping flow to the sump.

A. Correct. See above discussion.

B. First part of distractor is correct. Second part of distractor plausible if student is unaware of the relief valves or does not know where in the system they are located.

C. First part of distractor is plausible since there is no automatic closure of these valves except on loss of power. Also plausible if the student is unaware of the relief valves or does not know where in the system they are located. Additionally if the student thinks that MUV-49 (located upstream of the block orifice) closes then first part of distractor would be correct. Second part of distractor is correct.

D. First part of distractor is plausible since there is no automatic closure of these valves except on loss of power. Also plausible if the student is unaware of the relief valves.

OPS 4-52 OBJ 2 & 3; OPS 4-52 Page 49 & Figure 1; OPS 5-30 Section 5.0.C.1; AP-770 Step 2 (close MUV-49)

RO - New

Reference(s) provided: None

6. 005A1.01 001/OPS 4-55 OBJ 7/2-1/REV 2/C/A 3.5/3.6/04-12-11/RO/NO/BANK

RCS temperature is 180° F when a malfunction occurs. Instrument Air pressure is now 60 psig and lowering.

Manual control of the DHHE DC control valves will be necessary to limit the RCS ___(1)___ to ≤ ___(2)___ in any 1/2 hour period.

A. (1) heatup
(2) 50° F

B. (1) cooldown
(2) 50° F

C. (1) heatup
(2) 25° F

D.✔ (1) cooldown
(2) 25° F

005A1.01 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Heatup/cooldown rates.

0780402007 - Respond to a loss of instrument air

Reasons:

A. & C. Plausible failure position, but the DHHE DC control valves fail to the MAX cooling position on a loss of air.

B. Plausible since the first part of the distractor is correct, but for this temperature the cooldown limit is ≤ 25° F in any 1/2 hour period. The ≤ 50° F in any 1/2 hour period cooldown rate is applicable for RCS temperatures greater than 280° F (Modes 1 thru 3).

D. Correct. The valves fail to the MAX cooling position and the PPO must take manual control to limit the cooldown to ≤ 25° F in any 1/2 hour period IAW OP-103B. The ≤ 25° F in any 1/2 hour period cooldown rate is applicable for RCS temperatures between 150° F and 280° F.

OPS 4-55 OBJ 7; OPS 5-84 OBJ 5; OPS 4-55 Section 4.0.D.3.e; OPS-5-84 Section 5.0.A.4; AP-470 Step 3.4; OP-103B

RO - Bank

Reference(s) provided: None

7. 005A4.05 001/OPS 4-54 OBJ 2 & 6/2-1/REV 1/MEM 2.8/2.8/02-02-11/RO/NO/NEW

With the plant in Mode 1 BWST recirculation with DHP-1A is about to commence.

Which ONE of the following describes how recirculation flow will be controlled?

__(1)__ will be used to control recirculation flow. To raise recirculation flow the __(2)__ will be throttled open until desired flow is reached.

DHV-110	A LPI Flow Control Valve
DHV-210	DHHE-1A Outlet Isolation/Test Valve

A. (1) DHV-110
(2) control switch

B. (1) DHV-110
(2) demand lever

C. ✔ (1) DHV-210
(2) control switch

D. (1) DHV-210
(2) demand lever

005A4.05 - Ability to manually operate and/or monitor in the control room: Position of BWST recirculation valve (locked when not in use, continuously monitored when in use).

Reasons:

A. Plausible since DHV-110 is called a Flow Control Valve and is directly downstream of DHV-210. Second part of distractor is correct.

B. Plausible since DHV-110 is called a Flow Control Valve and is directly downstream of DHV-210. Second part of distractor correctly describes the operation of this valve.

C. Correct. Downstream of this valve the piping splits with piping continuing to the vessel with other piping routed back to the BWST. This is a throttling MOV with a 3 position switch on the MCB (Close-Norm-Open).

D. Plausible since first part of distractor is correct. Second part is also plausible if candidate confuses this valve control with DHV-110 valve control.

OPS 4-54 OBJ 2 & 6; OPS 4-54 Section 7.0.E & Figures 1 & 3; OP-404 Section 4.25

RO - New

Reference(s) provided: None

8. 005AK1.06 001/OPS 5-01 OBJ. 5 & 12/1-2/0010402013/MEM 2.9/3.8/01-26-11/RO/NO/BANK

With three (3) RCPs in operation an asymmetric rod runback condition occurs.

IAW Technical Specifications which ONE of the following identifies the maximum power level allowed and the reason for this requirement?

Maximum allowed power level is:

A. 45% to minimize local fuel temperature gradients.

B. 60% to minimize local fuel temperature gradients.

C.✔ 45% to ensure LHR (kw/ft) limitations are not exceeded.

D. 60% to ensure LHR (kw/ft) limitations are not exceeded.

005AK1.06 - Knowledge of the operational implications of the following concepts as they apply to Inoperable / Stuck Control Rod: Bases for power limit for rod misalignment

0010402013 - Respond to an asymmetric fault condition

Reasons:

A. First part of distractor is correct. Per TS Bases 3.1.4 the reduction is for LHR concerns.

B. The maximum power level for 3 RCP operation is 45% and per TS Bases 3.1.4 the reduction is for LHR concerns.

C. Correct. Per TS 3.1.4 Bases and OPS 4-28 this reduction is required to ensure the local LHR will not cause core design criteria to be exceeded.

D. The maximum power level for 3 RCP operation is 45%. Second part of distractor is correct.

OPS 5-01 OBJ. 5 & 12; TS 3.1.4 and Bases; TS 3.2.4; OPS 4-28 Section 8.0.C.3.h).3)

RO - Bank

Reference(s) provided: None

9. 006K4.18 001/OPS 4-53 OBJ 3/2-1//MEM 3.6/3.7/02-10-11/RO/NO/NEW

With the plant in Mode 1 the Core Flood Tank (CFT) discharge isolation valves (CFV- 5 & 6) are ___(1)___ in the open position because flow from the CFTs is required during *all* ___(2)___ break LOCA conditions.

A. (1) energized
(2) small

B. (1) energized
(2) large

C. (1) de-energized
(2) small

D.✔ (1) de-energized
(2) large

006K4.18 - Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following: Valves normally isolated from their control power

Reasons:

A. Plausible since almost all tank isolation valves are energized. Credit is taken for both small and large break LOCAs for the DBA analyses however on smaller, small break LOCAs HPI and OTSG heat removal is sufficient to maintain core cooling.

B. First part of distractor plausible since almost all tank isolation valves are energized. Second part of distractor is correct.

C. Plausible because first part of distractor is correct. Second part of distractor is plausible because credit is taken for both small and large break LOCAs for the DBA analyses however on smaller, small break LOCAs HPI and OTSG cooling is sufficient to maintain core cooling.

D. Correct. In order for the CFTs to be considered operable CFV-5 & 6 must be open with power removed. All large break (0.5 sq ft and larger) LOCAs require core flood flow to meet the ECCS acceptance criteria.

OPS 4-53 OBJ 3; OPS 4-53 Sections 4.0.C.6, 9.0.C.2 & 10.0.A.2.b; TS 3.5.1 & Bases

RO - New

Reference(s) provided: None

10. 007EK3.01 001/OPS 5-96, OBJ. 6/1-1/1150502001/C/A 4.0/4.6/01-18-11/RO/NO/BANK

The following plant conditions exist:

- The plant was operating at 60% power when a reactor trip occurred.
- The Immediate Actions of EOP-02, Vital System Status Verification, are in progress.
- Two control rods in Group 6 have failed to fully insert into the core.

Which ONE of the following identifies the actions to be taken and the reason for the action?

A. Immediately commence an RCS boration to ensure that shutdown margin is adequate.

B. ✔ Continue with actions in the EOP; commence an RCS boration when directed by the procedure to ensure shutdown margin is adequate.

C. Immediately commence an RCS boration to counteract the positive reactivity addition from the lower RCS temperature.

D. Continue with actions in the EOP; Xenon peaking will always ensure that shutdown margin is adequate for the first 24 hours.

007EK3.01 - Knowledge of the reasons for the following as they apply to a reactor trip: Actions contained in EOP for reactor trip.

1150502001 - Perform actions specified during a vital system status verification

Reasons:

A. Plausible since an RCS boration is required in Step 3.4 of the followup steps. Per the EOP Cross-Step document the reason for boration is to ensure adequate SDM.

B. Correct. Immediate actions are completed and followup procedure steps will direct when to commence a boration. Per the EOP Cross-Step document the reason for boration is to ensure adequate SDM.

C. Plausible since an RCS boration is required in Step 3.4 of the followup steps. Also while it is true that RCS temperature will lower and cause a positive reactivity insertion this is not the reason for starting an RCS boration.

D. Plausible since first part of distractor is correct, however Xenon peaking will not ensure that shutdown margin is *always* adequate for the first 24 hours.

OPS 5-96, Obj. 6; EOP-2 Step 3.4; EOP-2 Cross-Step Document

RO - Bank

Reference(s) provided: None

11. 007K5.02 001/OPS 5-103 OBJ 10/2-1/REV 1/MEM 3.1/3.4/02-11-11/RO/NO/NEW

IAW OP-305, Operation of the PZR, which ONE of the following methods will be used to *initially* form a steam bubble in the PZR?

A. PZR level will be maintained between 60" and 125"; then heated to saturation temperature while venting to the MUT.

B. ✔ PZR level will be maintained between 60" and 125"; then heated to saturation temperature while venting to the RCDT.

C. The PZR will be filled (water solid); then heated to saturation temperature; then letdown flow is raised to 'draw' the bubble.

D. The PZR will be filled to approximately 290"; then heated to saturation temperature; then letdown flow is raised to 'draw' the bubble.

007K5.02 - Knowledge of the operational implications of the following concepts as they apply to the RCDT: Method of forming a steam bubble in the PZR

Reasons:

A. Plausible since the PZR is normally vented to the MUT gas space during degas operations, however, per OP-305 the PZR is vented to the RCDT to initially form the steam bubble.

B. Correct. Per Step 4.1.16 of OP-305 the PZR is heated to saturation while venting with RCV-227 to the RCDT.

C. Plausible since this method will work and is used at other plants to perform this function. Also EOP-4 , Step 3.50, details drawing a bubble by lowering PZR level.

D. Plausible since this method will work to remove non-condensibles and draw a bubble.

OPS 5-103 OBJ 10; OP-305 Step 4.1.5 & 4.1.16; EOP-4 Step 3.50

RO - New

Reference(s) provided: None

12. 008AK3.02 001/OPS 2-34 OBJ. 15/1-1/REV 1/C/A 3.6/4.1/01-21-11/RO/NO/BANK

The following plant conditions exist:

- Reactor Coolant (RCS) pressure is 2205 psig.
- Reactor Coolant Drain Tank (RCDT) pressure is 35 psig.
- The PORV is stuck partially open.

The approximate temperature downstream of the PORV will be ___(1)___ and the reason for this value is because this is an ___(2)___ thermodynamic process.

A. (1) 228° F
(2) isentropic

B. (1) 228° F
(2) isenthalpic

C. (1) 281° F
(2) isentropic

D.✔ (1) 281° F
(2) isenthalpic

008AK3.02 - Knowledge of the reasons for the following responses as they apply to the Pressurizer Vapor Space Accident: Why PORV or code safety exit temperature is below RCS or PZR temperature

Reasons:

A. Plausible since this temperature is saturation for 20 psia with could be arrived at by reducing the given 35 psig figure by 15 psi instead of adding 15 psi for correct temperature. PORV flow is a constant enthalpy, not entropy, process.

B. Plausible since this temperature is saturation for 20 psia with could be arrived at by reducing the given 35 psig figure by 15 psi instead of adding 15 psi for correct temperature. Second part of distractor is correct.

C. Plausible since first part of distractor is correct. PORV flow is a constant enthalpy, not entropy, process.

D. Correct. Using the Mollier diagram correctly the temperature is 281° F and this is an isenthalpic thermodynamic process.

OPS 2-34 Obj. 15; OPS 2-34 Section 1-7.0; KA #008AK1.01 3.2/3.7

RO - Bank

Reference(s) provided: Steam table with Mollier diagram

13. 008K2.02 001/OPS 4-57 OBJ 2 & 3/2-1//C/A 3.0/3.2/02-15-11/RO/NO/NEW

The following plant conditions exist:

- The plant is in Mode 1.
- MUP-1B, SWP-1A and RWP-2A are running.
- A malfunction in the 230 KV switchyard caused the Off-site Power Transformer (OPT) feeds from the switchyard (breakers 4900 and 4902) to trip open but the normal feeder breaker (3211) to the ES bus remained closed.

IAW AP-770, Emergency Diesel Generator Actuation, which ONE of the following describes the appropriate operator response to this situation?

A. Trip the reactor and secure SW cooled components.

B. Ensure MUP-1B, SWP-1A and RWP-2A are still in operation.

C. Ensure SWP-1B and RWP-2B start; align MUP-1A to DC cooling then start DCP-1A and RWP-3A; start MUP-1A.

D. ✔ Ensure SWP-1B and RWP-2B start; start DCP-1B and RWP-3B; align the makeup system to start MUP-1C; start MUP-1C.

008K2.02 - Knowledge of bus power supplies to the following: SW / DC pump, including emergency backup

Reasons:

A. Plausible since a reactor trip is required on a loss of SW cooling however the 'B' ES bus is still energized and can supply SW and RW cooling.

B. The 'A' ES bus is de-energized due to the loss of the OPT. Since breaker 3211 did not open as designed the "A" EDG will not load on the bus. MUP-1B's breaker will still be closed (ES selected) however the bus will remain de-energized.

C. Plausible since first part of distractor is correct. Second part of distractor would also be correct if breaker 3211 had opened as designed.

D. Correct. With the stated stem conditions the "A" ES bus remains de-energized. SWP-1B and RWP-2B will auto start on low pressure since breaker 3210 is not closed and a 480 UVLO does not exist. MUP-1C is normally aligned to DC cooling, unlike MUP-1A. Per AP-770 choice D describes the actions, in order, required by the operator.

OPS 4-57 OBJ 2 & 3; OPS 5-30 Obj 6; OPS 4-90 Obj 7; OPS 4-57 Section 2.0.A.6.s.3; AP-770 Steps 3.22, 3.23, 3.24 & Enclosure 3; OPS 4-90 Section 4.0.F.2

RO - New

Reference(s) provided: None

14. 008K3.01 001/OPS 4-55 OBJ 2 & 7/2-1/FLEET/C/A 3.4/3.5/02-15-11/RO/NO/MOD

The following plant conditions exist:

- RB pressure is 32 psig.
- RCS pressure is 1100 psig.
- Adequate subcooling margin does exist.
- An overcurrent lockout has occurred on breaker 3310 (feeder breaker for the 'B' ES 480V bus).

Which ONE of the following identifies running equipment that will be secured, in addition to RWP-3B, because of these conditions? (assume all components have sequenced on as designed)

A. RWP-2B ONLY

B. DHP-1B and RWP-2B

C. BSP-1B and MUP-1C ONLY

D.✔ BSP-1B, MUP-1C and DHP-1B

008K3.01 - Knowledge of the effect that a loss or malfunction of the SWS / DCS will have on the following: Loads cooled by SWS / DCS

Reasons:

A. Plausible since RWP-3B is cooled by DC but RWP-2B is cooled by SW and should be left running.

B. Plausible since DHP-1B must be secured but RWP-2B is cooled by SW and should be left running.

C. Plausible since, if there were a LOOP present, this would be the correct answer.

D. Correct. The overcurrent lockout on breaker 3310 will keep the EDG from powering up the bus and all "B" train 480 volt loads will be lost. However this does not stop the "B" train ES 4160 volt loads from starting. DCP-1B is a 480 volt load and normally provides cooling water for DHP-1B, BSP-1B, MUP-1C and RWP-3B.

