

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

Applicant Information

Name:

Date: 03-05-2010

Facility/Unit: Vogtle 1 & 2

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

Student Name: _____

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

HL-15R SRO NRC EXAM

1.

Which **ONE** of the following describes the power supplies to the Rod Drive Motor Generator (MG) sets and the breakers that are required to be locally tripped during an ATWT per 19211-C, FR-S.1, Response to Nuclear Power Generation/ATWT, if the Reactor Trip breakers will not open?

MG Set Power Supplies

Breakers to Trip

A. 1NB09 and 1NB10

MG set motor breakers

B. 1NB09 and 1NB10

MG set output breakers

C. 1NB08 and 1NB09

MG set motor breakers

D. 1NB08 and 1NB09

MG set output breakers

HL-15R SRO NRC EXAM

2.

Initial conditions:

Unit 2 was operating at 100% power

The reactor was manually tripped

2NAA and 2NAB de-energize on the reactor trip

The crew implements 19001-C, "ES-0.1 Reactor Trip Recovery"

Current conditions:

2NAB has been re-energized

RCS Tave - 559 F and rising

RCS WR Tcold - 558 F and rising

AFW flow - 150 GPM per SG

SG NR levels - 18% and slowly rising

CST levels - Both at 93%

The UO and OATC shall ...

A. maintain stable plant conditions in Hot Standby

and

raise AFW flow while attempting to start RCP 1.

B. initiate a natural circulation cooldown

and

raise AFW flow while attempting to start RCP 4.

C. maintain stable plant conditions in Hot Standby

and

raise the steaming rate with SG ARVs while attempting to start RCP 4.

D. initiate a natural circulation cooldown

and

raise the steaming rate with SG ARVs while attempting to start RCP 1.

HL-15R SRO NRC EXAM

3.

Given the following conditions:

- Dropped rod recovery is in progress while at power.
- Control Bank C and Control Bank D are partially withdrawn.
- 14915, "Special Condition Surveillance Logs", Data Sheet 5 for "Rod Insertion Limit Monitor Inoperable" is being performed by the OATC.

Which ONE of the following choices lists banks and groups of a dropped rod that will render the RIL Monitor INOPERABLE during rod recovery?

- A. Control Bank C, Group 1 OR Control Bank D, Group 1
- B. Control Bank C, Group 2 AND Control Bank D, Group 1
- C. Control Bank C, Group 1 AND Control Bank D, Group 2
- D. Control Bank C, Group 2 OR Control Bank D, Group 2

HL-15R SRO NRC EXAM

4.

With an RCP shaft vibration of 20.2 mils, which ONE of the following correctly identifies where RCP vibrations are read and the required action to take?

<u>Location</u>	<u>Action to take</u>
A. IPC computer points	Immediately trip the affected RCP(s)
B. IPC computer points	Continue RCP operation and monitor vibrations
C. Locally in Control Building	Immediately trip the affected RCP(s)
D. Locally in Control Building	Continue RCP operation and monitor vibrations

HL-15R SRO NRC EXAM

5.

Given the following conditions:

- There is a 50 GPM RCS leak with the reactor at 100% power
- PRZR level is slowly lowering
- 120 GPM CVCS letdown is in service
- The NCP is in service
- Tave is stable at 586.4 F
- RCP seal injection flow is 8 GPM per pump
- Charging flow controller FIC-0121 is in automatic

Which one of the following describes:

1) why charging flow will automatically increase, and

2) required operator actions, if any?

A. 1) PRZR level is lowering below the program level.

2) No operator action required, charging flow will automatically restore PRZR level to program level.

B. 1) PRZR level is lowering below the program level.

2) Letdown will be manually isolated and charging flow will be manually adjusted to restore PRZR level.

C. 1) PRZR program level changing.

2) No operator action required, charging flow will automatically restore PRZR level to program level.

D. 1) PRZR program level changing.

2) Letdown will be manually isolated and charging flow will be manually adjusted to restore PRZR level.

HL-15R SRO NRC EXAM

6.

A malfunction has resulted in seal injection flows being out of limits.

Which one of the following choices lists the correct action to take for the given RCP seal injection flow?

	<u>RCP Seal Injection Flow</u>	<u>Action to take</u>
A.	7.8 gpm	Depress UP arrow to throttle HV-0182 OPEN
B.	13.4 gpm	Depress UP arrow to throttle HV-0182 CLOSED
C.	13.4 gpm	Depress DOWN arrow to throttle HV-0182 OPEN
D.	7.8 gpm	Depress DOWN arrow to throttle HV-0182 CLOSED

HL-15R SRO NRC EXAM

7.

Which ONE of the following describes the power supplies to the RHR loop suction isolation valves ?

- A. The outboard loop suction is powered from a 1E 480V MCC.
The inboard loop suction is powered from an opposite train 1E 480V MCC.
- B. The inboard loop suction is powered from a 1E 480V MCC.
The outboard loop suction is powered from an opposite train 1E 480V MCC.
- C. Both loop suction on one train are powered from 1E 480V MCCs.
Both loop suction on the other train are powered from 1E 25KVA Inverters.
- D. One loop suction on each train is powered from 1E 480V MCCs.
One loop suction on each train is powered from 1E 25KVA Inverters.

HL-15R SRO NRC EXAM

8.

While in Mode 5 with RHR Train B in service, which ONE of the following is the effect during a loss of instrument air?

RHR Hx Outlet, 1HV-607

RHR Hx Bypass, 1HV-619

- | | | |
|----|------------|------------|
| A. | Fails OPEN | Fails OPEN |
| B. | Fails SHUT | Fails SHUT |
| C. | Fails OPEN | Fails SHUT |
| D. | Fails SHUT | Fails OPEN |

HL-15R SRO NRC EXAM

9.

Given the following:

- The ECCS Accumulator isolation valves were inadvertently left CLOSED and in AUTO with power on the valves.
- PRZR pressure has been raised from 930 psig to 2100 psig.
- A spurious Safety Injection (SI) occurs.

Which ONE of the following identifies the effect on the ECCS Accumulator isolation valves:

1. at 2100 psig prior to the SI signal, and
2. after the spurious SI signal

At 2100 psig

- A. valves are closed.
- B. valves are closed.
- C. valves automatically open.
- D. valves automatically open.

After Spurious SI signal

- Open signal is generated to the valves.
- Open signal is NOT generated to the valves.
- Open signal is generated to the valves.
- Open signal is NOT generated to the valves.

HL-15R SRO NRC EXAM

10.

A loss of offsite power resulted in an automatic plant trip.

- Red lights are LIT on all RCP 1E handswitches.
- Red lights are LIT on all RCP non-1E handswitches.
- 19001-C, "ES-0.1 Reactor Trip Response" is in effect.

Which **ONE** of the following is the:

- 1) event which caused the reactor trip and
- 2) indication the operators will use to monitor RCS temperature?

<u>Cause of Reactor Trip</u>	<u>Temperature monitoring</u>
A. RCP underfrequency	RCS Tave
B. RCP underfrequency	RCS WR Tcold
C. RCS loops low flow	RCS Tave
D. RCS loops low flow	RCS WR Tcold

HL-15R SRO NRC EXAM

11.

Given the following while at 100% power.

- Plant systems are in normal alignment.
- A reactor trip occurs.
- RCS pressure is 1830 psig and lowering.
- Containment pressure is 2.3 psig and rising.

RCP seal leakoff flows from the # 1 seals are currently directed to the...

(Assume NO manual actions)

- A. PRT
- B. RCDD
- C. CTMT sump
- D. Seal Water Hx Outlet to the NCP

HL-15R SRO NRC EXAM

12.

Given the following:

The unit is at 100% power

PRT high temperature exists due to leakage from a PRZR PORV

All systems are in their normal alignment

PRT cooling ____ (1) ____ aligned to be directly cooled by ____ (2) ____.

A. (1) is normally

(2) ACCW

B. (1) is normally

(2) NSCW

C. (1) must be manually

(2) ACCW

D. (1) must be manually

(2) NSCW

HL-15R SRO NRC EXAM

13.

Given the following sequence of events:

At 1400, PRZR Safety valve failed open.

At 1402, Tave is 557°F, PRZR pressure is 1940 psig.

At 1405, Tave is 556°F, PRZR pressure is 1840 psig.

Which **ONE** of the following lists the **first** initiating signals for the FWI valves closure and the MFPTs trip?

FWI Valves Closure

MFPTs Trip

- | | |
|--|---------------------------------------|
| A. Low PRZR pressure SI | Low PRZR pressure SI |
| B. Reactor trip coincident with low Tave | Low PRZR pressure SI |
| C. Low PRZR pressure SI | Reactor trip coincident with low Tave |
| D. Reactor trip coincident with low Tave | Reactor trip coincident with low Tave |

HL-15R SRO NRC EXAM

14.

Which one of the following choices lists all the procedurally allowable power supplies for Unit 1 CCW pumps 1, 3, and 5 per 13427A-1, "4160V AC Bus 1AA02 1E Electrical Distribution System?"

- A. RAT-1A, RAT-1B, SAT, EDG-1A
- B. RAT-1A, UAT back feed, SAT, EDG-2A
- C. RAT-1A, RAT-2A, SAT, EDG-1A
- D. RAT-1A, UAT back feed, SAT, EDG-2A

HL-15R SRO NRC EXAM

15.

Given the following:

- A 200 gpm RCS leak is in progress.
- RCS pressure is 1465 psig and stable.
- Containment pressure is 2.1 psig and rising very slowly.
- The crew transitions to 19012-C, "E-1.2 Post LOCA Cooldown & Depressurization".

Which ONE of the following is CORRECT regarding minimum S/G NR water level required for these plant conditions and why?

- A. 10%, ensures S/G tubes are covered to promote reflux boiling.
- B. 32%, ensures S/G tubes are covered to promote reflux boiling.
- C. 10%, ensures S/G inventory to ensure a secondary heat sink.
- D. 32%, ensures S/G inventory to ensure a secondary heat sink.

HL-15R SRO NRC EXAM

16.

Complete the following statement for the PRZR Pressure Control System:

When PRZR level lowers_____, then_____will de-energize, if energized.

- | | |
|---------------------------|---------------------------------|
| A. below 17% | ONLY the backup heaters |
| B. 5% below program level | backup and proportional heaters |
| C. below 17% | backup and proportional heaters |
| D. 5% below program level | ONLY the backup heaters |

HL-15R SRO NRC EXAM

17.

To maintain Containment parameters within the accident analysis assumptions for a DBA LOCA, the Containment Pressure and Containment Air Temperature LCO limits for Mode 1 are...

- A. +1.8 psig and 120°F
- B. +1.8 psig and 130°F
- C. -3.0 psig and 120°F
- D. -3.0 psig and 130°F

HL-15R SRO NRC EXAM

18.

Five minutes following a reactor trip and safety injection, the OATC places Train A SI reset handswitch in the "reset" position.

P-4 Train A will be generated when the Train A reactor trip breaker is open (1) .

SI reset will block (2) .

- A. (1) **and** the Train B bypass breaker is open
(2) only the Train A PRZR Low Pressure SI and Low Steamline Pressure SI signals
- B. (1) **and** the Train A bypass breaker is open
(2) all Train A automatic SI signals
- C. (1) **or** the Train A bypass breaker is open
(2) only the Train A PRZR Low Pressure SI and Low Steamline Pressure SI signals
- D. (1) **or** the Train B bypass breaker is open
(2) all Train A automatic SI signals

HL-15R SRO NRC EXAM

19.

Which one of the following matches the reactor trip signals to their limiting accident / protection?

<u>Reactor Trip Signal</u>	<u>Limiting Accident / Protection</u>
A. Overpower DT Overtemperature DT PRZR High Pressure PRZR Low Pressure	DNB Excessive fuel heat generation rate (kW/ft) RCS integrity DNB
B. Overpower DT Overtemperature DT PRZR High Pressure PRZR Low Pressure	Excessive fuel heat generation rate (kW/ft) DNB RCCA drive housing rupture Excessive RCS cooldown
C. Overpower DT Overtemperature DT PRZR High Pressure PRZR Low Pressure	Excessive fuel heat generation rate (kW/ft) DNB RCS integrity DNB
D. Overpower DT Overtemperature DT PRZR High Pressure PRZR Low Pressure	DNB Excessive fuel heat generation rate (kW/ft) RCCA drive housing rupture Excessive RCS cooldown

HL-15R SRO NRC EXAM

20.

