

**ST. LUCIE EXAM 2002-301
50-335 & 50-389/2002-301**

APRIL 22, 2002

FINAL Submittal

1. Senior Reactor Operator Written Exam
With Answer Key & KAs

St. Lucie Plant
April 2002 NRC Exam

Q Num	K/A	Source	Exam	Level	Key
1	051.AA2.02	New	RO/SRO	1	D
2	057.AA1.05	New	RO/SRO	1	A
3	068.Ak3.13	New	RO/SRO	2	C
4	026.AK3.02	Bank 2001 NRC Exam	RO/SRO	2	C
5	076.AA2.02	New	RO/SRO	1	A
6	059.G2.3.10	Bank	RO/SRO	1	C
7	015.AA2.10	New	RO/SRO	2	B
8	063.K3.02	Bank	RO/SRO	2	A
9	015.K4.07	New	RO/SRO	2	B
10	072.A3.01	Bank	RO/SRO	2	D
11	003.AK3.06	New	RO/SRO	1	A
12	013.K1.15	New	RO/SRO	2	C
13	103.K3.03	New	SRO Only	1	C
14	008.K4.02	New	RO/SRO	2	D
15	011.K6.03	Bank 2000 NRC Exam	RO/SRO	2	C
16	010.A3.02	New	RO/SRO	2	C
17	012.A1.01	New	RO/SRO	2	D
18	059.K6.12	New	RO/SRO	1	B
19	006.K1.04	Bank	RO/SRO	1	D
20	079.A2.01	Bank 2000 NRC Exam	RO/SRO	2	B
21	033.K4.01	Bank	RO/SRO	1	D
22	078.K1.05	New	RO/SRO	2	B
23	086.A3.01	New	RO/SRO	2	C
24	005.A2.02	New	RO/SRO	2	B
25	041.K6.03	Modified	RO/SRO	2	A
26	028.AK2.02	Modified	RO/SRO	1	B
27	061.K2.01	Modified	RO/SRO	2	A
28	061.G2.4.11	New	RO/SRO	1	A
29	039.K3.05	New	RO/SRO	2	C
30	004.K2.05	Modified	RO/SRO	2	A
31	003.A2.01	Bank	SRO Only	2	C
32	001.K1.05	Bank	RO/SRO	2	A
33	071.K5.04	Bank	RO/SRO	1	B
34	G2.2.27	New	SRO Only	1	A
35	G2.1.11	New	SRO Only	2	D
36	026.K4.07	Bank	RO/SRO	1	D
37	056.A1.08	New	RO/SRO	1	A
38	G2.1.29	Bank 2000 NRC Exam	RO/SRO	1	A
39	065.AA2.06	New	RO/SRO	1	A
40	037.AA2.16	New	SRO Only	2	B
41	029.K4.03	Bank	RO/SRO	2	A
42	CE/A13.AK2.2	Bank	RO/SRO	1	C
43	054.AA1.02	New	RO/SRO	1	C
44	009.AK3.10	New	RO/SRO	2	A
45	027.AA2.10	New	RO/SRO	2	A
46	008.AK1.01	Bank	RO/SRO	2	A
47	G2.2.3	New	SRO Only	2	C
48	CE/A16.G2.4.4	Bank	SRO Only	1	C
49	G2.3.10	New	RO/SRO	1	C
50	G2.1.22	Bank	RO/SRO	1	C

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Q Num	K/A	Source	Exam	Level	Key
51	G2.2.22	New	SRO Only	1	D
52	024.AK1.02	New	RO/SRO	1	B
53	CE/A11.AK1.2	New	SRO Only	2	B
54	002.A4.03	New	RO/SRO	2	A
55	011.EK2.02	New	RO/SRO	1	A
56	055.EK1.02	New	RO/SRO	2	C
57	CE/EO5A2.1	New	SRO Only	2	D
58	055.EA1.06	New	RO/SRO	2	C
59	CE/EO5EA1.3	New	SRO Only	2	C
60	CE/EO9EA1.3	Bank	SRO Only	1	A
61	038.EK2.02	New	RO/SRO	1	D
62	CE/EO2EK1.2	New	RO/SRO	2	A
63	056.AK3.02	New	RO/SRO	1	B
64	G2.1.32	New	SRO Only	2	A
65	G2.4.41	New	SRO Only	2	B
66	G2.4.40	New	SRO Only	1	A
67	G2.3.11	Bank	SRO Only	1	B
68	G2.2.12	New	RO/SRO	1	C
69	G2.3.9	New	SRO Only	1	D
70	G2.3.6	New	SRO Only	1	A
71	G2.4.49	New	RO/SRO	1	C
72	G2.4.11	New	SRO Only	2	C
73	G2.4.7	New	SRO Only	1	D
74	025AG2.2.3	New	SRO Only	2	B
75	028.K5.03	Bank	RO/SRO	1	B
76	058.AA1.01	New	RO/SRO	2	C
77	064.K1.03	New	RO/SRO	1	D
78	026EG2.1.33	New	SRO Only	1	A
79	069.AA2.01	New	SRO Only	2	B
80	074.EA1.05	New	RO/SRO	1	D
81	062.AK3.02	New	RO/SRO	2	D
82	062.K3.02	New	RO/SRO	2	C
83	022.A3.01	Bank	RO/SRO	1	D
84	032AG2.1.27	Bank	RO/SRO	1	B
85	067AG2.4.26	Bank	RO/SRO	1	B
86	022.AA1.01	New	RO/SRO	2	B
87	060.AA2.05	New	RO/SRO	2	A
88	025.AK2.03	New	RO/SRO	2	A
89	061.AK302	New	RO/SRO	2	B
90	017.A2.02	New	RO/SRO	2	A
91	068.K1.01	New	RO/SRO	2	B
92	029.EK2.06	New	RO/SRO	2	C
93	073.K5.01	New	RO/SRO	2	D
94	015.A4.03	New	RO/SRO	2	D
95	001.AK.1.07	New	RO/SRO	2	B
96	014.A.1.03	New	RO/SRO	2	A
97	005AG2.2.22	New	SRO Only	1	C
98	035.A4.05	Bank	RO/SRO	1	D
99	022.K3.02	Bank	RO/SRO	1	D
100	027.G2.4.21	New	SRO Only	1	B

Question: 1

Unit 1 is performing a downpower with the following conditions:

- Condenser A reads 2.5" backpressure Hg absolute.
- Power level at 58%

Which of the following requires the Unit to be manually tripped?

Condenser B reads:

- A. 4.4" backpressure Hg absolute, at current power level.
- B. 4.9" backpressure Hg absolute, at 39% power.
- C. 3.4" backpressure Hg absolute at 29% power.
- D. 3.6" backpressure Hg absolute at 29% power.

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Question: 2

The 1B QSPDS cabinet and display is out of service. A loss of the Instrument bus results in the 1A QSPDS losing power. Prior to placing the Instrument bus on it's bypass, which of the following parameters can be determined by the Operator using alternate methods?

- A. Subcooled Margin
- B. Core Exit Thermocouple Temperature
- C. Reactor Vessel Level
- D. Heated Junction Thermocouple Temperature

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Question: 3

Unit 2 Control Room has been evacuated due to a fire in the cable spreading room. A cooldown is being performed from the Hot Shutdown Panel. The 2B BAMT was the Technical Specification tank prior to the evacuation. The 2B BAMT is 91% full with 3.0% wt. Boric acid concentration and two Charging pumps are currently operating. What is the minimum time to maintain the Charging pumps aligned to the BAMT?