OPS 4-55 OBJ 2 & 7; OPS 4-55 Figure 1, OPS 4-13 Table II

RO - Modified (008K3.01-3 LOIBANK)

Reference(s) provided: None

15. 009EK1.01 002/OPS 3-21 OBJ 2/1-1/REV 3/MEM 4.2/4.7/04-20-11/RO/NO/BANK

The following plant conditions exist:

- A small break LOCA has occurred.
- Tincore is 455° F.
- RCS pressure is 445 psig.

Which ONE of the following is the primary process that will provide core cooling for the conditions above?

A. Reflux boiling

B. Forced circulation

C. ✔ Natural circulation

D. LPI / break flow cooling

009EK1.01 - Knowledge of the operational implications of the following concepts as they apply to the Small Break LOCA: Natural circulation and cooling, including reflux boiling

1150502002 - Perform actions specified during an inadequate subcooling margin

Reasons:

A. Plausible since reflux boiling may occur later during the accident and contribute a small amount to core cooling.

B. Plausible since this would be the correct answer if adequate SCM existed.

C. Correct. Candidate should be able to use the Steam Tables to determine that saturation conditions in the core exist (~ 3° F subcooled) and that RCPs would be stopped due to a loss of adequate SCM. Natural circulation will be the predominant core cooling mechanism until inventory begins to become depleted.

D. Plausible since this would be the correct answer if RCS pressure was less than 200 psia (large break LOCA). LPI would have actuated at 500 psig but will not inject water into the core with RCS pressure at this high a value.

OPS 3-21 OBJ 2; OPS-3-21 Section 1-2.0.B.3

RO - Bank (Vogtle 2001)

Reference(s) provided: None

16. 010A1.07 001/OPS 4-09, OBJ. 4 & 7/2-1//C/A 3.7/3.7/03-11-11/RO/NO/NEW

The plant is at 100% power when the RCS narrow range pressure SASS module output fails low.

Which ONE of the following identifies the actual plant response and operator actions necessary to mitigate the event?

Actual RCS pressure will:

A. ✔ rise. Manual control of the PZR heaters is required to prevent a reactor trip on high RCS pressure.

B. rise. Manual control of the PZR spray valve and the PORV is required to prevent a reactor trip on high RCS pressure.

C. lower. Manual control of the PZR heaters is required to prevent a reactor trip on low RCS pressure.

D. lower. Manual control of the PZR spray valve and the PORV is required to prevent a reactor trip on low RCS pressure.

010A1.07 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: RCS pressure.

Reasons:

When the output of the RCS NR pressure SASS module fails low the RCS pressure signal to the PZR heaters, spray valve and PORV will be 1700 psig. This will cause all PZR heaters to energize raising actual RCS pressure. This will also keep the spray valve and PORV closed regardless of actual RCS pressure.

A. Correct. All heaters will energize and actual RCS pressure will rise. PZR heaters must be secured and/or demand lowered to prevent a trip on high RCS pressure.

B. Plausible since first part of distractor is correct. Second part of distractor is also plausible since manual control of the spray valve and PORV will prevent a reactor trip on high RCS pressure however, per AI-505, the PORV cannot be manually opened unless directed by a procedure. There is no procedure that directs opening the PORV under these conditions.

C. First part of distractor plausible since the transient is caused by an instrument failure. The second part of the distractor is also plausible since manual control of the PZR heaters will normally prevent a reactor trip on high or low pressure.

D. First part of distractor plausible since the transient is caused by an instrument failure. The second part of the distractor is also plausible since the lowering RCS pressure could be caused by the spray valve or PORV opening.

OPS 4-09 Obj. 4 & 7; AI-505 Step 4.2.7; OPS 4-09 Figure 5

RO - New

Reference(s) provided: None

17. 011EK2.02 001/OPS 5-116 OBJ. 1/1-1/REV 2/MEM 2.6/2.7/01-21-11/RO/NO/BANK

Reactor Building sump recirculation has been established following a large break LOCA.

Which ONE of the following actions, IAW EOP-14, EOP Enclosures, was previously taken to protect the LPI pumps from losing net positive suction head?

A. "RB Flood Level" was verified to be at least 2.5 feet.

B. Only one BSP was aligned to take a suction from the RB sump.

C. ✔ The LPI pumps' control valve setpoint was adjusted for RB sump operation.

D. Only one LPI pump was aligned to take a suction from the RB sump.

011EK2.02 - Knowledge of the interrelations between the Large Break LOCA and the following: Pumps

Reasons:

A. RB Flood Level of 2.5 feet would certainly supply adequate NPSH however the suction swapover is based on BWST level. This ensures adequate water level in the RB sump to preclude loss of NPSH. AP-404 also has a step to verify RB flood level $\geq$ 2.5 feet when aligning LPI from the sump but this step is not applicable for the stated conditions.

B. The BSP flow control setting is reduced to allow for both BSPs to remain running. Step 19.44 of Enclosure 19 allows stopping 1 BSP but the reason for that action is to reduce the pressure drop across the RB sump strainers, not for LPI pump protection.

C. Correct. The discharge valve's control setpoint was reduced to 2000 gpm. Per the EOP Cross-step Document this action is done to maintain NPSH for the LPI pumps.

D. While this action will raise NPSH of the other running pumps it is not the procedurally directed action.

OPS 5-116 Obj. 1; OPS 5-116 Enclosure 19, Step 3; EOP-14 Step 19.3; EOP-DBD Cross-Step Document; KA #'s 011EK3.12 4.4/4.6, 011EK3.15 4.3/4.4

RO - Bank

Reference(s) provided: None

18. 011K3.03 001/OPS 4-09 OBJ 3,4,7/2-2/REV 1/C/A 3.2/3.7/02-25-11/RO/NO/BANK

The following plant conditions exist:

- The plant is at 100% power.
- RC-1-LT1 is selected for PZR level control.
- RC-1-LT3 is failing low at a rate of 40" per minute.

Which ONE of the following describes the PZR level annunciator alarm(s) and PZR heater response for this condition five (5) minutes after the failure?

In addition to a SASS Mismatch alarm:

A. ONLY the "Low-Low" PZR level annunciator will alarm and heater banks "A" and "D" will de-energize.

B. ✔ ONLY the "Low-Low" PZR level annunciator will alarm and heater banks "B", "C" and "E" will de-energize.

C. BOTH the "Low" and "Low-Low" PZR level annunciators will alarm and heater banks "A" and "D" will de-energize.

D. BOTH the "Low" and "Low-Low" PZR level annunciators will alarm and heater banks "B", "C" and "E" will de-energize.

011K3.03 - Knowledge of the effect that a loss or malfunction of the PZR LCS will have on the following: PZR PCS

0160402005 - Respond to a SASS mismatch and/or transfer alarm.

Reasons:

At 100% power the PZR level should be 220". A failure rate of 40" per minute for five minutes will produce an indicated level of 20" on RC-1-LT3. At 40" the Low-Low level alarm actuates and selected heaters are turned off.

A. Plausible since first part of distractor is correct. "A" and "D" heaters are not affected by the failure of RC-1-LT-3

B. Correct. The low failure of RC-1-LT3 will cause these actions to occur at less than 40" PZR level, whether selected for control or not.

C. Only the selected transmitter inputs to the PZR "Low" level alarm. "A" and "D" heaters are not affected by the failure of RC-1-LT-3

D. Only the selected transmitter inputs to the PZR "Low" level alarm. Second part of distractor is correct.

OPS 4-09 OBJ 3,4,7; OPS 4-09 Section 4.0.B & Figure 4

RO - Bank

Reference(s) provided: None

19. 012K6.04 001/OPS 4-12 OBJ 5/2-1/REV 2/MEM 3.3/3.6/02-15-11/RO/NO/NEW

The following plant conditions exist:

- A plant shutdown is in progress.
- Current reactor power is 38%.
- ONLY RPS Channel A & C Turbine Trip Bypass bistables are bypassed.

For the conditions above, an AMSAC actuation ___(1)___ occur. IF a turbine trip were to occur the reactor ___(2)___ trip.

A. (1) could
(2) will

B. (1) could
(2) will NOT

C.✔ (1) could NOT
(2) will

D. (1) could NOT
(2) will NOT

012K6.04 - Knowledge of the effect of a loss or malfunction of the following will have on the RPS: Bypass-block circuits

Reasons:

The candidate must determine which power range detectors input to the RP and AMSAC systems. The Turbine Trip Bypass alarm comes in at 41% power using NI-5 thru 8 power range detectors. If at least 3 RPS Turbine Trip Bypass alarms are in RPS will NOT trip the reactor if the turbine trips. AMSAC uses a power level of 45% to bypass its actuation but uses different detectors to determine reactor power. These detectors have no input to RPS.

A. If AMSAC was not bypassed then first part of distractor would be correct. Second part of distractor is correct. See discussion above.

B. If AMSAC was not bypassed then first part of distractor would be correct. Second part of distractor is normally correct for this power level except that currently only 2 RPS channels are bypassed. Need a minimum of 3 RPS channels bypassed to prevent the reactor trip.

C. Correct. Nothing in the stem indicates that NI-14 & 15 are not working. At 45% power AMSAC is bypassed and will not trip the turbine. Since only 2 of the Turbine Trip Bypass alarms are in the reactor will trip on the loss of the turbine.

D. First part of distractor is correct. Second part of distractor is normally correct for this power level.

OPS 4-12 OBJ 5; OPS 4-12 Pages 20, 47 & 110; AR-502 EP 1975; AR-603 EP 1504

RO - New

Reference(s) provided: None

20. 013K5.02 001/OPS 4-13 OBJ 2/2-1/0130502001/C/A 2.9/3.3/02-16-11/RO/NO/BANK

The following plant conditions exist:

- Plant is at 100% power.
- RC-3A-PT4 (RCS pressure transmitter to ES Channel 2) has failed mid-scale.

Three minutes later BS-27-PS (4# RB pressure switch to ES Channel 1, "B" Train) fails to the tripped condition.

Which ONE of the following identifies the "B" ES Train system response to the above failures, if any?

A. No actuation will occur.

B. ✔ ONLY a HPI actuation will occur.

C. ONLY a HPI and LPI actuation will occur.

D. HPI, LPI and RBIC actuation will occur.

013K5.02 - Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Safety system logic and reliability.

(Easily modified to make "C" correct by failing RC-3A-PT4 low.)

Reasons:

A. Plausible since different types of transmitters have failed, RB pressure and RCS pressure. Additionally if the transmitter was assummed to be a narrow range vs wide range transmitter this answer would be correct

B. Correct. RC-3A-PT4 failure mid-scale (1250 psig) trips one HPI channel on both trains; BS-27-PS trips RB-1 but also cascades to trip another HPI and LPI channel on the "B" side causing a "B" train HPI actuation. LPI will not

actuate since the RCS pressure indication did not lower below 500 psig.

C. Plausible since this would be correct if the RCS pressure transmitter failed low.

D. Plausible since two transmitters associated with the "B" ES train have failed however an LPI and RBIC actuation will not occur since these failures only resulted in one channel of LPI and RBIC being tripped. (RB1 cascade).

OPS 4-13 Obj 2; OPS 4-13 Sections 2.0.B.1, 4.0.A and Table 1

RO - Bank

Reference(s) provided: None

21. 014K4.06 001/OPS 4-28, OBJ. 3 & 4/2-2/0010402022/C/A 3.4/3.7/02-25-11/RO/NO/MOD

The following information is available from the CRD PI panel for Absolute Position Indication (API) and Relative Position Indication (RPI).

Control Rod	RPI (PI Panel)	API (PI Panel)
7-1	92	93
7-2	93	92
7-3	85	86
7-4	93	93
7-5	94	94
7-6	92	92
7-7	92	92
7-8	92	92

Which ONE of the following identifies the expected indications based on the above control rod position information?

A.	PI panel - Individual Fault Light	OFF
	Diamond Control panel - Asymmetric Fault Light	OFF
B.	PI panel - Individual Fault Light	OFF
	Diamond Control panel - Asymmetric Fault Light	ON
C.✔	PI panel - Individual Fault Light	ON
	Diamond Control panel - Asymmetric Fault Light	OFF
D.	PI panel - Individual Fault Light	ON
	Diamond Control panel - Asymmetric Fault Light	ON

014K4.06 - Knowledge of RPIS design feature(s) and/or interlock(s) which provide for individual and group misalignment.

0010402022 - Respond to abnormal indicating lights on the Diamond and Rod Position Indication (RPI) panels

Reasons:

API, not RPI, is used for Individual Fault and Asymmetric Fault light indication. Group average for RPI is 91.625% making rod 7-3 6.625% below the group average. Group average for API is 91.75% making rod 7-3 5.75% below group average. Individual Fault light indication is > 5% from group average. Asymmetric Fault light indication is > 6.5% from group average.

A. & B. Individual Fault light should be on since rod 7-3 is > 5% below the group average.

C. Correct. Rod 7-3 is > 5% but < 6.5% from the group average so the Individual Fault light should be on and the Asymmetric Fault light should be off.

D. This answer would be correct if RPI was used to determine group average since rod 7-3 indicates > 6.5% from the group average.

OPS 4-28, Obj. 3 & 4; OPS 4-28 Section 4.0.G.6.c

RO - Modified Bank (014K4.06-1 LOIBank)

Reference(s) provided: None

22. 015/017G2.4.46 001/OPS 4-14 OBJ 4/1-1/0410402009/C/A 4.2/4.2/01-21-11/RO/NO/BANK

The following plant conditions exist:

- The plant is at 32% power.
- Annunciator window K-6-1, RCS ΔTc High, is in alarm from Event Point (EP) 1370.
- EP 1370 indicates that "A" Loop Tc is hotter than "B" Loop Tc.

This alarm would be caused by a loss of the ___(1)___ RCP. Continued operation with these conditions will cause ___(2)___ concerns.

A. (1) "B"
(2) QPT

B. ✔ (1) "C"
(2) QPT

C. (1) "B"
(2) axial power imbalance

D. (1) "C"
(2) axial power imbalance

015/017AG2.4.46 - Ability to verify that the alarms are consistent with the plant conditions: RCP malfunctions

0410402009 - Respond to a RCS delta-Tc high condition

Reasons:

For these conditions the "B" OTSG is on LLL. This is caused by a loss of either the "C" or "D" RCP. Either OTSG on LLL blocks the integral and proportional action of the delta Tcold circuit. The Total FW Flow Control circuit is in effect lowering FW flow to the "A" OTSG to maintain total FW flow compatible with reactor power. Delta Tc alarm indicates the "A" OTSG Tcold being hotter than the "B" OTSG Tcold. EP 1370 alarms at >5° F ΔTc.

A. Plausible since at this power level a loss of "C" or "D" RCP will cause these indications. Also the second part of the distractor is correct.

B. Correct. The operator must determine what the delta Tc alarm is telling him and determine which combination of RCPs could cause this indication. QPT is the concern per the EDBD.

C. Plausible since the second part of distractor would also be correct if power level was > 40%.

D. Plausible since the first part of distractor is correct. Also the second part of distractor would be correct if power level was > 40%.