A loss of 120V AC vital bus 1BY1B has occurred with the unit at 100% power. Which one of the following correctly describes the impact on SSPS?

A. Only SSPS Train B channel II Input relays are **de-energized**.

The Train B Slave relays are **inoperable**.

B. Only SSPS Train B channel II input relays are **de-energized**.

The Train B Slave relays are **operable**.

C. SSPS Train A and Train B channel II Input relays are **de-energized**.

The Train B Slave relays are **operable**.

D. SSPS Train A and Train B channel II Input relays are **de-energized**.

The Train B Slave relays are **inoperable**.

HL-15R SRO NRC EXAM

21.

Given the following:

- The plant is at 17% power.

The following conditions exist on Reactor Coolant Pump # 2.

- # 1 seal D/P is 190 psig.
- # 1 seal leakoff flow is 5.2 gpm.

Which **ONE** of the following describes the required sequence / response to these conditions?

- A. Shutdown the RCP, enter AOP-18005-C, "Partial Loss of Flow".
- B. Commence a unit shutdown per UOP-12004-C, shutdown the RCP within 8 hours.
- C. Trip the Reactor, enter 19000-C, "Reactor Trip or Safety Injection", shutdown the RCP.
- D. Maintain current power, shutdown the RCP with engineering / management concurrence.

HL-15R SRO NRC EXAM

22.

Given the following conditions:

- The unit is at 100% power.
- PRZR pressure control is selected to the 457 / 456 position.

The OATC determines that the controlling channel for Pressurizer Pressure control has failed.

Which one of the following describes the instrument failure and the plant response if no operator actions were taken?

- A. PT-457 fails high, PRZR pressure cycles between 2185 psig and 2200 psig.
- B. PT-456 fails low, PRZR pressure cycles between 2345 psig and 2325 psig.
- C. PT-456 fails low, reactor trips on the high PRZR Pressure setpoint.
- D. PT-457 fails high, reactor trips on the low PRZR Pressure setpoint.

HL-15R SRO NRC EXAM

23.

The unit is shutdown with RCS temperature 375°F.

CNMT HI TEMP alarm has just annunciated.

The UO notes that CNMT air temperature is rising with CNMT coolers 1, 2, 5, and 6 in service on high speed.

Which one of the following describes the actions the UO can take to stop the CNMT air temperature rise?

- A. Start CNMT coolers 3 and 4 simultaneously on high speed.
- B. Start CNMT coolers 3 and 7 simultaneously on high speed.
- C. Start CNMT coolers 3 and 4 sequentially on high speed.
- D. Start CNMT coolers 3 and 7 sequentially on high speed.

HL-15R SRO NRC EXAM

24.

Initial conditions:

A steamline break inside containment has occurred
EOP 19010-C, "E-1 Loss of Reactor or Secondary Coolant" is being implemented

The following sequence of events occurs:

- The SI signal is RESET
- CNMT pressure is 8.6 psig and lowering
- A loss of both RATs occurs
- Both EDGs start and re-energize their respective buses

Operators will:

1) verify the sequencers start all CNMT coolers on _____ speed, and

2) the next action necessary will be to _____

A. 1) low

2) shift the CNMT coolers to high speed to maximize CNMT energy removal.

B. 1) low

2) restart the SI and RHR pumps as necessary to maintain RCS inventory.

C. 1) high

2) shift the CNMT coolers to low speed to prevent a CNMT cooler fan motor overcurrent condition.

D. 1) high

2) shift the CNMT coolers to low speed to prevent an EDG output breaker overcurrent condition.

HL-15R SRO NRC EXAM

25.

Given the following conditions:

- A loss of all AC power occurs in Mode 1.
- The plant is currently in Mode 3.
- HV-8103A, B, C, D Seal Injection Isolation Valves are CLOSED.

Which **ONE** of the following describes:

- 1) the Mode in which seal injection will be re-established, and
- 2) the reason for closing the seal injection isolation valves?

A. 1) Mode 3.

2) To prevent steam binding the charging pumps via back leakage in the seal lines.

B. 1) Mode 3.

2) To prevent seal damage and RCP shaft bowing due to excessive thermal stresses.

C. 1) Mode 5.

2) To prevent steam binding the charging pumps via back leakage in the seal lines.

D. 1) Mode 5.

2) To prevent seal damage and RCP shaft bowing due to excessive thermal stresses.

HL-15R SRO NRC EXAM

26.

Given the following sequence:

- The plant is in Mode 6 at midloop.
- RHR pump "A" trips due to a loss of RCS inventory.
- The RCS has been refilled and RHR pump "B" is ready to be started.

Complete the following two sentences:

- 1) To start the pump, the RHR Hx Bypass Valve controller (FIC-0619) should be _____
- 2) To ensure compliance with Tech Spec flow requirements, per procedure the potentiometer setting for the RHR Hx Bypass Valve controller (FIC-0619) should be set at _____

Given: Formula for Potentiometer setting in gpm is $(\text{desired flow} / 5000)^2 \times 10$.

1) <u>RHR Hx Bypass valve</u>	2) <u>Potentiometer setting</u>
A. in automatic.	3.6
B. in automatic.	4.1
C. in manual and closed.	3.6
D. in manual and closed.	4.1

HL-15R SRO NRC EXAM

27.

Which one of the following lists ALL the locations where the control room crew can monitor and control:

- 1) Containment Cooler fan speeds, and
- 2) NSCW cooling water valves?

MLBs - Monitor Light Boxes on the vertical section of the main control board

QMCB - Sloping portion of the NSCW section of the main control board

QHVC - Main Control Room HVAC panel

	<u>Indications</u>	<u>Controls</u>
A.	1) MLBs, QHVC	QHVC
	2) QMCB only	QMCB
B.	1) MLBs, QMCB	QMCB
	2) MLBs only	QMCB
C.	1) QHVC only	QHVC
	2) QMCB only	QMCB
D.	1) MLBs, QHVC	QHVC
	2) MLBs, QMCB	QMCB

HL-15R SRO NRC EXAM

28.

Given the following:

- A loss of offsite power occurs.
- Both EDGs start and tie onto their respective ESF buses.
- All equipment sequences on as expected.

Which **ONE** of the following describes the PRZR heater banks available for RCS pressure control?

- A. All Backup Heater Banks.
- B. Backup Heater Banks A and B.
- C. Proportional Heater Bank and All Backup Heater Banks.
- D. Proportional Heater Bank and Backup Heater Banks A and B.

HL-15R SRO NRC EXAM

29.

Given the current plant conditions:

- A large RCS LOCA has occurred
- CNMT Hydrogen monitors indicate 5%
- Containment pressure is 5.5 psig
- TSC directs lowering of CNMT H₂ concentration using 13130-1, "Post-Accident Hydrogen Control"

Which one of the following describes the operational implication of the Hydrogen concentration (%) and the PREFERRED method to reduce Hydrogen concentration inside containment?

<u>Operational Implication</u>	<u>PREFERRED Method to reduce Hydrogen</u>
A. Potential Combustible atmosphere	Dilution with Service Air
B. Potential Combustible atmosphere	Post-LOCA Hydrogen Purge
C. Embrittlement of CNMT liner	Dilution with Service Air
D. Embrittlement of CNMT liner	Post-LOCA Hydrogen Purge

HL-15R SRO NRC EXAM

30.

The plant is in Mode 3.

- SR / IR Signal Processor Channel Operational Tests have been performed.
- Background counts for both SR channels are 1000 cps.
- The UO records the counts when the HFASA alarm lights for each SR channel.

N31 - 2080 cps N32 - 2340 cps

Which **ONE** of the following is **CORRECT** regarding Technical Specification LCO 3.3.8, High Flux At Shutdown Alarm (HFASA)?

- A. The LCO is met for both SR NIS HFASA alarms.
- B. LCO entry required due to N31 setpoint too low.
- C. LCO entry required due to N32 setpoint too high.
- D. LCO entry required for both SR NIS HFASA alarms.

HL-15R SRO NRC EXAM

31.

Which ONE of the following is CORRECT regarding:

- 1) The minimum Spent Fuel Pool level (elevation) **required** by Tech Specs for adequate shielding and design basis fuel handling events.
- 2) how the FHB crew would be alerted to High radiation on RE-0008, Fuel Handling Building Area radiation monitor.

1) Tech Spec level

2) RE-0008 high rad alarm

- | | |
|-------------------|--|
| A. 214 ft. 6 inch | audible horn and blinking strobe light |
| B. 214 ft. 6 inch | warble type siren on plant gai-tronics |
| C. 217 ft. 0 inch | audible horn and blinking strobe light |
| D. 217 ft. 0 inch | warble type siren on plant gai-tronics |

HL-15R SRO NRC EXAM

32.

The plant is at full power.

SG # 2 ARV, "PV-3010," has been declared INOPERABLE due to large hydraulic fluid leaks on the valve operator.

Which ONE of the following describes:

1) LCO entry (not INFO) and

2) **All** the applicable modes the ARVs are **required** to be OPERABLE?

LCO entry

Applicable Modes

- | | |
|--------------------|--------------------|
| A. Is required | Modes 1, 2, and 3 |
| B. Is required | Modes 1 and 2 only |
| C. Is NOT required | Modes 1, 2, and 3 |
| D. Is NOT required | Modes 1 and 2 only |

HL-15R SRO NRC EXAM

33.

A SGTR coincident with an RCS LOCA is in progress.

- All RCPs have been tripped.
- RVLIS Full Range indicates 65%.
- All SG levels are > 50% NR.
- Intact SG pressures - 1000 psig.
- Core Exit Thermocouples - 560°F and stable.
- RCS pressure - 1118 psig and stable.
- WR Tcolds - 465°F.

Which one of the following identifies:

- 1) the current method of core cooling, and
- 2) the flow path for this cooling method?

A. 1) Reflux Cooling

- 2) steam flows to the S/G via the top of the hot legs, transfers heat to the secondary side water, condenses in the S/G tubes and returns to the vessel via the bottom of the hot legs.

B. 1) Reflux Cooling

- 2) steam flows to the S/G via the top of the hot legs, transfers heat to the secondary side water, condenses in the S/G tubes and returns to the vessel via the cold legs into the downcomer.

C. 1) Natural Circulation

- 2) steam flows to the S/G via the top of the hot legs, transfers heat to the secondary side water, condenses in the S/G tubes and returns to the vessel via the bottom of the hot legs.

D. 1) Natural Circulation

- 2) steam flows to the S/G via the top of the hot legs, transfers heat to the secondary side water, condenses in the S/G tubes and returns to the vessel via the cold legs into the downcomer.

HL-15R SRO NRC EXAM

34.

Given the following conditions:

- An RCS LOCA has occurred.
- Containment pressure is 13.5 psig and stable.
- A loss of offsite power to 13.8 kV switchgear NAA has occurred.
- RCS pressure is 1080 psig and stable.
- The crew is performing 19012-C, "ES-1.2 Post-LOCA Cooldown and Depressurization."

Which ONE of the following describes the method that will be used to perform the cooldown of the RCS and the MAXIMUM cooldown rate allowed by 19012-C?

A. S/G ARVs.

$\leq 100^{\circ}\text{F}$ per hour.

B. S/G ARVs.

Maximum rate.

C. Steam Dumps.

$\leq 100^{\circ}\text{F}$ per hour.

D. Steam Dumps.

Maximum rate.

HL-15R SRO NRC EXAM

35.

The plant is at 100% power when the following annunciator is received following a circulating water pump trip:

TURB CNDSR LO VAC

- The SS enters AOP 18013-C, "Rapid Power Reduction."
- The UO rapidly reduces turbine load.
- Tave is 3.8°F higher than Tref.

Which one of the following describes:

- 1) AOP-18013-C, power reduction target, and
- 2) the PREFERRED operation of the control rods in accordance with 18013-C?