References Provided

- A. 102 minutes
- B. 86 minutes
- C. 76 minutes
- D. 27 minutes

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Question: 4

Unit 2 has the following CCW alignment at 100% power:

- 2A CCW pump running
- 2C CCW in normal standby alignment
- 2B CCW pump running

Which of the following states the response of the 2C CCW pump if a LOOP and LOCA (SIAS) were to occur?

The 2C CCW pump will:

- A. automatically start to augment CCW flow to both A and B CCW headers.
- B. automatically start to augment CCW flow to the header it is currently lined up to.
- C. not automatically start due to Diesel loading considerations.
- D. not automatically start due to the possibility of exceeding the CCW header flow rates.

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Question: 5

Unit 1 is at 100% power steady state. Letdown has been aligned to the flash tank.

Which of the following off-normal conditions exist that required this lineup?

- A. High RCS activity
- B. Waste gas system is out of service
- C. Hydrogen concentration in RCS below limits
- D. Oxygen concentration in RCS above limits

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Question: 6

The following conditions exist on Unit 1:

- 1A Waste Monitor Tank is being released to the discharge canal
- Liquid Release monitor channel #43 is in high alarm
- Liquid release flow indicator indicates full flow

Which of the following describes the FIRST action that should be taken based on the above indications?

- A. Stop the Waste Monitor Pump.
- B. Close the final effluent valve V-21462.
- C. Close final effluent discharge valve FCV 6627X.
- D. Contact Chemistry to determine the validity of the alarm.

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Question: 7

Instrument air Containment isolation valve has failed closed. Which of the following states the Unit and the reason for actions taken in response to loss of instrument air to the Containment?

- A. Unit 2, all RCP's are required to be stopped within 30 minutes due to RCP seal heat exchanger valves failing closed.
- B. Unit 2, all RCP's are required to be stopped within 10 minutes due to CCW Containment isolation valves failing closed.
- C. Unit 1, all RCP's are required to be stopped within 30 minutes due to RCP seal heat exchanger valves failing closed.
- D. Unit 1, all RCP's are required to be stopped within 10 minutes due to CCW Containment isolation valves failing closed.

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Question: 8

The following conditions exist:

- 1A 125V DC bus has been deenergized due to an electrical fault
- A steam line break has developed on the 1A Steam Generator
- 1A Steam Generator pressure is 570 psig
- 1B Steam Generator is 890 psig
- No other failures exist

Which of the following describes the status of the Main Steam isolation valves?

- A. The A MSIV is open, the B MSIV is closed.
- B. The B MSIV is open, the A MSIV is closed.
- C. Both A and B MSIV's are open.
- D. Both A and B MSIV's are closed.

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Question: 9

Unit 2 is at 18% reactor power with an automatic transfer from the 2A 15% Feedwater bypass valve to the 2A Main feed regulating valves in progress using the low power Feedwater control system (LPFWCS).

Which of the following will cause the automatic transfer to terminate?

- A. RPS channel A linear range NI failing high.
- B. Control channel 9 NI power (JR-009) failing low.
- C. 2A Feedwater temperature failing high.
- D. 2A Feedwater flow transmitter FT 9011 failing low.

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Question: 10

The following are Unit 2 Fuel Pool Area Radiation Monitors:

<u>SA</u>	<u>SB</u>
GAG-007	GAG-008
GAG-009	GAG-010
GAG-011	GAG-012

Which of the following is the minimum condition that would initiate a FHB ventilation transfer to the Sheild Building Ventilation system?

- A. GAG-007 in ALERT, GAG-009 in ALARM
- B. GAG-009 in ALARM, GAG-012 in ALARM
- C. GAG-007 in ALERT, GAG-011 in ALERT
- D. GAG-008 in ALARM, GAG-010 in ALARM

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Question: 11

On Unit 2 CEA group 5 is 8" withdrawn during a startup. A CEA in group 5 slips to the lower electrical limit (LEL).

Which of the following describes the indicated position of the slipped CEA.

The ADS will indicate 1", the DDPS will indicate

- A. 8" until CEA position is reset by the Operator.
- B. 8" until the Automatic CEDM timer Module (ACTM) is reset by the Operator.
- C. 1" due to the LEL resetting the DDPS position.
- D. 1" due to the Automatic CEDM timer Module (ACTM) resetting the DDPS position.

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Question: 12

Unit 1 has been manually tripped from 100% power due to low Steam Generator level. The following Containment conditions are observed:

- Containment pressure is 3.8 PSIG
- 1A Steam Generator pressure is 520 psia, 1B Steam Generator pressure is 840 psia.

Immediately upon the trip and assuming no Operator action, which of the following, if any, will be feeding the Steam Generators?

- A. Main feedwater only.
- B. Auxiliary feedwater only.
- C. No main or auxiliary feedwater.
- D. Both Main and Auxiliary feedwater.

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Question: 13

Unit 2 is in Mode 6 performing fuel movement. Which of the following conditions require fuel movement to be stopped?

- A. Equipment Hatch is capable of being closed with only four bolts.
- B. Only one personnel airlock door is capable of being closed.
- C. Containment closure crew demonstrated they can close the Equipment Hatch in 37 minutes
- D. Equipment Hatch is closed and only one individual is stationed at the Personnel Airlock Door with the doors open.

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Question: 14

Unit 2 is at 100% power when a 'B' side CCW leak occurs. A low level alarm (LA-10, LB-10) on both compartments has occurred in the CCW surge tank. The leak has been isolated and the surge tank level has returned to normal.

Assuming no Operator actions, other than isolating the leak, which of the following describes the configuration of the CCW system?

- A. Only the 'N' header valves from the 'A' side closed separating the 'A' CCW header from the 'B' side CCW header. The 'N' header valves automatically re-opened when the low level cleared.
- B. Only the 'N' header valves from the 'B' side closed separating the 'A' CCW header from the 'B' side CCW header. The 'N' header valves will have to be manually re-opened.
- C. All the 'N' header valves closed separating the 'A' CCW header from the 'B' CCW header. The 'N' header valves automatically re-opened when the low level cleared.
- D. All the 'N' header valves closed separating the 'A' CCW header from the 'B' CCW header. The 'N' header valves will have to be manually re-opened.

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Question: 15

Given the following conditions:

- Unit 1 tripped 15 minutes ago
- Pressurizer pressure is 2100 psia and slowly increasing
- Pressurizer level control lowered pressurizer level to 25% and has slowly recovered to 29%
- All systems are in automatic and have actuated as required

Which of the following is the correct condition for the Pressurizer heaters at this time?
(ASSUME NO OPERATOR ACTION)

- A. All heaters are energized
- B. Only the proportional heaters are energized.
- C. All heaters are de-energized.
- D. Only the proportional heaters are de-energized.

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Question: 16

Unit 1 is at 100% power with the following conditions:

- Pressurizer pressure controller PIC-1100Y is selected for control
- Pressurizer backup heaters B-1 and B-5 are energized

HIC-1100 Pressurizer spray controller fails to 100% output

Which of the following explains the expected response?

