INITIAL SUBMITTAL

HARRIS EXAM
50-400/2004-301

FEBRUARY 23 - 27,2004
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INITIAL SUBMITTAL
SRO WRITTEN EXAMINATION

Harris

Draft

SRO

Written

2004

QUESTION: I

Given the following conditions:

- While operating at 100% power, a drop in PRZ pressure resulted **in a** Reactor Trip and Safety Injection.
- PRZ level is currently indicating > 100%.
- PRZ pressure has stabilized at 1400 psig.
- Containment pressure is ***3.6*** psig and stable.
- RCPs have been stopped.
- RVLIS Full Range is indicating 20%.
- Core Exit Thermocouples are indicating 745°F.
- RCS Wide Range Hot **Leg** Temperatures are indicating 680°F.

Which of the following conditions currently exists'?

a. **A** PKZ steam space break has occurred and core heat removal is ADEQUATE

b. **A** PRZ steam space break has occurred arid core heat removal is INADEQUATE

c. **An** RCS hot leg break has occurred and core heat removal is ADEQUATE

d. An RCS hot leg break has occurred and core heat removal is INADEQUATE

ANSWER:

b. **A** PRZ steam space break has occurred and core heat removal is INADEQUATE

Post Validation Revision

QUESTION NUMBER: 1 **TIEWGROUP:** 1/1

KA IMPORTANCE: **RO** **SRO** *4.1*

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 000008AA2.30

Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: Inadequate core cooling

OBJECTIVE: EOP-3.10-4

Given the following EOP steps, notes, and cautions, describe the associated basis

c. RVLIS level of 39 percent (C.1)

DEVELOPMENT REFERENCES: EOP-FRP-C.1
CSFST-Core Cooling

REFERENCES SUPPLIED TO APPLICANT: None

QUESTYON SOIJRCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since the break is located in the PRZ steam space, but heat removal is not adequate.

√ b. The RCS is superheated and in excess of 700°F, which indicates that inadequate heat removal is occurring. The break is in the PRZ steam space as indicated by the pressurizer being full.

c. Plausible since RCS temperatures are stable, hut the break is in the steam space and heat removal is not adequate.

d. Plausihle since RCS heat removal is not adequate, but the break is in the steam space.

DIFFICULTY ANALYSIS:

[√] **COMPREHENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must analyze plant conditions to determine location of break, determine that temperature indications support superheated conditions and that heat removal is inadequate

QUESTION: 2

Which of the following describes a condition which would require Emergency Boration and the bases for taking this action?

a.
- Twenty minutes following a Main Feedwater Pump trip, Control Rods are determined to be below the rod insertion limit
- Control the reactivity transient associated with a steam line break

b.
- Twenty minutes following a Main Feedwater Pump trip, Control Rods are determined to he below the rod insertion limit
- Control the reactivity transient associated with an inadvertent dilution

c.
- During a reactor startup, the Reactor achieves criticality with Bank C rods at 105 steps
- Control the reactivity transient associated with a stearn line break

d.
- During a reactor startup, the Reactor achieves criticality with Bank C rods at 105 steps
- Control the reactivity transient associated with an inadvertent dilution

ANSWER:

c.
- During a reactor startup. the Reactor achieves criticality with Bank C rods at 105 steps
- Control the reactivity transient associated with a steam line break

QUESTION NUMBER: 2 **TIEWGROUP:** 1/2

KA IMPORTANCE: ***RO*** ***SRO*** 3.7

10CFR55 CONTENT: **41(b)** **43(b)** **2**

KA: 000024G2.2.25

Knowledge of bases in technical specifications for limiting conditions for operations and safety limits (Emergency Boration)

OBJECTIVE: CVCS-3.0-R4

Given a CVCS component/parameter, state whether the component/parameter is Tech Spec related

DEVELOPMENT REFERENCES: TS Bases 3/4.1.1
AOP-002 BD
GP-004

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW'** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: AOP-3.2-R1 001

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since if this condition existed for 2 hours, instead of 20 minutes, Emergency Boration would be required. Additionally, in Modes 1 & *2,* SDM is required to control the reactivity transient associated with a steam line break. However, it is not required during transient conditions, allowing the 2 hours to restore rod position.

b. Plausible since if this condition existed for 2 hours, instead of 20 minutes, Emergency Boration would he required. However, it is not required during transient conditions, allowing the 2 hours to restore rod position.

√ ***c.*** Emergency boration is required if SDM is not met. Criticality at steady state conditions is considered to he a loss **of** SDM. In Modes I & 2, **SDM** is required to control the reactivity transient associated with a steam line break.

d. Plausihle since Emergency boration is required if SDM is not met. Criticality at steady state conditions is considered to he a loss of SDM. However, the concern for an inadvertent dilution is related to a shutdown condition.

DIFFICULTY ANALYSIS:

☐ **COMPREHENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: **2**

EXPLANATION: Knowledge of the requirements for initiating Emergency Boration and the bases for these actions.

QUESTION: *3*

Given the following conditions:

- The plant has been operating at 100% power for the past three (3) months.
- CSIP **1.4-SA** is operating.
- CSIP 1B-SB has **just** been restored to a normal alignment following maintenance on the pump impeller.
- When CSIP 1B-SB is started the operator notes that suction pressure appears normal, while discharge pressure, discharge **flow,** and pump current are oscillating.

Which of the following is the most likely cause of these CSIP 1B-SB indications'?

a. Inadequate venting was performed during clearance restoration

b. The CSIP 1B-SB discharge valve was inadvertently left closed during clearance restoration

c. **A** failure of the CSIP 1B-SB miniflow isolation valve has resulted in gas binding

d. **A** failure of the CSIP 1B-SB miniflow isolation valve has resulted in all **pump** flow being recirculated to the VCT

ANSWER:
a. inadequate venting was performed during clearance restoration

Post Validation Revision

QUESTION NUMBER: 3 **TIEWGROUP:** **2** I

KA IMPORTANCE: **RO** **SRO** 3.8

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 006A2.04

Ability to (a) predict the impacts ofthe following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Improper discharge pressure

OBJECTIVE: AOP-3.2-4

Given a set of plant conditions and a copy of AOP-002, determine if the possibility of gas hinding the CSIPs exists and the corrective action to be taken

DEVELOPMENT REFERENCES: OP-107
SOER 97-1

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOW JUSTIFICACTION (CORRECT ANSWER √'d):

√ **a.** Gas binding o f a pump results in lower than expected pressure, flow, and current. Likely cause is improper venting **of** pump when restoring from post maintenance activities.

b. Plausible since improper alignment would result in low flow and current, but a closed discharge valve would cause discharge pressure to be high.

c. Plausible since gas binding is cause of these indications, but will not occur as a result of pump recirc valve being open.

d. Plausible since a failed open recirc valve will cause indicated flowto be low since flow *is* measured dowstreatn of the recirc valve. hut discharge pressure and current would **be** at or near normal.

