

U.S. Nuclear Regulatory Commission

Site-Specific RO Written Examination

Applicant Information

Name: **KEY**

Date: 04/23/2009

Facility / Unit: Kewaunee Power Station / 1

Region: I ☐ II ☐ III ☒ IV ☐

Reactor Type: W ☒ CE ☐ BW ☐ GE ☐

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

Applicant Certification

All work on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

Examination Value 75.00 Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

APPENDIX E

POLICIES AND GUIDELINES FOR TAKING NRC EXAMINATIONS

Each examinee shall be briefed on the policies and guidelines applicable to the examination category (written, operating, walk-through, and/or simulator test) being administered. The examinees may be briefed individually or as a group. Facility licensees are encouraged to distribute a copy of this appendix to every examinee before the examination begins. All items apply to both initial and requalification examinations, except as noted.

Part A: General Guidelines

1. **[Read Verbatim]** Cheating on any part of the examination will result in a denial of your application and/or action against your license.
2. If you have any questions concerning the administration of any part of the examination, do not hesitate to ask them before starting that part of the test.
3. SRO applicants will be tested at the level of responsibility of the senior licensed shift position (i.e., shift manager).
4. You must pass every part of the examination to receive a license or to continue performing license duties. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.
5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facility licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

Part B: Written Examination Guidelines

1. **[Read Verbatim]** After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
2. To pass the examination, you must achieve an overall grade of 80.00 percent or greater, with 70.00 percent or greater on the SRO-only items, if applicable. If you only take the SRO portion of the exam (as a retake or with an upgrade waiver of the RO exam), you must achieve an overall grade of 80.00 percent or better to pass. SRO-upgrade applicants who do take the RO portion of the exam and score below 80.00 percent on that part of the exam can still pass overall, but may require remediation. Grades will not be rounded up to achieve a passing score. Every question is worth one point.
3. For an initial examination, the nominal time limit for completing the examination is 6 hours for the RO exam; 3 hours for the 25-question, SRO-only exam; and 8 hours for the combined RO/SRO exam. Notify the proctor if you need more time.

4. You may bring pens, pencils, and calculators into the examination room; however, programmable memories must be erased. Use black dark pencil for this examination to facilitate machine grading.
5. Print your name in the blank provided on the examination cover sheet **and** on the answer sheet. You may be asked to provide the examiner with some form of positive identification.
6. Mark your answers on the answer sheet provided, and do not leave any question blank. Use only the paper provided; you may write anywhere on the provided examination. If you have a machine-gradable form that offers more than four answer choices (e.g., "a" through "e"), be careful to mark the correct column.
7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate to ask them before answering the question. Note that questions asked during the examination are taken into consideration during the grading process and when reviewing applicant appeals. Ask questions of the NRC examiner or the designated facility instructor *only*. A dictionary is available if you need it.

When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Similarly, you should assume that no operator actions have been taken, unless the stem of the question or the answer choices specifically state otherwise. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.

8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.
9. When you complete the examination, assemble a package that includes the examination cover sheet and the answer sheet, and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. Leave all other items at your examination table face down. The examination will be retained by the station training department.
10. After turning in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
11. Do you have any questions?

QUESTION 001

The plant was operating at 100%, MOL when RXCP 'A' #1 seal leakoff increased to nine gpm. The reactor was subsequently tripped and RXCP 'A' was stopped and placed in PULLOUT.

Which of the following best reflects the expected values for Loop 'A' Flow, Loop 'B' Flow, and Loop 'B' Bypass Flow, respectively, ten minutes later?

	<u>Loop 'A' Flow</u>	<u>Loop 'B' Flow</u>	<u>Loop 'B' Bypass Flow</u>
a.	18%	108%	300 gpm
b.	40%	78%	175 gpm
c.	0%	98%	250 gpm
d.	25%	85%	150 gpm

ANSWER

a.

REFERENCE

AOP-RC-005, Abnormal RXCP Operation, NOTE 2 Step 1.

System Description 36, Reactor Coolant System (RC), 3.5.4, page 25

Accident and Transient Analysis, Chapter VI Decreased Reactor Coolant Flow Events, Partial loss of forced flow. Figure VI.13 & VI.14.

K/A 007EA1.04

HIGHER

NEW

QUESTION 002

Given the following:

- The plant has just tripped from 100% power.
- Safety Injection has automatically initiated due to a failed OPEN Pressurizer PORV.
- Tavg is 543°F and stable.
- Steam Dumps are in Steam Pressure Mode.
- Condenser backpressure is 2.3" HgA.

Assuming NO operator action, how will steam dump operation be affected by PT-484, Main Steam Line Pressure Transmitter, failing high?

- a. All steam dump valves will remain closed.
- b. All condenser steam dump valves arm until reset.
- c. All condenser steam dump valves open, but reclose when RCS Tavg falls to 540°F
- d. All condenser steam dump valves open, until low steam line pressure causes an automatic Main Steam Line Isolation.

ANSWER

c.

REFERENCE

E-1626, Integrated Logic Diagram, Main Steam & Steam Dump System

E-1627, Integrated Logic Diagram, Main Steam & Steam Dump System

K/A 008AA1.03

HIGHER

NEW

QUESTION 003

Given the following:

- A Small Break LOCA has occurred.
- The crew has transitioned to ES-1.2, "Post LOCA Cooldown and Depressurization."
- Both RXCPs are stopped in PULLOUT.
- A cooldown to Cold Shutdown is in progress.
- Charging Pumps 'A' and 'B' are running at maximum output taking a suction from the RWST.
- Both RHR pumps are stopped and in AUTO.
- SG 'A' Narrow Range level is 13% and slowly increasing.
- SG 'B' Narrow Range level is 21% and slowly increasing.
- Subcooling is 62°F and stable.
- Pressurizer level is 31% and slowly increasing.
- Conditions have been established for starting RXCPs 'A' and 'B'

Starting RXCP(s) . . .

- a. 'B' is preferred to maximize pressurizer spray flow
- b. 'A' and 'B' are preferred to equalize RCS cold leg temperatures.
- c. 'A' and 'B' are preferred to maximize forced circulation in the RCS.
- d. 'A' is preferred to minimize pressure transients when placing RHR in service.

ANSWER

a.

REFERENCE

Background ES-1.2 Step 11.

K/A 009 2.4.6

FUNDAMENTAL

NEW

QUESTION 004

Given the following:

- A Large Break LOCA has occurred.
- The reactor has tripped.
- Safety Injection has initiated.
- RCS pressure is 200 psig and decreasing.

What is the reason for stopping the RxCPs?

- a. To maximize safety injection flow.
- b. To prevent two phase flow in core.
- c. To minimize RCS inventory depletion.
- d. To prevent RxCP degradation and/or damage.

ANSWER

d.

REFERENCE

BKG E-0, Foldout 1, Knowledge/Abilities

BKG E-1, Foldout 1, Knowledge/Abilities

AOP-RC-005, Abnormal RxCP Operation, step 1 #1 RXCP Seal D/P

K/A 011EK2.02

BANK

FUNDAMENTAL

QUESTION 005

Thermal barrier flow control valves (CC-610A and CC-610B) automatically close when Reactor Coolant Pump Component Cooling flow rate reaches 260 gpm.

What describes the reason for this?

- a. Limit the loss of Component Cooling system inventory.
- b. Limit the leakage of reactor coolant into the Component Cooling system.
- c. Ensure a continued supply of cooling water to the Excess Letdown heat exchanger.
- d. Ensure a continued supply of cooling water to the Reactor Coolant Pump upper oil pot oil cooler.

ANSWER

b.

REFERENCE

AOP-RC-005, Abnormal RXCP Operation, NOTES prior to Step 10

System Description 31, Component Cooling Water System (CC), 3.6.6, page 16

K/A 015/017AK3.02

NEW

FUNDAMENTAL

QUESTION 006

Given the following:

- The plant is at full power, steady state, Middle of Life (MOL).
- Tavg is stable.
- Normal charging and letdown are in service.
- The Reactor Makeup Control System is energized and in AUTO.
- VCT level is 20% and increasing with Auto Makeup in progress.

Assuming NO operator action, if power is lost to CVC-403/CV-31092, Boric Acid To Blender, . .

- a. CVC-403/CV-31092, Boric Acid To Blender, will cycle from THROTTLED to CLOSED.
- b. Annunciator 47045-L, RX MAKEUP WATER FLOW DEVIATION, will alarm after 10 seconds.
- c. Annunciator 47044-L, RX MAKEUP BORIC ACID FLOW DEVIATION, will alarm after 10 seconds.
- d. CVC-406/CV-31094, Boric Acid Blender To Volume Control Tank, will cycle from OPEN to CLOSE.

ANSWER

c.

REFERENCE

E-2024, Integrated Logic Diagram, Chemical & Volume Control System

System Description 35, Chemical and Volume Control System (CVC)

ARP 47044-L, RX MAKEUP BORIC ACID FLOW DEVIATION

ARP 47045-L, RX MAKEUP WATER FLOW DEVIATION

OPERXK-100-36, Flow Diagram, Chemical & Volume Control Sys.

NOP-CVC-001, Boron Concentration Control

K/A 022AA2.03

NEW

HIGHER

QUESTION 007

Given the following:

- The plant is at 255°F, cooling down to Cold Shutdown with RHR Train 'A'.
- RHR Train 'B' is out of service for testing.
- SI Accumulators are ISOLATED.
- Annunciator 47021-G, "RHR TO RCS COOLDOWN FLOW LOW" is LIT.
- Annunciator 47033-43, "TLA-18 RHR SYSTEM MONITOR ABNORMAL" is LIT.
- Annunciator 47031-R, "REACTOR CAVITY SUMP LEVEL HIGH/LOW" is LIT.
- Annunciator 47043-K, "LETDOWN HX OUTLET PRESS HIGH" is LIT.
- RHR flow is oscillating between 950 gpm and 2000 gpm

The crew's priority is implementation of . . .

- a. E-0, "Reactor Trip Or Safety Injection."
- b. E-1, "Loss Of Reactor or Secondary Coolant."
- c. ARP-47031-R, "REACTOR CAVITY SUMP LEVEL HIGH/LOW."
- d. AOP-RHR-001, "Abnormal Residual Heat Removal System Operation."

ANSWER

d.

REFERENCE

AOP-RHR-001, Abnormal Residual Heat Removal System Operation

AOP-RC-001, Reactor Coolant Leak

E-0, Reactor Trip Or Safety Injection

ARP-47031-R, REACTOR CAVITY SUMP LEVEL HIGH/LOW

ARP-47021-G, RHR TO RCS COOLDOWN FLOW LOW

ARP-47033-43, TLA-18 RHR SYSTEM MONITOR ABNORMAL

ARP-47043-K, LETDOWN HX OUTLET PRESS HIGH

K/A 025 2.4.45

NEW

HIGHER

QUESTION 008

Given the following:

- Plant at 100% Power.
- Component Cooling Water Pump 'A' tripped.
- Component Cooling Water Pump 'B' DID NOT auto start.
- The crew manually started Component Cooling Water Pump 'B' 90 seconds after Component Cooling Water Pump 'A' tripped.

Which components were unable to perform their Technical Specification function when Component Cooling system pressure and flow were zero?

- a. SI Pump 'A' & ICS Pump 'A'.
- b. RHR Pump 'A' & Charging Pump 'A'.
- c. RXCP 'A' & Letdown Heat Exchanger.
- d. Component Cooling Pump 'A' & Waste Gas Compressor 'A'.

ANSWER

a.

REFERENCE

47021-H, CC Pumps Discharge Pressure Low.

47021-I, RXCP CC Low.

47022-I, SI pumps CC Flow Low

47023-I, RHR Pumps CC Flow Low

47024-I, ICS Pumps CC Flow Low

K/A 026 2.2.37

NEW

FUNDAMENTAL

QUESTION 009

Given the following:

- The unit is operating at 78% power.
- PRZR pressure initially is 2235 psig and stable.
- PRZR Master Pressure Controller output, PC-431K, has failed AS IS.
- Main Feedwater Pump 'B' has TRIPPED.

What is the initial response of the Pressurizer Pressure Control System after Main Feedwater Pump 'B' has tripped?

- a. Backup heaters turn OFF due to the pressure increase.
- b. Backup heaters turn ON to heat the incoming surge volume.
- c. Both PRZR spray valves THROTTLE OPEN to reduce pressure to normal.
- d. Both PRZR PORVs OPEN to maintain pressure below the high reactor trip setpoint.

ANSWER

b.

REFERENCE

Dwgs E-2038, E-2039

System Description SD-05A, Feedwater System, 1.6, page 5

OP-KW-ARP-47061- D, FEEDWATER PUMP B TRIP, 4.3

KPS USAR, 4.1.5.4 & 4.1.5.5

K/A 027AA1.01

BANK

HIGHER

QUESTION 010

Given the following:

- The plant has experienced a Steam Generator Tube Rupture in Steam Generator 'A' and a Loss of Off-Site Power
- The crew has cooled down the RCS to the target CET temperature of 444°F using Steam Generator 'B ' PORV and is depressurizing the RCS using PR-2B, PRZR PORV.
- A RED path on Integrity is indicated because of a low RCS Loop 'A' Cold Leg temperature.

