

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

Name:

Date: **06/18/2014**Facility/Unit: **Oconee**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 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.

Applicant Certification

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

Applicant's Signature**Results**RO/SRO-Only/Total Examination Values 75 / 25 / 100 Points

Applicant's Scores _____ / _____ / _____ Points

Applicant's Grade _____ / _____ / _____ Percent

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 1

(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100% stable

1) 1RC-66 (PORV) will OPEN if the 1RC-66 pilot valve solenoid is inadvertently ____ (1) ____.

2) If 1RC-66 fails OPEN and NO operator action is taken, the reactor will trip on ____ (2) ____ RCS pressure

- A. 1. energized
 2. Low
- B. 1. energized
 2. Variable Low
- C. 1. de-energized
 2. Low
- D. 1. de-energized
 2. Variable Low
-

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ILT45 ONS SRO NRC Examination

Question: 2
(1 point)

Given the following Unit 1 conditions:

Time = 1700

- Reactor power = 100%

Time = 1701

- Reactor tripped due to a SBLOCA

Time = 1706

- RCS pressure = 425 psig slowly decreasing
- All SCMs = 0°F and stable
- HPI header A flow = 478 gpm and stable
- 1A and 1B HPI pumps operating
- 1C HPI pump breaker failed open

Which ONE of the following describes what valve must be opened and what flow limit is in effect in accordance with Rule 2 (Loss of SCM)?

- A. Open 1HP-409 and ensure total HPI flow is ≤ 950 gpm
 - B. Open 1HP-409 and ensure total HPI flow is ≤ 750 gpm
 - C. Open 1HP-410 and ensure total HPI flow is ≤ 950 gpm
 - D. Open 1HP-410 and ensure total HPI flow is ≤ 750 gpm
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 3
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- 1SA-02/D-4 (RC PRESS EMERG LOW) actuated
- RCS pressure = 520 psig decreasing
- ONLY ES Channels 1 and 2 actuated

- 1) The HIGHER pressure that will result in a RCS Low Pressure reactor trip is (1).
- 2) In accordance with EOP Enclosure 5.1 (ES Actuation) (2).

Which ONE of the following completes the statements above?

- A.
 1. 1810 psig
 2. Diverse LPI must be placed in override
 - B.
 1. 1810 psig
 2. ES Channels 3 and 4 trip push buttons must be depressed
 - C.
 1. 1850 psig
 2. Diverse LPI must be placed in override
 - D.
 1. 1850 psig
 2. ES Channels 3 and 4 trip push buttons must be depressed
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 4
(1 point)

Given the following Unit 2 conditions:

- Reactor power = 100%
- 2HP-31 (RCP Seal Flow Control) failed CLOSED
- ALL individual RCP seal return valves CLOSED
- 2CC-8 (CC Return Block) failed CLOSED

1) 2HP-21 will (1).

2) In accordance with 2AP/14 (Loss of HPI Normal Makeup and/or Seal Injection), the operator will be directed to (2).

Which ONE of the following completes the statements above?

- A.
 - 1. remain OPEN
 - 2. re-establish RCP seal injection flow by directing that 2HP-140 (RCP Seal Control Bypass) be opened
 - B.
 - 1. automatically CLOSE
 - 2. re-establish RCP seal injection flow by directing that 2HP-140 (RCP Seal Control Bypass) be opened
 - C.
 - 1. remain OPEN
 - 2. trip the reactor, and then secure ALL RCP's immediately
 - D.
 - 1. automatically CLOSE
 - 2. trip the reactor, and then secure ALL RCP's immediately
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 5
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1HP-31 failed CLOSED
- AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection) initiated

Current conditions:

- 1HP-31 has been repaired
- Seal injection flow is being re-established to the RCP seals

- 1) RCP seal injection flow is re-established slowly to prevent thermal shock and possible damage to the RCP (1).
- 2) In accordance with AP/14, (2) is/are throttled opened to re-establish RCP seal injection flow.

Which ONE of the following completes the statements above?

- A.
 1. thermal barrier
 2. 1HP-31
 - B.
 1. thermal barrier
 2. the individual RCP Seal Injection Throttle valves
 - C.
 1. seals
 2. 1HP-31
 - D.
 1. seals
 2. the individual RCP Seal Injection Throttle valves
-

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ILT45 ONS SRO NRC Examination

Question: 6
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Heatup in progress
- LPI in High Pressure mode

Current conditions:

- 1LP-12 is inadvertently closed and will NOT open
- AP/26 (Loss of Decay Heat Removal) initiated

- 1) AP/26 will direct aligning LPI in the (1) Mode to restore RCS cooling.
- 2) When LPI flow is restored above, flow will be entering the reactor vessel via the (2).

Which ONE of the following completes the statements above?

- A.
 1. Switchover
 2. "A" CFT nozzle ONLY
 - B.
 1. Switchover
 2. "A" and "B" nozzles
 - C.
 1. Series
 2. "A" CFT nozzle ONLY
 - D.
 1. Series
 2. "A" and "B" nozzles
-

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ILT45 ONS SRO NRC Examination

Question: 7
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1A and 1B Letdown Coolers in service

Current conditions:

- 1A Letdown Cooler is removed from service by the RO in the control room

1) CC flow to the 1B Letdown Cooler will (1) .

2) If letdown temperature increases, control rods will (2) as a result of the reactivity change.

Which ONE of the following completes the statements above?

- A. 1. stay the same
 2. insert
 - B. 1. stay the same
 2. withdraw
 - C. 1. increase
 2. insert
 - D. 1. increase
 2. withdraw
-

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ILT45 ONS SRO NRC Examination

Question: 8
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0401
- A transient occurs
- RCS pressure decreased to 2141 psig
- RCS pressure = 2142 psig slowly increasing

Which ONE of the following lists ALL of the Pzr heater banks that are energized at 0401?

- A. Bank 1 ONLY
 - B. Banks 1 and 2 ONLY
 - C. Banks 1 and 3 ONLY
 - D. Banks 1, 2, 3 and 4
-

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Question: 9

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0405
- 1TA lockout occurs
- Reactor power = 90% decreasing
- ONLY one RO is currently in the Unit 1 horseshoe area

1. At 0405, the RO will be directed to perform (1).
2. When initiated, Rule 1 (2) direct tripping the Main Turbine.

Which ONE of the following completes the statements above?

- A.
 1. Immediate Manual Actions
 2. will
 - B.
 1. Immediate Manual Actions
 2. will NOT
 - C.
 1. Rule 1
 2. will
 - D.
 1. Rule 1
 2. will NOT
-

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ILT45 ONS SRO NRC Examination

Question: 10

(1 point)

Given the following Unit 1 conditions:

Time = 0400

- Reactor power = 100%
- TDEFDW pump is OOS

Time = 0401

- Both Main FDW pumps trip
- Loss of IA to 1FDW-316 occurs

Time = 0410

- 1A SG level = 27 inches XSUR increasing
- 1B SG level = 36 inches XSUR increasing

- 1) At 0410, (1) SG has indications of a tube leak.
- 2) At 0410 and in accordance with Rule 7 the MAXIMUM EFDW flow allowed to each SG is (2) gpm.

Which ONE of the following completes the statements above?

- A.
 1. 1A
 2. 600
 - B.
 1. 1A
 2. 1000
 - C.
 1. 1B
 2. 600
 - D.
 1. 1B
 2. 1000
-

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ILT45 ONS SRO NRC Examination

Question: 11

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Total loss of Main and Emergency Feedwater
- Rule 4 (Initiation of HPI Forced Cooling) initiated

When Rule 4 is complete, ___(1)___ RCP(s) and ___(2)___ HPIP(s) will be operating.

Which ONE of the following completes the statement above?

- A. 1. ONLY one
 2. ONLY two
 - B. 1. ONLY one
 2. three
 - C. 1. two
 2. ONLY two
 - D. 1. two
 2. three
-

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ILT45 ONS SRO NRC Examination

Question: 12

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- A station blackout has occurred

Current conditions:

- Time = 0730
- 1CA bus voltage = 105 VDC

At 0730 and in accordance with the Blackout tab, 1CC-8 (1) required to be failed closed because it fails (2).

Which ONE of the following completes the statement above?

- A. 1. is NOT
 2. closed on a loss of IA
 - B. 1. is NOT
 2. closed on a loss of DC power
 - C. 1. is
 2. open on a loss of IA
 - D. 1. is
 2. open on a loss of DC power
-

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Question: 13

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- CT-4 Transformer fans tagged out for repairs
- Switchyard Isolation (LOOP) occurs

Current conditions:

- MFBs energized from Keowee via CT-4
- SK1 open

- 1) The HIGHER load allowed in accordance with AP/11 (Enclosure 5.1A, CT-4 Overload limits) is (1).
- 2) The reason for the above limit is to prevent damage to (2).

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A.
 1. 16 MWATTS and 14 MVARs
 2. CT-4
 - B.
 1. 16 MWATTS and 14 MVARs
 2. SK2
 - C.
 1. 14 MWATTS and 10 MVARs
 2. CT-4
 - D.
 1. 14 MWATTS and 10 MVARs
 2. SK2
-

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ILT45 ONS SRO NRC Examination

Question: 14

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- SASS in MANUAL
- Pzr level 1 selected

Current conditions:

- 1KVIA de-energized

1) 1HP-120 will throttle (1).

2) The operator will select Pzr level (2) to restore a valid Pzr level.

Which ONE of the following completes the statements above?

- A. 1. open
 2. 2
 - B. 1. open
 2. 3
 - C. 1. closed
 2. 2
 - D. 1. closed
 2. 3
-

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Question: 15
(1 point)

Given the following plant conditions:

- 1CA Battery Charger fails
 - Output voltage = 0 VDC
- 1CA Battery voltage = 120 VDC
- 1DCB Bus voltage = 123 VDC
- Unit 2 DCA/DCB Bus voltage = 125 VDC
- Unit 3 DCA/DCB Bus voltage = 127 VDC

Which ONE of the following will automatically supply power to 1DIA panelboard?

- A. 1CA Battery
 - B. Unit 3 DC Bus
 - C. 1DCB Bus
 - D. Unit 2 DC Bus
-

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Question: 16
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- A and B LPSW pumps operating

Current conditions:

- "A" LPSW pump trips due to breaker failure
- Standby LPSW pump will NOT start
- AP/24 (Loss of LPSW) initiated
- LPSW header pressure decreases to 15 psig and is now increasing

- 1) 1LPSW-1121, 1122, 1123, and 1124 closed at a MAXIMUM LPSW header pressure of ____ (2) ____ psig decreasing
- 2) In accordance with AP/24 the above valves closed to ____ (1) ____.

Which ONE of the following completes the statements above?

- A.
 1. 18
 2. prevent subsequent LPSW pump run out
 - B.
 1. 18
 2. prevent water hammers in the LPSW system
 - C.
 1. 25
 2. prevent subsequent LPSW pump run out
 - D.
 1. 25
 2. prevent water hammers in the LPSW system
-

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Question: 17

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- IA Header pressure = 25 psig decreasing
- AIA Header pressure = 100 psig stable
- Letdown temperature = 131°F stable

1HP-5 is (1) because (2) .

Which ONE of the following completes the statement above?

- A. 1. open
 2. it is backed up by Nitrogen
 - B. 1. open
 2. it is backed up by AIA
 - C. 1. closed
 2. IA Header pressure is low
 - D. 1. closed
 2. it closed on high Letdown temperature
-

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ILT45 ONS SRO NRC Examination

Question: 18

(1 point)

Given the following Unit 1 conditions:

- Reactor trip due to loss of Main Feedwater
- Emergency Feedwater is NOT available
- Condensate Booster Pump feed has been established
- RCS leak = 80 gpm slowly increasing

Which ONE of the following describes:

1) actions required by the LOHT tab?

2) the reason for the actions?

- A. 1. Reduce running RCP's to one pump per loop
 2. To reduce heat input to RCS
- B. 1. Reduce running RCP's to one pump per loop
 2. To reduce inventory lost from the RCS leak
- C. 1. Reduce running RCP's to one
 2. To reduce heat input to RCS
- D. 1. Reduce running RCP's to one
 2. To reduce inventory lost from the RCS leak
-

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ILT45 ONS SRO NRC Examination

Question: 19

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Main Turbine has tripped
- Reactor power = 48% decreasing
- Rule 1 (ATWS/UNPP) in progress
- 1HP-24 will NOT open

- 1) In accordance with Rule 6, (HPI Pump Throttling Limits) ____ (1) ____.
- 2) In accordance with Rule 6, (HPI Pump Throttling Limits) the MAXIMUM reactor power which will allow throttling HPI is ____ (2) ____.

Which ONE of the following completes the statements above?

- A.
 1. total HPI flow must be throttled \leq 950 gpm including seal injection
 2. \leq 1%
- B.
 1. total HPI flow must be throttled \leq 950 gpm including seal injection
 2. \leq 5%
- C.
 1. HPI pump operation is limited to two HPIPs
 2. \leq 1%
- D.
 1. HPI pump operation is limited to two HPIPs
 2. \leq 5%

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ILT45 ONS SRO NRC Examination

Question: 20

(1 point)

Unit 1 plant conditions:

- Reactor power = 100%
- 50 gpd Tube Leak
- An increase in activity is reported in Chemical Treatment Pond (CTP) #3

Which ONE of the following describes an event which would cause this increase?

- A. 1RIA-42 (RCW) activity is increasing and this will increase activity levels in CTP #3.
 - B. 1RIA-31 (LPI Cooler) activity is increasing and this will increase activity levels in CTP #3.
 - C. 1RIA-54 (TBS) interlock has failed and the Turbine Building Sump is being continually pumped.
 - D. 1RIA-33 (LW Release) interlock has failed and a Waste Monitor Tank release continues from the Radwaste Building.
-

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ILT45 ONS SRO NRC Examination

Question: 21
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- AP/50 (Challenging Plant Fire) has been initiated

Current conditions:

- AP/50, Section 4G (Unit 1 Control Room Evacuation) in progress

- 1) Section 4G will direct the OATC to (1) .
- 2) The reason the above action is taken is to (2) .

Which ONE of the following completes the statements above?

- A.
 1. take 1FDW-315 and 1FDW-316 to MANUAL and closed
 2. ensure flow to the SGs can be controlled from the ASD Panel
 - B.
 1. take 1FDW-315 and 1FDW-316 to MANUAL and closed
 2. prevent spurious operation of 1FDW-315 and 1FDW-316 due to fire damage
 - C.
 1. initiate feeding BOTH SGs to 96% O.R.
 2. ensure natural circulation develops when the RCPs are secured
 - D.
 1. initiate feeding BOTH SGs to 96% O.R.
 2. maximize SG inventory prior to losing secondary pumps due to the fire
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 22

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- 1SA3/B6 (FIRE ALARM) actuated
- The BOP reviews the alarms at the Fire Alarm Control panel

Current conditions:

- Time = 0415
- Fire detector at the Unit 1 Main FDW pumps alarms

1) At 0400, the alarm at the Fire Alarm Control panel will be indicated by (1) .

2) At 0415, 1SA3/B6 (Fire Alarm) (2) reflash.

Which ONE of the following completes the statements above?

- A. 1. a blinking LED ONLY
 2. will
 - B. 1. a blinking LED ONLY
 2. will NOT
 - C. 1. a blinking LED and an audible alarm
 2. will
 - D. 1. a blinking LED and an audible alarm
 2. will NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 23

(1 point)

Given the following Unit 3 conditions:

- Control Room Evacuation complete due to a non-fire event
- ASDP has been "manned"
- ASDP indications:
 - Turbine Header Pressure = 1011 psig and slowly decreasing
 - TBVs demand is 12% in Automatic and decreasing
 - RCS T Hot = 560°F and slowly decreasing
 - Pzr Level = 140 inches increasing
 - SG SU levels = 48 inches and increasing
 - ALL RCPs are operating

Which ONE of the following describes the required action(s) (if any) per AP/8 (Loss of Control Room) and why?

- A. NO actions are required, the plant is responding as expected.
 - B. Take manual control of TBVs to stabilize SG Pressure.
 - C. Take manual control and cycle 3B HPI pump to stabilize Pzr level.
 - D. Take manual control of FDW Startup Control Valves and lower SG levels
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 24

(1 point)

Given the following Unit 1 conditions:

- Reactor Power = 36%
- 1RIA-40 Alert and High Alarm actuated
- RC Makeup flow = 85 gpm
- Seal Inlet Header flow = 32 gpm
- Letdown Flow = 78 gpm
- Total Seal Return Flow = 8.5 gpm
- Pressurizer level = 220 inches stable

1) (1) is required to be entered at this time.

2) The procedure entered above will direct maintaining a Pzr level band of (2).

Which ONE of the following completes the statements above?

- A. 1. EOP (Emergency Operating Procedure) SGTR Tab
 2. 140 inches – 180 inches
 - B. 1. EOP (Emergency Operating Procedure) SGTR Tab
 2. 220 inches – 260 inches
 - C. 1. AP/31 (Primary to Secondary Leakage)
 2. 140 inches – 180 inches
 - D. 1. AP/31 (Primary to Secondary Leakage)
 2. 220 inches – 260 inches
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 25

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 25% slowly increasing
- Turbine trip

Current conditions:

- Reactor power = 22% decreasing

1) (1) will be used to direct plant activities after the Turbine trip.

2) The expected Steam Generator pressure is (2) psig.

Which ONE of the following completes the statements above?

- A. 1. The UNPP tab
 2. 885
 - B. 1. The UNPP tab
 2. 1010
 - C. 1. AP/1 (Unit Runback)
 2. 885
 - D. 1. AP/1 (Unit Runback)
 2. 1010
-

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ILT45 ONS SRO NRC Examination

Question: 26
(1 point)

Given the following Unit 1 conditions:

- Turbine Building Flood tab initiated
- Main and Emergency Feedwater have been lost

- 1) In accordance with the TBF tab RCS decay heat will be removed using (1) .
- 2) The above heat removal method is chosen because (2) .

Which ONE of the following completes the statements above?

- A. 1. HPI Forced Cooling
 2. "Raw" lake water will damage the SG's
- B. 1. HPI Forced Cooling
 2. SSF-ASW suction source is CCW and ALL CCW pumps will be secured
- C. 1. SSF-ASW
 2. of anticipation of losing Condensate Booster Pumps
- D. 1. SSF-ASW
 2. of anticipation of losing LPSW pumps
-

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Question: 27

(1 point)

Given the following Unit 1 conditions:

- Core SCM = 0°F
- LOCA Cooldown tab in progress
- CETC's = 395°F slowly decreasing

- 1) In accordance with the LOCA CD tab (1) is required to be opened to establish the normal Boron dilution flow path.
- 2) The above valve will be operated from the (2) Control Room

Which ONE of the following completes the statements above?

- A.
 1. 1LP-103 (Post LOCA Boron Dilute)
 2. Unit 1
 - B.
 1. 1LP-103 (Post LOCA Boron Dilute)
 2. SSF
 - C.
 1. 1LP-105 (Post LOCA Boron Dilute To LPI Suction)
 2. Unit 1
 - D.
 1. 1LP-105 (Post LOCA Boron Dilute To LPI Suction)
 2. SSF
-

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Question: 28
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400:00
- Reactor power = 100%
- 1B1 RCP Amps = 527

Current conditions:

- Time = 0400:01
- 1B1 RCP Amps = 255

Reactor power will ____ (1) ____ and feedwater will ____ (2) ____.

Which ONE of the following completes the statement above?

- A. 1. decrease
 2. re-ratio
 - B. 1. decrease
 2. NOT re-ratio
 - C. 1. stay the same
 2. re-ratio
 - D. 1. stay the same
 2. NOT re-ratio
-

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Question: 29

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 15%

Current conditions:

- Time = 0430
- RCS temperature = 535°F decreasing
- RCS pressure = 2040 psig decreasing
- Pzr level = 200 inches decreasing
- LDST level = 65 inches decreasing

- 1) The highest LDST level that will automatically align the HPI pumps suction to the BWST is (1) inches.
- 2) At 0430, the reactor (2) automatically tripped on low RCS pressure.

Which ONE of the following completes the statements above?

- A.
 1. 60
 2. has
 - B.
 1. 60
 2. has NOT
 - C.
 1. 40
 2. has
 - D.
 1. 40
 2. has NOT
-

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Question: 30

(1 point)

Given the following Unit 1 conditions:

- Reactor in MODE 6
- LPI is aligned in the Normal Decay Heat Removal flowpath
- LT-5 = 65" stable

1) Aligning LPI to the Purification Demineralizers (1) allowed at this level.

2) 1C LPI Pump (2) the desired LPI pump to use during this alignment.

Which ONE of the following completes the statements above?

- A. 1. is
 2. is
 - B. 1. is
 2. is NOT
 - C. 1. is NOT
 2. is
 - D. 1. is NOT
 2. is NOT
-

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ILT45 ONS SRO NRC Examination

Question: 31

(1 point)

Given the following Unit 1 plant conditions:

- Reactor in MODE 5
- LPI in normal DHR alignment

___(1)___ temperatures will be used to ensure compliance with Tech Spec allowed cooldown rates and ___(2)___ will be used to adjust cooldown rate.

Which ONE of the following completes the statement above?

- A. 1. LPI Cooler Outlet
 2. LPSW flow
 - B. 1. LPI Cooler Outlet
 2. LPI flow
 - C. 1. Core Exit Thermocouples
 2. LPSW flow
 - D. 1. Core Exit Thermocouples
 2. LPI flow
-

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ILT45 ONS SRO NRC Examination

Question: 32

(1 point)

Given the following Unit 1 conditions:

- RCS cooldown in progress
- RCS pressure = 1780 psig slowly decreasing

The HPI ES bypass permissive is activated at a MAXIMUM RCS pressure of (1) and (2) require manual actions to be re-instated when RCS pressure is returned to normal operating pressure.

Which ONE of the following completes the statement above?

- A. 1. 1715
 2. will
 - B. 1. 1715
 2. will NOT
 - C. 1. 1740
 2. will
 - D. 1. 1740
 2. will NOT
-

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Question: 33
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- ES Channels 1 – 8 actuated
- EOP Enclosure 5.1 (ES Actuation) initiated
- HPI Flow Train A = 520 gpm
- HPI Flow Train B = 468 gpm
- RC Make Up Flow = 160 gpm
- Seal Inlet Header Flow = 32 gpm

In accordance with the EOP, _____ is/are required to be throttled to prevent HPI pump runout.

Which ONE of the following completes the statement above?

- A. 1HP-26 ONLY
 - B. 1HP-27 ONLY
 - C. 1HP-26 and 1HP-27
 - D. NO valve
-

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Question: 34
(1 point)

Given the following Unit 1 conditions:

- OP/1/A/1103/002, (Filling and Venting RCS) Enclosure 4.14 (Establishing Pzr Steam Bubble And RCS Final Vent) in progress
- Quench Tank level = 82 inches
- Quench Tank pressure = 0.5 psig
- The Pressurizer is vented to the Quench Tank for 30 minutes

Which ONE of the following describes QT parameters that would indicate that Pzr Steam Bubble Formation is complete?

	QT level (inches)	QT pressure (psig)
A.	82.1	0.6
B.	84.1	0.6
C.	82.1	2.5
D.	84.1	2.5

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 35
(1 point)

Which ONE of the following will result in the Standby Component Cooling pump receiving an automatic start signal?

- A. CC Total Flow = 568 gpm
 - B. CRD Outlet HDR Flow = 136 gpm
 - C. Component Cooling Pump Pressure = 95 psig
 - D. ONE Main Feeder Buses de-energized for 21 seconds
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 36

(1 point)

Given the following Unit 1 conditions:

- BWST Temperature = 85°F
- LDST Temperature = 105°F
- RCS pressure = 685 psig

- 1) The (1) is an allowable suction source for Auxiliary Pressurizer Spray.
- 2) The reason for the applicable limit in accordance with SLC 16.5.8 (Pressurizer) is to reduce (2) .

Which ONE of the following completes the statements above?

- A.
 1. LDST ONLY
 2. thermal stress on the Pzr spray nozzle
 - B.
 1. LDST or the BWST
 2. thermal stress on the Pzr spray nozzle
 - C.
 1. LDST ONLY
 2. the potential for exceeding Pzr heater capacity
 - D.
 1. LDST or the BWST
 2. the potential for exceeding Pzr heater capacity
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 37

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1RC-1 failed OPEN
- RCS pressure = 2150 psig decreasing
- AP/44 (Abnormal Pressurizer Pressure Control) initiated

Current conditions:

- 1RC-3 failed OPEN

1) RCS pressure will (1).

2) AP/44 will initially direct stopping the (2) to help mitigate the failure.

Which ONE of the following completes the statements above?

- A. 1. continue to decrease below the reactor trip setpoint
 2. 1A1 RCP ONLY
 - B. 1. continue to decrease below the reactor trip setpoint
 2. 1A1 and 1A2 RCP
 - C. 1. be maintained above the reactor trip setpoint by the Pzr heaters
 2. 1A1 RCP ONLY
 - D. 1. be maintained above the reactor trip setpoint by the Pzr heaters
 2. 1A1 and 1A2 RCP
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 38
(1 point)

Which ONE of the following would result in a trip of the 1D RPS Channel AND the 1D CRD Breaker?

- A. 1D RPS channel Manual Trip keyswitch is placed in the trip position
 - B. Reactor Building Pressure Switch in the 1D RPS channel fails OPEN
 - C. Loss of 1DCB panelboard
 - D. Loss of the 1KVID panelboard
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 39

(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1A RPS Thot RTD fails HIGH

Which ONE of the following describes:

- 1) ALL RPS trips affected by the failure?
 - 2) the action preferred, in accordance with OP/1/A/1105/014 (Control Room Instrumentation Operation And Information)?
- A. 1. RCS High Outlet Temperature ONLY
 2. Place MANUAL TRIP Keyswitch in "TRIP".
- B. 1. RCS High Outlet Temperature ONLY
 2. Place affected RPS Channel MANUAL BYPASS keyswitch in "BYP".
- C. 1. RCS High Outlet Temperature and RCS Variable Low Pressure
 2. Place MANUAL TRIP Keyswitch in "TRIP".
- D. 1. RCS High Outlet Temperature and RCS Variable Low Pressure
 2. Place affected RPS Channel MANUAL BYPASS keyswitch in "BYP".
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 40

(1 point)

Given the following Unit 1 conditions:

- Main Steam Line break inside the Reactor Building
- RCS pressure decreased to 974 psig and is now increasing
- Reactor Building pressure increased to 34 psig and is now decreasing

Which ONE of the following lists ALL ECCS systems that have actuated?

- A. HPI ONLY
 - B. HPI AND Core Flood ONLY
 - C. HPI AND LPI ONLY
 - D. HPI, LPI, AND Core Flood
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 41
(1 point)

Given the following Unit 3 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- 3A HPI Pump operating

Current conditions:

- Time = 0401
- Reactor tripped due to SBLOCA
- ES Digital Channels 2, 4, and 6 failed to automatically actuate

At 0405, which ONE of the following lists only safety related components that will be in their ES condition?

ASSUME NO OPERATOR ACTIONS

- A. KHU #2 / 3HP-5
 - B. 3B HPI Pump / 3PR-10
 - C. KHU #2 / 3A LPI Pump
 - D. 3B HPI Pump / 3LPSW-24
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 42
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 50% stable

Current conditions:

- LBLOCA occurs
- 1TC de-energized

Which ONE of the following describes the status of the below listed Reactor Building Cooling Units five (5) minutes after ES actuates?

ASSUME NO OPERATOR ACTIONS

	<u>1A RBCU</u>	<u>1B RBCU</u>
A.	LOW	LOW
B.	LOW	OFF
C.	OFF	LOW
D.	OFF	OFF

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 43
(1 point)

Given the following plant conditions:

- SBLOCA has occurred on Unit 1
- Reactor Building Pressure = 11.2 psig slowly decreasing
- Unit 2 Reactor Power = 100%

Which ONE of the following describes the actions directed by Enclosure 5.1 (ES Actuation) to ensure the required LPSW flow exists in the 1A LPI cooler?

- A. Place 1LPSW-251 in "Failed Open" ONLY
 - B. Place 1LPSW-251 in "Failed Open" AND fully open 1LPSW-4
 - C. Place 1LPSW-251 in "Failed Open" AND Throttle LPSW flow to approximately 3000 gpm using 1LPSW-4
 - D. Place 1LPSW-251 in "Failed Open" AND Throttle LPSW flow to approximately 5200 gpm using 1LPSW-4
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 44
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 75% stable

Current conditions:

- 1A TBVs fail OPEN

1) (1) will be used to mitigate this event.

2) Reactor power will increase and then stabilize at (2).

Which ONE of the following completes the statements above?

- A. 1. OP/1/A/1106/001 (Turbine Generator)
 2. a higher power level
 - B. 1. OP/1/A/1106/001 (Turbine Generator)
 2. approximately the pre-transient value
 - C. 1. AP/1/A/1700/028 (ICS Instrument Failures)
 2. a higher power level
 - D. 1. AP/1/A/1700/028 (ICS Instrument Failures)
 2. approximately the pre-transient value
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 45
(1 point)

Given the following Unit 3 conditions:

- Time = 0400
- Reactor power = 70% stable
- 3B2 RCP trips

At 0430, which ONE of the following describes the response in FDW pump suction flows that has occurred over the previous 30 minutes?

- A. 3A FDW Pump suction flow has increased and 3B FDW Pump suction flow has decreased
 - B. 3B FDW Pump suction flow has increased and 3A FDW Pump suction flow has decreased
 - C. 3A and 3B FDW Pump suction flows have decreased
 - D. 3A and 3B FDW Pump suction flows remain unchanged
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 46

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Unit cooldown in progress
- 1A and 1B MD EFDWPs operating
- EOP Enclosure 5.9 (Extended EFDW Operation) in progress

Current conditions:

- UST level = 3.5 feet decreasing

In accordance with EOP Enclosure 5.9,

- 1) both MD EFDWPs are required to be secured at the HIGHER UST level of less than (1) .
- 2) vacuum is (2) to be broken prior to the MD EFDWPs taking suction on the Hotwell.

Which ONE of the following completes the statements above?

- A.
 1. one foot
 2. required
 - B.
 1. one foot
 2. NOT required
 - C.
 1. one inch
 2. required
 - D.
 1. one inch
 2. NOT required
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 47
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1DCA Bus Voltage = 125 VDC
- 1DCB Bus Voltage = 126 VDC
- 2DCA Bus Voltage = 127 VDC
- 2DCB Bus Voltage = 127 VDC

Current conditions:

- 1XS1 incoming feeder breaker trips

Based on the current conditions, which ONE of the following is correct regarding the DC power systems?

ASSUME NO OPERATOR ACTIONS

- A. 1DCA will be powered from the standby charger
 - B. 1DCB loads will be powered from Battery 1CB
 - C. 1KX Inverter will be powered from 1DCB
 - D. 1DIC Inverter will be powered from 1DCB
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 48
(1 point)

- 1) 600 volt MCC 1XS2 is normally powered from a power string that begins at 4 KV switchgear (1).
- 2) If the normal power supply to 1XS2 is lost, the alternate power supply (2) automatically energize 1XS2.

Which ONE of the following completes the statements above?

- A.
 1. 1TD
 2. will
 - B.
 1. 1TD
 2. will NOT
 - C.
 1. 1TE
 2. will
 - D.
 1. 1TE
 2. will NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 49

(1 point)

Station initial conditions:

- All three units Reactor power = 100%

Current conditions:

- All Unit's 4160v Main Feeder Busses are de-energized
- Unit 1, 2, and 3 EOP Blackout tabs in progress

Based on the above conditions, which ONE of the following describes the required status of Unit 1 Essential Inverters per the EOP Enclosure 5.38 (Restoration of Power) and why?

Unit 1's Essential Inverters...

- A. remain energized to provide power to ES channels.
 - B. remain energized to provide control power to 4160v.
 - C. are de-energized to prevent inverter damage.
 - D. are de-energized to extend available battery life.
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 50
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- SL1 and SL2 closed
- ACB-4 closed

Current conditions:

- Time = 0401
- RCS pressure = 200 psig decreasing
- Switchyard Isolation occurs
- Keowee Unit 2 Emergency Locked out

1A and 1B LPI pumps will be_____.

Which ONE of the following completes the statement above?

- A. manually energized from CT-5
 - B. automatically energized from CT-5
 - C. manually energized from Keowee Unit 1
 - D. automatically energized from Keowee Unit 1
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 51
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 1200
- Reactor power = 35% stable
- 1A steam generator tube leak = 2.1 gpd stable
- RCS activity = 0.25 $\mu\text{Ci/ml}$ DEI increasing

Current conditions:

- Time = 1400
- NO change in 1A SG tube leak rate
- RCS activity = 0.65 $\mu\text{Ci/ml}$ DEI and increasing

Which ONE of the following describes the response of the radiation monitors between 1200 and 1400?

- A. 1RIA-16 (Main Steam Line Monitor) and 1RIA-40 (CSAE Off-gas) increased.
 - B. 1RIA-16 (Main Steam Line Monitor) increased while 1RIA-40 (CSAE Off-gas) remained constant.
 - C. 1RIA-59 (N-16 monitor) and 1RIA-40 (CSAE Off-gas) increased.
 - D. 1RIA-59 (N-16 monitor) increased while 1RIA-40 (CSAE Off-gas) remained constant.
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 52

(1 point)

Given the following Unit 1 and 2 conditions:

Initial conditions:

- A & B LPSW pump operating

Current conditions:

- 1SA9/A9 LPSW HEADER A PRESS LOW
- A LPSW pump amps = 15 - 35 fluctuating
- B LPSW pump amps = 55 stable
- LPSW HDR PRESS = rapidly fluctuating between 60 & 75 psig

1) The A LPSW pump (1) .

2) AP/24 (Loss of LPSW) will direct (2) .

Which ONE of the following completes the statements above?

- A.
 - 1. is cavitating
 - 2. placing the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE then stopping LPSW Pump A and starting LPSW Pump C
 - B.
 - 1. has a sheared shaft
 - 2. placing the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE then stopping LPSW Pump A and starting LPSW Pump C
 - C.
 - 1. is cavitating
 - 2. starting LPSW Pump C then stopping LPSW Pump A
 - D.
 - 1. has a sheared shaft
 - 2. starting LPSW Pump C then stopping LPSW Pump A
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 53
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- RCS pressure = 248 psig decreasing

- 1) At 0415, (1) LPSW pumps will be supplying loads on Unit 1.
- 2) The B LPSW pump is powered from (2).

Which ONE of the following completes the statements above?

- A.
 1. ONLY two
 2. 1TD ONLY
 - B.
 1. ONLY two
 2. 1TD or 2TD
 - C.
 1. three
 2. 1TD ONLY
 - D.
 1. three
 2. 1TD or 2TD
-

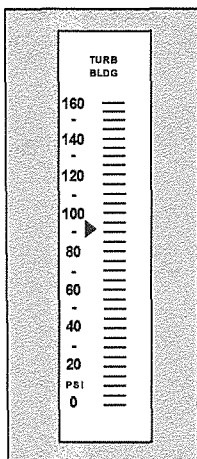
Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 54
(1 point)

Given the following plant conditions:

- Large IA leak occurs
- Service air header pressure = 87 psig decreasing
- Turbine Building air header pressure per gage below



Which ONE of the following describes the air compressors that will be operating?

The Primary IA Compressor AND...

- A. Diesel Air Compressors ONLY
- B. Diesel Air Compressors AND AIA Compressors
- C. AIA Compressors AND Backup IA Compressors
- D. Backup IA Compressors ONLY

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 55

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- RCS pressure = 1500 psig decreasing
- RB pressure = 1.2 psig increasing
- EOP Enclosure 5.1 (ES Actuation) initiated

- 1) At 0415, 1LPSW-15 is (1).
- 2) If closed due to ES actuation and in accordance with Enclosure 5.1, prior to opening 1LPSW-15, the associated (2).

Which ONE of the following completes the statements above?

- A.
 1. open
 2. voter is taken to override
- B.
 1. open
 2. ES channel(s) is/are taken to manual
- C.
 1. closed
 2. voter is taken to override
- D.
 1. closed
 2. ES channel(s) is/are taken to manual

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 56
(1 point)

Given the following Unit 1 conditions:

Time = 0400

- Reactor trip from 100% power due to a loss of offsite power
- Forced Cooldown tab in progress
- Tcold = 550°F stable

Time = 0500

- RCS pressure = 2155 psig stable
- A Natural Circulation cooldown is initiated
- 1RC-159 (RX Vessel Head Vent) will NOT open

- 1) At 0400 and in accordance with the FCD tab, the MAXIMUM allowable cooldown rate is (2).
- 2) During the cooldown, Reactor Vessel head voids (1) expected to occur.

Which ONE of the following completes the statements above?

- A.
 1. < 50°F/hr
 2. are
 - B.
 1. < 50°F/hr
 2. are NOT
 - C.
 1. ≤ 50°F / ½ hr
 2. are
 - D.
 1. ≤ 50°F / ½ hr
 2. are NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 57
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- A LOCA occurs from 100% power
- Multiple equipment failures have occurred

Current conditions:

- LOCA CD tab in progress
- A significant increase is noted on the Source Range

- 1) A transfer to the ICC tab is required (2).
- 2) A possible cause for the increase of the Source Range is significant voiding in the (1).

Which ONE of the following completes the statements above?

- A.
 1. when ANY SCM indicates superheat
 2. core
 - B.
 1. when ANY SCM indicates superheat
 2. downcomer
 - C.
 1. ONLY when the Core SCM indicates superheat
 2. core
 - D.
 1. ONLY when the Core SCM indicates superheat
 2. downcomer
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 58

(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%

1) ICS AUTO power to the TBVs is supplied by (1) .

2) ICS HAND power to the TBVs is supplied by (2) .

Which ONE of the following completes the statements above?

- A. 1. 1KI
 2. 1KU
 - B. 1. 1KI
 2. 1KX
 - C. 1. 1KU
 2. 1KI
 - D. 1. 1KU
 2. 1KX
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 59

(1 point)

Given the following Unit 1 conditions:

- Refueling in progress
- RB Purge in operation

- 1) If the RB Main Purge fan trips due an RIA alarm, Spent Fuel Pool level will (1) .
- 2) When the RB Main Purge fan trips above, PR valves (2) will automatically close.

Which ONE of the following completes the statements above?

- A.
 1. increase
 2. 2 – 5 ONLY
 - B.
 1. increase
 2. 1 – 6
 - C.
 1. decrease
 2. 2 – 5 ONLY
 - D.
 1. decrease
 2. 1 – 6
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 60
(1 point)

Given the following plant conditions:

Initial conditions:

- Time = 0400
- "A" SFP pump operating

Current conditions:

- Time = 0401
- Spent Fuel Storage Cask has been dropped in Unit 1&2 SFP
- Spent Fuel damage is visible
- RIA-6 and RIA-41 HIGH alarm actuates
- Spent Fuel Pool level = -3.5 feet decreasing

- 1) The Unit (1) Reactor Building Purge filters will be used to reduce off site releases.
- 2) At 0401, the "A" SFP pump is (2).

Which ONE of the following completes the statements above?

- A. 1. 1
2. ON
- B. 1. 1
2. OFF
- C. 1. 2
2. ON
- D. 1. 2
2. OFF
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 61
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1SA-02/B-11 (ICS AUTO POWER FAILURE)

As a result of the above failure:

- 1) 1HP-120 is operable in (1).
- 2) The Turbine Bypass Valves are operable in (2).

Which ONE of the following completes the statements above?

- A.
 1. HAND ONLY
 2. HAND or AUTO
 - B.
 1. HAND ONLY
 2. HAND ONLY
 - C.
 1. HAND or AUTO
 2. HAND or AUTO
 - D.
 1. HAND or AUTO
 2. HAND ONLY
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 62
(1 point)

Given the following Unit 1 conditions:

Time = 1200:00

- Reactor power = 80% stable
- 1A and 1B CBP operating

Time = 1201:00

- 1A CBP trips
- Feedwater Pump suction pressure = 225 psig slowly decreasing

Time = 1203:00

- Feedwater Pump suction pressure = 220 slowly increasing

Which ONE of the following describes the:

- 1) runback rate (%/min) inserted at 1201:00 to ICS?
- 2) procedure that will be directed by the Procedure Director at 1203:00?

- A. 1. 15
 2. AP/1/A/1700/001 (Unit Runback)
- B. 1. 15
 2. EOP
- C. 1. 20
 2. AP/1/A/1700/001 (Unit Runback)
- D. 1. 20
 2. EOP
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 63
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 63% decreasing
- Control Rod Group 5 Rod 6 Asymmetric Alarm light on the PI panel is lit
- Control Rod Group 5 Rod In Limit light on the PI panel is lit
- Asymmetric Fault light on Diamond Panel is lit

- 1) The Asymmetric Alarm light indicates that the rod is misaligned from the group average by a MINIMUM of (1) inches.
- 2) Plant conditions for an Asymmetric runback to occur (2) met.

Which ONE of the following completes the statements above?

- A.
 1. seven
 2. are
 - B.
 1. seven
 2. are NOT
 - C.
 1. nine
 2. are
 - D.
 1. nine
 2. are NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 64
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 32% decreasing
- A unit shutdown is in progress due to a primary to secondary leak

- 1) (1) provides the operator with a readout in GPM.
- 2) At this time, the above RIA (2) procedurally allowed to be used to determine the primary to secondary leak rate.

Which ONE of the following completes the statements above?

- A. 1. 1RIA-16 (Main Steam Line Monitor)
 2. is
- B. 1. 1RIA-16 (Main Steam Line Monitor)
 2. is NOT
- C. 1. 1RIA-59 (N-16 monitor)
 2. is
- D. 1. 1RIA-59 (N-16 monitor)
 2. is NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 65

(1 point)

Given the following Unit 2 conditions:

Initial conditions:

- Reactor power = 100%
- A and B LPSW pumps operating
- Switchyard Isolate occurs

Current conditions:

- Unit 2 MFB 1 & 2 energized

1) Unit 1 & 2 LPSW is supplied via the ECCW (1) .

2) A and B LPSW pumps will restart (2) after power is restored.

Which ONE of the following completes the statements above?

- A. 1. first siphon
 2. immediately
 - B. 1. second siphon
 2. immediately
 - C. 1. first siphon
 2. 10 seconds
 - D. 1. second siphon
 2. 10 seconds
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 66
(1 point)

Given the following plant conditions:

- "B" Shift is on duty
- The OATC asks to be temporarily relieved to go to the canteen.
- The BOP has previously received a formal turnover on the unit.

Which ONE of the following describes whose permission is required to turn over the OATC position to the BOP and items that are required to be included in the turnover per OMP 2-01 (Duties and Responsibilities of On-Shift Operations Personnel)?

- A. Control Room SRO / review of Ops Guides and outstanding R&Rs
 - B. Control Room SRO / review RCS temperature/pressure and operating band
 - C. Any "B" shift SRO / review of Ops Guides and outstanding R&Rs
 - D. Any "B" shift SRO / review RCS temperature/pressure and operating band
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 67
(1 point)

Given the following Unit 1 conditions:

Time = 0400

- Generator output = 850 MWe stable
- Generator Hydrogen pressure = 50 psig stable

Time = 0500

- Generator output = 600 MWe stable
- Generator Hydrogen pressure = 30 psig stable

At 0500 and in accordance with OP/1/A/1106/001 Encl. 4.5 (Capability Curve), the MAXIMUM MVARs allowed is approximately _____.