DIFFICULTY ANALYSIS:

[√] **COMPREHENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must analyze given pump conditions to determine failure mode and then determine likely cause of gas binding of the pump

Post Validation Revision

QUESTION: 4

Given the following conditions:

- The unit is operating at 100% power, with Control Bank D rods at 215 steps.
- ALB 13-7-1, ROD CONTROL URGENT ALARM, is in ALARM due to a failure in Power Cabinet I AC.
- Rod Control is in MAN.
- A turbine trip occurs, but the Reactor fails to trip either automatically or manually.

Which of the following actions should the Reactor Operator be directed to take'?

a. Place the Rod Control BANK SELECTOR in AUTO and allow rods to insert

b. Maintain the Rod Control BANK SELECTOR in MAN and manually insert rods

c. Place the Kod Control BANK SELECTOK in RANK D and manually insert rods

d. Maintain rods at 2 15 steps

ANSWER:
d. Maintain rods at 215 steps

QUESTION NUMBER: 4 **TIER/GROUP:** 2/2

KA IMPORTANCE: **RO** **SRO** 4.0

10CFR55 CONTENT: **41(b)** **43(b)** **5**

KA: 001G2.4.6

Knowledge of symptom based EOP mitigation strategies. (Control Rod Drive)

OBJECTIVE: EOP-3.19-4

Given a set of conditions during EOP implementation, determine the correct response or required action based upon the EOP User's Guide general information

z. Use of "**Bank** Select" during an ATWS

DEVELOPMENT REFERENCES: EOP-USERS GUIDE
EOP-FRP-S.I

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW'** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this is an RNO action for a failure of the reactor to trip. but will not be successful due to the urgent failure in rod control.

b. Plausible since this **is** an RNO action for a failure of the reactor to trip, hut will not be successful due to the urgent failure in rod control.

c. Plausible since this will allow Bank D rods to move inward, and is the only method of inserting rods with the rod control failure, hut should not be used due to the potential to cause unanalyzed **flux** shapes.

√ **d.** Due to the urgent failure, rods will not move in AIJTO **or** MAN. Although they will move in BANK D with this particular failure, moving rods in individual banks may result in unanalyzed **flux** shapes which could result in fuel damage.

DIFFICULTY ANALYSIS:

[√] **COMPREHENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: *3*

EXPLANATION: Must analyze the effect of an urgent rod control failure and then apply the failure results to the plant conditions to determine the proper actions

QUESTION: *5*

Four Operators worked the following schedule in the Control Room over the past **six** days:

HOURS WORKED (Shift turnover lime not included. Do **NOT** assume any hours worked before or after this period.)

OPERATOR	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY6
1	10	14	off	12	12	12
2	14	12	14	10	off	11
3	off	off	off	13	11	14
4	11	13	14	off	11	12

Which of the operators would be permitted to work a 12-hour shift on Day 7 **WITHOUT** requiring permission to exceed normal overtime limits?

a. Operator 1

b. Operator 2

c. Operator3

d. Operator 4

ANSWER:

a. Operator 1

QUESTION NUMBER: 5 **TIEWGROIJP:** 3

KA IMPORTANCE: **RO** **SRO** 4.0

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 2.1.2

Knowledge of operator responsibilities during all modes of plant operation

OBJECTIVE: PP-2.0-SI

STATE the requirements contained in Administrative Controls Section, including requirenients for the following:

- Unit staff, including overtime limitations

DEVELOPMENT REFERENCES: AP-012

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOIJRCE: ☐ **NEW** ☐ **SIGNIFICANTLY MODIFIED** ☑ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: Robinson NRC 2001

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

√ **a.** Working a 12 hour shift on Day 7 would result in this operator working 24 hours out of 48, and 72 hours in 7 days, both of which are permissible.

b. Plausible since this operator would not exceed the 24 hours out of 48 limit and has had a recent day off, but would work 73 hours in 7 days which exceeds limit.

E. Plausible since this operator would not exceed the 72 hours in 7 day limit and has several recent days off, but would **work** more than 24 hours in 48 which exceeds limit.

d. Plausible since this operator would riot exceed the 24 hours out of 48 limit arid has had a recent day off. but would work 73 hours in 7 days which exceeds limit.

DIFFICULTY ANALYSIS:

☑ **COMPREHENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Kequired to compare given data to administrative limits to determine which operator would remain within acceptable overtime limits

QUESTION: *6*

Given the following conditions:

- A Reactor Trip with SI occurs.
- The operators perform the immediate action steps, verify ECCS flow, and check AFW flow.
- SG levels are < 25% and the required AFW flow cannot be established, *so* the operators enter FOP-ERP-H. 1, "Response to Loss of Secondary Heat Sink."
- MCS pressure is 175 psig.
- **Ail** SG pressures are between 300 psig and 350 psig.

Which of the following actions is to be taken?

a. Continue in EOP-FRP-H.1 since EOP-FRP-H.1 has a higher priority than PATH-I and attempt to establish AFW or Main Feedwater flow.

b. Continue in EOP-FRP-H.1 since EOP-FRP-H.1 has a higher priority than PATH-I and initiate RCS feed and bleed.

c. Return to EOP-PATH-1 at the step that was in effect since a secondary heat sink is **NOT** required following a large break LOCA.

d. Return to EOP-PATH-1 at Entry Point C since a secondary heat sink is **NOT** required following a large break LOCA.

ANSWER:

c. Return to EOP-PATH-1 at the step that was in effect since a secondary heat sink is **NOT** required following a large break LOCA.

QUESTION NUMBER 6 **TIEWGROIJP:** 1/1

KA IMPORTANCE: **RO** **SRO** 4.0

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 000011G2.4.6

Knowledge *of* symptom based EOP mitigation strategies. (Large Break LOCA)

OBJECTIVE: EOP-3.11-4

Given the following EOP steps, notes, and cautions, describe the associated basis

e. Requirements fur a heat sink (W. I)

DEVELOPMENT REFERENCES: EOP-FRP-H.1

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BASK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EOP-3.11-R1 003

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since these are actions that are taken upon entry into FRP-H.1, but a secondary heat sink would not be required with RCS pressure < SG pressure.

b. Plausible since these are actions that might be taken upon entry into FRP-H.1, but a secondary heat sink would not be required with RCS pressure < SG pressure.

√ **c.** Since RCS pressure is less than SG pressure, a secondary heat sink is not required since the SG would act as a heat source rather than a heat sink. Return is to procedure and step in effect.

d. Plausible since RCS pressure is less than SG pressure and a secondary heat sink is not required. Return is to procedure and step in effect. not Entry Point C.

DIFFICULTY ANALYSIS:

☑ **COMPREIIESSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must interpret first that a secondary heat sink is not required based on RCS pressure being greater than SG pressure and then must recognize the entry point conditions for returning to **PATII-**I

QUESTION: *4*

Given the following conditions:

- The Reactor has been taken critical and power is being increased.
- NIS IR channels N35 and N36 are both indicating 5×10^{11} amps.
- NIS SR channel N31 is indicating 8×10^{3} cps.
- Due to improper adjustment of the high voltage setting, NIS SR channel N32 is indicating 7×10^{4} cps.