OPS 4-14, Obj. 4; OPS 4-14 Sections 4.0.H.8.b)4) and 4.0.H.8.c)2);
EDBD Chapter 5/4 Pages 25 and 44; TS 3.2.3 & 3.2.4; KA #015/017AK1.05 2.7/3.3

RO - Bank

Reference(s) provided: None

23. 017A4.01 001/OPS 4-11 OBJ 2/2-2//MEM 3.8/4.1/02-22-11/RO/NO/BANK

Which ONE of the following actions is necessary to review incore instrumentation history on the Incore Chessel Recorders with the recorder in the normal mode of operation?

A. Depress and hold red UP or DOWN buttons, as desired.

B. ✔ Touch and hold the center of the recorder for four seconds and scroll, as desired.

C. Touch the Navigator Keypad, followed by the right lower button (Cycle Screen Button).

D. Touch the Navigator Keypad, followed by the the right upper button (Area Display button).

017A4.01 - Ability to manually operate and/or monitor in the control room: Actual in-core temperatures

Reasons:

A. This describes how to review and acknowledge a Chessel alarm.

B. Correct. View history/adjust time parameters: Touch the center of the screen for about 4 seconds. This will bring up the history display. On the right hand side, the left scroll bar allows you to go forward and backwards on the time scale.

C. This describes how to change Chessel Display from alpha or graphic display.

D. This describes how to change Chessel Group Display.

OPS 4-11 Obj. 2; OPS 4-11 Section 7.0.B.2

RO - Bank

Reference(s) provided: None

24. 022K2.01 001/OPS 4-63 OBJ 3/2-1//C/A 3.0/3.1/02-16-11/RO/NO/NEW

The following plant conditions exist:

- Plant is at 100% power.
- MUP-1B is running on the "B" Train.
- RB Main Fan Assembly 1C (AHF-1C) is in operation.

Which ONE of the following identifies the power supply for AHF-1C?

A. ES MCC 3AB powered from 480V ES Bus 3A

B. ✔ ES MCC 3AB powered from 480V ES Bus 3B

C. Ventilation MCC 3A powered from 480V Turbine Aux Bus 3A

D. Ventilation MCC 3B powered from 480V Turbine Aux Bus 3B

022K2.01 - Knowledge of power supplies to the following: Reactor Building cooling fans

Reasons:

A. Plausible since this is the normal power supply for ES MCC 3AB.

B. Correct. Since MUP-1B is running on the "B" Train ES MCC 3AB is required to be aligned to the "B" 480 V ES Bus. AHF-1C is the swing fan and can be aligned to either ES Train but is not normally in operation.

C. & D. Plausible since all other fans in containment are powered from Ventilation MCC 3A or 3B.

OPS 4-63 OBJ 3; OPS 4-63 Section 2-4.0.B.1.j.5; OP-417 Steps 4.7.2, 4.7.3 and Note at Step 4.7.5; OP-402 Step 4.4.7

RO - New

Reference(s) provided: None

25. 025AK1.01 001/OPS 5-99 OBJ. 7/1-1/REV 1/C/A 3.9/4.3/01-25-11/RO/NO/BANK

A normal plant cooldown is in progress. The "A" decay heat train has just been placed in service. If both trains of decay heat are lost at this point what alternate method of core heat removal would be used?

A. LPI cooling

B. HPI cooling

C. ✔ OTSG cooling

D. BWST gravity feed cooling

025AK1.01 - Knowledge of the operational implications of the following concepts as they apply to a Loss of the Decay Heat Removal System: Loss of DH System during all modes of operation

1150402012 - Perform actions specified following a loss of decay heat removal

Reasons:

A. With DH just put into service LPI would not inject water into the RCS due to the high pressure in the RCS (RCS not yet vented to atmosphere).

B. RCS is not vented to atmosphere yet so this option is not available.

C. Correct. Per AP-404 all required subsystems are available for OTSG cooling.

D. RCS is not vented to atmosphere yet so this option is not available.

OPS 5-99 Obj. 7; AP-404 Step 3.18; Task # 1190402001

RO - Bank

Reference(s) provided: None

26. 026K1.01 001/OPS 4-62 OBJ 4/2-1/REPLACEMENT/C/A 4.2/4.2/05-16-11/RO/NO/BANK

The following plant conditions exist:

- A Small Break LOCA has occurred.
- RCS pressure has stabilized at 1450 psig.
- RB pressure is 20 psig and rising.
- The actions of Rule 2, HPI Control, for Bypassing/Resetting ES actuations for the "A" ES train are complete.
- The "A" ES train "HPI SEAL IN RESET" pushbutton was also depressed.
- Actions for Bypassing/Resetting the "B" ES train actuations have NOT been started.

Which ONE of the following statements identifies the response of BSP-1A & 1B when RB pressure reaches 30 psig? (assume no other operator actions taken)

A. BOTH BSP-1A & 1B will NOT auto start.

B. BOTH BSP-1A & 1B will auto start.

C. ONLY BSP-1A will auto start.

D.✔ ONLY BSP-1B will auto start.

026K1.01 - Knowledge of the physical connections and/or cause-effect relationships between the BSS and the following systems: ECCS

0130502004 - Respond to an RB spray ES A/B actuation

Reasons:

A. BSP-1B will auto start.

B. Only BSP-1B will auto start.

C. BSP-1A will not auto start.

D. Correct. Rule 2 allows the operator to bypass/reset the HPI actuation. The HPI Seal-in Reset pushbutton should not be depressed at this time. This keeps the HPI permit in place for the BSPs in case RB pressure does eventually reach 30 psig. Since this seal-in for the "A" ES train was reset BSP-1A would not automatically start at 30 psig RB pressure.

OPS 4-62 OBJ 4; OPS 4-13 OBJ 2; OPS 4-13 Section 2.0.F.3; EOP-13 Rule 2; KA #013K1.05 4.1/4.4

RO - Bank

Reference(s) provided: None

27. 026K4.02 001/OPS 4-62 OBJ. 3/2-1/REV 1/MEM 3.1/3.6/02-15-11/RO/NO/BANK

Which ONE of the following parameters is controlled to promote the effective removal of iodine in the RB atmosphere following a LOCA?

A. ✔ The pH of the RB sump.

B. The boron concentration of the RB sump.

C. The volume of aluminum inside containment.

D. The volume of galvanized metal inside containment.

026K4.02 - Knowledge of BSS design feature(s) and/or interlock(s) which provide for the following: Neutralized boric acid to reduce corrosion and remove inorganic fission product iodine from steam (TSP) in reactor building spray

Reasons:

A. Correct. TSP baskets inside containment adjust the pH of the RB sump to between 7.0 and 11.0. This range of pH creates non-volatile iodine and limits the amount of iodine in the RB atmosphere. This pH range also helps mitigate stress corrosion of materials inside containment.

B. RB sump boron is somewhat controlled by BWST and CFT boron limits but this does not effect iodine removal from the containment atmosphere.

C. & D. This parameter is limited to reduce the amount of post-LOCA hydrogen and does not affect iodine in the RB atmosphere.

OPS 4-62 Obj. 3; OPS 4-62 Sections 2.0.E, 3.0.D & 10.0.B; TS 3.6.7 Bases; Task #'s 1150502007, 1150402016

RO - Bank

Reference(s) provided: None

28. 027AA2.15 001/OPS 4-09, OBJ. 4 & 7/1-1//C/A 3.7/4.0/02-15-11/RO/NO/BANK

The following plant conditions exist:

- Reactor power is 50% RTP.
- Actual RCS pressure is 2055 psig and lowering.
- RCV-14, PZR Spray valve, is open.
- Ultrasonic Flow Indication for the PORV is in the "Valve Open Region".

Which ONE of the following describes a failure that would cause the above plant transient and the correct action(s) to *mitigate* the event?

(RCV-11 = PORV block valve, RCV-13 = PZR spray block valve, RCV-14 = PZR spray valve)

A. RCS Narrow Range Pressure transmitter failed high

Trip the reactor

B. ✔ RCS Narrow Range Pressure transmitter failed high

Close RCV-11, RCV-13 and RCV-14

C. RCS Wide Range Pressure transmitter failed high

Trip the reactor

D. RCS Wide Range Pressure transmitter failed high

Close RCV-11, RCV-13 and RCV-14

027AA2.15 - Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Actions to be taken if PZR pressure instrument fails high

Reasons:

When the RCS NR pressure instrument fails high the PORV and PZR spray valve will open. IAW AI-505 and AR-502 (J-04-02) the crew should isolate the leak paths by closing the PZR spray valve and the PORV block valve. If these actions are not taken the reactor will trip, ES will actuate, and eventually the RCS will saturate.

A. Plausible since the PZR Spray valve and the PORV receive their signal from RCS narrow range pressure making the first part of the response correct. The second part of the response is plausible if the candidate assumes that an automatic reactor trip setpoint will be exceeded. Adequate time is available to complete actions to isolate the PORV and PZR spray before an automatic reactor trip would occur.

B. Correct. PZR Spray valve and the PORV receive their signal from RCS narrow range pressure.

   AI-505 and AR-502 (J-04-02) would have the operators manually close the PZR spray and the PORV block valve. AP-520 will confirm these actions and based on the conditions given is the appropriate procedure for mitigation of this transient. Also the event is not mitigated until these valves are isolated.

C. Plausible since the transient is caused by an instrument failure. The candidate must distinguish between wide range instruments which input to ES and narrow range instruments which input to RPS and pressure control. The second part of the response is plausible if the candidate assumes that an automatic reactor trip setpoint will be exceeded.

D. Plausible since the transient is caused by an instrument failure. The second part of distractor is correct.

OPS 4-09 Obj. 4 & 7; AR-502 EP 1361; AI-505 Section 4.1.4.1.b; OPS 4-09 Figure 5

RO - Bank

Reference(s) provided: None

29. 028AA1.02 001/OPS 4-52 OBJ 3 & 7/1-2/REPLACEMENT/C/A 3.4/3.4/6-20-11/RO/NO/BANK

The following plant conditions exist:

- Plant is at 100% power.
- The temperature element for the selected PZR level transmitter fails mid-scale with NO SASS transfer.

Which ONE of the following describes the effect this malfunction will have on MUV-31 (PZR Level Control valve) operation? (Assume NO operator actions are performed.)

MUV-31 will throttle in the ___(1)___ direction. The reactor ___(2)___ trip on high/low RCS pressure.

A. (1) open
(2) will

B. ✔ (1) open
(2) will NOT

C. (1) closed
(2) will

D. (1) closed
(2) will NOT

028AA1.02 - Ability to operate and / or monitor the following as they apply to the Pressurizer Level Control Malfunctions: MU & P System

0040402006 - Respond to a high or low makeup tank level

Reasons:

A. The first part of the distractor is correct. The second part of the distractor is plausible since RCS pressure will rise during the transient, but PZR spray will easily control the pressure rise in automatic.

B. Correct. When the temperature element fails low, the indicated controlling PZR level will initially read ~ 180 inches and MUV-31 will throttle open to restore indicated level to ~ 220 inches. As a result, actual PZR level will stabilize at higher at ~ 318 inches.

C. & D. The first part of the distractor is plausible since this would be correct if the temperature element had failed high. The second part of the distractor is plausible based on the selection of MUV-31 throttling in the closed direction as RCS pressure would lower due to the expansion of the steam bubble.

OPS 4-52 OBJ 3 & 7; OPS 4-09 Section 4.0.C.4; OPS 4-52 Slide 74

RO - Bank

Reference(s) provided: None

30. 029EK2.06 002/OPS 4-12 OBJ 2-4/1-1/0120402004/MEM 2.9/3.1/01-25-11/RO/NO/BANK

With the plant at full power an RCS pressure excursion is in progress. Three RPS channels have failed to actuate. As RCS pressure rises which ONE of the following describes how DSS (Diverse Scram System) will shut down the reactor?

DSS will open contacts in:

A. parallel with the "E" and "F" electronic trip contacts.

B. ✔ series with the "E" and "F" electronic trip contacts.

C. parallel with the DC hold bus to de-energize "A" and "CC" phases.

D. series with the DC hold bus to de-energize "A" and "CC" phases.

029EK2.06 - Knowledge of the interrelations between the following an ATWS: Breakers, relays, and disconnects

0120402004 - Respond to a DSS channel trip

Reasons:

Our ATWS system consists of two subsystems, DSS and AMSAC. DSS works to shutdown the reactor if an RPS or CRD breaker malfunctions occurs. AMSAC initiates EFIC and trips the turbine if a MFW malfunction occurs.

A. DSS opens contacts in series with "E" and "F" electronic trip contacts.

B. Correct. When both channels of DSS trip (2450 psig) contacts in series with the "E" and "F" electronic trip contacts will open. This will kill gating power to the regulating rods and they will insert into the core.

C. & D. The DC hold bus does energize "A" and "CC" phases but this power is not interrupted from a DSS actuation. The DC hold buses maintain safety rod position. DSS works on the AC buses which maintain/move the regulating rods.

OPS 4-12, Chapter 2, Obj. 4; OPS 4-12 Page 89; OPS 4-28 Figure 22; DBD Tab 5/5 Summary System Description

RO - Bank

Reference(s) provided: None

31. 029K1.04 001/OPS 4-63 OBJ 2-3/2-2/0880102015/MEM 3.0/3.1/02-25-11/RO/NO/BANK

The following plant conditions exist:

- Plant is in Mode 5 with an RB purge in progress.
- Both purge supply fans (AHF-6A/6B) and both purge exhaust fans (AHF-7A/7B) are in operation.

Which ONE of the following identifies the status of AHF-6A/6B and AHV-1C (purge supply valve inside RB) if AHF-7A trips?

Both supply fans:

A. remain operating and AHV-1C remains open.

B. remain operating and AHV-1C closes.

C. trip and AHV-1C remains open.

D.✔ trip and AHV-1C closes.

029K1.04 - Knowledge of the physical connections and/or cause-effect relationships between the Containment Purge System and the following systems: Purge System (Interlocks between purge valves / purge fans / containment rad monitors OK per Mark Bates, 02-23-11)

0880102015 - Secure a reactor building purge

Reasons:

A. Both purge exhaust fans must be running for a supply fan to remain running. AHV-1C automatically closes with the loss of both supply fans.

B. Both purge exhaust fans must be running for a supply fan to remain running.

C. AHV-1C automatically closes with the loss of both supply fans.

D. Correct. Both purge exhaust fans must be running for a supply fan to remain running and AHV-1C will close unless at least one purge supply fan is operating.

OPS 4-63 Obj 2-3; OPS 4-63 Sections 2-4.0.G.3.h & 2-4.0.G.4.g

RO - Bank

Reference(s) provided: None

32. 032AK2.01 001/OPS 4-10 OBJ. 4 & 5/1-2/0150102004/C/A 2.7/3.1/02-23-11/RO/NO/BANK

A plant *shutdown* is in progress with current reactor power at 7%.

Which ONE of the following describes the impact to the Source Range NI's high voltage power supplies if power was lost to RPS Channel D?

Both high voltage power supplies would be:

A. ✔ de-energized because NI-7's power is too high.

B. de-energized because NI-3's power (amps) is too high.

C. energized because NI-8 would be indicating 0% power.

D. energized because NI-4 would be indicating 0% power (amps).

032AK2.01 - Knowledge of the interrelations between the Loss of Source Range Nuclear Instrumentation and the following: Power supplies, including proper switch positions (Electrical interlocks - PR or IR failures de-energizing SR OK per Mark Bates, 2-23-11)

0150102004 - Verify the source ranges energize during a plant shutdown

Reasons:

Conditions required to energize the HV power supplies:

NI-3 OR 4 < 5×10^{-10} amps

AND

NI-5 and 6 OR NI-7 and 8 < 5% RX power (plant shutdown)

A. Correct. NI-7 is powered from RPS Channel C. NI-7 's output will remain at 7% power.

B. Plausible since only NI-3 or 4 needs to be < 5×10^{-10} amps to energize high voltage power supplies. With RPS Channel D power loss NI-4 reads 0 amps which completes one-half of the required logic.