<u>Target</u>	<u>Control Rods</u>
A. low vacuum alarm clear	manual
B. low vacuum alarm clear	automatic
C. 20% rated thermal power	manual
D. 20% rated thermal power	automatic

HL-15R SRO NRC EXAM

36.

Given the following plant conditions:

- The unit is at 100% power.
- A Main Feedwater line break occurs at FRV # 3.

RCS temperature will _____ prior to the reactor trip and SG # 3 pressure will _____ after a FWI occurs.

RCS temperature response

SG # 3 pressure response

- | | | |
|----|-------|-------------------------|
| A. | rise | stabilize |
| B. | rise | completely depressurize |
| C. | lower | stabilize |
| D. | lower | completely depressurize |

HL-15R SRO NRC EXAM

37.

Which one of the following choices lists conditions requiring entry into EOP 19100-C, "ECA-0.0 Loss of All AC Power" with Unit 1 at 100% power?

- A. 2 of the 3 white potential lights for both 1AA02 and 1BA03 extinguish.
1AA02 and 1BA03 breaker position indication lights remain lit.
- B. 1 of the 3 white potential lights for both 1AA02 and 1BA03 extinguish.
1AA02 and 1BA03 breaker position indication lights extinguish.
- C. 2 of the 3 white potential lights for both 1NA01, 1NA04 and 1NA05 extinguish.
1NA01, 1NA04 and 1NA05 breaker position indication lights remain lit.
- D. 1 of the 3 white potential lights for 1NA01, 1NA04 and 1NA05 extinguish.
1NA01, 1NA04 and 1NA05 breaker position indication lights extinguish.

HL-15R SRO NRC EXAM

38.

Given the following conditions:

- Reactor power is steady-state at 100%.
- Rod control is in automatic.
- Sealing steam pressure drops to 0 psig due to a malfunction.

Which ONE of the following conditions will result if NO operator action is taken in response to this condition?

- A. Lowering megawatt output and rising condenser pressure.
- B. Rising megawatt output and rising condenser hotwell level.
- C. Lowering megawatt output and lowering condenser pressure.
- D. Rising megawatt output and rising steam seal header pressure.

HL-15R SRO NRC EXAM

39.

Initial conditions:

- ACCW pump # 1 running
- A plant event results in both ESF Sequencers running,

Current conditions:

- Both ACCW pumps running.
- The last load started at 50.5 seconds.

Which ONE of the following is the CORRECT initiating event?

- A. SI
- B. U/V
- C. SI followed by a U/V
- D. U/V concurrent with an SI

HL-15R SRO NRC EXAM

40.

The following indications occur with the unit at full power:

- All four SGs channel 1 NR levels go off-scale low
- All four SGs channel 1 pressures go off-scale low

This is a loss of _____ and the correct action to take is to _____

A. 1AY1A

place all 4 MFRVs and MFPT SPEED CONTROL MASTER in manual and match channel 2 feed flows to channel 2 steam flows while maintaining SG NR levels.

B. 1AY2A

place all 4 MFRVs and MFPT SPEED CONTROL MASTER in manual and match channel 2 feed flows to channel 2 steam flows while maintaining SG NR levels.

C. 1AY1A

verify reactor trip and initiate 19000-C, "E-0 Reactor Trip or Safety Injection".

D. 1AY2A

verify reactor trip and initiate 19000-C, "E-0 Reactor Trip or Safety Injection".

HL-15R SRO NRC EXAM

41.

For the Steam Generator Water Level Control System (SGWLC), which ONE of the following describes this systems' normal operation and program level input?

- A. SGWLC is a level dominant system that ultimately adjusts Feed Reg valve position by level error.

Program level is constant at 65% NR.

- B. SGWLC is a level dominant system that ultimately adjusts Feed Reg valve position by level error.

Program level is variable based on input from Auctioneered High Power Range NIS.

- C. SGWLC is a flow dominant system that ultimately adjusts Feed Reg valve position by mismatch in steam flow versus feed flow.

Program level is constant at 65% NR.

- D. SGWLC is a flow dominant system that ultimately adjusts Feed Reg valve position by mismatch in steam flow versus feed flow.

Program level is variable based on input from Auctioneered High Power Range NIS.

HL-15R SRO NRC EXAM

42.

Given the following plant conditions:

- Unit 2 Waste Gas Decay Tank (GDT) # 6 release was started at 0600.
- A-RE-0014, Waste Gas Radiation Monitor is reading as expected.
- The Aux. Building SO has given you Data Sheet 1 of SOP-13202-2, "Gaseous Releases" for your evaluation (**Reference provided**).

Which **ONE** of the following describes the required action to perform, and why?

- A. Continue the release, all indications are as expected for a release.
- B. Stop the release, indications of an accidental release are present.
- C. Stop the release, indications of a GDT relief valve lifting are present.
- D. Continue the release, the pressure change in Unit 2 GDT # 6 is expected.

HL-15R SRO NRC EXAM

43.

Given the following conditions:

- Manual reactor trip from 65% power.
- All AFW pumps are running.
- All MDAFW valves are throttled to 50 gpm per SG.
- All TDAFW valves are throttled completely closed.
- Both MFPTs are tripped per EOP direction.

Steam Generator NR levels are **stable** as follows:

SG # 1 - 40%, SG # 2 - 37%, SG # 3 - 36%, SG # 4 - 41%

Which ONE of the following describes the AFW system effect on the SG levels following a spurious Safety Injection?

SG # 1 and # 4 levels

SG # 2 and # 3 levels

- | | | |
|----|--------|--------|
| A. | stable | stable |
| B. | stable | rising |
| C. | rising | stable |
| D. | rising | rising |

HL-15R SRO NRC EXAM

44.

Given the following conditions:

- Unit 1 core offload commences 150 hours after reactor shutdown.
- All FHB ventilation systems are in normal lineup for this condition.

A fuel handling event has occurred in the Spent Fuel Pool area resulting in the following alarms:

- 1RE-0008, "FHB Area" monitor is in **HIGH** alarm.
- ARE-2532A, "FHB Effluent" monitor is in **HIGH** alarm.

Which **ONE** of the following describes additional radiation monitors expected to be in alarm, if any, and the expected FHB HVAC lineup?

A. RE-12442A, B, C, Plant Vent Rad Monitors.

The FHB Normal supply and exhaust fans discharge to the plant vent duct work.

B. RE-12442A, B, C, Plant Vent Rad Monitors.

The FHB Normal supply and exhaust dampers close, the FHB Normal supply and exhaust fans trip.

C. No additional radiation monitors would alarm.

The FHB Normal supply and exhaust fans discharge to the plant vent duct work.

D. No additional radiation monitors would alarm.

The FHB Normal supply and exhaust dampers close, the FHB Normal supply and exhaust fans trip.

HL-15R SRO NRC EXAM

45.

Given the following indications:

- NSCW Train A Supply header flow offscale high.
- NSCW Train A Return header flow offscale low.
- NSCW TRAIN A LO HDR PRESS annunciator is LIT.

The NSCW Train A "low flow" annunciators are lit for:

- Containment Coolers 1, 2, 5, and 6
- Reactor Cavity Cooler
- DG-A
- RHR pump A

Which **ONE** of the following is the **CORRECT** location of the NSCW pipe break?

- A. NSCW return line break inside the Auxiliary Building.
- B. NSCW supply line break inside the Auxiliary Building.
- C. NSCW return line break between the Auxiliary Building and the NSCW basin.
- D. NSCW supply line break between the cooling tower and the Auxiliary Building.

HL-15R SRO NRC EXAM

46.

Following a main generator trip, which ONE of the following describes the design automatic bus transfer function for the Reserve Auxiliary Transformers (RATs) for the:

1) 13.8kV buses and

2) Non-1E 4160kV buses?

13.8kV buses

Non-1E 4160kV buses

A. Fast bus transfer

Fast bus transfer

B. Fast bus transfer

Residual bus transfer

C. Residual bus transfer

Fast bus transfer

D. Residual bus transfer

Residual bus transfer

HL-15R SRO NRC EXAM

47.

During a loss of 125V DC Switchgear CD1, which ONE of the following can be performed in the control room?

- A. Start the TDAFW pump by opening the steam admission valve HV-5106.
- B. Isolate the TDAFW steam supply valve from SG # 2 by closing HV-3019.
- C. Align the TDAFW pump suction from CST # 1 to CST # 2 by opening HV-5113.
- D. Reduce TDAFW pump discharge flow by throttling valves HV-5120, HV-5122, HV-5125 and HV-5127.

HL-15R SRO NRC EXAM

48.

Given the following conditions:

- The unit is in Mode 3, normal operating temperature and pressure.
- 125V DC bus AD1 is inadvertently de-energized.

Which ONE of the following is CORRECT regarding:

- 1) QMCB remote indication for pumps powered by 4160 1E bus AA02, and
- 2) their breaker protective trips while AD1 is de-energized?

1) QMCB Remote Indication

2) Breaker Protective Trips

A. available

available

B. available

NOT available

C. NOT available

available

D. NOT available

NOT available

HL-15R SRO NRC EXAM

49.

Given the following plant conditions:

- 0900, a loss of 125V DC power to panel 1BD12 occurred
- 0905, Safety Injection actuated

As a result of the above conditions:

- 1) DG1B engine will _____, and
- 2) _____ will annunciate in the control room.

A. start

"DG1B ENGINE CNTL POWER A FAILURE"

B. start

"DG1B ENGINE CNTL POWER B FAILURE"

C. NOT start

"DG1B ENGINE CNTL POWER A FAILURE"

D. NOT start

"DG1B ENGINE CNTL POWER B FAILURE"

HL-15R SRO NRC EXAM

50.

The following sequence of events has occurred:

- Unit 2 instrument and service air pressures are both lowering.
- The Unit 1 and Unit 2 air headers were crosstied, but are now isolated from each other.
- Unit 2 Reactor is tripped.

1) The air leak was on the _____, and

2) the minimum pressure that requires the units to be isolated from each other is _____.

1) Air Leak Location

2) Minimum Pressure

- | | |
|--------------------------|---------|
| A. Service Air Header | 70 psig |
| B. Service Air Header | 80 psig |
| C. Instrument Air Header | 70 psig |
| D. Instrument Air Header | 80 psig |

HL-15R SRO NRC EXAM

51.

Given the following:

- A fire resulted in a control room evacuation.
- Operators only had time to initiate a manual reactor trip.
- Attempts to open Reactor Trip Breaker "B" were **NOT** successful
- Local control from the shutdown panels has been established

Based on the current conditions:

1) Prior to local operator actions, Steam Dumps will automatically control RCS Tave at _____, if not affected by the fire; AND

2) What mitigating actions are directed in AOP 18038-1, "Operation from Remote Shutdown Panels?"

A. 1) 557°F.

2) Locally open 125 VDC 1E panel breakers to close all MSIVs and BSIVs and locally control RCS Tave using the SG ARVs.

B. 1) 557°F

2) Close all MSIVs and BSIVs from the remote shutdown panels and locally control the SG ARVs to maintain RCS Tave.

C. 1) 559°F

2) Locally open 125 VDC 1E panel breakers to close all MSIVs and BSIVs and control RCS Tave using the SG ARVs.

D. 1) 559°F

2) Close all MSIVs and BSIVs from the remote shutdown panels and locally control the SG ARVs to maintain RCS Tave.

HL-15R SRO NRC EXAM

52.

From the time of sample collection, the MAXIMUM time a Waste Gas Decay Tank release can be **initiated** and the permit still be valid is _____.

Which of the following instrument INOPERABILITIES would require termination of the release and SS notification.

<u>Max time limit</u>	<u>Inoperable Instrumentation</u>
A. 12 hours	ARE-0014
B. 24 hours	ARE-0014
C. 12 hours	RE-12442C
D. 24 hours	RE-12442C

HL-15R SRO NRC EXAM

53.

Regarding RE-12116, Control Room Air Intake Radiation Monitor:

- 1) Prior to a pulse check, state the location where operators may block the actuation signal, and
- 2) can a high radiation signal which is still present be overridden on the QHVC panel to allow realignment of the CR HVAC system?

