76. 201002G2.1.32 001

Unit 1 plant conditions are as follows:

- o Reactor power is 80%
- o Control Rod 22-47 is at position 10

Control Rod 22-47 is required to be withdrawn to position 22 for a rod pattern adjustment.

Which ONE of the following describes the procedural restrictions for positioning Rod 22-47 IAW 34GO-OPS-065-0, Control Rod Movement and the Tech Spec (TS) requirement if Rod 22-47 will NOT move?

Continuous withdraw of Rod 22-47 must be stopped at position __________ .

If it is discovered that Rod 22-47 is stuck at position 10, IAW TS 3.1.3, Control Rod Operability, a Shutdown Margin Verification __________ required to allow continued operation with this rod stuck out.

Reference Provided

A.✔ 20;
is

B. 20;
is NOT

C. 22;
is NOT

D. 22;
is

Description:

IAW 34GO-OPS-065-0, Control Rod Movement, Limitation 5.2.3.3, states "During the "CONTINUOUS" insertion OR withdrawal of a control rod (using RMCS), the "CONTINUOUS" rod motion will normally be terminated at least one notch prior to the specified INSERT OR WITHDRAW limit unless going to position "00" or "48". Utilize single notch movement when approaching a specified INSRT OR WITHDRAW limit.

IAW TS Bases 3.1.3, To allow continued operation with a withdrawn control rod stuck, an evaluation of adequate SDM is also required within 72 hours. Should a DBA or transient require a shutdown, to preserve the single failure criterion, an additional control rod would have to be assumed to fail to insert when required. Therefore, the original SDM demonstration may not be valid. The SDM must therefore be evaluated (by measurement or analysis) with the stuck control rod at its stuck position and the highest worth OPERABLE control rod assumed to be fully withdrawn. In otherwords, an additional SDM verification is required.

The SRO will be required to know that SR 3.1.1.1 is the SDM surveillance and that TS bases, for an inop control rod, will require an additional performance of SDM verification.

The "B" distractor is plausible since the first part is correct and the second part if the applicant remembers that the initial SDM assumes one control rod is withdrawn and thinks that since an evaluation was already performed with a control withdrawn, that the initial SDM can be used.

The "C" distractor is plausible if the applicant remembers at certain control rod positions, the control rod can be continuously moved to the specified limit (00 or 48) and confuses this with moving the control rod to position 22. The second part if the applicant remembers that the initial SDM assumes one control rod is withdrawn and thinks that since an evaluation was already performed with a control withdrawn, that the initial SDM can be used.

The "D" distractor is plausible if the applicant remembers at certain control rod positions, the control rod can be continuously moved to the specified limit (00 or 48) and confuses this with moving the control rod to position 22. The second part is correct.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
Unit 1 TS 3.1.3 Control Rod Operability, first page

K/A:

201002 Reactor Manual Control System

2.1.32 **Ability to explain and apply system limits and precautions.**
(CFR: 41.10 / 43.2 / 45.12) 3.8 4.0

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

C11-RMCS-LP-05401, Reactor Manual Control System (RMCS), EO 300.006.C.02
LT-LP-30005, Technical Specifications, EO 300.006.A.27

Reference(s) used to develop this question:

Modified from Limerick 2008 NRC Written Exam Q#65
34GO-OPS-065-0, Control Rod Movement
TS 3.1.3, Control Rod Operability
TS Bases 3.1.3, Control Rod Operability

77. 205000G2.4.20 001

Unit 2 is at 100% RTP with 2C32-R606B, Narrow Range Reactor water level (RWL) indicator, inop.

During investigation of the 2C32-R606B failure, an equalizing valve is inadvertently opened on 2B21-D004B instrument rack.

During the resultant transient, a steam leak, that can NOT be immediately isolated, occurs in the Turbine Building.

- o Reactor pressure decreases from 1040 psig to 100 psig over a 30 minute time span

The crew is currently making preparations for placing Shutdown Cooling (SDC) in service.

IAW 31EO-EOP-010-2, RC (Non-ATWS), which ONE of the following correctly completes both statements?

IAW EOP Caution 2, 2B21-R623B, Wide Range RWL, __________ be used to determine RWL.

If the steam leak is isolated and SDC can NOT be placed into service, reactor pressure will be controlled <138 psig using __________ .

A. can;
31EO-EOP-107-2, "Alternate RPV Pressure Control"

B. can;
31EO-EOP-108-2, "Alternate RPV Depressurization"

C.✔ can NOT;
31EO-EOP-107-2, "Alternate RPV Pressure Control"

D. can NOT;
31EO-EOP-108-2, "Alternate RPV Depressurization"

Description:

Unit 2 Reference leg D004B feeds indicators R606A and R606C and recorder R623A Fuel Zone through level transmitters C32-N004A, C32-N004C and B21-N085A respectively. When the equalizing valve is opened, all level detectors off the reference leg, on D004B are equalized, which senses low dP resulting in Hi RWL indication for R606A & R606C. This removes all Narrow range instruments from being used for RWL determination.

IAW 31EO-EOP-010-2, Caution #2 is identified as information dealing with rapid depressurization of the RPV. If the RPV is rapidly depressurized, the pressure drop may adversely affect the reliability of the RWL indication (instrumentation), especially those

450°F (saturation temperature for 500 psig) this condition is not expected to occur except during rapid depressurization below 500 psig. Rapid is undefined, however, if RPV pressure is dropped at a rate that the cooldown limit is exceeded (or will be exceeded), the vessel is being depressurized "rapidly" and the wide range instruments can NOT be used.

IAW 31EO-EOP-010-2, If shutdown cooling cannot be established, continued RPV depressurization and cooldown may be accomplished using any combination of the systems listed in Table 1, using 31EO-EOP-107-2.

The "A" distractor is plausible if the applicant does not remember EOP Caution 2 requirements and realizes that D004B has no effect on R623B instrument, therefore R623B can still be used. Also if the applicant confuses the inter relationship between R606A & C instruments which share the same variable leg with R605 instrument and thinks R605 has failed also. The second part is correct.

The "B" distractor is plausible if the applicant does not remember EOP Caution 2 requirements and realizes that D004B has no effect on R623B instrument, therefore R623B can still be used. Also if the applicant confuses the inter relationship between R606A & C instruments which share the same variable leg with R605 instrument and thinks R605 has failed also. The second part is plausible if the applicant confuses the inter relationship between RWL instruments and thinks all RWL instruments are lost, therefore requiring an emergency depress IAW CP-2. CP-2 will direct SRV use first, but with reactor pressure low, will transition to EOP-108 to complete emergency depress.

The "D" distractor is plausible since the first part is correct and the second if the applicant confuses the inter relationship between RWL instruments and thinks all RWL instruments are lost, therefore requiring an emergency depress IAW CP-2. CP-2 will direct SRV use first, but with reactor pressure low, will transition to EOP-108 to complete emergency depress.

The SRO must remember detailed knowledge of the RC EOP - RC/P path concerning which procedure to use to control reactor pressure.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode)

2.4.20 **Knowledge of the operational implications of EOP warnings, cautions, and notes.**
(CFR: 41.10 / 43.5 / 45.13) 3.8 4.3

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-CAU-LP-20305, EOP Cautions, EO 201.065.A.09

Reference(s) used to develop this question:

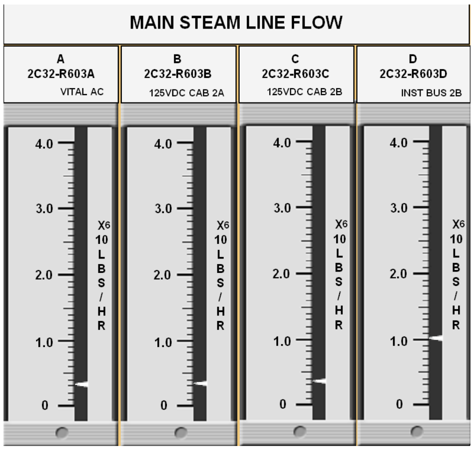
31EO-EOP-010-2, RC (Non-ATWS)
Caution 2

78. 217000G2.4.45 001

A transient occurred on **Unit 2** resulting in RCIC being the ONLY high pressure system injecting. RWL is steady at -154".

Two (2) minutes later, at 11:00, the following alarms and Main Steam Line Flow indications exist:

- o 601-327, Leak Det Ambient Temp High
- o 601-321, Leak Det Diff Temp High
- o 602-302, RCIC Isol Timer Initiated



Which ONE of the following completes the statements concerning RCIC Isolation and bypassing the RCIC Isolation timer?

Based on the above indications ONLY, the EARLIEST listed time that a RCIC Automatic Isolation will have occurred is __________ .

IAW 31EO-EOP-015-2, CP-1, Alternate Level Control, bypassing the RCIC Isolation timer __________ ALLOWED.

A. 11:14;
is

B. 11:14;
is NOT

C. 11:30;
is NOT

D✓ 11:30;
is

Description:

The U2 RCIC system receives steam from the "A" MSL before the flow restrictors. If a break occurs downstream of the MSL flow indicators, the flow indicator would indicate the break. If the break is upstream of the flow restrictor, MSL indication will not see the increased flow through the break. In this picture a break exists off of the "D" MSL into the Reactor Bldg. as indicated by alarms 601-321 & 327. IAW 34SO-E51-001-2 & 34AR-602-302, RCIC Isol Timer Initiated alarm, the RCIC system will receice an automatic isolation signal in 29 minutes.