C. Plausible since NI-8 will be indicating 0% power however the logic also requires NI-7 to indicate <5% power on a plant shutdown.

D. Plausible since NI-4 will be indicating 0% power however the logic also requires NI-7 (in addition to NI-8) to indicate <5% power on a plant shutdown.

OPS 4-10 Obj. 4 & 5; OPS 4-10 Section 4.0.A.2.d and Figure 5; Task #'s 0150102001, 1150402016

RO - Bank

Reference(s) provided: None

33. 034A2.03 001/OPS 5-01 OBJ 15/2-2/REV 4/C/A 3.3/4.0/02-22-11/RO/YES/NEW

Due to a Fuel Move Sheet error fuel assembly #2 has just been placed adjacent to (side-by-side) fuel assembly #1 in Spent Fuel Pool A. **(reference provided)**

Assembly	Enrichment (%)	Burnup (MWD/KgU)
#1	3.5	3.0
#2	3.75	1.0

IAW TS 3.7.15, Spent Fuel Assembly Storage, this fuel assembly movement:

A. ✔ does violate this LCO.

Immediately initiate action to move fuel assembly #2 to an acceptable location.

B. does violate this LCO.

Verify SF pool boron concentration within one (1) hour and contact reactor engineering.

C. does NOT violate this LCO.

Immediately initiate action to develop a recovery plan to move fuel assembly #2 to an acceptable location.

D. does NOT violate this LCO.

Verify SF pool boron concentration and contact reactor engineering.

034A2.03 - Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Mispositioned fuel element

1190302001 - Comply with requirements specified in TS

Reasons:

A. Correct. TS 3.7.15 Figure 1. Assembly #1 is a Category A fuel assembly. Assembly #2 is a Category F assembly and must be stored in a checkerboard pattern with fuel assemblies from Category B, empty water cells or separated from Category A fuel by a transition row of Category B fuel. IAW TS actions must be immediately initiated to move fuel assembly #2 to an acceptable location.

B. Plausible since first part of distractor is correct. Second part of distractor is plausible since reactor engineering would be contacted. There is no requirement to check SF pool boron concentration following this error.

C. Plausible since many assemblies can be erroneously placed and still not violate Tech Specs. Second part of distractor is plausible since FP-203 directs developing a recovery plan.

D. Plausible since many assemblies can be erroneously placed and still not violate Tech Specs. Second part of distractor also plausible since these actions are reasonable actions to take if no violation of TS occurred.

OPS 5-34 Obj. 1; OPS 5-01 Obj. 15; FP-203 Step 9.6; TS 3.7.15 and Figures 1 & 2

RO - New

Reference(s) provided: TS 3.7.15 Figures 1 & 2 **ONLY**

34. 038EA1.32 001/OPS 5-101 OBJ 4/1-1/REV 1/C/A 4.6/4.7/03-08-11/RO/NO/BANK

The following plant conditions exist:

- "A" OTSG has a large tube rupture.
- EOP-06, Steam Generator Tube Rupture, is in progress.
- A Tube Rupture Alternate Control (TRACC) limit has been exceeded (BWST level $\leq$ 35 feet)

Which ONE of the following describes criteria that must be satisfied prior to implementing TRACC (ruptured OTSG isolation) and the basis for the requirement(s)?

A. ✔ RCS temperature and pressure must be $\leq$ 500° F and $\leq$ 1000 psig before OTSG isolation to ensure the RCS is subcooled below the ruptured OTSG MSSV lift setpoint.

B. Adequate SCM must be adjusted to the applicable target value before OTSG isolation to ensure adequate SCM at an RCS pressure below the ruptured OTSG MSSV lift setpoint.

C. RCS temperature and pressure must be $\leq$ 500° F and $\leq$ 1000 psig before OTSG isolation to minimize the pressure differential across the ruptured OTSG tubes.

D. Adequate SCM must be adjusted to the applicable target value before OTSG isolation to minimize the pressure differential across the ruptured OTSG tubes.

038EA1.32 - Ability to operate and monitor the following as they apply to a SGTR: Isolation of a ruptured S/G

Reasons:

A. Correct. EOP-06 does not check for TRACC conditions until RCS temperature is $\leq$ 500° F and RCS pressure is $\leq$ 1000 psig. The basis for these setpoints is to establish enough subcooling margin to maintain RCS pressure less than the main steam safety valve relief setpoint of 1050 psig.

B. Adequate SCM is maintained as low as possible to the target values specified in the EOP-06 table on the foldout page (15° F if RCPs are running and 30° F if RCPs are not running) to minimize the differential pressure across the ruptured OTSG tubes. This will ensure that the tube leakage is maintained as low as possible. It is not required to be at the SCM target value to implement TRACC (ruptured OTSG isolation).

C. The RCS temperature and pressure setpoints for TRACC do not directly minimize the differential pressure across the ruptured OTSG tubes. Maintaining minimum adequate SCM by continuous depressurization of the RCS will accomplish minimizing the leakrate.

D. The statement in this distractor is a true statement but the condition is not required to implement TRACC as discussed in B above.

OPS 5-101 OBJ 4; EOP-14 Enclosure 12 Status Step & Step 12.2; EOP-14 Enclosure 12 Cross-Step Document

RO - Bank

References provided: None

35. 039A2.03 001/OPS 5-119 OBJ 3/2-1//C/A 3.4/3.7/02-17-11/RO/YES/NEW

Based on the above indications TS 3.4.12, RCS Operational Leakage, __(1)__ be entered and __(2)__ will be used to mitigate the consequences of the event. Assume the plant is at 100% power with ARP-1B running by itself.
(reference provided)

A. (1) will
(2) EOP-06, Steam Generator Tube Rupture,

B. ✔ (1) will
(2) CP-152, Primary to Secondary Leakage Operating Guideline,

C. (1) will NOT
(2) EOP-06, Steam Generator Tube Rupture,

D. (1) will NOT
(2) CP-152, Primary to Secondary Leakage Operating Guideline,

039A2.03 - Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Indications and alarms for main steam and area radiation monitors (during SGTR)

Reasons:

Using the RM-A12 Conversion Table a leak rate of approximately 989 gpd is indicated. TS 3.4.12 entry is required if leakage is150 gpd or greater. EOP-06 entry is required if leakage is > 1 gpm and CP-152 entry is required if leakage is > 5 gpd.

A. First part of distractor is correct. Second part of distractor is plausible since the MN STM LINE A/B HIGH RAD MONITOR FAIL alarm is in, but this will alarm at 100 gpd. EOP-06 entry requires > 1gpm leak rate.

B. Correct. Leak rate exceeds 150 gpd requiring TS and CP-152 entries.

C. First part of distractor is plausible since if the wrong scale (10K) was used, the candiate would obtain a leak rate of 108 gpd. Second part of distractor is plausible since the MN STM LINE A/B HIGH RAD MONITOR FAIL alarm is in, but this will alarm at 100 gpd. EOP-06 entry requires > 1gpm leak rate.

D. First part of distractor is plausible since if the wrong scale (10K) was used, the candiate would obtain a leak rate of 108 gpd. Second part of distractor is correct.

OPS 5-119 OBJ 3; OPS 5-119 Section 3.0.B; TS 3.4.12; EOP-06 Entry Conditions

RO - New

Reference(s) provided: RM-A12 Conversion Table (simulator version)

36. 040AG2.4.3 001/OPS 5-01 OBJ 8/1-1//MEM 3.7/3.9/03-08-11/RO/NO/NEW

A steam line rupture inside containment has occurred.

Which ONE of the following sets of instruments will provide the most reliable *post accident* information?

A. ✔ Wide range RCS pressure and wide range containment pressure instruments.

B. Wide range RCS pressure and narrow range containment pressure instruments.

C. Narrow range RCS pressure and wide range containment pressure instruments.

D. Narrow range RCS pressure and narrow range containment pressure instruments.

073G2.4.3 – Ability to identify post-accident instrumentation: Steam line rupture

Reasons:

A. Correct. These instruments are the PAM TS required instruments (TS 3.3.17) for post accident information.

B. Plausible since first part of distractor is correct. Narrow range containment pressure is used for normal operation and is a TS required instrument however it is not a RG 1.97 qualified instrument.

C. Plausible since narrow range pressure instruments are TS required instruments however they are not RG 1.97 qualified instruments. Second part of distractor is correct.

D. Plausible since narrow range pressure instruments (RCS and containment) are TS required instruments however they are not RG 1.97 qualified instruments.

OPS 5-01 OBJ 8; TS 3.3.17

RO - New

Reference(s) provided: None

37. 041A3.05 001/OPS 4-14, OBJ. 4/2-2//C/A 2.9/2.9/03-01-11/RO/NO/BANK

During a plant start-up the following conditions exist:

- Turbine header pressure is 870 psig and rising slowly.
- Turbine is at sync speed with no output breakers closed.
- All turbine bypass valves are closed.

If turbine header pressure continues to rise which ONE of the following values will be the earliest pressure that the turbine bypass valves will begin to open?

A. 885 psig

B. ✔ 895 psig

C. 935 psig

D. 1010 psig

041A3.05 - Ability to monitor automatic operation of the Turbine Bypass Valves, including: Main steam pressure

Reasons:

A. With the turbine and reactor not tripped and all TBVs closed with less than a 10# header pressure error the bias applied is 50#. The bias is released if a 10# header pressure error exists. At this pressure the bias is still applied.

B. Correct. When pressure reaches 10# above setpoint the bias is released. The TBVs open to lower pressure back to setpoint.

C. This is the correct pressure if the bias did not release.

D. This is the correct pressure if the reactor tripped.

OPS 4-14, Obj. 4; OPS 4-14 Section 4.0.F.c.1 & Table 3

RO - Bank

Reference(s) provided: None

38. 045G2.4.6 001/OPS 5-96 OBJ 6/2-2//MEM 3.7/4.7/03-11-11/RO/NO/NEW

IAW EOP-02, Vital System Status Verification, which ONE of the following identifies the action(s) required to be performed if Breaker 1661 (generator output breaker) still remains closed after attempting to trip the breaker with the backup trip coil?

A. Open MOS 1661N and MOS 1661S to isolate Breaker 1661.

B. ✔ Notify the System Dispatcher to separate CR-3 from the grid.

C. Open the generator field breaker and select the voltage regulator to OFF.

D. Open MOS 1873 (motor operated switch between main generator output and Breakers 1661 and 1662).

045G2.4.6 - Knowledge of EOP mitigation strategies: Main turbine generator

Reasons:

A. Plausible since opening these two MOSs will isolate Breaker 1661 and separate CR3 from the grid, however these actions are not IAW EOP-02.

B. Correct. If selecting the BU trip coils does not work then the dispatcher is notified to separate CR3 from the grid (Step 3.13 Detail 3).

C. Plausible since this is a required action IAW EOP-2 (Step 3.22) but this action is not performed until after CR3 is separated from the grid.

D. Plausible since opening this MOS will isolate Breaker 1661 and separate CR3 from the grid, however this action is not IAW EOP-02.

OPS 5-96 OBJ 6; EOP-2 Step 3.13; OPS 4-88 Figure 1

RO - New

Reference(s) provided: None

39. 054AA1.04 001/OPS 5-102 OBJ 5/1-1/REPLACEMENT/MEM 4.4/4.5/01-25-11/RO/NO/NEW

Which ONE of the following sets of valves *must* be open to establish a proper HPI flowpath for a loss of all feedwater IAW EOP-04, Inadequate Heat Transfer?

1. MUV-23 (HPI Injection valve to A RCP discharge)
2. MUV-24 (HPI Injection valve to B RCP discharge)
3. MUV-25 (HPI Injection valve to C RCP discharge)
4. MUV-26 (HPI Injection valve to D RCP discharge)
5. MUV-586 (HPI Crosstie valve)
6. MUV-587 (HPI Crosstie valve)

A. 1, 2 and either 5 or 6

B. 1, 3 and either 5 or 6

C. ✔ 1, 2, 5 and 6

D. 1, 3, 5 and 6

054AA1.04 - Ability to operate and /or monitor the following as they apply to the Loss of Main Feedwater (MFW): HPI, under total feedwater loss conditions

Reasons:

A proper HPI discharge flowpath requires at least 1 MUP running with HPI flow through both HPI crosstie valves and at least 1 train of HPI valves open.

A. Plausible since one train of HPI valves are open but both crosstie valves are also required to be open.

B. Plausible since two injection valves are open but not on the same train. Both crosstie valves are also required to be open.

C. Correct. A proper flowpath does exist. See above discussion.

D. Plausible since both crosstie valves are open but both valves from a single train are not open.

OPS 5-102 Obj. 5; EOP-04 Step 3.15; EOP-TBD Cross-Step Document

RO - New

Reference(s) provided: None

40. 055EK3.01 001/OPS 5-100 OBJ 3/1-1/REPLACEMENT/MEM 2.7/3.4/01-25-11/RO/NO/NEW

The 1E (safety related) batteries are designed to meet their ___(1)___ hour coping requirement if a ___(2)___ were to occur.

A. (1) 2
(2) Station Blackout

B. (1) 2
(2) Design Basis Accident, concurrent with a simultaneous loss of offsite power and start failure of the associated diesel generator,

C.✔ (1) 4
(2) Station Blackout

D. (1) 4
(2) Design Basis Accident, concurrent with a simultaneous loss of offsite power and start failure of the associated diesel generator,

055EK3.01 - Knowledge of the reasons for the following responses as the apply to the Station Blackout: Length of time for which battery capacity is designed

Reasons:

A. Plausible since TS 3.8.4 Bases states that each battery has adequate storage capacity to carry the required loads continuously for at least 2 hours however the 2 hour requirement is based on a DBA coincident with a LOOP and failure of one EDG, not a SBO.

B. Plausible since this is correct for the TS design requirement but not for the coping requirement.

C. Correct. The batteries are designed to last 4 hours following a SBO if timely load shedding activites are performed.

D. Plausible since there is a 4 hour coping requirement for the batteries in the event of an SBO. Second part of distractor is part of the TS design requirement.

OPS 5-100 Obj. 3; TS 3.8.4 Bases; OPS 4-64 Obj. 8, Section 4.0.A.2; DBD Tab 4/2 Step 1.2, Functional Requirements; FSAR Section 8.2.2.6 and 14.1.2.9.5.2

RO - New

Reference(s) provided: None

41. 056AK1.04 001/OPS 3-03 OBJ 4 & 5/1-1/REPLACEMENT/C/A 3.1/3.2/05-17-11/RO/NO/NEW

The plant was operating at 100% when a loss of all offsite power occurs. Ten (10) minutes after the trip Tcold is ≈ 542° F and rising.

RCS Tcold ___(1)___ trending towards OTSG saturation temperature. Opening the ___(2)___ further will enhance/establish heat removal.

A. (1) is
(2) TBVs

B. ✔ (1) is
(2) ADVs

C. (1) is NOT
(2) TBVs

D. (1) is NOT
(2) ADVs

056AK1.04 - Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Definition of saturation conditions, implication for the systems

Reasons:

Natural Circulation indications are as follows:

1. T_{hot} tracking T_{incore}
2. T_{cold} tracking OTSG T_{sat}
3. ΔT (T_{hot} minus T_{cold}) stable or lowering

A. Plausible since first part of distractor is correct. TBVs are lost since the CWPs tripped from the LOOP.

B. Correct. At ≈ 542° F Tcold is almost at saturation temperature for post trip OTSG pressure. This is one of the indications that Natural Circulation is in progress. TBVs are lost since the CWPs tripped from the LOOP and ADVs must be used to control OTSG pressure (heat removal).