Which ONE of the following completes the statement above?

REFERENCE PROVIDED

- A. 325
 - B. 340
 - C. 370
 - D. 450
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 68
(1 point)

Which ONE of the following is the LOWER limit on RCS activity that would require entry into AP/21 (RCS Activity)?

- A. Xe-133 = 0.25 $\mu\text{Ci/gm}$
 - B. Xe-133 = 1.0 $\mu\text{Ci/gm}$
 - C. DEI = 0.25 $\mu\text{Ci/gm}$
 - D. DEI = 1.0 $\mu\text{Ci/gm}$
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 69
(1 point)

Given the following Unit 1 conditions:

Time = 0000

- Unit shutdown in progress
- Reactor power = 2.5% decreasing

Time = 2300

- RCS Tave = 240°F decreasing

1) At 0000, the reactor is in MODE (1).

2) At 2300, the reactor is in MODE (2).

Which ONE of the following completes the statements above?

- A. 1. one
 2. four
 - B. 1. one
 2. five
 - C. 1. two
 2. four
 - D. 1. two
 2. five
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 70
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%
- Group 3 Rod 6 drops into the core
- Rod cannot be recovered

Which ONE of the following describes action(s) required and the associated MAXIMUM completion time(s) in accordance with TS 3.1.5 (Safety Rod Position Limits)?

- A. Verify SDM within 1 hour ONLY
 - B. Verify SDM within 30 minutes ONLY
 - C. Verify SDM within 1 hour AND reduce reactor power to less than 60% within 1 hour
 - D. Verify SDM within 30 minutes AND reduce reactor power to less than 60% within 1 hour
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 71
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%

Which ONE of the following describes a condition that would require entry into a Tech Spec ACTIONS table?

- A. UST level = 7.6 feet
 - B. Pressurizer = 291 inches
 - C. 1D RPS channel in Manual bypass
 - D. 230KV Dacus Black and White lines isolated
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 72
(1 point)

Given the following Unit 1 conditions:

- Reactor in MODE 5
- Reactor Building Main Purge in operation

Which ONE of the following will cause the RB Purge fan to trip?

- A. Inadvertent actuation of ES Channel 5
 - B. 1RIA-45 reaches HIGH alarm setpoint
 - C. Suction piping pressure = 5 inches of water vacuum
 - D. 1PR-3 (RB PURGE CONTROL) 5% open
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 73
(1 point)

An RWP that you are preparing to work under states that the highest dose rate in a particular area (at 30 cm) is 325 mR/hr. When you arrive at the work site, a flashing yellow light is noted in the entry path to the area.

1. How would an area with the dose rate specified in the RWP be designated?
 2. What is the significance of the flashing yellow light?
-
- A.
 1. Radiation Area
 2. Radiography is in progress
 - B.
 1. High Radiation Area
 2. Radiography is in progress
 - C.
 1. Radiation Area
 2. The area has been designated as a "Locked" High Radiation Area
 - D.
 1. High Radiation Area
 2. The area has been designated as a "Locked" High Radiation Area
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 74
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- CTPB = 75% stable
- 1A HPI pump operating
- Transient occurs

Current conditions:

- Time = 0405
- CTPB = 76% stable
- Letdown Flow = 78 gpm stable
- HPI Flow Train A = 176 gpm decreasing slowly

In accordance with OMP 1-18 (Implementation Standard During Abnormal and Emergency Events) at 0405:

- 1) Unit 1 (1) considered stable.
- 2) RCS makeup flow (2) within normal makeup capability.

Which ONE of the following completes the statements above?

- A. 1. is
 2. is
 - B. 1. is
 2. is NOT
 - C. 1. is NOT
 2. is
 - D. 1. is NOT
 2. is NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 75
(1 point)

- 1) The emergency facility that assumes responsibility for communications with offsite Agencies, including the NRC once it is activated, is the (1).
- 2) The lowest classification level that requires this facility's activation is a/an (2).

Which ONE of the following completes the statements above?

- A. 1. Technical Support Center (TSC)
 2. Alert
 - B. 1. Technical Support Center (TSC)
 2. Site Area Emergency
 - C. 1. Operations Support Center (OSC)
 2. Alert
 - D. 1. Operations Support Center (OSC)
 2. Site Area Emergency
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 76
(1 point)

Given the following Unit 1 conditions:

- Reactor Power = 85% stable
- 1A HPI Pump inoperable

- 1) The SMALLEST leak size classified as a SBLOCA (1) result in a saturated RCS due to loss of Pressurizer level.
- 2) The WORST case SBLOCA (2) be mitigated if one of the two HPI trains is unable to inject water into the core.

Which ONE of the following completes the statements above?

- A. 1. will
 2. can
 - B. 1. will
 2. can NOT
 - C. 1. will NOT
 2. can
 - D. 1. will NOT
 2. can NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 77
(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 75%
- AP/20 (Loss of Component Cooling) in progress

Current conditions:

- 1A1 RCP Radial Bearing Temperature = 248°F stable

In accordance with AP/20:

- 1) The 1A1 RCP ____ (1) ____ required to be secured.
- 2) If the RCP is required to be secured the reactor ____ (2) ____ be tripped first.

Which ONE of the following completes the statements above?

- A. 1. is
 2. will
 - B. 1. is
 2. will NOT
 - C. 1. is NOT
 2. will
 - D. 1. is NOT
 2. will NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 78
(1 point)

Given the following Unit 1 conditions:

Time = 0400

- Reactor Power = 100%
- 1A and 1B Main Steam pressure = 885 psig
- 1A Steam Generator Primary to Secondary leak rate = 120 gpd

Time = 0405

- 1A Main Steam pressure = 851 psig decreasing
- 1B Main Steam pressure = 523 psig decreasing
- 1SA-02/D-11 (AFIS Analog Channel trip) actuated
- 1SA-02/D-08 (AFIS Header B Initiated) NOT actuated

- 1) At 0405, the status of BOTH Statalarms listed above (1) as expected for the plant conditions.
- 2) If AFIS does NOT actuate as required, manual actuation of AFIS is required to maintain (2).

Which ONE of the following completes the statements above?

- A.
 1. are
 2. doses within 10CFR100 limits
 - B.
 1. are
 2. RB pressure within design limits
 - C.
 1. are NOT
 2. doses within 10CFR100 limits
 - D.
 1. are NOT
 2. RB pressure within design limits
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 79

(1 point)

Given the following Unit 1 plant conditions:

- B and C LPSW pumps have failed
- Multiple alarms associated with degraded LPSW flow have actuated
- AP/24 (Loss of LPSW) is in progress
- 1A2 RCP stator temperature = 310°F slowly increasing
- 1B2 RCP stator temperature = 270°F slowly increasing

- 1) The (1) RCP stator temperature(s) exceed the immediate trip criteria specified in AP/16 (Abnormal RCP Operations).
- 2) In accordance with AP/24, the procedure director (2) direct cross-connecting Unit 1&2 LPSW system with Unit 3 LPSW system.

Which ONE of the following completes the statements above?

- A.
 1. 1A2 ONLY
 2. will
 - B.
 1. 1A2 ONLY
 2. will NOT
 - C.
 1. 1A2 AND 1B2
 2. will
 - D.
 1. 1A2 AND 1B2
 2. will NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 80
(1 point)

Given the following Unit 1 conditions:

- Reactor trip has occurred from 100% power
- RCS temperature = 552°F stable
- 1A and 1B Main Steam pressure = 1010 psig stable
- One MSRV has NOT reseated

Which ONE of the following describes the:

- 1) MINIMUM RCS temperature (°F) allowed by Subsequent Actions while reducing Main Steam pressure to reseal the MSRV?
 - 2) basis for the minimum temperature above?
- A. 1. 525
 2. ensure PTS limits are not exceeded
- B. 1. 525
 2. ensure shutdown margin is maintained
- C. 1. 532
 2. ensure PTS limits are not exceeded
- D. 1. 532
 2. ensure shutdown margin is maintained
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 81
(1 point)

Give the following Unit 1 conditions:

Initial conditions:

- Reactor trip from 100% power
- Both Main Feedwater pumps trip
- EFDW pumps will NOT start

Current conditions:

- Rule 3 in progress
- LOHT tab initiated
- RCS heatup results in core SCM's = 0°F
- RCS pressure = 2190 psig slowly increasing
- Pressurizer level = 355 inches slowly increasing

1) In addition to Rule 3, Rule(s) (1) will be performed.

2) LOHT will direct a transfer to the (2) tab.

Which ONE of the following completes the statements above?

- A. 1. 2 ONLY
2. LOSCM
 - B. 1. 2 ONLY
2. FCD
 - C. 1. 2 AND 4
2. LOSCM
 - D. 1. 2 AND 4
2. HPICD
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 82
(1 point)

Given the following Unit 1 conditions:

Time = 1200

- Reactor Power = 100%
- Control Rod Group 5 Rod 4 ONLY has partially inserted and indicates 90% withdrawn

Time = 1330

- Reactor Power = 55% stable

Time = 1400

- Control Rod Group 3 Rod 1 has dropped and indicates 0% withdrawn

1) At 1330, Control Rod Group 5 Rod 4 is considered __ (1) __ in accordance with Tech Spec 3.1.4 (Control rod Group Alignment Limits).

2) At 1400, the CRS will direct the RO's to __ (2) __.

Which ONE of the following completes the statements above?

- A. 1. misaligned ONLY
 2. notify SPOC to reduce RPS trip setpoints
 - B. 1. misaligned ONLY
 2. trip the Reactor
 - C. 1. misaligned AND inoperable
 2. notify SPOC to reduce RPS trip setpoints
 - D. 1. misaligned AND inoperable
 2. trip the Reactor
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 83
(1 point)

Given the following Unit 1 conditions:

Initial Conditions:

- Reactor Power = 100%

Current Conditions:

- ATWS has occurred
- Rule 1 is complete
- Site Area Emergency has been declared

- 1) At the completion of Rule 1 (1) HPI pumps are operating.
- 2) In accordance with RP/0/A/1000/002 (Control Room Emergency Coordinator Procedure), non essential personnel (2) required to be evacuated from the site.

Which ONE of the following completes the statements above?

- A. 1. 2
2. are
 - B. 1. 2
2. are NOT
 - C. 1. 3
2. are
 - D. 1. 3
2. are NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 84
(1 point)

Given the following Unit 1 conditions:

Initial conditions

- Reactor power = 100%
- Condenser vacuum = 23" Hg decreasing

Current conditions

- Condenser vacuum is approximately 0" Hg

- 1) The setpoint (inches HG) at which the Main Turbine will trip on low vacuum is ____ (1) ____.
- 2) In accordance with Subsequent Actions, operator(s) at the ____ (2) ____ are controlling steaming of the Steam Generators.

Which ONE of the following completes the statements above?

- A.
 1. 21.75
 2. Auxiliary Shutdown Panel
 - B.
 1. 21.75
 2. Atmospheric Dump Valves
 - C.
 1. 19.5
 2. Auxiliary Shutdown Panel
 - D.
 1. 19.5
 2. Atmospheric Dump Valves
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 85

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- ACB-3 closed

Current conditions:

- Blackout tab in progress
- EOP Enclosure 5.38 has been initiated
- KHU-1 Emergency Locked Out
- 1TC, 1TD, and 1TE 4160V switchgear are locked out

1) Main Feeder Buses will be energized by (1).

2) Once the Main Feeder Buses are energized the Procedure Director will (2).

Which ONE of the following completes the statements above?

- A.
 - 1. CT-5
 - 2. continue in the Blackout Tab
 - B.
 - 1. CT-5
 - 2. transfer back to Subsequent Actions Tab
 - C.
 - 1. KHU-2
 - 2. continue in the Blackout Tab
 - D.
 - 1. KHU-2
 - 2. transfer back to Subsequent Actions Tab
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 86
(1 point)

Given the following Unit 1 conditions:

- Large Break LOCA from 100% has just occurred
- RCS pressure = 843 psig decreasing
- Reactor Building pressure = 12.4 psig increasing

- 1) Engineered Safeguards channels __ (1) __ have actuated.
- 2) In accordance with the LOSCM tab, the LOWER TOTAL (both trains) LPI flow that will allow transfer to the LOCA Cooldown tab is __ (2) __ gpm.

Which ONE of the following completes the statements above?

- A.
 1. 1-6 ONLY
 2. 2900
 - B.
 1. 1-6 ONLY
 2. 3400
 - C.
 1. 1-8
 2. 2900
 - D.
 1. 1-8
 2. 3400
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 87

(1 point)

Given the following Unit 3 plant conditions:

- Reactor power = 100%
- 3A RBCU tagged out

Which ONE of the following:

- 1) would require immediate entry into LCO 3.0.3?
 - 2) describes actions that are required once LCO 3.0.3 is entered in accordance with OMP 2-23 (Operations Shift Manager Rules Of Practice)?
- A.
 1. 3LPSW-19 (3B RBCU INLET) fails closed
 2. Must determine a time to begin power reduction within 1 hour
 - B.
 1. 3LPSW-19 (3B RBCU INLET) fails closed
 2. Must actually initiate a power reduction within 1 hour
 - C.
 1. 3A RBS Pump declared inoperable
 2. Must determine a time to begin power reduction within 1 hour
 - D.
 1. 3A RBS Pump declared inoperable
 2. Must actually initiate a power reduction within 1 hour
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 88

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0000
- Reactor Power = 100%
 - 1C RBCU inoperable

Current conditions:

- Time = 0100
- Worst case LBLOCA occurs
- 1A RB Spray pump failed to start

- 1) Reactor Building design pressure (1) be exceeded.
- 2) In accordance with EOP Enclosure 5.1 (ES Actuation), SRO approval (2) required before attempting to start the 1A RB Spray pump.

Which ONE of the following completes the statements above?

- A.
 1. will
 2. is
 - B.
 1. will
 2. is NOT
 - C.
 1. will NOT
 2. is
 - D.
 1. will NOT
 2. is NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 89

(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%
- Delta Tc failure has occurred
- 1A SG level = 80% OR increasing

The Steam Generator Overfill Protection system:

- 1) will trip BOTH Main Feedwater pumps once the 1A SG level reaches a MINIMUM of (1) % OR.
- 2) is credited with tripping the Main Feedwater pumps to prevent (2) that could occur due to a SG overfill.

Which ONE of the following completes the statements above?

- A.
 1. 86
 2. flooding of the SG aspirating ports
 - B.
 1. 86
 2. pressurized thermal shock of the Reactor Vessel
 - C.
 1. 96
 2. flooding of the SG aspirating ports
 - D.
 1. 96
 2. pressurized thermal shock of the Reactor Vessel
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 90

(1 point)

Unit 1 initial conditions:

- Reactor in MODE 4

- 1) In accordance with Tech Spec 3.6.3 (Containment Isolation Valves), 1PR-1 (1) be opened under administrative controls.
- 2) In accordance with the basis of Tech Spec 3.6.2 (Containment Air Locks), (2) door(s) in each air lock must be Operable for Containment to be Operable.

Which ONE of the following completes the statements above?

- A.
 1. can
 2. ONLY one
 - B.
 1. can
 2. BOTH
 - C.
 1. can NOT
 2. ONLY one
 - D.
 1. can NOT
 2. BOTH
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 91

(1 point)

- 1) The CRD Breaker Undervoltage Coil (1) to open its associated CRD breaker.
- 2) In accordance with Tech Spec 3.3.4 (CRD Trip Devices), the Shunt Trip coil (1) the Undervoltage coil must be operable for a CRD breaker to be considered OPERABLE.

Which ONE of the following completes the statements above?

- A. 1. energizes
 2. OR
 - B. 1. energizes
 2. AND
 - C. 1. de-energizes
 2. OR
 - D. 1. de-energizes
 2. AND
-

Oconee Nuclear Station

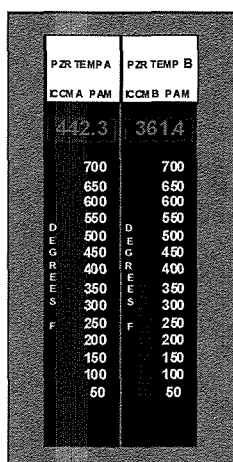
ILT45 ONS SRO NRC Examination

Question: 92

(1 point)

Given the following Unit 1 conditions:

- Time - 1200
- Reactor power = 100%
- Pressurizer temperature indicates as shown below



Which ONE of the following describes ALL Tech Spec 3.3.8 (PAM Instrumentation) Condition(s) that apply (if any) at Time = 1200?

REFERENCE PROVIDED

- A. NO Tech Spec 3.3.8 Condition applies
- B. Condition A ONLY
- C. Condition A and C ONLY
- D. Condition A, C, and H

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 93

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 1200
- Reactor power = 75%

Current conditions:

- Time = 1230
- Reactor power = 75% stable
- Delta Tc has failed
- 1A SG flow = 2.75 E6 lbm/hr
- 1B SG flow = 5.5 E6 lbm/hr
- Incore Quadrant Power Tilt (QPT) as describe below:

$\frac{W-X}{-8.4}$	$\frac{X-Y}{4.1}$	$\frac{Y-Z}{4.5}$	$\frac{Z-W}{2.8}$
--------------------	-------------------	-------------------	-------------------

ASSUME NO OPERATOR ACTIONS

- 1) In accordance with Tech Spec 3.2.3 (Quadrant Power Tilt), the MAXIMUM power level (%RTP) allowed at Time = 1430 is __ (1) __.
- 2) Restoring QPT to within TS 3.2.3 limits will ensure that during a LBLOCA, __ (2) __.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A.
 1. 60
 2. Peak cladding temperatures will NOT exceed 2200°F
- B.
 1. 60
 2. DNBR limits will be maintained within the Safety Limit values
- C.
 1. 98
 2. Peak cladding temperatures will NOT exceed 2200°F
- D.
 1. 98
 2. DNBR limits will be maintained within the Safety Limit values

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 94

(1 point)

Given the following Unit 1 conditions:

Initial conditions:

- Re-fueling in progress

Current conditions:

- A fuel assembly is damaged while inserting into the core
- An adjacent assembly must be placed in an alternate core location while recovering the damaged assembly

Which ONE of the following states the MINIMUM level of approval required to place a fuel assembly into an alternate location other than the original one assigned by the Core Reload Sequence in accordance with MP/0/A/1500/009 (Defueling/Refueling Procedure) Limits and Precautions?

- A. OSM
 - B. Refueling SRO
 - C. Reactor Building SRO
 - D. Refueling SRO Assistant
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 95

(1 point)

Given the following Unit 2 conditions:

Initial conditions:

- Time = 0100
- Refueling in progress
- FTC level = 22 feet stable
- No water additions are being made to the system
- 2A LPI train is Operable and in service
- 2B LPI train is Operable

Current conditions:

- Time = 2300
- Refueling SRO desires stopping the 2A LPI Pump to aid in inserting a fuel assembly

Which ONE of the following:

- 1) states whether the 2A LPI pump may be stopped in accordance with OP/2/A/1502/007 (Operations Defueling /Refueling Responsibilities)?
 - 2) describes the system(s) required to be operable in support of the Operability of a DHR loop in accordance with the basis of Tech Spec 3.9.4 (DHR and Coolant Circulation)?
- A. 1. 2A LPI Pump may be stopped for up to 1 hour per 8 hour period.
 2. LPSW ONLY
- B. 1. 2A LPI Pump may be stopped for up to 1 hour per 8 hour period.
 2. LPSW and ECCW
- C. 1. 2A LPI Pump may NOT be stopped
 2. LPSW ONLY
- D. 1. 2A LPI Pump may NOT be stopped
 2. LPSW and ECCW
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 96

(1 point)

Which ONE of the following describes when a RED condition for a Safety Function requires that a Risk Management plan must be developed in accordance with Site Directive 1.3.5 (Shutdown Protection Plan)?

- A. ANY unplanned entry ONLY
 - B. ANY planned entry ONLY
 - C. An unplanned entry of any duration AND ONLY planned entries that last greater than 1 hour
 - D. A planned entry of any duration AND ONLY unplanned entries that last greater than 1 hour
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 97
(1 point)

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1LP-15 is undergoing repair and maintenance needs to operate the valve locally

1) A (1) tag will be used to turn over operational control of 1LP-15 to maintenance.

2) The tag used in part one above (2) allowed to be Shared Tag.

- A. 1. MORT
 2. is
 - B. 1. MORT
 2. is NOT
 - C. 1. OORT
 2. is
 - D. 1. OORT
 2. is NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 98
(1 point)

Given the following Unit 1 conditions:

Time = 0410

- Reactor power = 100%
- 1RIA-59 = 0.1 gpm
- 1RIA-60 = 35 gpm
- Emergency classification declared

Time = 0430

- Reactor power = 38%
- 1A MSLB occurs

Time = 0500

- Cooldown is initiated using the 1A SG

- 1) At 0410, in accordance with the bases of TS 3.4.13, RCS Pressure Boundary LEAKAGE __ (1) __ occurring.
- 2) At 0500, an Emergency Classification upgrade __ (2) __ required (**Do NOT use Emergency Coordinators judgment**).

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A. 1. is
2. is
 - B. 1. is
2. is NOT
 - C. 1. is NOT
2. is
 - D. 1. is NOT
2. is NOT
-

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 99
(1 point)

Given the following Unit 1 conditions:

Time = 0400

- Reactor has tripped
- Subsequent Actions tab in progress
- RCS pressure = 2150 psig stable
- RCS temperature = 547°F stable

Time = 0405

- While at step 4.13 of the SA tab (checking for indications of a SGTR) the following occurs:
 - 1SA-18/D-6 (RC System Approaching Saturation Conditions) actuates
 - 1SA-8/B-9 (Process Monitor Radiation High) actuates
 - Pzr level = 0 inches
 - RBNS level increases off scale high
 - RCS pressure 1330 psig slowly decreasing
 - "A" loop SCM = 0°F
 - "B" loop and core SCM = 18°F slowly decreasing

- 1) At 0405, the Procedure Director will go to the LOSCM tab (1)
- 2) After the transfer to the LOSCM tab is made, a subsequent (2) will require a transfer to a different EOP tab.

Which ONE of the following completes the statement above?

- A.
 1. immediately based on a Parallel Actions page transfer
 2. Turbine Building Flood
- B.
 1. immediately based on a Parallel Actions page transfer
 2. Blackout
- C.
 1. ONLY when Core SCM reaches 0°F based on a Parallel Actions page transfer
 2. Turbine Building Flood
- D.
 1. ONLY when Core SCM reaches 0°F based on a Parallel Actions page transfer
 2. Blackout

Oconee Nuclear Station

ILT45 ONS SRO NRC Examination

Question: 100

(1 point)

Given the following Unit 1 conditions:

- Reactor Power = 100%
- Turbine Building Flood in progress
- AP/10 (Turbine Building Flood) has just been initiated by the Procedure Director

1) Once the Reactor has been tripped in accordance with AP/10, the highest priority actions to be performed are contained in (1).

2) Steam Generator levels and feed rates will be directed by (2).

Which ONE of the following completes the statements above?

- A. 1. AP/10
 2. Rule 7
 - B. 1. AP/10
 2. Turbine Building Flood tab
 - C. 1. the EOP
 2. Rule 7
 - D. 1. the EOP
 2. Turbine Building Flood tab
-

Reference List for: ILT45 ONS SRO NRC Examination

AP/11 Encl. 5.1A

OP/1106/001 Encl. 4.5

TS 3.3.8

TS 3.2.3

COLR tilt limits

RP/0/A/1000/001 Encl. 4.1 - 4.9

Enclosure 5.1A
CT-4 Overload Limits_{17}

AP/**1**/A/1700/011
Page 1 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
---------------------------------	------------------------------

CAUTION
Maximum transformer oil limit of 120°C should **NEVER** be exceeded.

NOTE

- The following statalarms may provide early warning that transformer limits are being approached:
 - SA-18/B-4 (TRANSFORMER CT-4 OIL TEMPERATURE HIGH)
 - SA-18/C-4 (TRANSFORMER CT-4 WINDING TEMP HIGH)
- O1A0836 maximum readout is 150°C. The local gage must be used above 150°C.
- Some single failure events could cause CT-4 winding temperature to exceed 160°C when only supplying essential loads. It is acceptable to exceed 160°C if supplying essential loads only and oil temperature remains below 120°C.

1. ☐ **IAAT** either of the following limits are exceeded:

✓	Indicator	Maximum
<input type="checkbox"/>	O1A0835 OR local gage	120°C CT-4 Oil Temperature
<input type="checkbox"/>	O1A0836 OR local gage	160°C CT-4 Winding Temperature

THEN take immediate action to reduce non-essential loads on CT-4.

2. ☐ **IAAT NO** CT-4 transformer cooling is available (no transformer fans operating),
THEN perform Steps 3 - 4.

☐ **GO TO** Step 5.

Enclosure 5.1A
CT-4 Overload Limits_{17}

AP/**1**/A/1700/011
Page 2 of 5

IF AT ANY TIME:

- (1) CT-4 oil temperature exceeds 120°C **OR** CT-4 winding temperature exceeds 160°C ... (take immediate action to reduce non-essential loads on CT-4)

Enclosure 5.1A
CT-4 Overload Limits_{17}

AP/1/A/1700/011
Page 3 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none">• CT-4 is limited to 17.5 MVA per curve in Step 4 or the 0.73 AC KILOAMPERES Incoming value in Step 3 RNO column, if in effect, until modifications are complete to install a spray system on CT-4. This procedure will be changed once modifications are complete.• This NOTE applies to Steps 3 and 4.	
<p>3. Verify <u>both</u> of the following available:</p> <p>___ CT-4 MEGA WATTS</p> <p>___ CT-4 MEGA VARS</p>	<p>1. ___ Use Unit 1 Switchyard Mimic board AC KILOAMPERES (on 2EF1) <u>or</u> OAC point O1A0795 XFMR CT4 AMPS to maintain loads < limits determined above.</p> <p>2. ___ GO TO Step 5.</p>

Enclosure 5.1A
CT-4 Overload Limits_{17}

AP/**1**/A/1700/011
Page 4 of 5

IF AT ANY TIME:

- (1) CT-4 oil temperature exceeds 120°C **OR** CT-4 winding temperature exceeds 160°C ... (take immediate action to reduce non-essential loads on CT-4)
- (2) **NO** CT-4 transformer cooling is available (no transformer fans operating) ... (limit CT-4 output to < 17.5 MVA)

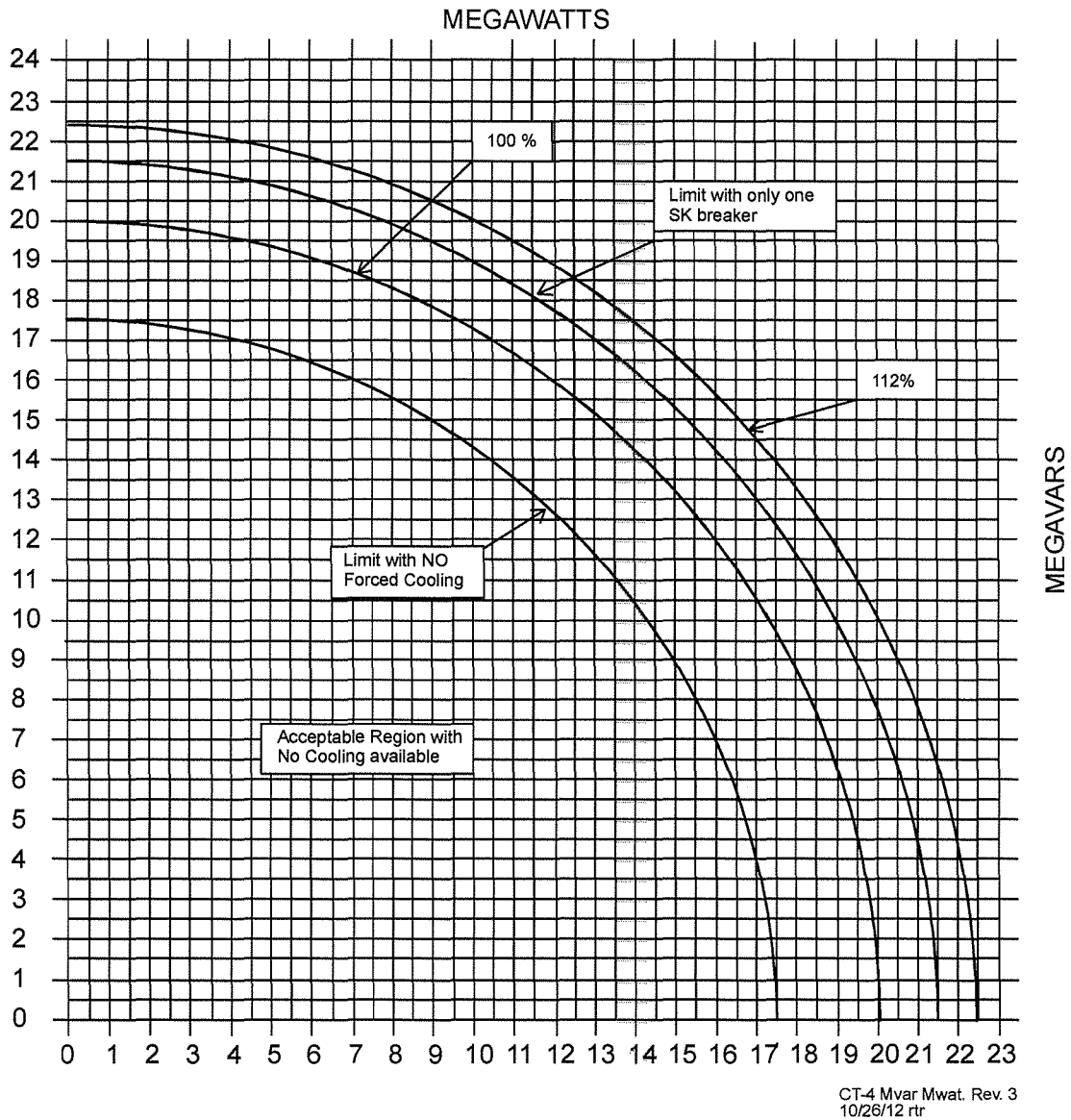
Enclosure 5.1A
CT-4 Overload Limits_{17}

AP/1/A/1700/011
Page 5 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4. <input type="checkbox"/> Maintain CT-4 < 17.5 MVA curve (Limit with no forced cooling) of Figure 1.	

FIGURE 1_{20}

CT-4

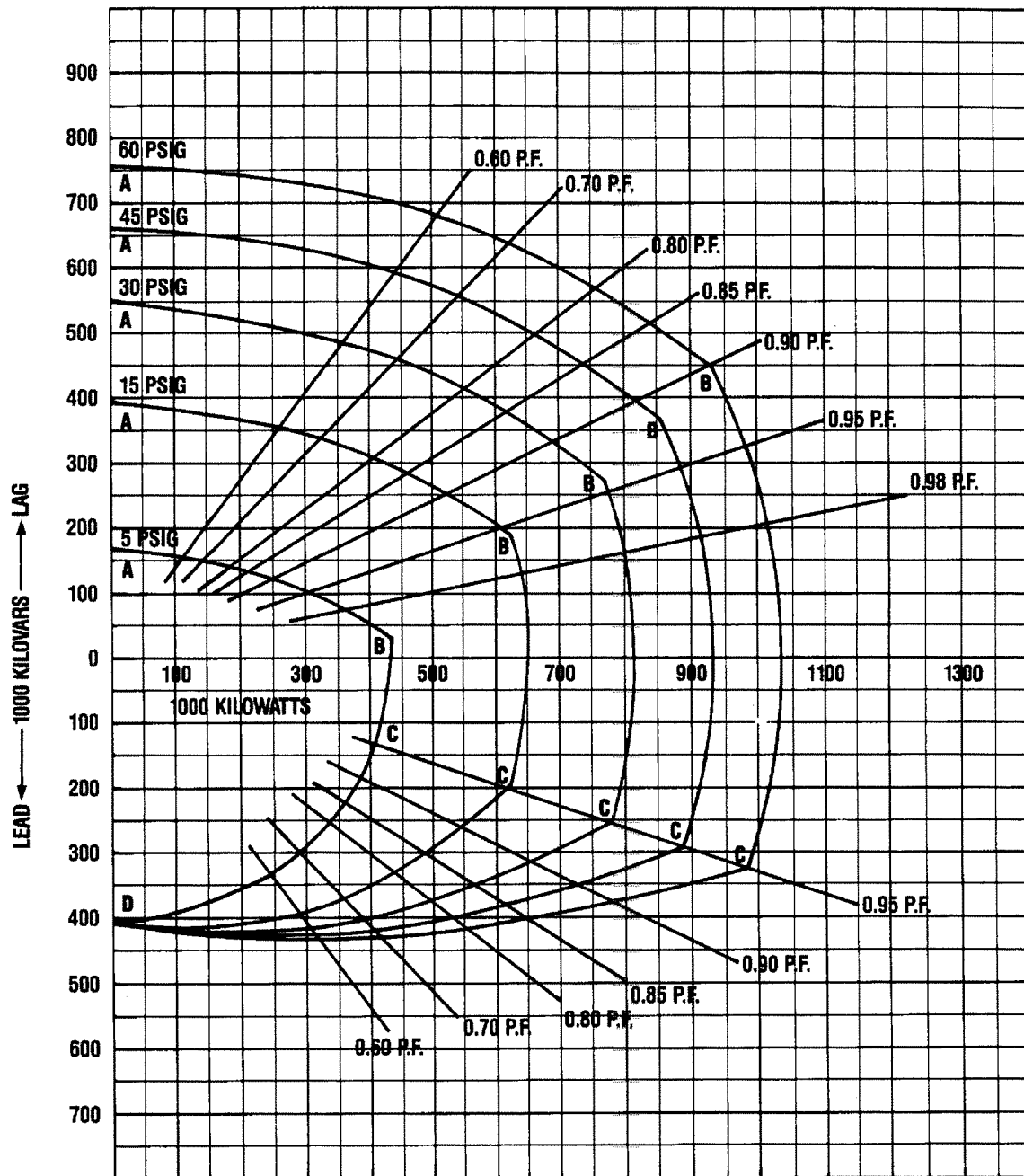


5. ☐ **WHEN** directed by CR SRO,
THEN EXIT this enclosure.

• • • **END** • • •

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Reference Use



CURVE AB LIMITED BY FIELD HEATING
CURVE BC LIMITED BY ARMATURE HEATING
CURVE CD LIMITED BY ARMATURE CORE END HEATING

Revised 3/9/92

3.3 INSTRUMENTATION

3.3.8 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.8 The PAM instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES-----
1. LCO 3.0.4 is not applicable.
 2. Separate Condition entry is allowed for each Function.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Not applicable to Functions 14, 18, 19, and 22. -----</p> <p>One or more Functions with one required channel inoperable.</p>	<p>A.1 Restore required channel to OPERABLE status.</p>	<p>30 days</p>
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Initiate action in accordance with Specification 5.6.6.</p>	<p>Immediately</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Not applicable to Functions 14, 18, 19, and 22. -----</p> <p>One or more Functions with two required channels inoperable.</p>	<p>C.1 Restore one channel to OPERABLE status.</p>	<p>7 days</p>
<p>D. Not Used</p>	<p>D.1 Not Used</p>	<p>Not Used</p>
<p>E. -----NOTE----- Only applicable to Function 14. -----</p> <p>One required channel inoperable.</p>	<p>E.1 Restore required channel to OPERABLE status.</p>	<p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. -----NOTE----- Only applicable to Functions 18, 19, and 22. ----- One or more Functions with required channel inoperable.</p>	<p>F.1 Declare the affected train inoperable.</p>	<p>Immediately</p>
<p>G. Required Action and associated Completion Time of Condition C or E not met.</p>	<p>G.1 Enter the Condition referenced in Table 3.3.8-1 for the channel.</p>	<p>Immediately</p>
<p>H. As required by Required Action G.1 and referenced in Table 3.3.8-1.</p>	<p>H.1 Be in MODE 3. <u>AND</u> H.2 Be in MODE 4.</p>	<p>12 hours 18 hours</p>
<p>I. As required by Required Action G.1 and referenced in Table 3.3.8-1.</p>	<p>I.1 Initiate action in accordance with Specification 5.6.6.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----
These SRs apply to each PAM instrumentation Function in Table 3.3.8-1 except where indicated.

SURVEILLANCE		FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2	<p>-----NOTE----- Only applicable to PAM Functions 7 and 22. -----</p> <p>Perform CHANNEL CALIBRATION.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. Not applicable to PAM Functions 7 and 22. <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	In accordance with the Surveillance Frequency Control Program

Table 3.3.8-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION		REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION G.1
1.	Wide Range Neutron Flux	2	H
2.	RCS Hot Leg Temperature	2	H
3.	RCS Hot Leg Level	2	I
4.	RCS Pressure (Wide Range)	2	H
5.	Reactor Vessel Head Level	2	I
6.	Containment Sump Water Level (Wide Range)	2	H
7.	Containment Pressure (Wide Range)	2	H
8.	Containment Isolation Valve Position	2 per penetration flow path ^{(a)(b)(c)}	H
9.	Containment Area Radiation (High Range)	2	I
10.	Not Used		
11.	Pressurizer Level	2	H
12.	Steam Generator Water Level	2 per SG	H
13.	Steam Generator Pressure	2 per SG	H
14.	Borated Water Storage Tank Water Level	2	H
15.	Upper Surge Tank Level	2	H
16.	Core Exit Temperature	2 independent sets of 5 ^(d)	H
17.	Subcooling Monitor	2	H
18.	HPI System Flow	1 per train	NA
19.	LPI System Flow	1 per train	NA
20.	Not used		
21.	Emergency Feedwater Flow	2 per SG	H
22.	Low Pressure Service Water Flow to LPI Coolers	1 per train	NA

- (a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.
- (b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.
- (c) Position indication requirements apply only to containment isolation valves that are electrically controlled.
- (d) The subcooling margin monitor takes the average of the five highest CETs for each of the ICCM trains.

3.2 POWER DISTRIBUTION LIMITS

3.2.3 QUADRANT POWER TILT (QPT)

LCO 3.2.3 QPT shall be maintained less than or equal to the steady state limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. QPT greater than the steady state limit and less than or equal to the transient limit.	A.1 Reduce THERMAL POWER \geq 2% RTP from the ALLOWABLE THERMAL POWER for each 1% of QPT greater than the steady state limit.	2 hours
	<u>AND</u>	
	A.2 Reduce nuclear overpower trip setpoints, based on flux and flux/flow imbalance, \geq 2% RTP for each 1% of QPT greater than the steady state limit.	10 hours
	<u>AND</u>	
	A.3 Restore QPT to less than or equal to the steady state limit.	24 hours from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. QPT greater than the transient limit and less than or equal to the maximum limit due to misalignment of a CONTROL ROD or an APSR.	B.1 Reduce THERMAL POWER $\geq 2\%$ RTP from ALLOWABLE THERMAL POWER for each 1% of QPT greater than the steady state limit.	30 minutes
	<u>AND</u> B.2 Restore QPT to less than or equal to the transient limit.	2 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Reduce THERMAL POWER to $< 60\%$ of the ALLOWABLE THERMAL POWER.	2 hours
	<u>AND</u> C.2 Reduce nuclear overpower trip setpoints, based on flux and flux/flow imbalance, to $\leq 65.5\%$ of the ALLOWABLE THERMAL POWER.	10 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. QPT greater than the transient limit and less than or equal to the maximum limit due to causes other than the misalignment of either CONTROL ROD or APSR.	D.1 Reduce THERMAL POWER to < 60% of the ALLOWABLE THERMAL POWER.	2 hours
	<u>AND</u> D.2 Reduce nuclear overpower trip setpoints, based on flux and flux/flow imbalance, to $\leq 65.5\%$ of the ALLOWABLE THERMAL POWER.	10 hours
E. Required Action and associated Completion Time for Condition C or D not met.	E.1 Reduce THERMAL POWER to $\leq 20\%$ RTP.	4 hours
F. QPT greater than the maximum limit.	F.1 Reduce THERMAL POWER to $\leq 20\%$ RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify QPT is within limits as specified in the COLR.	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>When QPT has been restored to less than or equal to the steady state limit, 1 hour for 12 consecutive hours, or until verified acceptable at $\geq 95\%$ RTP</p>

Oconee 1 Cycle 28

Steady State Operating Band

EFPD	Rod Index		APSR %WD	
	Min	Max	Min	Max
0 to 641	292 \pm 5	300	30	40
641 to EOC	292 \pm 5	300	100	100

Quadrant Power Tilt Setpoints

Core Power Level, %FP	Steady State		Transient		Maximum 0 - 100
	30 - 100	0 - 30	30 - 100	0 - 30	
Full Incore	3.50	7.61	7.11	9.40	16.55
Out of Core	2.35	6.09	5.63	7.72	14.22
Backup Incore	2.25	3.87	3.63	4.81	10.07

Referred to by TS 3.2.3

Correlation Slope (CS)

1.15

Referred to by TS 3.3.1 (SR 3.3.1.3).

Enclosure 4.1
Fission Product Barrier Matrix

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DETERMINE THE APPROPRIATE CLASSIFICATION USING THE TABLE BELOW:

ADD POINTS TO CLASSIFY.

SEE NOTE BELOW

RCS BARRIERS (BD 5-7)		FUEL CLAD BARRIERS (BD 8-9)			CONTAINMENT BARRIERS (BD 10-13)							
Potential Loss (4 Points)	Loss (5 Points)	Potential Loss (4 Points)	Loss (5 Points)		Potential Loss (1 Point)	Loss (3 Points)						
RCS Leakrate ≥ 160 gpm	RCS Leak rate that results in a loss of subcooling.	Average of the 5 highest CETC ≥ 700° F	Average of the 5 highest CETC ≥ 1200° F		CETC ≥ 1200° F ≥ 15 minutes OR CETC ≥ 700° F ≥ 15 minutes with a <i>valid</i> RVLS reading 0"	Rapid unexplained containment pressure decrease after increase OR containment pressure or sump level not consistent with LOCA						
SGTR ≥ 160 gpm		Valid RVLS reading of 0"	Coolant activity ≥ 300 μCi/ml DEI		RB pressure ≥ 59 psig OR RB pressure ≥ 10 psig and no RBCU or RBS	Failure of secondary side of SG results in a direct opening to the environment with SG Tube Leak ≥ 10 gpm in the <u>SAME</u> SG						
Entry into the PTS (Pressurized Thermal Shock) Operation NOTE: PTS is entered under either of the following: <ul style="list-style-type: none">A cooldown below 400°F @ > 100°F/hr. has occurred.HPI has operated in the injection mode while NO RCPs were operating.	IRIA 57 or 58 reading ≥ 1.0 R/hr 2 RIA 57 reading ≥ 1.6 R/hr 2 RIA 58 reading ≥ 1.0 R/hr 3RIA 57 or 58 reading ≥ 1.0 R/hr	<div>NOTE: RVLS is <u>NOT</u> valid if one or more RCPs are running <u>OR</u> if LPI pump(s) are running <u>AND</u> taking suction from the LPI drop line.</div>	Hours Since SD	RIA 57 OR R/hr	RIA 58 OR R/hr	SG Tube Leak ≥ 10 gpm exists in one SG. <u>AND</u> the other SG has secondary side failure that results in a direct opening to the environment <u>AND</u> is being fed from the affected unit.						
			0 - <0.5	≥ 300	≥ 150		Hours Since SD	RIA 57 OR R/hr	RIA 58 OR R/hr			
			0.5 - < 2.0	≥ 80	≥ 40		0 - <0.5	≥ 1800	≥ 860			
			2.0 - 8.0	≥ 32	≥ 16	0.5 - < 2.0	≥ 400	≥ 195		2.0 - 8.0	≥ 280	≥ 130
HPI Forced Cooling	RCS pressure spike ≥ 2750 psig				Hydrogen concentration ≥ 9%		Containment isolation is incomplete and a release path to the environment exists					
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment		Emergency Coordinator/EOF Director judgment		Emergency Coordinator/EOF Director judgment					
UNUSUAL EVENT (1-3 Total Points)		ALERT (4-6 Total Points)		SITE AREA EMERGENCY (7-10 Total Points)			GENERAL EMERGENCY (11-13 Total Points)					
OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4			OPERATING MODE: 1, 2, 3, 4					
4.1.U.1 Any potential loss of Containment		4.1.A.1 Any potential loss or loss of the RCS		4.1.S.1 Loss of any two barriers			4.1.G.1 Loss of any two barriers and potential loss of the third barrier					
4.1.U.2 Any loss of containment		4.1.A.2 Any potential loss or loss of the Fuel Clad		4.1.S.2 Loss of one barrier and potential loss of either RCS or Fuel Clad Barriers			4.1.G.2 Loss of all three barriers					
				4.1.S.3 Potential loss of both the RCS and Fuel Clad Barriers								

NOTE: An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss threshold is **IMMINENT** (i.e., within 1-3 hours). In this IMMINENT LOSS situation, use judgment and classify as if the thresholds are exceeded.

