2005 LOIT Reactor Operator NRC Exam

1

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	41007EK301	
Importance Rating:	4.00	4.60

Given the following plant conditions:

- Unit 1 has tripped.
- The following annunciators are in alarm:
  - "CNDS SYS TRBL" alarm (5B14A)
  - "SBCS COND INTLK" alarm (6A16B)
  - "COND VAC LO" alarm (6A16D)
- The CRS has completed the SPTAs and entered the Reactor Trip Optimal Recovery Procedure.
- As the Secondary Operator the CRS informs you to "Check that SBCS is maintaining Tcold 560 - 570°F".

Which ONE of the following describes the action the Secondary Operator should take and the reason?

A. ONLY the ADVs may be used to control steam generator pressure. This action is performed to allow a controlled RCS heat removal process using the steam generators.

B. ALL of the ADVs or SBCS Valves 7 & 8 may be used to control steam generator pressure. This action is performed to allow a controlled RCS heat removal process using the steam generators.

C. ONLY the SBCS Valves may be used to control steam generator pressure. This action is performed to maintain steam generator pressure below the secondary safety setpoints, preventing them from opening.

D. ALL of the ADVs or SBCS Valves may be used to control steam generator pressure. This action is performed to maintain steam generator pressure to prevent the RCS from overheating and lifting the primary safeties.

Answer: B

Learning Objective:
0356 Analyze the MVA to determine is the SFSC acceptance criteria is satisfied.

Reference Id:	Q10264	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP07, pg 12 of 22	

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Knowledge of the reasons for the following as they apply to a reactor trip:
Actions contained in EOP for reactor trip

The SFSC for Reactor trip requires both 125 Vdc class buses for the same train as the PB bus.

Reactor Trip Technical Guideline Page 12 of 22
40DP-9AP07

Instruction Step: 7 Maintain Tc

This step ensures that the RCS heat removal safety function is being satisfied. Following an uncomplicated Reactor Trip RCS Tc should be controlled by the SBCS. The goal is to stabilize RCS Tc and remove decay heat.

Contingency Actions

7.1 If condenser vacuum is lost or if the MSIVs are closed the SBCS valves to the condenser are unavailable. For this case the ADVs or atmospheric SBCS Valves must be used to control steam generator pressure. This action is performed to maintain steam generator pressure below the secondary safety setpoints, preventing them from opening, and to allow a controlled RCS heat removal process using the steam generators.

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2

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42008AK201	
Importance Rating:	2.70	2.70

Given the following plant conditions:

- PZR pressure is 1900 psig and slowly DECREASING
- PZR level is 60% and slowly INCREASING
- RCS subcooling is 23°F and DECREASING
- A SIAS/CIAS/MSIS have been manually actuated on trend
- SG #1 and SG #2 Narrow Range levels are 5% and increasing on both Steam Generators
- SG #1 and SG #2 pressures are 1150 and STABLE
- Containment pressure is 2.8 psig and slowly INCREASING
- Containment temperature is 140°F and slowly INCREASING
- Containment humidity is INCREASING
- RDT pressure is 1.5 psig and STABLE

Which ONE of the following could be the cause of the above conditions?

A. RCS leak from a cold leg

B. S/G Safety Valve failed open

C. RCS Safety Valve failed open

D. Pressurizer steam space leak

Answer: D

Learning Objective: L10452	Given PZR Safety Valve tailpipe temperatures and the steam tables analyze the data to determine the status of the PZR safety valve	
6193004G11	Determine the exit conditions of a fluid for a throttling process.	
6193004K115	K1.15	Determine the exit conditions for a throttling process based on the use of steam and/or water

Reference Id:	Q10268
Difficulty:	3.00
Time to complete:	4
10CFR Category:	CFR 55.41 (14) Principles of heat transfer thermodynamics and fluid mechanics.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified 2003 RO Exam Q#2 (Q61761)
Comment:	Proposed Reference to be provided to applicant during examination: Steam Tables Technical Reference: Steam Tables Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Valves Answer D is correct for the plant conditions given. RDT stable eliminates answers C. SG parameters eliminate answer B. Pressurizer level increase eliminates answer A.

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3

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	41009EA110	
Importance Rating:	3.80	3.90

Given the following plant conditions:

- A LOCA is in progress and the Reactor is tripped.
- SPTAs are complete. The CRS is implementing the LOCA ORP.
- RVLMS indicates 67% in the upper head and has been constant for the past 10 minutes.

THEN:

- The QSPDS B04 indicator for reactor vessel level instantaneously drops to 41% in the upper head and stabilizes for another 10 minutes.

The crew should relate this change in indication with the…

A. sudden increase of the RCS leak rate.

B. RVUH void size has decreased from 67% to 41%.

C. drop in level in the vessel head to less than 67%.

D. drop in level in the vessel head to less than 41%.

Answer: C

Learning Objective:

L10460	Given conditions of LOCA discuss the bases of the superheat value given in the Core Heat Removal SFSC
L61243	Discuss the bases of the superheat value limit provided in the LOCA EOP.

Reference Id:	Q10261	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP08, LOCA Tech Guide Ability to operate and monitor the following as they apply to a small break LOCA: Safety parameter display system C is correct, indicated level is based on heated junction thermocouple uncovery. Indicated level reading drops down to the next thermocouple once it is uncovered. A, C, & D could be interpreted as correct if a linear relationship increased or if the level system was based on comparing pressure signals.	

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4

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	41011EK101	
Importance Rating:	4.10	4.40

Given the following plant conditions:

- A Loss of Offsite power has occurred.
- All actions in the SPTAs have been completed.
- The CRS has entered the LOCA procedure.
- Loop ΔT is 70 °F and STABLE.
- Th and Tc are INCREASING.
- The ΔT between Th RTDs and the maximum quadrant CETs is 40 °F.

Based on these indications, the operator should perform which ONE of the following per the LOOP/LOFC EOP?

A. Depressurize the RCS.

B. Establish hot leg injection.

C. Perform void elimination by venting the Rx head to containment.

D. Ensure SG levels are 45-60% NR with proper SG feeding and steaming.

Answer: D

Learning Objective:	
L10471	Given conditions of a LOCA discuss the reactivity effects of a controlled cooldown to SDC conditions
L96640	Implement the LOCA EOP
L61256	Discuss the reactivity effects of a controlled cooldown to SDC conditions.
L62490	Given a LOCA Event, Tailboard the guidance included in the LOCA Emergency Procedure Technical Guideline.

Reference Id:	Q10269	
Difficulty:	3	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40DP-9AP08, LOCA Tech Guide

Knowledge of the operational implications of the following concepts as they apply to the Large Break LOCA:
Natural circulation and cooling, including reflux boiling

D Correct, increasing SG level improves NC driving force.
A & B do not improve NC.
C would improve NC but the given indications do not support a void in the head.

5 ***This question deleted from the final examination***

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42022AK103	
Importance Rating:	3.00	3.40

Given the following plant conditions:

- Unit 1 at 100 % power
- Pressurizer level setpoint is 53%
- Charging Pump selector switch is in the "1-2-3" position
- 'B' Charging Pump is not currently running
- Pressurizer level is now lowering

At which ONE of the following Pressurizer levels would you FIRST expect the 'B' Charging pump to be operating due to an auto start?

A. 19%

B. 29%

C. 38%

D. 43%

Answer: C

Learning Objective:

L75112	Describe the automatic features associated with the Pressurizer Level Control System operation of the Charging pumps.

Reference Id:	Q61101	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (5)	Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Simplified Control System Drawing, PZR Level Control System Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Pump Makeup: Relationship between charging flow and PZR level At -15% from setpoint (53%) decreasing, the Normally Running Charging Pump will auto start (53 – 15 = <38%). Must know from switch position the order of operation of the 'B' charging pump as the normally running pump.	

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Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42025AK203	
Importance Rating:	2.70	2.70

Given the following plant conditions:

- Unit 2 is shutdown with train "A" LPSI aligned for Shutdown Cooling.
- RCS Pressure is 350 psig.
- RCS Tave is stable at 330°F.

Which of the following would cause the RCS to heatup?

A. Throttling open on EWA-HCV-135, EWA-P01 discharge valve.

B. Throttling closed on EWA-HCV-53, SDCHX 'A' outlet isolation valve.

C. Throttling open on SIA-HV-685, the SDCHX inlet valve.

D. Throttling closed on SIA-HV-306, the SDCHX bypass valve.

Answer: B

Learning Objective:
56506 Given the LMFRP is being performed and HR is in progress outline the major steps used to control Core and RCS heat removal in HR (LMFRP)

Reference Id:	Q10191	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE	

Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: Service water or closed cooling water pumps

Due to throttling down the EW flow the RCS will heatup. All the other distracters will cause a RCS cooldown.

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Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42026AA103	
Importance Rating:	3.60	3.60

Given the following plant conditions:

- Nuclear cooling water is experiencing an as yet unexplained low discharge pressure.
- Essential Cooling Water Train "B" has been cross-connected to supply priority loads.
- No other equipment is out of service or in an abnormal lineup.

Which ONE of the following identifies the plant conditions that will isolate essential cooling water to the reactor coolant pumps?

A. Containment pressure 9.0 psig.

B. Pressurizer pressure 1800 psia.

C. Instrument air header pressure 60 psig.

D. Both Steam Generator pressures at 850 psig.

Answer: A

Learning Objective:	
L56846	Describe the automatic features associated with the NC Containment Isolation Valves.
N76950	Describe the normal operation of the Essential Cooling Water system.
L65501	Describe the automatic functions associated with the Essential Cooling Water Cross-tie to Nuclear Cooling Water Valves EWA-UV-145 and EWA-UV-65.
L56837	From memory describe the interlocks associated with the Train 'A' EW to NC cross tie valves (EWA-UV-145 and EWA-UV-65)

Reference Id:	Q5108	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ17, Inadvertent ESFAS Actuation, Att. C-13 SIAS Train A Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: SWS as a backup to the CCWS Question requires knowledge of the fact that the Train 'B' crosstie valve is manual, and therefore has NO automatic isolations. However, the NC isolation valves are still active when crosstied to either train of EW, and will isolate the system in response to a CSAS on Containment pressure.	

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Appears on:	RO EXAM	SRO EXAM
	Tier 1 Group 1	
K/A #	42027G2417	
Importance Rating:	3.10	3.80

An event is in progress where RCS pressure drops to the SIAS setpoint. 40EP-9EO01, Standard Post Trip Actions, contingency action 5.2 for success path RC Pressure Control states, "**IF** Pressurizer Press drops to the SIAS setpoint, **THEN** ensure that SIAS is actuated."

When used in this situation, which ONE of the following describes what the term 'ensure' means?

A. To evaluate conditions, inform the CRS and with his approval, take the necessary steps to establish the condition.

B. To evaluate conditions and, if the condition does not exist, manually take the necessary steps to establish the condition.

C. If the condition does not exist, identify the cause of the problem and wait for entry into the appropriate EOP to take action.

D. Identify the cause of the condition and inform the CRS of the condition when asked to report the status of the RC Pressure Control Safety Function.

Answer: B

Learning Objective:
L10422 Given a reactor trip describe the bases for the PZR pressure band (1837 to 2285 psia)

Reference Id:	Q10192	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP15, EOP Writer's Guide Knowledge of EOP terms and definitions Answer B is correct because an evaluation of conditions is required before action is taken. Permission is NOT required if the setpoint is reached or exceeded.	

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9

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	41029EK206	
Importance Rating:	2.90	3.10

Given the following plant conditions:

- Unit 1 reactor operating at 101% full power.
- Pressurizer pressure 2430 psia and rising.
- Manual trip buttons on control board B05 have been depressed and did not trip the Reactor.
- All actions inside the Control Room taken at Board 1 to de-energize CEDMCS have been unsuccessful.

Which ONE of the following identifies the **next required action** for reactivity control? Dispatch an area operator to:

A. Locally open NAN-S01F.

B. Locally de-energize PNA-D25 and PNB-D26.

C. The CEDMCS panels to open individual CEA breakers.

D. Locally open reactor trip switchgear breakers.

Answer: D

Learning Objective:	
L10403	Given plant conditions following a reactor trip analyze whether the Reactivity Control Safety Function is met and what contingency actions are required if it is not
L91171	Address Reactivity Control Safety Function with two Stuck CEA's
105794	As an operating crew respond to inadvertent MSIV/MSIVs closure
L55896	GENERIC EOP KNOWLEDGE

Reference Id:	Q6847
Difficulty:	2.00
Time to complete:	5
10CFR Category:	CFR 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory
Question Source:	PV Bank Not Modified 2003 SRO Q#4 (Q61862)
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP06, SPTA Tech Guide Knowledge of the interrelations between the and the following an ATWS: Breakers, relays, and disconnects Answer D is procedurally directed; the action results in a Rx Trip and does not result in loss of power to other equipment. Distracter B could be interpreted as a course of action to try to minimize the reactivity excursion. This path is not procedurally directed.

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10

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	2130	
Importance Rating:	3.90	3.40

Given the following plant conditions:

- A SGTR has occurred on S/G #1.
- A SIAS has initiated.
- The CRS has requested that the charging pump suction be realigned.
- You have been directed to perform Appendix 10 of the Standard Appendices and align the charging pumps suction to the RWT (Refueling Water Tank).
- CHB-HV-530 (RWT outlet to B Train Safety Injection) is open
- The 'A' Charging pump is in Pull to Lock.
- The Auxiliary operator's actions require local operation of the following valves:
  - CHB-V327 (RWT to Charging Pump Suction)
  - CHA-V316 (A – Charging Pump CHA-P01 suction isol valve)
  - CHA-V755 (A – Charging Pump CHA-P01 alternate suction isol valve)

Which of the following is correct concerning the Area Operator's expected local operation?

A. All valves require manual operation and are all located in the Charging Pump 'A' valve gallery.

B. All valves require manual operation and are located in the 70 ft. Mechanical Piping Penetration Room.

C. CHB-V327 requires local operation at the associated motor control center (MCC) breaker while CHA-V316 and CHA-V755 require manual operation in the Charging Pump 'A' valve gallery.

D. CHB-V327 requires manual operation in the 70 ft. Mechanical Piping Penetration Room and CHA-V316 and CHA-V755 require manual operation in the Charging Pump 'A' valve gallery.

Answer: D

Learning Objective:	
EGEP013	Given a transient that results in RWT level dropping below 73%, align Charging Pump alternate suctions
N64159	Discuss the purpose and strategies of the "Reactivity Control" Safety Function.
N62461	Given the appropriate references discuss and explain the Auxiliary Operator actions for Standard Appendix 11
L89992	As an operating crew Mitigate a SGTR in natural circulation

Reference Id:	Q2119		
Difficulty:	3.00		
Time to complete:	3		
10CFR Category:		CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:		Comprehension / Anal	
Question Source:		New	

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Comment:

Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40EP-9EO10, Standard Appendices, Appendix 11

Ability to locate and operate components, including local controls

Only D is correct due to location and types of valves. CHB-327 is a manual valve. Not all valves are located in the piping penetration area, neither the charging pump valve gallery.

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11

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42040AK103	
Importance Rating:	3.80	4.20

Given the following plant conditions:

- Unit 1 tripped from 100% full power.
- SPTA's in progress
- SIAS, CIAS, MSIS, and AFAS-1 have initiated.
- The RCS is in forced circulation.
- Steam Generator #1 pressure is 750 psia and dropping rapidly.
- Steam Generator #1 level is 8% WR and dropping rapidly
- Steam Generator #2 pressure is 940 psia and slowly lowering.
- Steam Generator #2 level is 37% WR and slowly lowering.
- Auxiliary feedwater flow is > 2000 gpm to steam generator #1.
- Auxiliary feedwater flow is 0 gpm to steam generator #2.
- RCS Loop 1 Tc is 515 °F and dropping rapidly.
- RCS Loop 2 Tc is 538 °F and dropping slowly.
- RCS pressure is 1800 and stable.

Which ONE of the following actions correctly addresses the existing symptoms?

A. Stop all RCPs.

B. Maximize SI flow to the RCS.

C. Throttle and balance flow to each steam generator.

D. Stop feeding SG #1 and ensure feedwater flow is restoring level in SG #2.

Answer: D

Learning Objective:

L11202	Given conditions of an ESD describe the mitigating strategy outlined in the ESD EOP
L61351	Describe the mitigating strategy for an ESD.
L11202	Given conditions of an ESD describe the mitigating strategy outlined in the ESD EOP
L62494	Given a ESD Event, Tailboard the guidance included in the ESD ORP.

Reference Id:	Q8575	
Difficulty:	3.00	
Time to complete:	4	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP10, ESD Tech Guide, Step 11 & 20 Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: RCS shrink and consequent depressurization	

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The mitigating strategy is to stop feeding the faulted SG and feed over steam on the non-faulted SG.
Distracters A, B, & C could lead to an uncontrolled cooldown.