Pressurizer spray valves:

- A. closed, all backup heaters on
- B. closed, proportional heater output to maximum
- C. open, proportional heater output to minimum
- D. open, all backup heaters off

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Question: 17

Unit 1 is at 30% power performing a Nuclear power and ΔT power calibration. As Nuclear power and ΔT power are adjusted downward, which of the following trip setpoints will change?

- A. High Startup Rate, LPD, TMLP
- B. High Startup Rate, High power, TMLP
- C. High power, LPD, Pressurizer Pressure
- D. High power, LPD, TMLP

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Question: 18

Unit 2 is at 80% power with all systems in automatic when the 2A Steam Flow transmitter FT 8011 that feeds 2A S/G level control, fails high. Assuming no operator actions, which of the following will occur FIRST?

- A. Turbine trip on high S/G level.
- B. 2A Main Feedwater regulating valve closes on high S/G level.
- C. Both Main Feedwater pumps trip on high S/G level.
- D. 2A Main Feedwater pump trips on high S/G level.

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Question: 19

In accordance with 1-EOP-03, "Loss of Coolant Accident", which of the following is a method of establishing hot leg injection during a LOCA event on Unit 1?

- A. Containment Spray pumps discharging through the pressurizer auxiliary spray valves.
- B. Containment Spray pumps discharging through the normal pressurizer spray valves.
- C. HPSI pumps discharging through the normal pressurizer spray valves.
- D. HPSI pumps discharging through the pressurizer auxiliary spray valves.

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Question: 20

Given the following conditions:

- Unit 2 is in Mode 6 with fuel movement in progress
- The only available Instrument Air Compressor, 2C, has tripped and been off line for 90 minutes.
- The Service Air Compressor has been lined up to Instrument air since the loss of the 2C compressor.
- Current Instrument air pressure is 98 PSIG and steady.

Which of the following describes the action to be taken as a result of Service Air being lined up to Instrument Air?

- A. Stop fuel movement until a redundant source of instrument air can be established.
- B. Blowdown the Instrument air header drains to remove oil, water, and crud build-up.
- C. Install Diesel air compressor to augment the installed Service Air compressor.
- D. Manually cross tie Instrument air to Unit 1 and isolate the Service Air to Instrument air cross tie.

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Question: 21

The following conditions exist on Unit 1:

- A severe leak has occurred in the Fuel pool
- Level in the pool has dropped 8 feet and continues to decrease
- Makeup capability from the RWT has been lost and ONP 1-0350030 has been implemented

Which of the following is available as a last resort for Fuel pool makeup IAW ONP 1-0350030 "Fuel Pool Cooling System"?

- A. Fire Water system
- B. Demin Water system
- C. Primary Water system
- D. Intake Cooling Water system

Question: 22

Unit 1 is in Mode 3 with all CEA's inserted. Both Main Steam Isolation Valves (MSIV's) are open.

The following alarm is received:

- Q47 Main Steam Isol HCV-08-1A Low Air Press/DC Failure.

Assuming no Operator actions, which of the following would you expect to see as the alarm condition continues?

HCV-08-1A to:

- A. close on either low air pressure or DC failure.
- B. close on low air pressure.
- C. stay open on either low air pressure or DC failure.
- D. stay open on low air pressure.

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Question: 23

Unit 1 was manually tripped due to a suspected fire on the 1A1 RCP. The RCP was manually tripped. A Pressurizer spray valve stuck partially open and RCS pressure is currently 1690 psia and stable.

Which of the following states the Fire Fighting capability for this event?

Hose stations:

- A. in the Containment supplied from the primary water system.
- B. in the Containment with the Fire Pumps automatically starting on low Fire header pressure.
- C. outside the Containment with the Fire Pumps automatically starting on low Fire header pressure.
- D. outside the Containment, but the Fire Pump will have to be manually started.

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Question: 24

Unit 2 is in Mode 5 on Shutdown Cooling, cooling the Pressurizer (Pressurizer solid). A pressure transient increases RCS pressure to 513 psia.

Which of the following states the Shutdown Cooling (SDC) response and the required Operator actions?

The SDC:

- A. Hotleg suction valves will close, but the LPSI pumps can continue to operate due to the Hotleg suction crosstie valve (V-3545) remaining open.
- B. Hotleg suction valves will close, and the LPSI pumps must be stopped even though the Hotleg suction crosstie valve (V-3545) remains open.
- C. Hotleg suction valves and the crosstie valve (V-3545) will close requiring the LPSI pumps to be stopped.
- D. Overpressure suction valve closure interlock has been manually defeated in this condition, but the LPSI pumps must be secured.

Question: 25

Unit 2 is in Mode 3 performing a Reactor startup. The following conditions exist:

- Steam Bypass control (SBCS) in Auto maintaining Tave 532°F
- PS 10-9 Condenser vacuum to SBCS momentarily spikes to 15 inches HG and returns to 3 inches HG.

Based on the above conditions, what is the status of the SBCS?

- A. SBCS will maintain RCS temperature in automatic, with no Operator action.
- B. SBCS can maintain RCS temperature in manual only, until the system is reset by depressing the 'Emergency off/Vacuum interlock pushbutton'.
- C. SBCS permissive switch must be placed in manual, and the 'Emergency off/Vacuum interlock pushbutton' depressed to regain control of SBCS.
- D. SBCS permissive switch must be placed in 'Off' and the SBCS can be used in manual only.

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Question: 26

Unit 2 is at 100% power with Pressurizer Level Control Channel 1110-Y selected for control.

Level transmitter 1110Y fails high

Which of the following describes the plant response? (assume no Operator actions)

- A. Maximum letdown, All heaters on, backup Charging pumps start.
- B. Maximum letdown, Pressurizer level and pressure decrease, all but one Charging pump off.
- C. Minimum letdown, Pressurizer level and pressure increases. Spray valves open on high pressure.
- D. Minimum letdown, all charging pumps off and all heaters on. Spray valves open on high pressure.

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Question: 27

Given the following conditions:

- Unit 2 has just tripped from 100% power due to loss of the 2A 125 VDC bus
- Normal AC electrical lineup prior to trip
- AB DC electrical lineup is to the A side
- Operators are performing 2-EOP-01, 'Standard post trip actions'
- No Contingency Actions have been performed.

Which of the following describes the configuration of the AFW system immediately following AFAS actuation?

- A. 2C AFW pump running feeding 2A Steam Generator and 2B AFW pump running feeding 2B Steam Generator.
- B. Only the 2C AFW pump running and feeding both Steam Generators.
- C. Only the 2B AFW pump running and feeding the 2B Steam Generator.
- D. All AFW pumps running and feeding both Steam Generators.

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Question: 28

Unit 1 has tripped from 100% power. EOP-01 has been completed and ONP '1-0700031 Auxiliary Feedwater' is being implemented. The 1C AFW pump AB Bypass switch has been placed in the 'Bypass' position.

Which of the following states the reason the AB Bypass switch has been placed in bypass position?

In preparation to reset:

- A. an electrical or mechanical overspeed condition. This will bypass the AFAS open signal and allow closing the steam supply valves.
- B. an electrical or mechanical overspeed condition. This will bypass the AFAS open signal and close all the feed and steam valves.
- C. an electrical overspeed condition only. This will bypass the AFAS open signal and allow closing the steam supply valves.
- D. a mechanical overspeed condition only. This will bypass the AFAS open signal and close the steam supply valves.

