# 2010 FCS NRC RO EXAM

NAME: ANSWER KEY

(1) A **B** C D
(2) A B C **D**
(3) A B **C** D
(4) A B C **D**
(5) **A** B C D
(6) A **B** C D
(7) **A** B C D
(8) **A** B C D
(9) A B **C** D
(10) **A** B C D
(11) **A** B C D
(12) A B **C** D
(13) **A** B C D
(14) A B **C** D
(15) A **B** C D
(16) **A** B C D
(17) A **B** C D
(18) A **B** C D
(19) A B C **D**
(20) **A** B C D
(21) A **B** C D
(22) A B C **D**
(23) A **B** C D
(24) A **B** C D
(25) A B **C** D
(26) **A** B C D
(27) A B C **D**
(28) A B **C** D
(29) **A** B C D
(30) A B C **D**
(31) A **B** C D
(32) A B **C** D
(33) A B C **D**
(34) **A** B C D
(35) A B C **D**
(36) A B **C** D
(37) A **B** C D
(38) A **B** C D
(39) A **B** C D
(40) A B C **D**
(41) A **B** C D
(42) A **B** C D
(43) A B **C** D
(44) A B **C** D
(45) A B C **D**
(46) **A** B C D
(47) A B C **D**
(48) A B C **D**
(49) A B C **D**
(50) A B C **D**
(51) A B C **D**
(52) A B **C** D
(53) A **B** C D
(54) A B C **D**
(55) A B **C** D
(56) A B C **D**
(57) A B C **D**
(58) A **B** C D
(59) A B **C** D
(60) **A** B C D
(61) A **B** C D
(62) A **B** C D
(63) A **B** C D
(64) A B **C** D
(65) A **B** C D
(66) **A** B C D
(67) **A** B C D
(68) A B C **D**
(69) A **B** C D
(70) **A** B C D
(71) A B **C** D
(72) A **B** C D
(73) A B **C** D
(74) A **B** C D
(75) **A** B C D

# 2010 FCS NRC SRO EXAM

NAME: ANSWER KEY

(1) A **B** C D
(2) A B C **D**
(3) A B **C** D
(4) A B C **D**
(5) **A** B C D
(6) A **B** C D
(7) **A** B C D
(8) **A** B C D
(9) A B **C** D
(10) **A** B C D
(11) **A** B C D
(12) A B **C** D
(13) **A** B C D
(14) A B **C** D
(15) A **B** C D
(16) **A** B C D
(17) A **B** C D
(18) A **B** C D
(19) A B C **D**
(20) **A** B C D
(21) A **B** C D
(22) A B C **D**
(23) A **B** C D
(24) A **B** C D
(25) A B **C** D
(26) **A** B C D
(27) A B C **D**
(28) A B **C** D
(29) **A** B C D
(30) A B C **D**
(31) A **B** C D
(32) A B **C** D
(33) A B C **D**
(34) **A** B C D
(35) A B C **D**
(36) A B **C** D
(37) A **B** C D
(38) A **B** C D
(39) A **B** C D
(40) A B C **D**
(41) A **B** C D
(42) A **B** C D
(43) A B **C** D
(44) A B **C** D
(45) A B C **D**
(46) **A** B C D
(47) A B C **D**
(48) A B C **D**
(49) A B C **D**
(50) A B C **D**
(51) A B C **D**
(52) A B **C** D
(53) A **B** C D
(54) A B C **D**
(55) A B **C** D
(56) A B C **D**
(57) A B C **D**
(58) A **B** C D
(59) A B **C** D
(60) **A** B C D
(61) A **B** C D
(62) A **B** C D
(63) A **B** C D
(64) A B **C** D
(65) A **B** C D
(66) **A** B C D
(67) **A** B C D
(68) A B C **D**
(69) A **B** C D
(70) **A** B C D
(71) A B **C** D
(72) A **B** C D
(73) A B **C** D
(74) A **B** C D
(75) **A** B C D
(76) A B **C** D
(77) A **B** C D
(78) A B C **D**
(79) A B C **D**
(80) A B C **D**
(81) A **B** C D
(82) A B **C** D
(83) A B **C** D
(84) A B C **D**
(85) A B C **D**
(86) **A** B C D
(87) **A** B C D
(88) A **B** C D
(89) **A** B C D
(90) A **B** C D
(91) **A** B C D
(92) A B **C** D
(93) **A** B C D
(94) **A** B C D
(95) A B **C** D
(96) A **B** C D
(97) A **B** C D
(98) A B C **D**
(99) A B C **D**
(100) A B **C** D

Fort Calhoun Station
Initial License Exam
09/2010

Written Examination Handouts

<u>RO</u>
Steam Tables

<u>SRO</u>
Steam Tables
AOP-19, Loss of Shutdown Cooling, Attachment D, Alternate Decay Heat Removal Method Determination

QUESTION NUMBER: 001

The plant is in hot shutdown following a loss of offsite power. The following plant conditions exist:

- 4160 volt buses 1A3 and 1A4 are both energized by the Diesel-Generators
- LRC-101X indicates 46% with a slowly rising trend
- LRC-101Y (controlling channel) indicates 45% with a slowly rising trend
- PRC-103X indicates 1910 psia and lowering
- PRC-103Y (controlling channel) indicates 1912 psia and lowering
- Charging flow indicates 40 gpm
- Letdown flow indicates 32 gpm
- One charging pump is running
- Pressurizer Quench Tank level and pressure are steady
- Reactor Vessel Level indicates 100%
- Representative CET temperature indicates 575°F

Which one of the following events could cause these indications?

A. Pressurizer Spray Valve, PCV-103-1, inadvertently opened.

B[redacted] Auxiliary Spray Valve, HCV-249, inadvertently opened.

C. Pilot Operated Relief Valve, PCV-102-1, inadvertently opened.

D. RCS Void Formation is occurring.

Question # 1 Revision: 1

KA #: 000008 AA2.19 Tier 1 Group 1 Pressurizer Vapor Space Accident

Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: PZR spray valve failure, using plant parameters

Importance: 3.4 / 3.6 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

PLOT and PREDICT the following parameters for the transients listed in objective 1.2:

Revision 1 - Modified explanation of choice B to explain level rise

EXPLANATION:

Choice B is correct, with the aux spray valve open, charging flow will go though aux spray valve causing a pressure decrease. Pressurizer level is rising slowly because the level control system is restoring level to its hot shutdown value of 48%. Choice A is incorrect because there will be no main spray low during a loss of offsite power with no reactor coolant pumps running. C is incorrect because pressurizer quench tank level and pressure are steady. D is incorrect because adequate subcooling exists and RV level is 100%

| | | | |
|---|---|---|---|
| KA#: | 000008 AA2.19 | Bank Ref #: | 07-17-33 002 |
| LP# / Objective: | 0715-12 01.03 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | STM 12 | Handout: | STEAM TABLES |

QUESTION NUMBER: 002

The following plant conditions exist following an automatic reactor trip and Pressurizer Pressure Low Setpoint (PPLS) actuation:

- Pressurizer Pressure is 725 psia and lowering
- Pressurizer level is 0%
- Reactor Vessel Level indicates 29%
- All Reactor Coolant Pumps have been tripped
- Representative CET temperature is 507°F
- Hot leg temperatures indicate 506°F
- Cold leg temperatures indicate 504°F
- Steam Generator Pressures are 900 psia
- Narrow Range Steam Generator Levels are 38% and rising
- Total HPSI Flow indicates 360 gpm
- Total LPSI flow indicates 0 gpm

What is the status of natural circulation?

A. Single phase natural circulation is occurring.

B. Two phase natural circulation is occurring.

C. Reflux boiling is occurring.

D[redacted] Natural circulation has stopped.

Question # 2 Revision: 0

KA #: 000009 EK2.03 Tier 1 Group 1 Small Break LOCA

Knowledge of the interrelations between the small break LOCA and the following: S/Gs

Importance: 3 / 3.3 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

STATE from memory the four indications used to verify the development of Subcooled Natural Circulation.

EXPLANATION:

Choice D is correct because primary pressure is below the S/G pressures and there is no heat sink to support natural circulation. The distractors are the three modes of natural circulation.

| | | | |
|---|---|---|---|
| KA#: | 000009 EK2.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-13 03.05 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | LP 07-15-23 | Handout: | NONE |

QUESTION NUMBER: 003

A precaution in OI-RC-9, REACTOR COOLANT PUMP OPERATION, states "WHEN a RCP Motor is cold, THEN do NOT attempt more than two starts in succession."

The reason for this precaution is to prevent damage to the RCP _________.

A. seals

B. bearings

C[redacted] motor windings

D. oil lift pump

Question # 3 Revision: 1

KA #: 000015 AK3.01 Tier 1 Group 1 Reactor Coolant Pump Malfunctions

Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow) : Potential damage from high winding and/or bearing temperatures

Importance: 2.5 / 3.1 CFR Number: 5.41(b)(3)

Mechanical components and design features of the reactor primary system.

Fort Calhoun Objective:

DISCUSS the prerequisites and precautions for operating an RCP.

Revision 1 - Simplified question

EXPLANATION:

Choice C is correct per the procedure. The distractors are all items that can be affected by repetitive pump starts.

| | | | |
|---|---|---|---|
| KA#: | 000015 AK3.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-20 03.02A | Exam Level: | RO-3 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OI-RC-9 | Handout: | NONE |

QUESTION NUMBER: 004

The first step of AOP-33, CVCS LEAK, directs that all Charging Pump Control Switches be placed in PULL-TO-LOCK and that the following valves be closed:

- TCV-202, Letdown Isolation Valve
- HCV-204, Letdown Isolation Valve
- HCV-238, Loop 1 Charging Isolation
- HCV-239, Loop 2 Charging Isolation
- HCV-240, PZR Auxiliary Spray Isolation Valve
- HCV-249, PZR Auxiliary Spray Isolation Valve

Why is Charging Line Stop Valve, HCV-247, not closed during this step?

A. Because it is normally closed.

B. Because it is interlocked to automatically close when HCV-204 is closed.

C. To maintain a Charging Header Relief Path to the Volume Control Tank.

D[redacted] To maintain a Charging Header Relief Path to the RCS Loops.

Question # 4 Revision: 1

KA #: 000022 2.4.06 Tier 1 Group 1 Loss of Reactor Coolant Makeup

Knowledge EOP mitigation strategies.

Importance: 3.7 / 4.7 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Given the caution statements and/or notes listed in this AOP, EXPLAIN the reason for

Revision 1 - minor punctuation change

EXPLANATION:

"D" is the correct answer per the reference. Distractor "A" is incorrect, the valve is normally open. Distractor "B" is incorrect, HCV-204 has many interlocks (pressue, flow, CIAS) but it is not interlocked with HCV-247. Distractor "C" is incorrect, HCV-247 does not maintain a relief path to the VCT.

| | | | |
|---|---|---|---|
| KA#: | 000022 2.4.06 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-33 01.05 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | TBD-AOP-33 | Handout: | NONE |

QUESTION NUMBER: 005

Given the following plant conditions:

- The plant is on shutdown cooling
- No Reactor Coolant Pumps are operating
- Pressurizer Manways are installed

How will a loss of power to RCS Pressure Controller, PC-118, affect Loop Suction Valves HCV-347 and HCV-348?

A[redacted] HCV-347 and HCV-348 will both close.

B. Only HCV-347 will close.

C. Only HCV-348 will close.

D. HCV-347 and HCV-348 will remain open unless power is also lost to PC-115.

Question # 5 Revision: 1

KA #: 000025 AA1.10 Tier 1 Group 1 Loss of Residual Heat Removal System

Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: LPI pump suction valve and discharge valve indicators

Importance: 3.1 / 2.9 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Given a current copy of OI-SC-1, explain the major steps, prerequisites and precautions for placing the Shutdown Cooling System in service.

Revision 1 - Expanded the explanation and added a system logic drawing to the reference material.

EXPLANATION:

A loss of power to PC-118A will close both HCV-347 and HCV-348. "A" is correct and the distractors are incorrect. B is incorrect because HCV-348 also closes. C is incorrect because HCV-347 also closes. D is incorrect because HCV-347 and HCV-348 both close if power is lost to PC-118. See drawing added to reference material.

| | | | |
|---|---|---|---|
| KA#: | 000025 AA1.10 | Bank Ref #: | 07-11-22 025 |
| LP# / Objective: | 0711-22 01.04 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | BANK |
| Reference: | STM 15 | Handout: | NONE |

QUESTION NUMBER: 006

Given the following plant conditions:

- The plant is operating at full power
- CCW Surge Tank level and pressure are rising
- Rising count rate indicated by CCW radiation monitor, RM-053

Which one of the following events would cause these indications?

A. A tube leak in the CVCS Regenerative heat exchanger.

B[redacted] A leak in a Reactor Coolant Pump seal cooler.

C. A tube leak in the Spent Fuel Pool heat exchanger.

D. A leak in a Raw Water/CCW heat exchanger.

Question # 6 Revision: 1

KA #: 000026 AA1.05 Tier 1 Group 1 Loss of Component Cooling Water

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: The CCWS surge tank, including level control and level alarms, and radiation alarm

Importance: 3.1 / 3.1 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective:

EXPLAIN conditions that indicate leakage in or out of the CCW System.

Revision 1 - deleted VCT level is lowering from the stem, punctuation changes.

EXPLANATION:
B would result in a leak of RCS liquid to CCW producing the conditions in the stem. Choice A is incorrect because there is no CCW interface (CVCS letdown heat exchanger would be correct), C & D are incorrect because the leakage would be from the CCW system.

| | | | |
|---|---|---|---|
| KA#: | 000026 AA1.05 | Bank Ref #: | 07-11-06 |
| LP# / Objective: | 0711-06 06.01 | Exam Level: | RO-11 |
| Cognitive Level: | HIGH | Source: | NRC 1997 REWORD |
| Reference: | AOP-22 | Handout: | NONE |

QUESTION NUMBER: 007

The reactor tripped 20 minutes ago. The following conditions are observed:

- "PRESSURIZER PRESSURE OFF NORMAL HI-LO" channel X and Y are in alarm
- PRC-103Y (controlling channel) indicates 2175 psia and slowly rising
- PRC-103X indicates 1980 psia and slowly lowering
- All backup heaters are in auto and deenergized
- LRC-101Y (controlling channel) indicates 48% and steady
- LRC-101X indicates 47% and steady
- Letdown flow is 36 gpm
- One charging pump is running
- $T_{cold}$ indicates 533°F, $T_{hot}$ indicates 534°F, both are stable

What action should be taken to restore RCS pressure to normal in accordance with ARP CB-1,2,3/A4?

A[redacted] Select PRC-103X as the controlling pressure channel.

B. Take manual control of PRC-103Y to lower pressurizer pressure.

C. Select LRC-101X as the controlling level channel.

D. Place pressurizer heater cutout switch, HC-101-1, in channel "X."

Question # 7 Revision: 1

KA #: 000027 AK2.03 Tier 1 Group 1 Pressurizer Pressure Control System Malfunction

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners

Importance: 2.6 / 2.8 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

When given specific plant conditions, EXPLAIN operating principles to predict response of Reactor Coolant System (RCS) Instrumentation.

Revision 1 - Added additional information to the explanation on why choice B is incorrect. Changed reference to ARP.

EXPLANATION:
A is correct. These conditions would result if PRC-103Y failed high. B is incorrect because PRC-103Y has failed and pressure needs to be raised, not lowered. C&D are incorrect because there is no problem with level. If either level channel had failed low, all backup heaters would deenergize. Choice D, would have no effect

| | | | |
|---|---|---|---|
| KA#: | 000027 AK2.03 | Bank Ref #: | 07-11-20 156 |
| LP# / Objective: | 0711-20 04.00 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | ARP-CB1,2,3/A4 B-4 | Handout: | NONE |

QUESTION NUMBER: 008

The Reactor failed to trip automatically during a transient and needed to be tripped manually.

Depressing the manual reactor trip pushbutton on CB-4 de-energized the CEDM clutch power supplies by ________________.

A[redacted] De-energizing the "M" coils which opens the "M" contacts.

B. Energizing the "M" coils which opens the "M" contacts.

C. De-energizing the undervoltage coils for the CEDM clutch power supply circuit breakers causing them to open.

D. Energizing the shunt coils for the CEDM clutch power supply circuit breakers causing them to open.

Question # 8 Revision: 1

KA #: 000029 2.1.31 Tier 1 Group 1 Anticipated Transient Without Scram (ATWS)

Ability to locate control room switches, controls and indications and to determine that they correctly reflecting the desired plant lineup.

Importance: 4.6 / 4.3 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Given a simplified diagram of the RPS trip paths, EXPLAIN how the "M" coil contacts are: Opened to initiate a reactor trip

Revision 1 - added words to the stem to tie the question to an ATWS event.

EXPLANATION:
Pushing the Reactor trip pushbutton on CB-4, de-energizes the "M" coils, opening "M" contacts which removes power to the clutch power supplies. "A" is correct. "B" is incorrect because energizing the coils closes the contacts. "C" and "D" are wrong because the CB-4 pushbutton has no affect on the clutch power supply circuit breakers, (although "Diverse Scram does open them)

| | | | |
|---|---|---|---|
| KA#: | 000029 2.1.31 | Bank Ref #: | 07-12-25 009 |
| LP# / Objective: | 0712-25 01.15 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | BANK |
| Reference: | STM 38 | Handout: | NONE |

QUESTION NUMBER: 009

What automatic action is caused by a high radiation alarm on Condenser Off-gas Radiation Monitor, RM-057, and what is the reason for this action?

A. Blowdown isolation valves, HCV-1387A/B and HCV-1388A/B, close to terminate a radiation release to the environment.

B. Condenser off-gas is routed through the hydrogen purge filters and the auxiliary building stack to reduce the Iodine and Particulate release to the environment.

C[redacted]6th stage extraction feed to Auxiliary Steam Valve, RCV-978, closes to prevent contamination of the Auxiliary Steam System.

D. Sample Valves from the Main Steam Line to Main Steam Line Radiation Monitor, RM-064, open to provide additional monitoring of a release to the environment.

Question # 9 Revision: 2

KA #: 000038 EK3.04 Tier 1 Group 1 Steam Generator Tube Rupture

Knowledge of the reasons for the following responses as the apply to the SGTR: Automatic actions provided by each PRM

Importance: 3.9 / 4.1 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective:

LIST radiation monitors with automatic actuations and STATE the automatic actuations that occur.

Revision 1 - Added "and what is the reason for this action" to the stem and expanded explanation.
Revision 2 - Punctuation change.

EXPLANATION:
RM-057 High Radiation isolates RCV-978, which supplies steam to the Auxiliary Steam System preventing contamination thus "C" is the correct answer. "A" is incorrect, because high radiation on RM-054A/B isolates blowdown. Choices "B" and "D" are both manual actions. They are valid distractors because they are manual actions taken in response to a steam generator tube rupture.

| | | | |
|---|---|---|---|
| KA#: | 000038 EK3.04 | Bank Ref #: | 07-12-03 010 |
| LP# / Objective: | 0712-03 04.01 | Exam Level: | RO-11 |
| Cognitive Level: | LOW | Source: | NRC 1999 EXAM |
| Reference: | STM 33 | Handout: | NONE |

QUESTION NUMBER: 010

The plant was operating at full power when the following sequence of events occurred:

- Level and pressure in Steam Generator, RC-2A, began lowering.
- Indicated Feedwater flow to RC-2A increased.
- Indicated Feedwater flow to RC-2B decreased.
- The reactor tripped followed by PPLS, CPHS,SGLS, and SGIS.
- All Safeguards Equipment operated as designed.
- Pressure and level in RC-2A continued to lower after both MSIVs closed.

Which one of the following break locations would cause these indications?

A[redacted] "A" feedwater line downstream of the FW Check Valve.

B. "A" feedwater line between the containment penetration and the FW Check Valve.

C. "B" Auxiliary feedwater line downstream of the FW Check Valve.

D. "A" Main steam line in Room 81, upstream of the MSIV.

Question # 10 Revision: 2

KA #: 000054 AK1.01 Tier 1 Group 1 Loss of Main Feedwater

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break)

Importance: 4.1 / 4.3 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN the plant response to an Excessive Heat Removal Event.

Revision 1 - Added drawing showing Main and Auxiliary Feedwater connections to Steam Generators.
Revision 2 - Editorial change.