12

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42054AA102	
Importance Rating:	4.40	4.40

Given the following plant conditions:

- The CRS has diagnosed a LOAF (Loss of all Feed) with an inadvertent SIAS.
- The CRS directs you to start AFN-P01.
- The SIAS load shed panels have been re-energized, valve line-ups are complete, and you have indicating lights for AFN-P01.
- You have gone to "START" one time using its handswitch (AFN-HS-1).

Which ONE of the following is correct regarding AFN-P01:

A. running and feeding both Steam Generators.

B. running but not feeding either Steam Generator.

C. not running; AFN-P01 will start by going to "START" one more time.

D. not running; AFN-P01 can be started by going to "STOP" then "START".

Answer: D

Learning Objective:	
L10502	Given conditions of a LOAF and the status of plant equipment determine from where feed can be established
L82097	Given conditions of a LOAF, Restore feedwater by Local Operation of AFN-P01
L6138	Analyze plant conditions to determine if feed can be established using AFN-P01 during a LOAF.

Reference Id:	Q21227	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: P&ID 01-E-AFB-002 Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): Manual startup of electric and steam-driven AFW pumps AFN-P01 can NOT be started after a SIAS occurs unless taken to override by going to STOP then to START.	

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13

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	41055EA202	
Importance Rating:	4.40	4.60

Given the following plant conditions:

- Unit 1 has been in a blackout condition for 5 hours.
- QSPDS indicates 32 degrees superheat and has been stable for the last 15 minutes.
- CET temperatures and RCS pressure have also been stable for the last 15 minutes.
- Pressurizer pressure is slowly lowering.
- Both Steam Generators are being fed and steamed.

Which ONE of the following describes the condition of RCS and core heat removal?

A. All natural circulation has been lost. Core uncovery has occurred.

B. Single phase natural circulation is maintaining heat removal. The Core remains covered.

C. Two phase natural circulation (no reflux boiling) is maintaining heat removal. The Core remains covered.

D. Two phase natural circulation (including reflux boiling) is maintaining heat removal. Core uncovery has occurred.

Answer: D

Learning Objective:	
L56411	Given conditions of a Blackout state the action necessary to maintain subcooling margin
L75186	Maintain RCS temp
L61432	State the action necessary to maintain subcooling margin during a blackout.

Reference Id:	Q8927	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: None Ability to determine or interpret the following as they apply to a Station Blackout: RCS core cooling through natural circulation cooling to S/G cooling Adequate core cooling can be maintained after subcooling is lost via two-phase natural circulation (Including reflux). The plant will be cooled down, in this case, to ensure superheat, per REP CET, is constant or lowering and less than 50°F superheat. Although the core must be uncovered to acquire superheat, natural circulation is not lost.	

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14

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42056G2125	
Importance Rating:	2.80	3.10

Unit 2 is in refueling outage. The CRS directs you to determine how much water will be drained from the RCS when lowering level from 10% in the Pressurizer to the 111' WR on RWLIS.

A. 7,400 gallons

B. 11,300 gallons

C. 14,700 gallons

D. 19,400 gallons

Answer: C

Learning Objective:
L10349 Given Appendix 4, Condensate vs. Time Remaining in Hot Standby and appropriate parameter values Identify the maximum time we can remain in hot standby

Reference Id:	Q10197	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: 40EP-9ZZ16, Appendix E, pages 1 - 8 (i.e. All 3 units) Technical Reference: 40EP-9ZZ16, GOP, RCS Drain Operations Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data The distractors were arrived at by using the U1 and U3 tables.	

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15

Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42058AK301	
Importance Rating:	3.40	3.70

Given the following plant conditions:

- Unit 2 is operating at rated power.
- The 'A' D/G (Diesel Generator) output breaker is closed with the D/G carrying 5000 KW of load paralleled to offsite power.
- A loss of PKA-M41 occurs due to a bus fault.

Which ONE of the following describes the impact (if any) this has on the D/G?

A. The D/G continues to run but its output breaker opens.

B. The D/G trips, its output breaker opens and PBA-S03 de-energizes.

C. The D/G continues to run at 5000 KW; however, output breaker control has been lost.

D. The D/G trips but its output breaker remains closed, causing the diesel to motorize.

Answer: D

Learning Objective:	
L11081	Given a loss of PKA or PKB with a DG that is connected to off-site power describe how a loss of its associated 125 Vdc control power impacts the DG operation, including operator action required to mitigate this impact
L75077	Describe the effect of the following on the Diesel Generator: • Control Power Loss • Control Air Loss
L58359	Given a loss of power in the simulator diagnose the class instrument power loss and review the mitigation steps in the procedure

Reference Id:	Q13050	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ13, Appendix A Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Use of dc control power by D/Gs If running when a loss of DC occurs, the DG trips but the breaker can not open. This results in motoring the D/G.	

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Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42062AA206	
Importance Rating:	2.80	3.10

Given the following plant conditions:

- The plant is operating at 100% power.
- Nuclear cooling water has been lost.
- RCPs (Reactor Coolant Pumps) still have seal injection.

To prevent seal damage, which ONE of the following states how long you have by procedure to restore cooling flow to the reactor coolant pump?

A. 3 minutes

B. 5 minutes

C. 10 minutes

D. 15 minutes

Answer: C

Learning Objective:
L10103 Given the status of NC and RCP seal injection describe the limitations on RCP operation without NC

Reference Id:	Q9938	
Difficulty:	3.00	
Time to complete:	5	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ03, Loss of Component Cooling Water, Sect. 4.0 Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The length of time after the loss of CCW flow to a component before that component may be damaged Answer C is correct based on Abnormal Operating Procedure guidance for the conditions given.	

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Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42065AK308	
Importance Rating:	3.70	3.90

Given the following plant conditions:

- Instrument air pressure is 78 psig and stable.
- All three air compressors have tripped.

Why are the operators directed to start a Fuel Building Essential AFU and align it to the Auxiliary Building?

A. Performing this action will restore operability of the PREACS system, LCO 3.7.13.

B. Performing this action will assist in reducing the nitrogen buildup in the lower levels of this building.

C. Performing the action will eliminate the requirement of monitoring the lower levels of the Auxiliary Building for nitrogen.

D. Performing this action is taken to ensure that at least one AFU has been aligned before there is not sufficient air pressure to reposition the required valves.

Answer: B

Learning Objective:	
100866	Active Question Bank 2004
L56779	Determine what actions will be taken if IAA-UV-2, Outside Containment Isolation Valve has failed closed.
L95425	As an operating crew mitigate a loss of Instrument Air to containment
L58193	Determine what actions will be taken if IAA-UV-2, Outside Containment Isolation Valve has failed closed.

Reference Id:	Q9836
Difficulty:	2.00
Time to complete:	3
10CFR Category:	CFR 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified 2001 RO Exam Q#36 (Q38055)
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ06, Loss of Instrument Air Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Actions contained in EOP for loss of instrument air Correct answer is B based on procedure 40AO-9ZZ06, Loss of Instrument Air.

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Appears on:	RO EXAM Tier 1 Group 1	SRO EXAM
K/A #	42057AA212	
Importance Rating:	3.50	3.70

How will a loss of PNA-D25 affect the Pressurizer level control system?

A. The level setpoint will fail low causing all charging pumps to stop.

B. The PLCS Master Controller will lose power and letdown will isolate.

C. The bistables for controlling charging pumps will lose power and all charging pumps will stop.

D. One of the Pressurizer level instruments will fail low and if selected to that instrument the STBY charging pump will start.

Answer: D

Learning Objective:	
100866	Active Question Bank 2004
L76768	Given a loss of all feedwater event perform required actions
L90312	As an operating crew mitigate a loss of all feedwater using the condensate pumps
L61371	Describe the major mitigating strategies used during a LOAF.
L61386	Describe how the RCPs are operated (including the bases for this action) during a LOAF.
L10494	Given a Loss of all Feed determine the major mitigating strategies contained in 40EP-9EO06

Reference Id:	Q0878
Difficulty:	3.00
Time to complete:	2
10CFR Category:	CFR 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ13, Loss of Class Instrument Power, App A Ability to determine and interpret the following as they apply to Loss of Vital AC Instrument Bus: PZR level controller, instrumentation, and heater indications. Answer D is correct. A is incorrect; the level setpoint is from RRS, which is non-class D.C. B is incorret; PLCS is powered from non-class AC inverter (Loss of this would cause a loss of letdown. C is incorrect; CCP control ckt is powered from non-class 125 vdc. Loss of this causes all CCPs to stop.

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	42036AK201	
Importance Rating:	2.90	3.50

Given the following plant conditions:

- Unit 1 is in Mode 6, core offload operations are in progress.
- The Spent Fuel handling machine operator has grappled a fuel bundle from the upender and lifted it approximately 2 ft.
- The operator inadvertently bumps the controller to move the SFHM North (forward) from the upender.

The Spent Fuel Handling Machine will...

A. bridge in fast or slow speed.

B. be limited to bridge in slow speed.

C. be locked out by a "Hoist Motion" interlock.

D. be locked out by a "Bridge/Trolley" interlock.

Answer: D

Learning Objective:
L97815 Identify the protective interlocks associated with the Spent Fuel Handling Machine

Reference Id: Q10267
Difficulty: 3.00
Time to complete: 3
10CFR Category: CFR 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level: Comprehension / Anal
Question Source: New
Comment: Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 78OP-9FX03, SFHM Appendix D

Knowledge of the interrelations between the Fuel Handling Incidents and the following: Fuel handling equipment

D is correct. It is an interlock added because of a similar event at Palo Verde. The Bridge/Trolley interlock prevents the Bridge from moving. It was added to the up limit light circuit.

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SPENT FUEL HANDLING MACHINE 78OP-9FX03

Appendix D - Spent Fuel Handling Machine Interlocks

INTERLOCK	FUNCTION	REMARKS

Hoist Overload/Underload Stop hoisting on overload/underload Cleared by lowering or raising the hoist.

Cable Slack Stop hoisting to prevent damage due to winch drum over rotation. Also allows grappling or ungrappling operations. Cleared by raising the hoist.

Travel Limits Reduces chance of fuel assembly being driven into pool walls.
Cleared by reversing travel of bridge or trolley.

Upender Vertical Prevent SFHM from entering the transfer canal unless the upender is vertical. (This interlock can be bypassed by turning the “Upender Vertical Bypass Switch” to the “ON” position.) With the transfer tube closed, this interlock must be bypassed to allow the SFHM to enter the transfer canal.

Hoist Up/Down Limit Advise that maximum/minimum hoist travel limits have been reached.
Cleared by reversing hoist travel direction.

Hoist Bypass Advise that the interlock has been circumvented.
Cleared by reversing hoist travel direction.

New Fuel Elevator Prevents SFHM trolley from entering TRANSFER CANAL unless ELEVATOR is at the down limit. SFHM must be out of BEZ to lower elevator. Then elevator must be at down limit to allow TROLLEY entry into the Transfer Canal through gate.

BRIDGE/TROLLEY Control Bridge and trolley lockout if UP LIMIT not received and an assembly is on the handling tool.

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	42060AK101	
Importance Rating:	2.60	3.10

Given the following plant conditions:

- Unit 1 is at 100% power.
- Due to a mispositioning of valves an accidental release of the Waste Gas Decay Tank System is in progress.

Which ONE of the following will cause an automatic isolation of the WGDT discharge?

A. Low flow rate in the discharge header.

B. High Oxygen concentration in the WGDT.

C. High humidity alarm in the WGDT discharge.

D. Gross Beta radiation levels at sufficient level to cause a “HIGH” alarm.

Answer: D

Learning Objective:
L78946 Describe the automatic functions / interlocks associated with the following:
Gaseous Discharge Isolation Valves
Gas Compressors (GRN-C01A, C01B)
Gaseous Discharge Header Isolation Valves (HS-34A and 34B)
Radiation Monitor (RU-12)

66731 Describe the interlocks associated with the Radiation Monitors at PVNGS

Reference Id:	Q10194	
Difficulty:	3.00	
Time to complete:	5	
10CFR Category:	CFR 55.41 (13)	Procedures and equipment available for handling and disposal of radioactive materials and effluents.
Cognitive Level:	Memory	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Knowledge of the operational implications of the following concepts as they apply to Accidental Gaseous Radwaste Release: Types of radiation, their units of intensity and the location of sources of radiation in a nuclear reactor power plant Answer D is correct because the High alarm causes automatic isolation and the process detector is beta sensitive.	

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	42061AA205	
Importance Rating:	3.50	4.20

Based on the following plant conditions:

- Unit 3 is in Mode 6
- The core is being offloaded.
- Irradiated fuel movement is in progress in the Fuel Building.
- Fuel Building Essential Ventilation has automatically started
- Fuel Building Area Rad Monitor, J-SQA-RU-31 is reading 30 mR/hr
- Fuel Building Ventilation Monitor, J-SQB-RU-145 is not in alarm at this time but is beginning to show a gradual increase in its reading.

The action to be taken is to contact...

A. Radiation Protection and evaluate the need to evacuate personnel from the Fuel Building.

B. RP to verify the associated alarms in the Control Room are valid then initiate a CPIAS.

C. Radwaste to stop any and all gas discharges and then inform Radiation Protection to evacuate personnel from the Fuel Building.

D. Radwaste to verify that the associated alarms received in the control room are valid and to evacuate the Fuel Building once this has been confirmed.

Answer: A

Learning Objective:
L64296 Describe the operator's responsibility when acknowledging RMS alarms

Reference Id:	Q10195
Difficulty:	3.00
Time to complete:	3
10CFR Category:	CFR 55.41 (12) Radiological safety principles and procedures
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 74RM-9EF41 Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Need for area evacuation; check against existing limits. A is correct based on action in 74RM-9EF41, Radiation Monitor Alarm Response.

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	Appears on:	RO EXAM	SRO EXAM
	K/A #	42067G2120	
	Importance Rating:	4.30	4.20

Given the following plant conditions:

- You are responding to a fire in NAN-S01 as the Fire Team Advisor.
- You have brought a Class B/C fire extinguisher to the scene.
- Other members have rigged a fire hose with a solid-stream nozzle.

Which ONE of the following actions should be taken?

A. Do not use the Class B/C fire extinguisher. Put the fire out with a fire hose.

B. Do not use the fire hose. Put the fire out with the Class B/C fire extinguisher.

C. Use the fire hose first. If it does not put out the fire, use the Class B/C fire extinguisher.

D. Wait for the fire brigade member assigned to bring a Class D fire extinguisher, then use the Class D fire extinguisher.

Answer: B

Learning Objective:
L57494 Describe the Control Room's initial response to a fire alarm, report of an emergency or a confirmed emergency.

100866 Active Question Bank 2004

Reference Id:	Q10252	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	INPO Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 14DP-9FP32, Emergency Notification and Response Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage. INPO question 25691	

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	068G2110	
Importance Rating:	2.70	3.90

Given the following plant conditions:

- The Control Room is evacuated due to a fire.
- The operators prepare to perform a Natural Circulation cooldown from remote locations.

Which ONE of the following statements is correct with regards to why certain instrumentation at the Remote Shutdown Panel should be considered reliable for plant control during a Control Room fire?

Group 1 Indicators
RCA-LI-110X-1 (Pressurizer Level)
RCA-PI-102A-1 (Pressurizer Pressure)
SGA-LI-1113A-1 (SG #1 and 2 levels)
SGA-PI-1013A-1 (SG #1 and 2 pressures)

Group 2 Indicators
RCB-LI-110Y-1 (Pressurizer Level)
RCB-PI-102B-1 (Pressurizer Pressure)
SGB-LI-1113B-1 (SG #1 and 2 levels)
SGB-PI-1013B-1 (SG #1 and 2 pressures)

A. Only the group 1 indicators because these instruments have isolators in their circuits.

B. Only the group 2 indicators because these instruments have isolators in their circuits.

C. Only the group 1 indicators because these instruments have LOCAL/REMOTE disconnects in their power supplies.

D. Only the group 2 indicators because these instruments have LOCAL/REMOTE disconnects in their power supplies.

Answer: B

Learning Objective:
L58909 Given a Control Room Fire identify which instruments located on the Remote Shutdown Panel are considered reliable

Reference Id:	Q10196	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Conduct of Operations: Knowledge of conditions and limitations in the facility license, CR evacuation.	

Answer A is incorrect because A train does not have optical isolators. Answers C & D do not have Local/Remote disconnects for their power supplies. Only group 2 indicators are used in a CR fire evacuation.