What is the cause for the RED path on Integrity?

- a. Re-direction of safety injection flow.
- b. Voiding of the upper head region.
- c. Backfill from the ruptured steam generator to the RCS.
- d. Establishing natural circulation in RCS loop 'A'.

ANSWER

a.

REFERENCE

E-3, Steam Generator Tube Rupture, Step 11 CAUTION 2

E-3 background for CAUTION 2 step 11

K/A 038K1.03

NEW

HIGHER

QUESTION 011

Given the following:

- Operators are performing ECA 2.1, "Uncontrolled Depressurization of Both Steam Generators," due to a steam leak on BOTH S/G main steam lines inside containment.

Parameter	Value	Trend
Cooldown rate	125°F/hour	Stable
RCS Cold Leg 'A' temperatures	360°F	Decreasing
RCS Cold Leg 'B' temperatures	320°F	Decreasing
S/G 'A' Narrow Range Level	OFF Scale Low	-----
S/G 'A' Wide Range Level	45%	Stable
S/G 'A' pressure	130 psig	Slowly Decreasing
S/G 'A' AFW flow	85 gpm	Stable
S/G 'B' Narrow Range Level	10%	Slowly Increasing
S/G 'B' Wide Range Level	67%	Slowly Increasing
S/G 'B' pressure	105 psig	Slowly Decreasing
S/G 'B' AFW flow	125 gpm	Stable
Containment pressure	8 psig	Slowly Decreasing

To mitigate the effects of the steam leaks and control the subsequent transient the operator should . . .

- a. minimize additional cooldown by decreasing AFW flow to 25 gpm to each Steam Generator.
- b. minimize steam flow to containment by isolating AFW flow to Steam Generator 'A' and maintaining at 25 gpm AFW flow to Steam Generator 'B'.
- c. prevent Steam Generator 'A' tube dryout by decreasing Steam Generator 'A' AFW flow to 25 gpm and increasing Steam Generator 'B' AFW flow to at least 185 gpm.
- d. ensure an adequate heat sink by maintaining total AFW flow between 210 gpm and 250 gpm until at least one Steam Generator narrow range level is greater than 13%.

ANSWER

a.

REFERENCE

ECA-2.1, Step 4

K/A E12EK2.2

NEW

HIGHER

QUESTION 012

Given the following:

- Operators are performing FR-H.1, "Response to Loss of Secondary Heat Sink", due to a loss of Main Feedwater event.
- Bleed and feed has been initiated.
- Main Feedwater is now available.

What is the reason for establishing feed flow in a slow and controlled manner?

- a. Limit the RCS temperature decrease.
- b. Conserve Condensate Storage Tank inventory.
- c. Prevent stratification of S/G as cold water is introduced.
- d. Minimize potential water hammer in the Main Feed Water System.

ANSWER

a.

REFERENCE

FR-H.1, CAUTION Step 36

Background FR-H.1, CAUTION Step 36

K/A 054K1.02

NEW

FUNDAMENTAL

QUESTION 013

Given the following:

- Station Blackout occurred 2 hours ago.
- Crew is performing the actions of ECA-0.0, "Loss of All AC Power", Step 36, (CAS) MONITOR DC BUS VOLTAGES.
- DC BUS voltages:

BRA-102 voltage is 120 VDC

BRB-102 voltage is 119 VDC

BRC-102 voltage is 120 VDC

BRD-102 voltage is 119 VDC

BRE-102 voltage is 205 VDC

Based on the above voltages, what is the appropriate action?

- a. Shed loads from BRB-102 and BRD-102.
- b. Monitor all individual cell voltages to ensure they are > 1.02 volts.
- c. Cross-connect BRA-102 with BRB-102 and BRC-102 with BRD-102.
- d. Report when generator seal oil pressure within 5 psig of generator gas pressure.

ANSWER

d.

REFERENCE

ECA-0.0, Step 36

K/A 055A1.04

NEW

HIGHER

QUESTION 014

Given the following:

- SI Pump 'A' is OOS for maintenance.
- The plant was operating at 100% power when a Loss of Offsite Power occurred.
- The crew is performing the Immediate Actions of E-0, "Reactor Trip or Safety Injection."
- Bus 5 and 6 are NOT energized.
- Annunciator 47091-G, "BUS 5 LOCKOUT", is LIT.
- Annunciator 47091-J, "BUS 6 LOCKOUT", is NOT LIT.
- Emergency Diesel Generator 'A' is running unloaded.

Per the Immediate Actions of E-0, "Reactor Trip or Safety Injection", the Balance of Plant Operator should first . . .

- a. manually start Emergency Diesel Generator 'B' to provide a power source for a train of Safeguards equipment.
- b. place Emergency Diesel Generator 'B' output breaker 43 switch to manual in preparation for manual start of Emergency Diesel Generator 'B'.
- c. place Emergency Diesel Generator 'A' in PULLOUT to prevent damage to the Emergency Diesel Generator due to running without Service Water.
- d. close SW pump 1A2 breaker prior to closing Emergency Diesel Generator 'A' output.

ANSWER

a.

REFERENCE

E-0, Step 3 (Immediate Operator Action)

E-0 Background, Step 3

K/A 056K3.02

NEW

HIGHER

QUESTION 015

Using the attached D/T PARAMETER and TAVE trend snapshots from the PPCS, identify the event that results in the displayed parameters.

- a. Loss of power to 480V MCC 1-62C.
- b. Loss of power to 125V DC Bus BRB-104.
- c. Loss of power to 120V AC Bus BRB-113.
- d. Loss of power to 120V AC cabinet BRB-105.

ANSWER

c.

REFERENCE

Plant Process Computer System

E-233 Rev AR

E-2042 Rev J (B-1)

E-2044 Rev. U (H-6)

K/A 057 2.1.19

NEW

HIGHER

QUESTION 016

Battery Charger, BRA-108, is provided with an automatic current limiting device to . . .

- a. limit charging current to a value that doesn't cause excessive gassing from Safeguards Battery, BRA-101.
- b. automatically place Safeguards Battery, BRA-101, on a normal float charge when Equalizing charge is complete.
- c. protect Safeguards Battery, BRA-101, from high charging current should a rectifier fail in Battery Charger, BRA-108.
- d. prevent tripping the Battery Charger, BRA-108, output circuit breaker when Safeguards Battery, BRA-101, is completely discharged.

ANSWER

d.

REFERENCE

System Description 38, DC & Emergency AC Electrical Distribution System, 3.3.1 and 3.3.4, pages 12-14.

K/A 058K1.01

FUNDAMENTAL

NEW

QUESTION 017

Given the following:

- A plant cooldown for a refueling outage is in progress.
- RCS pressure is 450 psig.
- RCS temperature is 375°F.
- Two Charging Pumps are running, both in MANUAL, with Letdown and Charging balanced (Letdown flow is 40 gpm).
- Operators are in the process of preparing to place the RHR system in service for decay heat removal.
- Auxiliary Building radiation levels are now rising.
- Pressurizer level is lowering.
- Annunciator 47032-Q, "RHR PUMP PIT A/B LEVEL HIGH", is LIT.
- Annunciator 47032-R, "RHR PUMP PIT SUMP LEVEL HIGH", is LIT.
- SER 1599, RHR pump A pit level high, is in ALARM.
- SER 1600, RHR pump B pit level high, is in ALARM.

Assuming all plant systems function as designed, . . .

- a. an automatic Safety Injection (SI) will occur.
- b. the SI Accumulators will inject into the RCS.
- c. Containment Sump recirculation will be unavailable.
- d. Containment Isolation (CI) signal will isolate the leak.

ANSWER

c.

REFERENCE

ECA-1.2, LOCA Outside Containment

Background ECA-1.2, LOCA Outside Containment

K/A E04EK3.4

BANK

HIGHER

QUESTION 018

Given the following:

- The Plant was operating at 100% power when a loss of normal feedwater occurred.
- Conditions for a reactor trip have occurred, but the Reactor has NOT tripped.
- Control Rods are being MANUALLY inserted.
- Attempts to trip the Reactor have failed.

What is the reason the operator trips the Main Turbine, even though the Reactor is NOT tripped?

- a. To cause the Reactor to trip.
- b. To generate an AMSAC signal.
- c. To maintain SG water inventory.
- d. To prevent reverse powering the Main Generator.

ANSWER

c.

REFERENCE

FR-S.1 Background Document, Step 2.

USAR 14.1.12, page 14.1-45

K/A E05EA2.2

BANK

FUNDAMENTAL

QUESTION 019

Given the following:

- Reactor is at 8% power, BOL.
- The Main Turbine is NOT LATCHED.
- RCS Tavg is 546°F and slowly lowering.
- Pressurizer pressure is 2235 psig and steady.
- Control Bank D position is 124 steps.
- RCS Boron is 2248 ppm.
- Control Bank D Rod G-11 drops.

The crew has entered AOP-CRD-001, "Control Drive System Malfunction."

To maintain Tavg on program the operators will ...

- a. step rods out.
- b. dilute the RCS.
- c. raise steam demand.
- d. allow power defect to provide positive feedback.

ANSWER

b.

REFERENCE

Ref AOP-CRD-001 Step 5

K/A 003AA1.06

NEW

HIGHER

QUESTION 020

Given the following:

- An irradiated fuel assembly has been dropped in the core.
- Annunciator 47011-B, "RADIATION INDICATION HIGH", is LIT.
- Radiation monitor R-11 Cnmt Vent (particulate) is in HIGH alarm.
- Radiation monitor R-12 Cnmt Vent (gas) is in HIGH alarm.

Which of the following describes the automatic response to this event?

- a. Containment Ventilation Isolation (CVI) of Train 'A' equipment will occur.
- b. Containment Ventilation Isolation (CVI) of Train 'B' equipment will occur.
- c. Control Room ventilation shifts to the Post-Accident Recirculation mode.
- d. Zone SV Boundary Dampers Train 'A' and 'B' Close and R-11 and R-12 sample return shifts to the Containment.

ANSWER

b.

REFERENCE

AOP-RM-001, ATTACHMENT A, A2 & A3.

System Description 45, Radiation Monitoring System (RM), Section 3.11

E-1636, Integrated Logic Diagram, Diesel Generator Electric

E-1608, Integrated Logic Diagram, Reactor Building Vent System

E-2068, Integrated Logic Diagram, Reactor Building Vent System

K/A 036AK2.02

MODIFIED

HIGHER

QUESTION 021

Given the following:

- A primary to secondary leak has developed in SG 'A'.
- The crew is reducing power at 3% per min per AOP-RC-004, "Steam Generator Tube Leak", and AOP-GEN-002, "Rapid Power Reduction."
- Reactor Power is 50% and lowering.
- Tavg is 559°F.
- PRZR Level is 22% and lowering.
- Charging Pump 'A' is in AUTO with 100% output and Charging Pump 'B' is in MANUAL with demand at 20%.
- Makeup Control is in AUTO.
- Letdown flow is 40 gpm.
- VCT level is 30% and lowering.
- Annunciator 47043-E, "PRESSURIZER LEVEL DEVIATION", has just LIT.

The operators should first . . .

- a. isolate letdown.
- b. maximize charging.
- c. manually trip the reactor.
- d. adjust loading rate to 1% per min.

ANSWER

b.

REFERENCE

ARP-47043-E, Rev. 0

AOP-RC-004 steps 2 and 17, Rev. 0

K/A 037AA1.11

MODIFIED

HIGHER

QUESTION 022

With a degrading condenser vacuum at 100% power, what is the sequence of events? (Assume NO operator action)

- a. As Generator MWe decreases and MVARs become negative, G-1 will open at 5% reverse power.
- b. Reactor Thermal Power will increase as plant efficiency degrades, this causes an OPDT Runback.
- c. The Reactor Trips, G-1 opens in 30 seconds, and the SG PORVs will open to control Tavg at 547°F.
- d. At a condenser vacuum of 10" HgA the Main Turbine will Trip, causing a Reactor Trip and Permissive P-7 to become lit.

ANSWER

d.

REFERENCE

OP-KW-ARP-47051-W, 3.4

System Description 9, Air Removal, 1.6, page 7

System Description 54, Main Turbine and Auxiliaries, 3.11.4, page 38

System Description 47, 3.12.2, page 19

E-2058, Integrated Logic Diagram - Turbine System

XK-100-156, Logic Diagrams Turbine Trip Runbacks & Other Signals

K/A 051AA2.02

MODIFIED

HIGHER

QUESTION 023

Given the following:

- Annunciator 47013-B, "RAD MONITOR FAILURE", is LIT.
- R-23, Control Room Vent Monitor, has failed low.
- R-23 Key Switch is in KEYPAD.
- TLA-15, "RMS ABOVE NORMAL", is LIT.
- R-5, Fuel Handling Area Monitor, reads above normal at 6 mr/hr and increasing slowly.
- HP has verified R-5 readings are valid.
- Annunciator 47012-B, "HIGH RADIATION INDICATION ALERT", is NOT LIT.
- Annunciator 47011-B, "RADIATION INDICATION HIGH", is NOT LIT.

In response to the conditions above, the operating crew manually starts Control Room Post Accident Recirc to . . .