Location To Block

QHVC Override capability

- | | |
|------------------------------------|-----------------------|
| A. locally in the Control Building | may be overridden |
| B. locally in the Control Building | may NOT be overridden |
| C. at the QESF panel | may be overridden |
| D. at the QESF panel | may NOT be overridden |

HL-15R SRO NRC EXAM

54.

During a release of WMT # 9, the following occurs on 1RE-0018, "Waste Effluent Radiation Monitor."

- 1RX-0018 TROUBLE light illuminates on the DPM.

- 1RE-0018 has failed offscale **LOW**.

1) Per SOP 13216-1, "Liquid Waste Release," the release _____

2) The release _____

A. 1) is NOT required to be terminated.

2) must be terminated unless independent grab samples are collected within one hour.

B. 1) is NOT required to be terminated.

2) must be terminated unless the discharge valve alignment is re-verified within one hour.

C. 1) must be terminated.

2) can be reinitiated with the radiation monitor inoperable.

D. 1) must be terminated.

2) can NOT be reinitiated until the radiation monitor is operable.

HL-15R SRO NRC EXAM

55.

The plant is at full power:

A large leak has caused a loss of cooling water to the **TPCCW** system heat exchangers and AOP-18023-C, "Loss of Turbine Plant Cooling and Closed Cooling Water Systems."

Which ONE of the following:

- 1) is a load directly cooled by **TPCCW**, and
- 2) what is the cooling water supply to the **TPCCW** Heat Exchanger?

1) TPCCW Load

- A. Generator Stator Coolers
- B. Main Feed Pump Lube Oil Coolers
- C. Generator Stator Coolers
- D. Main Feed Pump Lube Oil Coolers

2) TPCCW Hx Cooling Supply

- Turbine Plant Cooling Water pumps
- Turbine Plant Cooling Water pumps
- Circulating Water pumps
- Circulating Water pumps

HL-15R SRO NRC EXAM

56.

Given the following plant conditions.

- The unit is at 100% power.
- Section A of AOP-18017, "Abnormal Grid Disturbances/Loss of Grid" is in use.

Which **ONE** of the following describes the:

- 1) desired operation of the DG's in this condition and
- 2) the reason for this alignment?

A. 1) Operable and in standby.

- 2) To ensure the DG starts and runs properly in the event of a degraded voltage condition.

B. 1) Operable and in standby.

- 2) To prevent sequencer lockout on successive undervoltage conditions within a 2 hour time period.

C. 1) Powering 1E buses with the RAT feeder breakers open.

- 2) To isolate safety related loads from the grid and ensure safety related loads are powered by a reliable electrical source.

D. 1) Powering 1E buses with the RAT feeder breakers open.

- 2) To prevent extended unloaded or low load operation which would result in the buildup of combustion products in the engine exhausts due to incomplete fuel burn in the cylinders.

HL-15R SRO NRC EXAM

57.

Which one of the following describes the swing compressor design features for:

- 1) locally transferring control of the swing air compressor between Units 1 and 2 by positioning the handswitch(es) located on the _____, and
- 2) source of TPCCW to the swing compressor?

A. 1) Unit 1 P MEC only

2) Unit 1 only

B. 1) Unit 1 P MEC only

2) Unit 1 OR Unit 2

C. 1) Unit 1 OR Unit 2 P MEC

2) Unit 1 only

D. 1) Unit 1 OR Unit 2 P MEC

2) Unit 1 OR Unit 2

HL-15R SRO NRC EXAM

58.

The unit is at 100% power with the following annunciator illuminated. Air pressure has just lowered to 2 psig below the alarm setpoint:

**SERVICE AIR
HDR LO PRESS**

Which ONE of the following would be the CORRECT status of PV-9375, Instrument Air to Service Air Isolation valve and the status of the standby air compressors?

PV-9375 status

Standby Air Compressor status

- | | |
|-----------|------------------------------------|
| A. Open | Running prior to alarm receipt. |
| B. Open | Started upon receipt of the alarm. |
| C. Closed | Running prior to alarm receipt. |
| D. Closed | Started upon receipt of the alarm. |

HL-15R SRO NRC EXAM

59.

Which ONE of the following describes the effect a loss of all AC power for 2 hours will have on the fire detection and protection systems and the system response?

- A. The fire detectors are still capable of providing actuation signals.

The Local Suppression Indication Panels (LSIPs) will automatically trip open their associated clapper valves due to the loss of AC power, fire suppression is available when the fusible links melt due to heat from a fire.

- B. The fire detectors are NOT capable of providing any fire alarms.

The Diesel Fire Pump(s) will automatically start on low fire system header pressure, fire suppression is still available from the manual hose stations.

- C. The fire detectors are still capable of providing actuation signals.

The Diesel Fire Pump(s) will automatically start on low fire system header pressure, automatic fire suppression is still available.

- D. The fire detectors are NOT capable of providing any fire alarms.

The Local Suppression Indication Panels (LSIPs) will automatically trip open their associated clapper valves due to the loss of AC power, fire suppression is available when the fusible links melt due to heat from a fire.

HL-15R SRO NRC EXAM

60.

Which one of the following choices correctly describes the how the CNMT Spray system is actuated by SSPS?

INPUT RELAYS

SLAVE RELAYS

- | | |
|---------------------------|------------------------|
| A. Energize to actuate | Energize to actuate |
| B. Energize to actuate | De-energize to actuate |
| C. De-energize to actuate | De-energize to actuate |
| D. De-energize to actuate | Energize to actuate |

HL-15R SRO NRC EXAM

61.

The OATC needs to report to dosimetry for a whole body count and will be absent for 35 minutes.

Based on the above conditions, which one of the following meets the requirements for a "SHORT TERM RELIEF" in accordance with procedures 10003-C, "Manning the Shift" and 10004-C, "Shift Relief?"

- A. - The relieving operator does NOT have to be from the same shift.
 - The relieving operator must perform a joint board walkdown with the offgoing OATC.
- B. - The relieving operator must be from the same shift.
 - The relieving operator must perform a joint board walkdown with the offgoing OATC.
- C. - The relieving operator must be from the same shift.
 - The relieving operator does NOT have to perform a joint board walkdown with the offgoing OATC.
- D. - A SHORT TERM RELIEF is NOT allowed.
 - A COMPLETE turnover must be performed.

HL-15R SRO NRC EXAM

62.

Per 10002-C, "Plant Operating Orders":

- 1) Which one of the following is the proper Standing Order numerical designator which is applicable on both units?
- 2) Who is responsible for enforcing proper implementation of Standing Orders on the applicable units?

	<u>1</u>	<u>2</u>
A.	A-2010-1	Shift Manager
B.	A-2010-1	Shift Supervisors
C.	C-2010-1	Shift Manager
D.	C-2010-1	Shift Supervisors

HL-15R SRO NRC EXAM

63.

The Reactor was at 2% power with preparations to start up a MFP in progress.

- The OATC notices that SUR is indicating a negative 0.3 DPM.
- Reactor power has lowered from the Power Range to one decade below the POAH.

Which **ONE** of the following actions are required in accordance with plant UOPs and NMP-OS-001, "Reactivity Management"?

- A. Slowly raise power back to 2% using RCS dilution in 25 gallon increments.
- B. Slowly raise power back to 2% by withdrawing control rods in 3 step increments.
- C. Continue a plant shutdown to Mode 3. Restart the Reactor in accordance with 12003-C, "Reactor Startup."
- D. Continue a plant shutdown to Mode 3. NRC Region II approval must be obtained before reactor restart can be performed.

HL-15R SRO NRC EXAM

64.

While in Mode 1, a valve stroke test is to be performed on a Safety Related MOV per OSP-14825, "Quarterly Inservice Valve Test".

- The valve is a closed Containment Isolation Phase-A (CIA) valve.

Which **ONE** of the following actions would be **allowed** prior to performing the stroke test on the valve?

- A. Cycling the valve.
- B. Opening the valve.
- C. Lubricating the valve stem.
- D. Cleaning boric acid from the valve stem.

HL-15R SRO NRC EXAM

65.

A **fail open** air operated valve (AOV) with a handwheel must be tagged shut as a boundary point for a clearance.

To meet NMP-AD-003-002, "Tagging Standards":

1) The handwheel is required to be _____.

2) The air supply valve is _____.

 1

 2

A. in the closed position

required to be isolated and vented

B. in the closed position

not required to be isolated and vented

C. in the open position

required to be isolated and vented

D. in the open position

not required to be isolated and vented

HL-15R SRO NRC EXAM

66.

Given the following:

- Unit 1 is at 340°F maintaining stable plant conditions
- 14905-1, "RCS Leak Rate Calculation" has just been completed.

The following data was recorded.

- Total RCS Leakage = 11.06 gpm
- Leakage to PRT = 5.79 gpm
- Leakage to RCDT = 4.08 gpm

Primary-to-Secondary leakage is:

- SG # 1 = 0.06 gpm
- SG # 2 = 0.05 gpm
- SG # 3 = 0.10 gpm
- SG # 4 = 0.06 gpm

Which **ONE** of the following statements is **CORRECT** concerning the leak rate data?

- A. No Tech Spec LCO entry is required.
- B. The identified leakage LCO limit has been exceeded.
- C. The unidentified leakage LCO limit has been exceeded.
- D. The primary-to-secondary leakage LCO limit through SG # 3 has been exceeded.

HL-15R SRO NRC EXAM

67.

A General Emergency has been declared. The Extra UO in the control room has been dispatched to the CNMT Spray pump room to valve in NSCW cooling water to the CNMT Spray pump which had been previously tagged out. The pump is necessary to protect the CNMT Barrier for the safety and health of the general public.

- The expected dose for this task is 4500 mRem TEDE.
- The Extra UO has a previous TEDE exposure of 1000 mRem for the year.

Which of the following choices is correct?

- A. Exposure received during the emergency will be added to his previous occupational dose history for non-emergency conditions.

The Extra UO will be allowed to receive this dose.

- B. Exposure received during the emergency will NOT be added to his previous occupational dose history for non-emergency conditions.

The Extra UO will NOT be allowed to receive this dose.

- C. Exposure received during the emergency will be added to his previous occupational dose history for non-emergency conditions.

The Extra UO will NOT be allowed to receive this dose.

- D. Exposure received during the emergency will NOT be added to his previous occupational dose history for non-emergency conditions.

The Extra UO will be allowed to receive this dose.

HL-15R SRO NRC EXAM

68.

Core offload is in progress during a refueling outage.

- The RO notes RE-002 and RE-003 INTERMEDIATE radiation alarms illuminate.

Which ONE of the following is CORRECT regarding:

- 1) What Tech Spec position has the authority suspend core alterations?
- 2) What the PA announcement for Containment evacuation should instruct?

1

2

A. RO or SS

report to the Control Building HP Control Point for radiological monitoring.

B. RO or SS

personnel exiting CNMT should remain in the vicinity until radiological monitoring and accountability are complete.

C. SS only

report to the Control Building HP Control Point for radiological monitoring.

D. SS only

personnel exiting CNMT should remain in the vicinity until radiological monitoring and accountability are complete.

HL-15R SRO NRC EXAM

69.

Which of the following choices contains BOTH activities that require PA announcements?

A. Reactor Startup per 12003-C.

Transfer ECCS to Cold Leg Recirculation per 19013-C.

B. Reactor Shutdown per 12005-C.

Transfer ECCS to Hot Leg Recirculation per 19014-C.

C. Reactor Startup per 12003-C.

Transfer ECCS to Hot Leg Recirculation per 19014-C.

D. Reactor Shutdown per 12005-C.

Transfer ECCS to Cold Leg Recirculation per 19013-C.

HL-15R SRO NRC EXAM

70.

Given the following:

- Loss of all off-site power.
- DG-1B emergency tripped.
- The System Operator depressed the "Emergency Trip Reset" pushbutton.
- No other operator actions were performed
- DG-1B automatically restarted

Which one of the following conditions caused the emergency trip and would allow an automatic restart of the DG?

- A. Engine Overspeed
- B. Generator Differential
- C. Low Lube Oil Pressure
- D. High Jacket Water Temperature

HL-15R SRO NRC EXAM

71.