EXPLANATION:
The stem conditions are indications of a feedwater line break between the FW check valve and the "A" S/G, the S/G blows down much like a steam line break. Thus choice "A" is correct. Choice "B" is incorrect, because RC-2A pressure would not lower. "C" is incorrect because S/G "A" would not depressurize. Choice "D" is incorrect because CPHS would not have actuated for a steam line break in Room 81.

| | | | |
|---|---|---|---|
| KA#: | 000054 AK1.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0715-20 01.00 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | LP 07-15-12 | Handout: | NONE |

QUESTION NUMBER: 011

The plant was in hot standby when a significant electrical grid disturbance resulted in a reactor trip. Which one of the following sets of 4160V bus voltage conditions identified during the performance of EOP-00, STANDARD POST TRIP ACTIONS, would meet the entry conditions for EOP-07, STATION BLACKOUT, once EOP-00 is completed?

| | Bus 1A1 | Bus 1A2 | Bus 1A3 | Bus 1A4 |
|---|---|---|---|---|
| A[redacted] | 4160V | 4160V | 0V | 0V |
| B. | 0V | 4160V | 4160V | 0V |
| C. | 4160V | 0V | 0V | 4160V |
| D. | 0V | 0V | 4160V | 4160V |

Question # 11 Revision: 2

KA #: 000055 2.4.01 Tier 1 Group 1 Station Blackout

Knowledge of EOP entry conditions and immediate action steps.

Importance: 4.6 / 4.8 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

STATE from memory the three Entry Conditions for EOP-07, STATION BLACKOUT.

Revision 1 - Question replaced to reduce overlap with operating test.
Revision 2 - Added comma.

EXPLANATION: Choice A meets the entry conditions for EOP-07 because both bus 1A3 and bus 1A4 are deenergized. Correct answer. Choice B is incorrect because bus 1A3 is energized. Choice C is incorrect because bus 1A4 is energized. Choice D is incorrect because both bus 1A3 and bus 1A4 are energized.

| | | | |
|---|---|---|---|
| KA#: | 000055 2.4.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-17 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-07 | Handout: | NONE |

QUESTION NUMBER: 012

Given the following plant conditions:

- A Loss of Offsite Power occurred 20 minutes ago
- Both Diesel Generators are running and loaded.
- Condenser Vacuum indicates 0.5 inches Hg
- Both MSIVs are open
- Atmospheric Relief Valve, HCV-1040, is isolated due to leakage
- FW-54 is providing flow to both Steam Generators
- The Operators have not taken any actions

Under these conditions, what would be the expected pressure indicated on CB-10/11 by PI-941A, Main Steam Pressure?

A. 800 - 850 psia.

B. 875 - 925 psia.

C[redacted] 975 - 1025 psia.

D. 1050 - 1100 psia

Question # 12 Revision: 1

KA #: 000056 AA2.86 Tier 1 Group 1 Loss of Off-Site Power

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Main steam pressure meter scale

Importance: 2.7 / 2.7 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN when the atmospheric dump would be used instead of the steam dump and bypass valves.

Revision 1 - Simplified stem and added detail to explanation

EXPLANATION:
Following a loss of offsite power with no operator action, S/G pressure will be controlled at approximately 1000 psia due to automatic cycling of MS-291/292 making "C" the correct answer. "B" would be the correct answer if condenser vacuum were available. "D" is the set pressure for safety valves, MS-278/282, but only MS-291/292 would cycling 20 minutes after the trip because they are capable of removing decay heat. "A" is the pressure range for normal full power operation and is incorrect.

| | | | |
|---|---|---|---|
| KA#: | 000056 AA2.86 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-17 04.01 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STM 25 | Handout: | NONE |

QUESTION NUMBER: 013

Given the following plant conditions:

- The plant is operating at Full Power
- The "INVERTER A TROUBLE" and "INSTRUMENT BUS A LOW VOLTAGE/GROUND" annunciators are in alarm
- Instrument Bus A voltage on AI-40A indicates 0 volts

AOP-16, LOSS OF INSTRUMENT BUS POWER, Section II, "Loss of Instrument Bus AI-40A," directs that HC-111/121, REACTOR REG SYSTEM CHANNAL SELECTOR SWITCH, be placed in the "B" position.

What control system will be affected if this action is not taken?

A[redacted] Condenser Steam Dump Valve Control.

B. Steam Generator Level Control.

C. Pressurizer Level Control.

D. Pressurizer Pressure Control.

Question # 13 Revision: 1

KA #: 000057 AK3.01 Tier 1 Group 1 Loss of Vital AC Electrical Instrument Bus

Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital ac electrical instrument bus

Importance: 4.1 / 4.4 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Describe how the plant responds to a loss of instrument bus power in terms of how specific equipment is affected and how it affects overall plant operation and reliability.

Revision 1 - added AOP-16 title to stem

EXPLANATION:
The Reactor Regulating System provides input to both the Pressurizer Level Control System and The Steam Dump and Bypass Valve Control System, however the HC-111/121 switch only affects Steam Dump and Bypass Control. Therefore, "A" is the correct answer and "C" is a valid distractor. "B" and "D" are both Control Systems with many inputs and are also valid distractors.

| | | | |
|---|---|---|---|
| KA#: | 000057 AK3.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-16 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STM 36 | Handout: | NONE |

QUESTION NUMBER: 014

The following conditions exist:

- A Station Blackout occurred 11 hours ago
- The batteries are fully discharged and both DC buses are deenergized
- 13.8 KV and 161 KV have just been restored to the switchyard.

What actions would result in restoring <u>normal</u> DC control power required to enable energizing Bus 1A3?

A. Use 13.8 KV to supply Battery Charger # 1. Use Battery Charger #1 to power DC Bus #1

B. Use 13.8 KV to supply Battery Charger # 2. Use Battery Charger #2 to power DC Bus #2

C[redacted] Use 13.8 KV to supply Battery Charger # 3. Use Battery Charger #3 to power DC Bus #1

D. Use 13.8 KV to supply Battery Charger # 3. Use Battery Charger #3 to power DC Bus #2.

Question # 14 Revision: 2

KA #: 000058 AK1.01 Tier 1 Group 1 Loss of DC Power

Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: Battery charger equipment and instrumentation

Importance: 2.8 / 3.1 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Explain the principles of emergency operation of the 480 VAC Electrical Distribution System in terms of major parameters, alarms and control devices.

Revision 1 - Changed reference to EOP-AOP Attachment 5, changed stem to consolidate bulleted information.
Revision 2 - Capitalization changes.

EXPLANATION:
Normal DC Control Power for bus 1A3 comes from DC bus# 1. 13.8 KV can only be used to power battery charger #3, Thus "C" is correct. Choices "A" and "B" are incorrect because 13.8 KV can not be used to power battery chargers #1 and #2. "D" is incorrect because DC bus #2 does not supply control power to bus 1A3 breakers.

| | | | |
|---|---|---|---|
| KA#: | 000058 AK1.01 | Bank Ref #: | 07-13-03 013 |
| LP# / Objective: | 0713-03 01.07 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | EOP/AOP ATT 5 | Handout: | NONE |

QUESTION NUMBER: 015

Given the following conditions:

- The Plant is operating at Full Power
- River Level is 990 feet
- Raw Water Pumps AC-10A and AC-10B are operating
- The "RAW WATER SUPPLY HEADER FLOW LOW" annunciator is in alarm
- The "RAW WATER STRAINER DIFFERENTIAL HI " annunciators are in alarm
- The red pressure indicating lights for AC-10A and AC-10B are lit
- The 10 psig and 25 psig pressure indicating lights on the crosstie upstream of the flow transmitters are lit
- Downstream of the flow transmitters, the 10 psig lights are lit but the 25 psig lights are off.

Which one of the following is a possible cause of the Low Flow alarm?

A. Clogged CW traveling screens.

B[redacted] Clogged RW discharge strainers.

C. A leak in the RW backup header in Room 18.

D. Erosion of the RW pump impellers.

Question # 15 Revision: 1

KA #: 000062 AA2.02 Tier 1 Group 1 Loss of Nuclear Service Water

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The cause of possible SWS loss

Importance: 2.9 / 3.6 CFR Number: 5.41(b)(4)

Secondary coolant and auxiliary systems that affect the facility.

Fort Calhoun Objective:

Use the Loss of Raw Water Procedure to mitigate the consequences of a loss of cooling to Component Coolin Water System or a leak in the Raw Water System.

Revision 1 - Removed screen or grid differential Hi alarm from the stem

EXPLANATION:
The crosstie upstream of the flow transmitters is also upstream of the strainers, the indicating lights downstream of the flow transmitters are also downstream of the strainers. Choice "B" is correct because it shows a high DP accross the strainers. The distractors are all valid causes of low flow and/or pressure, but would not provide all of the indications in the stem.

| | | | |
|---|---|---|---|
| KA#: | 000062 AA2.02 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-18 01.00 | Exam Level: | RO-4 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STM 35 | Handout: | NONE |

QUESTION NUMBER: 016

Which of the following is designed to protect safeguards equipment motors and their associated 480 V buses against starting with a degraded voltage condition on the system grid?

A[redacted] OPLS sensor circuit

B. Undervoltage Load Shed

C. 183/MES switch on D-2 panel

D. Fast transfer circuitry

Question # 16 Revision: 1

KA #: 000077 AK2.01 Tier 1 Group 1 Generator Voltage and Electric Grid Disturbances

Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Motors

Importance: 3.1 / 3.2 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain how the system responds automatically to malfunctions.

Revision 1 - Expanded explanation.

EXPLANATION:
OPLS is designed to prevent loads on buses 1A3 and 1A4 and their associated 480 volt buses from starting with degraded voltage, choice "A" is correct. The distractors all affect safeguards equipment during various electrical failures or conditions. Distractor "B," Undervoltage Load Shed is designed to protect electrical loads that are already running. Distractor "C," the 183/MES switch can be used to isolate D-2 from the Control Room in the event of a fire but does not address a degraded voltage situation. Distractor "D," Fast transfer circuitry attempts to transfer the bus power supply but does not prevent loads from starting.

| | | | |
|---|---|---|---|
| KA#: | 000077 AK2.01 | Bank Ref #: | 07-13-02 021 |
| LP# / Objective: | 0713-02 01.09 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | BANK |
| Reference: | STM 19 | Handout: | NONE |

QUESTION NUMBER: 017

A reactor trip has just occurred and the Standard Post Trip Actions are being performed. The following annunciators are in alarm:

- ROD POSITION DEVIATION LOW LIMIT
- ROD POSITION DEVIATION LOW-LOW LIMIT
- PLANT AIR PRESS LO
- FEEDWATER CONTROL STEAM GENERATOR RC-2A LEVEL LO-LO
- FEEDWATER CONTROL STEAM GENERATOR RC-2B LEVEL LO-LO
- PRESSURIZER PRESSURE OFF NORMAL HI-LO CHANNEL X
- PRESSURIZER PRESSURE OFF NORMAL HI-LO CHANNEL Y

The following indications are noted:

- All trippable CEAs are fully inserted except for B-15 which is fully withdrawn
- Instrument Air Pressure is 85 psig and stable
- WR Levels in both Steam Generators indicate 85% and stable
- Pressurizer Pressure indicates 2060 psia and stable

Which one of the following contingency actions should be taken per EOP-00, STANDARD POST TRIP ACTIONS?

A. Emergency Boration.

B[redacted] Start an additional Air Compressor.

C. Start an AFW pump.

D. Place all Pressurizer Backup Heaters in the "ON" position.

Question # 17 Revision: 2

KA #: CE-E02 EK1.03 Tier 1 Group 1 Reactor Trip Recovery

Knowledge of the operational implications of the following concepts as they apply to the (Reactor Trip Recovery) Annunciators and conditions indicating signals, and remedial actions associated with the (Reactor Trip Recovery).

Importance: 3 / 3.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

GIVEN a set of plant conditions and a copy of the EOP resource Assessment Trees, DETERMINE the correct success path for any of the following safety functions:

Revision 1 - Changed to high cognitive level, minor punctuation changes, expanded eplanation.
Revision 2 - Capitalization change.

EXPLANATION:
Instrument air pressure is less than 90 psig, therefore the EOP-00 contingency action of starting an air compressor should be taken. "B" is correct. Distractor "A," Emergency Boration is not required because only one trippable CEA failed to insert. Distractor "C," starting and AFW pump is not required because Steam Generator Level is in the acceptance band (73-94% WR). Distractor "D," turning on pressurizer heaters is not required because pressurizer pressure is within the acceptable band (2050-2150)

| | | | |
|---|---|---|---|
| KA#: | CE-E02 EK1.03 | Bank Ref #: | 07-18-10 057 |
| LP# / Objective: | 0718-10 01.05 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NRC 02 EXAM |
| Reference: | EOP-00 | Handout: | NONE |

QUESTION NUMBER: 018

Given the following initial plant conditions:

- A plant heatup is in progress
- Steam generator pressure is 610 psia
- Narrow Range Steam Generator Level is 52%
- Pressurizer Pressure is 1710 psia

A steam line break in Room 81 then causes steam flow to rise, pressure to drop to 550 psia in both steam generators, narrow range level to drop to 35% in both steam generators and pressurizer pressure to drop to 1570 psia.

Which of the following ESF actuations would be expected?

A. AFAS

B[redacted] PPLS

C. SGLS

D. SGIS

Question # 18 Revision: 1

KA #: CE-E05 EA1.01 Tier 1 Group 1 Excess Steam Demand

Ability to operate and / or monitor the following as they apply to the (Excess Steam Demand) Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Importance: 3.9 / 4.2 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

DESCRIBE the operation of the Engineered Safeguards Control System during normal and emergency conditions.

Revision 1 -changed distractors A and D and added information in the stem to make the distractors more discriminating. The explanation was also revised.

EXPLANATION:
Choice "A" is incorrect because AFAS will not actuate unless Wide Range S/G level is less than 32% and the stem provides values for S/G narrow range level. Choice "B" is correct because PPLS will have automatically unblocked above 1700 psia pressurizer pressure, thus when RCS pressure drops to 1600 psia, PPLS will actuate. Choice "C" is incorrect because SGLS will not actuate unless S/G pressure falls to 500 psia. Choice "D" is incorrect because SGIS will not occur unless SGLS or CPHS actuates.

| | | | |
|---|---|---|---|
| KA#: | CE-E05 EA1.01 | Bank Ref #: | 07-12-14 093 |
| LP# / Objective: | 0712-14 02.00 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | STM 19 | Handout: | NONE |

QUESTION NUMBER: 019

Given the following plant conditions:

- The plant is operating at 60% power
- The following annunciators are in alarm:
  - ROD DROP NUCLEAR INSTRUMENTATION CHANNEL
  - ROD POSITION DEVIATION LOW LIMIT
  - ROD POSITION DEVIATION LOW-LOW LIMIT
  - PDIL GR 4 COMPUTER
- The Group selector switch is in "Group 4" position
- The Group 4 synchro indicates 118 inches
- SCEAPIS indicates that CEA # 1 is at 18 inches
- The white CEA mimic light for CEA 1 is lit

Which one of the following would produce these indications?

A. The Primary CEA position indication system (synchro) has failed.

B. The Secondary CEA position indication system (DCS SCEAPIS) has failed.

C. A CEA has fully inserted into the core.

D[redacted] A CEA has partially inserted into the core.

Question # 19 Revision: 1

KA #: 000003 AA2.01 Tier 1 Group 2 Dropped Control Rod

Ability to determine and interpret the following as they apply to the Dropped Control Rod: Rod position indication to actual rod position

Importance: 3.7 / 3.9 CFR Number: 5.41(b)(6)

Design, components,and functions of reactivity control mechanisms and instrumentation.

Fort Calhoun Objective:

Use the CEA and Control System Malfunctions Procedure to mitigate the consequences of a malfunction of a CEA, the CEA control system or CEA position indication.

Revision 1 - rearanged bullets for alarms, minor punctuation changes

EXPLANATION:
These are indications of a partial rod drop of CEA #1 to 18 inches. Choice "D" is correct. Choices "A" and "B" are incorrect because the "Rod Drop Nuclear Instrumentaion" alarm comes in when reactor power drops 8% in 8 seconds, therefore a CEA did insert. Choice "C" is incorrect because the white mimic light would be off for a fully inserted CEA.

| | | | |
|---|---|---|---|
| KA#: | 000003 AA2.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-02 01.00 | Exam Level: | RO-6 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STMS 11&29 | Handout: | NONE |

QUESTION NUMBER: 020

The following plant conditions exist:

- Spent fuel movement is in progress inside containment
- Control Room HVAC unit, VA-46A, has tripped and cannot be restarted

Which one of the following actions will be required by Technical Specifications in order to continue fuel movement?

A[redacted] Place Control Room HVAC unit, VA-46B, in operation in the "Filtered Air Mode" immediately.

B. Place Control Room HVAC unit, VA-46B, in operation in the "Filtered Air Mode" within one hour.

C. Place Control Room HVAC unit, VA-46B, in operation in the "Recirculation Mode" immediately.

D. Place Control Room HVAC unit, VA-46B, in operation in the "Recirculation Mode" within one hour.

Question # 20 Revision: 1

KA #: 000036 2.2.39 Tier 1 Group 2 Fuel Handling Incidents

Knowledge of less than or equal to one hour Technical Specification action statements for systems.

Importance: 3.9 / 4.5 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

State the Technical Specifications, and the bases associated with the Contol Room Ventilation System.

Revision 1 - Added information to explanation as to why this is a RO question, added reference to OP-12.

EXPLANATION:
Control Room HVAC must be in Filtered Air Mode whenever fuel is being moved. Tech Spec States,"If a CRVS train is not IN OPERATION in Filtered Air mode, immediately place the opposite train IN OPERATION in Filtered Air mode..." This is a less than 1 hour required action and classified as an RO question per "Guidance for SRO-only Questions, Rev 1" This requirment for Filtered Air Mode is also contained in OP-12. Therefore choice "A" is correct. Choice "B" is incorrect because there is no one hour limit. Choices "C" and "D" are incorrect because Filtered Air mode is required.

| | | | |
|---|---|---|---|
| KA#: | 000036 2.2.39 | Bank Ref #: | N/A |
| LP# / Objective: | 0714-06 01.09 | Exam Level: | RO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OP-12 | Handout: | NONE |

QUESTION NUMBER: 021

Chemistry is trending measurements of primary to secondary leakage. The trends predict the following leakage rates:

| Day | RC-2A Leakage | RC-2B Leakage |
|---|---|---|
| Monday | 0.05 gpm | 0.10 gpm |
| Tuesday | 0.10 gpm | 0.15 gpm |
| Wednesday | 0.15 gpm | 0.20gpm |
| Thursday | 0.20 gpm | 0.25 gpm |

If the trends continue as predicted, on what day will entry into Technical Specification 2.1.4 first be required due to primary to secondary leakage?

A. Monday

B[redacted] Tuesday

C. Wednesday

D. Thursday

Question # 21 Revision: 1

KA #: 000037 2.2.22 Tier 1 Group 2 Steam Generator Tube Leak

Knowledge of limiting conditions for operations and safety limits.

Importance: 4 / 4.7 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

Describe the Technical Specification LCO that is challenged by a leak in the Reactor Coolant System.

Revision 1 - Add information to explanation on why this is a RO question.Reworded to ensure tech spec limit not exceeded in the past. Added reference to AOP-22. Leakage values adjusted to support wording change that trending is in progress which changed correct choice to "B."

EXPLANATION:
The Tech Spec Limit is 150 gpd (0.104 gpm) through any one S/G.Therefore the limit was first exceeded on Tuesday when the leakage in RC-2B exceeded 150 gpd. This question only requires "above the line" Technical Specification knowledge and is classified as an RO question per "Guidance for SRO-only Questions, Rev 1"
The150 gpd limit is also supported by AOP-22

| | | | |
|---|---|---|---|
| KA#: | 000037 2.2.22 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-22 01.06 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-22 | Handout: | NONE |

QUESTION NUMBER: 022

Given the following plant conditions:

- The following alarms have been received:
  - AUX BLDG SUMP AREA 23 HI or LOW LEVEL
  - SPENT REGEN HOLDUP TANK WD-13A HI OR LOW LEVEL
  - RM-062 AUX BLDG VENT STACK HIGH RADIATION
- VIAS has actuated
- The Auxiliary Building Operator reports high level in Room 23 sump and low level in WD-13A
- AOP-09, HIGH RADIOACTIVITY, has been entered and actions taken
- All Auxiliary Building exhaust fans have tripped and cannot be restarted

Why does AOP-09 direct that Security unlock doors between the Auxiliary Building and Radwaste Building and that the doors be opened?

A. To allow personnel to exit the Auxiliary Building faster

B. To allow hoses to be run to transfer water from Room 23's sump

C. To ensure adequate heat removal from the Auxiliary Building

D[redacted] To ensure that the release is monitored by RM-043

Question # 22 Revision: 2

KA #: 000059 AK3.04 Tier 1 Group 2 Accidental Liquid Radwaste Release

Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release: Actions contained in EOP for accidental liquid radioactive-waste release

Importance: 3.8 / 4.3 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective:

Use the High Radioactivity Procedure to mitigate the consequences of unplanned or uncontrolled high radiation levels in any area of the plant.

Revision 1 - rearranged bullets, minor editing.
Revision 2 - Added comma.

