ANSWER KEY REPORT

for 2020 NRC SRO WRITTEN EXAM FINAL Test Form: 0

#	ID	Points	Type	Answers 0
1	2020 NRC RO 28	1.00	MCS	B
2	2020 NRC RO 29	1.00	MCS	B
3	2020 NRC RO 30	1.00	MCS	B
4	2020 NRC RO 31	1.00	MCS	A
5	2020 NRC RO 32	1.00	MCS	D
6	2020 NRC RO 33	1.00	MCS	A
7	2020 NRC RO 34	1.00	MCS	B
8	2020 NRC RO 35	1.00	MCS	B
9	2020 NRC RO 36	1.00	MCS	B
10	2020 NRC RO 37	1.00	MCS	B
11	2020 NRC RO 38	1.00	MCS	A
12	2020 NRC RO 39	1.00	MCS	B
13	2020 NRC RO 40	1.00	MCS	B
14	2020 NRC RO 41	1.00	MCS	B
15	2020 NRC RO 42	1.00	MCS	D
16	2020 NRC RO 43	1.00	MCS	C
17	2020 NRC RO 44	1.00	MCS	D
18	2020 NRC RO 45	1.00	MCS	B
19	2020 NRC RO 46	1.00	MCS	B
20	2020 NRC RO 47	1.00	MCS	D
21	2020 NRC RO 48	1.00	MCS	C
22	2020 NRC RO 49	1.00	MCS	C
23	2020 NRC RO 50	1.00	MCS	C
24	2020 NRC RO 51	1.00	MCS	A
25	2020 NRC RO 52	1.00	MCS	B
26	2020 NRC RO 53	1.00	MCS	B
27	2020 NRC RO 54	1.00	MCS	C
28	2020 NRC RO 55	1.00	MCS	C
29	2020 NRC RO 19	1.00	MCS	A
30	2020 NRC RO 20	1.00	MCS	D
31	2020 NRC RO 21	1.00	MCS	D
32	2020 NRC RO 22	1.00	MCS	A
33	2020 NRC RO 23	1.00	MCS	B
34	2020 NRC RO 24	1.00	MCS	C
35	2020 NRC RO 25	1.00	MCS	C
36	2020 NRC RO 26	1.00	MCS	D
37	2020 NRC RO 27	1.00	MCS	D
38	2020 NRC RO 1	1.00	MCS	C
39	2020 NRC RO 2	1.00	MCS	C
40	2020 NRC RO 3	1.00	MCS	A
41	2020 NRC RO 4	1.00	MCS	A
42	2020 NRC RO 5	1.00	MCS	A
43	2020 NRC RO 6	1.00	MCS	A
44	2020 NRC RO 7	1.00	MCS	C
45	2020 NRC RO 8	1.00	MCS	D
46	2020 NRC RO 9	1.00	MCS	B
47	2020 NRC RO 10	1.00	MCS	B

#	ID	Points	Type	Answers 0
48	2020 NRC RO 11	1.00	MCS	D
49	2020 NRC RO 12	1.00	MCS	A
50	2020 NRC RO 13	1.00	MCS	B
51	2020 NRC RO 14	1.00	MCS	C
52	2020 NRC RO 15	1.00	MCS	A
53	2020 NRC RO 16	1.00	MCS	A
54	2020 NRC RO 17	1.00	MCS	C
55	2020 NRC RO 18	1.00	MCS	C
56	2020 NRC RO 56	1.00	MCS	A
57	2020 NRC RO 57	1.00	MCS	B
58	2020 NRC RO 58	1.00	MCS	D
59	2020 NRC RO 59	1.00	MCS	B
60	2020 NRC RO 60	1.00	MCS	B
61	2020 NRC RO 61	1.00	MCS	A
62	2020 NRC RO 62	1.00	MCS	B
63	2020 NRC RO 63	1.00	MCS	A
64	2020 NRC RO 64	1.00	MCS	B
65	2020 NRC RO 65	1.00	MCS	C
66	2020 NRC RO 66	1.00	MCS	B
67	2020 NRC RO 67	1.00	MCS	A
68	2020 NRC RO 68	1.00	MCS	D
69	2020 NRC RO 69	1.00	MCS	A
70	2020 NRC RO 70	1.00	MCS	D
71	2020 NRC RO 71	1.00	MCS	C
72	2020 NRC RO 72	1.00	MCS	B
73	2020 NRC RO 73	1.00	MCS	B
74	2020 NRC RO 74	1.00	MCS	A
75	2020 NRC RO 75	1.00	MCS	B
76	2020 NRC SRO 1	1.00	MCS	B
77	2020 NRC SRO 2	1.00	MCS	B
78	2020 NRC SRO 3	1.00	MCS	A
79	2020 NRC SRO 4	1.00	MCS	C
80	2020 NRC SRO 5	1.00	MCS	C
81	2020 NRC SRO 6	1.00	MCS	A
82	2020 NRC SRO 7	1.00	MCS	B
83	2020 NRC SRO 8	1.00	MCS	D
84	2020 NRC SRO 9	1.00	MCS	B
85	2020 NRC SRO 10	1.00	MCS	C
86	2020 NRC SRO 11	1.00	MCS	D
87	2020 NRC SRO 12	1.00	MCS	D
88	2020 NRC SRO 13	1.00	MCS	C
89	2020 NRC SRO 14	1.00	MCS	B
90	2020 NRC SRO 15	1.00	MCS	B
91	2020 NRC SRO 16	1.00	MCS	B
92	2020 NRC SRO 17	1.00	MCS	C
93	2020 NRC SRO 18	1.00	MCS	B
94	2020 NRC SRO 19	1.00	MCS	A

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#	ID	Points	Type	Answers 0
95	2020 NRC SRO 20	1.00	MCS	B
96	2020 NRC SRO 21	1.00	MCS	C
97	2020 NRC SRO 22	1.00	MCS	A
98	2020 NRC SRO 23	1.00	MCS	B
99	2020 NRC SRO 24	1.00	MCS	D
100	2020 NRC SRO 25	1.00	MCS	B

1. Given the following plant conditions:
   - The unit is in Mode 3
   - ALB-007-4-2, VCT HIGH-LOW PRESS, has alarmed
   - Actual VCT pressure is 15 psig

   Which ONE of the following completes the statement below?

   If VCT pressure continues to lower, RCP #1 Seal Leakoff flow will __(1)__ and RCP #2 Seal Leakoff flow will __(2)__.

   A. (1) rise

      (2) rise

   B. (1) rise

      (2) lower

   C. (1) lower

      (2) rise

   D. (1) lower

      (2) lower

2. Given the following plant conditions:
   - The unit is operating at 100% power
   - Control Rods are in MANUAL

   Subsequently:
   - A DEH System malfunction causes a load rejection of approximately 50 MWe

   Which ONE of the following completes the statements below regarding the INITIAL effect on Pressurizer pressure and Charging flow?

   Pressurizer pressure will __(1)__.

   Charging flow will __(2)__.

   A. (1) rise

      (2) rise

   B. (1) rise

      (2) lower

   C. (1) lower

      (2) rise

   D. (1) lower

      (2) lower

3. Which ONE of the following completes the statements below?

   1RH-1, RCS Loop A to RHR Pump A-SA, is powered from 480V MCC ___(1)___.

   In Mode 1, the supply breaker to 1RH-1 is ___(2)___.

   A. (1) 1B21-SB

      (2) ON

   B. (1) 1B21-SB

      (2) OFF

   C. (1) 1B35-SB

      (2) ON

   D. (1) 1B35-SB

      (2) OFF

4. With the unit operating at 100% power, which ONE of the following identifies valves that will automatically re-position upon receipt of a Safety Injection signal?

   A. CSIP normal miniflow isolation valves (1CS-182/196/210/214)

   B. TDAFW pump flow control valves (1AF-129/130/131)

   C. SI accumulator discharge valves (1SI-246/247/248)

   D. RWST to RHR pump suction valves (1SI-322/323)

5. Given the following plant conditions:
   - ALB-009-8-1, Pressurizer Relief Tank High-Low Level Press Or Temp, alarms due to a high temperature condition

   Which ONE of the following describes how the PRT is cooled in accordance with APP-ALB-009-8-1 and OP-100, Reactor Coolant System?

   (Assume a rapid cooldown is NOT required)

   A. Drain the PRT to the Reactor Coolant Drain Tank while making up to the PRT from the Demineralized Water Storage Tank.

   B. Drain the PRT to the Reactor Coolant Drain Tank while making up to the PRT from the Reactor Makeup Water Storage Tank.

   C. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Service Water to cool the heat exchanger.

   D. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Component Cooling Water to cool the heat exchanger.

6. Which ONE of the following completes the statements below?

   In accordance with OP-145, Component Cooling Water, the NORMAL source of makeup to the Component Cooling Water (CCW) System is __(1)__ Water.

   Makeup from this source will be initiated __(2)__.

   A. (1) Demineralized

      (2) from the MCB

   B. (1) Demineralized

      (2) via local field actions

   C. (1) Reactor Makeup

      (2) from the MCB

   D. (1) Reactor Makeup

      (2) via local field actions

7. Given the following plant conditions:
   - The unit is operating at 75% power
   - ALB-005-1-2A, RCP Therm Bar Hdr High Flow, is in alarm

   Which ONE of the following completes the statements below?

   1CC-252, CCW Return Isolation from RCP Thermal Barriers Flow Control, will shut if CCW flow rises to a MINIMUM of ___(1)___ gpm.

   With 1CC-252 shut, RCP operational limits ___(2)___ be exceeded.

   A. (1) 198

      (2) will

   B. (1) 198

      (2) will NOT

   C. (1) 245

      (2) will

   D. (1) 245

      (2) will NOT

8. Which ONE of the following completes the statements below regarding PORV testing IAW OST-1117, Pressurizer PORV Operability Quarterly Interval Modes 3 - 6?

When Pressurizer pressure begins to lower from Normal Operating Pressure, the Group 'C' heaters will FIRST receive a "full on" signal when Pressurizer pressure reaches ___(1)___ psig

The PRT rupture discs will blow when PRT pressure reaches a MINIMUM of ___(2)___ psig.

A. (1) 2220

(2) 50

B. (1) 2220

(2) 100

C. (1) 2210

(2) 50

D. (1) 2210

(2) 100

9. Given the following plant conditions:
   - The unit is operating at 100% power

   Subsequently:
   - Pressurizer Spray Valve, 1RC-103, begins to slowly fail open

   Which ONE of the following completes the statements below?

   An __(1)__ turbine runback will occur.

   The SETPOINT for this runback is ΔT within __(2)__% of the Reactor trip setpoint.

   (Assume NO operator action)

   A. (1) Overtemperature ΔT (OTΔT)

      (2) 1.9

   B. (1) Overtemperature ΔT (OTΔT)

      (2) 3

   C. (1) Overpower ΔT (OPΔT)

      (2) 1.9

   D. (1) Overpower ΔT (OPΔT)

      (2) 3

10. Given the following plant conditions:
- Reactor power is 7%
- A plant startup is in progress in accordance with GP-005, Power Operation (Mode 2 to Mode 1)

Subsequently:
- Instrument Bus S-I de-energizes

Given the above plant conditions, which ONE of the following will result in a Reactor trip signal being generated?

A. LT-461, PRZ Level Channel III, fails high

B. LT-496, 'C' SG Level Channel III, fails low

C. PT-457, PRZ Pressure Channel III, fails low

D. A and C Aux buses are crosstied and breaker 107, Aux Bus A supply, fails open

11. Given the following plant conditions:
    - The unit is operating at 100% power

    Subsequently:
    - An inadvertent actuation of Train 'B' Safety Injection occurs

    Which ONE of the following completes the statement below?

    __(1)__ will trip AND the Main Feedwater Regulating Valves will __(2)__.

    A. (1) BOTH Main Feedwater Pumps

       (2) SHUT

    B. (1) BOTH Main Feedwater Pumps

       (2) OPEN

    C. (1) ONLY the 'B' Main Feedwater Pump

       (2) SHUT

    D. (1) ONLY the 'B' Main Feedwater Pump

       (2) OPEN

12. Given the following plant conditions:
    - The unit is operating at 100% power
    - Instrument Bus SIII is de-energized and actions are being taken in accordance with AOP-024, Loss of Uninterruptible Power Supply

    Subsequently:
    - PT-953, Containment Pressure Channel IV, fails high

    Which ONE of the following identifies the effect on the Safety Injection (SI) and Containment Spray Actuation Signal (CSAS) systems?

	SI	CSAS
A.	NOT Actuated	NOT Actuated
B.	Actuated	NOT Actuated
C.	NOT Actuated	Actuated
D.	Actuated	Actuated

13. Given the following plant conditions:
   - The unit is operating at 100% power
   - S-2B-SB, Primary Shield Cooling Fan, is in operation

   Subsequently:
   - ALB-027-5-5, Reactor Primary Shield Clg Fans S2 Low-Flow-O/L, alarms

   The S-2B-SB control switch indications are as follows:

   Which ONE of the following completes the statement below?

   The S-2B-SB control switch indicates the alarm was received due to actuation of the ___(1)___ AND S-2A-SA, Primary Shield Cooling Fan, ___(2)___.

A. (1) thermal overload device

   (2) will start automatically

B. (1) thermal overload device

   (2) must be manually started

C. (1) low flow switch

   (2) will start automatically

D. (1) low flow switch

   (2) must be manually started

14. Given the following plant conditions:
    - A LOCA occurred
    - The crew has transitioned EOP-ES-1.3, Transfer to Cold Leg Recirculation
    - Both trains of Safety Injection and Containment Spray are aligned for recirculation

    Which ONE of the following completes the statements below?

    A MINIMUM of ___(1)___ inches Containment (CNMT) wide range sump level assures a long term recirculation suction source.

    In accordance with EOP-ES-1.3, the PREFERRED method for raising CNMT sump inventory is to re-align one of the running ___(2)___ suction back to the RWST.

    A. (1) 142

       (2) CSIPs

    B. (1) 142

       (2) CNMT Spray Pumps

    C. (1) 196

       (2) CSIPs

    D. (1) 196

       (2) CNMT Spray Pumps

15. Given the following plant conditions:
    - The unit is operating at 100% power
    - 'A' Containment Spray Pump is running on recirculation per OST-1118, Containment Spray Operability Train A Quarterly Interval Modes 1-4

    Subsequently:
    - A LOCA occurs
    - Containment pressure rises to 7.5 psig

    Which ONE of the following identifies the positions of 1CT-24, Containment Spray Eductor Test, and 1CT-50, Containment Spray Pump 1A-SA Discharge Valve?

	1CT-24	1CT-50
A.	OPEN	OPEN
B.	OPEN	SHUT
C.	SHUT	OPEN
D.	SHUT	SHUT

16. Given the following plant conditions:
    - The unit is operating at 100% power
    - A Main Steam line rupture in the Turbine Building has occurred
    - The crew has manually tripped the Reactor

Which ONE of the following completes the statement below?

The Turbine Ventilating valves (1GS-97, 1GS-98) are expected to __(1)__ AND the MSR Non-Return valves (1HD-2, 1HD-3, 1HD-302, 1HD-303) are expected to __(2)__.

Valve Noun Name:

Turbine Ventilating valves
1GS-97, HP Turbine Vent to Cond (FCV-01TA-0415B)
1GS-98, HP Turbine Vent to Cond (FCV-01TA-0415A)

MSR Non-Return valves
1HD-2, MSR 1A-NNS Outlet to MSDT 1A-NNS
1HD-3, MSRDT 1A-NNS Outlet to 5-1A-NNS
1HD-302, MSR 1B-NNS Outlet to MSDT 1B-NNS
1HD-303, MSRDT 1B-NNS Outlet to 5-1B-NNS

A. (1) SHUT

   (2) SHUT

B. (1) SHUT

   (2) OPEN

C. (1) OPEN

   (2) SHUT

D. (1) OPEN

   (2) OPEN

17. Which ONE of the following completes the statement below regarding operation of the SG PORVs?

Control power selector switches located in the __(1)__ can be used to supply alternate control power from the instrument buses to __(2)__ SG PORVs.