Which one of the following EOPs will allow the use of 19005-C, "ES-0.0 Rediagnosis?"

- A. 19000-C, "E-0 Reactor Trip or Safety Injection"
- B. 19002-C, "ES-0.2 Natural Circulation Cooldown"
- C. 19012-C, "ES-1.2 Post-LOCA Cooldown & Depressurization"
- D. 19231-C, "FR-H.1 Response to Loss of Secondary Heat Sink"

HL-15R SRO NRC EXAM

72.

Given the following:

- A LOCA outside Containment has occurred.
- The crew is performing 19112-C, "LOCA Outside Containment".

Which **ONE** of the following is:

- 1) the **FIRST** system to be isolated from the RCS to attempt leak isolation, and
- 2) the parameter monitored to determine if the leak has been isolated?

1) First System Isolated

2) Parameter Monitored

- | | | |
|----|-----|-----------------|
| A. | RHR | RCS temperature |
| B. | RHR | RCS pressure |
| C. | SI | RCS temperature |
| D. | SI | RCS pressure |

HL-15R SRO NRC EXAM

73.

Given the following:

- 19231-C, Response to Loss of Secondary Heat Sink is in effect.
- RCS Feed and Bleed requirements have **NOT** been met.
- The crew is currently trying to establish AFW, MFW, or Condensate flow.

Which **ONE** of the following identifies the actions the crew will take regarding RCP operation and the bases?

- A. Trip the RCPs. Conserves S/G inventory delaying the need for feed and bleed.
- B. Trip the RCPs. Establishing natural circulation will tend to mitigate the transient.
- C. Leave the RCPs running. Prevents thermal and / or boric acid stratification.
- D. Leave the RCPs running. Ensures RCS pressure reduction capability.

HL-15R SRO NRC EXAM

74.

Given the following plant conditions:

- A reactor trip concurrent with an LOSP to both RATs has occurred.
- 19232-C, "FR-H.2 Response to Steam Generator Overpressure" YELLOW path is in effect.
- SG # 4 pressure is 1247 psig.

Which **ONE** of the following actions would mitigate the SG # 4 overpressure condition in accordance with 19232-C?

- A. Stop RCP # 4 to reduce the heat input to SG # 4.
- B. Initiate maximum AFW flow to SG # 4 to inject cold water.
- C. Locally operate SG # 4 ARV PV-3030 to dump steam to the atmosphere.
- D. Operate Steam Dumps in MANUAL in STEAM PRESSURE mode to dump steam.

HL-15R SRO NRC EXAM

75.

Initial plant conditions:

- The plant is in Mode 3.
- An RCS leak has occurred in Containment.
- The Containment Atmosphere sample valves for RE-2562A, B, C are open.

Current plant conditions:

- Containment Pressure is 1.2 psig and slowly rising.
- Steam lines pressures are all ~ 1080 psig and stable.
- PRZR pressure is 2235 psig and stable.
- RE-002 and 003 high rad alarms lit on the SRDC.
- The SS has entered 19253-C, "FR-Z.3, Response to Containment High Radiation Level" YELLOW path.

Which **ONE** of the following would be the **CORRECT** status of the:
(assume all systems function as designed, if required).

- 1) Containment Atmosphere sample valves, and
- 2) the Piping Penetration Area Filtration Units?

1

2

- | | |
|-----------|--------------|
| A. open | in standby |
| B. open | auto started |
| C. closed | in standby |
| D. closed | auto started |

HL-15R SRO NRC EXAM

76.

Initial conditions:

- Unit at 100% power for last 10 weeks
- All rods out at 228 steps

Current conditions:

- "ROD AT BOTTOM" alarm is alarming
- Control Bank D rod H-8 rod bottom LED lit
- Tave is lowering
- QPTR & AFD remain within limits
- The SS enters AOP 18003-C, "Rod Control System Malfunction"

Which of the following identifies the limits and required actions of AOP 18003-C **during the rod recovery?**

- A. Do not exceed 75% thermal power, rod pulls are limited to 3 step increments. Reset the Bank Overlap Unit to restore the RIL alarm to operable status.
- B. Do not exceed 65% thermal power, rod pulls are limited to 3 step increments. Reset the Bank Overlap Unit to restore the RIL alarm to operable status.
- C. Do not exceed 75% thermal power, the 3 step rod pull limit may be suspended for this condition. Reset the P/A converter to restore the RIL alarm to operable status.
- D. Do not exceed 65% thermal power, the 3 step rod pull limit may be suspended for this condition. Reset the P/A converter to restore the RIL alarm to operable status.

HL-15R SRO NRC EXAM

77.

Initial conditions:

- An RCP seal LOCA is in progress
- The OATC is unable to maintain PRZR level with normal charging
- SI is manually actuated
- 1NAA de-energizes 30 seconds after the reactor trip
- All RCP breakers remain closed

Current conditions:

19010-C, "E-1 Loss of Reactor or Secondary Coolant" is in progress

CSFST monitoring is in progress:

- Core Cooling Orange due to low RVLIS Dynamic Range reading 40%
- CNMT Yellow due to radiation levels 800 mR/hr
- Inventory Yellow due to low PRZR level of 0%

RCS pressure is 1450 psig and slowly lowering with both CCPs and SIPs running.

REFERENCES PROVIDED

The SS should...

- direct the OATC to open the breakers for RCPs 1 & 3 and then declare an Alert emergency.
- direct the OATC to open the breakers for all four RCPs and then declare a Site Area emergency.
- direct the OATC to open the breakers for RCPs 1 & 3 and then declare a Site Area emergency.
- direct the OATC to open the breakers for all four RCPs and then declare an Alert emergency.

HL-15R SRO NRC EXAM

78.

19241-C, "FR-P.1 Response to Imminent Pressurized Thermal Shock" is being implemented.

- RCS WR pressure is 2335 psig
- RCS WR cold leg temperatures are 190°F and stable
- All RCPs are stopped
- PRZR level is 15%

The SS is at Step 23 of 19241-C (**REFERENCE PROVIDED**)

The SS will direct the OATC to depressurize the RCS to lower subcooling using
1) _____, and

the first parameter from Step 23 that will be met to stop the depressurization is
2) _____.

- A. 1) auxiliary spray
2) RCS pressure less than 125 psig
- B. 1) one train of COPS
2) RCS pressure less than 125 psig
- C. 1) auxiliary spray
2) RCS subcooling 24 to 34 degrees F
- D. 1) one train of COPS
2) RCS subcooling 24 to 34 degrees F

HL-15R SRO NRC EXAM

79.

Safety Injection has actuated from 100% power
SS is implementing EOP 19010-C, "E-1 Loss of Reactor or Secondary Coolant"

SPDS indications for CSFSTs:

- Subcriticality - GREEN
- Core Cooling - YELLOW due to RCS subcooling < 24 F
- Heat Sink - GREEN
- Integrity - GREEN
- Containment - YELLOW due to CNMT radiation > 750 mR/hr
- Inventory - YELLOW due to PRZR level > 92%

PRZR level is 100%

RCS pressure is 1040 psig

The SS is at the step 15 which reads:

15. Check RCS and SG pressures:

- ___ • Pressure in all SGs -
STABLE OR RISING

- ___ • RCS pressure - STABLE OR
LOWERING

The correct actions to take are to...

- A. return to an earlier step in 19010-C until RCS subcooling is > 24 F, then transition to 19011-C, "SI Termination".
- B. return to an earlier step in 19010-C until SG pressures stabilize then continue with 19010-C.
- C. continue with the next step in 19010-C, then start an RCS cooldown in 19012-C, "ES-1.2 Post LOCA Cooldown and Depressurization".
- D. continue with the next step in 19010-C, then transition to 19011-C when RCS pressure starts increasing.

HL-15R SRO NRC EXAM

80.

Given the following conditions:

- 19030-C, "E-3 Steam Generator Tube Rupture" is being implemented
- Rapid RCS cooldown and depressurization have been completed
- The loop 1 PRZR spray valve is stuck open
- PRZR level is 76% and rapidly rising
- RCS pressure is 1150 psig and lowering

The SS will direct the OATC to...

A. stop RCP 1 then stop RCP 4 if pressure continues to lower.

Operate ECCS pumps as necessary if RCS pressure continues to lower after stopping both RCPs. Then transition to 19133-C, "ECA-3.3 SGTR Without Pressurizer Pressure Control".

B. stop RCP 4 then stop RCP 1 if pressure continues to lower.

Transition to 19131-C, "ECA-3.1 SGTR With Loss of Reactor Coolant: Subcooled Recovery Desired" if pressure continues to lower after stopping both RCPs.

C. stop RCP 4 then stop RCP 1 if pressure continues to lower.

Operate ECCS pumps as necessary if RCS pressure continues to lower after stopping both RCPs. Then transition to 19133-C, "ECA-3.3 SGTR Without Pressurizer Pressure Control".

D. stop RCP 1 then stop RCP 4 if pressure continues to lower.

Transition to 19131-C, "ECA-3.1 SGTR With Loss of Reactor Coolant: Subcooled Recovery Desired" if pressure continues to lower after stopping both RCPs.

HL-15R SRO NRC EXAM

81.

Initial conditions:

- A LOCA occurred 125 minutes ago
- ECCS cold leg recirculation cooling was aligned using 19013-C, "ES-1.3 Transfer to Cold Leg Recirculation" 28 minutes ago

Current conditions:

- CNMT pressure is 12 psig
- "RWST EMPTY" level alarm has just actuated
- CNMT radiation monitors RE-002 & RE-003 are in high alarm

The SS is implementing 19010-C, "E-1 Loss of Reactor or Secondary Coolant"

Which one of the following describes the actions the SS is required to take?

- A. remain in 19010-C, and
stop both CNMT spray pumps and close the pump discharge valves.
- B. remain in 19010-C, and
align both CNMT spray pumps for recirculation.
- C. transfer back into 19013-C, and
stop both CNMT spray pumps and close the pump discharge valves.
- D. transfer back into 19013-C, and
align both CNMT spray pumps for recirculation.

HL-15R SRO NRC EXAM

82.

Initial conditions:

- A loss of RCS level during mid-loop operations occurred
- AOP 18019-C, "Loss of Residual Heat Removal" is implemented
- RHR pump 1B has been stopped

Current conditions:

- Core exit TCs have been verified at 129 F and increasing
- "RCS MIDLOOP LO LEVEL" alarm is lit
- RCS level is currently 185' 10" and lowering
- RCS cold and hot legs are intact (no openings)

The SS is at step B11 which reads:

B11. Check RCS level:

___a. LESS THAN 188 FEET

___b. LESS THAN 186 FEET

Which one of the following is the required method to restore RCS level in accordance with AOP 18019-C?

- A. VCT using a CCP through the normal charging path into an intact cold leg.
- B. RWST using a CCP through the normal charging path into an intact cold leg.
- C. RWST using an SI pump through the RCS hot legs.
- D. RWST using an SI pump through the RCS cold legs.

HL-15R SRO NRC EXAM

83.

Initial conditions:

- An RCS LOCA has occurred
- 19010-C, "E-1 Lost of Reactor or Secondary Coolant" has been implemented
- The OATC is monitoring CSFSTs

Current conditions:

- CNMT CSFST is Orange due to high containment pressure
- The OATC reports transition to 19251-C, "FR-Z.1 Response to High Containment Pressure" is required
- Neither train of CNMT spray is operating
- RWST LO-LO LEVEL alarm is active

Which one of the following choices describes the correct diagnosis and actions to take?

- A. CNMT spray has failed to automatically actuate. Go to 19251-C and remain in that procedure until directed to return to "procedure and step in effect".
- B. CNMT spray has failed to automatically actuate. Go to 19013-C, "ES-1.3 Transfer to Cold Leg Recirculation" and place at least one train of of ECCS in the cold leg recirculation mode of operation prior to transitioning to 19251-C.
- C. CNMT spray actuation is not required. Go to 19251-C and return to 19010-C after both trains of CNMT coolers (low speed) are verified in service and proper CIA and CVI are verified.
- D. CNMT spray actuation is not required. Go to 19013-C, and place at least one train of ECCS in the cold leg recirculation mode of operation prior to transitioning to 19251-C.