C. Plausible if the student uses the wrong post trip OTSG pressure.TBVs are lost since the CWPs tripped from the LOOP.

D. Plausible if the student uses the wrong post trip OTSG pressure to determine the saturation temperature. Second part of distractor is correct.

OPS 3-03 OBJ 4 & 5; ***OPS 3-03 Section 2.0.H.1***

RO - New

Reference(s) provided: None

42. 058AG2.4.9 001/OPS 4-37 OBJ 7/1-1/REV 3/C/A 3.8/4.2/06-30-11/RO/NO/NEW

A plant shutdown is in progress when the following sequence of events occur.

- 0800 Plant enters Mode 3
- 0805 A loss of all offsite power (LOOP) occurs
- 0808 DPDP-1B is de-energized due to an internal fault on the bus

Which ONE of the following describes the EFIC system response and the actions required to mitigate the effects of these failures?

EFIC will automatically actuate FIRST due to ___(1)___ and the ___(2)___ EFW Train block valves will need to be closed to prevent excessively feeding both OTSGs.

.

A. (1) the loss of all RCPs
(2) "A"

B. ✔ (1) the loss of all RCPs
(2) "B"

C. (1) an OTSG low level condition
(2) "A"

D. (1) an OTSG low level condition
(2) "B"

058AG2.4.9 - Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of DH) mitigation strategies: Loss of DC Power

Reasons:

The LOOP will cause a loss of RCPs which will cause an EFIC actuation (bypass for loss of RCPs actuation of EFIC does not occur until Mode 4). With the loss of DPDP-1B the "B" train control valves will fail open and the "A" train block valves will fail "as is". This will cause full EFW flow to both OTSGs and an RCS cooldown to occur due to excessively feeding both OTSGs.

A. Plausible since first part of distractor is correct. Second part of distractor is plausible since the "A" Train block valves will lose power but the control valves should still be operating correctly.

B. Correct. See explanation above. The "B" Train block valves must be closed to stop full EFW flow to the OTSGs (per Rule 3).

C. First part of distractor plausible since EFIC would actuate due to a OTSG low level condition if the loss of RCPs actuation was bypassed. Second part of distractor is plausible since the "A" Train block valves will lose power but the control valves should still be operating correctly.

D. First part of distractor plausible since EFIC would actuate due to a OTSG low level condition if the loss of RCPs actuation was bypassed. Second part of distractor is correct.

OPS 4-37 OBJ 7; OPS 5-116 Obj 5; OPS 4-37 Section 4.0.I.8; EOP-13 Rule 3

RO - New

Reference(s) provided: None

43. 059A3.06 001/OPS 4-31 OBJ 4/2-1/REV 2/MEM 3.2/3.3/03-18-11/RO/NO/NEW

The following plant conditions exist:

- The plant is at 48% power due to the loss of the "A" MFWP.
- Actions of AP-545, Plant Runback, have been completed.
- The "A" MFWP has now been repaired and the RO has just raised the pump to minimum speed.

Which ONE of the following identifies the status of the MFW components below if a "B" OTSG MFLI now occurs?

FWV-14, "A" MFWP suction valve
FWV-15, "B" MFWP suction valve

A. ✔	"A" MFWP	tripped
	"B" MFWP	tripped
	FWV-14	closed
	FWV-15	closed
B.	"A" MFWP	running
	"B" MFWP	tripped
	FWV-14	open
	FWV-15	closed
C.	"A" MFWP	tripped
	"B" MFWP	running
	FWV-14	closed
	FWV-15	open
D.	"A" MFWP	tripped
	"B" MFWP	tripped
	FWV-14	open
	FWV-15	open

059A3.06 - Ability to monitor automatic operation of the MFW system including: Feedwater isolation

Reasons:

Normal operation at this power level has both EFIC Channel "A" and "B" MN FW Isolation key lock switches in the "ONE" position. Under these conditions (repair of "A" MFWP) the key lock switches, by procedure, must be selected to the "BOTH" position. This will ensure that MFW is isolated from a faulted OTSG should FWV-28 fail to close by tripping the opposite trains's MFWP and closing its suction valve.

A. Correct. See explanation above.

B. Plausible since this would be the expected component status if the key lock switches were in their normal configuration.

C. For these plant conditions the "B" MFWP will be tripped and FWV-15 will ` be closed.

D. For these plant conditions both MFWP suction valves will also be closed.

OPS 4-31 OBJ 4; OPS 4-31 Section 4.0.L.8

RO - New

Reference(s) provided: None

44. 061K2.01 001/OPS 4-37 OBJ. 3/2-1/0190502002/MEM 3.2/3.3/02-17-11/RO/NO/BANK

DPDP-1A has experienced a catastrophic failure and power is lost to the DC buses it supplies.

1.	EFV-32	EFP-2 block valve to the "B" OTSG
2.	EFV-33	EFP-3 block valve to the "B" OTSG
3.	EFV-55	EFP-2 control valve to the "B" OTSG
4.	EFV-57	EFP-3 control valve to the "B" OTSG

Which ONE of the following identifies the components that will lose power as a result of this failure?

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. ✔ 1 and 4

063K2.01 - Knowledge of bus power supplies to the following: EFW system MOVs

0190502002 - Ensure EFW flow is properly controlled

Reasons:

A. Due to single failure concerns in the EFW system the block valves are powered from the opposite electrical train. EFV-33 is powered from DPDP-8D, which is powered from DPDP-1B.

B. See A above. EFV-33 is powered from DPDP-8D and EFV-55 is powered from DPDP-5B. Both of these DPDPs are powered from DPDP-1B

C. EFV-55 is powered from DPDP-5B, which is powered from DPDP-1B.

D. Correct. See A above. EFV-57 is powered from DPDP-5A, which is powered from DPDP-1A. Even though EFV-32 is in the "B" EFW train flowpath it is powered from DPDP-8C, which is powered from DPDP-1A.

OPS 4-37 Obj. 3; OPS 4-37 Sections 4.0.H.2 and 4.0.I.7

RO - Bank

Reference(s) provided: None

45. 062AA2.02 001/OPS 4-57, OBJ. 4/1-1/0760402001/MEM 2.9/3.5/01-25-11/RO/NO/BANK

With the plant in Mode 2 which ONE of the following describes the status of the RW system after a loss of *all* offsite power has occurred? (assume sufficient time for all automatic actions to occur)

A. As soon as power is restored to the ES 4160V buses RWP-2A will start due to RW system low pressure.

B. As soon as power is restored to the ES 4160V buses RWP-2B will start due to RW system low pressure.

C. The automatic start on low RW pressure is blocked by the 4160V undervoltage lockout. No RWPs will be running.

D.✔ The automatic start on low RW pressure is blocked by EDG output breaker closure. No RWPs will be running.

062AA2.02 - Ability to determine and interpret the following as they apply to the Loss of Raw Water: The cause of possible RWS loss

0760402001 - Respond to DH SW raw water pump alarms

Reasons:

A. Plausible since there is an ES autostart signal for RWP-2A but there is no low pressure start for RWP-2A.

B. Plausible since RWP-2B does have a low pressure start however this signal is blocked by breaker 3210 closure ("B" EDG output breaker).

C. Plausible since the conditions are met for the 4160V undervoltage lockout however this is not the signal that blocks the low pressure start of RWP-2B.

D. Correct. The low pressure start for RWP-2B is blocked by breaker 3210 closure to ensure that a LOOP, coincident with an ES actuation, will not overload the EDG.

OPS 4-57, Obj. 4; OPS 4-57, Section 2.0.A.6.s; OP-408 Step 3.1.7; SP-354B, Step 3.5.13; KA #076A4.01 2.9/2.9

RO - Bank

Reference(s) provided: None

46. 062K3.03 001/OPS 4-64 OBJ 3/2-1/REV 1/C/A 3.7/3.9/02-17-11/RO/NO/NEW

The following plant conditions exist:

- A plant startup is in progress with the Startup Transformer supplying both Unit Buses.
- A sudden pressure fault has just occurred on the Backup ES (BEST) transformer.
- No emergency diesel generators (EDGs) start.

Which ONE of the following identifies the battery chargers that will lose power as a result of these failures?

A. "A" Train 1E (vital) battery chargers ONLY.

B. "B" Train 1E (vital) battery chargers ONLY.

C. "A" Train 1E (vital) battery chargers and the spare Non-1E (non-vital) battery charger (DPBC-1I).

D.✔ "B" Train 1E (vital) battery chargers and the spare Non-1E (non-vital) battery charger (DPBC-1I).

062K3.03 - Knowledge of the effect that a loss or malfunction of the AC distribution system will have on the following: DC system

Reasons:

A. Plausible since this would be the correct answer if the Offsite Power Transformer (OPT) was lost at > 80% power since the Unit buses would be supplied by the Unit Aux transformer.

B. Plausible since this would be the correct answer if > 80% power since the Unit buses would be supplied by the Unit Aux transformer.

C. Plausible since second part of distractor is correct. First part of distractor would be correct if the OPT was lost.

D. Correct. The BEST normally feeds "B" ES Train equipment. A loss of the BEST, at any power level, will also cause the loss of the Startup transformer (normal feed to non-vital buses below 80% power). Since no EDGs started the "B" ES Train will remain de-energized and since the turbine/generator is not supplying the non-vital buses the loss of the Startup transformer will cause DPBC-1I to lose power.

OPS 4-64 OBJ 3; OPS 4-64 Section 4.0.B.4; OPS 4-89 Figure 1; OP-703 Step 4.1.41

RO - New

Reference(s) provided: None

47. 063K3.02 001/OPS 4-64 OBJ 2 & 4/2-1/0630402001/MEM 3.5/3.7/02-17-11/RO/NO/BANK

The following plant conditions exist:

- A plant startup is in progress with all reactor coolant pumps (RCP) running.
- All DC power is lost to 6900 VAC Reactor Auxiliary Bus 3A.
- 10 seconds later AC power to the same bus is lost.

Which ONE of the following describes the response of RCP-1A and 1C if AC power is restored to the bus?

RCP-1A and 1C breakers:

A. ✔ remain closed and the RCPs will start.

B. tripped when AC power was lost and the pumps will NOT restart.

C. remain closed but will trip when AC power is restored.

D. tripped when DC power was lost and the pumps will NOT restart.

063K3.02 - Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power

0630402001 - Recover from a DC power loss

Reasons:

A. Correct. DC power is required to open or close the RCP breakers.

B. These breakers would have tripped on a loss of AC power if DC power were available.

C. There is no interlock associated with load breaker position.

D. These breakers require a trip signal and available DC power to open.

OPS 4-64 Obj. 2 & 4; OPS 4-64 Section 8.0.B.2

RO - Bank

Reference(s) provided: None

48. 063K4.01 001/OPS 4-64 OBJ 4/2-1//MEM 2.7/3.0/02-17-11/RO/NO/NEW

Which ONE of the following describes how aligning the spare battery charger to BOTH battery banks at the same time is prevented?

A. A selector switch only allows the selection of one feeder breaker at a time.

B. An electrical interlock prevents closing both feeder breakers simultaneously.

C.✔ A mechanical interlock prevents closing both feeder breakers simultaneously.

D. A "Kirk Key" interlock system prevents closing both feeder breakers simultaneously.

063K4.01 - Knowledge of DC electrical system design feature(s) and/or interlock(s) which provide for the following: Manual/automatic transfers of control

Reasons:

A. & B. Plausible since this type of interlock is used on multiple breakers in the AC distribution system.

C. Correct. The output breakers of the swing charger are mechanically interlocked with each other to prevent simultaneous closure.

D. Plausible since this type of key interlock system is used in the AC distribution system.

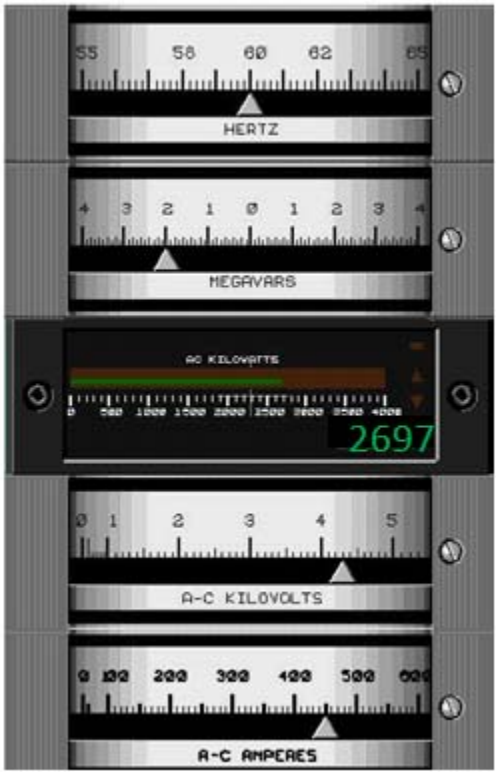
OPS 4-64 Obj. 4; OPS 4-64 Section 4.0.B.3 & 4.0.C.5

RO - New

Reference(s) provided: None

49. 064A3.02 001/OPS 4-06 OBJ 4/2-1/0640402004/C/A 3.4/3.7/02-23-11/RO/NO/NEW

The "B" Emergency Diesel Generator is running supplying its associated 4160V ES bus in parallel with the grid for surveillance testing. A grid disturbance occurs and the following EDG indications are noted:



IAW SP-354B, Monthly Functional Test of the EDG, ___(1)___ loading is NOT acceptable. The ___(2)___ will be used to return EDG loading back to acceptable values.

A. (1) megavar
(2) "EDG B Speed" switch

B. (1) kilowatt
(2) "EDG B Speed" switch

C.✔ (1) megavar
(2) "EDG B EXC Volt Adjust" rheostat

D. (1) kilowatt
(2) "EDG B EXC Volt Adjust" rheostat

064A3.02 - Ability to monitor automatic operation of the ED/G system, including: Minimum time for load pickup. (MCB indications / MVAR loading limits / how to adjust if outside of limits. OK per Mark Bates, 02-23-11)

0640402004 - Operate an EDG within the required load limits

Reasons:

A. Plausible since first part of distractor is correct. Second part of distractor is incorrect since the speed switch modifies real load, not reactive load.

B. SP-354 kilowatt range for the monthly run is 2625 to 2825 kW. Indicated value is 2697 kW so kW loading is acceptable. If kW load was out of range then the second part of distractor would be correct.

C. Correct. Per SP-354 reactive loading should be kept within $\pm$ 1.5 MVARs. Current indication is 2.0 MVARs in. Adjusting voltage to the exciter will bring MVARs back to acceptable values.

D. Kilowatt loading is acceptable per SP-354. Second part of distractor is correct for adjusting reactive load.

OPS 4-06 Obj. 4; OPS 4-06 Section 4.0.L; SP-354B Section 4.5

RO - New

Reference(s) provided: None

50. 064K6.08 001/OPS 5-01 OBJ 12/2-1/REV 1/C/A 3.2/3.3/02-24-11/RO/YES/BANK

The following plant conditions exist:

- RCS temperature is 212° F.
- The diesel fuel oil storage tank readings are as follows:

  EDG "A" - 7' 1"
  EDG "B" - 6' 6"

Which ONE of the following identifies the required TS action(s) for these conditions? **(reference provided)**

A. Restore fuel oil to within limits in 48 hours.

B. ✔ Immediately declare BOTH EDGs inoperable.

C. Immediately declare ONLY the "B" EDG inoperable.

D. Verify combined stored fuel oil level > 45,834 gallons within 1 hour.

064K6.08 - Knowledge of the effect that a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks

1190302001 - Comply with requirements specified in ITS

Reasons:

7' 1" = 19,544 gallons usable volume. 21,563 total volume.
6' 6" = 17,512 gallons usable volume. 19,531 total volume.