A. (1) Steam Tunnel

(2) ALL

B. (1) Steam Tunnel

(2) ONLY 'A' and 'B'

C. (1) RAB 286 Electrical Penetration Areas

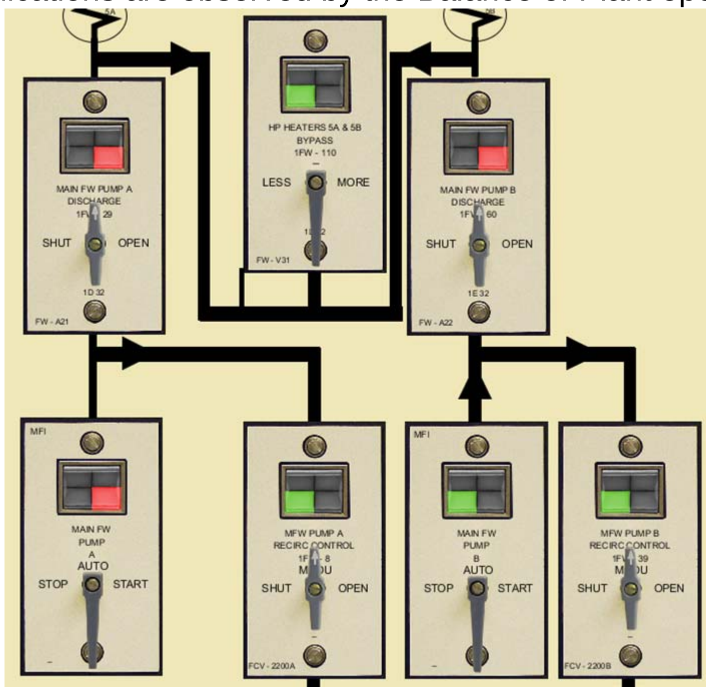
(2) ALL

D. (1) RAB 286 Electrical Penetration Areas

(2) ONLY 'A' and 'B'

18. Given the following plant conditions:
    - The unit is operating at 85% power

    Subsequently:
    - The following indications are observed by the Balance of Plant operator (BOP):



Which ONE of the following completes the statements below?

A loss of 6.9 KV Aux Bus ___(1)___ has occurred.

In accordance with AOP-010, Feedwater Malfunctions, the operator is required to ___(2)___.

A. (1) 1B

   (2) trip the Reactor

B. (1) 1B

   (2) isolate Steam Generator Blowdown

C. (1) 1E

   (2) trip the Reactor

D. (1) 1E

   (2) isolate Steam Generator Blowdown

19. Which ONE of the following identifies the power supply for 1MS-72, Main Steam C to Aux FW Turbine?

A. PP-1B312-SB

B. DP-1B2-SB

C. 1B31-SB

D. IDP-SII

20. Given the following plant conditions:
    - The unit is operating at 100% power
    - Annunciator ALB-014-7-4, SG A, B, C BACKLEAKAGE HIGH TEMP, has alarmed
    - An AO has been dispatched to verify local temperatures

Which ONE of the following completes the statements below?

The reason this condition occurred is because a/an ___(1)___ piping check valve is leaking.

In accordance with the AOP-010, Feedwater Malfunctions, under these conditions with the TDAFW piping local temperature > 212°F, the FIRST action required is to ___(2)___.

A. (1) TDAFW pump steam supply

(2) start the TDAFW pump to flush the line through the exhaust

B. (1) TDAFW pump steam supply

(2) isolate the TDAFW pump discharge header

C. (1) Auxiliary Feedwater

(2) start the TDAFW pump to flush the line to the SGs

D. (1) Auxiliary Feedwater

(2) isolate the TDAFW pump discharge header

21. Given the following plant conditions:
    - The unit is Mode 3

    Subsequently:
    - A loss of SUT 1A occurs
    - The crew enters AOP-025, Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)

    With regard to AOP-025, which ONE of the following completes the statements below?

    EDG 1A-SA ___(1)___ automatically re-energize 480V Emergency Bus 1A1.

    When SUT 1A becomes available, the operator will energize Emergency Bus 1A-SA from Auxiliary Bus ___(2)___ and unload the EDG.

    A. (1) will

       (2) 1D

    B. (1) will

       (2) 1E

    C. (1) will NOT

       (2) 1D

    D. (1) will NOT

       (2) 1E

22. Given the following plant conditions:
   - The unit is operating at 100% power
   - 250 VDC Battery Charger 1A is in service

   Subsequently:
   - Annunciator ALB-015-3-4, 250 VDC BUS TROUBLE, alarms

   Which ONE of the following completes the statements below?

   The crew will use indications __(1)__ to determine if a ground condition exists.

   If a ground is suspected, the crew should implement OP-156.06, Ground Isolation and Bus Drop, and __(2)__.

   A. (1) on AEP-2

      (2) energize the 1B 250 VDC Battery Charger then remove the 1A 250 VDC Battery Charger from service

   B. (1) on AEP-2

      (2) open the 1A 250 VDC Battery Charger DC output breaker allowing the batteries to power the 250 VDC bus and then place the 1B 250 VDC Battery Charger in service

   C. (1) locally in the switchgear room

      (2) energize the 1B 250 VDC Battery Charger then remove the 1A 250 VDC Battery Charger from service

   D. (1) locally in the switchgrear room

      (2) open the 1A 250 VDC Battery Charger DC output breaker allowing the batteries to power the 250 VDC bus and then place the 1B 250 VDC Battery Charger in service

23. Which ONE of the following completes the statements below?

The 125V DC Class 1E batteries are designed to provide power for __(1)__ hours during a station blackout event.

In addition to load shed, the Dedicated Shutdown Diesel Generator can be used to provide a non-safety-related feed through MCC 1D23 to __(2)__ safety-related battery charger(s) on EACH train to prolong the battery discharge time.

A. (1) two

(2) one

B. (1) two

(2) both

C. (1) four

(2) one

D. (1) four

(2) both

24. Which ONE of the following completes the statement below?

The Low Starting Air Pressure Interlock inhibits EDG __(1)__ and will FIRST occur when starting air pressure lowers to __(2)__ psig.

A. (1) auto starts ONLY

(2) 150

B. (1) auto starts ONLY

(2) 202

C. (1) auto AND manual starts

(2) 150

D. (1) auto AND manual starts

(2) 202

25. Given the following plant conditions:
    - A liquid release is in progress from the Treated Laundry and Hot Shower (TL&HS) Tank
    - REM-*1WL-3540, Treated Laundry and Hot Shower Tank Pump Discharge Monitor, goes into HIGH ALARM during the release

    Which ONE of the following will automatically terminate the release?

    A. The running TREATED H&HS TANK PUMP PUMP trips

    B. 3LHS-296, TREATED L&HS TKS DISCH ISOL VLV, shuts

    C. 3LHS-293 (FCV HK-6193), TRTD L&HS TK TO ENVIRON, shuts

    D. 3LHS-301, TREATED L&HS TKS DISCHARGE TO COOLING TOWER BLOWDOWN, shuts

26. Given the following plant conditions:
  - The unit is operating at 100% power
  - NSW Pump 'B' is operating
  - NSW Pump 'A' is in standby

Subsequently:
  - ALB-002-7-1, SERV WATER SUPPLY HDR B LOW PRESS, alarms

After one (1) minute, which ONE of the following identifies the expected Service Water system alignment?

A. NSW Pump 'B' is running supplying NSW loads and both ESW headers.

No ESW pumps are running.

B. NSW Pump 'B' is running supplying NSW loads and the 'A' ESW header.

ESW Pump 'B' is running supplying the 'B' ESW header.

C. NSW Pump 'A' is running supplying NSW loads and both ESW headers.

No ESW pumps are running.

D. NSW Pump 'A' is running supplying NSW loads and the 'A' ESW header.

ESW Pump 'B' is running supplying the 'B' ESW header.

27. Given the following plant conditions:
    - The unit is operating at 100% power
    - An Instrument Air leak is occurring
    - Instrument Air pressure is currently 80 psig and stable

    Which ONE of the following predicts the plant response for the current condition?

    A. All FW flow control valves will SHUT

    B. PRZ Spray valves drift to mid-position

    C. RCS letdown flowpath valves drift to mid-position

    D. Gland Steam Seal Spillover Regulator Valve will OPEN

28. Given the following plant conditions:
    - A LOCA has occurred
    - RCS pressure is 600 psig and stable
    - Containment pressure is 11.5 psig and lowering
    - SI has NOT been reset
    - Phase 'A' and 'B' Containment Isolation reset switches have been placed to RESET

    Which ONE of the following identifies the status of the Containment Isolation Phase A and Phase B signals?

	Phase A	Phase B
A.	NOT reset	reset
B.	NOT reset	NOT reset
C.	reset	reset
D.	reset	NOT reset

29. Which ONE of the following completes the statements below regarding recovery of a dropped rod in accordance with AOP-001, Malfunction of Rod Control and Indication System?

Prior to recovering the dropped rod, the lift coil disconnect switches for all rods except the dropped will be opened in the affected ___(1)___.

During the recovery, withdrawal of the dropped rod will be stopped based on ___(2)___.

A. (1) bank

(2) step counter position

B. (1) bank

(2) DRPI for the affected rod

C. (1) group ONLY

(2) step counter position

D. (1) group ONLY

(2) DRPI for the affected rod

30. Given the following plant conditions:
   - The unit is operating at 100% power
   - The 'A' Boric Acid Pump is under clearance

   Subsequently:
   - Emergency Bus 1B-SB locks out due to an 86UV failure
   - The crew enters AOP-002, Emergency Boration, due to a dilution event
   - The OATC performs the required valve alignment to provide a boration source

   With regard to AOP-002, which ONE of the following completes the statement below?

   For the boration flowpath established, the OATC is required to verify a MINIMUM of ___(1)___ gpm on ___(2)___ Flow.

   A. (1) 30

      (2) FI-110, Emergency Boration

   B. (1) 30

      (2) FI-122A.1, Charging Header

   C. (1) 90

      (2) FI-110, Emergency Boration

   D. (1) 90

      (2) FI-122A.1, Charging Header

31. Given the following plant conditions:
   - Tank Area Drains are being pumped to the Storm Drain System in accordance with OP-120.09.01, Radioactive Floor Drain Collection

   Subsequently:
   - A Refueling Water Storage Tank (RWST) leak occurs
   - REM-01MD-3530, Tank Area Drain Transfer Pumps Monitor, goes into HIGH alarm
   - Contaminated water is filling the retention dike area

   Which ONE of the following completes the statements below?

   1FD-109, FD Tank Area Drain Pump 1X Discharge to Storm Drain Valve, ___(1)___ receive an auto shut signal.

   AOP-005, Radiation Monitoring System, ___(2)___ direct the operator to verify the Tank Area Floor Drain **SUMP** Pump stopped.

   A. (1) does

      (2) does

   B. (1) does

      (2) does NOT

   C. (1) does NOT

      (2) does

   D. (1) does NOT

      (2) does NOT

32. Given the following plant conditions:
  - Core reload is in progress
  - A spent fuel assembly in the Fuel Handling Building (FHB) is damaged

FHB area radiation levels are rising with monitor status as follows:
  - RM-*1FR-3565A-SA - HIGH ALARM
  - RM-*1FR-3565B-SB - ALERT
  - No other Spent Fuel Pool Area monitors are in alarm

Which ONE of the following completes the statement below in accordance with AOP-005, Radiation Monitoring System?

__(1)__ train(s) of FHB Ventilation Emergency Exhaust has (have) automatically started and FHB Normal Operating Floor Ventilation __(2)__ shutdown.

A. (1) ONLY 'A'

   (2) has

B. (1) ONLY 'A'

   (2) has NOT

C. (1) BOTH 'A' and 'B'

   (2) has

D. (1) BOTH 'A' and 'B'

   (2) has NOT

33. Given the following plant conditions:
    - The unit is in Mode 3
    - Personnel have been sent into Containment to identify a source of leakage
    - Upon exiting Containment, both CNMT Personnel Airlock [PAL] doors failed to seal

Which ONE of the following completes the statements below?

Entry into AOP-023, Loss of Containment Integrity, __(1)__ required.

In accordance with Technical Specification 3.6.1.3, and OWP-AL, Containment Air Locks, the PAL doors are locked shut by locking the associated __(2)__ and deactivating the electronic mechanisms used to open the PAL doors.

A. (1) is

(2) mechanical operator

B. (1) is

(2) manual pumping stations

C. (1) is NOT

(2) mechanical operator

D. (1) is NOT

(2) manual pumping stations

34. Given the following plant conditions:
- A faulted Steam Generator inside Containment occurred
- The faulted Steam Generator was isolated
- Containment pressure peaked at 12 psig
- The crew is implementing EOP-ES-1.1, SI Termination, to re-establish RCP seal return flow to the Volume Control Tank (VCT)

The following annunciators are currently in alarm:
- ALB-001-5-1, Containment Isolation Phase B
- ALB-005-1-5B, Seal Water HX CCW Low Flow

Which ONE of the following identifies (1) the annunciator that must be cleared to allow the re-establishment of RCP seal return flow to the VCT AND (2) the reason why?

A. (1) ALB-001-5-1

(2) Allows re-opening of Phase B valves that shut to isolate the seal return flowpath to the VCT.

B. (1) ALB-001-5-1

(2) Allows re-opening of Phase B valves that shut to isolate CCW flow to the Seal Water Return Heat Exchanger.

C. (1) ALB-005-1-5B

(2) Provides assurance that CCW flow to the Seal Water Return Heat Exchanger is available to provide adequate seal return cooling.

D. (1) ALB-005-1-5B

(2) Provides assurance that CCW pressure is sufficient to minimize any in-leakage from the Seal Water Return Heat Exchanger when flow is restored.

35. The crew has transitioned to EOP-E-1, Loss of Reactor or Secondary Coolant, and is presently evaluating if the RHR System is capable of Cold Leg Recirculation.

Current plant conditions:
- Offsite power has been lost
- EDG 1B-SB has tripped
- CNMT Pressure is 17 psig and rising
- CNMT Wide Range Sump Level is reading 211 inches
- RVLIS Full Range Level is reading 38%
- RCS Wide Range Pressure is reading 225 psig
- Core Exit Thermocouples are reading 740°F
- Containment Spray Pump 'A' has tripped

Which ONE of the following identifies the procedure the crew is required to implement at this time?

A. EOP-FR-Z.2, Response to Containment Flooding

B. EOP-FR-C.2, Response to Degraded Core Cooling

C. EOP-FR-C.1, Response to Inadequate Core Cooling

D. EOP-FR-Z.1, Response to High Containment Pressure

36. Which ONE of the following completes the statements below in accordance with EOP-E-3, Steam Generator Tube Rupture?

The ruptured SG PORV controller setpoint is required to be adjusted to __(1)__ and placed in AUTO to prevent lifting the SG code safety valves.

If the ruptured SG PORV fails OPEN, the operator has a MAXIMUM time of __(2)__ minutes to shut the associated PORV block valve per the SGTR Dose Analysis.

A. (1) 1135 psig (87%)

(2) 10

B. (1) 1135 psig (87%)

(2) 20

C. (1) 1145 psig (88%)

(2) 10

D. (1) 1145 psig (88%)

(2) 20

37. Given the following plant conditions:
   - Core offload is in progress

   Subsequently:
   - An irradiated fuel assembly is damaged and has been fully withdrawn from the core
   - AOP-013, Fuel Handling Accident, has been entered
   - Containment area radiation levels are rising with monitor status as follows:
     - RM-01CR-3561ASA - not in alarm
     - RM-01CR-3561BSB - ALERT
     - RM-01CR-3561CSA - not in alarm
     - RM-01CR-3561DSB - HIGH ALARM

   Which ONE of the following completes the statements below?

