



**Constellation
Nuclear**

**Calvert Cliffs
Nuclear Power Plant**

*A Member of the
Constellation Energy Group*

TO: Larry Briggs, Chief Examiner, NRC Region I
FROM: Bill Birney, Supervisor, Requal Training Unit (Facility Representative)
SUBJECT: 9/00 Initial Operator Exams
DATE: August 11, 2000

Attached in a secured manner per NUREG 1021 are the following exam materials for the RO and SRO Exam scheduled for 9/22/00 and the week of 9/25/00 at Calvert Cliffs Nuclear Power Plant.

A. Written Exam

- 136 Questions in the review format
- Reference material to be used during the Exam
- ES-401-7 Written Examination Quality Checklist
- RO and SRO Written Test

TAB 1 QA, OUTLINE
2 EXAM BANK
3 RO TEST
4 SRO TEST
5 REFERENCE MATERIAL

B. Operating Exam

- 4 Simulator Scenarios (with 1 extra)
- 10 JPMs
- Administrative Topics
 - RO: 4 questions and 3 JPMs
 - SRO: 2 questions and 4 JPMs
- Revised JPM outline for RO, SROI and SROU
- Revised outline for SROI and SROU
- Justification for the revision to the outlines
- Quality Checklists ES-301-3, 4, 5 and 6

6 QA SUBJECTS, RO ADMIN
7 SRO ADMIN
8 D1 & 2 JPMs
9 SCENARIOS

In accordance with Attachment 1 of ES 201, the enclosed materials "shall be withheld from public disclosure until the examinations are complete".

If you need any additional information, please contact Bob Niedzielski at 410-495-6542 or Bill Birney at 410-495-2363.

Sincerely,


Bill Birney
Facility Representative

cc: C.D. Sly

JUSTIFICATION FOR OUTLINE CHANGES:

1. RO WRITTEN EXAM

*** Tier 2/Group 1**

Item 059 MAIN FEEDWATER

Changed category A2 11 to category A4 3 due to transposing error from original outline selection

2. SRO WRITTEN EXAM

*** Tier 1/Group 2**

Item 00038 Steam Generator Tube Rupture

Changed category K2 2 to category A1 11 due to transposing error from original outline selection

Item 00054 Loss of Main Feedwater

Added SRO designation to topic and added SRO K/A topic description due to transposing error from original outline selection

Item 00058 Loss of DC Power

Added K/A topic description due to transposing error from original outline selection

*** Tier 2/Group 1**

Item 0022 Containment Cooling

Added K/A topic description due to transposing error from original outline selection

3. RO/SROI B1/B2 OUTLINE

* Deleted alternate path designation for B2 item c to get alternate path to 40% criteria

* Changed JPM due to duplication on Audit Exam items b and c

4. SROU B1/2 OUTLINE

* Deleted alternate path designation for B1 item b and B2 item a to get alternate path to 40% criteria

* Changed JPM due to duplication on Audit exam item b

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	Imp.	Points
001 Control Rod Drive											27	G2.1- Knowledge of system function	2.8	1
003 Reactor Coolant Pump		1										Knowledge of bus power supplies	3.1	1
004 Chemical and Volume Control										17		Monitor deborating IX operation	2.7	1
013 Engineered Safety Features Actuation								4				Determine impact of loss of inst bus	3.6	1
015 Nuclear Instrumentation	1											Cause/effect between Nis and RPS	4.1	1
017 In-core Temperature Monitoring								2				Using CETs to mitigate core damage	3.6	1
022 Containment Cooling										1		Monitor CAC operation	3.6	1
056 Condensate								4				Predict impact of loss of cond. pump(s)	2.6	1
059 Main Feedwater										3		Predict effect of DFWCS failure	3.0*	1
061 Auxiliary/Emergency Feedwater					1							Interrelationship between AFW and RCS	3.6	1
068 Liquid Radwaste											11	G2.3- Ability to control Radiation release	2.7	1
071 Waste Gas Disposal	4											Relationship between WG and ventilation	2.7	1
072 Area Radiation Monitoring								2				Impact of detector failure	2.8	1
068 Liquid Radwaste				1								Design features of Misc Waste System	3.4	1
013 Engineered Safety Features Actuation									2			Monitor auto operation of ESF equip	4.1	1
072 Area Radiation Monitoring	4											Cause/effect on CR ventilation system	3.3*	1
015 Nuclear Instrumentation								3				Predict impact of Xe oscillation	3.2	1
003 Reactor Coolant Pump	13											Cause/effect of RCP Oil-lift pump	2.5	1
061 Auxiliary Feedwater	7											Cause/effect of water source on system	3.6	1
056 Condensate	3											Cause/effect of MFW on Condensate sys	2.6*	1
004 Chemical and Volume Control							11					Monitor L/D and Charging design flows	3	1
071 Waste Gas Disposal										29		O2, N2 or H2 Limits of WGDT	3.0*	1
001 Control Rod Drive				23								Design features of CMI	3.9	1
K/A Category Point Totals:	6	1	0	2	1	0	1	6	1	3	2	Group Point Total:		23

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topics	Imp.	Points
000007 CE/E02 Reactor Trip Stable/Recovery / 1		2					See RO Outline	4	1
000008 Pressurizer Vapor Space Accident / 3(SRO)					25		Determine expected leak rate from open PORV/Safety valve	3.4	1
000009 Small Break LOCA / 3			23				See RO Outline	4.3	1
000022 Loss of Reactor Coolant Makeup / 2					1		See RO Outline	3.8	1
000025 Loss of SDC (RHR) / 4 (SRO)					4		Determine location and isolability of leaks	3.6	1
000027 Pressurizer Press Control Sys Malf / 3						32	G2.1 See RO Outline	3.8	1
000032 Loss of Source Range NI / 8				1			See RO Outline	3.4*	1
000033 Loss of Wide Range NI / 7	1						See RO Outline	3	1
000037 Steam Generator Tube Leak / 3			7				See RO Outline	4.4	1
000038 Steam Generator Tube Rupture / 3				11			See RO Outline	2.5	1
000054 (CE/E06) Loss of Main Feedwater / 4 (SRO)				2			Ability to operate/monitor behavior characteristics during event	4	1
000058 Loss of DC Power / 6	1						Operating implication of loss of DC power on equipment/inst	3.1*	1
000060 Accidental Gaseous Radwaste Rel. / 9			3				See RO Outline	4.2	1
000061 ARM System Alarms / 7						50	G2.4 See RO Outline	3.3	1
000065 Loss of Instrument Air / 8					8		See RO Outline	3.3	1
CE/E09 Functional Recovery		1					See RO Outline	3.9	1
K/A Category Point Totals:	2	3	3	2	4	2	Group Point Total:		16

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topics	Imp.	Points
000028 Pressurizer Level Malfunction / 2									
000036 Fuel Handling Accident / 8		1					Interrelationship between rad monitor and event	3.9	1
000056 Loss of Off-site Power / 6						20	G24 Operational implications of EOP warnings, cautions and notes	4	1
CE/A16 Excess RCS Leakage / 2		2					Interrelationship between event and heat removal system	3.3	1
K/A Category Point Totals:	0	2	0	0	0	1	Group Point Total:		3

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topics	Imp.	Points
001 Control Rod Drive											27	G2.1 See RO Outline	2.9	
003 Reactor Coolant Pump		1										See RO Outline	3.1	
004 Chemical and Volume Control										17		See RO Outline	2.7	
013 ESF Actuation (SRO)								4				Predict impact of loss of inst bus on sys	4.2	
014 Rod Position Indication											12	G2.1 See RO Outline	4	
015 Nuclear Instrumentation	1											See RO Outline	4.2	
017 In-core Temperature Monitoring (SRO)								2				Using CETs to mitigate core damage	4.1	
022 Containment Cooling										1		See RO Outline	3.6	
026 Containment Spray			1									See RO Outline	4.1	
056 Condensate (SRO)								4				Predict impact of loss of condensate pps	2.8*	
059 Main Feedwater (SRO)								11				Predict impact of FW control failure	3.3*	
061 Auxiliary/Emergency Feedwater					1							See RO Outline	3.9	
063 DC Electrical Distribution (SRO)								1				Predict impact of grounds on DC system	3.2*	
068 Liquid Radwaste				1								See RO Outline	4.1	
071 Waste Gas Disposal										29		See RO Outline	3.6*	
072 Area Radiation Monitoring	4											See RO Outline	3.5*	
022 Containment Cooling	1											Cause/effect between CCS and SRW sys	3.7	
059 Main Feedwater										3		See RO Outline	2.9	
013 ESFAS									2			See RO Outline	4.2	
K/A Category Point Totals:	3	1	1	1	1	0	0	5	1	4	2	Group Point Total:		19

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

Applicant Information

Name:	Region: I / II / III / IV
Date:	Facility/Unit: CCNPP 1#2
License Level: RO / SRO	Reactor Type: W / CE / BW / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value	<u>100</u>	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

Name: _____

1. The Unit is at full power. The RO is directed to report to the Shift Manager in his office to discuss a surveillance he recently performed. The CRO is to relieve the RO during the meeting.

Which one of the following describes the minimum action the RO is REQUIRED to perform per NO-1-200 (Control of Shift Activities)?

- A. Verbally brief the CRO.
- B. Walkdown the panels with the CRO.
- C. Inform the CRS of the meeting subject, duration and the location.
- D. Complete all requirements listed in NO-1-207 (Nuclear Operations Shift Turnover).

2. Given the following:

- Unit 1 is defueled and Unit 2 is in Mode 5
- Alarm "SFP TEMP HI" annunciates at 1C13

Select the cooling mechanisms in preferred order per AOP-6F (SFP Cooling Malfunctions):

- A. Line up Unit 1 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- B. Place second SFP cooler in service, line up Unit 1 SDC to SFP system, add makeup to SFP as water boils off.
- C. Line up Unit 2 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- D. Place second SFP cooler in service, line up Unit 2 SDC to SFP system, add makeup to SFP as water boils off.

3. A new electric motor has been installed on an existing pump. The MO requires the motor to be checked for proper rotation and not all clearances have been returned.

Which one of the following actions are required to remove the Danger Tag from the motor power supply? (assume the pump suction and discharge valves are to remain tagged out)

- A. Process a Supplementary Clearance.
- B. Process a modification to the tagout.
- C. Clear all tags and use a "human danger tag" for equipment not ready for operation.
- D. Verbally authorize the "lifting" of the motor tag and re-tag after rotation check.

4. Which one of the following is the LTOP protection applicability requirements per Tech Specs for Unit 1 and Unit 2?

- A. Mode 3 with Unit 1 RCS cold leg temperature <365 °F or Unit 2 RCS cold leg temperature <301 °F.
- B. Mode 3 with Unit 1 RCS cold leg temperature <301 °F or Unit 2 RCS cold leg temperature <365 °F.
- C. Mode 3 with Unit 1 RCS cold leg temperature <365 °F or Unit 2 RCS cold leg temperature <301 °F AND Modes 4, 5, 6.
- D. Mode 3 with Unit 1 RCS cold leg temperature <301 °F or Unit 2 RCS cold leg temperature <365 °F AND Modes 4, 5, 6.

5. An operator is assigned a task to monitor a resin transfer line for blockage. The operator's current dose for the year is 850 mrem. The task is expected to result in a dose of 100 mrem.

Describe the procedure, if required, for extending the administrative dose limit:

- A. No administrative dose limit extension is needed.
- B. Dosimeter record review, Shift Manager and GS-NO approvals.
- C. Dosimeter record review, GS-NO and GS-RS approvals.
- D. EPD functional review, RadCon S/S and Shift Manager approvals.

6. Given the following:

- * Unit 2 is in Mode 5
- * PAL interlocks are defeated
- * Containment Equipment hatch is installed
- * Spent fuel moves are in progress in the SFP area

Which on the following describes the condition required to maintain operability of SFP ventilation?

- A. Line-up Containment Purge with Supply fan OFF and Exhaust Fan ON.
- B. Containment Equipment Hatch must be secured with all bolts.
- C. Line-up Containment Purge with both the Supply and Exhaust fans ON.
- D. Containment Equipment Hatch must be secured with at least 4 bolts.

7. Which one of the following describes the proper action(s) for a reactor trip and a subsequent severe fire requiring a Control Room Evacuation?

- A. Implement EOP-0.
- B. Implement AOP-9A.
- C. Implement EOP-0, then return to AOP-9A.
- D. Parallel implement EOP-0 and AOP-9A.

8. During the performance of EOP-0, the RO observes the following plant conditions for the Pressure and Inventory Safety Function:

- * Pzr level is at 70 inches and steady
- * 3 Charging pumps are running
- * Letdown was isolated prior to the reactor trip
- * RCS pressure is 1900 PSIA and steady
- * RCS Subcooling is 95 °F and steady

The FINAL report from the RO to the CRS regarding the status of Pressure and Inventory Control Safety Function should be:

- A. COMPLETE.
- B. MONITORING.
- C. CANNOT BE MET.
- D. TAKING ALTERNATE ACTIONS.

9. Given the following:

- * Unit 2 Reactor was manually tripped from 100% power due to a loss of a SGFP
- * RCS boron concentration at 753 ppm
- * The RO observes that 1 CEA has a WHITE light only

Which of the following is the proper response to complete the Reactivity Safety function steps?

- A. Monitor for drop in reactor power, a negative SUR and borate to at least 1053 ppm.
- B. Monitor for drop in reactor power, a negative SUR , inform the CRS that Reactivity Control Safety Function can not be met.
- C. Monitor for drop in reactor power, a negative SUR, verify DI water to the RCS is secured.
- D. Monitor for drop in reactor power, a negative SUR and borate to at least 2300 ppm.

10. Given the following:

- * Both Units are at 100% power
- * 1C01 "ANN LOSS OF DC POWER" annunciator alarms
- * ERPIP is implemented and an UNUSUAL EVENT is declared

Which one of the following describes the Alarm Manual actions required of the RO?

- A. Assemble with the Control Room personnel for accountability.
- B. Assume the duties of the Control Room Communicator.
- C. Monitor plant computer trends and raise frequency of watchstation rounds.
- D. Assume the duties of NRC ENS Communicator.

11. Given the following:

- * Unit 1 120VAC bus 1Y01 has been lost.
- * Operators are directed by AOP-7J (Loss of 120 Vital AC Power) to stop the Containment Radiation Monitor pump.

Which one of the following is the reason for securing the pump?

- A. To prevent an inadvertent restart of the pump when the bus is repowered .
- B. To avoid reliance on the low flow trip to protect the pump.
- C. To prevent an inadvertent alarm when the bus is repowered .
- D. To establish containment integrity for the affected penetration.

12. During the heat up of Unit 2 from Mode 5, when the Unit reaches NOT and NOP, the RO reports 22B RCP temperature trends have slowly increased during the heatup of the RCS, and are consistently running higher than the other RCPs.

Which one of the following is the correct action to respond to the 22B RCP temperature trend?

- A. Verify CC 3832 and 3833 open.
- B. Start a second CC pump.
- C. Check CC flow to 22B RCP ~ 50 GPM higher than the other RCPs.
- D. Check RCP integral heat exchanger for leakage.

13. What CRO action must be taken on Unit 2 in the "Ensure Turbine Trip" block step to prevent an overcooling of the RCS, per EOP-0? (The Turbine Speed was observed to be decreasing)

- A. Press "Close Valves" button on the turbine control panel.
- B. Press "Reset" button on the MSR control panel.
- C. Observe that MSR source valves go shut.
- D. Shut both MSIVs.

14. One of the first actions the operator is instructed to take per AOP-6A (Abnormal Reactor Coolant Chemistry/Activity) on increased RCS activity is to adjust letdown flow.

Which one of the following statements is correct as to the adjustment and the reason?

- A. Increase letdown to maximum to divert RCS water for processing by the RCW Processing System.
- B. Decrease letdown to minimum to minimize the amount of radioactive letdown that is flowing throughout the Auxiliary Building.
- C. Isolate letdown until the cause of the activity increase can be determined by chemistry technicians.
- D. Increase letdown flow to obtain the maximum purification flow.

15. Following a Loss of Offsite Power, natural circulation flow can not be accurately verified for approximately 15 minutes.

Which one of the following is the cause of this time delay?

- A. Time for Reactor Coolant Pump coastdown.
- B. Formation of Steam Generator inverted delta T.
- C. Time for Low Steam Generator levels recovery.
- D. Increased loop cycle time.

16. Given the following:

- * Unit 1 is in Mode 3 at NOT and NOP
- * A total loss of Component Cooling occurs
- * AOP-7C (Loss of Component Cooling Water) is implemented and RCPs are stopped
- * All RCP lower seal temperatures are $< 250^{\circ}\text{F}$
- * The CRS directs the start of 12 CC pump per AOP-7C

Which of the following is the correct valve lineup for RCP restart after completion of AOP-7C actions?

- A. SHUT 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- B. SHUT 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.
- C. OPEN 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- D. OPEN 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.

17. Given the following:

- * Unit 1 is in Mode 3 preparing for RCS cooldown to Mode 5
- * The CRO reports that 1C13 panel indication 11 Salt Water header pressure is reading 9 PSIG and both the salt water flow on the 11 SW header and 11 CCHX have increased

Which one of the following describes the required actions based on plant conditions?

- A. Reduce 11 Salt Water header flow by placing 11A/11B SRWHX SW Bypass, 1-PIC-5154, in AUTO.
- B. Implement AOP 7A (Loss Of Salt Water Cooling) for a rupture on the 11 CC Heat Exchanger header.
- C. Direct the OSO to throttle 11 SW pump discharge to raise SW header pressure.
- D. Start 13 SW pump on 11 SW header to raise SW header pressure.

18. Given:

- * Both Units 1 & 2 were at 100% power
- * A Loss of Offsite Power occurred
- * All DGs started and loaded as expected
- * EOP-0 was implemented for both units
- * Condenser vacuum is 22" HG on both Units

Select the expected response on steam dumping capabilities for both Units:

- A. Unit 1 TBVs are operable, Unit 2 TBVs are operable.
- B. Unit 1 TBVs are inoperable, Unit 2 TBVs are operable
- C. Unit 1 TBVs are inoperable, Unit 2 TBVs are inoperable.
- D. Unit 1 TBVs are operable, Unit 2 TBVs are inoperable

19. Given the following:

- * Unit 1 is in Mode 6 with refueling in progress
- * The Containment Outage Door is shut
- * The PPO reports the Equipment Hatch has 1 out of 4 bolts loose
- * AOP-4A (Loss of Containment Integrity) is implemented

Determine the actions required based on plant conditions:

- A. Verify the Containment Outer Door is secured per NO-1-114, Containment Closure
- B. Secure Core Alterations immediately and establish Containment Closure per STP O-55A-1.
- C. Verify the Containment Outer Door is secured per STP O-55A-1 and suspend Core Alterations if unsat.
- D. Secure Core Alterations immediately and document the Containment Closure deviation per NO-1-114.

20. Given the following:

- * Both Units are at 100% power when a Loss of Offsite Power event occurs
- * EOP 0 is implemented on both Units
- * Concurrent with EOP 0 implementation, a loss of suction on the AFW common suction header occurs in the Unit 1 Turbine Building
- * The appropriate optimal recovery procedure is implemented for each Unit
- * The following parameters are observed:

	Unit 1	Unit 2
RCS pressure	1800 PSIA and lowering	1900 PSIA and rising
RCS Tc (~15 min later)	475 °F and lowering	505 °F (after rising uncontrollably from 495 °F)
11 (21) SG level	-360 inches	-300 inches
12 (22) SG level	-300 inches	-300 inches

AFW Suction header is restored after venting

Evaluate the proper actions to be taken on both Units based on stated plant conditions:

- A. Establish AFW flow on Unit 1 and Unit 2.
- B. Initiate OTCC on Unit 1 and throttle OPEN ADVs on Unit 2.
- C. Establish AFW flow on Unit 1 and initiate OTCC on Unit 2.
- D. Initiate OTCC on Unit 1 and increase AFW flow to Unit 2.

21. Given the following:

- * Unit 2 is at 100% power
- * All control systems are in automatic
- * Pressurizer Spray is stuck open
- * NO operator action is taken

Which one of the following describes the effect of RCS pressure DECREASING to 2205 PSIA?

- A. Pressurizer "PZR CH 100 PRESS" alarm is annunciated.
- B. Proportional heaters are fully energized.
- C. Proportional heaters are partially energized.
- D. All Backup heaters are energized.

22. Unit 1 is in MODE 3 with Tavg at 532°F, when one CEA is declared inoperable/untrippable. How long after the detection of the inoperable CEA must the shutdown margin be verified?

- A. Immediately
- B. 1 hour
- C. 12 hours
- D. 24 hours

23. Given the appropriate reference:

During a reactor startup, an unborated ion exchanger was inadvertently placed in service, resulting in RCS boron dilution. If the equivalent dilution flow rate of this ion exchanger is 35 gpm and RCS boron concentration is 993 ppm, how long will it take to reach the boron concentration of 985 ppm?

- A. 13 minutes
- B. 38 minutes
- C. 68 minutes
- D. 100 minutes

24. EOP-7 (Station Blackout) occurred on U-1 and the crew restored power to 11 4KV Bus, from the 1A DG. The CRS directs you to restore power to MCC-104 from MCC-114.

This action will restore to which of the following equipment?

- A. All Pzr Backup Heater groups and allow all charging pumps to start.
- B. PORV Block Valves and RPS Channel A Instrumentation.
- C. All CEA position indications and Main HPSI header MOVs.
- D. TBV control from 1C03 and Containment Cooling Supply/Return CVs to the RCPs.

25. Given the following:

- * Both Units are at 100% power
- * A severe fire occurs in the Control Room resulting in implementation of AOP-9A (Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire)
- * The required actions of AOP-9A have been performed prior to Control Room evacuation

Which one of the following describes the initial response of RCS temperature upon abandoning the Control Room?

- A. RCS temperature will be controlled at 515 °F - 535 ° by TBVs.
- B. RCS temperature will be controlled at 515 °F - 535 ° by ADVs.
- C. RCS temperature will be controlled by cycling MSSVs.
- D. RCS temperature will be controlled by ADVs at 1C43.

26. A discharge of the Miscellaneous Waste Monitor Tank is in progress.

Which one of the following conditions would require entry into AOP-6B (Accidental Release of Radioactive Liquid Waste)?

- A. Trip of a Circ Water Pump on the unit receiving the discharge with no corresponding reduction in discharge flow rate.
- B. Liquid Waste Discharge valves 2201-CV and 2202-CV OPEN with discharge RMS alarm.
- C. Discharge activity exceeds the computer alarm high setpoint specified in the release permit.
- D. Discharge activity decreases to less than the Discharge Permit background activity value.

27. Given the following:

- * CEA 1 drops to the bottom on Unit 1
- * AOP-1B (CEA Malfunction) is implemented
- * Reactor power is being maintained constant during the recovery of the CEA

Which one of the following is a method used to maintain reactor power?

- A. Adjust Turbine load to compensate for the reactivity effects of CEA withdrawal.
- B. Fast Borate to compensate for the reactivity effects of the CEA withdrawal.
- C. Insert Group 1 CEAs to compensate for the reactivity effects of the CEA withdrawal.
- D. Dilute RCS to compensate for the reactivity effects of the CEA withdrawal.

28. Given the following:

- * A transient occurs on Unit 1
- * EOP-0 is implemented and alternate actions are required to trip the reactor
- * All Safety Functions are complete

Which one of the following would be the breakers reclosed after actions to trip the reactor?

- A. 11A 480V normal feeder breaker and 12A 480V tie breakers are closed.
- B. 12A 480V and 13A 480V normal feeder breakers are closed.
- C. 12A 480V and 13B 480V normal feeder breakers are closed.
- D. 12B 480V and 13A 480V normal feeder breakers are closed.

29. Given the following:

- * Unit 1 is in Mode 2 and at the POAH
- * The RO withdraws CEA Regulating Group 4 to raise power and enter Mode 1
- * After the RO releases the Raise/Lower Switch, he observes a steady rise in Reactor power and RCS temperature
- * Primary CEA Group 4 selected light is indicating withdrawal

Which one of the following describes the required action based on the plant conditions?

- A. Insert CEAs to initial position to stop the power increase at the desired point in mode 1.
- B. Place the Raise/Lower Switch to LOWER and monitor CEA position indications for Regulating Group 4.
- C. Adjust the TBV controller to stop the power increase at the desired point in Mode 1 and monitor CEA positions.
- D. Place the CEDS system in OFF and monitor CEA position indications for Regulating Group 4.

30. In accordance with the basis document, which of the following is the reason for tripping 2 RCPs at 1725 psia and the last 2 RCPs when RCS temperature/pressure is less than minimum during a LOCA?

- A. Minimize pump cavitation and/or air binding which would result in pump/motor damage.
- B. Minimize the loss of RCS inventory during a break at the bottom of the hot leg.
- C. Minimize the loss of RCS inventory during a break at the bottom of the cold leg.
- D. Minimize the heat input from the pumps thereby minimizing core damage.

31. Which condition occurs on a loss of +15 VDC power to the W.R. flux trip relays 1 & 2?

- A. SUR trip inhibited.
- B. Zero power mode bypass enabled.
- C. CEAPDS PDIL enabled.
- D. TM/LP signal to CWP inhibited.

32. A charging header leak would be identified by which one of the following?

- A. Lowering pressurizer level with minimum letdown flow and one charging pump operating.
- B. Charging header pressure greater than RCS pressure with two charging pumps operating.
- C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.
- D. Charging header pressure less than RCS pressure with one charging pump operating.

33. After isolating a S/G that has a ruptured tube, which one of the following is the preferred method for maintaining control of the level in the S/G?

- A. Steaming to the condenser.
- B. Blowdown to the condenser.
- C. Backfill to the RCS.
- D. Blowdown to the MWS.

34. Chemistry reports that the calculated Steam Generator primary-to-secondary leak rate is 50 GPD. The CRS has the appropriate AOP implemented.

Which one of the following describes the actions that are expected?

- A. Secure SG Surface and Bottom Blowdown Valves.
- B. Place Aux Building Sump Pumps in STOP.
- C. Monitor SG level for an unexplained rapid increase.
- D. Review AOP-2A, EOP-6, EOP-8 and OP-3 Appendix B (Rapid Power Reduction).

35. Given the following:

- * Unit 2 tripped from 100% power
- * EOP-0 "Post Trip Immediate actions" are being performed
- * The Main Turbine did not trip as expected

Which one of the following actions should be performed per EOP-0 to trip/stop the turbine?

- A. Manually close both MSIVs.
- B. Manually stop EHC pumps.
- C. Manually Shut Turbine Throttle Valves using Test pushbuttons.
- D. Locally trip the Turbine from the front standard.

36. Given the following:

- * Unit 2 was manually tripped from 100% power due to a steam leak in the MSIV room
- * EOP-0 is implemented
- * RO reports Reactivity Control cannot be met due to positive SURs
- * All other Safety Functions are met

Determine the appropriate actions for the plant conditions:

- A. Reassess the EOP-0 Safety Functions and implement the optimal recovery procedure.
- B. Implement the alternate actions for Reactivity Control Safety Function to mitigate the ATWS event.
- C. Implement EOP-8 and determine success paths using the Resource Assessment Table.
- D. Implement EOP-4 to address reactivity control and isolate the steam leak.

37. Given the following:

- * Unit 1 is at 100% power
- * 1Y01 (11 120V Vital AC bus) had been deenergized for emergency maintenance and is ready to be energized
- * The CRS directs you to reenergize 1Y01 per OI 26B (120 Volt Vital AC and Computer AC)

Which one of the following describes an expected result from improper implementation of the applicable procedure steps?

- A. ESFAS ZB logic channel could actuate if cabinet is not shutdown per OI-34 prior to energizing 1Y01.
- B. Unit 2 Channel A WRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- C. Unit 2 Channel A LRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- D. ESFAS ZE sensor channel could trip if cabinet is not shutdown per OI-34 prior to energizing 1Y01.

38. During the performance of a waste gas release from 11 WGDT, WGS-2191-CV is found failed closed by the ABO.

Which valve must be closed promptly per AOP-6C (Accidental Gaseous Waste Release) to prevent an inadvertent release from WG Surge Tank?

- A. WGS-2191-PCV (WG discharge flow control).
- B. WGS-623 (11 WGDT outlet).
- C. WGS-630 (WG discharge final filter bypass).
- D. WGS-683 (WG discharge to unit 1 plant vent).

39. Which one of the following describes the cause for the C06 panel annunciator window "SPDS" to alarm?

- A. Critical safety function box color has changed from red to magenta.
- B. Critical safety function box color has changed from yellow to green.
- C. Critical safety function box color has changed from red to green.
- D. Critical safety function box color has changed from green to red.

40. Which one of the following is a condition necessary to ensure adequate RCS cooling flow exists during a large break LOCA per EOP 5?

- A. Indicated Steam Generator water levels are maintained at ~0".
- B. CET temperatures trend consistent with Tcold.
- C. Injection via operating SI pumps per EOP attachment.
- D. RCS subcooling is 50 °F based on CETs.

41. Using the appropriate references and given the following:

- * Unit 2 is in Mode 4
- * RCS is at 500 PSIA and 250 °F
- * The acoustic monitor indicates Safety valve leakage
- * Quench tank temperature is rising and pressure is 15 PSIG

Determine the expected tailpipe temperature and fluid state for the plant conditions:

- A. ~ 250 °F as a saturated vapor.
- B. ~ 330 °F as a saturated vapor.
- C. ~ 250 °F as a superheated vapor.
- D. ~330 °F as a superheated vapor.