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Question: 29

Unit 2 is experiencing an unexplained RCS cooldown post trip from 100% power. Which of the following is a possible reason for the cooldown?

- A. Excessive boration.
- B. Condenser vacuum was lost.
- C. MSR Block valves were not closed.
- D. Spillover bypass valve MV-08-814 not closed

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Question: 30

At 100% power a loss of the 1B2 480 Volt Load Center has occurred and cannot be immediately recovered. A short time later, the plant trips and three CEA's are not fully inserted.

Which of the following Operator actions should be taken?

- A. Start both Boric Acid makeup pumps, close both Boric Acid pump recirc valves and open emergency borate valve V2514.
- B. Start both Boric Acid Makeup pumps, close both Boric Acid pump recirc valves and open Boron load control valve V2525.
- C. Open Gravity Feed valves V2508 and V2509, close and hold closed VCT outlet valve V2501.
- D. Open Gravity Feed valves V2508 and V2509, and emergency borate valve V2514.

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Question: 31

During operation at 60% power, the Unit 2 Reactor Coolant Pumps' seal readings indicate as follows:

PUMP	PRESSURE (PSIG)			FLOW (GPM) Controlled Bleedoff	TEMPERATURE Controlled Bleedoff
	Bleedoff Cavity	Upper Seal Cavity	Middle Seal Cavity		
2A1	121	776	1516	1.0	139
2A2	124	685	1588	1.1	148
2B1	176	180	2221	2.8	187
2B2	119	782	1505	0.9	143

In accordance with ONP 2-0120034 Reactor Coolant Pump, the crew should:

- A. monitor and record RCP seal parameters for additional degradation.
- B. perform a unit shutdown, then stop the affected RCP after TCBs are open and initiate seal injection.
- C. perform a unit shutdown, then stop the affected RCP after TCBs are open.
- D. manually trip the reactor and turbine, then trip the affected RCP.

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Question: 32

A Start-up is being performed on Unit 1 with the following indications:

	<u>Ch A</u>	<u>Ch B</u>	<u>Ch C</u>	<u>Ch D</u>
Power (%)	1.5×10^{-4}	1.5×10^{-4}	1×10^{-5}	1×10^{-5}
Startup Rate (DPM)	1.4	1.3	1.5	1.4

CEA motion has stopped. Which of the below interlocks has stopped CEA motion?

- A. CEA Withdrawal Prohibit from channels A and B
- B. Auto Withdrawal Prohibit from channels C and D
- C. CEA Motion Inhibit from channels A and B
- D. Low Power Automatic Withdrawal Prohibit from channels C and D

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Question: 33

Chemistry has reported 3% hydrogen concentration by volume, in the in-service gas decay tank. Which of the following states the minimum oxygen concentration, that if exceeded, requires immediate action as defined by 2-0530030 Waste Gas System Off-Normal Operating procedure?

- A. 2%
- B. 4%
- C. 6%
- D. 8%

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Question: 34

Unit 1 is in a refueling outage performing a fuel shuffle in the core.

In accordance with Unit 1 Technical Specifications, which of the following requires immediate suspension of refueling operations?

- A. Refueling canal level is 22 feet above the top of fuel assemblies that are seated in the reactor.
- B. Refueling canal level is 22 feet above the top of the reactor flange.
- C. Loss of audible countrate in the Control room
- D. Loss of one of the four operable Wide Range neutron flux monitors.

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Question: 35

Unit 2 is at 100% power. In accordance with Technical Specifications, which of the following equipment that if declared inoperable, is required to be restored to operable status within one hour?

- A. Both 2A and 2B Boric Acid Makeup tanks
- B. Both 2A and 2C Charging pumps
- C. Both 2A and 2C Intake Cooling water pumps
- D. Refueling Water Tank

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Question: 36

Which of the following describes how NPSH for the Containment Spray pumps is maintained during transfer of suctions from the RWT to the Containment sump upon receipt of a Recirculation Actuation Signal (RAS)?

- A. The LPSI pumps automatically stop on RAS.
- B. The Safeguards pumps minimum flow recirc flowpath is isolated automatically on RAS.
- C. On a RAS, the Containment sump outlet valves open fully prior to the RWT outlet valves starting to close.
- D. On a RAS, the Containment sump outlet valves opens fully prior to the RWT outlet valves closing completely.

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Question: 37

Which of the following will result in the automatic trip of 2A Main Feedwater pump?

- A. Main Feedwater suction header pressure indicates 260 psig.
- B. Loss of the 2A Condensate pump with less than 50% feedwater flow.
- C. 2A Main Feedwater pump suction valve indicates closed (indication only)
- D. Main Feedwater pump lube oil pressure indicates 6 psig.

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Question: 38

In preparations for entry into Mode 4, you have been requested to perform a line-up on the AFW system. Which of the below methods describes how to verify the 1A AFW pump discharge valve to be in the correct position?

- A. Physical hands on check, slightly moving the valve in the closed direction then fully open, then back to the closed direction $\frac{1}{4}$ to $\frac{1}{2}$ turn.
- B. Physical hands on check, rotating the valve at least one turn fully in the closed direction, then fully open against the backseat.
- C. Visual observation of the valve stem position.
- D. Visual observation of the valve position mechanical pointer.

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Question: 39

Given the following conditions:

- Unit 2 has an Instrument air leak.
- Instrument air pressure is 60.

If Instrument air pressure continues to drop, which of the following must be performed?

- A. Trip the reactor and turbine.
- B. Commence a Reactor and Turbine shutdown.
- C. Take manual control of Main feedwater reg. valves.
- D. Ensure the Unit 1 Instrument air crosstie valve is open.

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Question: 40

A Steam Generator Tube Leak has occurred in 1B S/G. 1-0830030 'Steam Generator Tube Leak' has been entered. The following conditions exist:

- That is 505°F
- 1B S/G has been isolated

Which of the following states the MINIMUM RCS pressure that is to be maintained?

- A. 700 psia
- B. 850 psia.
- C. 1050 psia.
- D. 1600 psia.

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Question: 41

The following conditions exist:

- Unit 1 is in Mode 6
- "A" train containment purge system is in service with suction aligned to the refueling cavity
- The Upper Guide structure is being lifted with one incore not fully inserted.
- The RCO reports A and C CIAS monitors indicate 95 mR/Hr with B and D CIAS monitors indicating 85 mR/Hr.

Which of the following describes the response of the containment purge system?

The containment purge system:

- A. is automatically secured.
- B. remains in its current configuration.
- C. suction is automatically aligned to the containment ring header.
- D. discharge is automatically aligned to the shield building exhaust system.

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Question: 42

Both Units are in a LOOP with all Diesel Generators running and tied to their respective busses. Upon completion of SPTA's, which Unit would have quicker control of Natural Circulation?

- A. Unit 1, due to two ADV's air operated, capable of being controlled in auto or manual.
- B. Unit 1, due to two ADV's, motor operated capable of being controlled manual only.
- C. Unit 2, due to four ADV's motor operated capable of being controlled in auto or manual.
- D. Unit 2, due to four ADV's air operated capable of being controlled in manual only.

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Question 43

Unit 2 has tripped from 20% power due to a LOOP. Both Diesel generators are loaded on their respective busses. 2A and 2B Steam Generator levels are 55% narrow range. Which of the following explains how Feedwater will be supplied to the Steam Generators?