Defeating HPCI and RCIC high area temperature isolation permits continued use of these systems following loss of area coolers or ventilation, such as might occur during a station blackout. The high temperature isolation provides protection from primary containment leakage. If a high area temperature is due to loss of cooling or ventilation, the isolation is unnecessary. If a leak does exist, the Secondary Containment Control flowchart specifies the appropriate actions and provides a backup for the isolation. If the systems are not needed for core cooling, they are isolated; if they are needed for core cooling, they are kept in service.

IAW 31EO-EOP-015-2, CP-1, since RCIC is not the cause of the above alarms, the isolation signal (timer) can be bypassed, as directed by Table 2A. The SRO must realize that RCIC is needed, not experiencing a leak and Table 2A on CP-1 allows RCIC isolation timer to be bypassed.

The "A" distractor is plausible since 13.5 minutes is the setpoint for U1 HPCI isolation timer and the applicant confusing this time limit with the actual isolation time limit. The second part is correct.

The "B" distractor is plausible since 13.5 minutes is the setpoint for U1 HPCI isolation timer and the applicant confusing this time limit with the actual isolation time limit. The second part is plausible if the applicant does not remember that the isolation can be bypassed or thinks that RCIC is experiencing a steam line break, therefore bypassing the isolation timer, is not allowed.

The "C" distractor is plausible since the first part is correct and the second part if the applicant does not remember that the isolation can be bypassed or thinks that RCIC is experiencing a steam line break, therefore bypassing the isolation timer, is not allowed.

Phil, this was question 2 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

217000 Reactor Core Isolation Cooling System (RCIC)

2.4.45 **Ability to prioritize and interpret the significance of each annunciator or alarm.**
(CFR: 41.10 / 43.5 / 45.3 / 45.12) 4.1 4.3

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-RC-LP-20308, RPV Control (Non-ATWS), EO 201.065.A.16

Reference(s) used to develop this question:

31EO-EOP-015-2, CP-1, Alternate Level Control
31EO-EOP-010-2 RC RPV Control (Non-ATWS)
34SO-E51-001-2, Reactor Core Isolation Cooling (RCIC) System
34AR-602-302, RCIC Isol Timer Initiated

79. 256000G2.1.23 001

Unit 2 was operating at 100% RTP when an event occurs resulting in the following conditions:

- o Reactor power is 6%
- o IAW 31EO-EOP-017-2, CP-3, RWL is being maintained -155" and -185" using HPCI
- o SBLC is injecting with tank level at 45%

Five (5) minutes later, the following conditions exist:

- o 7 ADS valves have been opened due to ALL high pressure injection systems being lost
- o Reactor pressure is 90 psig
- o 2E11-F015A & B, RHR Injection valves, can NOT be opened
- o SBLC tank level is 42%

IAW CP-3, which ONE of the following completes the statements below concerning the PREFERRED injection system for RWL control and the required RWL band?

To restore RWL, the PREFERRED method will be to use ____________ to maintain a level band of __________ .

A. 34SO-N21-007-2, Condensate and Feedwater System;
+3 inches to +50 inches

B.✔ 34SO-N21-007-2, Condensate and Feedwater System;
-155 inches to -185 inches

C. 34SO-E21-001-2, Core Spray System;
+3 inches to +50 inches

D. 34SO-E21-001-2, Core Spray System;
-155 inches to -185 inches

Description:

IAW 31EO-EOP-017-2, CP-3, at step G2, states "SLOWLY raise injection to restore and maintain RWL between -185 in. and previously established level using Table 13 Systems". Condesate is one of the systems in this table and will be first used. Core Spray will be used if RWL can NOT be restored/maintained >-185". CP-3 directs restoration of RWL to the previously established band.

The SRO will have to decide if the SBLC tank level is below the Hot Shutdown Boron level and if it is, CP-3 will then direct a new RWL band of +3" to +50", otherwise the previously established band will be directed.

The "A" distractor is plausible since the first part is correct and the second if the applicant does not remember the HSBW value and thinks it has been injected, thereby allowing a RWL band +3" to +50". Also this would be a correct answer if the SBLC tank level was <35%.

The "C" distractor is plausible if the applicant does not remember that Core Spray will only be used if RWL can NOT be restored/maintained >-185 and thinks that since the RWL band was already being maintained between -155" and -185", that after the depress RWL will be <-185" requiring Core Spray. The second if the applicant does not remember the HSBW value and thinks it has been injected, thereby allowing a RWL band +3" to +50". Also this would be a correct answer if the SBLC tank level was <35%.

The "D" distractor is plausible if the applicant does not remember that Core Spray will only be used if RWL can NOT be restored/maintained >-185 and thinks that since the RWL band was already being maintained between -155" and -185", that after the depress RWL will be <-185" requiring Core Spray. The second part is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

256000 Reactor Condensate System

2.1.23 **Ability to perform specific system and integrated plant procedures during all modes of plant operation.** (CFR: 41.10 / 43.5 / 45.2 / 45.6) 4.3 4.4

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-CP3-LP-20327, Level / Power Control (CP-3), EO 201.091.A.09

Reference(s) used to develop this question:

31EO-EOP-017-2, CP-3
2009 (SUBSET) Biennial LCT Questions Q# Procedure (SRO)-007

80. 259002A2.04 001

Unit 2 is starting up with the Rx. Mode switch in RUN. The following plant conditions exist:

- o Reactor power is 9%
- o 2C32-R601A, 2A RFP M/A Station in "Auto" operating in dP Mode
- o 2N21-R609, Pump dP Controller, in "Auto", set at 30 psid
- o 2N21-F111, FW Startup Level Control Valve, in "Auto", set at 37"

A malfunction occurs in the control circuit causing 2A RFPT speed to increase to 5800 RPM.

2N21-F111 valve position, did NOT change.

All GEMACs indicate reactor water level reaching 58", with only two (2) Rx Hi Level Trip "Amber" lights illuminating.

The Shift Supervisor declares one (1) Hi Level Trip circuit INOP.

Which ONE of the following completes the statement concerning the response of 2N21-F111, and the Reactor startup requirements?

With 2A RFPT speed increasing to 5800 RPM, the response of 2N21-F111 ________ expected.

IAW Tech Specs 3.0.4 and WITHOUT any further risk assessments, the reactor startup can be resumed ________ with the Hi Level Trip circuit still INOP.

A. was NOT;
and reactor power can be increased to 100% RTP

B.✓ was NOT;
but reactor power is limited to less than 24% RTP

C. was;
but reactor power is limited to less than 24% RTP

D. was;
and reactor power can be increased to 100% RTP

Description:

In dP Mode of operation, the FWLC System uses the dP developed across the closed startup level control bypass valve F110 compared to a selected dP on the dP controller. In this mode of operation, the dP Controller assumes the function of the RFPT Master Controller. One RFPT M/A Controller is in AUTO and the Feedwater Control Mode select switch is in dP mode. Input to the RFPT M/A Controller is a dP error signal from the dP Controller. The controller senses dP across the F110 valve and compares it with the controller setpoint. The objective is to maintain a constant dP across the F110 valve by varying RFPT speed which is determined by controller setpoint. A dP above 0 indicates an ability to makeup water to the vessel.

With the SULCV in AUTO, the system operates as follows:

As reactor water level decreases, the F111 valve opens, dP across the F110 valve decreases and a signal is sent to increase RFPT speed. As the F111 valve opens and RFPT speed increases, more water is injected into the vessel causing reactor water level to increase. As reactor water level increases, the F111 valve closes, dP across F110 increases and a signal is sent to decrease RFPT speed.

With 2A RFPT speed increasing to 5800 RPMs, the expected response for the F111 is to throttle closed.

TS 3.0.4 states; When an LCO is not met, entry into a mode or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time,
b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this specification are stated in the individual Specifications, or
c. When an allowance is stated in the individual value, parameter, or other Specification.

IAW TS 3.0.4, entry into Mode 1 can occur but reactor power will be limited to <24% RTP since above this power level continued operation is not permitted. TS 3.0.4b would allow above 24% operation provided all the actions of this condition is achieved. Since the stem states without any further risk assessments, TS 3.3.2.2 will only allow 7 days with one channel inop, therefore continuous operation will not exist above 24% RTP.

The SRO has to apply TS 3.0.4 along with TS 3.3.2.2 to obtain the correct answer.

The "A" distractor is plausible since the first part is correct and the second if the applicant does not properly apply TS 3.0.4 and thinks that continuous operation above 24% can be achieved.

The "C" distractor is plausible if the applicant does not remember how dP Mode works with reactor water level increasing and this distractor would be an expected response if the FWLC System was in Single Element instead of dP Mode. The second part is correct.

The "D" distractor is plausible if the applicant does not remember how dP Mode works with reactor water level increasing and this distractor would be an expected response if the FWLC System was in Single Element instead of dP Mode. The second part if the applicant does not properly apply TS 3.0.4 and thinks that continuous operation above 24% can be achieved.

A. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

259002 Reactor Water Level Control System

A2. Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)

A2.04 RFP runout condition: Plant-Specific 3.0 3.1

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

LT-LP-30005, Technical Specifications, EO 300.006.A.18
C32-RWLC-LP-00202, Reactor Water Level Control, EO 002.026.A.02

Reference(s) used to develop this question:

TS 3.0.4, Limiting Condition For Operation (LCO) Applicability
TS 3.3.2.2, Feedwater and Main Turbine Trip High Water Level Instrumentation
34SO-N21-007-2, Condensate Feedwater System

81. 262001A2.06 001

Unit 2 is in STARTUP making preparations to pull control rods when the Normal supply breaker to 2E 4160V Emergency Bus trips open.

Which ONE of the following completes both of these statements?

The 2A Emergency Diesel Generator __________ expected to automatically start.