EXPLANATION:
TBD-AOP-09 states that this action is taken to ensure that the release is monitored by RM-043, choice "D" is the correct answer. The distractors are credible alternatives for opening the doors.

| | | | |
|---|---|---|---|
| KA#: | 000059 AK3.04 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-09 01.00 | Exam Level: | RO-11 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | TBD-AOP-09 | Handout: | NONE |

QUESTION NUMBER: 023

A Radiation Area Monitor is showing the following indications in the Control Room:

- The RANGE alarm red light is lit
- The panel display indicates "EE.EEE mR/hr"

What would cause these indication?

A. The dose rate at the detector location is less than 0.1 mR/hr.

B[redacted]The dose rate at the detector is greater than 1 x $10^7$ mR/hr.

C. The detectors high voltage power supply has failed.

D. The connection between the local ratemeter and the control room ratemeter has failed.

Question # 23 Revision: 1

KA #: 000061 AK1.01 Tier 1 Group 2 Area Radiation Monitoring (ARM) System Alarms

Knowledge of the operational implications of the following concepts as they apply to Area Radiation Monitoring (ARM) System Alarms: Detector limitations

Importance: 2.5 / 2.9 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective:

EXPLAIN the characteristics of the components which make up the Radiation Monitoring System.

Revision 1 changed CFR reference and explanation.

EXPLANATION:
This is an indication that the dose rate exceeds the range of the detector, "B" is the correct answer. "A" is incorrect because the display will indicate 1 x $10^{-1}$ in this situation. "C" and "D" will result in a trouble alarm.

| | | | |
|---|---|---|---|
| KA#: | 000061 AK1.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0712-03 02.00 | Exam Level: | RO-11 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | STM 33 | Handout: | NONE |

QUESTION NUMBER: 024

The following plant conditions exist:

- The reactor has been tripped and Control Room evacuated due to a fire.
- Auxiliary Feedwater control is being established at AI-179.
- Both transfer switches (43/RC-2A & 43/RC-2B) were taken to local but relay 43X/RC-2A failed to trip.

How will this failure affect the ability to feed the Steam Generators from AI-179?

A. The Operator will be UNABLE to feed either Steam Generator.

B[redacted] The Operator will be UNABLE to feed Steam Generator RC-2A.

C. The Operator will be UNABLE to feed Steam Generator RC-2B.

D. The Operators will be ABLE to feed both Steam Generators.

Question # 24 Revision: 1

KA #: 000068 AK2.03 Tier 1 Group 2 Control Room Evacuation

Knowledge of the interrelations between the Control Room Evacuation and the following: Controllers and positioners

Importance: 2.9 / 3.1 CFR Number: 5.41(b)(7)

Design, components, and function of control and safety systems, including instrumentation, signals, interlocks, failure mods, and automatic and manual features

Fort Calhoun Objective: **EXPLAIN** the operation of the auxiliary relays (43X/RC2A and 43X/RC-2B) and transfer switches (43/RC-2A and 43/RC-2B) on AI-179.

Revision 1 - Changed reference to STM 2, changed cognitive level to high, minor rewording and punctuation changes.

EXPLANATION: There is no ability to control FCV-1107A, AFW flow control to RC-2A. RC-2B can still be fed

| | | | |
|---|---|---|---|
| KA#: | 000076 AK2.01 | Bank Ref #: | 0712-01 024 |
| LP# / Objective: | 0712-01 01.05 | Exam Level: | RO-11 |
| Cognitive Level: | HIGH | Source: | BANK |
| Reference: | STM 2 | Handout: | NONE |

QUESTION NUMBER: 025

Given the following plant conditions:

- The plant was operating at full power
- A steam line break occurred inside containment
- Offsite power was lost coincident with the steam line break
- Both Diesel Generators started and loaded as designed
- SGLS, PPLS, CPHS and derived actuations all occurred along with the associated annunciator alarms

Why does EOP-05, UNCONTROLLED HEAT EXTRACTION, direct that steam flow be initiated from the unaffected steam generator prior to dryout of the affected steam generator?

A. To ensure continuous heat removal for the establishment of natural circulation.

B. To promote reverse heat transfer from the affected steam generator which results in a lower containment pressure.

C[redacted] To minimize repressurization of the reactor coolant system which could result in pressurized thermal shock.

D. To minimize the difference between cold leg temperatures which limits the asymetric core power distribution during a potential return to criticality.

Question # 25 Revision: 1

KA #: CE-A11 AK1.03 Tier 1 Group 2 RCS Overcooling

Knowledge of the operational implications of the following concepts as they apply to the (RCS Overcooling) Annunciators and conditions indicating signals, and remedial actions associated with the (RCS Overcooling).

Importance: 3 / 3.2 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN the major startegy used to mitigate the consequences of an UHE.

Revision 1 - Added information to stem to better address K/A wording, minor punctuation change

EXPLANATION:
"C" is the correct answer according to TBD-EOP-05. The distractors are plausible explanations for establishing heat removal. "A", a heat sink is needed for natural circulation and the stem states that a loss of offsite power has occurred. "B" The stem states that the steamline break is inside containment. "D" reactivity addition is a concern during a steam line break and Fort Calhoun has an asymetric S/G trip.

| | | | |
|---|---|---|---|
| KA#: | CE-A11 AK1.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-15 01.01 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | TBD-EOP-05 | Handout: | NONE |

QUESTION NUMBER: 026

Given the following plant conditions:

- The plant was operating at full power
- CCW flow to the RCPs was lost
- The Reactor was tripped
- All RCPs were tripped

How will RCS Cold Leg Temperature respond if the steam dump and bypass valves remain in automatic control?

A[redacted] RCS T-cold will be controlled between 515° and 525°F

B. RCS T-cold will be controlled between 530° and 540°F

C. RCS T-cold will be controlled betwee 545° and 555°F

D. RCS T-cold will be controlled between 560° and 570°F

Question # 26 Revision: 1

KA #: CE-A13 AA1.02 Tier 1 Group 2 Natural Circulation Operations

Ability to operate and / or monitor the following as they apply to the (Natural Circulation Operations) Operating behavior characteristics of the facility.

Importance: 3.1 / 3.6 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN the operator actions required to monitor and maintain subcooled natural circulation.

Revision 1 - Added EOP/AOP floating step to reference material and explanation. Broke up information is last bullet.

EXPLANATION:

If steam dump and bypass valves are left in automatic, T-ave will be controlled at 535°F. Since there is a 30°F DT on natural circulation, T-cold will be about 520°F. (Note: EOP/AOP floating step C, "Natural Circulation" states Delta T should be below 50°F. (Plant experience shows it to be closer to 30°F) "A" is correct the others are incorrect. "B" is the value if not on natural circulation. "C" is the value if the S/G safety vales are controlling. "D" is the value of T-ave for normal full power operation.

| | | | |
|---|---|---|---|
| KA#: | CE-A13 AA1.02 | Bank Ref #: | 07-15-16 029 |
| LP# / Objective: | 0715-16 02.05 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NRC 04 EXAM |
| Reference: | LP 07-15-16 | Handout: | NONE |

QUESTION NUMBER: 027

The ERF computer is being used to calculate the RCS leakrate using OP-ST-RC-3001, REACTOR COOLANT SYSTEM (RCS) LEAK RATE TEST, Attachment 1, "ERF Computer Operable - RLR."

The leakrate test will be void if _________ during the test.

A. T-cold changes by more than 1 °F

B. normal makeup to the VCT is performed

C. an additional charging pump is started

D[redacted] the Reactor Coolant Drain Tank is pumped down

Question # 27 Revision: 1

KA #: CE-A16 AK3.02 Tier 1 Group 2 Excess RCS Leakage

Knowledge of the reasons for the following responses as they apply to the (Excess RCS Leakage) Normal, abnormal and emergency operating procedures associated with (Excess RCS Leakage).

Importance: 2.8 / 3.3 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Describe how the plant responds to a Reactor Coolant Leak in terms of how specific equipment is affected and how it affects overall plant operation and reliability.

Revision 1 - minor punctuation change

EXPLANATION:
OP-ST-RC-3001 states that the test will be void if the RCDT is pumped down, "D" is the correct answer. The procedure also states that the test will not be affected by normal makeup to the VCT, so "B" is incorrect. The leakrate accounts for changes in RCS temperature and charging and letdown flow even though these are parameters that Operators could use to detect excessive leakage.

| | | | |
|---|---|---|---|
| KA#: | CE-A16 AK3.02 | Bank Ref #: | 07-12-14 096 |
| LP# / Objective: | 0717-22 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OP-ST-RC-3001 | Handout: | NONE |

QUESTION NUMBER: 028

The following plant conditions exist:

- The reactor is at 100% power
- RCS pressure is 2100 psia
- The RC-3A "SEAL LEAKAGE FLOW HI" annunciator is in alarm
- VCT pressure is 50 psia.
- RC-3A middle seal inlet pressure is 110 psia
- RC-3A upper seal inlet pressure is 80 psia

What is the status of RC-3A's seals?

A. Only the upper seal has failed.

B. Only the lower seal has failed.

C[redacted] The upper and middle seals have failed.

D. The lower and middle seals have failed.

Question # 28 Revision: 1

KA #: 003000 K6.02 Tier 2 Group 1 Reactor Coolant Pump System

Knowledge of the effect of a loss or malfunction on the following will have on the RCPS: RCP seals and seal water supply

Importance: 2.7 / 3.1 CFR Number: 5.41(b)(3)

Mechanical components and design features of the reactor primary system

Fort Calhoun Objective:

EXPLAIN the operation of the RCP seal package.

Revision 1 - provided an explanation and chaged reference to STM 37

EXPLANATION:

Normally there should be approximately 700 psi DP across each seal. Choice "A". if only the upper seal failed, the middle seal inlet pressure would be approximately 1000 psia. Choice "B", if only the lower seal failed, the middle seal inlet pressure would be approximately 2000 psia. Choice "C", there is approximately 2000 psi across the lower seal, meaning the other two seals have failed. "C" is correct. Choice "D", if the lower and middle seals both failed, the upper seal inlet pressure would be approximately 2000 psia.

| | | | |
|---|---|---|---|
| KA#: | 003000 K6.02 | Bank Ref #: | 07-11-20 014 |
| LP# / Objective: | 0711-20 01.07D | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NRC 04 EXAM |
| Reference: | STM 37 | Handout: | NONE |

QUESTION NUMBER: 029

Given the following plant conditions:

- The plant is in hot shutdown
- I&C technicians are calibrating CCW pressure switches
- 1 CCW pump is operating with normal discharge pressure
- An inadvertent safeguards signal resulted in closure of HCV-438A/B/C/D

What action should be taken to restore cooling water to the Reactor Coolant Pumps in accordance with AOP-23, RESET OF ENGINEERED SAFEGUARDS?

A[redacted]Immediately PULL TO OVERRIDE the control switches for HCV-438A/B/C/D.

B. Wait 30 seconds to satisfy the interlock and then PULL TO OVERRIDE the control switches for HCV-438A/B/C/D.

C. Immediately place the control switches for HCV-438A/B/C/D in the OPEN position.

D. Wait 30 seconds to satisfy the interlock and then place the control switches for HCV-438A/B/C/D in the OPEN position.

Question # 29 Revision: 2

KA #: 003000 A4.08 Tier 2 Group 1 Reactor Coolant Pump System

Ability to manually operate and/or monitor in the control room: RCP cooling water supplies

Importance: 3.2 / 2.9 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the operation of controls associated with the CCW System valves operated from the Control Room.

Revision 1 - wording change to ensure distractor B is incorrect. Additional information added to explanation. Changed reference to AOP-23 and added reference material.
Revision 2 - Minor editorial change to choice "D."

EXPLANATION:
Choice "A" is correct, the valves can be opened immediately in PULL TO OVERRIDE. Choice "B" is a plausible but incorrect distractor because there is a 30 second delay associated with automatic closure of these valves, not opening them. Choices "C" and "D" are incorrect because the OPEN position will not override the close signal.

| | | | |
|---|---|---|---|
| KA#: | 003000 A4.08 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-06 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-23 | Handout: | NONE |

QUESTION NUMBER: 030

Given the following plant conditions:

- An alarm was received on the VOLUME CONTROL TANK LEVEL HIGH OR LOW annunciator on CB-1,2,3/A2 Window B-2U
- VCT level indicates 96%

ARP CB-1,2,3/A2 directs that LCV-218-1 be placed in the "RWTS" position until VCT level is _______.

A. 51.7%

B. 65.5%

C. 82.4%

D[redacted]91.2%

Question # 30 Revision: 2

KA #: 004000 2.4.31 Tier 2 Group 1 Chemical and Volume Control System

Knowledge of annunciator alarms, indications, or response procedures.

Importance: 4.2 / 4.1 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

Given a current copy of the Annunciator Response Procedures, EXPLAIN the alarms associated with the CVCS and the required corrective actions.

Revision 1 - Replaced question due to overlap with simulator scenario.
Revision 2 - Spelling and Capitalization change.

EXPLANATION:
ARP CB-1,2,3/A2 Window B-2U directs that LCV-218-1 be placed in the RWTS position until VCT level is less than 91.2 % which is the high level setpoint for the alarm. Choice "D" is correct. Distractor "A", 51.7% is the low level setpoint for the alarm. Distractors "B" and "C" are intermediate values between the two setpoints.

| | | | |
|---|---|---|---|
| KA#: | 004000 2.4.31 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-02 05.02 | Exam Level: | RO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | ARP-CB-1,2,3/A2 | Handout: | NONE |

QUESTION NUMBER: 031

At normal RCS and CVCS pressure. Placing HC-101-3, LIMITER BYPASS SWITCH, in BYPASS allows letdown flow to be increased to:

A. 116 gpm using one letdown flow control valve, LCV-101-1 or LCV-101-2.

B[redacted] 126 gpm using one letdown flow control valve, LCV-101-1 or LCV-101-2.

C. 116 gpm using both letdown flow control valves, LCV-101-1 and LCV-101-2.

D. 126 gpm using both letdown flow control valves, LCV-101-1 and LCV-101-2.

Question # 31 Revision: 1

KA #: 004000 A1.07 Tier 2 Group 1 Chemical and Volume Control System

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: Maximum specified letdown flow

Importance: 2.7 / 3.1 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain indications available in the Control Room associated with each major component.

Revision 1 - Chages valve to valves for "C" and "D."

EXPLANATION:
Each letdown flow control valve has a hard stop that limits flow to 126 gpm per valve. The pressurizer level control system normally limits flow to 116 gpm to the selected valve. HC-101-3 bypasses the 116 gpm limit to allow 126 gpm. Therefore, choice "B" is correct and the other choices are plausible, yet incorrect.

| | | | |
|---|---|---|---|
| KA#: | 004000 A1.07 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-03 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | STM 12 | Handout: | NONE |

QUESTION NUMBER: 032

OI-SC-5, SHUTDOWN COOLING PURIFICATION, contains a caution to maintain Shutdown Cooling Outlet Temperature, TR-346, above 54°F when Shutdown Cooling Purification is in service and fuel is in the core.

What is the reason for this precaution?

A. To ensure that Reactor Vessel Pressure-Temperature limits are not violated.

B. To ensure that the water temperature does not go below boric acid solubility limits.

C[redacted] To ensure that assumptions made in the Shutdown Margin Calculation remain valid.

D. To ensure that LPSI Pump motor current limits are not exceeded.

Question # 32 Revision: 1

KA #: 005000 K5.03 Tier 2 Group 1 Residual Heat Removal System

Knowledge of the operational implications of the following concepts as they apply the RHRS: Reactivity effects of RHR fill water

Importance: 2.9 / 3.1 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

Given a current copy of OI-SC-1, explain the major steps, prerequisites and precautions for placing the Shutdown Cooling System in service.

Revision 1 - Added "and fuel is in the core" to make the stem consistent with the procedure statement. Minor punctuation changes.

EXPLANATION:
The temperature limit is to ensure assumptions in the shutdown margin calculation remain valid, choice "C" is correct. "A" is a plausible distractor because there is a 64°F limit for reactor vessel boltup. "B" is a plausible distractor because boric acid solubility decreases at lower temperatures. "D" is a plausible distractor because pump motor current increases with lower temperature water.

| | | | |
|---|---|---|---|
| KA#: | 005000 K5.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-22 01.18 | Exam Level: | RO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OI-SC-5 | Handout: | NONE |

QUESTION NUMBER: 033

A small break LOCA has occurred. The following plant conditions exist:

- Pressurizer pressure is 905 psia and steady
- Pressurizer level is 0%
- Reactor Vessel Level is 43%
- All charging pumps are running
- All HPSI pumps failed to start
- Both LPSI pumps are running
- No Containment Spray Pumps are running
- S/G pressures are 900 psia
- Narrow Range S/G levels are 27%
- AFW is being supplied to both S/G's by FW-10
- Containment pressure is 6 psig

Which one of the following actions should be taken in accordance with EOP-03, LOSS OF COOLANT ACCIDENT?

A. Initiate Once-through-Cooling.

B. Perform LPSI stop and throttle.

C. Initiate Containment Spray Flow.

D[redacted] Increase steam flow from the steam generators.

Question # 33 Revision: 1

KA #: 006000 K6.03 Tier 2 Group 1 Emergency Core Cooling System

Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Safety Injection Pumps

Importance: 3.6 / 3.9 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

EXPLAIN how the decay heat removal capacity of the break affects plant response.

Revision 1 - Expanded explanation, added reference to EOP-03 in stem and changed question.reference to EOP-03.

EXPLANATION: RCS pressure needs to be reduced to allow the Safety Injection Tanks and LPSI pumps to be able to inject. RCS pressure is staying above S/G pressure because S/G heat removal is needed. The way to reduce RCS pressure is to lower S/G pressure by steaming making "D" the correct answer. Distractor "A", 27% wide range (not narrow as in the stem) is the initiation condition for once through cooling. Distractor "B" RCS pressure is above the shutoff head of the LPSI pumps (188 psid), but there is a recirc flow path back to the SIRWT. Distractor "C", containment pressure is above the CPHS setpoint (5psig), but it also take SGLS to initiate Containment Spray.

| | | | |
|---|---|---|---|
| KA#: | 006000 K6.03 | Bank Ref #: | 07-15-23 030 |
| LP# / Objective: | 0715-23 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NRC 2005 EXAM |
| Reference: | TBD-EOP-03 | Handout: | NONE |

QUESTION NUMBER: 034

What method is used to form a steam bubble in the pressurizer following a refueling outage?

A[redacted] With the pressurizer level at approximately 50%, pressurizer heaters are used to heat the water to saturation. Non-condensable gases are vented to the PQT or VCT.

B. With the pressurizer level at approximately 50%, pressurizer heaters are used to heat the water to saturation. Non-condensable gases are vented to the vacuum refill system.

C. The pressurizer is filled as non-condensable gases are vented to the PQT or VCT. With the pressurizer solid, the pressurizer heaters are used heat the water in the pressurizer. The pressurizer level is then lowered until a steam bubble forms.

D. The pressurizer is filled as non-condensable gases are vented to the vacuum refill system. With the pressurizer solid, the pressurizer heaters are used heat the water in the pressurizer. The pressurizer level is then lowered until a steam bubble forms.

Question # 34 Revision: 1

KA #: 007000 K5.02 Tier 2 Group 1 Pressurizer Relief Tank / Quench Tank System

Knowledge of the operational implications of the following concepts as the apply to PRTS: Method of forming a steam bubble in the PZR

Importance: 3.1 / 3.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

LIST the major steps for starting up the Reactor Coolant System per OP-2A.

Revision 1 - added additional question reference material.

EXPLANATION:
"A" is correct per the referenced procedures. "B" is incorrect because the vaccum refill system is used prior to establishing a steam bubble but is plausible. Choices "C" and "D" are plausible because some other plants used to draw a bubble starting with a solid pressurizer (Example, Zion) but not at FCS.

| | | | |
|---|---|---|---|
| KA#: | 007000 K5.02 | Bank Ref #: | 07-11-20 153 |
| LP# / Objective: | 0711-20 03.05 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NRC 2005 EXAM |
| Reference: | OP-2A,OI-CH-3 | Handout: | NONE |

QUESTION NUMBER: 035

Given the following plant conditions:

- A loss of Raw Water has occurred and the reactor has been tripped due to high CCW temperature
- EOP-00, STANDARD POST TRIP ACTIONS, are being taken
- The LETDOWN HEAT EXCH TUBE OUTLET TEMP HI annunciator has just alarmed

What action should be taken per ARP-CB-1,2,3/A2 in response to this alarm and why?

A. Verify that TCV-202 has closed to prevent an inadvertent boron dilution due to boron retention in the ion exchangers.

B. Verify that TCV-202 has closed to prevent damage to the ion exchanger resin beads due to excessive temperature.

C. Verify that TCV-211-2 has switched to the BYPASS position to prevent an inadvertent boron dilution due to boron retention in the ion exchangers.

D[redacted] Verify that TCV-211-2 has switched to the BYPASS position to prevent damage to the ion exchanger resin beads due to excessive temperature.

Question # 35 Revision: 2

KA #: 008000 A2.03 Tier 2 Group 1 Component Cooling Water System

Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low CCW temperature

Importance: 3 / 3.2 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

EXPLAIN, the manual and automatic functions of control valves in the CVCS.