42. Given the following:

- * Unit 2 is in Mode 5
- * RCS level is at 38 feet
- * RO observes that 21 LPSI discharge pressure and motor amps are fluctuating
- * "LPSI PUMP SUCTION PRESS LO" alarm is sporadically annunciating
- * SDC flow is observed to be ~3800 GPM and fluctuating

Which one of the following is the appropriate response based on plant conditions:

- A. Adjust SDC flow to 1500 GPM and verify cavitation stops.
- B. Start 22 LPSI pump, stop 21 LPSI pump and verify cavitation stops.
- C. Adjust SDC flow to 3000 GPM and verify cavitation stops.
- D. Secure both LPSI pumps, lineup a CS pump for SDC and verify cavitation stops.

43. Which one of the following is correct concerning a loss of Instrument Air pressure?

- A. Pressurizer Spray Valves fail OPEN.
- B. Condensate Demineralizer Bypass Valve fails OPEN.
- C. Pressurizer Auxiliary Spray Valve fails SHUT.
- D. Containment Spray Control Valves fail SHUT.

44. Given the following:

- * Unit 2 is at 100% power
- * The Regenerative heat exchanger develops a 25 gpm tube leak

Which one of the following describes the effect on letdown flow?

- A. Letdown flow will stop due to CVC-515 auto isolation.
- B. Letdown flow will remain unchanged.
- C. Letdown flow will compensate based on charging pumps status.
- D. Letdown flow will stop due to CVC-516 auto isolation.

45. Which one of the following would be the primary hazard if irradiated fuel were damaged within the pressure vessel during refueling operations?

- A. Inadvertent criticality exposure to personnel in the containment.
- B. Iodine 131 exposure to personnel in the containment.
- C. Chronic gamma radiation exposure to the RFM operator.
- D. Neutron radiation exposure to the RFM operator.

46. Given the following:

- * Unit 1 is at 100% power
- * A LOCA occurs when 1 PORV fails open
- * SIAS and CIS actuate.

Which one of the following describes the initial response of ESF components?

- A. 11 and 12 CS pumps start and CS flow is ~2700 GPM total flow.
- B. 11 and 12 HPSI pumps start and inject water below ~1300 PSIA.
- C. 11 and 12 LPSI pumps start and inject water to the RCS.
- D. 11 and 13 HPSI pumps start and inject water below ~1300 PSIA.

47. Which one of the following is the effect from deenergizing the LRNI level 2 bistable?

- A. Enables APD trip.
- B. Enables Power Trip Test Interlock (PTTI).
- C. Energizes Channel in Test LED.
- D. Enables Loss of Load Trip.

48. Given the following:

- * Unit 1 is in Mode 3 with a reactor startup in progress
- * The RO is withdrawing Regulating Group 1 CEAs in Manual Group mode
- * Regulating Group 1 is at 120 inches
- * No CEA deviations exist

Which one of the following will be the first to automatically stop CEA movement?

- A. Highest CEA reaches the Upper Computer Stop (UCS).
- B. Lowest CEA reaches the Upper Computer Stop (UCS).
- C. Highest CEA reaches the Upper Electrical Limit (UEL).
- D. Lowest CEA reaches the Upper Electrical Limit (UEL).

49. Given the following:

- * Unit 1 is in Mode 5, preparing for RCPs start
- * Unit 2 is in Mode 6
- * 12 13.8 KV Bus voltage is reading 14.8 KV
- * 22 13.8 KV Bus voltage is reading 15.2 KV

Which one of the following is the required action for the plant conditions?

- A. Start Unit 1 RCPs on 12 13.8 KV Bus and verify bus voltage drops to 14.5 KV.
- B. Start Unit 1 RCPs on 22 13.8 KV Bus and shift RCP power to 12 13.8 KV bus when voltage increases to ≥ 15.2 KV.
- C. Verify 4 KV Bus voltages are less than 4100 volts and start Unit 1 RCPs on 12 13.8 KV Bus.
- D. Verify 4 KV Bus voltages are greater than 4100 volts and start Unit 1 RCPs on 22 13.8 KV Bus.

50. The CRO is directed to place the AFW speed/flow controllers at 1(2)C43 to the "MIN" position before their respective hand transfer valves are placed in POSITION 2 during AOP-9A (Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire).

Which one of the following is the reason for the required action?

- A. To remove the air signal to the CVs and allow the CRO to have control of the AFW from 1(2)C43.
- B. To place the AFW pumps at a normal discharge pressure and shut the AFW flow CVs to allow a controlled feed rate.
- C. To place the pumps and CVs in a known position and prevent an uncontrolled RCS cooldown from occurring.
- D. To maintain AFW flow to the SGs to prevent a SG dryout condition until 13 (23) AFW pump is running.

51. Which one of the following describes a design flowpath of the MW Processing System?

- A. MWRT is pumped by the MWRT pump through the MWS filter and IX and IX outlet strainer to 11 RCWMT.
- B. MWMT is pumped by the MWMT pump through the MWS filter and IX and IX outlet strainer to 11 RCWRT.
- C. MWRT is pumped by the MWRT metering pump through the MWS filter and IX to 12 RCWMT.
- D. MWMT is pumped by the MWMT metering pump through the MWS filter and IX to 11 RCWRT.

52. Given the following:

- * Unit 1 is in Mode 5
- * Unit 2 is in Mode 6 with core off-load in progress
- * The Control Room Recirculation Signal (CRRS) is declared inoperable

Which one of the following is the required Tech Spec action, if any?

- A. Place 1 CREV System train in recirc with Post-LOCI fan in service within 4 hours.
- B. No action required by Tech Spec due to LCO is not applicable for either Unit.
- C. Place 1 CREV System train in recirc with Post-LOCI fan in service immediately.
- D. No action is required by TRM due to condition is not applicable for either Unit.

53. Given the following:

- * Unit 1 is at MOC and 100% power
- * Chemistry requests 13 Purification IX in service
- * The ABO reports that the "unborated IX" sign is hanging on the inlet valve 1-CVC-146

Which one of the following is the proper response for the plant conditions?

- A. Ensure 1-CVC-520-CV, IX Bypass, is in the BYPASS position and direct the ABO to remove the sign.
- B. Notify the CRS of a possible reactivity change and lower L/D temperature to minimize the effects of the unborated resin.
- C. Ensure 1-CVC-520-CV, IX Bypass, is in the AUTO position and direct the ABO continue placing 13 Purification IX in service.
- D. Notify the CRS of a possible reactivity change due to placing 13 Purification IX in service.

54. The Chemistry Tech has reported to the CRS that the weekly sample of the onservice WGDT has been completed. The analysis results are 4 curies of noble gas and 4.5% O₂ by volume.

What are the required actions for the sample results per TRM?

- A. Isolate the on-service WGDT and prepare a permit for a discharge.
- B. Maintain the on-service WGDT in service, have RCS sampled for activity.
- C. Isolate the on-service WGDT, reduce O₂ concentration in WG system immediately.
- D. Maintain the on-service WGDT in service, monitor letdown process rad monitor.

55. Given the following:

- * Unit 2 was at 100% power when a LOOP and large break LOCA occurred
- * All Emergency Diesels started and loaded as designed

Which one of the following describes the expected configuration of the Containment Cooling Systems?

- A. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.
- B. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- C. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- D. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.

56. Given the following:

- Unit 1 is at 10% power with a Plant startup in progress
- Alarm "12 SG CONTR CH LVL" annunciates at 1C03
- RO reports that 12 SG level by 1-LT-1106 indicates +63.5" and remaining SG level indications are at 0"

Describe the effect on the Plant and action required:

- A. 12 Bypass Feedwater Valve will go SHUT requiring a manual Reactor trip and implementation of EOP-0.
- B. 12 Bypass Feedwater Valve will continue to maintain level, the downcomer selector switch at 1C36 should be placed in the LT-1106 failure position to provide LT-1121 input to the control channel indication.
- C. 12 Bypass Feedwater Valve will go SHUT, requiring manual operation by placing its associated handswitch in the BYPASS FAIL position.
- D. 12 Bypass Feedwater Valve will continue to maintain level, a manual transfer from LOW to HIGH power of the DFWCS will be required for 12 Feed System.

57. Given the following conditions for Unit 1 (Unit 2 is in Mode 5):

- * Reactor tripped 10 minutes ago due to a Loss of Offsite Power (LOOP)
- * RCS is in Hot Standby
- * 12 CST inventory is 150,000 gallons
- * ADVs are maintaining RCS temperature

Which one of the following is the time the AFW system can supply Unit 1 in Hot Standby before cooldown is required per Tech Specs?

- A. 2 hours.
- B. 6 hours.
- C. 8 hours.
- D. 12 hours.

58. Given the following:

- * Unit 1 is at 100% power and EOC
- * ASI indication at 1C05 reads +0.06
- * CEAs are ARO
- * A power reduction is scheduled for MT CV Testing

Which one of the following power reduction methods will minimize the ASI oscillation?

- A. Insert CEAs in 30 inch increments to reduce reactor power.
- B. Fast Borate from the BASTs for 1 minute for each boration addition.
- C. Insert CEAs in ~10 inch increments with 30 second Fast Boration.
- D. Insert CEAs in ~5 inch increments and 10 second Fast Boration.

59. Which one of the following annunciator alarms also indicates the presence of an interlock which will prevent the start of 22A RCP?

- A. "OIL RESVR LEVEL LO"
- B. "OIL LIFT PP PRESS LO"
- C. "CC TEMP HI"
- D. "RCP BLDOFF FLOW HI/LO"

60. Which one of the following conditions would cause an uncontrolled release to the environment that would not pass through any filters contained in the plant ventilation systems?

- A. Resin transfer operation.
- B. Charging pump packing leak.
- C. Waste Gas Surge Tank relief valve open.
- D. Both RC waste degasifiers operating simultaneously.

61. During implementation of EOP-4, the following conditions are noted:

- * 21 SG Bottom Blowdown line ruptures in the Containment
- * EOP-0 actions have been completed and transition to the appropriate optimal recovery procedure has occurred
- * Plant data:
 - RCS pressure is 1000 PSIA
 - RCS cooldown rate is 65 °F per hour
 - 21 SG pressure is 650 PSIA
 - 22 SG pressure is 900 PSIA
 - CETs are reading 475 °F

Which one of the following actions should be taken?

- A. Dump steam from 21 SG to raise RCS cooldown rate to ~100 °F per hour to minimize the time of the SG blowdown.
- B. Dump steam from 22 SG to raise RCS Subcooled Margin to ~140 °F to minimize the time of SG blowdown.
- C. Dump steam from 21 SG until it is within 25 °F of CET average temperature.
- D. Dump steam from 22 SG until it is within 25 °F of CET average temperature.

62. Given the following:

- * Unit 1 is in Mode 2 at the POAH
- * Regulating Group 4 Inhibit Bypass Pushbutton Switch and the CEA Motion Inhibit Bypass Momentary Pushbutton are depressed
- * A "Secondary CEA Position Deviation" alarm is annunciated at 1C05

Which one of the following describes the effect on the CED System?

- A. CMI enabled to Regulating Group 4 and bypassed to all remaining Groups.
- B. CMI is bypassed to Regulating Group 4 and enabled to all remaining Groups.
- C. CWP is bypassed to all Regulating Groups only.
- D. CWP is enabled to all Regulating Groups only.

63. Given the following:

- * Unit 2 is at 65% power
- * A loss of 23 4KV Bus occurs

Which one of the following is the stabilizing actions for the event?

- A. Verify 2 Condensate pumps and 1 CBP are running.
- B. Trip the Reactor and implement EOP-0.
- C. Verify 1 Condensate pump and 2 CBPs are running.
- D. Reduce power as required to maintain condensate flow less than 10,000 GPM.

64. Given the following:

- * Unit 2 is at 100% power
- * RO observes concurrent feedwater flow decrease with increasing SGFP suction flows
- * CRO observes suction pressure to both SGFPs has decreased and hotwell level is decreasing

Which one of the following is the required actions based on plant conditions?

- A. Perform a rapid power reduction per OP-3 to <70% power, determine source of leakage on feedwater header. Implement EOP-0 if SG water levels decrease to RPS Pre-trip annunciator alarms.
- B. Trip the reactor, implement reactivity control of EOP-0, secure/trip SGFPs, HTR Drn pumps, CBP and all condensate pumps. Shut SG FW ISOL valves, implement remainder of EOP-0.
- C. Perform an expeditious power decrease per OP-3 to <70% power, isolate source of leakage on condensate or feedwater header. Implement EOP 0 based on SM or CRS direction.
- D. Trip the reactor, implement EOP 0, perform alternate actions for Core and RCS Heat Removal Safety Function. Transition to AOP-3G to determine and isolate the condensate or feedwater leak.

65. Given the following:

- * Unit 2 is at 10% power
- * All controls are in automatic
- * CVCS is in a normal lineup with 1 charging pump running
- * A transient results in pressurizer level lowering 20 inches below setpoint.

Which one of the following is the expected response without operator action?

- A. Letdown flow is at minimum (~30 GPM) and Charging flow is ~ 44 GPM.
- B. Letdown flow is nominal (~40 GPM) and Charging flow is ~88 GPM.
- C. Letdown flow is at minimum (~30 GPM) and Charging flow is ~132 GPM.
- D. Letdown flow is nominal (~80 GPM) and Charging flow is ~132 GPM.

66. Given the following:

- * MWMT discharge is in progress going to the Unit 2 discharge conduit
- * ABO reports that "21 REFUEL WTR STORAGE AREA SUMP LEVEL HI" alarm came in at 1C63 panel
- * OSO reports that Unit 2 RWT is leaking in the RWT Room

Which one of the following is the correct response for the stated conditions?

- A. Direct the ABO to investigate the Liquid Waste Discharge lineup.
- B. Direct the ABO to investigate a possible overflow of the Aux Building 5 Foot Elevation drains.
- C. Implement AOP-6B (Accidental Release of Radioactive Liquid Waste) due to MWMT discharge.
- D. Implement AOP-6B (Accidental Release of Radioactive Liquid Waste).

67. Which one of the following is the effect of a loss of detector signal from an area radiation monitor?

- A. The channel reading at 1C22 will fail high resulting in an inoperable channel.
- B. The CHECK SOURCE light will energize requiring a check source test.
- C. The power on indication will deenergize requiring a test per OI-35.
- D. A LOW ALARM will be indicated on 1C22 resulting in an inoperable channel.

68. Following the loss of 12 120V Vital AC bus, the performance of steps in AOP-7J requires the ESFAS Sensor cabinets to be reenergized prior to the Logic cabinets.

Which one of the following is the basis for the order of the steps?

- A. Prevent inadvertent actuation since the Logic modules are deenergized to actuate and the Sensor modules are energized to actuate.
- B. Prevent actuation since the Logic modules are energized to actuate and the Sensor modules are deenergized to actuate.
- C. Properly align the Under Voltage Logic Relays.
- D. Properly align the Under Voltage Sensor Relays.

69. Using the provided reference and given the following:

- * Unit 1 is at 100% power
- * Regulating Group 5 CEAs are at 129 inches for testing
- * CEA 1 Pulse counting position indicator indicates 129 inches while CEAPDS indicates 124 inches

Which one of the following describes the actions (if any) that comply with the TRM requirements?

- A. TRM requirements are met, no actions are required.
- B. Restore the CEAPDs indication within 6 hours.
- C. Borate power to <70% and withdraw CEA 1 to FULL OUT position within 6 hours.
- D. Borate power to <70% and withdraw Group 5 to FULL OUT position within 6 hours.

70. Given the following:

- * Unit is at 100% power
- * "CSAS ACTUATED" alarm is annunciated at 1(2)C08
- * Containment pressure indicates .5 PSIG

Which one of the following describes the expected system response?

- A. CS pump(s) running and SI-4150 and/or SI-4151 is/are OPEN.
- B. PS-6531-SV, Quench Tank sample valve is SHUT.
- C. SI-4150 and/or 4151 is/are OPEN.
- D. NO system response due to a spurious actuation has occurred.

71. A CAR unit has been shutdown and the inlet CV has failed to shut. If the CAR is in the "Holding Mode", describe the effect, if any:

- A. Air will not leak into the condenser.
- B. Air will leak into the condenser via the seal water recirc pump.
- C. Air will leak into the condenser via the hogging CV.
- D. Air will leak into the condenser via the three way valve.

72. Given the following:

- * Unit 1 is in Mode 3
- * SIAS Pressurizer Pressure Blocked on both logic channels
- * RCS pressure being reduced to 1500 PSIA
- * PZR Spray valves fail shut and RCS pressure starts to rise

Select the expected system response as pressure rises:

- A. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with the keyswitch for SIAS Block A at 1C10.
- B. SIAS Pressurizer Pressure Block will be automatically removed when 2 SIAS Pressurizer Pressure Block sensors clear
- C. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with both keyswitches for SIAS Block A and B at 1C10.
- D. SIAS Pressurizer Pressure Block will be automatically removed when 1 SIAS Pressurizer Pressure sensor clears.

73. Given the following:

- Unit 1 is at 100% power
- The 1B DG is running unloaded for post maintenance testing, Electric Shop and Mechanical maintenance personnel are standing by in the 1B DG Room
- CRO reports a "1B DG" alarm is received at 1C18B
- OSO reports a "START FAILURE" alarm is received at the 1B DG Alarm panel
- Electricians suspect blown fuses, requesting to replace them immediately.

Using the provided electrical schematic, determine which fuse(s) have blown, resulting in the indicated response on the 1B DG:

- A. Fuses FU7 and FU8 due to the start failure alarm that was annunciated from the loss of control power.
- B. Fuses FU1 and FU2 due to the start failure alarm that annunciated from the loss of control power.
- C. Fuses FU3 and FU4 due to start failure alarm from the engine running with the air start solenoids failed close.
- D. Fuses FU5 and FU6 due to the start failure alarm from the loss of power to the low speed and auxiliary stop relays.

74. Given the following:

- * Unit 1 is in Mode 4
- * RCS pressure is 325 PSIA and temperature is 355 °F
- * PORV Block Valve RC 403 is OPEN
- * PORV Block Valve RC 405 is SHUT
- * HS 1406 (PORV 402 MPT Protection) is in "VARIABLE MPT ENABLE"
- * HS 1408 (PORV 404 MPT Protection) is in "NORMAL"
- * PORV 402 override is in "AUTO"
- * PORV 404 override is in "AUTO"
- * PT 103-1 Pressurizer Low Range pressure transmitter fails to 1500 PSIA

Which one of the following describes the response to the conditions?

- A. ERV-402 stays ENABLED and OPENS.
- B. ERV-404 is ENABLED and OPENS.
- C. ERV-402 stays ENABLED and remains SHUT.
- D. ERV-404 is ENABLED and remains SHUT.

75. The most serious failure for the Spent Fuel Pool Cooling System is the loss of SFP Water. What feature of the system is designed to prevent this?

- A. Piping interconnection to either RWT.
- B. Piping interconnection from Safety Injection systems.
- C. Two channels of remote level indication with alarm function.
- D. SFP pipe connections with siphon breakers, above the water level in SFP.

76. A smoke detector fails and goes into alarm for the Unit 1 27 Foot Switch Gear Room.

Which one of the following describes the effect on the system?

- A. Pre-Alarm buzzer sounds and after a time delay, Halon system discharges.
- B. Pre-Alarm buzzer sounds but does not result in Halon system discharge.
- C. Discharge warning horn sounds and after a time delay, Halon system discharges.
- D. Discharge warning horn sounds but does not result in Halon system discharge.

77. Given the following:

- Unit 2 is 100% power
- LT-110X Pressurizer level channel selected
- HS-100-3, Pzr Htr Lo Lvl cut-off is selected in "X / Y" position

Describe the effect on the RCS if LT-110X fails due to a leak in the reference leg:

- A. Indicated Pressurizer level will increase due to Letdown goes to minimum and charging pumps stop .
- B. Indicated Pressurizer level will decrease due to Letdown goes to maximum exceeding Charging pump capacity.
- C. Actual Pressurizer level will decrease as Letdown goes to maximum, PZR Backup Heaters energize.
- D. Actual Pressurizer level will increase as Letdown goes to minimum and backup Charging pumps start.

78. Which one of the following describes the effect of fast neutron irradiation of the reactor vessel?

- A. Brittle Fracture.
- B. Thermal gradients
- C. Embrittlement.
- D. Pressurized thermal shock.

79. Given the following:

- * Unit 2 is a 100% power
- * All control systems in automatic
- * Reactor trips on MT EHC system failure

Which one of the following describes the expected plant response?

- A. Post-trip DFWCS relay is energized, MFVs ramp shut over 20 seconds, BFVs open to 56%.
- B. DFWCS shifts to low power mode on RRS NI power input, BFVs open to 33%.
- C. Post-trip DFWCS relay is deenergized, MFVs ramp shut over 30 seconds, BFVs open to 65%.
- D. DFWCS shifts to low power mode after 20 seconds by relays from MT trip circuit, BFVs open to 65%.

80. Unit 1 is at full power when a reduction occurs in the Instrument Air Header pressure. The CRO observes that IA header pressure has decreased to 85 PSIG and PA Header is at 85 PSIG also.

Which one of the following describes the expected automatic action that will occur at this pressure?

- A. PA-2061-CV, PA to IA Cross connect Valve OPENS.
- B. PA-2059-CV , PA header Isolation Valve SHUTS.
- C. Standby Instrument Air Compressor STARTS.
- D. IA-2085-CV, Containment IA Isolation Valve SHUTS.

81. Given the following:

- Unit 1 is in Mode 6
- Fuel Handling is in progress
- Containment Purge is in operation

Which of the following monitors should **NOT** be functionally tested per OI-35 (Radiation Monitoring System)?

- A. Fuel Handling Area Monitor (RI-5420).
- B. Containment Area Radiation Monitor (RI-5316A-D).
- C. Main Vent Gas Monitor (RI-5415).
- D. Containment ICI Area Monitor (RI-7008).

82. Given the following:

- Unit 1 is in Mode 3, NOT and NOP (previously was at 100% power for 245 days)
- Chemistry reports that the trend on weekly samples indicate an increase in the RCS activity for non-soluble matter
- NFM reports that a review of CECOR data indicates that fuel rod fouling is increasing

Which condition will cause 1C07 alarm F-21 "RAD MON LVL HI" to alarm AND a dose rate change in the Letdown line?

- A. LOCA inside the Containment resulting in stopping RCPs after CIS actuation.
- B. LOCA outside the Containment resulting in activity in the 27 Foot West Penetration Room.
- C. Establishing forced circulation by starting RCPs after a Loss of Offsite Power.
- D. Starting additional Charging pumps in response to an RCS leak.

83. Given the following:

- * Both Units are at 100% power
- * MS line Rad Monitor status:

	Unit 1 (11/12)	Unit 2 (21/22)
NORM White light	on/on	on/on
FAIL Green light	off/off	on/on
ALERT Amber light	off/on	off/off
HIGH Red light	off/on	off/off

Which one of the following describes the operational status of the RMS?

- A. Unit 1 both operable and Unit 2 both inoperable.
- B. Unit 1 one RMS inoperable and Unit 2 one RMS inoperable.
- C. Unit 1 both RMS inoperable and Unit 2 both RMS inoperable.
- D. Unit 1 both RMS inoperable and Unit 2 both RMS operable.

84. Given the following:

- * Unit 2 is in Mode 1 and the Main Turbine has just been paralleled to the Grid
- * Alarm "LOSS OF LOAD CH TRIP BYPASS" is clear at 2C05
- * Condenser Vacuum is decreasing and the Main Turbine trips

Which one of the following describes the expected plant response?

- A. 4 limit switches on the MT Stop Valves generate a 2/4 trip signal to RPS resulting in a Loss of Load reactor trip.
- B. Master trip solenoids energize to generate a 2/4 trip signal to the RPS resulting in a Loss of Load reactor trip.
- C. 4 Auto stop oil pressure switches actuate to generate a 2/4 trip signal to the RPS resulting in a Loss of load reactor trip.
- D. Master trip bus deenergizes to drop out 4 relays in the RPS trip logic resulting in a Loss of Load reactor trip.

85. Given the following:

- * Unit 1 is in Mode 5
- * All Circulating Water pumps are running
- * SG Blowdown IX is bypassed with RI-4095 in service
- * SG Blowdown is lined up to Unit 1 Circulating Water to lower SG water levels while in wet layup
- * RE 4014 RMS (SG Blowdown Tank) loses power

Which of the following describes the system response?

- A. Discharge to the Circulating Water is shifted to the Main Condenser via BD-4096-CV.
- B. Discharge to the Circulating Water remains unchanged.
- C. Discharge is stopped as 1-BD-4010, 4011, 4012 and 4013 SHUT.
- D. Discharge is stopped as 1-BD-4096, 4015 and 4097- CVs SHUT.

86. Given the following:

- * Unit 1 is in Mode 5
- * Applicable 13.8 KV Voltage Regulators are in MANUAL
- * CRS directs the CRO to transfer from 4KV Bus 15 Feeder to 4KV Bus 16 Feeder

Which one of the following describes the proper sequence to perform this action?

- A. Insert sync stick for BUS tie breaker , observe voltages match and sync scope rotating slowly in the fast direction in the Control Room, CLOSE tie breaker and OPEN Bus 16 feeder.
- B. Insert sync stick for Bus 16 feeder breaker, observe voltages match locally at the Voltage Regulator cabinets and sync scope not rotating, CLOSE Bus 16 feeder breaker and OPEN Bus 15 feeder.
- C. Insert sync stick for Bus 15 feeder breaker, observe voltages match locally at the Voltage Regulator cabinets and sync scope rotating slowly in the fast direction, CLOSE tie breaker and OPEN Bus 16 feeder.
- D. Insert sync stick for BUS tie breaker, observe voltages match and sync scope not rotating, CLOSE 15/16 tie breaker and OPEN Bus 15 feeder.

87. Which one of the following describes the effect on decay heat removal after a Unit 1 Turbine Trip from a loss of 11 125 VDC Bus?

- A. ADVs and TBVs unavailable in all modes (quick open and modulating).
- B. TBVs unavailable in all modes (quick open and modulating), ADVs operate in manual from 1C03.
- C. ADVs unavailable in all modes (quick open and modulating), TBVs operate in manual or auto from 1C03.
- D. ADVs and TBVs quick open mode is removed, ADVs and TBVs will operate in manual or auto from 1C03.

88. Given the following:

- * Unit 1 is at 20% power
- * DFWCS has automatically shifted to HIGH POWER mode
- * Loss of high voltage power Control Channel X NI

Which one of the following describes the effect on the plant?

- A. DFWCS shifts to low power mode on 11 SG.
- B. DFWCS stays in the high power mode on 11 SG.
- C. DFWCS stays in the high power mode on both SGs.
- D. DFWCS shifts to single input in the high power mode on both SGs.

89. Given the following:

- * A LOCA has occurred on Unit 2
- * EOP 5 has been implemented
- * CRO has started the H₂ Recombiners per OI-41A (Hydrogen Recombiners)
- * The CRO later observes that 21 H₂ Recombiner has malfunctioned and 22 H₂ Recombiner is operating satisfactorily

Which one of the following describes the required action, if any, to control H₂ volume to <4% during a LOCA?

- A. Containment H₂ control will require the repair of 21 H₂ Recombiner within 24 hours.
- B. Containment H₂ control will require the use of the Hydrogen Purge System within 24 hours.
- C. Containment H₂ control will require the use of alternate procedures from the TSC.
- D. No further actions are required to maintain H₂ <4% by volume by design.

90. Given the following:

- * Unit 1 is in Mode 6 with fuel off-load in progress
- * RFM is being operated in AUTO mode
- * Off indexing is being used during a fuel assembly insertion in the core
- * OFF INDEX ZONE BREACHED is indicated on the CRT

Which one of the following is the action required to complete the fuel move?

- A. Raise the fuel to the hoist up limit and select SEMI-AUTOMATIC mode to reposition the RFM to the Off index zone.
- B. Lower the hoist in slow speed until the Upper Grapple Operate Zone and position the RFM to On Index.
- C. Use TRAVEL OVERRIDE to return within the Off index zone and continue with hoist lowering.
- D. Reset the alarm by depowering the RFM console and complete the fuel move from the RFM in MANUAL ELECTRIC control.

91. Which one of the following conditions is indicated when the LOAD CHANNEL light on the Unit 2 turbine control panel is lit?

- A. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the IMP OUT mode.
- B. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the TURBINE MANUAL mode.
- C. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the TURBINE MANUAL mode.
- D. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the IMP OUT mode.

92. Which one of the following is the design basis for the Quench Tank volume?

- A. Continuous discharge of both PORVs with no operator action.
- B. Continuous CEA withdrawal event from low power.
- C. Continuous RCS degassing using both Reactor Vent Valves.
- D. Continuous discharge from 1 Primary Safety Valve during loss of load event.

93. Given the following:

- * Unit 1 Reactor is manually tripped from 100% power
- * 11 RCS hot leg loop RTD to RRS fails high to 615°F
- * No operator action is taken

Which one of the following describes the initial response of the ADVs and TBVs and final plant conditions?