With plant in Mode 4 TS requires >19,643 usable gallons in each tank and combined > 45,834 usable gallons.

A. Plausible since this answer would be correct if either tank contained more than 19,643 gallons of *usable* fuel AND combined level was <45,834 gallons.

B. Correct. Both tanks are not within specification for volume and total volume. Condition "G" of TS 3.8.3 applies. TS 3.8.1 condition "E" also applies.

C. Plausible since this would be correct if total volume values were used instead of usable volume values.

D. Plausible since this answer would be correct if either tank contained more than 19,643 gallons of *usable* fuel.

OPS 5-01 OBJ 12; TS 3.8.1 & 3.8.3; OP-103F

RO - Bank

Reference(s) provided: TS 3.8.1, 3.8.3 and OP-103F Figure 8

51. 065AA2.01 001/OPS 4-81 OBJ 4, 7/1-1/REV 3/C/A 2.9/3.2/06-30-11/RO/NO/NEW

The following plant conditions exist:

- The plant is in Mode 3.
- IAP-4 is tagged out for an oil change.
- A Loss of Offsite Power (LOOP) occurs coincident with a loss of the 12 KV Site Distribution line.
- Annunciator window G-2-1, Instrument Air Press Low, is now in alarm.

Which ONE of the following describes the cause of this alarm and the resultant effect on MUV-49 (Letdown Isolation valve)?

The Instrument Air Press Low alarm is in because there is/are ___(1)___ air compressor(s) running. If air was lost to MUV-49 it would fail ___(2)___.

A. (1) no
(2) open

B. ✔ (1) no
(2) closed

C. (1) only one
(2) open

D. (1) only one
(2) closed

065AA2.01 - Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Cause and effect of low pressure instrument air alarm

0780402007 - Respond to a loss of instrument air

Reasons:

IAP-3A, 3B & 3C will have no power immediately following a LOOP concurrent with a loss of the 12 KV line. IAP-3A is powered from 480V Rx Aux. Bus 3A, IAP-3B & 3C can be powered from either 480V Rx Aux. Bus 3B or from the 12KV line. On a loss of Instrument Air MUV-49 (Letdown Isolation valve) fails closed.

A. First part of distractor is correct. The second part of the distractor is plausible since multiple air valves fail open on a loss of air.

B. Correct. Due to the stated power losses and IAP-4 being OOS, all IA compressors will be lost. MUV-49 will fail closed resulting in isolation of letdown flow.

C. First part of distractor is plausible since on a generic LOOP the 12 KV Site Distribution line is still available. This would supply power to one (1) of the air compressors. The second part of the distractor is plausible since multiple air valves fail open on a loss of air.

D. First part of distractor is plausible since on a generic LOOP the 12 KV Site Distribution line is still available. This would supply power to one (1) of the air compressors. Second part of distractor is correct.

OPS 4-81 OBJ 4 & 7; OPS-4-81 Section 8.0.B.3.a)1); OPS 5-84 Section 5.0.E

RO - New

Reference(s) provided: None

52. 068K6.10 001/OPS 4-25 OBJ 4/2-2//MEM 2.5/2.9/03-01-11/RO/NO/NEW

An SDT-1 release to the discharge canal is in progress when RM-L7 fails high.

Which ONE of the following identifies what effect, if any, this malfunction will have on SDP-7 (SDT-1 Recirc Pump) and SDV-90 (RM-L7 Remote Operated Isolation Valve)?

SDP-7 ___(1)___ automatically trip and SDV-90 ___(2)___ automatically close.

A. (1) will
(2) will

B. (1) will
(2) will NOT

C.✔ (1) will NOT
(2) will

D. (1) will NOT
(2) will NOT

068K6.10 - Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System: Radiation monitors

Reasons:

A. First part of distractor plausible since this pump is required to be running in order for SDV-90 to open. Second part of distractor is correct.

B. First part of distractor plausible since this pump is required to be running in order for SDV-90 to open. Second part of distractor is plausible since securing the pump will also terminate the release.

C. Correct. SDP-7 is not dependent on RM-L7 status for operation. SDV-90 will automatically close if RM-L7 goes into high alarm or loses power.

D. Plausible since first part of distractor is correct.

OPS 4-25 OBJ 4; OPS 4-25 Section 4.0.G.8; OPS 4-83 Section 2-3.0.B; OP-407N Step 3.1.3

RO - New

Reference(s) provided: None

53. 069AK2.03 001/OPS 5-01 OBJ 12/1-2/REV 2/MEM 2.8/2.9/03-18-11/RO/NO/BANK

The plant is in Mode 4 when maintenance reports that the inner door on the Personnel Hatch Airlock will not seal properly after leaving containment.

IAW Technical Specifications which ONE of the following identifies the action required, if any?

A. No action required if remaining in Mode 4.

B. ✔ Within 1 hour verify the outer door is closed.

C. Within 1 hour perform SP-430, Containment Air Locks Seal Leakage Test.

D. Immediately initiate action to evaluate overall containment leakage rate.

069AK2.03 - Knowledge of the interrelations between the Loss of Reactor Building Integrity and the following: Personnel access hatch and equipment access hatch

Reasons:

A. Plausible if candidate thinks that containment operability is only required in Modes 1 through 3.

B. Correct. TS 3.6.2 Condition A.

C. Plausible because this SP will be performed to declare the seal operable.

D. Plausible since this is a TS requirement (TS 3.6.2 Condition C) if an air lock is inoperable for reasons other than Conditions A or B.

OPS 5-01 OBJ 12; TS 3.6.2

RO - Bank (2008 Harris)

Reference(s) provided: None

54. 073A4.03 001/OPS 4-25 OBJ 3 & 4/2-1//MEM 3.1/3.2/02-22-11/RO/NO/BANK

Which ONE of the following represents the effect of depressing the "CHECK SOURCE" button on RM-L2 and the reason for having a check source?

Pressing this button ___(1)___. A check source is used to ___(2)___.

A. ✔ (1) exposes the detector to a known radioactive substance
(2) verify proper monitor response

B. (1) injects an electronic signal downstream of the detector
(2) verify proper monitor response

C. (1) exposes the detector to a known radioactive substance
(2) provide a signal for monitor calibration

D. (1) injects an electronic signal downstream of the detector
(2) provide a signal for monitor calibration

073A4.03 - Ability to manually operate and/or monitor in the control room: Check source for operability demonstration

0720202002 - Perform radiation monitoring instrumentation functional test for the RMLs and RM-A3, A4, A7, and A8

Reasons:

A. Correct. The RM-Ls are equipped with radioactive sources for source check. The purpose of the check source is to verify proper monitor and detector operation.

B. Plausible since some Rad Monitors have electronic check sources. RM-L2 is equipped with an actual radioactive source.

C. Plausible since first part of distractor is correct. RM-L2 is calibrated using an external source IAW CH-220R.

D. Plausible since some Rad Monitors have electronic check sources. RM-L2 is equipped with an actual radioactive source. RM-L2 is calibrated using an external source IAW CH-220R.

OPS 4-25, Obj. 3 & 4; OPS 4-25 Section 4.0.G.1 & 7.0.C; SP-335B Step 6.9; 0720202002

RO - Bank (CR3 2009 NRC)

Reference(s) provided: None

55. 073G2.4.3 001/OPS 5-01 OBJ 8/2-1/REV 1/MEM 3.7/3.9/05-19-11/RO/NO/NEW

Which ONE of the following identifies a radiation monitor required to be operable IAW TS 3.3.17, Post Accident Monitoring (PAM) Instrumentation?

A. RM-A2, Auxiliary Building and Fuel Handling Exhaust Duct Monitor

B. RM-A12, Condenser Vacuum Pump Off Gas Monitor

C. RM-G25, Main Steam Line A1 Radiation Monitor (ADV)

D.✔ RM-G29, Containment Area Radiation (High Range) Monitor

073G2.4.3 – Ability to identify post-accident instrumentation: Process radiation monitoring system

Reasons:

A. Plausible since RM-A2 is an ODCM required monitor.

B. Plausible since RM-A12 is used for OTSG tube rupture identification.

C. Plausible since RM-G25 is used to monitor OTSG tube rupture radiation release to atmosphere (ADV).

D. Correct. Per TS 3.3.17 this instrument is required.

OPS 5-01 OBJ 8; TS 3.3.17

RO - New

Reference(s) provided: None

56. 075K2.03 001/OPS 4-57 OBJ 3/2-2/REV 1/MEM 2.6/2.7/06-30-11/RO/NO/BANK

The following plant conditions exist:

- The plant is at 100% power with the Unit Buses supplied from the Unit Aux Transformer.
- SP-354B, Monthly Functional Test of EDG-1B, is in progress with EDG-1B paralleled with the grid.
- The Backup ES Transformer (BEST) is lost due to all sudden pressure relays actuating.

Which ONE of the following identifies which Nuclear Services Raw Water (RW) system pumps will be running, if any? (assume sufficient time for all automatic actions to occur)

A. None

B. ✔ RWP-1, Normal Nuclear Services Sea Water Pump

C. RWP-2A, Emergency Nuclear Services Sea Water Pump

D. RWP-2B, Emergency Nuclear Services Sea Water Pump

075K2.03 - Knowledge of bus power supplies to the following: Emergency / essential CW System pumps (The KA specifies emergency/essential CW pumps. CR3 has no emergency CW pumps. Substituted emergency RW pumps since both CW and RW use the gulf as a suction source.)

Reasons:

Loss of the BEST will also de-energize the Startup transformer which would de-energize all the Unit buses if they were not being supplied by the Unit Aux transformer.

A. RWP-1 will still be running.

B. Correct. Above 80% power the Unit buses are powered from the Unit Aux transformer.

C. RWP-2A has no low pressure auto-start and there is currently no reason for an ES actuation.

D. The low pressure start for RWP-2B is defeated because breaker 3210 is closed but with RWP-1 still running there should be no low pressure condition. There is currently no reason for an ES actuation.

OPS 4-57 OBJ 3; OPS 4-57 Slide 34; OPS 4-89 Figure 1

RO - Bank

Reference(s) provided: None

57. 076G2.1.28 001/OPS 4-57 OBJ 1/2-1/REV 1/MEM 4.1/4.1/02-24-11/RO/NO/NEW

Which ONE of the following describes the purpose/function of RWV-150, RW Recirc Flow Control Valve?

RWV-150 regulates recirculation flow to the ___(1)___ RW pit to maintain ___(2)___ temperature limits.

A. (1) "A"
(2) SW

B. (1) "A"
(2) RW

C. ✔ (1) "B"
(2) SW

D. (1) "B"
(2) RW

076G2.1.28 - Knowledge of the purpose and function of major system components and controls: RW / CW system

Reasons:

A. First part of distractor plausible since there is a common misconception that RWP-1 resides in the "A" RW pit. Second part of distractor is correct.

B. First part of distractor plausible since there is a common misconception that RWP-1 resides in the"A" RW pit. Second part of distractor is plausible since RW temperature will be affected but the reason for this recirc flow is to maintain SW temperature design limits.

C. Correct. RWP-1 is the normal duty pump and resides in the "B" RW pit. RWV-150 is required to regulate the amount of recic flow to the "B" RW pit to maintain SW temperatue above 80° F.

D. Plausible since first part of distractor is correct. Second part of distractor is plausible since RW temperature will be affected but the reason for this recirc flow is to maintain SW temperature design limits.

OPS 4-57 OBJ 1; OPS 4-57 Slide 25; OP-408 Steps 3.1.14; DBD Tab 6/11 Page 36 and DBD Tab 6/12 Page 17

RO - New

Reference(s) provided: None

58. 077AA1.03 001/OPS 2-16 OBJ 44/1-1/0510102003/C/A 3.8/3.7/06-20-11/RO/NO/NEW

A grid disturbance has caused gid voltage to lower. Due to this lower grid voltage CR3's MVAR out loading will ___(1)___. In order to *re-zero* the "Voltage Reg Balance" meter the generator ___(2)___ switch must be used.

A. (1) rise
(2) Volt Adjust

B. ✔ (1) rise
(2) Base Adjust

C. (1) lower
(2) Volt Adjust

D. (1) lower
(2) Base Adjust

077AA1.03 – Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: Voltage regulator controls.

0510102003 - Operate the voltage regulator

Reasons:

MVAR out would rise due to the voltage regulator attempting to maintain the original higher voltage. This will also cause the "Voltage Reg Balance" meter to move off of 0 since the automatic portion of the regulator is 'boosting' the signal above the manual 'base adjust' value. At power the "Base Adjust" switch is used to re-zero the meter.

A. First part of distractor is correct. The "Volt Adjust" switch is used to re-zero the meter when the votage regulator is in 'Test'. At power the voltage regulator is selected to 'Auto'.

B. Correct. See discussion above.

C. Plausible since lowering grid voltage may indicate to the candidate that MVAR's out are also lowering. The "Volt Adjust" switch is used to re-zero the meter when the voltage regulator is in 'Test'. At power the voltage regulator is selected to 'Auto'.

D. Plausible since lowering grid voltage may indicate to the candidate that MVAR's out are also lowering. Second part of the distractor is correct.

OPS 2-16, Obj. 44; OPS 4-33 Obj. 3 & 4; OPS 4-33 Section 1-4.0.D.8.g); OPS 2-16 Section 1-7.0.R

RO - New

Reference(s) provided: None

59. 078A4.01 001/OPS 4-81 OBJ. 3 & 4/2-1/REV 1/MEM 3.1/3.1/02-22-11/RO/NO/NEW

With the exception of computer displays/annunciator alarms which ONE of the following lists the indication(s) available in the main control room to monitor the plant air systems?

A. Instrument Air header pressure ONLY

B. ✔ Station Air and Instrument Air header pressures ONLY

C. Instrument Air header pressure and IAV-30, IA/SA Crosstie Auto Isolation, valve position ONLY

D. Station Air header pressure, Instrument Air header pressure and IAV-30, IA/SA Crosstie Auto Isolation, valve position

078A4.01 - Ability to manually operate and/or monitor in the control room: Pressure gauges

Reasons:

A. Both Station Air and Instrument Air pressure indication is available on the MCB.

B. Correct. Both Station Air and Instrument Air pressure indication is available on the MCB.

C. Plausible since first part of distractor is half correct. IAV-30 position indication is also plausible due to the importance of this valve, however the only indication for actual valve position is local or computer alarm when out of position. Valve position could be derived from the difference between Station and Instrument Air header pressure values following a leak.

D. Plausible since first part of distractor is correct. IAV-30 position indication is also plausible due to the importance of this valve, however the only indication for actual valve position is local or computer alarm when out of position. Valve position could be derived from the difference between Station and Instrument Air header pressure values following a leak.

OPS 4-81 Obj. 3 & 4; OPS 4-81 Section 4.0.M & 5.0.A

RO - New

Reference(s) provided: None

60. 103A2.05 001/OPS 4-63 OBJ 6 & 10/2-1/REV 2/MEM 2.9/3.9/06-30-11/RO/NO/NEW

The plant is in Mode 2 when an emergency RB entry is required.