Enclosure 4.2
System Malfunctions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. RCS LEAKAGE (BD 15)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. Unidentified leakage \geq 10 gpm</p> <p>B. Pressure boundary leakage \geq 10 gpm</p> <p>C. Identified leakage \geq 25 gpm</p> <ul style="list-style-type: none"> Includes SG tube leakage <p>2. UNPLANNED LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM FOR > 15 MINUTES (BD 16)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. <i>Unplanned</i> loss of > 50% of the following annunciators on one unit for > 15 minutes:</p> <p>Units 1 & 3 1 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18 3 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18</p> <p>Unit 2 2 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, & 16</p> <p>AND</p> <p>Loss of annunciators or indicators requires additional personnel (beyond normal shift complement) to safely operate the unit</p> <p style="text-align: center;">(CONTINUED)</p>	<p>1. UNPLANNED LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM (BD 20)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. <i>Unplanned</i> loss of > 50% of the following annunciators on one unit for > 15 minutes:</p> <p>Units 1 & 3 1 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18 3 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18</p> <p>Unit 2 2 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, & 16</p> <p>AND</p> <p>Loss of annunciators or indicators requires additional personnel (beyond normal shift complement) to safely operate the unit</p> <p>AND</p> <p><i>Significant plant transient in progress</i></p> <p>OR</p> <p>Loss of the OAC and ALL PAM indications</p> <p style="text-align: center;">(END)</p>	<p>1. INABILITY TO MONITOR A SIGNIFICANT TRANSIENT IN PROGRESS (BD 22)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. <i>Unplanned</i> loss of > 50% of the following annunciators on one unit for > 15 minutes:</p> <p>Units 1 & 3 1 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18 3 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, & 18</p> <p>Unit 2 2 SA1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, & 16</p> <p>AND</p> <p><i>A significant transient is in progress</i></p> <p>AND</p> <p>Loss of the OAC and ALL PAM indications</p> <p>AND</p> <p><i>Inability to directly monitor any one of the following functions:</i></p> <ol style="list-style-type: none"> Subcriticality Core Cooling Heat Sink RCS Integrity Containment Integrity RCS Inventory <p style="text-align: center;">(END)</p>	

Enclosure 4.2
System Malfunctions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>3. INABILITY TO REACH REQUIRED SHUTDOWN WITHIN LIMITS (BD 17)</p> <hr/> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A. Required operating mode not reached within TS LCO action statement time</p> <p>4. UNPLANNED LOSS OF ALL ONSITE OR OFFSITE COMMUNICATIONS (BD 18)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Loss of all onsite communications capability (Plant phone system, PA system, Pager system, Onsite Radio system) affecting ability to perform Routine operations</p> <p>B. Loss of all onsite communications capability (Selective Signaling, NRC ETS lines, Offsite Radio System, AT&T line) affecting ability to communicate with offsite authorities.</p> <p>5. FUEL CLAD DEGRADATION (BD 19)</p> <hr/> <p><u>OPERATING MODE:</u> All:</p> <p>A. DEI - >5μCi/ml</p> <p style="text-align: center;">(END)</p>			

Enclosure 4.3
Abnormal Rad Levels/Radiological Effluent

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1 ANY UNPLANNED RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS TWO TIMES THE SLC LIMITS FOR 60 MINUTES OR LONGER (BD 25)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> indication on radiation monitor RIA 33 of $\geq 4.06\text{E}+06$ cpm for > 60 minutes (See Note 1)</p> <p>B. <i>Valid</i> indication on radiation monitor RIA-45 of $\geq 9.35\text{E}+05$ cpm or RP sample reading of $\geq 6.62\text{E}-2\mu\text{Ci/ml}$ Xe 133 eq for > 60 minutes (See Note 1)</p> <p>C. Liquid effluent being released exceeds two times SLC 16.11.1 for > 60 minutes as determined by Chemistry Procedure</p> <p>D. Gaseous effluent being released exceeds two times SLC 16.11.2 for > 60 minutes as determined by RP Procedure</p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>NOTE 1: If monitor reading is sustained for the time period indicated in the EAL AND the required assessments (procedure calculations) cannot be completed within this period, declaration must be made on the <i>valid</i> Radiation Monitor reading.</p> </div> <p style="text-align: center;">(CONTINUED)</p>	<p>1. ANY UNPLANNED RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS 200 TIMES RADIOLOGICAL TECHNICAL SPECIFICATIONS FOR 15 MINUTES OR LONGER (BD 30)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> indication of RIA-46 of $\geq 2.09\text{E}+04$ cpm or RP sample reading of $\geq 6.62\text{ uCi/ml}$ Xe 133 eq for > 15 minutes. (See Note 1)</p> <p>B RIA 33 HIGH Alarm</p> <p>AND</p> <p>Liquid effluent being released exceeds 200 times the level of SLC 16.11.1 for > 15 minutes as determined by Chemistry Procedure</p> <p>C. Gaseous effluent being released exceeds 200 times the level of SLC 16.11.2 for >15 minutes as determined by RP Procedure</p> <p style="text-align: center;">(CONTINUED)</p>	<p>1. BOUNDARY DOSE RESULTING FROM ACTUAL/IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 35)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> reading on RIA 46 of $\geq 2.09\text{E}+05$ cpm or RIA 56 reading of $\geq 17.5\text{ R/hr}$ or RP sample reading of $6.62\text{E}+01\text{ uCi/ml}$ Xe 133 eq for > 15 minutes (See Note 2)</p> <p>B. <i>Valid</i> reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 2)</p> <p>C. Dose calculations result in a dose projection at the <i>site boundary</i> of:</p> <p style="padding-left: 40px;">$\geq 100\text{ mRem TEDE}$ or 500 mRem CDE adult thyroid</p> <p>D. Field survey results indicate <i>site boundary</i> dose rates exceeding $\geq 100\text{ mRad/hr}$ expected to continue for more than one hour</p> <p>OR</p> <p>Analyses of field survey samples indicate adult thyroid dose commitment of $\geq 500\text{ mRem CDE}$ ($3.84\text{E}-7\text{ }\mu\text{Ci/ml}$) for one hour of inhalation</p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>NOTE 2: If actual Dose Assessment cannot be completed within 15 minutes, then the <i>valid</i> radiation monitor reading should be used for emergency classification.</p> </div> <p style="text-align: center;">(CONTINUED)</p>	<p>1. BOUNDARY DOSE RESULTING FROM ACTUAL/ IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 39)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> reading on RIA 46 of $\geq 2.09\text{E}+06$ cpm or RIA 56 reading of $\geq 175\text{ R/hr}$ or RP sample reading of $6.62\text{E}+02\mu\text{Ci/ml}$ Xe 133 eq for ≥ 15 minutes (See Note 3)</p> <p>B. <i>Valid</i> reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 3)</p> <p>C. Dose calculations result in a dose projection at the <i>site boundary</i> of:</p> <p style="padding-left: 40px;">$\geq 1000\text{ mRem TEDE}$</p> <p>OR</p> <p style="padding-left: 40px;">$\geq 5000\text{ mRem CDE}$ adult thyroid</p> <p>D. Field survey results indicate <i>site boundary</i> dose rates exceeding $\geq 1000\text{ mRad/hr}$ expected to continue for more than one hour</p> <p>OR</p> <p>Analyses of field survey samples indicate adult thyroid dose commitment of $\geq 5000\text{ mRem CDE}$ for one hour of inhalation</p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p>NOTE 3: If actual Dose Assessment cannot be completed within 15 minutes, then the <i>valid</i> radiation monitor reading should be used for emergency classification.</p> </div> <p style="text-align: center;">(END)</p>

Enclosure 4.3
Abnormal Rad Levels/Radiological Effluent

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>2 UNEXPECTED INCREASE IN PLANT RADIATION OR AIRBORNE CONCENTRATION (BD 27)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage WITH fuel in the core</p> <p>B. <i>Valid</i> indication of <i>uncontrolled</i> water decrease in the SFP or fuel transfer canal with all fuel assemblies remaining covered by water</p> <p>AND</p> <p>Unplanned <i>Valid</i> RIA 3, 6 or Portable Area Monitor readings increase.</p> <p>C. 1 R/hr radiation reading at one foot away from a damaged storage cask located at the ISFSI</p> <p>D. <i>Valid</i> area monitor readings exceeds limits stated in Enclosure 4.9.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.4., (Loss of Shutdown Functions). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center; margin-top: 20px;">(END)</p>	<p>2. RELEASE OF RADIOACTIVE MATERIAL OR INCREASES IN RADIATION LEVELS THAT IMPEDES OPERATION OF SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR TO ESTABLISH OR MAINTAIN COLD SHUTDOWN (BD 32)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> radiation reading ≥ 15 mRad/hr in CR, CAS, or Radwaste CR</p> <p>B. <i>Unplanned/unexpected valid</i> area monitor readings exceed limits stated in Enclosure 4.9</p> <p>3. MAJOR DAMAGE TO IRRADIATED FUEL OR LOSS OF WATER LEVEL THAT HAS OR WILL RESULT IN THE UNCOVERING OF IRRADIATED FUEL OUTSIDE THE REACTOR VESSEL (BD 33)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> RIA 3*, 6, 41, OR 49* HIGH Alarm</p> <p style="text-align: center;">* - Applies to Mode 6 and No Mode Only</p> <p>B. HIGH Alarm for portable area monitors on the main bridge or SFP bridge</p> <p>C. Report of visual observation of irradiated fuel uncovered</p> <p>D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.4., (Loss of Shutdown Functions). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center; margin-top: 10px;">(END)</p>	<p>2. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 38)</p> <hr/> <p>OPERATING MODE: 5, 6</p> <p>A. Loss of all decay heat removal as indicated by the inability to maintain RCS temperature below 200° F</p> <p>AND</p> <p>LT 5 indicates 0 inches after initiation of RCS makeup</p> <p>B. Loss of all decay heat removal as indicated by the inability to maintain RCS temperature below 200° F</p> <p>AND</p> <p>Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.4., (Loss of Shutdown Functions). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center; margin-top: 20px;">(END))</p>	

Enclosure 4.4
Loss of Shutdown Functions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
(CONTINUE TO NEXT PAGE)	<p>1. FAILURE OF RPS TO COMPLETE OR INITIATE A Rx SCRAM (BD 44)</p> <hr/> <p>OPERATING MODE: 1, 2, 3</p> <p>A. <i>Valid</i> reactor trip signal received or required WITHOUT automatic scram</p> <p>AND</p> <p>DSS has inserted Control Rods</p> <p>OR</p> <p>Manual trip from the Control Room is successful and reactor power is less than 5% and decreasing</p>	<p>1. FAILURE OF RPS TO COMPLETE OR INITIATE A Rx SCRAM (BD 50)</p> <hr/> <p>OPERATING MODE: 1, 2</p> <p>A. <i>Valid</i> reactor trip signal received or required WITHOUT automatic scram</p> <p>AND</p> <p>DSS has NOT inserted Control Rods</p> <p>AND</p> <p>Manual trip from the Control Room was NOT successful in reducing reactor power to less than 5% and decreasing</p>	<p>1. FAILURE OF RPS TO COMPLETE</p> <hr/> <p>OPERATING MODE: 1, 2</p> <p>A. <i>Valid</i> Rx trip signal received or required WITHOUT automatic scram</p> <p>AND</p> <p>Manual trip from the Control Room was NOT successful in reducing reactor power to < 5% and decreasing</p> <p>AND</p> <p>Average of the 5 highest CETCs $\geq 1200^{\circ}\text{F}$ on ICCM</p> <p style="text-align: center;">(END)</p>
	<p>2. INABILITY TO MAINTAIN PLANT IN MODE 5 (COLD SHUTDOWN) (BD 46)</p> <hr/> <p>OPERATING MODE: 5, 6</p> <p>A. Loss of LPI and/or LPSW</p> <p>AND</p> <p>Inability to maintain RCS temperature below 200°F as indicated by either of the following:</p> <p>RCS temperature at the LPI Pump Suction</p> <p>OR</p> <p>Average of the 5 highest CETCs as indicated by ICCM display</p> <p>OR</p> <p>Visual observation</p> <p style="text-align: center;">(CONTINUED)</p>	<p>2. COMPLETE LOSS OF FUNCTION NEEDED TO ACHIEVE OR MAINTAIN MODE 4 (HOT SHUTDOWN) (BD 51)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. Average of the 5 highest CETCs $\geq 1200^{\circ}\text{F}$ shown on ICCM</p> <p>B. Unable to maintain reactor subcritical</p> <p>C. EOP directs feeding SG from SSF ASWP or station ASWP</p> <p style="text-align: center;">(CONTINUED)</p>	

Enclosure 4.4
Loss of Shutdown Functions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. UNEXPECTED INCREASE IN PLANT RADIATION OR AIRBORNE CONCENTRATION (BD 42)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage WITH fuel in the core</p> <p>B. <i>Valid</i> indication of <i>uncontrolled</i> water decrease in the SFP or fuel transfer canal with all fuel assemblies remaining covered by water</p> <p>AND</p> <p><i>Unplanned Valid</i> RIA 3, 6 or Portable Area Monitor readings increase.</p> <p>C. 1 R/hr radiation reading at one foot away from a damaged storage cask located at the ISFSI</p> <p>D. <i>Valid</i> area monitor readings exceeds limits stated in Enclosure 4.9.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.3., (Abnormal Rad Levels/Radiological Effluent). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center;">(END)</p>	<p>3. MAJOR DAMAGE TO IRRADIATED FUEL OR LOSS OF WATER LEVEL THAT HAS OR WILL RESULT IN THE UNCOVERING OF IRRADIATED FUEL OUTSIDE THE REACTOR VESSEL (BD 48)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. <i>Valid</i> RIA 3*, 6, 41, OR 49* HIGH Alarm</p> <p>*Applies to Mode 6 and No Mode Only</p> <p>B. HIGH Alarm for portable area monitors on the main bridge or SFP bridge</p> <p>C. Report of visual observation of irradiated fuel uncovered</p> <p>D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.3, (Abnormal Rad Levels/Radiological Effluent). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center;">(END)</p>	<p>3. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 52)</p> <hr/> <p>OPERATING MODE: 5, 6</p> <p>A. Loss of all decay heat removal as indicated by the inability to maintain RCS temperature below 200° F</p> <p>AND</p> <p>LT-5 indicates 0 inches after initiation of RCS Makeup</p> <p>B. Loss of all decay heat removal as indicated by the inability to maintain RCS temperature below 200° F</p> <p>AND</p> <p>Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This Initiating Condition is also located in Enclosure 4.3, (Abnormal Rad Levels/Radiological Effluent). High radiation levels will also be seen with this condition.</p> </div> <p style="text-align: center;">(END)</p>	

Enclosure 4.5
Loss of Power {4}

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. LOSS OF ALL OFFSITE POWER TO ESSENTIAL BUSES FOR GREATER THAN 15 MINUTES (BD 55)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Unit auxiliaries are being supplied from Keowee or CT5</p> <p>AND</p> <p>Inability to energize <u>either</u> MFB from an offsite source (either switchyard) within 15 minutes.</p>	<p>1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES (BD 57)</p> <hr/> <p>OPERATING MODE: 5, 6 Defueled</p> <p>A. MFB 1 and 2 de-energized</p> <p>AND</p> <p>Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power</p>	<p>1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES (BD 59)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. MFB 1 and 2 de-energized</p> <p>AND</p> <p>Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power</p>	<p>1. PROLONGED LOSS OF ALL OFFSITE POWER AND ONSITE AC POWER (BD 62)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. MFB 1 and 2 de-energized</p> <p>AND</p> <p>SSF fails to maintain Mode 3 (Hot Standby) {1}</p> <p>AND</p> <p>At least one of the following conditions exist:</p> <p>Restoration of power to at least one MFB within 4 hours is NOT likely</p> <p>OR</p> <p>Indications of continuing degradation of core cooling based on Fission Product Barrier monitoring</p> <p style="text-align: center;">(END)</p>
<p>2. UNPLANNED LOSS OF REQUIRED DC POWER FOR GREATER THAN 15 MINUTES (BD 56)</p> <hr/> <p>OPERATING MODE: 5, 6</p> <p>A. <i>Unplanned</i> loss of vital DC power to required DC busses as indicated by bus voltage less than 110 VDC</p> <p>AND</p> <p>Failure to restore power to at least one required DC bus within 15 minutes from the time of loss</p> <p style="text-align: center;">(END)</p>	<p>2. AC POWER CAPABILITY TO ESSENTIAL BUSES REDUCED TO A SINGLE SOURCE FOR GREATER THAN 15 MINUTES (BD 58)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. AC power capability has been degraded to a single power source for > 15 minutes due to the loss of all but one of the following:</p> <p>Unit Normal Transformer (backcharged) Unit SU Transformer Another Unit SU Transformer (aligned) CT4 CT5</p> <p style="text-align: center;">(END)</p>	<p>2. LOSS OF ALL VITAL DC POWER (BD 60)</p> <hr/> <p>OPERATING MODE: 1, 2, 3, 4</p> <p>A. <i>Unplanned</i> loss of <i>vital</i> DC power to required DC busses as indicated by bus voltage less than 110 VDC</p> <p>AND</p> <p>Failure to restore power to at least one required DC bus within 15 minutes from the time of loss</p> <p style="text-align: center;">(END)</p>	
<p>Loss of Power - Emergency Action Levels (EALs) apply to the ability of electrical energy to perform its intended function, reach its intended equipment. ex. - If both MFBs, are energized but all 4160V switchgear is not available, the electrical energy can not reach the motors intended. The result to the plant is the same as if both MFBs were de-energized. {4}</p>			

Enclosure 4.6
Fire/Explosions and Security Actions {2} {3}

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. FIRES/EXPLOSIONS WITHIN THE PLANT (BD 65)</p> <hr/> <p style="text-align: center;">OPERATING MODE: All</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: Within the plant means:</p> <ul style="list-style-type: none"> Turbine Building Auxiliary Building Reactor Building Keowee Hydro Transformer Yard B3T B4T Service Air Diesel Compressors Keowee Hydro & associated Transformers SSF </div> <p>A. Fire within the plant not extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm</p> <p>B. Unanticipated <i>explosion</i> within the plant resulting in <i>visible damage</i> to permanent structures/equipment</p> <ul style="list-style-type: none"> • includes steam line break and FDW line break <p style="text-align: center;">(Continued)</p>	<p>1. FIRE/EXPLOSION AFFECTING OPERABILITY OF PLANT SAFETY SYSTEMS REQUIRED TO ESTABLISH/MAINTAIN SAFE SHUTDOWN (BD 70)</p> <hr/> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: Only one train of a system needs to be affected or damaged in order to satisfy this condition.</p> </div> <p>A. <i>Fire/explosions</i></p> <p>AND</p> <p>Affected safety-related system parameter indications show degraded performance</p> <p style="text-align: center;">OR</p> <p>Plant personnel report <i>visible damage</i> to permanent structures or equipment required for safe shutdown</p> <p style="text-align: center;">(Continued)</p>	<p>(CONTINUE TO NEXT PAGE)</p>	<p>(CONTINUE TO NEXT PAGE)</p>

Enclosure 4.6
Fire/Explosions and Security Actions

{2} {3}

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>2. CONFIRMED SECURITY CONDITION OR THREAT WHICH INDICATES A POTENTIAL DEGRADATION IN THE LEVEL OF SAFETY OF THE PLANT (BD 67)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Security condition that does not involve a HOSTILE ACTION as reported by the Security Shift Supervision.</p> <p>B. A <i>credible</i> site-specific security threat notification</p> <p>C. A validated notification from NRC providing information of an aircraft threat</p> <p>3. OTHER CONDITIONS EXIST WHICH IN THE JUDGEMENT OF THE EMERGENCY DIRECTOR WARRANT DECLARATION OF A NOUE. (BD 69)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.</p> <p style="text-align: center;">(END)</p>	<p>2 HOSTILE ACTION WITHIN THE OWNER CONTROLLED AREA OR AIRBORNE ATTACK THREAT. (BD 72)</p> <hr/> <p>A. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervision.</p> <p>B. A validated notification from NRC of an AIRLINER attack threat within 30 minutes of the site.</p> <p>3. OTHER CONDITIONS EXIST WHICH IN THE JUDGEMENT OF THE EMERGENCY DIRECTOR WARRANT DECLARATION OF AN ALERT (BD 75)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.</p> <p style="text-align: center;">(END)</p>	<p>1. HOSTILE ACTION within the PROTECTED AREA (BD 76)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervision.</p> <p>2. OTHER CONDITIONS EXIST WHICH IN THE JUDGEMENT OF THE EMERGENCY DIRECTOR WARRANT DECLARATION OF A SITE AREA EMERGENCY. (BD 78)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.</p> <p style="text-align: center;">(END)</p>	<p>1. A HOSTILE ACTION RESULTING IN LOSS OF PHYSICAL CONTROL OF THE FACILITY (BD 79)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions</p> <p>B. A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.</p> <p>2. OTHER CONDITIONS EXIST WHICH IN THE JUDGMENT OF THE EMERGENCY DIRECTOR WARRANT DECLARATION OF A GENERAL EMERGENCY. (BD 81)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.</p> <p style="text-align: center;">(END)</p>

Enclosure 4.7
Natural Disasters, Hazards and Other Conditions Affecting Plant Safety

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>I. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE PROTECTED AREA (BD 83)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Tremor felt and <i>valid</i> alarm on the strong motion accelerograph</p> <p>B. Tornado striking within <i>Protected Area</i> Boundary</p> <p>C. Vehicle crash into plant structures/systems within the <i>Protected Area</i> Boundary</p> <p>D. Turbine failure resulting in casing penetration or damage to turbine or generator seals</p> <p style="text-align: center;">(CONTINUED)</p>	<p>I. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE PLANT VITAL AREA (BD 89)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Tremor felt and seismic trigger actuates (0.05g)</p> <hr/> <p><u>NOTE:</u> Only one train of a safety-related system needs to be affected or damaged in order to satisfy these conditions.</p> <hr/> <p>B. Tornado, high winds, missiles resulting from turbine failure, vehicle crashes, or other catastrophic event.</p> <p><u>AND</u></p> <p><i>Visible damage</i> to permanent structures or equipment required for safe shutdown of the unit.</p> <p><u>OR</u></p> <p>Affected safety system parameter indications show degraded performance.</p> <p style="text-align: center;">(CONTINUED)</p>	(CONTINUE TO NEXT PAGE)	(CONTINUE TO NEXT PAGE)

Enclosure 4.7
Natural Disasters, Hazards and Other Conditions Affecting Plant Safety

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>2. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING KEOWEE HYDRO CONDITION B (BD 85)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Reservoir elevation ≥ 805.0 feet with all spillway gates open and the lake elevation continues to rise</p> <p>B. Seepage readings increase or decrease greatly or seepage water is carrying a significant amount of soil particles</p> <p>C. New area of seepage or wetness, with large amounts of seepage water observed on dam, dam toe, or the abutments</p> <p>D. Slide or other movement of the dam or abutments which could develop into a failure</p> <p>E. Developing failure involving the powerhouse or appurtenant structures and the operator believes the safety of the structure is questionable</p> <p>3. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING JOCASSEE HYDRO CONDITION B (BD 86)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Condition B has been declared for the Jocassee Dam</p> <p style="text-align: center;">(CONTINUED)</p>	<p>2. RELEASE OF TOXIC/FLAMMABLE GASES JEOPARDIZING SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR ESTABLISH/ MAINTAIN MODE 5 (COLD SHUTDOWN) (BD 91)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Report/detection of <i>toxic</i> gases in concentrations that will be life-threatening to plant personnel</p> <p>B. Report/detection of flammable gases in concentrations that will affect the safe operation of the plant:</p> <ul style="list-style-type: none"> • Reactor Building • Auxiliary Building • Turbine Building • Control Room <p>3. TURBINE BUILDING FLOOD (BD 93)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Turbine Building flood requiring use of AP/1,2,3/A/1700/10, (Turbine Building Flood)</p> <p>4. CONTROL ROOM EVACUATION HAS BEEN INITIATED (BD 94)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Evacuation of Control Room</p> <p>AND ONE OF THE FOLLOWING:</p> <p>AND</p> <p>Plant control IS established from the Aux shutdown Panel or the SSF</p> <p style="text-align: center;">OR</p> <p>Plant control IS BEING established from the Aux Shutdown Panel or SSF</p> <p style="text-align: center;">(CONTINUED)</p>	<p>1. CONTROL ROOM EVACUATION AND PLANT CONTROL CANNOT BE ESTABLISHED (BD 96)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Control Room evacuation has been initiated</p> <p>AND</p> <p>Control of the plant cannot be established from the Aux Shutdown Panel or the SSF within 15 minutes</p> <p>2. KEOWEE HYDRO DAM FAILURE (BD 97)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Imminent/actual dam failure exists involving any of the following:</p> <ul style="list-style-type: none"> • Keowee Hydro Dam • Little River Dam • Dikes A, B, C, or D • Intake Canal Dike • Jocassee Dam - Condition A <p style="text-align: center;">(CONTINUED)</p>	<p>(CONTINUE TO NEXT PAGE)</p>

Enclosure 4.7
Natural Disasters, Hazards and Other Conditions Affecting Plant Safety

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>4 RELEASE OF TOXIC OR FLAMMABLE GASES DEEMED DETRIMENTAL TO SAFE OPERATION OF THE PLANT (BD 87)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Report/detection of toxic or flammable gases that could enter within the site area boundary in amounts that can affect normal operation of the plant</p> <p>B. Report by local, county, state officials for potential evacuation of site personnel based on offsite event</p>	<p>5. OTHER CONDITIONS WARRANT CLASSIFICATION OF AN <i>ALERT</i> (BD 95)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Emergency Coordinator judgment indicates that:</p> <p style="padding-left: 40px;">Plant safety may be degraded</p> <p>AND</p> <p style="padding-left: 40px;">Increased monitoring of plant functions is warranted</p> <p style="text-align: center;">(END)</p>	<p>3. OTHER CONDITIONS WARRANT DECLARATION OF SITE AREA EMERGENCY (BD 98)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Emergency Coordinator/EOF Director judgment</p> <p style="text-align: center;">(END)</p>	<p>1. OTHER CONDITIONS WARRANT DECLARATION OF GENERAL EMERGENCY (BD 99)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Emergency Coordinator/EOF Director judgment indicates:</p> <p style="padding-left: 40px;">Actual/imminent substantial core degradation with potential for loss of containment</p> <p>OR</p> <p>Potential for <i>uncontrolled</i> radionuclide releases that would result in a dose projection at the site boundary greater than 1000 mRem TEDE or 5000 mRem CDE Adult Thyroid</p> <p style="text-align: center;">(END)</p>
<p>5. OTHER CONDITIONS EXIST WHICH WARRANT DECLARATION OF AN <i>UNUSUAL EVENT</i> (BD 88)</p> <hr/> <p>OPERATING MODE: All</p> <p>A. Emergency Coordinator determines potential degradation of level of safety has occurred</p> <p style="text-align: center;">(END)</p>			

Enclosure 4.8
Radiation Monitor Readings for Emergency Classification

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All RIA values are considered GREATER THAN or EQUAL TO

HOURS SINCE REACTOR TRIPPED	RIA 57 R/hr		RIA 58 R/hr*	
	Site Area Emergency	General Emergency	Site Area Emergency	General Emergency
0.0 - < 0.5	5.9E+003	5.9E+004	2.6E+003	2.6E+004
0.5 - < 1.0	2.6E+003	2.6E+004	1.1E+003	1.1E+004
1.0 - < 1.5	1.9E+003	1.9E+004	8.6E+002	8.6E+003
1.5 - < 2.0	1.9E+003	1.9E+004	8.5E+002	8.5E+003
2.0 - < 2.5	1.4E+003	1.4E+004	6.3E+002	6.3E+003
2.5 - < 3.0	1.2E+003	1.2E+004	5.7E+002	5.7E+003
3.0 - < 3.5	1.1E+003	1.1E+004	5.2E+002	5.2E+003
3.5 - < 4.0	1.0E+003	1.0E+004	4.8E+002	4.8E+003
4.0 - < 8.0	1.0E+003	1.0E+004	4.4E+002	4.4E+003

* RIA 58 is partially shielded

Enclosure 4.9
Unexpected/Unplanned Increase In Area Monitor Readings

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NOTE: This Initiating Condition is not intended to apply to anticipated temporary increases due to planned events (e.g.; incore detector movement, radwaste container movement, depleted resin transfers, etc.).

MONITOR NUMBER	UNITS 1, 2, 3	
	<i>UNUSUAL EVENT 1000x</i> NORMAL LEVELS mRAD/HR	<i>ALERT</i> mRAD/HR
RIA 7, Hot Machine Shop Elevation 796	150	≥ 5000
RIA 8, Hot Chemistry Lab Elevation 796	4200	≥ 5000
RIA 10, Primary Sample Hood Elevation 796	830	≥ 5000
RIA 11, Change Room Elevation 796	210	≥ 5000
RIA 12, Chem Mix Tank Elevation 783	800	≥ 5000
RIA 13, Waste Disposal Sink Elevation 771	650	≥ 5000
RIA 15, HPI Room Elevation 758	NOTE*	≥ 5000

NOTE: RIA 15 normal readings are approximately 9 mRad/hr on a daily basis. Applying 1000x normal readings would put this monitor greater than 5000 mRad/hr just for an *Unusual Event*. For this reason, an *Unusual Event* will **NOT** be declared for a reading less than 5000 mRad/hr.

Examination KEY for: ILT45 ONS SRO NRC Examin

<i>Question Number</i>	<i>Answer</i>
1	B
2	A
3	B
4	D
5	D
6	B
7	D
8	C
9	B
10	C
11	B
12	D
13	C
14	B
15	D
16	B
17	B
18	A
19	C
20	C
21	B
22	C
23	D
24	B
25	C

Examination KEY for: ILT45 ONS SRO NRC Examin

<i>Question Number</i>	<i>Answer</i>
26	D
27	B
28	A
29	D
30	B
31	A
32	B
33	D
34	B
35	A
36	A
37	B
38	D
39	D
40	C
41	C
42	C
43	B
44	D
45	D
46	A
47	C
48	B
49	D
50	B

Examination KEY for: ILT45 ONS SRO NRC Examin

<i>Question Number</i>	<i>Answer</i>
51	A
52	A
53	D
54	D
55	B
56	A
57	D
58	A
59	A
60	D
61	D
62	D
63	A
64	D
65	A
66	B
67	C
68	C
69	C
70	A
71	B
72	B
73	D
74	C
75	A

Examination KEY for: ILT45 ONS SRO NRC Examin

<i>Question Number</i>	<i>Answer</i>
76	D
77	A
78	D
79	B
80	D
81	D
82	D
83	B
84	B
85	C
86	D
87	A
88	C
89	D
90	C
91	D
92	C
93	C
94	B
95	B
96	D
97	B
98	D
99	B
100	D

ILT45 ONS SRO NRC Examination QUESTION 1

1

APE008 AK2.03 - Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: (CFR 41.7 / 45.7)

Controllers and positioners

Given the following Unit 1 conditions:

- Reactor power = 100% stable

- 1) 1RC-66 (PORV) will OPEN if the 1RC-66 pilot valve solenoid is inadvertently (1).
 - 2) If 1RC-66 fails OPEN and NO operator action is taken, the reactor will trip on (2) RCS pressure
 - A.
 1. energized
 2. Low
 - B.
 1. energized
 2. Variable Low
 - C.
 1. de-energized
 2. Low
 - D.
 1. de-energized
 2. Variable Low
-

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B

General Discussion

--

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because RCS pressure will decrease during this event to the point that the reactor will trip.

Answer B Discussion

Correct: The solenoid is energized to open 1RC-66.. From 100% power, this is essentially a SBLOCA and will cause RCS pressure to decrease with little/no temperature decrease. This will cause the reactor to trip on "Variable Low Pressure".

Answer C Discussion

Incorrect. First part is plausible because some solenoids in the plant de-energize to cause the intended action. Ie MS-93 (Steam admission valve for the TD EFDW pump).. Second part is plausible because RCS pressure will decrease during this event to the point that the reactor will trip.

Answer D Discussion

Incorrect. First part is plausible because some solenoids in the plant de-energize to cause the intended action. Ie MS-93 (Steam admission valve for the TD EFDW pump).. Second part is correct.

Basis for meeting the K

Requires knowledge how the 1RC-66 controller relates to a vapor space accident.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

PNS-PZR Obj 14 and 15
CF-EF

Student References Provided

--

APE008 AK2.03 - Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: (CFR 41.7 / 45.7)

Controllers and positioners

401-9 Comments:

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Remarks/Status

--

ILT45 ONS SRO NRC Examination QUESTION 2

2

EPE009 EA1.18 - Small Break LOCA

Ability to operate and monitor the following as they apply to a small break LOCA: (CFR 41.7 / 45.5 / 45.6)

Balancing of HPI loop flows

Given the following Unit 1 conditions:

Time = 1700

- Reactor power = 100%

Time = 1701

- Reactor tripped due to a SBLOCA

Time = 1706

- RCS pressure = 425 psig slowly decreasing
- All SCMs = 0°F and stable
- HPI header A flow = 478 gpm and stable
- 1A and 1B HPI pumps operating
- 1C HPI pump breaker failed open

Which ONE of the following describes what valve must be opened and what flow limit is in effect in accordance with Rule 2 (Loss of SCM)?

- A. Open 1HP-409 and ensure total HPI flow is ≤ 950 gpm
 - B. Open 1HP-409 and ensure total HPI flow is ≤ 750 gpm
 - C. Open 1HP-410 and ensure total HPI flow is ≤ 950 gpm
 - D. Open 1HP-410 and ensure total HPI flow is ≤ 750 gpm
-

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ILT45 ONS SRO NRC Examination QUESTION 2 2

A

General Discussion

Answer A Discussion

Correct, Rule 2 provides guidance if no flow in the "B" HPI header to open 1HP-409. In addition, if 1A & 1B HPI pumps operating with 1HP-409 open, do not exceed 950 gpm total.

Answer B Discussion

Incorrect, first part is correct. Second part is incorrect. Plausible because this is the limit on HPI flow if ONLY one LPI to HPI flow path exists while in piggy back operation.

Answer C Discussion

Incorrect, first part is incorrect. Plausible because the higher number valve would normally go to the "B" header. Second part is correct.

Answer D Discussion

Incorrect, first part is incorrect. Plausible because the higher number valve would normally go to the "B" header. Second part is incorrect. Plausible because this is the limit on HPI flow if ONLY one LPI to HPI flow path exists while in piggy back operation.

Basis for meeting the K

Question requires evaluating the plant following a SBLOCA and determining how HPI header flow must be controlled. At ONS HPI injection flow is not "balanced" but is limited under certain conditions.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2007 RO Retest Q3

Development References

EOP Rule 2 (Loss of SCM)
EAP-LOSCM Obj. 18

Student References Provided

EPE009 EA1.18 - Small Break LOCA

Ability to operate and monitor the following as they apply to a small break LOCA: (CFR 41.7 / 45.5 / 45.6)

Balancing of HPI loop flows

401-9 Comments:

Remarks/Status

EPE011 2.4.50 - Large Break LOCA

EPE011 GENERIC

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

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- 1SA-02/D-4 (RC PRESS EMERG LOW) actuated
- RCS pressure = 520 psig decreasing
- ONLY ES Channels 1 and 2 actuated

- 1) The HIGHER pressure that will result in a RCS Low Pressure reactor trip is (1).
- 2) In accordance with EOP Enclosure 5.1 (ES Actuation) (2).

Which ONE of the following completes the statements above?

- A.
 1. 1810 psig
 2. Diverse LPI must be placed in override
 - B.
 1. 1810 psig
 2. ES Channels 3 and 4 trip push buttons must be depressed
 - C.
 1. 1850 psig
 2. Diverse LPI must be placed in override
 - D.
 1. 1850 psig
 2. ES Channels 3 and 4 trip push buttons must be depressed
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because Diverse LPI will be placed in Bypass.

Answer B Discussion

Correct. The reactor will trip on low RCS pressure at 1810 psig. ES Channels 3 and 4 should have actuated at 550 psig and Enclosure 5.1 will required tripping channels 3 and 4.

Answer C Discussion

Incorrect. First part is plausible because it is the setpoint for the RC EMERG LOW Statalarm. Second part is plausible because Diverse LPI will be placed in Bypass.

Answer D Discussion

Incorrect. First part is plausible because it is the setpoint for the RC EMERG LOW Statalarm. Second part is correct.

Basis for meeting the K

Question requires knowledge of system setpoints and operation of controls of systems identified in the alarm response manual.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EOP Encl. 5.1
ISA-01
ISA-02
IC-ES

EPE011 2.4.50 - Large Break LOCA
EPE011 GENERIC

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

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 4

4

APE015/017 AK2.08 - Reactor Coolant Pump (RCP) Malfunctions

Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7)

CCWS

Given the following Unit 2 conditions:

- Reactor power = 100%
- 2HP-31 (RCP Seal Flow Control) failed CLOSED
- ALL individual RCP seal return valves CLOSED
- 2CC-8 (CC Return Block) failed CLOSED

1) 2HP-21 will (1).2) In accordance with 2AP/14 (Loss of HPI Normal Makeup and/or Seal Injection), the operator will be directed to (2).

Which ONE of the following completes the statements above?

- A.
 - 1. remain OPEN
 - 2. re-establish RCP seal injection flow by directing that 2HP-140 (RCP Seal Control Bypass) be opened
 - B.
 - 1. automatically CLOSE
 - 2. re-establish RCP seal injection flow by directing that 2HP-140 (RCP Seal Control Bypass) be opened
 - C.
 - 1. remain OPEN
 - 2. trip the reactor, and then secure ALL RCP's immediately
 - D.
 - 1. automatically CLOSE
 - 2. trip the reactor, and then secure ALL RCP's immediately
-

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ILT45 ONS SRO NRC Examination QUESTION 4 4

D

General Discussion

Answer A Discussion

Incorrect: First part is plausible since HP-21 does not automatically close on Unit 1. Second part is plausible because it is an action directed in AP/14. However because CC flow to the RCPs are also lost this step will not be used.

Answer B Discussion

Incorrect: Plausible since leaving the RCP's running unless Immediate Trip Criteria of AP/16 is exceeded would be correct in the case where either CC or Seal Injection were lost as long as both CC and Seal Injection were not lost simultaneously.

Answer C Discussion

Incorrect: First part is plausible since HP-21 does not automatically close on Unit 1. Second part is correct.

Answer D Discussion

Correct: On Unit 2, the individual seal return valve will close when that pumps seal injection is < 4 gpm and CC flow is < 575 gpm. In this case, 2HP-31 is closed which means all pumps seal injection are < 4 gpm and CC-8 going closed will trip all running CC pumps therefore all individual seal return valves have closed. When all Unit 2 seal return valves close, 2HP-21 will close. One of the IMA's of AP/14 (Loss of HPI Normal Makeup and/or Seal Injection) is to trip the Rx and stop all RCP's if BOTH RCP seal injection and CC are lost

Basis for meeting the K

This question requires knowledge of how a loss of component cooling can result in a loss of RC Flow based on Malfunctions that impact RCP operation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT40 Q3

Development References

EAP-APG AP/14 R9
2AP/14
ONS ILT40 Q3

Student References Provided

APE015/017 AK2.08 - Reactor Coolant Pump (RCP) Malfunctions

Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7)
CCWS

401-9 Comments:

Remarks/Status

APE022 AK1.01 - Loss of Reactor Coolant Makeup

Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: (CFR 41.8 / 41.10 / 45.3)

Consequences of thermal shock to RCP seals

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1HP-31 failed CLOSED
- AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection) initiated

Current conditions:

- 1HP-31 has been repaired
- Seal injection flow is being re-established to the RCP seals

- 1) RCP seal injection flow is re-established slowly to prevent thermal shock and possible damage to the RCP ____ (1) ____.
- 2) In accordance with AP/14, ____ (2) ____ is/are throttled opened to re-establish RCP seal injection flow.

Which ONE of the following completes the statements above?

- A.
 1. thermal barrier
 2. 1HP-31
 - B.
 1. thermal barrier
 2. the individual RCP Seal Injection Throttle valves
 - C.
 1. seals
 2. 1HP-31
 - D.
 1. seals
 2. the individual RCP Seal Injection Throttle valves
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible because the thermal barrier is used to cool the RCS during a loss of seal injection. The candidate could have the misconception that re-establishing flow could damage the thermal barrier. Second part is plausible because 1HP-31 is normally used to control seal injection flow.

Answer B Discussion

Incorrect. First part is plausible because the thermal barrier is used to cool the RCS during a loss of seal injection. The candidate could have the misconception that re-establishing flow could damage the thermal barrier. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because 1HP-31 is normally used to control seal injection flow.

Answer D Discussion

Correct. Per the caution in AP/14 seal injection is re-established slow to prevent thermal shock and possible damage to the RCP seals. The manual seal injection throttle valves are used to establish seal injection flow.

Basis for meeting the K

Question requires knowledge of the operational implications of re-establishing seal injection flow to the RCPs including thermal shock and possible damage.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EAP-AP/14
AP/14

Student References Provided

APE022 AK1.01 - Loss of Reactor Coolant Makeup

Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: (CFR 41.8 / 41.10 / 45.3)

Consequences of thermal shock to RCP seals

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 6

6

APE025 AK2.01 - Loss of Residual Heat Removal System (RHRS)

Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: (CFR 41.7 / 45.7)

RHR heat exchangers

Given the following Unit 1 conditions:

Initial conditions:

- Heatup in progress
- LPI in High Pressure mode

Current conditions:

- 1LP-12 is inadvertently closed and will NOT open
- AP/26 (Loss of Decay Heat Removal) initiated

- 1) AP/26 will direct aligning LPI in the (1) Mode to restore RCS cooling.
- 2) When LPI flow is restored above, flow will be entering the reactor vessel via the (2).