   Containment Ventilation Isolation ___(1)___ automatically initiated.

   For the conditions above, AOP-013 ___(2)___ require the fuel assembly to be placed in a safe storage location prior to making the announcement to evacuate Containment.

   A. (1) has

      (2) does

   B. (1) has

      (2) does NOT

   C. (1) has NOT

      (2) does

   D. (1) has NOT

      (2) does NOT

38. The unit was operating at 100% power when a Reactor trip occurred.

Which ONE of the following completes the statements below?

Xenon-135 concentration will decay to zero (xenon-free) ___(1)___ hours following the Reactor trip.

In accordance with EOP-ES-0.1, Reactor Trip Response, the operator will ensure that Source Range detectors energize when Intermediate Range flux FIRST lowers to ___(2)___ AMPS.

A. (1) 30 - 40

(2) 5×10^{-11}

B. (1) 30 - 40

(2) 1×10^{-10}

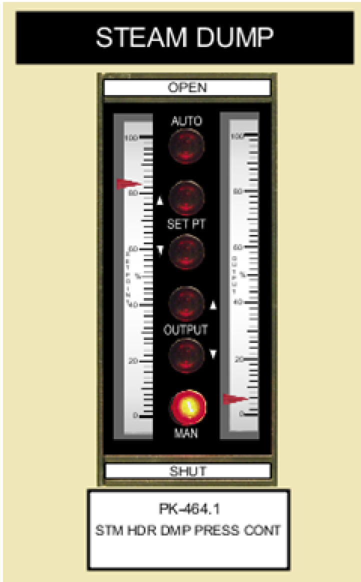
C. (1) 70 - 80

(2) 5×10^{-11}

D. (1) 70 - 80

(2) 1×10^{-10}

39. Given the following plant conditions:
   - A break in the Pressurizer steam space has resulted in a small break LOCA
   - The crew is implementing EOP-ES-1.2, Post LOCA Cooldown and Depressurization
   - RCS temperature is stable



Which ONE of the following completes the statements below?

The steam dumps will be operated in the ___(1)___ Mode of Control.

The operator must depress the OUTPUT ___(2)___ pushbutton to initiate an RCS cooldown to cold shutdown conditions.

A. (1) T-AVG

   (2) RAISE

B. (1) T-AVG

   (2) LOWER

C. (1) Steam Pressure

   (2) RAISE

D. (1) Steam Pressure

   (2) LOWER

40. Given the following plant conditions:
    - The unit was operating at 100% power when a LOCA occurred
    - 1CS-11, Letdown Isolation, was shut to isolate the break in accordance with EOP-ECA-1.2, LOCA Outside Containment

    Subsequently:
    - The crew is implementing EOP-ES-1.1, SI Termination
    - Safety Injection has been terminated and minimum charging flow established

    Which ONE of the following completes the statements below?

    In accordance with EOP-ES-1.1, a MINIMUM PRZ level of ___(1)___% is required to allow excess letdown to be established.

    Per the Background Document for EOP-ES-1.1, the reason for establishing excess letdown is to offset ___(2)___.

    A. (1) 25

       (2) RCP seal injection ONLY

    B. (1) 25

       (2) BOTH RCP seal injection and charging flow

    C. (1) 40

       (2) RCP seal injection ONLY

    D. (1) 40

       (2) BOTH RCP seal injection and charging flow

41. Which ONE of the following completes the statements below regarding transferring the RHR system from the RWST to the Containment (CNMT) sumps (recirculation mode) during a large break LOCA?

The CNMT Sump to RHR Pump Suction valves will open automatically on ___(1)___ level.

The RWST to RHR Pump Suction valves will ___(2)___.

A. (1) lowering RWST

(2) remain open until shut by an operator

B. (1) lowering RWST

(2) begin to shut five seconds after the CNMT Sump to RHR Pump Suction Valves reach the full open position

C. (1) rising CNMT sump

(2) remain open until shut by an operator

D. (1) rising CNMT sump

(2) begin to shut five seconds after the CNMT Sump to RHR Pump Suction Valves reach the full open position

42. Given the following plant conditions:
- EOP-FR-C.1, Response to Inadequate Core Cooling, is being implemented
- Containment pressure is 2.5 psig
- Maximum Core Exit Thermocouples (CET) temperatures are 1305°F
- All SGs have been depressurized to 130 psig
- Support conditions have been established to the 'B' and 'C' RCPs ONLY

Subsequent to the above conditions:
- RCP 'C' was started and CET temperatures are now 1250°F and lowering
- The crew is evaluating if additional RCPs can be started to provide core cooling

Current SG narrow range levels are:
- SG 'A' level is 35%
- SG 'B' level is 15%
- SG 'C' level is 39%

Which ONE of the following identifies the operator action(s) required to be taken NEXT in accordance with EOP-FR-C.1?

A. Start RCP 'A'

B. Start RCP 'B'

C. Re-establish a heat sink in at least one SG

D. Open the PRZ PORVs and RCS vent valves

43. In accordance with AOP-018, Reactor Coolant Pump Abnormal Conditions, which ONE of the following completes the statements below?

If all RCP seal cooling is lost for greater than a MINIMUM of ___(1)___ minutes, a controlled restoration of seal injection flow must be done.

The basis for this requirement is to ___(2)___.

A. (1) 4

(2) preclude increased seal leakage

B. (1) 4

(2) protect against potential pump radial bearing damage

C. (1) 10

(2) preclude increased seal leakage

D. (1) 10

(2) protect against potential pump radial bearing damage

44. Given the following plant conditions:
- The unit is operating in Mode 5
- The RCS is in solid plant operation
- Both trains of RHR are aligned in the Shutdown Cooling Mode

Subsequently:
- A large RCS leak developed

Conditions are as follows:
- The crew has aligned flow through the BIT with 'A' CSIP in service as directed by AOP-020, Loss of RCS Inventory or Residual Heat Removal While Shutdown
- Core Exit Thermocouples continue to rise
- RCS water level continues to lower

Which ONE of the following completes the statement below regarding the action required by AOP-020 to lower Core Exit Thermocouple temperatures?

___(1)___ with flow through ___(2)___.

A. (1) Start the 'B' CSIP

(2) 1SI-3 and 1SI-4, BIT Outlet Valves

B. (1) Start the 'B' CSIP

(2) 1SI-52, Alternate High Head SI to Cold Leg Valve

C. (1) Align 'A' RHR Pump for Low Head SI

(2) 1SI-340, Low Head SI Train A to Cold Leg Valve

D. (1) Align 'A' RHR Pump for Low Head SI

(2) 1SI-359, Low Head SI Trains A & B to Hot Leg valve

45. Given the following plant conditions:
    - The unit is operating at 100% power
    - ALB-005-6-1, CCW Surge Tank High-Low Level, has just alarmed
    - The OATC reports that CCW Surge Tank level is 39% and trending lower

Which ONE of the following automatic actions must be verified in accordance with APP-ALB-005?

A. 1DW-15, Makeup Valve, has opened

B. CCW Drain Tank Transfer Pump has tripped

C. CCW Holdup Tank Transfer Pump has tripped

D. CCW flow to the GFFD and RCS Sample Panel has isolated

46. Given the following plant conditions:
   - The unit is in Mode 3 at normal operating pressure
   - Pressurizer (PRZ) Pressure Control is in AUTO

   Subsequently:
   - A PRZ pressure transmitter failure occurs
   - PRZ pressure channel indications are:
     - PI-444 2050 psig
     - PI-445 2500 psig
     - PI-455 2050 psig
     - PI-456 1950 psig
     - PI-457 2050 psig

   Which ONE of the following completes the statements below regarding the expected conditions of the PRZ PORVs and spray valves?

   PRZ PORVs 1RC-116 (PCV-445B) and 1RC-118 (PCV-445A) will be __(1)__.

   The PRZ spray valves (PCV-444C and PCV-444D) will be __(2)__.

   (Assume NO operator actions)

   A. (1) OPEN

      (2) OPEN

   B. (1) OPEN

      (2) SHUT

   C. (1) SHUT

      (2) OPEN

   D. (1) SHUT

      (2) SHUT

47. Which ONE of the following completes the statements below regarding an ATWS?

Reactor Trip Breaker shunt trip coils are ___(1)___ to actuate devices.

In accordance with EOP-FR-S.1, Response to Nuclear Power Generation/ATWS, if the Reactor fails to trip following opening of the Reactor Trip and Bypass Breakers locally, the next PREFERRED action is to open the rod drive MG set ___(2)___ breakers.

A. (1) energize

(2) motor

B. (1) energize

(2) generator output

C. (1) de-energize

(2) motor

D. (1) de-energize

(2) generator output

48. Given the following plant conditions:
- A tube rupture occurred in the 'A' SG
- Offsite power was lost
- The crew completed EOP-E-3, Steam Generator Tube Rupture, and transitioned to EOP-ES-3.1, Post-SGTR Cooldown Using Backfill

The following plant conditions presently exist:
- 6.9 KV Aux Buses 'A' and 'C' have been re-energized
- The crew is preparing to restart an RCP

Which ONE of the following completes the statement below?

In accordance with EOP-ES-3.1, the __(1)__ RCP should be started FIRST to minimize any challenges to __(2)__.

A. (1) 'A'

(2) vessel integrity

B. (1) 'A'

(2) core reactivity

C. (1) 'C'

(2) vessel integrity

D. (1) 'C'

(2) core reactivity

49. Given the following plant conditions:
- A complete loss of all feedwater sources occurred
- RCS bleed and feed has been initiated

Subsequently:
- All SGs are completely dry and depressurized
- Auxiliary Feedwater (AFW) capability is restored
- RCS temperature is stable

Which ONE of the following completes the statements below?

In accordance with EOP-FR-H.1, Response to a Loss of Secondary Heat Sink, one intact SG will be fed using AFW at __(1)__ KPPH.

The reason ONLY one SG is fed is to ensure __(2)__.

A. (1) 50

(2) a failure due to excessive thermal stresses is limited to one SG

B. (1) 50

(2) RCS cooldown rates are maintained within Technical Specification limits

C. (1) 200

(2) a failure due to excessive thermal stresses is limited to one SG

D. (1) 200

(2) RCS cooldown rates are maintained within Technical Specification limits

50. Given the following plant conditions:
    - The unit is operating 100% power
    - OST-1073, 1B-SB Emergency Diesel Generator Operability Test, in progress
    - Emergency Diesel Generator 1B-SB is loaded to 6300 KW while operating in parallel with the grid

    Subsequently:
    - EDG 1B-SB output breaker (126) trips open then recloses

    Which ONE of the following identifies an event that would cause breaker 126 to operate in this manner?

    A. Safety Injection actuates

    B. A loss of offsite power occurs

    C. A Main Generator lockout trips

    D. Breaker 124, Aux Bus 1E to Emergency Bus B-SB, opens

51. Given the following plant conditions:
    - The unit is in Mode 6
    - 'A-SA' Safety Train is in service
    - Core Alterations are in progress
    - Nuclear Flux Monitoring System (NFMS) N60 is being substituted for SR N31
    - Source Range (SR) N32 is providing audible count rate in the MCR and CNMT

    In accordance with Technical Specifications, which ONE of the following identifies a condition that would require suspension of Core Alterations?

    A. RWST level lowers to 23%

    B. 'B' EDG is declared inoperable

    C. Instrument Bus IDP-1B-SII de-energizes

    D. Reactor cavity water level at the 23' 10" mark (above the flange)

52. Given the following plant conditions:
    - A LOCA has occurred
    - 'A' ESW Booster Pump has tripped
    - Containment pressure is 28 psig

Which ONE of the following completes the statement below?

In accordance with EOP-FR-Z.1, Response to High Containment Pressure, ESW to the 'A' Train Containment Fan Coolers is isolated to prevent ______.

A. an unmonitored release from Containment to the ESW system

B. infusion of hydrogen into the ESW system from the Containment atmosphere

C. damage to the Containment fan coolers from water hammer if the ESW Booster pump is restarted

D. damage to the containment fan coolers from water hammer due to ESW flashing to steam in piping inside Containment due to low fan cooler flow

53. Given the following plant conditions:
   - The unit is operating at 100% power
   - Air Compressor 1C is the lead compressor
   - Air Compressor 1B is under clearance for inspection
   - Air Compressor 1A is in STANDBY and isolated from CAS Panel
   - Instrument Air header pressure is 110 psig

   Subsequently:
   - Instrument Air header pressure begins to lower steadily

   With regard to AOP-017, Loss of Instrument Air, which ONE of the following completes the statements below?

   The HIGHEST value that Air Compressor 1A will start on lowering Instrument Air header pressure is ___(1)___ psig.

   If Instrument Air header pressure continues to lower, the operators are FIRST required to manually trip the Reactor when pressure lowers to ___(2)___ psig.

   A. (1) 96

      (2) 60

   B. (1) 96

      (2) 35

   C. (1) 90

      (2) 60

   D. (1) 90

      (2) 35

54. Given the following plant conditions:
- The unit is operating at 100% power
- MDAFW pump 'B' is under clearance

Subsequently the following occurs:
- A manual Reactor Trip was initiated due to a loss of the 'A' MFP
- The TDAFW pump tripped after starting
- MDAFW flow control valves are full open
- Total AFW flow is 212 KPPH and lowering
- SG NR levels are 41% and lowering
- Containment pressure is 2.8 psig and stable

Which ONE of the following would be the FIRST set of conditions that would require entry into EOP-FR-H.1, Response to Loss of Secondary Heat Sink?

All SG NR levels are ___(1)___% AND total AFW flow is ___(2)___ KPPH.

A. (1) 39

(2) 195

B. (1) 39

(2) 205

C. (1) 24

(2) 195

D. (1) 24

(2) 205

55. Given the following plant conditions:
    - The unit was operating at 100% power when a Reactor Trip and Safety Injection occurred due to a steam line break in Containment on the 'B' SG

    Current plant conditions are as follows:
    - Containment pressure is 28 psig

    Which ONE of the following identifies the set of valves listed below that the operator must ensure are in the SHUT position using Attachment 3, Safeguards Actuation Verification, of EOP-E-0, Reactor Trip or Safety Injection, for the conditions above?

    1. All MSIV's
    2. 1MS-70, Main Steam B to Aux FW Turbine
    3. 'B' SG MDAFW AND TDAFW motor isolation valves
    4. ONLY 'B' MSIV
    5. All Blowdown isolation valves
    6. 1SI-3, BIT Outlet

    A. 1, 2, and 3

    B. 4, 5, and 6

    C. 1, 3, and 5

    D. 2, 4, and 6

56. Given the following plant conditions:
- A Steam Generator tube rupture occurred
- The Reactor was tripped and Safety Injection actuated
- All offsite power was lost following the Reactor trip

Subsequently:
- The crew is at the step in EOP-E-3, Steam Generator Tube Rupture, to depressurize the RCS to restore inventory

Which ONE of the following completes the statements below?

In accordance with EOP-E-3, the RCS will be depressurized using ___(1)___.

Due to the loss of power during depressurization, the ___(2)___.

A. (1) one PRZ PORV

(2) Reactor Vessel upper head may void resulting in a rapidly rising PRZ level

B. (1) one PRZ PORV

(2) Steam Generator tubes may void causing a loss of natural circulation

C. (1) Auxiliary Spray

(2) Reactor Vessel upper head may void resulting in a rapidly rising PRZ level

D. (1) Auxiliary Spray

(2) Steam Generator tubes may void causing a loss of natural circulation

57. A failure of the compensating voltage for Intermediate Range channel NI-35 occurs resulting in NI-35 stabilizing at $2E^{-10}$ amps during a Reactor shutdown.

Which ONE of the following completes the statement below?