Power should he stabilized . .

a. at or above 10^{-10} amps, and the SR High Flux trip should then be blocked.

b. at the current power level, and the SR High Flux trip should then be blocked.

c. at or above 10^{-10} amps, but the SR High Flux trip should **NOT** be blocked.

d. at the current power level, hut the SR High **Flux** trip should **NOT** be blocked.

ANSWER:

d. at the current power level. but the SR High Flux trip should **NOT** be blocked.

QUESTION NUMBER: 7 **TIER/GROUP:** I/2
KA IMPORTANCE: **RO** **SRO** **2.9**
10CFR55 CONTENT: **41(b)** **43(b)** **5**

Kh: 000032AA2.09

Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: Effect of improper HV setting

OBJECTIVE: GP-3.4-1

Recognize off-normal conditions during a reactor start-up, including

a. Availability of excore nuclear instrumentation channels (SR, IR, PR)

DEVELOPMENT REFERENCES: GP-004
ALB-012-4-5

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since power must he increased above 10^{10} amps before blocking trips, but increasing power to this level will result in SR high flux trip.

b. Plausible since power cannot be increased above 10^{-10} amps, but the block of the SR high flux trip is interlocked at this power level.

c. Plausible since the SR high flux trip is not permitted to be blocked without at least 1 decade of overlap between SR and IR, but increasing power above 10^{-10} amps will result in a SR high flux trip.

√ **d.** Less than 1 decade of overlap exists between SR and IR channel before trip would occur. Increasing power to allow blocking SR would result in trip before reaching power level and attempting to **block** at current power level will not be successful.

DIFFICULTY ANALYSIS:

[√] **COMPREIIENSIVE / ANALYSIS** [ ] **KNOWLEDGE /RECALL**

DIFFICULTY RATING: **3**

EXPLANATION: Must determine that increasing power above 10^{-10} amp will result in **a** reactor trip due to SR high flux, and that attempting to block the SR high flux trip below 10^{-10} amps will not he successful. Required tu not block SK high flux trip if < 1 decade **of** overlap exists.

QUESTION: 8

Given the following conditions:

- EOP-FRP-S.1, "Kesponse to Nuclear Power Generation/ATWS," is being implemented.
- An SI actuation has occurred.
- The Foldout page is applicable.

Which of the following actions **should** be taken?

a. Continue with EOP-FRP-S.1 while verifying proper operation of safeguard equipment

b. Continue with EOP-FKP-S.1 until the reactor is tripped or made subcritical, then immediately exit to EOP-PATH-1

c. Transition to EOP-PATH-1 and verify all automatic actions required for an SI have occurred, then return to EOP-FRP-S.1 only when directed by PATH-1

d. Reset **SI** and FW isolation as soon as possible to restore feed flow to the steam generators, then continue with EOP-FKP-S.1

ANSWER

a. Continue with EOP-FRP-S.1 while verifying proper operation of safeguard equipment

Post Validation Revision

QUESTION NUMBER: 8 **TIER/GROUP:** 2/1

KA IMPORTANCE: **RO** **SHO** 4.0

10CFR55 CONTENT: **41(b)** **43(b)** **5**

KA: 012G2.4.6

Knowledge of symptom based EOP mitigation strategies. (Keactor Protection)

OBJECTIVE: EOP-3.15

Describe the purpose of the following EOPs including type of event for which they were designed and the major actions performed

- FRP-S.1

DEVELOPMENT REFERENCES: EOP-FRP-S.1
EOP User's Guide

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☐ **SIGNIFICANTLY MODIFIED** ☑ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EOP-3.15 021

NRC EXAM HISTORY: Harris NRC 2000

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

√' **a.** If a safety injection occurs while implementing FRP-S.1, proper operation of **SI** equipment is verified while continuing with FRP-S.I.

b. Plausible since PATH-1 provides instructions for **a** response lo safety injection, but FRP-S.1 must be performed until completion.

c. Plausible since PATH-I provides instructions for a response to safety injection, but FRP-S.1 must be performed until completion.

d. Plausible since a safety injection will result in a loss of MFW, hut AFW flow is capable of providing minimum required flow.

DIFFICULTY ANALYSIS:

☐ **COMPREHENSIVE / ANALYSIS** ☑ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 2

EXPLANATION: Knowledge of procedural requirements in EPP-FRP-S.1

Post Validation Revision

QUESTION: 9

Given the following conditions:

- **The** plant is in Mode 3 with all Shutdown Rods withdrawn.
- **All power** is lost to the Digital Rod Position Indication display and **CANNOT** be restored.

Which of the following actions is to be taken?

a. Verify that all Shutdown Bank Rods are fully withdrawn using Demand Position Indication

b. Determine that all Shutdown Bank Rods are fully withdrawn using the movable incore detectors

c. Commence a boration of the RCS to ensure adequate Shutdown Margin

d. Open the Reactor Trip Breakers

ANSWER:
d. Open the Reactor Trip Breakers

QUESTION NUMBER: 9 **TIER/GROUP:** 2/1

KA IMPORTANCE: **RO** **SRO** 3.6

10CFR55 CONTENT: **41(b)** **43(b)** **5**

KA: 014A2.02

Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of power to the **RPIS**

OBJECTIVE: RODCS-3.1-R4

Given a copy of 'Technical Specifications and a plant mode, determine if rod position indication components and actual rod positions meet their Limiting Conditions for Operation; if they do not, then the applicable ACTION statements

DEVELOPMENT REFERENCES: TS 3.1.3.3

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOIJRCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this would be required in the event of a loss of a single indication while operating in Mode 1 or 2, but with both indications lost in Mode 3 the Reactor Trip Breakers are to be opened.

b. Plausible since this would he required in the event of a loss of a single indication while operating in Mode 1 or 2, but with both indications lost in Mode 3 the Reactor Trip Breakers are to be opened.

c. Plausible since loss of indication of DRPI may lead to belief that SDM cannot be verified, which would require Emergency Boration.

√ **d.** With both DRPI indications inoperable in Mode 3, 4, or 5, TS requires that the Reactor Trip Breakers be opened immediately.

DIFFICULTY ANALYSIS:

[ ] **COMPREHENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 2

EXPLANATION: Knowledge of Tech Spec immediate action requirements in the event of a **loss** of both DRPI indications

Post Validation Revision

QUESTION: 10

A licensed Reactor Operator has failed to meet the required number of hours this past calendar quarter to maintain an active license.

Assuming all other requirements have been met to activate the license, which of the following watches completed under instruction would satisfy the requirement to allow activation of the license?

a. 24 hours as the Control Operator during Mode 5 AND 36 hours as the Control Operator during Mode 4

b. 48 hours as the Balance of Plant Operator during Mode 5 AND 12 hours as the Control Operator during Mode 4

c. 40 hours as the Control Operator during Mode 5

d. 40 hours as the Balance of Plant Operator during Mode 4

ANSWER:

d. 40 hours as the Balance of Plant Operator during Mode 4

QUESTION NUMBER: 10 **TIER/GROUP:** 3

KA IMPORTANCE: **RO** **SRO** 3.8

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 2.1.1

Knowledge **of** conduct of operations requirements

OBJECTIVE: PP-3.1-1

Given a situation, **STATE** whether or not an off-going operator may be relieved during the shift turnover process

DEVELOPMENT REFERENCES: OMM-001

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this exceeds the required 40 hours for the CO or BOP position. but only those hours when the plant is above 200°F are acceptable.

b. Plausible since this exceeds the required 40 hours for the CO or BOP position. but only those hours when the plant is above 200°F are acceptable.

c. Plausible since this meets the required 40 hours for the CO or BOP position and this has the most hours in the CO position, but only those hours when the plant is above 200°F are acceptable.