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	42069AK301	
Importance Rating:	3.80	4.20

Given the following initial plant conditions:

- U1 Reactor has tripped.
- SIAS/CIAS/MSIS have actuated.
- SG 1 Safety Valve has failed open and remains open.
- SG 2 Pressure is 900 psig and stable.
- SG 1 Pressure stops lowering at about 300 psig and begins slowly increasing.
- SG 1 Level is 20% WR and slowly rising.
- The RCS continues to cool down.
- SG 1 Feedwater flow is isolated.
- SG 2 is being fed at 500 gpm and level is 25% NR and recovering.

Which ONE of the following is the procedurally directed action regarding feeding of the Steam Generators?

A. Feed both SGs at 1360 – 1600 gpm. This will ensure heat removal capability is maintained on both SGs throughout the event.

B. Feed SG 2 to recover level. Do not feed SG 1. SG 2 is the most easily recovered of the two SGs to ensure that the heat removal safety function is maintained.

C. Feed SG 1 at 1360 – 1600 gpm. Do not feed SG 2 at this time. This will provide for the containment isolation of SG 1. There is insufficient feed flow available at this time to feed both SGs.

D. Feed SG 1 at 1360 – 1600 gpm; continue feeding SG 2 at 500 gpm. This will provide for the containment isolation of SG 1 while maintaining level in SG 2 to satisfy the HR Safety Function.

Answer: C

Learning Objective:
56304 Given the FRP is being performed and given specific plant conditions determine if the selected CI success path safety function status checks are being met

Reference Id:	Q10114	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO02, LOCA 40EP-9EO09 FRP. Knowledge of the reasons for the following responses as they apply to the Loss of Containment Integrity: Guidance contained in EOP for loss of containment integrity	

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An ESD in conjunction with a SGTR is in progress on SG 1 (i.e. a loss of Containment Integrity)
C is correct; the mitigating strategy is to feed the SGTR 1360 – 1600 gpm to cover the tubes and therefore the leak to minimize dose offsite. This requires full feed flow from two AF pumps. AFA should not be used unless absolutely necessary.
If only an ESD has been diagnosed than distractor B would be diagnosed as correct.

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	44A11AA11	
Importance Rating:	3.30	3.50

Given the following plant conditions for a specific point in time:

- Unit 2
- The reactor has tripped.
- An MSSV (Main Steam Safety Valve) has stuck open on SG 1.
- SG 1 is at 32% WR.
- SG 1 is at 930 psia.
- SG 2 is at 43% WR.
- SG 2 is at 1060 psia.
- LOOP 1 Tc 538°F, Th 559°F.
- LOOP 2 Tc 556°F, Th 559°F.

With no operator action, which ONE of the following describes the status of SG feedwater?

A. MFW is feeding both SGs in RTO.

B. Neither SG is receiving feedwater.

C. AFA and AFB are feeding both SGs.

D. AFA and AFB are feeding SG #1 only.

Answer: B

Learning Objective: 30074	As an operating crew Respond to Steam Line ESD event(s)
L11214	Given conditions of an ESD analyze RCS Heat Removal to determine if the SFSC acceptance criteria is satisfied
100866	Active Question Bank 2004

Reference Id:	Q9113	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: AFAS Simplified Drawing Ability to operate and / or monitor the following as they apply to the (RCS Overcooling) Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. Answer A is correct under the conditions because SG#1 is isolated and SG#2 level is greater than the AFAS setpoint. Ref 40EP-9EO05.	

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Appears on:	RO EXAM Tier 1 Group 2	SRO EXAM
K/A #	44A13AA22	
Importance Rating:	2.90	3.80

Given the following plant conditions:

- A LOOP (Loss of Offsite Power) has occurred on Unit 1, causing a reactor trip.
- No actions have been taken to restore non class systems or components.
- Pressurizer level is at 71% and trending up.
- One charging pump is running.

The correct action to restore Pressurizer level is to...

A. increase letdown flow.

B. stop the running charging pump.

C. cooldown as needed to maintain level < 65%.

D. verify shutdown margin per the S.T. prior to commencing a cooldown to obtain T-hot < 550°F.

Answer: C

Learning Objective:
L90347 As an operating crew mitigate a Loss of Forced Circ

Reference Id:	Q10199	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO07, LOOP Ability to determine and interpret the following as they apply to the (Natural Circulation Operations) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments. Answer C is correct because letdown is lost and with no NCW, charging should not be stopped. Stopping the charging pump has adverse impact on charging pump seals, SDM is not a concern at this point and 550 deg. F is for another event. Comprehense/Anal based on analysis required to determine the LOOP results in a loss of NCW.	

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	Appears on:	RO EXAM	SRO EXAM
	K/A #	44A16K22	
	Importance Rating:	3.00	3.30

Given the following plant conditions:

- Unit 2 is at 100% power.
- No equipment is out of service.
- All systems are aligned normally.
- The crew detects a small RCS leak on ERFDADS and enters the Excess RCS Leakrate AOP.
- The Area Operator informs the Control Room that Nuclear Cooling Water Surge Tank Level is slowly rising.

Which ONE of the following contains only components which must be considered as potential sources of leakage for the stated condition?

A. Letdown Heat Exchanger and RCP Seal Coolers.

B. Shutdown Cooling Heat Exchanger and RCP Seal Coolers.

C. RCP Seal Coolers and the Non-Nuclear Sample Coolers.

D. Letdown Heat Exchanger and the Shutdown Cooling Heat Exchangers.

Answer: A

Learning Objective:
L10169 Given indications of RCS or a Steam Generator Tube Leak, describe the basic procedure methodology, including Reactor Trip is thresholds,

Reference Id: Q10258
Difficulty: 2.00
Time to complete: 3
10CFR Category: CFR 55.41 (10) 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level: Comprehension / Analysis
Question Source: PV Bank Not Modified
Comment: Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40AO-9ZZ02, Excess RCS Leakrate

Knowledge of the interrelations between the (Excess RCS Leakage) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

A is correct because these two items would cause a leak into the NC system that would be indicated by an increase in the NC Surge Tank Level.
B & D are incorrect because the SDC System is normally cooled by EW not NC.
C is incorrect; NC surge tank level would not be impacted by the secondary chemical control sample cooler leak. (i.e. lower pressure systems)

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34003K201	
Importance Rating:	3.10	3.10

Given the following plant conditions:

- Unit at 100% power.
- All systems available.

A loss of _____ will result in the de-energization of the reactor coolant pump RCP 1A?

A. Bus PBB-S04

B. Bus NAN-S03

C. Bus NBN-S02

D. Bus NAN-S01

Answer: D

Learning Objective:

L67246 Explain the operation of the Reactor Coolant Pumps under normal operating conditions.

Reference Id:	Q7260	
Difficulty:	2.00	
Time to complete:	1	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR 55.41 (10)CFR 55.41 (4)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ12, Degraded Electrical Knowledge of bus power supplies to the following: RCPS Answer D is correct because RCP power is non-class and is 13.8 KV.	

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Appears on:	RO Exam Tier 2 Group 1	SRO EXAM
K/A #	32004K631	
Importance Rating:	3.10	3.50

Given the following plant indications:

- Unit 1 is at 100% power in a normal lineup
- All RCP seal injection controllers (CHN-FIC 241 through 244) are in automatic.
- The output signal of CHN-FIC-244, 2B Seal Injection controller, begins rising.

Which ONE of the following could be the cause?

A. Decreased VCT pressure.

B. Stopping a running charging pump.

C. One of the other seal injection valves failed open.

D. Seal Injection flow has risen above the setpoint.

Answer: D

Learning Objective:
L56822 Given an RCP with seal injection removed determine the temperature response when seal injection is secured to an RCP

Reference Id:	Q27608	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: P & IDs

Knowledge of the effect of a loss or malfunction on the following CVCS components: Seal injection system and methods of operation.

Answer D is correct due to these controllers being backward acting controllers. Seal injection flow rising causes controller output to rise to close down on the valve.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	32004A410	
Importance Rating:	3.60	3.20

Given the following conditions:

- Boric Acid Makeup pump CHN-P02A was running to support boration.
- The blue light on the handswitch is illuminated for CHN-P02A.
- Discharge pressure on CHN-PI-206 reads 32 psig.

Which one of the following describes what happened and what action (if any) should be taken to support boration operations?

A. Low suction pressure; must manually start the standby pump.

B. Thermal overload; must manually start the standby pump.

C. Low discharge pressure; no action required because the standby pump will auto start in 15 seconds.

D. RWT level at 85%; no action required because the standby pump will auto start immediately.

Answer: C

Learning Objective:
L68202 Describe the automatic functions associated with the Boric Acid Makeup Pumps (CHN-P02A AND P02B).

100866 Active Question Bank 2004

Reference Id:	Q62121	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 41AL-1RK3A Ability to manually operate and/or monitor in the control room: Boric acid pumps. Per drawing 01-E-CHB-041 & 042 and Alarm Response for window 3A06A, Group A, answer C is correct. Answer B thermal over load does not cause blue light. Answer A is associated with the charging pumps. RWT level does not trip BAMPs but does provide suction.	

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31

Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34005K503	
Importance Rating:	2.90	3.10

Given the following plant conditions:

- Unit 2 is in Mode 5.
- Shutdown Cooling has been initiated using LPSI 'A'.
- Shutdown Cooling Train B is lined up for SDC but has not been recirculated.
- LPSI Pump 'A' trips due to a fault condition.
- RCS Pressure is 360#
- RCS temperature is 150 °F.

What is the main concern with swapping the SDC alignment to 'B' Train at this time?

A. The LTOP could lift when the "B" SDC Loop is exposed to the RCS.

B. The colder water in Loop B could cause the 19°F per minute heatup rate limit on SDC loop to be exceeded.

C. RWLIS has not been calibrated for LPSI “B” flow, therefore RCS level indication will not be accurate.

D. The addition of positive reactivity due to a difference in boron concentrations between ‘B’ SDC and the RCS.

Answer: D

Learning Objective:
L79915 Discuss the concerns with boron concentration associated with the Shutdown Cooling System.

Reference Id:	Q10202
Difficulty:	3.00
Time to complete:	4
10CFR Category:	CFR 55.41 (10) 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40OP-9SI01, SDC Initiation Knowledge of the operational implications of the following concepts as they apply the RHRS: Reactivity effects of RHR fill water. Answer D is correct based on the Precautions listed in the governing procedure, 40OP-9SI03.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	32006K301	
Importance Rating:	4.10	4.20

Given the following conditions:

- The plant has experienced a LOCA
- The RCS is at 1000 psig
- Trends for all major parameters are improving slowly
- All equipment is operating normally

THEN the 'B' HPSI pump handswitch indicates brighter than normal green.

Which of the following is the result of this condition?

A. RCS subcooling worsens, RVUH level lowers.

B. RCS subcooling improves, RVUH level lowers.

C. RCS subcooling worsens, RVUH level increases.

D. RCS subcooling improves, RVUH level increases.

Answer: A

Learning Objective:
93897 State the ECCS core flow assumed in the Large Break LOCA analysis

93805 State the 10CFR 50.46 design criteria for ECCS performance and explain the criteria bases.

Reference Id:	Q10203	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: GFES and electrical prints for handswitches. Knowledge of the effect that a loss or malfunction of the ECCS will have on the following: RCS. The loss of HPSI B is indicated by brighter than normal green indication on the handswitch. Reducing HPSI flow in half produces worsening trends in subcooling, RVUH level, and Pzr level.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35007K502	
Importance Rating:	3.10	3.40

Given the following plant conditions:

- Unit 1 is in a heatup from MODE 5 to MODE 3.
- The unit has commenced drawing a bubble in the Pressurizer.
- The Pressurizer is being periodically vented to the RDT (Reactor Drain Tank).
- The RDT is aligned to manually vent to the Waste Gas Surge Header.

During this procedure, the Reactor Drain Tank should be maintained at what pressure?

A. Less than 25 psig.

B. 25 psig to 75 psig.

C. 75 psig to 100 psig.

D. 100 psig to 125 psig.

Answer: A

Learning Objective:
L97166 Describe how a steam bubble is drawn in the pressurizer.

Reference Id:	Q10204	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	INPO Bank NOT modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40OP-9ZZ01, Appendix H

Knowledge of the operational implications of the following concepts as they apply to PRTS: Method of forming a steam bubble in the PZR

INPO Q#20980

Answer A is correct by procedure 40OP-9ZZ01. The other ranges of pressure are too high of this operation.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35007K103	
Importance Rating:	3.00	3.20

Given the following plant conditions and a set of steam tables:

- Unit 1 RCS pressure is at 1385 psia
- A Pressurizer safety/relief valve is leaking to the RDT
- The RDT is at 10 psig.

What is the temperature of the fluid downstream of the relief valve?

A. 190°F

B. 240°F

C. 265°F

D. 280°F

Answer: C

Learning Objective:
L10452 Given PZR Safety Valve tailpipe temperatures and the steam tables analyze the data to determine the status of the PZR safety valve

6193004G11 Determine the exit conditions of a fluid for a throttling process.

6193004K115 K1.15 Determine the exit conditions for a throttling process based on the use of steam and/or water

Reference Id: 193004Q027
Difficulty: 4.00
Time to complete: 5
10CFR Category: CFR 55.41 (14) 55.41 (14) Principles of heat transfer thermodynamics and fluid mechanics.
Cognitive Level: Comprehension / Anal
Question Source: PV Bank Not Modified
Comment: Proposed Reference to be provided to applicant during examination: Steam Tables
Technical Reference: Steam Tables

Knowledge of the physical connections and/or cause-effect relationships between the PRTS and the following systems: RCS

Answer C is correct: Steam Tables diagram for a RCS press of 1385 psia and RDT pressure at 10 psig is 265 °F.
Distractors A, B, & D were taken from other RDT Pressures.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	38008K105	
Importance Rating:	3.00	3.10

Which ONE of the following systems, by procedure, can provide makeup to the NC System?

A. Domestic Water System, Chemical Waste System

B. Demineralized Water System, Chemical Waste System

C. Demineralized Water System, Fire Protection Water System

D. Domestic Water System, Fire Protection Water System

Answer: B

Learning Objective:
74240 Describe how the Plant Cooling Water System supports the operation of the following systems:
- Turbine Cooling Water System
- Nuclear Cooling Water System
- Condenser Air Removal System

Reference Id: Q7518
Difficulty: 2.00
Time to complete: 2
10CFR Category: CFR 55.41 (4) 55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level: Memory
Question Source: New
Comment: Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40OP-9CM02, Cooling Water Waste, Sect. 5.0; 40OP-9NC01, Nuclear Cooling Water, Section 4.0

Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: Sources of makeup water.

Only Demin Water and Chemical Waste System can normally be aligned by procedure.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	38008A401	
Importance Rating:	3.30	3.10

What is the meaning of the AMBER lights associated with the Nuclear Cooling Water, NCN-P01A and NCN-P01B pump handswitches, on B07? The AMBER light...

A. informs the operator that the pump has automatically started.

B. informs the operator that the pump has tripped on overcurrent.

C. comes on when the pump has been started locally at the 4.16KV switchgear.

D. comes on when the pump is running but does not have adequate discharge pressure.

Answer: A

Learning Objective:
100866 Active Question Bank 2004

65018 Describe the Control Room controls associated with the NC Pumps, including their indications.

Reference Id:	Q72602	
Difficulty:	2.00	
Time to complete:	1	
10CFR Category:	CFR 55.41 (4)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: NONE

Ability to manually operate and/or monitor in the control room: CCW indications and controls.

Answer A is correct because it is a standard function of the amber light at Palo Verde. Overcurrent uses a green light. There is no light for local control. Alarms are used for performance monitoring.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	33010K601	
Importance Rating:	2.70	3.10

Given the following conditions:

- The pressurizer pressure master controller is in AUTO
- The RCN-HS-100 is selected to channel X
- RCN-PT-100X fails low

Assuming no operator action, which ONE of the following is correct?

A. The proportional heaters deenergize due to low pressure.

B. Backup heaters energize then trip when actual pressure increases above 2285.

C. All heaters energize and eventually cause a reactor trip on high pressurizer pressure.

D. All heaters energize and pressure increases until the spray valve opens to reduce pressure.

Answer: C

Learning Objective:	
L88177	Describe the response of the Pressurizer Pressure Control System to a failure of various power supplies.
L75356	Describe the response of the Pressurizer Pressure Control System to a failure of various power supplies.

Reference Id:	Q2657	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (4)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
10CFR Category:	CFR 55.41 (4)CFR 55.41 (7)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified 2003 SRO Q#3	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: PVNGS Operator Information Manual, pg 31 Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: Pressure detection system. With instrument failed low the spray valves won't open but all heaters will energize. System will not see the high pressure. Comprehensive because operator must evaluate effect of instrument failure on the control system, then the effect on the plant.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	33010A402	
Importance Rating:	3.2	3.6

Given the following plant conditions:

- An earthquake causes a loss of the switchyard which leads to a loss of offsite power.
- A steam line break inside containment has also occurred.
- SIAS, CIAS, CSAS, and MSIS have occurred
- The operators have NOT touched the PZR heater controls.