IF Intermediate Range channel NI-36 output lowers to less than P-6, THEN _______ will automatically energize.

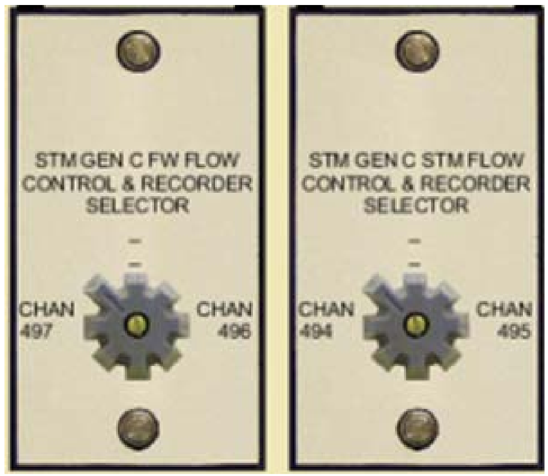
A. BOTH SR NIs

B. NEITHER SR NI

C. ONLY SR channel NI-31

D. ONLY SR channel NI-32

58. Given the following plant conditions:
    - The unit is operating at 100% power
    - The 'C' SG Control and Recorder Selector switches are as follows:



Subsequently:
- The controlling 'C' SG Feed Flow channel fails high
- Annunciator ALB-014-6-1A, SG C FW > STM Flow Mismatch, alarms

Which ONE of the following completes the statements below?

Immediately after the failure, the 'C' SG FRV will start to go ___(1)___.

Once 'C' SG level is under operator control, OP-134, Feedwater System, will direct the operator to select ___(2)___ to restore automatic water level control.

A. (1) OPEN

   (2) STM GEN C FW Flow Chan 496 ONLY

B. (1) SHUT

   (2) STM GEN C FW Flow Chan 496 ONLY

C. (1) OPEN

   (2) STM GEN C FW Flow Chan 496 AND STM GEN C STM Flow Chan 495

D. (1) SHUT

   (2) STM GEN C FW Flow Chan 496 AND STM GEN C STM Flow Chan 495

59. Which ONE of the following identifies the 480V power supply for S-1B, Containment Airborne Radioactivity Removal (ARR) Fan?

A. MCC 1B21-SB

B. MCC 1E11

C. Bus 1B1

D. Bus 1D2

60. Given the following plant conditions:
   - The unit was operating at 100% power when a LOCA develops inside Containment

   Subsequently:
   - Containment pressure rises to a peak value of 12 psig
   - Containment hydrogen concentration is 0.5%

   Current plant conditions:
   - Safety Injection System is aligned for Cold Leg Recirculation
   - Containment hydrogen concentration is 5%
   - Containment pressure is 3.5 psig

   Which ONE of the following completes the statements below in accordance with OP-125, Hydrogen Monitoring System (HMS)?

   The Containment Isolation Phase __(1)___ signal must be reset to allow aligning the Hydrogen Monitoring System from Standby to Continuous Sample Mode.

   The Hydrogen Purge System __(2)___ designed to be placed in service based on the current plant conditions.

   A. (1) A

      (2) is

   B. (1) A

      (2) is NOT

   C. (1) B

      (2) is

   D. (1) B

      (2) is NOT

61. Core reload is in progress in accordance with GP-009, Refueling Cavity, Refueling and Drain of the Refueling Cavity, Modes 5-6-5

Which ONE of the following completes the statements below?

The Manipulator Crane Overload Interlock stops hoist up travel when the hoist load reaches a MINIMUM of __(1)__ lbs above the weight of the mast and fuel assembly to prevent fuel damage.

In accordance with GP-009, core reload must be suspended if BOTH Source Range channels count rates rise by a MINIMUM factor of __(2)__.

A. (1) 150

(2) two

B. (1) 150

(2) five

C. (1) 430

(2) two

D. (1) 430

(2) five

62. Given the following plant conditions:
    - A waste gas release is in progress
    - WPB Stack 5 PIG Monitor, REM-*1WV-3546, exceeds the HIGH ALARM setpoint

    Which ONE of the following identifies how the release will be automatically terminated?

    A. 3WG-230, Gas Decay Tanks to Plant Vent Isolation Valve, SHUTS

    B. 3WG-229, WG Decay Tanks E & F to Plant Vent Valve, SHUTS

    C. Filtered Exhaust Fans, E-46, E-47, E-48, and E-49 TRIP

    D. Running Waste Gas Compressor TRIPS

63. Which ONE of the following is an input to the Containment Critical Safety Function Status Tree (CSF-5)?

A. RM-01CR-3589SA, High Range Containment Post Accident

B. REM-01LT-3502ASA, Containment RCS Leak Detection

C. RM-01CR-3561BSB, Containment Ventilation Isolation

D. REM-01LT-3502B, Containment Pre-Entry Purge

64. Given the following plant conditions:
   - The unit is operating at 100% power
   - 'A' Normal Service Water (NSW) Pump is running

   Subsequently:
   - The 'A' Emergency Service Water (ESW) Pump control switch is taken to START

   Which ONE of the following completes the statements below regarding the Service Water valve alignment two (2) minutes following the pump start?

   1SW-39, NSW Supply to 'A' ESW Header, will be ___(1)___.

   1SW-276, ESW to NSW Common Return, will be ___(2)___.

   A. (1) SHUT

      (2) SHUT

   B. (1) SHUT

      (2) OPEN

   C. (1) OPEN

      (2) SHUT

   D. (1) OPEN

      (2) OPEN

65. Given the following plant conditions:
- Fire header pressure is 145 psig
- No fire pumps are running

Subsequently:
- A fire occurs on site
- Fire header pressure lowers to 70 psig for 30 seconds then recovers

Which ONE of the following completes the statements below?

In addition to the Jockey Pump, ___(1)___ will automatically start.

After the fire is OUT, the Jockey Pump ___(2)___ secure automatically when fire header pressure is fully restored.

A. (1) ONLY the Motor Driven Fire Pump

(2) will

B. (1) ONLY the Motor Driven Fire Pump

(2) will NOT

C. (1) BOTH the Motor and Diesel Driven Fire Pumps

(2) will

D. (1) BOTH the Motor and Diesel Driven Fire Pumps

(2) will NOT

66. Which ONE of the following completes the statement below in accordance with AD-OP-ALL-1000, Conduct of Operations?

If needed to protect the plant, ___(1)___ can authorize resetting a protective device without knowing the cause provided a(an) ___(2)___ condition is NOT evident.

A. (1) ONLY the Shift Manager

(2) thermal overload

B. (1) ONLY the Shift Manager

(2) overcurrent

C. (1) the Shift Manager OR Control Room Supervisor

(2) thermal overload

D. (1) the Shift Manager OR Control Room Supervisor

(2) overcurrent

67. Given the following plant conditions:
    - A post-maintenance lineup is being performed
    - Circuit Breaker 1A-SA-5, Charging/SI Pump 1A-SA Breaker, is being racked in

Which ONE of the following completes the statements below in accordance with AD-HU-ALL-0005, Human Performance Tools?

For this evolution, verification of "racked in" status for the breaker MUST ___(1)___.

Circuit Breaker 1A-SA-5 ___(2)___ require Independent Verification.

A. (1) be performed LOCALLY

   (2) does

B. (1) be performed LOCALLY

   (2) does NOT

C. (1) use the MCB indicating light

   (2) does

D. (1) use the MCB indicating light

   (2) does NOT

68. Which ONE of the following completes the statement below in accordance with OMM-002, Shift Turnover Package?

With the unit in Mode 4, the MINIMUM shift crew composition must include ___(1)___ Reactor Operator(s) and ___(2)___ Auxiliary Operator(s).

A. (1) one

(2) one

B. (1) one

(2) two

C. (1) two

(2) one

D. (1) two

(2) two

69. A Reactor startup is in progress in accordance with GP-004, Reactor Startup (Mode 3 to Mode 2).

Which ONE of the following completes the statements below?

In accordance with AD-OP-ALL-0203, Reactivity Management, the dedicated Reactor Operator for this evolution __(1)__ be one of the Reactor Operators on the crew.

A NOTE in GP-004 states that most startups will use __(2)__ steps on Bank D as the target for criticality.

A. (1) can

   (2) 90

B. (1) can

   (2) 130

C. (1) can NOT

   (2) 90

D. (1) can NOT

   (2) 130

70. Given the following plant conditions:
- The Reactor is shutdown for a scheduled refueling outage
- An RCS cooldown is in progress IAW GP-007, Normal Plant Cooldown

The following information is a plot of the cooldown:

TIME	RCS Tcold
0830	516°F
0845	505°F
0900	487°F
0915	477°F
0930	465°F
0945	441°F
1000	405°F
1015	378°F
1030	363°F

Of the times listed below, when was the Technical Specification RCS cooldown rate limit FIRST exceeded?

A. 0900

B. 0930

C. 1000

D. 1030

71. Which ONE of the following completes the statements below regarding operation of the DISCP (RMS) Human Machine Interface?

Operators may navigate between screens and choose options using the ___(1)___.

Only the ___(2)___ can be used to control the functions of the safety-related monitors.

(DISCP = Distributed Instrumentation and Control System Platform)

A. (1) keyboard ONLY

(2) RM-23

B. (1) keyboard ONLY

(2) DICSP

C. (1) mouse AND keyboard

(2) RM-23

D. (1) mouse AND keyboard

(2) DICSP

72. Given the following:
    - A valve lineup will be performed in the RCA
    - Highest general radiation levels are 20 mrem/hr
    - Highest general area contamination levels are 1,000 dpm/100 cm^2
    - The valve lineup requires accessing one valve 10 feet in the overhead

    Which ONE of the following completes the statement below in accordance with PD-RP-ALL-0001, Radiation Worker Responsibilities?

    The RWP Self-Briefing process is ______.

    A. allowed for the given conditions

    B. NOT allowed due to the overhead work

    C. NOT allowed due to the area radiation levels

    D. NOT allowed due to the area contamination levels

73. Which ONE of the following completes the statements below in accordance with AD-OP-ALL-1001, Conduct of Abnormal Operations?

If a crew member recognizes entry conditions are met for an Event Procedure, then a __(1)__ will be used to notify the crew.

Event Procedure immediate actions __(2)__ require CRS concurrence to perform.

A. (1) Crew Update

(2) do

B. (1) Crew Update

(2) do NOT

C. (1) Focus Brief

(2) do

D. (1) Focus Brief

(2) do NOT

74. Given the following plant conditions:
   - The unit is operating at 100% power

   Subsequently:
   - At 0800, a loss of MCB annunciators occurred and the crew entered AOP-037, Loss of Main Control Room Annunciators
   - The CRS determined that the following Alarm Light Boxes (ALBs) were lost:
     - ALB-001, Containment Spray & Accumulator System
     - ALB-002, Emergency Service Normal Service Water System
     - ALB-003, Miscellaneous Systems
     - ALB-004, RHR/RWST System

   Which ONE of the following completes the statement below regarding the required action per plant procedures for loss of these ALBs?

   __(1)__ must be first logged no LATER than __(2)__.

   A. (1) Containment sump level

      (2) 0810

   B. (1) Containment sump level

      (2) 0900

   C. (1) Temperature and level for both reservoirs

      (2) 0810

   D. (1) Temperature and level for both reservoirs

      (2) 0900

75. Given the following plant conditions:
    - The Reactor has tripped and Safety Injection has actuated due to a large break Loss of Coolant Accident (LOCA)
    - The crew is implementing EOP-E-1, Loss of Reactor or Secondary Coolant
    - The OATC reports the following for Critical Safety Function Status Trees:
        - Containment - Orange
        - Subcriticality - Orange
        - Heat Sink - Red
        - Integrity - Red

    Which ONE of the following identifies the procedure required to be entered?

    A. EOP-FR-P.1, Response to Imminent Pressurized Thermal Shock

    B. EOP-FR-H.1, Response to Loss of Secondary Heat Sink

    C. EOP-FR-Z.1, Response to High Containment Pressure

    D. EOP-FR-S.1, Response to Nuclear Generation/ATWS

76. Given the following plant conditions:
- The unit is operating at 100% power when a Station Blackout occurs
- 125 VDC power to Auxiliary Buses 1D and 1E has been lost
- Start Up XFMR 1A Lockout SU 1A Relay is tripped
- Aux Bus 1E 86 Lockout Relay is tripped

Subsequently:
- Offsite power is restored
- The appropriate lockout has been reset

Which ONE of the following completes the statement below?

The crew will restore power to 6.9 KV Emergency Bus __(1)__ using EOP-ECA-0.0, Loss of All AC Power, __(2)__.

A. (1) 1A-SA

(2) Attachment 1, Restoration of Offsite Power to Emergency Buses

B. (1) 1A-SA

(2) Attachment 2, Local Restoration of Offsite Power to Emergency Buses

C. (1) 1B-SB

(2) Attachment 1, Restoration of Offsite Power to Emergency Buses

D. (1) 1B-SB

(2) Attachment 2, Local Restoration of Offsite Power to Emergency Buses

77. Given the following plant conditions:
- The unit is operating at 100% power
- The Safety Train 'B' Battery Chargers are being rotated in accordance with OP-156.01, DC Electrical Distribution

Subsequently:
- At 0800, attempts to place standby battery charger in service are unsuccessful and Battery Charger 1B-SB is declared inoperable
- At 0815, the in-service battery charger's AC Input Breaker trips on high voltage and Battery Charger 1A-SB is declared inoperable
- At 0830, an electrician performing the weekly maintenance surveillance test for the Emergency Battery 1A-SA reports the following pilot cell indications:
  - Electrolyte level is midway between the minimum and maximum marks
  - Float voltage is 2.10 volts
  - Specific gravity is 1.198

Which ONE of the following completes the statements below in accordance with Technical Specification 3.8.2.1, D. C. Sources - Operating?

At 0830, Emergency Battery 1A-SA is ___(1)___.

Based on the conditions above, the MINIMUM required action is to ___(2)___.

(Reference provided)

A. (1) operable

(2) place either 'B' train battery charger in service no later than 1000

B. (1) operable

(2) place either 'B' train battery charger in service no later than 1015

C. (1) inoperable

(2) enter Technical Specificaton 3.0.3 at 0815

D. (1) inoperable

(2) enter Technical Specification 3.0.3 at 0830

78. Given the following plant conditions:
- The unit is operating at 100% power

Subsequently:
- The Load Dispatcher reports a large disturbance occurring on the grid
- The crew enters AOP-028, Grid Instability

The following conditions are observed:

Time	Grid Frequency (Hz)
0107	59.6
0110	59.2
0113	58.9
0116	58.7
0118	58.5
0121	58.3

Which ONE of the following completes the statements below?

In accordance with AOP-028, the EARLIEST time that the Reactor must be tripped is ___(1)___.

When the 6.9 KV Emergency AC Buses are energized from the Emergency Diesel Generators, declaration of an emergency event ___(2)___ required.

A. (1) 0118

(2) is

B. (1) 0118

(2) is NOT

C. (1) 0121

(2) is

D. (1) 0121

(2) is NOT

79. Given the following plant conditions:
    - A small break LOCA outside Containment occurred
    - The crew implemented EOP-E-0, Reactor Trip or Safety Injection, and transitioned to EOP-ECA-1.2, LOCA Outside Containment
    - RP will NOT allow personnel entry while RAB radiological conditions are being evaluated

    Which ONE of the following completes the statements below?

    Rising __(1)__ is the indication used in EOP-ECA-1.2 to determine that the break is isolated.

    After the break is isolated, a transition to __(2)__ will be made.