Which ONE of the following completes the statements above?

- A.
 1. Switchover
 2. "A" CFT nozzle ONLY
 - B.
 1. Switchover
 2. "A" and "B" nozzles
 - C.
 1. Series
 2. "A" CFT nozzle ONLY
 - D.
 1. Series
 2. "A" and "B" nozzles
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because LPI flow is going towards the core via only one LPI header. (the "B"). However due to the crossover mod it will enter the core through both CFT nozzles.

Answer B Discussion

Correct. 1LP-12 closing will remove the 1A LPI cooler from service. AP/26 will align LPI in the Switchover Mode which only uses the 1B LPI cooler. Due to the crossover mod flow will enter the core through both CFT nozzles. Although flow is only in the "B" LPI header.

Answer C Discussion

Incorrect. First part is plausible because the candidate could have the misconception that series mode did not use the 1A LPI cooler. Second part is plausible because LPI flow is going towards the core via only one LPI header. (the "B"). However due to the crossover mod it will enter the core through both CFT nozzles.

Answer D Discussion

Incorrect. First part is plausible because the candidate could have the misconception that series mode did not use the 1A LPI cooler. Second part is correct.

Basis for meeting the K

Question requires knowledge of the interrelationship between an LPI cooler and loss of Header.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

TA-DHR R16
AP/26
PNS-LPI Obj. 8

Student References Provided

APE025 AK2.01 - Loss of Residual Heat Removal System (RHRS)

Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: (CFR 41.7 / 45.7)

RHR heat exchangers

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 7

7

APE026 AA1. 07 - Loss of Component Cooling Water (CCW)

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: (CFR 41.7 / 45.5 / 45.6)

Flow rates to the components and systems that are serviced by the CCWS; interactions among the components

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1A and 1B Letdown Coolers in service

Current conditions:

- 1A Letdown Cooler is removed from service by the RO in the control room

- 1) CC flow to the 1B Letdown Cooler will (1) .
- 2) If letdown temperature increases, control rods will (2) as a result of the reactivity change.

Which ONE of the following completes the statements above?

- A. 1. stay the same
 2. insert
- B. 1. stay the same
 2. withdraw
- C. 1. increase
 2. insert
- D. 1. increase
 2. withdraw
-

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ILT45 ONS SRO NRC Examination QUESTION 7 7

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible if the candidate has the misconception that only HPI is isolated to the letdown cooler when it is removed from service. Second part is plausible if the candidate has the misconception that the Demin removes Boron as temperature increases which would cause control rods to insert.

Answer B Discussion

Incorrect. First part is plausible if the candidate has the misconception that only HPI is isolated to the letdown cooler when it is removed from service. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible if the candidate has the misconception that the Demin removes Boron as temperature increases which would cause control rods to insert.

Answer D Discussion

Correct. Because HPI and CC are isolated when a letdown cooler is removed from service, the CC flow to the in service cooler will increase. CC is closed loop system. Increasing Letdown temperature will cause the demin to release Boron to the RCS causing a negative reactivity addition and control rods withdrawing.

Basis for meeting the K

CC flow is lost to one CC cooler. Question requires knowledge of how flow rates to components that are serviced by CC are affected and the interactions among components when controls are operated by the operator. KA match was discussed with the chief examiner.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

PNS-CC Obj. 5

Student References Provided

APE026 AA1. 07 - Loss of Component Cooling Water (CCW)

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: (CFR 41.7 / 45.5 / 45.6)

Flow rates to the components and systems that are serviced by the CCWS; interactions among the components

401-9 Comments:

Remarks/Status

APE027 AA2.05 - Pressurizer Pressure Control System (PZR PCS) Malfunction

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: (CFR: 43.5 / 45.13)

PZR heater setpoints

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0401
- A transient occurs
- RCS pressure decreased to 2141 psig
- RCS pressure = 2142 psig slowly increasing

Which ONE of the following lists ALL of the PZR heater banks that are energized at 0401?

- A. Bank 1 ONLY
 - B. Banks 1 and 2 ONLY
 - C. Banks 1 and 3 ONLY
 - D. Banks 1, 2, 3 and 4
-

General Discussion

--

Answer A Discussion

Incorrect. Plausible because it would be correct if RCS had stayed above 2145 psig.

Answer B Discussion

Incorrect. Plausible because it is a common misconception that Bank 2 would energize before bank 3.

Answer C Discussion

Correct. Bank 1 is normally energized to maintain RCS pressure at 2155 psig. Bank 3 will energize at 2145 psig decreasing and remain on until pressure reaches 2175.
--

Answer D Discussion

Incorrect. Plausible because it would be correct if RCS pressure decreased to 2130 psig.
--

Basis for meeting the K

Question requires knowledge of PZR heater setpoints.
--

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

PNS-PZR Obj 7

Student References Provided

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APE027 AA2.05 - Pressurizer Pressure Control System (PZR PCS) Malfunction

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: (CFR: 43.5 / 45.13)

PZR heater setpoints

401-9 Comments:

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Remarks/Status

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EPE029 2.4.14 - Anticipated Transient Without Scram (ATWS)

EPE029 GENERIC

Knowledge of general guidelines for EOP usage. (CFR: 41.10 / 45.13)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0405
- 1TA lockout occurs
- Reactor power = 90% decreasing
- ONLY one RO is currently in the Unit 1 horseshoe area

1. At 0405, the RO will be directed to perform (1).
2. When initiated, Rule 1 (2) direct tripping the Main Turbine.

Which ONE of the following completes the statements above?

- A.
 1. Immediate Manual Actions
 2. will
- B.
 1. Immediate Manual Actions
 2. will NOT
- C.
 1. Rule 1
 2. will
- D.
 1. Rule 1
 2. will NOT

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9

B

General Discussion

--

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since the Main Turbine is directed to be tripped by Rule 1 if Main Feedwater is not feeding the SG's.

Answer B Discussion

Correct. IAW OMP 1-18, Immediate Manual Actions take priority over all other actions. IAW Rule 1, if Main Feedwater is feeding the SG's the Main turbine is NOT tripped.

Answer C Discussion

Incorrect. First part is plausible since it is Rule 1 and other than IMA's is the highest priority actions. Second part is plausible since the Main Turbine is directed to be tripped by Rule 1 if Main Feedwater is not feeding the SG's.

Answer D Discussion

Incorrect. First part is plausible since it is Rule 1 and other than IMA's is the highest priority actions. Second part is correct.

Basis for meeting the K

A general guideline applicable at all times IAW OMP 1-18 is that Immediate Manual Actions always takes priority over any other actions. Knowledge of this requirement meets the KA.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Admin OMP obj R10, EAP-UNPP R5
Rule 1
OMP 1-18

EPE029 2.4.14 - Anticipated Transient Without Scram (ATWS)
EPE029 GENERIC
Knowledge of general guidelines for EOP usage. (CFR: 41.10 / 45.13)

Student References Provided

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401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 10

10

EPE038 EA2.03 - Steam Generator Tube Rupture (SGTR)

Ability to determine or interpret the following as they apply to a SGTR : (CFR 43.5 / 45.13)

Which S/G is ruptured

Given the following Unit 1 conditions:

Time = 0400

- Reactor power = 100%
- TDEFDW pump is OOS

Time = 0401

- Both Main FDW pumps trip
- Loss of 1A to 1FDW-316 occurs

Time = 0410

- 1A SG level = 27 inches XSUR increasing
- 1B SG level = 36 inches XSUR increasing

- 1) At 0410, (1) SG has indications of a tube leak.
- 2) At 0410 and in accordance with Rule 7 the MAXIMUM EFDW flow allowed to each SG is (2) gpm.

Which ONE of the following completes the statements above?

- A. 1. 1A
2. 600
 - B. 1. 1A
2. 1000
 - C. 1. 1B
2. 600
 - D. 1. 1B
2. 1000
-

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ILT45 ONS SRO NRC Examination QUESTION 10

10

C

General Discussion

Answer A Discussion

Incorrect. First part is plausible because the 1A SG level is increasing above the Main FDW setpoint of 25 inches. The candidate could have the misconception that the 1B SG level increase is due to the failure of IA to 1FDW-316. However, 1FW-316 is backed up by Nitrogen. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because the 1A SG level is increasing above the Main FDW setpoint of 25 inches. The candidate could have the misconception that the 1B SG level increase is due to the failure of IA to 1FDW-316. However, 1FW-316 is backed up by Nitrogen. Second part is plausible because it would be correct if the TDEFDW pump were operating.

Answer C Discussion

Correct. The SG levels should be controlling at 30 inches XSUR. 1B SG level is increasing this is caused by the tube leakage. Although IA is lost to 1FDW-316, this will not cause level to increase above setpoint because the valve is backed up by Nitrogen.

The EFDW flow limit is 600 gpm per header. This is the limit for a MDEFDW pump.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible because it would be correct if the TDEFDW pump were operating.

Basis for meeting the K

Question requires evaluation of control indications to determine which SG has a tube leak.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT42 Q10

Development References

EAP-SGTR R2
EOP Rule 7

Student References Provided

EPE038 EA2.03 - Steam Generator Tube Rupture (SGTR)

Ability to determine or interpret the following as they apply to a SGTR : (CFR 43.5 / 45.13)

Which S/G is ruptured

401-9 Comments:

Remarks/Status

APE054 AA1.04 - Loss of Main Feedwater (MFW)

Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW):(CFR 41.7 / 45.5 / 45.6)

HPI, under total feedwater loss conditions

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Total loss of Main and Emergency Feedwater
- Rule 4 (Initiation of HPI Forced Cooling) initiated

When Rule 4 is complete, ___(1)___ RCP(s) and ___(2)___ HPIP(s) will be operating.

Which ONE of the following completes the statement above?

- A. 1. ONLY one
 2. ONLY two
 - B. 1. ONLY one
 2. three
 - C. 1. two
 2. ONLY two
 - D. 1. two
 2. three
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because two HPI pumps are operating at the conclusion of Rule 1 (ATWS).

Answer B Discussion

Correct. Rule 4 directs stopping all but 1 RCP and starting all available HPIPs (3 in this case).

Answer C Discussion

Incorrect. First part is plausible because while in LOHT tab waiting to run Rule 4, the EOP directs tripping 1 RCP in each loop. This leaves two operating RCPs. Second part is plausible because two HPI pumps are operating at the conclusion of Rule 1 (ATWS).

Answer D Discussion

Incorrect. First part is plausible because while in LOHT tab waiting to run Rule 4, the EOP directs tripping 1 RCP in each loop. This leaves two operating RCPs. Second part is correct.

Basis for meeting the K

Question requires knowledge of HPI pump operation during a loss of Main FDW.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

EAP-LOHT R28
Rule 1 and 4
LOHT tab

Student References Provided

APE054 AA1.04 - Loss of Main Feedwater (MFW)

Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW):(CFR 41.7 / 45.5 / 45.6)

HPI, under total feedwater loss conditions

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 12

12

EPE055 2.1.23 - Loss of Offsite and Onsite Power (Station Blackout)

EPE055 GENERIC

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

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- A station blackout has occurred

Current conditions:

- Time = 0730
- 1CA bus voltage = 105 VDC

At 0730 and in accordance with the Blackout tab, 1CC-8 (1) required to be failed closed because it fails (2).

Which ONE of the following completes the statement above?

- A. 1. is NOT
2. closed on a loss of IA
 - B. 1. is NOT
2. closed on a loss of DC power
 - C. 1. is
2. open on a loss of IA
 - D. 1. is
2. open on a loss of DC power
-

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ILT45 ONS SRO NRC Examination QUESTION 12

12

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible because it would be correct if less than three hour had elapsed or 1CA bus voltage were greater than 105 vdc. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because it would be correct if less than three hour had elapsed and 1CA bus voltage were greater than 105 vdc. Second part is plausible because 1CC-8 fails closed on a loss of IA.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because it fails open on a loss of DC to the solenoid but closed on loss of IA. The candidate could be confused and get them backwards.

Answer D Discussion

Correct. Per the BO tab if a station blackout has lasted greater than 3 hours or 1CA bus voltage is approximately 105 vdc then 1CC-8 is required to be closed. 1CC-8 fails open on a loss of DC power to the solenoid.

Basis for meeting the K

Question requires knowledge of an action to be taken in the Blackout Tab of the EOP due to low DC voltage during a blackout.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT42 Q12

Development References

EAP- BO R10
EOP Blackout Tab
ONS ILT42 Q12

Student References Provided

EPE055 2.1.23 - Loss of Offsite and Onsite Power (Station Blackout)

EPE055 GENERIC

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

401-9 Comments:

Remarks/Status

APE056 AK3.02 - Loss of Offsite Power

Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: (CFR 41.5, 41.10 / 45.6 / 45.13)

Actions contained in EOP for loss of offsite power

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- CT-4 Transformer fans tagged out for repairs
- Switchyard Isolation (LOOP) occurs

Current conditions:

- MFBs energized from Keowee via CT-4
- SK1 open

- 1) The HIGHER load allowed in accordance with AP/11 (Enclosure 5.1A, CT-4 Overload limits) is (1).
- 2) The reason for the above limit is to prevent damage to (2).

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A.
 1. 16 MWATTs and 14 MVARs
 2. CT-4
 - B.
 1. 16 MWATTs and 14 MVARs
 2. SK2
 - C.
 1. 14 MWATTs and 10 MVARs
 2. CT-4
 - D.
 1. 14 MWATTs and 10 MVARs
 2. SK2
-

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C

General Discussion

Answer A Discussion

Incorrect. First part is plausible because it is below the "only one SK breaker) limit and would be correct if the CT-4 fans were operable. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because it is below the "only one SK breaker) limit and would be correct if the CT-4 fans were operable. Second part is plausible because the value is below the (only one SK Breaker) curve and only one SK breaker is closed.

Answer C Discussion

Correct. 14MWs and 10 Mvars is below the "Limit with no Forced Cooling) and the one SK breaker limit. The limit is based on damage to the CT-4 transformer.

Answer D Discussion

Incorrect. Plausible because it is below the (only one SK breaker curve) and only one SK breaker is closed. Second part is plausible because the value is below the (only one SK Breaker) curve and only one SK breaker is closed.

Basis for meeting the K

When a loss of Offsite power Occures and power is restored with a Keowee Unit the guidance for this in AP/11 not the EOP. Question requires knowledge of reasons for a step in the AP/11 concerning a Loss of Offsite Power.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

AP/11

Student References Provided

AP/11 Encl. 5.1A

APE056 AK3.02 - Loss of Offsite Power

Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: (CFR 41.5,41.10 / 45.6 / 45.13)

Actions contained in EOP for loss of offsite power

401-9 Comments:

Remarks/Status

APE057 AA2.12 - Loss of Vital AC Electrical Instrument Bus

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: (CFR: 43.5 / 45.13)

PZR level controller, instrumentation, and heater indications

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- SASS in MANUAL
- Pzr level 1 selected

Current conditions:

- 1KVIA de-energized

- 1) 1HP-120 will throttle (1).
- 2) The operator will select Pzr level (2) to restore a valid Pzr level.

Which ONE of the following completes the statements above?

- A. 1. open
 2. 2
- B. 1. open
 2. 3
- C. 1. closed
 2. 2
- D. 1. closed
 2. 3
-

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B

General Discussion

--

Answer A Discussion

Incorrect. First part is correct. Second part is plausible if the candidate had the misconception that level 2 came from ICCM Channel B.

Answer B Discussion

Correct. When the ICCM Train loses power the controlling Pzr level will fail low this will cause 1HP-120 to open. OP/1/1105/014 Encl. 4.11 (SASS Information) will direct selecting a valid Pzr level signal. Since Pzr level 1 and 2 come from ICCM Train A then selecting Level 3 is the correct action.

Answer C Discussion

Incorrect. First part is plausible because the candidate could have the misconception that on a loss of power the level failed high. Second part is plausible if the candidate had the misconception that level 2 came from ICCM Channel B.

Answer D Discussion

Incorrect. First part is plausible because the candidate could have the misconception that on a loss of power the level failed high. Second part is correct.

Basis for meeting the K

Question requires knowledge of how a loss of a vital bus affects the Pzr level controller and instrumentation.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

PNS-PZR Obj. 21
 IC-RCI
 OP/1105/014

Student References Provided

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APE057 AA2.12 - Loss of Vital AC Electrical Instrument Bus

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: (CFR: 43.5 / 45.13)

PZR level controller, instrumentation, and heater indications

401-9 Comments:

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Remarks/Status

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APE058 AK1.01 - Loss of DC Power

Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: (CFR 41.8 / 41.10 / 45.3)

Battery charger equipment and instrumentation

Given the following plant conditions:

- 1CA Battery Charger fails
 - Output voltage = 0 VDC
- 1CA Battery voltage = 120 VDC
- 1DCB Bus voltage = 123 VDC
- Unit 2 DCA/DCB Bus voltage = 125 VDC
- Unit 3 DCA/DCB Bus voltage = 127 VDC

Which ONE of the following will automatically supply power to 1DIA panelboard?

- A. 1CA Battery
 - B. Unit 3 DC Bus
 - C. 1DCB Bus
 - D. Unit 2 DC Bus
-

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D

General Discussion

--

Answer A Discussion

Incorrect. Unit 2 supplies power to the alternate isolating diodes for 1DIA panelboard. The voltage from Unit 2 is higher than the 1CA battery voltage since Unit 2 is being supplied from the charger, so Unit 2 will supply power.

Answer B Discussion

Incorrect. Plausible because Unit 3's DC Bus is the highest. However Unit 3 does not backup Unit 1.

Answer C Discussion

Incorrect. For the Vital DC system, the 1DCB bus is not aligned to the 1DCA bus.

Answer D Discussion

Correct, the voltage from Unit 2 is higher than the 1CA battery voltage since Unit 2 is being supplied from the charger, so Unit 2 will supply power.

Basis for meeting the K

Question requires knowledge of the operational implications of a loss of a battery charger.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS Bank 1947

Development References

EL-DCD Obj. 6
 ONS Bank 1947

Student References Provided

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APE058 AK1.01 - Loss of DC Power

Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: (CFR 41.8 / 41.10 / 45.3)

Battery charger equipment and instrumentation

401-9 Comments:

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Remarks/Status

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APE062 AK3.03 - Loss of Nuclear Service Water

Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: (CFR 41.4, 41.8 / 45.7)

Guidance actions contained in EOP for Loss of nuclear service water

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- A and B LPSW pumps operating

Current conditions:

- "A" LPSW pump trips due to breaker failure
- Standby LPSW pump will NOT start
- AP/24 (Loss of LPSW) initiated
- LPSW header pressure decreases to 15 psig and is now increasing

- 1) 1LPSW-1121, 1122, 1123, and 1124 closed at a MAXIMUM LPSW header pressure of ____ (2) ____ psig decreasing
- 2) In accordance with AP/24 the above valves closed to ____ (1) ____.

Which ONE of the following completes the statements above?

- A.
 1. 18
 2. prevent subsequent LPSW pump run out
 - B.
 1. 18
 2. prevent water hammers in the LPSW system
 - C.
 1. 25
 2. prevent subsequent LPSW pump run out
 - D.
 1. 25
 2. prevent water hammers in the LPSW system
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because with low header pressure the LPSW pump would have high flow which could cause pump run out. But this is not the reason the valves were installed.

Answer B Discussion

Correct. 1LPSW-1121 - 1124 close at 18 psig decreasing to prevent water hammers in the LPSW system on pump restart.

Answer C Discussion

Incorrect. First part is plausible because 25 psig is the pressure at which the valves will re-open. Second part is plausible because with low header pressure the LPSW pump would have high flow which could cause pump run out. But this is not the reason the valves were installed.

Answer D Discussion

Incorrect. First part is plausible because 25 psig is the pressure at which the valves will re-open. Second part is correct.

Basis for meeting the K

ONS does not have action for a Loss of LPSW in the EOP. They are in an AP. Question requires knowledge of the reasons for actions contained in the AP for a loss of LPSW.

Basis for Hi Cog

Requires knowledge of procedural guidance and the reasons behind the guidance.

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

EAP-APG AP/24 R9
AP/24

Student References Provided

APE062 AK3.03 - Loss of Nuclear Service Water

Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: (CFR 41.4, 41.8 / 45.7)

Guidance actions contained in EOP for Loss of nuclear service water

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 17

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APE065 AK3.03 - Loss of Instrument Air

Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5, 41.10 / 45.6 / 45.13)

Knowing effects on plant operation of isolating certain equipment from instrument air

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- IA Header pressure = 25 psig decreasing
- AIA Header pressure = 100 psig stable
- Letdown temperature = 131°F stable

1HP-5 is ____ (1) ____ because ____ (2) ____.

Which ONE of the following completes the statement above?

- A. 1. open
 2. it is backed up by Nitrogen
 - B. 1. open
 2. it is backed up by AIA
 - C. 1. closed
 2. IA Header pressure is low
 - D. 1. closed
 2. it closed on high Letdown temperature
-

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ILT45 ONS SRO NRC Examination QUESTION 17

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B

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because Nitrogen does backup some air operated valves. i.e. 1FDW-315

Answer B Discussion

Correct. 1HP-5 will be isolated from the IA system by a check valve and then supplied by the AIA system and thus will remain OPEN.

Answer C Discussion

Incorrect. First part is plausible because 1HP-5 will fail closed on a total loss of air. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because the given letdown temperature is above the setpoint for the high letdown temperature alarm. Second part is plausible because 1CC-8 would close on a loss of IA and this would cause a high letdown temperature which would cause 1HP-5 to close on high letdown temperature. However 1CC-8 is also backed up by AIA.

Basis for meeting the K

When IA header pressure is lower than AIA pressure a check valve closes and isolates 1HP-5 from the IA system. Then the AIA system then supplies air to the valve. Question requires knowledge of how 1HP-5 is isolated from IA on a loss of IA and reason for this response.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

SSS-IA Obj. 27
AP/22

Student References Provided

APE065 AK3.03 - Loss of Instrument Air

Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5,41.10 / 45.6 / 45.13)

Knowing effects on plant operation of isolating certain equipment from instrument air

401-9 Comments:

Remarks/Status

BWE04 EK1.2 - Inadequate Heat Transfer

Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer):

(CFR: 41.8 / 41.10 / 45.3)

Normal, abnormal and emergency operating procedures associated with (Inadequate Heat Transfer).

Given the following Unit 1 conditions:

- Reactor trip due to loss of Main Feedwater
- Emergency Feedwater is NOT available
- Condensate Booster Pump feed has been established
- RCS leak = 80 gpm slowly increasing

Which ONE of the following describes:

1) actions required by the LOHT tab?

2) the reason for the actions?

- A. 1. Reduce running RCP's to one pump per loop
 2. To reduce heat input to RCS
- B. 1. Reduce running RCP's to one pump per loop
 2. To reduce inventory lost from the RCS leak
- C. 1. Reduce running RCP's to one
 2. To reduce heat input to RCS
- D. 1. Reduce running RCP's to one
 2. To reduce inventory lost from the RCS leak
-

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ILT45 ONS SRO NRC Examination QUESTION 18

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A

General Discussion

Answer A Discussion

Correct. With CBP feed established, the LOHT tab will direct reducing number of running RCP's to one/loop while waiting on a source of feedwater. The reason is to reduce heat input to the RCS.

Answer B Discussion

Incorrect. The number of RCP's is correct. The reason is plausible since there is a large RCS leak present and one of the reason that RCP's are secured during a loss of SCM event is to reduce the inventory lost out of the break.

Answer C Discussion

Incorrect. Number of pumps is plausible since it would be correct if CBP feed were not available and HPI forced cooling had been established. The reason is correct even for going to one pump in HPI FC.

Answer D Discussion

Incorrect. Number of pumps is plausible since it would be correct if CBP feed were not available and HPI forced cooling had been established. The reason is plausible since there is a large RCS leak present and one of the reason that RCP's are secured during a loss of SCM event is to reduce the inventory lost out of the break.

Basis for meeting the K

Questions requires knowledge of steps in the EOP for a Loss of Heat Transfer and reasons for the step.

Basis for Hi Cog

Requires analysis of conditions to determine appropriate actions that need to be taken.

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2011B Q10 (Bank 4607)

Development References

EAP-LOHT R2
LOHT
ONS 2011B Q10

Student References Provided

BWE04 EK1.2 - Inadequate Heat Transfer

Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer):
(CFR: 41.8 / 41.10 / 45.3)

Normal, abnormal and emergency operating procedures associated with (Inadequate Heat Transfer).

401-9 Comments:

Remarks/Status

APE024 AK1.02 - Emergency Boration

Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: (CFR 41.8 / 41.10 / 45.3)

Relationship between boron addition and reactor power

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Main Turbine has tripped
- Reactor power = 48% decreasing
- Rule 1 (ATWS/UNPP) in progress
- 1HP-24 will NOT open

- 1) In accordance with Rule 6, (HPI Pump Throttling Limits) (1).
- 2) In accordance with Rule 6, (HPI Pump Throttling Limits) the MAXIMUM reactor power which will allow throttling HPI is (2).

Which ONE of the following completes the statements above?

- A.
 1. total HPI flow must be throttled \leq 950 gpm including seal injection
 2. \leq 1%
 - B.
 1. total HPI flow must be throttled \leq 950 gpm including seal injection
 2. \leq 5%
 - C.
 1. HPI pump operation is limited to two HPIPs
 2. \leq 1%
 - D.
 1. HPI pump operation is limited to two HPIPs
 2. \leq 5%
-

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ILT45 ONS SRO NRC Examination QUESTION 19

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C

General Discussion

Answer A Discussion

Incorrect. First part is plausible because it is actions taken for another case when HPI has NOT operated correctly. "Total HPI flow must be throttled 950 gpm including seal injection when 1A and 1B HPI pumps are operating with 1HP-409 open." Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because it is actions taken for another case when HPI has NOT operated correctly. "Total HPI flow must be throttled 950 gpm including seal injection when 1A and 1B HPI pumps are operating with 1HP-409 open." Second part is plausible because when Immediate Manual Actions are being performed if power is < 5% then Rule 1 is not required to be performed.

Answer C Discussion

Correct. IAW Rule 6 if only one suction to the BWST is aligned then HPIP operation is limited to two. IAW Rule 6 HPI cannot be throttled unless Reactor power is < 1%.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible because when Immediate Manual Actions are being performed if power is < 5% then Rule 1 is not required to be performed.

Basis for meeting the K

Question requires knowledge of when Emergency Boration is stopped in relation to reactor power.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

Rule 1 and 6
EOP IMAs and SA

Student References Provided

APE024 AK1.02 - Emergency Boration

Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: (CFR 41.8 / 41.10 / 45.3)

Relationship between boron addition and reactor power

401-9 Comments:

Remarks/Status

APE059 AA1.02 - Accidental Liquid Radioactive-Waste Release

Ability to operate and / or monitor the following as they apply to the Accidental Liquid Radwaste Release: (CFR 41.7 / 45.5 / 45.6)

ARM system

Unit 1 plant conditions:

- Reactor power = 100%
- 50 gpd Tube Leak
- An increase in activity is reported in Chemical Treatment Pond (CTP) #3

Which ONE of the following describes an event which would cause this increase?

- A. 1RIA-42 (RCW) activity is increasing and this will increase activity levels in CTP #3.
 - B. 1RIA-31 (LPI Cooler) activity is increasing and this will increase activity levels in CTP #3.
 - C. 1RIA-54 (TBS) interlock has failed and the Turbine Building Sump is being continually pumped.
 - D. 1RIA-33 (LW Release) interlock has failed and a Waste Monitor Tank release continues from the Radwaste Building.
-

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ILT45 ONS SRO NRC Examination QUESTION 20

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C

General Discussion

Answer A Discussion

Incorrect, RCW is a closed system. The RCW cooler is cooled by CCW which goes to the discharge not CTP #3. Isolating the cooler would not stop the release.

Answer B Discussion

Incorrect, LPSW goes to the discharge not to #3 CTP. Isolating the cooler would not stop the release.

Answer C Discussion

Correct, TBS pump goes to CTP #3. Due to the tube leak, activity could be high in the sump. If the interlock failed it could pump high activity to CTP #3. AP/18 requires that the 1A and 1B TBS pump breakers be opened.

Answer D Discussion

Incorrect, the waste monitor tanks discharge to the Keowee tailrace not CTP # 3. Stopping the waste monitor tank release would not stop the release to CTP # 3.

Basis for meeting the K

Discussed with Chief Examiner. At ONS operations does not release liquid radioactive waste. He stated that testing on the RIA associated with the Turbine Building Sump would be adequate.

Question requires evaluating plant information and determine which RIA response would result in the accidental Liquid release in progress.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2007 Q59

Development References

RAD-RIA Obj. 8
BPS-OSS
ONS 2007 Q59

Student References Provided

APE059 AA1.02 - Accidental Liquid Radioactive-Waste Release

Ability to operate and / or monitor the following as they apply to the Accidental Liquid Radwaste Release: (CFR 41.7 / 45.5 / 45.6)

ARM system

401-9 Comments:

Remarks/Status

APE067 AK3.02 - Plant Fire On Site

Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site: (CFR 41.5, 41.10 / 45.6 / 45.13)

Steps called out in the site fire protection plan, FPS manual, and fire zone manual

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- AP/50 (Challenging Plant Fire) has been initiated

Current conditions:

- AP/50, Section 4G (Unit 1 Control Room Evacuation) in progress

1) Section 4G will direct the OATC to ____ (1) ____.

2) The reason the above action is taken is to ____ (2) ____.

Which ONE of the following completes the statements above?

- A.
 - 1. take 1FDW-315 and 1FDW-316 to MANUAL and closed
 - 2. ensure flow to the SGs can be controlled from the ASD Panel
 - B.
 - 1. take 1FDW-315 and 1FDW-316 to MANUAL and closed
 - 2. prevent spurious operation of 1FDW-315 and 1FDW-316 due to fire damage
 - C.
 - 1. initiate feeding BOTH SGs to 96% O.R.
 - 2. ensure natural circulation develops when the RCPs are secured
 - D.
 - 1. initiate feeding BOTH SGs to 96% O.R.
 - 2. maximize SG inventory prior to losing secondary pumps due to the fire
-

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B

General Discussion

--

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because the SGs will be fed from ASDP during a control room evacuation not caused by a fire.

Answer B Discussion

Correct. AP/50 Section 4G directs closing 1FDW-315 and 316 to prevent spurious operation due to fire damage.

Answer C Discussion

Incorrect. First part is plausible because it is correct for a Turbine Building Flood. Second part is plausible because RCPs are secured in the event and level are raised to ensure NC occurs.

Answer D Discussion

Incorrect. First part is plausible because it is correct for a Turbine Building Flood. Second part is plausible because it is correct for a Turbine Building Flood.

Basis for meeting the K

Question requires knowledge of the reason for steps in procedures used during plant fire.

Basis for Hi Cog

--

Basis for SRO only

--

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

EAP-AP50 R9
 AP/50
 EOP TBF Tab

Student References Provided

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APE067 AK3.02 - Plant Fire On Site

Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site: (CFR 41.5,41.10 / 45.6 / 45.13)

Steps called out in the site fire protection plan, FPS manual, and fire zone manual

401-9 Comments:

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Remarks/Status

--

ILT45 ONS SRO NRC Examination QUESTION 22

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APE067 AA1.09 - Plant Fire On Site

Ability to operate and / or monitor the following as they apply to the Plant Fire on Site: (CFR 41.7 / 45.5 / 45.6)

Plant fire zone panel (including detector location)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- 1SA3/B6 (FIRE ALARM) actuated
- The BOP reviews the alarms at the Fire Alarm Control panel

Current conditions:

- Time = 0415
- Fire detector at the Unit 1 Main FDW pumps alarms

1) At 0400, the alarm at the Fire Alarm Control panel will be indicated by (1).

2) At 0415, 1SA3/B6 (Fire Alarm) (2) reflash.

Which ONE of the following completes the statements above?

- A.
 - 1. a blinking LED ONLY
 - 2. will
 - B.
 - 1. a blinking LED ONLY
 - 2. will NOT
 - C.
 - 1. a blinking LED and an audible alarm
 - 2. will
 - D.
 - 1. a blinking LED and an audible alarm
 - 2. will NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 22

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C

General Discussion

Answer A Discussion

Incorrect. First part is plausible because the statalarm in the control room will be audible and is in the same general area as the Fire Alarm Panel. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because the statalarm in the control room will be audible and is in the same general area as the Fire Alarm Panel. Second part is plausible because not all stalarms reflash.

Answer C Discussion

Correct. When an fire alarm is received the is a blinking LED and a local audible alarm and the Fire Alrm Control Panel. 1SA3/B6 will reflash if another loop alarms.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible because not all stalarms reflash.

Basis for meeting the K

Question requires knowledge of how the Fire Alarm Panel responds to a fire alarm The blinking LED is used to determine the loop in alarm.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

IC-FDS obj. 3

Student References Provided

APE067 AA1.09 - Plant Fire On Site

Ability to operate and / or monitor the following as they apply to the Plant Fire on Site: (CFR 41.7 / 45.5 / 45.6)

Plant fire zone panel (including detector location)

401-9 Comments:

Remarks/Status

APE068 AK2.03 - Control Room Evacuation

Knowledge of the interrelations between the Control Room Evacuation and the following: (CFR 41.7 / 45.7)

Controllers and positioners

Given the following Unit 3 conditions:

- Control Room Evacuation complete due to a non-fire event
- ASDP has been "manned"
- ASDP indications:
 - Turbine Header Pressure = 1011 psig and slowly decreasing
 - TBVs demand is 12% in Automatic and decreasing
 - RCS T Hot = 560°F and slowly decreasing
 - Pzr Level = 140 inches increasing
 - SG SU levels = 48 inches and increasing
 - ALL RCPs are operating

Which ONE of the following describes the required action(s) (if any) per AP/8 (Loss of Control Room) and why?

- A. NO actions are required, the plant is responding as expected.
 - B. Take manual control of TBVs to stabilize SG Pressure.
 - C. Take manual control and cycle 3B HPI pump to stabilize Pzr level.
 - D. Take manual control of FDW Startup Control Valves and lower SG levels
-

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D

General Discussion

Answer A Discussion

Incorrect: Operator action is required, FDW SU control valves are not performing correctly SG levels are above 25 inches and rising. Plausible as the SG response would be normal if RCPs were not running and SG levels would control at 50% OR Level (240 inches SUR)

Answer B Discussion

Incorrect: TBVs are responding normally to post trip conditions and to the overfeed causing SG pressure to decrease

Answer C Discussion

Incorrect. Per AP/8 Pzr level should be maintained 100-220 inches. Plausible if Pzr level were to be controlled at the normal level of 220 inches

Answer D Discussion

Correct: Manual control is needed; FDW SU control valves should be closing and controlling at 25 inches on SUR Level post trip.

Basis for meeting the K

The question requires evaluating plant conditions and then determine the control in the Aux Shutdown Panel required to be used to stabilize the unit during a Control Room evacuation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2009 Q25

Development References

EAP-APG AP/8 R9
 AP/8
 ONS 2009 Q25

Student References Provided

APE068 AK2.03 - Control Room Evacuation

Knowledge of the interrelations between the Control Room Evacuation and the following: (CFR 41.7 / 45.7)

Controllers and positioners

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 24

24

APE037 AA2.06 - Steam Generator (S/G) Tube Leak

Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: (CFR: 43.5 / 45.13)

S/G tube failure

Given the following Unit 1 conditions:

- Reactor Power = 36%
- 1RIA-40 Alert and High Alarm actuated
- RC Makeup flow = 85 gpm
- Seal Inlet Header flow = 32 gpm
- Letdown Flow = 78 gpm
- Total Seal Return Flow = 8.5 gpm
- Pressurizer level = 220 inches stable

1) (1) is required to be entered at this time.2) The procedure entered above will direct maintaining a Pzr level band of (2) .

Which ONE of the following completes the statements above?

- A. 1. EOP (Emergency Operating Procedure) SGTR Tab
 2. 140 inches – 180 inches
 - B. 1. EOP (Emergency Operating Procedure) SGTR Tab
 2. 220 inches – 260 inches
 - C. 1. AP/31 (Primary to Secondary Leakage)
 2. 140 inches – 180 inches
 - D. 1. AP/31 (Primary to Secondary Leakage)
 2. 220 inches – 260 inches
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because it would be correct if the reactor had tripped.

Answer B Discussion

Correct: Calculated tube leak size IAW AP/31 is 34.5 gpm.

Leak rate = Makeup flow + Seal Injection - Letdown - Seal return

Leak rate = 85 = 32 - 78 - 8.5

Leak rate = 30.5

This is > 25 gpm Primary to secondary leakage and requires entry into the EOP. With the reactor not tripped the SGTR tab directs maintaining Pzr level in a band of 220 inches - 260 inches.

Answer C Discussion

Incorrect. First part is plausible because it would be correct if the calculated leak rate were less than 25 gpm. Second part is plausible because it would be correct if the reactor had tripped.

Answer D Discussion

Incorrect. First part is plausible because it would be correct if the calculated leak rate were less than 25 gpm. Second part is correct.

Basis for meeting the K

Question requires knowledge of S/G tube failure conditions as indicated by plant indications and the procedures used to address the conditions.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	ONS 2009 Q83

Development References

AP/31
SGTR tab

Student References Provided

APE037 AA2.06 - Steam Generator (S/G) Tube Leak

Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: (CFR: 43.5 / 45.13)

S/G tube failure

401-9 Comments:

Remarks/Status

BWA04 AK1.2 - Turbine Trip

Knowledge of the operational implications of the following concepts as they apply to the (Turbine Trip)

(CFR: 41.8 / 41.10 / 45.3)

Normal, abnormal and emergency operating procedures associated with (Turbine Trip).

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 25% slowly increasing
- Turbine trip

Current conditions:

- Reactor power = 22% decreasing

1) (1) will be used to direct plant activities after the Turbine trip.

2) The expected Steam Generator pressure is (2) psig.

Which ONE of the following completes the statements above?

- A. 1. The UNPP tab
 2. 885
 - B. 1. The UNPP tab
 2. 1010
 - C. 1. AP/1 (Unit Runback)
 2. 885
 - D. 1. AP/1 (Unit Runback)
 2. 1010
-

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ILT45 ONS SRO NRC Examination QUESTION 25

25

C

General Discussion

Answer A Discussion

Incorrect: The turbine trip should not have resulted in a reactor trip since power was < 30%. First part is plausible since this would be the correct answer if initial reactor power had been >30% and the reactor did not trip. Second part is correct and would still be plausible for UNPP since the Gen. breakers tripping open would make TLSF false and therefore remove the 50 psi bias thus TBV's would be controlling at setpoint.

Answer B Discussion

Incorrect: The turbine trip should not have resulted in a reactor trip since power was < 30%. First part is plausible since this would be the correct answer if initial reactor power had been >30% and the reactor did not trip. Second part is plausible with UNPP since there are conditions where AMSAC would actuate and still send the 125 psi bias to the TBV's which would result in them controlling at 1010 psig.

Answer C Discussion

CORRECT: With Rx power < 30% a turbine trip does not result in a Rx trip. The plant would run back to 20% CTP via an ICS runback due to both Gen bkrs open. Once at 20% with turbine off line, either the Shutdown procedure or the Startup procedure would be implemented to direct the plant activities. With no Rx trip, the TBV's would control at setpoint (885) since the 50 psi bias to the setpoint would be removed by ICS when both Generator breakers open.

Answer D Discussion

Incorrect: First part is correct. Second part is plausible since there are conditions where AMSAC would actuate and still send the 125 psi bias to the TBV's which would result in them controlling at 1010 psig.

Basis for meeting the K

Requires knowledge of abnormal and emergency operating procedures following a turbine trip

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2009A Q25

Development References

IC-RPS R3
STG-ICS Chapter 3
AP/1
ONS 2009A Q25

BWA04 AK1.2 - Turbine Trip

Knowledge of the operational implications of the following concepts as they apply to the (Turbine Trip)
(CFR: 41.8 / 41.10 / 45.3)

Normal, abnormal and emergency operating procedures associated with (Turbine Trip).

Student References Provided

401-9 Comments:

Remarks/Status

BWA07 AK3.2 - Flooding

Knowledge of the reasons for the following responses as they apply to the (Flooding)

(CFR: 41.5 / 41.10, 45.6, 45.13

Normal, abnormal and emergency operating procedures associated with (Flooding).

Given the following Unit 1 conditions:

- Turbine Building Flood tab initiated
- Main and Emergency Feedwater have been lost

- 1) In accordance with the TBF tab RCS decay heat will be removed using (1).
- 2) The above heat removal method is chosen because (2).

Which ONE of the following completes the statements above?

- A. 1. HPI Forced Cooling
 2. "Raw" lake water will damage the SG's
- B. 1. HPI Forced Cooling
 2. SSF-ASW suction source is CCW and ALL CCW pumps will be secured
- C. 1. SSF-ASW
 2. of anticipation of losing Condensate Booster Pumps
- D. 1. SSF-ASW
 2. of anticipation of losing LPSW pumps
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct in all other conditions regarding loss of main and emergency feedwater. Second part is plausible since it is a valid reason for using HPI FC before SSF-ASW.

Answer B Discussion

Incorrect. First part is plausible since it would be correct in all other conditions regarding loss of main and emergency feedwater. Second part is plausible since CCW is the suction source for SSF-ASW and CCW is the most likely source of the flooding. There are actions taken to minimize CCW water that can get to the Turbine Building since it is the most probable source of flooding however these action do not isolate the SSF-ASWP from its suction source in the CCW inlet piping.

Answer C Discussion

First part is correct. Second part is plausible since CBP feed is normally how heat removal occurs if both Main and Emergency FDW have been lost and the CBP's are located in the Turbine Building Basement and therefore will be impacted by the flooding.

Answer D Discussion

Correct. For this event, feeding SGs with raw water from SSF ASW or Station ASW is preferred over HPI forced cooling. HPI F/C is not preferred since once the BWST is depleted, water in the RBES is not expected to be available due to unavailability of LPSW for cooling. A plant cooldown will not be performed with Station ASW.

Basis for meeting the K

Requires knowledge of reasons for guidance contained in the EOP that are a result of a loss of LPSW.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT40 Q15 (Bank 4612)

Development References

EAP-TBF R5
EOP-TBF
ONS ILT40 Q15

Student References Provided

BWA07 AK3.2 - Flooding

Knowledge of the reasons for the following responses as they apply to the (Flooding)

(CFR: 41.5 / 41.10, 45.6, 45.13

Normal, abnormal and emergency operating procedures associated with (Flooding).

401-9 Comments:

Remarks/Status

BWE08 2.1.30 - LOCA Cooldown

BWE08 GENERIC

Ability to locate and operate components, including local controls. (CFR: 41.7 / 45.7)

Given the following Unit 1 conditions:

- Core SCM = 0°F
- LOCA Cooldown tab in progress
- CETC's = 395°F slowly decreasing

- 1) In accordance with the LOCA CD tab (1) is required to be opened to establish the normal Boron dilution flow path.
- 2) The above valve will be operated from the (2) Control Room

Which ONE of the following completes the statements above?

- A.
 1. 1LP-103 (Post LOCA Boron Dilute)
 2. Unit 1
 - B.
 1. 1LP-103 (Post LOCA Boron Dilute)
 2. SSF
 - C.
 1. 1LP-105 (Post LOCA Boron Dilute To LPI Suction)
 2. Unit 1
 - D.
 1. 1LP-105 (Post LOCA Boron Dilute To LPI Suction)
 2. SSF
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because the other Post LOCA Boron Dilution valves are operated in the Unit 1 Control Room.