HL-15R SRO NRC EXAM

84.

Initial conditions:

- PRZR level channel 459 failed low 6 hours ago
- LCO 3.3.1 condition M is applicable for the failed channel
- PRZR LVL CNTL SELECT switch is in the 461/460 position
- AOP 18001-C, Section D, is being implemented

Current conditions:

- I&C needs to perform an ACOT on PRZR level channel 461
- The surveillance will be late in 8 hours
- PRZR level channel 459 time to repair is 24 hours
- Reactor power is 15%

The correct action(s) for the SS to take per cautions in AOP 18001-C is to...

- A. bypass channel 459 using the BTI Panel AND trip channel 461 per Table D1 of AOP 18001-C.
- B. Place the unit in mode 3 within the next 6 hours to meet LCO 3.0.3 requirements.
- C. trip channel 459 per Table D1 of AOP 18001-C AND bypass channel 461 using the BTI Panel.
- D. leave channel 459 as is AND reduce power to less than P7 (10%) prior to bypassing channel 461 using the BTI Panel.

HL-15R SRO NRC EXAM

85.

Initial conditions:

- Core off-load is in progress on Unit 2
- The CNMT equipment hatch is open with a designated closure crew
- Both personnel airlock doors are open with a designated door operator
- No hoses or cables are run through the personnel airlock
- Reactor cavity water level is 219 feet

Current conditions:

- A loss of all AC power occurs on Unit 2
- A spent fuel assembly is fully withdrawn in the refueling machine
- The mast is over the CNMT upender

Which one of the following are the required actions the Fuel Handling Supervisor will direct for:

- 1) the spent fuel assembly in the refueling machine, and
- 2) The MINIMUM required actions to meet containment closure?

- A. direct manual operation of the refueling machine to place the fuel assembly in a safe location.

Direct closure of the containment equipment hatch and ONE of the personnel airlock doors to meet technical specification action requirements.

- B. direct manual operation of the refueling machine to place the fuel assembly in a safe location.

Direct closure of the containment equipment hatch and BOTH of the personnel airlock doors to meet technical specification action requirements.

- C. leave the fuel assembly in its current position. Operation of the refueling machine is not possible without AC power.

Direct closure of the containment equipment hatch and ONE of the personnel airlock doors to meet technical specification action requirements.

- D. leave the fuel assembly in its current position. Operation of the refueling machine is not possible without AC power.

Direct closure of the containment equipment hatch and BOTH of the personnel airlock doors to meet technical specification action requirements.

HL-15R SRO NRC EXAM

86.

A loss of RAT-1B has occurred.

Current conditions:

- DG-1B is running with its output breaker open
- The SAT is available
- AOP 18031-C, "Loss of Class 1E Electrical Systems" is being implemented

Which one of the following describes:

- 1) the required actions per AOP 18031-C, and
 - 2) The status of the PRZR heaters following the actions in 1) above?
- A. 1) Emergency trip DG-1B and re-energize 1BA03 from the SAT.
2) All required groups of PRZR heaters are operable, no technical specification actions are required.
- B. 1) Emergency trip DG-1B and re-energize 1BA03 from the SAT.
2) All required PRZR heaters are inoperable, enter LCO 3.0.3.
- C. 1) Manually close DG-1B output breaker to re-energize 1BA03.
2) One required group of PRZR heaters is inoperable, restore PRZR heaters to operable status within Technical Specification requirements.
- D. 1) Manually close DG-1B output breaker to re-energize 1BA03.
2) All required groups of PRZR heaters are operable, no technical specification actions are required.

HL-15R SRO NRC EXAM

87.

Unit 2 instrument air header pressure is 85 psig and lowering rapidly with all compressors running.

The SS directs the TBO to locally isolate instrument air to the turbine building.

Which one of the following describes additional SS actions per AOP 18028-C, "Loss of Instrument Air"?

1) If instrument air pressure cannot be maintained > _____ initiate a reactor trip, and

2) initiate actions to _____.

A. 1) 80 psig

2) Stabilize RCS Temperatures in MODE 3 using Attachment A

B. 1) 70 psig

2) Stabilize RCS Temperatures in MODE 3 using Attachment A

C. 1) 80 psig

2) Cooldown to MODE 4 using Attachment B

D. 1) 70 psig

2) Cooldown to MODE 4 using Attachment B

HL-15R SRO NRC EXAM

88.

Initial conditions:

- The unit tripped from 100% power due to a control room fire
- AOP 18038-1 "Operation from Remote Shutdown Panels" was entered
- The CCPs and SI pumps were running when local control was established

Current conditions:

- RCS Cold legs 1 - 4 temperatures - 557°F
- RCS Hot legs 1 - 4 temperatures - 559°F
- RCS Core exit temperatures - 565°F
- WR RCS pressure - 1885 psig and rising
- PRZR level is 5% and rising
- AFW flow - 0 GPM
- SG WR levels - 50%

The SS is at the step of AOP 18038-1 to "check if ECCS flow should be reduced."

Using the above conditions:

1) ECCS flow reduction criteria are _____, and

2) additional actions the SS will direct per AOP 18038-1 are to _____.

A. 1) met

2) stop all but 1 CCP and both SI pumps simultaneously

B. 1) NOT met

2) locally emergency stop both DGs if their buses are powered by the RATs

C. 1) met

2) sequentially stop the CCPs and SI pumps after verifying RCS subcooling requirements are met after each pump is stopped

D. 1) NOT met

2) locally raise charging flow to fill the PRZR to 17% before energizing the PRZR backup heaters to prevent damage

HL-15R SRO NRC EXAM

89. Initial conditions:

The unit is at 100% power
CNMT mini-purge for pressure relief is in service

Current conditions:

The DPM power supply fuse blows for RE-002, "Containment Area Low Range Monitor."

Which one of the following describes the required LCO action?

REFERENCES PROVIDED

- A. Restore RE-002 to operable status within 4 hours.
- B. Analyze grab samples of the CNMT atmosphere once per 24 hours.
- C. Enter an INFO only LCO. All other Tech Spec LCO requirements are met.
- D. Isolate the CNMT mini-purge exhaust penetration by closing and de-activating one of the CNMT mini-purge exhaust valves within the next 4 hours.

HL-15R SRO NRC EXAM

90.

Initial conditions:

Unit 1 is at 100% power

CNMT pressure relief is in progress per 13125-1, "Containment Purge System"
1RE-12442C, Plant Vent Effluent Radiogas Monitor (Low Range), is out of service

Current conditions:

1RE-12444C, Plant Vent Effluent Wide Range-Low Radiogas Monitor, fails low.

The SS will direct:

- 1) CNMT pressure relief _____, and
- 2) _____ per the ODCM.

A. termination

ensure periodic grab samples of the Plant Vent are taken

B. termination

re-initiate CNMT pressure relief, provided samples are continuously collected with auxiliary sampling equipment

C. continuation

verify 1RE-2565C, Containment Vent Effluent Radiogas Monitor, remains operable

D. continuation

ensure periodic grab samples of the Plant Vent occur

HL-15R SRO NRC EXAM

91.

AOP 18028-C "Loss of Instrument Air" is being implemented
Instrument air pressure is 95 psig and lowering
RCS Tave is 314 F

The SS should direct the Turbine Building Operator to...

- A. manually isolate the service air system when air pressure drops below 80 psig.

Service air should be restored locally in the turbine building by implementing SOP 13710-1, "Service Air System" when service air pressure at the PMEC is above 97 psig to prevent excessive lowering of the instrument air system pressure.

- B. manually isolate the service air system when air pressure drops below 80 psig.

Service air should be restored by isolating control air to the Service Air Dryer and then resetting PV-9375 per Attachment B of AOP 18028-C, "Loss of Instrument Air in Modes 4, 5, and 6" to prevent excessive service air flow.

- C. verify automatic isolation of the service air system from the instrument air system at 80 psig.

Service air should be restored locally in the turbine building by implementing SOP 13710-1, "Service Air System" when service air pressure at the PMEC is above 97 psig to prevent excessive lowering of the instrument air system pressure.

- D. verify automatic isolation of the service air system from the instrument air system at 80 psig.

Service air should be restored by isolating control air to the Service Air Dryer and then resetting PV-9375 per Attachment B of AOP 18028-C, "Loss of Instrument Air in Modes 4, 5, and 6" to prevent excessive service air flow.

HL-15R SRO NRC EXAM

92.

Which of the following describes the Refueling SRO responsibilities per the VEGP Technical Requirements Manual (TRM)?

The Refueling SRO must observe and directly supervise all...

- A. fuel shuffle activities inside the FHB. Approve FME zone 2 entries while refueling is in progress.
- B. all core alteration activities. Approve FME zone 2 entries while refueling is in progress.
- C. fuel shuffle activities inside the FHB. No other concurrent duties are allowed.
- D. core alteration activities. No other concurrent duties are allowed.

HL-15R SRO NRC EXAM

93.

Initial conditions:

- Core reload is in progress
- A once burned fuel assembly is in transient with the refueling machine

Current conditions:

- A shift in CNMT HVAC drastically increased the noise level
- SRNI count rate is inaudible on the refueling machine

The Fuel Handling Supervisor should...

- A. verify that the control room can still hear the audible count rate. If the control room does **not** hear audible counts, then he should suspend all operations involving core alterations.

The FHS may direct that the assembly be placed into the reactor core.

- B. assign a designee to monitor the audible count rate from containment. If the designee **cannot** hear an audible count rate then he should suspend all operations involving core alterations.

The FHS may direct that the assembly be placed into the reactor core.

- C. verify that the control room can still hear the audible count rate. If the control room does **not** hear audible counts, then he should suspend all operations involving core alterations.

The FHS may direct that the assembly be placed in the containment upender.

- D. assign a designee to monitor the audible count rate from containment. If the designee **cannot** hear an audible count rate then he should suspend all operations involving core alterations.

The FHS may direct that the assembly be placed in the containment upender.

HL-15R SRO NRC EXAM

94.

Initial conditions:

Unit 2 is at 100% power

The regulating transformer associated with 2AY1A is danger tagged for maintenance

The transformer has been out of service for 2 hours

Current conditions:

2AY1A has been de-energized due to inverter 2AD111 fault for 3 hours

The time to repair the inverter is estimated at 2-4 days

The expected return to service time for the transformer is 8 hours

1) The SS should enter LCO _____, and

2) due to this failure, and the Shift Manager should _____

A. 1) 3.8.9

2) upgrade the work order for the regulated transformer to an emergency work order.

B. 1) 3.0.3

2) upgrade the work order for the regulated transformer to an emergency work order.

C. 1) 3.8.9

2) inform the work planners that the regulated transformer needs to be restored in 6 hours.

D. 1) 3.0.3

2) inform the work planners that the regulated transformer needs to be restored in 6 hours.

HL-15R SRO NRC EXAM

95.

Initial conditions:

RCS Tave is 554°F

TAVG/TREF DEVIATION alarm is lit

The UO is recording RCS loop Tave's every 15 minutes per 12003-C "Reactor Startup"

The OATC has pulled control bank A rods to 50 steps

Current conditions:

The OATC has pulled control bank B rods to 100 steps to continue the reactor startup

The OATC is waiting for count rate stabilization

TAVG/TREF DEVIATION alarm is still lit

The UO realizes his last set of RCS loop Tave readings were taken 45 minutes ago

Which one of the following describes the actions the SS will take?

1) The SS will _____, and

2) direct the OATC to _____

A. 1) declare LCO 3.4.2, "RCS Minimum Temperature for Criticality" not met

2) to insert the control bank rods within a MAXIMUM time of 60 minutes.

B. 1) declare LCO 3.4.2, "RCS Minimum Temperature for Criticality" not met

2) to insert the control bank rods within a MAXIMUM time of 30 minutes.

C. 1) direct the UO to record all four RCS loop Tave's within the delay period per SR 3.0.3

2) adjust RCS Tave to 557°F with the steam dumps prior to continuing the reactor startup if any RCS loop Tave is less than 551°F.

D. 1) direct the UO to record all four RCS loop Tave's within the delay period per SR 3.0.3

2) pull control rods to restore Tave to 557°F if any RCS loop Tave is less than 551°F.