Upon entering containment, TS 3.6.2, Containment Air Locks, requires verification that the air lock interlock prevents ___(1)___.

IAW OP-417, Containment Operating Procedure, while personnel are in containment ___(2)___ if a reactor trip were to occur.

A. (1) simultaneous opening of both air lock doors
(2) radio notification SHALL be made

B. (1) opening an air lock door against excessive differential pressure
(2) radio notification SHALL be made

C.✔ (1) simultaneous opening of both air lock doors
(2) the Containment Evacuation Alarm SHALL be sounded

D. (1) opening an air lock door against excessive differential pressure
(1) the Containment Evacuation Alarm SHALL be sounded

103A2.05 - Ability to (a) predict the impacts of the following malfunctions or operations on the reactor building system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Emergency reactor building entry

Reasons:

A. First part of distractor is correct. Second part of distractor is plausible since this action will probably occur however radio notification is not required per OP-417.

B. First part of distractor since each air lock contains equalization valves which work in conjuction with the associated air lock doors. Second part of distractor is plausible since this action will probably occur however radio notification is not required per OP-417.

C. Correct. SR 3.6.2.2 requires verification that the mechanical interlock still functions during the entry to ensure that only one door in the air lock can be opened at any given time. Per limit and precaution (Step 3.2.7) and Enclosure 4 sounding the Containment Evacuation Alarm is required.

D. First part of distractor since each air lock contains equalization valves which work in conjuction with the associated air lock doors. Second part of distractor is correct.

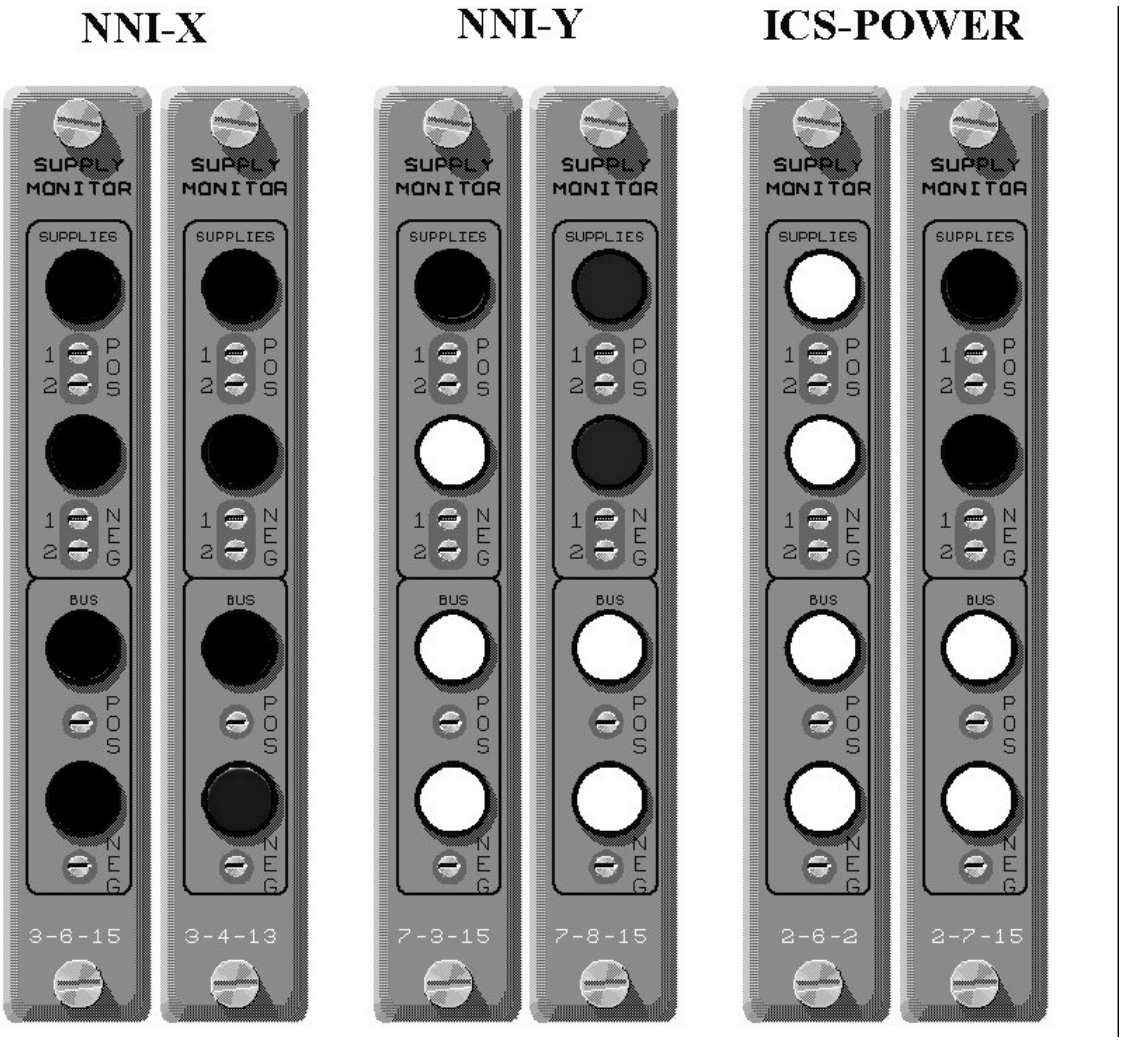
OPS 4-63 OBJ 6 & 10; OPS 4-63 Section 1-7.0.B.5; OP-417 Steps 3.2.7 and Enclosure 4; SR 3.6.2.2

RO - New

Reference(s) provided: None

61. BW/A02AA1.2 001/OPS 4-09 OBJ 3/1-2/REV 2/C/A 3.4/3.2/06-20-11/RO/NO/NEW

Based on the indications below which ONE of the following will be required to be operated in manual? [White indicates light is ON]



A.✔ PZR spray valve

B. MFW pump controllers

C. Condensate pump controllers

D. Main Turbine Bypass Valves

BW/A02AA1.2 - Ability to operate and / or monitor the following as they apply to the Loss of NNI-X: Operating behavior characteristics of the facility.

0160402006 - Respond to a loss of NNI-X AC or DC

Reasons:

A. Correct. This condition represents a total loss of NNI-X DC power and the loss of one of the DC power supplies for NNI-Y. With a loss of NNI-X DC power RCV-14 will only work in manual.

B. Plausible since this would be correct for a loss of ICS DC power.

C. Plausible since this would be correct for a loss of NNI-Y DC power.

D. Plausible since this would be correct for a loss of ICS DC power

OPS 4-09 OBJ 3; OPS 4-09 Section 4.0.I & Figure 16; AP-581 Enclosure 4

RO - New

Reference(s) provided: None

62. BW/A07AK1.2 001/OPS 5-83 OBJ 7/1-2/0750402001/C/A 3.3/3.7/01-27-11/RO/NO/MOD

The plant is at 70% power with the following activities in progress:

- "A" SCHE shoot and clean activities.
- "B" CWP breaker tripped on overcurrent.

The "A Cond. Pump Pit Sump Level High" alarm has just annunciated in conjunction with the SPO reporting water coming out of the "A" SCHE and that CWV-1, "A" SCHE inlet valve from CWP-1A, has failed open.

The SPO also reports that water is entering the AB.

Based on these conditions which ONE of the following identifies the actions required for this event?

IAW AP-1050, Turbine Building Flooding,:

A. ✔ trip the reactor and concurrently perform EOP-02, Vital System Status Verification; then stop all CWPs.

B. trip the reactor and concurrently perform EOP-02, Vital System Status Verification; then stop CWP-1A ONLY.

C. and concurrently perform AP-510, Rapid Power Reduction, to reduce power to < 60%; then stop CWP-1A.

D. and concurrently perform AP-510, Rapid Power Reduction; when reactor power is < 45% trip the turbine; stop CWP-1A and transition to AP-660, Turbine Trip.

BW/A07AK1.2 - Knowledge of the operational implications of the following concepts as they apply to Flooding: Normal, abnormal and emergency operating procedures associated with Flooding.

Reasons:

A. Correct. Per Step 3.3 of AP-1050 the reactor will be tripped and all CWPs stopped if flooding enters the AB. All the in-depth decision points (SRO) occur after this step.

B. First part of distractor is correct. Since flooding is entering the AB all CWPs must be stopped.

C. The reactor must be tripped. If the "C" or "D" CWP was OOS (without AB flooding) then this would be the correct answer.

D. The reactor must be tripped. If water was not entering the AB then this would be the correct answer since the affected CWP was in a hotwell with only 1 CWP running power would have to be reduced to <45% and the turbine tripped.

OPS 5-83 Obj 7; AP-1050 Step 3.3

RO - Modified (BW/A07AK1.2-1 LOIBANK)

Reference(s) provided: None

63. BW/E03EA2.2 001/OPS 5-116 OBJ 1/1-2//C/A 3.5/4.0/01-28-11/RO/NO/BANK

The following plant conditions exist:

- The plant was at 100% power when a small break LOCA occurred.
- Rule 1, Loss of SCM, has just been completed.
- Current RCS pressure is 1300 psig.
- Current Tincore indication is 425° F.
- RCS cooldown rate is 65° F per 1/2 hr.

Based on these conditions which ONE of the following describes why Rule 4, PTS, is in effect and why HPI flow must be throttled?

Rule 4, PTS, is in effect because ___(1)___. HPI must be throttled to ___(2)___.

A. ✔ (1) HPI flow exists with no RCPs running
(2) prevent exceeding NDT limits

B. (1) TS cooldown rate was exceeded
(2) prevent exceeding NDT limits

C. (1) HPI flow exists with no RCPs running
(2) lower and maintain RCS pressure below 1000 psig

D. (1) TS cooldown rate was exceeded
(2) lower and maintain RCS pressure below 1000 psig

006K5.04 – Knowledge of the operational implications of the following concepts as they apply to ECCS: Brittle fracture, including causes and preventative actions

Reasons:

A. Correct. Since the stem states that Rule 1 has been performed then RCPs would have been secured and HPI actuated. This meets the criteria for a PTS event and Rule 4 must be followed. Since adequate SCM now exists (approx 140 degrees) Rule 2, HPI Control, is also in effect. HPI is throttled to prevent exceeding NDT (brittle fracture) limits.

B. Plausible because TS cooldown rates were exceeded but Rule 4 is NOT in effect based on cooldown rate because RCS temperature is still above 400° F.

C. Plausible because first part of distractor is correct. Also Rule 2 does require HPI to be throttled to maintain RCS pressure < 1000 psig but only if the OTSG has been isolated for TRACC.

D. Plausible because TS cooldown rates were exceeded but Rule 4 is NOT in effect based on cooldown rate because RCS temperature is still above 400° F. Also Rule 2 does require HPI to be throttled to maintain RCS pressure < 1000 psig but only if the OTSG has been isolated for TRACC.

OPS 5-116 Obj. 1; EOP Cross-Step Document for EOP-13, Rule 2 & 4; EOP-13, Rules 2 & 4; KA #006K5.04 2.9/3.1

RO - Bank (CR3 NRC 2009)

Reference(s) provided: Steam Tables

64. BW/E04EK2.2 001/OPS 5-102, OBJ. 5/1-1/1150502003/C/A 4.2/4.2/01-26-11/RO/YES/BANK

EOP-04, Inadequate Heat Transfer, has been entered. EFP-2 is the only running EFW pump. Tincore is currently 460° F. You are directed to establish and maintain OTSGs as a heat sink. Step details are as follows:

> Lower OTSG PRESS using TBVs (preferred) or ADVs until the higher of the following occurs:
>
> ___ OTSG PRESS 200 psig (if EFP-2 is only running EFWP)
>
> ___ OTSG Tsat 40 to 60° F below Tincore

Which ONE of the following identifies the proper OTSG pressure for this situation? **(reference provided)**

A. 200 psig

B. ✔ 240 psig

C. 450 psig

D. 600 psig

BW/E04EK2.2 - Knowledge of the interrelations between the (Inadequate Heat Transfer) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

1150502003 - Perform actions specified during an inadequate heat transfer

Reasons:

A. This value would be correct if Tincore was lower since EFP-2 is the only running EFW pump.

B. Correct. Using 460° F 240 psig creates a primary to secondary delta T between 40 to 60° F.

C. This is saturation pressure for a Tincore temp of 460° F.

D. This is where OTSG isolation will occur.

OPS 5-102, Obj. 5; EOP-4 Step 3.35 & Figure 3

RO - Bank

Reference(s) provided: EOP-4 Figure 3

65. BW/E09EG2.4.6 001/OPS 5-98 OBJ 1/1-2/REV 2/MEM 3.7/4.7/04-14-11/RO/NO/BANK

Which ONE of the following describes the basis for the cooldown rate limits IAW EOP-09, Natural Circulation Cooldown?

A. Conserve EFT-2 inventory.

B. Maintain a stable or lowering core ΔT.

C. Limit thermal stress on the OTSG tubesheet.

D. ✔ Limit voiding in the reactor vessel head region.

BW/E09EG2.4.6 - Knowledge of EOP mitigation strategies. (Natural Circulation Cooldown)

1150502008 - Perform actions specified during a natural circulation cooldown.

Reasons:

A. Plausible concern during a natural circ cooldown, but slower C/D rates will have minimal affect or may require more demand on EFW inventory.

B. Plausible since this is an indication natural circulation is in progress, but this is not the reason for the cooldown limit.

C. Plausible concern, but other operational limits are used to control these parameters.

D. Correct. This step provides instructions for responding to RCS head voids. The details require that RCS cooldown rates be maintained within limits. Although these limits are the same as those already referred to, awareness of the potential of head voids to form is important. The "normal" limitations are restated here to ensure that if head voids have occurred, the user checks that the limits have been maintained.

The referenced table includes different cooldown rate requirements depending on whether RCS pressure is being maintained above or below the Nat Circ Curve shown on Figure 1 and Figure 2. The difference is based on analysis of reactor head cooldown rate. If pressure is being maintained above the Nat Circ Curve then further void formation is not expected with a cooldown rate of 25 deg F/half hour. If pressure is below the Nat Circ Curve, then cooldown rate of 5 deg F/half hour must be limited to prevent further head voiding. Head voiding is not expected to cause loss of natural circulation, however, the operators should be aware of and deal with the condition.

OPS 5-98 Obj. 1; OPS-5-98 Section 5.0.B; EOP Step Basis Document; EOP-09 Step 3.27

RO - Bank

Reference(s) provided: None

66. G2.1.19 001/OPS 4-10 OBJ. 3 & 7/GENERIC/REV 2/C/A 3.9/3.8/06-30-11/RO/NO/MOD

The initial power escalation following a refueling outage is being performed. Reactor power level is stabilized to perform testing. The following information is available using the plant computer:

NI-5	26.0%
NI-6	29.0%
NI-7	26.0%
NI-8	29.0%

T_h Loop A	588.5° F
T_h Loop B	588.0° F
T_c Loop A	569.5° F
T_c Loop B	570.0° F

Which ONE of the following identifies the reactor thermal power for the above conditions?

A. 402 MWth

B. 678 MWth

C. 757 MWth

D. ✔ 1049 MWth

G2.1.19 - Ability to use plant computers to evaluate system or component status.

Reasons:

Due to the change in Tcold on a power increase the NIs will need calibrating at approximately 25% power increments. Using alternate indications, such as core deltaT, is a more accurate indication of power level. Core deltaT for 100% power (2609 MWth) is 46° F per SP-312A.