Answer B Discussion

Correct. The normal Post LOCA Boron Dilution flow path is thru 1LP-103 and 1LP-104. 1LP-103 is controlled from the Unit 1 SSF Control Room.

Answer C Discussion

Incorrect. First part is plausible because 1LP-105 is part of the Alternate Post LOCA Boron Dilution flow path, Second part is plausible because the other Post LOCA Boron Dilution valves are operated in the Unit 1 Control Room.

Answer D Discussion

Incorrect. First part is plausible because 1LP-105 is part of the Alternate Post LOCA Boron Dilution flow path, Second part is correct.

Basis for meeting the K

Question requires knowledge of local controls of valves required during a LOCA Cooldown.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

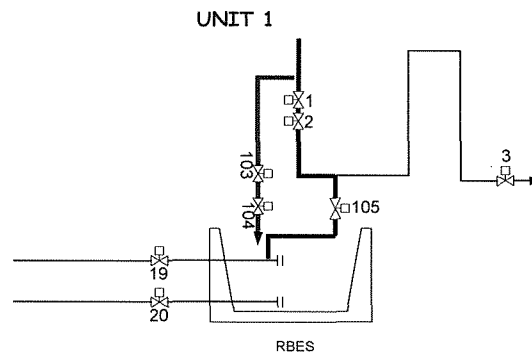
PNS-LP obj. 33
EOP-LOCACD

BWE08 2.1.30 - LOCA Cooldown
BWE08 GENERIC
Ability to locate and operate components, including local controls, (CFR: 41.7 / 45.7)

Student References Provided

401-9 Comments:

Remarks/Status

Figure 14: Unit 1/2/3 Normal and Alternate Boron Dilution Path

NORMAL BORON DILUTION PATH

ALTERNATE BORON DILUTION PATH

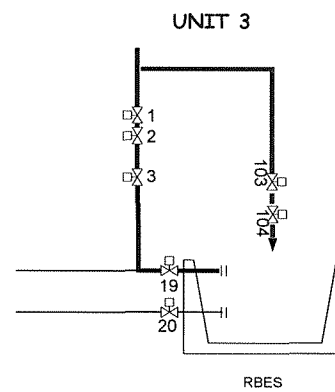
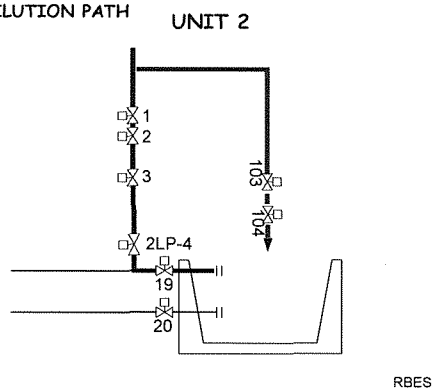
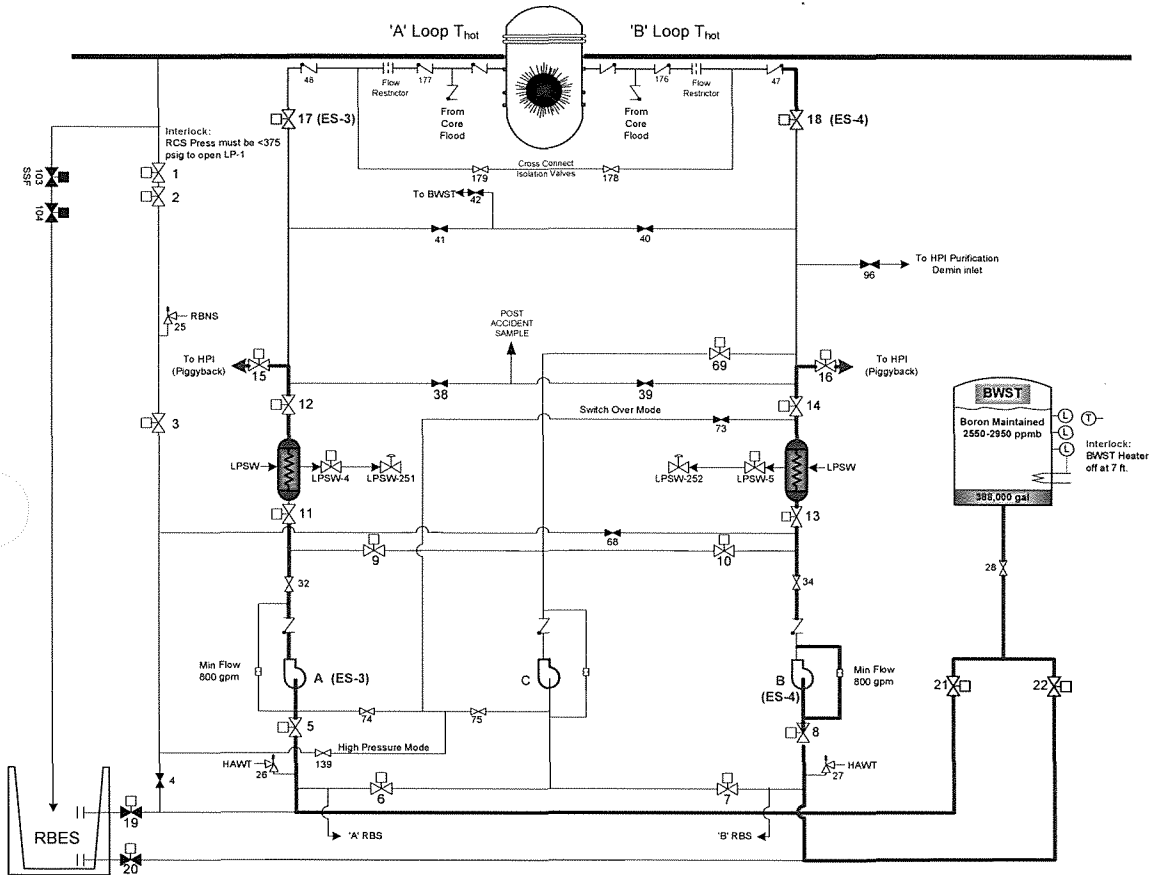


Figure 13: Unit 2 LPI Piggyback Flow Path

ILT45 ONS SRO NRC Examination QUESTION 28

28

SYS003 A3.02 - Reactor Coolant Pump System (RCPS)

Ability to monitor automatic operation of the RCPS, including: (CFR: 41.7 / 45.5)

Motor current

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400:00
- Reactor power = 100%
- 1B1 RCP Amps = 527

Current conditions:

- Time = 0400:01
- 1B1 RCP Amps = 255

Reactor power will ____ (1) ____ and feedwater will ____ (2) ____.

Which ONE of the following completes the statement above?

- A. 1. decrease
 2. re-ratio
 - B. 1. decrease
 2. NOT re-ratio
 - C. 1. stay the same
 2. re-ratio
 - D. 1. stay the same
 2. NOT re-ratio
-

General Discussion

Answer A Discussion

Correct, 1B1 RCP has had a reduction in flow as indicated by the reduction in pumps amps. This will cause the ICS to reduce power at 20%/min to match the new RCS flow. Because the flow reduction was in only one RC loop the loop Tc will change. This will cause the ΔT_c circuit to re-ratio feedwater to return the loop Tc to the same value.

Answer B Discussion

Incorrect, first part correct.

Second part incorrect because the flow reduction was in only one RC loop the loop Tc will change. This will cause the ΔT_c circuit to re-ratio feedwater to return the loop Tc to the same value.

Answer C Discussion

Incorrect, first part incorrect. It would be correct if the ICS only looked at RCP breaker position to determine the runback. Part of the circuit does look at the breaker position establish an estimate of FDW floww. It is futher tuned by the actual delta Tc input.

Second part is correct. Because the flow reduction was in only one RC loop the loop Tc will change. This will cause the ΔT_c circuit to re-ratio feedwater to return the loop Tc to the same value.

Answer D Discussion

Incorrect, first part incorrect. It would be correct if the ICS only looked at RCP breaker position to determine the runback. Part of the circuit does look at the breaker position establish an estimate of FDW floww. It is futher tuned by the actual delta Tc input.

Second part incorrect because the flow reduction was in only one RC loop the loop Tc will change. This will cause the ΔT_c circuit to re-ratio feedwater to return the loop Tc to the same value.

Basis for meeting the K

At ONS RCP have no automatic operations relating to Motor current. Discussed with Chief he agreed that a question that asked about plant response in relation to RCP motor current would be OK.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2004 Q4

Development References

STG-ICS - R3, R15

Student References Provided

SYS003 A3.02 - Reactor Coolant Pump System (RCPS)
 Ability to monitor automatic operation of the RCPS, including: (CFR: 41.7 / 45.5)
 Motor current

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 29

29

SYS004 A3.05 - Chemical and Volume Control System

Ability to monitor automatic operation of the CVCS, including: (CFR: 41.7 / 45.5)

RCS pressure and temperature

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 15%

Current conditions:

- Time = 0430
- RCS temperature = 535°F decreasing
- RCS pressure = 2040 psig decreasing
- Pzr level = 200 inches decreasing
- LDST level = 65 inches decreasing

- 1) The highest LDST level that will automatically align the HPI pumps suction to the BWST is (1) inches.
- 2) At 0430, the reactor (2) automatically tripped on low RCS pressure.

Which ONE of the following completes the statements above?

- A.
 1. 60
 2. has
 - B.
 1. 60
 2. has NOT
 - C.
 1. 40
 2. has
 - D.
 1. 40
 2. has NOT
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible because 60 inches is the setpoint for the LDST low level statalarm. Second part is plausible because RCS pressure is below the RCS LOW PRESSURE Statalarm setpoint of 2055 psig.

Answer B Discussion

Incorrect. First part is plausible because 60 inches is the setpoint for the LDST low level statalarm. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because RCS pressure is below the RCS LOW PRESSURE Statalarm setpoint of 2055 psig.

Answer D Discussion

Correct. The BWST is aligned to the HPI pump suction when LDST level reaches 40 inches. The reactor has not tripped because RCS pressure is above the Low RCS Pressure setpoint of 1810 psig.

Basis for meeting the K

Because RCS temperature is decreasing, this causes makeup flow to increase and this question requires knowledge of the automatic actions of the HPI (CVCS) system as a result.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

1SA-2

Student References Provided

SYS004 A3.05 - Chemical and Volume Control System

Ability to monitor automatic operation of the CVCS, including: (CFR: 41.7 / 45.5)

RCS pressure and temperature

401-9 Comments:

Remarks/Status

SYS004 K1.10 - Chemical and Volume Control System

Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

Pneumatic valves and RHRS

Given the following Unit 1 conditions:

- Reactor in MODE 6
- LPI is aligned in the Normal Decay Heat Removal flowpath
- LT-5 = 65" stable

- 1) Aligning LPI to the Purification Demineralizers (1) allowed at this level.
- 2) 1C LPI Pump (2) the desired LPI pump to use during this alignment.

Which ONE of the following completes the statements above?

- A.
 1. is
 2. is
 - B.
 1. is
 2. is NOT
 - C.
 1. is NOT
 2. is
 - D.
 1. is NOT
 2. is NOT
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since the 1C LPI pump is not an ES pump and would therefore be a logical choice to operate outside of ECCS criteria (otherwise why would we have it). Additionally, it was the preferred pump for many years therefore it is a common misconception that it would be used during normal DHR alignment. Also, since normal DHR uses both LPI coolers and only one pump and the 1C LPI pump is located central to both coolers it would be a logical choice.

Answer B Discussion

Correct. Aligning LPI in purification is allowed until reaching 50" on LT-5. The LPI procedure says that the A and B LPI pumps are the preferred pumps to use when in normal DHR since they would restart on power being regained following a loss of power.

Answer C Discussion

Incorrect. First part is plausible because 80" on LT-5 is a threshold level. There is a specific enclosure in the RCS drain down procedure for going to 80" on LT-5. There are specific requirements that must be met before going below 80" (example: both LT-5A and LT-5B must be in service) and both the canal lip and RCS pump cold leg spillover levels are just above 80" therefore it would be plausible to associate aligning LPI to purification with 80" instead of 50". Second part is plausible since the 1C LPI pump is not an ES pump and would therefore be a logical choice to operate outside of ECCS criteria (otherwise why would we have it). Additionally, it was the preferred pump for many years therefore it is a common misconception that it would be used during normal DHR alignment. Also, since normal DHR uses both LPI coolers and only one pump and the 1C LPI pump is located central to both coolers it would be a logical choice.

Answer D Discussion

Incorrect. First part is plausible because 80" on LT-5 is a threshold level. There is a specific enclosure in the RCS drain down procedure for going to 80" on LT-5. There are specific requirements that must be met before going below 80" (example: both LT-5A and LT-5B must be in service) and both the canal lip and RCS pump cold leg spillover levels are just above 80" therefore it would be plausible to associate aligning LPI to purification with 80" instead of 50". Second part is correct.

Basis for meeting the K

Aligning LPI to the purification demineralizers is done by aligning some LPI flow to the normal HPI letdown line and then placing 1HP-14 in the bleed position. 1HP-14 is a pneumatic valve that is part of the volume control portion of HPI. Therefore this question demonstrates knowledge of the physical connections between LPI and HPI via a pneumatic valve.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Obj. PNS-LPI- 09,11,12
PNS-LPI

Student References Provided

SYS004 K1.10 - Chemical and Volume Control System

Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

Pneumatic valves and RHRS

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 31

31

SYS005 A4.03 - Residual Heat Removal System (RHRS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

RHR temperature, PZR heaters and flow, and nitrogen

Given the following Unit 1 plant conditions:

- Reactor in MODE 5
- LPI in normal DHR alignment

___(1)___ temperatures will be used to ensure compliance with Tech Spec allowed
cooldown rates and ___(2)___ will be used to adjust cooldown rate.

Which ONE of the following completes the statement above?

- A. 1. LPI Cooler Outlet
 2. LPSW flow
 - B. 1. LPI Cooler Outlet
 2. LPI flow
 - C. 1. Core Exit Thermocouples
 2. LPSW flow
 - D. 1. Core Exit Thermocouples
 2. LPI flow
-

General Discussion

Answer A Discussion

Correct. With LPI in DHR alignment on Unit 1, no RCP's are operating and with no RCP's operating, LPI cooler outlet temperature is used IAW Tech Specs. LPSW flow to the LPI cooler is adjusted to control RCS temperature on Units 1&2.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct for Unit 3 due to the different design on Unit 3 that allows an LPI flow bypass around the coolers.

Answer C Discussion

Incorrect. First part is plausible since CETC's are more indicative of actual core temperatures and are used to determine Mode changes in the lower Modes. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since CETC's are more indicative of actual core temperatures and are used to determine Mode changes in the lower Modes. Second part is plausible since it would be correct for Unit 3 due to the different design on Unit 3 that allows an LPI flow bypass around the coolers.

Basis for meeting the K

Requires the ability to manually operate the LPI system to control RCS temperature as well as the ability to monitor the correct parameter to determine RCS temperature.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Obj PNS-LPI-07,09,46
PNS-LPI
1102/010

Student References Provided

SYS005 A4.03 - Residual Heat Removal System (RHRS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

RHR temperature, PZR heaters and flow, and nitrogen

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 32

32

SYS006 K4.21 - Emergency Core Cooling System (ECCS)

Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

Bypassing/blocking ESF channels

Given the following Unit 1 conditions:

- RCS cooldown in progress
- RCS pressure = 1780 psig slowly decreasing

The HPI ES bypass permissive is activated at a MAXIMUM RCS pressure of (1) and (2) require manual actions to be re-instated when RCS pressure is returned to normal operating pressure.

Which ONE of the following completes the statement above?

- A. 1. 1715
 2. will
 - B. 1. 1715
 2. will NOT
 - C. 1. 1740
 2. will
 - D. 1. 1740
 2. will NOT
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since most systems required manual actions to reset.

Answer B Discussion

Correct. ES HPI bypass permit is satisfied at 1715 psig and will automatically reset when RCS pressure goes back above 1740 psig.

Answer C Discussion

Incorrect. First part is plausible since it is the setpoint at which ES is automatically re-instated as pressure is increased. Second part is plausible since most systems required manual actions to reset.

Answer D Discussion

Incorrect. First part is plausible since it is the setpoint at which ES is automatically re-instated as pressure is increased. Second part is correct.

Basis for meeting the K

Requires knowledge of ES design features that allow for bypassing ES HPI actuation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

IC-ES Obj R21
 IC-ES

Student References Provided

SYS006 K4.21 - Emergency Core Cooling System (ECCS)

Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

Bypassing/blocking ESF channels

401-9 Comments:

Remarks/Status

- 2.12 (Obj. R21, 10, 26) **COMPARATORS** –(ANALOG only) function as software AUTO Reset bistables. When the actuation setpoint is reached the output will send an actuation signal to the Voters, Statalarms, Interlock....respectively. Their input may be the Instrument Channel direct input OR from the output of 2.MIN/2.MAX calculation. The system comparators and associated functions and setpoints are as follows:

FUNCTION	SETPOINT	RESET
HPI BYP PERMIT	1715 psig	1740 psig
ES-1&2	1600 psig	1625 psig
LPI BYP PERMIT	865 psig	890 psig
ES-3&4	550 psig	575 psig
1LP-1 Permit	375 psig	400 psig
ES-1-6	3.0 psig	2.7 psig

- A. (Obj. R21, 26) **Channel Trip Statalarms (1SA-7)** – There are '4' Logic functions being calculated continuously in each Instrument Channel. The CHANNEL TRIP alarm '1__ES TRIP' is the ONLY function that is not a 2.MIN, 2.MAX, 2/3 calculated output. It is the direct response of that Instrument Channel to its input (transmitter or pressure switch) signal as compared to the 'Comparator' or 'Closed' contact for that function (Example: ES-1/2 @ 1600 psig comparator setpoint is a Function). Since each Instrument Channel has only ONE statalarm it will re-flash any time 1 of the other 3 remaining functions either reach the COMPARATOR setpoint OR in the case of ES-7/8 the PRESSURE SWITCH closes. Functions:

- ES-1-2 @ 1600 psig RCS WR Pressure (1)
- ES-3-4 @ 550 psig RCS WR Pressure (1)
- ES-1-6 @ 3.0 psig RB NR Pressure (1)
- ES-7 @ 10.0 psig RB Pressure Switches (1)
- ES-8 @ 10.0 psig RB Pressure Switches (1)

Monitoring Plant Conditions and Indications Closely

ILT45 ONS SRO NRC Examination QUESTION 33

33

SYS006 K5.08 - Emergency Core Cooling System (ECCS)

Knowledge of the operational implications of the following concepts as they apply to ECCS: (CFR: 41.5 / 45.7)

Operation of pumps in parallel

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- ES Channels 1 – 8 actuated
- EOP Enclosure 5.1 (ES Actuation) initiated
- HPI Flow Train A = 520 gpm
- HPI Flow Train B = 468 gpm
- RC Make Up Flow = 160 gpm
- Seal Inlet Header Flow = 32 gpm

In accordance with the EOP, _____ is/are required to be throttled to prevent HPI pump runout.

Which ONE of the following completes the statement above?

- A. 1HP-26 ONLY
 - B. 1HP-27 ONLY
 - C. 1HP-26 and 1HP-27
 - D. NO valve
-

General Discussion

--

Answer A Discussion

Incorrect. Plausible because "A" header is greater than 475 gpm.
--

Answer B Discussion

Incorrect. Plausible because if you add seal injection to the "B" header flow then 1HP-27 would be selected.
--

Answer C Discussion

Incorrect. Plausible because "A" header is greater than 475 gpm which require throttling 1HP-26 and if you add seal injection to the "B" header flow then 1HP-27 would be throttled.
--

Answer D Discussion

Correct. No valve is required to be throttled because no HPI header flow with one HPI pump operating has more than 475 gpm including seal injection flow for the "A" header.
--

Basis for meeting the K

Question requires understanding relationship between two HPI pumps in parallel and the pump run out flow limits.
--

Basis for Hi Cog

--

Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EOP Rule 6

Student References Provided

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SYS006 K5.08 - Emergency Core Cooling System (ECCS)

Knowledge of the operational implications of the following concepts as they apply to ECCS: (CFR: 41.5 / 45.7)

Operation of pumps in parallel

401-9 Comments:

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Remarks/Status

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SYS007 2.2.44 - Pressurizer Relief Tank/Quench Tank System (PRTS)

SYS007 GENERIC

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)

Given the following Unit 1 conditions:

- OP/1/A/1103/002, (Filling and Venting RCS) Enclosure 4.14 (Establishing Pzr Steam Bubble And RCS Final Vent) in progress
- Quench Tank level = 82 inches
- Quench Tank pressure = 0.5 psig
- The Pressurizer is vented to the Quench Tank for 30 minutes

Which ONE of the following describes QT parameters that would indicate that Pzr Steam Bubble Formation is complete?

	QT level (inches)	QT pressure (psig)
A.	82.1	0.6
B.	84.1	0.6
C.	82.1	2.5
D.	84.1	2.5

General Discussion

Answer A Discussion

Incorrect: Plausible if you have the misconception that the Pzr vent line is above the water level in the QT and therefore both QT pressure and level increase only slightly as some but not all of the steam would condense as it was vented to the QT

Answer B Discussion

CORRECT: Per OP/1103/002, Pzr steam bubble formation is complete (ie, all the N2 gas is vented out of the Pzr) when a change (rise) in QT pressure of less than 0.2 psig occurs and QT level increases by 2 inches. Since the Pzr vent is underwater in the QT, when N2 is being vented it will rise to the surface and cause a corresponding increase in QT pressure therefore minimal pressure response is a sign that all of the N2 has been vented. Additionally, as water is vented it is condensed under the water level of the QT therefore minimal QT pressure change in conjunction with increasing QT level is indicative of all N2 being out of Pzr.

Answer C Discussion

Incorrect: Plausible if you have the misconception that the Pzr vent line is above the water level in the QT and therefore the steam being vented to the QT would cause pressure to increase with little impact on level.

Answer D Discussion

Incorrect: Plausible if you have the misconception that the Pzr vent line is above the water level in the QT and therefore both QT pressure and level increase as some but not all of the steam would condense as it was vented to the QT.

Basis for meeting the K

Question requires interpreting control room indications to determine the status of Pzr bubble formation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS 2009A Q34

Development References

PNS-PZR Obj. 23
OP/1/A/1103/002, Encl. 4.10 pg 6 and 8
ONS 2009A Q34

Student References Provided

SYS007 2.2.44 - Pressurizer Relief Tank/Quench Tank System (PRTS)
SYS007 GENERIC

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

Obj. # PNS-PZR-	Enabling Objectives	Initial			Continuing		
		AO	RO	SRO	AO	RO	SRO
09	Given a set of conditions, determine which RC pressure signal has been selected for control by the ICS RC pressure signal median select function.		X			X	
10	Discuss the reasons for bypass flow around the PZR Spray valve during normal operation.	X					
11	Evaluate plant response to a failed open PZR Spray valve without operator action.			X			X
12	Discuss the operation of the PZR Heaters including: a. Three purposes. b. Level Interlock: Purpose and Setpoints (Normal and SSF).		X				
13	Explain the operation of the PZR Water Space Saturation Recovery Circuit.		X			X	
14	Describe the physical operation of the PORV including what causes the Pilot Valve to operate and how this causes the PORV to open or close.		X			X	
15	Explain the purpose of the two opening setpoints associated with the PORV.		X			X	
16	Explain how to manually operate the PORV.		X			X	
17	Given a set of conditions, determine operability of the PORV following a loss of power.		X	X		X	X
18	Discuss the reason for the PZR Safeties and their setpoint.		X			X	
19	Given a set of plant conditions, determine the position of the PORV.		X	X		X	X
20	Explain the operation of SASS as it relates to PZR level control.		X			X	
21	Given a set of conditions, determine how PZR level control/indication is affected by a loss of SASS and/or ICCM.		X	X		X	X
22	Discuss the use of PZR Saturation Pressure Indication by the operator.		X			X	
23	Discuss the forming of a PZR steam bubble including any precautions to be taken during the evolution.		X				

1. Initial Conditions
 - a) RCS PZR level 95" to 110".
 - b) Loops are full.
 - c) 38 - 45 psig N2 overpressure in PZR.
 - d) Quench Tank filled \geq 80 inches.

Objective #

PNS-PZR-23

2. Procedure
 - a) Nitrogen supplies isolated (PZR, OTSGs, etc).
 - b) PZR vent path line is aligned to the QT (underwater path) through GWD-146 (PZR Vent to RV Line).
 - c) RC-1 (Spray Valve) is placed in Auto (should not have to be used).
 - d) PZR heaters are energized; steam forms as evidenced by increase in RCS pressure and PZR temperature.
 - e) As PZR pressure rises, GWD-17 (PZR Vent Control Valve) is throttled open to maintain PZR pressure 38-45 psig (<45 psig so as not to over-pressurize the QT). Heaters are cycled for PZR pressure control. N2 and steam are slowly vented to the QT.
 - f) At the same time, GWD-12 (QT Vent Inside RB) is opened and GWD-13 (QT Vent Outside RB) is throttled to vent QT N2 gas and to maintain GWD system header pressure. Add additional GWD compressors if necessary.
 - g) Throttle GWD-17 and GWD-13 until they can both remain fully open and still maintain PZR pressure between 38-45 psig.
 - h) After ~30 mins of achieving both valves being fully open:
 - 1) Record QT Pressure; and then close GWD-13 for 5 mins.
 - 2) Record QT Pressure again; then reopen GWD-13.
 - i) Perform the above steps three times. If the "change" in QT Pressure is less than 0.2 psig, then Bubble formation is complete. If not, then continue venting with GWD-17 & GWD-13 fully open until it is complete.
 - j) Analysis: has shown that an increase in QT level of 2" (due to the condensing of PZR steam) is indication that all the N2 has been removed from the PZR.

Enclosure 4.10
Establishing Pzr Steam Bubble
And RCS Final Vent

OP/1/A/1103/002
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- 3.23 **WHEN** both 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB))
AND 1GWD-17 (PRESSURIZER VENT) have been open an additional 30 minutes,
perform the following: {17}
- _____ 3.23.1 **IF** venting of RxV head is in-progress, notify Operator to stop venting
RxV head.
- _____ 3.23.2 Record QT pressure in Step 4.1. {17}
- _____ 3.23.3 Close 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB)). {17}
- _____ 3.23.4 **AFTER** 5 minutes record QT pressure in Step 4.1. {17}
- _____ 3.23.5 Open 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB)). {17}
- _____ 3.23.6 **IF** venting of RxV head is in-progress, notify Operator to restart venting
RxV head.
- _____ 3.24 Check QT pressure change with 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB))
closed for 5 minutes from Step 3.23.
- _____ 3.25 **IF** QT pressure change is < 0.2 psig, Pzr steam bubble formation is complete.
Continue to Step 3.27.
- 3.26 **IF** required after both 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB))
AND 1GWD-17 (PRESSURIZER VENT) have been open an additional 30 minutes,
perform the following: {17}
- _____ 3.26.1 **IF** venting of RxV head is in-progress, notify Operator to stop venting
RxV head.
- _____ 3.26.2 Record QT pressure in Step 4.1. {17}
- _____ 3.26.3 Close 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB)). {17}
- _____ 3.26.4 **AFTER** 5 minutes record QT pressure in Step 4.1. {17}
- _____ 3.26.5 Open 1GWD-13 (QUENCH TANK VENT (OUTSIDE RB)). {17}
- _____ 3.26.6 **IF** venting of RxV head is in-progress, notify Operator to restart venting
RxV head.
- _____ 3.27 Record final QT level in Step 4.1. {17}

Enclosure 4.10
Establishing Pzr Steam Bubble
And RCS Final Vent

OP/1/A/1103/002
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4. RCS Vent Data

- NOTE:**
- With 1GWD-17 open, 1GWD-13 closed, and QT pressure changes minimal, Pzr steam bubble formation is complete. {17}
 - 2" change in QT level is expected from condensing Pzr steam. {17}

4.1 Pzr steam bubble:

Initial QT level Step 3.17	
QT pressure Step 3.20.2	QT pressure Step 3.20.4
QT pressure Step 3.21.2	QT pressure Step 3.21.4
QT level Step 3.22	
QT pressure Step 3.23.2	QT pressure Step 3.23.4
<u>IF</u> required, QT pressure Step 3.26.2	<u>IF</u> required, QT pressure Step 3.26.4
Final QT level Step 3.27	

4.2 Record the following:

Completed By Date

____ 4.3 **WHEN** complete, return Section 4 (RCS Vent Data) to Ops Support Group. {17}

SYS008 K4.09 - Component Cooling Water System (CCWS)

Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

The "standby" feature for the CCW pumps

Which ONE of the following will result in the Standby Component Cooling pump receiving an automatic start signal?

- A. CC Total Flow = 568 gpm
 - B. CRD Outlet HDR Flow = 136 gpm
 - C. Component Cooling Pump Pressure = 95 psig
 - D. ONE Main Feeder Buses de-energized for 21 seconds
-

General Discussion

Answer A Discussion

Correct. The Standby CC pump will start when total CC flow is less than 575 gpm.

Answer B Discussion

Incorrect. Plausible because 136 gpm is below the interlock (138 gpm) to prevent energizing the CRDs. A candidate could have the misconception that this low flow would also start the standby pump.

Answer C Discussion

Incorrect. 95 psig is well below the normal system pressure of about 125 psig. A candidate could have the misconception that the standby pump starts on low header pressure.

Answer D Discussion

Incorrect. Plausible because it would be correct if BOTH MFBs were deenergized for greater than 20 seconds. MFB Monitor Panel would actuate and send a start signal to BOTH CC pumps.

Basis for meeting the K

Question requires knowledge of the auto start feature of the CC pumps.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT41 Q35

Development References

PNS-CC Obj. 15
ONS ILT41 Q35

Student References Provided

SYS008 K4.09 - Component Cooling Water System (CCWS)

Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

The "standby" feature for the CCW pumps

401-9 Comments:

Remarks/Status

SYS010 A1.08 - Pressurizer Pressure Control System (PZR PCS)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: (CFR: 41.5 / 45.5)

Spray nozzle DT

Given the following Unit 1 conditions:

- BWST Temperature = 85°F
- LDST Temperature = 105°F
- RCS pressure = 685 psig

- 1) The (1) is an allowable suction source for Auxiliary Pressurizer Spray.
- 2) The reason for the applicable limit in accordance with SLC 16.5.8 (Pressurizer) is to reduce (2) .

Which ONE of the following completes the statements above?

- A.
 1. LDST ONLY
 2. thermal stress on the Pzr spray nozzle
 - B.
 1. LDST or the BWST
 2. thermal stress on the Pzr spray nozzle
 - C.
 1. LDST ONLY
 2. the potential for exceeding Pzr heater capacity
 - D.
 1. LDST or the BWST
 2. the potential for exceeding Pzr heater capacity
-

General Discussion

Answer A Discussion

Correct. Aux Spray nozzle ΔT limit is 410°F. RCS pressure $685 + 15 = 700$ psia = 503°F Pzr Temp. BWST ΔT is $5033 - 85 = 418^\circ\text{F}$. LDST $\Delta T = 503 - 105 = 395^\circ\text{F}$. BWST is above ΔT limit therefore only LDST can be used. To reduce thermal stress on the Pzr spray nozzle is the reason.

Answer B Discussion

Incorrect, BWST is above ΔT limit therefore only LDST can be used. Second part is correct.

Answer C Discussion

Incorrect, first part is correct. Second part is plausible because lower temp water would required more heat input.

Answer D Discussion

Incorrect, BWST is above ΔT limit therefore only LDST can be used. Second part is plausible because lower temp water would required more heat input.

Basis for meeting the K

Requires knowledge of limitation on spray nozzle delta T during the use of Aux Spray for RCS pressure control.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2007 RO Retest

Development References

PNS-PZR Obj. 29
ONS 2007 retest Q29

Student References Provided

SYS010 A1.08 - Pressurizer Pressure Control System (PZR PCS)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: (CFR: 41.5 / 45.5)

Spray nozzle DT

401-9 Comments:

Remarks/Status

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SYS010 K6.03 - Pressurizer Pressure Control System (PZR PCS)

Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: (CFR: 41.7 / 45.7)

PZR sprays and heaters

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1RC-1 failed OPEN
- RCS pressure = 2150 psig decreasing
- AP/44 (Abnormal Pressurizer Pressure Control) initiated

Current conditions:

- 1RC-3 failed OPEN

1) RCS pressure will (1).

2) AP/44 will initially direct stopping the (2) to help mitigate the failure.

Which ONE of the following completes the statements above?

- A. 1. continue to decrease below the reactor trip setpoint
 2. 1A1 RCP ONLY
 - B. 1. continue to decrease below the reactor trip setpoint
 2. 1A1 and 1A2 RCP
 - C. 1. be maintained above the reactor trip setpoint by the Pzr heaters
 2. 1A1 RCP ONLY
 - D. 1. be maintained above the reactor trip setpoint by the Pzr heaters
 2. 1A1 and 1A2 RCP
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because the 1A1 RCP is the "spray" pump.

Answer B Discussion

Correct. Heaters will not maintain pressure with the Spray valve open. Pressure will continue to decrease. AP/44 will initially stop the 1A1 and 1A2 RCPs.

Answer C Discussion

Incorrect. First part is plausible because the candidate may have the misconception that Pzr heaters could overcome Pzr spray. Second part is plausible because the 1A1 RCP is the "spray" pump.

Answer D Discussion

Incorrect. First part is plausible because the candidate may have the misconception that Pzr heaters could overcome Pzr spray. Second part is correct.

Basis for meeting the K

Question requires knowledge of how a failure of Pzr spray would affect Pzr PCS and the resulting RCS pressure response.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

PNS-PZR Obj. 11
AP/44

Student References Provided

SYS010 K6.03 - Pressurizer Pressure Control System (PZR PCS)
Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: (CFR: 41.7 / 45.7)
PZR sprays and heaters

401-9 Comments:

Remarks/Status

SYS012 K2.01 - Reactor Protection System (RPS)

Knowledge of bus power supplies to the following: (CFR: 41.7)

RPS channels, components, and interconnections

Which ONE of the following would result in a trip of the 1D RPS Channel AND the 1D CRD Breaker?

- A. 1D RPS channel Manual Trip keyswitch is placed in the trip position
 - B. Reactor Building Pressure Switch in the 1D RPS channel fails OPEN
 - C. Loss of 1DCB panelboard
 - D. Loss of the 1KVID panelboard
-

General Discussion

Answer A Discussion

Incorrect: Plausible since taking the Manual Trip keyswitch to trip would cause the channel to trip. However the breaker would remain closed because it requires two RPS channels to trip to open the CRD breakers.

Answer B Discussion

Incorrect: Plausible since in the OLD RPS this failure would result in the RPS channel tripping however the CRD breaker still requires 2 tripped RPS channels to open therefore it will remain closed

Answer C Discussion

Incorrect. Plausible because 1DCB does provide power to inverter that powers 1KVID. However it is backedup by isolating diodes and power will not be lost.

Answer D Discussion

CORRECT: Loss of the vital power source to a particular RPS channel will result in that entire channel de-energizing, with all indicating lights off, and the channel tripped. Loss of the vital power source will also result in a trip of the individual CRD breaker associated with that RPS channel since the 120VAC to the breakers UV coil and shunt trip relay will be lost.

Basis for meeting the K

Requires knowledge of the power supply to RPS Channels and related components (CRD breakers)

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS 2009A Q38

Development References

IC-RPS R18
ONS 2009A Q38

SYS012 K2.01 - Reactor Protection System (RPS)
Knowledge of bus power supplies to the following: (CFR: 41.7)
RPS channels, components, and interconnections

Student References Provided

401-9 Comments:

Remarks/Status

SYS012 K6.03 - Reactor Protection System (RPS)

Knowledge of the effect of a loss or malfunction of the following will have on the RPS: (CFR: 41.7 / 45/7)

Trip logic circuits

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1A RPS Thot RTD fails HIGH

Which ONE of the following describes:

- 1) ALL RPS trips affected by the failure?
 - 2) the action preferred, in accordance with OP/1/A/1105/014 (Control Room Instrumentation Operation And Information)?
- A.
 1. RCS High Outlet Temperature ONLY
 2. Place MANUAL TRIP Keyswitch in "TRIP".
 - B.
 1. RCS High Outlet Temperature ONLY
 2. Place affected RPS Channel MANUAL BYPASS keyswitch in "BYP".
 - C.
 1. RCS High Outlet Temperature and RCS Variable Low Pressure
 2. Place MANUAL TRIP Keyswitch in "TRIP".
 - D.
 1. RCS High Outlet Temperature and RCS Variable Low Pressure
 2. Place affected RPS Channel MANUAL BYPASS keyswitch in "BYP".
-

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D

General Discussion

We have 4 RPS channels. TS 3.3.1 only requires 3 to be operable. OP/1105/014 gives guidance on what to do if problems arise with RPS channels.

Answer A Discussion

Incorrect. First part is plausible since it is the only trip function in RPS with high temperature in its name. Second part is plausible since it would be correct if this were a "required" RPS channel. However only 3 RPS channels are required IAW TS 3.3.1 and since there are no other conditions given, the channel with the failed NI would be considered not required.

Answer B Discussion

Incorrect. Incorrect. First part is plausible since it is the only trip function in RPS with high temperature in its name. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if this were a "required" RPS channel. However only 3 RPS channels are required IAW TS 3.3.1 and since there are no other conditions given, the channel with the failed NI would be considered not required.

Answer D Discussion

Correct. The High Outlet Temperature trip uses T_{hot} directly to determine if the trip setpoint has been reached. The Variable Low Pressure trip uses T_{hot} in the formula to calculate the low pressure trip:

$$11.14T_{hot} - 4706$$

Since this is NOT a required channel, 1105/014 directs (per a note saying it is preferred) placing the channel in Manual Bypass is correct.

Basis for meeting the K

Question requires knowledge of the impact on RPS from a malfunction of the trip logic. Malfunction of the trip logic circuit portion of the KA is matched since the failure of the RTD results in trip logic "malfunction" since it causes a response of the channel to something other than actual RCS T_{hot} temperature.

Basis for Hi Cog

Requires analyzing plant conditions and determining the correct actions based on guidance in a procedure.

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2011B Q38 (Bank 4638)

Development References

IC-RPS
OP/1105/14
ADM-ITS
ASM-PIS

Student References Provided

SYS012 K6.03 - Reactor Protection System (RPS)

Knowledge of the effect of a loss or malfunction of the following will have on the RPS: (CFR: 41.7 / 45/7)

Trip logic circuits

401-9 Comments:

Remarks/Status

SYS013 K1.06 - Engineered Safety Features Actuation System (ESFAS)

Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

ECCS

Given the following Unit 1 conditions:

- Main Steam Line break inside the Reactor Building
- RCS pressure decreased to 974 psig and is now increasing
- Reactor Building pressure increased to 34 psig and is now decreasing

Which ONE of the following lists ALL ECCS systems that have actuated?

- A. HPI ONLY
 - B. HPI AND Core Flood ONLY
 - C. HPI AND LPI ONLY
 - D. HPI, LPI, AND Core Flood
-

General Discussion

Answer A Discussion

Incorrect. Plausible since RCS pressure decreased below the setpoint that would actuate HPI but did not go below the LPI setpoint therefore if you associated RB pressure setpoints with only those systems that address high RB pressure (ES-5,6,7,8 for RBCU's and RBS) then you would choose A.

Answer B Discussion

Incorrect. Plausible if the 600 psig CFT pressure requirement is not understood since RCS pressure did not reach the ES-LPI setpoint.

Answer C Discussion

Correct. ES 1-8 have actuated on high RB pressure (>10 psig). Since CFT's have not yet discharged, the only ECCS systems that have actuated are HPI and LPI

Answer D Discussion

Plausible based on either a misconception that all ECCS systems are actuated if ES 1-8 actuate and Plausible if the 625 max CFT pressure is not known.

Basis for meeting the K

Requires knowledge of the relationship between RCS pressure, RB pressure, ES setpoints, and ECCS systems.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

IC-ES R1
 IC-ES
 PNS-CF

Student References Provided

SYS013 K1.06 - Engineered Safety Features Actuation System (ESFAS)

Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

ECCS

401-9 Comments:

Remarks/Status

SYS013 K5.01 - Engineered Safety Features Actuation System (ESFAS)

Knowledge of the operational implications of the following concepts as they apply to the ESFAS: (CFR: 41.5 / 45.7)

Definitions of safety train and ESF channel

Given the following Unit 3 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- 3A HPI Pump operating

Current conditions:

- Time = 0401
- Reactor tripped due to SBLOCA
- ES Digital Channels 2, 4, and 6 failed to automatically actuate

At 0405, which ONE of the following lists only safety related components that will be in their ES condition?

ASSUME NO OPERATOR ACTIONS

- A. KHU #2 / 3HP-5
 - B. 3B HPI Pump / 3PR-10
 - C. KHU #2 / 3A LPI Pump
 - D. 3B HPI Pump / 3LPSW-24
-

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C

General Discussion

Answer A Discussion

Incorrect: First part is correct. Either ES channels 1 or 2 starts both Keowee units. Second part is plausible if the candidate had the misconception that 3HP-5 was on ES Channel 1.

Answer B Discussion

Incorrect: First part is correct. Either ES channels 1 or 2 starts the "B" HPI Pump. Second part is plausible if the candidate had the misconception that 3PR-10 was on ES Channel 1.

Answer C Discussion

Correct. Either ES channels 1 or 2 starts both Keowee units. 3A LPI Pump is on ES Channel 3.

Answer D Discussion

Incorrect: First part is correct. Either ES channels 1 or 2 starts the "B" HPI Pump. Second part is plausible if the candidate had the misconception that 3LPSW-24 was on ES Channel 1.

Basis for meeting the K

Requires knowledge of the ES Channels and their associated safety train components.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	ONS 2009 Q37

Development References

IC-ES R18
ONS 2009 Q37

Student References Provided

SYS013 K5.01 - Engineered Safety Features Actuation System (ESFAS)

Knowledge of the operational implications of the following concepts as they apply to the ESFAS: (CFR: 41.5 / 45.7)

Definitions of safety train and ESF channel

401-9 Comments:

Remarks/Status

SYS022 K2.01 - Containment Cooling System (CCS)
Knowledge of power supplies to the following: (CFR: 41.7)
Containment cooling fans

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 50% stable

Current conditions:

- LBLOCA occurs
- 1TC de-energized

Which ONE of the following describes the status of the below listed Reactor Building Cooling Units five (5) minutes after ES actuates?

ASSUME NO OPERATOR ACTIONS

	<u>1A RBCU</u>	<u>1B RBCU</u>
A.	LOW	LOW
B.	LOW	OFF
C.	OFF	LOW
D.	OFF	OFF

General Discussion

Answer A Discussion

Incorrect: Plausible as the RBCU power supplies are not sequenced such that the letter designator follows the power supply arrangement. If 1C RBCU fan is applied to TC bus this choice would be plausible.

Answer B Discussion

Incorrect: Plausible if candidate confuses the typical power supply arrangement where TC supplies "B" safety train components and TE supplies "C" safety train components.