IAW with Tech Specs 3.4.1, "Recirculation Loops Operating", the MAXIMUM amount of time allowed to satisfy the applicable LCO action statement for loss of both Recirc pumps is __________ hours.

A. is NOT;
24

B. is NOT;
12

C. is;
24

D.✓ is;
12

Description:

IAW 34AB-R22-002-2, Loss of 4160V Emergency Bus, Section 3.0 states the Diesel Generator for the affected bus has auto started. Loss of power to respective 4160V bus; less than 87.5% nominal bus voltage for greater than five seconds, or less than 77.5% nominal bus voltage for greater than two seconds, will send a signal to start the Diesel Generator. The signal that closes the alternate breaker also starts the D/G.

IAW with Tech Specs 3.4.1, "Recirculation Loops Operating", Condition "B", NO Recirc loops operating, (Required Action B.1) requires the LCO to be met in 12 hours. 24 hours is plausible because this is the time requirement for exceeding LCO 3.4.1, Condition A, which also exists at this time.

The SRO must know TS 3.4.1, Required Action Completion times for when No recirculation loops are in operation.

The "A" distractor isplausible if the applicant does not remember that the same signal that closes the alternate breaker also starts the D/G. The second part is plausible since this condition does currently exist and will have to be met.

The "B" distractor isplausible if the applicant does not remember that the same signal that closes the alternate breaker also starts the D/G. The second part is correct.

The "C" distractor isplausible since the first part is correct and the second part is plausible since this condition does currently exist and will have to be met.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

262001 A.C. Electrical Distribution

A2. Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)

A2.06 Deenergizing a plant bus 2.7 2.9

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

R22-ELECT-LP-02702, 4160 VAC, EO 027.009.A.03 & EO 300.006.A.10

Reference(s) used to develop this question:

Tech Specs 3.4.1, "Recirculation Loops Operating", Condition "A & B",
(Required Action A.1 & B.1)
34AB-R22-002-2, Loss of 4160V Emergency Bus

82. 264000G2.2.12 001

Which ONE of the following describes the surveillance requirements for the 2A Diesel Generator?

IAW TS SR 3.0.2, the specified Frequency for 34SV-R43-001-2, Diesel Generator 2A Monthly Surveillance is MET if the surveillance is performed within __________ the interval specified in TS.

IAW TS SR 3.0.3, if it is discovered that 34SV-R43-001-2 has been MISSED, then entry into the required action statement for the 2A Diesel Generator being inoperable ________ .

A. 1.25 times;
is required IMMEDIATELY

B.✓ 1.25 times;
can be DELAYED

C. 2.0 times;
is required IMMEDIATELY

D. 2.0 times;
can be DELAYED

Description:

SR 3.0.2 states: - The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

34SV-R43-001-2 is performed on a frequency of 31 days. The maximum extension time will be 7.75 days (31 x 0.25 = 7.75 days).

SR 3.0.3 states: - If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, **up to 24 hours** or **up to the limit of the specified Frequency**, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A *risk evaluation shall be performed for any Surveillance delayed > 24 hours* and the risk impact shall be managed.

Without performing a risk evaluation, declaring 2A Diesel Generator inoperable can be delayed for up to 24 hours.

The SRO must remember TS SR 3.0.3 requirements to answer this question.

The "A" distractor is plausible since the first part is correct and the second part is plausible since it could be up to 31 days if a risk evaluation is performed.

The "C" distractor is plausible if the applicant remembers SR 3.0.3 frequencies and confuses it with applying SR 3.0.2 and thinks that the surveillance can be extended the specified frequency (31 days) which would be 2 times. The second part is plausible since it could be up to 31 days if a risk evaluation is performed.

The "D" distractor is plausible if the applicant remembers SR 3.0.3 frequencies and confuses it with applying SR 3.0.2 and thinks that the surveillance can be extended the specified frequency (31 days) which would be 2 times. The second part is correct.

Phil, this was question 3 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

264000 Emergency Generators (Diesel/Jet)

2.2.12 **Knowledge of surveillance procedures.** (CFR: 41.10 / 45.13) 3.7 4.1

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

R43-EDG-LP-02801, Emergency Diesel Generators, EO 300.010.A.18

Reference(s) used to develop this question:

34SV-R43-001-2, Diesel Generator 2A Monthly Surveillance
TS SR 3.0.2
TS SR 3.0.3
2009-302 NRC Exam Q#96

83. 288000A2.01 001

Unit 2 was operating at 100% RTP in Type A Containment with the Unit 2 Refueling Floor Equipment Hatch installed.

An event occurs resulting in the following conditions:

- o RWL is -25 inches (lowest reached) and rising slowly
- o Reactor pressure is 900 psig and lowering slowly
- o Drywell pressure is 5.0 psig and rising slowly

- o Unit 2 Standby Gas Treatment fans will NOT run
- o Unit 2 Reactor Building differential pressure (dP) is 0 inches water

Which ONE of the following completes these statements?

Unit 1 Reactor Building Ventilation Systems __________ have isolated.

IAW 31EO-EOP-014-2, SC/RR, the Shift Supervisor will direct restart of the **Unit 2** Reactor Building Ventilation IAW __________ .

A.✓ should;
34SO-T41-005-2, Reactor Building Ventilation System, AND 31EO-EOP-100-2, Miscellaneous Emergency Overrides

B. should;
34SO-T41-005-2, Reactor Building Ventilation System, ONLY

C. should NOT;
34SO-T41-005-2, Reactor Building Ventilation System, ONLY

D. should NOT;
34SO-T41-005-2, Reactor Building Ventilation System, AND 31EO-EOP-100-2, Miscellaneous Emergency Overrides

Description:

Any one of the following will generate an isolation signal for the **Unit 1 Reactor Zone Ventilation System:**

Unit 1 **or** 2 Reactor Zone exhaust high radiation
Unit 1 **or** 2 Refueling Zone exhaust high radiation
High drywell pressure (Either Unit): 1.85
Low reactor water level (Either Unit): -35 inches

Since U2 Drywell pressure is > 1.85 psig the U1 Reactor Building Ventilation System should have isolated.

Reactor Building Ventilation is normally used to maintain secondary containment temperature and differential pressure within operational limits. If the Reactor Building HVAC is isolated, it is appropriate to restart this system and use it to restore and maintain control of secondary containment temperature and pressure once it has been confirmed that a radiation condition does not exist. 31EO-EOP-014-2, SC/RR EOP flowchart contains an override allowing a high Drywell or low RWL level condition to be overriden, provided NO radiation condition exists. This restart will be IAW 31EO-EOP-100-2 and then transition to 34SO-T41-005-2, to actually restart the Reactor Building Ventilation.

The SRO will be required to know, not only that the Reactor Building Ventilation can be restarted, but that it will require actions IAW EOP supplemental procedures and that these action are directed from an EOP override located on the SC/RR EOP Flowchart.

The "B" distractor is plausible since the first part is correct and the second part if the applicant does not remember the override requirements of SC/RR and thinks the (Normal) 34SO-T41-005-2 procedure is only required. Using 31EO-EOP-100-2 will only be done if necessary and as directed by the SRO. In this case it is necessary.

The "C" distractor is plausible if the applicant thinks that a U2 Drywell high pressure signal will not have any actions on a U1 Reactor Building Ventilation System. Until a design change was implemented, this was actually how a U2 high Drywell signal affected U1 Reactor Building Ventilation. The second part if the applicant does not remember the override requirements of SC/RR and thinks the (Normal) 34SO-T41-005-2 procedure is only required. Using 31EO-EOP-100-2 will only be done if necessary and as directed by the SRO. In this case it is necessary.

The "D" distractor is plausible if the applicant thinks that a U2 Drywell high pressure signal will not have any actions on a U1 Reactor Building Ventilation System. Until a design change was implemented, this was actually how a U2 high Drywell signal affected U1 Reactor Building Ventilation. The second part is correct.

Phil, this was question 4 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

288000 Plant Ventilation Systems

A2. Ability to (a) predict the impacts of the following on the PLANT VENTILATION SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)

A2.01 High drywell pressure: Plant-Specific 3.3   3.4

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-SCRR-LP-20325, Secondary Containment / Radioactivity Release Control, EO 201.081.B.01
T41-SC HVAC-LP-01303, Secondary Containment HVAC Systems, EO 037.012.A.08

Reference(s) used to develop this question:

31EO-EOP-014-2, SC/RR
34SO-T41-005-1, Reactor Building Ventilation System
34SO-T41-005-2, Reactor Building Ventilation System

84. 295001G2.4.41 001

Unit 2 has just entered Mode 4 with RPV coolant temperature 210°F. Both Recirc pumps are secured. Type A Secondary Containment exists and NO work has been started on any reactor systems.

At 1000 a fuse blows causing 2E11-F008, SDC Suction valve, to close.

At 1010 Reactor Coolant temperature is 213°F INCREASING 0.5°F/minute. Maintenance reports the fuse will be replaced in 10 minutes.

At 1020 the fuse is replaced and SDC restored, reactor coolant temperature is 218°F and slowly LOWERING.

Which ONE of the choices below completes the following statements?

IAW NMP-EP-110, Emergency Classification Determination, the HIGHEST Emergency Classification required to be declared due to this event is __________ .

IAW NMP-EP-111, Emergency Notifications, State and Local Agencies must be notified within __________ of the emergency declaration.

Reference Provided

A. an Alert;
1 hour

B. an Alert;
15 minutes

C. a Notification of Unusual Event;
1 hour

D.✓ a Notification of Unusual Event;
15 minutes

Description:

IAW NMP-EP-110, Emergency Classification Determination, at 1010, conditions exist for an Unusual Event (CU4.1) to be declared. IAW NMP-EP-111, Emergency Notifications, step 6.1.1 states "Initial notifications of applicable State and Local Agencies shall be accomplished as soon as practicable and with 15 minutes of the declaration of an emergency......"