√ **d.** 40 hours are required in either the CO or HOP position when the plant is above 200°F

DIFFICULTY ANALYSIS:

[ ] **COMPREHENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 2

EXPLANATION: Must recall requirement for activating an inactive license from OMM-001

QUESTION: 11

Following a loss of off-site power during recovery from a SGTR, the crew is required to transition from EPP-019, "Post SGTR Cooldown Using Steam Dump," to either:

- EPP-017, "Post SGTR Cooldown Using Backfill"
- EPP-018, "Post SGTR Cooldown Using Blowdown"

Which of the following describe how RCS and SG pressure control in EPP-017 compares to that in EPP-018?

a.
- EPP-Oi7 maintains RCS pressure below the ruptured SG pressure
- EPP-018 maintains RCS pressure below the ruptured SG pressure

b.
- EPP-017 maintains RCS pressure below the ruptured SG pressure
- EPP-OI 8 maintains RCS pressure the same as the ruptured SG pressure

c.
- EPP-017 maintains RCS pressure the same as the ruptured SG pressure
- EPP-018 maintains RCS pressure below the ruptured SG pressure

d.
- EPP-017 maintains RCS pressure the same as the ruptured SG pressure
- EPP-018 niaintains RC'S pressure the same as the ruptured SG pressure

ANSWER:

b.
- EPP-017 maintains RCS pressure below the ruptured SG pressure
- EPP-018 maintains KCS pressure the same as the ruptured SG pressure

QUESTION NUMBER: 11 **TIER/GROUP:** 1/1

KA IMPORTANCE: **RO** **SRO** **4.4**

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 000038EA2.08

Ability to determine or interpret the following as they apply to a SGTR: Viable alternatives for placing plant in safe condition when condenser is not available

OBJECTIVE: EOP-3.4-1

Describe the purpose of the following EOPs including the type of event for which they were designed and the major actions performed
- EPP-017
- EPP-018
- EPP-019

DEVELOPMENT REFERENCES: EPP-017
EPP-018

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☐ **SIGNIFICANTLY MODIFIED** ☑ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EPP-3.4010

NRC EXAM HISTORY: Harris 2002

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since EPP-017 maintains pressnre below ruptured SG pressure, but EPP-018 maintains pressure the same as the ruptured SG pressure.

√ **b.** EPP-017 maintains pressure below SG pressure to allow backfill from the SG to the RCS, while EPP-018 maintains pressure the same as SG pressure to minimize SG leakage.

c. Plausible since either EPP-017 or EPP-018 maiutains pressure below SG pressure and either EPP-017 or EPP-018 maintains pressure the same as SG pressure, hut this distracter has the correct condition reveresed.

d. Plausible since EPP-018 maintains pressure the same as the ruptured SG pressure, but EPP-017 maintains pressure below ruptured SG pressure.

DIFFICULTY ANALYSIS:

☐ **COMPREHENSIVE / ANALYSIS** ☑ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Knowledge of differeut mitigation strategies for EPP-017 and EPP-018

QUESTION: 12

A LOCA occurred several hours ago. Only one (1) Containment Spray Pump is running due to actions taken in EPP-012, "Loss of Emergency Coolant Recirculation."

A transition has just been made to FRP-J.1, "Response to High Containment Pressure." Containment Pressure is 14 psig.

Whish of the following actions should be taken?

a. Start the second Containment Spray Pump if Containment pressure docs NOT decrease below 10 psig before exiting FRP-J.1.

b. Start the second Containment Spray Pump since pressure is above 10 psig.

c. Continue operation with one Containment Spray Pump regardless of any increase in Containment pressure.

d. Continue operation with one Containment Spray Pump unless Containment pressure begins increasing, then start the second pump.

ANSWER:

c. Continue operation with one Containment Spray Pump regardless of any increase in Containment pressure.

Post Validation Revision

QUESTION NUMBER I2 **TIER/GROUP:** 1/2
KA IMPORTANCE: **RO** **SRO** 3.8
10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: WE14EA2.2

Ability to determine and interpret the following as they apply to the (High Containment Pressure) Adherence to appropriate procedures and operation within the limitations in the facilitys license and amendments

OBJECTIVE: EOP-3.13-5

Given the following EOP steps, notes, and cautions, describe the associated basis: b. CNMI spray operation (EPP-012 or FRP-J.l)

DEVELOPMENT REFERENCES: EOP-FRP-J.1

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EOP-3.13-R4 008

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this would be a normal action directed by FRP-J.1

b. Plausible since this would be a normal action directed by FRP-J.1

√ **c.** EPP-012 directs the operators to run Containment Spray Pumps based upon Containment pressure and Fan Cooler operation. These actions are taken to minimize RWST depletion. This configuration is to he maintained even if FRP-J.I is implemented.

d. Plausible since would better serve the intent of EPP-012, but would be contradictory to the intent of FRP-J.1 which bas a higher priority concerning the operation ofthe Spray Pumps.

DIFFICULTY ANALYSIS:

☑ **COMPREHENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: **3**

EXPLANATION: Must compare the relative actions in the 2 procedures and make a judgement of *which* condition takes precedent

QUESTION: 13

During operation at 100%power, an inadvertent **SI** occurs on 'B' Train **ONLY**.

Which of the following actions is required?

a. Manually actuate SI on 'A' Train and continue in PATH-1

b. Continue in PATH-I noting which 'A' Train ESF equipment is **NOT** running

c. Start ONLY the 'A' Train of ESI equipment for which the redundant 'B' 'Train equipment failed

d. Transition directly to EPP-008, SI Termination

ANSWER:

a. Manually actuate SI on 'A' Train and continue in PATH-I

Post Validation **Revision**

QUESTION NUMBER: 13 **TIEWGROIJP:** 2 I

KA IMPORTANCE: **RO** **SRO** 4.6

10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 013.42.01

Ability to (a) predict the impacts ofthe following malfunctions or operations on the **ESFAS;** and (b) based on those predictions, use procedures to correct. control, or mitigate the consequences of those malfunctions or operations: LOCA

OBJECTIVE: IE-3.10-R4

Describe the expected operator actions associated with an imminent RPS or ESFAS actuation

DEVELOPMENT REFERENCES: EOP User's Guide

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [ ] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [√] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: IE-3.10-R4 001

NRC EXAM HISTORY: Harris 2000

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

√ a. Preferred method of manual actuation although it would be acceptable to start / reposition all equipment which would be actuated regardless of the perceived need since diagnostics have not yet been performed.

b. Plausible since only a single train actuation is analyzed, but efforts are to be made **to** initiate both trains.

c. Piausible since starting equipment as needed would provide adequate protection, but since diagnostics have not yet been completed the equipment required may not yet be known.

d. Plausible since one of the goals following an inadvertent SI is to terminate SI as soon as criteria are met to prevent overfilling / pressurizing the RCS, but procedures are written assuming both trains started.