Answer C Discussion

Correct: 1TD supplies 1X9 which supplies 1C RBCU and 1TE supplies 1XS3 which supplies 1B RBCU and 1TC supplies 1XS8 which supplies 1A RBCU. ES will only start the 1B & 1C RBCUs.

Answer D Discussion

Incorrect: Plausible as there is a 3 minute time delay on the restart of the RBCUs. Incorrect application of the time delay could result in selecting this distracter.

Basis for meeting the K

Requires knowledge of power supplies to Reactor Building Cooling Units (RBCUs)

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS 2009 Q38

Development References

PNS-RBC R1
IC-ES R20
ONS 2009 Q38

Student References Provided

SYS022 K2.01 - Containment Cooling System (CCS)
Knowledge of power supplies to the following: (CFR: 41.7)
Containment cooling fans

401-9 Comments:

Remarks/Status

SYS026 K1.02 - Containment Spray System (CSS)

Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

Cooling water

Given the following plant conditions:

- SBLOCA has occurred on Unit 1
- Reactor Building Pressure = 11.2 psig slowly decreasing
- Unit 2 Reactor Power = 100%

Which ONE of the following describes the actions directed by Enclosure 5.1 (ES Actuation) to ensure the required LPSW flow exists in the 1A LPI cooler?

- A. Place 1LPSW-251 in "Failed Open" ONLY
 - B. Place 1LPSW-251 in "Failed Open" AND fully open 1LPSW-4
 - C. Place 1LPSW-251 in "Failed Open" AND Throttle LPSW flow to approximately 3000 gpm using 1LPSW-4
 - D. Place 1LPSW-251 in "Failed Open" AND Throttle LPSW flow to approximately 5200 gpm using 1LPSW-4
-

General Discussion

Answer A Discussion

Incorrect. Plausible since there are no LPSW failures and LPSW-251 is designed to automatically control LPSW flow, Additionally plausible since the valve is maintained in Auto with a setpoint of 3000 gpm.

Answer B Discussion

Correct. With all LPSW pumps operating, Encl. 5.1 directs placing LPSW-251 and 252 in "Failed Open" and then fully opening 1LPSW-4 & 5.

Answer C Discussion

Incorrect. Plausible since these actions are taken at other times based on component failures following ES actuation. Additional plausibility based on the fact that 3000 gpm is the setpoint that is normally maintained on LPSW-251 and 252.

Answer D Discussion

Incorrect. Placing LPSW-251 in failed open and throttling with LPSW-4 is plausible because those actions are directed as a result of component failures following ES actuation. The flow rate is plausible since it is where LPSW-251 will auto control LPSW flow following a condition where flow exceeds 5900 gpm.

Basis for meeting the K

Wrote question LPSW flow to LPI coolers since ONS does not have coolers specific to the RBS system.

This question demonstrates understanding of how cooling water is supplied to the LPI coolers following a SBLOCA. The LPI coolers will cool the Reactor Building Spray water when suction is swapped to the RB Emergency Sump.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT44 Q68

Development References

EOP Encl 5.1
ONS ILT44 Q68

Student References Provided

SYS026 K1.02 - Containment Spray System (CSS)

Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

Cooling water

401-9 Comments:

Remarks/Status

SYS039 A2.05 - Main and Reheat Steam System (MRSS)

Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Increasing steam demand, its relationship to increases in reactor power ...

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 75% stable

Current conditions:

- 1A TBVs fail OPEN

1) (1) will be used to mitigate this event.

2) Reactor power will increase and then stabilize at (2) .

Which ONE of the following completes the statements above?

- A.
 - 1. OP/1/A/1106/001 (Turbine Generator)
 - 2. a higher power level
 - B.
 - 1. OP/1/A/1106/001 (Turbine Generator)
 - 2. approximately the pre-transient value
 - C.
 - 1. AP/1/A/1700/028 (ICS Instrument Failures)
 - 2. a higher power level
 - D.
 - 1. AP/1/A/1700/028 (ICS Instrument Failures)
 - 2. approximately the pre-transient value
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible because this procedure used to operate the TBVs. It also has guidance for returning some controllers to Automatic if they swap to MANUAL. Ie Turbine Oil Temp. Controller. Second part is plausible because reactor power will initially increase.

Answer B Discussion

Incorrect. First part is plausible because this procedure used to operate the TBVs. It also has guidance for returning some controllers to Automatic if they swap to MANUAL. Ie Turbine Oil Temp. Controller. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because reactor power will initially increase.

Answer D Discussion

Correct. AP/28 will be used to mitigate a TBVs failing open. Reactor power will initially increase and then because Reactor power is front end demand the ICS will reduce power to the pre-transient value.

Basis for meeting the K

Question requires knowledge of how changing steam demand affects reactor power and the procedure that will used to mitigate the TBVs failing open.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

AP/28
OP/1106/001

Student References Provided

SYS039 A2.05 - Main and Reheat Steam System (MRSS)

Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Increasing steam demand, its relationship to increases in reactor power ...

401-9 Comments:

Remarks/Status

SYS059 A3.03 - Main Feedwater (MFW) System

Ability to monitor automatic operation of the MFW, including: (CFR: 41.7 / 45.5)

Feedwater pump suction flow pressure

Given the following Unit 3 conditions:

- Time = 0400
- Reactor power = 70% stable
- 3B2 RCP trips

At 0430, which ONE of the following describes the response in FDW pump suction flows that has occurred over the previous 30 minutes?

- A. 3A FDW Pump suction flow has increased and 3B FDW Pump suction flow has decreased
- B. 3B FDW Pump suction flow has increased and 3A FDW Pump suction flow has decreased
- C. 3A and 3B FDW Pump suction flows have decreased
- D. 3A and 3B FDW Pump suction flows remain unchanged
-

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ILT45 ONS SRO NRC Examination QUESTION 45

45

D

General Discussion

Answer A Discussion

Incorrect. Plausible since FDW flow to the steam generators will re-ratio due to the loss of the RCP.

Answer B Discussion

Incorrect. Plausible since FDW flow to the steam generators will re-ratio due to the loss of the RCP.

Answer C Discussion

Incorrect: Plausible since there is an automatic ICS runback associated with a loss of an RCP however the runback is only to 75%, If the Reactor was above 75% this would be the correct answer.

Answer D Discussion

Correct. A loss of a RCP at 70% power will result in a re-rationing of feedwater flows to the SG. In this case, FDW flow will increase to the A SG and decrease to the B SG as a response to the unbalanced RC flow and the delta Tc that results. As a result, feedwater flow to each SG will change accordingly. However, since the discharge of the FDW pumps go to a common header, suction flows to each FDW pump will remain unchanged.

Basis for meeting the K

Requires the ability to monitor for the correct automatic response of the MFW system in that it requires the ability to monitor for correct FDW pump suction flow response to a loss of an RCP.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

CF-FDW Obj. 3, 5, 6
 CF-FDW Figure 1

Student References Provided

SYS059 A3.03 - Main Feedwater (MFW) System
 Ability to monitor automatic operation of the MFW, including: (CFR: 41.7 / 45.5)
 Feedwater pump suction flow pressure

401-9 Comments:

Remarks/Status

SYS061 A1.04 - Auxiliary / Emergency Feedwater (AFW) System

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: (CFR: 41.5 / 45.5)

AFW source tank level

Given the following Unit 1 conditions:

Initial conditions:

- Unit cooldown in progress
- 1A and 1B MD EFDWPs operating
- EOP Enclosure 5.9 (Extended EFDW Operation) in progress

Current conditions:

- UST level = 3.5 feet decreasing

In accordance with EOP Enclosure 5.9,

- 1) both MD EFDWPs are required to be secured at the HIGHER UST level of less than (1).
- 2) vacuum is (2) to be broken prior to the MD EFDWPs taking suction on the Hotwell.

Which ONE of the following completes the statements above?

- A.
 1. one foot
 2. required
 - B.
 1. one foot
 2. NOT required
 - C.
 1. one inch
 2. required
 - D.
 1. one inch
 2. NOT required
-

General Discussion

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Answer A Discussion

Correct. In accordance with EOP Encl. 5.9 the MD EFDWPs are required to be secured when UST level is less than 1 foot. Vacuum is required to be broken prior to taking suction on the Hotwell with the MD EFDWPs.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because the valves from the Hotwell to the MD EFDWPs are normally open.

Answer C Discussion

Incorrect. First part is plausible because it is correct when taking a suction from the Hotwell. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because it is correct when taking a suction from the Hotwell. Second part is plausible because the valves from the Hotwell to the MD EFDWPs are normally open.

Basis for meeting the K

Question requires knowledge of UST levels and when stopping the MD EFDWPs is required.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

CF-EF Obj. 6
EOP Enclosure 5.9

Student References Provided

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SYS061 A1.04 - Auxiliary / Emergency Feedwater (AFW) System

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: (CFR: 41.5 / 45.5)

AFW source tank level

401-9 Comments:

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Remarks/Status

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ILT45 ONS SRO NRC Examination QUESTION 47

47

SYS062 K3.03 - AC Electrical Distribution System

Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: (CFR: 41.7 / 45.6)

DC system

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1DCA Bus Voltage = 125 VDC
- 1DCB Bus Voltage = 126 VDC
- 2DCA Bus Voltage = 127 VDC
- 2DCB Bus Voltage = 127 VDC

Current conditions:

- 1XS1 incoming feeder breaker trips

Based on the current conditions, which ONE of the following is correct regarding the DC power systems?

ASSUME NO OPERATOR ACTIONS

- A. 1DCA will be powered from the standby charger
 - B. 1DCB loads will be powered from Battery 1CB
 - C. 1KX Inverter will be powered from 1DCB
 - D. 1DIC Inverter will be powered from 1DCB
-

General Discussion

Re-arranged answers

Answer A Discussion

Incorrect: the standby charger will not automatically power 1DCA. Plausible because the standby charger can be manually aligned to supply 1DCA.

Answer B Discussion

Incorrect: DCB is not powered from 1XS1. The Battery Charger will be supplying DCB and the battery. Plausible because if 1XS2 were de-energized, B would be correct.

Answer C Discussion

Correct: Upon a loss of 1XS1, Battery Charger 1CA de-energizes. Battery 1CA automatically picks up DC bus DCA. Essential Inverters (KX, KI and KU) are powered from DCA or DCB (whichever has the higher potential). Vital DC Buses (DIA, DIB, DIC, DID) are powered from their unit or the alternate unit (whichever has the higher potential).

Answer D Discussion

Incorrect: 1DIC is supplied from the alternate unit (higher potential). Plausible because 1DIC would be supplied from 1DCB if it had the higher potential.

Basis for meeting the K

Question requires knowledge of the affect of a loss or malfunction of the AC distribution system will have on the DC system.

Basis for Hi Cog

Requires analyzing system conditions and detailed knowledge of how the system works.

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT40 Q48 (Bank 4648)

Development References

EL-DCD Obj. 10
ONS ILT40 Q48 (Bank 4648)

Student References Provided

SYS062 K3.03 - AC Electrical Distribution System

Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: (CFR: 41.7 / 45.6)
DC system

401-9 Comments:

Remarks/Status

SYS062 K4.07 - AC Electrical Distribution System

Knowledge of ac distribution system design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

One-line diagram of 4kV to 480V distribution, including sources of normal and alternative power

-
- 1) 600 volt MCC 1XS2 is normally powered from a power string that begins at 4 KV switchgear (1).
 - 2) If the normal power supply to 1XS2 is lost, the alternate power supply (2) automatically energize 1XS2.

Which ONE of the following completes the statements above?

- A.
 1. 1TD
 2. will
 - B.
 1. 1TD
 2. will NOT
 - C.
 1. 1TE
 2. will
 - D.
 1. 1TE
 2. will NOT
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because it is correct for none safety related power strings.

Answer B Discussion

Correct. 1XS2 is power from 1TD. If the normal supply is lost it will not automatically swap to the alternate source.

Answer C Discussion

Incorrect. First part is plausible because 1TE does supply 1XS3 and 1XS6 MCCs. Second part is plausible because it is correct for none safety related power strings.

Answer D Discussion

Incorrect. First part is plausible because 1TE does supply 1XS3 and 1XS6 MCCs. Second part is correct.

Basis for meeting the K

Question requires knowledge of the AC dist. From 4KV to 600 v MCC. At ONS we do not use 480 volt equipment.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

EL-EPD

Student References Provided

SYS062 K4.07 - AC Electrical Distribution System

Knowledge of ac distribution system design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)

One-line diagram of 4kV to 480V distribution, including sources of normal and alternative power

401-9 Comments:

Remarks/Status

SYS063 A1.01 - DC Electrical Distribution System

Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: (CFR: 41.5 / 45.5)

Battery capacity as it is affected by discharge rate

Station initial conditions:

- All three units Reactor power = 100%

Current conditions:

- All Unit's 4160v Main Feeder Busses are de-energized
- Unit 1, 2, and 3 EOP Blackout tabs in progress

Based on the above conditions, which ONE of the following describes the required status of Unit 1 Essential Inverters per the EOP Enclosure 5.38 (Restoration of Power) and why?

Unit 1's Essential Inverters...

- A. remain energized to provide power to ES channels.
 - B. remain energized to provide control power to 4160v.
 - C. are de-energized to prevent inverter damage.
 - D. are de-energized to extend available battery life.
-

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ILT45 ONS SRO NRC Examination QUESTION 49

49

D

General Discussion

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Answer A Discussion

Incorrect: Plausible if ES Channels (are vital loads from KVIA,B,C,D) are confused with essential loads (from KI, KU, KX); vital loads must be differentiated from essential loads

Answer B Discussion

Incorrect: Plausible if control power (ex. for breakers, switches, etc) are incorrectly assumed to be essential inverter loads

Answer C Discussion

Incorrect: Incorrect but plausible in that inverters could be damaged due to high current as input voltages start to decrease.

Answer D Discussion

Correct: Essential Inverters KI, KU, & KX DC input breakers are opened to extend battery life per direction given from the EOP SBO tab (Encl. 5.38 and tab Step 2.38)

Basis for meeting the K

Requires knowledge of required actions within procedures and the correlation of the impact of high battery load on available battery capacity as the bases for actions directed in the EOP

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS 2009 Q48

Development References

EAP-SBO R8
ONS 2009 Q48

Student References Provided

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SYS063 A1.01 - DC Electrical Distribution System

Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: (CFR: 41.5 / 45.5)

Battery capacity as it is affected by discharge rate

401-9 Comments:

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Remarks/Status

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ILT45 ONS SRO NRC Examination QUESTION 50

50

SYS064 K3.02 - Emergency Diesel Generator (ED/G) System

Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: (CFR: 41.7 / 45.6)

ESFAS controlled or actuated systems

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%
- SL1 and SL2 closed
- ACB-4 closed

Current conditions:

- Time = 0401
- RCS pressure = 200 psig decreasing
- Switchyard Isolation occurs
- Keowee Unit 2 Emergency Locked out

1A and 1B LPI pumps will be _____.

Which ONE of the following completes the statement above?

- A. manually energized from CT-5
 - B. automatically energized from CT-5
 - C. manually energized from Keowee Unit 1
 - D. automatically energized from Keowee Unit 1
-

General Discussion

Answer A Discussion

Incorrect. Plausible because it would be correct if both Keowees were locked out and SL1/SL2 not closed.

Answer B Discussion

Correct. Loss of Offsite power has occurred concurrent with a LOCA. Power would normally be restored by a Keowee unit via CT-4 and the underground. In this case the Keowee unit locked out and power will be restored automatically from CT-5.

Answer C Discussion

Incorrect. Plausible because it would be correct if a LOCA was not occurring.

Answer D Discussion

Incorrect. Plausible because it would be correct if SL1/SL2 not closed.

Basis for meeting the K

We do not have Emergency Diesel Generators for backup power. We use two Keowee Hydro units. This question requires knowledge of how the LPI pumps (ES equipment) will be powered if one of the KHUs fail during a LOCA/LOOP.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EL-PSL Obj. 7

Student References Provided

SYS064 K3.02 - Emergency Diesel Generator (ED/G) System

Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: (CFR: 41.7 / 45.6)

ESFAS controlled or actuated systems

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 51

51

SYS073 K5.01 - Process Radiation Monitoring (PRM) System

Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: (CFR: 41.5 / 45.7)

Radiation theory, including sources, types, units, and effects

Given the following Unit 1 conditions:

Initial conditions:

- Time = 1200
- Reactor power = 35% stable
- 1A steam generator tube leak = 2.1 gpd stable
- RCS activity = 0.25 μ Ci/ml DEI increasing

Current conditions:

- Time = 1400
- NO change in 1A SG tube leak rate
- RCS activity = 0.65 μ Ci/ml DEI and increasing

Which ONE of the following describes the response of the radiation monitors between 1200 and 1400?

- A. 1RIA-16 (Main Steam Line Monitor) and 1RIA-40 (CSAE Off-gas) increased.
 - B. 1RIA-16 (Main Steam Line Monitor) increased while 1RIA-40 (CSAE Off-gas) remained constant.
 - C. 1RIA-59 (N-16 monitor) and 1RIA-40 (CSAE Off-gas) increased.
 - D. 1RIA-59 (N-16 monitor) increased while 1RIA-40 (CSAE Off-gas) remained constant.
-

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ILT45 ONS SRO NRC Examination QUESTION 51

51

A

General Discussion

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Answer A Discussion

Correct: RIA-16 and 40 will respond to ALL activity, therefore an increase in RCS activity, which the stem provides with a degrading fuel failure, would cause both to increase.

Answer B Discussion

Incorrect. RIA-40 will be affected by the fuel failure as described in A. Plausible since RIA-40 is reading Air Ejector off gas flow and not directly monitoring the RCS.

Answer C Discussion

Incorrect. RIA-40 will be affected by the fuel failure, whereas RIA 59 (N-16 detectors) will not. Plausible since RIA-59 & 60 are Main Steam Line monitors and activity that leaks to the secondary side will pass by the RIA's on the way to the Main Turbine.

Answer D Discussion

Incorrect. RIA-40 will be affected by the fuel failure, whereas RIA 59 (N-16 detectors) will not. Plausible since RIA-40 is reading Air Ejector off gas flow and not directly monitoring the RCS.

Basis for meeting the K

Knowledge of the operational implications of process RIA responses are required to determine expected RIA response to SGTR and failed fuel. Additionally, an understanding of N-16 production and decay is needed to understand RIA-59 & 60 responses (or lack of response) to failed fuel. RIA-40 is a process monitor.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2009A Q51

Development References

RAD RIA obj. 8
ONS 2009A Q51

Student References Provided

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SYS073 K5.01 - Process Radiation Monitoring (PRM) System

Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: (CFR: 41.5 / 45.7)

Radiation theory, including sources, types, units, and effects

401-9 Comments:

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Remarks/Status

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ILT45 ONS SRO NRC Examination QUESTION 52

52

SYS076 A4.01 - Service Water System (SWS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

SWS pumps

Given the following Unit 1 and 2 conditions:

Initial conditions:

- A & B LPSW pump operating

Current conditions:

- 1SA9/A9 LPSW HEADER A PRESS LOW
- A LPSW pump amps = 15 - 35 fluctuating
- B LPSW pump amps = 55 stable
- LPSW HDR PRESS = rapidly fluctuating between 60 & 75 psig

1) The A LPSW pump ____ (1) ____.

2) AP/24 (Loss of LPSW) will direct ____ (2) ____.

Which ONE of the following completes the statements above?

- A. 1. is cavitating
 2. placing the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE then stopping LPSW Pump A and starting LPSW Pump C
- B. 1. has a sheared shaft
 2. placing the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE then stopping LPSW Pump A and starting LPSW Pump C
- C. 1. is cavitating
 2. starting LPSW Pump C then stopping LPSW Pump A
- D. 1. has a sheared shaft
 2. starting LPSW Pump C then stopping LPSW Pump A
-

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ILT45 ONS SRO NRC Examination QUESTION 52

52

A

General Discussion

Answer A Discussion

Correct: Indication given is consistent with pump cavitation on LPSW Pump A. LPSW Pump B amps are at the normal value for existing conditions. AP/24 procedural direction for cavitation is to disable the auto start feature then stop the affected pump and then start an available pump.

Answer B Discussion

Incorrect. First part is plausible since a sheared shaft would cause incorrect pump amp indications (vs a correctly operating pump). Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since starting the C pump would be correct if the A pump were not cavitating.

Answer D Discussion

Incorrect. First part is plausible since a sheared shaft would cause incorrect pump amp indications (vs a correctly operating pump). Second part is plausible since starting the C pump would be correct if the A pump were not cavitating.

Basis for meeting the K

Requires knowledge of monitoring LPSW pumps and plant conditions and then operating the LPSW pump controls in accordance with AP/24 (Loss of LPSW).

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2007 Retest Q53

Development References

EAP-APG AP/24 R9
 AP/24 (Loss of LPSW)
 ONS 2007 Retest Q53

Student References Provided

SYS076 A4.01 - Service Water System (SWS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

SWS pumps

401-9 Comments:

Remarks/Status

SYS076 2.2.3 - Service Water System (SWS)

SYS076 GENERIC

(multi-unit license) Knowledge of the design, procedural, and operational differences between units. (CFR: 41.5 / 41.6 / 41.7 / 41.10 / 45.12)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- RCS pressure = 248 psig decreasing

1) At 0415, (1) LPSW pumps will be supplying loads on Unit 1.

2) The B LPSW pump is powered from (2).

Which ONE of the following completes the statements above?

- A.
 - 1. ONLY two
 - 2. 1TD ONLY
 - B.
 - 1. ONLY two
 - 2. 1TD or 2TD
 - C.
 - 1. three
 - 2. 1TD ONLY
 - D.
 - 1. three
 - 2. 1TD or 2TD
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible because it would be correct on Unit 3. Second part is plausible because on Unit 3 it would be 3TD only.

Answer B Discussion

Incorrect. First part is plausible because it would be correct on Unit 3. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because on Unit 3 it would be 3TD only.

Answer D Discussion

Correct. Unit 1 and 2 share three LPSW pumps. On ES 3 and 4 actuation all three LPSW pumps start. Unit 3 has two LPSW pumps. Both start on ES actuation.

Basis for meeting the K

Question requires knowing differences in the LPSW system for Unit 1 and Unit 3.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

SSS-LPW R14

Student References Provided

SYS076 2.2.3 - Service Water System (SWS)

SYS076 GENERIC

(multi-unit license) Knowledge of the design, procedural, and operational differences between units. (CFR: 41.5 / 41.6 / 41.7 / 41.10 / 45.12)

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 54

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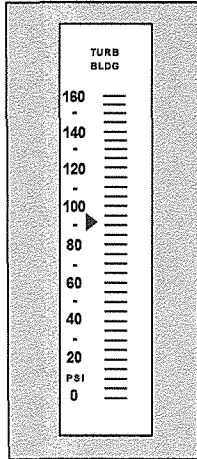
SYS078 A4.01 - Instrument Air System (IAS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

Pressure gauges

Given the following plant conditions:

- Large IA leak occurs
- Service air header pressure = 87 psig decreasing
- Turbine Building air header pressure per gage below



Which ONE of the following describes the air compressors that will be operating?

The Primary IA Compressor AND...

- A. Diesel Air Compressors ONLY
- B. Diesel Air Compressors AND AIA Compressors
- C. AIA Compressors AND Backup IA Compressors
- D. Backup IA Compressors ONLY

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ILT45 ONS SRO NRC Examination QUESTION 54

54

D

General Discussion

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Answer A Discussion

Incorrect. Diesel Air Compressors will Auto start at 90 psig IA pressure. Gage indicates pressure is slightly > 90 psig. Plausible if you use Service Air pressure. Second part is correct.

Answer B Discussion

Incorrect. Diesel Air Compressors will Auto start at 90 psig IA pressure. Plausible if you use Service Air pressure. AIA compressors start at 88 psig IA pressure therefore would not be operating.

Answer C Discussion

Incorrect. AIA compressors start at 88 psig IA pressure therefore would not be operating. Second part is correct.

Answer D Discussion

Correct. Primary IA compressor would be operating loaded and the Backup IA compressors would start at 93 psig IA pressure

Basis for meeting the K

Requires demonstrating the ability to monitor an IA pressure gage in the control room and based on the indication determine IA compressor status.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2009A Q53

Development References

SSS-IA Obj. 45
AP/22
ONS 2009A Q54

SYS078 A4.01 - Instrument Air System (IAS)

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

Pressure gauges

Student References Provided

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401-9 Comments:

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Remarks/Status

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SYS103 A2 03 - Containment System

Ability to (a) predict the impacts of the following malfunctions or operations on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Phase A and B isolation

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- Reactor power = 100%

Current conditions:

- Time = 0415
- RCS pressure = 1500 psig decreasing
- RB pressure = 1.2 psig increasing
- EOP Enclosure 5.1 (ES Actuation) initiated

- 1) At 0415, 1LPSW-15 is (1).
- 2) If closed due to ES actuation and in accordance with Enclosure 5.1, prior to opening 1LPSW-15, the associated (2).

Which ONE of the following completes the statements above?

- A.
 1. open
 2. voter is taken to override
 - B.
 1. open
 2. ES channel(s) is/are taken to manual
 - C.
 1. closed
 2. voter is taken to override
 - D.
 1. closed
 2. ES channel(s) is/are taken to manual
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because override is used if going to manual does not work.

Answer B Discussion

Correct. 1LPSW-15 is part of Essential RB isolation which isolates with ES channels 5 and 6. ES channels 5 and 6 actuate on 3 psig RB pressure. Encl. 5.1 will take the ES channel to manual and then open the valve.

Answer C Discussion

Incorrect. First part is plausible because it would be true if 1LPSW-15 were part of Non-essential RB isolation which is on ES channels 1 and 2. ES channels 1 and 2 have actuated on low RCS pressure. Second part is plausible because override is used if going to manual does not work.

Answer D Discussion

Incorrect. First part is plausible because it would be true if 1LPSW-15 were part of Non-essential RB isolation which is on ES channels 1 and 2. ES channels 1 and 2 have actuated on low RCS pressure. Second part is correct.

Basis for meeting the K

Question requires knowledge of the operation of Essential and non-essential RB isolation (Phase A and B. It also requires knowledge of the procedure to operate a valve that has been closed.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

IC-ES
Encl. 5.1

Student References Provided

SYS103 A2 03 - Containment System

Ability to (a) predict the impacts of the following malfunctions or operations on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Phase A and B isolation

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 56

56

SYS002 K6.04 - Reactor Coolant System (RCS)

Knowledge of the effect or a loss or malfunction on the following RCS components: (CFR: 41.7 / 45.7)

RCS vent valves

Given the following Unit 1 conditions:

Time = 0400

- Reactor trip from 100% power due to a loss of offsite power
- Forced Cooldown tab in progress
- Tcold = 550°F stable

Time = 0500

- RCS pressure = 2155 psig stable
- A Natural Circulation cooldown is initiated
- 1RC-159 (RX Vessel Head Vent) will NOT open

- 1) At 0400 and in accordance with the FCD tab, the MAXIMUM allowable cooldown rate is (2).
- 2) During the cooldown, Reactor Vessel head voids (1) expected to occur.

Which ONE of the following completes the statements above?

- A.
 1. < 50°F/hr
 2. are
 - B.
 1. < 50°F/hr
 2. are NOT
 - C.
 1. ≤ 50°F / ½ hr
 2. are
 - D.
 1. ≤ 50°F / ½ hr
 2. are NOT
-

General Discussion

--

Answer A Discussion

Correct. IAW with the FCD tab the cooldown rate is reduced to less than 50 degrees per hour. Because no flow will exist in the head area the head will not cool and head voids are likely to occur.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because the candidate could have the misconception that opening a vent flow path on the RX vessel head would create a low pressure area and cause not prevent head voids. It prevent the head voids by increasing the cooling of the Rx vessel head by cause flow through a normally stagnant area.

Answer C Discussion

Incorrect. First part is plausible because it is correct for a none NC cooldown. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because it is correct for a none NC cooldown. Second part is plausible because the candidate could have the misconception that opening a vent flow path on the RX vessel head would create a low pressure area and cause head voids. It prevents the head voids by increasing the cooling of the Rx vessel head by cause flow through a normally stagnant area.

Basis for meeting the K

Question requires knowledge of the affect of a failed Rx vessel head vent valve during a NC cooldown.

Basis for Hi Cog

--

Basis for SRO only

--

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EAO-FCD R5, 6
FCD tab

Student References Provided

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SYS002 K6.04 - Reactor Coolant System (RCS)

Knowledge of the effect or a loss or malfunction on the following RCS components: (CFR: 41.7 / 45.7)

RCS vent valves

401-9 Comments:

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Remarks/Status

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SYS015 A2.05 - Nuclear Instrumentation System (NIS)

Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)

Core void formation

Given the following Unit 1 conditions:

Initial conditions:

- A LOCA occurs from 100% power
- Multiple equipment failures have occurred

Current conditions:

- LOCA CD tab in progress
- A significant increase is noted on the Source Range

- 1) A transfer to the ICC tab is required (2).
- 2) A possible cause for the increase of the Source Range is significant voiding in the (1).

Which ONE of the following completes the statements above?

- A. 1. when ANY SCM indicates superheat
2. core
- B. 1. when ANY SCM indicates superheat
2. downcomer
- C. 1. ONLY when the Core SCM indicates superheat
2. core
- D. 1. ONLY when the Core SCM indicates superheat
2. downcomer
-

General Discussion

--

Answer A Discussion

Incorrect. First part is plausible because this is true for going to the LOSCM tab. Second part is plausible because voiding in the core will affect neutron generation.

Answer B Discussion

Incorrect. First part is plausible because this is true for going to the LOSCM tab. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because voiding in the core will affect neutron generation.

Answer D Discussion

Correct. Transfer to ICC is made ONLY when the Core SCM indicates superheat. Voiding in the downcomer will cause an increase in the Source Range.

Basis for meeting the K

Question requires knowledge of how void formation in the core and downcomer affect the source range. Most likely to be in this condition the ICC tab would be entered. This question requires knowledge of the entry requirements for the ICC tab of the EOP.

Basis for Hi Cog

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Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

TA-AM3 R6
EAP-ICC R2

Student References Provided

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SYS015 A2.05 - Nuclear Instrumentation System (NIS)

Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)

Core void formation

401-9 Comments:

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Remarks/Status

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ILT45 ONS SRO NRC Examination QUESTION 58

58

SYS041 K2.01 - Steam Dump System (SDS)/Turbine Bypass Control

Knowledge of bus power supplies to the following: (CFR: 41.7)

ICS, normal and alternate power supply

Given the following Unit 1 conditions:

- Reactor power = 100%

1) ICS AUTO power to the TBVs is supplied by (1).2) ICS HAND power to the TBVs is supplied by (2).

Which ONE of the following completes the statements above?

- A. 1. 1KI
2. 1KU
- B. 1. 1KI
2. 1KX
- C. 1. 1KU
2. 1KI
- D. 1. 1KU
2. 1KX
-

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ILT45 ONS SRO NRC Examination QUESTION 58

58

A

General Discussion

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Answer A Discussion

Correct. ICS AUTO power is from 1KI. ICS HAND power is from 1KU.
--

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because 1KX does supply power to the Main Turbine supervisor instrumentation.
--

Answer C Discussion

Incorrect. First part is plausible because 1KU supplies ICS HAND power. Second part is plausible because 1KI supplies AUTO power.

Answer D Discussion

Incorrect. First part is plausible because 1KU supplies ICS HAND power. Second part is plausible because 1KX does supply power to the Main Turbine supervisor instrumentation.
--

Basis for meeting the K

Question requires knowledge of the power supplies to TBVs (ICS). Our supplies are AUTO and HAND power instead of normal and alternate.
--

Basis for Hi Cog

--

Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT42 Q61

Development References

EL-VPC R7
ONS ILT42 Q61

Student References Provided

SYS041 K2.01 - Steam Dump System (SDS)/Turbine Bypass Control
Knowledge of bus power supplies to the following: (CFR: 41.7)
ICS, normal and alternate power supply

401-9 Comments:

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Remarks/Status

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SYS029 K3.01 - Containment Purge System (CPS)

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: (CFR: 41.7 / 45.6)

Containment parameters

Given the following Unit 1 conditions:

- Refueling in progress
- RB Purge in operation

- 1) If the RB Main Purge fan trips due an RIA alarm, Spent Fuel Pool level will (1).
- 2) When the RB Main Purge fan trips above, PR valves (2) will automatically close.

Which ONE of the following completes the statements above?

- A.
 1. increase
 2. 2 – 5 ONLY
 - B.
 1. increase
 2. 1 – 6
 - C.
 1. decrease
 2. 2 – 5 ONLY
 - D.
 1. decrease
 2. 1 – 6
-

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ILT45 ONS SRO NRC Examination QUESTION 59

59

A

General Discussion

Answer A Discussion

Correct. When the RB Main Purge fan trips RB pressure will increase. This will "push" water from the Fuel Transfer Canal into the SFP. RIA-45 interlock will cause PR-2 - 5 to close.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because is true for ES actuation.

Answer C Discussion

Incorrect. First part is plausible because the candidate could have a misconception as to the affect on RB pressure on stopping the RB purge fan.. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because the candidate could have a misconception as to the affect on RB pressure on stopping the RB purge fan.. Second part is plausible because is true for ES actuation.

Basis for meeting the K

Question requires knowledge of the affect of the loss of the RB Purge Fan on containment pressure and the resultant affect on SFP level. Discussed this concept with the Chief Examiner.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

PNS-RBP Obj. 9
RAD-RIA

Student References Provided

SYS029 K3.01 - Containment Purge System (CPS)

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: (CFR: 41.7 / 45.6)

Containment parameters

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 60

60

SYS033 A3.02 - Spent Fuel Pool Cooling System (SFPCS)

Ability to monitor automatic operation of the Spent Fuel Pool Cooling System including: (CFR: 41.7 / 45.5)

Spent fuel leak or rupture

Given the following plant conditions:

Initial conditions:

- Time = 0400
- "A" SFP pump operating

Current conditions:

- Time = 0401
- Spent Fuel Storage Cask has been dropped in Unit 1&2 SFP
- Spent Fuel damage is visible
- RIA-6 and RIA-41 HIGH alarm actuates
- Spent Fuel Pool level = -3.5 feet decreasing

- 1) The Unit (1) Reactor Building Purge filters will be used to reduce off site releases.
- 2) At 0401, the "A" SFP pump is (2) .

Which ONE of the following completes the statements above?

- A. 1. 1
 2. ON
- B. 1. 1
 2. OFF
- C. 1. 2
 2. ON
- D. 1. 2
 2. OFF
-

General Discussion

Answer A Discussion

Incorrect: First part is Plausible since Unit 1 and Unit 2 share Spent Fuel Pools and there is only one set of filters needed for the Spent Fuel Filtered Exhaust system. Since there are no dedicated filters, Unit 2's filters Reactor Building Purge filters are used. Second part is plausible since 4' is the level at which SF Pumps loose suction and level is still > 4 feet.

Answer B Discussion

Incorrect: First part is Plausible since Unit 1 and Unit 2 share Spent Fuel Pools and there is only one set of filters needed for the Spent Fuel Filtered Exhaust system. Since there are no dedicated filters, Unit 2's filters Reactor Building Purge filters are used. Second part is correct

Answer C Discussion

Incorrect: First part is correct. Second part is plausible since -4 feet is the level at which SF Pumps loose suction and level is still > -4 feet.

Answer D Discussion

Correct. Unit 1 and Unit 2 share Spent Fuel Pools and there is only one set of filters needed for the Spent Fuel Filtered Exhaust system. Since there are no dedicated filters, Unit 2's filters Reactor Building Purge filters are used. The Spent Fuel Cooling pumps have a low level trip at -2.5 feet. Since level is -3.5 feet the pumps would be off.

Basis for meeting the K

Knowledge of automatic operation of the SF Cooling pumps on a decreasing SF Pool level and SFP Filtered Exhaust System as a result of a Spent Fuel Pool accident is required.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS 2009A Q59

Development References

FH-SFC Obj. 5
FH-FES R2

Student References Provided

SYS033 A3.02 - Spent Fuel Pool Cooling System (SFPCS)

Ability to monitor automatic operation of the Spent Fuel Pool Cooling System including: (CFR: 41.7 / 45.5)

Spent fuel leak or rupture

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 61

61

SYS041 A4.01 - Steam Dump System (SDS)/Turbine Bypass Control

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

ICS voltage inverter

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1SA-02/B-11 (ICS AUTO POWER FAILURE)

As a result of the above failure:

- 1) 1HP-120 is operable in (1).
- 2) The Turbine Bypass Valves are operable in (2).

Which ONE of the following completes the statements above?

1. HAND ONLY
2. HAND or AUTO
 1. HAND ONLY
2. HAND ONLY
 1. HAND or AUTO
2. HAND or AUTO
 1. HAND or AUTO
2. HAND ONLY
-

General Discussion

--

Answer A Discussion

Incorrect: First part is plausible because it is correct for other components. (i.e. TBVs). Second part is plausible because it is correct for 1HP-120.

Answer B Discussion

Incorrect: First part is plausible because it is correct for other components. (i.e. TBVs). Second part is correct. +

Answer C Discussion

Incorrect: First part is correct. Second part is plausible because it is correct for 1HP-120.

Answer D Discussion

Correct. 1HP-120 will be operable in HAND or AUTO with a loss of ICS AUTO power.. The TBVs are operable in HAND ONLY.

Basis for meeting the K

Question requires knowledge of the ICS voltage inverters and how the loss of ICS Auto power effects the Turbine Bypass Valves (TBVs)

Basis for Hi Cog

--

Basis for SRO only

--

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

1SA-2/B-11

Student References Provided

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SYS041 A4.01 - Steam Dump System (SDS)/Turbine Bypass Control

Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

ICS voltage inverter

401-9 Comments:

--

Remarks/Status

--

ILT45 ONS SRO NRC Examination QUESTION 62

62

SYS056 K1.03 - Condensate System

Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

MFW

Given the following Unit 1 conditions:

Time = 1200:00

- Reactor power = 80% stable
- 1A and 1B CBP operating

Time = 1201:00

- 1A CBP trips
- Feedwater Pump suction pressure = 225 psig slowly decreasing

Time = 1203:00

- Feedwater Pump suction pressure = 220 slowly increasing

Which ONE of the following describes the:

- 1) runback rate (%/min) inserted at 1201:00 to ICS?
- 2) procedure that will be directed by the Procedure Director at 1203:00?

- A. 1. 15
 2. AP/1/A/1700/001 (Unit Runback)
- B. 1. 15
 2. EOP
- C. 1. 20
 2. AP/1/A/1700/001 (Unit Runback)
- D. 1. 20
 2. EOP
-

General Discussion

Answer A Discussion

Incorrect: First part is plausible since there are ICS runbacks that incorporate the 15%/min runback rate. Second part is plausible since it would be correct for the first 90 seconds of the transient.

Answer B Discussion

Incorrect: First part is plausible since there are ICS runbacks that incorporate the 15%/min runback rate. Second part is correct,

Answer C Discussion

Incorrect: First part is correct. Second part is plausible since it would be correct for the first 90 seconds of the transient.

Answer D Discussion

Correct: With FDWP suction pressure < 235 psig, an ICS runback is initiated. The runback rate is 20%/min to a power level of 15% or until the low suction pressure clears. After 90 seconds, if FDWP suction pressure is still < 235 psig the FDWP's will trip which will trip the Rx and require entry into the EOP to mitigate the loss of main feedwater.

Basis for meeting the K

Requires knowledge of the impact of a loss of a Condensate Booster Pump will have on the Maind FDW system and the impact on the unit.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS ILT40 Q62

Development References

CF-FDW
STG-ICS Section 2
ONS ILT40 Q62

Student References Provided

SYS056 K1.03 - Condensate System

Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

MFW

401-9 Comments:

Remarks/Status

SYS014 2.2.44 - Rod Position Indication System (RPIS)

SYS014 GENERIC

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)

Given the following Unit 1 conditions:

- Reactor power = 63% decreasing
- Control Rod Group 5 Rod 6 Asymmetric Alarm light on the PI panel is lit
- Control Rod Group 5 Rod In Limit light on the PI panel is lit
- Asymmetric Fault light on Diamond Panel is lit

- 1) The Asymmetric Alarm light indicates that the rod is misaligned from the group average by a MINIMUM of (1) inches.
- 2) Plant conditions for an Asymmetric runback to occur (2) met.

Which ONE of the following completes the statements above?

- A.
 1. seven
 2. are
 - B.
 1. seven
 2. are NOT
 - C.
 1. nine
 2. are
 - D.
 1. nine
 2. are NOT
-

General Discussion

Answer A Discussion

Correct. When the absolute position of a CRDM deviates by more than 7 inches from its group average an ASYMMETRIC ROD ALARM occurs. Asymmetric runback will occur because reactor power is > 60%.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because it would be correct if reactor power was < 60%. Also candidate could have the misconception that power was below 65% which is below the FDWP runback limit.

Answer C Discussion

Incorrect. First part is plausible because it is setpoint for the Asymmetric Fault alarm. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because it is setpoint for the Asymmetric Fault alarm. Second part is plausible because it would be correct if reactor power was < 60%. Also candidate could have the misconception that power was below 65% which is below the FDWP runback limit.

Basis for meeting the K

Question requires using the RPIS system to determine the status of the plant system.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

IC-CRI Obj. 11

Student References Provided

SYS014 2.2.44 - Rod Position Indication System (RPIS)
SYS014 GENERIC

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 64

64

SYS072 K5.01 - Area Radiation Monitoring (ARM) System

Knowledge of the operational implications of the following concepts as they apply to the ARM system: (CFR: 41.5 / 45.7)

Radiation theory, including sources, types, units, and effects

Given the following Unit 1 conditions:

- Reactor power = 32% decreasing
- A unit shutdown is in progress due to a primary to secondary leak

- 1) (1) provides the operator with a readout in GPM.
- 2) At this time, the above RIA (2) procedurally allowed to be used to determine the primary to secondary leak rate.

Which ONE of the following completes the statements above?

- A.
 1. 1RIA-16 (Main Steam Line Monitor)
 2. is
 - B.
 1. 1RIA-16 (Main Steam Line Monitor)
 2. is NOT
 - C.
 1. 1RIA-59 (N-16 monitor)
 2. is
 - D.
 1. 1RIA-59 (N-16 monitor)
 2. is NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 64

64

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it does monitor the Main Steam Line for SG tube leakage however it reads out in mR/hr. Second part is plausible the RIA is accurate above 20% power. However procedurally it is only used above 40% power.

Answer B Discussion

Incorrect. First part is plausible since it does monitor the Main Steam Line for SG tube leakage however it reads out in mR/hr. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible the RIA is accurate above 20% power. However procedurally it is only used above 40% power.

Answer D Discussion

Correct. 1RIA-59 reads out in GPM. Procedurally 1RIA-59 is only used when reactor power is above 40%.

Basis for meeting the K

The KA is met by requiring knowledge of which one of the two SG tube leak monitors provides an output to the operator directly in gpm (operational implications). Knowing the when the RIA can be used to determine leak size relates to how the RIA detects radiation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

RAD RIA Obj. 8
AP-31

Student References Provided

SYS072 K5.01 - Area Radiation Monitoring (ARM) System

Knowledge of the operational implications of the following concepts as they apply to the ARM system: (CFR: 41.5 / 45.7)

Radiation theory, including sources, types, units, and effects

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 65

65

SYS075 K4.01 - Circulating Water System

Knowledge of circulating water system design feature(s) and interlock(s) which provide for the following : (CFR: 41.7)

Heat sink

Given the following Unit 2 conditions:

Initial conditions:

- Reactor power = 100%
- A and B LPSW pumps operating
- Switchyard Isolate occurs

Current conditions:

- Unit 2 MFB 1 & 2 energized

1) Unit 1 & 2 LPSW is supplied via the ECCW ____ (1) ____.