Which ONE of the following is true?

A. No pressurizer heaters are operating.

B. Only the proportional heaters are operating.

C. Only the class backup heaters are operating.

D. Only the non-class backup heaters are operating.

Answer: A

Learning Objective:
L75243 Describe the Control Room controls associated with the Pressurizer Backup Heaters including indications.

Reference Id:	Q10205	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (3)	55.41 (3) Mechanical components and design features of the reactor primary system.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ17, Inadvertent PPS-ESFAS, Sect. 8.0 Ability to manually operate and/or monitor in the control room: PZR heaters. Loss of power removes non-class power. The Safeguards signals remove class power until overridden. Answer A is correct.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	37012K406	
Importance Rating:	3.20	3.60

Given the following plant conditions:

- The plant is at 100% power.
- Channel 'D' PPS **bypassed** due to failed high RCS pressure (Narrow Range) transmitter.
- Channel 'B' PPS SG-2 level low has tripped due to a failed transmitter.
- Channel 'A' RCS pressure (Narrow Range) transmitter now **fails high**.

Based on these conditions, which of the following is correct?

A. The operator can not bypass channel 'A' RCS pressure transmitter.

B. The reactor would have tripped when the channel 'A' pressure transmitter failed.

C. 2 Reactor Trip Circuit Breakers (RTCBs) would open when the channel 'A' RCS pressure transmitter failed, but the reactor would not trip.

D. If the operator bypasses the channel 'A' RCS pressure transmitter, that channel would go into bypass, while removing the channel 'D' transmitter from bypass.

Answer: D

Learning Objective:
100866 Active Question Bank 2004

L77084 Describe the RPS operating bypasses.

Reference Id:	Q23178	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (6)	55.41 (6) Design, components, and functions of reactivity control mechanisms and instrumentation.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AL-9RK5B PANEL B05B ALARM RESPONSES	

Knowledge of RPS design feature(s) and/or interlock(s) which provide the following: Automatic or manual enable/disable of RPS trips.

Channel A has highest priority for bypass and will remove all other channels from bypass.

The channel can be bypassed but there is a RPS Trip Channel Bypass Interlock that prevents two channels bypassed at the same time. Due to the RCS Press channel being bypassed, another failure will not cause a trip. No logic is activated for RTSG breakers.

40AL-9RK5B PANEL B05B ALARM RESPONSES 0 Rev.
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RESPONSE SECTION

PT ID	POSSIBLE CAUSE	SETPOINT
SBYS25	Plant Protection System Channel A Bypass	N/A
SBYS26	Plant Protection System Channel B Bypass	N/A
SBYS27	Plant Protection System Channel C Bypass	N/A
SBYS28	Plant Protection System Channel D Bypass	N/A

AUTO ACTION
None.

NOTE
A PPS trip channel bypass places the bypassed channel in a two out of three trip logic condition.

FIRST PRIORITY OPERATOR ACTION
___ 1. None.

SECOND PRIORITY OPERATOR ACTION
NOTE
The following Technical Specifications may be impacted: 3.3.4, 3.3.6.

___ 1. Determine which channel caused the alarm, if not known, by observing the amber trip channel bypass indicators at the PPS remote panels, at B05.
___ 2. Investigate the cause of the alarm and initiate corrective action to clear the alarm condition as necessary. Possible causes of the alarm include:
_____ 2.1 Trip channel bypassed at bistable control panel on plant protective system cabinet.
_____ 2.2 Failed auxiliary relay in relay card rack portion of plant protective system cabinet.

End of Response

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	32013K502	
Importance Rating:	2.90	3.30

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- PNB-D26 has just been de-energized to permit replacement of one of its circuit breakers.
- Almost immediately after D26 was turned off, the inverter that supplies PND-D28 fails.

Assuming no parameters on PPS channels are bypassed, which ONE of the following will be the effect on the ESFAS system?

A. All appropriate 'A' and 'B' train ESFAS initiations will trip.

B. Due to power supply arrangement, this should have no impact.

C. All appropriate 'B' ESFAS channels ONLY will half leg trip (no equipment will actuate).

D. All appropriate 'B' ESFAS initiations ONLY will trip (all appropriate 'B' train equipment will actuate).

Answer: A

Learning Objective:
L77073 Describe how matrix logic receives electrical power.

Reference Id:	Q10206	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ13, Loss of Class Instrument or Control Power Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Safety system logic and reliability. C & D are incorrect; train 'A' is also affected. B is incorrect; a loss of the listed power sources affects ESFAS.	

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40AO-9ZZ13 LOSS OF CLASS INSTRUMENTOR CONTROL POWER

Appendix A, Effects of the Loss of Channel A

RTSG Breaker A and C trip open due to loss of power to one leg of the RPS logic matrices AB, AC, AD.

RTSG Breaker A trips on a SPLA trip and loss of power to RPS Initiation path #1.

Lose power to all Channel A input parameter instruments resulting in Channel A trips on all parameters that have a low trip setpoint.

Unit 1 & 3 only - CEAC 1 becomes inop due to loss of power to RSPTs and may generate penalty factors when reenergized.

Unit 2 only - CEAC 1 in all CPC channels becomes inop due to loss of power to RSPTs and may generate penalty factors when reenergized.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35022A203	
Importance Rating:	2.60	3.00

Given the following plant conditions:

- Unit 3 is in mode 1 at 100% power.
- CEDM ACU A is tagged out (both fans A and C).
- The CEDM ACU COOL SYS TRBL alarm window is lit.
- CEDM ACU B fans 'B' and 'D' electrical protection computer point HCYS50 appears on the alarm screen.

In accordance with 40AO-9ZZ20, Loss of HVAC, the appropriate action is to:

A. commence a rapid shutdown if cooling is not restored within 40 minutes.

B. trip the reactor and perform the SPTAs if cooling is not restored within 10 minutes.

C. minimize all CEA movement to only that required for ASI control and commence a rapid shutdown if cooling is not restored within 2 hours.

D. commence a rapid shutdown if cooling is not restored within 10 minutes and have RTSG breakers opened 40 minutes after the initial cooling loss.

Answer: D

Learning Objective:
L56879 Determine the required actions and time frames to protect plant equipment if a loss of CEDM Coolers exists.

Reference Id:	Q10207	
Difficulty:	3.00	
Time to complete:	4	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ20, Loss of HVAC Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Fan motor thermal overload. Answer D is correct based on procedure 40AO-9ZZ20, section 1.0. The objective is to de-energize the CEDM coils within 40 minutes of the cooling loss.	

40AO-9ZZ20, Loss of HVAC

10.0 Loss of Containment Building HVAC - CEDM

CAUTION

If RCS temperature is 300°F or more, CEDM coils may be damaged if CEDM Cooling is not restored or if the coils are not de-energized within 40 minutes of the initial loss.

___1. **IF** any CEDM Fan is available, **THEN** start at least one CEDM Fan.

___2. PERFORM 40AO-9ZZ12, Degraded Electrical Power as needed to restore electrical power to any CEDM Fan.

___3. **IF** at least one CEDM Fan is **NOT** restored within 10 minutes, **THEN** PERFORM 40OP-9ZZ05, Power Operations, Section 8.0, Rapid Shutdown to ensure that the unit is shutdown within the next 30 minutes.

___4. Continue efforts to restore at least one CEDM Fan.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35026K405	
Importance Rating:	2.80	3.30

What prevents clogging of the containment spray nozzles following a Design Loss of Coolant Accident while on recirculation?

A. The screens in the recirculation sump will block any particles big enough to clog the nozzle.

B. Duplex filters on the discharge of the pumps remove particles large enough to clog the spray nozzles.

C. Anti-vortex blades create a centrifugal force to keep large particles and debris from entering the sump suctions.

D. Pump suctions are located at an elevation in the sump above where debris settles.

Answer: A

Learning Objective:
L59383 Describe the Recirculation Sumps and Trisodium Phospate baskets.

Reference Id:	Q10208	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (3)	55.41 (3) Mechanical components and design features of the reactor primary system.
Cognitive Level:	Memory	
Question Source:	INPO Bank Not modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Prevention of material from clogging nozzles during recirculation Taken from INPO Q#26454 Anti-vortex blades are present in the sump suction to improve flow conditions to the pumps, thus minimizing the potential for cavitation. There are no filters on the discharge of the pumps. Accident analysis assumes that particles and debris will be blocked from entering the spray pump suctions by the sump screens.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34039K404	
Importance Rating:	2.90	3.10

Given the following plant conditions:

- Unit 2 Reactor has tripped from 100% power.
- Condenser Vacuum has been lost.
- The SBCS atmospheric valves are controlling steam header pressure in automatic.
- Steam header pressure has just (1 second ago) dropped 40 psi below the SBCS setpoint due to an ADV being inadvertently opened.

Which ONE of the following is true?

The SBCS valves will...

A. modulate closed.

B. "quick" close due to the loss of the condenser interlock.

C. remain as is until pressure drops approximately 50 psi below the setpoint.

D. remain as is until SG header pressure drops approximately 75 psi below setpoint.

Answer: A

Learning Objective:
L65680 Explain the operation of SBCS permissive and demand logic.

Reference Id:	Q10209	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (6)	55.41 (6) Design, components, and functions of reactivity control mechanisms and instrumentation.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Simplified Drawing Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: Utilization of steam pressure program control when steam dumping through atmospheric relief/dump valves, including T-ave. limits. Answer A is correct since modulation signal is based on the difference between setpoint and steam pressure. The quick close goes through a time delay of 15 seconds. The valves cannot remain as-is with the absence of a modulate signal.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34059G211	
Importance Rating:	3.70	3.80

Given the following plant conditions:

- Unit 1 is operating at 50% power during a power increase.
- A trainee is present in the control room (currently in the Licensed Operator Initial Training Program).
- The CRS has directed the operator to place the 'B' Main Feed pump in service.

Concerning this operation, the trainee can perform this evolution if the trainee is…

A. briefed by a licensed operator prior to the start of the evolution. Monitoring is not required unless the trainee asks for assistance.

B. monitored by the CRS periodically. The CRS is responsible for the control of the trainee and for the proper operation of all equipment.

C. under the direct supervision of a licensed operator. The licensed operator is responsible for control of the trainee and for the proper operation of all equipment.

D. monitored periodically by a licensed operator. The licensed operator is responsible for control of the trainee and for the proper operation of all equipment.

Answer: C

Learning Objective:
L12044 Describe the manual overriding of automatic systems.

100866 Active Question Bank 2004

Reference Id:	Q6834	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9OP02, Conduct of Shift Operations. Knowledge of conduct of operations requirements B, C, & D are not correct. The trainee should be under direct supervision. Periodic supervision or briefings are not correct.	

40DP-9OP02
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12.0 MANUAL OVERRIDE OF AUTOMATIC SYSTEMS

Detailed instructions for how to shift various controllers from auto to manual are addressed in system operating procedures. The following guidelines are provided to specify general considerations and controls for operation of automatic systems in a manual mode.

12.1 The preferred method of operation for plant systems which have automatic controllers is with controllers in the **automatic mode**.

12.2 The decision to operate a controller in manual must be made with consideration of potential impact on plant reliability and safety.

12.3 The following criteria should be used to evaluate the effect of manual controller operations:

• By design, manual controller operation should not be required to assure plant safety.

• Manual operation of automatic controllers may mitigate a transient that represents a challenge to systems which do protect the plant.

• Manual operation may adversely affect a transient by defeating interlocks or designed control system response.

12.4 When a controller is to be placed in a **manual mode**, it should be done from the highest effective level available (i.e., Master Controller).

12.5 Concurrence shall be obtained from the CRS prior to placing any automatic controller in manual or returning any controller to automatic.

12.6 All Control Room personnel shall be informed of the status of the controller and changes in their expected actions in the event of a plant transient with the automatic controller in manual.

12.7 During equipment malfunctions which result in a transient, the Operator shall make a conscious decision on controller operation based on his understanding of the transient and what manual actions are likely to be effective in mitigating it.

1. If the operator believes he can control the transient by taking manual control, then he should do so immediately and inform the other control room personnel of his action. The CRS shall state his concurrence or direct alternate actions.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34061A105	
Importance Rating:	3.60	3.70

Given the following plant conditions:

- Unit 1 has tripped.
- The Main Turbine failed to trip automatically, the Secondary Operator manually tripped the turbine.
- Both SGs are at 900 psig and steady.
- Both SGs are currently at 35% WR and steady.
- Feed flow is approximately 1200 gpm to #1 and #2 SG using AFB-P01 only.
- "AFW PMP B DSCH PRESS LO" alarm is in.
- The CRS directs the Secondary Operator to restore SG levels to 40% – 60% NR.
- The current feed flow rate is less than the steam flow rate.

Based on these indications, the Secondary Operator should…

A. open the AFB-P01 flow control valves to increase AFB discharge pressure to increase flow to both SGs and promptly recover level to the NR.

B. close down on the AFB flow control valves to stop excessive flow until the alarm has cleared and start AFN-P01 to increase total flow to each SG until feed flow is greater than steam flow.

C. open the AFB-P01 flow control valves to increase AFB discharge pressure to increase feed flow to both SGs until feed flow is greater than steam flow and then start AFN-P01 to provide additional flow as needed.

D. close down on the AFB flow control valves to stop excessive flow until the alarm has cleared and start AFA-P01 to increase total flow to each SG so that feed flow matches steam flow.

Answer: B

Learning Objective:
L60485 Given a loss of all feedwater event restore feedwater using Local Operation of AFA-P01

Reference Id:	Q10210	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (14)	55.41 (14) Principles of heat transfer thermodynamics and fluid mechanics.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: AFW Flow/Motor amps.	

D incorrect, SG press is currently 5 psig away from a MSIS setpoint. Utilizing AFA at this time could lead to complications caused by a MSIS occurring. The operator should take prompt action to clear the AFB low discharge pressure (i.e. excessive flow) condition to prevent possible loss of the pump.

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Appears on:	RO EXAM	SRO EXAM
	Tier 2 Group 1	
K/A #	34061K601	
Importance Rating:	2.50	2.80

Given the following plant conditions:

- Reactor Trip.
- Steam Generator (S/G) #1 Level 30% WR.
- S/G #2 Level 26% WR.
- S/G Pressure transmitter failures are causing the following annunciator to be locked in:
  S/G #2 > S/G #1 Pressure Channel Trip

If both S/G Levels decreased to < 25% WR, which one of the following statements would be correct? Auxiliary feed would automatically feed...

A. both S/Gs because of low S/G levels.

B. only S/G #1 because of the S/G pressure difference.

C. only S/G #2 because of the S/G pressure difference.

D. only S/G #2 until S/G #2 pressure equals 950 psia, then both.

Answer: C

Learning Objective:
78322 Describe the response of the Auxiliary Feedwater System to a failure of support systems.

Reference Id:	Q10212	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank NOT Modified	

Comment: Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: NONE

Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners.

Answer C is correct because there is a differential pressure lockout condition created in the question stem. Aux Feedwater Actuation (AFAS) will occur but only feed SG#2. The valves for SG#1 are closed.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	36062K301	
Importance Rating:	3.50	3.90

Given the following plant conditions:

- Unit 1 is operating in Mode 1.
- All startup transformers are initially in a normal lineup.
- NAN-X03, Startup XFRMR #3, experiences a fault causing it to lockout.
- Simultaneously, a SIAS has occurred due to low RCS Pressure.

30 seconds later, which ONE of the following describes the condition of Unit 1?

A. 'A' HPSI pump is running and is energized by 'A' diesel generator.

B. 'A' LPSI is NOT running but will be energized by the 'A' diesel generator on an auto start signal.

C. 'A' and 'B' Spray Pond pumps are running and are energized by their respective diesel generator.

D. 'B' Containment Spray is NOT running but will be energized by the 'B' diesel generator on an auto start signal.

Answer: A

Learning Objective:
L73676 Describe the response of the Non-Class AC Distribution System to a failure of power.

Reference Id:	Q10257	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Simplified Drawing	

Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: Major system loads.

Answer A is correct because NAN-X03 supplies PBA-S03. Upon loss of power on PBA-S03 the DG will start and supply the bus. Due to the SIAS, HPSI 'A' will be running. The 'B' Train bus PBB-S04 is not affected.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35026K202	
Importance Rating:	2.70	2.90

Given the following plant conditions:

- An inadvertent CSAS Train 'A' has occurred.
- The CRS has entered 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.
- The crew has stopped the CS pump.
- The crew has overridden and closed SIA-UV-672 (Train 'A' CS header isolation valve).