- A. Feed the S/G's with the AFW system by manually initiating AFAS-1 and AFAS-2 from the AFAS cabinets.
- B. Depress the 15% manual override pushbuttons and feed the S/G's using the 15% bypass valves.
- C. Manually start the Auxiliary Feedwater pump(s) and initiate feedwater to both S/G's.
- D. Feed the S/G's with the AFW system by manually initiating AFAS-1 and AFAS-2 from RTGB 202.

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Question 44

Given the following conditions:

- Reactor trip occurred 10 minutes ago
- RCS hot and cold leg temperatures are stable at normal values
- Pressurizer pressure is 1900 psia and lowering
- Pressurizer level is 59% and rising
- Containment pressure is 0.5 psia and rising slowly
- Charging and letdown are responding as expected

A leak in which of the following locations would result in these symptoms?

- A. Pressurizer steam space
- B. RCS cold leg
- C. Reactor vessel head
- D. Main steam line

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Question: 45

Unit 1 is operating at 100% power with channel Y Pressurizer pressure control selected. Annunciator H-14 'PZR CHANNEL Y PRESS HIGH/LOW' alarms. You noticed the selected pressure channel has failed low.

Assuming no Operator actions, which of the following states the plant response?

The Plant will:

- A. trip on high Pressurizer pressure due to all heaters on and spray valves closed.
- B. trip on low Pressurizer pressure due to all heaters on and spray valves fully open.
- C. not trip but pressure will stabilize at a higher value due to all heaters on and spray valves fully open.
- D. not trip but pressure will stabilize at a lower value due to all heaters on and spray valves fully open.

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Question: 46

Given the following plant conditions:

- Plant tripped 30 minutes ago
- Pressurizer Safety Valve is lifting
- Pressurizer pressure is 1900 psia
- RCS Thot is 545°F
- Quench Tank rupture disk has ruptured
- Containment Pressure is 1 psig

What is the expected temperature in the tailpipe downstream of the affected Pressurizer Safety Valve?

- A. 215°F
- B. 300°F
- C. 545°F
- D. 628°F

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Question: 47

Unit 2 is at 49% power with the following ADV configuration:

2A S/G

2B S/G

One ADV is in Manual

Both ADV's in Manual

One ADV is in Auto

Which of the following states the acceptability of this ADV configuration?

This configuration is:

- A. acceptable as long as no more than one of four ADV's is in Auto.
- B. acceptable as long as power is maintained below 50%.
- C. in violation of Tech. Specs. due to one ADV on the 2A S/G in Auto.
- D. in violation of Tech. Specs. due to both ADV's on the 2B S/G in Manual.

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Question 48

During steady state operation at 100% power, the Board RCO notices Charging flow is 10 gpm greater than Letdown flow. Pressurizer level is constant and Tave is constant. What procedure, if any should be entered for this condition?

- A. ONP-02.03, "Charging and Letdown"
- B. ONP-0120035, "Pressurizer Pressure and Level"
- C. ONP-0120031, "Excessive Reactor Coolant System Leakage"
- D. No action is necessary, the difference is expected due to RCP seal leakoff flow

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Question: 49

Unit 1 is at 100% power preparing to start a second charging pump. Which of the following is performed prior to starting the charging pump?

Notify:

- A. Chemistry department to monitor letdown ion exchanger efficiency.
- B. Chemistry department to perform RCS boron sample.
- C. HP due to the possibility of increasing radiation levels in the letdown area.
- D. HP due to the possibility of contamination of Charging pump room from potential pump leakage.

Question: 50

Unit 1 has the following conditions:

- RCS temperature is 345°F
- Shutdown margin calculation indicates .98 Keff

Which of the following states the Mode of the Unit?

- A. Hot Shutdown (Mode 4)
- B. Cold Shutdown (Mode 5)
- C. Hot Standby (Mode 3)
- D. Startup (Mode 2)

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Question: 51

Which of the following is referenced in the Technical Specifications to prevent exceeding a Safety Limit?

- A. Containment vacuum breakers.
- B. Power operated relief valves.
- C. Diverse scram system.
- D. Main Steam Safety Valves.

Question: 52

The reactor is critical at 10% power with SBCS in auto when an inadvertent Emergency Boration occurs. RCS boron concentration is raised by 10 ppm before it is stopped. Assume no CEA motion and the same initial boron concentration for BOL and EOL conditions.

Which of the following describes the effect that this event will have on Reactor Power?

- A. It will decrease the most at BOL.
- B. It will decrease the most at EOL.
- C. It will decrease the same at EOL as at BOL.
- D. It will not be significantly affected.

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Question 53

Unit 1 has tripped from 100% power due to an Excess Steam Demand on the 1A Steam Generator. 1-EOP-05 'Excess Steam Demand' has been entered with the following conditions:

- Subcooling is greater than minimum
- SIAS has actuated and ECCS flow is meeting figure 2
- HPSI throttling criteria is NOT met
- RCS temperature is lowering
- Pressurizer pressure is lowering
- Pressurizer level is lowering
- 1A SG wide range level 20%
- 1B SG wide range level 45%

Which of the following states the major mitigating strategy?

- A. Depressurize the RCS to maximize ECCS flow and regain Pressurizer level.
- B. Stabilize RCS temperature when heat removal from the 1A Steam Generator subsides.
- C. Stop all feedwater to the 1B Steam Generator to prevent contributing to the cooldown.
- D. Manually secure all feedwater to the 1A Steam Generator prior to automatic feedwater isolation.

Question 54

The following conditions exist:

- A LOCA inside containment is occurring on Unit 1
- RCPs were shut off 20 minutes ago
- Containment temperature is 215°F
- Pressurizer pressure is 1000PSIA
- RCS T_{hot} is 515°F
- RCS T_{cold} is 510°F
- CET is 520°F

Which of the following statements indicates the status of subcooling?

References Provided

Subcooling indicates:

- A. 25°F CET subcooled but subcooling is inadequate.
- B. 35°F RCS subcooled but subcooling is inadequate.
- C. 25°F CET subcooled. Subcooling is adequate.
- D. 35°F RCS subcooled. Subcooling is adequate.

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Question 55

The following condition exist on Unit 2 as the result of a LOCA:

- Pressurizer Pressure is 200 psia and lowering.

Which of the following identifies the short and long term cooling strategy?

Short term, RCS cooling will be:

- A. LPSI flow and SIT discharge with long term cooling by hot and cold leg injection
- B. LPSI flow and S/G steaming and feeding with long term cooling by SDC.
- C. HPSI flow and SIT dumping with long term cooling by SDC.
- D. S/G steaming and feeding with long term cooling by hot and cold leg injection.

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Question 56

Unit 1 is experiencing a Station Blackout and has implemented 1-EOP-10 with the following conditions:

- That is 535°F and lowering
- Pressurizer Pressure is 2100 PSIA and stable

Which of the following would indicate a problem with Natural Circulation?

- A. Tcold is 520°F and stable.
- B. Pressurizer Pressure slowly decreased to 1750 PSIA
- C. Rep CET is 557°F
- D. That stabilizes at 535°F

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Question 57

The following conditions exist:

- An ESDE has occurred on the 2A steam generator upstream of the MSIVs
- A SGTR has occurred on the 2B steam generator
- SIAS has actuated
- Offsite power has been lost
- 2-EOP-15 is being implemented

Which of the following is the mitigation strategy that is to be used by the operators in this event?