2) A and B LPSW pumps will restart ____ (2) ____ after power is restored.

Which ONE of the following completes the statements above?

- A. 1. first siphon
 2. immediately
 - B. 1. second siphon
 2. immediately
 - C. 1. first siphon
 2. 10 seconds
 - D. 1. second siphon
 2. 10 seconds
-

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ILT45 ONS SRO NRC Examination QUESTION 65

65

A

General Discussion

Answer A Discussion

Correct: First siphon flow path from the intake to the CCW crossover header is the correct source to LPSW. LPSW pumps will start as soon as power is restored. The breakers will stay closed during the loss of power.

Answer B Discussion

Incorrect: First part is plausible because it is the source of cooling to the condenser in this condition. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because the Standby LPSW pumps starts with low suction pressure (< 70psig) for 10 seconds. And in this case if LPSW pressure is not restored within 10 seconds the standby LPSW pump will start.

Answer D Discussion

Incorrect: First part is plausible because it is the source of cooling to the condenser in this condition. Second part is plausible because the Standby LPSW pumps starts with low suction pressure (< 70psig) for 10 seconds. And in this case if LPSW pressure is not restored within 10 seconds the standby LPSW pump will start.

Basis for meeting the K

Question requires knowledge of the CCW design features that will provide a suction to LPSW following a loss of power. LPSW is the heat sink for many systems and components in the plant.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2009 Q65

Development References

STG-CCW Obj. 13
SSS-LPSW R23
ONS 2009 Q65

Student References Provided

SYS075 K4.01 - Circulating Water System

Knowledge of circulating water system design feature(s) and interlock(s) which provide for the following : (CFR: 41.7)

Heat sink

401-9 Comments:

Remarks/Status

GEN2.1 2.1.2 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of operator responsibilities during all modes of plant operation. (CFR: 41.10 / 45.13)

Given the following plant conditions:

- "B" Shift is on duty
- The OATC asks to be temporarily relieved to go to the canteen.
- The BOP has previously received a formal turnover on the unit.

Which ONE of the following describes whose permission is required to turn over the OATC position to the BOP and items that are required to be included in the turnover per OMP 2-01 (Duties and Responsibilities of On-Shift Operations Personnel)?

- A. Control Room SRO / review of Ops Guides and outstanding R&Rs
 - B. Control Room SRO / review RCS temperature/pressure and operating band
 - C. Any "B" shift SRO / review of Ops Guides and outstanding R&Rs
 - D. Any "B" shift SRO / review RCS temperature/pressure and operating band
-

General Discussion

Answer A Discussion

Incorrect: First part is correct. Second part is plausible as this item is required to be reviewed frequently by ROs per OMP 2-01.

Answer B Discussion

Correct: Per OMP 2-1 " An abbreviated turnover between reactor operators who have previously received a formal turnover on the associated unit may occur with permission from the Control Room SRO and shall include the following as a minimum:

- Reactor power level and reactivity changes in progress
- Control rod positions and expected changes
- RCS temperature and operating band
- Reactor pressure and operating band
- Main generator load (Mwe)
- Plant evolutions in progress
- The Control Room SRO is notified once the turnover is complete"

Answer C Discussion

Incorrect: First part is incorrect the CR SRO's permission is required. Plausible as SROs are responsible for plant oversight. Second part is plausible as this item is required to be reviewed frequently by ROs per OMP 2-01.

Answer D Discussion

Incorrect: First part is incorrect the CR SRO's permission is required. Plausible as SROs are responsible for plant oversight. Second part is correct.

Basis for meeting the K

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ADM045251

Development References

ADM-OMP R5
OMP 2-1
ONS ADM045251

Student References Provided

GEN2.1 2.1.2 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of operator responsibilities during all modes of plant operation. (CFR: 41.10 / 45.13)

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 67

67

GEN2.1 2.1.25 - GENERIC - Conduct of Operations

Conduct of Operations

Ability to interpret reference materials, such as graphs, curves, tables, etc. (CFR: 41.10 / 43.5 / 45.12)

Given the following Unit 1 conditions:

Time = 0400

- Generator output = 850 MWe stable
- Generator Hydrogen pressure = 50 psig stable

Time = 0500

- Generator output = 600 MWe stable
- Generator Hydrogen pressure = 30 psig stable

At 0500 and in accordance with OP/1/A/1106/001 Encl. 4.5 (Capability Curve), the MAXIMUM MVARs allowed is approximately _____.

Which ONE of the following completes the statement above?

REFERENCE PROVIDED

- A. 325
 - B. 340
 - C. 370
 - D. 450
-

General Discussion

--

Answer A Discussion

Incorrect. Plausible because it would be correct for a leading power factor (minus VARs) at 0400. 850 Mwe and 50 psig H2.

Answer B Discussion

Incorrect. Plausible because it would be correct for a leading power factor (minus VARs) at 0500. 600 Mwe and 30 psig H2.

Answer C Discussion

Correct. The MVAR limit is about 370 for 600 Mwe and 30 psig H2 pressure.

Answer D Discussion

Incorrect.. Plausible because it would be correct at 0400. It uses 850 MWe and 50 psig H2 pressure.

Basis for meeting the K

Requires ability to interpret the capability curve to determine the maximum MVARs allowed.
--

Basis for Hi Cog

--

Basis for SRO only

--

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

OP/1/A/1106/001

Student References Provided

OP/1106/001 Encl. 4.5

GEN2.1 2.1.25 - GENERIC - Conduct of Operations

Conduct of Operations

Ability to interpret reference materials, such as graphs, curves, tables, etc. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

--

Remarks/Status

--

GEN2.1 2.1.34 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of primary and secondary plant chemistry limits. (CFR: 41.10 / 43.5 / 45.12)

Which ONE of the following is the LOWER limit on RCS activity that would require entry into AP/21 (RCS Activity)?

- A. Xe-133 = 0.25 $\mu\text{Ci/gm}$
 - B. Xe-133 = 1.0 $\mu\text{Ci/gm}$
 - C. DEI = 0.25 $\mu\text{Ci/gm}$
 - D. DEI = 1.0 $\mu\text{Ci/gm}$
-

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ILT45 ONS SRO NRC Examination QUESTION 68

68

C

General Discussion

Answer A Discussion

Incorrect. Plausible since this would be correct if the element were I-131. Xe is plausible since it is repeatedly referenced in AP/21.

Answer B Discussion

Incorrect. Plausible since 1.0 is a threshold value referenced several times in AP/21. Also, Xe is plausible since it is referenced repeatedly in AP/21.

Answer C Discussion

Correct 0.25 micro Ci/gm is the threshold for entry level into AP/21.

Answer D Discussion

Incorrect. Plausible since 1.0 is a threshold value referenced several times in AP/21.

Basis for meeting the K

Requires knowledge of chemistry limit that is the entry condition for AP/21 (RCS Activity).

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT44 Q56

Development References

EAP-APG Obj R9
AP/21
ONS ILT44 Q56

Student References Provided

GEN2.1 2.1.34 - GENERIC - Conduct of Operations
Conduct of Operations
Knowledge of primary and secondary plant chemistry limits. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

GEN2.2 2.2.35 - GENERIC - Equipment Control

Equipment Control

Ability to determine Technical Specification Mode of Operation. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

Given the following Unit 1 conditions:

Time = 0000

- Unit shutdown in progress
- Reactor power = 2.5% decreasing

Time = 2300

- RCS Tave = 240°F decreasing

1) At 0000, the reactor is in MODE (1).

2) At 2300, the reactor is in MODE (2).

Which ONE of the following completes the statements above?

- A. 1. one
 2. four
- B. 1. one
 2. five
- C. 1. two
 2. four
- D. 1. two
 2. five
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible because reactor power is in the power range. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because reactor power is in the power range. Second part is plausible because it would be correct if RCS temperature were < 200 degrees.

Answer C Discussion

Correct. At 0000 the reactor is in MODE 2 because Keff is greater than 0.99 but reactor power is < 5%. At 2300 the reactor is in MODE 4 because RCS temperature is between 250 and 200 degrees.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible because it would be correct if RCS temperature were < 200 degrees.

Basis for meeting the K

Question requires determine the reactor MODE by evaluating plant conditions.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

ADM-ITS R2

Student References Provided

GEN2.2 2.2.35 - GENERIC - Equipment Control
 Equipment Control
 Ability to determine Technical Specification Mode of Operation. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

401-9 Comments:

Remarks/Status

GEN2.2 2.2.39 - GENERIC - Equipment Control

Equipment Control

Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

Given the following Unit 1 conditions:

- Reactor power = 100%
- Group 3 Rod 6 drops into the core
- Rod cannot be recovered

Which ONE of the following describes action(s) required and the associated MAXIMUM completion time(s) in accordance with TS 3.1.5 (Safety Rod Position Limits)?

- A. Verify SDM within 1 hour ONLY
 - B. Verify SDM within 30 minutes ONLY
 - C. Verify SDM within 1 hour AND reduce reactor power to less than 60% within 1 hour
 - D. Verify SDM within 30 minutes AND reduce reactor power to less than 60% within 1 hour
-

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ILT45 ONS SRO NRC Examination QUESTION 70

70

A

General Discussion

--

Answer A Discussion

Correct. TA 3.1.5 requires verifying SDM within 1 hour.

Answer B Discussion

Incorrect. Plausible because TS 3.2.3 has a completion time of 30 minutes to reduce power when QPT limits are exceeded.

Answer C Discussion

Incorrect. Plausible because 1 hour for SDM verification is correct and the AP requires power to be reduced to less than 60% in 2 hours.
--

Answer D Discussion

Incorrect. Plausible because TS 3.2.3 has a completion time of 30 minutes to reduce power when QPT limits are exceeded and the AP requires power to be reduced to less than 60% in 2 hours.

Basis for meeting the K

Requires knowledge of 1 hr or less actions required by TS 3.1.5.
--

Basis for Hi Cog

--

Basis for SRO only

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Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT41 Q70

Development References

TS 3.1.5
TS 3.2.3
ONS ILT41 Q70

GEN2.2 2.2.39 - GENERIC - Equipment Control
Equipment Control

Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)

Student References Provided

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401-9 Comments:

--

Remarks/Status

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GEN2.2 2.2.42 - GENERIC - Equipment Control

Equipment Control

Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)

Given the following Unit 1 conditions:

- Reactor power = 100%

Which ONE of the following describes a condition that would require entry into a Tech Spec ACTIONS table?

- A. UST level = 7.6 feet
 - B. Pressurizer = 291 inches
 - C. 1D RPS channel in Manual bypass
 - D. 230KV Dacus Black and White lines isolated
-

General Discussion

Answer A Discussion

Incorrect. Plausible because it is below the OAC low level alarm setpoint of 8 feet.

Answer B Discussion

Correct. TS 3.4.9 requires PZR level to be less than or equal to 285 inches. TS entry would be required.

Answer C Discussion

Incorrect: Plausible since Tech Specs do require that RPS be operable, however there are 4 channels for each required function and only 3 channels are required therefore having one of the RPS channels in Manual Bypass does not result in required functions being inoperable as long as no other RPS inoperability's exist.

Answer D Discussion

Incorrect: Plausible since either Dacus black or white are part of what can be credited in TS 3.8.1 for one of the two offsite sources on separate towers however since there are still more than enough offsite sources available that meet the separate tower criteria, these being out of service would not require entry into the TS ACTION table for TS 3.8.1.

Basis for meeting the K

Questions requires knowledge of TS entry requirements.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	ONS 2009A Q70

Development References

TS 3.7.6
TS 3.4.9
TS 3.3.1
TS 3.8.1
ONS 2009A Q70

Student References Provided

GEN2.2 2.2.42 - GENERIC - Equipment Control
Equipment Control

Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)

401-9 Comments:

Remarks/Status

GEN2.3 2.3.11 - GENERIC - Radiation Control

Radiation Control

Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)

Given the following Unit 1 conditions:

- Reactor in MODE 5
- Reactor Building Main Purge in operation

Which ONE of the following will cause the RB Purge fan to trip?

- A. Inadvertent actuation of ES Channel 5
 - B. 1RIA-45 reaches HIGH alarm setpoint
 - C. Suction piping pressure = 5 inches of water vacuum
 - D. 1PR-3 (RB PURGE CONTROL) 5% open
-

General Discussion

Answer A Discussion

Incorrect: Plausible since it would be correct for ES 1 or 2.

Answer B Discussion

Correct. 1RIA-45 will trip the main purge fan when the HIGH alarm setpoint is reached.

Answer C Discussion

Incorrect: Plausible since vacuum in the suction piping will trip the main purge fan however the setpoint is 9 inches water.

Answer D Discussion

Incorrect. Plausible because the main purge fan will trip if PR-3 is closed while the fan is running and it must be > 10% to start the fan.

Basis for meeting the K

Question demonstrates ability to control radiation releases by demonstrating the ability to determine conditions that would result in terminating the release by tripping the main purge fan.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	ONS 2009A Q71

Development References

PNS-RBP Obj. 6 ,7, 8
ONS 2009A Q71

Student References Provided

GEN2.3 2.3.11 - GENERIC - Radiation Control
Radiation Control
Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)

401-9 Comments:

Remarks/Status

GEN2.3 2.3.7 - GENERIC - Radiation Control

Radiation Control

Ability to comply with radiation work permit requirements during normal or abnormal conditions. (CFR: 41.12 / 45.10)

An RWP that you are preparing to work under states that the highest dose rate in a particular area (at 30 cm) is 325 mR/hr. When you arrive at the work site, a flashing yellow light is noted in the entry path to the area.

1. How would an area with the dose rate specified in the RWP be designated?
 2. What is the significance of the flashing yellow light?
- A.
 1. Radiation Area
 2. Radiography is in progress
 - B.
 1. High Radiation Area
 2. Radiography is in progress
 - C.
 1. Radiation Area
 2. The area has been designated as a "Locked" High Radiation Area
 - D.
 1. High Radiation Area
 2. The area has been designated as a "Locked" High Radiation Area
-

General Discussion

Dose rates from 100-1000 mR/hr require a posting of HIGH radiation area. A flashing yellow light signifies that an area is a LOCKED high rad area. A flashing yellow light is used for "locked high rad areas" (>1 R/hr) where locking is not practical.

Answer A Discussion

It is plausible the area should be posted as a radiation area since there are various posting for different dose rates. Plausible the flashing yellow light signifies radiography in progress since it is posted with a flashing light. This is actually a BLUE flashing light.

Answer B Discussion

The area is posted correctly. Plausible the flashing yellow light signifies radiography in progress since it is posted with a flashing light. This is actually a BLUE flashing light.

Answer C Discussion

It is plausible the area should be posted as a radiation area since there are various posting for different dose rates. The flashing yellow light signifies a Locked High Radiation Area and the RWP is inaccurate.

Answer D Discussion

Correct: Dose rates from 100-1000 mR/hr require a posting of HIGH radiation area. The flashing yellow light signifies a Locked High Radiation Area and the RWP is inaccurate.

Basis for meeting the K

Requires ability to recognize how the area SHOULD be posted and what the as found conditions mean.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	CNS 2009 NRC Q73 (Bank 1673)

Development References

RAD-RPP Obj. 10
PD-RP-ALL-001

GEN2.3 2.3.7 - GENERIC - Radiation Control
Radiation Control

Ability to comply with radiation work permit requirements during normal or abnormal conditions. (CFR: 41.12 / 45.10)

Student References Provided

401-9 Comments:

Remarks/Status

GEN2.4 2.4.17 - GENERIC - Emergency Procedures / Plan

Emergency Procedures / Plan

Knowledge of EOP terms and definitions. (CFR: 41.10 / 45.13)

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0400
- CTPB = 75% stable
- 1A HPI pump operating
- Transient occurs

Current conditions:

- Time = 0405
- CTPB = 76% stable
- Letdown Flow = 78 gpm stable
- HPI Flow Train A = 176 gpm decreasing slowly

In accordance with OMP 1-18 (Implementation Standard During Abnormal and Emergency Events) at 0405:

- 1) Unit 1 (1) considered stable.
- 2) RCS makeup flow (2) within normal makeup capability.

Which ONE of the following completes the statements above?

- A. 1. is
 2. is
- B. 1. is
 2. is NOT
- C. 1. is NOT
 2. is
- D. 1. is NOT
 2. is NOT

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74

C

General Discussion

--

Answer A Discussion

Incorrect. First part is plausible because CTPD is stable. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible because CTPD is stable. Second part is plausible because makeup flow is > 160 gpm which is about the capacity of flow thru 1HP-120.

Answer C Discussion

Correct. Unit is not considered stable by the definition in OMP 1-18 because power is above the pre-transient power level. RCS makeup flow is within normal makeup capability because letdown is NOT isolated.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible because makeup flow is > 160 gpm which is about the capacity of flow thru 1HP-1

Basis for meeting the K

Question requires knowledge of terms used in the EOP.

Basis for Hi Cog

--

Basis for SRO only

--

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

EAP-EOP R13
OMP 1-18

GEN2.4 2.4.17 - GENERIC - Emergency Procedures / Plan
Emergency Procedures / Plan
Knowledge of EOP terms and definitions. (CFR: 41.10 / 45.13)

Student References Provided

--

401-9 Comments:

--

Remarks/Status

--

GEN2.4 2.4.42 - GENERIC - Emergency Procedures / Plan

Emergency Procedures / Plan

Knowledge of emergency response facilities. (CFR: 41.10 / 45.11)

-
- 1) The emergency facility that assumes responsibility for communications with offsite Agencies, including the NRC once it is activated, is the (1).
- 2) The lowest classification level that requires this facility's activation is a/an (2).

Which ONE of the following completes the statements above?

- A. 1. Technical Support Center (TSC)
2. Alert
- B. 1. Technical Support Center (TSC)
2. Site Area Emergency
- C. 1. Operations Support Center (OSC)
2. Alert
- D. 1. Operations Support Center (OSC)
2. Site Area Emergency
-

General Discussion

Answer A Discussion

Correct. The TSC assumes communications with the NRC after it is activated and is required to be activated at an Alert.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible if the candidate had the misconception that for an Alert it was optional.

Answer C Discussion

Incorrect. First part is plausible because the OSC does perform required actions during an event but not communications with outside agencies. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because the OSC does perform required actions during an event but not communications with outside agencies. Second part is plausible if the candidate had the misconception that for an Alert it was optional.

Basis for meeting the K

Question requires knowledge of emergency response facilities.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ONS ILT42 Q75

Development References

EAP-SEP R1, R3

Student References Provided

GEN2.4 2.4.42 - GENERIC - Emergency Procedures / Plan
 Emergency Procedures / Plan
 Knowledge of emergency response facilities. (CFR: 41.10 / 45.11)

401-9 Comments:

Remarks/Status

EPE009 EA2.06 - Small Break LOCA

Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)

Whether PZR water inventory loss is imminent

Given the following Unit 1 conditions:

- Reactor Power = 85% stable
- 1A HPI Pump inoperable

- 1) The SMALLEST leak size classified as a SBLOCA (1) result in a saturated RCS due to loss of Pressurizer level.
- 2) The WORST case SBLOCA (2) be mitigated if one of the two HPI trains is unable to inject water into the core.

Which ONE of the following completes the statements above?

- A.
 1. will
 2. can
 - B.
 1. will
 2. can NOT
 - C.
 1. will NOT
 2. can
 - D.
 1. will NOT
 2. can NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 76

76

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since most SBLOCA's do result in an empty pressurizer and therefore saturation of the RCS. Additionally plausible since this size may not result in a Rx trip on low RCS pressure and could be mitigated using the Excessive Leakage Abnormal Procedure.

Second part is plausible since using the single failure criteria applied to most other active Safety Systems would lead you to believe this to be a true statement however the ONS HPI system can only mitigate worst case SBLOCA's with a single train of HPI when the initiating Rx power is <75% and the atmospheric dump valves are used to help remove decay heat.

Answer B Discussion

Incorrect. First part is plausible since most SBLOCA's do result in an empty pressurizer and therefore saturation of the RCS. Additionally plausible since this size may not result in a Rx trip on low RCS pressure and could be mitigated using the Excessive Leakage Abnormal Procedure.

Second part is correct.

Answer C Discussion

Incorrect. First part is correct.

Second part is plausible since using the single failure criteria applied to most other active Safety Systems would lead you to believe this to be a true statement however the ONS HPI system can only mitigate worst case SBLOCA's with a single train of HPI when the initiating Rx power is <75% and the atmospheric dump valves are used to help remove decay heat.

Answer D Discussion

Correct. SBLOCA's classification begins at .25 square feet break. This break size is insufficient to empty the pressurizer since it is not beyond the capacity of the HPI system to replace the lost inventory.

The ONS HPI system can only mitigate worst case SBLOCA's with a single train of HPI when the initiating Rx power is <75% and the atmospheric dump valves are used to help remove decay heat.

Basis for meeting the K

Requires determining if the lower range of break sizes classified as SBLOCA's will result in a complete loss of PZR water inventory.

Basis for Hi Cog

Basis for SRO only

Requires knowledge specific to the basis of Tech Specs.

Cannot be answered solely by knowing < 1 hr TS's

Cannot be answered solely with "above the line" TS knowledge

Cannot be answered solely by knowing TS safety limits

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj. TA-AT R1, ADM-TSS R5
TA-AT
ADM-TSS

Student References Provided

EPE009 EA2.06 - Small Break LOCA

Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)

Whether PZR water inventory loss is imminent

401-9 Comments:

Remarks/Status

45 Day Submittal

ILT45 ONS SRO NRC Examination QUESTION 77

77

APE015/017 2.4.6 - Reactor Coolant Pump (RCP) Malfunctions

APE015/017 GENERIC

Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 75%
- AP/20 (Loss of Component Cooling) in progress

Current conditions:

- 1A1 RCP Radial Bearing Temperature = 248°F stable

In accordance with AP/20:

- 1) The 1A1 RCP (1) required to be secured.
- 2) If the RCP is required to be secured the reactor (2) be tripped first.

Which ONE of the following completes the statements above?

- A.
 1. is
 2. will
 - B.
 1. is
 2. will NOT
 - C.
 1. is NOT
 2. will
 - D.
 1. is NOT
 2. will NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 77

77

A

General Discussion

Answer A Discussion

Correct. Per AP/20 IAAT RCP radial bearing temp exceeds 225 then the RCP must be secured. Because Reactor power is above 70%, AP/20 directs tripping the reactor and then the RCP.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible because if reactor power were below 70% then it would be correct.

Answer C Discussion

Incorrect. First part is plausible because AP/16 list other immediate RCP trips above 248 degrees. I.e MTR STATOR if 295 degrees. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible because AP/16 list other immediate RCP trips above 248 degrees. I.e MTR STATOR if 295 degrees. Second part is plausible because if reactor power were below 70% then it would be correct.

Basis for meeting the K

Basis for Hi Cog

Basis for SRO only

In accordance with Clarification Guidance for SRO-only Questions Rev 1:

This question requires the following:

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed

Requires accessing the plant conditions and determining if the reactor will be tripped or not prior to securing the RCP.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub procedures or emergency contingency procedures.

Can the question be answered solely by knowing systems knowledge", i.e., how the system works, flow path, logic, component location? NO

Can the question be answered solely by knowing immediate operator actions? NO

Can the question be answered solely by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs? NO

Can the question be answered solely by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure? NO

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	ILT42 Q77

Development References

EAP APG R5
AP/20

APE015/017 2.4.6 - Reactor Coolant Pump (RCP) Malfunctions

APE015/017 GENERIC

Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 78

78

APE040 2.4.50 - Steam Line Rupture

APE040 GENERIC

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

Given the following Unit 1 conditions:

Time = 0400

- Reactor Power = 100%
- 1A and 1B Main Steam pressure = 885 psig
- 1A Steam Generator Primary to Secondary leak rate = 120 gpd

Time = 0405

- 1A Main Steam pressure = 851 psig decreasing
- 1B Main Steam pressure = 523 psig decreasing
- 1SA-02/D-11 (AFIS Analog Channel trip) actuated
- 1SA-02/D-08 (AFIS Header B Initiated) NOT actuated

- 1) At 0405, the status of BOTH Statalarms listed above (1) as expected for the plant conditions.
- 2) If AFIS does NOT actuate as required, manual actuation of AFIS is required to maintain (2).

Which ONE of the following completes the statements above?

- A.
 1. are
 2. doses within 10CFR100 limits
 - B.
 1. are
 2. RB pressure within design limits
 - C.
 1. are NOT
 2. doses within 10CFR100 limits
 - D.
 1. are NOT
 2. RB pressure within design limits
-

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ILT45 ONS SRO NRC Examination QUESTION 78

78

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible because the candidate could have the misconception that the depressurization rate had to be greater than 6 psi/min for AFIS to Actuate. The rate in the question is below 6 psi/min. Second part is plausible because there are parts of the MSLB analysis that credit AFIS actuation. During a large MSLB inside containment AFIS is credited with maintaining Containment pressure below the design limit of 59 psig. Since a portion of the Safety Analysis does credit AFIS it is plausible to believe that it is credited with limiting dose since it limits the inventory placed in the affected steam generator.

Answer B Discussion

Incorrect. First part is plausible because the candidate could have the misconception that the depressurization rate had to be greater than 6 psi/min for AFIS to Actuate. The rate in the question is below 6 psi/min. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because there are parts of the MSLB analysis that credit AFIS actuation. During a large MSLB inside containment AFIS is credited with maintaining Containment pressure below the design limit of 59 psig. Since a portion of the Safety Analysis does credit AFIS it is plausible to believe that it is credited with limiting dose since it limits the inventory placed in the affected steam generator.

Answer D Discussion

Correct. Because MS pressure is below 550 psig 1SA-02/D-08 should be in alarm. AFIS is not credited for reducing dose. It is credited for maintaining RB pressure within limits.

Basis for meeting the K

Requires the ability to operate controls identified in the alarm response manual. 1SA2/C8 (AFIS Header A Initiated) specifically addresses controls and indications for AFIS.

Basis for Hi Cog

Basis for SRO only

Requires knowledge specific to the basis of Tech Specs.

Cannot be answered solely by knowing < 1 hr TS's
 Cannot be answered solely with "above the line" TS knowledge
 Cannot be answered solely by knowing TS safety limits

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Admin-TSS R5, TA-SA R5, CF-FDW 19
 TA-SA
 CF-FDW
 1SA-2

APE040 2.4.50 - Steam Line Rupture

APE040 GENERIC

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

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 79

79

APE062 AA2.04 - Loss of Nuclear Service Water

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: (CFR: 43.5 / 45.13)

The normal values and upper limits for the temperatures of the components cooled by SWS

Given the following Unit 1 plant conditions:

- B and C LPSW pumps have failed
- Multiple alarms associated with degraded LPSW flow have actuated
- AP/24 (Loss of LPSW) is in progress
- 1A2 RCP stator temperature = 310°F slowly increasing
- 1B2 RCP stator temperature = 270°F slowly increasing

- 1) The (1) RCP stator temperature(s) exceed the immediate trip criteria specified in AP/16 (Abnormal RCP Operations).
- 2) In accordance with AP/24, the procedure director (2) direct cross-connecting Unit 1&2 LPSW system with Unit 3 LPSW system.

Which ONE of the following completes the statements above?

- A.
 1. 1A2 ONLY
 2. will
 - B.
 1. 1A2 ONLY
 2. will NOT
 - C.
 1. 1A2 AND 1B2
 2. will
 - D.
 1. 1A2 AND 1B2
 2. will NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 79

79

B

General Discussion

--

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since cross connecting is a strategy implemented by AP/24 however it is not initiated until all 3 of the Unit 1&2 LPSW pumps are unavailable regardless of LPSW header pressures and/or alarms.

Answer B Discussion

Correct. The Immediate Trip Criteria temperature for RCP stator temps is 295 degrees. Cross connecting with Unit 3 is not performed unless all 3 Unit 1&2 LPSW pumps are lost.

Answer C Discussion

Incorrect. First part is plausible since the 1A2 RCP does exceed the ICT and the 1B2 RCP temperature given is above the Immediate Trip Criteria for Upper seal housing temperature. Second part is plausible since cross connecting is a strategy implemented by AP/24 however it is not initiated until all 3 of the Unit 1&2 LPSW pumps are unavailable regardless of LPSW header pressures and/or alarms.

Answer D Discussion

Incorrect. First part is plausible since the 1A2 RCP does exceed the Immediate Trip Criteria and the 1B2 RCP temperature given is above the ICT for Upper seal housing temperature. Second part is correct.

Basis for meeting the K

Requires specific knowledge of the upper limits of RCP stator temperature which would be the primary temperature impacted by a loss of LPSW. Also requires knowledge of specific mitigation steps to restore the RCP stator temperatures.

Basis for Hi Cog

--

Basis for SRO only

Requires detailed knowledge of an Abnormal procedure in that it requires knowledge of the specific steps taken after assessing plant conditions. To know that cross connecting with Unit 3 is one of the mitigation strategies used in AP/24 would be RO knowledge. To know the specific criteria which must be satisfied in order to proceed with that strategy elevates it to SRO level.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

EAP-APG Obj R9
AP/24
AP/16

Student References Provided

--

APE062 AA2.04 - Loss of Nuclear Service Water

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: (CFR: 43.5 / 45.13)

The normal values and upper limits for the temperatures of the components cooled by SWS

401-9 Comments:

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Remarks/Status

--

BWE02 2.4.18 - Vital System Status Verification

BWE02 GENERIC

Knowledge of the specific bases for EOPs. (CFR: 41.10 / 43.1 / 45.13)

Given the following Unit 1 conditions:

- Reactor trip has occurred from 100% power
- RCS temperature = 552°F stable
- 1A and 1B Main Steam pressure = 1010 psig stable
- One MSRV has NOT reseated

Which ONE of the following describes the:

1) MINIMUM RCS temperature (°F) allowed by Subsequent Actions while reducing Main Steam pressure to reseal the MSRV?

2) basis for the minimum temperature above?

- A.
 - 1. 525
 - 2. ensure PTS limits are not exceeded
 - B.
 - 1. 525
 - 2. ensure shutdown margin is maintained
 - C.
 - 1. 532
 - 2. ensure PTS limits are not exceeded
 - D.
 - 1. 532
 - 2. ensure shutdown margin is maintained
-

General Discussion

--

Answer A Discussion

Incorrect. First part is plausible since 525 is a cooldown temperature limit applied in the SGTR tab. Second part is plausible since a stuck open MSRV is analogous with a MSLB and overcooling and PTS is a major concern during a MSLB or large steam leak.

Answer B Discussion

Incorrect. First part is plausible since 525 is a cooldown temperature limit applied in the SGTR tab. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since a stuck open MSRV is analogous with a MSLB and overcooling and PTS is a major concern during a MSLB or large steam leak.

Answer D Discussion

Correct. 532 is the minimum temperature allowed during MS pressure reduction to reseal a stuck open MSRV. The reason for the limit is to ensure that SDM is maintained.

Basis for meeting the K

Requires knowledge of the basis of steps found in Subsequent Actions (Vital System Status Verification).

Basis for Hi Cog

--

Basis for SRO only

Requires detailed knowledge of the basis of steps contained in the EOP.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References

EAP-SA R23
EAP-SA

BWE02 2.4.18 - Vital System Status Verification
BWE02 GENERIC
Knowledge of the specific bases for EOPs. (CFR: 41.10 / 43.1 / 45.13)

Student References Provided

401-9 Comments:

--

Remarks/Status

--

ILT45 ONS SRO NRC Examination QUESTION 81

81

BWE04 EA2.1 - Inadequate Heat Transfer

Ability to determine and interpret the following as they apply to
the (Inadequate Heat Transfer)
(CFR: 43.5 / 45.13)

Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Give the following Unit 1 conditions:

Initial conditions:

- Reactor trip from 100% power
- Both Main Feedwater pumps trip
- EFDW pumps will NOT start

Current conditions:

- Rule 3 in progress
- LOHT tab initiated
- RCS heatup results in core SCM's = 0°F
- RCS pressure = 2190 psig slowly increasing
- Pressurizer level = 355 inches slowly increasing

1) In addition to Rule 3, Rule(s) (1) will be performed.

2) LOHT will direct a transfer to the (2) tab.

Which ONE of the following completes the statements above?

- A. 1. 2 ONLY
2. LOSCM
 - B. 1. 2 ONLY
2. FCD
 - C. 1. 2 AND 4
2. LOSCM
 - D. 1. 2 AND 4
2. HPICD
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible since Rule 2 is required and the normal criteria for Rule 4 initiation (Pzr level and RCS pressure) are not met. Second part is plausible since SCM = 0 degrees.

Answer B Discussion

Incorrect. First part is plausible since Rule 2 is required and the normal criteria for Rule 4 initiation (Pzr level and RCS pressure) are not met. Second part is plausible since the LOHT tab does direct a transfer to the FCD tab once main or emergency feedwater cooling is re-established.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since SCM = 0 degrees.

Answer D Discussion

Correct. A note in the LOHT tab says transfer to LOSCM tab should not be performed if core scm reaches zero due to RCS heatup. The LOHT tab does direct performing Rule 4 and then transferring to the HPICD tab with core scm = zero.

Basis for meeting the K

Second part of question matches KA by requiring selection of the appropriate EOP tab based on given plant conditions.

Basis for Hi Cog

Basis for SRO only

SRO-ONLY ANALYSIS

Requires assessing plant conditions and prescribing a section of the procedure with which to proceed. Additionally requires detailed knowledge of diagnostic steps which require a transfer to event specific sub procedures.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj. EAP-EHT R1
EOP LOHT tab page 1

Student References Provided

BWE04 EA2.1 - Inadequate Heat Transfer

Ability to determine and interpret the following as they apply to the (Inadequate Heat Transfer)
(CFR: 43.5 / 45.13)

Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 82

82

APE005 2.2.21 - Inoperable/Stuck Control Rod

APE005 GENERIC

Knowledge of pre- and post-maintenance operability requirements. (CFR: 41.10 / 43.2)

Given the following Unit 1 conditions:

Time = 1200

- Reactor Power = 100%
- Control Rod Group 5 Rod 4 ONLY has partially inserted and indicates 90% withdrawn

Time = 1330

- Reactor Power = 55% stable

Time = 1400

- Control Rod Group 3 Rod 1 has dropped and indicates 0% withdrawn

1) At 1330, Control Rod Group 5 Rod 4 is considered __ (1) __ in accordance with Tech Spec 3.1.4 (Control rod Group Alignment Limits).

2) At 1400, the CRS will direct the RO's to __ (2) __.

Which ONE of the following completes the statements above?

- A.
 - 1. misaligned ONLY
 - 2. notify SPOC to reduce RPS trip setpoints
 - B.
 - 1. misaligned ONLY
 - 2. trip the Reactor
 - C.
 - 1. misaligned AND inoperable
 - 2. notify SPOC to reduce RPS trip setpoints
 - D.
 - 1. misaligned AND inoperable
 - 2. trip the Reactor
-

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ILT45 ONS SRO NRC Examination QUESTION 82

82

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct prior to 1300.. It is plausible to believe that "Inoperable" is not correct since Tech Spec basis does provide up to 1 hour to restore the rod to alignment with its group average before requiring that the rod be declared inoperable. Since TS 3.1.4 does allow 2 hours to get thermal power reduced to < 60% of allowable RTP it would be plausible to believe that the 2 hours is also allowed before having to declare the rod inoperable.

Second part is plausible since the dropped rod AP (AP/1 for Unit Runback) does direct reducingtrip setpoints following a dropped rod therefore this would be correct with only one dropped or misaligned rod.

Answer B Discussion

Incorrect. First part is plausible since it would be correct prior to 1300.. It is plausible to believe that "Inoperable" is not correct since Tech Spec basis does provide up to 1 hour to restore the rod to alignment with its group average before requiring that the rod be declared inoperable. Since TS 3.1.4 does allow 2 hours to get thermal power reduced to < 60% of allowable RTP it would be plausible to believe that the 2 hours is also allowed before having to declare the rod inoperable. It would be plausible to believe that the rod be determined "Untrippable" since it s reactivity is no longer available to be added when the reactor trips.

Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since the dropped rod AP (AP/1 for Unit Runback) does direct reducingtrip setpoints following a dropped rod therefore this would be correct with only one dropped or misaligned rod.

Answer D Discussion

Correct. The basis of TS 3.1.4 allows up to one hour to restore alignment of the misaligned rod however at the end of the 1 hour the control rod must either be restored to alignment or declared inoperable. Since the rod alignment was not restored, the Control Rod would be considered inoperable. AP/1 and OMP 1-18 memory items requires tripping the Reactor if more than one Control Rod is dropped or misaligned.

Basis for meeting the K

Requires knowledge of Control Rod operability requirements as a precursor to maintenance activities required as a result of the inoperable rod.

Basis for Hi Cog

Basis for SRO only

Requires the ability to interpret the conditions to determine if the rod is actually inoperable or just misaligned in accordance with Tech Spec as a precursor for maintenance activities associated with the inoperable rod.

It cannot be answered solely by 1hr or less memory items.

It cannot be answered solely by above the line knowledge

It cannot be answered solely by knowing TS Safety Limits

It does require knowledge of TS basis that is not systems knowledge

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	ILT44 Q82

Development References

Admin-TSS Obj R5

AP/1

TS 3.1.4 basis

APE005 2.2.21 - Inoperable/Stuck Control Rod

APE005 GENERIC

Knowledge of pre- and post-maintenance operability requirements. (CFR: 41.10 / 43.2)

Student References Provided

401-9 Comments:

Remarks/Status

45 Day Submittal

APE024 2.4.41 - Emergency Boration

APE024 GENERIC

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

Given the following Unit 1 conditions:

Initial Conditions:

- Reactor Power = 100%

Current Conditions:

- ATWS has occurred
- Rule 1 is complete
- Site Area Emergency has been declared

- 1) At the completion of Rule 1 (1) HPI pumps are operating.
- 2) In accordance with RP/0/A/1000/002 (Control Room Emergency Coordinator Procedure), non essential personnel (2) required to be evacuated from the site.

Which ONE of the following completes the statements above?

- A.
 1. 2
 2. are
 - B.
 1. 2
 2. are NOT
 - C.
 1. 3
 2. are
 - D.
 1. 3
 2. are NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 83

83

B

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since evacuation would be required for a General Emergency. Additionally, since it is a "Site" area emergency it would logical to deduce that evacuating unneeded personell from the site would be prudent.

Answer B Discussion

Correct. Rule 2 directs running either 1A or 1B HPI pump and 1C HPI pump as long as the other HPI pump is not needed for RCS inventory. Since there is no indication of inventory issues in the stem of the question, HPI would be reduced to two HPI pumps. Non-essential personell are not required to be evacuated until a General Emergency is declared.

Answer C Discussion

Incorrect. Plausible since HPI Forced Cooling does align all 3 HPI pumps. Second part is plausible since evacuation would be required for a General Emergency. Additionally, since it is a "Site" area emergency it would logical to deduce that evacuating unneeded personell from the site would be prudent.

Answer D Discussion

Incorrect. Plausible since HPI Forced Cooling does align all 3 HPI pumps. Second part is correct.

Basis for meeting the K

Requires knowledge of the threshold for evacuation of non essential site personnel during an ATWS and therefore as it relates to Emergency Boration.

Basis for Hi Cog

Basis for SRO only

Requires knowledge of plant emergency plan which is specific SRO knowledge since the Emergency Coordinator is required to be an SRO and approve/direct the evacuation of non-essential personell.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References

Obj EAP-SEP R4
Rule 1
RP/1000/02

APE024 2.4.41 - Emergency Boration

APE024 GENERIC

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

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 84

84

APE051 AA2.02 - Loss of Condenser Vacuum

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: (CFR: 43.5 / 45.13)

Conditions requiring reactor and/or turbine trip

Given the following Unit 1 conditions:

Initial conditions

- Reactor power = 100%
- Condenser vacuum = 23" Hg decreasing

Current conditions

- Condenser vacuum is approximately 0" Hg

- 1) The setpoint (inches HG) at which the Main Turbine will trip on low vacuum is ____ (1) ____.
- 2) In accordance with Subsequent Actions, operator(s) at the ____ (2) ____ are controlling steaming of the Steam Generators.

Which ONE of the following completes the statements above?

- A.
 1. 21.75
 2. Auxiliary Shutdown Panel
 - B.
 1. 21.75
 2. Atmospheric Dump Valves
 - C.
 1. 19.5
 2. Auxiliary Shutdown Panel
 - D.
 1. 19.5
 2. Atmospheric Dump Valves
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since the Turbine Bypass Valves can be controlled at the ASD. Plausibility is greatly enhanced by the fact that the TBV controls at the ASD bypass the low vacuum failure mode of the TBV's. At 7 inches vacuum, the TBV's fail closed and the controllers in the control room will not operate the TBV's. The controllers at the ASDP bypass that failure making it plausible that the TBV's would be used in a loss of vacuum situation via control from the ASDP.

Answer B Discussion

Correct. The low vacuum trip for the Main Turbine is 21.75 inches. The EOP Subsequent actions step 4.9 directs the operators to use the ADV's via implementation of EOP Encl. 5.24 if the TBV's cannot control SG pressures.

Answer C Discussion

Incorrect. First part is plausible since it is the setpoint for the low vacuum trip of a Main Feedwater pump. Second part is plausible since the Turbine Bypass Valves can be controlled at the ASD. Plausibility is greatly enhanced by the fact that the TBV controls at the ASD bypass the low vacuum failure mode of the TBV's. At 7 inches vacuum, the TBV's fail closed and the controllers in the control room will not operate the TBV's. The controllers at the ASDP bypass that failure making it plausible that the TBV's would be used in a loss of vacuum situation via control from the ASDP.

Answer D Discussion

Incorrect. First part is plausible since it is the setpoint for the low vacuum trip of a Main Feedwater pump. Second part is correct.

Basis for meeting the K

Requires ability to determine low condenser vacuum conditions that would require a main turbine trip (and therefore a Rx trip).

Basis for Hi Cog

Basis for SRO only

Requires knowledge of when to implement attachments of the EOP. Cannot be answered with RO systems knowledge since both choices of part two of the question could be used to control Steam Generator pressures. Also, answer to part two is more specific than the overall purpose or mitigation strategy.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References

STG-EHC R10
CF-FPT
STG-EHC
SA's

Student References Provided

APE051 AA2.02 - Loss of Condenser Vacuum

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: (CFR: 43.5 / 45.13)

Conditions requiring reactor and/or turbine trip

401-9 Comments:

Remarks/Status

BWA05 AA2.1 - Emergency Diesel Actuation

Ability to determine and interpret the following as they apply to
the (Emergency Diesel Actuation)
(CFR: 43.5 / 45.13)

Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- ACB-3 closed

Current conditions:

- Blackout tab in progress
- EOP Enclosure 5.38 has been initiated
- KHU-1 Emergency Locked Out
- 1TC, 1TD, and 1TE 4160V switchgear are locked out

- 1) Main Feeder Buses will be energized by (1).
- 2) Once the Main Feeder Buses are energized the Procedure Director will (2).

Which ONE of the following completes the statements above?