Revision 1 - minor wording and punctuation changes, added discussion of why this is not a boron dilution event. Added references for second part of question.
Revision 2 - Deleted extra space.

EXPLANATION:
Choice "D" is correct, TCV-211-2 bypasses the ion exchangers on high temperature to prevent damage to the resin beads. Choice "C" is plausible because temperature does affect boron retention by the resin beads, however lowering temperature causes the resin to retain more boron resulting in a RCS boron dilution. Choices "A" and "B" are plausible because TCV-202 is a letdown valve that will close on high temperature to protect the regenerative heat exchanger. Its setpoint is way too high (470°F) to protect resin.

| | | | |
|---|---|---|---|
| KA#: | 008000 A2.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-02 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | ARP-CB-1,2,3/A2 | Handout: | NONE |

QUESTION NUMBER: 036

Given the following plant conditions:

- The reactor tripped 20 minutes ago
- "PRESSURIZER PRESSURE OFF NORMAL HI-LO" channel X and Y are in alarm
- PRC-103X (controlling channel) indicates 2160 psia and stable
- All backup heaters in auto and energized
- LRC-101Y (controlling channel) indicates 60% and stable
- LRC-101X indicates 38% and lowering slowly
- LI-106 indicates 28% and lowering slowly
- Letdown flow is 55 gpm
- One charging pump is running
- $T_{cold}$ is 533°F, $T_{hot}$ is 534°F; both are stable

Select the probable cause and the action to be taken per the ARP.

A. Low level on LRC-101X is maintaining backup heaters on. Place the pressurizer heater cutout switch in the channel Y position.

B. The bistable for the backup heaters needs to be reset. Place the control switches for all B/U heaters to reset and back to auto.

C[redacted] LRC-101Y has malfunctioned causing the backup heaters to remain on. Place LRC-101X in service.

D. PRC-103X has malfunctioned causing the backup heaters to remain on. Place PRC-103Y in service.

Question # 36 Revision: 2

KA #: 010000 K1.08 Tier 2 Group 1 Pressurizer Pressure Control System

Knowledge of the physical connections and/or cause-effect relationships between the PZR PCS and the following systems: PZR LCS

Importance: 3.2 / 3.5 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Given a current copy of ARP, EXPLAIN the alarms associated with the RCS Instrumentation System and the required actions.

Revision 1 - added level trend for LI-106 (lowering)
Revision 2 - Changed reference to ARP, added "per the ARP" to the stem.

EXPLANATION:

Controlling channel LRC-101Y has malfunctioned causing letdown flow to be high and lowering pressurizer level. It should be controlling to 48% at these RCS temperatures, Backup heaters are on because the level deviation is greater than 5%. "C" is correct. "A" is incorrect because low level will turn the heaters off and the setpoint is 32%. "B" is incorrect, the bistable reset is for the charging pumps. "D" is incorrect because the pressure is too high to turn on the backup heaters in AUTO.

| | | | |
|---|---|---|---|
| KA#: | 010000 K1.08 | Bank Ref #: | 07-11-20 017 |
| LP# / Objective: | 0711-20 05.04 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NRC EXAM 2001 |
| Reference: | ARP-CB-1,2,3/A4,B-4 | Handout: | NONE |

QUESTION NUMBER: 037

What is the basis for the RPS Asymmetric Steam Generator Transient (ASGT) Trip ?

A. To ensure that peak fuel centerline temperature safety limit is not exceeded following a steam line break.

B[redacted] To ensure that peak fuel centerline temperature safety limit is not exceeded following inadvertent closure of one MSIV.

C. To ensure that DNBR stays below its limit following a steam line break.

D. To ensure that DNBR stays below its limit following inadvertent closure of one MSIV.

Question # 37 Revision: 2

KA #: 012000 K5.02 Tier 2 Group 1 Reactor Protection System

Knowledge of the operational implications of the following concepts as the apply to the RPS: Power density

Importance: 3.1 / 3.3 CFR Number: 5.41(b)(6)

Design, components,and functions of reactivity control mechanisms and instrumentation.

Fort Calhoun Objective:

EXPLAIN the bases for each reactor trip.

Revision 1 - Added another reference to explanation and material.
Revision 2 - Moved "(ASGT)."

EXPLANATION:

The ASGT trip is based on maintaining peak fuel centerline temperature below limits and DNBR above limits for an asymmetric event such as closure on one MSIV, thus "B" is correct. This answer is also supported by Tech Spec 2.13(9). "A" is incorrect, wrong event. "C" and "D" DNBR must stay above limit, not below.

| | | | |
|---|---|---|---|
| KA#: | 012000 K5.02 | Bank Ref #: | N/A |
| LP# / Objective: | 0712-25 01.04 | Exam Level: | RO-6 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | STM 38 | Handout: | NONE |

QUESTION NUMBER: 038

The following conditions exist:

- The plant is operating at full power
- The bistables for Channel "A" Trip Units 1 (High Power Level), 2 (High Rate), 9 (TM/LP), 10 (Loss of Load) and 12 (APD) have been bypassed
- The bistables for Channel "D" Trip Units 1, 2, 9, 10 and 12 have been placed in the "tripped" condition

Which of the following instrument failures will result in a reactor trip?

A. "A" Channel NIS Power Range input to the RPS fails high.

B[redacted] "B" Channel Pressurizer Pressure input to the RPS fails low.

C. "C" Channel Wide Range Power input to the RPS fails high.

D. "D" Channel RCS Flow input to the RPS fails low.

Question # 38 Revision: 2

KA #: 012000 A3.05 Tier 2 Group 1 Reactor Protection System

Ability to monitor automatic operation of the RPS, including: Single and multiple channel trip indicators

Importance: 3.6 / 3.7 CFR Number: 5.41(b)(6)

Design, components,and functions of reactivity control mechanisms and instrumentation.

Fort Calhoun Objective:

State the purpose of the Power Range NI System.

Revision 1 - Revised explanation, added Trip Unit Noun Names.
Revision 2 - Capitalization changes, removed period.

EXPLANATION:

"B" will result in a TM/LP trip (2/3 logic), Correct choice
"A" is incorrect, no trip because the Trip Unit is bypassed (1/3 logic),
"C" is incorrect, will not result in a trip because the high SUR trip is automatically bypassed above 15% power
"D" is incorrect, no trip because low flow Trip Units were neither tripped or bypassed (1/4 logic)

| | | | |
|---|---|---|---|
| KA#: | 012000 A3.05 | Bank Ref #: | 07-12-19 052 |
| LP# / Objective: | 0712-19 01.02 | Exam Level: | RO-6 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | STM 38 | Handout: | NONE |

QUESTION NUMBER: 039

Given the following plant conditions:

- An event has occurred that resulted in CIAS actuation
- Inlet and outlet valves to Containment Cooling Coil VA-1A, HCV-400A/C have automatically closed

Which one of the following could have caused these valves to close?

A. CCW pump discharge pressure switches, PCS-412 and PCS-413, failed low.

B[redacted] CCW flow transmitter from VA-1A, FT-416, failed low.

C. CCW return temperature transmitter from VA-1A, TE-420, failed high.

D. Containment cooling fan, VA-3A, tripped.

Question # 39 Revision: 0

KA #: 008000 2.1.28 Tier 2 Group 1 Component Cooling Water System

Knowledge of the purpose and function of major system components and controls.

Importance: 4.1 / 4.1 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the response of the CCW System to signals from the Engineered Safeguards Control System.

EXPLANATION:

CIAS and no CCW flow from the containment cooling coil will cause HCV-400A/C to close, choice "B". Choice "A" will cause HCV-438A/B/C/D valves to close. Choice "C" will have no affect on these valves. Tripping the containment cooling fan associated with VA-1A will also have no effect.

| | | | |
|---|---|---|---|
| KA#: | 008000 2.1.28 | Bank Ref #: | 07-11-06 011 |
| LP# / Objective: | 0711-06 01.05 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NRC 2004 EXAM |
| Reference: | STM 8 | Handout: | NONE |

QUESTION NUMBER: 040

Given the following plant conditions:

- The plant tripped from full power 10 minutes ago
- Pressure in both Steam Generators is lowering due to a malfunction of the controller for Turbine Bypass Valve, PCV-910
- No Operator actions are taken

How will this event be mitigated?

A. Solenoid valves that enable operation of PCV-910 will deenergize when RCS $T_{avg}$ falls below 535°F.

B. Solenoid valves that enable operation of PCV-910 will deenergize when Steam Generator pressure falls below 500 psia.

C. Main Steam Isolation Valves will close when RCS $T_{avg}$ falls below 535°F.

D[redacted] Main Steam Isolation Valves will close when Steam Generator pressure falls below 500 psia.

Question # 40 Revision: 1

KA #: 013000 K4.03 Tier 2 Group 1 Engineered Safety Features Actuation System

Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following: Main Steam Isolation System

Importance: 3.9 / 4.4 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN how each prime and backup actuation signal is developed.

Revision 1 - minor wording and punctuation changes

EXPLANATION:

The MSIVs will close whan a SGLS occurs due to steam generator pressure being less than 500 psia. (choice D). Solenoid valves that enable operation of TCV-909-1/2/3/4, steam dump valves, deenergize below 535°F RCS temperature. The distractors are all plausible but incorrect.

| | | | |
|---|---|---|---|
| KA#: | 013000 K4.03 | Bank Ref #: | 07-12-14 094 |
| LP# / Objective: | 0712-14 01.04 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NRC 02 EXAM |
| Reference: | STM 19 | Handout: | NONE |

QUESTION NUMBER: 041

Given the following plant conditions:

- The plant was operating at full power
- Containment cooling fans VA-3A, and VA-7D and their associated coolers were in operation
- A Large Break LOCA occurred inside containment
- PPLS and CPHS actuations occurred
- All CIAS lockout relays failed to actuate

Assuming all other systems operate as designed, what will be the status of containment cooling 2 minutes after the LOCA?

A. VA-3A, VA-3B and VA-7D will be operating, but only VA-3A and VA-7D will have CCW flow to their associated coolers.

B[redacted] All Containment Cooling Fans will be operating, but only VA-3A and VA-7D will have CCW flow to their associated coolers.

C. All Containment Cooling Fans will be operating with CCW flow to their associated coolers.

D. All Containment Cooling Fans will be operating but there will be no CCW flow to their associated coolers.

Question # 41 Revision: 1

KA #: 022000 A3.01 Tier 2 Group 1 Containment Cooling System

Ability to monitor automatic operation of the CCS, including: Initiation of safeguards mode of operation

Importance: 4.1 / 4.3 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Given specific plant conditions, apply the principles of operation of the Containment Air Cooling and Filtering System to diagnose system response.

Revision 1 - minor wording change.

EXPLANATION:

PPLS or CPHS will start the sequencers which will send a start signal to VA-3A and VA-3B. PPLS and CPHS will cause a CSAS which will start VA-7A and VA-7B. CIAS is required to open the CCW valves to the containment coolers therefore only VA-3A and VA-7D will have cooling water flow. (choice B) "A" is incorrect because all containment cooling fans will be operating. "C" is incorrect because there will be no cooling flow to VA-3B and VA-7C. "D" is incorrect because there will be cooling flow to VA-3A and VA-7D. All distractors are plausible because the ESF logic could have been designed that way.

| | | | |
|---|---|---|---|
| KA#: | 022000 A3.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0714-02 01.00 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STM 8 | Handout: | NONE |

QUESTION NUMBER: 042

Given the following plant conditions:

- A Steam Line Break occurred inside containment on the steam line from S/G RC-2B
- There was a coincident loss of offsite power
- PPLS, CPHS and SGLS have actuated
- Diesel Generator, D-2, failed to start

Assuming that no actions are taken to cross-tie buses, what is the status of the containment spray pumps 2 minutes after CPHS actuation?

A. SI-3A is stopped, SI-3B is stopped, SI-3C stopped.

B[redacted] SI-3A is running, SI-3B is stopped, SI-3C stopped.

C. SI-3A is stopped, SI-3B is running, SI-3C stopped.

D. SI-3A is running, SI-3B is running, SI-3C running.

Question # 42 Revision: 1

KA #: 026000 K2.01 Tier 2 Group 1 Containment Spray System

Knowledge of bus power supplies to the following: Containment spray pumps

Importance: 3.4 / 3.6 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Sketch a basic single-line drawing of the ECCS, labelling all major equipment.

Revision 1 - changed distractor "D" to SI-3A running, minor punctuation change

EXPLANATION:

SI-3A is powered from bus 1B3C which is supplied by D/G D-1. SI-3B ispowered from bus 1B4B which is supplied by failed D/G, D-2. SI-3C does not start automatically. Choice "B" is correct the other choices are incorrect.

| | | | |
|---|---|---|---|
| KA#: | 026000 K2.01 | Bank Ref #: | 07-11-22 072 |
| LP# / Objective: | 0711-22 01.01 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | STM 15 | Handout: | NONE |

QUESTION NUMBER: 043

Given the following plant conditions:

- The Reactor has tripped following a loss of offsite power
- Both Diesel Generators started as designed
- Main Condenser Vacuum is 15" Hg and lowering
- S/G Pressures are 940 psia and rising
- Both MSIVs are open

What is the preferred steaming path per EOP-02, LOSS OF OFFSITE POWER / LOSS OF FORCED CIRCULATION?

A. Steam Dump Valves, TCV-909-1,2,3,4

B. Turbine Bypass Valve, PCV-910

C[redacted] Atmospheric Relief Valve, HCV-1040

D. Air Assisted Main Steam Safety Valves, MS-291 and MS-292

Question # 43 Revision: 2

KA #: 039000 K1.02 Tier 2 Group 1 Main and Reheat Steam System

Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: Atmospheric relief dump valves

Importance: 3.3 / 3.3 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

EXPLAIN when the atmospheric dump would be used instead of the steam dump and bypass valves.

Revision 1 - Changed Condenser bypass to turbine bypass in distractor "B", minor punctuation change.
Revision 2 - Added space.

EXPLANATION:

There is insufficient condenser vacuum to operate PCV-910 or TCV-909-1.2.3.4 making "A" and "B" incorrect. HCV-1040 is the next best choice, "C" is the corerct answer. Choice "D" is incorrect because the MSIVs are open.

| | | | |
|---|---|---|---|
| KA#: | 039000 K1.02 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-17 04.01 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-02 | Handout: | NONE |

QUESTION NUMBER: 044

Given the following plant conditions:

- A steamline break has occurred outside containment on the "A" S/G's steam line
- PPLS, SGLS, SGIS, SIAS, CIAS and VIAS actuations have occurred

What action(s) must be taken to open the "B" Main Steam Line Bypass Valve, HCV-1042C, to establish steam flow from the "B" S/G per EOP-05, UNCONTROLLED HEAT EXTRACTION ?

A. Place the control switch for HCV-1042C in "OPEN."

B. Place the key operated override switch for HCV-1042C in override, then place the control switch for HCV-1042C in "OPEN."

C[redacted] Block SGLS using the key operated SGLS block switches, then place the control switch for HCV-1042C in "OPEN."

D. Reset the CIAS lockout relays, then place the control switch for HCV-1042C in "OPEN."

Question # 44 Revision: 2

KA #: 039000 A4.01 Tier 2 Group 1 Main and Reheat Steam System

Ability to manually operate and/or monitor in the control room: Main steam supply. valves

Importance: 2.9 / 2.8 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the controls and indications associated with the Main Steam System equipment manipulated from the Control Room.

Revision 1 - Changed distractor "D", minor punctuation change, changed to outside containment.
Revision 2 - Changed explanation for distractor "D."

EXPLANATION:

When SGLS is blocked SGIS will unblock and HCV-1042C can be opened. If there were a CPHS, then SGIS would not unblock. "C" is the correct answer. "A" is incorrect, HCV-1042C will not open with SGIS. "B" is incorrect, there is no override switch for HCV-1042C as there is for some FW valves that close on SGIS. "D" is incorrect, the valve was not closed by CIAS.

| | | | |
|---|---|---|---|
| KA#: | 039000 A4.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-17 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | EOP-05 | Handout: | NONE |

QUESTION NUMBER: 045

Given the following plant conditions:

- A total loss of feedwater has occurred
- Once-Through-Cooling has been established

Should the Condenser Steam Dump and Bypass valves be opened to aid in primary heat removal after establishing Once-Through-Cooling? Why or why not?

A. Yes, this will lower RCS pressure to provide more HPSI flow.

B. Yes, this will ensure that natural circulation continues as long as possible.

C. No, this will result in violating RCS cooldown limits.

D[redacted] No, this will increase the probability of S/G tube thermal shock if feed flow is reestablished.

Question # 45 Revision: 2

KA #: 059000 A2.04 Tier 2 Group 1 Main Feedwater System

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Feeding a dry S/G

Importance: 2.9 / 3.4 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN the operator actions required during a total loss of feedwater event.

Revision 1 - Changed the question to low cognitive.
Revision 2 - Capitalization changes.

EXPLANATION:

"D" is correct per the referance. The other choices are plausible reasons to justify the answer.

| | | | |
|---|---|---|---|
| KA#: | 059000 A2.04 | Bank Ref #: | N/A |
| LP# / Objective: | 0715-17 02.03 | Exam Level: | RO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | TBD-EOP-20 | Handout: | NONE |

QUESTION NUMBER: 046

Given the following plant conditions:

- A Steam Generator Isolation Signal (SGIS) has isolated Main Feed Water to both Steam Generators
- All Main Feedwater pumps have been tripped
- FW-54 will not start
- Auxiliary Feedwater Pump, FW-10, is running

Which of the following manual actions will result in water being provided to Steam Generator, RC-2A, Main Feed Ring?

A[redacted] Open HCV-1384, Override and Open HCV-1386 and HCV-1105

B. Open HCV-1386, Override and Open HCV-1103 and HCV-1105

C. Open HCV-1386, Override and Open HCV-1101 and HCV-1103

D. Open HCV-1384, Override and Open HCV-1385 and HCV-1105

Question # 46 Revision: 1

KA #: 061000 K1.02 Tier 2 Group 1 Auxiliary / Emergency Feedwater System

Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: MFW System

Importance: 3.4 / 3.7 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the operation of controls located in the Control Room associated with AFW components.

Revision 1 - minor wording changes and enhanced explanation, added reference material.

EXPLANATION:
Choice "A" - Flow will be from AFW header through HCV-1384, HCV-1105 and HCV-1386 to RC-2A. This is the correct answer.
Choice "B" - Crosstie valve HCV-1384 is normally closed and must be opened to allow flow from AFW header to main feedwater header. Incorrect.
Choice "C" - Crosstie valve HCV-1384 is normally closed and must be opened to allow flow from AFW header to main feedwater header. Incorrect.
Choice "D" is incorrect because HCV-1385 feeds S/G RC-2B

| | | | |
|---|---|---|---|
| KA#: | 061000 K1.02 | Bank Ref #: | 07-11-01 007 |
| LP# / Objective: | 0711-01 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | MODIFIED |
| Reference: | STM 04 | Handout: | NONE |

QUESTION NUMBER: 047

Given the following plant conditions:

- The plant is in Mode 4 with all 4160 V buses powered from 345 KV
- 161 KV is unavailable due to switchyard breaker maintenance
- Shutdown cooling is in operation with LPSI pump SI-1A running
- Emergency Diesel Generators #1 and #2 are aligned for normal operation

Assuming all systems operate as designed when 345 KV power is lost, what will be the status of the Diesel Generators?

A. Neither Diesel Generator will start.

B. Both Diesel Generators will start. D-1's output breaker will not close until SI-1A is tripped.

C. Both Diesel Generators will start. D-2's output breaker will not close until SI-1A is tripped.

D[redacted] Both Diesel Generators will start and their output breakers will close.

Question # 47 Revision: 1

KA #: 062000 K3.02 Tier 2 Group 1 A.C. Electrical Distribution

Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: ED/G

Importance: 4.1 / 4.4 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain an emergency start of the EDG. Include in your explanation the following: The conditions that will cause an auto start.

Revision 1 - capitalization change

EXPLANATION:

Both D/Gs will start due to low bus voltage. The output breaker for D-1 will close even with SI-1A running."D" is correct. The distractors are plausible but incorrect.

| | | | |
|---|---|---|---|
| KA#: | 062000 K3.02 | Bank Ref #: | 07-13-05 |
| LP# / Objective: | 0713-05 01.10A | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NRC 01-2 EXAM |
| Reference: | STM 16 | Handout: | NONE |

QUESTION NUMBER: 048

Given the following plant conditions:

- The plant was operating at full power
- DC Bus 1 was lost due to a short
- A Loss of Offsite Power occured
- Diesel Generator D-2 started and its output breaker closed
- Diesel Generator D-1 failed to start
- The turbine building Operator reports all support systems for D-1 are in a normal alignment but the primary air bank pressure is 195 psig

Which of the following actions will allow D-1 to be started and loaded?