Isolate the:

- A. 2B steam generator and control RCS temperature using the SBCS.
- B. 2B steam generator, cooldown the RCS to shutdown cooling entry conditions using the 2A steam generator.
- C. 2A steam generator and control RCS temperature using the SBCS.
- D. 2A steam generator, cooldown the RCS to shutdown cooling entry conditions using the 2B steam generator.

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Question 58

Unit 2 has implemented 2-EOP-10 Station Blackout. Unit 1 is in a LOOP with only the 1A Diesel Generator available.

When Unit 2 is crosstied with the only operable Diesel Generator, which of the following component/system will most likely NOT be able to be put in service?

- A. Instrument air system
- B. Charging pump
- C. Letdown
- D. Cable spreading room ventilation system

Question 59

Given the following post trip conditions:

- RCS Tave is 520°F and slowly lowering
- Pressurizer pressure is 1980 psia and slowly lowering
- Pressurizer level is 31% and trending slowly downward
- Containment pressure is rising
- All RCPs are in operation
- Subcooling is approximately 100°F and slowly rising
- Both SG levels are 10% narrow range and slowly lowering
- Both SG pressures are 740 psia and slowly lowering

After completion of EOP-01, which one of the following states the correct EOP to implement? (assume no equipment out of service)

- A. Loss of Coolant Accident, EOP-3
- B. Steam Generator Tube Rupture, EOP-4
- C. Excessive Steam Demand, EOP-5
- D. Total Loss Feedwater, EOP-6

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Question 60

The Reactor has tripped and four (4) CEAs are stuck out.

The following actions are taken:

Emergency boration was not successful
Reactor power is 10⁻²% and decreasing

Which of the following states the correct procedure implementation?

- A. Complete the Standard Post Trip Actions, then enter Functional Recovery procedure (EOP-15).
- B. Complete the Standard Post Trip Actions, then enter Reactor Trip Recovery (EOP-2) procedure.
- C. Immediately enter Functional Recovery procedure (EOP-15)
- D. Enter Functional Recovery procedure (EOP-15), Reactivity Control success path concurrently with Standard Post Trip Actions.

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Question 61

On Unit 1, which of the following is an automatic action as a result of a Steam Generator tube rupture?

- A. Condenser air ejector is aligned to the plant vent
- B. Vacuum drag isolates.
- C. Steam Generator Blowdown is aligned to the Flash tank.
- D. Steam Generator Blowdown sample valves close.

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Question 62

Unit 2 has tripped from 100% power. An uncomplicated trip has been diagnosed and 2-EOP-02 has been entered.

- The B side 4.16KV and 6.9KV buses did not transfer to the startup transformer post trip.
- The B Diesel Generator is supplying the B vital bus.

Attempts to re-energize the B side from offsite power was not successful.

Which of the following is the desired Pressurizer pressure range while in EOP-02?

- A. 1800 to 1850 psia.
- B. 1800 to 1900 psia.
- C. 1800 to 2300 psia.
- D. 2225 to 2275 psia.

Question 63

During implementation of 2-EOP-09 LOOP, which of the following action is performed to protect the Main Condenser?

- A. Restoring Instrument air
- B. Closing the MSIV's
- C. Ensuring the FW heater alternate drains are closed
- D. Ensuring the Turbine drain valves are open

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Question 64

Given the following conditions:

- 2A SDC train is in operation
- RCS level is at 29 feet 10 inches

Which of the following could result in RCS pressurization and a loss of inventory should a loss of SDC occur?

- A. Removal of the Cold leg manways prior to removing Hot leg manways.
- B. Removal of the Hot leg manways prior to removing Cold leg manways.
- C. Installing the Cold leg Nozzle dams prior to installing the Hot leg Nozzle dams.
- D. Installing the Pressurizer manway prior to installing the Hot leg manway.

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Question 65

Unit 2 is in Mode 5, with the Pressurizer manway off. A differential current trip occurs on the 2A3 4.16 KV bus. Subsequently, the 2B LPSI pump was secured when the motor current increased and pegged out.

Refueling level indicators LI-1117 and LI-1117-1 indicate RCS level at 49" and constant. RCS temperature has increased to 212°F. The differential current condition is expected to be cleared in 20 minutes.

For this condition the Emergency action level (EAL) would be:

References provided

- A. Unusual event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

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Question 66

During implementation of the EPIP's, which of the following Emergency Coordinator duties are **NOT** transferred to other individuals in the emergency response organization when the TSC, EOF and OSC are fully operational?

- A. Classification of emergencies
- B. Notifications to state and local authorities
- C. Protective action recommendations
- D. Authorizing all field activities and re-entries

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Question 67

Unit-2 is in the process of cooling down due to a Steam Generator Tube Rupture in the 2A Steam Generator. The Board RCO reports that RCS T-Hot just reached 509 °F and RCS pressure is 1950 psia.

What action should be performed?

- A. Reduce cooldown to less than 30°F per hour.
- B. Isolate the 2A Steam Generator.
- C. Stop one RCP in each loop.
- D. Block MSIS.

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Question 68

Unit 1 is stable at 100% power with all systems in normal alignment. An RCS leak rate surveillance IAW OP 1-0010125A, Data Sheet 1 'Reactor Coolant System Water Inventory Balance' is 60 minutes into the required 120 minute period.

Which of the following conditions will invalidate this surveillance?

- A. The RCO adds 30 gallons of water to the VCT.
- B. Quench tank level increases from 56% to 58%.
- C. Letdown is diverted to the HUT.
- D. Charging pump seal leakage increases to 0.5 GPM.

Question 69

Unit 2 is at 100% power steady state. Containment pressure is approaching the Technical Specification limit. Which of the following is initiated to prevent exceeding the Containment pressure Technical Specification limit?

Initiate:

- A. Containment purge using HVE-8A or HVE-8B through the Shield building ventilation filter trains
- B. Containment mini-purge using HVE-7A or HVE-7B through the Shield building ventilation filter trains.
- C. Containment purge using HVE-8A or HVE-8B through the Continuous Contmt/H2 Purge system filter trains
- D. Containment mini-purge using HVE-7A or HVE-7B through the Continuous Contmt/H2 Purge system filter trains.

Question 70

You are reviewing a Liquid Release Permit in preparation to release the 1B Waste Monitor Tank. The Liquid Release radiation monitor R-6627 has been out of service for 10 days. Which of the following would you expect to see attached to the Liquid Release permit as a result of R-6627 being out of service?

- A. Two independent release rate calculations
- B. Figure 1 from ADM-17.18 'Temporary System Alteration' documenting R-6627 being out of service
- C. Chemistry Supervisor letter giving permission to release the tank
- D. Plant General Manger letter giving permission to release the tank

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Question 71

While performing 1-EOP-01 Standard Post Trip Actions, the following indication is observed:

- Turbine First Stage pressure is 530 Psia

Which of the following describes the FIRST required Operator action?

- A. Open the Generator OCB's 8W30 and 8W26
- B. Open the Exciter supply breaker CB FB 1
- C. Close the Main Steam isolation valves
- D. Stop the DEH pumps

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Question 72

Unit 2 is on SDC, mid-loop operations with the following conditions:

- Time to boil has been calculated to be 14 minutes
- 2A LPSI pump is running with 2B LPSI in standby mode

An RCS leak develops and the RCS level stabilizes at 29' 5" with the leak isolated. The 2A LPSI pump has been secured. ONP 2-0440030 'Shutdown Cooling Off-Normal' has been entered.