- a. ensure that the Control Room environment is protected.
- b. prevent discharging contamination from the Control Room to the Aux Building.
- c. establish operability of the system prior to radiation levels reaching EAL actions levels.
- d. maintain the Control Room atmosphere within the limits of the ODCM.

ANSWER

a.

REFERENCE

ARP 47013-B, RAD MONITOR FAILURE

AOP-RM-001, Abnormal Radiation Monitoring, Steps 2.1; 7 (R-5), 24 (R-23)

K/A 061AK3.02

NEW

FUNDAMENTAL

QUESTION 024

Given the following:

- A fire has forced the control room to be evacuated.
- Control Operator 'A' is establishing Auxiliary Feedwater at the DSP.

AFW-10A, AFW Train 'A' Crossover Valve, is verified closed to . . .

- a. prevent feeding Steam Generator 'B'.
- b. prevent feeding Steam Generator 'A'.
- c. control TDAFW pump feed flow to Steam Generator 'A'.
- d. prevent a smart short from opening AFW-10A inadvertently.

ANSWER

a.

REFERENCE

OP-KW-AOP-FP-002, Fire in Alternate Fire Zone, APPENDIX A, Step A14
System Description 87, 10CFR50 Appendix R, Section 3.7.1

K/A 068K3.07

NEW

FUNDAMENTAL

QUESTION 025

Given the following:

- Loss of Off-Site Power
- A Small Break LOCA is in progress.
- Both trains of ECCS failed to actuate.
- Core Exit Thermocouples are 560°F and stable.
- Reactor Vessel Level Indication is 0%.
- Subcooling Margin Monitor is 0°F and stable.
- Annunciator 47044-F, "ICCMS PANEL TROUBLE", is LIT.
- Annunciator 47033-12, "TLA-2 RCS SUBCOOLING HIGH/LOW", is LIT.

The plant is progressing towards inadequate core cooling because . . .

- a. RCS coolant has reached superheated conditions.
- b. RCS subcooling is decreasing towards saturation conditions.
- c. coolant inventory has decreased to below the top of the core.
- d. coolant inventory is between the bottom of the hot leg and the top of the core.

ANSWER

d.

REFERENCE

System Description 50, Incore Instrumentation & Inadequate Core Cooling Monitor & Loose Parts Monitoring (IE), Sections 3.5.2 and 3.5.3.

K/A E06 2.4.31

NEW

HIGHER

QUESTION 026

The following plant conditions exist:

- 100% power with all systems in normal lineup.
- Annunciator 47033-35, "TLA-15 RMS ABOVE NORMAL", is LIT.
- Annunciator 47012-B, "RADIATION INDICATION ALERT", is LIT.
- Annunciator 47011-B, "RADIATION INDICATION HIGH", is LIT.
- The radiation level indication on R-9, RCS Letdown Monitor, is 15 R/hr which has been confirmed by portable monitoring equipment.

Procedurally . . .

- a. letdown is isolated to minimize the radiation hazard.
- b. excess letdown is placed in service to minimize the radiation hazard.
- c. letdown flow is maximized through the mixed bed demineralizers to reduce RCS activity.
- d. letdown flow is maximized through the cation bed demineralizer to reduce RCS activity.

ANSWER

c.

REFERENCE

AOP-RM-001, Abnormal Radiation Monitoring System, Step 10.b

AOP-RC-003, High Reactor Coolant Activity, Step 2.1 and Step 2 RNO

K/A 076A2.02

MODIFIED

HIGHER

QUESTION 027

Given the following:

- Steam Line Break has occurred in containment with a Loss of Off-Site Power.
- Bus 5 and 6 are powered from the Emergency Diesel Generators.
- The crew is performing the actions of FR-P.1, "Response to Imminent Pressurized Thermal Shock."
- Both SI pumps have been stopped and placed in AUTO.
- Both RHR pumps have been stopped and placed in AUTO.
- Charging pump 'A' is running with charging flow established at 25 gpm.
- Letdown is unavailable.

Which of the following is the preferred method to depressurize the plant?

- a. Use auxiliary spray to prevent rupturing the PRT rupture disk.
- b. Turn off all pressurizer heaters to prevent thermal stratification.
- c. Use normal spray to prevent dilution of PRZR boron concentration.
- d. Open a PRZR PORV to minimize thermal shock to the PRZR spray nozzle.

ANSWER

d.

REFERENCE

FR-P.1, Step 21

Background Document for FR-P.1 step 21

K/A W/E08EK1.1

NEW

FUNDAMENTAL

QUESTION 028

Given the following:

- The plant is at 100% power.
- Control Bank D is at 225 steps.
- Reactor Coolant System pressure is 2235 psig and stable.
- Tavg is 572°F and stable.
- Reactor Coolant Pump 'A' trips.

With NO operator action, 2 minutes after Reactor Coolant Pump 'A' trips . . .

- a. AFW flow to S/G 'A' is > AFW flow to S/G 'B'.
- b. AFW Pump 'A' tripped on low discharge pressure.
- c. SD-3B, S/G 'B' PORV, will be cycling to maintain RCS Temperature.
- d. FW-12A, S/G 'A' Feedwater Isolation, will be closed to limit feed water flow.

ANSWER

a.

REFERENCE

Accident and Transient Analysis, Chapter VI (page VI-25)

Dwg E-1625

K/A 003K3.02

MODIFIED

HIGHER

QUESTION 029

Given the following:

- Plant Startup and Heatup in progress.
- The RCS is solid and vented.
- RHR system is in service with RHR/CVC crossconnect aligned: RHR-210 OPEN, RHR-211 OPEN, RHR/CVC Spectacle Flange INSTALLED.
- RCS Cold Leg Temperatures are 175°F.
- RCS Hot Leg Temperatures are 175°F.
- RCS pressure is 350 psig.
- SW-1306A, CC HX A Temperature CV, is in MANUAL and Component Cooling Heat Exchanger Outlet Temperature, T0621A, is 100°F

RXCP 'B' is the first RXCP to be started. Which action is required prior to starting RXCP 'B'?

- a. Form a bubble in the Pressurizer.
- b. Measure Steam Generator temperatures locally.
- c. Verify PS-1A, Przr Spray Control Valve A, in MANUAL and CLOSED.
- d. Reduce Component Cooling Heat Exchanger outlet temperature to <95°F.

ANSWER

b.

REFERENCE

OP-KW-NOP-RCS-001, Reactor Coolant Pump Operation, Section 4.5, 4.6 & 5.4

K/A 006K6.14

NEW

HIGHER

QUESTION 030

Given the following:

- Cooldown to Cold Shutdown in progress.
- RCS temperature at 310°F.
- RCS pressure at 345 psig.
- One RXCP in operation with spray control in AUTO.
- PRZR level on program with control in AUTO.
- PRZR PORV, PR-2A, is being cycled to vent hydrogen from the Pressurizer and is currently open.
- PRT level and pressure were normal before cycling PR-2A.

Close PRZR PORV, PR-2A, before . . .

- a. RCS subcooling decreases to 15°F.
- b. PRT pressure increases to 20 psig.
- c. PRT temperature increases to 110°F.
- d. RXCP #1 seal DP decreases to 200 psid.

ANSWER

d.

REFERENCE

GOP-202, Shutdown From RHR To Cold Shutdown, 4.6 and Step 5.2.4

AOP-RC-005, Abnormal RXCP Operation, Foldout Page

NOP-RCS-002, Pressurizer Relief Tank Operation, 4.5 and 4.8

K/A 004K5.14

NEW

HIGHER

QUESTION 031

Which design feature is associated with minimizing the probability of brittle fracture of the reactor pressure vessel?

- a. RHR-33, RHR From Loop Hot Legs, is installed with a setpoint of 480 psig.
- b. SI-312, RHR To Reactor Vessel Line to PRT, is installed with a setpoint of 600 psig.
- c. PR-2A and PR-2B, Pressurizer PORVs, are installed to prevent exceeding design pressure.
- d. RHR-33-1, 4 inch Valve-Safety-RHR To Reactor Coolant Hot Legs, is installed with a setpoint of 500 psig.

ANSWER

d.

REFERENCE

System Description 34, Residual Heat Removal System, 3.1.6, pages 10-11.

OEA 82-205 (SOER 82-7)

K/A 05K5.01

MODIFIED

FUNDAMENTAL

QUESTION 032

With the RHR system in the normal cooldown mode and total RHR flow rate being maintained using RHR-101, RHR Flow Control Bypass Valve, how is RCS temperature controlled using the RHR system?

- a. Throttle valves at the inlet of the RHR Heat Exchangers are positioned by the Control Room operator to maintain RCS temperature.
- b. Throttle valves at the outlet of the RHR Heat Exchangers are positioned by the Control Room operator in response to RCS temperature trends.
- c. A temperature control valve at the outlet of the RHR Heat Exchanger controls RHR flow through the RHR Heat Exchanger to maintain the preset RHR Heat Exchanger outlet temperature automatically.
- d. A temperature control valve in the Component Cooling Water (CCW) system controls CCW flow through the RHR Heat Exchanger to maintain the preset RHR Heat Exchanger outlet temperature automatically.

ANSWER

b.

REFERENCE

System Description 34 – Residual Heat Removal, 3.5

OPERXK-100-18, Flow Diagram, Residual Heat Removal System

K/A 05A4.03

MODIFIED

FUNDAMENTAL

QUESTION 033

Given the following:

- A cooldown to COLD SHUTDOWN is in progress.
- RCS Tavg is 450°F.
- RCS pressure is 990 psig.
- Both SI Accumulator Discharge Isolation power supply breakers are ON.
- SI-20A/MV-32091 Accumulator 'A' Isolation valve is CLOSED with its switch in AUTO.
- SI-20B/MV-32096 Accumulator 'B' Isolation valve is OPEN with its switch in AUTO.
- Bus 5 LOCKOUT occurs.
- Large break LOCA occurs on Loop 'B' Hot Leg (Double Ended Shear).
- RCS pressure decreases to 400 psig in 15 seconds.

What is the response of the SI Accumulators?

- a. Both SI Accumulators will inject to the reactor vessel.
- b. Neither SI Accumulator will inject to the reactor vessel.
- c. Only SI Accumulator 'A' will inject to the reactor vessel.
- d. Only SI Accumulator 'B' will inject to the reactor vessel.

ANSWER

d.

REFERENCE

KNPP USAR, Sections 6.2.2.2.1, 6.2.3.7, 14.3.2.1 and 14.3.3.1

E-2034, Integrated Logic Diagram – Safety Injection System, Rev. R

Operator Aid # 02-22 MCC-52B and MCC-62B

K/A 006K2.02

BANK

HIGHER

QUESTION 034

Given the following:

- Reactor is at 100% power.
- Annunciator 47043-B, "PRESSURIZER RELIEF TANK ABNORMAL", is LIT.
- PRT level indication is 62% and slowly lowering.
- PRT temperature is 119°F.

If a PRZR PORV fails OPEN before the operators restore PRT level, PRT pressure will . . .

- a. increase slightly because PRT volume increases.
- b. lower because of condensing affect of the PRT sparger line.
- c. increase to over-pressurization because PRT quench volume is no longer sufficient.
- d. remain constant because PRT volume is sufficient to accommodate a PRZR PORV discharge.

ANSWER

c.

REFERENCE

System Description 36, 3.6.8, pages 32-34

K/A 007A1.01

BANK

HIGHER

QUESTION 035

The crew is performing a pumpdown of the PRT to CVC HUT per NOP-RCS-002 section 5.2, "Pressurizer Relief Tank Operation."

When the Operator opens PR-40, Przr Relief Tank Drain Isolation, . . .

- a. RCDT pump 'A' starts and then stops when RCDT level is 12%.
- b. RC-503-1, RCDT to Rx Clnt Drain pumps, closes and RCDT pump 'A' starts.
- c. RCDT pump 'B' starts when RCDT level is 50% and stops when RCDT level is 12%.
- d. RC-507, Rx Clnt Drain Pump Disch Header Isolation, opens and RCDT pump 'A' will start.

ANSWER

b.

REFERENCE

OP-KW-NOP-RCS-002, Pressurizer Relief Tank Operation, section 5.2

OP-KW-NOP-LWP-001, Reactor Coolant Drain Tank, section 5.2

Dwg. E-2040

Dwg. E-2046

K/A 007 2.1.20

MODIFIED

FUNDAMENTAL

QUESTION 036

Given the following:

- RXCP 'A' thermal barrier has ruptured
- 47022-H, "CC SURGE TANK LEVEL HIGH/LOW", is LIT
- Component Cooling (CC) Surge Tank level is 85% and increasing

The CC Surge Tank is protected from overpressurization by the . . .

- a. CC Surge Tank relief valve which is set to open at 150 psig.
- b. CC Surge Tank Vent line which is open to the Waste Holdup Tank.
- c. CC-630A, RXCP 'A' Thermal Barrier Return relief valve, which is set to open at 2485 psig.
- d. CC-104, CC Surge Tank Vent valve, which automatically opens to limit surge tank pressure to 100 psig.

ANSWER

b.

REFERENCE

OPERXK-100-19, Flow Diagram Component Cooling System

OPERXK-100-20, Flow Diagram Component Cooling System

System Description 31, Component Cooling Water System (CC)

K/A 08A1.03

NEW

FUNDAMENTAL

QUESTION 037

The plant is shutdown with core decay heat being removed by the steam generators (S/Gs).