- A. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the TBVs will SHUT and ADVs control RCS at a lower temperature band around 505 °F .
- B. The failed input to RRS is deleted by the Tave calculator, ADV and TBV operation is unchanged (including Quick Open) with RCS temperature control by the ADVs at the expected post trip band of ~532 °F.
- C. The failed input to the RRS inhibits the Quick Open features of the ADVs and TBVs resulting in both a lift of MSSVs and ADVs and TBVs staying open longer with the RCS temperature control by the ADVs at a lower temperature band ~ 505 °F.
- D. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the ADVs will SHUT and TBVs control RCS at a lower temperature band around 505 °F .

94. Given the following:

- * Unit 1 is at 100% power
- * 14 4KV bus trips on a ground fault
- * AOP 7I (Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power) is implemented
- * 1Y10 is tied to 1Y09

Which one of the following describes the specific stabilizing action to be taken to prevent a possible reactor trip?

- A. Repower 14 4KV Bus by use of Alternate Feeder Breaker 152-1414.
- B. Shift 13 CC pump to 11B 480V Bus
- C. Repower 14 4KV Bus by use of 0C DG.
- D. Shift 13 SW and 13 SRW pumps to 11 4KV Bus and restore 12 SW and 12 SRW Header flows

95. Which one of the following is the power supply for 21 SWAC?

- A. 21A 480 Volt Bus
- B. MCC 204 R
- C. 21B 480 Volt Bus
- D. MCC 214 R

96. Given the following:

- * Unit 2 was at 100% when a Design Basis LOCA occurs
- * one train of ESF equipment operates as designed
- * 1 CS pump and 2 Iodine Filter Fans are running

Which one of the following describes the effect on iodine removal during the LOCA event?

- A. Iodine Removal System is at 33% capacity due to higher final containment temperature and pressure.
- B. Iodine Removal System is at 66% capacity, design is unaffected by containment environment.
- C. Iodine Removal System is at 100% capacity.
- D. Iodine Removal System is at 250% capacity due to concurrent iodine removal by the Containment Spray System

97. Given the following:

- * Unit 2 tripped, EOP-0 completed and EOP-4 is diagnosed and implemented
- * "CNTMT RAD LVL HI" at 2C10 is received and verified as valid by the CRO

What procedural actions are required?

- A. Parallel implementation of EOP-5 concurrent with EOP-4.
- B. Implementation of EOP-8 due to EOP-4 Cont Env SFSC not met.
- C. Implementation of EOP-8 due to EOP-4 Rad levels SFSC not met.
- D. Parallel implementation of AOP-6A (Abnormal Reactor Coolant Chemistry/Activity) concurrent with EOP-4.

98. You are directed by the CRS to monitor the Reactor Vessel level during RCS draining operations for mid-loop operation. During the rad con pre-brief, the contractor RST tells you that this is the first time he has worked at CCNPP and isn't sure how the RCS draining operation effects rad levels.

Which one of the following describes CCNPP management expectations with regards to 200% accountability?

- A. Since you are the Operations' representative, the RST is required only to monitor the dose rate in the area per the SWP.
- B. The RST should ensure at least two different methods (i.e., meters, alnor, epd, etc) are available to monitor the area dose rates.
- C. The RST should be provided continuous oversight by his supervisor as a second person to provide the required accountability.
- D. You and the RST both understand what could change conditions and required actions under changed conditions.

99. Which one of the following describes a responsibility of the Control Room Operator per NO-1-100?

- A. Controlling Containment entries according to NO-1-104.
- B. One of two required approvals for Troubleshooting Risk level 4 items.
- C. Functioning as the OTA for fires involving safe shutdown capability.
- D. Authorizing the conduct of Performance Evaluations.

100. Which one of the following describes the SHUTDOWN MARGIN determination method per OP-2 prior to achieving reactor criticality during a normal reactor startup?

- A. Verify boron concentration meets the requirements of the NEOP within 4 hours.
- B. Verify boron concentration meets the requirements of the NEOP within 2 hours.
- C. Verify CEAs are between the Tech Spec Long Term Steady State and Transient insertion limits within 2 hours.
- D. Verify CEAs are between the Tech Spec Long Term Steady State and Transient insertion limits within 4 hours.

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

Applicant Information

Name:	Region: I / II / III / IV
Date:	Facility/Unit: CCNPP 1#2
License Level: RO / SRO	Reactor Type: W / CE / BW / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value	<u>100</u> Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

1. The Unit is at full power. The RO is directed to report to the Shift Manager in his office to discuss a surveillance he recently performed. The CRO is to relieve the RO during the meeting.

Which one of the following describes the minimum action the RO is REQUIRED to perform per NO-1-200 (Control of Shift Activities)?

- A. Verbally brief the CRO.
- B. Walkdown the panels with the CRO.
- C. Inform the CRS of the meeting subject, duration and the location.
- D. Complete all requirements listed in NO-1-207 (Nuclear Operations Shift Turnover).

2. Given the following:

- Unit 1 is defueled and Unit 2 is in Mode 5
- Alarm "SFP TEMP HI" annunciates at 1C13

Select the cooling mechanisms in preferred order per AOP-6F (SFP Cooling Malfunctions):

- A. Line up Unit 1 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- B. Place second SFP cooler in service, line up Unit 1 SDC to SFP system, add makeup to SFP as water boils off.
- C. Line up Unit 2 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- D. Place second SFP cooler in service, line up Unit 2 SDC to SFP system, add makeup to SFP as water boils off.

3. A new electric motor has been installed on an existing pump. The MO requires the motor to be checked for proper rotation and not all clearances have been returned.

Which one of the following actions are required to remove the Danger Tag from the motor power supply? (assume the pump suction and discharge valves are to remain tagged out)

- A. Process a Supplementary Clearance.
- B. Process a modification to the tagout.
- C. Clear all tags and use a "human danger tag" for equipment not ready for operation.
- D. Verbally authorize the "lifting" of the motor tag and re-tag after rotation check.

4. An operator is assigned a task to monitor a resin transfer line for blockage. The operator's current dose for the year is 850 mrem. The task is expected to result in a dose of 100 mrem.

Describe the procedure, if required, for extending the administrative dose limit:

- A. No administrative dose limit extension is needed.
- B. Dosimeter record review, Shift Manager and GS-NO approvals.
- C. Dosimeter record review, GS-NO and GS-RS approvals.
- D. EPD functional review, RadCon S/S and Shift Manager approvals.

5. Given the following:

- * Unit 2 is in Mode 5
- * PAL interlocks are defeated
- * Containment Equipment hatch is installed
- * Spent fuel moves are in progress in the SFP area

Which on the following describes the condition required to maintain operability of SFP ventilation?

- A. Line-up Containment Purge with Supply fan OFF and Exhaust Fan ON.
- B. Containment Equipment Hatch must be secured with all bolts.
- C. Line-up Containment Purge with both the Supply and Exhaust fans ON.
- D. Containment Equipment Hatch must be secured with at least 4 bolts.

6. Which one of the following describes the proper action(s) for a reactor trip and a subsequent severe fire requiring a Control Room Evacuation?

- A. Implement EOP-0.
- B. Implement AOP-9A.
- C. Implement EOP-0, then return to AOP-9A.
- D. Parallel implement EOP-0 and AOP-9A.

7. During the performance of EOP-0, the RO observes the following plant conditions for the Pressure and Inventory Safety Function:

- * Pzr level is at 70 inches and steady
- * 3 Charging pumps are running
- * Letdown was isolated prior to the reactor trip
- * RCS pressure is 1900 PSIA and steady
- * RCS Subcooling is 95 °F and steady

The FINAL report from the RO to the CRS regarding the status of Pressure and Inventory Control Safety Function should be:

- A. COMPLETE.
- B. MONITORING.
- C. CANNOT BE MET.
- D. TAKING ALTERNATE ACTIONS.

8. Given the following:

- * Unit 1 120VAC bus 1Y01 has been lost.
- * Operators are directed by AOP-7J (Loss of 120 Vital AC Power) to stop the Containment Radiation Monitor pump.

Which one of the following is the reason for securing the pump?

- A. To prevent an inadvertent restart of the pump when the bus is repowered .
- B. To avoid reliance on the low flow trip to protect the pump.
- C. To prevent an inadvertent alarm when the bus is repowered .
- D. To establish containment integrity for the affected penetration.

9. During the heat up of Unit 2 from Mode 5, when the Unit reaches NOT and NOP, the RO reports 22B RCP temperature trends have slowly increased during the heatup of the RCS, and are consistently running higher than the other RCPs.

Which one of the following is the correct action to respond to the 22B RCP temperature trend?

- A. Verify CC 3832 and 3833 open.
- B. Start a second CC pump.
- C. Check CC flow to 22B RCP ~ 50 GPM higher than the other RCPs.
- D. Check RCP integral heat exchanger for leakage.

10. What CRO action must be taken on Unit 2 in the "Ensure Turbine Trip" block step to prevent an overcooling of the RCS, per EOP-0? (The Turbine Speed was observed to be decreasing)

- A. Press "Close Valves" button on the turbine control panel.
- B. Press "Reset" button on the MSR control panel.
- C. Observe that MSR source valves go shut.
- D. Shut both MSIVs.

11. One of the first actions the operator is instructed to take per AOP-6A (Abnormal Reactor Coolant Chemistry/Activity) on increased RCS activity is to adjust letdown flow.

Which one of the following statements is correct as to the adjustment and the reason?

- A. Increase letdown to maximum to divert RCS water for processing by the RCW Processing System.
- B. Decrease letdown to minimum to minimize the amount of radioactive letdown that is flowing throughout the Auxiliary Building.
- C. Isolate letdown until the cause of the activity increase can be determined by chemistry technicians.
- D. Increase letdown flow to obtain the maximum purification flow.

12. Following a Loss of Offsite Power, natural circulation flow can not be accurately verified for approximately 15 minutes.

Which one of the following is the cause of this time delay?

- A. Time for Reactor Coolant Pump coastdown.
- B. Formation of Steam Generator inverted delta T.
- C. Time for Low Steam Generator levels recovery.
- D. Increased loop cycle time.

13. Given the following:

- * Unit 1 is in Mode 3 at NOT and NOP
- * A total loss of Component Cooling occurs
- * AOP-7C (Loss of Component Cooling Water) is implemented and RCPs are stopped
- * All RCP lower seal temperatures are < 250 °F
- * The CRS directs the start of 12 CC pump per AOP-7C

Which of the following is the correct valve lineup for RCP restart after completion of AOP-7C actions?

- A. SHUT 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- B. SHUT 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.
- C. OPEN 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- D. OPEN 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.

14. Given the following:

- * Unit 1 is in Mode 3 preparing for RCS cooldown to Mode 5
- * The CRO reports that 1C13 panel indication 11 Salt Water header pressure is reading 9 PSIG and both the salt water flow on the 11 SW header and 11 CCHX have increased

Which one of the following describes the required actions based on plant conditions?

- A. Reduce 11 Salt Water header flow by placing 11A/11B SRWHX SW Bypass, 1-PIC-5154, in AUTO.
- B. Implement AOP 7A (Loss Of Salt Water Cooling) for a rupture on the 11 CC Heat Exchanger header.
- C. Direct the OSO to throttle 11 SW pump discharge to raise SW header pressure.
- D. Start 13 SW pump on 11 SW header to raise SW header pressure.

15. Given:

- * Both Units 1 & 2 were at 100% power
- * A Loss of Offsite Power occurred
- * All DGs started and loaded as expected
- * EOP-0 was implemented for both units
- * Condenser vacuum is 22" HG on both Units

Select the expected response on steam dumping capabilities for both Units:

- A. Unit 1 TBVs are operable, Unit 2 TBVs are operable.
- B. Unit 1 TBVs are inoperable, Unit 2 TBVs are operable
- C. Unit 1 TBVs are inoperable, Unit 2 TBVs are inoperable.
- D. Unit 1 TBVs are operable, Unit 2 TBVs are inoperable

16. Given the following:

- * Unit 1 is in Mode 6 with refueling in progress
- * The Containment Outage Door is shut
- * The PPO reports the Equipment Hatch has 1 out of 4 bolts loose
- * AOP-4A (Loss of Containment Integrity) is implemented

Determine the actions required based on plant conditions:

- A. Verify the Containment Outer Door is secured per NO-1-114, Containment Closure
- B. Secure Core Alterations immediately and establish Containment Closure per STP O-55A-1.
- C. Verify the Containment Outer Door is secured per STP O-55A-1 and suspend Core Alterations if unsat.
- D. Secure Core Alterations immediately and document the Containment Closure deviation per NO-1-114.

17. Given the following:

- * Both Units are at 100% power when a Loss of Offsite Power event occurs
- * EOP 0 is implemented on both Units
- * Concurrent with EOP 0 implementation, a loss of suction on the AFW common suction header occurs in the Unit 1 Turbine Building
- * The appropriate optimal recovery procedure is implemented for each Unit
- * The following parameters are observed:

	Unit 1	Unit 2
RCS pressure	1800 PSIA and lowering	1900 PSIA and rising
RCS Tc (~15 min later)	475 °F and lowering	505 °F (after rising uncontrollably from 495 °F)
11 (21) SG level	-360 inches	-300 inches
12 (22) SG level	-300 inches	-300 inches

AFW Suction header is restored after venting

Evaluate the proper actions to be taken on both Units based on stated plant conditions:

- A. Establish AFW flow on Unit 1 and Unit 2.
- B. Initiate OTCC on Unit 1 and throttle OPEN ADVs on Unit 2.
- C. Establish AFW flow on Unit 1 and initiate OTCC on Unit 2.
- D. Initiate OTCC on Unit 1 and increase AFW flow to Unit 2.

18. Given the following:

- * Unit 2 is at 100% power
- * All control systems are in automatic
- * Pressurizer Spray is stuck open
- * NO operator action is taken

Which one of the following describes the effect of RCS pressure DECREASING to 2205 PSIA?

- A. Pressurizer "PZR CH 100 PRESS" alarm is annunciated.
- B. Proportional heaters are fully energized.
- C. Proportional heaters are partially energized.
- D. All Backup heaters are energized.

19. A discharge of the Miscellaneous Waste Monitor Tank is in progress.

Which one of the following conditions would require entry into AOP-6B (Accidental Release of Radioactive Liquid Waste)?

- A. Trip of a Circ Water Pump on the unit receiving the discharge with no corresponding reduction in discharge flow rate.
- B. Liquid Waste Discharge valves 2201-CV and 2202-CV OPEN with discharge RMS alarm.
- C. Discharge activity exceeds the computer alarm high setpoint specified in the release permit.
- D. Discharge activity decreases to less than the Discharge Permit background activity value.

20. Given the following:

- * CEA 1 drops to the bottom on Unit 1
- * AOP-1B (CEA Malfunction) is implemented
- * Reactor power is being maintained constant during the recovery of the CEA

Which one of the following is a method used to maintain reactor power?

- A. Adjust Turbine load to compensate for the reactivity effects of CEA withdrawal.
- B. Fast Borate to compensate for the reactivity effects of the CEA withdrawal.
- C. Insert Group 1 CEAs to compensate for the reactivity effects of the CEA withdrawal.
- D. Dilute RCS to compensate for the reactivity effects of the CEA withdrawal.

21. Given the following:

- * A transient occurs on Unit 1
- * EOP-0 is implemented and alternate actions are required to trip the reactor
- * All Safety Functions are complete

Which one of the following would be the breakers reclosed after actions to trip the reactor?

- A. 11A 480V normal feeder breaker and 12A 480V tie breakers are closed.
- B. 12A 480V and 13A 480V normal feeder breakers are closed.
- C. 12A 480V and 13B 480V normal feeder breakers are closed.
- D. 12B 480V and 13A 480V normal feeder breakers are closed.

22. Given the following:

- * Unit 1 is in Mode 2 and at the POAH
- * The RO withdraws CEA Regulating Group 4 to raise power and enter Mode 1
- * After the RO releases the Raise/Lower Switch, he observes a steady rise in Reactor power and RCS temperature
- * Primary CEA Group 4 selected light is indicating withdrawal

Which one of the following describes the required action based on the plant conditions?

- A. Insert CEAs to initial position to stop the power increase at the desired point in mode 1.
- B. Place the Raise/Lower Switch to LOWER and monitor CEA position indications for Regulating Group 4.
- C. Adjust the TBV controller to stop the power increase at the desired point in Mode 1 and monitor CEA positions.
- D. Place the CEDS system in OFF and monitor CEA position indications for Regulating Group 4.

23. In accordance with the basis document, which of the following is the reason for tripping 2 RCPs at 1725 psia and the last 2 RCPs when RCS temperature/pressure is less than minimum during a LOCA?

- A. Minimize pump cavitation and/or air binding which would result in pump/motor damage.
- B. Minimize the loss of RCS inventory during a break at the bottom of the hot leg.
- C. Minimize the loss of RCS inventory during a break at the bottom of the cold leg.
- D. Minimize the heat input from the pumps thereby minimizing core damage.

24. Which condition occurs on a loss of +15 VDC power to the W.R. flux trip relays 1 & 2?

- A. SUR trip inhibited.
- B. Zero power mode bypass enabled.
- C. CEAPDS PDIL enabled.
- D. TM/LP signal to CWP inhibited.

25. A charging header leak would be identified by which one of the following?

- A. Lowering pressurizer level with minimum letdown flow and one charging pump operating.
- B. Charging header pressure greater than RCS pressure with two charging pumps operating.
- C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.
- D. Charging header pressure less than RCS pressure with one charging pump operating.

26. After isolating a S/G that has a ruptured tube, which one of the following is the preferred method for maintaining control of the level in the S/G?

- A. Steaming to the condenser.
- B. Blowdown to the condenser.
- C. Backfill to the RCS.
- D. Blowdown to the MWS.

27. Chemistry reports that the calculated Steam Generator primary-to-secondary leak rate is 50 GPD. The CRS has the appropriate AOP implemented.

Which one of the following describes the actions that are expected?

- A. Secure SG Surface and Bottom Blowdown Valves.
- B. Place Aux Building Sump Pumps in STOP.
- C. Monitor SG level for an unexplained rapid increase.
- D. Review AOP-2A, EOP-6, EOP-8 and OP-3 Appendix B (Rapid Power Reduction).

28. Given the following:

- * Unit 2 tripped from 100% power
- * EOP-0 "Post Trip Immediate actions" are being performed
- * The Main Turbine did not trip as expected

Which one of the following actions should be performed per EOP-0 to trip/stop the turbine?

- A. Manually close both MSIVs.
- B. Manually stop EHC pumps.
- C. Manually Shut Turbine Throttle Valves using Test pushbuttons.
- D. Locally trip the Turbine from the front standard.

29. Given the following:

- * Unit 2 was manually tripped from 100% power due to a steam leak in the MSIV room
- * EOP-0 is implemented
- * RO reports Reactivity Control cannot be met due to positive SURs
- * All other Safety Functions are met

Determine the appropriate actions for the plant conditions:

- A. Reassess the EOP-0 Safety Functions and implement the optimal recovery procedure.
- B. Implement the alternate actions for Reactivity Control Safety Function to mitigate the ATWS event.
- C. Implement EOP-8 and determine success paths using the Resource Assessment Table.
- D. Implement EOP-4 to address reactivity control and isolate the steam leak.

30. Given the following:

- * Unit 1 is at 100% power
- * 1Y01 (11 120V Vital AC bus) had been deenergized for emergency maintenance and is ready to be energized
- * The CRS directs you to reenergize 1Y01 per OI 26B (120 Volt Vital AC and Computer AC)

Which one of the following describes an expected result from improper implementation of the applicable procedure steps?

- A. ESFAS ZB logic channel could actuate if cabinet is not shutdown per OI-34 prior to energizing 1Y01.
- B. Unit 2 Channel A WRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- C. Unit 2 Channel A LRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- D. ESFAS ZE sensor channel could trip if cabinet is not shutdown per OI-34 prior to energizing 1Y01.

31. During the performance of a waste gas release from 11 WGDT, WGS-2191-CV is found failed closed by the ABO.

Which valve must be closed promptly per AOP-6C (Accidental Gaseous Waste Release) to prevent an inadvertent release from WG Surge Tank?

- A. WGS-2191-PCV (WG discharge flow control).
- B. WGS-623 (11 WGDT outlet).
- C. WGS-630 (WG discharge final filter bypass).
- D. WGS-683 (WG discharge to unit 1 plant vent).

32. Which one of the following describes the cause for the C06 panel annunciator window "SPDS" to alarm?

- A. Critical safety function box color has changed from red to magenta.
- B. Critical safety function box color has changed from yellow to green.
- C. Critical safety function box color has changed from red to green.
- D. Critical safety function box color has changed from green to red.

33. Which one of the following is correct concerning a loss of Instrument Air pressure?

- A. Pressurizer Spray Valves fail OPEN.
- B. Condensate Demineralizer Bypass Valve fails OPEN.
- C. Pressurizer Auxiliary Spray Valve fails SHUT.
- D. Containment Spray Control Valves fail SHUT.

34. Given the following:

- * Unit 1 is at 100% power
- * A LOCA occurs when 1 PORV fails open
- * SIAS and CIS actuate.

Which one of the following describes the initial response of ESF components?

- A. 11 and 12 CS pumps start and CS flow is ~2700 GPM total flow.
- B. 11 and 12 HPSI pumps start and inject water below ~1300 PSIA.
- C. 11 and 12 LPSI pumps start and inject water to the RCS.
- D. 11 and 13 HPSI pumps start and inject water below ~1300 PSIA.

35. Which one of the following is the effect from deenergizing the LRNI level 2 bistable?

- A. Enables APD trip.
- B. Enables Power Trip Test Interlock (PTTI).
- C. Energizes Channel in Test LED.
- D. Enables Loss of Load Trip.

36. Given the following:

- * Unit 1 is in Mode 3 with a reactor startup in progress
- * The RO is withdrawing Regulating Group 1 CEAs in Manual Group mode
- * Regulating Group 1 is at 120 inches
- * No CEA deviations exist

Which one of the following will be the first to automatically stop CEA movement?

- A. Highest CEA reaches the Upper Computer Stop (UCS).
- B. Lowest CEA reaches the Upper Computer Stop (UCS).
- C. Highest CEA reaches the Upper Electrical Limit (UEL).
- D. Lowest CEA reaches the Upper Electrical Limit (UEL).

37. Given the following:

- * Unit 1 is in Mode 5, preparing for RCPs start
- * Unit 2 is in Mode 6
- * 12 13.8 KV Bus voltage is reading 14.8 KV
- * 22 13.8 KV Bus voltage is reading 15.2 KV

Which one of the following is the required action for the plant conditions?

- A. Start Unit 1 RCPs on 12 13.8 KV Bus and verify bus voltage drops to 14.5 KV.
- B. Start Unit 1 RCPs on 22 13.8 KV Bus and shift RCP power to 12 13.8 KV bus when voltage increases to ≥ 15.2 KV.
- C. Verify 4 KV Bus voltages are less than 4100 volts and start Unit 1 RCPs on 12 13.8 KV Bus.
- D. Verify 4 KV Bus voltages are greater than 4100 volts and start Unit 1 RCPs on 22 13.8 KV Bus.

38. The CRO is directed to place the AFW speed/flow controllers at 1(2)C43 to the "MIN" position before their respective hand transfer valves are placed in POSITION 2 during AOP-9A (Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire) .

Which one of the following is the reason for the required action?

- A. To remove the air signal to the CVs and allow the CRO to have control of the AFW from 1(2)C43.
- B. To place the AFW pumps at a normal discharge pressure and shut the AFW flow CVs to allow a controlled feed rate.
- C. To place the pumps and CVs in a known position and prevent an uncontrolled RCS cooldown from occurring.
- D. To maintain AFW flow to the SGs to prevent a SG dryout condition until 13 (23) AFW pump is running.

39. Which one of the following describes a design flowpath of the MW Processing System?

- A. MWRT is pumped by the MWRT pump through the MWS filter and IX and IX outlet strainer to 11 RCWMT.
- B. MWMT is pumped by the MWMT pump through the MWS filter and IX and IX outlet strainer to 11 RCWRT.
- C. MWRT is pumped by the MWRT metering pump through the MWS filter and IX to 12 RCWMT.
- D. MWMT is pumped by the MWMT metering pump through the MWS filter and IX to 11 RCWRT.

40. Given the following:

- * Unit 1 is in Mode 5
- * Unit 2 is in Mode 6 with core off-load in progress
- * The Control Room Recirculation Signal (CRRS) is declared inoperable

Which one of the following is the required Tech Spec action, if any?

- A. Place 1 CREV System train in recirc with Post-LOCI fan in service within 4 hours.
- B. No action required by Tech Spec due to LCO is not applicable for either Unit.
- C. Place 1 CREV System train in recirc with Post-LOCI fan in service immediately.
- D. No action is required by TRM due to condition is not applicable for either Unit.

41. Given the following:

- * Unit 1 is at MOC and 100% power
- * Chemistry requests 13 Purification IX in service
- * The ABO reports that the "unborated IX" sign is hanging on the inlet valve 1-CVC-146

Which one of the following is the proper response for the plant conditions?

- A. Ensure 1-CVC-520-CV, IX Bypass, is in the BYPASS position and direct the ABO to remove the sign.
- B. Notify the CRS of a possible reactivity change and lower L/D temperature to minimize the effects of the unborated resin.
- C. Ensure 1-CVC-520-CV, IX Bypass, is in the AUTO position and direct the ABO continue placing 13 Purification IX in service.
- D. Notify the CRS of a possible reactivity change due to placing 13 Purification IX in service.

42. The Chemistry Tech has reported to the CRS that the weekly sample of the onservice WGDT has been completed. The analysis results are 4 curies of noble gas and 4.5% O₂ by volume.

What are the required actions for the sample results per TRM?

- A. Isolate the on-service WGDT and prepare a permit for a discharge.
- B. Maintain the on-service WGDT in service, have RCS sampled for activity.
- C. Isolate the on-service WGDT, reduce O₂ concentration in WG system immediately.
- D. Maintain the on-service WGDT in service, monitor letdown process rad monitor.

43. Given the following:

- * Unit 2 was at 100% power when a LOOP and large break LOCA occurred
- * All Emergency Diesels started and loaded as designed

Which one of the following describes the expected configuration of the Containment Cooling Systems?

- A. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.
- B. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- C. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- D. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.

44. Given the following:

- Unit 1 is at 10% power with a Plant startup in progress
- Alarm "12 SG CONTR CH LVL" annunciates at 1C03
- RO reports that 12 SG level by 1-LT-1106 indicates +63.5" and remaining SG level indications are at 0"

Describe the effect on the Plant and action required:

- A. 12 Bypass Feedwater Valve will go SHUT requiring a manual Reactor trip and implementation of EOP-0.
- B. 12 Bypass Feedwater Valve will continue to maintain level, the downcomer selector switch at 1C36 should be placed in the LT-1106 failure position to provide LT-1121 input to the control channel indication.
- C. 12 Bypass Feedwater Valve will go SHUT, requiring manual operation by placing its associated handswitch in the BYPASS FAIL position.
- D. 12 Bypass Feedwater Valve will continue to maintain level, a manual transfer from LOW to HIGH power of the DFWCS will be required for 12 Feed System.

45. Using the provided reference and given the following:

- * Unit 1 is at 100% power
- * Regulating Group 5 CEAs are at 129 inches for testing
- * CEA 1 Pulse counting position indicator indicates 129 inches while CEAPDS indicates 124 inches

Which one of the following describes the actions (if any) that comply with the TRM requirements?

- A. TRM requirements are met, no actions are required.
- B. Restore the CEAPDs indication within 6 hours.
- C. Borate power to <70% and withdraw CEA 1 to FULL OUT position within 6 hours.
- D. Borate power to <70% and withdraw Group 5 to FULL OUT position within 6 hours.

46. Given the following:

- * Unit is at 100% power
- * "CSAS ACTUATED" alarm is annunciated at 1(2)C08
- * Containment pressure indicates .5 PSIG

Which one of the following describes the expected system response?

- A. CS pump(s) running and SI-4150 and/or SI-4151 is/are OPEN.
- B. PS-6531-SV, Quench Tank sample valve is SHUT.
- C. SI-4150 and/or 4151 is/are OPEN.
- D. NO system response due to a spurious actuation has occurred.

47. A CAR unit has been shutdown and the inlet CV has failed to shut. If the CAR is in the "Holding Mode", describe the effect, if any:

- A. Air will not leak into the condenser.
- B. Air will leak into the condenser via the seal water recirc pump.
- C. Air will leak into the condenser via the hogging CV.
- D. Air will leak into the condenser via the three way valve.

48. Given the following:

- * Unit 1 is in Mode 3
- * SIAS Pressurizer Pressure Blocked on both logic channels
- * RCS pressure being reduced to 1500 PSIA
- * PZR Spray valves fail shut and RCS pressure starts to rise

Select the expected system response as pressure rises:

- A. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with the keyswitch for SIAS Block A at 1C10.
- B. SIAS Pressurizer Pressure Block will be automatically removed when 2 SIAS Pressurizer Pressure Block sensors clear
- C. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with both keyswitches for SIAS Block A and B at 1C10.
- D. SIAS Pressurizer Pressure Block will be automatically removed when 1 SIAS Pressurizer Pressure sensor clears.

49. Given the following:

- Unit 1 is at 100% power
- The 1B DG is running unloaded for post maintenance testing, Electric Shop and Mechanical maintenance personnel are standing by in the 1B DG Room
- CRO reports a "1B DG" alarm is received at 1C18B
- OSO reports a "START FAILURE" alarm is received at the 1B DG Alarm panel
- Electricians suspect blown fuses, requesting to replace them immediately.