After the crew has taken the above actions a Train 'A' LOP occurs and the Train 'A' DG starts and energizes PBA-S03. The status of SIA-UV-672 is that the valve is…

A. OPEN due to losing control power to the valve on the LOP.

B. OPEN due to the BOP-ESFAS sequencer going through Mode 0 (zero) because of the LOP.

C. CLOSED because the valve is powered from a DC bus and does not get affected by a LOP.

D. CLOSED because although the valve is AC powered, the control power for the valve is DC and is not affected by the LOP.

Answer: A

Learning Objective:
L75050 Discuss the purpose and conditions under which the Diesel Generator System is designed to function.

Reference Id:	Q10213	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40 Knowledge of bus power supplies to the following: MOVs B incorrect; Sequencer doesn't do valves, only pumps. C incorrect; Valve is AC power & AC control power. D incorrect; Valve control is AC power.	

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	36063K102	
Importance Rating:	2.70	3.20

A Design Basis Accident has occurred.

One class 1E 4.16 KV bus has been lost due to a fault.

Based on this event the affected PK battery system will provide the power necessary to supply _____ loads for a minimum of _____ hours.

A. PK loads only, 2 hours

B. PK loads only, 4 hours

C. PK and PN loads, 2 hours

D. PK and PN loads, 4 hours

Answer: C

Learning Objective:
L74195 Describe the circuit paths to include these major components:
- PK Control Centers
- Batteries
- Battery Chargers
- Distribution Panels
- RTSG Breaker Feed
- PN Inverter Feed

Reference Id:	Q10214	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Memory	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: Technical Specification 3.8.4 Bases

Knowledge of the physical connections and/or cause effect relationships between the DC electrical system and the following systems: AC electrical system

By design, the battery supplies 2 hours of power under full safeguards load, both DC and AC.

2005 LOIT Reactor Operator NRC Exam

Palo Verde Technical Specifications
DC Sources — Operating
B 3.8.4
BASES
BACKGROUND The DC power distribution system is described in more detail in the Bases for LCO 3.8.9, "Distribution Systems- Operating," and for LCO 3.8.10, Distribution Systems — Shutdown."
Each battery has adequate storage capacity to carry the required load continuously for at least 2 hours as discussed in the UFSAR, Chapter 8 (Ref. 4).

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	36064K302	
Importance Rating:	4.20	4.40

Given the following plant conditions:

- A LOP of PBA-S03 has occurred due to a fault on the ESF transformer (NBN-X03)
- The 'A' DG has started and is running at normal speed and frequency.
- The normal supply breaker for PBA-S03 failed to auto open.

Assuming no operator action, what is the status of the Train 'A' Load Sequencer?

The Train 'A' sequencer is…

A. not sequencing loads on the bus due to the fault on NBN-X03.

B. not sequencing loads on the bus due to the DG 'A' breaker not being closed.

C. sequencing loads on the bus. The sequencer does not require the DG 'A' breaker to be closed.

D. sequencing loads on the bus. The sequencer will sequence loads on the bus if either the DG breaker or the normal supply breaker is closed.

Answer: B

Learning Objective:
L75077 Describe the effect of the following on the Diesel Generator:
- Control Power Loss
- Control Air Loss

Reference Id:	Q10215	
Difficulty:	4.00	
Time to complete:	4	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: Operations Control Drawings

Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: ESFAS controlled or actuated systems.

A is incorrect; the sequencer does not look at faults on X03.
C is incorrect; the sequencer starts sequencing after the DG brkr closes.
D is incorrect; the sequencer does not look at the status of the normal supply breaker.

LOSS OF NON-CLASS INSTRUMENT OR CONTROL POWER
Appendix A, Effects of the Loss of Non-Class DC

AR

• Condenser Air Removal Pump D Suction Valves, ARN-UV-14/15/16, fail closed.

CD

• CDN-LV-75, Condenser Draw-off Valve and Make-up Valves, CDN-LV-81/82 fail closed.

• Condensate Pump A and B Miniflow Recirc Valves fail open.

• Condensate Pump C Miniflow Recirc Valve fails open.

CE

• Loss of Generator Hydrogen and Stator Cooling alarms and tripping functions.

CH

• CHN-LC-227, VCT level controller auxiliary circuit deenergizes causing charging pump suction to swap to CHN-UV-514.

• Letdown isolates, loss of power to NCN-FSL-613 auxiliary circuit closes CHN-UV-523.

• DC Control Power has been lost to the VCT make-up control system. VCT make-up is not available.

CHN-FV-210X/Y fail closed.

• The Charging Pump automatic control circuit deenergizes, all Charging Pumps stop. Manual control is available.

• RCP Seal Injection Flow Control Valves fail open

• Loss of position indication for Letdown Control and Backpressure Control Valves.

DG

• Loss of power to DGN-B01A, DG A Control Panel. DG A will trip if not in Emergency Run. Loss of alarm power.

• Loss of power to DGN-B01B, DG B Control Panel. DG B will trip if not in Emergency Run. Loss of alarm power.

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	064G2224	
Importance Rating:	2.60	3.80

Given the following plant conditions:

- Unit 1 is at 100% power
- The 'B' DG is being tagged out to repair a lube oil leak.
- The CRS has declared the 'B' DG Inoperable.

Based on these conditions, what action is required to comply with LCO 3.8.1 (AC Sources – Operating)?

A. Start and fully load the 'A' DG immediately.

B. Block the fast bus transfer for NAN-S02 within 1 hour.

C. Verify the support systems for 'A" DG are operable within 30 minutes.

D. Perform the Inoperable Power Sources Action Statement within 1 hour.

Answer: D

Learning Objective:
L75083 State LCO 3.8.13, "AC Sources Operating," including bases.

Reference Id:	Q10216	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Memory	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Technical Specifications 3.8.1.B. Emergency Diesel Generators: Ability to analyze the affect of maintenance activities on LCO status. Answer B is correct based on Technical Specifications. The other distracters are not required per tech specs.	

Technical Specifications 3.8.1
One DG inoperable:
Action B: Perform SR 3.8.1.1 for the OPERABLE required offsite circuit(s). within 1 hour AND Once per 8 hours thereafter.

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	37073A202	
Importance Rating:	2.70	3.20

Given the following plant conditions:

- A planned release of waste gas decay tank "B" is in progress.
- The RU-12 reading is 1.60 E-04 uci/cc.
- During the release the Effluent Tech informs the Control Room of a detector power supply failure on RU-12.
- RU-12 now reads 1.00 E-07 uci/cc.

Which ONE of the following describes the expected plant response and any operator required actions due to the detector failure on RU-12? The detector failure alarm will...

A. NOT auto close Waste Gas Discharge Valves GRN-UV-34A and GRN-UV-34B. The Control Room should verify locally that the release has been terminated.

B. NOT auto close Waste Gas Discharge Valves GRN-UV-34A and GRN-UV-34B. The Control Room should ensure the release is secured by placing GRN-HS-34B in the close position.

C. automatically close Waste Gas Discharge Valves GRN-UV-34A and GRN-UV-34B. The Control Room should verify locally that the release has been terminated.

D. automatically close Waste Gas Discharge Valves GRN-UV-34A. The control room should ensure the release is terminated by placing GRN-HS-34B in the close position.

Answer: B

Learning Objective:
16322 A2.02 Detector failure 2.7 3.2

Reference Id:	Q10217
Difficulty:	4.00
Time to complete:	5
10CFR Category:	CFR 55.41 (10) 55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 74RM-9EF41, Rad Monitoring System Alarm Response Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure . The detector failure does not automatically cause valve closure (output fails low). For this reason the Control Room must take action to close the valve.

RADIATION MONITORING SYSTEM ALARM RESPONSE
74RM-9EF41 Rev. 17 Page 18 of 76

ALERT/HIGH ALARM

AUTO ACTION

HIGH alarm closes Waste Gas Discharge Valves GRN-UV-34A and GRN-UV-34B.

OPERATIONS RESPONSE:

1. If a waste gas system discharge is in progress, ensure that the release is secured by placing GRN-HS-34B in the Close position.
2. Notify the Radwaste Control Room and the Radiological Monitoring Technician of the alarm and that the release has been terminated.
3. If no waste gas system discharge is in progress, monitor RU-143's gas channel readings and trends to determine if an unplanned release from the waste gas system is in progress.
4. Evaluate the cause of the alarm prior to resuming any waste gas system discharge. If the alarm was caused by a malfunction of RU-12, ensure that ODCM requirements for an inoperable monitor are satisfied prior to resuming the release.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	34076A302	
Importance Rating:	3.70	3.70

Given the following plant conditions:

- The plant is operating at 100% power.
- Essential cooling water train 'A' and Nuclear Cooling Water are cross-tied.
- A low-low level in Essential Cooling Water surge tank is received.

Which ONE of the following would occur?

A. Cross-tie valves would close.

B. Essential cooling water pump would stop.

C. Demin Pump would auto start to supply makeup.

D. Standby essential cooling water pump would start.

Answer: A

Learning Objective:
L56846 Describe the automatic features associated with the NC/EW Crosstie Isolation Valves.

Reference Id:	Q7532	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (4)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ03, Loss of Cooling Water Ability to monitor automatic operation of the SWS, including: Emergency heat loads. There are no auto actions for the pumps on low level and auto start on the demin pump for makeup. Answer A is correct. Ref 40OP-9EW01, section 8, step 8.1.	

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40AO-9ZZ03, Loss of Cooling Water

Appendix A, Cross-connect EW to NC

INSTRUCTIONS CONTINGENCY ACTIONS

---------- **NOTE** ----------

Cross-connecting EW and NC makes the EW Train inoperable per Tech Spec 3.7.7, Essential Cooling Water (EW) System, and the EC Train inoperable per Tech Spec 3.7.10, Essential Chilled Water (EC) System.

---------- **NOTE** ----------

The cross-connect of Essential Cooling Water Train A with Nuclear Cooling Water will be lost on a SIAS or Essential Cooling Water surge tank A low level.

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	38078G2411	
Importance Rating:	3.40	3.60

Given the following conditions:

- The plant is at 100% power.
- Instrument air header pressure is dropping.
- The condensate Minimum Flow valves go to their fail positions

Based on this failure, which ONE of the following describes the **first** impact on Main Feedwater Pump 'B'?

A. FWP 'B' SUCT PRESS LO alarm.

B. No impact on MFP suction pressure.

C. FWP 'B' DISCHARGE PRESS HI alarm.

D. FWP 'B' TRIP CKT ENERGIZED alarm.

Answer: A

Learning Objective:
L56758 Predict the position of the condensate pump miniflow valve and describe the effect on main feed water flow.

Reference Id:	Q10218	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ06, Loss of Instrument Air, Appendix A, page 2 of 3 provides the fail position of these valves as OPEN. Knowledge of abnormal condition procedures Candidate must determine fail open condition of valves then assess impact on FW pumps. They must know that the Low Suction Alarm comes in at a higher pressure than the trip circuit. Open valves decrease suction pressure on MFP's. Question meets KA because the loss of IA AOP contains fail positions of components and their impact.	

40SO-9ZZ06, Loss of Insturment Air
Appendix A, Page 31 of 34
< 15 psig FWN-FV-1/ 2, SG Feedwater Pump A & B Miniflow Recirc Control Vlv (FO)

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Appears on:	RO EXAM Tier 2 Group 1	SRO EXAM
K/A #	35103A301	
Importance Rating:	3.90	4.20

Given the following plant conditions:

- Containment pressure (NR) Channel A 3.1 psig
- Containment pressure (NR) Channel B 2.7 psig
- Containment pressure (NR) Channel C 3.1 psig
- Containment pressure (NR) Channel D 2.6 psig

Which ONE of the following ESFAS actuations would occur?

A. "A" Train ONLY SIAS/CIAS.

B. "A" Train ONLY SIAS/CIAS, and MSIS.

C. "A" and "B" train SIAS/CIAS and MSIS.

D. "A" and "B" train SIAS/CIAS ONLY.

Answer: C

Learning Objective:
L77167 Describe what automatically initiates the Containment Isolation Actuation System (CIAS) and its function.

Reference Id:	Q10219	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Simplified Drawing Ability to monitor automatic operation of the containment system, including: Containment isolation. Any 2 of 4 detectors exceeding the 3 psig setpoint would cause both trains of SIAS, CIAS and MSIS to actuate. The CSAS setpoint is at a higher pressure. This question is comprehensive because the examinee must look at logic as well as setpoints.	

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Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	31001K205	
Importance Rating:	3.10	3.50

The CEDM MG sets receive power directly from which ONE of the following systems?

A. NGN-L03 & NGN-L10

B. NAN-S01 & NAN-S02

C. NNN-D11 & NNN-D12

D. PKA-M41 & PKB-M42

Answer: A

Learning Objective:
L80233 Explain the operation of the Motor Generator Set.

Reference Id:	Q10221	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (3)	55.41 (3) Mechanical components and design features of the reactor primary system.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ12, Degraded Electrical Knowledge of bus power supplies to the following: M/G sets. Procedure 40AO-9ZZ12, Degraded Electrical, section 70.0 shows the power supply as NGN-L03 and L10.	

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Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	32002K508	
Importance Rating:	3.40	3.90

All of the following are reasons to keep the Pressurizer within its program values of 33% to 53% **EXCEPT**:

A. If Pressurizer level becomes too low, the heaters uncover and then RCS pressure can no longer be raised.

B. If Pressurizer level becomes too low, the outsurge on a normal reactor trip would cause a SIAS signal on low RCS pressure.

C. If water level becomes too high, the spray nozzles could become covered at which point they would no longer reduce pressure.

D. If Pressurizer level becomes too high, the steam space is reduced and the Pressurizer sprays become much less effective to reduce pressure.

Answer: B

Learning Objective:
L75079 Discuss the purpose and conditions under which the Pressurizer Level Control System is designed to function.

Reference Id:	Q10222	
Difficulty:	3.00	
Time to complete:	4	
10CFR Category:	CFR 55.41 (2)	55.41 (2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: NONE

Knowledge of the operational implications of the following concepts as they apply to the RCS: Why PZR level should be kept within the programmed band.

Answers A, C, and D are design features of the system.

The effect of a gas system in the Pressurizer would provide more “cushion” to insurges caused by RCS temperature increases.

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Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	32011A102	
Importance Rating:	3.30	3.50

Given the following initial plant conditions:

- U3 is at 98% power, in coastdown at EOL.
- Plant parameters are normal.
- The crew ensures that all three charging pumps are running.

Which ONE of the following statements correctly describes why the crew is running all three charging pumps?

A. Pre-outage operational run.

B. Provide Auxiliary Spray capability for pressure control.

C. Enhances cleanup of RCS via increased Letdown flow.

D. Maintains Pressurizer level to offset the effects of RCS average temperature drop in coastdown.

Answer: C

Learning Objective:
L79585 Given the need to change pressurizer level operate the Pressurizer Level Control System

Reference Id:	Q10224	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (7)	55.41 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40OP-9ZZ10, Mode 3 to Mode 5 Ops

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR LCS controls including: Charging and letdown flows.

Answer C is correct based on procedural direction in 40OP-9ZZ10. There is no pre-op run of Charging pumps, there is no impact on inadvertent dilution and D is false.

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Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	37015A401	
Importance Rating:	3.60	3.60

Given the following plant conditions:

- A reactor startup is in progress
- The SU AND CONT CH TRBL annunciator alarms.
- Startup Control Channel counts are reading 2100 cps and increasing slowly.

Which ONE of the following statements correctly describes the first expected operator response to this?

A. Reset the Boron Dilution Alarm System.

B. Verify that the control channels are coming on scale.

C. After verifying overlap, turn off the high voltage supply to the startup channels.

D. Place CEDMCS mode selector to manual sequential in preparation for power range operations.

Answer: C

Learning Objective:
L75657 Describe the conditions required to generate the following annunciators:
- POSSIBLE INADVRTNT BORON DILUTION
- SU AND CONT CH TRBL
- HI RATE OF CHANGE OF POWER
- NUC INST CH INOP
- CALIB AND EX-CORE LIN PWR DEV
- HI LOG PWR LVL BYP PERM
- DNBR/LPD OPER BYP
- LO DNBR CH PRE-TRIP/TRIP

100866 Active Question Bank 2004

Reference Id:	Q8274	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (2)	55.41 (2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.
Cognitive Level:	Comprehension / Anal	
Question Source:	PV Bank Not modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40OP-9ZZ03, Reactor Startup

Ability to manually operate and/or monitor in the control room: Selection of controlling NIS channel.