HL-15R SRO NRC EXAM

96.

Given the following:

- Reactor Trip and Safety Injection on low PRZR pressure
- RCS pressure is now 23 psig
- CNMT pressure is now 23 psig
- CNMT radiation monitors RE-005 and RE-006 read $5.3 \text{ E}+5$ mR/hr
- Plant Vent Radiogas Effluent monitor RE-12444C has been reading $1.2 \text{ E}+3$ $\mu\text{Ci/cc}$ since the event initiation 10 minutes ago.

Determine the appropriate emergency classification based on the conditions listed above.

REFERENCES PROVIDED

- A. General, PAR's required on declaration message.
- B. Site Area, PARs required on declaration message.
- C. General, PARs NOT required on declaration message.
- D. Site Area, PARs NOT required on declaration message.

HL-15R SRO NRC EXAM

97.

A confirmed fire in the DG-2B room has occurred. Ten minutes later the Fire Team Captain reports that the emergency diesel generator building is "Fully Involved."

1) The Shift Manager shall immediately notify _____, and

2) declare a(n) _____

A. 1) the Burke County Emergency Management Agency (BCEMA) by dialing 911 using the Waynesboro line.

2) Alert.

B. 1) the Burke County Emergency Management Agency (BCEMA) by dialing 911 using the Waynesboro line, only if the Fire Team Captain requests assistance.

2) Notification of an Unusual Event.

C. 1) the Burke County Emergency Management Agency (BCEMA) by dialing 911 using the SouthernLinc system.

2) Alert.

D. 1) the Burke County Emergency Management Agency (BCEMA) by dialing 911 using the SouthernLinc system, only if the Fire Team Captain requests assistance.

2) Notification of an Unusual Event.

HL-15R SRO NRC EXAM

98.

Initial conditions:

- An RCS leak has occurred
- The OATC had to start the second charging pump to maintain PRZR level

Which of the following completes the sentences below?

1) The Shift Manager will declare a(n) _____, and

2) Faxing of the ENN form by the emergency communicator _____

A. 1) Notification of Unusal Event

2) **is required** to be performed in parallel with the ENN notification.

B. 1) Alert

2) is performed in parallel with the ENN notification **only if** time permits.

C. 1) Alert

2) **is required** to be performed in parallel with the ENN notification.

D. 1) Notification of Unusal Event

2) is performed in parallel with the ENN notification **only if** time permits.

HL-15R SRO NRC EXAM

99.

The crew is implementing EOP 19112-C, "ECA-1.2 LOCA Outside Containment".

- The COLD LEG INJECTION FROM SIS HV-8835 has been closed.
- The SS determines the leak is now isolated.

The SS will transition to...

- A. 19011-C, "ES-1.1 SI Termination".
- B. 19010-C, "E-1 Loss of Reactor or Secondary Coolant".
- C. 19111-C, "ECA-1.1 Loss of Emergency Coolant Recirculation".
- D. 19012-C, "ES-1.2 Post-LOCA Cooldown and Depressurization".

HL-15R SRO NRC EXAM

100.

Initial conditons:

An RCS cooldown at 50°F/hr per 19002-C, "ES-0.2 Natural Circulation Cooldown" is in progress

Current conditions:

- PSMS train A DPU is inoperable
- RCS pressure is 1200 psig and lowering
- RCS cold leg temperatures are 450°F and lowering
- SG pressures are 435 psig and lowering
- PRZR level is 35% and rising

The RCS temperature must be < 350°F in the next 1 hour and 30 minutes to comply with a technical specification action requirement.

The correct action to take for these conditons is to...

- A. continue the cooldown at the present rate. Declare an Alert emergency due to the inability to cool down the RCS to < 350°F within the technical specification LCO action time limit.
- B. repressurize the RCS within the limits of LCO 3.4.3 to collapse potential voids while increasing the cooldown rate to 70°F/hr to meet the technical specification time limit.
- C. transition to 19003-C, "ES-0.3 Natural Circulation Cooldown with Void in Vessel (With RVLIS)" and increase the cooldown rate to 70°F/hr to meet the technical specification time limit.
- D. transition to 19004-C, "ES-0.4 Natural Circulation Cooldown with Void in Vessel (Without RVLIS)" and increase the cooldown rate to 70°F/hr to meet the technical specification time limit.

#	ID	0
1	001K2.05 2	D
2	002A2.03 2	C
3	003AK3.10 2	A
4	003G2.4.35 2	C
5	004G2.1.23 1	B
6	004K6.31 1	C
7	005K2.03 3	D
8	005K6.03 2	C
9	006K6.02 2	C
10	007EG2.4.31 3	D
11	007K1.03 2	A
12	007K4.01 1	C
13	008AA1.04 1	B
14	008K2.02 1	A
15	009EK2.03 1	C
16	010K1.08 2	C
17	011EG2.2.38 1	A
18	012K1.05 1	B
19	012K5.01 1	C
20	013K5.02 3	D
21	015AK2.07 1	C
22	016K1.08 1	D
23	022A1.01 1	A
24	022A2.03 1	C
25	022AK1.01 1	D
26	025AA1.19 1	D
27	026A3.02 3	D
28	027AA1.05 2	B
29	028K5.01 2	A
30	032AA2.07 1	C
31	033A1.02 1	C
32	035G2.2.40 1	C
33	038EK1.04 3	A
34	039A2.01 2	C
35	051AA1.04 2	B
36	054AK1.01 2	A
37	055EG2.4.02 1	A
38	055K3.01 2	A
39	056AK3.01 2	B
40	057AA2.05 1	A
41	059A3.02 1	A
42	060AG2.1.25 2	B
43	061A1.01 1	A
44	061AK2.01 1	B
45	062AA2.02 1	D
46	062G2.1.27 1	B
47	063K2.01 1	B
48	063K4.02 1	D

#	ID	0
49	064A2.13 1	B
50	065AA2.03 1	D
51	068AK3.02 1	C
52	071K4.06 1	B
53	073A4.02 1	C
54	073K3.01 2	C
55	076K3.02 1	B
56	077AK3.02 2	A
57	078K4.01 1	A
58	079A4.01 1	A
59	086K6.04 2	C
60	103A4.03 1	A
61	G2.1.03 3	B
62	G2.1.15 2	D
63	G2.1.37 2	C
64	G2.2.12 1	B
65	G2.2.13 2	B
66	G2.2.42 1	B
67	G2.3.04 2	D
68	G2.3.13 2	B
69	G2.4.30 1	A
70	G2.4.35 1	C
71	WE01EK1.2 1	C
72	WE04EK2.2 1	B
73	WE05EK3.2 1	A
74	WE13EA1.1 1	C
75	WE16EK1.1 2	D
76	003AG2.1.30 1	C
77	003G2.4.41 1	A
78	007A2.03 1	B
79	008AA2.28 1	C
80	010G2.1.20 1	B
81	011EG2.4.11 2	D
82	025AG2.4.31 1	C
83	026A2.03 1	B
84	028AG2.4.20 1	C
85	034G2.4.20 1	A
86	056AA2.73 1	A
87	065AG2.1.30 3	B
88	068AA2.03 1	B
89	072A2.03 2	B
90	073A2.02 2	A
91	079A2.01 1	C
92	G2.1.35 1	D
93	G2.1.40 1	D
94	G2.2.19 3	A
95	G2.2.35 2	C
96	G2.3.05 1	A

Answers

#	ID	0
97	G2.4.27 3	A
98	G2.4.39 2	B
99	WE04EA2.1 1	B
100	WE10EA2.1 1	C

Approved By
J. D. Williams

Vogtle Electric Generating Plant



Procedure Number Rev
13202-2 11

Date Approved
3/18/08

GASEOUS RELEASES

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Sheet 1 of 1

DATA SHEET 1

TANK BEING RELEASED UNIT 2 TANK 6

TIME DATE	INITIAL	HOURLY	HOURLY	HOURLY	HOURLY	HOURLY	FINAL
	<i>JH</i>	0600	0700				
UNIT 1 GDT TANK #1 PSIG	<i>JH</i>	58	58				
UNIT 1 GDT TANK #2 PSIG	<i>JH</i>	31	31				
UNIT 1 GDT TANK #3 PSIG	<i>JH</i>	39	39				
UNIT 1 GDT TANK #4 PSIG	<i>JH</i>	46	43				
UNIT 1 GDT TANK #5 PSIG	<i>JH</i>	26	26				
UNIT 1 GDT TANK #6 PSIG	<i>JH</i>	70	70				
UNIT 1 GDT TANK #7 PSIG	<i>JH</i>	69	69				
SDT #9 PSIG	<i>JH</i>	58	58				
SDT #10 PSIG	<i>JH</i>	61	61				
UNIT 2 GDT TANK #1 PSIG	<i>JH</i>	43	43				
UNIT 2 GDT TANK #2 PSIG	<i>JH</i>	52	52				
UNIT 2 GDT TANK #3 PSIG	<i>JH</i>	71	71				
UNIT 2 GDT TANK #4 PSIG	<i>JH</i>	66	66				
UNIT 2 GDT TANK #5 PSIG	<i>JH</i>	64	64				
UNIT 2 GDT TANK #6 PSIG	<i>JH</i>	78	62				
UNIT 2 GDT TANK #7 PSIG	<i>JH</i>	57	57				

AI2006201868

REFERENCE USE

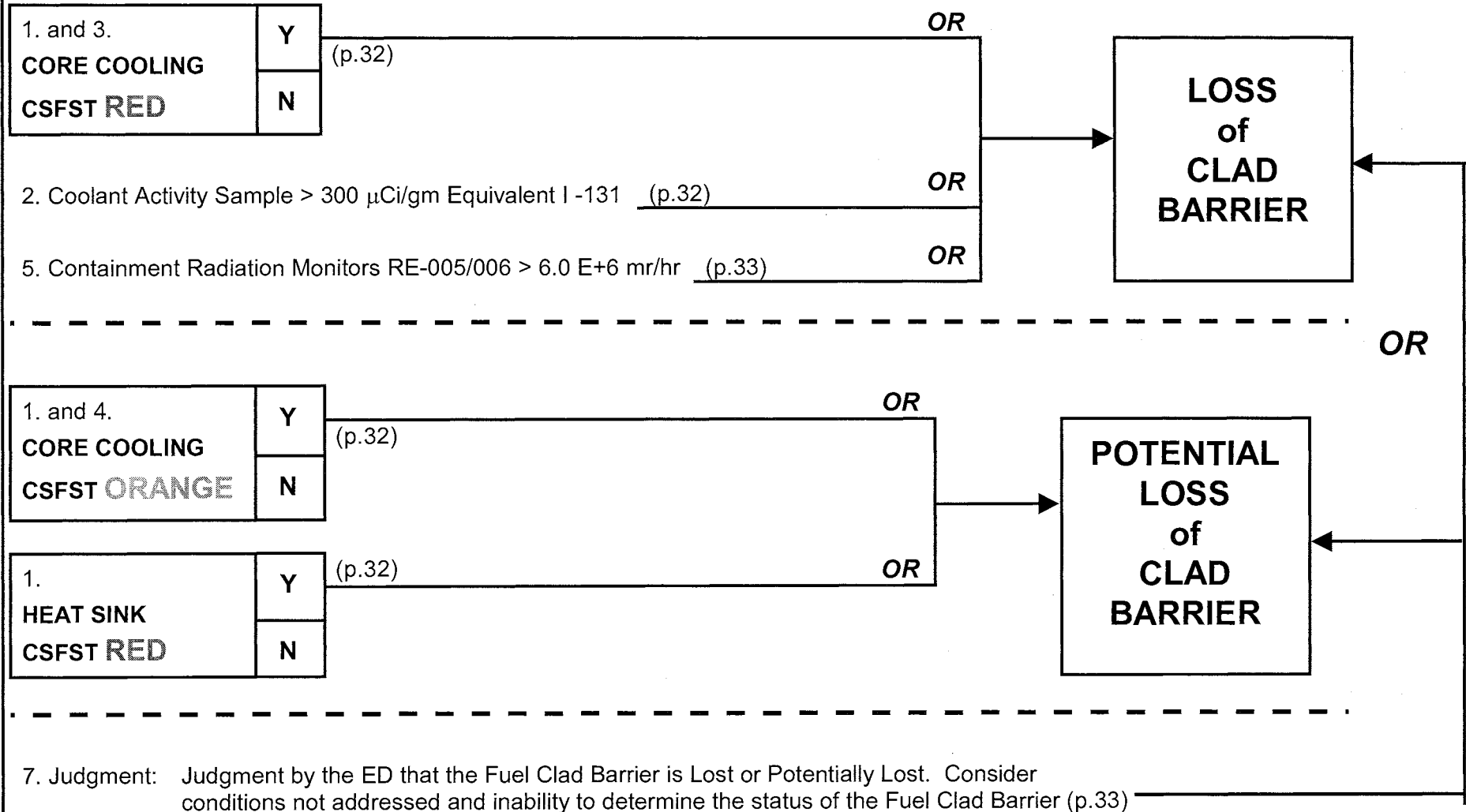


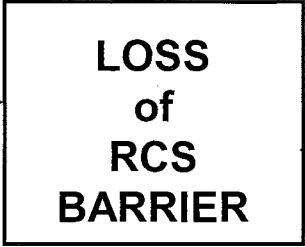
FIGURE 1 – FUEL CLADDING INTEGRITY (Modes 1, 2, 3 and 4 only)