Using the provided electrical schematic, determine which fuse(s) have blown, resulting in the indicated response on the 1B DG:

- A. Fuses FU7 and FU8 due to the start failure alarm that was annunciated from the loss of control power.
- B. Fuses FU1 and FU2 due to the start failure alarm that annunciated from the loss of control power.
- C. Fuses FU3 and FU4 due to start failure alarm from the engine running with the air start solenoids failed close.
- D. Fuses FU5 and FU6 due to the start failure alarm from the loss of power to the low speed and auxiliary stop relays.

50. Given the following:

- * Unit 1 is in Mode 4
- * RCS pressure is 325 PSIA and temperature is 355 °F
- * PORV Block Valve RC 403 is OPEN
- * PORV Block Valve RC 405 is SHUT
- * HS 1406 (PORV 402 MPT Protection) is in "VARIABLE MPT ENABLE"
- * HS 1408 (PORV 404 MPT Protection) is in "NORMAL"
- * PORV 402 override is in "AUTO"
- * PORV 404 override is in "AUTO"
- * PT 103-1 Pressurizer Low Range pressure transmitter fails to 1500 PSIA

Which one of the following describes the response to the conditions?

- A. ERV-402 stays ENABLED and OPENS.
- B. ERV-404 is ENABLED and OPENS.
- C. ERV-402 stays ENABLED and remains SHUT.
- D. ERV-404 is ENABLED and remains SHUT.

51. The most serious failure for the Spent Fuel Pool Cooling System is the loss of SFP Water. What feature of the system is designed to prevent this?

- A. Piping interconnection to either RWT.
- B. Piping interconnection from Safety Injection systems.
- C. Two channels of remote level indication with alarm function.
- D. SFP pipe connections with siphon breakers, above the water level in SFP.

52. A smoke detector fails and goes into alarm for the Unit 1 27 Foot Switch Gear Room.

Which one of the following describes the effect on the system?

- A. Pre-Alarm buzzer sounds and after a time delay, Halon system discharges.
- B. Pre-Alarm buzzer sounds but does not result in Halon system discharge.
- C. Discharge warning horn sounds and after a time delay, Halon system discharges.
- D. Discharge warning horn sounds but does not result in Halon system discharge.

53. Given the following:

- Unit 2 is 100% power
- LT-110X Pressurizer level channel selected
- HS-100-3, Pzr Htr Lo Lvl cut-off is selected in "X / Y" position

Describe the effect on the RCS if LT-110X fails due to a leak in the reference leg:

- A. Indicated Pressurizer level will increase due to Letdown goes to minimum and charging pumps stop .
- B. Indicated Pressurizer level will decrease due to Letdown goes to maximum exceeding Charging pump capacity.
- C. Actual Pressurizer level will decrease as Letdown goes to maximum, PZR Backup Heaters energize.
- D. Actual Pressurizer level will increase as Letdown goes to minimum and backup Charging pumps start.

54. Which one of the following describes the effect of fast neutron irradiation of the reactor vessel?

- A. Brittle Fracture.
- B. Thermal gradients
- C. Embrittlement.
- D. Pressurized thermal shock.

55. Given the following:

- * Unit 2 is a 100% power
- * All control systems in automatic
- * Reactor trips on MT EHC system failure

Which one of the following describes the expected plant response?

- A. Post-trip DFWCS relay is energized, MFVs ramp shut over 20 seconds, BFVs open to 56%.
- B. DFWCS shifts to low power mode on RRS NI power input, BFVs open to 33%.
- C. Post-trip DFWCS relay is deenergized, MFVs ramp shut over 30 seconds, BFVs open to 65%.
- D. DFWCS shifts to low power mode after 20 seconds by relays from MT trip circuit, BFVs open to 65%.

56. Unit 1 is at full power when a reduction occurs in the Instrument Air Header pressure. The CRO observes that IA header pressure has decreased to 85 PSIG and PA Header is at 85 PSIG also.

Which one of the following describes the expected automatic action that will occur at this pressure?

- A. PA-2061-CV, PA to IA Cross connect Valve OPENS.
- B. PA-2059-CV , PA header Isolation Valve SHUTS.
- C. Standby Instrument Air Compressor STARTS.
- D. IA-2085-CV, Containment IA Isolation Valve SHUTS.

57. Given the following:

- Unit 1 is in Mode 6
- Fuel Handling is in progress
- Containment Purge is in operation

Which of the following monitors should **NOT** be functionally tested per OI-35 (Radiation Monitoring System)?

- A. Fuel Handling Area Monitor (RI-5420).
- B. Containment Area Radiation Monitor (RI-5316A-D).
- C. Main Vent Gas Monitor (RI-5415).
- D. Containment ICI Area Monitor (RI-7008).

58. Given the following:

- Unit 1 is in Mode 3, NOT and NOP (previously was at 100% power for 245 days)
- Chemistry reports that the trend on weekly samples indicate an increase in the RCS activity for non-soluble matter
- NFM reports that a review of CECOR data indicates that fuel rod fouling is increasing

Which condition will cause 1C07 alarm F-21 "RAD MON LVL HI" to alarm AND a dose rate change in the Letdown line?

- A. LOCA inside the Containment resulting in stopping RCPs after CIS actuation.
- B. LOCA outside the Containment resulting in activity in the 27 Foot West Penetration Room.
- C. Establishing forced circulation by starting RCPs after a Loss of Offsite Power.
- D. Starting additional Charging pumps in response to an RCS leak.

59. Given the following:

- * Both Units are at 100% power
- * MS line Rad Monitor status:

	Unit 1 (11/12)	Unit 2 (21/22)
NORM White light	on/on	on/on
FAIL Green light	off/off	on/on
ALERT Amber light	off/on	off/off
HIGH Red light	off/on	off/off

Which one of the following describes the operational status of the RMS?

- A. Unit 1 both operable and Unit 2 both inoperable.
- B. Unit 1 one RMS inoperable and Unit 2 one RMS inoperable.
- C. Unit 1 both RMS inoperable and Unit 2 both RMS inoperable.
- D. Unit 1 both RMS inoperable and Unit 2 both RMS operable.

60. Given the following:

- * A LOCA has occurred on Unit 2
- * EOP 5 has been implemented
- * CRO has started the H₂ Recombiners per OI-41A (Hydrogen Recombiners)
- * The CRO later observes that 21 H₂ Recombiner has malfunctioned and 22 H₂ Recombiner is operating satisfactorily

Which one of the following describes the required action, if any, to control H₂ volume to <4% during a LOCA?

- A. Containment H₂ control will require the repair of 21 H₂ Recombiner within 24 hours.
- B. Containment H₂ control will require the use of the Hydrogen Purge System within 24 hours.
- C. Containment H₂ control will require the use of alternate procedures from the TSC.
- D. No further actions are required to maintain H₂ <4% by volume by design.

61. Given the following:

- * Unit 1 is in Mode 6 with fuel off-load in progress
- * RFM is being operated in AUTO mode
- * Off indexing is being used during a fuel assembly insertion in the core
- * OFF INDEX ZONE BREACHED is indicated on the CRT

Which one of the following is the action required to complete the fuel move?

- A. Raise the fuel to the hoist up limit and select SEMI-AUTOMATIC mode to reposition the RFM to the Off index zone.
- B. Lower the hoist in slow speed until the Upper Grapple Operate Zone and position the RFM to On Index.
- C. Use TRAVEL OVERRIDE to return within the Off index zone and continue with hoist lowering.
- D. Reset the alarm by depowering the RFM console and complete the fuel move from the RFM in MANUAL ELECTRIC control.

62. Which one of the following conditions is indicated when the LOAD CHANNEL light on the Unit 2 turbine control panel is lit?

- A. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the IMP OUT mode.
- B. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the TURBINE MANUAL mode.
- C. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the TURBINE MANUAL mode.
- D. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the IMP OUT mode.

63. Which one of the following is the design basis for the Quench Tank volume?

- A. Continuous discharge of both PORVs with no operator action.
- B. Continuous CEA withdrawal event from low power.
- C. Continuous RCS degassing using both Reactor Vent Valves.
- D. Continuous discharge from 1 Primary Safety Valve during loss of load event.

64. Given the following:

- * Unit 1 Reactor is manually tripped from 100% power
- * 11 RCS hot leg loop RTD to RRS fails high to 615°F
- * No operator action is taken

Which one of the following describes the initial response of the ADVs and TBVs and final plant conditions?

- A. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the TBVs will SHUT and ADVs control RCS at a lower temperature band around 505 °F .
- B. The failed input to RRS is deleted by the Tave calculator, ADV and TBV operation is unchanged (including Quick Open) with RCS temperature control by the ADVs at the expected post trip band of ~532 °F .
- C. The failed input to the RRS inhibits the Quick Open features of the ADVs and TBVs resulting in both a lift of MSSVs and ADVs and TBVs staying open longer with the RCS temperature control by the ADVs at a lower temperature band ~ 505 °F .
- D. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the ADVs will SHUT and TBVs control RCS at a lower temperature band around 505 °F .

65. During the performance of a routine valve lineup while the Unit is in Mode 5, a valve listed as OPEN is discovered to be closed.

Which one of the following describes the correct action to be taken for this valve lineup condition?

- A. Since the Unit is not in MODE 1 or 2, an entry in the CRO log is required.
- B. Note the position on the discrepancy section of the lineup cover sheet and have the designated SRO evaluate the discrepancy.
- C. With concurrence with the Control Room Operator, the valve is immediately returned to the recommended position.
- D. An Abnormal Valve position tag is attached to the valve and the step is signed off as complete.

66. You are an extra SRO on-shift in the OWC office, when Unit 1 reactor trips. About 30 minutes later a Maintenance Supervisor requests to talk with the SM. The Maintenance Supervisor explains that there is a problem with the final coupling alignment for 12 Condensate pump during its routine overhaul.

Which one of the following describes the proper response to the Maintenance Supervisor's request?

- A. Direct the Maintenance Supervisor to fill out an Issue Report.
- B. Direct the Maintenance Supervisor to enter the Control Room to get permission to see the SM.
- C. Direct the Maintenance Supervisor to fill out a Risk Assessment form.
- D. Direct the Maintenance Supervisor to wait until normal access is restored.

67. You are in the OWC and a NFM Engineer requests operator support for an unscheduled activity to move fuel assemblies into the Fuel inspection stand in the SFP area.

Which one of the following is the proper action for the work request?

- A. Verify plant conditions are correct for fuel handling, assign a qualified SFHM operator and grant permission for the evolution.
- B. Direct the NFM Engineer to have the activity scheduled on the QSS schedule per MN 1-120.
- C. Verify plant conditions are correct for fuel handling, contact CRS for approval and assign a SFHM operator, direct the NFM Engineer to conduct a pre-job brief.
- D. Perform a risk assessment, contact the CRS for approval and SFHM operator assignment, direct the NFM Engineer to conduct a pre-job brief.

68. Given the following:

- * Unit 2 tripped
- * EOP-5 is implemented
- * A loss of all AC power occurs

What is the MAXIMUM design time available to restore power to the affected battery chargers?

- A. 2 hours from initial loss of power
- B. 4 hours from initial loss of power
- C. 6 hours from time of Reactor Trip
- D. 8 hours from time of Reactor Trip

69. Which one of the following describes the basis for the differences in the required Unit 1 (2343 ppm) and Unit 2 (2323 ppm) refueling boron concentrations per Tech Spec 3.9.1?

- A. Boron¹⁰ atom % concentration is greater on Unit 1 than Unit 2.
- B. Unit 1 has higher U²³⁵ enrichment fuel load than Unit 2.
- C. Unit 2 has higher U²³⁵ enrichment fuel load than Unit 1.
- D. Pu²³⁹ concentration is greater on Unit 2 than Unit 1.

70. Refer to the attached Unit 1 Technical Specifications Core Operating Limits Report (COLR).

Unit 1 reactor power is 80% when a continuous CEA withdrawal occurs. When the withdrawal is stopped, indicated Axial Shape Index (ASI) is -0.25 and reactor power peaks at 85%. Unit 1 is using Excore Monitoring for LHR and DNB surveillance monitoring.

Which, if any, axial flux offset control limit(s) is(are) being exceeded?

- A. Linear Heat Rate only.
- B. DNB only.
- C. Both Linear Heat Rate and DNB.
- D. Tech Spec 3.2.5 is not applicable .

71. Given the following:

- * An approved Waste Gas Release Permit has been issued
- * ABO is lining up to discharge 11 WGDT
- * CRO has completed a RMS operability check on 0-RI-2191 per OI-17B and notes that the applicable recorder is not functioning

Which one of the following is the appropriate action for the stated conditions?

- A. Stop the evolution and contact Instrument Maintenance for priority repair of the recorder prior to the release.
- B. Continue with evolution and notify Chemistry to determine alternate monitoring requirements per the ODCM.
- C. Stop the evolution and contact Chemistry to determine operability of the RMS per the ODCM.
- D. Continue with the evolution since the recorder is not required by the ODCM for operability.

72. Given the following:

- * Unit 1 is at 50% power
- * Maintenance is in progress on 11 Charging pump
- * alarm at 1C17 "RAD MON PANEL 1C22" annunciates
- * CRO reports that "UNIT 1 WP VENT" alarmed with 1-RI-5410 reading 1000 cpm
- * ABO reports that 11 Charging pump was inadvertently vented

As CRS, select the proper response to these conditions:

- A. Direct CRO to remove the monitor from service until completion of maintenance on 11 Charging pump.
- B. Declare 1-RI-5410 OOS due to alarm setpoint set too low, have CRO refer to Alarm Manual for compensatory actions.
- C. Direct CRO bypass 1-RI-5410 alarm for duration of maintenance on 11 Charging pump.
- D. Direct CRO to monitor for trends on 1-RI-5410 and notify Rad Safety, ABO and Shift Manager of alarm condition.

73. Using appropriate references:

Given the following:

- * Unit 1 is at 100% power
- * A Loss of Offsite Power occurs and 1A and 1B DGs failed to load
- * After EOP 0 is complete, the appropriate optimal procedure is implemented on Unit 1
- * The appropriate ERPIP EAL is declared after 15 minutes and notification is completed.
- * ~10 minutes later, 11 4KV Bus is repowered by the 0C DG

Assuming you are the SM, which one of the following describes the ERPIP EAL based on the above conditions?

- A. Unusual Event.
- B. Alert.
- C. Site Emergency.
- D. General Emergency.

74. One of the major set of actions performed during EOP-5 (LOCA), is to commence a cooldown to SDC entry conditions.

Which of the following is a result of this action, during a small break LOCA?

- A. Ensure SDC is entered before condensate inventory is lost using TBVs.
- B. Minimize the time before corrective maintenance activities can commence.
- C. Enhance natural circ, if RCPs are secured, and depressurize the RCS faster to allow quicker inventory recovery.
- D. Allow operation of the LPSI pumps under RAS conditions.

75. The Control Room has been evacuated due to toxic gas intrusion per AOP-11 (Control Room Evacuation and Safe Shutdown, Non-fire conditions). The STA reports that the Safety Parameter Acceptance Criteria for Core and RCS Heat Removal can not be met due to no RCPs operating. All other parameters are met.

Based on the NO-1-200 requirements for not meeting AOP SFSC criteria, the correct action would be:

- A. Start one RCP in each loop, per AOP-11, for decay heat removal.
- B. Start both RCPs in the loop with an available SG, per AOP-11, for decay heat removal.
- C. Implement EOP-8 after the Control Room atmosphere allows entry for RCP restart.
- D. Implement EOP-8, since AOP-11 assumes at least two RCPs are running and does not address natural circ.

76. Given the following:

- * Unit 2 steam line rupture event is in progress
- * EOP 4 has been implemented and STEP G has identified 21 SG as the affected SG
- * The CRO reports that the TBO states that 21 ADV Hand valves are frozen in POSITION 1

Which one of the following actions is required to complete the affected step?

- A. Direct the CRO to place the ADV controller at 2C03 in MANUAL with 0% output.
- B. Direct the CRO to have the ABO SHUT 2-MS-101, 21 ADV Isolation.
- C. Direct the CRO to place the 21 ADV Controller 2-HC-4056A to 0% output.
- D. Direct the CRO complete the rest of STEP G and write an IR on the hand valves.

77. Given the following:

- * Both Units are at 100% power
- * A fire is reported in the -15 foot East-West Corridor and the Fire Brigade responds
- * The OTA reports fire damage appears severe and safe shutdown equipment is damaged with heavy smoke in the area

Which one of the following describes the proper actions for the given plant conditions?

- A. Monitor communications with the Fire Brigade, secure Auxiliary Building elevator to prevent use during fire.
- B. Call for outside assistance from local fire companies within 15 minutes, review Tech Specs and TRM for system applicability.
- C. Trip the affected Unit(s), implement EOP 0 on the affected Unit(s), cooldown the affected Unit(s) to Mode 5 within 72 hours to comply with Appendix R requirements.
- D. Implement AOP 9C to Trip both Reactors and Main Turbines, secure SGFPs and CEDM MG sets.

78. Which one of the following describes the immediate effect on Shutdown Margin as defined by Tech Specs for a dropped CEA?

- A. Shutdown Margin is unchanged by the dropped CEA.
- B. Shutdown Margin is reduced by the worth of the CEA.
- C. Shutdown Margin is increased by the worth of resultant power change.
- D. Shutdown Margin is unchanged because of the offsetting Xe reactivity effects.

79. On a loss of MCC-214, which boration flowpath would be available?

- A. RWT outlet and a charging pump.
- B. 22 BA pump, BA direct M/U valve and a charging pump.
- C. 21 BA pump, BA flow control valve, VCT to a charging pump.
- D. 21 or 22 BAST gravity valves and a charging pump

80. Given the following:

- * Unit 2 is in Mode 6 with RFP level at 67 foot elevation
- * RCS level has been slowly rising over the last twelve hours
- * Chemistry reports RCS sample results show boron has decreased from 2610 ppm to 2583 ppm and Hydrazine is at 10 ppm

Which of the following is the correct action?

- A. Borate with 3 charging pumps to maintain specified boron concentration.
- B. Drain the RCS as required and implement AOP 6A (Abnormal RCS Chemistry)
- C. Lower SG levels per AOP 1A (Inadvertent Boron Dilution).
- D. Drain the RCS as required and monitor for SG tube primary side draining.

81. Given the following:

- * Unit 1 trips due to a LOOP
- * 1A and 1B DGs fail to start
- * The appropriate optimum procedure is implemented
- * The CRO has completed actions to align the electrical system for power restoration
- * 1-CC-3832-CV (CC CNTMT SUPPLY) is shut

Which of the following is the reason for shutting 1-CC-3832-CV?

- A. Prevent DG overload when a Component Cooling pump is restarted.
- B. Prevent thermal shock to RCP seals when power restored and CC pump(s) started.
- C. Maximize the heat removal capability of the CCHX for SDC entry conditions.
- D. Minimize the DG loading during a SBO.

82. Given the following:

- * EOP 5 is implemented on Unit 1
- * 11 4KV Bus is deenergized
- * RAS has actuated
- * HPSI pump is cavitating and flow cannot be throttled

Which one of the following is appropriate action to maintain adequate heat removal?

- A. Align 11 CS pump flow to 12 HPSI pump via 11 SDC HX to HPSI pump suction valve, SI-663-MOV.
- B. Align 12 CS pump flow to 13 HPSI pump via 12 SDC HX to HPSI pump suction valve, SI-662-MOV.
- C. Align 12 CS pump flow to 12 HPSI pump via 11 SDC HX to HPSI pump suction valve, SI-663-MOV.
- D. Align 11 CS pump to 13 HPSI pump via 12 SDC HX to HPSI pump suction valve, SI-662-MOV.

83. Given the following:

- * Unit 1 is at 100%
- * A major transient results in an increasing RCS pressure trend
- * The RO reports that Quench Tank parameters are increasing and acoustic monitors indicate a large leak rate into the quench tank
- * The Reactor automatically trips at 2400 PSIA RCS pressure
- * RCS pressure stops increasing and starts rapidly decreasing
- * The plant computer indications are:
 - T106 (Pwr Op Relief Valve Out) - 110° F
 - T107 (Pzr Relief Valve Temp Out) - 285° F
 - T108 (Pzr Relief Valve Temp Out) - 100° F

Which of the following describes the event?

- A. Single ejected CEA event.
- B. Uncomplicated Loss of Load event.
- C. Single failed open PORV event.
- D. Single failed open RCS Safety Valve event

84. Given the following:

- * Unit 1 is in Mode 5
- * SDC is in service with 11 LPSI pump running
- * RCS temperature is 180 °F
- * Pressurizer Proportional and Backup heaters are placed in AUTO
- * RCS pressure peaks ~300 PSIA
- * The RO reports that pressurizer level is decreasing

Which one of the following describes the correct procedure to implement and probable reason?

- A. Implement AOP 2A, Excessive RCS Leakage, for loss of RCS inventory due to SDC return header relief valve open.
- B. Implement AOP 3B, Abnormal Shutdown Cooling Conditions, for loss of RCS inventory due to SDC return header relief open.
- C. Implement AOP 2A, Excessive RCS Leakage, for loss of RCS inventory due to NRHX tube leakage.
- D. Implement AOP 3B, Abnormal Shutdown Cooling Conditions, for loss of RCS inventory due to NRHX tube leakage.

85. Given the following:

- * "11,12 125V DC BUS UV" alarm is annunciated at 1C34
- * The CRO reports "0" voltage indication for 11 125 V DC Bus

Which one of the following describes the expected effect on Unit 1 and 2?

- A. Unit 1 will trip after 30 second delay, Unit 2 will not automatically trip.
- B. Unit 2 will trip after a 30 second delay, Unit 1 will not automatically trip.
- C. Unit 1 and 2 will trip after 30 second delay.
- D. Unit 1 and 2 will not automatically trip.

86. Given the following:

- * Unit 2 is in Mode 2, EOL and at ~2% Reactor power with Main Turbine tripped
- * 21 SGFP running with 22 SGFP lined up in STBY
- * AFW system aligned for normal operation
- * The RO reports that Tc is lowering, approaching 515 °F Tavg
- * RO withdrew Reg Group 5 CEAs from 125 inches to 133 inches before being stopped by the SM
- * The CRO reports that 21 SGFP overspeed and tripped on high discharge pressure
- * Shortly thereafter, the RO reports Unit 2 is in Mode 1 with .5 DPM SUR

As the CRS, describe the action(s) required and basis for the decision:

- A. Direct the insertion of Reg Group 5 to return to Mode 2, start up 22 SGFP.
- B. Direct a reactor trip due to positive reactivity excursion from excessive CEA motion.
- C. Direct the insertion of Reg Group 5 to maintain power at 5%, start 23 AFW Pump.
- D. Direct a reactor trip due to a positive reactivity excursion from excessive cooldown.

87. Given the following:

- Unit 2 is at 100% power
- Unidentified RCS leakage is .9 GPM
- No SG leakage is identified
- RO reports that VCT trace indicates an increase in RCS leakage

As the CRS, you direct the implementation of AOP 2A (Excessive RCS leakage).

Which of the following conditions would require Unit 2 to be shutdown per T.S. 3.4.6.2?

- A. 10 GPM leakage from body to bonnet gasket leak on 2-CVC-515 (Letdown Stop).
- B. 10 GPM leakage from seat leakage from PORV-404.
- C. 10 GPM leakage from RCP integral heat exchanger.
- D. 10 GPM leakage from packing gland leakage on SI-652-MOV.

88. Given the following:

- * Loss of Offsite Power occurs
- * EOP-2 is implemented on both Units
- * All DGs start and load as designed

Which one of the following prevents a DG overload condition, should the LOCI sequencer initiate?

- A. Shifting vital bus loads to SMECO, per EOP-2.
- B. Maintaining load on 1A DG less than 1 MW, by stopping non-essential loads per EOP-2.
- C. Controlling load on 1B DG, by starting non-essential loads per EOP-2 .
- D. Placing the 0C DG on 21 4KV bus, per EOP-2.

89. Given the following:

- * Unit 1 is in Mode 6
- * Core on-load is in progress
- * RFM is over the upender lowering the hoist to grapple a "SHINY" Assembly
- * The RFM operator observes a high radiation alarm on the portable radiation monitor on the RFM Bridge

Which one of the following describes FHS direction required for the stated conditions?

- A. Implement AOP 6D, Fuel Handling Incident, and direct personnel to evacuate the Containment, and send the irradiated fuel to the Spent Fuel Pool side.
- B. Validate the radiation alarm then implement AOP 6D, Fuel Handling Incident and direct personnel to evacuate the containment.
- C. Implement AOP 6D, Fuel Handling Incident, and direct the RFM operator to move the RFM to allow the transfer carriage to be sent to the Spent Fuel Pool side.
- D. Validate the radiation alarm then implement AOP 6D, Fuel Handling Incident and direct personnel to evacuate the Spent Fuel Pool and Containment.

90. What happens on a transfer from High Power to Low Power Mode if SG level rises to greater than +20" during the transfer?

- A. The transfer continues at the same rate.
- B. The transfer continues at 1/2 the original rate.
- C. The transfer is suspended, the MFV returns SG level to normal in Auto, and the BFV is held at current position.
- D. The transfer is suspended, the BFV returns SG level to normal in Auto, and the MFV is held at current position.

91. Given the following:

- * "125 VDC GROUND DETECTED" alarm is received at 1C33
- * The ground detection system indicates a partial positive ground on 21 125 VDC Bus
- * E-shop reports that the ground has been identified on 1-CC-3833-SV

Which one of the following is a potential impact of the ground?

- A. Loss of 21 125 VDC Bus.
- B. Loss of RCP component cooling water.
- C. Loss of position indication for CC-3833 only.
- D. Loss of SDC HX component cooling water.

92. Unit 2 is in Mode 4 and heating up when the RO reports that Containment average air is 100 °F with the following parameters:

- * 21, 22 and 23 Containment Air Coolers are running in SLOW speed
- * SRW flow to the CACs is in the normal lineup (8" SRW Valves are SHUT)

Which one of the following describes the direction the CRS should give the CRO to operate the CACs based on the normal system operation?

- A. OPEN the 8" SRW Emergency Outlet CVs.
- B. SHIFT running CACs to FAST speed.
- C. START 24 CAC in SLOW speed
- D. RUN all 4 CACs in FAST speed.

93. The CCNPP IPE (PRA) has determined that the concurrent loss of 1Y03 and 1Y04 could result in a significant Core damage probability.

Which one of the following is the predicted impact of the loss of power on the ESFAS system?

- A. AFAS Block would stop AFW flow, DG will not start and PORVs are OPEN from RPS response.
- B. DGs would fail to start, vital 4KV Busses would be de-energized and PORVs are OPEN by RPS response.
- C. DGs would start and power vital 4 KV Busses, ESFAS pumps would NOT start due to deenergized LOCI sequencer and PORVS would be OPEN by RPS response.
- D. AFAS Block would stop AFW flow, ESFAS pumps would NOT start due to UV Blocked signals and PORVs would be OPEN by RPS response.

94. Using provided references:

Given the following:

- * Unit 2 has tripped and EOP 5 (LOCA) has been implemented 4 hours ago
- * RCS pressure has equalized with Containment pressure at 45 PSIG
- * CET average temperature is 352 °F
- * RAS has actuated and HPSI flow has been throttled to 300 GPM

Which one of the following is the correct actions to mitigate core damage?

- A. Line up and start Core Flush via Pressurizer injection.
- B. Increase LPSI flow.
- C. Increase HPSI flow.
- D. Commence RCS cooldown to below 300 °F using TBVs or ADVs.

95. Given the following:

- * Unit 2 is at 95% and returning to 100% power
- * The CRO reports a rapid lowering of hotwell level with a low pressure alarm on the Condensate header

Which one of the following is the correct response for the conditions?

- A. Direct the RO to trip the reactor, perform Reactivity Control per EOP-0, then direct the CRO to trip both SGFPs, secure CBPs, HDPs and Cond pumps, shut SG FW ISOL valves, start AFW system, implement the remainder of EOP-0.
- B. Direct the CRO to shut the hotwell dump valve, verify condensate header pressure returns to normal.
- C. Direct the RO to trip the reactor, and the CRO while performing Core and RCS Heat Removal to start of the idle Condensate Booster pump, verify the condensate header pressure returns to normal.
- D. Direct the CRO to take manual control of the hotwell level controller, place to controller at 50 % and verify condensate header pressure returns to normal.

96. Given the following:

- * Unit 2 is in Mode 5 at reduced inventory
- * Equipment Hatch is installed with 4 bolts
- * PAL interlocks are defeated with doors shut and a Guard is stationed to operate the doors
- * A Modified Containment Purge (Supply fan OFF, Exhaust fan ON) is in progress and a negative pressure exists in the Containment
- * SFHM is tagged out for replacement

Which one of the following describes a safety issue based on the stated conditions?

- A. Opening PAL Outer Door with the Inner Door open.
- B. Securing the SFP Ventilation System.
- C. Shutting PAL Outer Door with the Inner Door shut.
- D. Starting up the SFP Ventilation System

97. Given the following:

- * Unit 2 is at 100% power
- * RRS Control Channel X upper and lower detectors fail low

Which one of the following describes a process control system impact of the detector failures?

- A. Reactor Regulating System.
- B. Digital FW System.
- C. Internal Vibration Monitoring System.
- D. Power Ratio Calculator.

98. Given the following:

- * Unit 2 is at 100% power
- * The RO reports 2-CC-223-CV fails shut and Letdown Heat Exchanger outlet temperature is increasing
- * CVCS is in NORMAL lineup

Which one of the following describes the expected effect on reactor power and the reason based on the given conditions?