The SRO will be required to use NMP-EP-110 and properly classify the event.

The "A" distractor is plausible if the applicant overlooks the containment integrity requirement and thinks the Alert can be declared right now. The second part if the applicant confuses the required time to notify State and Local Agencies with the NRC and would be correct if notifying the NRC.

The "B" distractor is plausible if the applicant overlooks the containment integrity requirement and thinks the Alert can be declared right now. The second part is correct.

The "C" distractor is plausible since the first part is correct and the second part if the applicant confuses the required time to notify State and Local Agencies with the NRC and would be correct if notifying the NRC.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NMP-EP-110-GL02, "Figure 3 - Cold Initiating Condition Matrix, System Columns with Notes

K/A:

295001 Partial or Complete Loss of Forced Core Flow Circulation

2.4.41 **Knowledge of the emergency action level thresholds and classifications.**
(CFR: 41.10 / 43.5 / 45.11) 2.9 4.6

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EP-LP-20101, Initial/Terminating Activities, 001.017.A

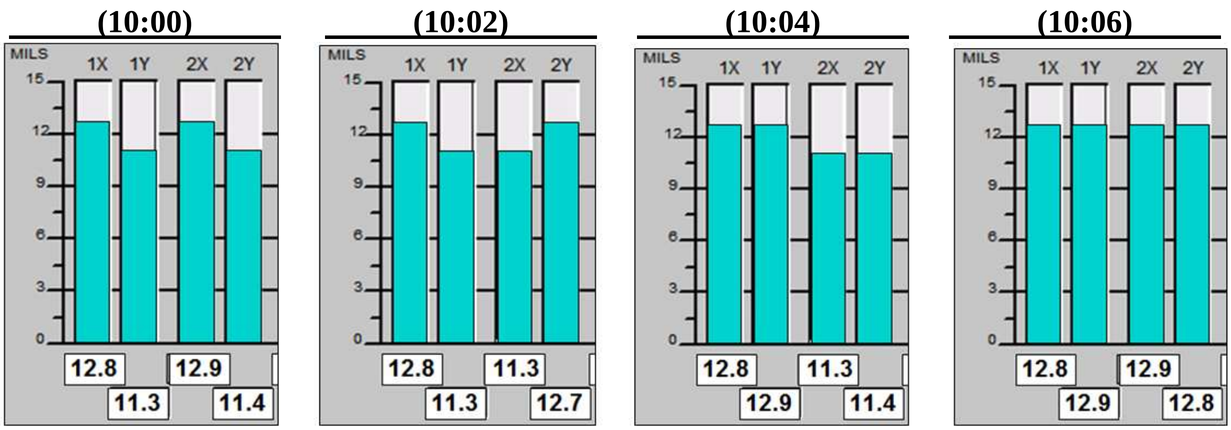
Reference(s) used to develop this question:

NMP-EP-110, Emergency Classification Determination
NMP-EP-110-GL02, "Figure 3 - Cold Initiating Condition Matrix
NMP-EP-111, Emergency Notifications
2009-302 NRC Exam Q#100

85. 295005G2.1.23 001

Unit 2 is operating at 400 GMWe. The following DEHC Mark VI vibration displays were taken for Main Turbine bearings #1 and #2 at the following times.

Time:



Subsequently, the Unit 2 Main Turbine automatically trips.

A local Systems Operator reports that part of a turbine blade has been expelled from the Unit 2 Main Turbine and caused visible damage to the Unit 2 Reactor Building wall.

Which ONE of the following completes the statements below?

IAW 34SO-N30-001-2, Main Turbine Operation, the FIRST Unit 2 Main Turbine High Vibration trip signal was received __________ 10:03.

Based strictly on the above conditions, actions __________ required to be taken IAW NMP-EP-110, Emergency Classification Determination and Initial Actions.

A. prior to;
are NOT

B. after;
are NOT

C. prior to;
are

D.✓ after;
are

Description:

Vibration is monitored by proximeter probes on each bearing. Four probes are mounted on each bearing one about 45 degrees from the horizontal axis (X) and one about 45 degrees from the vertical axis (Y) with about 90 degrees of separation. The U2 Main Turbine will trip on vibration (2 of 2 probes for one or more bearings) of 12 mils. The turbine automatically tripped ***after*** 10:03 at 10:04. IAW NMP-EP-110, Emergency Classification Determination and Initial Actions, an emergency classification does exist and actions in this procedure are required to be performed.

The SRO will be required from memory to remember NMP-EP-110 and realize this event is required to be classified.

The "A" distractor is plausible if the applicant determines that the X probe and the Y probe is above 12 mils in the 10:02 picture and thinks that the turbine trip value has been reached. This will allow the ***prior to*** distractor to be selected. The second part is plausible if the applicant does not recognize, with part of the turbine expelling and damaging the U2 Reactor Building wall, that an emergency classification does exist.

The "B" distractor is plausible since the first part is correct. The second part is plausible if the applicant does not recognize, with part of the turbine expelling and damaging the U2 Reactor Building wall, that an emergency classification does exist.

The "C" distractor is plausible if the applicant determines that the X probe and the Y probe is above 12 mils in the 10:02 picture and thinks that the turbine trip value has been reached. This will allow the ***prior to*** distractor to be selected. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295005 Main Turbine Generator Trip

2.1.23 **Ability to perform specific system and integrated plant procedures during all modes of plant operation.** (CFR: 41.10 / 43.5 / 45.2 / 45.6) 4.3 4.4

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

N30-MTA-LP-01701, Main Turbine, EO 017.002.A.07
EP-LP-20101, Initial/Terminating Activities, 001.017.A

Reference(s) used to develop this question:

34SO-N30-001-2, Main Turbine Operation
NMP-EP-110, Emergency Classification Determination and Initial Actions
2009 (Subset) Biennial LCT Questions Q# ADMIN/TS 005

86. 295009G2.4.6 001

An ATWS is in progress on **Unit 2** with the following:

- o Reactor power is 4%
- o SLC is injecting (current tank level, 30%)
- o Reactor pressure is 840 psig
- o Suppression Pool level is 165 inches
- o Suppression Pool temperature is 122°F
- o Reactor water level is -186” and slowly lowering
- o All available Table 13 systems are injecting

Which ONE of the following is the NEXT REQUIRED EOP action based on these conditions?

A. Place all available loops of RHR in Torus Cooling IAW 34SO-E11-010-2.

B.✓ Terminate and Prevent injection IAW 31EO-EOP-113-2.

C. Lower reactor pressure and inject with Condensate Booster pumps IAW 34GO-OPS-013-2.

D. Exit the EOPs and enter Severe Accident Guidelines (SAGs).

Description:

IAW CP-3, ATSW Level Control, Terminate & Prevent is the required action which will mitigate this transient since RWL can NOT be maintained above -185" and reactor pressure is higher than the shutoff head of the RHR pumps.

The SRO will have to remember CP-3 EOP flowchart steps and realize RWL can NOT be maintained >185" and an Emergency Depress is required. Before an Emergency Depress can be performed a Terminate & Prevent execution must be performed first.

The "A" distractor is plausible since this is a required action IAW 31EO-EOP-012-2, PC Flowchart, since Torus temp is 152°F. This step can not be performed due to RWL -186" and the RHR pumps will be required for adequate core cooling once the reactor is emergency depressed. IAW DI-OPS-59-0896 step 5.12.3.3 which states: "All available low pressure systems (RHR, Core Spray, and Condensate) should be aligned for injection and operating by the time RWL reaches TAF. Torus cooling, Torus Spray, and/or Drywell spray may be utilized while waiting for TAF. However, all systems should be aligned and operating prior to opening the SRVs. Unless a PCC step specifically directs a containment control action irrespective of adequate core cooling, no RHR should be diverted for containment control, when adequate core cooling is not assured." In this case adequate core cooling is in jeopardy.

The "C" distractor is plausible since this is a correct action if all control rods are fully inserted and RWL was approximately 0". Without injecting the SBLC Cold Shutdown Boron weight into the vessel, the RCA flowchart will not allow a pressure reduction for any reason, other than an Emergency Depress.

The "D" distractor is plausible since RWL is below -185" and would be correct if RWL can NOT be restored >-185" only AFTER the Emergency Depress. Given these stem conditions, while on CP-3, entry into the SAGs will only be made after an Emergency Depress has been performed.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295009 Low Reactor Water Level

2.4.6 **Knowledge of EOP mitigation strategies.** (CFR: 41.10 / 43.5 / 45.13) 3.7 4.7

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-CP3-LP-20327, Level / Power Control (CP-3), EO 201.090.A.15

Reference(s) used to develop this question:

Grand Gulf 2010 NRC Exam Q#80
31EO-EOP-012-2, PC
31EO-EOP-011-2, RCA
DI-OPS-59-0896, Operations Management Expectations

87. 295018AA2.03 001

Unit 2 is starting up at 2% RTP, with the CRD and RWCU Systems maintaining RWL.

- o RWCU dump flow is 50 gpm.

Subsequently:

- o RWCU dump flow is raised to 75 gpm
- o 2P41-F316A and 2P41-F316D, Turbine Bldg. PSW Isolation valves, inadvertently close.

RBCCW suction temperature is 102°F and increasing and the reactor is manually scrammed.

Which ONE of the following identifies the cause of the RBCCW System response AND the reporting requirements IAW REG-0025, One, Four, and Eight Hour Reporting Requirements of 10 CFR 50.72?