A. Start the diesel from the control room using the "EMERGENCY START" button.

B. Start the diesel locally, at AI-133A.

C. Place the Air Start Motor System selector (D1-163) switch in the Number 2 position.

D[redacted] Transfer DC Control Power for DG-1 to its alternate source.

Question # 48 Revision: 0

KA #: 063000 K3.01 Tier 2 Group 1 D.C. Electrical Distribution

Knowledge of the effect that a loss or malfunction of the dc electrical system will have on the following: ED/G

Importance: 3.7 / 4.1 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain an emergency start of the EDG. Include in your explanation the following: How emergency starts are manually inititated.

EXPLANATION:

D-1 has no DC control power, choice "D" is correct. Choices "A" and "B" will not work without DC control power. Choice "C" is incorrect, low pressure is not preventing start.

| | | | |
|---|---|---|---|
| KA#: | 063000 K3.01 | Bank Ref #: | 07-13-05 001 |
| LP# / Objective: | 0713-05 01.10H | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NRC EXAM 1995 |
| Reference: | AOP-16 | Handout: | NONE |

QUESTION NUMBER: 049

Given the following plant conditions:

- The plant was operating at full power
- A loss of offsite power occurred
- Both Diesel Generators started and their output breakers closed
- Pumps and fans were manually placed into service per EOP-02
- 25 minutes later 161 KV power became available to the site
- The CRS has directed that Bus 1A3 be powered from 161 KV per EOP/AOP Attachment 17, "Restoring Off-site Power to Bus 1A3."
- Lockout relays have been reset and Breakers 110 and 111 closed

Which one of the following actions should be taken prior to closing breaker 1A33 ?

A. The breakers should be opened for all loads on the 480 volt buses powered by Bus 1A3.

B. The OPLS Test and Bypass Switches should be placed in "BYPASS."

C. Diesel Generator Breaker 1AD1 should be opened.

D[redacted] The D-1 Governor Droop Dial should be set to the "SCRIBE MARK."

Question # 49 Revision: 1

KA #: 064000 A2.03 Tier 2 Group 1 Emergency Diesel Generators

Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Parallel operation of ED/Gs

Importance: 3.1 / 3.1 CFR Number: 5.41(b)(8)

Components, capacity, and functions of emergency systems.

Fort Calhoun Objective:

GIVEN a copy of Attachment 17 or 18, EXPLAIN the steps necessary to restore off-site power to a vital 4160 V bus.

Revision - Replaced K/A 064000 A2.14 with K/A 064000 A2.03, add electrical drawing to references.

EXPLANATION:

Correct choice "D" ensures correct speed droop to protect D/G from picking up excessive load when parrelleling. Choice "A" is incorrect loads can remain on bus. "B" is incorrect, no OPLS actuation condition, "C" is incorrect, dead bus is not needed.

| | | | |
|---|---|---|---|
| KA#: | 064000 A2.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-12 02.03 | Exam Level: | RO-8 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | EOP/AOP ATTACHMENT 1 | Handout: | NONE |

QUESTION NUMBER: 050

A source check is being performed on Containment Noble Gas Monitor (RM-051) from the Control Room. The monitor's keyswitch has NOT been placed in the KEYPAD position. What will happen during the source check?

A. Annunciator "RM-051 CNTMT Noble Gas High Radiation" will alarm, and CRHS will occur.

B. Annunciator "RM-051 CNTMT Noble Gas High Radiation" will alarm, but CRHS will not occur.

C. Annunciator "RM-051 CNTMT Noble Gas High Radiation" will not alarm, but CRHS will occur.

D[redacted] Annunciator "RM-051 CNTMT Noble Gas High Radiation" will not alarm, and CRHS will not occur.

Question # 50 Revision: 1

KA #: 073000 A4.03 Tier 2 Group 1 Process Radiation Monitoring System

Ability to manually operate and/or monitor in the control room: Check source for operability demonstration

Importance: 3.1 / 3.2 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective:

EXPLAIN the operations, actuations and applications of the individual radiation monitors.

Revision 1 - Resampled K/A and replaced question.

EXPLANATION:

During the Source Check, the Alarms and actuations will be blocked making "D" the correct answer. The KEYPAD position blocks alarms and actuations and they are also blocked during source checks. "A" is incorrect, neither will occur. "B" is incorrect, no alarm will occur. "C" is incorrect, CRHS will not occur even though RM-051 provides an input to CRHS.

.

| | | | |
|---|---|---|---|
| KA#: | 073000 A4.03 | Bank Ref #: | 07-12-03 013 |
| LP# / Objective: | 0712-03 04.00 | Exam Level: | RO-11 |
| Cognitive Level: | HIGH | Source: | BANK |
| Reference: | STM 33 | Handout: | NONE |

QUESTION NUMBER: 051

The power supply to Raw Water Pump, AC-10D, is:

A. Bus 1B3C

B. Bus 1B4C

C. Bus 1A3

D[redacted] Bus 1A4

Question # 51 Revision: 0

KA #: 076000 K2.01 Tier 2 Group 1 Service Water System

Knowledge of bus power supplies to the following: Service water

Importance: 2.7 / 2.7 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the automatic start features associated with the Raw Water Pumps.

EXPLANATION:

Bus 1A4 provides power to AC-10D," D." The distractors are other vital buses at FCS.

| | | | |
|---|---|---|---|
| KA#: | 076000 K2.01 | Bank Ref #: | 07-11-19 037 |
| LP# / Objective: | 0711-19 01.05 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | MODIFIED |
| Reference: | STM 35 | Handout: | NONE |

QUESTION NUMBER: 052

Given the following plant conditions:

- A significant plant transient occurred that resulted in a Reactor Trip and Steam Generator isolation
- Wide Range level in S/G RC-2A is 26%
- Pressure in S/G RC-2A is 450 psia
- Wide range level in S/G RC-2B is 30%
- Pressure in S/G RC-2B is 540 psia
- No Operator actions have been taken

How would the Auxiliary Feedwater System respond to these conditions?

A. AFW would not be feeding either S/G

B. AFW would be feeding S/G RC-2A but not S/G RC-2B

C[redacted] AFW would be feeding S/G RC-2B but not S/G RC-2A

D. AFW would be feeding both S/Gs

Question # 52 Revision: 2

KA #: 061000 K4.14 Tier 2 Group 1

Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: AFW automatic isolation.

Importance: 3.5 / 3.7 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Fort Calhoun Objective:

Apply operating principles to predict Auxiliary Feedwater Actuation System (AFAS) response when given specific plant conditions.

Revision 1 - Resampled K/A and replaced question.
Revision 2 - Minor wording and Capitalization changes.

EXPLANATION:

Auxilliary Feedwater Actuation Stystem (AFAS) will start both the Electric AFW pump, FW-6, and the turbine AFW pump, FW-10, when WR S/G level falls to 32% on either steam generator. It will feed any steam generator with a pressure greater than 500 psia. If the pressure is less than 500 psia, it will not feed any steam generator with a pressure that is more than 85 psi lower than the other steam generator. Thus with the given plant conditions, only RC-2B will be fed. "C" is correct. With "C" being correct, the distractors must be incorrect.

| | | | |
|---|---|---|---|
| KA#: | 061000 K4.14 | Bank Ref #: | 07-11-01 027 |
| LP# / Objective: | 0712-11 01.00 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | BANK |
| Reference: | AFW STM | Handout: | NONE |

QUESTION NUMBER: 053

Given the following plant conditions:

- The plant was operating at full power
- Instrument air pressure was lost due to a header rupture inside containment
- The CRS has entered AOP-17, LOSS OF INSTRUMENT AIR

How will Instrument Air Containment Isolation Valves, PCV-1849A and PCV-1849B, normally be closed to isolate the break per the procedure?

A. They will both close automatically when instrument air pressure falls to 70 psig.

B[redacted] They will both be closed remotely by a Control Room Operator.

C. PCV-1849A will be closed locally by an Auxilary Building Operator which will cause PCV-1849B to close.

D. PCV-1849B will be closed locally by an Auxilary Building Operator which will cause PCV-1849A to close.

Question # 53 Revision: 1

KA #: 078000 K3.01 Tier 2 Group 1 Instrument Air System

Knowledge of the effect that a loss or malfunction of the IAS will have on the following: Containment air system

Importance: 3.1 / 3.4 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain the principles of normal operation of the Compressed Air System in terms of flow paths, major parameters, (temperature, pressure, flow, etc.), and control devices.

Revision 1 - minor wording changes and enhanced explanation

EXPLANATION:
Choice "A" would only be true with a CIAS.
Choice "B" is correct. These valves are normally operated from CB-10,11 in the control room and AOP-17 directs their closure
Choice "C" PCV-1849A is in containment and closing it will not cause PCV-1849B to close.
Choice "D" Closing PCV-1849B will isolate air to the operator for PCV-1849A causing it to close. However, local action is not normally used to operate this valve.

| | | | |
|---|---|---|---|
| KA#: | 078000 K3.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-07 01.04 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | AOP-17 | Handout: | NONE |

QUESTION NUMBER: 054

The following conditions exist:

- A normal plant cooldown is in progress
- PPLS has been blocked
- RCS pressure is 1615 psia and lowering
- Pressurizer pressure channel A/P-102 fails high

Which one of the following will occur as a result of this sequence of events?

A. Only the PPLS Block 'A' circuit will be automatically reset.

B. Both PPLS circuits will be automatically reset but can be reblocked by operator action.

C. Both PPLS circuits will be automatically reset and can not be reblocked.

D[redacted] Both PPLS circuits will remain blocked.

Question # 54 Revision: 1

KA #: 013000 A4.01 Tier 2 Group 1 Engineered Safety Features Actuation System

Ability to manually operate and/or monitor in the control room: ESFAS-initiated equipment which fails to actuate

Importance: 3.5 / 4.8 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN how to block, override or defeat ESC functions and how those functions are reinstated

Revision 1 - Added FCS objective and explanation, minor wording changes.

EXPLANATION: Both A and B PPLS can be blocked when (A/P-102 or B/P-102) and (C/P-102 or D/P-102) indicate less than 1700 psia. PPLS will automatically unblock when these condition are no longer met. With A/P-102 failing above 1700 psia, this logic will still be met and PPLS will not unblock. Thus "D" is correct. "A" is incorrect but could be chosen if the examinee thought that A/P-102 only affected the "A" PPLS block circuit. "B" is incorrect but could be chosen if the examinee thought automatic reset of both "A" and "B" PPLS was caused by a 1/4 logic. "C" is incorrect but could be chosen if the examinee thought both block enable and automatic reset of both "A" and "B" PPLS was caused by a 1/4 logic.

| | | | |
|---|---|---|---|
| KA#: | 013000 A4.01 | Bank Ref #: | 07-12-14 011 |
| LP# / Objective: | 0712-14 01.04 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NRC EXAM 1995 |
| Reference: | STM 19 | Handout: | NONE |

QUESTION NUMBER: 055

Which of the following will result in a Containment Isolation Actuation Signal (CIAS)?

A. SIAS

B. SGIS

C[redacted]CPHS

D. CRHS

Question # 55 Revision: 0

KA #: 103000 K4.06 Tier 2 Group 1 Containment System

Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Containment isolation system

Importance: 3.1 / 3.7 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN how each prime and backup actuation signal is developed.

EXPLANATION

CIAS is caused by PPLS or CPHS, "C" is correct. "A" the same things that cause CIAS also cause SIAS, but SIAS does not cause CIAS. "B" and "D", SGIS isolates MSIV's and FW valves, CRHS causes VIAS.

| | | | |
|---|---|---|---|
| KA#: | 103000 K4.06 | Bank Ref #: | |
| LP# / Objective: | 0712-14 01.04 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NRC 2005 EXAM |
| Reference: | STM 19 | Handout: | NONE |

QUESTION NUMBER: 056

Given the following plant conditions:

- The plant is at full power
- All CEAs are fully withdrawn
- Rod Drive Clutches are being supplied from Instrument Buses A and C
- Instrument Bus B is de-energized.
- The operator then inadvertently switches a clutch power supply from Instrument Bus A to Instrument Bus B

How will CEA position be affected?

A. All trippable CEAs will fully insert.

B. One-half of the trippable CEAs will fully insert.

C. All CEAs will insert to the Power Dependent Insertion Limit.

D[redacted] All CEAs will remain fully withdrawn.

Question # 56 Revision: 1

KA #: 001000 K2.02 Tier 2 Group 2 Control Rod Drive System

Knowledge of bus power supplies to the following: One-line diagram of power supply to trip breakers

Importance: 3.6 / 3.7 CFR Number: 5.41(b)(6)

Design, components,and functions of reactivity control mechanisms and instrumentation.

Fort Calhoun Objective:

Describe the interface/interaction between the CRDS and the following systems/components: Electrical Distribution System.

Revision 1 - Added more explanation for distractor "C", changed indent for one bullet.

EXPLANATION:

The power going to the clutches is auctioneered, so even if there is no power from buses A and B, the clutches are still energized from bus C or D. Choice "D" is correct. The distractors are plausible if you don't understand how power is supplied to the CEDM clutches. Choice "C" is incorrect, but there is a rod rundown function that will cause all trippable CEAs to drive inward following a reactor trip, however the rundown will stop when a rod block condition, such as PDIL, occurs.

| | | | |
|---|---|---|---|
| KA#: | 001000 K2.02 | Bank Ref #: | 07-12-26 001 |
| LP# / Objective: | 0712-26 01.02A | Exam Level: | RO-6 |
| Cognitive Level: | HIGH | Source: | NRC 1995 EXAM |
| Reference: | STM 11 | Handout: | NONE |

QUESTION NUMBER: 057

What enables the PORV LTOP feature where the PORV opening setpoints are automatically adjusted as RCS temperature lowers?

A. The feature is automatically enabled when pressurizer pressure falls below 1700 psia.

B. The feature is automatically enabled when RCS average temperature falls below 515°F.

C. The feature is enabled when the Operator blocks SGLS.

D[redacted]The feature is enabled when the Operator blocks PPLS.

Question # 57 Revision: 1

KA #: 002000 A3.03 Tier 2 Group 2 Reactor Coolant System

Ability to monitor automatic operation of the RCS, including: Pressure, temperatures, and flows

Importance: 4.4 / 4.6 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

GIVEN a copy of the Blocking PPLS floating step, EXPLAIN the steps necessary to initiate LTOP.

Revision 1 - Changed reference to STM 36, Added explanation.

EXPLANATION: LTOP is enabled when the Opereator blocks PPLS. "D" is the correct answer. Distractor "A" is incorrect, PPLS block is enabled at 1700 psia. Distractor "B" is incorrect, LTOP is not enabled on temperature although the LTOP setpoints are changed as temperature changes. Distractor "C" is incorrect, SGLS is blocked during a cooldown but has no effect on LTOP.

| | | | |
|---|---|---|---|
| KA#: | 002000 A3.03 | Bank Ref #: | 07-18-14 001 |
| LP# / Objective: | 0718-14 03.20 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NRC 1995 EXAM |
| Reference: | STM 36 | Handout: | NONE |

QUESTION NUMBER: 058

Given the following plant conditions:

- A slow plant load reduction from 60% to 30% power is being performed
- Pressurizer Level Control Channel, LRC-101X, is selected as the controlling channel and has inadvertently been placed in "AUTOMATIC" instead of "CASCADE"

If no Operator action is taken, how will pressurizer level control respond during the load reduction?

A. Pressurizer level will be controlled to follow the reference level.

B[redacted] Pressurizer level will be controlled to stay above the reference level.

C. Pressurizer level will be controlled to stay below the reference level.

D. Pressurizer level will be controlled at the no load reference level.

Question # 58 Revision: 2

KA #: 011000 K6.04 Tier 2 Group 2 Pressurizer Level Control System

Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Operation of PZR level controllers

Importance: 3.1 / 3.1 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

EXPLAIN the interlocks and control functions associated with RCS Instrumentation.

Revision 1 - Changed distractor D, expanded explanation, added figures to reference material, removed second bulleted item, capitalization change.
Revision 2 - Added comma.

EXPLANATION:

Programed pressurizer level goes from 60% (at 560°F T-ave) to 48% (at 535°F T-ave). At 60% power, T-ave will be 565.5°F (TDB-III.1) and programed level will be 60%. At 30% power, T-ave will be 544°F (TDB-III.1) and programed level will be 52.3%. If the level controller is taken to automatic at 60% power, it will control at 60% instead of the programed level. This will be above the programmed level. Choice "B" is correct. The distractors are incorrect but plausible if you don't know how the system works.

| | | | |
|---|---|---|---|
| KA#: | 011000 K6.04 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-20 04.04 | Exam Level: | RO-7 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | STM 36 | Handout: | NONE |

QUESTION NUMBER: 059

Given the following plant conditions:

- A small break LOCA has occurred
- A PPLS signal was generated and all systems performed as designed
- RCS pressure indicates 991 psia and stable
- S/G pressure is being controlled at 900 psia by PCV-910
- Subcooling indicated by the CET's is 38°F
- Pressurizer level indicates 0%
- RVLMS level indicates 100%
- Two Reactor Coolant Pumps are running
- Two HPSI pumps and two LPSI pumps are running
- Three charging pumps are running
- Total HPSI flow indicates 415 gpm

Tripping a __________ Pump would result in the largest reduction in subcooling margin as indicated by the CETs.

A. Charging

B. Reactor Coolant

C[redacted] HPSI

D. LPSI

Question # 59 Revision: 2

KA #: 017000 A1.01 Tier 2 Group 2 In-Core Temperature Monitor System

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ITM system controls including: Core exit temperature

Importance: 3.7 / 3.9 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective:

EXPLAIN how the "Stop and Throttle" criteria is used to prevent reducing HPI flow when full HPI flow is required.

Revision 1 - Changed distractor "B" and beefed up explanation.
Revision 2 - Removed period from distractor "D."

EXPLANATION:

Subcooling is being maintained by HPSI flow pressurizing the RCS. Thus tripping a HPSI pump will reduce injection flow by about 200 gpm and have the biggest effect on subcooling. (choice "C") The reduction in flow by tripping a charging pump would be smaller (40 gpm), "A" is incorrect. A Reactor Coolant Pump is not injecting into the RCS and will have a minor affect on pressure. "B" is incorrect. The RCS pressure is above the LPSI pump shutoff head and there would be no change in injection flow. "D" is incorrect.

| | | | |
|---|---|---|---|
| KA#: | 017000 A1.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0715-23 02.06 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP/AOP ATTACHMENT 3 | Handout: | NONE |

QUESTION NUMBER: 060

Containment purge supply fans are not available. During a Containment Purge release using Purge Air Discharge Fan, VA-32A, which damper is used to throttle the purge flow rate?

A[redacted] The Purge Air Discharge Fan inlet damper (HCV-749)

B. The Purge Air Discharge Fan outlet damper (YCV-747)

C. The outside Containment Purge Exhaust Isolation valve (HCV-742B)

D. The Purge Air Bypass Dilution damper (HCV-751)

Question # 60 Revision: 1

KA #: 029000 A4.01 Tier 2 Group 2 Containment Purge System

Ability to manually operate and/or monitor in the control room: Containment purge flow rate

Importance: 2.5 / 2.5 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

STATE the function of each major component of the Containment Purge System.

Revision 1 - Changed fan noun names to match procedure, minor editing.

EXPLANATION:

The procedure directs that HCV-749 be used to throttle flow. The distracters are other dampers in the system.

| | | | |
|---|---|---|---|
| KA#: | 029000 A4.01 | Bank Ref #: | 07-14-04 |
| LP# / Objective: | 0714-04 01.04 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | BANK |
| Reference: | OI-VA-1, ATT 17 | Handout: | NONE |

QUESTION NUMBER: 061

Overload protection while using Spent Fuel Handling Machine, FH-12, to relocate spent fuel elements in the pool is provided by:

A. An interlock that stops vertical motion and cannot be overridden.

B[redacted] An interlock that stops vertical motion but can be overridden.

C. Only an indicator light that alerts the operator to stop vertical motion.

D. Only an indicator dial that is monitored by the operator to ensure overload limits are not exceeded.

Question # 61 Revision: 0

KA #: 034000 K4.03 Tier 2 Group 2 Fuel Handling Equipment System

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Overload protection

Importance: 2.6 / 3.3 CFR Number: 5.41(b)(7)

Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes,and automatic and manual features.

Fort Calhoun Objective:

Explain the function of the major components of the refueling machine and how interlocks prevent unsafe operation.

EXPLANATION:

"B" is correct, overload interlock will stop the hoist's vertical motion but can be overridden. The distractors are all incorrect but the hoist could have been designed that way.

| | | | |
|---|---|---|---|
| KA#: | 034000 K4.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0711-13 01.02 | Exam Level: | RO-7 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | STM 40 | Handout: | NONE |

QUESTION NUMBER: 062

Given the following plant conditions:

- The reactor has tripped from full power as a result of a loss of all offsite power
- Diesel Driven Auxiliary Feedwater Pump, FW-54, is tagged out of service
- Diesel Generator, D-1, failed to start
- Steam generator levels are currently 50% WR and lowering slowly
- All safety functions, other than heat removal, are satisfied

What action should be taken to establish heat removal?