- A. Reactor power will not change due to the auto isolation of letdown when letdown temperature reaches ~145 °F.
- B. Reactor power will decrease due to the resultant increase in B-10 concentration in the VCT from ion exchanger temperature response.
- C. Reactor power will increase due to the resultant decrease in B-10 concentration in the VCT from ion exchanger temperature response.
- D. Reactor power will not change due to auto bypass of letdown ion exchangers when letdown temperature reaches ~ 145 °F.

99. Unit 1 is at 100%, when two CEAs in Regulating Group 5 are determined by the System Engineer to have stuck grippers based on CEA traces.

Which one of the following is the appropriate action, per procedures?

- A. Verify Regulating Group CEA Insertion limits within 1 hour; Trip the reactor, per AOP 1B, to ensure proper Shut Down Margin.
- B. Return at least one CEA to operable status within 1 hour or Trip the reactor per AOP 1B to enter Mode 3 to be outside the mode of applicability.
- C. Be in Mode 3 within 6 hours by commencing a rapid shutdown, per OP-3, and borate until RCS is >2300 PPM, to ensure proper Shut Down Margin
- D. Verify Regulating Group CEA Insertion limits within 1 hour; commence a rapid shutdown, per OP-3, to be outside the Mode of applicability within 12 hours.

100. Given the following:

- * Specific activity of the reactor coolant has exceeded 1.0 microcurie/gram DOSE EQUIVALENT I-131 for greater than 100 continuous hours interval.

Which one of following is the basis for the requirement to cooldown below 500 °F within 6 hours?

- A. Prevents the release of activity should a SG tube rupture occur.
- B. Increases reliability of the data collected for actual Iodine determination per ODCM.
- C. Minimizes the expected Iodine spiking phenomena from the large change in thermal power due to plant shutdown.
- D. Increases the coolant density to enable self-shielding to reduce on-site exposures.

RO
↓

RO outline

1. AC ELECTRICAL DIST 001/000062K45/2.7*/XXX/COMP/NEW/OI 27C//T2G2/XXXX

Given the following:

- * Unit 1 is in Mode 5
- * Applicable 13.8 KV Voltage Regulators are in MANUAL
- * CRS directs the CRO to transfer from 4KV Bus 15 Feeder to 4KV Bus 16 Feeder

Which one of the following describes the proper sequence to perform this action?

- A. Insert sync stick for BUS tie breaker , observe voltages match and sync scope rotating slowly in the fast direction in the Control Room, CLOSE tie breaker and OPEN Bus 16 feeder.
- ✓B. Insert sync stick for Bus 16 feeder breaker, observe voltages match locally at the Voltage Regulator cabinets and sync scope not rotating, CLOSE Bus 16 feeder breaker and OPEN Bus 15 feeder.
- C. Insert sync stick for Bus 15 feeder breaker, observe voltages match locally at the Voltage Regulator cabinets and sync scope rotating slowly in the fast direction, CLOSE tie breaker and OPEN Bus 16 feeder.
- D. Insert sync stick for BUS tie breaker, observe voltages match and sync scope not rotating, CLOSE 15/16 tie breaker and OPEN Bus 15 feeder.

2. ACCID GAS RELEASE 001/000060K33/3.8/4.2/MEMORY/1197 NRC/AOP 6C/CRO 134-1/5.0/T1G2/T1G2

During the performance of a waste gas release from 11 WGDT, WGS-2191-CV is found failed closed by the ABO.

Which valve must be closed promptly per AOP-6C (Accidental Gaseous Waste Release) to prevent an inadvertent release from WG Surge Tank?

- ✓A. WGS-2191-PCV (WG discharge flow control).
- B. WGS-623 (11 WGDT outlet).
- C. WGS-630 (WG discharge final filter bypass).
- D. WGS-683 (WG discharge to unit 1 plant vent).

5/16/00:edited to put valve numbers in sequential order and delete reference to WGDT discharge in stem question based on review comments. Raised to "COMP" level due to resultant higher cognitive level.

3. ACCID LIQ RELEASE 001/000059K21/2.7/2.8/MEMORY/498 NRC/AOP-6B/CRO-134-1/10.0/T1G2/T1G1

A discharge of the Miscellaneous Waste Monitor Tank is in progress.

Which one of the following conditions would require entry into AOP-6B (Accidental Release of Radioactive Liquid Waste)?

- A. Trip of a Circ Water Pump on the unit receiving the discharge with no corresponding reduction in discharge flow rate.
- ✓B. Liquid Waste Discharge valves 2201-CV and 2202-CV OPEN with discharge RMS alarm.
- C. Discharge activity exceeds the computer alarm high setpoint specified in the release permit.
- D. Discharge activity decreases to less than the Discharge Permit background activity value.

correct answer is specified entry condition for AOP 6B, distractors plausible occurrences during a discharge that are not entry conditions for AOP 6B.

author:REN The question was modified to even out the length of the distractors (JB comment)

4. ALARM MANUAL 001/00061G2450/3.3/3.3/MEMORY/BANK//CRO-69-5/2.0/T1G2/T1G2

Which one of the following describes the cause for the C06 panel annunciator window "SPDS" to alarm?

- A. Critical safety function box color has changed from red to magenta.
- B. Critical safety function box color has changed from yellow to green.
- C. Critical safety function box color has changed from red to green.
- ✓D. Critical safety function box color has changed from green to red.

reformatted for clarity and corrected a distractor (green to yellow).

5. AREA RAD MONITORING 001/000072A22/ 2.8/XXX/ COMP/ NEW/ SD 77/ / T2G1/XXXX

Which one of the following is the effect of a loss of detector signal from an area radiation monitor?

- A. The channel reading at 1C22 will fail high resulting in an inoperable channel.
- B. The CHECK SOURCE light will energize requiring a check source test.
- C. The power on indication will deenergize requiring a test per OI-35.
- ✓D. A LOW ALARM will be indicated on 1C22 resulting in an inoperable channel.

Correct answer is based on System Description (page 5). Distractors are incorrect indications of different malfunctions.

6. AREA RAD MONITORING 002/000072K14/3.3*/3.5*/MEMORY/NEW/TECH SPEC///T2G1/T2G1

Given the following:

- * Unit 1 is in Mode 5
- * Unit 2 is in Mode 6 with core off-load in progress
- * The Control Room Recirculation Signal (CRRS) is declared inoperable

Which one of the following is the required Tech Spec action, if any?

- A. Place 1 CREV System train in recirc with Post-LOCI fan in service within 4 hours.
- B. No action required by Tech Spec due to LCO is not applicable for either Unit.
- ✓C. Place 1 CREV System train in recirc with Post-LOCI fan in service immediately.
- D. No action is required by TRM due to condition is not applicable for either Unit.

Correct answer is based on TS requirement 3.3.8 condition a. Distractors are incorrect action time (4 hours) or contrary to TS 3.3.8 applicability.

7. ATWS 001/00029G2131/ 4.2/3.9/ MEMORY/NEW/ EOP0 BASIS/// T1G2/T1G1

Given the following:

- * A transient occurs on Unit 1
- * EOP-0 is implemented and alternate actions are required to trip the reactor
- * All Safety Functions are complete

Which one of the following ~~would be the~~ breakers reclosed after actions to trip the reactor? *are complete*

- A. 11A 480V normal feeder breaker and 12A 480V tie breakers are closed.
- ✓ B. 12A 480V and 13A 480V normal feeder breakers are closed.
- C. 12A 480V and 13B 480V normal feeder breakers are closed.
- D. 12B 480V and 13A 480V normal feeder breakers are closed.

8. AUX FEEDWATER 001/ 000061K51/ 3.6/3.9/ MEMORY/ BANK/ AOP-9A/ CRO-202-9A/ 12.1/ T2G1/T2G1

The CRO is directed to place the AFW speed/flow controllers at 1(2)C43 to the "MIN" position before their respective hand transfer valves are placed in POSITION 2 during AOP-9A (Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire) .

Which one of the following is the reason for the required action?

- A. To remove the air signal to the CVs and allow the CRO to have control of the AFW from 1(2)C43.
- B. To place the AFW pumps at a normal discharge pressure and shut the AFW flow CVs to allow a controlled feed rate.
- ✓C. To place the pumps and CVs in a known position and prevent an uncontrolled RCS cooldown from occurring.
- D. To maintain AFW flow to the SGs to prevent a SG dryout condition until 13 (23) AFW pump is running.

CRO-202-9A-2-22 from LOIT bank

9. AUX FEEDWATER 002/ 000061K17/ 3.6/XXX/ MEMORY/ BANK-MOD/ TS BASIS/ CRO-34-2/ 2.1/ T2G1/XXXX

Given the following conditions for Unit 1 (Unit 2 is in Mode 5):

- * Reactor tripped 10 minutes ago due to a Loss of Offsiter Power (LOOP)
- * RCS is in Hot Standby
- * 12 CST inventory is 150,000 gallons
- * ADVs are maintaining RCS temperature

Which one of the following is the time the AFW system can supply Unit 1 in Hot Standby before cooldown is required per Tech Specs?

- A. 2 hours.
- ✓B. 6 hours.
- C. 8 hours.
- D. 12 hours.

Correct answer is based on TS Basis 3.7.4 (page B3.7.4-2). Distractors are incorrect times.

(CRO -34-2-3-02 from LOIT bank).

10. CIRCULATING WATER 001/ 000075K12/ 2.9/XXX/ MEMORY/ NEW/ FSAR/ CRO 122-1/ 3.0/ T2G2/XXXX

Given the following:

- * Unit 1 is in Mode 5
- * All Circulating Water pumps are running
- * SG Blowdown IX is bypassed with RI-4095 in service
- * SG Blowdown is lined up to Unit 1 Circulating Water to lower SG water levels while in wet layup
- * RE 4014 RMS (SG Blowdown Tank) loses power

Which of the following describes the system response?

- A. Discharge to the Circulating Water is shifted to the Main Condenser via BD-4096-CV.
- B. Discharge to the Circulating Water remains unchanged.
- ✓C. Discharge is stopped as 1-BD-4010, 4011, 4012 and 4013 SHUT.
- D. Discharge is stopped as 1-BD-4096, 4015 and 4097- CVs SHUT.

11. COMPONENT COOLING 001/ 000008A209/ XXX/2.8*/ COMP-SRO/ 498 NRC/ FUND/ CRO-113-5/ 3.0/ XXXX/T2G3

Given the following:

- * Unit 2 is at 100% power
- * The RO reports 2-CC-223-CV fails shut and Letdown Heat Exchanger outlet temperature is increasing
- * CVCS is in NORMAL lineup

Which one of the following describes the expected effect on reactor power and the reason based on the given conditions?

- A. Reactor power will not change due to the auto isolation of letdown when letdown temperature reaches ~145 °F.
- ✓B. Reactor power will decrease due to the resultant increase in B-10 concentration in the VCT from ion exchanger temperature response.
- C. Reactor power will increase due to the resultant decrease in B-10 concentration in the VCT from ion exchanger temperature response.
- D. Reactor power will not change due to auto bypass of letdown ion exchangers when letdown temperature reaches ~ 145 °F.

Correct answer includes the effect on the I-X to the downstream VCT, distractors are reverse action of effects on reactor or cvcs components.

editorial change for stem format change.

12. COND AIR REMOVL 001/000055K31/2.5/2.7/ MEMORY/ 498 NRC/ OI-13/ CRO 202-7G/ 1.2/ T2G2/T2G2

A CAR unit has been shutdown and the inlet CV has failed to shut. If the CAR is in the "Holding Mode", describe the effect, if any:

- A. Air will not leak into the condenser.
- B. Air will leak into the condenser via the seal water recirc pump.
- C. Air will leak into the condenser via the hogging CV.
- ✓D. Air will leak into the condenser via the three way valve.

Correct answer reflects the caution in the OI, distractors are based on no effect, or specific components which are not sources of air inleakage for a failed inlet CV.

13. CONDENSATE 001/000056A24/2.6/XXX/COMP/NEW/AOP 7I//T2G1/XXXX

Given the following:

- * Unit 2 is at 65% power
- * A loss of 23 4KV Bus occurs

Which one of the following is the stabilizing actions for the event?

- A. Verify 2 Condensate pumps and 1 CBP are running.
- B. Trip the Reactor and implement EOP-0.
- ✓C. Verify 1 Condensate pump and 2 CBPs are running.
- D. Reduce power as required to maintain condensate flow less than 10,000 GPM.

Correct answer is based on required actions of AOP 7I for loss of 23 4KV bus.

Distractors are actions for loss of 22 4KV Bus and incorrect limit for condensate header flow (<8,000 GPM)

14. CONDENSATE 002/000056K13/2.6*XXX/COMP-SRO/NEW/AOP 3G///T2G1/XXXX

Given the following:

- * Unit 2 is at 100% power
- * RO observes concurrent feedwater flow decrease with increasing SGFP suction flows
- * CRO observes suction pressure to both SGFPs has decreased and hotwell level is decreasing

Which one of the following is the required actions based on plant conditions?

- A. Perform a rapid power reduction per OP-3 to <70% power, determine source of leakage on feedwater header. Implement EOP-0 if SG water levels decrease to RPS Pre-trip annunciator alarms.
- ✓B. Trip the reactor, implement reactivity control of EOP-0, secure/trip SGFPs, HTR Drn pumps, CBP and all condensate pumps. Shut SG FW ISOL valves, implement remainder of EOP-0.
- C. Perform an expeditious power decrease per OP-3 to <70% power, isolate source of leakage on condensate or feedwater header. Implement EOP 0 based on SM or CRS direction.
- D. Trip the reactor, implement EOP 0, perform alternate actions for Core and RCS Heat Removal Safety Function. Transition to AOP-3G to determine and isolate the condensate or feedwater leak.

Correct answer is based on step 1 actions of AOP3G section on response to a condensate or feedwater rupture. Distractors are permutations of contrary actions.

15. CONDENSATE 003/0000056A24/XXX/2.8*/COMP/NEW/III/XXXX/T2G1

Given the following:

- * Unit 2 is at 95% and returning to 100% power
- * The CRO reports a rapid lowering of hotwell level with a low pressure alarm on the Condensate header

Which one of the following is the correct response for the conditions?

- ✓A. Direct the RO to trip the reactor, perform Reactivity Control per EOP-0, then direct the CRO to trip both SGFPs, secure CBPs, HDPs and Cond pumps, shut SG FW ISOL valves, start AFW system, implement the remainder of EOP-0.
- B. Direct the CRO to shut the hotwell dump valve, verify condensate header pressure returns to normal.
- C. Direct the RO to trip the reactor, and the CRO while performing Core and RCS Heat Removal to start of the idle Condensate Booster pump, verify the condensate header pressure returns to normal.
- D. Direct the CRO to take manual control of the hotwell level controller, place to controller at 50 % and verify condensate header pressure returns to normal.

Correct action is based on the seal water lost to the condensate pumps upon system S/D. Distractors are ineffective actions contained in procedures in use for the given condition.

16. CONDUCT OF OPS 001/00000G2110/XXX/3.9/MEMORY/498 NRC/FSAR-8/CRO-54-1/5.1/XXXX/G21

Given the following:

- * Unit 2 tripped
- * EOP-5 is implemented
- * A loss of all AC power occurs

What is the MAXIMUM design time available to restore power to the affected battery chargers?

- ✓A. 2 hours from initial loss of power
- B. 4 hours from initial loss of power
- C. 6 hours from time of Reactor Trip
- D. 8 hours from time of Reactor Trip

Correct answer is based on FSAR description and Tech Spec LCO time, distractors are unrelated times or conditions.

Changed to memory level per CE comments of 3/19/98.

17. CONDUCT OF OPS 002/000000G212/3.0/XXX/MEMORY/NEW/NO1-100///G21/XXX

Which one of the following describes a responsibility of the Control Room Operator per NO-1-100?

- ✓A. Controlling Containment entries according to NO-1-104.
- B. One of two required approvals for Troubleshooting Risk level 4 items.
- C. Functioning as the OTA for fires involving safe shutdown capability.
- D. Authorizing the conduct of Performance Evaluations.

18. CONDUCT OF OPS 003/00000G213/3.0/3.4/MEMORY/1197 NRC/NO 1-200///G21/G21

The Unit is at full power. The RO is directed to report to the Shift Manager in his office to discuss a surveillance he recently performed. The CRO is to relieve the RO during the meeting.

Which one of the following describes the minimum action the RO is REQUIRED to perform per NO-1-200 (Control of Shift Activities)?

- A. Verbally brief the CRO.
- B. Walkdown the panels with the CRO.
- C. Inform the CRS of the meeting subject, duration and the location.
- D. Complete all requirements listed in NO-1-207 (Nuclear Operations Shift Turnover).

19. CONDUCT OF OPS 004/00000G2113/XXX/2.9/APPLIC/NEW/NO 1-100///XXXX/G21

You are an extra SRO on-shift in the OWC office, when Unit 1 reactor trips. About 30 minutes later a Maintenance Supervisor requests to talk with the SM. The Maintenance Supervisor explains that there is a problem with the final coupling alignment for 12 Condensate pump during its routine overhaul.

Which one of the following describes the proper response to the Maintenance Supervisor's request?

- A. Direct the Maintenance Supervisor to fill out an Issue Report.
- B. Direct the Maintenance Supervisor to enter the Control Room to get permission to see the SM.
- C. Direct the Maintenance Supervisor to fill out a Risk Assessment form.
- ✓D. Direct the Maintenance Supervisor to wait until normal access is restored.

Correct answer is based on NO 1-100, Section 5.2 requirements (page 26). Distractors are permutations of unrelated actions.

20. CONDUCT OF OPS 005/00000G2129/XXX/3.3/MEMORY/1197 NRC/N0 1-200///XXXX/G21

During the performance of a routine valve lineup while the Unit is in Mode 5, a valve listed as OPEN is discovered to be closed.

Which one of the following describes the correct action to be taken for this valve lineup condition?

- A. Since the Unit is not in MODE 1 or 2, an entry in the CRO log is required.
- ✓B. Note the position on the discrepancy section of the lineup cover sheet and have the designated SRO evaluate the discrepancy.
- C. With concurrence with the Control Room Operator, the valve is immediately returned to the recommended position.
- D. An Abnormal Valve position tag is attached to the valve and the step is signed off as complete.

21. CONDUCT OF OPS 006/00000G212/XXX/4.0/MEMORY/NEW/NO-1-100///XXXX/G21

You are in the OWC and a NFM Engineer requests operator support for an unscheduled activity to move fuel assemblies into the Fuel inspection stand in the SFP area.

Which one of the following is the proper action for the work request?

- A. Verify plant conditions are correct for fuel handling, assign a qualified SFHM operator and grant permission for the evolution.
- ✓B. Direct the NFM Engineer to have the activity scheduled on the QSS schedule per MN 1-120.
- C. Verify plant conditions are correct for fuel handling, contact CRS for approval and assign a SFHM operator, direct the NFM Engineer to conduct a pre-job brief.
- D. Perform a risk assessment, contact the CRS for approval and SFHM operator assignment, direct the NFM Engineer to conduct a pre-job brief.

Correct answer is based on requirements in NO 1-100 (page 28, 5.3.J), distractors are permutations of actions for scheduled work.

22. CONDUCT OF OPS 007/00000G2110/2.7/XXX/MEMORY/BANK/OP-2/CRO 206-1/4.2/G21/XXX

Which one of the following describes the SHUTDOWN MARGIN determination method per OP-2 prior to achieving reactor criticality during a normal reactor startup?

- A. Verify boron concentration meets the requirements of the NEOP within 4 hours.
- B. Verify boron concentration meets the requirements of the NEOP within 2 hours.
- C. Verify CEAs are between the Tech Spec Long Term Steady State and Transient insertion limits within 2 hours.
- ✓D. Verify CEAs are between the Tech Spec Long Term Steady State and Transient insertion limits within 4 hours.

(CRO98BNK.BNK item CRO-206-1-1-07)

23. CONT IODINE REMOVAL 001/000027K11/3.4*/XXX/ APPLIC/ NEW/ FSAR 6/ CRO 7-1// T2G3/XXXX

Given the following:

- * Unit 2 was at 100% when a Design Basis LOCA occurs
- * one train of ESF equipment operates as designed
- * 1 CS pump and 2 Iodine Filter Fans are running

Which one of the following describes the effect on iodine removal during the LOCA event?

- A. Iodine Removal System is at 33% capacity due to higher final containment temperature and pressure.
- B. Iodine Removal System is at 66% capacity, design is unaffected by containment environment.
- ✓C. Iodine Removal System is at 100% capacity.
- D. Iodine Removal System is at 250% capacity due to concurrent iodine removal by the Containment Spray System

Correct answer is based on FSAR section 6.7.6 (page 6.7-3) that requires 2 IRUs and 1 CS train by design for 100% capacity.

24. CONT ROD WITHDRAWL 001/000001K28/3.1/3/MEMORY/NEW/AOP 1B///T1G2/T1G1

Given the following:

- * Unit 1 is in Mode 2 and at the POAH
- * The RO withdraws CEA Regulating Group 4 to raise power and enter Mode 1
- * After the RO releases the Raise/Lower Switch, he observes a steady rise in Reactor power and RCS temperature
- * Primary CEA Group 4 selected light is indicating withdrawal

Which one of the following describes the required action based on the plant conditions?

- A. Insert CEAs to initial position to stop the power increase at the desired point in mode 1.
- B. Place the Raise/Lower Switch to LOWER and monitor CEA position indications for Regulating Group 4.
- C. Adjust the TBV controller to stop the power increase at the desired point in Mode 1 and monitor CEA positions.
- ✓D. Place the CEDS system in OFF and monitor CEA position indications for Regulating Group 4.

25. CONTAINMENT 001/00103K404/XXX/3.2/APPLIC/NEW/SD 59/ / /XXXX/T2G2

Given the following:

- * Unit 2 is in Mode 5 at reduced inventory
- * Equipment Hatch is installed with 4 bolts
- * PAL interlocks are defeated with doors shut and a Guard is stationed to operate the doors
- * A Modified Containment Purge (Supply fan OFF, Exhaust fan ON) is in progress and a negative pressure exists in the Containment
- * SFHM is tagged out for replacement

Which one of the following describes a safety issue based on the stated conditions?

- A. Opening PAL Outer Door with the Inner Door open.
- B. Securing the SFP Ventilation System.
- C. Shutting PAL Outer Door with the Inner Door shut.
- D. Starting up the SFP Ventilation System

The negative pressure in the Containment results in a personnel hazard with trying to open both doors at the same time. Distractors are inconsequential actions (shutting a door with other door already shut) or no Tech Spec application due to assumed no fuel handling in SFP area.

26. CONTAINMENT COOLING 001/000022A41/3.6/3.6/MEMORY/NEW/EOP ATTACH//T2G1/T2G2

Given the following:

- * Unit 2 was at 100% power when a LOOP and large break LOCA occurred
- * All Emergency Diesels started and loaded as designed

Which one of the following describes the expected configuration of the Containment Cooling Systems?

- A. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.
- B. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- C. 4 CACs running in FAST speed and 2 CS pumps are injecting water into the containment atmosphere at ~ 1300 GPM.
- ✓D. 4 CACs running in SLOW speed and 2 CS pumps are injecting water into the containment atmosphere at > 1400 GPM.

27. CONTAINMENT COOLING 002/000022K101/XXX/3.7/MEMORY/NEW/OI 5A//XXXX/T2G1

Unit 2 is in Mode 4 and heating up when the RO reports that Containment average air is 100 °F with the following parameters:

- * 21, 22 and 23 Containment Air Coolers are running in SLOW speed
- * SRW flow to the CACs is in the normal lineup (8" SRW Valves are SHUT)

Which one of the following describes the direction the CRS should give the CRO to operate the CACs based on the normal system operation?

- A. OPEN the 8" SRW Emergency Outlet CVs.
- ✓B. SHIFT running CACs to FAST speed.
- C. START 24 CAC in SLOW speed
- D. RUN all 4 CACs in FAST speed.

Correct answer is based on the OI 5a requirements for normal operation (3 CAC running with SRW lineup on 4" lines) in Modes 1-3. Distractors are permutations of subsequent actions.

28. CONTAINMENT PURGE 002/000029A31/3.8/4.2/COMP/BANK/OI-36/CRO 134-1/4.1/T2G2/T2G2

Given the following:

- Unit 1 is in Mode 6
- Fuel Handling is in progress
- Containment Purge is in operation

Which of the following monitors should **NOT** be functionally tested per OI-35 (Radiation Monitoring System)?

- A. Fuel Handling Area Monitor (RI-5420).
- ✓B. Containment Area Radiation Monitor (RI-5316A-D).
- C. Main Vent Gas Monitor (RI-5415).
- D. Containment ICI Area Monitor (RI-7008).

Correct answer is based on OI-35, distractors have no auto action to Containment Purge.

author: REN The question had the stem completely changed and changed 1 distractor (Criticality Monitor), modified to exclude criticality and hi range monitors based on question review, additionally, change stem and answer to be in singular.

29. CONTAINMENT SPRAY 001/000026K31/3.9/4.1/MEMORY/1197 MOD/EOP ATTACH/CRO-7-1/14.1/T2G2/T2G1

Given the following:

- * Unit is at 100% power
- * "CSAS ACTUATED" alarm is annunciated at 1(2)C08
- * Containment pressure indicates .5 PSIG

Which one of the following describes the expected system response?

- A. CS pump(s) running and SI-4150 and/or SI-4151 is/are OPEN.
- B. PS-6531-SV, Quench Tank sample valve is SHUT.
- ✓C. SI-4150 and/or 4151 is/are OPEN.
- D. NO system response due to a spurious actuation has occurred.

Modified 1197 NRC with complete stem change and 1 distractor (PS-67521-SV)

30. CONTROL ROD DRIVE 001/ 00001G2127/ 2.8/2.9/ MEMORY/ 1197 NRC/ / CRO-60-1/ 11.2/ T2G1/T2G1

Given the following:

- * Unit 1 is in Mode 3 with a reactor startup in progress
- * The RO is withdrawing Regulating Group 1 CEAs in Manual Group mode
- * Regulating Group 1 is at 120 inches
- * No CEA deviations exist

Which one of the following will be the first to automatically stop CEA movement?

- A. Highest CEA reaches the Upper Computer Stop (UCS).
- ✓B. Lowest CEA reaches the Upper Computer Stop (UCS).
- C. Highest CEA reaches the Upper Electrical Limit (UEL).
- D. Lowest CEA reaches the Upper Electrical Limit (UEL).

31. CONTROL ROD DRIVE 002/ 000001K423/ 3.9/XXX/ COMP/ NEW/ SD 55/ CRO-60-1/ / T2G1/XXXX

Given the following:

- * Unit 1 is in Mode 2 at the POAH
- * Regulating Group 4 Inhibit Bypass Pushbutton Switch and the CEA Motion Inhibit Bypass Momentary Pushbutton are depressed
- * A "Secondary CEA Position Deviation" alarm is annunciated at 1C05

Which one of the following describes the effect on the CED System?

- A. CMI enabled to Regulating Group 4 and bypassed to all remaining Groups.
- ✓B. CMI is bypassed to Regulating Group 4 and enabled to all remaining Groups.
- C. CWP is bypassed to all Regulating Groups only.
- D. CWP is enabled to all Regulating Groups only.

32. CONTROL ROOM EVAC 001/ 000068A25/ 4.2/XXX/ COMP/ BANK/ AOP-9A/ CRO-202-9A/ 11.0/ T1G1/XXXX

Given the following:

- * Both Units are at 100% power
- * A severe fire occurs in the Control Room resulting in implementation of AOP-9A (Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire)
- * The required actions of AOP-9A have been performed prior to Control Room evacuation

Which one of the following describes the initial response of RCS temperature upon abandoning the Control Room?

- A. RCS temperature will be controlled at 515 °F - 535 ° by TBVs.
- B. RCS temperature will be controlled at 515 °F - 535 ° by ADVs.
- ✓C. RCS temperature will be controlled by cycling MSSVs.
- D. RCS temperature will be controlled by ADVs at 1C43.

33. CONTROL ROOM EVAC 002/000068A25/XXX/4.3/COMP-SRO/NEW/AOP 11///XXXXT1G1

The Control Room has been evacuated due to toxic gas intrusion per AOP-11 (Control Room Evacuation and Safe Shutdown, Non-fire conditions). The STA reports that the Safety Parameter Acceptance Criteria for Core and RCS Heat Removal can not be met due to no RCPs operating. All other parameters are met.

Based on the NO-1-200 requirements for not meeting AOP SFSC criteria, the correct action would be:

- A. Start one RCP in each loop, per AOP-11, for decay heat removal.
- B. Start both RCPs in the loop with an available SG, per AOP-11, for decay heat removal.
- C. Implement EOP-8 after the Control Room atmosphere allows entry for RCP restart.
- ✓D. Implement EOP-8, since AOP-11 assumes at least two RCPs are running and does not address natural circ.

34. CVCS 001/00004A417/2.7/2.7/COMP/NEW////T2G1/T2G1

Given the following:

- * Unit 1 is at MOC and 100% power
- * Chemistry requests 13 Purification IX in service
- * The ABO reports that the "unborated IX" sign is hanging on the inlet valve 1-CVC-146

Which one of the following is the proper response for the plant conditions?