A.✔ Loss of cooling medium to the RBCCW Hx;
4 Hour

B. Loss of cooling medium to the RBCCW Hx;
8 Hour

C. Excessive RWCU dump flow ONLY;
4 Hour

D. Excessive RWCU dump flow ONLY;
8 Hour

Description:

With 2P41-F316A-D valves closing, all cooling water is isolated from the RBCCW Hx. Increasing RWCU Dump flow will cause RBCCW temp to increase, just not to the extent that isolating all flow to the RBCCW Hx. IAW REG-0025, since the reactor is critical, the reactor scram will be a four hour report.

The SRO must remember the procedure requirements for Reporting Requirement and determine which notification must be made.

The "B" distractor is plausible since the first part is correct and the second part is plausible since this would be a correct choice if the reactor was not critical.

The "C" distractor is plausible if the applicant remembers that increasing RWCU Dump flow will cause RBCCW temp to increase, just not to the extent that isolating all flow to the Hx. The second part is correct.

The "D" distractor is plausible if the applicant remembers that increasing RWCU Dump flow will cause RBCCW temp to increase, just not to the extent that isolating all flow to the Hx. The second part is plausible since this would be a correct choice if the reactor was not critical.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295018 Partial or Complete Loss of Component Cooling Water

AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : (CFR: 41.10 / 43.5 / 45.13)

AA2.03 Cause for partial or complete loss 3.2 3.5

SRO only because of link to 10CFR55.43(b)(1): Conditions and limitations in the facility license. (Reporting Requirements)

LESSON PLAN/OBJECTIVE:

LT-LP-30004, Administrative Procedures, 300.004.B.01 & 300.004.B.2

Reference(s) used to develop this question:

34AB-P42-001-1, Loss Reactor Building Closed Cooling Water
REG-0025, One, Four, and Eight Hour Reporting Requirements of 10 CFR 50.72

88. 295020G2.4.2 001

Unit 1 was operating at 100% RTP when the MSIVs inadvertently closed. The following conditions exist after the closure AND PRIOR to entering any EOP flowcharts:

o IRMs	Fully inserted
o Reactor power	40/125 IRM Range 4
o Control rods	50 rods NOT Full In
o Reactor pressure	controlled by LLS
o RWL	9" and steady (lowest level reached 0.0")
o NO Boron has been injected	

IAW 31EO-EOP-011-1, RCA RPV Control (ATWS), which ONE of the following completes the statement concerning reactor pressure entry conditions and the procedure for inserting control rods?

The Entry condition for reactor pressure __________ EXCEEDED.

The Shift Supervisor is required to enter __________ IAW RCA flowchart.

A.✔ was;
34AB-C11-005-1, Control Rod Insertion Methods

B. was NOT;
34AB-C11-005-1, Control Rod Insertion Methods

C. was NOT;
31EO-EOP-103-1, Control Rod Insertion Methods

D. was;
31EO-EOP-103-1, Control Rod Insertion Methods

Description:

IAW 31EO-EOP-011-1, RCA RPV Control (ATWS), the entry condition for reactor pressure is 1074 psig, which was exceeded when reactor pressure peaked to at least 1120 psig. Reactor power will be required to be controlled by the 34AB-C71-001-1 and then 34AB-C11-005-1, since reactor power is below the override requirement for branching off of the RCA/Q path and entering 34AB-C71-001-1. This override is for when reactor power is below range 6 on the IRMs and Boron has not been injected, then you leave the RCA/Q path and enter 34AB-C71-001-1. Reactor power is on Range 4.

The SRO must remember the RCA/Q path override requirement of being less than Range 6 on IRMs and NO Boron injected, before branching off to another procedure. This requires specific detailed knowledge of the RCA/Q path to ensure requirements are met, prior to exiting an EOP path.

The "B" distractor is plausible if the applicant does not know the EOP entry condition for reactor pressure and thinks the entry condition was not reached or does not remember the signals to arm LLS (1074 psig reactor pressure & 85 psig tailpipe pressure). The second part is correct.

The "C" distractor is plausible if the applicant does not know the EOP entry condition for reactor pressure and thinks the entry condition was not reached or does not remember the signals to arm LLS (1074 psig reactor pressure & 85 psig tailpipe pressure). The second part is plausible if the applicant does not remember nor understand the override requirements for transitioning and could be correct if reactor power was indicated above range 6.

The "D" distractor is plausible since the first part is correct. The second part is plausible if the applicant does not remember nor understand the override requirements for transitioning and could be correct if reactor power was indicated above range 6.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295020 Inadvertent Containment Isolation

2.4.2 **Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.** (CFR: 41.7 / 45.7 / 45.8) 4.5 4.6

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-RCA-LP-20328, RPV Control - ATWS (RCA), EO 201.071.A.03

Reference(s) used to develop this question:

31EO-EOP-011-1, RCA RPV Control (ATWS)
34AB-C71-001-1, Scram Procedure
2009-301 NRC Exam Q#83

89. 295021G2.1.23 001

Unit 2 is in Mode 4, five (5) days after shutdown. The following plant conditions exist:

- 2A RHR Pump is operating in Shutdown Cooling (SDC)
- Reactor Level is 47” and stable
- Reactor Coolant Temperature is 130°F and stable
- Both Reactor Recirculation pumps are off

Subsequently, a loss of 2A RPS Bus occurs. Maintenance estimates that 2A RPS Bus can be recovered in four hours.

Which ONE of the following completes the statements concerning the SDC Suction valves and the reactor coolant temperature and pressure monitoring requirements?

The loss of 2A RPS Bus resulted in __________ closing.

IAW 34AB-E11-001-2, Loss Of Shutdown Cooling, reactor coolant temperature and pressure are required to be monitored once every __________ .

A. ONLY one SDC Suction Valve
hour

B.✓ ONLY one SDC Suction Valve
15 minutes

C. BOTH SDC Suction Valves
15 minutes

D. BOTH SDC Suction Valves
hour

Description:

IAW 34AB-C71-001-2, Loss Of RPS, 2E11-F009, SDC Suction valve, will close on a loss of 2A RPS bus. 2E11-F008, SDC Suction valve, will close on a loss of 2B RPS bus. IAW 34AB-E11-001-2, Loss Of Shutdown Cooling, step 4.7 requires an increase in monitoring of reactor coolant temperature and pressure to at least 15 minute intervals.

The SRO must remember detailed knowledge in the body of an Abnormal procedure, plus remember TS Completion times and decide which time is required for monitoring reactor coolant temperatures.

The "A" distractor is plausible since the first part is correct and the second part if the applicant confuses the 34AB-E11-001-2 requirement with 34GO-OPS-015-2, Maintaining Cold Shutdown Or Refuel Condition, requirement of once per hour, if SDC was still in service. This is also the temperature requirement for TS 3.4.8, Condition B.2 Completion time with no RHR SDC or Recirc pump in operation.

The "C" distractor is plausible if the applicant confuses RHR SDC suction valve logic and thinks that since both SDC suction valves are required for either loop of SDC to be in service, that both valves isolate. Also if the applicant remembers there are other systems (SBGT) which will both start if only one RPS bus (U1) is lost. The second part is correct.

The "D" distractor is plausible if the applicant confuses RHR SDC suction valve logic and thinks that since both SDC suction valves are required for either loop of SDC to be in service, that both valves isolate. Also if the applicant remembers there are other systems (SBGT) which will both start if only one RPS bus (U1) is lost. The second part if the applicant confuses the 34AB-E11-001-2 requirement with 34GO-OPS-015-2, Maintaining Cold Shutdown Or Refuel Condition, requirement of once per hour, if SDC was still in service. This is also the temperature requirement for TS 3.4.8, Condition B.2 Completion time with no RHR SDC or Recirc pump in operation.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295021 Loss of Shutdown Cooling

2.1.23 **Ability to perform specific system and integrated plant procedures during all modes of plant operation.** (CFR: 41.10 / 43.5 / 45.2 / 45.6) 4.3 4.4

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 200.049.A.01

Reference(s) used to develop this question:

Modified from Perry 2007-2 NRC Exam SR Q#17 (#92)
34AB-C71-002-2, Loss Of RPS Bus
34AB-E11-001-2, Loss Of Shutdown Cooling
34GO-OPS-015-2, Maintaining Cold Shutdown Or Refuel Condition

90. 295026EA2.01 001

Unit 1 scrammed on low reactor water level due to a loss of the Condensate system.

Current plant conditions are:

- o Control rods .... Fully inserted
- o Reactor Water Level .... -135 inches and stable
- o Reactor Pressure .... 580 psig, being controlled manually by SRVs
- o Torus Level .... 120 inches and slowly increasing
- o Torus Temperature .... 180°F and slowly increasing

Which ONE of the following choices answers both of these statements IAW 31EO-EOP-012-1, Primary Containment Control EOP Flowchart?

The plant is in the __________ region of the Heat Capacity Temperature Limit (HCTL).

If the plant is currently in, or subsequently enters, the UNSAFE region, then the operator __________ allowed to reduce pressure and return to the SAFE region to avoid an unnecessary Emergency Depressurization.

Reference provided

A. Safe;
is

B.✓ Safe;
is NOT

C. Unsafe;
is

D. Unsafe;
is NOT

Description:

The EOPs require maintaining in the Safe Area of the HCTL graph, but if the unsafe area is entered the reactor will be emergency depressurized. The HCTL graph requires plotting of 3 factors (Rx pressure, Torus level and Torus temperature). The plot shows the plant in the SAFE region.