C is correct because it is an expected alarm during a startup as the Startup channels reach the top of their range. Log channels are already on scale and Control channels are decades away from their range. Question is comprehensive because examinee must evaluate conditions to determine if count level and rate are appropriate, then determine what needs to be done.

2005 LOIT Reactor Operator NRC Exam

60

Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	37017K401	
Importance Rating:	3.40	3.70

QSPDS uses_____ to determine RCS Saturation Margin.

A. the hottest Th or Tc value

B. the average Th or Tc value

C. the average of CETs, Th, and Tc values

D. the hottest of the top three (3) unheated junction thermocouple temperatures

Answer: A

Learning Objective:
L76568 Describe how QSPDS is used to determine Subcooling Margin.

100866 Active Question Bank 2004

Reference Id:	Q19145	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (2)	55.41 (2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: NONE

Knowledge of ITM system design feature(s) and/or interlock(s) which provide for the following: Input to subcooling monitors.

The QSPDS system description has the inputs as the highest Th or Tc value. It does not use average and does not use the top 3.

2005 LOIT Reactor Operator NRC Exam

61

Appears on:	RO EXAM	SRO EXAM
	Tier 2 Group 2	
K/A #	38033K105	
Importance Rating:	2.70	2.80

Given the following plant conditions:

- Unit 1 is at 100% power
- The PC cleanup pump is aligned to the spent fuel pool.
- The PC cooling pump is in operation.
- Spent fuel pool temperature is 114°F.
- Spent fuel pool level is 137' 10" and has been noted by the AO to be slowly losing level over the past several shifts.
- The AO is investigating the loss of level at this time.
- Chemistry reports that the Spent Fuel Pool boron concentration is 2140 ppm.
- You are directed by the CRS to add water to the SFP.

Which ONE of the following should be used to makeup to the Spent Fuel Pool?

A. RMT (Recycle Monitor Tank) Makeup to the SFP.

B. LRS (Liquid Radwaste System) Makeup to the SFP.

C. RWT (Refueling Water Tank) via Gravity Feed Makeup to the SFP.

D. RMWP (Reactor Makeup Water Pump) to the SFP via the Batch Tank Eductor.

Answer: C

Learning Objective:
L77408 Explain the operation of the Spent Fuel Pool under normal operating conditions.

Reference Id:	Q10225	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ23, Loss of SFP Cooling or Level Knowledge of the physical connections and/or cause-effect relationships between the Spent Fuel Pool Cooling System and the following systems: RWST. Procedure 40AO-9ZZ23, Loss of SFP Level or Cooling, section 3.0, lists the RWT of Answer C under borated water sources and not the others in answers A, B, and D. Comprehensive because the examinee must recognize that due to SFP level and boron concentration that makeup must come from a borated water source.	

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	38034A301	
Importance Rating:	2.50	3.10

The "Upender Vertical Interlock" prevents...

A. driving the refueling machine over the transfer system when the Upender is vertical.

B. driving the refueling machine over the transfer system when the Upender is NOT vertical.

C. the Upender from moving IF the refueling machine is too close AND the Upender is vertical.

D. the Upender from moving IF the refueling machine is out of the RTZ (Refueling Transfer Zone) AND the Upender is NOT vertical.

Answer: B

Learning Objective:
100866 Active Question Bank 2004

L97801 Identify the protective interlocks associated with the refueling machine.

Reference Id:	Q67350	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	55.41 (13)	55.41 (13) Procedures and equipment available for handling and disposal of radioactive materials and effluents.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 78OP-9FX01, Refueling Machine Ops

Ability to monitor automatic operation of the Fuel Handling System including: Travel limits.

Answer B is correct because the Upender Vertical Interlock is for the refueling machine and is a concern when the Upender is not vertical.

2005 LOIT Reactor Operator NRC Exam

63

Appears on:	RO EXAM Tier 2 Group 2	SRO EXAM
K/A #	34056A204	
Importance Rating:	2.60	2.80

Given the following plant conditions:

- Unit 1 operating at 100% full power.
- A fault occurs internally in NBN-S01, tripping the normal supply breaker on an 86 lockout.

Which ONE of the following describes the status of NBN-S01 and plant response to this event?

A. Deenergized, resulting in small transient on secondary plant.

B. Deenergized, resulting in a loss of main feedwater pump "B" and a reactor power cutback.

C. Energized from automatically transferring to NBN-S02, resulting in little or no transient.

D. Momentarily loses power until automatic transfer to NBN-X02, resulting in a loss of main feedwater pump "B" and reactor power cutback.

Answer: B

Learning Objective:

L67448	Describe the interlocks associated with the condensate pumps.
L56805	Determine if the RPCB (LOFP) AOP should be executed.

Reference Id:	Q9032
Difficulty:	3.00
Time to complete:	3
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps. Answer B is correct because a fault on NBN-S01 locks out any supply to it. This results in a loss of one feed pump which causes a Reactor Power Cutback.

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	39071K304	
Importance Rating:	2.70	2.90

Given that a release of gaseous decay tank GRN-X02B is in progress. Which ONE of the following will NOT cause an automatic termination of the release?

A. High waste gas discharge flow.

B. High waste gas discharge pressure.

C. High radiation level in the discharge line.

D. High radiation on the radwaste building ventilation exhaust filter inlet.

Answer: D

Learning Objective:
L78943 Explain the operation of the following components under normal operating conditions:
- Gas Surge Header
- Gas Surge Header Containment Isolation Valve
- Gas Surge Tank (GRN-X01)
- Gas Compressor Pre-filters (GRN-F02A, F02B)
- Gas Compressors (GRN-C01A, C01B)
- Decay Tanks (GRN-X02A, X02B, X02C)
- Decay Tank Disch Header Isolation Valves (GRN-UV-34A, 34B)
- Gaseous Discharge Header Isolation Valves (HS-34A and 34B)
- Radiation Monitor (RU-12)
- Gaseous Discharge Flow Control Valve (GRN-FV33)

Reference Id:	Q6739	
Difficulty:	3.00	
Time to complete:	5	
10CFR Category:	CFR 55.41 (4)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Modified	

Comment: Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: Simplified Drawing

Knowledge of the effect that a loss or malfunction of the Waste Gas Disposal System will have on the following: Ventilation system.

WGDT isolates on A, B, & D but not on High Rad off the exhaust filter inlet.

2005 LOIT Reactor Operator NRC Exam

Original question prior to modification | **ID: Q6739** | **Points: 1.00**

Given the following plant conditions:

The control room operator is venting the reactor drain tank to the gaseous surge header. Suddenly the tank pressure stops decreasing.

Which ONE of the following auto actions would stop the flow, isolating the reactor drain tank from the gaseous radwaste system?

A. Radiation monitor RU-12 in alarm.

B. Radiation monitor RU-15 in alarm.

C. Containment isolation actuation signal occurs.

D. Containment recirculation actuation signal occurs.

Answer: C

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	38086K604	
Importance Rating:	2.60	2.90

Which ONE of the following describes the effect a loss of essential lighting will have on the PVNGS Fire Protection System?

A. The In-plant communication system (QF) will become unavailable.

B. The on-site deep well pumps will not auto start to provide makeup to the fire water tanks.

C. The motor driven and diesel fire pumps will not auto start to maintain fire main header pressure.

D. Local control panels that provide power to fire, smoke and heat detectors will become unavailable.

Answer: D

Learning Objective:
L75414 Describe the Fire Detection and Alarm Sub-system of the Fire Protection System.

Reference Id:	Q10229	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (4)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.
Cognitive Level:	Memory	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: NONE

Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the: Fire, smoke, and heat detectors.

A, B, C are incorrect because Essential Lighting does not impact the QF system, deep well pumps or fire pumps.

2005 LOIT Reactor Operator NRC Exam

66

Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2116	
Importance Rating:	2.90	2.80

You are walking through the Unit 1 Turbine Building and notice a seriously injured person on the floor near a scaffold.

Which ONE of the following should be the first person or group directly notified?

A. Security at extension 4444.

B. Fire Protection at extension 1612.

C. The Site Manager at extension 2219.

D. The Site Medical Dept. at extension 2636.

Answer: A

Learning Objective:
L59592 Provide accurate, clear and concise verbal communications.

Reference Id:	Q10230	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 01DP-0AP48, PVNGS Employee Emergency situation response.

Conduct of Operations: Ability to operate plant phone, paging system, and two-way radio.

Answer A is correct in accordance with 01DP-0AP48, PVNGS Employee Emergency situation response. Contacting any other group other than security via the 4444 line may cause unnecessary delays (step 3.6.2 pg 5 of 9).

14DP-0FP32

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1.0 PURPOSE AND SCOPE

1.1 The purpose of this procedure is to describe the actions of personnel upon discovering a fire, hazardous material incident, medical emergency or emergency rescue (special duty) within the boundary of PVNGS.

1.2 This procedure also defines actions to be taken after a fire, hazardous material incident, medical emergency, special duty or drill has been reported.

2.0 RESPONSIBILITIES

2.1 All Plant Personnel

2.1.1 **All plant personnel** are responsible to notify Security at extension 4444 of any fire, hazardous material, medical emergency or rescue emergency (special duty) onsite

2005 LOIT Reactor Operator NRC Exam

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2127	
Importance Rating:	2.80	2.90

Given the following conditions:

Unit 1 at 100% power
COLSS is in service
CPCs are in service
CEACs are in service

A 12 finger CEA drops to the bottom of the core and picks up the Dropped Rod Contact

How will COLSS and CPCs respond to this event?

COLSS will…

A. Initiate a reactor trip, CPCs will initiate a single channel trip.

B. initiate a reactor trip, CPCs will initiate a reactor trip.

C. actuate various alarms, CPCs will generate a single channel trip.

D. actuate various alarms, CPC will initiate a reactor trip.

Answer: D

Learning Objective:

L77046 Describe the purpose and conditions under which the Core Operating Limit Supervisory System is designed to function.

Reference Id:	Q3304	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (8)	55.41 (8) Components, capacity, and functions of emergency systems.
Cognitive Level:	Memory	
Question Source:	PV Bank Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Conduct of Operations: Knowledge of system purpose and or function. Answer D is correct because COLSS is a monitoring system only and provides no auto action, while CPC provides protection.	

2005 LOIT Reactor Operator NRC Exam

Question prior to modification | **ID: Q3304** | **Points: 1.00**

Which statement describes the functional relationship between COLSS and CPCs?

COLSS provides...

A. indication and alarms, while CPCs provide automatic protection.

B. automatic protection, while CPCs only provide indication and alarms.

C. automatic control functions, while CPCs provide automatic protection.

D. automatic protection, while CPCs provide automatic control functions.

Answer: A

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2128	
Importance Rating:	3.20	3.30

With the reactor at 100% power, what is the normal condition of the Safety Injection Tank (SIT) outlet valves and why are they in that condition?

A. The valves are open and deenergized to maintain it as a passive system.

B. The valves are open and energized to provide for rapid closure after a SIAS.

C. The valves are closed and deenergized to allow the SIAS to automatically open the valves.

D. The valves are closed and energized to prevent voiding the RCS with nitrogen after a SIAS.

Answer: A

Learning Objective:
65273 Describe the design characteristics of the Safety Injection Tanks

Reference Id:	Q9776	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (4)CFR 55.41 (8)	55.41 (4) Secondary coolant and auxiliary systems that affect the facility.55.41 (8) Components, capacity, and functions of emergency systems.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Knowledge of the purpose and function of major system components and controls By procedure and design the SIT outlet valves must remain open and deenergized because they are a totally passive system relying on gas pressure as a motive force for injection. Powering them up could lead to closure and the loss of an ESF system.	

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2.2.11	
Importance Rating:	2.50	3.40

A Temporary Modification can remain active...

A. a maximum of 3 months.

B. a maximum of 6 months.

C. as long as it is needed as verified by the performance of a Justification Review.

D. an indefinite period of time, as long as an initial 50.59 screening was performed.

Answer: C

Learning Objective:
L57330 Describe the "Justification Review" of plant T-Mods.

Reference Id:	Q10022	
Difficulty:	3.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 81DP-0DC17, Temporary Modification Control Knowledge of the process for controlling temporary changes Answer C is correct in accordance with 81DP-0DC17, Temporary Modifications, section 3.2.4.	

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2227	
Importance Rating:	2.60	3.50

Which ONE of the following is the Reactor Operator, located in the Control Room, responsible for during refueling operations?

A. The MBA transfer sheet status.

B. The Fuel Building and Core status board.

C. Subcritical multiplication status of the core.

D. Communications with the Refuel Machine and SFHM operators.

Answer: C

Learning Objective:

100866	Active Question Bank 2004
10755	State the communication requirements during refueling.
L114367	Describe the refueling process.

Reference Id:	Q9272	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: T.S. 3.9.101

Knowledge of the refueling process

Answer C is correct.
A, B, & D are accountable to the SRO and Rx Engineer.

2005 LOIT Reactor Operator NRC Exam

71

Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	234	
Importance Rating:	2.50	3.10

According to 10 CFR 20, which ONE of the following correctly lists the requirements which must be met if the whole body dose annual limit is to be exceeded?

A. You are NOT permitted to exceed the annual whole body dose limit.

B. Can NOT exceed 3 Rem/Qtr whole body, and you must have planned special exposures documented.

C. Can NOT exceed 25 Rem whole body lifetime dose, and you must have planned special exposures documented.

D. Planned special exposures need to be documented only if you might exceed your 5 times the whole body lifetime dose.

Answer: C

Learning Objective:
L59736 Given a set of plant conditions, identify the Emergency Coordinator's responsibilities associated with Emergency Exposure

Reference Id:	Q10255
Difficulty:	2.00
Time to complete:	2
10CFR Category:	CFR 55.41 (13) 55.41 (12) Radiological safety principles and procedures.
Cognitive Level:	Memory
Question Source:	INPO Bank NOT modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 10CFR20 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. INPO Q# 18497

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Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2311	
Importance Rating:	2.70	3.20

Given the following plant conditions:

- The Unit 2 control room operators are responding to a SGTR on #1 SG.
- Condenser pressure is 3 inches Hg.
- Aux Feedwater pump A is running.
- RCPs 1A and 2A are running.
- Both Main Feedwater pumps are tripped.
- DG 'B' is running, supplying its bus.
- ESF transformer NBN-X04 has a sudden pressure trip.
- Bus NNN-D15 is deenergized.

In order to cool down the RCS to isolate the affected SG, the operators dump steam to the _____using _____.

A.	condenser	ONLY #2 SG
B.	atmosphere	ONLY #2 SG
C.	condenser	#1 and #2 SG
D.	atmosphere	#1 and #2 SG

Answer: C

Learning Objective:
L11218 Given that the SGTR EOP is being implemented describe the SGTR EOP mitigation strategy

Reference Id:	Q10233	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR 55.41 (10)CFR 55.41 (13)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.55.41 (12) Radiological safety principles and procedures.
Cognitive Level:	Comprehension / Anal	
Question Source:	New	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40DP-9AP09, SG Tube Rupture Tech Guide

Ability to control radiation releases.

Answer C is correct because with all equipment available the condenser is preferred and both SGs are used to dump steam in accordance with 40DP-9AP09, SGTR Tech Guide. Question is comprehensive based on examinee must evaluate plant conditions to determine viable options for cooling down.

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2413	
Importance Rating:	3.30	3.90

Given the following plant conditions:

- A reactor trip has occurred
- SPTAs are in the process of being performed.

Based on these conditions, alarm response procedures do not have to be used….

A. until the plant stabilizes.

B. until the EOPs are exited.

C. until directed by the EOPs.

D. until directed by the SPTAs.

Answer: A

Learning Objective: 100866	Active Question Bank 2004
L10336	Given that an EOP is being implemented describe the process for performing a procedural step in another manner than the one listed
16298	Identify the process for performing a procedural step in another manner than the one listed.

Reference Id:	Q9550	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: 40DP-9AP16, EOP Users Guide

Knowledge of crew roles and responsibilities during EOP flowchart use.

Answer A is correct by EOP Users Guide.
Answer B conditions could take days.
Answers C and D are incorrect because the EOP's do not direct ARP use.

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2005 LOIT Reactor Operator NRC Exam

NUCLEAR ADMINISTRATIVE AND TECHNICAL MANUAL

EMERGENCY OPERATING PROCEDURE USERS GUIDE
40DP-9AP16
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28.0 USE OF ALARM RESPONSE PROCEDURES

1. Following reactor trip, there are so many alarms that it may not be practical to use Alarm Response procedures, but they can be directed by the CRS. The CRS should resume the use of alarm response procedures after the plant stabilizes.
2. The primary and secondary operators should observe, and acknowledge alarms.
3. Alarm response procedures in progress when the reactor trips and SPTAs are entered may be continued until the first priority actions are done.
4. Use **ANY** of the following guidance during use of the LMFR:

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Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2419	
Importance Rating:	2.70	3.70

Given that an ORP is being performed and a step on the left side can not be completed;

What should be done if the contingency action can not be completed either?