Which of the following states the Immediate Operator Actions and procedure implementation for the given conditions?

- A. Start the 2B LPSI pump, perform safety function status check per 2-ONP-01.04 'PC4-SDC in Operation-Reduce Inventory Operations'.
- B. Re-start the 2A LPSI pump, perform safety function status check per 2-ONP-01.04 'PC4-SDC in Operation-Reduce Inventory Operations'
- C. Evacuate the Containment and initiate Containment closure. Perform safety function status check per 2-ONP-01.04 'PC4-SDC in Operation-Reduce Inventory Operations'
- D. Evacuate the Containment and initiate Containment closure. With the leak isolated, exit ONP 2-0440030 'Shutdown Cooling Off-Normal' and implement 2-ONP-01.04 'PC4-SDC in Operation-Reduce Inventory Operations'

Question 73

Unit 1 has entered 1-EOP-06 Total Loss of Feedwater. 1A and 1B SG levels are at 10% narrow range and slowly decreasing. Other than attempting to re-gain Feedwater, which of the following is performed to mitigate the event?

- A. Cooldown the RCS to less than 510°F.
- B. Reducing subcooling to minimum values.
- C. Stopping one RCP in each loop.
- D. Stabilize and control RCS T_{cold} less than 535°F.

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Question 74

The RCS is in Mode 5 with the Pressurizer manway off. RCS level is 35 feet. Which of the following mechanisms are utilized to prevent loss of SDC due to certain failures.

	Unit 1	Unit 2
A.	HCV 3657 SDC Temp. control and FCV-3306 SDC return flow are locally positioned.	Pressurizer Pressure Instruments PC 1103, 1104, 1105, 1106 are de-energized.
B.	HCV 3657 SDC Temp. control and FCV-3306 SDC return flow are locally positioned.	Hot leg suction valves V3480, 3481, 3651, and 3652 are de-energized.
C.	Hot leg suction valves V3480, 3481, 3651, and 3652 are de-energized.	HCV 3657 SDC Temp. control and FCV-3306 SDC return flow are locally positioned.
D.	Pressurizer Pressure Instruments PC 1103, 1104, 1105, 1106 are de-energized.	Hot leg suction valves V3480, 3481, 3651, and 3652 are de-energized.

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Question 75

Which of the following is the largest contributor of hydrogen concentration inside the Containment during a core melt event, and the preferred method of removal?

- | | | |
|----|---------------------------------|---------------------|
| A. | Radiolysis of water | Hydrogen Recombiner |
| B. | Zirc/water reaction | Hydrogen Recombiner |
| C. | Corrosion of Aluminum and Zinc. | Hydrogen Purge |
| D. | Zirc/water reaction. | Hydrogen Purge |

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Question 76

Due to numerous A side AC electrical failures, Unit 1 has entered 1-0910054 'Loss of a Safety Related AC Bus' with the following malfunctions:

- The 1AB 480V load center is de-energized and unable to be restored.
- The 1A DC bus has no Battery Chargers available to supply the bus.

Which of the following options are available to align the 1A DC bus to another DC bus that has an operable battery charger?

Tie the:

- A. 1AB DC bus to the 1A DC bus through the 1B DC bus
- B. 1A DC bus directly to the 1B DC bus
- C. 1C DC bus to 1AB DC bus, 1AB DC bus to the 1A DC bus.
- D. 1C DC bus directly to the 1A DC bus.

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Question 77

Unit 2 Diesel fuel oil storage tanks are filled to Tech. Spec limit. A Loss of Offsite power occurs with the 2A Diesel out of service. The 2B Diesel is fully loaded. With both Diesel oil storage tanks supplying the 2B Diesel, when will the Unit 2 fuel oil storage tanks run dry?

- A. 4 days
- B. 7 days
- C. 8 days
- D. 14 days

Question 78

Unit 2 has the following CCW alignment in Mode 1:

- 2A CCW pump has been shut down due to a major oil leak and declared inoperable
- 2B CCW pump is in service on the B CCW header
- 2C CCW pump was aligned and started on the A header 4 hours ago
- 2AB electrical busses are aligned to the B side

Which of the following states the Technical Specification operability status of the CCW system.

- A. Only the B CCW train is considered operable.
- B. A and B CCW trains are considered operable.
- C. A and B CCW trains are considered inoperable due to single electrical train alignment.
- D. A and B CCW trains are considered inoperable due to 2C CCW pump alignment tying A and B headers together.

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Question 79

Unit 2 is at Mid-Loop during a refueling outage, with the following conditions:

- Unit has been shutdown for 28 days and refueling is complete
- RCS temperature is 120 °F
- Penetration 50 is open to support the outage

If SDC cooling were lost with Penetration 50 open, what is the maximum time to establish Containment integrity?

References Provided

- A. 22 minutes
- B. 28 minutes
- C. 30 minutes
- D. 32 minutes

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Question 80

Unit 1 has entered 1-EOP-15 in preparation for once through cooling. Which of the following is the correct sequence to open the PORV's and the positive indication that the PORV's are open?

Pull two RPS Hi pressure bistables and:

- A. position the PORV override switches to override. Verify PORV red lights lit.
- B. position the PORV override switches to override. Verify acoustic flow monitors indicate flow.
- C. ensure PORV control switches in normal. Verify PORV red lights lit.
- D. ensure PORV control switches in normal. Verify acoustic flow monitors indicate flow.

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Question 81

Which of the following states the response of MV-21-2 and MV-21-3 (Turbine Cooling Water and Open Blowdown Cooling system valves) and the reason for the response, upon receipt of a SIAS signal?

MV-21-2 and MV-21-3 will receive:

- A. an open signal to ensure cooling flow to the OBCS heat exchangers for secondary sampling capability.
- B. an open signal to ensure cooling flow to the OBCS heat exchangers in the event blowdown needs to be put in service during a SGTR.
- C. a close signal to ensure the ICW pumps will not be at runout flow if the CCW TCV's failed open.
- D. a close signal to ensure sufficient cooling flow to the CCW heat exchangers.

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Question 82

Unit 2 is at 100% power. The 2A3 4.16 KV bus is de-energized with the 2A Diesel Generator running with it's output breaker open. Which of the following caused this condition?

(assume the diesel output breaker is operating as designed)

- A. A degraded voltage condition.
- B. A under voltage condition.
- C. A differential current condition.
- D. A overcurrent condition.

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Question 83

Which of the following will automatically initiate Containment Spray flow on Unit 1?
(Assume initiate logic has been met)

- A. RCS pressure of 1600 PSIA for SIAS OR containment pressure of 10.0 PSIG for CSAS.
- B. RCS pressure of 1736 PSIA for SIAS AND containment pressure of 5.0 PSIG for CSAS.
- C. Containment pressure of 3.5 PSIG for SIAS OR containment pressure of 5.0 PSIG for CSAS.
- D. Containment pressure of 5.0 PSIG for SIAS AND containment pressure of 10.0 PSIG for CSAS.

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Question 84

The Unit 2 'A' Channel Boron Dilution Monitor has gone into alarm due to an instrument failure. Which instrument has failed?

- A. The boronometer.
- B. The 'A' log Startup channel.
- C. The 'A' Wide Range Log Safety channel.
- D. The 'A' Excore Neutron Flux Monitoring System.