Pressure reduction is allowed to prevent from entering the UNSAFE region, but once there the plant is not allowed to restore to the SAFE region except by Emergency Depressurization. This is a confusion point with SRV Tail Pipe Level limit which allows reducing pressure to exit the UNSAFE into the SAFE region without performing an emergency depressurization.

The SRO must know detailed knowledge in an EOP override and decide if the plant is exceeding or will exceed the HCTL EOP graph. Once the SRO decides the HCTL will or is exceeded, the SRO must know if reactor pressure can be reduced just enough to exit the unsafe region (SRV Tail Pipe Limit) or know that reactor pressure must be controlled via an emergency depress (HCTL).

The "A" distractor is plausible since the first part is correct and the second if the applicant confuses the HCTL with the SRV Tail Pipe Level, which does allow a pressure reduction and returning to the SAFE region to avoid an unnecessary Emergency Depressurization.

The "C" distractor is plausible if the applicant plots the 3 points at the wrong location and the second if the applicant confuses the HCTL with the SRV Tail Pipe Level, which does allow a pressure reduction and returning to the SAFE region to avoid an unnecessary Emergency Depressurization.

The "D" distractor is plausible if the applicant plots the 3 points at the wrong location and the second part is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
Unit 1 HCTL Limit Curve (Graph 2)

K/A:

295026 Suppression Pool High Water Temperature

EA2. Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: (CFR: 41.10 / 43.5 / 45.13)

EA2.01 Suppression pool water temperature 4.1* 4.2*

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-RC-LP-20308, RPV Control (NON-ATWS), EO 201.074.A12

Reference(s) used to develop this question:

31EO-EOP-012-1, "Primary Containment Control" EOP Flowchart (PCC)
U1 EOP Graph 2, "Heat Capacity Temperature Limit"
Modified from HLT 4 NRC Exam Q# 89 2009-301

91. 295031G2.2.25 001

Which ONE of the following completes the statement concerning the TS Bases for the RPV water level low (Level 3) function?

IAW B3.3.1.1, RPS Instrumentation, the RPV water level low (Level 3) trip function ensures that __________ ; and,

IAW B3.3.5.1, ECCS Instrumentation, the RPV water level low (Level 3) function __________ used to prevent a spurious initiation of ADS due to spurious Level 1 signals.

A.✓ the heat energy generated in the fuel is substantially reduced before the fuel is uncovered;

is ALSO

B. the heat energy generated in the fuel is substantially reduced before the fuel is uncovered;

is NOT

C. enough time is available for the ECCS to start and reflood the reactor core before the Peak Cladding Temperature exceeds 2200°F;

is ALSO

D. enough time is available for the ECCS to start and reflood the reactor core before the Peak Cladding Temperature exceeds 2200°F;

is NOT

Description:

IAW TS Bases B3.3.1.1, Low RPV water level indicates the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, a reactor scram is initiated at Level 3 to substantially reduce the heat generated in the fuel from fission. The Reactor Vessel Water Level - Low, Level 3 Function is assumed in the analysis of the recirculation line break. The reactor scram reduces the amount of energy required to be absorbed and, along with the actions of the Emergency Core Cooling Systems (ECCS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

IAW B3.3.5.1, The Reactor Vessel Water Level - Low, Level 3 Function is used by the ADS only as a confirmatory low water level signal. ADS receives one of the signals necessary for initiation from Reactor Vessel Water Level - Low Low Low, Level 1 signals. In order to prevent spurious initiation of the ADS due to spurious Level 1 signals, a Level 3 signal must also be received before ADS initiation commences.

The SRO must have detailed bases knowledge of the RPV water level low (Level 3) function to answer this question. This knowledge exceeds the RO knowledge of bases requirement.

The "B" distractor is plausible since the first part is correct and the second part if the applicant does not remember the TS Bases for the low level signal of Level 3 being part of the ADS initiation logic.

The "C" distractor is plausible since this is the bases for Level 1 initiation. The second part is correct.

The "D" distractor is plausible since this is the bases for Level 1 initiation. The second part if the applicant does not remember the TS Bases for the low level signal of Level 3 being part of the ADS initiation logic.

Phil, this was question 7 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295031 Reactor Low Water Level

2.2.25 **Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.** (CFR: 41.5 / 41.7 / 43.2) 3.2 4.2

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

LT-LP-30005, Technical Specifications, EO 300.006.A.27

Reference(s) used to develop this question:

B3.3.1.1, RPS Instrumentation
B3.3.5.1, ECCS Instrumentation
Perry 2005 NRC Exam Q#81
DI-OPS-77-1216, General Operator Information

92. 295034EA2.02 001

Unit 2 is operating at 100% RTP when the following alarms are received:
(These are the ONLY alarms received)

601-420, Rx Bldg Pot Contam Area Vent Radn Hi-Hi
601-426, Rx Bldg Pot Contam Area Radiation High
601-306, Rx Bldg Radiation High

34AB-T22-003-2, Secondary Containment Control, is entered.

Which ONE of the following completes the statement below?

The cause for these radiation alarms is due to a __________ in Secondary Containment and __________ .

A.✔ RWCU line leak;

34AB-T22-003-2 is performed CONCURRENTLY with 31EO-EOP-014-2, SC/RR

B. RWCU line leak;

34AB-T22-003-2 is exited and 31EO-EOP-014-2, SC/RR is entered

C. dropped irradiated fuel bundle;

34AB-T22-003-2 is performed CONCURRENTLY with 31EO-EOP-014-2, SC/RR

D. dropped irradiated fuel bundle;

34AB-T22-003-2 is exited and 31EO-EOP-014-2, SC/RR is entered

Description:

The afore mentioned alarms are associated with higher than normal radiation conditions in the Rx Bldg. The cause of the alarm is the RWCU leak in the RWCU Heat Exchanger room since the atmosphere here will be drawn into the Rx Bldg Exhaust system and then processed out the Rx Bldg Vent Plenum (Stack). Rx Bldg Stack receives building process flow from the Rx Bldg RF Floor, Control Bldg. Turbine Bldg. and Radwaste Building. The SC/RR procedure will be entered performed concurrently with 34AB-T22-003-2.

The SRO must remember that there are times when an Abnormal procedure can be exited and the EOP flowcharts will provide the necessary guidance. In this case, the SRO must realize that the Abnormal procedure can NOT be exited and that both procedures will be required to mitigate the event.

The "B" distractor is plausible since the first part is correct and the second if the applicant thinks that since an EOP is entered that it will provide the necessary actions to mitigate the event, therefore the abnormal procedure can be exited. Also there are times when an Abnormal procedure will be exited and the EOP flowcharts will provide the necessary guidance.

The "C" distractor is plausible if the applicant confuses the 601-420 & 601-426 alarms with the 601-229, Rx Bldg Vent Exhaust Radiation Hi-Hi, alarm. This alarm would be indicative of radiation conditions coming from other areas not only the Rx Bldg. The second part is correct.

The "D" distractor is plausible if the applicant confuses the 601-420 & 601-426 alarms with the 601-229, Rx Bldg Vent Exhaust Radiation Hi-Hi, alarm. This alarm would be indicative of radiation conditions coming from other areas not only the Rx Bldg. The second if the applicant thinks that since an EOP is entered that it will provide the necessary actions to mitigate the event, therefore the abnormal procedure can be exited. Also there are times when an Abnormal procedure will be exited and the EOP flowcharts will provide the necessary guidance.

Phil, this was question 8 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295034 Secondary Containment Ventilation High Radiation

EA2. Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION : (CFR: 41.10 / 43.5 / 45.13)

EA2.02 Cause of high radiation levels 3.7 4.2*

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

T41-SC HVAC-LP-01303, Secondary Containment HVAC Systems, EO 200.031.A.01

Reference(s) used to develop this question:

34AB-T22-003-2, Secondary Containment Control
31EO-EOP-014-2, SC/RR
Brunswick 2010 December NRC Exam Q#91

93. 295038EA2.03 001

Unit 1 is operating at 100% power when the following events occur:

10:00 RCIC Steam line break occurs in the Rx. Bldg. with 1E51-F007 & F008, Isolation Valves, failing to close
10:01 Manual scram inserted and very few rods insert into the core
10:05 Attempts to start SLC pumps are unsuccessful
10:10 Drywell Radiation Monitors indicate 1,000 R/hr
10:15 Reactor Water Level is -165" and steady
10:20 Drywell pressure is 2.6 psig and slowly rising
10:25 Projected Dose at the Site Boundary is 1050 mrem TEDE and 3000 mrem CDE (thyroid)

Which ONE of the following is the EARLIEST listed time that plant conditions exist for a GENERAL Emergency to be declared, without basing the declaration on ED judgment?

Reference Provided

A. 10:10

B.✓ 10:15

C. 10:20

D. 10:25

Description:

For these conditions a General emergency is first declared when 2 fission product barriers are lost and the loss/potential exists for the third barrier. The first barrier (Loss of Containment) is lost when the RCIC Steam line break occurs with 1E51-F007 & F008, isolaion valves, failing to close. The second barrier (Loss of RCS) is lost when the DW rad monitors read greater than 138 R/hr. At 1015, RWL is less than TAF (-155") which is the potential loss of the third barrier (Fuel Clad) and therefore constitutes a GE. At 10:20, DW pressure is > 1.85 psig which is another loss of RCS barrier and at 10:25 offsite dose rates exceed General Emergency levels.

The SRO must realize what constitues a General Emergency and then advance through the different events and decide which barriers are lost and at what time they occur. EALs are above the RO knowledge level.

The "A" distractor is plausible since this is a loss of the (Fuel Clad Barrier) and if the applicant does not remember what constitutes a General Emergency, may think that since 2 barriers are now lost that a General exists at 10:10.