- A. Ensure 1-CVC-520-CV, IX Bypass, is in the BYPASS position and direct the ABO to remove the sign.
- B. Notify the CRS of a possible reactivity change and lower L/D temperature to minimize the effects of the unborated resin.
- C. Ensure 1-CVC-520-CV, IX Bypass, is in the AUTO position and direct the ABO continue placing 13 Purification IX in service.
- ✓D. Notify the CRS of a possible reactivity change due to placing 13 Purification IX in service.

correct answer is based on the first step in the procedure and that use of Deborating resin is not normally used at MOC. Distractors are permutations of OI-2D steps to actually place it in service.

35. CVCS 002/ 00004A111/ 3.0/XXX/ COMP/ NEW/ FSAR 7.4-6/ CRO-107-1/ 2.1.5/ T2G1/XXXX

Given the following:

- * Unit 2 is at 10% power
- * All controls are in automatic
- * CVCS is in a normal lineup with 1 charging pump running
- * A transient results in pressurizer level lowering 20 inches below setpoint.

Which one of the following is the expected response without operator action?

- A. Letdown flow is at minimum (~30 GPM) and Charging flow is ~ 44 GPM.
- B. Letdown flow is nominal (~40 GPM) and Charging flow is ~88 GPM.
- ✓C. Letdown flow is at minimum (~30 GPM) and Charging flow is ~132 GPM.
- D. Letdown flow is nominal (~80 GPM) and Charging flow is ~132 GPM.

Correct answer is based on FSAR figure 4-10 and 4-11 (L/D flow 30 gpm charging flow from 3 pumps). Distractors are permutations of incorrect L/D and charging flows.

36. DC ELECTRICAL DIST 001/000063A21/2.5/XXX/COMP/BANK/AOP 7J/CRO-103-2/4.5.1/T2G2/XXXX

Which one of the following describes the effect on decay heat removal after a Unit 1 Turbine Trip from a loss of 11 125 VDC Bus?

- A. ADVs and TBVs unavailable in all modes (quick open and modulating).
- ✓B. TBVs unavailable in all modes (quick open and modulating), ADVs operate in manual from 1C03.
- C. ADVs unavailable in all modes (quick open and modulating), TBVs operate in manual or auto from 1C03.
- D. ADVs and TBVs quick open mode is removed, ADVs and TBVs will operate in manual or auto from 1C03.

37. DC ELECTRICAL DIST 002/000063A21/XXX/3.2*/COMP/NEW/AOP7IBASIS///XXXX/T2G1

Given the following:

- * "125 VDC GROUND DETECTED" alarm is received at 1C33
- * The ground detection system indicates a partial positive ground on 21 125 VDC Bus
- * E-shop reports that the ground has been identified on 1-CC-3833-SV

Which one of the following is a potential impact of the ground?

- A. Loss of 21 125 VDC Bus.
- ✓B. Loss of RCP component cooling water.
- C. Loss of position indication for CC-3833 only.
- D. Loss of SDC HX component cooling water.

38. DROPPED CONTROL ROD 001/ 000003K34/ 3.8*/4.1/ APPLIC/ NEW/ AOP 1B/ CRO-202-1B/ 1.3/ T1G2/T1G1

Given the following:

- * CEA 1 drops to the bottom on Unit 1
- * AOP-1B (CEA Malfunction) is implemented
- * Reactor power is being maintained constant during the recovery of the CEA

Which one of the following is a method used to maintain reactor power?

- A. Adjust Turbine load to compensate for the reactivity effects of CEA withdrawal.
- ✓B. Fast Borate to compensate for the reactivity effects of the CEA withdrawal.
- C. Insert Group 1 CEAs to compensate for the reactivity effects of the CEA withdrawal.
- D. Dilute RCS to compensate for the reactivity effects of the CEA withdrawal.

39. DROPPED ROD 001/00003AK107/XXX/3.9/COMP/498 NRC/TECH SPEC/CRO-206-1/3/XXXX/T1G1

Which one of the following describes the immediate effect on Shutdown Margin as defined by Tech Specs for a dropped CEA?

- ✓A. Shutdown Margin is unchanged by the dropped CEA.
- B. Shutdown Margin is reduced by the worth of the CEA.
- C. Shutdown Margin is increased by the worth of resultant power change.
- D. Shutdown Margin is unchanged because of the offsetting Xe reactivity effects.

Correct answer is based on the TS definition for SDM, distractors are effects on SDM which do not account for the TS definition.

author: REN

40. EMER CORE COOLING 003/000006A48/4.2/4.3/COMP/498 NRC/FSAR-7/CRO 63-1/1.7/T2G2/T2G2

Given the following:

- * Unit 1 is in Mode 3
- * SIAS Pressurizer Pressure Blocked on both logic channels
- * RCS pressure being reduced to 1500 PSIA
- * PZR Spray valves fail shut and RCS pressure starts to rise

Select the expected system response as pressure rises:

- A. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with the keyswitch for SIAS Block A at 1C10.
- ✓B. SIAS Pressurizer Pressure Block will be automatically removed when 2 SIAS Pressurizer Pressure Block sensors clear
- C. SIAS Pressurizer Pressure Block will be manually removed when the RO goes to "NORMAL" at 1800 PSIA with both keyswitches for SIAS Block A and B at 1C10.
- D. SIAS Pressurizer Pressure Block will be automatically removed when 1 SIAS Pressurizer Pressure sensor clears.

Correct answer is based on FSAR description, distractors are permutations of wrong status (manually removed) or 1 out of 4 logic.

author:REN this is a new question for an Exam Bank question replacement

41. EMER DG 002/ 000064K23/ 3.2*/3.6/ APPLIC/ 498 NRC/ 1E86 SH13/ CRO 48-1/ 11.0/ T2G2/T2G2

Given the following:

- Unit 1 is at 100% power
- The 1B DG is running unloaded for post maintenance testing, Electric Shop and Mechanical maintenance personnel are standing by in the 1B DG Room
- CRO reports a "1B DG" alarm is received at 1C18B
- OSO reports a "START FAILURE" alarm is received at the 1B DG Alarm panel
- Electricians suspect blown fuses, requesting to replace them immediately.

Using the provided electrical schematic, determine which fuse(s) have blown, resulting in the indicated response on the 1B DG:

- A. Fuses FU7 and FU8 due to the start failure alarm that was annunciated from the loss of control power.
- ✓B. Fuses FU1 and FU2 due to the start failure alarm that annunciated from the loss of control power.
- C. Fuses FU3 and FU4 due to start failure alarm from the engine running with the air start solenoids failed close.
- D. Fuses FU5 and FU6 due to the start failure alarm from the loss of power to the low speed and auxiliary stop relays.

Correct answer is based on the schematic for loss of fuses FU1 and FU2, distractors are different fuses in the circuit which do not effect the start failure circuitry (T2A relay).
author:REN The question was modified by complete change of the stem and use of different fuse combinations.

42. EMERGENCY BORATION 001/ 000024A26/ 3.6/XXX/ APPLIC/ BANK/ OI-2B/ / / T1G1/XXXX

Given the appropriate reference:

During a reactor startup, an unborated ion exchanger was inadvertently placed in service, resulting in RCS boron dilution. If the equivalent dilution flow rate of this ion exchanger is 35 gpm and RCS boron concentration is 993 ppm, how long will it take to reach the boron concentration of 985 ppm?

- ✓A. 13 minutes
- B. 38 minutes
- C. 68 minutes
- D. 100 minutes

Need OI-2B curves

43. EMERGENCY BORATION 002/ 000024K201/ XXX/2.7/ MEMORY/ 498 NRC/ AOP 7I/ CRO-107-1/ 2.15/ XXXX/T1G1

On a loss of MCC-214, which boration flowpath would be available?

- A. RWT outlet and a charging pump.
- ✓B. 22 BA pump, BA direct M/U valve and a charging pump.
- C. 21 BA pump, BA flow control valve, VCT to a charging pump.
- D. 21 or 22 BAST gravity valves and a charging pump

Correct answer is from effect specified in AOP 7I, distractors are based on 1 component that has no power that prevents flow.

author: REN

44. EMERGENCY BORATION 003/000024A26/XXX/3.7/COMP-SRO/NEW/AOP 1A///XXXXT1G1

Given the following:

- * Unit 2 is in Mode 6 with RFP level at 67 foot elevation
- * RCS level has been slowly rising over the last twelve hours
- * Chemistry reports RCS sample results show boron has decreased from 2610 ppm to 2583 ppm and Hydrazine is at 10 ppm

Which of the following is the correct action? *per AOP 1A*

- A. Borate with 3 charging pumps to maintain specified boron concentration.
- B. Drain the RCS as required and implement ~~AOP 6A~~ (Abnormal RCS Chemmistry)
- ✓C. Lower SG levels ~~per AOP 1A~~ (Inadvertent Boron Dilution).
- D. Drain the RCS as required and monitor for SG tube primary side draining.

45. EMERGENCY PROC/PLAN 002/ 000000G241/ 4.3/XXX/ COMP/ NEW/ EOP0 BASIS/ SRO-201-0/ 3.0/ G24/XXX

Given the following:

- * Unit 2 Reactor was manually tripped from 100% power due to a loss of a SGFP
- * RCS boron concentration at 753 ppm
- * The RO observes that 1 CEA has a WHITE light only

Which of the following is the proper response to complete the Reactivity Safety function steps?

- A. Monitor for drop in reactor power, a negative SUR and borate to at least 1053 ppm.
- B. Monitor for drop in reactor power, a negative SUR , inform the CRS that Reactivity Control Safety Function can not be met.
- ✓C. Monitor for drop in reactor power, a negative SUR, verify DI water to the RCS is secured.
- D. Monitor for drop in reactor power, a negative SUR and borate to at least 2300 ppm.

Correct answer is based on revised EOP 0 (3/00) specified actions with 1 stuck rod, distractors are based on incorrect communication responses or boration of RCS (1 stuck CEA).

EOP0 Actions were revised 3/00 NOT to borate for one stuck rod

46. EMERGENCY PROC/PLAN 003/ 00000G2415/ 3.0/3.5/ COMP/ BANK/ NO 1-201/ SRO 201-0/ 14.2/ G24/G24

During the performance of EOP-0, the RO observes the following plant conditions for the Pressure and Inventory Safety Function:

- * Pzr level is at 70 inches and steady
- * 3 Charging pumps are running
- * Letdown was isolated prior to the reactor trip
- * RCS pressure is 1900 PSIA and steady
- * RCS Subcooling is 95 °F and steady

The FINAL report from the RO to the CRS regarding the status of Pressure and Inventory Control Safety Function should be:

- A. COMPLETE.
- B. MONITORING.
- ✓C. CANNOT BE MET.
- D. TAKING ALTERNATE ACTIONS.

47. EMERGENCY PROC/PLAN 005/ 00000G2440/ XXX/4.0/ APPLIC/ NEW/ ERPIP/ / / XXXX/G24

Using appropriate references:

Given the following:

- * Unit 1 is at 100% power
- * A Loss of Offsite Power occurs and 1A and 1B DGs failed to load
- * After EOP 0 is complete, the appropriate optimal procedure is implemented on Unit 1
- * The appropriate ERPIP EAL is declared after 15 minutes and notification is completed.
- * ~10 minutes later, 11 4KV Bus is repowered by the 0C DG

Assuming you are the SM, which one of the following describes the ERPIP EAL based on the above conditions?

- A. Unusual Event.
- B. Alert.
- ✓C. Site Emergency.
- D. General Emergency.

Correct answer is based on EAL (ES1 1.) for site emergency with EOP 7 implemented and both 4kv bus deenergized for > 15 minutes. Since the SM made the initial call, no downgrade is permitted by Attachment 9 of ERPIP 3.0 (page 3). Distractors are inappropriate EAL calls.

48. EMERGENCY PROC/PLAN 006/00000G241/XXX/4.6/COMP/BANK/EOP BASES/SRO 201-5/2.0/XXXX/G24

One of the major set of actions performed during EOP-5 (LOCA), is to commence a cooldown to SDC entry conditions.

Which of the following is a result of this action, during a small break LOCA?

- A. Ensure SDC is entered before condensate inventory is lost using TBVs.
- B. Minimize the time before corrective maintenance activities can commence.
- ✓C. Enhance natural circ, if RCPs are secured, and depressurize the RCS faster to allow quicker inventory recovery.
- D. Allow operation of the LPSI pumps under RAS conditions.

CRO98BNK.BNK item SRO-201-5-1-08)

49. EMERGENCY PROC/PLAN 007/0000G2411/3.4/3.6/MEMORY/NEW/NO 1-201///G24/G24

Which one of the following describes the proper action(s) for a reactor trip and a subsequent severe fire requiring a Control Room Evacuation?

- A. Implement EOP-0.
- ✓B. Implement AOP-9A.
- C. Implement EOP-0, then return to AOP-9A.
- D. Parallel implement EOP-0 and AOP-9A.

Correct answer is based on NO-1-201 exemption for AOP 9 series and 11 (page 23), distractors are permutations of non applicable implementation method described in the same section.

50. EMERGENCY PROC/PLAN 008/00000G2439/3.3/XXX/MEMORY/NEW/ERPIP///G24/XXXX

Given the following:

- * Both Units are at 100% power
- * 1C01 "ANN LOSS OF DC POWER" annunciator alarms
- * ERPIP is implemented and an UNUSUAL EVENT is declared

Which one of the following describes the Alarm Manual actions required of the RO?

- A. Assemble with the Control Room personnel for accountability.
- B. Assume the duties of the Control Room Communicator.
- ✓C. Monitor plant computer trends and raise frequency of watchstation rounds.
- D. Assume the duties of NRC ENS Communicator.

Correct answer is based on Alarm Manual actions for window A-28 and ERPIP 3.0. Distractors are incorrect EAL actions (assemble) or positions that would be filled by non-control room staff (extra PO)

51. EQUIPMENT CONTROL 001/00000G2228/2.6/3.5/COMP/NEW/AOP 6F/CRO 113-4/4.0/G22/G22

Given the following:

- Unit 1 is defueled and Unit 2 is in Mode 5
- Alarm "SFP TEMP HI" annunciates at 1C13

Select the cooling mechanisms in preferred order per AOP-6F (SFP Cooling Malfunctions):

- A. Line up Unit 1 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- ✓B. Place second SFP cooler in service, line up Unit 1 SDC to SFP system, add makeup to SFP as water boils off.
- C. Line up Unit 2 SDC to SFP system, place second SFP cooler in service, add makeup to SFP as water boils off.
- D. Place second SFP cooler in service, line up Unit 2 SDC to SFP system, add makeup to SFP as water boils off.

Correct answer is based on AOP 6F actions, distractors are permutations in the wrong order or prohibited lineup (Unit 2 SDC).

author:REN The question was developed as an extra question.

52. EQUIPMENT CONTROL 002/ 0000G2213/ 3.6/3.8/ MEMORY/ 1197 NRC/ NO 1-112/ / / G22/G22

A new electric motor has been installed on an existing pump. The MO requires the motor to be checked for proper rotation and not all clearances have been returned.

Which one of the following actions are required to remove the Danger Tag from the motor power supply? (assume the pump suction and discharge valves are to remain tagged out)

- A. Process a Supplementary Clearance.
- ✓B. Process a modification to the tagout.
- C. Clear all tags and use a "human danger tag" for equipment not ready for operation.
- D. Verbally authorize the "lifting" of the motor tag and re-tag after rotation check.

53. EQUIPMENT CONTROL 003/00000G223/XXX/3.3/MEMORY/NEW/TECH SPEC/CRO 59-1/5.02/XXXX/G22

Which one of the following describes the basis for the differences in the required Unit 1 (2343 ppm) and Unit 2 (2323 ppm) refueling boron concentrations per Tech Spec 3.9.1?

- A. Boron¹⁰ atom % concentration is greater on Unit 1 than Unit 2.
- ✓B. Unit 1 has higher U²³⁵ enrichment fuel load than Unit 2.
- C. Unit 2 has higher U²³⁵ enrichment fuel load than Unit 1.
- D. Pu²³⁹ concentration is greater on Unit 2 than Unit 1.

Correct answer is based on COLR 3.9.1 requirements.

54. EQUIPMENT CONTROL 004/00000G2222/XXX/4.1/COMP/498 MOD/TS COLR/CRO 212-3/2.1/XXXX/G22

Refer to the attached Unit 1 Technical Specifications Core Operating Limits Report (COLR).

Unit 1 reactor power is 80% when a continuous CEA withdrawal occurs. When the withdrawal is stopped, indicated Axial Shape Index (ASI) is -0.25 and reactor power peaks at 85%. Unit 1 is using Excore Monitoring for LHR and DNB surveillance monitoring.

Which, if any, axial flux offset control limit(s) is(are) being exceeded?

- A. Linear Heat Rate only.
- B. DNB only.
- ✓C. Both Linear Heat Rate and DNB.
- D. Tech Spec 3.2.5 is not applicable .

Correct answer is based on the TS requirements. Distractors are different possible combinations of 2 items of concern. Note COLR was revised for Unit 1 4/00 RFO, this changed the answer Modified stem by changing initial power from 70 % to 80%, final power from 79% to 85% and ASI from -.29 to -.25 , changed distractor from "neither linear heat rate nor DNB" to "Tech Spec 3.2.5 is not applicable" provide TS section 3/4.2 and COLR

55. EQUIPMENT CONTROL 006/00000G223/3.1/XXX/COMP/NEW/TS BASES///G22/XXX

Which one of the following is the LTOP protection applicability requirements per Tech Specs for Unit 1 and Unit 2?

- A. Mode 3 with Unit 1 RCS cold leg temperature <365 °F or Unit 2 RCS cold leg temperature <301 °F.
- B. Mode 3 with Unit 1 RCS cold leg temperature <301 °F or Unit 2 RCS cold leg temperature <365 °F.
- ✓C. Mode 3 with Unit 1 RCS cold leg temperature <365 °F or Unit 2 RCS cold leg temperature <301 °F AND Modes 4, 5, 6.
- D. Mode 3 with Unit 1 RCS cold leg temperature <301 °F or Unit 2 RCS cold leg temperature <365 °F AND Modes 4, 5, 6.

56. ESFAS 003/ 000013A32/ 4.1/4.2/ MEMORY/ NEW/ EOP ATTACH/ CRO 113-5/ 1.4/ T2G1/T2G1

Given the following:

- * Unit 1 is at 100% power
- * A LOCA occurs when 1 PORV fails open
- * SIAS and CIS actuate.

Which one of the following describes the initial response of ESF components?

- A. 11 and 12 CS pumps start and CS flow is ~2700 GPM total flow.
- B. 11 and 12 HPSI pumps start and inject water below ~1300 PSIA.
- C. 11 and 12 LPSI pumps start and inject water to the RCS.
- ✓D. 11 and 13 HPSI pumps start and inject water below ~1300 PSIA.

Correct answer is based on FSAR description, distractors are permutations of wrong functions

CRO-113-5-5-09 from LOIT bank

57. ESFAS 004/ 000013A24/ 3.6/XXX/ COMP/ 1197 NRC/ AOP7J BASI/ CRO-202-7J/ 1.2/ T2G1/XXXX

Following the loss of 12 120V Vital AC bus, the performance of steps in AOP-7J requires the ESFAS Sensor cabinets to be reenergized prior to the Logic cabinets.

Which one of the following is the basis for the order of the steps?

- A. Prevent inadvertent actuation since the Logic modules are deenergized to actuate and the Sensor modules are energized to actuate.
- ✓B. Prevent actuation since the Logic modules are energized to actuate and the Sensor modules are deenergized to actuate.
- C. Properly align the Under Voltage Logic Relays.
- D. Properly align the Under Voltage Sensor Relays.

58. ESFAS 005/000013A24/XXX/4.2/APPLIC-SRO/NEW/XXX/T2G1

The CCNPP IPE (PRA) has determined that the concurrent loss of 1Y03 and 1Y04 could result in a significant Core damage probability.

Which one of the following is the predicted impact of the loss of power on the ESFAS system?

- A. AFAS Block would stop AFW flow, DG will not start and PORVs are OPEN from RPS response.
- B. DGs would fail to start, vital 4KV Busses would be de-energized and PORVs are OPEN by RPS response.
- C. DGs would start and power vital 4 KV Busses, ESFAS pumps would NOT start due to deenergized LOCI sequencer and PORVS would be OPEN by RPS response.
- ✓D. AFAS Block would stop AFW flow, ESFAS pumps would NOT start due to UV Blocked signals and PORVs would be OPEN by RPS response.

59. EXCESS RCS LEAKAGE 001/CE/A16K21/3.2/XXX/COMP/NEW////T1G3/XXXX

Given the following:

- * Unit 2 is at 100% power
- * The Regenerative heat exchanger develops a 25 gpm tube leak

Which one of the following describes the effect on letdown flow?

- A. Letdown flow will stop due to CVC-515 auto isolation.
- ✓B. Letdown flow will remain unchanged.
- C. Letdown flow will compensate based on charging pumps status.
- D. Letdown flow will stop due to CVC-516 auto isolation.

60. EXCESSIVE RCS LEAK 001/0CEA16AK22/XXX/3.3/COMP/498 MOD/TECH SPEC/CRO-202-2A/2.0/XXXX/T1G3

Given the following:

- Unit 2 is at 100% power
- Unidentified RCS leakage is .9 GPM
- No SG leakage is identified
- RO reports that VCT trace indicates an increase in RCS leakage

As the CRS, you direct the implementation of AOP 2A (Excessive RCS leakage).

Which of the following conditions would require Unit 2 to be shutdown per T.S. 3.4.6.2?

- A. 10 GPM leakage from body to bonnet gasket leak on 2-CVC-515 (Letdown Stop).
- B. 10 GPM leakage from seat leakage from PORV-404.
- ✓C. 10 GPM leakage from RCP integral heat exchanger.
- D. 10 GPM leakage from packing gland leakage on SI-652-MOV.

RCP integral heat exchanger is considered pressure boundary leakage, distractors are non-pressure boundary leakage for the RCS or system connected to RCS.

author:REN Modified stem to change unidentified leakage to .9 gpm (close to limit) and changed all identified leakages to 10 gpm (TS limit) and changed 1 distractor from CVC 500 (in Aux building) to CVC 515 (in containment)

61. FIRE PROTECTION 001/ 000086K64/ 2.6/2.9/ MEMORY/ NEW/ ALM MAN/ / T2G2/T2G2

A smoke detector fails and goes into alarm for the Unit 1 27 Foot Switch Gear Room.

Which one of the following describes the effect on the system?

- A. Pre-Alarm buzzer sounds and after a time delay, Halon system discharges.
- ✓B. Pre-Alarm buzzer sounds but does not result in Halon system discharge.
- C. Discharge warning horn sounds and after a time delay, Halon system discharges.
- D. Discharge warning horn sounds but does not result in Halon system discharge.

Correct answer is based on 1C24B Alarm Manual (page 90). Distractors are permutations of incorrect action (Halon system discharges) or wrong warning sound (horn).

62. FUEL HANDLING ACCID 001/00036G2227/2.6/XXX/ MEMORY/ 1197 NRC/ AOP 6D///T1G3/XXXX

Which one of the following would be the primary hazard if irradiated fuel were damaged within the pressure vessel during refueling operations?

- A. Inadvertent criticality exposure to personnel in the containment.
- ✓B. Iodine 131 exposure to personnel in the containment.
- C. Chronic gamma radiation exposure to the RFM operator.
- D. Neutron radiation exposure to the RFM operator.

63. FUEL HANDLING ACCID 002/000036K201/XXX/3.9/MEMORY/NEW/AOP 6D///XXXX/T1G3

Given the following:

- * Unit 1 is in Mode 6
- * Core on-load is in progress
- * RFM is over the upender lowering the hoist to grapple a "SHINY" Assembly
- * The RFM operator observes a high radiation alarm on the portable radiation monitor on the RFM Bridge

Which one of the following describes FHS direction required for the stated conditions?

- A. Implement AOP 6D, Fuel Handling Incident, and direct personnel to evacuate the Containment, and send the irradiated fuel to the Spent Fuel Pool side.
- ✓B. Validate the radiation alarm then implement AOP 6D, Fuel Handling Incident and direct personnel to evacuate the containment.
- C. Implement AOP 6D, Fuel Handling Incident, and direct the RFM operator to move the RFM to allow the transfer carriage to be sent to the Spent Fuel Pool side.
- D. Validate the radiation alarm then implement AOP 6D, Fuel Handling Incident and direct personnel to evacuate the Spent Fuel Pool and Containment.

Correct answer is based on AOP6D actions for portable high radiation alarm (which requires validation of the alarm as entry condition) followed by containment evacuation. Distractors contain no validation of the alarm as their first step and sending transfer carriage to the SFP or evacuation of both the Containment and SFP area.

64. FUEL HANDLING EQUIP 001/000034A32/2.5*3.1/COMP/NEW/OI-25C(U1)/T2G3/T2G2

Given the following:

- * Unit 1 is in Mode 6 with fuel off-load in progress
- * RFM is being operated in AUTO mode
- * Off indexing is being used during a fuel assembly insertion in the core
- * OFF INDEX ZONE BREACHED is indicated on the CRT

Which one of the following is the action required to complete the fuel move?

- A. Raise the fuel to the hoist up limit and select SEMI-AUTOMATIC mode to reposition the RFM to the Off index zone.
- B. Lower the hoist in slow speed until the Upper Grapple Operate Zone and position the RFM to On Index.
- ✓C. Use TRAVEL OVERRIDE to return within the Off index zone and continue with hoist lowering.
- D. Reset the alarm by depowering the RFM console and complete the fuel move from the RFM in MANUAL ELECTRIC control.

Correct answer is based on design, distractors are permutations of incorrect methods for logic design for the new RFM on Unit 1.

65. FUNCTIONAL RECOVERY 001/ CE/E09K21/ 3.6/3.9/ COMP/ NEW/ EOP 0/ SRO 201-8/ 1.1/ T1G2/T1G2

Given the following:

- * Unit 2 was manually tripped from 100% power due to a steam leak in the MSIV room
- * EOP-0 is implemented
- * RO reports Reactivity Control cannot be met due to positive SURs
- * All other Safety Functions are met

Determine the appropriate actions for the plant conditions:

- A. Reassess the EOP-0 Safety Functions and implement the optimal recovery procedure.
- B. Implement the alternate actions for Reactivity Control Safety Function to mitigate the ATWS event.
- ✓C. Implement EOP-8 and determine success paths using the Resource Assessment Table.
- D. Implement EOP-4 to address reactivity control and isolate the steam leak.

66. HI RCS ACTIVITY 001/ 000076K36/ 3.2/3.8/ COMP/ 1197 NRC/ AOP 6D/ CRO-202-6A/ 4.0/ T1G1/T1G1

One of the first actions the operator is instructed to take per AOP-6A (Abnormal Reactor Coolant Chemistry/Activity) on increased RCS activity is to adjust letdown flow.

Which one of the following statements is correct as to the adjustment and the reason?

- A. Increase letdown to maximum to divert RCS water for processing by the RCW Processing System.
- B. Decrease letdown to minimum to minimize the amount of radioactive letdown that is flowing throughout the Auxiliary Building.
- C. Isolate letdown until the cause of the activity increase can be determined by chemistry technicians.
- ✓D. Increase letdown flow to obtain the maximum purification flow.

editorial changes for enhancement.

67. HI RCS ACTIVITY 002/000076A202/XXX/3.4/COMP-SRO/498 NRC/TS BASES/CRO-212-1/5.0/XXXX/TIG1

Given the following:

* Specific activity of the reactor coolant has exceeded 1.0 microcurie/gram DOSE EQUIVALENT I-131 for greater than 100 continuous hours interval.

Which one of following is the basis for the requirement to cooldown below 500 °F within 6 hours?

- ✓A. Prevents the release of activity should a SG tube rupture occur.
- B. Increases reliability of the data collected for actual Iodine determination per ODCM.
- C. Minimizes the expected Iodine spiking phenomena from the large change in thermal power due to plant shutdown.
- D. Increases the coolant density to enable self-shielding to reduce on-site exposures.

Correct answer is based on Tech Spec bases for trip, distractors are RCS activity related concepts or variations of reactivity concepts (self-shielding).

68. HYDROGEN RECOMBINER 001/000028K61/2.6/3.1/COMP/NEW/FSAR 6.8/CRO 7-1/28.9/T2G3/T2G2

Given the following:

- * A LOCA has occurred on Unit 2
- * EOP 5 has been implemented
- * CRO has started the H₂ Recombiners per OI-41A (Hydrogen Recombiners)
- * The CRO later observes that 21 H₂ Recombiner has malfunctioned and 22 H₂ Recombiner is operating satisfactorily

Which one of the following describes the required action, if any, to control H₂ volume to <4% during a LOCA?

- A. Containment H₂ control will require the repair of 21 H₂ Recombiner within 24 hours.
- B. Containment H₂ control will require the use of the Hydrogen Purge System within 24 hours.
- C. Containment H₂ control will require the use of alternate procedures from the TSC.
- ✓D. No further actions are required to maintain H₂ <4% by volume by design.

Correct answer is based on FSAR description section 6.8 (page 6.8-3). Distractors are permutations of options which are not required by FSAR design.