S/G pressures are being maintained at 415 psig using the Condenser Steam Dumps.

Using steam tables, determine what listed pressure below is the MINIMUM PRZR pressure required to establish a 110°F subcooling margin in the RCS loop cold legs? (Assume a negligible temperature difference between the RCS and the S/Gs.)

- a. 1100 psig
- b. 1120 psig
- c. 1140 psig
- d. 1160 psig

ANSWER

c.

REFERENCE

Steam Tables

K/A 010K5.01

BANK

HIGHER

QUESTION 038

The plant was operating at 18% power when an event occurred.

The operator then noted the following:

- Tavg is 548°F and decreasing rapidly.
- Main Turbine is LATCHED.
- FW-7A/B, Main Feedwater Control Valves are Throttled OPEN.
- Steam Dumps are NOT Armed.
- Annunciator 47012-K, "RXCP B BREAKER OPEN", is LIT.
- Annunciator 47012-M, "RCS LOOP B FLOW LOW", is LIT.
- Annunciator 47032-D, "SINGLE LOOP LOW FLOW REACTOR TRIP", is LIT.
- Reactor Trip Breakers green lights are LIT.

Which of the following permissive circuits has failed as indicated by this event?

- a. P-2 circuit
- b. P-4 circuit
- c. P-8 circuit
- d. P-13 circuit

ANSWER

b.

REFERENCE

System Description 47, Reactor Protection and Reactor Coolant Temperature Instrument, 3.12.2 and 3.12.3

XK100-144

K/A 012A3.02

BANK

HIGHER

QUESTION 039

Given the following:

- Containment pressure instrument PT-945, Containment Pressure (Channel I), has failed downscale.
- The actions of AOP-MISC-001 Attachment I, "Response to Instrument Failure", have been completed for removing the channel from service.
- The following status lights are LIT:
 - 44908-0901, Containment 4 psig
 - 44908-1101, Containment 23 psig
- The following annunciators are LIT:
 - 47023-D, "CNTMT PRESS SI ALERT"
 - 47022-F, "CNTMT PRESS ICS ALERT"
- After AOP-MISC-001 Attachment I has been completed for the failure of PT-945, PT-949 (Channel III) fails upscale.

What is the response of the plant?

- a. Only Safety Injection will occur.
- b. Only Main Steam Isolation will occur.
- c. Safety Injection and Main Steam Isolation will occur.
- d. Safety Injection and Containment Spray Actuation will occur.

ANSWER

a.

REFERENCE

OP-KW-AOP-MISC-001, ATTACHMENT I, I.5 and I.9

XK100-150

K/A 013K6.01

BANK

HIGHER

QUESTION 040

Given the following:

- A Small Break LOCA resulted in a MANUAL SI
- A loss of off-site power occurred at the time of trip/SI
- 480 V Bus 1-51 de-energized on overcurrent and locked out
- Emergency Diesel Generators 'A' and 'B' have energized their respective vital busses

Which identifies the status of CFCU's?

- a. No CFCUs will be operating.
- b. All CFCUs will be operating.
- c. Only CFCU 'A' and 'B' will be operating.
- d. Only CFCU 'C' and 'D' will be operating.

ANSWER

d.

REFERENCE

Drawing E-240

480 V Bus 51: CFCU A and B

480 V Bus 61: CFCU C and D

K/A 022K2.01

BANK

HIGHER

QUESTION 041

Given the following:

- A Safety Injection Signal is actuated.

How is the operation of SW-901B-1/CV-31705, Header B Shroud Clg Coil A/B Bypass, affected by this condition?

- a. It gets a close signal to provide Containment Isolation for the Shroud Cooling Coil 'A/B'.
- b. It gets an open signal to ensure adequate cooling flow through Containment Fan Coil Unit 'B'.
- c. It gets a close signal to prevent excessive cooling flow conditions for Containment Fan Coil Unit 'B'.
- d. It gets an open signal to maintain a minimum flow of 75 gpm through Shroud Cooling Coil 'A/B'.

ANSWER

b.

REFERENCE

E-3174, (C-2)

OPERM-547, (A-3)

System Description Number 18, 3.7, pages 18 & 19

K/A 022 2.4.2

BANK

FUNDAMENTAL

QUESTION 042

Given the following:

- LOCA.
- Unable to establish Containment Sump Recirculation.
- Both trains of Containment Spray automatically actuated.
- Both trains of Containment Spray are taking a suction from the RWST.
- Containment Fan Coil Units 'A', 'B', and 'C' are operating in the emergency mode.
- RBV-150D, Containment Fan Coil Unit D Emergency Discharge Damper, has failed closed.

According to the attached ECA-1.1, "Loss of Emergency Coolant Recirculation", Step 8, which of the following combinations of RWST level and Containment Pressure would allow the EARLIEST stopping of the LAST Containment Spray pump?

- a. 40% and 40 psig
- b. 50% and 30 psig
- c. 40% and 20 psig
- d. 30% and 10 psig

ANSWER

c.

REFERENCE

ECA-1.1, Loss Of Emergency Coolant Recirculation, Step 8

K/A 026A2.08

NEW

FUNDAMENTAL

QUESTION 043

Which of the following conditions does NOT result in an INOPERABLE Turbine Driven AFW pump with reactor power at 20%?

- a. AFW Recirc Flow aligned to TB standpipe.
- b. MS-103, T/D AFW Pump Trip And Throttle Valve, is CLOSED.
- c. SW-500A, Service Water Supply to TD AFW Pump, is NOT fully OPEN.
- d. AFW-10A or AFW-10B, AFW Train Crossover Valve, is NOT fully OPEN.

ANSWER

a.

REFERENCE

KPS Technical Specification, 3.4.b

KPS Technical Specification Bases, 3.4.b

OPERM-202 Sh 2

OPERM-203

K/A 039K1.07

MODIFIED

FUNDAMENTAL

QUESTION 044

How will AFW pump 'A' respond to a Bus 1 and Bus 2 LOCKOUT?

The AFW pump 'A' INITIALLY starts because. . .

- a. of a Steam Generator 'A' Lo-Lo Level.
- b. both Main Feedwater Pump breakers trip.
- c. of an AMSAC Steam Generator Lo-Lo Level.
- d. of the undervoltage condition on Buses 1 and 2.

ANSWER

b.

REFERENCE

E-1602-1, Integrated Logic Diagram - Auxiliary Feedwater

E-1624, Integrated Logic Diagram – Feedwater System

K/A 059K1.02

NEW

FUNDAMENTAL

QUESTION 045

The plant is operating at 100% power, with all systems in a normal configuration. Auxiliary Feedwater Pump 'B' is started from the Control Room by placing the control switch to the start position.

Without further operator actions, what is the final condition of the Steam Generator Blowdown valves?

	<u>BT-2A</u>	<u>BT-3A</u>	<u>BT-2B</u>	<u>BT-3B</u>
a.	Open	Open	Closed	Closed
b.	Open	Closed	Closed	Open
c.	Closed	Open	Open	Closed
d.	Closed	Closed	Open	Open

ANSWER

b.

REFERENCE

E-1602-1, Integrated Logic Diagram - Auxiliary Feedwater

E-1629, Integrated Logic Diagram - Main Steam & Steam Dump System

K/A 061K4.03

BANK

FUNDAMENTAL

QUESTION 046

Per AOP-EHV-005, "Loss of 4160V Bus 5", the following conditions are required to shift from Diesel Generator 'A' to the TAT:

- Verify Bkr 1-501 43 switch in MAN.
- Position Bkr 1-501 SYNC Switch to ON
- Locally set Governor Speed Droop to 30
- Locally position Parallel-Unit switch to PARALLEL
- Verify Incoming and Running voltages MATCHED
- Verify Synchroscope rotating slowly in FAST direction
- At 11:57 o'clock CLOSE Bkr 1-501

Which condition would prevent Bkr 1-501, TAT to Bus 5, from CLOSING?

- a. Bkr 1-501 43 Switch is left in AUTO.
- b. The synchroscope is rotating slowly in the SLOW direction.
- c. Running voltage is not within 2-3 volts of incoming voltage.
- d. The attempt to close Bkr 1-501 does not occur until 12:01 o'clock.

ANSWER

a.

REFERENCE

AOP-EHV-005, Loss Of 4160V Bus 5, page 1 and 2

E-914, Interlock Logic Diagrams, Bus 1-5 Source Breakers

K/A 062K4.05

NEW

FUNDAMENTAL

QUESTION 047

Given the following:

- Annunciator 47102-D, "INSTRUMENT BUS INVERTER TROUBLE", is LIT.
- SER printout identifies BRA-112 as the affected inverter.

If BRA-105 is supplying the inverter's load . . .

- a. the inverter supplying load light would be ON.
- b. the alternate source supplying load light would be ON.
- c. annunciator 47101-A, "BRA-102 DC Voltage Low", would be ON.
- d. the red circuit status light on BRA-104 for BRA-112 supply breaker would be OFF.

ANSWER

b.

REFERENCE

E-233

OP-KW-ARP-47102-D

System Description 38, DC and Emergency AC Electrical Distribution System, 3.4.3, pages 16-17 and 3.11, page 21.

K/A 063A3.01

NEW

FUNDAMENTAL

QUESTION 048

The following plant conditions exist:

- Diesel Generator 'B' was started manually.
- Diesel Generator 'B' is currently running at steady state conditions.
- The KW loading is 2400 KW.
- The KVAR loading is 1600 KVAR out.
- Diesel Generator 'B' is to be operated based on Attachment 'A' Figure 1 of NOP-DGM-001B, "Diesel Generator 'B' Remote Operation."

Using Attachment 'A' Figure 1 of NOP-DGM-001B, "Diesel Generator 'B' Remote Operation, determine what action should be taken by the operator to maintain safe operation of Diesel Generator 'B'.

- a. Position the Speed Control Switch to LOWER in order to decrease the power factor.
- b. Position the Voltage Control Switch to LOWER in order to increase the power factor.
- c. Position the Diesel Generator Mode Selector Switch to AUTO to allow the governor to automatically decrease the power factor.
- d. Position the Man Voltage Control Selector Switch to MAN and position the Voltage Control Switch to RAISE in order to increase the power factor.

ANSWER

b.

REFERENCE

OP-KW-NOP-DGM-001B, Step 5.3.11, 5.4.1 and Attachment A, Figure 1

K/A 064A2.19

BANK

HIGHER

QUESTION 049

Given the following:

- Diesel Generator 'A' was noted making an unusual noise during its startup.
- To troubleshoot the problem requires the Diesel Generator be operated between 700 and 800 rpm for a short time.
- The Operator places the Man Voltage Control Selector in OFF position prior to the troubleshooting.

This action was taken to . . .

- a. disable the generator exciter under-voltage trip.
- b. prevent generator excitation resulting in regulator damage.
- c. discharge the field windings to protect workers from electrical shock.
- d. prevent the governor from raising Diesel Generator speed to prevent an increase in excitation.

ANSWER

b.

REFERENCE

OP-KW-NOP-DGM-001A, Precaution & Limitation 4.7

E-2022, (A-4)

System Description 42, 3.3.1, page 8

K/A 064A4.05

BANK

FUNDAMENTAL

QUESTION 050

Given the following:

- Performing a Gas Decay Tank discharge
- WG-36, Waste Gas To Plant Vent Control Valve, automatically closes.

Assuming the automatic closure signal is no longer present, and it is acceptable for the release to be re-initiated, which of the following describes the operation needed to re-open WG-36, Waste Gas To Plant Vent Control Valve?

- a. WG-36 control knob must be taken to close to raise control air pressure, and then may be re-opened.
- b. WG-36 control knob must be taken to close to reduce control air pressure, and then may be re-opened.
- c. WG-36 can be re-opened by placing its control switch at the Waste Disposal Panel in the OPEN position.
- d. The automatic closure signal must be manually reset and WG-36 will then automatically re-open.

ANSWER

b.

REFERENCE

N-GWP-32B – Gaseous Waste Processing & Discharge System Note before step 4.2.8.e.7 E-2048

System Description 32B, 3.5, page 13

K/A 073A4.01

BANK

FUNDAMENTAL

QUESTION 051

Given the following:

- Operating at 100% power
- 12:00:00 Annunciator 47074-A, "SUBSTATION MAJOR", is LIT.
- 12:00:00 SER 618, Substation 138KV RAT Differential Current Trip is ALARMING.
- 12:00:10 Emergency Diesel Generator 'B' started and is powering Bus 6.

With NO operator action, how will Component Cooling Heat Exchanger Outlet Temperature (PPCS Point T0621A) respond to RAT Differential Current Trip?

Component Cooling Heat Exchanger Outlet Temperature decreases because . . .

- a. SW-1300B, COMP Cooling Heat Exchanger B Outlet, OPENS.
- b. SW-1306B, SW From CC HX 'B' Temp Control Valve, OPENS.
- c. SW-1306B, SW From CC HX 'B' Temp Control Valve, CLOSES AND SW-1300B, COMP Cooling Heat Exchanger B Outlet, OPENS.
- d. SW-1306B, SW From CC HX 'B' Temp Control Valve, OPENS AND SW-1300B, COMP Cooling Heat Exchanger B Outlet, CLOSES.