The "C" distractor is plausible since this is a loss of the (RCS Barrier) and if the applicant does not remember what constitutes a General Emergency, may think that now 3 barriers are lost and a General exists at 10:20.

The "D" distractor is plausible since this is the conditions that constitutes a General Emergency at 10:25, just not the earliest.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NMP-EP-110-GL02, "Figure 1 - Fission Product Barrier Matrix

K/A:

295038 High Off-Site Release Rate

EA2. Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE : (CFR: 41.10 / 43.5 / 45.13)

EA2.03 †Radiation levels 3.5* 4.3*

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EP-LP-20101, Initial/Terminating Activities, TO 001.017.A

Reference(s) used to develop this question:

NMP-EP-110-GL02, "Figure 1 - Fission Product Barrier Matrix

94. G2.1.44 001

Unit 1 is in REFUEL with core reload in progress.

The Control Room informs the Refueling SRO that the individual on the headset with them has to be relieved.

IAW 34FH-OPS-001-0, Fuel Movement Operation, which ONE of the choices below completes the following statements?

The individual who relieves the person in the Main Control Room __________ REQUIRED to have a NRC License.

The fuel movement prerequisites must be completed __________ .

A. is;
ONLY once during the refueling outage (prior to the initial fuel movement)

B. is NOT;
ONLY once during the refueling outage (prior to the initial fuel movement)

C.✔ is;
at EACH shift change (12 hour shift) during fuel movement

D. is NOT;
at EACH shift change (12 hour shift) during fuel movement

Description:

IAW 34FH-OPS-001-0, Limitation 5.2.15.4, which states, "The SRO must ensure that the control room is aware of conditions on the refueling floor. Constant communications will be maintained with a *licensed individual* in the control room when core alterations are in progress."

Prerequisite 6.3, states, Prerequisites shall be performed PRIOR to moving any fuel in or above the RPV or movement of irradiated fuel in the Secondary Containment AND at each shift change (12 hour shift).

The SRO mus know detailed knowledge of 34FH-OPS-001-0 prerequisite requirements and 34SV-F15-001-1 to obtain the correct answer to this question.

The "A" distractor is plausible since the first part is correct and the second part is plausible if the applicant does not remember the requirement or confuses this with 34SV-F15-001-1 requirement for performing the Hoist Limit Checks, which requires only once (prior to) during the refueling outage.

The "B" distractor is plausible if the applicant does not remember the limitation setforth in 34FH-OPS-001-0. Earlier at Hatch the individual did not have to be licensed. The second part is plausible if the applicant does not remember the requirement or confuses this with 34SV-F15-001-1 requirement for performing the Hoist Limit Checks, which requires only once (prior to) during the refueling outage.

The "D" distractor is plausible if the applicant does not remember the limitation setforth in 34FH-OPS-001-0. Earlier at Hatch the individual did not have to be licensed. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.1.44 **Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.** (CFR: 41.10 / 43.7 / 45.12) 3.9 3.8

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

F15-RF-LP-04502, Refueling, EO 300.048.A.01 & EO 045.018.A.03

Reference(s) used to develop this question:

34FH-OPS-001-0, Fuel Movement Operation
34SV-F15-001-1, Refueling Interlocks And Hoist Limit Checks

95. G2.2.23 001

With **Unit 2** at 100%, considering the following sequence of events:

10:00	12/18/10	2A SLC Pump declared INOP
14:00	12/20/10	2B SLC Pump declared INOP
18:00	12/20/10	2A SLC Pump declared OPERABLE

IAW Tech Spec 1.3, Completion Times and LCO 3.1.7, Standby Liquid Control (SLC) System, which ONE of the following is the LATEST time the Reactor would be REQUIRED to be in MODE 3 ?

Reference Provided

A. 10:00 12/25/10

B. 22:00 12/25/10

C.✔ 22:00 12/26/10

D. 10:00 12/28/10

Description:

IAW TS 3.1.7, Condition B has a completion time of 7 days. When the second pump is declared inop, Condition C is entered with a completion time of 8 hours. IAW TS Completion Times definition: "Once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. However, when a subsequent division, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

a. Must exist concurrent with the first inoperability; and
b. Must remain inoperable or not within limits after the first inoperability is resolved.

In this case, conditions exist to apply a 24 hour extension to the first time in the LCO, in otherwords the latest time is 22:00 on 12/26/10.

The SRO must use knowledge of Tech Spec Completion Time extensions and the criteria that first must be met for an extension to be allowed. This is also beyond the RO knowledge level of Tech Specs.

The "A" distractor is plausible if the applicant does not applyr the completion time extension and considers only Condition B completion time (7 days).

The "B" distractor is plausible if the applicant does not apply the completion time extension correctly and considers only Condition C completion time (8 hours) will be added to the original 7 days.

The "D" distractor is plausible if the applicant does not consider the completion time extension and considers once the first pump is repaired that the 10 days completion time of Condition B is used.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
LCO 3.1.7, Standby Liquid Control (SLC) System ONLY NO BASES OR SRs

K/A:

2.2.23 **Ability to track Technical Specification limiting conditions for operations.**
(CFR: 41.10 / 43.2 / 45.13) 3.1 4.6

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

C41-SBLC-LP-01101, Standby Liquid Control, EO 300.006.A.26

Reference(s) used to develop this question:

Unit 2 TS 3.1.7 Standby Liquid Control (SLC) System & 1.3 Completion Times
Brunswick 2010 December NRC Exam Q#96

96. G2.2.5 001

A proposed plant modification must ALWAYS have prior approval from the NRC if it involves any __________ .

A. system that requires a 50.59 screening

B. change to any system included in Tech Specs

C. change to the Technical Requirements Manual (TRM)

D.✔ design basis limit for Primary Containment being altered

Description:

IAW NMP-AD-010, 10CFR 50.59 Screenings and Evaluations, section 6.1.1 states "(c)(2) A licensee shall obtain a license amendment pursuant to 50.90 prior to implementing a proposed **change**, test, or experiment if the **change**, test, or experiment would: (vii) result in a *design basis limit for a fission product barrier* as described in the FSAR (as updated) being exceeded or altered."

The SRO must have detailed knowledge of NMP-AD-010 to determine which one of the conditions requires prior NRC approval.

The "A" distractor is plausible since this type of evaluation will determine if NRC approval is required. The "B" distractor is plausible since this must have a 50.59 evaluation but not necessarily prior NRC approval. The "C" distractor is plausible since this must have a 50.59 evaluation but not necessarily prior NRC approval.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

2.2.5 **Knowledge of the process for making design or operating changes to the facility.**
(CFR: 41.10 / 43.3 / 45.13) 2.2 3.2

SRO only because of link to 10CFR55.43(b)(3): Facility licensee procedures required to obtain authority for design and operating changes in the facility.

LESSON PLAN/OBJECTIVE:

LT-LP-30004, Administrative Procedures, EO 300.017.A.03

Reference(s) used to develop this question:

2009 Perry NRC Exam Q#SRO 21
NMP-AD-010, 10CFR 50.59 Screenings and Evaluations

97. G2.3.12S 001

Unit 1 is in Hot Shutdown to inspect the Drywell for leakage. Upon entry it is noted that the INNER airlock door seal is no longer intact.

IAW Tech Spec 3.6.1.2, "Primary Containment Airlock," which ONE of the following completes both statements concerning the OUTER Airlock door?

The OUTER Airlock door must be verified closed no later than __________ from the discovery of the INNER door seal failure.

While Maintenance is actively repairing the INNER Airlock door, the OUTER Airlock door __________ .

A. 24 hours;
MUST be immediately closed after each entry and exit

B. 24 hours;
CAN be left open while Maintenance workers are in the airlock

C.✔ 1 hour;
MUST be immediately closed after each entry and exit

D. 1 hour;
CAN be left open while Maintenance workers are in the airlock

Description:

TS 3.6.1.2 Condition A.1, requires the outer airlock door closed within one hour and locked within 24 hours. TS Bases B3.6.1.2 Actions, states, The ACTIONS are modified by Note 1, which allows entry and exit to perform repairs of the affected air lock component. If the outer door is inoperable, then it may be easily accessed to repair. If the inner door is the one that is inoperable, however, then a short time exists when the containment boundary is not intact (during access through the outer door). The allowance to open the OPERABLE door, even if it means the primary containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the primary containment during the short time in which the OPERABLE door is expected to be open. The OPERABLE door must be ***immediately closed after each entry and exit***. While Maintenance is actively repairing the INNER Airlock door, the OUTER Airlock door can NOT be left open.

The SRO must remember the TS Required Action time limit for one Airlock door inop and then have detailed knowledge of TS Bases concerning the inop Airlock door to answer this question.

The "A" distractor is plausible since 24 hours is the completion time for verifying the operable door is locked closed not just closed.. The second part is correct.

The "B" distractor is plausible since 24 hours is the completion time for verifying the operable door is locked closed not just closed.. The second part is plausible if the applicant does not remember the TS Bases requirement for only allowing the operable door to be opened then closed after each entry/exit. Also plausible since leaving the outer door open could be considered a safety requirement for preventing personnel from getting trapped in the airlock.

The "D" distractor is plausible since the first part is correct and the second part if the applicant does not remember the TS Bases requirement for only allowing the operable door to be opened then closed after each entry/exit. Also plausible since leaving the outer door open could be considered a safety requirement for preventing personnel from getting trapped in the airlock.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.3.12 **Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc**. (CFR: 41.12 / 45.9 / 45.10) 3.2 3.7

SRO only because of link to 10CFR55.43(b)(2): Facility operating limitations in the technical specifications and their bases.