DIFFICULTY ANALYSIS:

[ ] **COMPREHENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Required knowledge of procedural requirements for a single train of ESF actuation

QUESTION: 14

Given the following conditions:

- 1CS-235, Charging Line Isolation, was closed to establish a clearance boundary for maintenance on 1CS-238.
- 1CS-235 had to be manually torqued shut.
- 1CS-235 is a Limitorque SMB-00/SB-00 motor-operated valve.

Prior to declaring 1CS-235 operable after the clearance is removed, the valve must be ...

a. verified to have the torque switch calibrated correctly.

b. stroked with the control switch.

c. monitored for seat leakage.

d. manually stroked full open

ANSWER:
b. stroked with the control switch.

QUESTION NUMBER: 14 **TIER/GROUP:** 3
KA IMPORTANCE: **RO** **SRO** 3.1
10CFR55 CONTENT: 41(b) 43(b) 5

KA: 2.2.19
Knowledge of maintenance work order requirements

OBJECTIVE: PP-2.4-1
Identify the primary functions and explain the responsibilities of the Work Coordination Centre

DEVELOPMENT REFERENCES: OMM-014
REFERENCES SUPPLIED TO APPLICANT: None
QUESTION SOURCE: [ ] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [√] **DIRECT**
BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: B00 028
NRC EXAM *HISTORY:* Harris 2000

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since **the** valve has been manually torqued onto the seat, but the requirement is that the valve must he stroked electrically from the coutrol switch.

√ **b.** All Limitorque SMB-00/SB-00 motor operated valves, if manually operatrd, are required to be stroked electrically from the control switch to he declared operable.

c. Plausible since over torqueing a valve may result in seat leakage, hut the requirement is that the valve must be stroked electrically from **the** control switch.

d. Plausible since the valve was manually torqued closed, but the requirement is that the valve must he stroked electrically from the control switch.

DIFFICULTY ANALYSIS:
[ ] **COMPREHENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL**
DIFFICULTY RATING: 3
EXPLANATION: Knowledge of administrative post-work practices required

QUESTION: 15

Given the following conditions:

- Following a Reactor Trip and Safety Injection, a transition has eventually been made **to** EOP-EPP-015, "Uncontrolled Depressurization of All Steam Generators."
- Both Main and Auxiliary Feed Flow have been isolated to all SGs.
- Directions have just been given to locally isolate steam flows from all SGs.
- SG **'A'** pressure appears to have stabilized at approximately 100 psig, while the other SGs have completely depressurized.

Which of the following actions should be taken?

a. Transition to FOP-EPP-014, "Faulted SG Isolation," since this is indication that SG **'A'** has been isolated.

b. Continue in EOP-EPP-015 and re-establish AFW flow to SG 'A' at minimum flow.

c. Transition to EOP-PATH-2 if local radiation surveys indicate primary-to-sccotidary leakage is occurring.

d. Transition to EOP-EPP-008, "SI Termination," to prevent overpressurizing the RCS.

ANSWER:

c. Transition to EOP-PATH-2 if local radiation surveys indicate primary-to-secondary leakage is occurring.

Post Validation Revision

QUESTION NUMBER: 15 **TIER/GROUP:** 1/1

KA IMPORTANCE: **RO** **SRO** **3.8**

10CFR55 CONTENT: **41(b)** **43(b)** **2**

KA: 000040G2.1.32

Ability to explain arid apply all system limits and precautions. (Steam Line Rupture - Excessive Heat Transfer)

OBJECTIVE: EOP-3.9-7

Given a step, caution. or note from an emergency procedure, state its purpose

DEVELOPMENT REFERENCES: EOP-EPP-015

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

HANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NHC EXAM HISTORY: None

DISTRACTOR JUSTPFPCACI'ION (CORRECT ANSWER √'d):

a. Plausible since once a SG *is* confirmed to be isolated in EPP-015, a foldout page item directs a transition to EPP-014.

h. Plausible since without indications of a SG tube leak, actions would be taken to remain in EPP-015 and maintain feed Row at minimum.

√ **c.** A SG may be suspected to be ruptured if it **fails** to dry out following isolation of feed flow. Local checks for radiation can be used to confirm primary-to-secondary leakage.

d. Plausible since a desired goal after isolating a faulted SG is *to* terminate SI as soon *as* conditions are met to prevent overfilling and overpressmizing the RCS.

DIFFICULTY ANALYSIS:

[√] **COMPREHENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must analyze the cause of the failure of the SG to depressurize and then determine the correct actions based on the analysis.

QUESTION: 16

The unit has tripped due to a LOCA and ESF equipment has failed to start. As a result, EOP-FRP-C.2, "Response to Degraded Core Cooling," has been entered.

A depressurization **of** the Steam Generators (SGs) to 80 psig *is* being performed, in accordance with the procedure, when the STA reports that a Red Path condition for Integrity has occurred.

Which of the following actions should be taken?

a. Immediately transition to EOP-FRP-P.1, "Response to Imminent Pressurized Thermal Shock Conditions"

b. Stop the S/G depressurization and, if the red path does not clear, transition to EOP-FRP-P.1. "Response to Imminent Pressurized Thermal Shock Conditions"

c. Complete EOP-FRP-C.2 and then transition to EOP-FRP-P.1, "Response to Imminent Pressurized Thermal Shock Conditions." if the red path still exists

d. Complete the S/G depressurization and then transition to EOP-FRP-P.1, "Response to Imminent Pressurized Thermal Shock Conditions," if the red path still exists

ANSWER

c. Complete EOP-FRP-C.2 **and** then transition to EOP-FRP-P.1 . "Response to Imminent Pressurized Thermal Shock Conditions," if the red path still exists

Post Validation **Revision**

QUESTION NIJMBER: 16 **TIEWGROUP:** Ii2

KA **IMPORTANCE:** **RO** **SRO** **3.8**

10CFR55 CONTENT: **41(b)** **43(b)** 2

KA: WE06G2.1.32

Ability to explain and apply all system limits and precautions. (Degraded Core Cooling)

OBJECTIVE: EOP-3.10-4

Given the following EOP steps, notes, and cautions, describe the associated basis

g. Stopping SG depressurization at 80 psig (C.2)

DEVELOPMENT REFERENCES: EOP-FKP-C.2

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since the red path for integrity has a higher priority than the orange path that caused entry into EOP-FRP-C.2, hut under these particular conditions a transition should not occur until completion of the EOP-FRP-C.2.

h. Plausible since the red path for integrity has a higher priority than the orange path that caused entry into EOP-FRP-C.2, but under these particular conditions a transitinn should not occur until completion ofthe EOP-FRP-C.2.