A. Exit the procedure and enter the FRP.

B. Proceed to the next step in the left-hand column.

C. Proceed to the next step in the right-hand column.

D. Continue to work on the current step until the actions can be completed.

Answer: B

Learning Objective:
100866 Active Question Bank 2004

L10330 Given that an ORP is being implemented describe the order in which procedural steps are performed during the performance of the EOP

Reference Id:	Q9702	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank Not Modified	
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP16, EOP Users Guide	

Answer B is correct based on the EOP Users Guide, 40DP-9AP16, step 12.0. The asterisk is the designated means for this purpose.

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75

Appears on:	RO EXAM Tier 3	SRO EXAM
K/A #	2443	
Importance Rating:	2.80	3.50

Following the initial declaration of a Notification of Unusual Event (NUE), the STSC (Satellite Technical Support Center) Communicator must commence notification of state and county agencies within...

A. 15 minutes on NAN Phone.

B. 30 minutes on PBX Phone.

C. 1 hour NAN Phone.

D. 4 hours on PBX Phone.

Answer: A

Learning Objective:
64124 Identify the specific E-Plan time requirements and responsibilities of the STSC Communicator.

Reference Id:	Q10214	
Difficulty:	2.00	
Time to complete:	3	
10CFR Category:	CFR 55.41 (10)	55.41 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory	
Question Source:	PV Bank NOT Modified	

Comment:
Proposed Reference to be provided to applicant during examination: NONE
Technical Reference: EPIP-01, STSC

Knowledge of emergency communications systems and techniques

Only the NAN or radio is used for the communication. By EPIP-01, the notification must be within 15 minutes.

EPIP-01, STSC Actions

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2.0 EXPECTATIONS FOR EMERGENCY PLAN IMPLEMENTATION

The on-duty Shift Manager is the senior licensed member with the ultimate responsibility to protect the health and safety of the public. This Shift Manager responsibility is of the highest priority and supersedes all other responsibilities, including event mitigation. When an event occurs, the Shift Manager should remain in, or return to the Control Room and perform emergency plan reviews and classifications as required. Qualified personnel at the scene of the problem will assess any situation and relay information to the control room. The Shift Manager is responsible to ensure the initial classification and proper notifications are completed. During emergency situations wherein the Shift Manager is physically prevented from fulfilling emergency plan requirements (e.g. unable to return to the control room, personnel injury), the following hierarchy shall be followed:

• **Plant Transient not in progress** - The Control Room Supervisor (CRS) is responsible for emergency plan implementation until relieved by the Shift Manager. The CRS is responsible to make the initial classification prior to being relieved as EC.

• **Plant transient in progress** - The CRS is responsible to assign an EC qualified individual to implement the Emergency Plan until relieved by the Shift Manager. The assigned individual should be in order of preference: Unaffected Unit Shift Manager or another qualified Emergency Coordinator (EC).

NUREG 0654 requires notification of State/Local officials and the NRC within 15 minutes and 1 hour respectively, following declaration of an emergency condition. Regulations do not specify a time limit for classifying an emergency. However, consistent with the NRC position published in Emergency Preparedness Position #2 dated 8/95, it is PVNGS management's expectation that 15 minutes is an appropriate limit for classification of an event once indications are available to the Control Room operators that an Emergency Action Level (EAL) has been met. Failure to recognize that an EAL has been met does not delay commencement of the 15 minute classification time-clock.

2005 LOIT Reactor Operator NRC Exam

Cognitive Level Summary

Number of questions linked:	75	Percentage
Memory	31	41%
Comprehension / Analysis	44	59%

Question Source Summary

Number of questions linked to source:	75	Percentage
New	28	37%
Modified		
INPO Bank Modified	0	
PV Bank Modified	3	
Total Modified	3	4%
Bank		
INPO Bank Not Modified	4	
PV Bank Not Modified	40	
Total BANK	44	59%

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

1

Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	217	
Importance Rating:		4.4

Given the following plant conditions:

- The unit is at 100% power and the following conditions exist for 1A RCP:

#1 seal inlet pressure	2250 psig
#2 seal inlet pressure	2130 psig
#2 seal outlet pressure	325 psig
Seal bleedoff flow	3.2 gpm

These readings are indicative of _____ failure requiring the crew to _____ the reactor.

A.	seal #1	shutdown
B.	seal #2	shutdown
C.	seal #1	trip
D.	seal #2	trip

Answer: A

Learning Objective:
L10103 Given the status of NC and RCP seal injection describe the limitations on RCP operation without NC

Reference Id:	Q0693
Difficulty:	2.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ04, RCP Emergencies. Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. B & D incorrect, indications given do not support a #2 seal failure. C incorrect; a reactor trip is only required for both seals failing. A correct; a 1700 psid pressure drop across a seal requires a plant shutdown.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

2

Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	42025AA202	
Importance Rating:		3.80

Given the following plant conditions:

- Unit 1 is in Mode 5.
- RCS Pressure is 195 psia.
- SDC Train "A" is in service using LPSI 'A' pump.
- RU-2, Essential Cooling Water Monitor, is in alarm.
- RU-10, Auxiliary Building Ventilation Exhaust, is in alarm.
- "EW Surge Tank High/Low", is in alarm.

Which ONE of the following describes the plant condition and the appropriate procedure required to mitigate or correct the condition?

A leak exists in the…

A. LPSI 'A' pump seal. Enter the "Excess RCS leak rate" Abnormal Operating Procedure.

B. LPSI 'A' pump seal. Enter the "Loss of Coolant Accident" Emergency Operating Procedure.

C. SDC Heat Exchanger. Enter the "LMFRP" Emergency Operating Procedure.

D. SDC Heat Exchanger. Enter the "Radiation Monitoring" Alarm Response.

Answer: C

Learning Objective:
L65400 Describe how the Essential Cooling Water system is supported by the following systems:
- Radiation Monitoring (SQ)
- Essential Chilled Water (EC)

Reference Id:	Q10237
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: LMFRP pg 3 of 334 Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere. The EW surge tank is located on the 120' elevation. The Aux Bldg Rad monitor samples from different Aux Bldg elevations. The surge tank would overflow onto the 120'. The LMFRP is appropriate for this condition. A, B incorrect, no indication given to support leak from the LPSI seal D incorrect, the rad monitor alarm response by itself would not mitigate the condition or direct them to a mitigating procedure.

LOWER MODE FUNCTIONAL RECOVERY 40EP-9EO11
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1.0 ENTRY CONDITIONS

The Lower Mode Functional Recovery Procedure may be entered when **ALL** of the following conditions exist:

1. The unit is in Mode 4, 5, or 6 with LTOP in service.

   And

2. An Emergency Operating Procedure is **NOT** currently in use.

   And

3. **ANY** of the following conditions exist:

   - The CRS directs entering the LMFR
   - Any Lower Mode Safety Function Status Check Acceptance Criteria are **NOT** met
   - An Abnormal Operating Procedure directs entering the LMFR
   - An Alarm Response Procedure directs entering the LMFR
   - Any condition, or pattern of symptoms that are not being mitigated by the procedure(s) in use (Abnormal, Alarm or Normal)
   - Any condition, or pattern of symptoms for which no procedural guidance can be identified

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

3

Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	42040AA205	
Importance Rating:		4.50

Given the following plant conditions:

- Unit 1 has tripped.
- Containment pressure is at 12 psig and slowly lowering.
- Containment temperature is 186°F.
- Containment Spray Flow is 4400 gpm in both headers.
- PZR level is 20% and rising.
- RVUH is 100%.
- RCS subcooling is 112°F.
- SG 1 is at 24% WR (increasing) and being fed from AFW at 505 gpm.
- SG 2 is below the indicated level.
- Both HPSI pumps are injecting into the RCS.

Based on these conditions, the CRS should direct the operator to...

A. feed SG 2 at ~1500 gpm.

B. maximize feed flow to SG 1.

C. start throttling HPSI discharge.

D. override and isolate Containment Spray flow.

Answer: C

Learning Objective:
L11202 Given conditions of an ESD describe the mitigating strategy outlined in the ESD EOP

Reference Id:	Q10238
Difficulty:	2.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	Modified PV Bank
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO05, ESD, step 16 Ability to determine and interpret the following as they apply to the Steam Line Rupture: When ESFAS systems may be secured. B incorrect, SG Level is recovering. Maximizing feed flow would compound the C/D rate. A incorrect, this is correct if a SGTR occurred in conjunction with the ESD. C correct, conditions given meet SI throttle criteria for Harsh Containment D incorrect, containment spray flow is not secured until Containment press is < 5 psig.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

Original PV Question prior to modifying **ID: Q9037** **Points: 1.00**

Given the following plant conditions:

An ESD has occurred due to a steam line break inside containment.
The Operating crew has just entered in the ESD procedure.
Containment pressure peaked and is stable at 9 psig
Containment temperature is 186°F.
PZR level is 12% and rising.
RVUH is 100%.
RCS subcooling is 112°F
SG 1 is at 24% WR (increasing) and being fed from AFW at 505 gpm.
SG 2 is below the indicated level.
Both HPSI pumps are injecting into the RCS.

Based on these conditions, the operator should**...**

A. throttle HPSI immediately.

B. maximize feedflow to SG 1.

C. throttle HPSI when PZR level reaches 15%.

D. maximize feedflow to SG 1 and throttle HPSI when PZR level reaches 15%.

Answer: C

EXCESS STEAM DEMAND 40EP-9EO05

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CAUTION
Throttling HPSI injection valves will cause erosion damage to downstream piping.

*16. **IF** at least one HPSI Pump is operating, **AND ALL** of the following conditions exist:

- RCS is 24°F [44°F] or more subcooled
- Pressurizer level is greater than 10% [15%] and **NOT** lowering
- The unisolated Steam Generator is available for RCS heat removal with level being maintained within or being restored to 45 - 60% [45 - 60%] NR
- RVLMS indicates RVUH level is 16% or more

THEN throttle HPSI flow or stop the HPSI Pumps one pump at a time.

*17. **IF** any of the Safety Injection throttlecriteria can **NOT** be maintained, **THEN** perform the following:

a. Raise HPSI flow.
b. Start HPSI pumps as needed.

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4

Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	42057AA214	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 3 is operating in Mode 1.
- Voltmeter PKA-EI-M41 indicating zero volts.
- "125V IE CC M41 CHGR A/AC PNL D21 TRBL" alarm (1A04A).

Based on these indications, the CRS should enter the _____ and _____.

A. "Loss of Class Instrument Power" AOP. Verify that PNA-D25 is energized.

B. "Loss of Class Instrument Power" AOP. Bypass all PPS Channel 'A' and 'B' trip bistables.

C. "Degraded Electrical" AOP. Align power for class instruments to its alternate power supply.

D. "Degraded Electrical" AOP. Restore power to affected instrumentation in parallel with performance of the Reactor Trip EOP.

Answer: A

Learning Objective:
L74141 Explain the operation of the Static Transfer Switch which is provided on Inverters in Units 2 and 3.

Reference Id:	Q10239
Difficulty:	3.00
Time to complete:	2
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ13, Loss of Class Inst or Control Power Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: That substitute power sources have come on line on a loss of initial AC. C, D incorrect, PN system has a static transfer switch that on a loss of power to the inverter auto swaps power to the AC power supply, to which it remains aligned until manually transferred back to the inverter, RTSG Brkr A would open, i.e. ½ Rx Trip signal. A is correct for Unit 2 & 3 only. PNA-D25 would auto realign its power supply and remain energized B would be a correct action for Unit 1 IAW Loss of class power.

LOSS OF CLASS INSTRUMENT OR CONTROL POWER Page 5 of 95

3.0 LOSS OF PKA-M41 OR PKA-D21

___ 5. Check that PNA-D25 is energized

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

5

Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	058G244	
Importance Rating:		4.30

Given the following plant conditions:

- Unit 1 Reactor has tripped
- The CRS is proceeding through the SPTAs.
- Upon requesting the status of the electric plant, the RO informs him of the following:

  - ✓ PBB-S04 is energized from EDG B
  - ✓ PNA-D25 is energized from Inverter PNA-N11
  - ✓ PKA-M41 is energized from its battery
  - ✓ PKC-M43 is energized from its battery
  - ✓ All other buses are DE-ENERGIZED

Based on these conditions, upon completing the remaining steps of the SPTAs, the CRS should transition to which ONE of the following procedures?

A. Reactor Trip

B. LOOP (Loss of Offsite Power)

C. FRP (Functional Recovery Procedure)

D. Stay in the SPTAs and perform the "Degraded Electrical" AOP

Answer: C

Learning Objective:
56297 Given the FRP is being performed and given specific plant conditions determine if the selected MVDC success path safety function status checks are being met

Reference Id:	Q10240
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO02, Rx Trip Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures The Reactor Trip procedure can not be entered because to meet the Maintenance of Vital Auxiliaries section at least one of the following trains of PK and PN is energized and is on the same train as the powered vital 4.16 kV AC bus. Therefore the only appropriate procedure to enter is the Functional Recovery Procedure. The other electrical AOP/EOP procedures do not handle a MVDC bus plus philosophy issue.

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SAFETY FUNCTION:

2. Maintenance of Vital Auxiliaries

ACCEPTANCE CRITERIA:

a. At least one vital 4.16 kV AC bus energized.

b. At least one non-vital 13.8 kV AC bus energized.

c. At least one non-vital 4.16 kV AC bus energized.

d. At least one of the following trains of PK and PN is energized and is on the same train as the powered vital 4.16 kV AC bus.

- PKA-M41, PKC-M43, and PNA-D25
- PKB-M42, PKD-M44, and PNB-D26

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Appears on:		SRO EXAM
	Tier 1 Group 1	
K/A #	41007EA206	
Importance Rating:	4.30	4.50

Given the following plant conditions:

- Unit 2 has tripped.
- The Main Turbine failed to trip automatically and was manually tripped by the secondary operator.
- An MSIS has occurred due to overfeeding both Steam Generators.
- 1A RCP has been secured post trip due to high thrust bearing temperatures.
- Both SGs are being fed at 500 gpm.
- #1 SG is at 30% WR and increasing.
- #2 SG is at 40% WR and increasing.
- Loop 1 Tcold is 561°F and decreasing.
- Loop 2 Tcold is 565°F and steady.
- All Engineered Safety Functions have actuated normally.

What is the most appropriate ORP for this condition and why?

A. SGTR, a tube rupture exists in #2 SG.

B. ESD, a rapid cooldown event is in progress.

C. FRP, there is more than one event ongoing.

D. Reactor Trip, this is the only event ongoing.

Answer: D

Learning Objective:
L10350 Given conditions of a reactor trip, analyze whether or not entry into the Reactor Trip EOP is appropriate, IAW 40EP-9EO01.

Reference Id:	Q5093
Difficulty:	2.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO01, Rx Trip Ability to determine and interpret the following as they apply to a Reactor Trip: Occurrence of a Reactor Trip The examinee needs to ascertain that divergent SG levels exist due to a tripped RCP. A SGTR could be misdiagnosed based on SG #2 level being higher than #1. Due to the overcooling event combined with the tripped RCP loop 1 delta T is higher. This may cause a misdiagnosis of an ESD event or possibly a dual event requiring a FRP entry.

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Appears on:		SRO EXAM
	Tier 1 Group 2	
K/A #	42003AA204	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A Group 4 CEA drops to the bottom of the core.
- The crew responds in accordance with the abnormal operating procedure for a dropped rod.
- The I&C technician contacts the control room and informs them that the dropped CEA can be recovered.
- The CEDMCS control switch has been repositioned to "Manual Individual".
- Group 4 is selected.
- The dropped rod has been selected.
- The operator takes the shim switch to the withdrawal position.
- No other operator action has been taken.

Based on these conditions, the CRS should enter L.C.O. _____ and move the rod _____.

A. 3.1.5 with no other operator action required.

B. 3.1.5 by bypassing the CWP (CEA withdrawal prohibit).

C. 3.1.6 after resetting the AWP (Automatic Withdrawal Prohibit).

D. 3.1.6 by having I & C jumper out the AMI (Automatic Motion Inhibit).

Answer: B

Learning Objective:
L56642 Describe the required action if any CEA(s) is deviating by 6.6 inches or more from its group.

Reference Id:	Q10242
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ11, CEA Malfunction Ability to determine and interpret the following as they apply to the Dropped Control Rod: Rod motion stops due to dropped rod. A incorrect, a CWP is in due to deviation. C,D incorrect, a deviation causes a CWP not an AWP. No indication of AMI is present. T.S. 3.1.6 only applies to shutdown CEAs. B correct, a CWP is generated due to deviation of > 5.5" w/i a subgroup and T.S. 3.1.5. for reg group CEA. The CWP can be bypassed to allow rod w/d.