LESSON PLAN/OBJECTIVE:

T23-PC-LP-01301, Primary Containment, EO 300.010.A.12

Reference(s) used to develop this question:

Tech Spec 3.6.1.2, Primary Containment Airlock
TS B3.6.1.2

98. G2.3.15 001

Unit 2 is operating at 85% RTP when an event occurs requiring the Drywell to be vented using 2T48-F319 and 2T48-F320, Drywell Vent valves.

Drywell pressure is being maintained between 0.5 psig and 1.0 psig.

Which ONE of the following completes the statements concerning 2T48-F319 and 2T48-F320 and the TS Bases for the 2D11-K621A & B, Drywell Radiation Monitors?

If 2D11-K621A & B, Drywell Radiation Monitors increase to 145 R/hr, 2T48-F319 and 2T48-F320 will __________ .

IAW TS Bases 3.3.6.1, the Drywell Radiation - High function, __________ .

A.✓ close;

is NOT assumed in the U2 FSAR accident or transient analysis because other leakage paths are more limiting.

B. close;
is assumed in the U2 FSAR accident or transient analysis because this leakage path is the most limiting

C. remain open;

is NOT assumed in the U2 FSAR accident or transient analysis because other leakage paths are more limiting.

D. remain open;

is assumed in the U2 FSAR accident or transient analysis because this leakage path is the most limiting

Description:

Two Drywell channel monitors (2D11-K621A & B, Drywell Radiation Monitors) have a range of 1 to 10^7 R/hr and provide alarms, indication, and isolations. At 138 R/hr in the drywell, all the primary containment 18" purge and vent valves close. The valves are; Drywell purge, T48-F307 and F308; Torus purge, T48-F309 and F324; **Drywell vent, T48-F319 and F320**; and Torus vent T48-F318 and F326. If the valves are closed on a High Radiation signal, then an amber light above the valve indicator on H11-P602 will illuminate to tell the operator that the valves closed, or would have closed, on high radiation in the drywell.

IAW TS Bases 3.3.6.1, High drywell radiation indicates possible gross failure of the fuel cladding. Therefore, when Drywell Radiation - High is detected, an isolation is initiated to limit the release of fission products. However, this Function is **not** assumed in any accident or transient analysis in the FSAR because other leakage paths (e.g., MSIVs) are more limiting.

The SRO must have detailed knowledge of Tech Spec bases concerning DW radiation monitors to answer this question.

The "B" distractor is plausible since the first part is correct and the second if the applicant thinks Drywell radiation high would be assumed in the analysis just because Drywell radiation has such a high range of indication.

The "C" distractor is plausible if the applicant does not remember the setpoint for the isolation and thinks this is not high enough for an isolation. The second part is correct.

The "D" distractor is plausible if the applicant does not remember the setpoint for the isolation and thinks this is not high enough for an isolation. The second if the applicant thinks Drywell radiation high would be assumed in the analysis just because Drywell radiation has such a high range of indication.

Phil, this was question 10 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.3.15 **Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.**
(CFR: 41.12 / 43.4 / 45.9) 2.9 3.1

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

D11-CAMS-LP-05101, D11-CAMS-LP-05101, LO 300.006.C.02

Reference(s) used to develop this question:

TS Bases 3.3.6.1
34AR-602-436-2, Containment Radiation High/Inop

99. G2.4.28 001

Security has just notified the control room that armed intruders have just penetrated the Protected Area and are headed towards the Service Building.

- o Both Units are manually scrammed
- o An Emergency has been declared IAW NMP-EP-110, Emergency Classification Determination

IAW 34AB-Y22-004-0, Credible Imminent Threat Of Attack On The Plant, which ONE of the following completes both statements?

A page announcement will be made to direct all TSC Emergency Responders to ________ .

An aggressive cooldown (60°F/hr to 100°F/hr) ________ required to be initiated.

A. report to their Emergency Response Facility immediately;
is

B. report to their Emergency Response Facility immediately;
is NOT

C. cease all activities and take cover in their immediate vicinity;
is NOT

D.✓ cease all activities and take cover in their immediate vicinity;
is

Description:

IAW 34AB-Y22-004, Credible Imminent Threat Of Attack On The Plant, step 4.6 requires the crew to enter the section (4.10) and make an announcement for all personnel to cease all activities and take cover in your immediate vicinity. This is due to the threat being an "Immeditate Security Threat" (in progress). The caution at this step states the Emergency Response Facilities will not be activated during the performance of the next step (4.9.4) unless the Emergency Director can ensure the nature and proximity of the threat poses no threat to facility activation and/or function. With armed intruders headed to the Service Building, the Emergency Director can not ensure facility activation will not pose a threat. Step 4.9.8 requires an aggressive cooldown on both units to be initiated.

The SRO must have detailed knowledge of this procedure which involves three different sections to evaluate and then remember an applicable "Caution" to obtain the correct answer.

The "A" distractor is plausible if the applicant does not remember the section on an "Immediate" threat and remembers only the "Imminent" section which requires the TSC responders to report to their response facility. The second part is correct.

The "B" distractor is plausible if the applicant does not remember the section on an "Immediate" threat and remembers only the "Imminent" section which requires the TSC responders to report to their response facility. The second part if the applicant does not remember the section on an "Immediate/Imminent" threat and remembers the "Valid" threat section (4.11), which does not require an aggressive cooldown on both units.

The "C" distractor is plausible since the first part is correct and the second part if the applicant does not remember the section on an "Immediate/Imminent" threat and remembers the "Valid" threat section (4.11), which does not require an aggressive cooldown on both units.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

2.4.28 **Knowledge of procedures relating to a security event (non-safeguards information).**
(CFR: 41.10 / 43.5 / 45.13) 3.2 4.1

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

LT-LP-20201, Introduction To Abnormal Procedures, LT-20201.019

Reference(s) used to develop this question:

34AB-Y22-004, Credible Imminent Threat Of Attack On The Plant

100. G2.4.50 001

Unit 2 was operating at 100% RTP when a transient occurred resulting in the following conditions/alarms:

- o All Control Rods are Full In
- o Drywell pressure 0.5 psig and steady
- o Recirc pumps are operating at MINIMUM speed
- o Reactor Vessel Water Level High/Low (603-141) is ILLUMINATED
- o Reactor Vessel Level 2 Div I Trip (603-205) is ILLUMINATED
- o Reactor Vessel Level 2 Div II Trip (603-206) is ILLUMINATED

Two (2) minutes later, the following alarms are as indicated:

- o Reactor Vessel Level 2 Div I Trip (603-205) is CLEAR
- o Reactor Vessel Level 2 Div II Trip (603-206) is CLEAR

Which ONE of the following completes both statements below?

During this transient, 650-234, SEC System Auto Initiation Signal Present, annunciator __________ expected to be alarming.

Reactor water level control will be directed from __________ .

A. is NOT;
31EO-EOP-015-2, CP-1 Alternate Level Control

B. is;
31EO-EOP-015-2, CP-1 Alternate Level Control

C. is NOT;
31EO-EOP-010-2, "RC" (Non-ATWS) flow chart, RC/L path

D.✓ is;
31EO-EOP-010-2, "RC" (Non-ATWS) flow chart, RC/L path

Description:

Alarm 603-205 & 206, indicate that RWL has dropped at least -35" and with the Recirc pumps still operating at minimum speed indicates that RWL has NOT dropped below -60". Therefore RWL is between -35" and -60". 2 minutes later the afore mentioned alarms indicate that RWL has increased above -35".

31EO-EOP-010-2, "RC" (Non-ATWS) flow chart, RC/L path will be used to control RWL since RWL is increasing and can be restored and maintained above -155". The requirement to exit RC/L path and transition to CP-1, does not exist at this time with the above mentioned conditions.

The SRO must have detailed knowledge of RC/L path and CP-1 and then realize that with RWL increasing, control of level systems will be directed from the RC/L path and not CP-1.

The "A" distractor is plausible if the applicant confuses Level 2 setpoint and does not remember that HPCI/RCIC will start at -35" (Level 2), which will result in 650-234 alarm being received. The second part is plausible if the applicant thinks that RWL went below -101" and can NOT be restored and transitions to CP-1 for Alternate RWL control and does not remember the override on CP-1, which transitions back to RC/L path when RWL is increasing.

The "B" distractor is plausible since the first part is correct. The second part is plausible if the applicant thinks that RWL went below -101" and can NOT be restored and transitions to CP-1 for Alternate RWL control and does not remember the override on CP-1, which transitions back to RC/L path when RWL is increasing.

The "C" distractor is plausible if the applicant confuses Level 2 setpoint and does not remember that HPCI/RCIC will start at -35" (Level 2), which will result in 650-234 alarm being received. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

2.4.50 **Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.** (CFR: 41.10 / 43.5 / 45.3) 4.2 4.0

SRO only because of link to 10CFR55.43(b)(5): Assessment of facility conditions and selection of appropriate procedure, recalling the action in the body of procedure and when to take the action.

LESSON PLAN/OBJECTIVE:

EOP-RC-LP-20308 "RPV Control (Non-ATWS)" EO 201.083.A.02

Reference(s) used to develop this question:

EOP-RC-LP-20308, RPV Control (Non-ATWS)
31EO-EOP-010-2, RC" (Non-ATWS) flow chart
31EO-EOP-015-2, CP-1 flow chart
34AR-603-205-2, Reactor Vessel Level 2 Div I Trip
34AR-603-206-2, Reactor Vessel Level 2 Div II Trip
34AR-601-308-2, Reactor Low Level Initiation
34AR-601-101-2, Core Spray System II Actuated

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