69. INADEQUATE CORE CLG 001/000074G223/3.1/3.3/APPLIC/NEW/EOP 3///T1G1/T1G1

Given the following:

- * Both Units are at 100% power when a Loss of Offsite Power event occurs
- * EOP 0 is implemented on both Units
- * Concurrent with EOP 0 implementation, a loss of suction on the AFW common suction header occurs in the Unit 1 Turbine Building
- * The appropriate optimal recovery procedure is implemented for each Unit
- * The following parameters are observed:

	Unit 1	Unit 2
RCS pressure	1800 PSIA and lowering	1900 PSIA and rising
RCS Tc (~15 min later)	475 °F and lowering	505 °F (after rising uncontrollably from 495 °F)
11 (21) SG level	-360 inches	-300 inches
12 (22) SG level	-300 inches	-300 inches

AFW Suction header is restored after venting

Evaluate the proper actions to be taken on both Units based on stated plant conditions:

- A. Establish AFW flow on Unit 1 and Unit 2.
- B. Initiate OTCC on Unit 1 and throttle OPEN ADVs on Unit 2.
- ✓C. Establish AFW flow on Unit 1 and initiate OTCC on Unit 2.
- D. Initiate OTCC on Unit 1 and increase AFW flow to Unit 2.

70. INCORE TEMP MON 001/000017A22/3.6/XXX/ APPLIC/NEW/ EOP4///T2G1/XXXX

During implementation of EOP-4, the following conditions are noted:

- * 21 SG Bottom Blowdown line ruptures in the Containment
- * EOP-0 actions have been completed and transition to the appropriate optimal recovery procedure has occurred
- * Plant data:
 - RCS pressure is 1000 PSIA
 - RCS cooldown rate is 65 °F per hour
 - 21 SG pressure is 650 PSIA
 - 22 SG pressure is 900 PSIA
 - CETs are reading 475 °F

Which one of the following actions should be taken?

- A. Dump steam from 21 SG to raise RCS cooldown rate to ~100 °F per hour to minimize the time of the SG blowdown.
- B. Dump steam from 22 SG to raise RCS Subcooled Margin to ~140 °F to minimize the time of SG blowdown.
- C. Dump steam from 21 SG until it is within 25 °F of CET average temperature.
- ✓D. Dump steam from 22 SG until it is within 25 °F of CET average temperature.

71. INCORE TEMP MON 002/000017A22/XXX/4.1/APPLIC-SRO/NEW/EOP 5/1/XXXX/T2G1

Using provided references:

Given the following:

- * Unit 2 has tripped and EOP 5 (LOCA) has been implemented 4 hours ago
- * RCS pressure has equalized with Containment pressure at 45 PSIG
- * CET average temperature is 352 °F
- * RAS has actuated and HPSI flow has been throttled to 300 GPM

Which one of the following is the correct actions to mitigate core damage?

- A. Line up and start Core Flush via Pressurizer injection.
- B. Increase LPSI flow.
- ✓C. Increase HPSI flow.
- D. Commence RCS cooldown to below 300 °F using TBVs or ADVs.

Correct answer is based on actions in EOP 5 Block step N for CET superheat > 50 °F, distractors are incorrect actions based on no LPSI flow (RAS actuated), too early for core flush (8-11 hours) or ineffective actions for large break LOCA (cooldown)

72. INOP/STUCK CEA 001/0000005A23/3.5/XXX/MEMORY/498 NRC/TECH SPEC/SRO 206-1/3.0/T1G1/XXXX

Unit 1 is in MODE 3 with Tavg at 532°F, when one CEA is declared inoperable/untrippable. How long after the detection of the inoperable CEA must the shutdown margin be verified?

- A. Immediately
- ✓B. 1 hour
- C. 12 hours
- D. 24 hours

Correct answer is specified by Tech Specs, distractors are routinely mentioned action times from the Tech Spec.

73. INOP/STUCK CEA 002/ 000005A24/ XXX/4.4/ COMP-SRO/ NEW/ AOP 1B, TS/ SRO 206-1/ /XXXX/TIG1

Unit 1 is at 100%, when two CEAs in Regulating Group 5 are determined by the System Engineer to have stuck grippers based on CEA traces.

Which one of the following is the appropriate action, per procedures?

- A. Verify Regulating Group CEA Insertion limits within 1 hour; Trip the reactor, per AOP 1B, to ensure proper Shut Down Margin.
- B. Return at least one CEA to operable status within 1 hour or Trip the reactor per AOP 1B to enter Mode 3 to be outside the mode of applicability.
- ✓C. Be in Mode 3 within 6 hours by commencing a rapid shutdown, per OP-3, and borate until RCS is >2300 PPM, to ensure proper Shut Down Margin
- D. Verify Regulating Group CEA Insertion limits within 1 hour; commence a rapid shutdown, per OP-3, to be outside the Mode of applicability within 12 hours.

Correct answer is specified by Tech Specs, distractors are permutations of incorrect TS basis or wrong AOP 1B actions.

74. INSTRUMENT AIR 001/000078K22/3.3*XXX/MEMORY/NEW/AOP 7I//T2G3/XXXX

Which one of the following is the power supply for 21 SWAC?

- A. 21A 480 Volt Bus
- B. MCC 204 R
- C. 21B 480 Volt Bus
- ✓D. MCC 214 R

75. LARGE BREAK LOCA 001/ 000011A210/ 4.5/XXX/ MEMORY/ 498 NRC/ EOP 5/ SRO 201-5/ 6.0/ T1G2/XXXX

Which one of the following is a condition necessary to ensure adequate RCS cooling flow exists during a large break LOCA per EOP 5?

- A. Indicated Steam Generator water levels are maintained at ~0".
- B. CET temperatures trend consistent with Tcold.
- ✓C. Injection via operating SI pumps per EOP attachment.
- D. RCS subcooling is 50 °F based on CETs.

Correct answer is based on EOP 5 conditions step N 2.1 , distractors are above expected limits for event (subcooling > 30 °F) or unrelated to the event per EOP 5. The correct answer supports the core reflux boiling mechanism for large break LOCAs. Distractors changed to remove "superheat" for plausibility per CE comments of 3/19/98 and edited for similar length.

76. LARGE BREAK LOCA 003/ 000011A210/ XXX/4.7/ COMP-SRO/ BANK/ EOP5 BASIS/ CRO -7-1-5/ 36.0/ XXXX/T1G1

Given the following:

- * EOP 5 is implemented on Unit 1
- * 11 4KV Bus is deenergized
- * RAS has actuated
- * HPSI pump is cavitating and flow cannot be throttled

Which one of the following is appropriate action to maintain adequate heat removal?

- A. Align 11 CS pump flow to 12 HPSI pump via 11 SDC HX to HPSI pump suction valve, SI-663-MOV.
- ✓B. Align 12 CS pump flow to 13 HPSI pump via 12 SDC HX to HPSI pump suction valve, SI-662-MOV.
- C. Align 12 CS pump flow to 12 HPSI pump via 11 SDC HX to HPSI pump suction valve, SI-663-MOV.
- D. Align 11 CS pump to 13 HPSI pump via 12 SDC HX to HPSI pump suction valve, SI-662-MOV.

LOIT Bank CRO-7-1-5-103

77. LIQUID RADWASTE 001/ 00068G2311/ 2.7/XXX/ COMP/ NEW/ AOP6B/ CRO-122-1/ 2.0/ T2G1/XXXX

Given the following:

- * MWMT discharge is in progress going to the Unit 2 discharge conduit
- * ABO reports that "21 REFUEL WTR STORAGE AREA SUMP LEVEL HI" alarm came in at 1C63 panel
- * OSO reports that Unit 2 RWT is leaking in the RWT Room

Which one of the following is the correct response for the stated conditions?

- A. Direct the ABO to investigate the Liquid Waste Discharge lineup.
- B. Direct the ABO to investigate a possible overflow of the Aux Building 5 Foot Elevation drains.
- C. Implement AOP-6B (Accidental Release of Radioactive Liquid Waste) due to MWMT discharge.
- ✓D. Implement AOP-6B (Accidental Release of Radioactive Liquid Waste).

Modified stem and 1 distractor from 498 bank (accd liq release 001)

78. LIQUID RADWASTE 002/000068K41/3.4/4.1/MEMORY/NEW/FSAR 11.1///T2G1/T2G1

Which one of the following describes a design flowpath of the MW Processing System?

- ✓A. MWRT is pumped by the MWRT pump through the MWS filter and IX and IX outlet strainer to 11 RCWMT.
- B. MWMT is pumped by the MWMT pump through the MWS filter and IX and IX outlet strainer to 11 RCWRT.
- C. MWRT is pumped by the MWRT metering pump through the MWS filter and IX to 12 RCWMT.
- D. MWMT is pumped by the MWMT metering pump through the MWS filter and IX to 11 RCWRT.

Correct answer is based on FSAR design (page 11.1-7). Distractors are incorrect flow paths (MWMT discharge to 11 RCWRT) or non-existent (MWRT metering pump) or retired equipment (MWMT metering pump).

79. LOOP 002/00056G2420/XXX/4.0/COMP/NEW/EOP2/SRO-201-2/XXXX/T1G3

Given the following:

- * Loss of Offsite Power occurs
- * EOP-2 is implemented on both Units
- * All DGs start and load as designed

Which one of the following prevents a DG overload condition, should the LOCI sequencer initiate?

- A. Shifting vital bus loads to SMECO, per EOP-2.
- B. Maintaining load on 1A DG less than 1 MW, by stopping non-essential loads per EOP-2.
- ✓C. Controlling load on 1B DG, by starting non-essential loads per EOP-2 .
- D. Placing the 0C DG on 21 4KV bus, per EOP-2.

Correct answer is based on EOP2 procedure Caution #4 for 1B DG, distractors are based on other power sources that are higher rated (~5000KW) and wrong controlling procedure (EOP-5).

Question stem was modified from "4 major actions of EOP2" to "4 major actions of EOP2 during the plant stabilization phase" sine EOP 2 was revised in 3/00 and correct answer was changed to reflect procedure revision.

80. LOSS OF CCW 001/0000026A23/2.6/2.9/COMP/NEW/AOP 7C///T1G1/T1G1

Given the following:

- * Unit 1 is in Mode 3 at NOT and NOP
- * A total loss of Component Cooling occurs
- * AOP-7C (Loss of Component Cooling Water) is implemented and RCPs are stopped
- * All RCP lower seal temperatures are < 250 °F
- * The CRS directs the start of 12 CC pump per AOP-7C

Which of the following is the correct valve lineup for RCP restart after completion of AOP-7C actions?

- A. SHUT 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- B. SHUT 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.
- ✓C. OPEN 1-CC-3832-CV (CC CNTMT SUPPLY) valve prior to RCP restart.
- D. OPEN 1-CC-284 (CC CNTMT SUPPLY HDR ISOL) prior to RCP restart.

81. LOSS OF COND VAC 001/ 00051G2132/ 3.4/3.8/ MEMORY/ 498 NRC/ AOP-7G/ CRO2027G7/ 1.3/ T1G1/T1G1

Given:

- * Both Units 1 & 2 were at 100% power
- * A Loss of Offsite Power occurred
- * All DGs started and loaded as expected
- * EOP-0 was implemented for both units
- * Condenser vacuum is 22" HG on both Units

Select the expected response on steam dumping capabilities for both Units:

- A. Unit 1 TBVs are operable, Unit 2 TBVs are operable.
- ✓ B. Unit 1 TBVs are inoperable, Unit 2 TBVs are operable
- C. Unit 1 TBVs are inoperable, Unit 2 TBVs are inoperable.
- D. Unit 1 TBVs are operable, Unit 2 TBVs are inoperable

Correct answer is based on difference of Unit 1 and 2 nominal setpoints (Unit 1 is 20"Hg, Unit 2 is 25"Hg) contained in the Main Turbine trip logic, distractors are permutations around the setpoints.

82. LOSS OF CONT INTEG 001/0000069K31/3.8*4.2/COMP/NEW/AOP 4A//T1G1/T1G1

Given the following:

- * Unit 1 is in Mode 6 with refueling in progress
- * The Containment Outage Door is shut
- * The PPO reports the Equipment Hatch has 1 out of 4 bolts loose
- * AOP-4A (Loss of Containment Integrity) is implemented

Determine the actions required based on plant conditions:

- A. Verify the Containment Outer Door is secured per NO-1-114, Containment Closure
- ✓B. Secure Core Alterations immediately and establish Containment Closure per STP O-55A-1.
- C. Verify the Containment Outer Door is secured per STP O-55A-1 and suspend Core Alterations if unsat.
- D. Secure Core Alterations immediately and document the Containment Closure deviation per NO-1-114.

Correct answer is based on actions in AOP-4A and TS 3.9.3 requirements. Distractors are permutations of incorrect reference to administrative actions in NO-1-114 or no immediate securing of Core Alterations.

83. LOSS OF DC POWER 001/00058AK101/XXX/3.1*/MEMORY/NEW/AOP7 BASIS///XXXX/T1G2

Given the following:

- * "11,12 125V DC BUS U/V" alarm is annunciated at 1C34
- * The CRO reports "0" voltage indication for 11 125 V DC Bus

Which one of the following describes the expected effect on Unit 1 and 2?

- ✓A. Unit 1 will trip after 30 second delay, Unit 2 will not automatically trip.
- B. Unit 2 will trip after a 30 second delay, Unit 1 will not automatically trip.
- C. Unit 1 and 2 will trip after 30 second delay.
- D. Unit 1 and 2 will not automatically trip.

Correct answer is based on Alarm Manual Window U-13 (page 27). Distractors are permutations of incorrect actions.

84. LOSS OF INST AIR 001/000065A28/2.9*/3.3/MEMORY/1197 NRC/AOP 7D/CRO-202-7D/5.0/T1G3/T1G2

Which one of the following is correct concerning a loss of Instrument Air pressure?

- A. Pressurizer Spray Valves fail OPEN.
- B. Condensate Demineralizer Bypass Valve fails OPEN.
- ✓C. Pressurizer Auxiliary Spray Valve fails SHUT.
- D. Containment Spray Control Valves fail SHUT.

85. LOSS OF MFW 001/CE/E06A112/XXX/4.0/APPLIC-SRO/498 NRC/ LER 95-3/ CRO-202-3G/ 8.1/ XXXX/T1G2

Given the following:

- * Unit 2 is in Mode 2, EOL and at ~2% Reactor power with Main Turbine tripped
- * 21 SGFP running with 22 SGFP lined up in STBY
- * AFW system aligned for normal operation
- * The RO reports that Tc is lowering, approaching 515 °F Tavg
- * RO withdrew Reg Group 5 CEAs from 125 inches to 133 inches before being stopped by the SM
- * The CRO reports that 21 SGFP overspeed and tripped on high discharge pressure
- * Shortly thereafter, the RO reports Unit 2 is in Mode 1 with .5 DPM SUR

As the CRS, describe the action(s) required and basis for the decision:

- A. Direct the insertion of Reg Group 5 to return to Mode 2, start up 22 SGFP.
- B. Direct a reactor trip due to positive reactivity excursion from excessive CEA motion.
- C. Direct the insertion of Reg Group 5 to maintain power at 5%, start 23 AFW Pump.
- ✓D. Direct a reactor trip due to a positive reactivity excursion from excessive cooldown.

The event is due to excessive cooldown similar to LER 95-003 (Swapping of SGFP steam supplies). The determination of the correct answer requires analysis of data to realize that CEA reactivity is insufficient to result in a .5 DPM SUR at 5% power and the uncontrolled cooldown from the inferred overfeed will result in an automatic trip at ~14% power. Distractors are actions which assume the cooldown effect is controlled. The described conditions require a SRO judgement to prevent an automatic trip.

author:REN

86. LOSS OF SDC 001/ 000025K11/ 3.9/XXX/ APPLIC/ NEW/ AOP 3B/ / / T1G2/XXXX

Given the following:

- * Unit 2 is in Mode 5
- * RCS level is at 38 feet
- * RO observes that 21 LPSI discharge pressure and motor amps are fluctuating
- * "LPSI PUMP SUCTION PRESS LO" alarm is sporadically annunciating
- * SDC flow is observed to be ~3800 GPM and fluctuating

Which one of the following is the appropriate response based on plant conditions:

- A. Adjust SDC flow to 1500 GPM and verify cavitation stops.
- B. Start 22 LPSI pump, stop 21 LPSI pump and verify cavitation stops.
- ✓C. Adjust SDC flow to 3000 GPM and verify cavitation stops.
- D. Secure both LPSI pumps, lineup a CS pump for SDC and verify cavitation stops.

87. LOSS OF SDC 002/ 025A2AA204/ XXX/3.6/ COMP-SRO/ NEW/ AOP 3B/ / / XXXX/T1G2

Given the following:

- * Unit 1 is in Mode 5
- * SDC is in service with 11 LPSI pump running
- * RCS temperature is 180 °F
- * Pressurizer Proportional and Backup heaters are placed in AUTO
- * RCS pressure peaks ~300 PSIA
- * The RO reports that pressurizer level is decreasing

Which one of the following describes the correct procedure to implement and probable reason?

- A. Implement AOP 2A, Excessive RCS Leakage, for loss of RCS inventory due to SDC return header relief valve open.
- ✓ B. Implement AOP 3B, Abnormal Shutdown Cooling Conditions, for loss of RCS inventory due to SDC return header relief open.
- C. Implement AOP 2A, Excessive RCS Leakage, for loss of RCS inventory due to NRHX tube leakage.
- D. Implement AOP 3B, Abnormal Shutdown Cooling Conditions, for loss of RCS inventory due to NRHX tube leakage.

Correct answer is based on entry conditions and setpoint for the SDC return header relief valve. Distractors are permutations of incorrect procedure (AOP 2A) or wrong leak location (NRHX)

88. LOSS OF SRNI 001/000032A11/3.1*/3.4*/COMP/NEW/OI26B///T1G2/T1G2

Given the following:

- * Unit 1 is at 100% power
- * 1Y01 (11 120V Vital AC bus) had been deenergized for emergency maintenance and is ready to be energized
- * The CRS directs you to reenergize 1Y01 per OI 26B (120 Volt Vital AC and Computer AC)

Which one of the following describes an expected result from improper implementation of the applicable procedure steps?

- A. ESFAS ZB logic channel could actuate if cabinet is not shutdown per OI-34 prior to energizing 1Y01.
- ✓B. Unit 2 Channel A WRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- C. Unit 2 Channel A LRNI at 2C43 Preamplifier may be damaged if power is restored prior to IM discharging the Fission Chamber.
- D. ESFAS ZE sensor channel could trip if cabinet is not shutdown per OI-34 prior to energizing 1Y01.

Per OI-26B, Section 6.9 (Energizing 1Y01) cautions the effect on Unit 2 WRNI Preamplifier at 2C43. Distractors are not powered from 1Y01 (MS Rad Monitors) or is wrong Channel (Unit 2 Channel A LRNI) for 1Y01.

89. LOSS OF SW 001/00062AA106/2.9/2.9/COMP/NEW/AOP 7A//T1G1/T1G1

Given the following:

- * Unit 1 is in Mode 3 preparing for RCS cooldown to Mode 5
- * The CRO reports that 1C13 panel indication 11 Salt Water header pressure is reading 9 PSIG and both the salt water flow on the 11 SW header and 11 CCHX have increased

for the

Which one of the following describes the required actions based on plant conditions?

- A. Reduce 11 Salt Water header flow by placing 11A/11B SRWHX SW Bypass, 1-PIC-5154, in AUTO.
- ✓B. Implement AOP 7A (Loss Of Salt Water Cooling) for a rupture on the 11 CC Heat Exchanger header.
- C. Direct the OSO to throttle 11 SW pump discharge to raise SW header pressure.
- D. Start 13 SW pump on 11 SW header to raise SW header pressure.

Correct answer is based on AOP 7A entry conditions, distractors are inappropriate actions for a header rupture (<10 PSIG). Note: Unit 1 now has flow rate indication added during recent RFO

90. LOSS OF WRNI 001/000033K11/2.7/3/COMP/BANK//CRO-57-1/2.6.6/T1G2/T1G2

Which condition occurs on a loss of +15 VDC power to the W.R. flux trip relays 1 & 2?

- A. SUR trip inhibited.
- B. Zero power mode bypass enabled.
- ✓C. CEAPDS PDIL enabled.
- D. TM/LP signal to CWP inhibited.

Basis: Loss of +15 VDC Power to Flux Trip Relays 1 & 2
References: 55.41:2,7
55.43:5KA1: 057K1.03KA2: K4.01

91. LOSS RC MAKEUP 001/000022A21/3.2/3.8/ MEMORY/BANK/ AOP 2A/ CRO-107-1/2.20/T1G2/T1G2

A charging header leak would be identified by which one of the following?

- A. Lowering pressurizer level with minimum letdown flow and one charging pump operating.
- B. Charging header pressure greater than RCS pressure with two charging pumps operating.
- C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.
- ✓D. Charging header pressure less than RCS pressure with one charging pump operating.

Basis: Identification of Charging Header LeakReferences: 55.41:10 55.43:5 /
AOP-2AKA1: 006K5.13KA2: 004020K6.05

92. LOSS VITAL AC 002/ 00057K31/ 4.1/4.4/ MEMORY/ NEW/ AOP BASIS/ CRO-202-7J/ 1.0/ T1G1/T1G1

Given the following:

- * Unit 1 120VAC bus 1Y01 has been lost.
- * Operators are directed by AOP-7J (Loss of 120 Vital AC Power) to stop the Containment Radiation Monitor pump.

Which one of the following is the reason for securing the pump?

- A. To prevent an inadvertent restart of the pump when the bus is repowered .
- ✓B. To avoid reliance on the low flow trip to protect the pump.
- C. To prevent an inadvertent alarm when the bus is repowered .
- D. To establish containment integrity for the affected penetration.

Correct answer is based on actions in AOP basis, distractors are actions that do not account for the loss of IA or incorrect responses (inadvertent alarm, containment integrity).

93. MAIN FEEDWATER 001/000059A211/XXX/3.0*/COMP-SRO/498 NRC/ALM MAN/CRO 103-1/1.4/XXXX/T2G1

What happens on a transfer from High Power to Low Power Mode if SG level rises to greater than +20" during the transfer?

- A. The transfer continues at the same rate.
- B. The transfer continues at 1/2 the original rate.
- ✓C. The transfer is suspended, the MFV returns SG level to normal in Auto, and the BFV is held at current position.
- D. The transfer is suspended, the BFV returns SG level to normal in Auto, and the MFV is held at current position.

Correct answer is based on the automatic actions of the DFWCS. Distractors are based on the reverse (transfer from low power to high power) transfer or incorrect transfer actions.

94. MAIN FEEDWATER 002/000059A403/3.0*/2.9/APPLIC/498 NRC/CRO 103-1/CRO 103-1/1.9/T2G1/T2G2

Given the following:

- Unit 1 is at 10% power with a Plant startup in progress
- Alarm "12 SG CONTR CH LVL" annunciates at 1C03
- RO reports that 12 SG level by 1-LT-1106 indicates +63.5" and remaining SG level indications are at 0"

Describe the effect on the Plant and action required:

- A. 12 Bypass Feedwater Valve will go SHUT requiring a manual Reactor trip and implementation of EOP-0.
- ✓B. 12 Bypass Feedwater Valve will continue to maintain level, the downcomer selector switch at 1C36 should be placed in the LT-1106 failure position to provide LT-1121 input to the control channel indication.
- C. 12 Bypass Feedwater Valve will go SHUT, requiring manual operation by placing its associated handswitch in the BYPASS FAIL position.
- D. 12 Bypass Feedwater Valve will continue to maintain level, a manual transfer from LOW to HIGH power of the DFWCS will be required for 12 Feed System.

Correct answer is required action for failure of LT-1106 (CPU sensed failed output and shifted control to LT1121). Distractors are permutations on incorrect BFV action author: REN the question was developed as new due to STM GENERATOR 002 was used in Audit Exam for CRO 96.

95. MAIN STM AND RHT STM 001/ 000039A19/ 2.5*2.7*1 COMP/ NEW/ OI-35/ CRO-122-1/ 2.5/ T2G2/T2G2

Given the following:

- * Both Units are at 100% power
- * MS line Rad Monitor status:

	Unit 1 (11/12)	Unit 2 (21/22)
NORM White light	on/on	on/on
FAIL Green light	off/off	on/on
ALERT Amber light	off/on	off/off
HIGH Red light	off/on	off/off

Which one of the following describes the operational status of the RMS?

- A. Unit 1 both operable and Unit 2 both inoperable.
- B. Unit 1 one RMS inoperable and Unit 2 one RMS inoperable.
- C. Unit 1 both RMS inoperable and Unit 2 both RMS inoperable.
- D. Unit 1 both RMS inoperable and Unit 2 both RMS operable.

Correct answer is based on the green light indicating a failure on 1 RMS on each unit.
 Distractors are permutations of incorrect operational status.

96. MAIN TURB GEN 001/ 000045K120/ 3.4/3.6/ MEMORY/ 498 NRC/ CRO 102-2/ CRO 102-2/ 7.4/ T2G3/T2G3

Which one of the following conditions is indicated when the LOAD CHANNEL light on the Unit 2 turbine control panel is lit?

- ✓A. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the IMP OUT mode.
- B. Failure in the Impulse Pressure feedback loop has occurred and the EHC system is in the TURBINE MANUAL mode.
- C. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the TURBINE MANUAL mode.
- D. Failure of the Turbine Actual Reference counter has occurred and the EHC system is in the IMP OUT mode.

Correct answer is based on system design, distractors are unrelated variations of other turbine control circuits

97. NATURAL CIRC 001/CE/A13K12/3.2/3.5/MEMORY/1197 NRC/EOP 2/SRO-201-2/12/T1G1/T1G1

Following a Loss of Offsite Power, natural circulation flow can not be accurately verified for approximately 15 minutes.

Which one of the following is the cause of this time delay?

- A. Time for Reactor Coolant Pump coastdown.
- B. Formation of Steam Generator inverted delta T.
- C. Time for Low Steam Generator levels recovery.
- ✓D. Increased loop cycle time.

98. NON-NUCLEAR INST 001/ 000016A21/ 3.0#/XXX/ MEMORY/ NEW/ OI-7/ / T2G2/XXXX

Given the following:

- * Unit 1 is at 20% power
- * DFWCS has automatically shifted to HIGH POWER mode
- * Loss of high voltage power Control Channel X NI

Which one of the following describes the effect on the plant?

- A. DFWCS shifts to low power mode on 11 SG.
- B. DFWCS stays in the high power mode on 11 SG.
- ✓C. DFWCS stays in the high power mode on both SGs.
- D. DFWCS shifts to single input in the high power mode on both SGs.

Correct answer is based on caution in OI-7 (page 90) and system design. Distractors are incorrect permutations of effects.

99. NON-NUCLEAR INST 002/ 000016A21/ XXX/3.1*/ COMP-SRO/ NEW/ FSAR 5.5-8/ / / XXXX/T2G2

Given the following:

- * Unit 2 is at 100% power
- * RRS Control Channel X upper and lower detectors fail low

Which one of the following describes a process control system impact of the detector failures?

- A. Reactor Regulating System.
- ✓B. Digital FW System.
- C. Internal Vibration Monitoring System.
- D. Power Ratio Calculator.

Digital FW is only process control function affected, distractors are indication circuits only

100. NUCLEAR INST 001/000015K11/4.1/4.2/MEMORY/1197 NRC//CRO-57-1/4.10/T2G1/T2G1

Which one of the following is the effect from deenergizing the LRNI level 2 bistable?

- A. Enables APD trip.
- B. Enables Power Trip Test Interlock (PTTI).
- C. Energizes Channel in Test LED.
- ✓D. Enables Loss of Load Trip.

101. NUCLEAR INST 002/ 000015A23/ 3.2/XXX/ COMP/ NEW/ OP-3/ CRO-59/ / T2G1/XXXX

Given the following:

- * Unit 1 is at 100% power and EOC
- * ASI indication at 1C05 reads +0.06
- * CEAs are ARO
- * A power reduction is scheduled for MT CV Testing

Which one of the following power reduction methods will minimize the ASI oscillation?

- A. Insert CEAs in 30 inch increments to reduce reactor power.
- B. Fast Borate from the BASTs for 1 minute for each boration addition.
- C. Insert CEAs in ~10 inch increments with 30 second Fast Boration.
- ✓D. Insert CEAs in ~5 inch increments and 10 second Fast Boration.

OP-3 Precaution 5.0 A

102. PLANT FIRE 001/067A2AA216/XXX/4.0/APPLIC-SRO/NEW/AOP 9C///XXXX/T1G1

Given the following:

- * Both Units are at 100% power
- * A fire is reported in the -15 foot East-West Corridor and the Fire Brigade responds
- * The OTA reports fire damage appears severe and safe shutdown equipment is damaged with heavy smoke in the area

Which one of the following describes the proper actions for the given plant conditions?

- A. Monitor communications with the Fire Brigade, secure Auxiliary Building elevator to prevent use during fire.
- B. Call for outside assistance from local fire companies within 15 minutes, review Tech Specs and TRM for system applicability.
- C. Trip the affected Unit(s), implement EOP 0 on the affected Unit(s), cooldown the affected Unit(s) to Mode 5 within 72 hours to comply with Appendix R requirements.
- ✓D. Implement AOP 9C to Trip both Reactors and Main Turbines, secure SGFPs and CEDM MG sets.

Correct answer is based on entry conditions and actions contained in AOP 9C.
Distractors are inappropriate actions from other procedures which do not apply.