ANSWER

b.

REFERENCE

ARP 47082-G, Recommended Action: NOTE

ARP-47082-E, Step 14.c

E-1632, Integrated Logic Service Water System.

OPERM 202-2, Flow Diagram Service Water System

K/A 076K1.01

NEW

HIGHER

QUESTION 052

Given the following:

- Operating at 100% power.
- Service Water Pump Preferred Selector Switch is in the '1A' position, with the first three pumps in the sequence running.
- SW-3A and SW-3B, Service Water Header 'A' & 'B' Isolations, are both OPEN.
- Turbine Building Header Selector Switch is in position '1A'.
- Annunciator 47051-P, "SW HEADER PRESSURE LOW", is LIT.
- Annunciator 47052-Q, "TURBINE BLDG SW ISOLATION ALERT", is LIT.
- SER 93, SW header 'A' less than 82 psig is in ALARM.
- SER 841, Service Water Header 'A' pressure Low (SWI), is in ALARM.

With NO operator action, which of the following is consistent with the given alarms?

- a. All Service water pumps are running.
- b. No change in Service Water System alignment.
- c. SW-3A, Service Water Header 'A' Isolation, CLOSED.
- d. SW-4A, SW Header 'A' to Turbine Bldg Hdr, CLOSED.

ANSWER

b.

REFERENCE

OP-KW-ARP-47051-P, SW Header Pressure Low.

OP-KW-ARP-47051-Q, Turbine Bldg Service Water Isolation

OP-KW-ARP-47052-Q, Turbine Bldg SW Isolation Alert.

K/A 076 2.4.50

NEW

HIGHER

QUESTION 053

Given the following:

- Air Compressor 'A' switch in AUTO
- Air Compressor 'B' switch in AUTO
- Air Compressor 'C' switch in OFF
- The station air compressor Preferred Selector Switch is aligned to Compressor 'G'.

What automatically occurs WHEN the Station and Instrument Air System air header pressure reaches 95 psig?

- a. Air Compressor 'F' starts.
- b. Air Compressor 'A' starts and loads.
- c. SA-200, SA Header 'A' Supply Valve, starts to close.
- d. SA-60, SA Crossover Pressure Control Valve, closes.

ANSWER

c.

REFERENCE

Dwg E-1603

Dwg E-2098

Dwg OPERM-213-1

K/A 078K1.02

BANK

FUNDAMENTAL

QUESTION 054

Given the following:

- The plant has experienced a Small Break LOCA with a Loss of Off-Site Power.
- The crew has transitioned to E-1, "Loss of Reactor or Secondary Coolant."
- Air Compressors 'A', 'B' and 'C' were in AUTO before the plant trip.
- Instrument Air Header Pressure is 85 psig.

What action in the CONTROL ROOM is required to allow for starting of additional air compressors?

- a. Reset both trains of Safety Injection.
- b. Direct a NAO to locally reset Air Compressor 'A'.
- c. Position Air Compressor 'C' control switch to ON.
- d. Position Air Compressor 'B' control switch to OFF.

ANSWER

a.

REFERENCE

Dwg E-1603

K/A 078A4.01

NEW

HIGHER

QUESTION 055

Given the following:

- Refueling Operations are in progress and changes in core geometry are taking place.
- RHR Pumps 'A' and 'B' are running.
- SFP Pumps 'A' and 'B' are running.

Which of the following would require refueling of the reactor to cease?

- a. Residual Heat Removal Pump 'B' has tripped and will not restart.
- b. Refueling cavity water level was found to be 24 ft above the vessel flange.
- c. The containment personnel air lock inner and outer doors were damaged during the movement of equipment and will not close.
- d. A manual containment isolation valve was found stuck closed, and the upstream automatic containment isolation valve is inoperable.

ANSWER

c.

REFERENCE

Technical Specifications 3.8 refueling operations

K/A 103K3.03

NEW

HIGHER

QUESTION 056

Given the following:

- Current time is 1400.
- ES-0.2, "Natural Circulation Cooldown", is being implemented.
- RXCPs are unavailable.
- All CRDM fans are off and CANNOT be started.
- Letdown is NOT isolated.
- SI IS blocked.
- RCS cooldown is in progress.
- RCS cold leg temperature just lowered to 339°F.
- RCS Pressure is 1450 psig.

Using Attachment B of ES-0.2, "Natural Circulation Cooldown", determine the crew's actions and basis.

- a. Hold temperature and pressure stable until 2300 to prevent damage to the CRDM coils due to overheating.
- b. Cooldown the RCS to < 200°F at 25°F per hour while maintaining RCS pressure >1400 psig to prevent void formation in the U-tubes.
- c. Maintain RCS pressure >1400 psig until 2300 while cooling down the RCS to 275°F to minimize void formations in the Reactor Vessel head.
- d. Depressurize the RCS while holding RCS cold leg temperature stable until 2300 to ensure the upper head fluid temperature is equal to the cold leg fluid temperature.

ANSWER

c.

REFERENCE

ES-0.2, Natural Circulation Cooldown, Step 18, ATTACHMENT B

ES-0.2 Background Document, Step 18

K/A 002A2.03

BANK

HIGHER

Provided Reference: ES-0.2, ATTACHMENT B

QUESTION 057

Given the following:

- Plant is operating at 100%.
- Bus 62 experiences a LOCKOUT.

Which of the following is INOPERABLE?

- a. Step Counters.
- b. All control rods.
- c. Axial Flux Difference.
- d. Rod Position Deviation Monitor.

ANSWER

d.

REFERENCE

AOP-CRD-001, Control Rod Drive System Malfunction, ATTACHMENT B, Step B1.
Technical Specification 3.10.f, 3.10.i.

K/A 014K3.02

NEW

HIGHER

QUESTION 058

Given the Following:

- Plant Startup is in progress.
- Reactor Power is 15% and increasing.
- Source and Intermediate Range Channel 1 nuclear instrument FAILS: Fission Chamber NE-35, Detector 28044.

Which of the following would NOT be accurate because of the failure of NE-35?

- a. NI-41 delta flux.
- b. Calculated Tave-Tref.
- c. NI-36D SUR.
- d. N-31B count rate.

ANSWER

d.

REFERENCE

Dwg E-2051-1

Dwg E-2051-2

K/A 015A4.02

MODIFIED

HIGHER

QUESTION 059

Which of the following is NOT a direct source of hydrogen gas in Containment after a Loss Of Coolant Accident?

- a. Radiolysis of water.
- b. Metal-water reaction.
- c. Deterioration of qualified containment coatings.
- d. Chemical corrosion of materials by spray liquids.

ANSWER

c.

REFERENCE

USAR section 5.8.2.1

CM-AA-CRS-103, section 8.2.16

K/A 028K5.03

BANK

FUNDAMENTAL

QUESTION 060

Given the following:

- The Reactor is at 10% power.
- A Containment 2" vent is planned to begin using Hydrogen Recombiner System Train 'B'. N-RBV-18B, "Reactor Bldg Vent System Cold Operation and Making Releases", Section 4.1.3.

Why is the Hydrogen Recombiner System Train 'A' NOT used to vent containment via LOCA-2A, Post-LOCA Hydrogen Cntmt Vent Isol 'A', and LOCA-100A, Post-LOCA Hydrogen to Recombiner 'A'?

- a. Hydrogen Recombiner System Train 'A' vents at a higher flow rate than Train B and requires a release permit.
- b. Hydrogen Recombiner System Train 'A' CANNOT be operated from the Post LOCA H₂ Control Station panels.
- c. Hydrogen Recombiner System Train 'A' isolation valves do NOT receive a Containment Vent Isolation Train 'A' signal.
- d. Opening of LOCA-2A and LOCA-100A, with the RCS cold leg temperatures > 200°F requires NRC approval prior to opening.

ANSWER

c.

REFERENCE

Dwg E-2068

Dwg OPERM-403

N-RBV-18B, Reactor Bldg Vent System Cold Operation and Making Releases, 4.1.3.

K/A 029A2.03

MODIFIED

HIGHER

QUESTION 061

The design of the New Fuel Elevator prevents inadvertently raising an irradiated fuel assembly.

To accomplish this design feature the New Fuel Elevator will move in the up direction when the . . .

- a. hoist motor overload is disabled by a key interlock.
- b. load sensing station senses less than 1000 lbs.
- c. lower limit switch resets the raise pushbutton control.
- d. elevator interlock bypass key is used to bypass the raise limit switch.

ANSWER

b.

REFERENCE

Dwg E-2052

K/A 034 2.1.32

NEW

FUNDAMENTAL

QUESTION 062

Given the following:

- Holding at 75% turbine power.
- PPCS Point P0487G, P486 Deviation, is in ALARM.
- The Balance of Plant Operator reports that P-486, Turbine Impulse Pressure, is off scale high.

In response to P-486, Turbine Impulse Pressure, failing high . . .

- a. control bank 'D' rods will step out.
- b. Main Generator MWe will increase.
- c. condenser steam dumps will not function in Tave mode.
- d. blocking of reactor trips associated with P-10 is prevented.

ANSWER

c.

REFERENCE

Dwg E-1626

Dwg E-2051-2

Dwg XK-100-151

Dwg XK-100-156

OP-KW-AOP-MISC-001, ATTACHMENT N

K/A 041K6.03

NEW

HIGHER

QUESTION 063

Given the following:

- The weekly Air Inleakage Test is being performed using the local digital air flow calibrator per NOP-AR-001, "Air Removal System", section 5.8.
- An air flow reading has just been obtained, when a high alarm occurs on R-15, Air Ejector Exhaust Monitor.

AR-6, Air Ejector Discharge Vent Valve, will . . .

- a. NOT re-position, since it is already aligned to the suction of the Aux. Building ventilation exhaust fans.
- b. automatically re-align to direct the air ejector flow to the suction of the Aux. Building ventilation exhaust fans.
- c. NOT re-position, since it is already aligned to the suction of the Spent Fuel Pool ventilation exhaust fans.
- d. automatically re-align to direct the air ejector flow to the suction of the Spent Fuel Pool ventilation exhaust fans.

ANSWER

b.

REFERENCE

E-1607

OPERM-212

OPERM-601

NOP-AR-001, Air Removal System, Step 5.8.2

K/A 055A3.03

BANK

FUNDAMENTAL

QUESTION 064

Given the following:

- Rx Power 99.4%
- Condensate Pump 'B' trips on overcurrent.

With NO operator action . . .

- a. C-701, Condensate Recirculation Control Valve, fails open when Condensate Pump 'B' trips.
- b. FW-101A, Feedwater Pump 'A' recirculation valve, modulates to maintain recirculation flow.
- c. C-13, Condensate Bypass LP FW Heaters, will open to attempt to maintain feed water pump suction pressure.
- d. FW-12A, SG 'A' Feedwater Isolation Valve, will close because of the reactor trip signal generated from the low level on both Steam Generators.

ANSWER

c.

REFERENCE

Dwg E-1615

OP-KW-ARP-47063-P, Feedwater Htr Bypass Alert.

Dwg E-1625

OP-KW-ARP-47063-A, SG A Feedwater Isolation.

K/A 056K1.03

NEW

HIGHER

QUESTION 065

With NO operator action, what is the fire system response to a loss of power to MCC-52D?

- a. The Fire System Header pressure will rise to 140 psig because Fire Pumps '1A' and '1B' will automatically start due to loss of voltage.
- b. The Fire System header pressure will stabilize at 143 psig when Fire Pump '1B' automatically starts on loss of power to Fire Pump '1A'.
- c. The Fire System Header pressure will cycle between 102 to 110 psig after Fire Pump '1B' automatically starts on low header pressure.
- d. The Fire System header pressure will lower to 110 psig at which time Fire Pump '1A' will automatically start and raise header pressure.

ANSWER

d.

REFERENCE

E-1619, Integrated Logic Diagram – Fire Protection System

Operator Aid # 02-22, MCC-52D

K/A 086K4.01

BANK

FUNDAMENTAL

QUESTION 066

Given the following:

- The plant is at 100%.
- Annunciator 47061-B, "SG A SF > FF", is LIT.
- S/G 'A' Level is rising slowly.
- S/G 'A' Pressure Instrument PI-468, Red Channel, indicates Off-Scale High.
- S/G 'A' Stm Flow Instrument FI-464, Red Channel, indicates Off-Scale High.

The control board operator should IMMEDIATELY . . .

- a. attempt to manually close SD-3A, S/G 'A' PORV.
- b. shift the steam dump controller, HC-484, to manual.
- c. place S/G 'A' Steam Flow Selector Switch to FI-465, White Channel.
- d. position Main Steam Dump Control Mode Selector to RESET then STM PRESS.

ANSWER

a.

REFERENCE

OP-KW-AOP-GEN-001, Operator Immediate Actions, ATTACHMENT D

Dwg. E-1627

Dwg. XK-100-556

K/A 2.1.17

NEW

HIGHER

QUESTION 067

What is the continuous/steady state startup rate (SUR) allowed by the Dominion Reactivity Management procedure, OP-AP-300, and the Kewaunee Reactor Startup procedure GOP-104, "Startup From Hot Shutdown To Hot Standby", during an approach to criticality?