- A.
 1. CT-5
 2. continue in the Blackout Tab
 - B.
 1. CT-5
 2. transfer back to Subsequent Actions Tab
 - C.
 1. KHU-2
 2. continue in the Blackout Tab
 - D.
 1. KHU-2
 2. transfer back to Subsequent Actions Tab
-

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85

C

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if neither of the KHU's were available. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if neither of the KHU's were available. Second part is plausible since it would be correct if any one of the 3 4160v buses were energized by the MFB.

Answer C Discussion

Correct. Guidance in Encl. 5.38 directs closing the underground feeder (ACB-4) for the operating KHU to see if that will get the MFB energized before going to CT-5. The transfer back to Subsequent Actions requires at least one of the 4160v switchgear buses to be energized even after the MFB's are energized.

Answer D Discussion

Incorrect. First part is correct, Second part is plausible since it would be correct if any one of the 3 4160v buses were energized by the MFB.

Basis for meeting the K

Requires selection of appropriate EOP section following Emergency Start of KHU's (our "Emergency Diesels").

Basis for Hi Cog

Basis for SRO only

Requires assessing plant conditions and determining a procedure or section of a procedure with which to proceed.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

EAP-BO R6
EOP Encl 5.38
Blackout tab

Student References Provided

BWA05 AA2.1 - Emergency Diesel Actuation

Ability to determine and interpret the following as they apply to the (Emergency Diesel Actuation)
(CFR: 43.5 / 45.13)

Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 86

86

SYS013 A2.03 - Engineered Safety Features Actuation System (ESFAS)

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Rapid depressurization

Given the following Unit 1 conditions:

- Large Break LOCA from 100% has just occurred
- RCS pressure = 843 psig decreasing
- Reactor Building pressure = 12.4 psig increasing

- 1) Engineered Safeguards channels __ (1) __ have actuated.
- 2) In accordance with the LOSCM tab, the LOWER TOTAL (both trains) LPI flow that will allow transfer to the LOCA Cooldown tab is __ (2) __ gpm.

Which ONE of the following completes the statements above?

- A.
 1. 1-6 ONLY
 2. 2900
 - B.
 1. 1-6 ONLY
 2. 3400
 - C.
 1. 1-8
 2. 2900
 - D.
 1. 1-8
 2. 3400
-

General Discussion

Answer A Discussion

Incorrect. First part is plausible since RB pressure is below the TS required actuation setpoint for ES channels 7 and 8 of 15 psig. Second part is plausible since it would be correct of only one train of LPI were available to inject.

Answer B Discussion

Incorrect. First part is plausible since RB pressure is below the TS required actuation setpoint for ES channels 7 and 8 of 15 psig. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct of only one train of LPI were available to inject.

Answer D Discussion

Correct. ES channels 1-6 have actuated once RB pressure exceeds 3 psig and ES channels 7 and 8 actuate at 10 psig RB pressure. The transfer to LOCA Cooldown when both LPI trains are available for injection occurs at > 3400 gpm.

Basis for meeting the K

Requires predicting the impact of decreasing RCS pressure on ES in that as RCS pressure is released to the RB, RB pressure increases and this question requires knowing when increasing RB pressure results in ES channels 7&8 actuation. Mitigation strategy for a LBLOCA is primarily in the LOCA cooldown tab of the EOP therefore knowing the transfer criteria to that tab demonstrates an ability to use procedures to mitigate the LBLOCA that results in the rapidly decreasing RCS pressure.

Basis for Hi Cog

Basis for SRO only

Knowing the setpoint for LPI flow that corresponds to a transfer to the LOCA Cooldown tab is detailed knowledge of the procedure content rather than the overall mitigation strategy. It also requires assessing plant conditions and selecting a section of the EOP with which to continue mitigation activities.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj IC-ES R24. EAP-LOSCM-2
IC-ES
LOSCM tab

Student References Provided

SYS013 A2.03 - Engineered Safety Features Actuation System (ESFAS)

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Rapid depressurization

401-9 Comments:

Remarks/Status

SYS022 A2.04 - Containment Cooling System (CCS)

Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Loss of service water

Given the following Unit 3 plant conditions:

- Reactor power = 100%
- 3A RBCU tagged out

Which ONE of the following:

- 1) would require immediate entry into LCO 3.0.3?
 - 2) describes actions that are required once LCO 3.0.3 is entered in accordance with OMP 2-23 (Operations Shift Manager Rules Of Practice)?
- A.
 1. 3LPSW-19 (3B RBCU INLET) fails closed
 2. Must determine a time to begin power reduction within 1 hour
 - B.
 1. 3LPSW-19 (3B RBCU INLET) fails closed
 2. Must actually initiate a power reduction within 1 hour
 - C.
 1. 3A RBS Pump declared inoperable
 2. Must determine a time to begin power reduction within 1 hour
 - D.
 1. 3A RBS Pump declared inoperable
 2. Must actually initiate a power reduction within 1 hour
-

General Discussion

Answer A Discussion

CORRECT: TS 3.6.5 Condition H of TS 3.6.5 requires immediate entry into LCO 3.0.3 with 2 RBCU's inoperable in MODE 1 or 2. Once LCO 3.0.3 is entered, OMP 2-23 requires that within the first hour a time to begin the power reduction will be determined and can only be changed if justified by the Superintendent of Operation.

Answer B Discussion

Incorrect: First part is correct. Second part is plausible since LCO 3.0.3 does discuss 1 hour to initiate a change in plant status however the bases of LCO 3.0.3 elaborates and explains that actual power reduction within the 1 hour is not required.

Answer C Discussion

Incorrect: First part is plausible since RBS pumps are also part of TS 3.6.5 and it would be reasonable to assume that the ability of Containment spray and cooling systems to perform their safety function would be impeded with two of the major components inoperable. The misconception that the safety function is impeded would lead to deducing that 3.0.3 is required. Second part is correct.

Answer D Discussion

Incorrect: First part is plausible since RBS pumps are also part of TS 3.6.5 and it would be reasonable to assume that the ability of Containment spray and cooling systems to perform their safety function would be impeded with two of the major components inoperable. The misconception that the safety function is impeded would lead to deducing that 3.0.3 is required. Second part is plausible since LCO 3.0.3 does discuss 1 hour to initiate a change in plant status however the bases of LCO 3.0.3 elaborates and explains that actual power reduction within the 1 hour is not required.

Basis for meeting the K

Requires predicting the impact that losing LPSW to one of the RBCU's will have on the operability of that RBCU as well as the impact on Containment. Once both RBCU's are determined inoperable the question requires the use of TS 3.6.5 and Generic LCO 3.0.3 to mitigate the consequences of the failure

Basis for Hi Cog

Basis for SRO only

Requires an operability determination (done only by SRO's) for the 3B RBCU) Requires applying Generic LCO 3.0.3 requirements to specific system failures and determining actions required by LCO 3.0.3 to mitigate the failures. Specific SRO knowledge of time line for LCO 3.0.3 shutdown is required.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	ONS 2009A Q87

Development References

TS 3.6.5
OMP 2-23

Student References Provided

SYS022 A2.04 - Containment Cooling System (CCS)

Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Loss of service water

401-9 Comments:

Remarks/Status

SYS026 A2.04 - Containment Spray System (CSS)

Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Failure of spray pump

Given the following Unit 1 conditions:

Initial conditions:

- Time = 0000
- Reactor Power = 100%
 - 1C RBCU inoperable

Current conditions:

- Time = 0100
- Worst case LBLOCA occurs
- 1A RB Spray pump failed to start

- 1) Reactor Building design pressure (1) be exceeded.
- 2) In accordance with EOP Enclosure 5.1 (ES Actuation), SRO approval (2) required before attempting to start the 1A RB Spray pump.

Which ONE of the following completes the statements above?

- A.
 1. will
 2. is
 - B.
 1. will
 2. is NOT
 - C.
 1. will NOT
 2. is
 - D.
 1. will NOT
 2. is NOT
-

General Discussion

Answer A Discussion

Incorrect. The first part is plausible because it goes against the standard rules in Tech Specs. Both RBS and RBCU's are required operable under the same TS (3.6.5). In most every other TS covering active equipment, a single component of that spec can be inoperable and the components of the spec still be able to perform their safety function. In this spec it is different in that two components required by the spec can be inoperable and all still perform their safety functions therefore applying the normal rules used by TS would lead to incorrectly choosing "will". Second part is correct

Answer B Discussion

Incorrect. The first part is plausible because it goes against the standard rules in Tech Specs. Both RBS and RBCU's are required operable under the same TS (3.6.5). In most every other TS covering active equipment, a single component of that spec can be inoperable and the components of the spec still be able to perform their safety function. In this spec it is different in that two components required by the spec can be inoperable and all still perform their safety functions therefore applying the normal rules used by TS would lead to incorrectly choosing "will". Second part is plausible since Encl. 5.1 does direct starting some components that fail to start (Example LPI pumps)

Answer C Discussion

Correct. One RBS pump and one RBCU can be inoperable simultaneously and the components required by TS 3.6.5 can still perform their safety functions. EOP Encl 5.1 directs getting SRO direction to start a RBS pump if it failed to go to its ES position.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since Encl. 5.1 does direct starting some components that fail to start (Example LPI pumps)

Basis for meeting the K

First part of the question predicts the impact of having one RBS pump inoperable along with 1 RBCU. The second part requires using procedures (Encl 5.1 of the EOP) to correct the consequences.

Basis for Hi Cog

Basis for SRO only

This question requires knowledge from the Basis of Tech Spec 3.6.5 that is not systems knowledge or 1 hr TS info.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Admin-ITS R3, Admin TSS R5
TS 3.6.5
TS 3.6.5 basis
Encl 5.1

Student References Provided

SYS026 A2.04 - Containment Spray System (CSS)

Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Failure of spray pump

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 89

89

SYS059 2.4.31 - Main Feedwater (MFW) System

SYS059 GENERIC

Knowledge of annunciator alarms, indications, or response procedures. (CFR: 41.10 / 45.3)

Given the following Unit 1 conditions:

- Reactor power = 100%
- Delta Tc failure has occurred
- 1A SG level = 80% OR increasing

The Steam Generator Overfill Protection system:

- 1) will trip BOTH Main Feedwater pumps once the 1A SG level reaches a MINIMUM of (1) % OR.
- 2) is credited with tripping the Main Feedwater pumps to prevent (2) that could occur due to a SG overfill.

Which ONE of the following completes the statements above?

- A.
 1. 86
 2. flooding of the SG aspirating ports
 - B.
 1. 86
 2. pressurized thermal shock of the Reactor Vessel
 - C.
 1. 96
 2. flooding of the SG aspirating ports
 - D.
 1. 96
 2. pressurized thermal shock of the Reactor Vessel
-

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ILT45 ONS SRO NRC Examination QUESTION 89

89

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it is the setpoint for the SG High Level limit. Second part is plausible since it is the basis for the High Level Limit circuitry.

Answer B Discussion

Incorrect. First part is plausible since it is the setpoint for the SG High Level limit. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it is the basis for the High Level Limit circuitry.

Answer D Discussion

Correct. The SG overflow protection system trips both main feedwater pumps if either SG reaches 96%OR level. The basis for this system is to prevent PTS of the Reactor Vessel that could occur during a SG overflow. The PTS analysis credits this circuit to trip MFDW pumps and therefore mitigate the overflow.

Basis for meeting the K

Required knowledge of SG level indication and its impact on operation of the Main Feedwater pumps.

Basis for Hi Cog

Basis for SRO only

Requires knowledge specific to the basis of SLC 16.7.5 (SG Overflow Protection).

Cannot be answered solely by knowing < 1 hr actions

Cannot be answered solely with "above the line" knowledge

Cannot be answered solely by knowing TS safety limits

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj Admin-TSS R5 STG-ICS R17
SLC 16.7.5
STG-ICS chptr 4

SYS059 2.4.31 - Main Feedwater (MFW) System
SYS059 GENERIC

Knowledge of annunciator alarms, indications, or response procedures. (CFR: 41.10 / 45.3)

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 90

90

SYS103 2.2.25 - Containment System

SYS103 GENERIC

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

Unit 1 initial conditions:

- Reactor in MODE 4

- 1) In accordance with Tech Spec 3.6.3 (Containment Isolation Valves), 1PR-1 (1) be opened under administrative controls.
- 2) In accordance with the basis of Tech Spec 3.6.2 (Containment Air Locks), (2) door(s) in each air lock must be Operable for Containment to be Operable.

Which ONE of the following completes the statements above?

- A.
 1. can
 2. ONLY one
 - B.
 1. can
 2. BOTH
 - C.
 1. can NOT
 2. ONLY one
 - D.
 1. can NOT
 2. BOTH
-

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ILT45 ONS SRO NRC Examination QUESTION 90

90

C

General Discussion

Answer A Discussion

Incorrect. First part is plausible since all CI valves except for the 48" purge valves are allowed to be opened under administrative controls when Containment is required to be Operable. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since all CI valves except for the 48" purge valves are allowed to be opened under administrative controls when Containment is required to be Operable. Second part is plausible since most passive SSC's are not required to be single failure proof and therefore do not have a redundant component or train. One (of several available) example, there are two Core Flood Tanks but both are required to perform their safety function. Since the hatches are actually passive systems it is logical to deduce that there are not redundant components and therefore both are required.

Answer C Discussion

Correct. 1PR-1 is one of the 48" Purge System Valves. Tech Spec 3.6.3 (Containment Isolation Valves) specifically excludes the 48" Purge valves from being able to be opened under administrative control when Containment is required to be Operable. The basis of TS 3.6.2 specifically states that either door of a personnel hatch is all that is required to satisfy the requirements of Containment Operability.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since most passive SSC's are not required to be single failure proof and therefore do not have a redundant component or train. One (of several available) example, there are two Core Flood Tanks but both are required to perform their safety function. Since the hatches are actually passive systems it is logical to deduce that there are not redundant components and therefore both are required.

Basis for meeting the K

Requires knowledge from TS 3.6.2 basis. This spec is for the Containment Air Locks which are part of SYS103 IAW NUREG 1122.

Basis for Hi Cog

Basis for SRO only

Requires knowledge specific to the basis of Tech Specs.

Cannot be answered solely by knowing < 1 hr TS's
 Cannot be answered solely with "above the line" TS knowledge
 Cannot be answered solely by knowing TS safety limits

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

ADM-TSS R5
 ADM-TSS

SYS103 2.2.25 - Containment System
 SYS103 GENERIC

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

Student References Provided

401-9 Comments:

Remarks/Status

SYS001 2.2.22 - Control Rod Drive System

SYS001 GENERIC

Knowledge of limiting conditions for operations and safety limits. (CFR: 41.5 / 43.2 / 45.2)

-
- 1) The CRD Breaker Undervoltage Coil (1) to open its associated CRD breaker.
- 2) In accordance with Tech Spec 3.3.4 (CRD Trip Devices), the Shunt Trip coil (1) the Undervoltage coil must be operable for a CRD breaker to be considered OPERABLE.

Which ONE of the following completes the statements above?

- A. 1. energizes
 2. OR
- B. 1. energizes
 2. AND
- C. 1. de-energizes
 2. OR
- D. 1. de-energizes
 2. AND
-

General Discussion

Answer A Discussion

Incorrect: First part is plausible since it would be correct for the shunt trip coil. Second part is correct since Tech Spec is not consistent with its application of requirements for diverse power sources. As an example, a vital power panelboard can be powered from either its associated inverter or regulated power. Tech specs only requires that one or the other be powering the panelboard for the panelboard to be considered Operable. This inconsistency makes it plausible to believe that either trip device would suffice to support breaker operability.

Answer B Discussion

Incorrect: First part is plausible since it would be correct for the shunt trip coil. Second part is correct.

Answer C Discussion

Incorrect: First part is correct. Second part is plausible since Tech Spec is not consistent with its application of requirements for diverse power sources. As an example, a vital power panelboard can be powered from either its associated inverter or regulated power. Tech specs only requires that one or the other be powering the panelboard for the panelboard to be considered Operable. This inconsistency makes it plausible to believe that either trip device would suffice to support breaker operability.

Answer D Discussion

Correct. For the undervoltage trip coil, a trip is initiated when Reactor Protective System logic interrupts power to the under voltage (UV) coil of the 4 main AC feeder breakers. Both the undervoltage trip device and the shunt trip device are required to be operable for a CRD breaker to be considered operable.

Basis for meeting the K

Requires knowledge of equipmentg required to be operable in order to meet the LCO for Tech Spec 3.3.4 which is the CRD system trip devices (breakers).

Basis for Hi Cog

Basis for SRO only

Question requires knowledge of TS operability for components that is only found in the Tech Spec basis. Also involves an operability determination based on TS basis information.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj. IC-CRI-05, ADM-TSS R5
IC-CRI
TS 3.3.4 basis

SYS001 2.2.22 - Control Rod Drive System

SYS001 GENERIC

Knowledge of limiting conditions for operations and safety limits. (CFR: 41.5 / 43.2 / 45.2)

Student References Provided

401-9 Comments:

Remarks/Status

SYS016 2.1.7 - Non-Nuclear Instrumentation System (NNIS)

SYS016 GENERIC

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)

Given the following Unit 1 conditions:

- Time - 1200
- Reactor power = 100%
- Pressurizer temperature indicates as shown below

PZR TEMP A	PZR TEMP B
CCMA PAM	CCMB PAM
442.3	361.4
700	700
650	650
600	600
550	550
500	500
450	450
400	400
350	350
300	300
250	250
200	200
150	150
100	100
50	50

Which ONE of the following describes ALL Tech Spec 3.3.8 (PAM Instrumentation) Condition(s) that apply (if any) at Time = 1200?

REFERENCE PROVIDED

- A. NO Tech Spec 3.3.8 Condition applies
- B. Condition A ONLY
- C. Condition A and C ONLY
- D. Condition A, C, and H

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ILT45 ONS SRO NRC Examination QUESTION 92

92

C

General Discussion

This question requires an understanding that there are only two channels of Pressurizer temperature. One channel includes Pressurizer level 1 & 2 and the other channel is Pressurizer level 3. TS 3.3.8 requires both channels operable (per TS 3.3.8 Table 3.3.8-1. That means that either Pressurizer level 1 or 2 has to be operable as well as Pzr level 3 to meet the LCO requirements of TS 3.3.8. Additionally, Pzr temp A feeds both Pzr level 1 and 2 and Pzr temp B feeds Pzr level 3. This means that a loss of Pzr temp A renders both Pressurizer levels 1 and 2 inoperable and a loss of Pzr temp B renders Pzr level 3 NOT operable.

Answer A Discussion

Incorrect and plausible. TS 3.3.8 does not specifically require Pzr temperature to be operable. If the candidate does not know TS bases information that requires the required pressurizer level channels to be temperature compensated then this would be the choice made since the temperature instruments are not specifically listed as required instrumentation in TS 3.3.8.

Answer B Discussion

Incorrect. Plausible since it would be correct if the candidate were to have the misconception that one of the temperatures being displayed was accurate. Believing that either temperature is correct for 100% power would lead to this choice.

Answer C Discussion

Correct. TS 3.3.8 requires that either Pzr level 1 or 2 AND Pzr level 3 be operable. Pressurizer temp A feeds Pzr level channels 1 & 2 and Pzr temp B feeds Pzr level channel 3. With Rx power at 100%, Pzr temp should be saturation temperature for normal pressure which is approximately 2155. That means Pzr temp should be reading approximately 647 degrees. With both Pzr temps being inaccurate, NO pressurizer levels are Operable therefore Condition A AND C would apply.

Answer D Discussion

Incorrect and plausible. It is reasonable that when applying TS 3.3.8 to immediately go to table 3.3.8-1 and entering the condition specified in the right hand column for the PAM instrument with an inoperability. Additionally, this would be correct if the inoperability's continued beyond the 7 day Completion time of Condition C.

Basis for meeting the K

Requires evaluating plant performance (comparing Reactor power level to indicated Pzr levels) and making an operational judgment based on instrument interpretation. Specifically, it requires knowing that Pzr temp for 100% power is 649 degrees therefore it is Pzr temp B that is malfunctioned and therefore Pzr level 3 is NOT operable.

Basis for Hi Cog

Requires analyzing plant conditions and correctly applying TS 3.3.8 based on the analysis.

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question is SRO in that it requires application of TS 3.3.8 and is not a direct lookup. Correct application of the spec cannot be performed based solely on systems knowledge.

This question cannot be answered Solely on 1 hr or less TS knowledge.

This question cannot be answered based on "above the line" TS information.

This question cannot be answered with TS Safety Limit information.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	2011B ONS SRO NRC Examination NRC Q91 (Bank 4691)

Development References

Obj IC-RCI R13,15,16,17,18, ADM-TSS R1, R5
TS 3.3.8
TS 3.3.8 bases

SYS016 2.1.7 - Non-Nuclear Instrumentation System (NNIS)

SYS016 GENERIC

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)

Student References Provided

TS 3.3.8

401-9 Comments:

Remarks/Status

45 Day Submittal

ILT45 ONS SRO NRC Examination QUESTION 93

93

SYS035 A2.05 - Steam Generator System (S/GS)

Ability to (a) predict the impacts of the following mal- functions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)

Unbalanced flows to the S/Gs

Given the following Unit 1 conditions:

Initial conditions:

- Time = 1200
- Reactor power = 75%

Current conditions:

- Time = 1230
- Reactor power = 75% stable
- Delta Tc has failed
- 1A SG flow = 2.75 E6 lbm/hr
- 1B SG flow = 5.5 E6 lbm/hr
- Incore Quadrant Power Tilt (QPT) as describe below:

$\frac{W-X}{-8.4}$	$\frac{X-Y}{4.1}$	$\frac{Y-Z}{4.5}$	$\frac{Z-W}{2.8}$
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ASSUME NO OPERATOR ACTIONS

- 1) In accordance with Tech Spec 3.2.3 (Quadrant Power Tilt), the MAXIMUM power level (%RTP) allowed at Time = 1430 is (1).
- 2) Restoring QPT to within TS 3.2.3 limits will ensure that during a LBLOCA, (2).

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A.
 1. 60
 2. Peak cladding temperatures will NOT exceed 2200°F
- B.
 1. 60
 2. DNBR limits will be maintained within the Safety Limit values
- C.
 1. 98
 2. Peak cladding temperatures will NOT exceed 2200°F
- D.
 1. 98
 2. DNBR limits will be maintained within the Safety Limit values

General Discussion

Answer A Discussion

Incorrect. First part is plausible since the absolute value of the w-x quadarant tilt would result in being in Condition D and make 60% the correct answer therefore not understanding that negative tilt values are not considered would lead to choosing 60% as the max power level. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since the absolute value of the w-x quadarant tilt would result in being in Condition D and make 60% the correct answer therefore not understanding that negative tilt values are not considered would lead to choosing 60% as the max power level. Second part is plausible since during normal ops and abnormal transients, compliance with TS LCO's does ensure that DNBR limits established in the Safety Limits are not exceeded.

Answer C Discussion

Correct. The y-z quadrant is the highest tilt value land is 1% greater than the allowed 3.5% established in the COLR for steady state limits but below the 7.11% transient limit in the COLR. This means that Condition A of TS 3.2.3 is applicable which requires reducing max power level 2% for every 1% above the Steady State limit which results in 98% max power level.
The fuel cladding must not sustain damage as a result of normal operation and anticipated transients. The LCOs based on power distribution (LCO 3.2.1, LCO 3.2.2, and LCO 3.2.3) preclude core power distributions that violate the following fuel design criteria:
During a large break LOCA, the peak cladding temperature must not exceed 2200 degrees F.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since during normal ops and abnormal transients, compliance with TS LCO's does ensure that DNBR limits established in the Safety Limits are not exceeded.

Basis for meeting the K

The first part of this question requires using procedures (in this case Tech Specs) to mitigate the consequences of the failure which resulted in unbalanced flows to the SG's and therefore QPT issues. The second part of this question requires predicting the impact of operation in this condition.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":
This question is SRO in that it requires application of TS 3.2.3 and is not a directl lookup. Correct application of the spec cannot be performed based solely on systems knowledge.
This question cannot be answered Solely on 1 hr or less TS knowledge.
This question cannot be answered based on "above the line" TS information.
This question cannot be answered with TS Safety Limit information.
It also requires knowledge of the Safety Limit and TS 3.2.3 Bases.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

ADM-TSS R5
TS 3.2.3
COLR tilt limits
TS 3.2.3 Basis
Safety Limit Bais

Student References Provided

TS 3.2.3
COLR tilt limits

SYS035 A2.05 - Steam Generator System (S/GS)

Ability to (a) predict the impacts of the following mal- functions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5)

Unbalanced flows to the 5/Gs

401-9 Comments:

Remarks/Status

45 Day Submittal

GEN2.1 2.1.36 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of procedures and limitations involved in core alterations. (CFR: 41.10 / 43.6 / 45.7)

Given the following Unit 1 conditions:

Initial conditions:

- Re-fueling in progress

Current conditions:

- A fuel assembly is damaged while inserting into the core
- An adjacent assembly must be placed in an alternate core location while recovering the damaged assembly

Which ONE of the following states the MINIMUM level of approval required to place a fuel assembly into an alternate location other than the original one assigned by the Core Reload Sequence in accordance with MP/0/A/1500/009 (Defueling/Refueling Procedure) Limits and Precautions?

- A. OSM
 - B. Refueling SRO
 - C. Reactor Building SRO
 - D. Refueling SRO Assistant
-

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ILT45 ONS SRO NRC Examination QUESTION 94

94

B

General Discussion

Answer A Discussion

Incorrect. Plausible since in general the OSM is required to approve deviations from procedures. However, this specific case has more specific requirements in the procedure being used to perform the fuel movement.

Answer B Discussion

Correct. In accordance with the procedures use to control fuel handling activities: During refueling, IF Any Fuel Assembly must be placed in a Core location other than the one assigned in PT/0/A/0750/018, Refueling Activities, then the alternate core location shall be evaluated by a Qualified Reactor Engineer and approved by the Refueling SRO.

Answer C Discussion

Incorrect. Plausible since this is an SRO position required to be inside the Rx Bldg during core alterations and it is a position required to be staffed by SLC 16.13.1 (Minimum Station Staffing Requirements). Additionally plausible since this position is responsible for the overall conduct of fuel handling operations in the Reactor Building.

Answer D Discussion

Incorrect. Plausible since this position is involved in the step by step implementation of the refueling procedures and this position is the one required to administratively verify that the assembly is being inserted into the position required by the procedure.

Basis for meeting the K

Requires knowledge of procedure limitations on activities that involve core alterations.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":
This question requires knowledge of fuel handling procedures and knowledge of the requirements necessary to change/deviate from a plant procedure.
Additionally, this requires knowledge of an activity that is defined as an SRO only activity in plant procedures.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	BANK	ILT41 Q82

Development References

FH-FHS R27
MP/1500/09

GEN2.1 2.1.36 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of procedures and limitations involved in core alterations. (CFR: 41.10 / 43.6 / 45.7)

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 95

95

GEN2.1 2.1.41 - GENERIC - Conduct of Operations

Conduct of Operations

Knowledge of the refueling process. (CFR: 41.2 / 41.10 / 43.6 / 45.13)

Given the following Unit 2 conditions:

Initial conditions:

- Time = 0100
- Refueling in progress
- FTC level = 22 feet stable
- No water additions are being made to the system
- 2A LPI train is Operable and in service
- 2B LPI train is Operable

Current conditions:

- Time = 2300
- Refueling SRO desires stopping the 2A LPI Pump to aid in inserting a fuel assembly

Which ONE of the following:

- 1) states whether the 2A LPI pump may be stopped in accordance with OP/2/A/1502/007 (Operations Defueling /Refueling Responsibilities)?
 - 2) describes the system(s) required to be operable in support of the Operability of a DHR loop in accordance with the basis of Tech Spec 3.9.4 (DHR and Coolant Circulation)?
- A. 1. 2A LPI Pump may be stopped for up to 1 hour per 8 hour period.
 2. LPSW ONLY
- B. 1. 2A LPI Pump may be stopped for up to 1 hour per 8 hour period.
 2. LPSW and ECCW
- C. 1. 2A LPI Pump may NOT be stopped
 2. LPSW ONLY
- D. 1. 2A LPI Pump may NOT be stopped
 2. LPSW and ECCW
-

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ILT45 ONS SRO NRC Examination QUESTION 95

95

B

General Discussion

Re-arranged answers

Answer A Discussion

Incorrect: First part is correct. 2nd part is incorrect but plausible since LPSW is required to remove Decay Heat. It is plausible to believe ECCS is not required since when the Reactor is in Modes 5 or 6, single failure criteria does not normally apply and siphon headers required by ECCW are not required unless there is some sort of failure.

Answer B Discussion

CORRECT: TS 3.9.4 (Refueling Ops- DHR and Coolant Circulation-High Water Level) is in effect as water level is ≥ 21.34 ft. This condition requires only 1 DHR loop to be operable and in service since the water can provide adequate backup decay heat removal. TS and Refueling procedures limits & precautions allow SRO to grant permission for the operating loop to be secured for up to 1 hour every 8 hours with adequate level.

The basis of TS 3.9.4 identifies both LPSW and ECCW as required to support DHR loop operability.

Answer C Discussion

Incorrect: First part is incorrect but plausible if TS 3.9.5 criteria are misapplied to this situation. TS3.9.5 (DHR and Coolant Circulation-Low Water Level) requires 2 operable DHR loops with one loop in service (no time is allowed for a pump to be secured). 2nd part is incorrect but plausible since LPSW is required to remove Decay Heat. It is plausible to believe ECCW is not required since when the Reactor is in Modes 5 or 6, single failure criteria does not normally apply and siphon headers required by ECCW are not required unless there is some sort of failure.

Answer D Discussion

Incorrect: First part is incorrect but plausible if TS 3.9.5 criteria are misapplied to this situation. TS3.9.5 (DHR and Coolant Circulation-Low Water Level) requires 2 operable DHR loops with one loop in service (no time is allowed for a pump to be secured). 2nd part is correct.

Basis for meeting the K

Requires knowledge of fuel handling procedures and specific requirements of DHR loop operability during fuel handling

Basis for Hi Cog

Basis for SRO only

First part requires knowledge of procedures and limitations involved in core alterations (43.6), TS and Bases (43.2). Second part requires knowledge of the Basis of Tech Spec 3.9.4 and is not systems knowledge.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	BANK	ONS 2011B Q95 (Bank 4696)

Development References

FH-FHS R21, / ADM-TSS R5, R6
OP/2/A/1502/007
TS 3.9.4
TS 3.9.5
TS 3.9.4 bases

GEN2.1 2.1.41 - GENERIC - Conduct of Operations
Conduct of Operations
Knowledge of the refueling process. (CFR: 41.2 / 41.10 / 43.6 / 45.13)

Student References Provided

401-9 Comments:

Remarks/Status

GEN2.2 2.2.18 - GENERIC - Equipment Control

Equipment Control

Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.
(CFR: 41.10 / 43.5 / 45.13)

Which ONE of the following describes when a RED condition for a Safety Function requires that a Risk Management plan must be developed in accordance with Site Directive 1.3.5 (Shutdown Protection Plan)?

- A. ANY unplanned entry ONLY
 - B. ANY planned entry ONLY
 - C. An unplanned entry of any duration AND ONLY planned entries that last greater than 1 hour
 - D. A planned entry of any duration AND ONLY unplanned entries that last greater than 1 hour
-

General Discussion

Answer A Discussion

Incorrect. It is plausible to believe that only unplanned entries into a RED condition would require a risk management plan since a planned entry would already be supported by either existing plant procedure guidance or temporary procedure developed for the condition or evolution that was going to place the unit in the Red conditions.

Answer B Discussion

Incorrect: Any planned entry does require a risk management plan be developed. It is plausible to deduce that unplanned entries do not require a risk management plan since the name itself says it is unplanned.

Answer C Discussion

Incorrect. Plausible since both sides of the AND are simply reversed and therefore easily confused. Unplanned entries do require a plan only if they will last > 1 hr and all unplanned entries require a plan. The ease of getting the two backwards makes this choice plausible.

Answer D Discussion

Correct. All planned entries and any unplanned entry that will last > 1 hr require risk management plans.

Basis for meeting the K

Requires knowledge of maintenance activities during shutdown operations.

Basis for Hi Cog

Basis for SRO only

Requires knowledge of administrative procedures that specify implementation of an abnormal procedure (specifically a risk management plan).

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References

Site Directive 1.3.5 (Shutdown Protection Plan)

Student References Provided

GEN2.2 2.2.18 - GENERIC - Equipment Control

Equipment Control

Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc. (CFR: 41.10 / 43.5 / 45.13)

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 97

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GEN2.2 2.2.20 - GENERIC - Equipment Control

Equipment Control

Knowledge of the process for managing troubleshooting activities. (CFR: 41.10 / 43.5 / 45.13)

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1LP-15 is undergoing repair and maintenance needs to operate the valve locally

1) A (1) tag will be used to turn over operational control of 1LP-15 to maintenance.

2) The tag used in part one above (2) allowed to be Shared Tag.

- A. 1. MORT
 2. is
- B. 1. MORT
 2. is NOT
- C. 1. OORT
 2. is
- D. 1. OORT
 2. is NOT
-

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because other tags can be shared.

Answer B Discussion

Correct. A MORT tag would be used to assign operational control to maintenance for a component which maintenance is not the Operational Control Group normally. The MORT tag cannot be a Shared Tag.

Answer C Discussion

Incorrect. First part is plausible since 1LP-15 is an Operations controlled component and since OORT starts with an "O" and it pertinent to what the tag does it is plausible to believe the OORT tag could assign a component normally under Operations control to maintenance. Second part is plausible because other tags can be shared.

Answer D Discussion

Incorrect. First part is plausible since 1LP-15 is an Operations controlled component and since OORT starts with an "O" and it pertinent to what the tag does it is plausible to believe the OORT tag could assign a component normally under Operations control to maintenance. Second part is correct.

Basis for meeting the K

Requires knowledge of NSD 500 requirements to assign operational control of an Operations component to Maintenance when operation of the component is required for troubleshooting.

Basis for Hi Cog

Basis for SRO only

Requires knowledge of administrative requirements for activities that are controlled by SRO's.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References

ADM-SD R9
NSD-500

GEN2.2 2.2.20 - GENERIC - Equipment Control
Equipment Control
Knowledge of the process for managing troubleshooting activities. (CFR: 41.10 / 43.5 / 45.13)

Student References Provided

401-9 Comments:

Remarks/Status

ILT45 ONS SRO NRC Examination QUESTION 98

98

GEN2.3 2.3.5 - GENERIC - Radiation Control

Radiation Control

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.11 / 41.12 / 43.4 / 45.9)

Given the following Unit 1 conditions:

Time = 0410

- Reactor power = 100%
- 1RIA-59 = 0.1 gpm
- 1RIA-60 = 35 gpm
- Emergency classification declared

Time = 0430

- Reactor power = 38%
- 1A MSLB occurs

Time = 0500

- Cooldown is initiated using the 1A SG

- 1) At 0410, in accordance with the bases of TS 3.4.13, RCS Pressure Boundary LEAKAGE __ (1) __ occurring.
- 2) At 0500, an Emergency Classification upgrade __ (2) __ required (**Do NOT use Emergency Coordinators judgment**).

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

- A. 1. is
2. is
 - B. 1. is
2. is NOT
 - C. 1. is NOT
2. is
 - D. 1. is NOT
2. is NOT
-

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ILT45 ONS SRO NRC Examination QUESTION 98

98

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible because a SG tube is part of the RCS pressure boundary but is not considered as such in this TS. Second part is plausible because it would be correct if the SG tube leak were > 160 gpm.

Answer B Discussion

Incorrect. First part is plausible because a SG tube is part of the RCS pressure boundary but is not considered as such in this TS. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because it would be correct if the SG tube leak were > 160 gpm.

Answer D Discussion

Correct. In accordance with the bases of TS 3.4.13, SG tube leakage is not considered pressure boundary leakage. The Fission Product Barrier Matrix result in 3 points for SG Tube Leak > 10 gpm secondary side failure and feeding from the affected unit. 3 points is an Unusual Event. This is the same a tube leak > 25 gpm. No upgrade is required.

Basis for meeting the K

Question requires the ability to use of radiation monitors to be used to determine how the plant will be cooled down during a SGTR and a MSLB.

Basis for Hi Cog

Basis for SRO only

In accordance with Clarification Guidance for SRO-only Questions Rev 1:

Must assess plant conditions including RIA readings to determine with SG will be used for the CD.

TS Basis knowledge is also required to answer the question.

This question requires the following:

Assessing plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.

Knowledge of diagnostic steps and decision points in the EOPs that involve transitions to event specific sub procedures or emergency contingency procedures.

Can the question be answered solely by knowing systems knowledge", i.e., how the system works, flow path, logic, component location? NO

Can the question be answered solely by knowing immediate operator actions? NO

Can the question be answered solely by knowing entry conditions for AOPs or plant parameters that require direct entry to major EOPs? NO

Can the question be answered solely by knowing the purpose, overall sequence of events, or overall mitigative strategy of a procedure? NO

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	BANK	ILT42 Q48

Development References

EAP-SGTR-R27

TS B3.4.13

RP/1000/001

Student References Provided

RP/0/A/1000/001 Encl. 4.1 - 4.9

GEN2.3 2.3.5 - GENERIC - Radiation Control

Radiation Control

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.11 / 41.12 / 43.4 / 45.9)

401-9 Comments:

Remarks/Status

45 Day Submittal

ILT45 ONS SRO NRC Examination QUESTION 99

99

GEN2.4 2.4.19 - GENERIC - Emergency Procedures / Plan
Emergency Procedures / Plan
Knowledge of EOP layout, symbols, and icons. (CFR: 41.10 / 45.13)

Given the following Unit 1 conditions:

Time = 0400

- Reactor has tripped
- Subsequent Actions tab in progress
- RCS pressure = 2150 psig stable
- RCS temperature = 547°F stable

Time = 0405

- While at step 4.13 of the SA tab (checking for indications of a SGTR) the following occurs:
 - 1SA-18/D-6 (RC System Approaching Saturation Conditions) actuates
 - 1SA-8/B-9 (Process Monitor Radiation High) actuates
 - Pzr level = 0 inches
 - RBNS level increases off scale high
 - RCS pressure 1330 psig slowly decreasing
 - "A" loop SCM = 0°F
 - "B" loop and core SCM = 18°F slowly decreasing

- 1) At 0405, the Procedure Director will go to the LOSCM tab (1)
- 2) After the transfer to the LOSCM tab is made, a subsequent (2) will require a transfer to a different EOP tab.

Which ONE of the following completes the statement above?

- A.
 1. immediately based on a Parallel Actions page transfer
 2. Turbine Building Flood
- B.
 1. immediately based on a Parallel Actions page transfer
 2. Blackout
- C.
 1. ONLY when Core SCM reaches 0°F based on a Parallel Actions page transfer
 2. Turbine Building Flood
- D.
 1. ONLY when Core SCM reaches 0°F based on a Parallel Actions page transfer
 2. Blackout

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because the candidate could have the misconception that TBF tab is a higher priority because drastic action are taken in TBF tab due to the imminent loss of important plant equipment.

Answer B Discussion

Correct. Per EAP-EOP lesson plan:

...anytime plant conditions have changed, the Procedure Director will use the Parallel Actions page to determine where to go within the EOP to address the changes. Parallel actions transfers are made in order of priority of symptoms. TBF is a higher priority than LOSCM.

Answer C Discussion

Incorrect. First part is plausible because there is a EOP PA page transfer that is based on Core SCM only. That is the transfer to the ICC tab when core SCM indicates superheated. Second part is plausible because the candidate could have the misconception that TBF tab is a higher priority because drastic action are taken in TBF tab due to the imminent loss of important plant equipment.

Answer D Discussion

Incorrect. First part is plausible because there is a EOP PA page transfer that is based on Core SCM only. That is the transfer to the ICC tab when core SCM indicates superheated. Second part is correct.

Basis for meeting the K

Requires knowledge of the layout of the EOP. Specifically how the Parallel actions pages are laid out and how they are used.

Basis for Hi Cog

Basis for SRO only

Two separate things make this SRO only:

1. Per SRO guidance document, Knowledge of diagnostic steps and decision points in the EOP that involve transitions to event specific sections of the EOP. The concept of the parallel actions transfer page is NOT used in AP's and is therefore SRO only.
2. Knowledge of the transfers using Parallel Actions is an SRO ONLY objective (R31) in the Generic EOP lesson plan.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

EAP-EOP Obj R31
SA tab

GEN2.4 2.4.19 - GENERIC - Emergency Procedures / Plan
Emergency Procedures / Plan
Knowledge of EOP layout, symbols, and icons. (CFR: 41.10 / 45.13)

Student References Provided

401-9 Comments:

Remarks/Status

GEN2.4 2.4.5 - GENERIC - Emergency Procedures / Plan

Emergency Procedures / Plan

Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. (CFR: 41.10 / 43.5 / 45.13)

Given the following Unit 1 conditions:

- Reactor Power = 100%
- Turbine Building Flood in progress
- AP/10 (Turbine Building Flood) has just been initiated by the Procedure Director

- 1) Once the Reactor has been tripped in accordance with AP/10, the highest priority actions to be performed are contained in (1).
- 2) Steam Generator levels and feed rates will be directed by (2).

Which ONE of the following completes the statements above?

- A.
 1. AP/10
 2. Rule 7
 - B.
 1. AP/10
 2. Turbine Building Flood tab
 - C.
 1. the EOP
 2. Rule 7
 - D.
 1. the EOP
 2. Turbine Building Flood tab
-

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ILT45 ONS SRO NRC Examination QUESTION 100

100

D

General Discussion

Answer A Discussion

Incorrect. Plausible because AP/10 is unique in that there is specific guidance in the Turbine Building Flood tab prior to step 1 that directs that AP/10 be used in parallel with this tab. That is primarily due to the fact that it is AP/10 that provides the direction to locate and isolate the source of the TBF therefore it would be plausible to believe it is the highest priority. Second part is plausible because in most every case except a TBF Rule 7 provided direction for SG levels and feed rates.

Answer B Discussion

Incorrect. Plausible because AP/10 is unique in that there is specific guidance in the Turbine Building Flood tab prior to step 1 that directs that AP/10 be used in parallel with this tab. That is primarily due to the fact that it is AP/10 that provides the direction to locate and isolate the source of the TBF therefore it would be plausible to believe it is the highest priority. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible because in most every case except a TBF Rule 7 provided direction for SG levels and feed rates.

Answer D Discussion

Correct. IAW OMP 1-18, Immediate Manual Actions are always the higher priority and they are contained in the EOP. Although Rule 7 normally provides SG level and feed rate, in the unique case of a TBF, the TBF tab instructs that in this case the guidance in AP/10 supercedes the EOP guidance provided in Rule 7.

Basis for meeting the K

Requires knowledge of the organization (and implementation requirements) of AP's and EOP's as contained in OMP 1-18 as well as in the EOP itself.

Basis for Hi Cog

Basis for SRO only

Demonstrates knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.

Job Level	Cognitive Level	Question Type	Question Source
SRO	Memory	NEW	

Development References

ADM-OMP R10
OMP 1-18
TBF tab
AP/10

GEN2.4 2.4.5 - GENERIC - Emergency Procedures / Plan
Emergency Procedures / Plan

Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. (CFR: 41.10 / 43.5 / 45.13)

Student References Provided

401-9 Comments:

Remarks/Status