    A. (1) PRZ level

       (2) EOP-E-1, Loss of Reactor or Secondary Coolant

    B. (1) PRZ level

       (2) EOP-ECA-1.1, Loss Of Emergency Coolant Recirculation

    C. (1) RCS pressure

       (2) EOP-E-1, Loss of Reactor or Secondary Coolant

    D. (1) RCS pressure

       (2) EOP-ECA-1.1, Loss Of Emergency Coolant Recirculation

80. Given the following plant conditions:
- A large break LOCA occurred
- The RHR system was determined to be not capable of cold leg recirculation and the crew transitioned from EOP-E-1, Loss of Reactor or Secondary Coolant, to EOP-ECA-1.1, Loss of Emergency Coolant Recirculation Capability
- The SGs are currently being depressurized to inject the SI Accumulators

Which ONE of the following completes the statements below?

In accordance with EOP-ECA-1.1, SG depressurization should be controlled to maximize the amount of time the accumulators are available as a makeup source while maintaining __(1)__.

If emergency coolant recirculation capability is restored during SG depressurization, EOP-ECA-1.1 requires the crew to transition from EOP-ECA-1.1 to __(2)__.

A. (1) core exit TCs stable or dropping

(2) EOP-E-1, Loss of Reactor or Secondary Coolant, step in effect

B. (1) core exit TCs stable or dropping

(2) EOP-ES-1.3, Transfer to Cold Leg Recirculation, step 1

C. (1) RVLIS at or above its required value

(2) EOP-E-1, Loss of Reactor or Secondary Coolant, step in effect

D. (1) RVLIS at or above its required value

(2) EOP-ES-1.3, Transfer to Cold Leg Recirculation, step 1

81. Given the following plant conditions:
    - The unit was operating at 100% power when a Main Steam Line Break occurred
    - The Reactor was tripped and Safety Injection actuated
    - Main Steam Isolation failed and all MSIVs failed to shut from the MCB
    - Main Steam Line radiation monitor readings as follows:
        - RM-01MS-3591 SB, MSL "A" 2.91E-1 mR/hr
        - RM-01MS-3592 SB, MSL "B" 2.22E-1 mR/hr
        - RM-01MS-3593 SB, MSL "C" 3.82E-1 mR/hr

The crew established a minimum feed flow of 12.5 KPPH to all SGs in accordance with EOP-ECA-2.1, Uncontrolled Depressurization of All Steam Generators.

Which ONE of the following completes the statements below?

The basis for maintaining minimum feed flow to each SG is to minimize thermal stresses on the __(1)___.

If any SG pressure begins to rise, a transition from EOP-ECA-2.1 to ___(2)___, Step 1, will be required.

A. (1) SGs when feed flow is eventually raised

   (2) EOP-E-2, Faulted Steam Generator Isolation

B. (1) SGs when feed flow is eventually raised

   (2) EOP-E-3, Steam Generator Tube Rupture

C. (1) Reactor Vessel due to continued RCS cooldown

   (2) EOP-E-2, Faulted Steam Generator Isolation

D. (1) Reactor Vessel due to continued RCS cooldown

   (2) EOP-E-3, Steam Generator Tube Rupture

82. Given the following plant conditions:
  - The unit was operating at 100% power when a load rejection occurred

Following the load rejection:
  - The OATC reports that Control Rod D-4 is misaligned from the Group D step counter demand position by approximately 20 steps
  - ALB-013-7-1, ROD CONTROL URGENT ALARM, is in alarm
  - All rods are verified to be above the Rod Insertion Limits

Which ONE of the following completes the statements below?

In accordance with AOP-001, Malfunction of Rod Control and Indication System, Control Rod D-4 ___(1)___ considered trippable.

In accordance with Technical Specification 3.1.3.1, Movable Control Assemblies - Group Height, the bases for reducing Thermal Power is to ___(2)___.

A. (1) is

   (2) minimize the effects of a control rod ejection accident

B. (1) is

   (2) provide assurance of fuel rod integrity during continued operation

C. (1) is NOT

   (2) minimize the effects of a control rod ejection accident

D. (1) is NOT

   (2) provide assurance of fuel rod integrity during continued operation

83. Given the following timeline:
- 0000 The unit is in Mode 5
  All shutdown rods are fully withdrawn for testing
- 0001 Source Range Nuclear Instrument N-31 fails LOW
- 0010 Source Range Nuclear Instrument NI-32 fails LOW
  The OATC manually trips the Reactor using MCB Switch #1

Which ONE of the following completes the statements below?

In accordance with the EOP Users Guide, EOP-E-0, Reactor Trip or Safety Injection, ___(1)___ required to be entered to confirm the Reactor trip.

A maximum allowable extension of 25% ___(2)___ be used when verifying compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.2.

(Reference provided)

A. (1) is

(2) can

B. (1) is

(2) can NOT

C. (1) is NOT

(2) can

D. (1) is NOT

(2) can NOT

84. Given the following plant conditions:
  - The unit is operating at 100% power
  - The 'A' and 'B' Circulating Water Pumps are operating
  - 'C' Circulating Water Pump is under clearance

Subsequently:
  - Degrading condenser vacuum is observed
  - AOP-012, Partial Loss of Condenser Vacuum, is entered
  - CTMP-7-1, COOLING TOWER 1 LEVEL HI/LO, alarms due to low level

Which ONE of the following completes the statements below?

A Reactor trip would be required in accordance with AOP-012 if __(1)__.

When the Reactor is tripped, the crew will GO TO EOP-E-0, Reactor Trip or Safety Injection, and __(2)__.

A. (1) ALB-021-5 alarms due to Condenser Pit High Level

   (2) exit AOP-012

B. (1) ALB-021-5 alarms due to Condenser Pit High Level

   (2) continue to perform the actions of AOP-012 as time allows

C. (1) ONE of the running Circulating Water Pumps trips

   (2) exit AOP-012

D. (1) ONE of the running Circulating Water Pumps trips

   (2) continue to perform the actions of AOP-012 as time allows

85. Given the following plant conditions:
- The crew is implementing EOP-ES-1.2, Post LOCA Cooldown and Depressurization
- AFW flow to the SGs has been secured to maintain current levels
- Charging flow is 150 gpm
- Pressurizer level is 8% and lowering
- RCS subcooling is 23°F and lowering
- 'C' SG level is rising steadily

Which ONE of the following completes the statement below?

The required operator action will be to __(1)__ and transition to __(2)__.

A. (1) actuate Safety Injection

(2) EOP-E-3, Steam Generator Tube Rupture

B. (1) actuate Safety Injection

(2) EOP-ECA-3.1, SGTR with Loss of Reactor Coolant: Subcooled Recovery

C. (1) manually align flow through the BIT

(2) EOP-E-3, Steam Generator Tube Rupture

D. (1) manually align flow through the BIT

(2) EOP-ECA-3.1, SGTR with Loss of Reactor Coolant: Subcooled Recovery

86. Given the following plant conditions:
- The unit is in Mode 4
- A plant heatup is in progress in accordance with GP-002, Normal Plant Heatup from Solid to Hot Subcritical, Mode 5 to Mode 3

Subsequently:
- RCS leakage develops
- Inspection reveals that 1RC-38, Normal Letdown Isol. Vlv., has developed through-wall leakage (upstream side of valve body)
- The calculated leak rate is 5 gpm

Which ONE of the following completes the statements below in accordance with Technical Specifications?

The RCS leakage will be classified as ___(1)___ LEAKAGE.

Entry into Mode 3 ___(2)___ allowed.

(Reference provided)

A. (1) UNIDENTIFIED

(2) is

B. (1) UNIDENTIFIED

(2) is NOT

C. (1) PRESSURE BOUNDARY

(2) is

D. (1) PRESSURE BOUNDARY

(2) is NOT

87. Given the following plant conditions:
   - The unit is operating at 100% power

   Subsequently:
   - An inadvertent Safety Injection occurs
   - RCS pressure is 2100 psig and rising

   Which ONE of the following completes the statements below?

   For the conditions above, the CSIP alternate mini-flow valves will be ___(1)___.

   Safety Injection will be terminated using ___(2)___.

   A. (1) SHUT

      (2) EOP-ES-1.1, SI Termination

   B. (1) SHUT

      (2) EOP-E-0, Reactor Trip or Safety Injection

   C. (1) OPEN

      (2) EOP-ES-1.1, SI Termination

   D. (1) OPEN

      (2) EOP-E-0 Reactor Trip or Safety Injection

88. Which ONE of the following completes the statement below regarding the Pressurizer Power-Operated Relief Valves (PORVs)?

In accordance with Technical Specification bases, a SAFETY-RELATED function of the PORVs in Modes 1, 2, and 3 is to _______.

A. provide automatic pressure control to minimize challenges to the safety valves

B. prevent the RCS from being pressurized above its Safety Limit of 2735 psig

C. provide manual RCS pressure control for mitigation of a SGTR accident

D. prevent RCS overpressurization from occuring during a Turbine Trip

89. Given the following plant conditions:
   - The unit is operating at 100% power
   - At 1000 Emergency Service Water Pumps 1A-SA and 1B-SB are determined to be NOT Operable but Available due to a common cause

Subsequently:
   - At 1030 a downpower to shutdown the unit is initiated

Which ONE of the following completes the statements below?

In accordance with Technical Specification 3.7.4, Plant Systems - Emergency Service Water System, the bases for the Limiting Condition of Operation is to ensure that sufficient cooling capacity is available for continued operation of safety related equipment during ___(1)___ conditions.

The LATEST time the unit is required to be in Hot Standby is ___(2)___.

(Reference provided)

A. (1) normal AND accident

   (2) 1630

B. (1) normal AND accident

   (2) 1700

C. (1) ONLY accident

   (2) 1630

D. (1) ONLY accident

   (2) 1700

90. Given the following plant conditions:
- The unit is in Mode 1
- OST-1029, Containment Penetration Outside Isolation Valve Verification, Monthly Interval, Modes 1-6, was performed satisfactorily on September 30 at midnight
- On November 2 at 0800, it was discovered that OST-1029 was not performed on October 30 as scheduled

Which ONE of the following completes the statements below?

For the plant conditions above, the Containment Pre-Entry Purge Makeup and Exhaust Valves (1CP-1, 1CP-4, 1CP-7, and 1CP-10) ___(1)___ required to be SEALED shut.

In accordance with Technical Specifications, the LATEST date this surveillance item must be completed satisfactory to be within its specified surveillance interval is ___(2)___.

(Monthly frequency is 31 days)

A. (1) are

(2) November 3

B. (1) are

(2) November 7

C. (1) are NOT

(2) November 3

D. (1) are NOT

(2) November 7

91. Given the following plant conditions:
- A load reduction was initiated in accordance with GP-006, Normal Plant Shutdown from Power Operation to Hot Standby (Mode 1 to Mode 3)

The following indications are observed as load is reduced:

Time	Power	Control Bank C	Control Bank D
0600	75%	228 steps	158 steps
0630	70%	228 steps	128 steps
0700	65%	228 steps	113 steps
0730	60%	224 steps	98 steps
0800	55%	216 steps	88 steps

Which ONE of the following completes the statement below?

The EARLIEST time that the action statement is required to be entered for Technical Specification 3.1.3.6, Control Rod Insertion Limits, is __(1)__ AND based on the entry time the action required to satisfy the LCO is to __(2)__.

(Reference provided)

A. (1) 0630

(2) reduce Thermal Power to less than 67% by no later than 1030

B. (1) 0630

(2) restore control banks to within the insertion limit specified by 0830

C. (1) 0730

(2) reduce Thermal Power to less than 51% by no later than 1130

D. (1) 0730

(2) restore control banks to within the insertion limit specified by 0930

92. Given the following plant conditions:
    - The unit is operating at 100% power

    At 0930, Pressurizer (PRZ) level indications are as follows:
    - LI-459 is 88% and rising
    - LI-460 is 56% and lowering
    - LI-461 is 55% and lowering

    Which ONE of the following completes the statements below?

    At 0930, ___(1)___ will be in alarm due to the level transmitter failure.

    At 1020, the inoperable channel is placed into bypass for testing of other channels.

    In accordance with Technical Specification 3.3.1, Instrumentation - Reactor Trip System Instrumentation, the inoperable channel may be bypassed for surveillance testing of the other channels until no LATER than ___(2)___.

    A. (1) ALB-009-4-1, PRESSURIZER HIGH LEVEL

       (2) 1420

    B. (1) ALB-009-4-1, PRESSURIZER HIGH LEVEL

       (2) 1620

    C. (1) ALB-009-2-1, PRZ CONT HIGH LEVEL DEVIATION AND HEATERS ON

       (2) 1420

    D. (1) ALB-009-2-1, PRZ CONT HIGH LEVEL DEVIATION AND HEATERS ON

       (2) 1620

93. At time 0030, the following plant conditions exist:
- The unit is operating at 75% power
- Both Control Bank 'D' step counters indicate 182 steps
- Control Rod H-14 indicates 168 steps on DRPI
- All other Control Bank 'D' rods indicate 180 steps on DRPI
- I&C estimates 8 hours to repair the faulty indicator

Which ONE of the following completes the statements below?

ALB-013-8-5, COMPUTER ALARM ROD DEV/SEQ NIS PWR RANGE TILTS, ___(1)___ be in alarm due to its Rod to Bank Deviation input.

In accordance with Technical Specification 3.1.3.1, Movable Control Assemblies - Group height, the LATEST time the High Neutron Flux Setpoint is required to be reduced to less than or 85% of Rated Thermal Power is ___(2)___.

(Reference provided)

A. (1) will

(2) 0430

B. (1) will

(2) 0630

C. (1) will NOT

(1) 0430

D. (1) will NOT

(2) 0630

94. Which ONE of the following completes the statement below regarding the refueling process in accordance with AD-NS-ALL-1001, Conduct of Refueling?

With fuel movement in progress, bypassing of fuel handling equipment interlocks which are **NOT** specified in approved procedures shall require permission of the Refueling SRO and concurrence of the _______.

A. Shift Manager

B. Reactor Engineer

C. Reactor Services Supervisor

D. Refueling Equipment Engineer

95. Given the following:
  - A clearance is ready for approval
  - The clearance uses single valve isolation

System conditions are as follows:
  - Pressure is 450 psig
  - Temperature is 175°F

Which ONE of the following completes the statement below regarding the approval process for this clearance in accordance with AD-OP-ALL-0200, Clearance and Tagging?

The clearance can be approved _______.

A. using double valve isolation (single valve isolation is not allowed)

B. using single valve isolation without designating as an "Exceptional Clearance"

C. using single valve isolation only if it is designated as an "Exceptional Clearance" and approved by the Shift Manager

D. using single valve isolation only if it is designated as an "Exceptional Clearance" but approval by the Shift Manager is not required

96. Which ONE of the following completes the statement below regarding maintenance activities during a refueling outage in accordance with AD-WC-ALL-0420, Shutdown Risk Management?

REDUCED INVENTORY is a plant condition in which fuel is in the reactor vessel and reactor vessel inventory level is lowered to less than ___(1)___ inches below the reactor vessel flange.

The ___(2)___ is responsible for confirming organizational readiness for scheduled activities prior to commencing a drain of the reactor coolant system to a reduced inventory condition.

A. (1) 12

(2) Shift Manager

B. (1) 12

(2) Shift Outage Manager

C. (1) 36

(2) Shift Manager

D. (1) 36

(2) Shift Outage Manager

97. Given the following:
    - An employee was injured and contaminated during a fuel handling accident
    - The employee was transported offsite for treatment before he was de-contaminated
    - Duke Energy is planning a news release for this event

Which ONE of the following completes the statements below?

In accordance with AOP-013, Fuel Handling Accident, ___(1)___ is the primary radiological concern for fuel off-loaded more than 6 months ago because it will NOT be detected by personal dosimetry or area radiation monitors.

In accordance with AD-LS-ALL-0006, Notification/Reportability Evaluation, the EARLIEST required NRC notification of this event is within ___(2)___ hours.

(Reference provided)

A. (1) Krypton-85

(2) 4

B. (1) Iodine-131

(2) 4

C. (1) Krypton-85

(2) 8

D. (1) Iodine-131

(2) 8

98. Which ONE of the following completes the statements below regarding preparation and approval of a Gaseous Effluent Permit in accordance with OP-120.07, Waste Gas Processing?