- a. 0.30 dpm
- b. 0.50 dpm
- c. 0.75 dpm
- d. 1.00 dpm

ANSWER

d.

REFERENCE

OP-KW-GOP-104, Section 4.21

OP-AP-300, Attachment 2.3

K/A 2.1.37

FUNDAMENTAL

NEW

QUESTION 068

Given the following:

- Plant is at 100% power
- Makeup Water System Checklist has been verified

Given N-MUP-27A-CL, "Makeup Water System Checklist", and OPERM-209-2, Flow Diagram of Make-up and Demineralized Water Systems determine which of the following components is NOT supplied from the Demineralized Water Header.

- a. TSC Computer Room HVAC.
- b. Waste Gas Compressor Seals.
- c. Membrane Contactor Vacuum Pump.
- d. Secondary Sampling System Rad Detector.

ANSWER

b.

REFERENCE

N-MUP-27A-CL, Makeup Water System Checklist

OPERM-209-2, Flow Diagram Make-up and Demineralized Water Systems

XK-100-132, Flow Diagram Waste Disposal System

K/A 2.2.15

NEW

HIGHER

Provided References: N-MUP-27A-CL; OPERM-209-2

QUESTION 069

Transformer Bank T-10 is going to be removed from service per MOP-SUB-001, Removal and Restoration of Transformer Bank T-10, during power operations at 50% NI power.

To remove Transformer Bank T-10 from service the following equipment alignment is required for PRA concerns:

- Busses 1, 3, 4 & 5 on the RAT
- Busses 2 and 6 on the MAT
- MCC 5262 lined up to Bus 62
- BRA-106 lined up to normal
- BRB-106 lined up to normal
- Fast transfers for 1-5 and 1-6 disabled except to Emergency Diesel Generators
- Fast transfers of bus 1-1 to RAT is disabled

The following loads are aligned such that they are NOT running and will not start coincident with SI actuation.

- | | |
|---|---------|
| - Charging Pump 'C' control switch | PULLOUT |
| - Boric Acid Transfer Pump 1A control switch | PULLOUT |
| - Boric Acid Immersion Heaters 1A1 and 1B1 breakers | OFF |
| - Spent Fuel Pool Pump 1A breaker | OFF |
| - Dome Vent Fan 1A control switch and breaker | OFF |
| - Turning Gear Oil Pump breaker | OFF |
| - Instrument Air Dryer 1A control switch | OFF |

The following substation alignment is required.

- | | |
|---|------|
| - TA-199 OCB | OPEN |
| - TA-199 OCB Bus and Transformer Side Disconnects | OPEN |
| - 1066E OCB | OPEN |
| - 1066E OCB Transformer Side Disconnect | OPEN |
| - 1066W OCB | OPEN |
| - 1066W OCB Transformer Side Disconnect | OPEN |

Which equipment alignment requires entry into a Limiting Condition for Operation?

- a. Bus 1-5 aligned to the RAT.
- b. Spent Fuel Pool Pump 1A breaker OFF.
- c. Boric Acid Transfer Pump 1A control switch in PULLOUT.
- d. TA-199 OCB Bus and Transformer Side Disconnects OPEN.

ANSWER

d.

REFERENCE

OP-KW-MOP-SUB-001, Removal and Restoration of Transformer Bank T-10.5.1.6.b, 5.1.6.e, 5.2.6 and 5.4

N-SUB-59, Substation Equipment Switching Procedure, 2.2, 2.8 and Section 4.6

Technical Specification, 3.7.a.2, 3.7.b.1 and 3.2.a

K/A 2.2.36

NEW
HIGHER

QUESTION 070

Given the following:

- VCT level is lowering slowly.
- DDT level is rising slowly.
- TI-127, Regen Heat Exchanger Letdown temperature, rose slightly
- PI-136, Letdown Heat Exchanger Outlet pressure, is unchanged
- LD-10, Letdown Cont Pressure, has throttled closed by 5%

Using the attached OPERXK-100-35 and OPERXK-100-36, Flow Diagrams for the Chemical & Volume Control System, and OPERM-350, Flow Diagram, Reactor Plant Misc. Vents, Drains & Sump Pump Piping, the leak in the CVC System is most likely originating from . . .

- a. LD-10, Letdown Cont Pressure, stem leakoff.
- b. CVC-7, Chg Line Flow Cont Vlv, stem leakoff.
- c. LD-13, Letdown Line Relief Valve, seat leakage.
- d. CVC-264, Seal Water Return Filter Drain, seat leakage.

ANSWER

a.

REFERENCE

OPERXK-100-35, Flow Diagram, Chemical & Volume Control Sys.

OPERXK-100-36, Flow Diagram, Chemical & Volume Control Sys.

OPERM-350, Flow Diagram, Reactor Plant Misc. Vents, Drains & Sump Pump Piping

AOP-RC-001, Step 12

K/A 2.2.41

NEW

HIGHER

Provided Reference:

OPERXK-100-35, Flow Diagram, Chemical & Volume Control System

OPERXK-100-36, Flow Diagram, Chemical & Volume Control System

OPERM-350, Flow Diagram, Reactor Plant Misc. Vents, Drains & Sump Pump Piping

QUESTION 071

Given the following:

- A SGTR has occurred on Steam Generator 'A'.
- Both RXCPs are in PULLOUT.
- Both RHR pumps have been STOPPED and placed in AUTO.
- Charging Pumps A and C are running and taking suction from the VCT.
- PRZR Level is 50% and stable.
- Both SI pumps have been STOPPED and placed in AUTO.
- Containment pressure is 0.2 psig.
- RCS Subcooling is 36°F.
- 40 gpm letdown has been established.
- Ruptured Steam Generator 'A' narrow range level is Off Scale High.
- RCS and Ruptured Steam Generator 'A' pressures are equal.
- The crew has selected to perform the Post SGTR Cooldown using ES-3.2, "POST-SGTR COOLDOWN USING BLOWDOWN."

What is an advantage of using ES-3.2, "POST-SGTR COOLDOWN USING BLOWDOWN" to cooldown the RCS for the given conditions?

Using ES-3.2, "POST-SGTR COOLDOWN USING BLOWDOWN" to cooldown the RCS instead of . . .

- a. ES-3.3, "POST-SGTR COOLDOWN USING STEAM DUMP" conserves CST inventory.
- b. ES-3.3, "POST-SGTR COOLDOWN USING STEAM DUMP" minimizes radiation levels in the Aux Building.
- c. ES-3.1, "POST-SGTR COOLDOWN USING BACKFILL" minimizes radiological release and RCS dilution.
- d. ES-3.1, "POST-SGTR COOLDOWN USING BACKFILL" allows for the processing of greater volumes of contaminated primary coolant.

ANSWER

c.

REFERENCE

Bkg Doc E-3 Step 47

ES-1.2, 1.2 Purpose

ES-1.1, 1.2 Purpose

ES-1.2, 1.2 Purpose

K/A 2.3.11

NEW

HIGHER

QUESTION 072

Why is it preferred that Post Accident Leakage Control System be activated per AOP-MDS-002, "Post Accident Leakage Control System", prior to establishing containment sump recirculation during a Large Break LOCA?

- a. To prevent boron dilution of Containment Sump 'B' during containment sump recirculation.
- b. The Post Accident Leakage Control System is required to obtain containment sump samples during containment sump recirculation.
- c. High radiation levels could prohibit diverting the Deaerator Drain Tank Vent to containment during containment sump recirculation.
- d. A large differential pressure across CVC-215B, Seal Water Filter Bypass valve, will develop during containment sump recirculation and prevent it from opening.

ANSWER

c.

REFERENCE

AOP-MDS-002, Post Accident Leakage Control, NOTE Step 2

K/A 2.3.14

NEW

FUNDAMENTAL

QUESTION 073

Given the following:

- A loss of BOTH offsite and onsite power has occurred, resulting in a Reactor Trip.
- Immediately the STA reports the status of Critical Safety Functions as follows:

SUBCRITICALITY	- Green
CORE COOLING	- Orange
HEAT SINK	- Red
INTEGRITY	- Green
CONTAINMENT	- Green
INVENTORY	- Yellow

In response to the above conditions the crew should implement . . .

- a. ECA-0.0, "Loss of All AC Power."
- b. FR-I.3, "Response to Voids in Reactor Vessel."
- c. FR-C.1, "Response to Inadequate Core Cooling."
- d. FR-H.1, "Response to Loss of Secondary Heat Sink."

ANSWER

a.

REFERENCE

ECA-0.0, Loss of All AC, Note prior to step 3

Back ground ECA-0.0 for note prior to step 3.

UG-0, Users guide for Emergency and abnormal procedures, section 6.2.3

K/A 2.4.16

BANK

HIGHER

QUESTION 074

Given the following:

- Reactor Trip and Safety Injection actuated 20 minutes ago.
- The Reactor Trip and Safety Injection were caused by a Steam Line Break on Main Steam Header 'A' inside Containment.
- Transition from E-0, "Reactor Trip or Safety Injection," is in progress.

<u>Parameter</u>	<u>Value</u>	<u>Trend</u>
S/G 'A' Narrow range level	Off Scale Low	-----
S/G 'B' Narrow range level	14%	Slowing Rising
ALL RCS cold leg temperatures	265°F	Slowly Lowering
SI Flow	400 gpm	Slowing Rising
Total AFW Flow	100 gpm	Slowing Rising
Containment Pressure	27 psig	Slowly Lowering

What CSF would be expected for these plant conditions?

- A RED path on Integrity.
- A RED path on Heat Sink.
- A YELLOW path on Integrity.
- An ORANGE path on Containment.

ANSWER

a.

REFERENCE

FR-0, Critical safety Function Status Trees.

K/A 2.4.21

BANK

HIGHER

QUESTION 075

Given the following:

- At 11:00 today the site experienced a Loss of All AC power
- The crew is performing actions of ECA-0.0, "Loss of All AC Power."

What is an ECA-0.0, "Loss of All AC Power", time critical operator action and the reason for its performance?

- a. Energize Bus 52 within 60 minutes to prevent depletion of station emergency batteries.
- b. Opening of Relay Room panel room doors within 60 minutes to ensure that temperatures do not exceed 120°F.
- c. Close CVC-212, RXCP Seal Water Return Isolation Valve, within 10 minutes to prevent RCS inventory loss in excess of one Charging Pump.
- d. Close MU-2A, Condensate Normal Makeup Inlet Valve, within 10 minutes to ensure adequate CST level for 4 hours of decay heat removal.

ANSWER

d.

REFERENCE

GNP-05.16.06, Time Critical Operator Actions – 5. Respond to a station blackout

K/A 2.4.35

NEW

FUNDAMENTAL

***** END OF 2009 RO NRC EXAM *****

U.S. Nuclear Regulatory Commission
Site-Specific SRO Written Examination

Applicant Information

Name: KEY

Date: 04/23/2009

Facility / Unit:	Kewaunee Power Station / 1
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Region: I ☐ II ☐ III ☒ IV ☐Reactor Type: W ☒ CE ☐ BW ☐ GE ☐

Start Time:

Finish Time:	
--------------	--

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

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Applicant Certification

All work on this examination is my own. I have neither given nor received aid.

Applicant's Signature

All work on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

RO/SRO-Only/Total Examination Values 75.00 / 25.00 / 100.00 Points

Applicant's Scores _____ / _____ / _____ Points

Applicant's Grade _____ / _____ / _____ Percent

QUESTION 001

Given the following:

At 0700

- Reactor Power is 1.2%, plant startup is in progress.
- Annunciator 47052-C, "CNTMT EMERG DISCH DMPRS ABNORMAL", is LIT
- RBV-150A, Containment Fan Coil Unit 'A' Emergency Discharge Damper, has failed OPEN.
- Actions taken per ARP-47052-C, "CNTMT EMERG DISCH DMPRS ABNORMAL", did NOT CLOSE RBV-150A, Containment Fan Coil Unit 'A' Emergency Discharge Damper.

At 0714

- Reactor Power is 1.4%.
- TLA-20, "4160V Stator Temperature Hot", is LIT.
- Computer Point T0437A, Reactor Coolant Pump 'B' Stator, is in ALARM at 112 deg C and rising at 1 deg C per minute.

At 0715

- Reactor Power is 1.5%.
- Annunciator 47014-K, "RXCP Vibration Abnormal", is LIT
- Computer Point V8198A, RXCP 'B' Motor X Vibration, is in ALARM at 3.2 mils and rising slowly
- Computer Point V8199A, RXCP 'B' Motor Y Vibration, is in ALARM at 3.6 mils and rising slowly.

What action should the Unit Supervisor take in response the above conditions?

- a. Declare RXCP 'B' INOPERABLE per T.S. 3.1.a and perform a normal plant shutdown to Hot Shutdown.
- b. Enter AOP-RC-005, "Abnormal RXCP Operation" and direct tripping the reactor if RXCP 'B' Motor vibration ≥ 5.0 mils.
- c. Direct Tripping of the Reactor, Enter E-0, "Reactor Trip or Safety Injection", Stop RXCP 'B' and cooldown the plant to less than 200°F in the next 36 hours.
- d. At 0700 declare 'A' train of CFCUs INOPERABLE per T.S. 3.3.c, suspend any mode changes and enter a 72 hour LCO for one train of CFCUs INOPERABLE.