√ **c.** During the depressurization, a red path may occur due to injecting the accumulators. A transition should not be made until the entire procedure has been completed.

d. Plausible since the red path for integrity has a higher priority than the orange path that caused entry into EOP-FRP-C.2, hut under these particular conditions a transition should not occur until completion of the EOP-FRP-C.2.

DIFFICULTY ANALYSIS:

[√] **COMPREHENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must analyze plant conditions to determine that the cause ofthe red path is the depressurization and that, under these specific conditions, an immediate transition is not warranted

QUESTION: 17

Given the following conditions:

- The unit is in Mode **3.**
- Instrument Buses 1DP-1B-SII and 1DP-1B-SIV are both de-energized.
- Maintenance reports that Instrument Bus 1DP-1B-SII is ready to be re-energized

In order to prevent an inadvertent Safeguards Actuation, which of the following must be verified prior to re-energizing the bus and why?

a. Train **'A'** Logic Input Error Inhibit must be verified to be in INHIBIT due to the proper coincidence for an actuation being available

b. Train **'A'** Logic Train Output must be verified to be in TEST to prevent an inadvertent Safeguard Actuation due to the loss of the SI BLOCK Signals

c. Train 'B' Logic Input Error Inhibit must be verified to be in INHIBIT due to **the** proper coincidence for an actuation being available

d. Train 'B' Logic Train Output must be verified to be in TEST to prevent an inadvertent Safeguard Actuation due to the loss of the SI BLOCK Signals

ANSWER:

d. Train 'B' Logic Train Output must be verified to be in TESI to prevent an inadvertent Safeguard Actuation due to the loss of the SI BLOCK Signals

QUESTION NUMBER: 17 **TIEWGROUP:** *211*

KA IMPORTANCE: **RO** **SRO** 3.4

10CFR55 CONTENT: **41(b)** **43(b)** 2

KA: 062G2.2.22

Ktiowledge of limiting conditions for operations and safety limits. (AC Electrical Distribution)

OBJECTIVE: ESFAS-3.0-4

Given applicable logic diagrams and a set of plant conditions, predict how loss of any of the four instrument buses will affect the ESFAS output functions of each SSFS train.

DEVELOPMENT REFERENCES: OP-156.02

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED *i* DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFPCACTION (CORRECT ANSWER √'d):

a. Plausible since the loss of both trains of power will provide the proper coincidence, hut power must be available to the output relays to actuate. Placing the input error inhibit in INHIBIT at this time will not prevent an actuation since the logic is already made up. Also the incorrect Train.

h. Plausible since the loss of both trains of power causes the SI Block signals to he lost and when either of the supplies is restored, power will be available to the output relays to cause an actuation. however this occurs on Train 'B' for this event.

c. Plausible since the loss of both trains of power will provide the proper coincidence, but power must be available to the output relays to actuate. Placing the input error inhibit in INHIBIT at this time will not prevent an actuation since the logic is already made up.

√ **d.** The **loss** of both trains of power causes the SI Block signals to be lost. When either of the supplies is restored, power will be available to the output relays to cause an actuation.

DIFFICULTY ANALYSIS:

[√] **COMPREIIENSIVE / ANALYSIS** [ ] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must determine train of SSPS affected by the loss of power and then analyze the effect of partially restoring power

Post Validation Revision

QUESTION: 18

The Unit-SCO arid Superintendent-Shift Operations are discussing invoking 10CFR50.54(x) during the implementation of the Emergency Operating Procedures due to a condition arising which ***is*** **NOT** addressed by the procedures or Technical Specifications.

Which of the following conditions must be met when invoking 10CFR50.54(x)?

a. The action must be approved by an additional licensed Senior Reactor Operator when the action is necessary to prevent equipnient damage.

b. The action must he approved by the Superintendent-Shift Operations prior to taking the action.

c. The NRC must concur with the action to be taken prior to the action actually being taken.

d. The action must be approved by the Manager-Operations when the action is necessary to protect plant personnel.

ANSWER:

b. The action must be approved by the Superintendent-Shift Operalions prior to taking the action.

QUESTION NUMBER: 18 **TIEWGROUP** 3

KA IMPORTANCE: **RO** **SRO** 3.3

10CFR55 CQNTENT: **41(b)** **43(b)** 3

KA: 2.2.10

Knowledge of the process for determining if the margin of safety, as defined in the basis of any technical specification **is** reduced by a proposed change, test or experiment

OBJECTIVE: PP-2.0-S2

LIST the actions required by the individual who authorizes a deviation from the Technical Specifications or license conditions

DEVELOPMENT REFERENCES: PRO-NGGC-0200

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☐ **SIGNIFICANTLY MODIFIED** ☑ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: INPO 23318

NRC EXAM IIISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since 10CFR50.54(x) requires that a licensed SRO approve any actions which deviate from license conditions prior to performance, but the actions must be to protect the health and safety ofthe public.

√ ***b.*** The minimum level of approval per PRO-NGGC-0200 is the Superintendent-Shift Operations. *but* it can be approved by any personnel holding an SRO license above this position also.

c. Piausible since the NRC must be notified, but the notification requirenients are within 1 hour per AP-617.

d. Plausible since the Manager-Operations can approve a deviation if he holds an **SRO** license, but the actions must he to protect the health and safety ofthe public.

DIFFICULTY ANALYSIS:

☐ **COMPREIIENSIVE:/ ANALYSIS** ☑ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 2

EXPLANATION: Requires knowledge of requirements for process of performing actions not described in any licensing basis documents.

QUESTION: 19

Given the following conditions:

- Following a Loss of All Power, EDG IA-SA has been restarted and partially loaded.
- **A** transition has been made to EOP-EPP-003, "Loss of All **AC** Power Kecovery with SI Kequired."
- EDG 1.4-SA is currently loaded to **4.5** MWe and 3.5 MVAR.

Which of the following would result in an UNACCEPTABLE loading condition for EDG 1A-SA?

a. • Pick up an additional 0.5 MWe
   • Pick up an additional 0.1 MVAR

b. • **Pick up** an additional I.0 MWe
   • Pick up an additional 0.5 MVAK

c. • Pick **up** an additional 1.5 MWe
   • Pick up an additional 1.0 MVAR

d. • Pick up an additional 2.0 MWe
   • Pick up an additional 1.2 MVAR

ANSWER:

c. **e** **Pick** up an additional 1.5MWe
• Pick up **an** additional I.0 MVAR

QUESTION NUMBER: 19 **TIEWGROUP:** 1/1

KA IMPORTANCE: **RO** **SRO** 4.6

10CFR55 CONTENT: **41(b)** **43(b)** **5**

KA: 000056AA2.14

Ability to detennine and interpret the following as they apply to the Loss of Offsite Power: Operational status of ED/Gs **(A** and B)

OEJECTIVE: EOP-3.7-6

Given a step, caution, or note from EOP-001, EOP-002, or EOP-003, state its purpose