__(1)__ is responsible for preparing the permit.

The Control Room Supervisor __(2)__ have the authority to approve the permit.

A. (1) Chemistry

   (2) does

B. (1) Chemistry

   (2) does NOT

C. (1) Radiation Protection

   (2) does

D. (1) Radiation Protection

   (2) does NOT

99. Which ONE of the following completes the statements below in accordance with AD-OP-ALL-0207, Fire Brigade Administrative Controls?

The Incident Commander ___(1)___ required to be filled by a Senior Reactor Operator.

In addition to the Incident Commander, a MINIMUM of ___(2)___ Fire Brigade member(s) must be knowledgeable of plant safety-related equipment and the affects of fire suppressants on safe shutdown capabilities.

A. (1) is

(2) one

B. (1) is

(2) two

C. (1) is NOT

(2) one

D. (1) is NOT

(2) two

100. Given the following plant conditions:
- A seismic event has occurred resulting in a small break LOCA inside Containment
- Damage to the intake structure has resulted in a loss of Emergency Service Water
- Containment pressure is 12 psig and rising
- No Containment Spray pumps are running
- Offsite power remains available

The crew is currently implementing EOP-E-1, Loss of Reactor or Secondary Coolant.

Which ONE of the following describes restoration of containment cooling?

<u>PROCEDURE TITLES</u>:
AOP-022, Loss of Service Water
EOP-FR-Z.1, Response to High Containment Pressure
ISG-CC, Containment Cooling

A. Continue in EOP-E-1 and perform AOP-022 in parallel to establish Service Water to the Containment Fan Cooler Units.

B. Transition to EOP-FR-Z.1 and perform AOP-022 in parallel to establish Service Water to the Containment Fan Cooler Units.

C. Continue in EOP-E-1 and perform ISG-CC in parallel to supply cooling water using fire water to the Containment Fan Cooler Units.

D. Transition to EOP-FR-Z.1 and perform EOP-E-1 in parallel to re-establish containment cooling using the Containment Spray System.

ELECTRICAL POWER SYSTEMS

3/4.8.2 D.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum, the following D.C. electrical sources shall be OPERABLE:

a. 125-volt Emergency Battery Bank 1A-SA and either full capacity charger, 1A-SA or 1B-SA, and,

b. 125-volt Emergency Battery Bank 1B-SB and either full capacity charger, 1A-SB or 1B-SB.

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

ACTION:

With one of the required D.C. electrical sources inoperable, restore the inoperable D.C. electrical source to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 Each 125-volt Emergency Battery and charger shall be demonstrated OPERABLE:

a. At the frequency specified in the Surveillance Frequency Control Program by verifying that:

1. The parameters in Table 4.8-2 meet the Category A limits, and
2. The total battery terminal voltage is greater than or equal to 129 volts on float charge.

b. At the frequency specified in the Surveillance Frequency Control Program and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1. The parameters in Table 4.8-2 meet the Category B limits,
2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohm, and
3. The average electrolyte temperature of 10 connected cells is above 70° F.

ELECTRICAL POWER SYSTEMS
D.C. SOURCES
OPERATING

SURVEILLANCE REQUIREMENTS (CONTINUED)

c. At the frequency specified in the Surveillance Frequency Control Program by verifying that:

   1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,

   2. The cell-to-cell and terminal connections are clean, tight, and coated with anticorrosion material,

   3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm, and

   4. The battery charger will supply at least 150 amperes at greater than or equal to 125 volts for at least 4 hours.

d. At the frequency specified in the Surveillance Frequency Control Program, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test;

e. At the frequency specified in the Surveillance Frequency Control Program, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. At the frequency specified in the Surveillance Frequency Control Program, this performance discharge test may be performed in lieu of the battery service test required by Specification 4.8.2.1d.; and

f. At least once per 18 months, during shutdown, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENTS

	CATEGORY A(1)	CATEGORY B(2)	
PARAMETER	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE(3) VALUE FOR EACH CONNECTED CELL
Electrolyte Level	>Minimum level indication mark, and < ¼" above maximum level indication mark	>Minimum level indication mark, and < ¼" above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts (6)	> 2.07 volts
Specific Gravity(4)	≥ 1.200(5)	≥ 1.195	Not more than 0.020 below the average of all connected cells
		Average of all connected cells > 1.205	Average of all connected cells ≥ 1.195(5)

TABLE NOTATIONS

(1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.

(2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.

(3) Any Category B parameter not within its allowable value indicates an inoperable battery.

(4) Corrected for electrolyte temperature and level.

(5) Or battery charging current is less than 2 amps when on charge.

(6) Corrected for average electrolyte temperature.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the Reactor Trip System instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION: As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each Reactor Trip System instrumentation channels and interlock and the automatic trip logic shall be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirements specified in Table 4.3-1.

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each Reactor trip function shall be verified to be within its limit, specified in the Technical Specification Equipment List Program, plant procedure PLP-106, at the frequency specified in the Surveillance Frequency Control Program.

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT		TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1.	Manual Reactor Trip	2	1	2	1, 2	1
		2	1	2	3, 4*, 5*	9
2.	Power Range, Neutron Flux					
	a. High Setpoint	4	2	3	1, 2	2
	b. Low Setpoint	4	2	3	1###, 2	2
3.	Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2
4.	Not Used	N/A	N/A	N/A	N/A	N/A
5.	Intermediate Range, Neutron Flux	2	1	2	1###, 2	3
6.	Source Range, Neutron Flux					
	a. Startup	2	1	2	2##	4
	b. Shutdown	2	1	2	3, 4, 5	5
7.	Overtemperature ΔT	3	2	2	1, 2	6
8.	Overpower ΔT	3	2	2	1, 2	6
9.	Pressurizer Pressure--Low (Above P-7)	3	2	2	1	6 (1)
10.	Pressurizer Pressure--High	3	2	2	1, 2	6
11.	Pressurizer Water Level--High (Above P-7)	3	2	2	1	6

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.

ACTION 5 - a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor Trip System breakers, and verify compliance with the shutdown margin requirements of Specification 3.1.1.2 within 1 hour and at least once per 12 hours thereafter.

b. With no channels OPERABLE, open the Reactor Trip System breakers within 1 hour and suspend all operations involving positive reactivity changes. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.2 within 1 hour and at least once per 12 hours thereafter.

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System operational leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 150 gallons per day primary-to-secondary leakage through any one steam generator,

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 31 gpm CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. The maximum allowable leakage of any Reactor Coolant System Pressure Isolation Valve shall be as specified in Table 3.4-1 at a pressure of 2235 ± 20 psig.*

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

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, or with primary-to-secondary leakage not within limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System operational leakage greater than any one of the above limits, excluding primary-to-secondary leakage, PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the limit specified in Table 3.4-1, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least two closed manual or deactivated automatic valves, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

---

*Test pressures less than 2235 psig but greater than 150 psig are allowed. Observed leakage shall be adjusted by multiplying the observed leakage by the square root of the quotient of 2235 divided by the test pressure.

REACTOR COOLANT SYSTEM
OPERATIONAL LEAKAGE

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System operational leakages shall be demonstrated, at the frequency specified in the Surveillance Frequency Control Program, to be within each of the above limits by:

a. Monitoring the containment Airborne Gaseous or Particulate Radioactivity Monitor;

b. Monitoring the containment sump inventory and Flow Monitoring System;

c. Measurement of the CONTROLLED LEAKAGE to the reactor coolant pump seals when the Reactor Coolant System pressure is 2235 ± 20 psig with the modulating valve fully open. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4;

d. Performance of a Reactor Coolant System water inventory balance*; and

e. Monitoring the Reactor Head Flange Leakoff System.

4.4.6.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying leakage to be within its limit:

a. At the frequency specified in the Surveillance Frequency Control Program,

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 7 days or more and if leakage testing has not been performed in the previous 9 months,

c. Prior to returning the valve to service following maintenance, repair or replacement work on the valve, and

d. Within 24 hours following valve actuation due to automatic or manual action or flow through the valve.

The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4.

4.4.6.2.3 Primary-to-secondary leakage shall be verified to be ≤ 150 gallons per day through any one steam generator at the frequency specified in the Surveillance Frequency Control Program **.

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* Not required to be performed until 12 hours after establishment of steady-state operation. Not applicable to primary-to-secondary leakage.

** Not required to be performed until 12 hours after establishment of steady-state operation.

TABLE 3.4-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

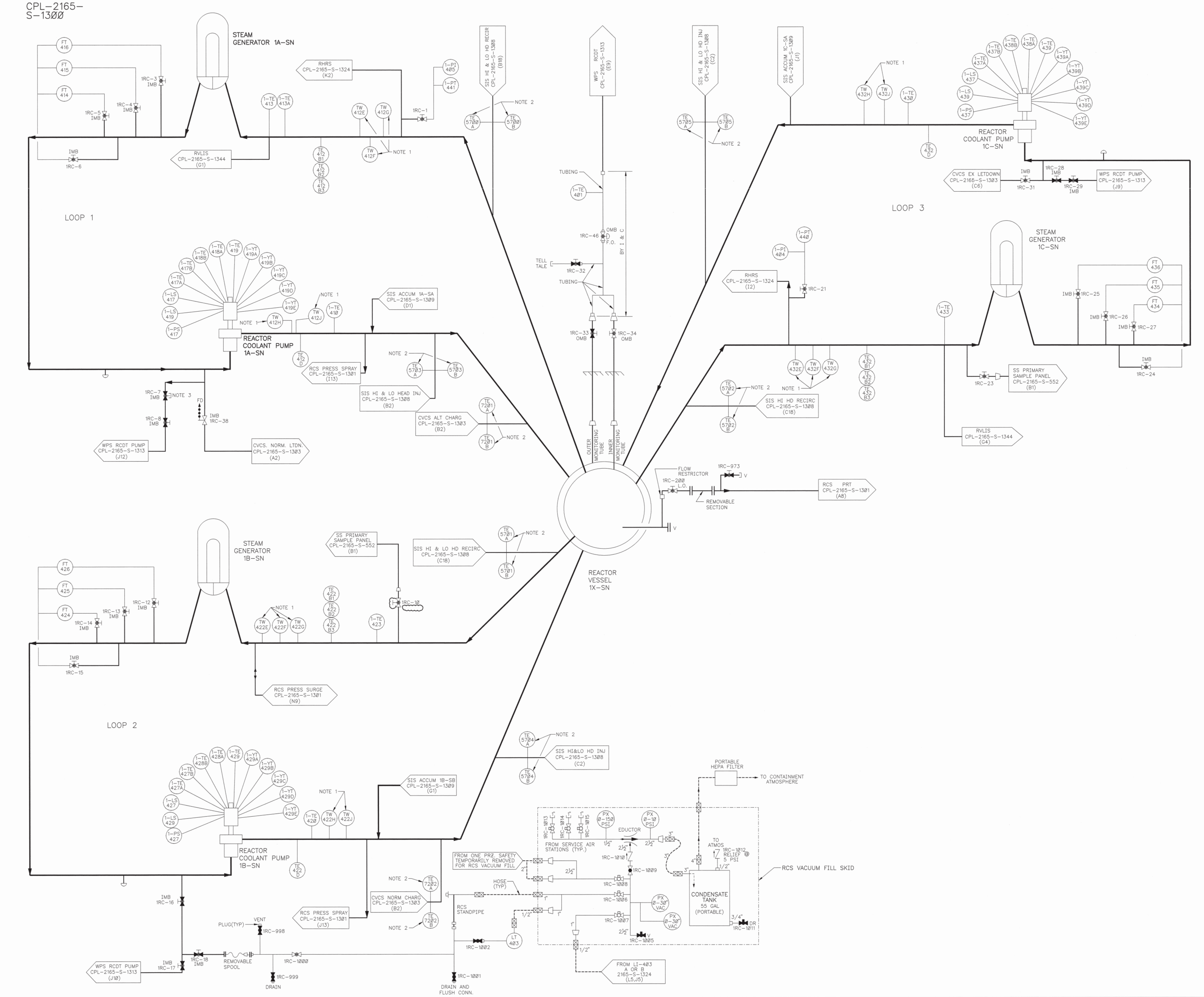
EBASCO VALVE NUMBER	CP&L VALVE NUMBER	TYPE	FUNCTION	MAXIMUM ALLOWABLE LEAKAGE
1-RH-V502-SB-1	1RH1	12" Gate	RHR Pump Suction*	5 gpm
1-RH-V503-SA-1	1RH2	12" Gate	RHR Pump Suction*	5 gpm
1-RH-V500-SB-1	1RH39	12" Gate	RHR Pump Suction*	5 gpm
1-RH-V501-SA-1	1RH40	12" Gate	RHR Pump Suction*	5 gpm
1-SI-V510-SA-1	1SI134	6" Check	Low Head Injection (Hot Leg)	3 gpm
1-SI-V511-SB-1	1SI135	6" Check	Low Head Injection (Hot Leg)	3 gpm
1-SI-V544-SA-1	1SI249	12" Check	Accumulator Injection	5 gpm
1-SI-V547-SA-1	1SI250	12" Check	Accumulator Injection	5 gpm
1-SI-V545-SB-1	1SI251	12" Check	Accumulator Injection	5 gpm
1-SI-V548-SB-1	1SI252	12" Check	Accumulator Injection	5 gpm
1-SI-V546-SA-1	1SI253	12" Check	Accumulator Injection	5 gpm
1-SI-V549-SA-1	1SI254	12" Check	Accumulator Injection	5 gpm
2-SI-V581-SA-1	1SI346	10" Check	Low Head Injection	5 gpm
2-SI-V580-SB-1	1SI347	10" Check	Low Head Injection	5 gpm
1-SI-V584-SA-1	1SI356	6" Check	Low Head Injection	3 gpm
1-SI-V585-SB-1	1SI357	6" Check	Low Head Injection	3 gpm
1-SI-V586-SA-1	1SI358	6" Check	Low Head Injection	3 gpm
1-SI-V587-SA-1	1SI359	10" Gate	Hot Leg Recirculation	5 gpm

*Specifications 4.4.6.2.2.b. and d. do not apply to these valves.

2020 NRC SRO Question 86 (11) Reference

CPL-2165-
S-13ØØ

REPLACES DWG SFD-1985-M-8ØØ



NOTES:
1. PLUGGED THERMOWELLS FOR FUTURE RTD FAST RESPONSE TEMPERATURE ELEMENTS.
2. TE TO MONITOR EXTERNAL PIPE TEMPERATURE ONLY.
3. OPERATOR REMOVED AND STEM CAPPED. VALVE TO REMAIN CLOSED.

REV	DATE	DESCRIPTION	DWN	CHK	DPE	DPPE
23		INCORPORATED: EC 764Ø1 (H5,I17-I19)	ELECTRONICALLY SIGNED			
22	9/14/Ø1	INCORPORATED: ESR 97-ØØ8Ø6 (A3,B3,D14,E14,H3,I3)	ARM	JWB	N/A	DLS
21	5/24/99	INCORPORATED:ESR-98ØØ559 (I6,I17-I19)	ARM	RPP	N/A	DLS
2Ø	1Ø/26/98	INCORPORATED:ESR-94ØØØ99 (K9-K12,L1Ø,M9)	ARM	RPP	N/A	DLS
19	5/22/97	ADMINISTRATIVE REVISION: DELETED THERMAL SLEEVES (REF. CR-97-Ø34Ø7-2) (C7,D1Ø,E6,F7,H8,I3,J7,L6)	LLS	RPP	N/A	DLS
18	5/22/97	INCORPORATED:ESR-94ØØØ99 (K7-K11,L6-L11,M7-M11,N8,N9)	LLS	RPP	CRW	MMP
17	5/9/94	INCORPORATED:PCR-7296 (A17-A19, F3)	GRS	RPP	MMP	MMP FOR WAS
16	5/4/94	INCORPORATED:PCR-3543 (A18, A19, B7, B1Ø, E6, F7, F1Ø, H7, K7, M6)	GRS	LLS	MMP	MMP FOR WAS
15	4/29/94	INCORPORATED:PCR-42Ø (A18, A19, B4, B5, B12, B13, B15, B16, C4, C5, E2, E4, E12, E13, F1, F2, F3, F4, F11, F12, H4-H6, I4, I5, L2, L4, M1, M2, M3, M4)	GRS	RPP	MMP	MMP FOR WAS

THIS DRAWING HAS BEEN PRODUCED AND IS CONTROLLED ON THE NED CAD/E SYSTEM. ANY REVISIONS TO THIS DOCUMENT SHOULD BE DONE USING THE CAD/E SYSTEM TO ASSURE PROPER CONTROL OF THE ELECTRONIC DRAWING DATABASE.