A. If the student uses 100% MWe instead of MWth with the average core deltaT this answer will be obtained:
(18.5° F / 46° F X 1000 MWe = 402 MWe)

B. If the student uses the lowest NI power this answer will be obtained:
(.26 X 2609 MWt = 678 MWth)

C. If the student uses the highest NI power this answer will be obtained:
(.29 X 2609 MWt = 757 MWth)

D. Correct. Student should use the average core deltaT with the 100% MWth rating.
(18.5° F / 46° F X 2609 MWth = 1049 MWth)

OPS 4-10 Obj. 3 & 7; SP-312A Encl. 2, Page 1; OPS 4-10 Sections 1-7.0 & 1-11.0; OP-103A Curve 7; KA #'s 015K5.19 2.9/3.2, 015A1.08 3.3/3.4

RO - Modified (LOIBank ----

Reference(s) provided: None

67. G2.1.23 001/OPS 5-114 OBJ 5/GENERIC/0020402013/C/A 4.3/4.4/03-17-11/RO/NO/BANK

EOP-10, Post Trip Stabilization, is in progress when the following indications are observed:

- RCS pressure is 1900 psig and lowering.
- All PZR heaters are on.
- PZR level is 100 inches and stable.
- Makeup Tank level is lowering at a rate of approximately 15 gpm.
- RCDT level and temperature are rising.
- RB sump, temperature and pressure are normal.

This event would be caused by a ___(1)___ . AP-520, Loss of RCS Coolant or Pressure, will be entered and if the transient can NOT be terminated, then initiate ___(2)___ within 4 hours.

A. (1) PZR spray valve leakby
(2) EOP-08A, LOCA Cooldown

B. (1) PZR steam space leak
(2) EOP-08A, LOCA Cooldown

C. (1) PZR spray valve leakby
(2) OP-209, Plant Cooldown

D.✔ (1) PZR steam space leak
(2) OP-209, Plant Cooldown

G2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.

0020402013 - Respond to a loss of RCS coolant or pressure

Reasons:

A. Plausible since the PZR spray valve will open if a MFWP is lost at 100% power. Also a slow RCS pressure reduction with all heaters on and RB parameters normal supports a leaking PZR spray valve. However, MUT level and RCDT parameters support RCS leakage from the PORV or PZR safeties. AP-520 directs the performance of EOP-08A if RCS leakage is > 100 gpm (Step 3.28). The given conditions do not support an RCS leak rate of > 100 gpm.

B. Plausible since AP-520 directs the performance of EOP-08A if RCS leakage is > 100 gpm (Step 3.28). The given conditions do not support an RCS leak rate of > 100 gpm. First part of distractor is correct.

C. Plausible since the PZR spray valve will open if a MFWP is lost at 100% power. Also a slow RCS pressure reduction with all heaters on and RB parameters normal supports a leaking PZR spray valve. However, MUT level and RCDT parameters support RCS leakage from the PORV or PZR safeties. Second part of distractor is correct.

D. Correct. An RCS pressure reduction with rising RCDT level and temperature, and a lowering MUT with all other RCS leak indications normal supports a leaking PZR PORV or PZR safeties (PZR steam space LOCA). AP-520 directs the performance of a plant cooldown within 4 hours if RCS leakage exceeds ITS limits (Step 3.17). The leakage caused by this event is classified as identified leakage but it exceeds the TS limit of 10 gpm. AP-520 will direct closure of the PORV block valve to eliminate the leak. Based on the given conditions this action was either unsuccessful or the leak is from one of the PZR safeties. Therefore, a plant cooldown is required. OP-209, Plant Cooldown, would be used.

OPS 5-114 OBJ 5; AP-520 Steps 3.17 & 3.29

RO - Bank (CR3 2009 NRC)

Reference(s) provided: None

68. G2.1.6 001/OPS 5-38 OBJ 14/GENERIC/REV 1/MEM 3.8/4.8/03-04-11/RO/NO/BANK

Which ONE of the following identifies the required transient communication protocol IAW OPS-NGGC-1000, Fleet Conduct of Operations?

A. A "Crew Update" is ONLY conducted by the CRS.

B. ✔ A "Crew Update" may be conducted by any member of the control room staff.

C. A "Plant Status Brief" is ONLY conducted by the CRS.

D. A "Plant Status Brief" may be conducted by any member of the control room staff.

G2.1.6 - Ability to manage the control room crew during plant transients.

Reasons:

A. A "Crew Update" can be used by anyone on the control room staff.

B. Correct. A "Crew Update" can be used by anyone on the control room staff.

C. & D. A "Plant Status Brief" is used by the CRS OR the SM only.

OPS 5-38 OBJ 14; OPS-NGGC-1000 Sections 9.13.3 & 9.13.4

RO - Bank (Hatch 2009)

Reference(s) provided: None

69. G2.2.17 001/OPS 5-01 OBJ 1/GENERIC/REV 2/MEM 2.6/2.7/03-17-11/RO/NO/BANK

The weekly performance of SP-321, Power Distribution Breaker Alignment and Power Availability Verification, was completed at 2300 on Monday of last week. Due to maintenance activities the surveillance cannot be completed as scheduled.

With respect to work prioritization for the week, which ONE of the following identifies the **LATEST** time that this test can be completed without exceeding an LCO?

A. 2300 on Tuesday

B. 1100 on Wednesday

C. ✔ 1700 on Wednesday

D. 2300 on Wednesday

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.

1190302001 - Comply with requirements specified in ITS.

Reasons:

A. Distractor is interval (7 days) plus 24 hours.

B. Distractor is interval (7 days) plus 36 hours.

C. Correct. A deviation of 25% of the weekly serveillance interval is allowed (1.75 days or 42 hours).

D. Distractor is interval (7 days) plus 48 hours.

OPS 5-01 Obj. 1; SR 3.0.2; OPS 5-90 Section 1-5.0

RO - Bank (Cooper 2008)

Reference(s) provided: None

70. G2.2.2 001/OPS 4-14 OBJ 3/GENERIC/0410102007/MEM 4.6/4.1/03-17-11/RO/NO/BANK

The following plant conditions exist:

- Plant is operating ≈ 20% power.
- SUCV position ≈ 95% open.
- LLCV position ≈ 5% open.
- 'B' train SUCV and LLCV H/A stations are in HAND for data recording.

Which ONE of the following describes the appropriate actions to return these stations to automatic?

A. Place the SUCV in auto first, then place the LLCV in auto.

B. ✔ Place the LLCV in auto first, then place the SUCV in auto.

C. Close the LLCV to allow the SUCV full control. Place the SUCV in auto first and then the LLCV.

D. Throttle the SUCV to 50% to allow the LLCV full control. Place the LLCV in auto first and then the SUCV.

G2.2.2 - Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.

0410102007 - Transfer a hand/auto station to automatic

Reasons:

A. Plausible since this answer would be correct if the LLBV were closed; however, the LLBV must be open at this point. The SUCV cannot be placed in automatic first if the LLBV is open.

B. Correct. With the SUCV 95% open, the LLBV will be open. The LLCV must be placed into automatic first when the LLBV is open.

C. Plausible since the candidate may have the misconception that with the SUCV 95% open the LLCV should be closed; however, the SUCV and LLCV are operating as designed. The operator should not manipulate control valve position unnecessarily. Also, the SUCV cannot be placed in automatic first if the LLBV is open.

D. Plausible since the second part of the distractor is correct; however, reducing SUCV to 50% demand will close the LLBV and lower FW flow below the amount required.

OPS 4-14 OBJ 3; OP-504 Enclosure 3; OPS 4-14 Section 4.0.H.13.d)2); KA # 059A4..10 3.9/3.8

RO - Bank

Reference(s) provided: None

71. G2.2.21 001/OPS 5-38 OBJ 25/GENERIC/REV 1/MEM 2.9/4.1/06-30-11/RO/NO/NEW

Due to excessive packing leakage, a motor operated valve (MOV) has been manually backseated using its handwheel.

IAW OPS-NGGC-1000, Fleet Conduct of Operations, the MOV ___(1)___ and ___(2)___ required to be manually removed from its backseat prior to performing post-maintenance stroke testing.

A. (1) remains operable
(2) is

B. (1) remains operable
(2) is NOT

C. ✔ (1) must be declared inoperable
(2) is

D. (1) must be declared inoperable
(2) is NOT

G2.2.21 - Knowledge of pre- and post-maintenance operability requirements.

1150104017 - Manually operate a Motor Operated Valve

Reasons:

A. The first part of the distractor is plausible since an MOV can be manually operated and remain operable provided it was not seated or backseated. The second part of the distractor is correct.

B. The first part of the distractor is plausible since an MOV can be manually operated and remain operable provided it was not seated or backseated. The second part of the distractor is plausible since the candidate may not recognize that leaving the valve backseated during testing could affect its closing stroke time.

C. Correct. IAW OPS-NGGC-1000, an MOV that is manually backseated must be declared inoperable and prior to testing it must be manually removed from it backseat.

D. The first part of the distractor is correct. The second part of the distractor is plausible since the candidate may not recognize that leaving the valve backseated during testing could affect its closing stroke time.

OPS 5-38 OBJ 25; OPS-NGGC-1000 Section 9.16; AI-500 Appendix 7; SOER 83-9

RO - New

Reference(s) provided: None

72. G2.3.11 001/OPS 4-25/GENERIC/REV 1/C/A 3.8/4.3/01-18-11/RO/NO/BANK

The following plant conditions exist:

- The plant is in Mode 5.
- The Reactor Building (RB) Equipment Hatch is off.
- An RB purge is in service.
- High radiation in the RB caused RM-A1 to actuate.
- All purge supply and exhaust fans remain running.

Which ONE of the following describes the operator actions necessary to terminate an *unmonitored* release from the RB?

A. Stop the purge fans IAW AP-250, Radiation Monitor Actuation.

B. ✔ Establish Containment Closure IAW AP-250, Radiation Monitor Actuation.

C. Stop the purge fans IAW OP-417, Containment Operating Procedure.

D. Establish Containment Closure IAW OP-417, Containment Operating Procedure.

G2.3.11 - Ability to control radiation releases.

Reasons:

A. Plausible since AP-250 requires stopping of the purge fans however until containment closure is established an unmonitored release path still exists.

B. Correct. Closing the AHVs and establishing containment closure will stop any unmonitored release.

C. Plausible since guidance is available in OP-417 however, based on the stem conditions, AP-250 will be used to secure the purge fans.

D. Plausible since guidance is available in OP-417 however, based on the stem conditions, AP-250 will be used to establish containment closure.

OPS 5-60 Obj. 7; AP-250 Enclosure 1, Steps 1.1 thru 1.4

RO - Bank (NRC 2009 CR)

Reference(s) provided: None

73. G2.3.7 001/OPS 2-32 OBJ 9,17/GENERIC/1190304005/C/A 3.5/3.6/01-18-11/RO/NO/BANK

You are signed on to a Radiation Work Permit (RWP) that prohibits work in High Radiation areas. While performing a valve lineup you need to enter an area that contains a hot spot where you could receive 300 millirem in an hour at **15** centimeters?

Which ONE of the following describes the entry requirements for this area?

A. NO entry allowed on this RWP.

B. ✔ Entry allowed with no further restrictions.

C. Entry allowed with a maximum time limit of 30 minutes.

D. NO entry allowed on this RWP unless accompanied by an HP technician.

G2.3.7 - Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Reasons:

At 30 centimeters the dose rate should be 75 mr/hr. This does not meet the criteria for a High Radiation Area.

$I1/I2 = D^2 2/D^2 1$ I2 = 75 mr/hr at 30 centimeters.

A. This would be correct if the actual dose rate met the criteria for a High Radiation Area.

B. Correct. Since this is not a High Radiation Area entry is allowed.

C. Since this is a Radiation Area only there is no time limit.

D. An HP technician is not required for entry into a Radiation Area.

OPS 2-32 OBJ 9,17; OPS 2-32 Section 1.7.B and 1-12.0.AA; Task # 1190102008

RO - Bank

Reference(s) provided: None

74. G2.4.4 001/OPS 5-29 OBJ 2/GENERIC/REPLACEMENT/C/A 4.5/4.7/05-17-11/RO/NO/MOD

The plant is operating at 70% power when both Reheat Stop Valve, RHV-2 (MSR-3B to LP Turb 3B), and Reheat Intercept Valve, RHV-4 (MSR-3D to LP Turb 3B), close.

Which ONE of the following procedures, if any, is required to be entered for these conditions?

A. AP-660, Turbine Trip

B. AP-510, Rapid Power Reduction

C. ✔ EOP-02, Vital System Status Verification

D. No EOPs/APs are required to be entered at this time.

G2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Reasons:

A. Plausible since OP-204 L&P 3.2.6 requires that the turbine be tripped within 1 minute for these conditions, but at this power a reactor trip will occur requiring entry into EOP-02.

B. Plausible since OP-204 L&P 3.2.7 requires a power reduction to 50% if two crossovers close to different turbines.

C. Correct. OP-204 L&P 3.2.6 requires that the turbine be tripped within 1 minute for these conditions and at this power level a turbine trip will cause a reactor trip. EOP-02 entry conditions will be met.

D. Plausible since candidate may only recall the OP-204 L&P for reducing power to 75% if one crossover closes and conclude with power already at 70% that no action is required.

OPS 5-29 OBJ 2; OP-204 Step 3.2.6; OPS 4-78 Section 8.0.D.2

RO - Modified (LOIBANK BW/A04AK1.2-1)

Reference(s) provided: None

75. G2.4.47 001/OPS 5-61 OBJ 5/GENERIC/REV 1/C/A 4.2/4.2/3-18-11/RO/NO/BANK

The following plant conditions exist:

- SWP-1A, RWP-2A and MUP-1B are running.
- MUP-1B lube oil temperature is slowly trending up.
- Spent Fuel pool level has risen 1 inch over the last four hours.
- RWP-2A discharge is currently 56 psig and has risen 4 psig over the last four hours.
- Computer points for three CRDM stators have reached their "Hi Warning" setpoint of 113° F and are slowly trending up.

Which ONE of the following would cause these indications and what actions should be taken?

A. A leak has caused reduced SW flow to other components.

Enter AP-330, Loss of Nuclear Service Cooling, and isolate SW flow to the Spent Fuel coolers.

B. A leak has caused reduced SW flow to other components.

Use OP-408, Nuclear Services Closed Cycle Cooling System, and isolate SW flow to the Spent Fuel coolers.

C.✔ At least one of the in service SWHEs is excessively fouled.

Enter AP-330, Loss of Nuclear Service Cooling, place the standby SWHE in service and remove the fouled one.

D. At least one of the in service SWHEs is excessively fouled.

Use OP-408, Nuclear Services Closed Cycle Cooling System, place the standby SWHE in service and remove the fouled one.

G2.4.47 - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

1190402001 - Comply with requirements during abnormal and emergency events

Reasons:

A. & B. Plausible since a SW leak could cause the SF pool level rise and SW cooled component temperatures to rise, but this would not explain the rise in RWP discharge pressure.

C. Correct. This failure would cause all of the conditions given in the stem. The entry conditions for AP-330 are met due to the rising SW cooled component temperatures. AP-330 states that a RWP discharge pressure greater than 53 psig is indication of excessive SWHE fouling and directs placing the standby SWHE in service and removing the fouled SWHE from service for this situation.

D. The first part of the distractor is correct. The second part of the distractor is plausible since OP-408 provides procedural guidance for placing SWHEs in service.

OPS 5-61 OBJ 5; OPS-5-61 Section 5.0.C; AP-330 Steps 3.10 & 3.11

RO - Bank

Reference(s) provided: None