REFERENCE USE

2. RCS Leak in progress **AND** RCS Subcooling is Less Than 24 °F **OR**
[38 ° F ADVERSE] (p.33)

3. SGTR Resulting in an SI Actuation (p.34) **OR**

4. Containment Radiation Monitors RE-005/006 > 2.0 E+4 mr/hr (p.34) **OR**

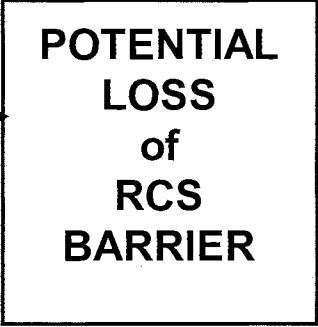


1. HEAT SINK CSFST RED	Y
	N

OR
(p. 33)

1. RCS INTEGRITY CSFST RED	Y
	N

OR
(p. 33)



2. NON-Isolable RCS leak (including SG tube leakage) GREATER THAN the Capacity of One Charging Pump in the normal charging mode (p.34) **OR**

5. Unexplained level rise in any of the following: containment sump, Reactor Coolant Drain Tank (RCDT), Waste Holdup Tank (WHT) (p.34)

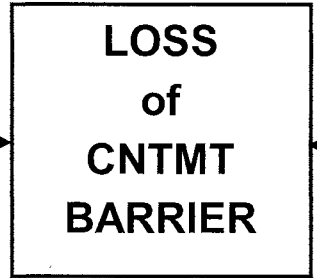
6. Judgment: Judgment by the ED that the RCS Barrier is Lost or Potentially Lost. Consider conditions not addressed and the inability to determine the status of the RCS Barrier (p. 34)

OR

FIGURE 2 – REACTOR COOLANT SYSTEM (RCS) INTEGRITY (Modes 1, 2, 3 and 4 only)

REFERENCE USE

- | | |
|--|----|
| 2. Rapid Unexplained Containment Pressure Decrease Following Initial Pressure Increase (p.35) | OR |
| 2. Intersystem LOCA indicated by Containment Pressure or Sump Level Response Not Consistent With a Loss of Primary or Secondary Coolant (p. 35) | OR |
| 4. Ruptured SG is also Faulted Outside of Containment (p. 36) | OR |
| 4. Primary-to-Secondary Leakage > 10 gpm AND a Non-Isolable Steam Release of Contaminated Secondary Coolant is Occurring to the Environment (p. 36) | OR |
| 5. Containment Isolation Valve(s) or Damper(s) are NOT Closed Resulting in a Direct Pathway to the Environment After Containment Isolation is Required (p. 37) | OR |
| 7. Pathway to the environment exists based on VALID RE-2562C, RE-12444C, OR RE-12442C Alarms. (p.37) | |



----- OR -----

- | | | | |
|--|---|---------|----|
| 1. CONTAINMENT
CSFST RED | Y | | OR |
| | N | (p. 35) | |
| 2. CTMT CSFST ORANGE AND less than the following minimum operable equipment:
four CTMT fan coolers AND one train of CTMT spray (p.35) | | | OR |
| 3. CORE COOLING CSFST RED OR ORANGE > 15 minutes AND RVLS FULL RANGE LEVEL <62% (p.37) | | | OR |
| 2. Containment Hydrogen Concentration > 6% (p.35) | | | OR |
| 2. Containment Pressure > 43 psig (p.35) | | | OR |
| 6. Containment Radiation Monitors RE-005/006 > 2.4 E+8 mr/hr (p.37) | | | OR |



8. Judgment: Judgment by the ED that the CNTMT Barrier is Lost or Potentially Lost. Consider conditions not addressed and inability to determine the status of the CTMT Barrier (p. 37)

FIGURE 3 – CONTAINMENT INTEGRITY (Modes 1, 2, 3 and 4 only)

Approved By
J. B. Stanley

Vogtle Electric Generating Plant

Procedure Number Rev
19241-C 22

Date Approved
7/11/08

FR-P.1 RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION

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ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE

The Upper Head region of the vessel may void during RCS depressurization if RCPs are NOT running. This will result in a rapidly rising PRZR level.

CAUTION

RCS depressurization may result in RCP seal ΔP lowering to less than 200 psid. Shutdown of RCPs is required in this case.

23. Depressurize RCS to lower RCS subcooling:

a. Check if ANY of the following conditions are satisfied:

__a. Go to Step 23.c.

___ RCS subcooling -
24°F to 34°F
[38°F to 48°F ADVERSE].

-OR-

___ PRZR level - GREATER
THAN 75%
[52% ADVERSE].

-OR-

___ RCS pressure - LESS
THAN 125 PSIG.

__b. Go to Step 27.

° Step 23 continued on next page

3.3 INSTRUMENTATION

3.3.6 Containment Ventilation Isolation Instrumentation

LCO 3.3.6 The Containment Ventilation Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Only one radiation monitoring channel OPERABLE.	A.1 Restore at least two channels to OPERABLE status.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. -----NOTE----- Only applicable in MODE 1, 2, 3, or 4. -----</p> <p>One or more Functions with one or more manual or automatic actuation channels inoperable.</p> <p><u>OR</u></p> <p>No radiation monitoring channels OPERABLE.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1</p> <p>Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment purge supply and exhaust isolation valves made inoperable by isolation instrumentation.</p>	<p>Immediately</p>

(continued)

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Purge and Exhaust Isolation Function.

SURVEILLANCE	FREQUENCY
SR 3.3.6.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.6.2 Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.6.3 Perform MASTER RELAY TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.6.4 Perform COT.	92 days
SR 3.3.6.5 Perform SLAVE RELAY TEST.	18 months
SR 3.3.6.6 -----NOTE----- Verification of setpoint not required. ----- Perform TADOT.	18 months
SR 3.3.6.7 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.8 Verify RESPONSE TIMES are within limits.	18 months on a STAGGERED TEST BASIS

Containment Ventilation Isolation Instrumentation
3.3.6

Table 3.3.6-1 (page 1 of 1)
Containment Ventilation Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1. Manual Initiation	1,2,3,4	2	SR 3.3.6.6	NA
2. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2	SR 3.3.6.2 SR 3.3.6.3 SR 3.3.6.5	NA
3. Containment Radiation	1,2,3,4,6 ^(c)	2 ^(a)	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7 SR 3.3.6.8	(b)
a. Gaseous (RE-2565C)				(b)
b. Particulate (RE-2565A)				(b)
c. Iodine (RE-2565B)				(b)
d. Area Low Range (RE-0002, RE-0003)				≤ 15 mr/h ^(c) ≤ 50x background ^(d)
4. Safety Injection ^(d)	1,2,3,4	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements.		

- (a) Containment ventilation radiation (RE-2565) is treated as one channel and is considered OPERABLE if the particulate (RE-2565A) and iodine monitors (RE-2565B) are OPERABLE or the noble gas monitor (RE-2565C) is OPERABLE.
- (b) Setpoints will not exceed the limits of Specifications 5.5.4.h and 5.5.4.i of the Radioactive Effluent Controls Program.
- (c) During CORE ALTERATIONS and movement of irradiated fuel assemblies within containment.
- (d) During MODES 1, 2, 3, and 4.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

- a. The containment normal sumps level and reactor cavity sump monitors;
- b. One containment atmosphere radioactivity monitor (gaseous or particulate); and
- c. Either the containment air cooler condensate flow rate or a containment atmosphere gaseous or particulate radioactivity monitoring system not taken credit for in item b.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment sump monitor inoperable.	A.1 Perform SR 3.4.13.1.	Once per 24 hours
B. Two or more containment sump monitors inoperable	B.1 Perform SR 3.4.13.1	Once per 24 hours
	<u>AND</u> B.2 Restore at least two containment sump monitors to OPERABLE status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required containment atmosphere radioactivity monitor(s) inoperable.</p>	<p>C.1.1 Analyze grab samples of the containment atmosphere.</p>	<p>Once per 24 hours</p>
	<p><u>OR</u></p>	
	<p>C.1.2 Perform SR 3.4.13.1.</p>	<p>Once per 24 hours</p>
	<p><u>AND</u></p>	
<p>D. Required containment air cooler condensate flow rate monitor inoperable.</p>	<p>C.2.1 Restore required containment atmosphere radioactivity monitor(s) to OPERABLE status.</p>	<p>30 days</p>
	<p><u>OR</u></p>	
	<p>C.2.2 Verify containment air cooler condensate flow rate monitor is OPERABLE.</p>	<p>30 days</p>
	<p><u>OR</u></p>	
<p>D. Required containment air cooler condensate flow rate monitor inoperable.</p>	<p>D.1 Perform SR 3.4.15.2.</p>	<p>Once per 8 hours</p>
	<p>D.2 Perform SR 3.4.13.1.</p>	<p>Once per 24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required containment atmosphere radioactivity monitor inoperable. <u>AND</u> Required containment air cooler condensate flow rate monitor inoperable.	E.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	30 days
	<u>OR</u> E.2 Restore required containment air cooler condensate flow rate monitor to OPERABLE status.	30 days
F. Required Action and associated Completion Time not met.	F.1 Be in MODE 3.	6 hours
	<u>AND</u> F.2 Be in MODE 5.	36 hours
G. All required leakage detection systems inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.15.1 Perform CHANNEL CHECK of containment normal sumps level and reactor cavity sump level monitors.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.15.2	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.15.3	Perform COT of the required containment atmosphere radioactivity monitor.	92 days
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the containment sump monitors.	18 months
SR 3.4.15.5	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	18 months
SR 3.4.15.6	Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

-----NOTES-----

1. Penetration flow path(s) (except for 24 inch purge valves) may be unisolated intermittently under administrative controls.
 2. Separate Condition entry is allowed for each penetration flow path.
 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.
 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one containment isolation valve inoperable except for purge valve leakage not within limit.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. <u>AND</u>	4 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2</p> <p>-----NOTE----- Isolation devices in high radiation areas may be verified by use of administrative means. -----</p> <p>Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>
B. One or more penetration flow paths with two containment isolation valves inoperable except for purge valve leakage not within limit.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.1 Verify each 24 inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition C of this LCO.	31 days
SR 3.6.3.2 Verify each 14 inch purge valve is closed, except when the associated penetration(s) is (are) permitted to be open for purge or venting operations and purge system surveillance and maintenance testing under administrative control.	31 days
SR 3.6.3.3 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ----- Verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.4	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. The fuel transfer tube blind flange is only required to be verified closed once after refueling prior to entering MODE 4 from MODE 5. <p>-----</p> <p>Verify each containment isolation manual valve and blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p>	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.5	Verify the isolation time of each power operated and each automatic containment isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.6	Perform leakage rate testing for containment purge valves with resilient seals.	18 months
SR 3.6.3.7	Verify each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	18 months