DEVELOPMENT REFERENCES: OP-155, Attachment 9
EOP-EPP-003

REFERENCES SUPPLIED TO APPLICANT: OP-155, Attachment 9

QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFPED** [ ] **DIRECT**

RANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since new loading will be 5.0 MWe and *3.6* MVAR, which is just within acceptable limits.

b. Plausible since new hading will he 5.5 MWe and 4.0 MVAR, which is just within acceptable limits,

√ **c.** New loading will be *6.0* MWe and 4.5 MVAR, which is outside acceptable limits.

d. Plausible since new loading will be 6.5 MWe and 4.7 MVAK. which ***is*** just within acceptable limits,

DIFFICULTY ANALYSIS:

[√] **COMPREIIENSIVE / ANALYSIS** [ ] **KNOWLEDGE /RECALL**

DIFFICULTY RATING: *3*

EXPLANATION: Must analyze EDG operability curve to determine whether additional MWe and MVAR loading is within acceptable limits

Post Validation Revision

QUESTION: 20

A reactor trip occurred due to a loss of offsite power. The plant is being cooled down on RHR per EPP-006. Natural Circulation Cooldown with Steam Void in Vessel with RVLIS.

- RCS cold leg temperatures are 190°F.
- Steam generator pressures are 50 psig.
- RVLIS upper range indicates greater than 100%.
- Three CRDM fans have been running during the entire cooldown.

Steam should be dumped from all SGs to ensure …

a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.

b. all inactive portions of the RCS are below 200°F prior to cotnplete RCS depressurization.

c. RCS **and** SG temperatures are equalized prior *to* any subsequent RCP restart

d. RCS temperatures do not increase during the required 29 hour vessel soak period.

ANSWER:

b. all inactive portions of the RCS are below 200°F prior to complete RCS depressurization.

Post Validation Revision

QUESTION NUMBER: 20 **TIEWGROUP:** 112

KA IMPORTANCE: **RO** **SRO** 3.8

10CFR55 CONTENT: **41(b)** **43(b)** **2**

MA: WE09G2.1.32

Ability to explain and apply all system limits and precautions. (Natural Circulation Operations)

OBJECTIVE: EOP-3.8-2

Demonstrate the below-assumed operator knowledge from the SHNPP Step Deviation Document and the WOG ERGs that support performance of EOP actions: Determining that upper head and SG U-tube temperatures are below 200 °F

DEVELOPMENT REFERENCES: EOP-EPP-006

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EOP-3.8 **006**

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this action would have been performed in this procedure, hut must be completed prior to depressurizing the RCS below 1900 psig:.

√ **h.** SG pressure above 0 psig indicates that the SGs are above 200°F. Depressurizing the RCS under this condition will result in additional void formation in the SG u-tubes.

c. Plausible since RCP operation throughout NC Cooldown is desirable, but will not be performed at this point in the procedure.

d. Plausible since a soak period is addressed, but only if continued operation of CRDM fans had not been maintained.

DIFFICULTY ANALYSIS:

☑ **COMPREHENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must analyze the conditions and detennine that the entire RCS is not below 200°F and the effect of depressurizing under these conditions.

QUESTION: 21

During an emergency, **a** worker has been directed to enter a high radiation area and perform a repair necessary for the protection of valuable property.

In accordance with PEP-330. "Radiological Consequences," the worker's exposure should be limited to …

a. 10 Rem TEDE and the entry does **NOT** require specific Site Etnergency Coordinator authorization.

b. 10 Rem TEDE and the entry requires specific Site Emergency Coordinator authorization.

c. 25 Rem TEDE and the entry does **NOT** require specific Site Emergency Coordinator authorization.

d. 25 Rem TEDE and the entry requires specific Site Emergency Coordinator authorization.

ANSWER:

b. 10 Rem TEDE and the entry requires specific Site Emergency Coordinator authorization.

QUESTION NUMBER: 21 **TIER/GROUP:** 3
K.4 IMPORTANCE: **RO** **SRO** 3.3
10CFR55 CONTENT: **41(b)** **43(b)** 4

KA: 2.3.7
Knowledge of the process for preparing a radiation work permit

OBJECTIVE: EP20-2A
Identify the types of protective actions for HNP personnel (both on and off-site) and who is responsible for directing them.

DEVELOPMENT REFERENCES: **PEP-330**
REFERENCES SUPPLIED TO APPLICANT: None
QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**
BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New
NHC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since 10 rem TEDE for protecting valuable company property. hut *S-SO* approval is required.

√ **b.** Exposure is limited *to* 10 rem TEDE is the limit required for this activity and *S-SO* approval is required.

c. Plausible since 25 rem TEDE is the limit required for lifesaving efforts. hut the limit to protect equipment and property is L0 rem TEDE.

d. Plausible since 25 rem TEDE is the limit required for lifesaving efforts, but the limit to protect equipment and property is 10 rem TEDE.

DIFFICULTY ANALYSIS:
[ ] **COMPREHENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL,**
DIFFICULTY RATING: **3**
EXPLANATION: Requires knowledge of the emergency exposure limits and approval requirements

QUESTION: 22

Given the following conditions:

- Power *is* currently at 32% during a plant startup.
- Instrument Bus IDP-1B-SIV deenergized as **a** *result* of a fault **in** PIC' CAR-4.
- PIC **CAR-4** has been isolated from Instrument **Bus** SIV and will be deenergized for approximately eight (8) hours while repairs are being made.

Which of the following actions must be taken?

a. Place **ail** PIC CAB-4 Reactor **Trip** instruments in the tripped condition

b. Place all PIC CAB-4 ESF instrutnents in the tripped condition

c. Place all MFW Regulating Valves in MANUAL

d. Perform a plant shutdown

ANSWER:

d. Perform a plant shutdown

QUESTION NUMBER: 22 **TIER/GROUP:** 1/1
KA IMPORTANCE: **RO** **SRO** **4.1**
10CFR55 CONTEXT: **41(b)** **43(b)** **2**

KA: 000057G2.2.22
Knowledge of limiting conditions for operations and safety limits. (Loss of Vital AC Instrument Bus)

OBJECTIVE: AOP-3.24-4
Determine the following: a. Consequences of the loss of all power to PIC CAB-4

DEVELOPMENT REFERENCES: AOP-024
TS Table 3.3-3, pg 3-IX and 3-27
TS 3.0.3, pg 0-1

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**
BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: AOP-3.24-R4 001
NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since instrument failures require bistables tripped, but they are deenergized to actuate and are already tripped since no power **is** available.

b. Plausible since instrument failures require bistables tripped, but they are deenergized to actuate and are already tripped since no power is available.

c. Plausihle since this is the immediate operator action for a loss of Instrument Bus SIII, not **SIV**

√ **d.** Loss of all power to PIC' CAB-4 will result in 3 bistable channels of Steam Line Pressure becoming inoperable. The TS action is io trip the bistables within one hour, but the bistables are energized to actuate. Without power available, this action cannot he performed and TS 3.0.3 becomes applicable.