NUCLEAR SAFETY RELATED (Q-LIST)
YES ▬ NO ▭ PARTIAL ▭ F.P.-Q ▭ R.W.-Q ▭

CAROLINA POWER & LIGHT COMPANY
NUCLEAR ENGINEERING DEPARTMENT - RALEIGH, N.C.

CP&L

PLANT: HARRIS NUCLEAR PROJECT - UNIT 1

SCALE: NONE

TITLE: SIMPLIFIED FLOW DIAGRAM
REACTOR COOLANT SYSTEM
SHEET 1
UNIT 1

DWG NO. CPL-2165-S-13ØØ

PLANT SYSTEMS

3/4.7.4 EMERGENCY SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4 At least two independent emergency service water loops shall be OPERABLE.

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

ACTION:

With only one emergency service water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

--- NOTE ---

*The 'B' Train emergency service water loop is allowed to be inoperable for a total of 7 days to allow for maintenance on the Essential Services Chilled Water System and air handlers supported by the Essential Services Chilled Water System. Prior to exceeding 72 hours, the compensatory measures described in HNP LAR correspondence letter RA-19-0007 shall be implemented.

SURVEILLANCE REQUIREMENTS

4.7.4 At least two emergency service water loops shall be demonstrated OPERABLE:

a. At the frequency specified in the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At the frequency specified in the Surveillance Frequency Control Program by verifying that:

   1. Each automatic valve servicing safety-related equipment or isolating non-safety portions of the system actuates to its correct position on a Safety Injection test signal, and

   2. Each emergency service water pump and each emergency service water booster pump starts automatically on a Safety Injection test signal.

REACTIVITY CONTROL SYSTEMS

CONTROL ROD INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The control banks shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR).

APPLICABILITY: MODES 1* and 2* **

ACTION:

With the control banks inserted beyond the insertion limit specified in the COLR, except for surveillance testing pursuant to Specification 4.1.3.1.2:

a. Restore the control banks to within the insertion limit specified in the COLR within 2 hours, or

b. Reduce THERMAL POWER within 2 hours to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the bank position using the insertion limits specified in the COLR, or

c. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each control bank shall be determined to be within the insertion limit specified in the COLR at the frequency specified in the Surveillance Frequency Control Program except during time intervals when the rod insertion limit monitor is inoperable, then verify the individual rod positions at least once per 4 hours.

*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

**With K_{eff} greater than or equal to 1.

FIGURE 3.1-2

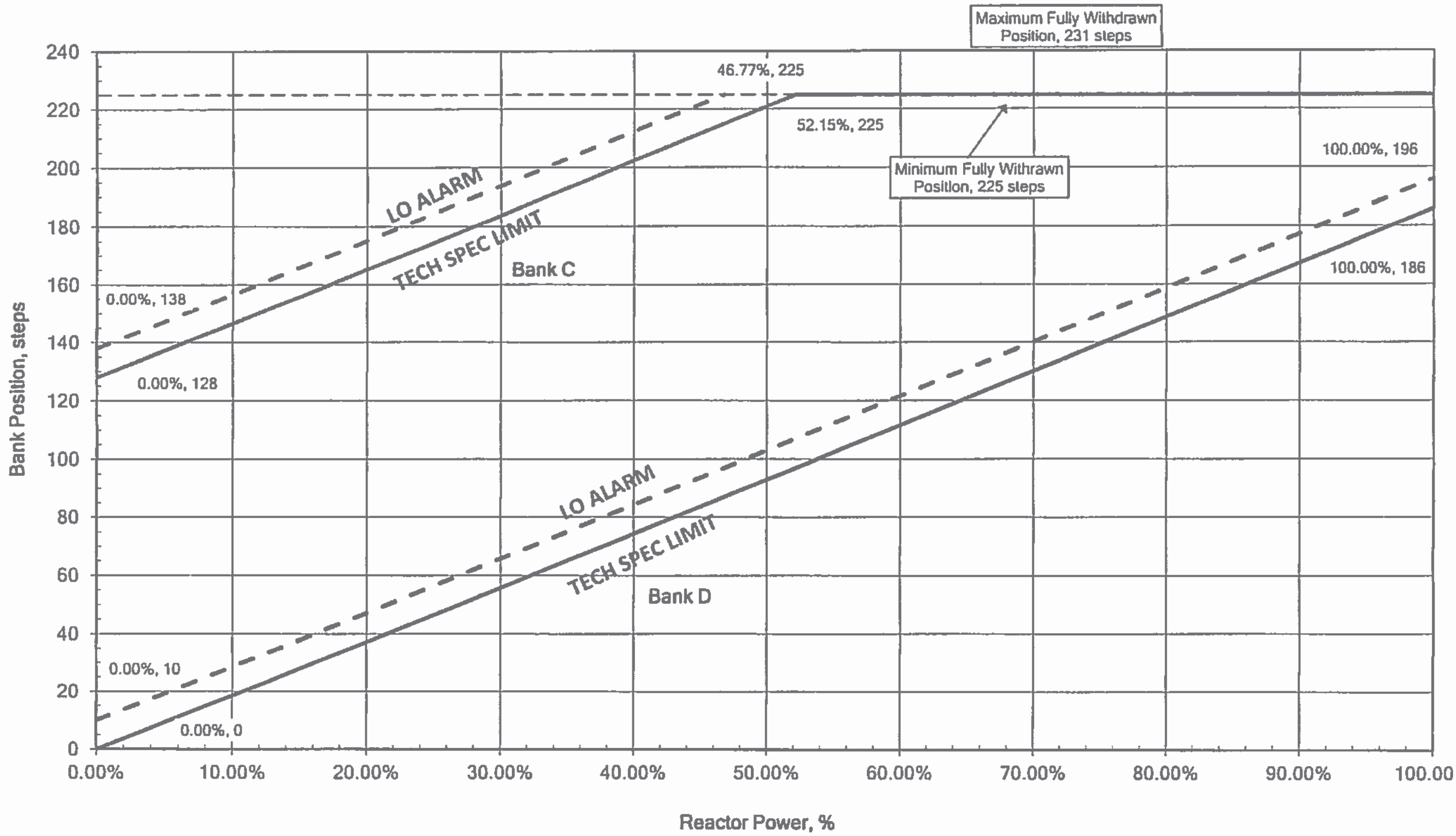
ROD GROUP INSERTION LIMITS VERSUS THERMAL POWER, THREE LOOP OPERATION

This figure is deleted from Technical Specifications, and is controlled by the CORE OPERATING LIMITS REPORT.

2020 NRC SRO Question 91 (16) Reference

UNIT ONE
REACTOR OPERATING DATA
SECTION 2.2
CONTROL ROD INSERTION LIMITS

Revision Number: 0
Date: 10/30/19



REACTIVITY CONTROL SYSTEMS
3/4.1.3 MOVABLE CONTROL ASSEMBLIES
GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All shutdown and control rods shall be OPERABLE and positioned within ± 12 steps (indicated position) of their group step counter demand position.

APPLICABILITY: MODES 1* and 2*.

ACTION:

a. With one or more rods inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.

b. With more than one rod misaligned from the group step counter demand position by more than ± 12 steps (indicated position), be in HOT STANDBY within 6 hours.

c. Deleted.

d. With one rod misaligned from its group step counter demand height by more than ± 12 steps (indicated position), POWER OPERATION may continue provided that within 1 hour:

   1. The rod is restored to OPERABLE status within the above alignment requirements, or

   2. The rod is declared inoperable and the remainder of the rods in the group with the inoperable rod are aligned to within ± 12 steps of the inoperable rod while maintaining the rod sequence and insertion limits of Specification 3.1.3.6. The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or

   3. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:

      a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents

*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

LIMITING CONDITION FOR OPERATION

ACTION (Continued):

remain valid for the duration of operation under these conditions;

b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours;

c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F^N_{\Delta H}$ are verified to be within their limits within 72 hours; and

d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within the next hour and within the following 4 hours the High Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each rod shall be determined to be within the group demand limit by verifying the individual rod positions at the frequency specified in the Surveillance Frequency Control Program except during time intervals when the rod position deviation monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at the frequency specified in the Surveillance Frequency Control Program.

TABLE 3.1-1

ACCIDENT ANALYSES REQUIRING REEVALUATION
IN THE EVENT OF AN INOPERABLE ROD

Rod Cluster Control Assembly Insertion Characteristics

Rod Cluster Control Assembly Misalignment

Loss of Reactor Coolant from Small Ruptured Pipes or from Cracks in Large Pipes Which Actuates the Emergency Core Cooling System

Single Rod Cluster Control Assembly Withdrawal at Full Power

Major Reactor Coolant System Pipe Ruptures (Loss-of-Coolant Accident)

Major Secondary Coolant System Pipe Rupture

Rupture of a Control Rod Drive Mechanism Housing (Rod Cluster Control Assembly Ejection)

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
SHUTDOWN REQUIRED BY TECHNICAL SPECIFICATION (TS) 10 CFR 50.72(b)(2)(i)	Shutdown TS Shutdown Power Reduction	The initiation of any shutdown required by the TS	• Reactor is in MODEs 1 or 2 and the Control Room takes action to reduce power (i.e., negative reactivity insertion) in order to comply with a Required Action to be in MODE 3 within a Completion Time. Reduction in power for some other purpose than compliance with the shutdown requirement is not reportable. MODE changes required by TS when reactor is in MODEs 3, 4, or other non-power conditions, are not reportable. • If allowed outage time plus required shutdown time to MODE 3 is less than the expected restoration time of the LCO and power is reduced in anticipation of the required shutdown, the shutdown is reportable (includes any TS Safety Limit violation). • GOE A.3 job aid located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73
EMERGENCY CORE COOLING SYSTEM (ECCS) DISCHARGE INTO REACTOR COOLANT SYSTEM (RCS) 10 CFR 50.72(b)(2)(iv)(A)	ECCS Actuation Safety Injection	Any event that results or should have resulted in emergency core cooling system (ECCS) discharge into the reactor coolant system as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.	• Manual or automatic Safety Injection System actuation in response to a valid signal that resulted in or should have resulted in discharge into the reactor coolant system. • GOE A.9, 11 job aids located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC			
EVENT	**KEYWORDS**	**REQUIREMENT**	**GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE**
RPS INITIATION (MANUAL/AUTOMATIC) DURING OPERATION 10 CFR 50.72(b)(2)(iv)(B)	RPS Actuation Reactor Protection System RPS Reactor Trip	Any event or condition that results in actuation of the Reactor Protection System (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.	• Manual or automatic reactor trip from critical through RTP of 100%. Trips which occur as part of planned evolutions in accordance with procedures are not reportable. • GOE A.10, 11 job aids located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 4-Hour Notifications to the NRC >>

PRESS RELEASES AND GOVERNMENT NOTIFICATIONS 10 CFR 50.72(b)(2)(xi) 10 CFR 72.75(b)(2)	News Release Press Radio Television Fatality Environment Public Health and Safety Release ISFSI	Any event or situation, related to the health and safety of the public or on-site personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. Such an event may include an on-site fatality or inadvertent release of radioactively contaminated materials. • Non-fatal injuries that are reported to OSHA are **NOT** required to be reported to the NRC • Licensees are required to notify the NRC within 4 hours of whichever of the following occurs first: ◊ A plan to report to either the press or another government agency is approved by an individual authorized to make the final decision **OR** ◊ A report has actually been made to the press or another government agency.	• Any News release concerning ◊ A fatality ◊ Inadvertent release of radioactively contaminated materials to public areas ◊ unusual or abnormal releases of radioactive effluents, or ◊ Information associated with an Emergency Event except when the ERO is activated • Notification to other government agencies concerning: ◊ A fatality on site, ◊ Health and safety of the public or site personnel, ◊ Inadvertent release of radioactively contaminated materials to public areas, ◊ Discovered endangered species kill. ◊ Notifications to the National Response Center (EPA) • The North Carolina Wildlife Commission's Sea Turtle Coordinator (NCSTC) is notified of each sea turtle recovery. A report per 10 CFR 50.72(b)(2)(xi) is required when: ◊ A dead turtle is recovered **OR** ◊ After consultation with the NCSTC, it is determined that an injured turtle requires rehabilitation versus release. The NRC notification is required no later than 4 hrs after consultation with the NCSTC when either of these conditions is met. • GOE A.15, D.14, 15, 16, 17 and E.6 job aids located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
LOSS OR THEFT OF LICENSED MATERIAL (GREATER THAN 1000X 10 CFR 20 LIMITS) 10 CFR 20.2201	Loss Theft Missing Licensed Radioactive Material Recovery	• Immediately notify the NRC, after its occurrence becomes known, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in [10 CFR 20] Appendix C under such circumstances that it appears to the site's SEP that an exposure could result to persons in unrestricted areas. ◊ Follow-up written report required within subsequent 30 days. • [RNP] If the lost, stolen, or missing source exceeds a "Quantity of Concern" as specified in HPP-018, Control and Inventory of Radioactive Sources, then the NRC desires to be notified within 4 hours of any subsequent recovery of the source.	• A radiography source is discovered missing. The source is licensed to the radiography contractor. If the contractor does not make the required notification, the site should notify the NRC Operations Center via ETS. • GOE B.9 job aid located on Fleet Regulatory Affairs SharePoint
ISFSI - DEPARTURE FROM LICENSE CONDITION 10 CFR 72.75(b)(1)	ISFSI Emergency Departure Deviation Health and Safety License Condition	An action taken in an emergency that departs from a condition or a technical specification contained in a license or certificate of compliance issued under 10 CFR 72 when the action is immediately needed to protect the public health and safety and no action consistent with license conditions or technical specifications that can provide adequate or equivalent protection is immediately apparent.	• Action taken in an emergency that departs from procedure that is deemed necessary to prevent releases or radiation doses to the public in excess of 10 CFR 20 limits ◊ Refer to AD-HU-ALL-0004, Procedure and Work Instruction Use and Adherence. • GOE A.6 job aid located on Fleet Regulatory Affairs SharePoint

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
UNAUTHORIZED ENTRY RESULTS IN ACTUAL OR ATTEMPTED THEFT, SABOTAGE, OR DIVERSION OF A CATEGORY 1 OR CATEGORY 2 QUANTITY OF RADIOACTIVE MATERIAL 10 CFR 37.57(a)	Unauthorized Entry Theft Sabotage Diversion Radioactive Material Category	Immediately notify the Local Law Enforcement Agency (LLEA) after determining that an unauthorized entry resulted in actual or attempted theft, sabotage, or diversion of a Category 1 or Category 2 quantity of radioactive material. Notify NRC Operations Center not later than 4 hours after the discovery of any attempted or actual theft, sabotage, or diversion. • Follow-up written report required within subsequent 30 days.	Refer to AD-SY-ALL-0150, Attachment 1, Table 10.0, 10 CFR Part 37 Events Table.
CYBER ATTACK 10 CFR 73.77(a)(2) 10 CFR 73.77(a)(2)(i) 10 CFR 73.77(a)(2)(ii) 10 CFR 73.77(a)(2)(iii)	Attack, Unauthorized Access, Security, Compromised Systems and Equipment, Critical Digital Assets, Tampering, Digital, Computer, Cyber, Communication Systems, Network, logs, virus, malware	After discovery of a cyber attack that could have caused an adverse impact to safety related or important-to-safety functions, security functions, or emergency preparedness functions (including offsite communications); or that could have compromised support systems and equipment, which if compromised, could have adversely impacted safety, security, or emergency preparedness functions within the scope of 10 CFR 73.54.	• A CDA that was isolated or on a protected network was found to be connected to an unprotected network (wired or wireless) and cyber security controls (e.g., activity logs, antivirus protection, an intrusion detection system, etc.) indicated the pathway had been exploited as evidenced by the presence of malware or unauthorized access/activity had occurred. • An unauthorized transmitter (e.g., wireless router, modem) or unauthorized portable media (e.g., memory stick, smart phone) was attached or connected to a CDA, and cyber security controls (e.g., activity logs, antivirus protection, an intrusion detection system, etc.) indicated the pathway had been exploited as evidenced by the presence of malware or unauthorized access/activity had occurred. • GOE C.25 job aid located on Fleet Regulatory Affairs SharePoint • Refer to NGD-CYB-1902-0001, Cyber Security Event Reporting (10 CFR 73.77), for guidance on "could have caused".