ANSWER

b.

REFERENCE

ARP 47052-C, CNTMT EMRG DISCH DMPRS Abnormal.

ARP 47014-K, RXCP Vibration Abnormal.

AOP-RC-005, Abnormal RXCP Operation, Step 1.

Technical Specification 3.1.a and Bases

Technical Specification 3.3.c and Bases

ARP-47033-45, 4160V Stator Temperature High, Steps 1-8.

LEVEL SRO

K/A 017AA2.02

NEW

HIGHER

QUESTION 002

Given the following:

- The plant has been shutdown for two weeks and 4 hours.
- RCS temperature is 80°F.
- All Charging Pumps are unavailable due to maintenance.
- RHR is aligned in a normal cooldown lineup with the following valves open:
 - RHR-1A and RHR-2A, RCS Loop A Supply To RHR Pumps
 - RHR-1B and RHR-2B, RCS Loop B Supply To RHR Pumps
 - RHR-10A and RHR-10B, Cross Connect
 - RHR-100A and RHR-100B, Heat Exchanger Bypass Line
- RHR pump 'A' was running but was shutdown due to indications of cavitation.
- RCS refueling level is 9.95%.
- RHR pump 'B' is AVAILABLE.
- The Shift Manager has decided to refill the RCS using RHR pump 'B' per AOP-RHR-003, "Loss of RHR While Operating At Reduced Inventory", step 11.a RNO 11.a.2.

Using the attached AOP-RHR-003, "Loss of RHR While Operating At Reduced Inventory", Attachments C, D and F, determine when saturation temperature will be reached in the RCS and the maximum allowable RHR flowrate when establishing makeup to the RCS using RHR pump 'B'.

- a. 19 minutes; 2900 gpm
- b. 21 minutes; 1500 gpm
- c. 34 minutes; 2000 gpm
- d. 54 minutes; 1350 gpm

ANSWER

c.

REFERENCE

AOP-RHR-003, Loss Of RHR While Operating At Reduced Inventory Conditions

N-RHR-34, Residual Heat Removal System Operation. P&L 2.8

ES-1.3, Step 14.b

LEVEL SRO

K/A 025A2.05

NEW

HIGHER

Provided Reference: From AOP-RHR-003:

- Attachment C, Approximate Heatup Rates
- Attachment D, Time To Reach Saturation Vs. Time Shutdown
- Attachment F, RCS Level Vs. RHR Flow

QUESTION 003

Given the following:

- A spurious Reactor Trip and SI have occurred.
- The crew is performing the actions of E-0, "Reactor Trip or Safety Injection."
- There are NO indications of a LOCA, Ruptured Steam Generator, or Faulted Steam Generator.
- Annunciator 47051-N, "CW Pumps Flood Level Trip" is LIT.

According to UG-0, "User's Guide For Emergency and Abnormal Procedures", what is the EARLIEST time that the Unit Supervisor is allowed to perform procedures in parallel, and direct the actions of ARP-47051-N, "CW Pumps Flood Level Trip"?

- a. After the transition from E-0, "Reactor Trip or Safety Injection" to ES-1.1 "SI Termination."
- b. After the actions to terminate Safety Injection are completed per ES-1.1, "SI Termination."
- c. During the immediate actions of E-0, "Reactor Trip or Safety Injection," as long as the actions of the ARP do NOT interfere with the performance of E-0.
- d. After the immediate actions of E-0, "Reactor Trip or Safety Injection," as long as the actions of the ARP do NOT interfere with the performance of E-0.

ANSWER

d.

REFERENCE

UG-0, User's Guide For Emergency and Abnormal Procedures, step 6.2.4 and section 6.4

LEVEL SRO

K/A 029E 2.4.8

NEW

FUNDAMENTAL

QUESTION 004

Given the following:

- Plant is operating at 100%.
- ATC has called the control room with information that the grid is degraded and 138KV Bus Post Trip Voltage is 137KV. All contingencies to maintain KPS 138KV Bus Post Trip voltage greater than 140KV have been implemented and have NOT been successful.

The SRO should declare . . .

- a. Bus 6 INOPERABLE and transfer Bus 6 to 'B' EDG.
- b. transmission lines F-84 and Y-51 INOPERABLE and reduce power to < 50%.
- c. the RAT INOPERABLE and continue 100% power operation for up to 7 days.
- d. off-site power INOPERABLE and commence a standard shutdown sequence.

ANSWER

d.

REFERENCE

OP-KW-AOP-EG-001, Abnormal Grid Operations, Step 2

Technical Specification 3.7.a.8, 3.7.b.4 and 3.0.c

LEVEL SRO

K/A 056A 2.2.38

NEW

HIGHER

QUESTION 005

Given the following:

- The plant is at 100% power.
- All systems are in Automatic.
- Loss of Yellow Instrument Bus 4 has occurred.

In addition to AOP-EDC-001, "Loss of Instrument Bus", what additional action should the Unit Supervisor take?

- a. Enter E-0, "Reactor Trip or Safety Injection," and direct the Operators to perform the immediate actions of E-0.
- b. Enter N-RM-45, "Radiation Monitoring System," and direct the Reactor Operator to shift Containment sampling to R-21.
- c. Enter NOP-CVC-001, "Boron Concentration Control," and direct the Reactor Operator to manually makeup to the Charging Pump suction.
- d. Enter NOP-CVC-002, "Charging and Volume Control," and direct the Reactor Operator to place Excess Letdown in service.

ANSWER

c.

REFERENCE

AOP-EDC-001, Loss of Instrument Bus

LEVEL SRO

K/A 057A 2.4.11

NEW

HIGHER

QUESTION 006

A plant cooldown at 25°F/hour is in progress using RHR when the following timeline of events occur.

At time = 0, annunciator 47032-R, "RHR PUMP PIT SUMP LEVEL HIGH", is LIT and the following plant conditions are noted:

- RCS pressure 380 psig
- RCS hot leg temperature 325°F
- Pressurizer Level 27%, lowering
- Letdown In Service with one 40 gpm orifice OPEN
- Charging Pumps 'A' & 'B' are both in manual.

At time = 1 minute, R13 alarms at the ALERT level and its indication is rising.

At time = 4 minutes, charging flow is raised to maximum, pressurizer level is 18% and letdown is isolated.

At time = 5 minutes, pressurizer level reaches 17%.

At time = 7 minutes, charging flow remains at maximum and pressurizer level is 14% and slowly rising.

What is the correct course of action for the Unit Supervisor to implement in this situation?

- a. Enter and direct actions of AOP-RC-001, "Reactor Coolant Leak."
- b. Enter E-0, "Reactor Trip or Safety Injection," and direct manual initiation of SI.
- c. Enter ECA-1.2, "LOCA Outside Containment," and direct manual initiation of SI.
- d. Enter and direct actions of AOP-RHR-002, "Shutdown Loss Of Coolant Accident."

ANSWER

d.

REFERENCE

AOP-RC-001, Reactor Coolant Leak

AOP-RHR-002, Shutdown Loss Of Coolant Accident

E-0, Reactor Trip Or Safety Injection

ECA-1.2, LOCA Outside Containment

LEVEL SRO

K/A E04EA2.1

BANK

HIGHER

QUESTION 007

Given the following:

- The Reactor is Tripped.
- Safety Injection has NOT occurred.
- The first FOUR steps of E-0, Reactor Trip Or Safety Injection, have been completed.
- Intermediate Range SUR reads -1/3 dpm.
- Tave is 547°F.
- Two control rods are NOT fully inserted.
- Bus 5 LOCKED OUT when G-1 opened, expected return > 6 hours.

Based on the above conditions, what method will the Unit Supervisor direct in order to add the required negative reactivity?

Direct the Reactor Operator to . . .

- a. establish a normal boration through CVC-406, BA Blender to VCT, per NOP-CVC-001, "Boron Concentration Control."
- b. start an emergency boration through CVC-440, Emergency Boration to charging pumps, per E-0, "Reactor Trip or Safety Injection."
- c. commence a boration through CVC-403, Boric Acid to Blender, and CVC-408, BA Blender to Charging Pumps, per AOP-CVC-001, "Emergency Boration."
- d. align the RWST to the suction of the charging pumps by opening CVC-301, RWST Supply to Charging Pumps, per FR-S.2, "Response to Loss of Core Shutdown."

ANSWER

c.

REFERENCE

ES-0.1, Reactor Trip Response, Step

AOP-CVC-001, Emergency Boration

FR-0, Critical Safety Function Status Trees, ATTACHMENT A F-0.1 SUBCRITICALITY

OA # 02-22 MCC-52E

LEVEL SRO

K/A 024A 2.4.47

NEW

HIGHER

QUESTION 008

Given an EAL matrix containing the Offsite Rad Conditions and the following conditions:

- An unplanned release of gaseous radioactivity to the environment is in progress
- The release is expected to continue
- R-13 Aux. Bldg. Vent Exhaust reading $1.0\text{E}+07$ cpm and stable
- R-14 Aux. Bldg. Vent Exhaust reading $1.0\text{E}+07$ cpm and stable
- 01-07 Aux. Bldg. SPING Mid Range reading $1.30\text{E}+05$ cpm
- Dose assessment using actual meteorology indicates 150 mRem TEDE and 430 mRem thyroid CDE at the site boundary

The Shift Manager should declare a . . .

- a. General Emergency based on RG1.1.
- b. General Emergency based on RG1.2.
- c. Site Area Emergency based on RS1.1.
- d. Site Area Emergency based on RS1.2.

ANSWER

d.

REFERENCE

EPIP-AD-02, Emergency Class Determination, Step 5.1

Kewaunee Power Station Emergency Action Level Matrix

Emergency Action Level Technical Bases Document, RG1 Basis

LEVEL SRO

K/A 060A 2.4.41

NEW

HIGHER

QUESTION 009

Given the following:

- AOP-FP-001, "Abnormal Operating Procedure - Fire," is in progress.
- The fire is in the Cable Spreading area.
- All Nuclear Instrumentation indication in the Control Room has been lost.
- PR-2A, Pressurizer PORV, has failed open and will NOT close from the Control Room.
- Contingency actions to close PR-2A, Pressurizer PORV, have NOT been successful.
- PT-478, S/G 'B' header pressure, has failed low.
- SM directs Control Room evacuation.

The US should enter . . .

- a. AOP-FP-002, "Fire In Alternate Fire Zone", and direct the Reactor Operator to trip the reactor.
- b. AOP-FP-003, "Fire In Dedicated Fire Zone" and direct the Reactor Operator to trip the reactor.
- c. E-0, "Reactor Trip Or Safety Injection," and direct the operators to perform the Immediate Actions of E-0.
- d. FR-S.1, "Response To Nuclear Power Generation/ATWS" and direct actions to shutdown the reactor.

ANSWER

a.

REFERENCE

AOP-FP-001, Abnormal Operating Procedure – Fire, Steps 30-31

AOP-FP-002, Fire In Alternate Fire Zone, 2.1 and NOTE at step 1

LEVEL SRO

K/A 067A 2.4.8

NEW

HIGHER

QUESTION 010

The operator may go to ES-0.0, "Rediagnosis," if . . .

- a. Safety Injection is required and a transition has not been made from E-0, "Reactor Trip Or Safety Injection."
- b. Safety Injection is not required and a transition from E-0, "Reactor Trip Or Safety Injection," has been completed.
- c. Safety Injection is in service and a transition from E-0, "Reactor Trip Or Safety Injection," has been completed.
- d. Safety Injection is in service and a transition has not been made from E-0, "Reactor Trip Or Safety Injection."

ANSWER

c.

REFERENCE

UG-0, User's Guide For Emergency And Abnormal Procedures, Step 6.6.3.c

ES-0.0, Rediagnosis

LEVEL SRO

K/A E01EA2.2

NEW

FUNDAMENTAL

QUESTION 011

Which statement describes the Technical Specification Safety Limit for Reactor Coolant System Pressure and its bases?

The Reactor Coolant System pressure shall not exceed 2735 psig . . .

- a. at COLD SHUTDOWN during hydrostatic testing to prevent exceeding 115% of design pressure, the maximum transient pressure allowable under ASME Code.
- b. with fuel assemblies installed in the reactor vessel with settings providing protection to prevent exceeding this value for all transients except for a rod ejection accident.
- c. during at power operation to ensure DNBR during steady-state operation, normal operational transients, Condition I and Condition II transients is maintained greater than or equal to the 95/95 DNBR criterion.
- d. while the RCS is greater than or equal to 200°F in order to prevent exceeding design containment pressure resulting from the postulated Design Basis Accident.

ANSWER

b.

REFERENCE

Technical Specification 2.2.a and Bases

LEVEL SRO

K/A 010 2.2.22

BANK

FUNDAMENTAL

QUESTION 012

Given the following:

- The plant is operating at 100% power when a Design Basis LOCA occurs.
- ICS Pump A is OOS for planned maintenance.
- All attempts to start ICS Pump B have failed.
- All other ECCS equipment is functioning as expected.

In accordance with the ICS Technical Specification Basis, what accident condition will NOT be mitigated?