103. PROCESS RAD MONITOR 001/000073K51/2.5/3.1/APPLIC/498 NRC/ALM MAN/CRO-107-1/2.7/T2G2/T2G2

Given the following:

- Unit 1 is in Mode 3, NOT and NOP (previously was at 100% power for 245 days)
- Chemistry reports that the trend on weekly samples indicate an increase in the RCS activity for non-soluble matter
- NFM reports that a review of CECOR data indicates that fuel rod fouling is increasing

Which condition will cause 1C07 alarm F-21 "RAD MON LVL HI" to alarm AND a dose rate change in the Letdown line?

- A. LOCA inside the Containment resulting in stopping RCPs after CIS actuation.
- B. LOCA outside the Containment resulting in activity in the 27 Foot West Penetration Room.
- ✓C. Establishing forced circulation by starting RCPs after a Loss of Offsite Power.
- D. Starting additional Charging pumps in response to an RCS leak.

Correct answer is based on Alarm Manual description and actions of AOP 6A, distractors various activity producing events with no activity reaching the process rad monitor in the letdown portion of CVCS.

author:REN, added conditions to stem per CE comments from 3/19/98 to provide plausible conditions for a crud burst, removed "crud burst" from distractors.

104. PZR LEVEL CONTROL 002/ 000011K32/ 3.5/3.7/ COMP/ 498 MOD/ FSAR-7/ CRO 107-1/ 1.0/ T2G2/T2G2

Given the following:

- Unit 2 is 100% power
- LT-110X Pressurizer level channel selected
- HS-100-3, Pzr Htr Lo Lvl cut-off is selected in "X / Y" position

Describe the effect on the RCS if LT-110X fails due to a leak in the reference leg:

- A. Indicated Pressurizer level will increase due to Letdown goes to minimum and charging pumps stop .
- B. Indicated Pressurizer level will decrease due to Letdown goes to maximum exceeding Charging pump capacity.
- ✓C. Actual Pressurizer level will decrease as Letdown goes to maximum, PZR Backup Heaters energize.
- D. Actual Pressurizer level will increase as Letdown goes to minimum and backup Charging pumps start.

Correct answer is based on design, distractors are permutations of wrong actual level response or wrong component actions.

author:CCZ and REN, modified stem by deleting previously stated conditions, having Unit 2 at 100% power and changed 1 distractor from "No change in pressurizer level" to "Indicated pressurizer level will increase" due to wrong reason.

105. PZR PRESS CONT 001/ 000010A43/ 4/3.8/ COMP/ BANK/ / CRO 62-1/ 7/ T2G2/T2G2

Given the following:

- * Unit 1 is in Mode 4
- * RCS pressure is 325 PSIA and temperature is 355 °F
- * PORV Block Valve RC 403 is OPEN
- * PORV Block Valve RC 405 is SHUT
- * HS 1406 (PORV 402 MPT Protection) is in "VARIABLE MPT ENABLE"
- * HS 1408 (PORV 404 MPT Protection) is in "NORMAL"
- * PORV 402 override is in "AUTO"
- * PORV 404 override is in "AUTO"
- * PT 103-1 Pressurizer Low Range pressure transmitter fails to 1500 PSIA

Which one of the following describes the response to the conditions?

- A. ERV-402 stays ENABLED and OPENS.
- B. ERV-404 is ENABLED and OPENS.
- ✓C. ERV-402 stays ENABLED and remains SHUT.
- D. ERV-404 is ENABLED and remains SHUT.

CRO-62-1-8-45 from LOIT Bank

106. PZR PRESS CONT MALF 001/ 00027G2132/ 3.4/3.8/ COMP/ 1197 NRC/ ALM MAN/ CRO-62/ OH-20/ T1G1/T1G2

Given the following:

- * Unit 2 is at 100% power
- * All control systems are in automatic
- * Pressurizer Spray is stuck open
- * NO operator action is taken

Which one of the following describes the effect of RCS pressure DECREASING to 2205 PSIA?

- A. Pressurizer "PZR CH 100 PRESS" alarm is annunciated.
- ✓B. Proportional heaters are fully energized.
- C. Proportional heaters are partially energized.
- D. All Backup heaters are energized.

107. PZR VAPOR SPACE ACCD 001/ 000008K11/ 3.2/XXX/ APPLIC/ NEW/ MOLLIER CH/ CRO-54-1/ 14.4/ T1G2/XXXX

Using the appropriate references and given the following:

- * Unit 2 is in Mode 4
- * RCS is at 500 PSIA and 250 °F
- * The acoustic monitor indicates Safety valve leakage
- * Quench tank temperature is rising and pressure is 15 PSIG

Determine the expected tailpipe temperature and fluid state for the plant conditions:

- A. ~ 250 °F as a saturated vapor.
- B. ~ 330 °F as a saturated vapor.
- C. ~ 250 °F as a superheated vapor.
- ✓D. ~330 °F as a superheated vapor.

108. PZR VAPOR SPACE ACCD 002/ 008A2AA225/ XXX/3.4*/ COMP-SRO/ NEW/ SD 64/ / / XXXX/T1G2

Given the following:

- * Unit 1 is at 100%
- * A major transient results in an increasing RCS pressure trend
- * The RO reports that Quench Tank parameters are increasing and acoustic monitors indicate a large leak rate into the quench tank
- * The Reactor automatically trips at 2400 PSIA RCS pressure
- * RCS pressure stops increasing and starts rapidly decreasing
- * The plant computer indications are:
 - T106 (Pwr Op Relief Valve Out) - 110° F
 - T107 (Pzr Relief Valve Temp Out) - 285° F
 - T108 (Pzr Relief Valve Temp Out) - 100° F

Which of the following describes the event?

- A. Single ejected CEA event.
- B. Uncomplicated Loss of Load event.
- C. Single failed open PORV event.
- ✓D. Single failed open RCS Safety Valve event

Correct answer is based on the design flow from a RCS Safety as described in EOP 5 basis (page 18) and SD 64. Distractors are in correct initiating events (Single CEA ejection and uncomplicated Loss of Load) or wrong valve flow rate response (PORV)

109. QUENCH TANK 001/ 000007K41/ 2.6/2.9/ MEMORY/ BANK/ FSAR 4/ CRO 5-2/ 16/ T2G3/T2G3

Which one of the following is the design basis for the Quench Tank volume?

- A. Continuous discharge of both PORVs with no operator action.
- ✓B. Continuous CEA withdrawal event from low power.
- C. Continuous RCS degassing using both Reactor Vent Valves.
- D. Continuous discharge from 1 Primary Safety Valve during loss of load event.

editorial changes to CRO-5-2-3-24 from LOIT bank.

110. RADIATION CONTROL 001/ 00000G232/ 2.5/XXX/ COMP/ NEW/ RP 1-100/ / / G23/XXX

You are directed by the CRS to monitor the Reactor Vessel level during RCS draining operations for mid-loop operation. During the rad con pre-brief, the contractor RST tells you that this is the first time he has worked at CCNPP and isn't sure how the RCS draining operation effects rad levels.

Which one of the following describes CCNPP management expectations with regards to 200% accountability?

- A. Since you are the Operations' representative, the RST is required only to monitor the dose rate in the area per the SWP.
- B. The RST should ensure at least two different methods (i.e., meters, alnor, epd, etc) are available to monitor the area dose rates.
- C. The RST should be provided continuous oversight by his supervisor as a second person to provide the required accountability.
- ✓D. You and the RST both understand what could change conditions and required actions under changed conditions.

Correct answer is based on RP 1-100 (page 63) requires both the Rad worker and the RST to understand what would change conditions and required actions.

111. RADIATION CONTROL 002/ 00000G234/ 2.5/3.1/ COMP/ 498 NRC/ RP 1-100/ GOT/ 22.0/ G23/G23

An operator is assigned a task to monitor a resin transfer line for blockage. The operator's current dose for the year is 850 mrem. The task is expected to result in a dose of 100 mrem.

Describe the procedure, if required, for extending the administrative dose limit:

- A. No administrative dose limit extension is needed.
- B. Dosimeter record review, Shift Manager and GS-NO approvals.
- ✓C. Dosimeter record review, GS-NO and GS-RS approvals.
- D. EPD functional review, RadCon S/S and Shift Manager approvals.

Correct answer is based on admin requirements for dose extensions, distractors are variations on positions or reviews not specified.

112. RADIATION CONTROL 003/ 00000G239/ 2.5/3.4/ COMP/ NEW/ OI 36/ / / G23/G23

Given the following:

- * Unit 2 is in Mode 5
- * PAL interlocks are defeated
- * Containment Equipment hatch is installed
- * Spent fuel moves are in progress in the SFP area

Which on the following describes the condition required to maintain operability of SFP ventilation?

- A. Line-up Containment Purge with Supply fan OFF and Exhaust Fan ON.
- B. Containment Equipment Hatch must be secured with all bolts.
- ✓C. Line-up Containment Purge with both the Supply and Exhaust fans ON.
- D. Containment Equipment Hatch must be secured with at least 4 bolts.

Correct answer is based on OI-36 General Precaution L (page 6). Distractors are wrong Containment Purge line-up for SFP ventilation system operability or TS doesn't apply (Equipment hatch)

113. RADIATION CONTROL 004/ 00000G232/ XXX/3.6/ APPLIC-SRO/ 498 NRC/ NO 1-200/ CRO 122-1/ 2.17.2/ XXXX/G23

Given the following:

- * Unit 1 is at 50% power
- * Maintenance is in progress on 11 Charging pump
- * alarm at 1C17 "RAD MON PANEL 1C22" annunciates
- * CRO reports that "UNIT 1 WP VENT" alarmed with 1-RI-5410 reading 1000 cpm
- * ABO reports that 11 Charging pump was inadvertently vented

As CRS, select the proper response to these conditions:

- A. Direct CRO to remove the monitor from service until completion of maintenance on 11 Charging pump.
- B. Declare 1-RI-5410 OOS due to alarm setpoint set too low, have CRO refer to Alarm Manual for compensatory actions.
- C. Direct CRO bypass 1-RI-5410 alarm for duration of maintenance on 11 Charging pump.
- ✓D. Direct CRO to monitor for trends on 1-RI-5410 and notify Rad Safety, ABO and Shift Manager of alarm condition.

Correct answer is based on actions in Alarm Manual, distractors are inappropriate actions for an unplanned RMS alarm. The "unplanned RMS alarm" condition is inferred.

author:REN Modified question by complete change of stem and distractors. This alarm condition is a SWP back out condition for the ALARA program.

114. RADIATION CONTROL 005/ 000000G236/ XXX/3.1/ APPLIC/ NEW/ OI-17B/ CRO 134-1/5.0/ XXXX/G23

Given the following:

- * An approved Waste Gas Release Permit has been issued
- * ABO is lining up to discharge 11 WGDT
- * CRO has completed a RMS operability check on 0-RI-2191 per OI-17B and notes that the applicable recorder is not functioning

Which one of the following is the appropriate action for the stated conditions?

- A. Stop the evolution and contact Instrument Maintenance for priority repair of the recorder prior to the release.
- B. Continue with evolution and notify Chemistry to determine alternate monitoring requirements per the ODCM.
- C. Stop the evolution and contact Chemistry to determine operability of the RMS per the ODCM.
- ✓D. Continue with the evolution since the recorder is not required by the ODCM for operability.

Correct answer is based the note in OI-17B which exempts the need for the trend recorder for a discharge per the ODCM. Distractors are permutations of actions that are inappropriate or not required per OI-17B.

115. RCP MALFUNCTION 001/000015K32/3.0/3.1/COMP/NEW/ALM 12ARCP/CRO-106-1/5.0/T1G1/T1G1

During the heat up of Unit 2 from Mode 5, when the Unit reaches NOT and NOP, the RO reports 22B RCP temperature trends have slowly increased during the heatup of the RCS, and are consistently running higher than the other RCPs.

Which one of the following is the correct action to respond to the 22B RCP temperature trend?

- A. Verify CC 3832 and 3833 open.
- B. Start a second CC pump.
- ✓C. Check CC flow to 22B RCP ~ 50 GPM higher than the other RCPs.
- D. Check RCP integral heat exchanger for leakage.

Correct answer is based on the design of 22B RCP CC supplying both the RCP and RCDT heat exchanger. Distractors are unrelated cause and effect for this unique design difference for 22B RCP which would effect all RCPs.

author:REN

116. RCS OVERCOOLING 001/0CEA11A12/3.2/3.4/MEMORY/498 MOD/EOP 0/SRO-201-0/1.0/T1G1/T1G1

What CRO action must be taken on Unit 2 in the "Ensure Turbine Trip" block step to prevent an overcooling of the RCS, per EOP-0? (The Turbine Speed was observed to be decreasing)

- A. Press "Close Valves" button on the turbine control panel.
- ✓B. Press "Reset" button on the MSR control panel.
- C. Observe that MSR source valves go shut.
- D. Shut both MSIVs.

Correct answer is based on Unit 2 specified actions for EOP 0, distractors are variations of Unit 1 features or unspecified Unit 2 features. modified stem (complete rewrite) and changed 1 distractor to "Shut both MSIVs"

117. REACTOR COOLANT 001/ 000002K519/ 2.6/2.9/ MEMORY/ BANK/ FSAR 4/ RO-301-16/ 4/ T2G2/T2G2

Which one of the following describes the effect of fast neutron irradiation of the reactor vessel?

- A. Brittle Fracture.
- B. Thermal gradients
- ✓C. Embrittlement.
- D. Pressurized thermal shock.

ro-301-16-04 from LOIT bank

118. REACTOR COOLANT PP 001/000003K113/2.5/XXX/MEMORY/498 NRC/ALM MAN/CRO 106-1/9.0/T2G1/XXXX

Which one of the following annunciator alarms also indicates the presence of an interlock which will prevent the start of 22A RCP?

- A. "OIL RESVR LEVEL LO"
- ✓B. "OIL LIFT PP PRESS LO"
- C. "CC TEMP HI"
- D. "RCP BLDOFF FLOW HI/LO"

Correct answer is based on Alarm Manual response and RCP design, distractors are variations of unrelated RCP alarms.

119. REACTOR COOLANT PP 002/ 000003K21/ 3.1/3.1/ COMP/ NEW/ 0I-1A/ / T2G1/T2G1

Given the following:

- * Unit 1 is in Mode 5, preparing for RCPs start
- * Unit 2 is in Mode 6
- * 12 13.8 KV Bus voltage is reading 14.8 KV
- * 22 13.8 KV Bus voltage is reading 15.2 KV

Which one of the following is the required action for the plant conditions?

- ✓A. Start Unit 1 RCPs on 12 13.8 KV Bus and verify bus voltage drops to 14.5 KV.
- B. Start Unit 1 RCPs on 22 13.8 KV Bus and shift RCP power to 12 13.8 KV bus when voltage increases to ≥ 15.2 KV.
- C. Verify 4 KV Bus voltages are less than 4100 volts and start Unit 1 RCPs on 12 13.8 KV Bus.
- D. Verify 4 KV Bus voltages are greater than 4100 volts and start Unit 1 RCPs on 22 13.8 KV Bus.

Coorect answer is based on precautions (K and O) in 0I-1A, distractors are permutations of incorrect application of the precautions.

120. REACTOR PROTECTION 001/000012K16/3.1*/XXX/COMP/NEW//CRO 102-2/6.4/T2G2/XXXX

Given the following:

- * Unit 2 is in Mode 1 and the Main Turbine has just been paralleled to the Grid
- * Alarm "LOSS OF LOAD CH TRIP BYPASS" is clear at 2C05
- * Condenser Vacuum is decreasing and the Main Turbine trips

Which one of the following describes the expected plant response?

- A. 4 limit switches on the MT Stop Valves generate a 2/4 trip signal to RPS resulting in a Loss of Load reactor trip.
- B. Master trip solenoids energize to generate a 2/4 trip signal to the RPS resulting in a Loss of Load reactor trip.
- ✓C. 4 Auto stop oil pressure switches actuate to generate a 2/4 trip signal to the RPS resulting in a Loss of load reactor trip.
- D. Master trip bus deenergizes to drop out 4 relays in the RPS trip logic resulting in a Loss of Load reactor trip.

Correct answer is based on westinghouse Auto Stop Oil system. Distractors are unit 1 General Electric features or unrelated circuits (Stop valve limit switches.) editorial changes to CRO-102-2-12 from LOIT bank

121. ROD POSITION INDIC 001/00014G2112/2.9/4/ APPLIC/NEW/TRM 15.1.4/// T2G2/T2G1

Using the provided reference and given the following:

- * Unit 1 is at 100% power
- * Regulating Group 5 CEAs are at 129 inches for testing
- * CEA 1 Pulse counting position indicator indicates 129 inches while CEAPDS indicates 124 inches

Which one of the following describes the actions (if any) that comply with the TRM requirements?

- A. TRM requirements are met, no actions are required.
- ✓B. Restore the CEAPDs indication within 6 hours.
- C. Borate power to <70% and withdraw CEA 1 to FULL OUT position within 6 hours.
- D. Borate power to <70% and withdraw Group 5 to FULL OUT position within 6 hours.

Correct answer is based on TRM contingency measure A.2.1 and A.2.2.1. Distractors are incorrect application of TRM A.1 or incorrect individual CEA movement.
provide copy of TRM 15.1.4

122. RX TRIP STABIL. 002/ OCEE02EK22/ 3.5/4/ MEMORY/ 498 NRC/ EOP-0/ SR0-201-0/ 10.0/ T1G2/T1G2

Given the following:

- * Unit 2 tripped from 100% power
- * EOP-0 "Post Trip Immediate actions" are being performed
- * The Main Turbine did not trip as expected

Which one of the following actions should be performed per EOP-0 to trip/stop the turbine?

- ✓A. Manually close both MSIVs.
- B. Manually stop EHC pumps.
- C. Manually Shut Turbine Throttle Valves using Test pushbuttons.
- D. Locally trip the Turbine from the front standard.

Correct answer is based on EOP 0 actions, distractors are unspecified actions which will result in turbine trip or equipment damage.

Changed 1 distractor per CE comments of 3/19/98. Changed Distractor from Exciter breaker to use of test pushbutton to close Throttle valves per CE comments 3/26/98.

123. SERVICE WATER 001/000076A12/2.6*XXX/COMP/NEW/AOP 7B///T2G3/XXXX

Given the following:

- * Unit 1 is at 100% power
- * 14 4KV bus trips on a ground fault
- * AOP 7I (Loss of 4KV,480 Volt or 208/120 Volt Instrument Bus Power) is implemented
- * 1Y10 is tied to 1Y09

Which one of the following describes the specific stabilizing action to be taken to prevent a possible reactor trip?

- A. Repower 14 4KV Bus by use of Alternate Feeder Breaker 152-1414.
- B. Shift 13 CC pump to 11B 480V Bus
- C. Repower 14 4KV Bus by use of 0C DG.
- ✓D. Shift 13 SW and 13 SRW pumps to 11 4KV Bus and restore 12 SW and 12 SRW Header flows

124. SFP COOLING 002/000033A11/2.7/3.3/MEMORY/498 NRC/FSAR-9.4/CRO-113-4/1.0/T2G2/T2G2

The most serious failure for the Spent Fuel Pool Cooling System is the loss of SFP Water. What feature of the system is designed to prevent this?

- A. Piping interconnection to either RWT.
- B. Piping interconnection from Safety Injection systems.
- C. Two channels of remote level indication with alarm function.
- ✓D. SFP pipe connections with siphon breakers, above the water level in SFP.

Correct answer is based on the FSAR description, distractors are design features that are not credited by FSAR loss of SFP water.

125. SG TUBE LEAK 001/000037K37/4.2/4.4/COMP/NEW/AOP 10///T1G2/T1G2

Chemistry reports that the calculated Steam Generator primary-to-secondary leak rate is 50 GPD. The CRS has the appropriate AOP implemented.

Which one of the following describes the actions that are expected?

- A. Secure SG Surface and Bottom Blowdown Valves.
- B. Place Aux Building Sump Pumps in STOP.
- C. Monitor SG level for an unexplained rapid increase.
- ✓D. Review AOP-2A, EOP-6, EOP-8 and OP-3 Appendix B (Rapid Power Reduction).

AOP 10 specifies in Attachment 1 to have operators review appropriate procedures. Distractors are actions for AOP 2A (stated condition does not meet entry conditions for AOP 2A) or wrong unit actions for AOP 10 (Unit 1 TB sump pumps).

126. SG TUBE RUPTURE 001/0000038A11/4.5/2.5/MEMORY/BANK/EOP 6/SRO-201-6/7/T1G2/T1G2

After isolating a S/G that has a ruptured tube, which one of the following is the preferred method for maintaining control of the level in the S/G?

- A. Steaming to the condenser.
- B. Blowdown to the condenser.
- ✓C. Backfill to the RCS.
- D. Blowdown to the MWS.

Basis: Ruptured S/G inventory control references: EOP-6 Rev. 2 Step KKA1:
02017A2.04KA2:

127. SMALL BREAK LOCA 001/000009K323/ 4.2/4.3/ MEMORY/ BANK-MOD/ EOP5 BASIS/ SR0-201-5/ 4/ T1G2/T1G2

In accordance with the basis document, which of the following is the reason for tripping 2 RCPs at 1725 psia and the last 2 RCPs when RCS temperature/pressure is less than minimum during a LOCA?

- A. Minimize pump cavitation and/or air binding which would result in pump/motor damage.
- ✓B. Minimize the loss of RCS inventory during a break at the bottom of the hot leg.
- C. Minimize the loss of RCS inventory during a break at the bottom of the cold leg.
- D. Minimize the heat input from the pumps thereby minimizing core damage.

Basis: RCP Trip CriteriaReferences: EOP-5 Rev. 3 Basis Document Step EKA1:
02005K1.13KA2:

128. STATION AIR 001/ 000079A41/ 2.7/2.7/ MEMORY/ BANK/ AOP 7D/ CRO 202-7D/ 1.1/ T2G2/T2G2

Unit 1 is at full power when a reduction occurs in the Instrument Air Header pressure. The CRO observes that IA header pressure has decreased to 85 PSIG and PA Header is at 85 PSIG also.

Which one of the following describes the expected automatic action that will occur at this pressure?

- A. PA-2061-CV, PA to IA Cross connect Valve OPENS.
- ✓B. PA-2059-CV , PA header Isolation Valve SHUTS.
- C. Standby Instrument Air Compressor STARTS.
- D. IA-2085-CV, Containmant IA Isolation Valve SHUTS.

AOP-7D-05 from LOIT bank

129. STATION BLACKOUT 001/000055A23/3.9/XXX/MEMORY/BANK/EOP 7/ SR0-201-7/9.0/T1G1/XXXX

EOP-7 (Station Blackout) occurred on U-1 and the crew restored power to 11 4KV Bus, from the 1A DG. The CRS directs you to restore power to MCC-104 from MCC-114.

This action will restore to which of the following equipment?

- A. All Pzr Backup Heater groups and allow all charging pumps to start.
- B. PORV Block Valves and RPS Channel A Instrumentation.
- ✓C. All CEA position indications and Main HPSI header MOVs.
- D. TBV control from 1C03 and Containment Cooling Supply/Return CVs to the RCPs.

Basis: Restore Reactor MCCs and Instrument Buses (MCC-104 to MCC-114)References: EOP-7 Rev. 4 Step R and AOP-7IKA1: ?KA2:

130. STATION BLACKOUT 002/000055A23/XXX/4.7/COMP-SRO/NEW/XXX/T1G1

Given the following:

- * Unit 1 trips due to a LOOP
- * 1A and 1B DGs fail to start
- * The appropriate optimum procedure is implemented
- * The CRO has completed actions to align the electrical system for power restoration
- * 1-CC-3832-CV (CC CNTMT SUPPLY) is shut

Which of the following is the reason for shutting 1-CC-3832-CV?

- A. Prevent DG overload when a Component Cooling pump is restarted.
- ✓B. Prevent thermal shock to RCP seals when power restored and CC pump(s) started.
- C. Maximize the heat removal capability of the CCHX for SDC entry conditions.
- D. Minimize the DG loading during a SBO.

131. STEAM GENERATOR 001/000035A31/4/3.9/COMP/NEW/SD 45/CRO 103-1/1.6/T2G2/T2G2

Given the following:

- * Unit 2 is a 100% power
- * All control systems in automatic
- * Reactor trips on MT EHC system failure

Which one of the following describes the expected plant response?

- ✓A. Post-trip DFWCS relay is energized, MFVs ramp shut over 20 seconds, BFVs open to 56%.
- B. DFWCS shifts to low power mode on RRS NI power input, BFVs open to 33%.
- C. Post-trip DFWCS relay is deenergized, MFVs ramp shut over 30 seconds, BFVs open to 65%.
- D. DFWCS shifts to low power mode after 20 seconds by relays from MT trip circuit, BFVs open to 65%.

Correct answer is based on SD and L/P description. Distractors are wrong initiating devices (Low power mode. MT trip relays) and BFV setpoints (65%)

132. STM DUMP/ TBV CONT 001/ 000041K15/ 3.5/3.6/ COMP/ NEW// CRO 58-1/ 3.0/ T2G3/T2G3

Given the following:

- * Unit 1 Reactor is manually tripped from 100% power
- * 11 RCS hot leg loop RTD to RRS fails high to 615°F
- * No operator action is taken

Which one of the following describes the initial response of the ADVs and TBVs and final plant conditions?

- ✓A. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the TBVs will SHUT and ADVs control RCS at a lower temperature band around 505 °F .
- B. The failed input to RRS is deleted by the Tave calculator, ADV and TBV operation is unchanged (including Quick Open) with RCS temperature control by the ADVs at the expected post trip band of ~532 °F .
- C. The failed input to the RRS inhibits the Quick Open features of the ADVs and TBVs resulting in both a lift of MSSVs and ADVs and TBVs staying open longer with the RCS temperature control by the ADVs at a lower temperature band ~ 505 °F .
- D. ADVs and TBVs both OPEN due to Quick Open signal for a longer period of time, then the ADVs will SHUT and TBVs control RCS at a lower temperature band around 505 °F .

Correct answer is based on the Simulator response and that the failed Th would result in a higher than actual calculated Tave. distractors are incorrect responses (failed input is compensated for by the Tave calculator, Quick Open feature is inhibited) of components to the event.

based on CRO -58-1-16 from LOIT bank, which was missing power criteria and answer based on the response of the first 30 seconds from the trip condition

133. STM LINE RUPTURE 002/000040A22/ 3.4/XXX/ APPLIC/ 498 NRC/ EOP 4/ SRO-201-8/ 3.1/ T1G1/XXXX

Given the following:

- * Unit 2 tripped, EOP-0 completed and EOP-4 is diagnosed and implemented
- * "CNTMT RAD LVL HI" at 2C10 is received and verified as valid by the CRO

What procedural actions are required?

- A. Parallel implementation of EOP-5 concurrent with EOP-4.
- ✓B. Implementation of EOP-8 due to EOP-4 Cont Env SFSC not met.
- C. Implementation of EOP-8 due to EOP-4 Rad levels SFSC not met.
- D. Parallel implementation of AOP-6A (Abnormal Reactor Coolant Chemistry/Activity) concurrent with EOP-4.

Correct answer is based on the specific parameter (rad alarm) contained in the containment environment safety function status check. Distractors are various combinations of parallel actions that are not appropriate or wrong SFSC referenced.
author:REN

134. STM LINE RUPTURE 003/CE/E05EK33/XXX/4.0/COMP/NEW/EOP 4///XXXX/T1G1

Given the following:

- * Unit 2 steam line rupture event is in progress
- * EOP 4 has been implemented and STEP G has identified 21 SG as the affected SG
- * The CRO reports that the TBO states that 21 ADV Hand valves are frozen in POSITION 1

Which one of the following actions is required to complete the affected step?

- A. Direct the CRO to place the ADV controller at 2C03 in MANUAL with 0% output.
- ✓B. Direct the CRO to have the ABO SHUT 2-MS-101, 21 ADV Isolation.
- C. Direct the CRO to place the 21 ADV Controller 2-HC-4056A to 0% output.
- D. Direct the CRO complete the rest of STEP G and write an IR on the hand valves.

Correct answer is based on EOP4 Step G.2. (1).1 alternate actions. Distractors are permutations of inappropriate actions.

135. WASTE GAS DISPOSAL 001/000071A429/3.0/3.6*/APPLIC/498 MOD/TRM15.11.1/CRO-134-1/6.0/T2G1/T2G1

The Chemistry Tech has reported to the CRS that the weekly sample of the onservice WGDT has been completed. The analysis results are 4 curies of noble gas and 4.5% O₂ by volume.

What are the required actions for the sample results per TRM?

- A. Isolate the on-service WGDT and prepare a permit for a discharge.
- B. Maintain the on-service WGDT in service, have RCS sampled for activity.
- ✓C. Isolate the on-service WGDT, reduce O₂ concentration in WG system immediately.
- D. Maintain the on-service WGDT in service, monitor letdown process rad monitor.

TRM requires action for O² reduction only, distractors have action for activity results (none required by TRM) or subsequent identification of O² source.

author:REN modified stem to change the curies from 9 to 4 curies and O₂ from 55 to 4.5% , changed answer and 1 distractor (prepare a discharge permit)

136. WASTE GAS DISPOSAL 002/ 000071K14/ 2.7/XXX/ MEMORY/ BANK/ SD 69/ CRO219-1/ 8.1/ T2G1/XXXX

Which one of the following conditions would cause an uncontrolled release to the environment that would not pass through any filters contained in the plant ventilation systems?

- A. Resin transfer operation.
- B. Charging pump packing leak.
- C. Waste Gas Surge Tank relief valve open.
- D. Both RC waste degasifiers operating simultaneously.

CRO-219-1-0-40 from LOIT baNK