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
CYBER ATTACK 10 CFR 73.77(a)(2) 10 CFR 73.77(a)(2)(i) 10 CFR 73.77(a)(2)(ii) 10 CFR 73.77(a)(2)(iii)		After discovery of a suspected or actual cyber attack initiated by personnel with physical or electronic access to digital computer and communication systems and networks within the scope of 10 CFR 73.54.	• The degradation or failure of a CDA or of the cyber security controls that protect CDAs that is indicative of unauthorized and malicious activity (e.g., cyber attack, physical tampering), and could have but does not have an immediate or adverse impact on SSEP functions because, for example, the CDA has an analog backup. This does not include common degradations or failures such as mechanical or electrical. • A cyber attack, (e.g., virus or worm logic bomb initiated by an intentional and malicious act) on a CDA, CS or protected network, that could have, but did not cause an adverse impact to SSEP functions or that could have compromised support systems and equipment, which if compromised, could have adversely impacted SSEP functions. • GOE C.25 job aid located on Fleet Regulatory Affairs SharePoint

<< 4-Hour Notifications to the NRC >>

4-HOUR NOTIFICATIONS TO THE NRC			
EVENT	**KEYWORDS**	**REQUIREMENT**	**GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE**
(continued)	Attack, Unauthorized Access, Security, Compromised Systems and Equipment, Critical Digital Assets, Tampering, Digital, Computer, Cyber, Communication Systems, Network, logs, virus, malware	After notification of a local, State, or other Federal agency (e.g., law enforcement, FBI, etc.) of an event related to the licensee's implementation of their cyber security program for digital computer and communication systems and networks within the scope of § 73.54 that does not otherwise require a notification under paragraph (a) of this section.	• A cyber attack that caused an adverse impact to a CDAs and/or CSs confidentiality, integrity or availability, could have but did not cause an adverse impact to SSEP functions or that could have compromised support systems and equipment, which if compromised, could have adversely impacted SSEP functions. For example, if a remote digital control to an active vehicle barrier has been disabled (e.g., loss of communications due to an intentional and malicious act), but the barrier is in the denial position and has not and will not allow unauthorized access as a result of the cyber attack. • Control of a mobile or portable media device (PMD) is lost or misplaced and there are signs of malicious exploitation. For example, a PMD used for maintenance and testing is misplaced or lost, if the PMD is recovered and shows signs of malicious tampering (e.g., physical tampering, malware installed, etc.) or PMDs that are maintained and tested by the lost or misplaced PMD show signs of malicious exploitation (e.g., malware, unauthorized access/activity). • GOE C.25 job aid located on Fleet Regulatory Affairs SharePoint

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
PRINCIPAL SAFETY BARRIERS SERIOUSLY DEGRADED 10 CFR 50.7(3)(ii)(A)	Degraded Safety Barriers Fission Product Barrier	• Any event or condition that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; • ENS notifications and LERs are required if a Degraded or Unanalyzed Condition occurred within 3 years of the date of discovery, even if the event is not on-going at the time of discovery	• Fuel cladding failures in the reactor, or in the storage pool, that exceed expected values, or that are unique or widespread, or that are caused by unexpected factors, and would involve a release of significant quantities of fission products • Cracks and breaks in the piping or reactor vessel, or major components in the reactor coolant system that have safety relevance (steam generators, reactor coolant pumps, valves, etc.) • Significant welding or material defects in the RCS • Low temperature overpressure transients where the pressure temperature limits are violated • Loss of relief and/or safety valve functions during operation • Loss of Containment function or integrity • Complete loss of containment integrity function including (1) containment leakage rate greater than allowed value per TS • GOE A.7 job aid located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73
UNANALYZED PLANT CONDITION 10 CFR 50.72(b)(3)(ii)(B)	Safety Function Unanalyzed Condition	• Any event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety. • ENS notification and LER are required if a seriously degraded principal safety barrier or unanalyzed condition that significantly degraded plant safety occurred within 3 years of the date of discovery, even if the event is not on-going at the time of discovery.	• GOE A, 7, 18 job aids located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
LOSS OF EMERGENCY ASSESSMENT, OFF-SITE RESPONSE, OR COMMUNICATIONS CAPABILITY {7.1.1} 10 CFR 50.72(b)(3)(xiii)	Duke Energy Emergency Management Network (DEMNET) Sirens ETS ERFIS ERDS	Any event that results in a major loss of emergency assessment capability, off-site response capability, or communications capability (e.g., significant portion of control room indication, ETS, or off-site notification system).	• Guidance listed in site-specific Equipment Important to Emergency Response (EITER) documents • GOE A. 16 job aid located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
RPS/SAFETY SYSTEM INITIATION (MANUAL/AUTOMATIC) 10 CFR 50.72(b)(3)(iv)(A)(B)	Manual Automatic Actuation Engineered Safety Feature ESF Valid Clearance RPS Actuation Reactor Protection System RPS Reactor Trip	Any event or condition that results in valid actuation of any of the systems listed below except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. The systems to which the requirements of this paragraph apply are: • Reactor Protection System (RPS) including: reactor scram and reactor trip. • General containment isolation signals affecting containment isolation valves in more than one system or multiple Main Steam Isolation Valves (MSIVs). • Emergency Core Cooling Systems (ECCS) for Pressurized Water Reactors (PWRs) including: high-head, intermediate-head, and low-head injection systems and the low pressure injection function of residual (decay) heat removal systems. • PWR auxiliary or emergency feedwater system. • Containment heat removal and depressurization systems, including containment spray and fan cooler systems. • Emergency AC electrical power systems, including: Emergency Diesel Generators (EDGs)	• Auxiliary Feedwater initiation/actuation • Reactor Trip (Manual/Automatic) while subcritical • Reactor Trip while critical is reportable per Attachment 2, Four Hour Notifications to the NRC • EDG start due to an undervoltage trip signal on emergency bus E1 or E2 • A single train of Containment Isolation actuates • A valid signal for Containment Ventilation Isolation occurs • Valid actuations are those actuations that result from "valid signals" or from intentional manual initiation, unless it is part of a preplanned test. Valid signals are those signals that are initiated in response to actual plant conditions or parameters satisfying the requirements for the initiation of the safety function of the system. They do not include actuations which are the result of other signals. (NUREG 1022) • Invalid actuations are, by definition, those that do not meet the criteria for being valid. Thus invalid actuations include actuations that are not the result of valid signals and are not intentional manual actuations. ◊ Except for actuations of the Reactor Protection System (RPS) when the reactor is critical or in MODE 1, invalid actuations are not reportable by telephone under 10 CFR 50.72. In addition, invalid actuations are not reportable under 10 CFR 50.73 in any of the following: ◊ The invalid actuation occurred when the system is already properly removed from service. This means all requirements of plant procedures for removing equipment from service have been met. It includes required clearance documentation, equipment and control board tagging, and properly positioned valves/power supply breakers. • The invalid actuation occurs after the safety function has already been completed. An example would be RPS actuation after the control rods have already been inserted into the core • GOE A.11 job aid located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC			
EVENT	**KEYWORDS**	**REQUIREMENT**	**GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE**
CONDITION THAT COULD PREVENT FULFILLMENT OF SAFETY FUNCTIONS 10 CFR 50.72(b)(3)(v)	Loss of Safety Function Residual Heat Mitigation Shutdown Generic Setpoint Drift Engineering Evaluation Operability Determination Common Mode Failure	• Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to: ◊ Shut down the reactor and maintain it in a safe shutdown condition ◊ Remove residual heat ◊ Control the release of radioactive material ◊ Mitigate the consequences of an accident • Events covered in this section may include one or more procedural errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported in accordance with this paragraph if redundant equipment in the same system was operable and available to perform the required safety function. **Note:** The 8- hour notification is required for conditions that existed at the time of discovery only. If the condition did not exist at the time of discovery within the previous 3 years, an LER per 10 CFR 50.73(a)(2)(v) is still required.	• Loss of one Train of required equipment, and the cause of the failure could fail the other train, and there is a reasonable expectation that the other train would not fulfill its safety function if required ◊ Contaminated lubrication fluid degrades Safety Injection (SI) Pump operation (a single condition could prevent fulfillment of a safety function if both trains could be reasonably expected to be inoperable). ◊ EDG Air Start Solenoids (if it demonstrates a design, procedural, or equipment deficiency that could prevent the fulfillment of a safety function, i.e., if both diesels are susceptible to same problem) • Multiple Control Rod failures (if failure prevented fulfillment of a safety function) • Operator action to inhibit the RPS (actions would prevent fulfillment of a safety function) • There is a determination that the SSC is inoperable in a required mode or other specified condition in the TS Applicability • Safety-related SSCs in certain Modes (ex. Refueling) determined by the NRC to be required for defense in depth (i.e., not credited in UFSAR Chapter 6 or 15 accident analyses). • The level of judgment for reporting an event or condition under this criterion is a "reasonable expectation" of preventing fulfillment of a safety function. For SSCs that has been declared inoperable, the SSC capability is degraded to a point where it cannot perform with reasonable expectation or reliability. • No Event Notification [i.e., per 10 CFR 50.72(b)(3)(v)] is required for conditions which could have prevented fulfillment of the safety function that are discovered when the affected system is INOPERABLE or when the affected system is INOPERABLE but considered available. If the condition is discovered when the system is OPERABLE, an EN will be made per 10 CFR 50.72(b)(3)(v).

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC

EVENT	KEYWORDS	REQUIREMENT	GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE
(continued)			◊ [BNP] RCIC INOPERABILITY is **NOT** reportable as a single train system per 10 CFR 50.72(b)(3)(v)(d). TS Basis 3.5.3 states that the RCIC System is not an ESF system and no credit is taken in the safety analysis for RCIC System operation. As such, consistent with Example 2 on NUREG 1022, Revision 3, RCIC Failure is not reportable under 10 CFR 50.72(b)(3)(v)(d)." • GOE A.12, 12 job aids located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73
ISFSI - DEFECT IMPORTANT TO SAFETY 10 CFR 72.75(c)(1)	ISFSI Defect Safety	A defect in any spent fuel storage structure, system, or component that is important to safety.	• A defect discovered in the design or construction of ISFSI units that could result in releases or radiation doses to the public in excess of 10 CFR 20 limits. • GOE A.24, B23 job aids located on Fleet Regulatory Affairs SharePoint
ISFSI - REDUCTION IN EFFECTIVENESS 10 CFR 72.75(c)(2)	ISFSI Confinement Reduction Effectiveness	A significant reduction in the effectiveness of any spent fuel storage cask confinement system during use.	• Wear or degradation of ISFSI units that could result in releases or radiation doses to the public in excess of 10 CFR 20 limits. • GOE B.23 job aid located on Fleet Regulatory Affairs SharePoint
TRANSPORT OF CONTAMINATED INJURED PATIENT 10 CFR 50.72(b)(3)(xii) 10 CFR 72.75(c)(3)	Contaminate Injured Person Medical Transport Rescue Hospital ISFSI	Any event requiring the transport of a radioactively contaminated person to an off-site medical facility for treatment.	Any event requiring the transport of a radioactively contaminated or potentially contaminated person to an off-site medical facility for treatment. • GOE B.5 job aid located on Fleet Regulatory Affairs SharePoint • NEI 18-09 Templates located on Fleet Regulatory Affairs SharePoint • NUREG 1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC			
EVENT	**KEYWORDS**	**REQUIREMENT**	**GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE**
CYBER ATTACK 10 CFR 73.77(a)(3)	Unauthorized Inquiries, Unauthorized Access, Security, Compromised Systems and Equipment, need- to-know, Critical Digital Assets, Tampering, Digital, Computer, Cyber, Communication Systems, Network	As stated in 10 CFR 73.77(a)(3) licensees are required to notify the NRC within eight hours after receipt or collection of information regarding observed behavior, activities, or statements that may indicate intelligence gathering or pre- operational planning related to a cyber attack against digital computer, and communication systems and networks that fall within the scope of 10 CFR 73.54. Generally, eight-hour notifications should include behavior, activities, or statements that are coordinated or targeted. Additionally, licensees should evaluate events that are not reportable under this requirement for reporting or recording under the other provisions of 10 CFR 73.77.	• Personnel or persons with an uncommon level of interest or making abnormal inquiries related to specific attributes of the licensee's cyber security program (e.g., CDAs, CSs, cyber security controls) or vulnerabilities associated with the cyber security program. Such interests or inquiries could occur onsite or offsite (e.g., cyber security symposium) by personnel, vendors, or contractors, or non- employees that do not have a need-to-know (e.g., are not part of, or support, the licensee's cyber security program). This does not include generic public or media inquiries related to plant operations, safety, etc. (i.e., these inquiries are targeted). ◊ GOE C.26 job aid located on Fleet Regulatory Affairs SharePoint • Unauthorized personnel in a static position in vicinity of the plant (protected area) that are in possession and operating equipment (e.g., laptop, Yagi antenna) capable of scanning for wireless networks. This does not include devices such as personal electronic devices (e.g., smartphones) carried by visitors that are configured to search or join wireless networks (i.e., these activities are targeted). • The recognition of the theft or suspicious loss of smart cards, tokens, or other "two factor" authentication devices required for accessing a CDA or CS. • The detection of forged or fabricated smart cards, tokens or other "two factor" authentication devices required for accessing a CDA/CS or performing authorization activities. • The detection of falsified identification badges, key cards, or other access-control devices that allow unauthorized individuals access to a CDA or CS. • A targeted spear phishing email (payload) followed- up with a telephone call to the targeted individual attempting to trigger the spear phishing email (social engineering) with intent to adversely impact an SSEP function. Investigation reveals the attempt is credible and involves or has the potential to involve digital computer, computer communication system or network under the scope of the Cyber Security Rule.

<< 8-Hour Notifications to the NRC >>

8-HOUR NOTIFICATIONS TO THE NRC			
EVENT	**KEYWORDS**	**REQUIREMENT**	**GUIDANCE, EXAMPLES AND OPERATING EXPERIENCE**
(continued)			• The recognition of the exfiltration of data (intelligence gathering) from an unprotected network from an unknown source, in conjunction with malware (payload) that was surreptitiously delivered and executed by the unknown source without licensee knowledge. • A website posting or notification indicating a planned cyber attack against the plant.
NOTE: The Corrective Action Program (CAP) is used to record vulnerabilities, weaknesses, failures and deficiencies in the cyber security program as well as record EIGHT HOUR NOTIFICATIONS, within 24 hours of their discovery.			