A. Start AFW Pump, FW-6

B[redacted] Start AFW Pump, FW-10

C. Establish Once-through-Cooling

D. Steam both S/Gs to establish conditions for Shutdown Cooling

Question # 62 Revision: 0

KA #: 035000 A2.02 Tier 2 Group 2 Steam Generator System

Ability to (a) predict the impacts of the following malfunctions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Reactor trip/turbine trip

Importance: 4.2 / 4.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective: EXPLAIN the major strategy used to mitigate the consequences of a loss of all feedwater

EXPLANATION:

With a loss of offsite power, main FW pumps are not available. FW-54 is out of service. There is no power to FW-6 because D/G D-1 did not start. FW-10 should be started (Choice "B"). "A" is incorrect, FW-6 has no power. "C" is incorrect, WR level is greater than 27%, "D" is incorrect because S/G feed is needed.

| | | | |
|---|---|---|---|
| KA#: | 035000 A2.02 | Bank Ref #: | 07-18-10 014 |
| LP# / Objective: | 0718-16 01.00 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NRC EXAM 2001-2 |
| Reference: | EOP-00 | Handout: | NONE |

QUESTION NUMBER: 063

Given the following sequence of events:

- The reactor was stable at 12% power
- The turbine tripped due to an overspeed test
- Two steam dump valves failed open causing a power increase

How will the plant respond?

A. Reactor power will rise and stabilize below 15%.

B[redacted]The reactor will trip when power exceeds 15%.

C. The reactor will trip when power exceeds 19.1%.

D. Reactor power will rise and stabilize above 19.1% power.

Question # 63 Revision: 0

KA #: 045000 K3.01 Tier 2 Group 2 Main Turbine Generator System

Knowledge of the effect that a loss or malfunction of the MT/G system will have on the following: Remainder of the plant

Importance: 2.9 / 3.2 CFR Number: 5.41(b)(6)

Design, components,and functions of reactivity control mechanisms and instrumentation.

Fort Calhoun Objective:

STATE the NSSS parameters and points that enable, disable and/or permit the following RPS trip functions:

EXPLANATION:

With the turbine tripped, the Reactor will trip on loss of load at 15% power. "B" is correct. Two steam dump valves will remove more than 15% power thus "A" is incorrect. "C" is the variable high power trip setpoint but is above 15%. "D" would be correct if no trip setpoints were reached.

| | | | |
|---|---|---|---|
| KA#: | 045000 K3.01 | Bank Ref #: | 07-12-25 016 |
| LP# / Objective: | 0712-25 01.09 | Exam Level: | RO-6 |
| Cognitive Level: | HIGH | Source: | NRC EXAM 2001-1 |
| Reference: | STM 38 | Handout: | NONE |

QUESTION NUMBER: 064

Which one of the following pumps is used to supply makeup water to the Emergency Feedwater Storage Tank from the Condensate Storage Tank per AOP-30, EMERGENCY FILL OF EMERGENCY FEEDWATER STORAGE TANK?

A. Demineralized Water Pump, DW-40A

B. Electric AFW Pump, FW-6

C[redacted] Diesel AFW Pump, FW-54

D. Diesel Fire Pump, FP-1B

Question # 64 Revision: 2

KA #: 056000 2.1.23 Tier 2 Group 2 Condensate System

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

Importance: 4.3 / 4.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Use the Emergency Fill of EFWST Procedure to makeup to the tank if it goes below Technical Specification levels and normal makeup is not available.

Revision 1 - Removed plant conditions, chaned Cognitive level to low, minor punctuation changes.
Revision 2 - Corrected procedure title.

EXPLANATION:

FW-54 is used to supply water to the EFWST from the CST "C." Choices "A" and "D" can be used to makeup to the EFWST, but not from the CST. Choice "B" is incorrect, but plausible if you don't know the flow paths.

| | | | |
|---|---|---|---|
| KA#: | 056000 2.1.23 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-30 01.00 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | AOP-30 | Handout: | NONE |

QUESTION NUMBER: 065

__________ is used as a fire fighting agent in the Switchgear Rooms instead of water to prevent __________.

A. Halon; flooding of the equipment below in Room 19

B[redacted] Halon; shorting of the electrical equipment in the Switchgear Rooms

C. $CO_2$; flooding of the equipment below in Room 19

D. $CO_2$; shorting of the electrical equipment in the Switchgear Rooms

Question # 65 Revision:1

KA #: 086000 K5.03 Tier 2 Group 2 Fire Protection System

Knowledge of the operational implication of the following concepts as they apply to the Fire Protection System: Effect of water spray on electrical components

Importance: 3.1 / 3.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Describe the major recovery actions of this AOP. (AOP-06)

Revision 1 - Capitalization changes.

EXPLANATION:

Halon is used for fire protection in the swithgear rooms, "B." "A" is incorrect although Room 19 is located below the switchgear rooms however water should not leak to Room 19. "C" and "D" are incorrect because $CO_2$ is not used in the switchgear room although it is used in the plant.

| | | | |
|---|---|---|---|
| KA#: | 086000 K5.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-07 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | STM 21 | Handout: | NONE |

QUESTION NUMBER: 066

In the Control Room, tan octagon labels or tan magnetic tags and Form FC-1290 are used to identify:

A[redacted] RCS Boric Acid Flowpath components during outages.

B. The HPSI Pumps that are not aligned for autostart.

C. Preferred Raw Water Pumps and Heat Exchanger valves during all modes of operation.

D. Protected equipment during all modes of operation.

Question # 66 Revision: 1

KA #: 000000 2.1.31 Tier 3 Generic Knowledges and Abilities

Ability to locate control room switches, controls and indications and to determine that they correctly reflecting the desired plant lineup.

Importance: 4.6 / 4.3 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

RCS boration

Revision 1 - Minor wording and explanation changes

EXPLANATION:

"A" is correct per OPD-6-08. Distractor "B", disabled HPSI pump labels are flourescent orange squares. Distractor "C" Preferred Raw Water Pump tags are white circles. Distractor "D" Protected equipment are marked by flourescent orange tags or labels.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.1.31 | Bank Ref #: | N/A |
| LP# / Objective: | 0707-42 10.06 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OPD-6-08 | Handout: | NONE |

QUESTION NUMBER: 067

Which one of the following methods is acceptable for verifying that the most current revision of an Operating Instruction (OI) procedure is being used in accordance with SO-G-7, PROCEDURE USE AND ADHERENCE?

A[redacted] Use Indexes on the Document Control Web page.

B. Contact the System Engineer for the latest revision.

C. Check with the Procedure Maintenance Group.

D. Check with the Operations Procedure Group.

Question # 67 Revision: 1

KA #: 000000 2.1.21 Tier 3 Generic Knowledges and Abilities

Ability to verify the controlled procedure copy.

Importance: 3.5 / 3.6 CFR Number: 5.41(b)(7)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:STATE the major sections of the Standing Orders.

Revision 1 - added "in accordance with SO-G-7, PROCEDURE USE AND ADHERENCE? to the stem changed distractor "C"

EXPLANATION:

"A" is correct per the procedure. The distractors are all incorrect.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.1.21 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-17 01.02 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-G-7 | Handout: | NONE |

QUESTION NUMBER: 068

Given the following plant conditions:

- All CEAs are fully inserted and preparations are being made to perform a reactor startup by CEA withdrawal.
- According to the Estimated Critical Condition calculation, boron concentration should be reduced by 250 ppm prior to the startup.

According to OP-2A, PLANT STARTUP, Attachment 2, "CEA Withdrawal to Criticality Mode 2," which one of the following sequences of steps is acceptable?

A. Withdraw the non-trippable CEAs, dilute to the ECC boron concentration, withdraw the shutdown CEAs, withdraw the regulating CEAs.

B. Dilute to the ECC boron concentration, withdraw the shutdown CEAs, withdraw the non-trippable CEAs, withdraw the regulating CEAs.

C. Withdraw the shutdown CEAs, withdraw the non-trippable CEAs, withdraw the regulating CEAs, dilute to the ECC boron concentration.

D[redacted] Withdraw the shutdown CEAs, dilute to the ECC boron concentration, withdraw the non-trippable CEAs, withdraw the regulating CEAs.

Question # 68 Revision: 2

KA #: 000000 2.2.01 Tier 3 Generic Knowledges and Abilities

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Importance: 4.5 / 4.4 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

Explain the operation of the Control Rod Drive System (CRDS).

Revision 1 - minor punctuation changes.
Revision 2 - Removed space.

EXPLANATION:

The reactivity management concept here is to not add positive reactivity without the ability to trip the reactor. "D" is correct. "A" and "B" would add positive reactivity without trip capability. "C" would not be a reactor startup by CEA withdrawal.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.2.01 | Bank Ref #: | 07-12-26 017 |
| LP# / Objective: | 0712-26 01.00 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NRC 1997 EXAM |
| Reference: | OP-2A, ATT2 | Handout: | NONE |

QUESTION NUMBER: 069

According to TDB-V.1.B, ESTIMATED CRITICAL CONDITIONS WORKSHEET, which one of the following situations may require adjustment to the required boron concentration to compensate for changes in B-10 concentration?

A. The RCS has been cooled down to less than 210°F.

B[redacted] The RCS has been drained to mid-loop and refilled.

C. The reactor has been shutdown for more than 72 hours.

D. "Acid Reducing" conditions have been established in the RCS.

Question # 69 Revision:1

KA #: 000000 2.1.43 Tier 3 Generic Knowledges and Abilities

Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

Importance: 4.1 / 4.3 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

DESCRIBE and USE the shutdown margin worksheets.

Revision 1 - minor punctuation changes, provide full copy of TDB-V.1.B as reference

EXPLANATION:

Boron depletion, lowering B-10 content in RCS boron, occurs during operation. An operation that adds a lot of newly batched boric acid changes the content. "B" is correct. Distractors "A" and "C" both affect shutdown margin. "D" is done as part of a shutdown for chemistry control.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.1.43 | Bank Ref #: | N/A |
| LP# / Objective: | 0705-09 05.00 | Exam Level: | RO-10 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | TDB-V.1.B | Handout: | NONE |

QUESTION NUMBER: 070

How is the installation of a Temporary Modification (TM) on a system annotated on the controlled P&IDs in the Control Room (Copy #14) and the OCC (Copy #1)?

A[redacted] The associated P&ID drawings are marked with green dots bearing the temporary modification number.

B. Red "Post-It" notes listing the temporary modification number are attached to the associated P&ID drawings.

C. The associated P&ID drawings are replaced with temporary drawings that reflect the temporary modification.

D. The associated P&ID drawings are marked up in blue to indicate the location of the temporary modification.

Question # 70 Revision: 2

KA #: 000000 2.2.41 Tier 3 Generic Knowledges and Abilities

Ability to obtain and interpret station electrical and mechanical drawings.

Importance: 3.5 / 3.9 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

STATE the major sections of the Standing Orders.

Revision 1 - Changed Magenta to Red in distractor "B."
Revision 2 - Capitalization changes.

EXPLANATION:

"A" is the method that is used. The distractors are other viable methods.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.2.41 | Bank Ref #: | ADM-OPS 034 |
| LP# / Objective: | 0762-01 01.00 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NRC EXAM 2002 |
| Reference: | SO-O-25 | Handout: | NONE |

QUESTION NUMBER: 071

Given the following conditions:

- The plant is operating at full power
- You are exiting a posted contaminated area
- A step-off pad has been provided for removal of protective apparel
- There are no friskers located by the step-off pad but there is one 30 feet away

Which one of the following actions should you take per SO-G-101, RADIATION WORKER PRACTICES?

A. Contact Radiation Protection prior to stepping on the step-off pad.

B. Contact Radiation Protection after stepping on the step-off pad.

C[redacted] Perform a hand and foot frisk at the nearest frisker location.

D. Proceed directly to the RCA exit and use a PCM to check for contamination.

Question # 71 Revision: 2

KA #: 000000 2.3.05 Tier 3 Generic Knowledges and Abilities

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Importance: 2.9 / 2.9 CFR Number: 5.41(b)(12)

Radiological safety principles and procedures.

Fort Calhoun Objective:

EXPLAIN the proper method of frisking, what background countrate is acceptable, and when an individual is considered contaminated.

Revision 1 - Added procedure reference to stem.
Revision 2 - "stepoff" changed to "step-off."

EXPLANATION:

"C" is correct per the reference. "A" and "B" are incorrect because not every stepoff pad has a frisker. "D" is incorrect during power operation.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.3.05 | Bank Ref #: | N/A |
| LP# / Objective: | 1924-03 01.17 | Exam Level: | RO-12 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-G-101 | Handout: | NONE |

QUESTION NUMBER: 072

In accordance with SO-G-101, RADIATION WORKER PRACTICES, the administrative exposure limit from occupational sources at FCS is:

A. 0.3 Rem/year TEDE

B[redacted] 1.0 Rem/year TEDE

C. 4.0 Rem/year TEDE

D. 5.0 Rem/Year TEDE

Question # 72 Revision: 1

KA #: 000000 2.3.13 Tier 3 Generic Knowledges and Abilities

Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Importance: 3.4 / 3.8 CFR Number: 5.41(b)(11)

Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

Fort Calhoun Objective: State the FCS radiation exposure limits.

Revision 1 - Added procedure reference and title to the stem.

EXPLANATION:

"B" is correct per SO-G-101. "A" is the limit for pregnant workers. "C" is the FCS limit for all occupational sources. "D" is the regulatory limit.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.3.13 | Bank Ref #: | |
| LP# / Objective: | 0715-33 01.03 | Exam Level: | RO-11 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-G-101 | Handout: | NONE |

QUESTION NUMBER: 073

A plant cooldown is being performed using OP-3A, PLANT SHUTDOWN. RCS Temperature is 450°F.

What actions should be taken if a RPS actuation should occur and specific AOP or ARP guidance cannot be located?

A. Enter EOP-00 and perform Standard Post Trip Actions.

B. Reference EOP-00 and the appropriate EOP and follow procedural guidance verbatim.

C[redacted] Reference EOP-00 and the appropriate EOP and selectively follow procedural guidance.

D. Contact the TSC and wait for specific guidance.

Question # 73 Revision: 2

KA #: 000000 2.4.09 Tier 3 Generic Knowledges and Abilities

Knowledge of low power / shutdown implications in accident (e.g. Loss of coolant accident loss of residual heat removal) mitigation strategies.

Importance: 3.8 / 4.2 CFR Number: 5.41(b)(5)

Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons.

Fort Calhoun Objective: STATE the major sections of the Standing Orders.

Revision 1 - Minor wording and punctuation changes.
Revision 2 - Removed space.

EXPLANATION: SO-O-1 states that when T-cold is less than 525°F and the plant is not on shutdown cooling, an event occurs and specific AOP or ARP guidance can not be found, refer to EOP-00 and selectively follow procedural guidance. "C" is correct. "A" is incorrect, EOP-00 is not entered. "B" is incorrect, verbatim compliance is not required. "D" is incorrect, TSC guidance is not required.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.4.09 | Bank Ref #: | N/A |
| LP# / Objective: | 0767-05 02.00 | Exam Level: | RO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | SO-O-1 | Handout: | NONE |

QUESTION NUMBER: 074

Which of the following programs is used to define risk profiles and assign risk assessment "colors" as conditions change during outages per SO-O 21, SHUTDOWN OPERATIONS PROTECTION PLAN?

A. EOOS

B[redacted] ORAM

C. GARDEL

D. EAGLE

**Q**uestion # 74 Revision: 1

KA #: 000000 2.2.18 Tier 3 Generic Knowledges and Abilities

Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.

Importance: 2.6 / 3.9 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

DESCRIBE the significant risk contributing scenarios identified by industry experience and PRA studies.
Revision 1 - corrected spelling.

EXPLANATION:
ORAM is used to assign risk colors during outages, "B." "A" is used for risk colors during operation. "C" and "D" are computer programs used for core monitoring and offsite dose projection.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.2.18 | Bank Ref #: | N/A |
| LP# / Objective: | 0707-42 02.01 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-O-21 | Handout: | NONE |

QUESTION NUMBER: 075

The Emergency Plan has just been entered due to a plant event. Who fills the "Command and Control" position prior to activation of the Technical Support Center and the Emergency Offsite Facility?

A[redacted] Shift Manager

B. Control Room Supervisor

C. Shift Technical Advisor

D. Work Week Manager

Question # 75 Revision: 1

KA #: 000000 2.4.37 Tier 3 Generic Knowledges and Abilities

Knowledge of the lines of authority during implementation of the emergency plan.

Importance: 3 / 4.1 CFR Number: 5.41(b)(10)

Administrative, normal, abnormal, and emergency operating procedures for the facility.

Fort Calhoun Objective:

The person who completes this topic will be able to IDENTIFY specifices of the organization and methods of operation of the Emergency Response Organization.

Revision 1 - changed "Emergency Director" to "Command and Control" position, expanded explanation.

EXPLANATION:

The Shift Manger initially serves as the Emergency Director having the Command and Control position. EPIP-OSC-2 lists The Shift Manager, Control Room Coordinator, Site Director or Emergency Director. The Control Room Coordinator, Site Director or Emergency Director positions do not exist until activation of the EP facilities. Thus, "A" is the only correct choice.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.4.37 | Bank Ref #: | N/A |
| LP# / Objective: | 1070-001 1.0 | Exam Level: | RO-10 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | EPIP-OSC-2 | Handout: | NONE |

QUESTION NUMBER: 076

Given the following plant conditions:

- The plant has tripped from full power due to a High Pressurizer Pressure Trip
- EOP-00, STANDARD POST TRIP ACTIONS, were completed and EOP-01, REACTOR TRIP RECOVERY, was entered
- Several minutes later PPLS actuated
- All Engineered Safety Features operated as designed
- Pressurizer Pressure is now 931 psia
- The ATCO has tripped all Reactor Coolant Pumps
- Pressurizer Level is 100% (solid)
- Representative CET Temperature is 536°F
- PORV, PCV-102-2, is discovered to be open

Which one of the following actions should be taken?

A. Go to Diagnostic Actions of EOP-00, STANDARD POST TRIP ACTIONS, then enter EOP-03, LOSS OF COOLANT ACCIDENT, and close HCV-151, the block valve for PCV-102-2.

B. Stay in EOP-01, REACTOR TRIP RECOVERY, and reestablish letdown using EOP/AOP Attachment 23, RESTORATION OF LETDOWN.

C[redacted] Go to Diagnostic Actions of EOP-00, STANDARD POST TRIP ACTIONS, then enter EOP-03, LOSS OF COOLANT ACCIDENT, and begin a plant cooldown.

D. Go to EOP-20, FUNCTIONAL RECOVERY PROCEDURE, implement EOP/AOP Floating Step A, HPSI STOP AND THROTTLE CRITERIA.

Question # 76 Revision: 2

KA #: 000008 2.4.20 Tier 1 Group 1 Pressurizer Vapor Space Accident

Knowledge of operational implications of EOP warnings, cautions, and notes.

Importance: 3.8 / 4.3 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

DEMONSTRATE the knowledge required to use EOP-03, Loss of Coolant Accident (LOCA), to mitigate the consequences of a LOCA.

Revision 1 - Changed choices wording to better match statement in EOP-01.
Revision 2 - Editorial changes.

EXPLANATION:

EOP-01 directs you to EOP-00, Diagnostic Actions. A caution in EOP-03 states to not close the PORV block valves with the pressurizer full but instead begin a plant cooldown. "C" is correct. "A" is incorrect because it closes the block valve. Choices "B" and "D" can help control pressure, but are not procedurely directed under the stem conditions.

| | | | |
|---|---|---|---|
| KA#: | 000008 2.4.20 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-13 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-03 | Handout: | NONE |

QUESTION NUMBER: 077

Given the following plant conditions:

- The Reactor has been shutdown for 24 hours following 17 months of full power operation
- Shutdown Cooling was in service using LPSI Pump, SI-1A
- The RCS Temperature was at 110°F and lowering slowly
- The RCS Pressure is 15 psia
- Containment Pressure is 15 psia
- Pressurizer Level is 50%
- The Pressurizer Manway has been removed
- The SIRWT is full
- The Refueling Cavity has not been filled
- All Containment Spray Pumps, HPSI Pumps and Charging Pumps are available
- AFW Pumps FW-6 and FW-54 are available
- LPSI Pump, SI-1A, tripped 1 minute ago
- LPSI Pump, SI-1B will not start

Which one of the following alternate cooling strategies should be implemented per AOP-19, LOSS OF SHUTDOWN COOLING?

A. Establish a minimum of 55 gpm flow and implement Attachment F, "Alternate Decay Heat Removal using Steam Generators."

B[redacted] Establish a minimum of 575 gpm flow using Attachment N, "Shutdown Cooling via the HPSI header."