- a. Containment pressure will exceed its design value.
- b. Airborne radiation levels in containment will be elevated.
- c. Containment temperature will exceed design values for adverse instrumentation.
- d. Containment temperature and pressure will rise above the auto ignition limits for hydrogen.

ANSWER

b.

REFERENCE

USAR 5.8.2

Technical Specification 3.3.c Bases

LEVEL SRO

K/A 026 2.2.25

NEW

FUNDAMENTAL

QUESTION 013

Given the following:

- A spurious reactor trip has occurred from 100% power.
- Red Channel Tave, TI-405, has failed off-scale high during the trip.
- All other Tave channels are indicating 543°F and decreasing slowly.
- Steam Dump Control Mode Selector Switch is in Tavg mode.

What procedure will FIRST be used to address the status of Steam Dumps based on the above failure?

- a. E-0, "Reactor Trip Or Safety Injection", will be used to take the Steam Dump Interlock Selector Switches to BYPASS INTLK.
- b. ES-0.1, "Reactor Trip Response", will be used to reposition the Steam Dump Control Mode Selector Switch to RESET and then to STM PRESS.
- c. NOP-MS-001, "Main Steam and Steam Dump System", will be used to position the Steam Dump Control Mode Selector Switch to RESET.
- d. FR-P.1, "Response To Imminent Pressurized Thermal Shock Condition", will be used to reposition the Steam Dump Interlock Selector Switches to OFF/RESET

ANSWER

b.

REFERENCE

E-0, Reactor Trip Or Safety Injection, Steps 1-4 (RNO)

ES-0.1, Reactor Trip Response, Step 15.B & 15.c

LEVEL SRO

K/A 039A2.04

NEW

HIGHER

QUESTION 014

Given the following:

- Operating at 100% power, 1772 MWt.
- 'A' AFW Pump starts on a spurious start signal.

What is an operational limitation associated with the spurious start of 'A' AFW Pump?

- a. Initiate action to restore ARTO and IMMEDIATELY reduce power to ≤ 1710 MWt.
- b. Reduce actual reactor thermal power to less than 1772 MWt since PPCS "Thermal Output Monitoring" is inaccurate.
- c. Reduce Power to ≤ 1649 MWt within 4 hours to ensure adequate decay heat removal during a loss of feedwater event.
- d. Declare 'A' AFW Pump INOPERABLE and either reduce power to ≤ 1673 MWt or restore 'A' AFW Pump OPERABILITY within 2 hours.

ANSWER

b.

REFERENCE

AOP-CP-001, Abnormal Plant Process Computer System, ATTACHMENT A, page 11

Technical Specification 3.4

LEVEL SRO

K/A 059A2.03

NEW

HIGHER

QUESTION 015

Per TS 3.7 Auxiliary Electrical Systems, there are three pairs of physically independent transmission lines to the Kewaunee Substation:

What describes the MINIMUM requirements that must be met for transmission lines, as given in Technical Specification 3.7.a.8?

- a. TS 3.7.a.8 requires that three of the physically independent transmission line pairs serving the substation are OPERABLE.
- b. TS 3.7.a.8 requires that at least one of the physically independent transmission line pairs serving the substation is OPERABLE.
- c. TS 3.7.a.8 requires that at least two of the physically independent transmission line pairs serving the substation are OPERABLE.
- d. TS 3.7.a.8 requires that at least one feed of each physically independent transmission line pair serving the substation are OPERABLE.

ANSWER

b.

REFERENCE

Technical Specification 3.7 Auxiliary Electrical Systems, 3.7.a.8

LEVEL SRO

K/A 062 2.2.38

BANK

FUNDAMENTAL

QUESTION 016

Which describes a situation requiring entry into Technical Specification 3.10.n, DNBR Parameters, for Reactor Coolant System Pressure and correctly describes the basis and required action of T.S. 3.10.n?

- a. RCS pressure 1904 psig, provides protection against a power excursion at full RATED THERMAL POWER. Required action is to restore RCS pressure within 5 minutes and be in HOT SHUTDOWN within 4 hours.
- b. RCS pressure 2176 psig, ensures that calculated offsite doses are held to within the limits specified in 10 CFR 50.67. Required action is to place the reactor in INTERMEDIATE SHUTDOWN with an average reactor coolant temp < 500°F within 6 hours.
- c. RCS pressure 2211 psig, maintains the integrity of the fuel cladding. Required action is to restore RCS pressure in two hours or less to within limits or reduce power to < 5% of thermal rated power within an additional six hours.
- d. RCS pressure 2485 psig, maintains the integrity of the Reactor Coolant System. Required action is to restore compliance and place the reactor in HOT SHUTDOWN within 1 hour.

ANSWER

c.

REFERENCE

T.S. 3.10.k, 3.10.l, 3.10.m and 3.10.n.

COLR 2.11.2

LEVEL SRO

K/A 002 2.1.7

NEW

HIGHER

QUESTION 017

Given the following:

- The plant is operating at 100% power.
- Annunciator 47033-12, "TLA-2 RCS Subcooling High/Low," is LIT.
- Annunciator 47033-24, "TLA-9 Core Exit T/C Tilt," is LIT.
- Annunciator 47044-F, "ICCMS Panel Trouble," is LIT.

The following indications are reported by the RO:

- Core Exit Thermocouple Monitor Train 'A': 673°F, erratic and rising slowly
- Core Exit Thermocouple Monitor Train 'B': 626°F, stable
- ICC SYS ACK train 'A' bright with display flashing
- ICC SYS ACK train 'B' dim

The SRO should direct entry into which procedure to address the current plant condition?

- a. E-0, "Reactor Trip or Safety Injection."
- b. N-II-50, "Inadequate Core Cooling Monitoring System."
- c. AOP-CP-001, "Abnormal Plant Process Computer System."
- d. AOP-II-001, "Abnormal Inadequate Core Cooling Monitoring System."

ANSWER

d.

REFERENCE

ARP-47033-12, TLA-2 RCS Subcooling High/Low

ARP-47033-24, TLA-9 Core Exit T/C Tilt, Recommended Action 3

ARP-47044-F, ICCMS Panel Trouble, Step 12 (RNO)

AOP-II-001, Abnormal Inadequate Core Cooling Monitoring (ICCM) System

AOP-CP-001, Abnormal Plant Process Computer System, Step 23

LEVEL SRO

K/A 017A2.01

NEW

HIGHER

QUESTION 018

Per N-FH-53F, "Reactor Cavity Draining With Fuel and Upper Internals Removed," what is an operational consideration while RHR is running at a reduced inventory condition?

- a. Do not drain below 10.2% Reactor Vessel Level, to prevent lowering below the center line of the Hot Leg.
- b. At 12.5% Reactor Vessel Level, an operator is required to continuously monitor Reactor Vessel Level via the tygon to prevent lowering below the bottom of the RVLIS instrument range.
- c. Draining below 13.0% Reactor Vessel Level will require reducing RHR flow to less than 1000 gpm to prevent cavitation.
- d. With Reactor Vessel Level below 19.0%, continuous monitoring is required of RHR parameters for signs of vortexing such as rising suction pressure.

ANSWER

a.

REFERENCE

N-RHR-34C, RHR Operation At A Reduced Inventory Condition

N-FH-53F, Reactor Cavity Draining With Fuel and Upper Internals Removed

LEVEL SRO

K/A 034K5.03

NEW

FUNDAMENTAL

QUESTION 019

According to GNP-02.07.01, "Refueling Operations - Logkeeping, Watchstanding and Shift Turnover," which of the following is NOT required as part of the Shift Turnover for the oncoming Refueling SRO?

- a. A review of the detailed fuel movement log.
- b. A review of the containment Open Boundary Tracking Log.
- c. A face to face turnover in containment or other designated location.
- d. The transfer of Refueling SRO responsibilities documented in the detailed fuel movement log.

ANSWER

b.

REFERENCE

GNP-02.07.01 Refueling Operations - Logkeeping, Watchstanding, and Shift Turnover. Section 6.2 Shift Relief and Turnover

N-CCI-56A, Open Containment Boundary Tracking, 1.1, 1.2 and section 3.0.

LEVEL SRO

K/A 2.1.3

NEW

FUNDAMENTAL

QUESTION 020

What accident provides the basis for the minimum boron concentration and shutdown margin limits for the RCS during REFUELING OPERATIONS when fuel is in the reactor?

- a. Loss of Inventory during Refueling
- b. Boron Dilution during a Refuel Accident
- c. Dropped Fuel Assembly during Refueling
- d. Loss of Decay Heat Removal during a Refuel Accident

ANSWER

b.

REFERENCE

Technical Specification 3.8 Refueling Operations and associated Basis, 3.8.a.5.

Core Operating Limits Report (COLR) Cycle 29, 2.12.

LEVEL SRO

K/A 2.1.36

NEW

FUNDAMENTAL

QUESTION 021

Given the current equipment out of service information:

- Packing for SW-301A, Service Water from D/G A Heat Exchanger, was replaced.
- During the post-maintenance review of the work package it was identified that the wrong packing was used.
- An Operability Determination was performed and the valve was found to be operable but degraded.

How is the current operability condition officially tracked until full operability is restored to the component?

- a. Tech Spec Tracking Log.
- b. Unit Supervisor Turnover.
- c. Control Room Narrative Log.
- d. Corrective Action Program.

ANSWER

d.

REFERENCE

OP-KW-ORT-MISC-007, Operations Turnovers, Logs and Briefings, ATTACHMENTS D and E

OP-AA-102, Operability Determination, 2.2 & 3.2.11

LEVEL SRO

K/A 2.2.23

BANK

FUNDAMENTAL

QUESTION 022

Given the following:

- Plant is at 100% power.
- CFCU 'A' is INOPERABLE for maintenance.
- ICS Pump 'A' is INOPERABLE for maintenance.
- Plant Electricians request Bus 1-61 be removed from service for maintenance.

Upon SRO review, the Electricians' request will be denied. What is the reason for the denial?

- a. De-energizing Bus 1-61 will result in both Containment Spray trains being INOPERABLE.
- b. Vital 480V buses shall be energized from their respective station transformers when the reactor is critical.
- c. Both Containment Spray trains may only be out of service provided that all CFCU's are operable.
- d. Per PRA configuration control guidelines, only one SSC affecting PRA risk may be removed for maintenance at a time.

ANSWER

a.

REFERENCE

E-240 SH-001, Circuit Diagram – Circuit Diagram 4160V and 480V Power Sources

Tech. Spec. 3.3.c.1.A.1, and 3.7

LEVEL SRO

K/A 2.2.37

MODIFIED

HIGHER

QUESTION 023

What action is required if R-13 and R-14, Aux Bldg Vent Exhaust Radiation Monitors, are both out of service?

- a. Start Auxiliary Building Zone SV.
- b. Stop two inch containment vent if in progress.
- c. Report failure per GNP-11.08.04, "Reportability Determination" within 1 hour.
- d. Use portable air monitoring systems (AMS) for monitoring radiation levels in the AUX Building.

ANSWER

b.

REFERENCE

N-RM-45, 4.3.11 and 12

ODCM

AOP-RM-001, step 14 and 15

GNP-11.08.04

LEVEL SRO

K/A 2.3.13

NEW

HIGHER

QUESTION 024

Given the following:

- Shift turnover is completed with Night Shift, on-coming.
- Reactor Power is 70%.
- The operating crew is at minimum Technical Specification staffing.
- The nuclear auxiliary operator assigned to the Fire Brigade has been injured and contaminated.
- The injured nuclear auxiliary operator requires transport to the hospital.

Which replacement will meet the time and personnel requirements to maintain BOTH the Fire Brigade and the On-duty Shift Complement?

- a. Within 1 hour, a licensed operator and a contractor radiation technologist.
- b. Within 2 hours, a licensed operator and a chemistry technologist.
- c. Within 2 hours, a nuclear auxiliary operator and a radiation technologist.
- d. Within 4 hours, a nuclear auxiliary operator and a security guard.

ANSWER

c.

REFERENCE

T.S. 6.2.b.1 and 6.2.b.3

Kewaunee Power Station Fire Protection Program Plan, 7.8.4 and 7.9.

LEVEL SRO

K/A 2.4.26

NEW

HIGHER

QUESTION 025

Given the following:

- ORT-DGM-002, "Technical Support Center Diesel Generator Monthly Availability Test," is in progress.
- During the diesel run, the Equipment Operator reports that the TSC Diesel is on fire.
- The Fire Brigade has been dispatched to the scene.
- After 10 minutes, the Fire Brigade Leader reports that the fire is still active.

Two hours have now elapsed from the initial report of fire.

By this time, which of the following outside agencies is NOT required to have been notified of this event?

- a. NRC.
- b. State Warning Center.
- c. Manitowoc County Sheriff.
- d. Nuclear Electric Insurers Limited (NEIL).

ANSWER

d.

REFERENCE

FPP-08-13 Fire Report, 5.2

EPIP-AD-07 Emergency Notifications, 3.1

GNP-11.08.04, Reportability Determinations, 6.2.1 and Table 1, item 1

LEVEL SRO

K/A 2.4.30

BANK

HIGHER

***** END OF 2009 SRO NRC EXAM *****