DIFFICULTY ANALYSIS:

☑ **COMPREIIENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: **4**

EXPLANATION: Must recognize that energized **io** actuate histables cannot be placed in tripped condition without power, thus an entry into TS 3.0.3 is required. and must determine the required TS 3.0.3 actions

QUESTION: *23*

During the performance of EOP-PATH-2, the STA reports that the following two (2) YELLOW path Critical Safety Function Status Trees (CSFST) exist:

- Integrity
- Heat Sink

Which of the following describes how these YELLOW paths are to be addressed and / or implemented?

a. Both must be addressed and implemented, with Heat Sink having a higher priority than Integrity, as soon as EOP-PATH-2 actions are completed provided no other higher priority CSFST conditions exist

b. Both must be addressed, but implemented at the discretion of the Superintendent-Shift Operations, prior to exiting from the EOP network

c. Both must be addressed and implemented, with Heat Sink having a higher priority than Integrity, prior to exiting from the EOP network

d. Both must be addressed. but implemented at the discretion of the Superintendent-Shift Operations, as soon as EOP-PATH-2 actions are completed provided no other higher priority CSFST conditions exist

ANSWER:

h. Both must **he** addressed, but implemented at the discretion of the Superintendent-Shift Operations, prior to exiting from the EOP network

QUESTION NUMBER 23 **TIER/GROUP:** 3
KA IMPORTANCE: ***RO*** ***SRO*** 4.0
10CFR55 CONTENT: **41(b)** **43(b)** 5

KA: 2.4.22

Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations

OBJECTIVE: EOP-3.19-2

Describe Control Room usage of status trees as it relates to the following

a. Priority of status trees
b. Rules of usage

DEVELOPMENT REFERENCES: EOP User's Guide
REFERENCES SUPPLIED TO APPLICANT: None
QUESTION SOURCE: [√] **NEW** [ ] **SIGNIFICANTLY MODIFIED** [ ] **DIRECT**
BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: New
NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since they are to be addressed, but only prior to leaving the EOP network and are not required to he implemented.

√ **b.** All YELLOW-condition CSFSTs should be addressed prior to exiting the EOP network. However, the operator is allowed to decide if and when to implement. and whether to complete any YELLOW-condition FRP.

c. Plausible since they are to be addressed, but only prior to leaving the EOP network and are not required to be implemented.

d. Plausible since they are to be addressed, but only prior to leaving the EOP network and are not required to be implemented.

DIFFICULTY ANALYSIS:

[ ] **COMPREIIENSIVE / ANALYSIS** [√] **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 2

EXPLANATION: Knowledge of the implementation criteria for yellow CSFSTs ***as*** directed by plant procedures

QUESTION: 24

Following a loss of all AC power, how long are the safety-related 125 VDC batteries **DESIGNED** to allow equipment operation'?

a. 2 hours, assuming DC ioad shedding occurs within *30* minutes of the loss of all AC power

b. 2 hours, assuming DC load shedding occurs within 60 minutes of the loss of all AC power

c. 4 hours, assuming DC load shedding occurs within 30 minutes of the loss of all **AC** power

d. 4 hours, assuming DC load shedding occurs within *60* minutes of the loss of all A S power

ANSWER:

d. 4 hours, assuming DC load shedding occurs within *60* tninutes of the loss of all AC power

QUESTION NUMBER: 24 **TIEWGROUP:** 1/1

KA IMPORTANCE: **RO** **SRO** 3.7

10CFR55 CONTENT: **41(b)** **43(b)** 2

KA: 00005862.2.25

Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (Loss of DC Power)

OBJECTIVE: EOP-3.7-6

Given a step, caution, or note from EOP-001, EOP-002, or EOP-003, state its purpose

DEVELOPMENT REFERENCES: Tech Spec Bases 3.8.2, pg 8-2
EOP-EPP-001
ADEL-LP-2.6

REFERENCES SIJPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☐ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: ADEL2-6-S1 001

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this is the time limit which requires actions being taken in accordance with Technical Specifications, hut the design of the hatteries is 4 hours.

b. Plausihle since this is the time limit which requires actions being taken in accordance with Technical Specifications, but the design of the batteries is 4 hours.

c. Plausible since the design of the hatteries is 4 hours, but the design assumes that DC load shedding occurs within 60 minutes. not 30.

√ **d.** Batteries are designed to can); required safety related loads for **up** to 4 hours without AC input to carry bus or charge hatter)., assuming that required load shedding occurs within 1 hour.

DIFFICULTY ANALYSIS:

☐ **COMPREHENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: *3*

EXPLANATION: Knowledge of tech spec basis arid design of safety-related batteries

QUESTION: 25

Which of the following actions would be **INAPPROPRIATE** to perform prior to direction in an EQP?

a. Isolating **AFW** flow to a single faulted SG

h. Throttling AFW flow to control a ruptured SG level within the required level band

c. Securing a ('SIP to prevent overfilling the pressurizer following an inadvertant SI

d. Shutting the MSIVs tu isolate a steamline break which has not resulted in an SI

ANSWER:

c. Securing a CSIP to prevent overfilling the pressurizer following an inadvertant SI

Post Validation Revision

QUESTION NUMBER: 25 **TIER/GROUP:** 3

KA IMPORTANCE: **RO** **SRO** 3.9

10CFR55 CONTENT: **41(b)** **43(b)** **5**

KA: **2.4.14**

Knowledge of general guidelines for EOP flowchart use

OBJECTIVE: EOP-LP-3.19-1

Describe Control Room usage **of** the EOP network as it relates to the following: a) Performing steps out of sequence

DEVELOPMENT REFERENCES: **EOP** User's Chide

REFERENCES SUPPLIED TO APPLICANT: None

QUESTION SOURCE: ☐ **NEW** ☑ **SIGNIFICANTLY MODIFIED** ☐ **DIRECT**

BANK NUMBER FOR SIGNIFICANTLY MODIFIED / DIRECT: EOP-3.19-R1 0 18

NRC EXAM HISTORY: None

DISTRACTOR JUSTIFICACTION (CORRECT ANSWER √'d):

a. Plausible since this is a numbered step in PATH-I which are normally required to he performed in sequence, but the EOP User's Guide addresses this as being acceptable.

b. Plausible since this is a numbered step in PATH-1 which are *normally* required to he performed in sequence, but the EOP User's Guide addresses this as being acceptable.

√ **c.** Performing steps out of sequence is allowed, but must be done with caution to prevent masking symptoms or defeating the intent **ofthe** EOP being used. Although terminating SI early might he beneficial to prevent filling the pressurizer if the only event is a spurious SI, this may result in further degradation of the plant if another undiagnosed event is in progress.

d. Plausible since this is a numhered step in PATH-1 which are normally required to be performed in sequence, but the EOP User's Guide addresses this **as** being acceptable.

DIFFICULTY ANALYSIS:

☑ **COMPREIIENSIVE / ANALYSIS** ☐ **KNOWLEDGE / RECALL**

DIFFICULTY RATING: 3

EXPLANATION: Must differentiate between those actions which could potentially result in degradation ofthe plant if taken out of sequence and those actions which would likely have little impact on the operators' abilities to diagnose other events.