C. Establish a minimum of 575 gpm flow using Attachment E, "Alternate Decay Heat Removal by Boiling."

D. Establish a minimum of 55 gpm flow using Attachment G, "Once Through Cooling."

Question # 77 Revision: 2

KA #: 000025 AA2.05 Tier 1 Group 1 Loss of Residual Heat Removal System

Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Limitations on LPI flow and temperature rates of change

Importance: 3.1 / 3.5 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Use the Loss of Shutdown Cooling Procedure to mitigate the consequences of a loss of cooling to the Reactor Coolant System.

Revision 1 - Changed choices to 575 gpm and 55 gpm, Changed Attachment "Q" to Attachment "G" in choice "D." Provided basis for 55 gpm. Changed temperature in stem to 110°F. Removed source of flow with simply "flow" in all the choices. Expanded explanation.
Revision 2 - Capitalization change.

EXPLANATION: Pressure boundary not intact, RV head on, SDC discharge not available, HPSI discharge is available, Sufficient injection is available, Implement N, 575 gpm which has been calculated to be the flow required to remove decay heat without boiling and stop the temperature rise. "B" is the only correct answer. Distractors "A" and "D", 55 gpm is the flow required to remove decay heat by boiling.

| | | | |
|---|---|---|---|
| KA#: | 000025 AA2.05 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-19 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-19 | Handout: | AOP-19 ATT D |

QUESTION NUMBER: 078

Given the following plant conditions:

- The Reactor has tripped
- EOP-00, STANDARD POST TRIP ACTIONS, have been completed
- EOP-01, REACTOR TRIP RECOVERY, has been entered
- The STA was in the process of performing the EOP-01, Safety Function Status Check when the BATTERY CHARGER #1 TROUBLE and the DC BUS #1 LOW VOLTAGE annunciators alarmed
- The STA reports that the Safety Function Status Check is unacceptable because DC Bus #1 is not energized

What action(s) should be taken?

A. Stay in EOP-01. Follow ARP guidance to power DC Bus #1 using Battery Charger #3 per OI-EE-3, 125 VDC SYSTEM NORMAL OPERATION.

B. Stay in EOP-01, implement AOP-16, Section VIII, LOSS OF DC BUS 1.

C. Enter EOP-20, FUNCTIONAL RECOVERY PROCEDURE, and perform actions for Safety Function MVA-DC.

D[redacted] Return to EOP-00, DIAGNOSTIC ACTIONS section, then enter EOP-20 and perform actions for Safety Function MVA-DC.

Question # 78 Revision: 2

KA #: CE-E02 EA2.01 Tier 1 Group 1 Reactor Trip Recovery

Ability to determine and interpret the following as they apply to the (Reactor Trip Recovery) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Importance: 2.7 / 3.7 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

GIVEN a copy of the Safety Function Status Check acceptance criteria, DETERMINE the parameters used to confirm an uncomplicated Reactor Trip.

Revision 1 - Capitalization change and additional reference material.
Revision 2 - Editorial change.

EXPLANATION:

EOP-01 directs a return to EOP-00 Diagnostic Actions if a Safety Function Status Check is not acceptable. Diagnostic actions will then direct entry into EOP-20. "D" is correct. The distractors are all incorrect because they do not return to EOP-00.

EOP-00 page 33 flow chart

| | | | |
|---|---|---|---|
| KA#: | CE-E02 EA2.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-11 01.03 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-01 | Handout: | NONE |

QUESTION NUMBER: 079

Given the following plant conditions:

- The Reactor tripped from full power
- Multiple CEAs failed to insert on the trip
- All applicable EOP-00, STANDARD POST TRIP ACTIONS, have been taken and WR NI Power is indicating 7% and steady

What action should be taken at the completion of EOP-00?

A. Implement AOP-02, CEA AND CONTROL SYSTEM MALFUNCTIONS, and insert CEAs using the Rod Drop Test Switches.

B. Enter EOP-01, REACTOR TRIP RECOVERY, and implement AOP-03, EMERGENCY BORATION, and borate from the Boric Acid Storage Tanks.

C. Enter EOP-20, FUNCTIONAL RECOVERY PROCEDURE, and insert the Group "N" CEAs manually.

D[redacted] Enter EOP-20, FUNCTIONAL RECOVERY PROCEDURE, and trip the AI-57 Power Supply Breakers on AI-40A/B/C/D.

Question # 79 Revision: 1

KA #: 000029 2.4.11 Tier 1 Group 1 Anticipated Transient Without Scram (ATWS)

Knowledge of abnormal condition procedures.

Importance: 4 / 4.2 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

USE the Functional Recovery Procedure (EOP-20) to bring the reactor, Reactor Coolant System and containment to a safe and stable condition.

Revision 1 - Changed SIRWT to BASTs in choice "B," Minor Capitalization changes

EXPLANATION:

Guidance for tripping the AI-57 power supply breakers on AI-40A/B/C/D is only found in EOP-20. "D" is correct. "C" inserting group "N" CEAs is helpful, but not directed by EOP-20. "A" and "B" are incorrect because there is no transition from EOP-00 to these procedures.

| | | | |
|---|---|---|---|
| KA#: | 000029 2.4.11 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-18 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-20 | Handout: | NONE |

QUESTION NUMBER: 080

Given the following plant conditions:

- The Reactor is operating at full power
- An Urgent High Voltage ERFCS alarm was received for Bus 1A3
- Bus 1A3 voltage has indicated 4395 V for one hour
- 161 KV Grid Voltage has indicated 170 KV for one hour
- System Operations has been contacted and requested to lower grid voltage

What additional action should be taken and why?

A. Select MANUAL voltage control using AOP-27, GENERATOR MALFUNCTIONS, to hold the generator field voltage constant.

B. Start a second Stator Water Cooling Pump using AOP-27, MAIN GENERATOR MALFUNCTIONS, to provide additional cooling to the Main Generator.

C. Start redundant safety related loads powered from Bus 1A4 and shutdown safety related loads powered from Bus 1A3 using AOP-31, 161 KV GRID MALFUNCTIONS, to prevent damage to equipment due to overvoltage.

D[redacted] Start additional loads powered by Bus 1A3 using AOP-31, 161 KV GRID MALFUNCTIONS, to reduce voltage on bus ~~BA3.~~ 1A3

Question # 80 Revision: 2

KA #: 000077 2.4.18 Tier 1 Group 1 Generator Voltage and Electric Grid Disturbances

Knowledge of the specific bases for EOPs.

Importance: 3.3 / 4 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Describe the major recovery actions of this AOP.

Revision 1 - Added MAIN to procedure title in choice "B," Minor capitalization changes.
Revision 2 - Removed MAIN from procedure title, Capitalization change.

EXPLANATION:

The stem conditions meet the entry conditions for AOP-31, which directs additional loads be started to lower bus voltage, "D" is correct. Choices "A" addresses voltage control but enters the wrong procedure. Choice "B" provides additional cooling to the main generator but enters the wrong procedure. Choice "C" enters the correct procedure but shuts down loads on the bus and is incorrect.

| | | | |
|---|---|---|---|
| KA#: | 000077 2.4.18 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-31 01.03 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | TBD-AOP-31 | Handout: | NONE |

QUESTION NUMBER: 081

Given the following plant conditions:

- The plant is operating at full power
- Instrument Air Compressor, CA-1C, is out of service for maintenance
- The INSTRUMENT AIR PRESS LO and PLANT AIR PRESS LO annunciators are in alarm
- AOP-17, LOSS OF INSTRUMENT AIR, has been entered and actions taken
- Instrument air pressure has stabilized at 82 psig with CA-1A and CA-1B fully loaded

Which one of the following actions should be taken per AOP-17?

A. Trip the Reactor and enter EOP-00, STANDARD POST TRIP ACTIONS.

B[redacted] Evaluate the need to shutdown the Reactor per AOP-05, EMERGENCY SHUTDOWN.

C. Declare a "Notice of Unusual Event" per EPIP-OSC-1, EMERGENCY CLASSIFICATION.

D. Exit AOP-17 and continue full power operation.

Question # 81 Revision: 1

KA #: 000065 AA2.05 Tier 1 Group 1 Loss of Instrument Air

Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to commence plant shutdown if instrument air pressure is decreasing

Importance: 3.4 / 4.1 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Use the Loss of Instrument Air Procedure to mitigate the consequences of a partial or complete loss of instrument air.

Revision 1 - Minor punctuation changes.

EXPLANATION:

With the pressure above 50 psig but below 98 psig, AOP-17 directs evaluation of the need to shutdown. Choice "B" is correct. "A" is incorrect because pressure is greater than 50 psig. "D" is incorrect because pressure is less than 98 psig. "C" is incorrect because this is not addressed in the EPIPs.

| | | | |
|---|---|---|---|
| KA#: | 000065 AA2.05 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-17 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-17 | Handout: | NONE |

QUESTION NUMBER: 082

Given the following plant conditions:

- The plant was operating at full power
- A large break LOCA occurred 5.5 hours ago
- All ESF equipment operated as designed
- RAS occurred 3.5 hours ago
- RCS pressure is 17 psia
- Containment pressure is 2 psig
- Only one HPSI Pump is available
- RVLMS indicates 21%

Which one of the following actions is required per EOP-03, LOSS OF COOLANT ACCIDENT, and EOP/AOP Attachments?

A. Implement EOP/AOP Attachment 9, SIMULTANEOUS HOT AND COLD LEG INJECTION, within 30 minutes.

B. Implement EOP/AOP Attachment 9, SIMULTANEOUS HOT AND COLD LEG INJECTION, between 2.0 and 2.5 hours from now.

C[redacted] Implement EOP/AOP Attachment 11, ALTERNATE HOT LEG INJECTION, within 30 minutes.

D. Implement EOP/AOP Attachment 11, ALTERNATE HOT LEG INJECTION, between 2.0 and 2.5 hours from now.

Question # 82 Revision: 2

KA #: 000074 2.4.49 Tier 1 Group 2 Inadequate Core Cooling

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Importance: 4.6 / 4.4 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

EXPLAIN the problems associated with boron precipitation for a cold leg break, what actions are taken to minimize it and why it is not a problem for a hot leg break.

Revision 1 - Changed reference to EOP/AOP Attachment 9, added EOP-03 page to included references.
Revision 2 - Added EOP-03 title.

EXPLANATION:

With the conditions in the stem, EOP/AOP Attachment 11 must be implemented immediately. Choice "C" is correct. Choice "D" is incorrect because it addresses 5.5 to 6 hours after RAS. Choices "A" and "B" are incorrect because Attachment 11 is used when only one HPSI pump is available.

| | | | |
|---|---|---|---|
| KA#: | 000074 2.4.49 | Bank Ref #: | N/A |
| LP# / Objective: | 0715-28 01.09 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP/AOP ATT 9 | Handout: | NONE |

QUESTION NUMBER: 083

Given the following plant conditions:

- The plant is operating at full power
- Condenser Offgas Radiation Monitor,RM-057, is in Alert
- Blowdown Radiation Monitor, RM-054B, indicates rising counts
- Charging flow is 40 gpm
- Letdown flow is 32 gpm
- Pressurizer pressure and level are steady
- Reactor Coolant Pump Seal parameters are normal
- AOP-22, REACTOR COOLANT LEAK, Attachment B, "Primary to Secondary Leak Rate Actions" has been entered
- The Shift Chemist has confirmed the primary to secondary leakrate to be the same as indicated by primary plant parameters

Which one of the following actions should be taken per AOP-22, Attachment B?

A. Maintain the current plant conditions. Continue to monitor for increased primary to secondary leakage.

B. Commence a 3% per hour power reduction to Mode 3 per OP-4, LOAD CHANGE AND NORMAL POWER OPERATION. When Mode 3 is entered, implement EOP-00, STANDARD POST TRIP ACTIONS.

C[redacted] Commence a power reduction to Mode 4 per AOP-05, EMERGENCY PLANT SHUTDOWN. When Mode 3 is entered, implement EOP-00, STANDARD POST TRIP ACTIONS.

D. Trip the Reactor and enter EOP-00, STANDARD POST TRIP ACTIONS, then transition to EOP-04, STEAM GENERATOR TUBE RUPTURE.

Question # 83 Revision: 1

KA #: 000037 AA2.04 Tier 1 Group 2 Steam Generator Tube Leak

Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Comparison of RCS fluid inputs and outputs, to detect leaks

Importance: 3.4 / 3.7 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Describe the Technical Specification LCO that is challenged by a leak in the Reactor Coolant System.

Revision 1 - Changed Mode 3 to Mode 4 in choice "C," Changed letdown flow to 32 gpm, Capitalization changes.

EXPLANATION:

The charging/letdown mismatch indicates primary to secondary leakage is 4 gpm and an AOP-05 shutdown is warranted by AOP-22, "C" is correct. "A" and "B" would be correct if the leak rate was smaller. "D" would be correct if the leak rate were greater than 40 gpm.

| | | | |
|---|---|---|---|
| KA#: | 000037 AA2.04 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-22 01.06 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-22 | Handout: | NONE |

QUESTION NUMBER: 084

Given the following plant conditions:

- The CONDENSER VACUUM STANDBY PUMP RUNNING annunciator is in alarm
- All three Condenser Evacuation Pumps are running
- Condenser vacuum is 26.5" and steady
- Generator load is 470 MWe
- Water is visible in all Condenser Evacuation Pump separator tank level sight glasses
- The Circulating Water System is operating normally
- There is no water in ST-13, Steam Packing Exhauster Drain Trap
- VD-200, Vacuum Breaker, is closed
- A visible level is being maintained in VD-4, Drip and Drain Tank
- DW-48, Condensate Storage Tank, level is 90%

What action(s) should be taken after entering the ARP based on these indications?

A. Initiate a plant shutdown using AOP-05, EMERGENCY SHUTDOWN. Ensure the isolation valves for HCV-1040, Atmospheric Steam Dump Valve, are open.

B. Trip the Reactor and Turbine and enter EOP-00, STANDARD POST TRIP ACTIONS.

C. Initiate continuous feed and bleed of the Condenser Evacuation Separator Tanks using OI-CE-1, CONDENSER EVACUATION SYSTEM NORMAL OPERATION.

D[redacted] Isolate the Steam Packing Exhauster Drain Trap using AOP-26, TURBINE MALFUNCTIONS.

Question # 84 Revision: 2

KA #: 000051 AA2.01 Tier 1 Group 2 Loss of Condenser Vacuum

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Cause for low vacuum condition

Importance: 2.4 / 2.7 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Describe the major recovery actions of this AOP (AOP-26).

Revision 1 - Editorial and puncuation changes.
Revision 2 - Capitalization change.

EXPLANATION:

AOP-26 directs isolation of the steam packing exhauster drain trap if no water is visible. Choice "D" is correct. "A" would be correct if vacuum was less than 25". "B" would be correct if vacuum was less than 23.85" Choice "C" is plausible becase it involves the condenser evacuation system.

| | | | |
|---|---|---|---|
| KA#: | 000051 AA2.01 | Bank Ref #: | 07-17-26 |
| LP# / Objective: | 0717-26 01.03 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NRC 2004 EXAM |
| Reference: | AOP-26 | Handout: | NONE |

QUESTION NUMBER: 085

Given the following plant conditions:

- A Loss of Coolant Accident occurred 2.5 hours ago
- DC Bus 1 was lost 5 minutes after the LOCA
- EOP-20, FUNCTIONAL RECOVERY PROCEDURE, was entered
- DC Control power for appropriate equipment was transferred to DC Bus 2
- RAS has just occurred
- HPSI pumps, SI-2A and SI-2B are operating
- All LPSI and Containment Spray Pumps are in Pull-To-Lock
- Pressurizer pressure is 50 psia
- HPSI flow indication was fluctuating
- HPSI Discharge header pressure was fluctuating
- HPSI Pump performance improved after reducing flow to 50 gpm per pump

What action should be taken next?

A. Maintain 50 gpm injection per pump in accordance with EOP-20.

B. Start HPSI pump SI-2C and establish a total HPSI flow of 150 gpm in accordance with EOP-20.

C. Slowly increase HPSI flow to the minimum flow required by EOP/AOP Attachment 3, SAFETY INJECTION FLOW VS. PRESSURIZER PRESSURE.

D[redacted] Slowly increase HPSI flow to the minimum flow required by EOP/AOP Attachment 26, TOTAL SI PUMP FLOW TO MATCH DECAY HEAT VS. TIME AFTER TRIP.

Question # 85 Revision: 1

KA #: CE-E09 2.4.47 Tier 1 Group 2 Functional Recovery

Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

Importance: 4.2 / 4.2 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Given the Resource Assessment Trees, basically DESCRIBE the Method, Path and Acceptance Criteria for each success path.

Revision 1 - Changed bullet in stem to "All LPSI and Containment Spray Pumps are in Pull-To-Lock. Added normally to explanation.

EXPLANATION:

With reduced suction flow, EOP-20 directs that flow be slowly increased to minimum flow in Attachemnt 26. (Choice "D") Choice "C" uses the wrong attachment. "B" is incorrect SI-2A and SI-2C should not normally be operated together. Choice "A" would be correct if HPSI pump performance had not improved.

| | | | |
|---|---|---|---|
| KA#: | CE-E09 2.4.47 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-18 01.05 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-20 | Handout: | NONE |

QUESTION NUMBER: 086

Given the following plant conditions:

- The plant is operating at full power
- An inadvertent CPHS actuation occurs
- The Reactor has tripped
- EOP-00, STANDARD POST TRIP ACTIONS, are completed and EOP-01, REACTOR TRIP RECOVERY, has been entered

What procedure should first be used to restore Engineered Safeguards following this event?

A.✓ AOP-23, RESET OF ENGINEERED SAFEGUARDS.

B. EOP/AOP Floating Step H, RESET OF ENGINEERED SAFEGUARDS.

C. EOP/AOP Floating Step JJ, DISABLING SAFEGUARDS RELAYS.

D. OI-ES-3, ENGINEERED SAFEGUARD CONTROLS - NORMAL MODE 1, 2 AND 3 ALIGNMENT CHECK.

Question # 86 Revision: 3

KA #: 006000 A2.13 Tier 2 Group 1 Emergency Core Cooling System

Ability to (a) predict the impacts of the 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: Inadvertent SIS actuation

Importance: 3.9 / 4.2 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Use the Reset of Engineered Safeguards Procedure to mitigate the consequences of an inadvertent safeguards actuation.

Revision 1 - Significantly changed wording, Question now addresses inadvertent CPHS.
Revision 2 - Changed comma to period in choice "D."
Revision 3 - Added bullets 3 and 4, reworded answer and distractors.

EXPLANATION:
Choice "A" is correct. AOP-23 is used for inadvertent ESF actuations. Distractor "B" is incorrect because Floating Step H is used to reset legitimate ESF actuations, not inadvertent. Distractor "C" is incorrect because Floating Step JJ is only used if the relays will not reset using installed plant controls. It is entered from AOP-23, therefore the word "first" in the stem makes this distractor incorrect. Distractor "D" is incorrect because OI-ES-3 is not used for inadvertent actuations.
.

| | | | |
|---|---|---|---|
| KA#: | 006000 A2.13 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-23 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-23 | Handout: | NONE |

QUESTION NUMBER: 087

Given the following plant conditions:

- The plant was operating at full power when a LOCA occurred
- EOP-03, LOSS OF COOLANT ACCIDENT, was entered after performing EOP-00, STANDARD POST TRIP ACTIONS
- 2 HPSI pumps, 2 LPSI pumps and 3 Charging pumps are operating
- SIRWT level is 122 inches
- RCS Pressure is 500 psia and lowering slowly
- Steam Generator pressures are 800 psia
- Containment Pressure is 28 psig and rising slowly
- SI flowrate is below the flow required by EOP/AOP Attachment 3, "Safety Injection Flow vs. Pressurizer Pressure"
- Both Reactor Vessel Level Channels indicate 29%
- CETs indicate 467°F

What actions should be taken first to mitigate this situation?

A[redacted] Stay in EOP-03 and start a third HPSI pump.

B. Stay in EOP-03 and start a plant cooldown.

C. Enter EOP-20, FUNCTIONAL RECOVERY PROCEDURE, and implement Success Path IC-2 and open PORVs.

D. Enter EOP-20, FUNCTIONAL RECOVERY PROCEDURE, and implement Success Path CI and start two Containment Spray pumps.

Question # 87 Revision: 2

KA #: 013000 A2.01 Tier 2 Group 1 Engineered Safety Features Actuation System

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

Importance: 4.6 / 4.8 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Given the Resource Assessment Trees, basically DESCRIBE the Method, Path and Acceptance Criteria for each success path.

Revision 1 - Editorial changes, expanded explanation.
Revision 2 - Editorial changes.