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Question 85

A fire has been reported in the Unit 1 Turbine Switchgear room. The NWE who is currently the fire team leader is at the site medical facility. Which of the following individuals can be used to fill the team leader vacancy? (assume shift is at minimum complement IAW AP 0010120, "Conduct of Operations")

- A. Unit 1 Desk RCO (qualified as SRCO)
- B. Unit 1 SNPO (qualified as SNPO)
- C. Unit 1 NPO (qualified as NPO)
- D. Unit 1 ANPO (qualified as ANPO)

Question 86

Unit 2 is operating at 100% power steady state with only the 2B charging pump running. The following annunciator is received:

- M-31 2B Charging pump trouble

You notice the 2B Charging pump has tripped. Which of the following has caused the Charging pump to trip and what are the required operator actions as a result of the charging pump tripping?

The Charging pump has tripped on low:

- A. oil level, start the standby charging pump.
- B. oil pressure, isolate letdown.
- C. seal tank level, fill seal tank and re-start charging pump.
- D. seal tank level, isolate letdown.

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Question 87

Which of the following will start the Unit 1 Control Room Emergency Filtration system fans (HVE-13A and HVE-13B) and position the dampers that will place the Control Room on recirculation?

- A. Unit 2 CIAS (caused by High Radiation)
- B. High outside air temperature
- C. Smoke in the outside air intake ductwork
- D. Pressure in the Control Room decreases below $\frac{1}{8}$ inch water gage

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Question 88

Given the following Unit 2 plant conditions:

- RCS level is at mid loop
- All CCW flow is lost

Assuming no operator action, the operator would observe an increase in:

- A. LPSI pump amp fluctuation.
- B. Steam Generator pressure.
- C. SDC purification flow.
- D. LPSI pump discharge pressure.

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Question 89

Unit 1 has received alarm Q-36 'Radiation Monitoring Power Failure.'

Which of the following indication would confirm this alarm and what would be the consequences assuming this alarm is valid?

- A. Blue FAIL light is lit, detector is inoperable due to power failure.
- B. Blue FAIL light is NOT lit, detector is inoperable due to power failure.
- C. Amber light is lit, detector is inoperable due to an internal failure.
- D. Red light is NOT lit, detector is inoperable due to an internal failure.

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Question 90

Unit 1 is experiencing a large break loss of coolant. All RCP's are off. Which of the following would indicate possible core damage and what mitigation step will have the greatest impact on regaining core cooling?

- A. CET temperature is >22 °F superheat, verify ECCS flow meets figure 2.
- B. CET temperature is >22 °F superheat, verify Steam Generators are feeding and steaming.
- C. That indicates saturation conditions, verify ECCS flow meets figure 2.
- D. That indicates saturation conditions, verify Steam Generators are feeding and steaming.

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Question 91

Unit 1 is at steady state 80% power with the following conditions:

- Charging pumps A and C are running
- Charging and letdown are balanced and Pressurizer Level is steady

Which of the following failures will result in letdown flow diverting to the waste management system? (assume no Operator actions)

- A. Selected Pressurizer level channel failing low.
- B. Selected Pressurizer level channel failing high.
- C. Selected RRS Tave program failing high.
- D. Letdown backpressure valves failing open.

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Question 92

Unit 1 had a transient which resulted in the plant tripping at Pressurizer pressure of 2450 psia. Which of the following explains the mechanism that tripped the plant?

High Pressurizer pressure through the:

- A. Reactor Protection System, which opened line contactors, which in turn opened the CEA MG set output breakers.
- B. Reactor Protection System, which opened eight TCB's.
- C. Engineered Safety Feature Actuation System, which opened line contactors, which in turn opened the CEA MG set output breakers.
- D. Engineered Safety Feature Actuation System, which opened eight TCB's.

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Question 93

Unit 2 is performing a rapid downpower due to a Steam Generator tube leak. Assuming the leak rate stays constant as the unit is downpowered, which of the following radiation monitors will show significant decreasing trends as the unit is downpowered and the reason why?

- A. Steam Generator blowdown due to high activity isolating the sample and the trapped sample decaying over time.
- B. Condenser air ejector due to decreasing steam flow.
- C. Condenser air ejector due to decreasing levels of Nitrogen 16.
- D. Main Steam line due to decreasing levels of Nitrogen 16.

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Question 94

Unit 1 is in Mode 3 with the following conditions:

- 1230 psia Pressurizer pressure
- Zero Power Mode Bypass in service on all channels.
- All RCP's running

RPS Channel A Wide Range channel has failed high. Which of the following RPS Bistables has automatically changed state?

- A. LPD
- B. High power
- C. High Pressurizer pressure
- D. TMLP

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Question 95

If unit 1 had a continuous rod withdrawal at BOC and a continuous rod withdrawal at EOC which would cause the largest RCS temperature change and why?

- A. BOC because FTC is more negative.
- B. BOC because MTC is less negative.
- C. EOC because FTC is less negative.
- D. EOC because MTC is more negative.

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Question 96

Unit 2 is in mode 2 at 2% power, withdrawing CEA's. Group 5 is currently at 115" withdrawn. Channel "A" Linear Range Safety Channel fails high. Which of the following states the effect on CEA motion and the reason why?

- A. CEA motion stops due to Power Dependent Insertion Limit setpoint change.
- B. CEA motion stops due to Pre-Power Dependent Insertion setpoint change.
- C. CEA motion continues, one channel failure is not sufficient to stop CEA motion.
- D. CEA motion continues, actual reactor power is too low to stop CEA motion.

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Question 97

During the performance of the Control Element Assembly Quarterly Exercise 1-OSP-66.01, it was determined that a CEA in Regulating Group "5" is inoperable due to mechanical binding. Which of the following actions must be taken? (Assume normal 100% power with all rods at 136 inches.)

- A. Reduce power to less than 70%.
- B. Place unit in mode-3 within 1 hour.
- C. Calculate shutdown margin within 1 hour.
- D. Manually trip the reactor and turbine.

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Question 98

The operators are maintaining the plant in Hot Standby on natural circulation. Which of the following operator actions would enhance natural circulation flow?

- A. Atmospheric steam dump controllers are adjusted from 30% output to 20% output.
- B. Steam Generator blowdown is decreased from 100 gpm to 30 gpm.
- C. Pressurizer spray is operated to reduce subcooling from 90°F to 40°F.
- D. Aux feedwater flow is adjusted from 150 gpm to 200 gpm to increase S/G level.

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Question 99

Unit 1 has just tripped from 100% power with a loss of all Containment cooling. As Containment temperature increases, what effect will a rise in Containment temperature have on Steam Generator level and the reason why?

- A. Actual level will be higher than indicated level due to voiding in the variable leg.
- B. Actual level will be higher than indicated level due to reference leg temperature increase.
- C. Indicated level will be higher than actual level due to voiding in the variable leg.
- D. Indicated level will be higher than actual level due to reference leg temperature increase.

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Question 100

Which of the following parameters determines when Containment Spray can be terminated on Unit 2?

- A. Containment pressure, Containment temperature, Hydrogen concentration
- B. Containment pressure, Containment temperature, Hydrazine Tank level
- C. Containment temperature, Hydrazine Tank level, Hydrogen concentration
- D. Containment pressure, Hydrazine Tank level, Hydrogen concentration,