EXPLANATION:

With the equipment listed in the stem operating, SI flowrate should be adequate. Therefore, the ECCS systems are not operating as designed. RVLMS level is low and the event is progressing toward core damage. According to EOP-03, if safety injection flow is inadequate per EOP/AOP attachment 2, then all idle HPSI pumps should be started. "A" is correct. "B" will be performed, but comes later in the procedure. With the RCS pressure below the S/G pressure, starting a plant cooldown will not have an immediate effect. "C" is incorrect because EOP-20 entry is not required, and opening PORVs is not in IC-2. "D" is incorrect because Containment Pressure is below 60 psig and no action is required.

| | | | |
|---|---|---|---|
| KA#: | 013000 A2.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-18 01.05 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-03 | Handout: | STEAM TABLES |

QUESTION NUMBER: 088

Given the following plant conditions:

- The plant is operating at full power
- Pressurizer pressure and level are lowering
- All three charging pumps are running
- Letdown flow is 26 gpm
- The RM-057 CONDENSER OFF GAS HIGH RADIATION annunciator is in Alarm
- The RM-054A STM GEN "A" BLWD HIGH RADIATION annunciator is in Alarm

What is the appropriate procedural guidance for placing RM-064, Main Steam Line Radiation Monitor, in service?

A. RM-064 will be placed in service on both Steam Generators using EOP-00, STANDARD POST TRIP ACTIONS.

B[redacted] RM-064 will be placed in service on both Steam Generators using EOP-04, STEAM GENERATOR TUBE RUPTURE.

C. RM-064 will be placed in service on the "A" Steam Generator only using the Annunciator Response Procedure for the RM-057 CONDENSER OFF GAS HIGH RADIATION alarm.

D. RM-064 will be placed in service on the "A" Steam Generator only using AOP-22, REACTOR COOLANT LEAK," Attachment B, "Primary to Secondary Leak Rate Actions."

Question # 88 Revision: 1

KA #: 039000 A2.03 Tier 2 Group 1 Main and Reheat Steam System

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

Importance: 3.4 / 3.7 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

EXPLAIN the major strategy used to mitigate the consequences of a SGTR.

Revision 1 - Capitalization changes.

EXPLANATION: Guidance for placing RM-064 into service is found in EOP-04, ARPs and AOP-22, but not EOP-00. "A" is incorrect. "B" is correct. "C" and "D" are incorrect because RM-064 is placed into operation for both S/Gs. (Auto alternates between the steam generators)

| | | | |
|---|---|---|---|
| KA#: | 039000 A2.03 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-14 01.01 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | EOP-04 | Handout: | NONE |

QUESTION NUMBER: 089

Given the following plant conditions:

- The Reactor tripped due to a loss of offsite power
- EOP-02, LOSS OF OFFSITE POWER/LOSS OF FORCED CIRCULATION, was entered following EOP-00, STANDARD POST TRIP ACTIONS
- Turbine Auxiliary Feedwater Pump, FW-10, is providing water to the Steam Generators
- The EFWST LEVEL LO APPROACHING TECH SPEC LIMIT annunciator is in Alarm
- EFWST level indicates 89%

What action should be taken in response to these conditions?

A[redacted] Implement EOP-AOP Floating Step J, EMERGENCY FEEDWATER STORAGE TANK INVENTORY.

B. Implement AOP-30, EMERGENCY FILL OF EMERGENCY FEEDWATER STORAGE TANK.

C. Implement EOP-AOP Floating Step J, EMERGENCY FEEDWATER STORAGE TANK INVENTORY, when the EFWST LEVEL LO-LO alarm is received.

D. Implement AOP-30, EMERGENCY FILL OF EMERGENCY FEEDWATER STORAGE TANK, when the EFWST LEVEL LO-LO alarm is received.

Question # 89 Revision: 2

KA #: 061000 2.4.46 Tier 2 Group 1 Auxiliary / Emergency Feedwater System

Ability to verify that the alarms are consistent with the plant conditions.

Importance: 4.2 / 4.2 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

STATE from memory the sources of makeup water to replenish the EFWST as described in the EFWST Inventory floating step and AOP-30.

Revision 1 - Deleted Bullets associated with annunciators not in alarm from stem, Editorial changes.
Revision 2 - Corrected title in choice "B."

EXPLANATION:

Entry condition is met for floating step ("A" is correct), Not met for AOP-30 ("B" is incorrect) LO-LO level alarm is after entry conditions ("C" and "D" are incorrect)

| | | | |
|---|---|---|---|
| KA#: | 061000 2.4.46 | Bank Ref #: | N/A |
| LP# / Objective: | 0718-12 03.08 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | FLOATING STEP J | Handout: | NONE |

QUESTION NUMBER: 090

Given the following plant conditions:

- The plant is operating at full power
- An I&C Technician has informed you that Pressure Transmitter, B/PT-102, can not be calibrated because it has failed low
- The Channel "B" High Pressurizer Pressure and TM/LP Trip Units have been bypassed

Technical Specifications require that jumpers be installed to bypass the Channel "B" input(s) to ______________ lockout relay(s) within _________ hours.

A. Only 86B/PPLS; 8

B✓ Both 86A/PPLS and 86B/PPLS; 8

C. Only 86B/PPLS; 24

D. Both 86A/PPLS and 86B/PPLS; 24

Question # 90 Revision: 2

KA #: 012000 2.1.32 Tier 2 Group 1 Reactor Protection System

Ability to explain and apply system limits and precautions.

Importance: 3.8 / 4 CFR Number: 5.43(b)(2)

Facility operating limitations in the technical specifications and their bases.

Fort Calhoun Objective:

EXPLAIN the Technical Specification requirements for placing an RPS trip unit in the tripped or bypassed condition within one hour.

Revision 1 - Question reworded to a 2x2 question. expanded explanation, provided additional references.
Revision 2 - added only and both to choices.

EXPLANATION:

B/PT-102 provides an input to both 86A/PPLS and 86B/PPLS so both must be bypassed within 8 hours. "B" is correct because B/PT-102 provides an input to both 86A/PPLS and 86B/PPLS and the TS specifies 8 hours. Distractor "A" is incorrect because an input is also provided to 86A/PPLS. Distractors "C" and "D" are incorrect because is is an 8 hour time limit, not a 24 hour time limit.

| | | | |
|---|---|---|---|
| KA#: | 012000 2.1.32 | Bank Ref #: | 07-12-25 077 |
| LP# / Objective: | 0712-25 01.18 | Exam Level: | SRO-2 |
| Cognitive Level: | HIGH | Source: | BANK |
| Reference: | TS 2.15 | Handout: | NONE |

QUESTION NUMBER: 091

According to EPIP-EOF-7, PROTECTIVE ACTION GUIDELINES, which one of the following would require notification of the states and counties?

A[redacted] The dose assessment has been revised and the Emergency Classification downgraded to an ALERT.

B. Command and Control has been transferred from the Control Room to the EOF.

C. Issuance of Potassium Iodide has been authorized for onsite personnel.

D. Non-Emergency Response personnel have been evacuated to North Omaha Station.

Question # 91 Revision: 1

KA #: 028000 2.4.30 Tier 2 Group 2 Hydrogen Recombiner and Purge Control System

Knowledge of events related to system operations/status that must be reported to internal organizations or external agencies such as the State, the NRC or the transmission system operator.

Importance: 2.7 / 4.1 CFR Number: 5.43(b)(4)

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Fort Calhoun Objective:

The person who completes this topic will be able to IDENTIFY the applicable definitions and variables that go into the making of Protective Action Recommendations

Revision 1 - Changed cognitive level to low, minor puncuation change.

EXPLANATION: A change to the EALs requires notification of the States and Counties. "A" is correct The distractors do not require notification.

| | | | |
|---|---|---|---|
| KA#: | 028000 2.4.30 | Bank Ref #: | N/A |
| LP# / Objective: | 1070-05 01.00 | Exam Level: | SRO-4 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | EPIP-EOF-7 | Handout: | NONE |

QUESTION NUMBER: 092

Given the following plant conditions:

- Refueling is in progress
- A new Fuel Assembly is being inserted into the core
- Count rates on 2 Wide Range NI channels have doubled

What actions should be taken?

A. Stop fuel movement and initiate emergency boration in accordance with AOP-03, EMERGENCY BORATION.

B. Stop fuel movement and evacuate containment in accordance with AOP-08, FUEL HANDLING INCIDENT.

C[redacted] Withdraw the fuel assembly from the core and initiate emergency boration in accordance with AOP-03, EMERGENCY BORATION.

D. Withdraw the fuel assembly from the core and evacuate containment in accordance with AOP-08, FUEL HANDLING INCIDENT.

Question # 92 Revision: 0

KA #: 034000 K1.04 Tier 2 Group 2 Fuel Handling Equipment System

Knowledge of the physical connections and/or cause-effect relationships between the Fuel Handling System and the following systems: NIS

Importance: 2.6 / 3.5 CFR Number: 5.43(b)(7)

Fuel handling facilities and procedures.

Fort Calhoun Objective:

Use the Emergency Boration AOP to mitigate the consequences of an uncontrollable or unexplained positive reactivity addition.

EXPLANATION:

OP-12 precaution states that if the count rate doubles on 2 or more channels, withdraw the fuel assembly being inserted and Enter AOP-03. "C" is correct. "A" is incorrect because the fuel assembly is not being withdrawn. "B" and "D" are incorrect because the wrong AOP is entered.

| | | | |
|---|---|---|---|
| KA#: | 034000 K1.04 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-03 01.00 | Exam Level: | SRO-7 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OP-12 | Handout: | NONE |

QUESTION NUMBER: 093

Given the following plant conditions:

- The plant is operating at full power
- There is an unusually high amount of debris in the river
- River level is 981 feet and lowering
- Pressure is lowering on PI-1913A, "CONDENSER CIRC WATER PRESSURE INLET"

What actions should be taken for these conditions?

A[redacted] Enter AOP-10, LOSS OF CIRCULATING WATER, and throttle condenser outlet valves to maintain Condenser vacuum. Implement AOP-01, ACTS OF NATURE, Section IV, "Low River Water Level."

B. Initiate a plant shutdown using OP-4, LOAD CHANGE AND NORMAL POWER OPERATION. Prepare for the potential loss of Fire Protection using SO-G-103, FIRE PROTECTION OPERABILITY CRITERIA AND SURVEILLANCE REQUIREMENTS.

C. Initiate a plant shutdown using AOP-05, EMERGENCY PLANT SHUTDOWN. Prepare for the potential loss of Raw Water using AOP-18, LOSS OF RAW WATER.

D. Trip the Reactor and enter EOP-00, STANDARD POST TRIP ACTIONS. After completing these actions, trip the Circulating Water Pumps and enter AOP-10, LOSS OF CIRCULATING WATER.

Question # 93 Revision: 2

KA #: 075000 A2.01 Tier 2 Group 2 Circulating Water System

Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of intake structure

Importance: 3 / 3.2 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

Use the Loss of Circulating Water Procedure to mitigate the consequences of a loss of cooling to the condenser or a Circulating Water System rupture.

RevIsion 1 - Added "to maintain Condenser Vacuum" to choice "A."
Revision 2 - Editorial changes.

EXPLANATION:

Choice "A" is correct per AOP-10. The other choices are incorrect because a plant shutdown is not directed under these conditions although it would be at lower river levels. Distractors address other concerns if the river level gets too low.

| | | | |
|---|---|---|---|
| KA#: | 075000 A2.01 | Bank Ref #: | N/A |
| LP# / Objective: | 0717-10 01.00 | Exam Level: | SRO-5 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | AOP-10, AOP-01 | Handout: | NONE |

QUESTION NUMBER: 094

Where are action levels associated with Chloride in the primary and secondary systems specified?

A[redacted] CH-AD-0003, PLANT SYSTEM CHEMICAL LIMITS AND CORRECTIVE ACTIONS

B. AOP-41, CHEMISTRY OUT OF SPECIFICATION

C. OI-CH-2, CVCS PURIFICATION SYSTEM NORMAL OPERATION, and OI-FW-5, STEAM GENERATOR BLOWDOWN NORMAL OPERATION

D. SO-O-43, FUEL RELIABILITY MANAGEMENT PLAN, and SO-G-105, STEAM GENERATOR TUBE LEAKAGE

Question # 94 Revision: 1

KA #: 000000 2.1.34 Tier 3 Generic Knowledges and Abilities

Knowledge of primary and secondary plant chemistry limits.

Importance: 2.7 / 3.5 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Fort Calhoun Objectives:

USE Chemistry Administrative Procedure CH-AD-0003 to EVALUATE a given set of Reactor Coolant System chemistry conditions and determine the need for corrective action.
USE Chemistry Administrative Procedure CH-AD-0003 to EVALUATE a given set of Steam Generator chemistry conditions and determine the need for corrective action.

Revision 1 - Replaced question with a more generic one

EXPLANATION:
Action levels for chemicals such as Chloride are given for various plant systems including RCS primary and secondary limits are provided in CH-AD-0003. "A" is the correct answer. Distractor "B' - AOP-41 provides actions to be taken if action levels are exceeded, but refers to CH-ADM-0003 to determine what those levels are. Distractor "C" OI-CH-2 and OI-FW-5 provide operating instructions for systems used to help control primary and secondary chemistry, but they do not specify action levels. Distractor "D" SO-O-43 and SO-G-105 provide action levels for radioactivity, but not for Chloride and other chemicals.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.1.34 | Bank Ref #: | N/A |
| LP# / Objective: | 0706-02 01.00,02.00 | Exam Level: | SRO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | CH-AD-0003 | Handout: | NONE |

QUESTION NUMBER: 095

According to SO-G-117, REACTIVITY MANAGEMENT, who is responsible for assigning another active SRO licensed individual to act as the Reactivity SRO during periods of frequent reactivity manipulations such as Reactor startups and shutdowns?

A. Reactor Engineer

B. Shift Technical Advisor

C[redacted] Shift Manager

D. Work Week Manager

Question # 95 Revision: 2

KA #: 000000 2.1.43 Tier 3 Generic Knowledges and Abilities

Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

Importance: 4.1 / 4.3 CFR Number: 5.43(b)(6)

Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects of core reactivity.

Fort Calhoun Objective:

STATE the major sections of the Standing Orders

Revision 1 - Replaced question with a more generic question.
Revision 2 - Removed "The" from choices.

EXPLANATION:
According to SO-G-117, REACTIVITY MANAGEMENT, the Shift Manager is responsible for assigning the Reactivity SRO. Choice "C" is correct. Distractors "A", "B" and "D", the Reactor Engineer, The Shift Technical Advisor and the Work Week Manager all have responsibilities for Reactivity Management per SO-G-117, but not for assigning the Reactivity SRO.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.1.43 | Bank Ref #: | N/A |
| LP# / Objective: | 0762-01 01.00 | Exam Level: | SRO-6 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-G-117 | Handout: | NONE |

QUESTION NUMBER: 096

Which one of the following procedure changes can be processed as a Temporary Procedure Change?

A. A change to the initial conditions in an Operations Survellance Test (OP-ST) procedure.

B[redacted] A change in a system Operating Instruction (OI) to allow manual operation of an automatic controller.

C. A change to an Abnormal Operating Procedure (AOP) to clarify entry conditions.

D. A change to an Emergency Operating Procedure (EOP) to require an additional action be taken due to a failed indicator.

Question # 96 Revision:0

KA #: 000000 2.2.06 Tier 3 Generic Knowledges and Abilities

Knowledge of the process for making changes in procedures.

Importance: 3 / 3.6 CFR Number: 5.43(b)(3)

Facility licensee procedures required to obtain authority for design and operating changes in the facility.

Fort Calhoun Objective:

Temporary procedure change implementation

EXPLANATION:

"B" is correct because it is a non-change of intent change to an OI. "A" changes the intent of the procedure by changing initial conditions. "C" and "D" are incorrect because a temporary procedure change can not be used for AOPs or EOPs.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.2.06 | Bank Ref #: | N/A |
| LP# / Objective: | 0762-08 10.03 | Exam Level: | SRO-3 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | SO-G-30 | Handout: | NONE |

QUESTION NUMBER: 097

Given the following plant conditions:

- A radiological event has occurred
- The Emergency Plan has been entered

According to EPIP-EOF-11, DOSIMETRY RECORDS, EXPOSURE EXTENSIONS AND HABITABILITY, the MINIMUM authorized radiation dose that requires approval by the person in the "Command and Control" position is _________ in a year.

A. 1 rem

B[redacted] 5 rem

C. 15 rem

D. 50 rem

Question # 97 Revision: 1

KA #: 000000 2.3.04 Tier 3 Generic Knowledges and Abilities

Knowledge of radiation exposure limits under normal and emergency conditions.

Importance: 3.2 / 3.7 CFR Number: 5.43(b)(4)

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Fort Calhoun Objective:

LIST the OPPD administrative exposure limits.

Revision 1 added MINIMUM

EXPLANATION:

According to EPIP-EOF-11, The Comand and Control Position must approve radiation dose greater than 5 rem in a year. "B" is correct the others are wrong.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.3.04 | Bank Ref #: | N/A |
| LP# / Objective: | 1924-03 03.02 | Exam Level: | SRO-4 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | EPIP-EOF-11 | Handout: | NONE |

QUESTION NUMBER: 098

Given the following plant conditions:

- The Reactor is in Mode 4, Cold Shutdown
- All Circulating Water Pumps have been secured
- Raw Water Pumps AC-10A and AC-10C are operating
- Radiation Monitor, RM-055, is inoperable
- A sample has been taken of the contents of Waste Monitor Tank, WD-22B
- The release rate calculations have been verified by two qualified individuals
- A release permit has been prepared and approved by Chemistry

What action (if any) must be taken before the Shift Manager can authorize a release of Waste Monitor Tank, WD-22B?

A. No additional action is required.

B. An additional Raw Water Pump must be started.

C. A Circulating Water Pump must be started.

D[redacted] An additional WD-22B sample must be taken.

Question # 98 Revision: 0

KA #: 000000 2.3.11 Tier 3 Generic Knowledges and Abilities

Ability to control radiation releases.

Importance: 3.8 / 4.3 CFR Number: 5.43(b)(4)

Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Fort Calhoun Objective:

Monitor Tank Releases

EXPLANATION:

The requirements for the release are 2 samples independently verified by 2 qualified individuals. One more sample needs to be taken. "D: is correct and "A" is incorrect. One Circulating Water Pump or 2 Raw Water Pumps are required to be operating. Choices "B" and "C" are incorrect.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.3.11 | Bank Ref #: | N/A |
| LP# / Objective: | 1950-04 10.01B | Exam Level: | SRO-4 |
| Cognitive Level: | HIGH | Source: | NEW |
| Reference: | CH-ODCM-0001 | Handout: | NONE |

QUESTION NUMBER: 099

The following instructions are included as a contingency action in EOP-20, FUNCTIONAL RECOVERY PROCEDURE, MVA-IA:

"If instrument air pressure is less than 90 psig, then IMPLEMENT AOP-17, LOSS OF INSTRUMENT AIR."

If this is the case, how do you use AOP-17 in conjunction with EOP-20?

A. Exit EOP-20 and enter AOP-17.

B. Exit EOP-20 and enter AOP-17. Reenter EOP-20 when you reach the AOP-17 exit conditions.

C. Complete the actions in EOP-20. Enter AOP-17 when you reach the EOP-20 exit conditions.

D[redacted] Perform AOP-17 actions in parallel with EOP-20.

Question # 99 Revision: 1

KA #: 000000 2.4.08 Tier 3 Generic Knowledges and Abilities

Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

Importance: 3.8 / 4.5 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

GIVEN a set of plant conditions, DETERMINE if the Standard Post Trip Actions (SPTA's), the Optimal Recovery Guidelines or the Functional Recovery Guideline (FGR) should be used.

Revision 1 - Minor punctuation change.

EXPLANATION:

According to OPD 4-09, IMPLEMENTmeans to perform in parallel with. Therefore, "D" is correct and all of the distractors are incorrect.

| | | | |
|---|---|---|---|
| KA#: | 000000 2.4.08 | Bank Ref #: | 07-18-10 061 |
| LP# / Objective: | 0718-10 01.06 | Exam Level: | SRO-5 |
| Cognitive Level: | LOW | Source: | NRC 04 EXAM |
| Reference: | OPD 4-09 | Handout: | NONE |

QUESTION NUMBER: 100

Given the following plant conditions:

[redacted] Redacted - SUNSI [redacted]

Question # 100 Revision:1

KA #: 000000 2.4.16 Tier 3 Generic Knowledges and Abilities

Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.

Importance: 3.5 / 4.4 CFR Number: 5.43(b)(5)

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal,and emergency situations.

Fort Calhoun Objective:

STATE the conditions that OCAG-1 is designed to mitigate.

Revision 1 - Added reference material, punctuation changes.

EXPLANATION:

[redacted] Redacted - SUNSI [redacted].

**[SUNSI, Withhold from Public Disclosure under 10 CFR 2.390]**

| | | | |
|---|---|---|---|
| KA#: | 000000 2.4.16 | Bank Ref #: | N/A |
| LP# / Objective: | 1074-01 02.02 | Exam Level: | SRO-5 |
| Cognitive Level: | LOW | Source: | NEW |
| Reference: | OCAG-1 | Handout: | NONE |