CEA MALFUNCTIONS 40AO-9ZZ11

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3.0 DROPPED OR SLIPPED CEA MODE 1 OR 2

INSTRUCTIONS

____28. Contact Operations Management to determine action to be taken prior to attempting to align the affected CEA.

____29. **IF** the affected CEA can be moved,
AND Operations Management concurs,
THEN perform the following:
a. Determine the minimum CEA withdrawal time.
REFER TO Appendix C, CEA Withdrawal Time Limits.
b. **IF** a CWP has occurred,
AND the CEA(s) is to be withdrawn,
THEN press and **hold** the CWP Bypass pushbutton during CEA withdrawals.

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Appears on:		SRO EXAM
	Tier 1 Group 2	
K/A #	42028AA201	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 3 is operating at 100% power.
- Pressurizer LEVEL SETPOINT CONTROL (RCN-LIC-110) is in Remote-Auto.
- The LEVEL CONTROL SELECTOR (CHANNEL X/Y) switch is in CH-Y.
- The HEATER CONTROL SELECTOR LEVEL TRIP (CHANNEL X/Y) switch is in "BOTH".
- The Reactor Operator informs the CRS of the following indications and alarms:
  - All backup heaters are energized
  - The proportional heaters are energized
  - Channel 'Y' indicated PZR level is 69% and slowly rising
  - Channel 'X' indicated PZR level is 51% and slowly going down
  - Post Accident PZR level indication on Board 2 is at 45% and slowly rising
  - PZR pressure is 2240 psia and slowly going down
  - RCS temperature is constant
  - "PZR TRBL" alarm
  - "PZR Hi-Lo" alarm

Which ONE of the following describes a possible cause for these indications, and the action that should be ordered by the CRS?

A. a small leak has developed in the Variable leg of Channel 'X' of the PLCS. Direct the PZR heater selector switch to be shifted to Channel 'Y' only.

B. Tavg from the controlling Reactor Regulating System Channel 'Y' has failed low. Direct the Reactor Regulating System be shifted to the unaffected Channel 'X'.

C. a small leak has developed in the Reference leg of Channel 'Y' of the PLCS. Direct the PZR level controls and heater selector switch to be shifted to Channel 'X' control.

D. Tavg from the controlling Reactor Regulating System Channel 'X' has failed low. Direct the Reactor Regulating System be shifted to the unaffected Channel 'Y'.

Answer: C

Learning Objective:
L75120 Describe the conditions required to generate the following annuncitators:
- PZR TRBL
- PZR Hi-Lo

Reference Id:	Q8273
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: NONE Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: PZR level indicators and alarms.

C correct, a Ref leg break would cause indicated level to increase causing an increase in letdown to maintain level. The PAM instrument shares a common reference leg with 110X.
A incorrect, a leak in the variable leg of Channel 'X' would cause 'X' indication to drop, but would not cause both of the other level indicators to rise.
B incorrect, Tavg failing low would cause actual PZR level to lower, due to a lowering setpoint, but would not cause differing level indications between channels.
D incorrect, a failure of the backpressure controller may cause indicated letdown flow to go to zero initially and then it would cycle as the relief lifted. The other indications do not support a failure of the controller.

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Appears on:		SRO EXAM
	Tier 1 Group 2	
K/A #	A11G2120	
Importance Rating:		4.20

Given the following plant conditions:

- Unit 1 was operating at 50% power prior to a Reactor Trip.
- SG 2 Level is 0% WR.
- SG 2 Pressure is 350 psig and decreasing.
- SG 1 Level is 40% WR and steady.
- SG 1 Pressure is 1100 psig and steady.
- RCS Loop 2 Tcold is at 500 °F and increasing.
- RCS Loop 1 Tcold is at 550 °F and decreasing.
- Pressurizer level is 9% and steady.
- RCS Press is 1400 psia and increasing.
- Containment Press is indicating .3 psig
- Containment Temperature is 90 °F.

The CRS should direct the operators at this time to…

A. stabilize RCS temperature by throttling HPSI flow to prevent PTS concerns.

B. stabilize RCS temperature by lowering SG 1 Pressure to prevent PTS concerns.

C. equalize RCS temperature by lowering SG 2 Pressure to allow more SI flow to prevent Reactor restart concerns.

D. reduce RCS loop 1 temperature by lowering SG 1 Pressure to allow more SI flow to prevent Reactor restart concerns.

Answer: B

Learning Objective:	
L11205	Given a set of plant parameters determine when and how RCS temperature is stabilized during an ESD
L61355	Determine when and how RCS temperature is stabilized during an ESD.
L61329	Given conditions of an ESD and appropriate reference material describe the mitigation strategy used during excessive steam demand accidents
L89129	Given a set of plant parameters determine why, when and how RCS temperature is stabilized during an ESD

Reference Id:	Q6723
Difficulty:	2.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40EP-9EO05, ESD RCS Overcooling: Ability to execute procedure steps. A, D, C incorrect per ESD Emergency Operating Procedure and could possibly complicate the mitigating strategy.

EXCESS STEAM DEMAND 40EP-9EO05

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INSTRUCTIONS

*14. Stabilize RCS temperature using the lowest Tc by performing the following:

a. Maintain Tc within the P/T limits. REFER TO Appendix 2, Figures.

b. Steam the least affected Steam Generator using **ANY** of the following:

- SBCS
- ADVs from the Control Room
- Appendix 18, Local ADV Operation

c. Control feedwater to the least affected steam generator.

*15. **IF** steaming to atmosphere, **THEN** inform Radiation Protection and the RMS Technician.

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10

Appears on:		SRO EXAM
	Tier 1 Group 2	
K/A #	44A16AA22	
Importance Rating:		3.70

The following plant conditions have just occurred:

- RU-142 (Main Steam Line N-16 Monitor) Channel 1 is in HIGH alarm.
- RU-142 Channels 2, 3, and 4 are in ALERT alarm.
- RMS is showing a leakrate of 70 gpd.

Based on these conditions, the CRS should enter the appropriate procedure and…

A. commence a plant shutdown. Entry into LCO 3.4.14 (RCS leakage) is not required at this time.

B. commence a plant shutdown. Entry into LCO 3.4.14 (RCS leakage) is necessary due to identified leakage being greater than 50 gpd.

C. trip the reactor. Entry into LCO 3.4.14 (RCS leakage) is necessary due to unidentified leakage being greater than 50 gpd.

D. trip the reactor. Entry into LCO 3.4.14 (RCS leakage) is not required because inter-system leakage is not considered RCS leakage.

Answer: A

Learning Objective:
L10169 Given indications of RCS or a Steam Generator Tube Leak, describe the basic procedure methodology, including Reactor Trip thresholds,

Reference Id:	Q8817
Difficulty:	4.00
Time to complete:	5
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ02, RCS Leakage, App F.; T.S. 3.4.14 Ability to determine and interpret the following as they apply to the (Excess RCS Leakage) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments A SGTR leak in excess of 50 gpd requires an orderly plant shutdown per App. F of 40AO-9ZZ02, Excess RCS leakrate. The LCO is not entered until >150 gpd.

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11

Appears on:		SRO EXAM
	Tier 2 Group 1	
K/A #	2222	
Importance Rating:		4.10

Given the following plant conditions:

- RCS fill and vent operations are in progress
- The CRS desires to start a Reactor Coolant Pump.
- Average Steam Generator secondary side temperature is 180°F.
- RCS T-cold is 150°F.
- PZR level is 28%

What is the main concern with starting an RCP at this time?

A. A rapid RCS temp drop, leading to a PTS concern.

B. Possible RCS pressure excursion causing LTOP lifting.

C. RCP motor starting and running limits would be exceeded.

D. Possible cold water reactivity excursion reducing shutdown margin.

Answer: B

Learning Objective:
L10199 Given that 40OP-9ZZ01 is in progress identify the consequences associated with starting RCPs when SG temperatures are greater than RCS cold leg temperature.

Reference Id:	Q7895
Difficulty:	3.00
Time to complete:	2
10CFR Category:	55.43 (2) Facility operating limitations in the technical specifications and their bases.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: Steam Tables Technical Reference: 40OP-9ZZ01, Mode 5 to 3; pg 12; T.S. 3.4.7, NOTE 3 Knowledge of limiting conditions for operations and safety limits A, C, D incorrect, these are all correct fundamental relationships that would be impacted in the correct direction but are not the main concern.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops — MODE 5, Loops Filled

LCO 3.4.7 One Shutdown Cooling (SDC) train shall be OPERABLE and in operation, and either:
a. One additional SDC train shall be OPERABLE; or
b. The secondary side water level of each Steam Generator (SG) shall be = 25%.
----------NOTES----------
1. The SDC pump of the train in operation may be de-energized for = 1 hour per 8 hour period provided:
a. No operations are permitted that would cause reduction of the RCS boron concentration; and
b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required SDC train may be inoperable for up to 2 hours for surveillance testing provided that the other SDC train is OPERABLE and in operation.

3. No Reactor Coolant Pump (RCP) shall be started with one or more of the RCS cold leg temperatures ≤214°F during cooldown, or ≤ 291°F during heatup unless the secondary side water temperature in each SG is < 100°F above each of the RCS cold leg temperatures.

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Appears on:		SRO EXAM
	Tier 2 Group 1	
K/A #	38008A201	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 2 is in Mode 6.
- Core offload is in progress.
- Refueling cavity level is 24' over the reactor vessel flange.
- A large NC Water leak exists from the outboard NC Containment supply isolation valve and has resulted in a loss of Nuclear Cooling Water due to all pumps starting to cavitate.

Which ONE of the following accurately describes the procedure that would be entered and the action required?

A. 40AO-9ZZ03, Loss of Cooling Water and direct actions to crosstie EW to NC.

B. 40EP-9EO11, LMFRP and direct actions per HR-2 for loss of cooling to the Spent Fuel Pool.

C. 40AO-9ZZ03, Loss of Cooling Water and direct actions to crosstie EW to SFP cooling.

D. 40EP-9EO11, LMFRP and direct actions per HR-2 for loss of heat removal safety function.

Answer: C

Learning Objective:
L10100 Given plant conditions, determine if the Loss of Cooling Water AOP should be executed IAW 40AO-9ZZ03.

Reference Id:	Q10246
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ03, Loss of Cooling Water Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCW pump A incorrect, a nonisolable leak exists on the NC System. B incorrect, the LMFRP does not contain steps in HR-2 to restore SFP cooling. D incorrect, HR-2 is not in jeopardy at this time. EW supplies the SDC HX and is not lost when EW is crosstied to the SFP. C correct, per procedure to restore cooling to the SFP.

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Appears on:		SRO EXAM
	Tier 2 Group 1	
K/A #	37012A201	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 3 is operating at 100% power.
- Pressurizer Pressure NR RCA-PI-101A is reading offscale high.
- Pressurizer Pressure WR RCA-PI-102A is reading 2250 psia.
- Pressurizer Pressure NR RCB-PI-101B is reading 2240 psia.
- Pressurizer Pressure WR RCB-PI-102B is reading 2250 psia.
- Pressurizer Pressure NR RCD-PI-101D is reading 2240 psia.
- Pressurizer Pressure WR RCD-PI-102D is reading 2240 psia.
- Point ID “SBTC06 Lo Pzr Press Ch C – Trip” is in alarm.
- Point ID “SBTC05 Hi Pzr Press Ch C - Trip” is in alarm.

Which ONE of the following would you expect to be a consequence of this and what action should be taken to mitigate the consequence?

A. The Reactor will trip; the CRS should enter the SPTAs.

B. No actuations should occur; the CRS should enter the appropriate alarm responses.

C. An 'A' train SIAS should occur; the CRS should enter the AOP for "Inadvertent PPS-ESFAS".

D. The Reactor will trip, an 'A' train SIAS should occur, the CRS should enter the SPTAs in conjunction with the AOP for "Inadvertent PPS-ESFAS".

Answer: A

Learning Objective:
L11037 Determine whether or not the Inadvertent PPS-ESFAS Actuations AOP should be executed

Reference Id:	Q10247
Difficulty:	4.00
Time to complete:	5
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Simplified Drawing Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation. A correct, 2/4 channels reach trip condition. NR provides input to Rx Trip for High Press. B incorrect, a SIAS/CIAS would NOT occur, only 1 signal is present for the condition. C incorrect, the CRS would NOT enter the AOP but would direct a Rx Trip. D incorrect, SIAS/ CIAS NOT present.

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14

Appears on:		SRO EXAM
	Tier 2 Group 1	
K/A #	34076A201	
Importance Rating:		3.70

Given the following plant conditions:

- Unit 1 is 90% power.
- 'A' PCW (Plant Cooling Water) pump is out of service for maintenance.
- The 'B' PCW pump is running but develops a rapidly and continually degrading discharge flow.

Which ONE of the following action(s) should the CRS direct?

The CRS should direct...

A. the RO to minimize the heat loads on Turbine Cooling Water by performing the AOP for "Loss of Cooling Water" only.

B. a Reactor Trip, enter the SPTAs, and direct a RO to cross-tie EW to NC using Standard Appendix 63 to restore NC loads.

C. a Reactor Trip, enter the SPTAs, and direct a RO to perform "Loss of Cooling Water" AOP, to minimize cooling loads on Turbine Cooling Water.

D. the RO to minimize the heat loads on Essential Cooling Water by performing the AOP for "Loss of Cooling Water" and also enter the "Loss of Letdown" AOP.

Answer: C

Learning Objective: L10102	Given a sustained loss of the Plant or Turbine Cooling Water system(s) describe the required actions for a sustained loss of the Plant or Turbine Cooling Water System(s)
Reference Id:	Q10248
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ03, Loss of Cooling Water Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS. LO & EW temp will increase. Continued plant operations will be affected almost immediately therefore the procedure directs a Rx Trip for this condition if NOT restored. The CRS is also expected to follow through in this condition with the AOP for loss of cooling on the secondary plant to protect equipment from overheating, crosstie EW to NC to restore NC loads and to enter the AOP for “Loss of letdown”. B incorrect, the SPTAs will not correct or mitigate the loss of cooling. A, D incorrect, Rx trip is required. Not enough time to prevent heat up to cause equipment overheating.

LOSS OF COOLING WATER 40AO-9ZZ03 Page 6 of 36

3.0 PLANT COOLING WATER

INSTRUCTIONS

___ 3. **IF** the PW system has been restored,
THEN GO TO the appropriate procedure for current plant conditions.

___ 4. **IF** the PW system is **NOT** restored,
AND the Reactor is at power,
THEN perform the following:
a. Trip the Reactor.
b. PERFORM 40EP-9EO01, Standard Post Trip Actions.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

15

Appears on:		SRO EXAM
	Tier 2 Group 1	
K/A #	35103A204	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 3 is in Mode 6.
- Refueling operations are in progress.
- RU-33, Refueling Machine Area, receives a HIGH alarm.
- The LSRO reports a fuel bundle has dropped into the core and bubbles are coming from the area.
- No BOP-ESFAS signals have actuated at this time.
- RU-1, Containment Radiation monitor is slowly increasing.

Which ONE of the following actions should the control room take?

A. Manually actuate CPIAS and CREFAS and evacuate all unnecessary personnel from the containment.

B. Manually actuate a FBEVAS and CPIAS and evacuate all unnecessary personnel from the containment and Fuel Building.

C. Direct the RO to close essential dampers HFA-M01 through M06 and HFB-M01 through M06 and evacuate all personnel the containment.

D. Inform the LSRO to move the damaged fuel element to the intermediate storage rack and direct RP to evacuate all personnel from the containment.

Answer: A

Learning Objective:
56433 Given the LMFR procedure is in progress and presented with specific plant parameters determine the need for containment evacuation

Reference Id:	Q10249
Difficulty:	3.00
Time to complete:	5
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ22, Fuel Damage Ability to (a) predict the impacts of the following malfunctions or operations on the containment system-and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations Containment evacuation (including recognition of the alarm). A correct, procedure requires activation of both CPIAS and CREFAS to protect both the Control Room and Containment personnel. B incorrect, while the fuel damage may eventually affect the Fuel Bldg also, based on the given information the procedure only directs actions for the Control Room and containment. C incorrect, viable actions but not IAW procedure. D incorrect, viable actions but not IAW procedure.

3.0 IRRADIATED FUEL DAMAGE

INSTRUCTIONS

___ 2. Announce the following using the unit page system:

"Attention all personnel, Attention all personnel, All non-essential personnel evacuate the following area(s) immediately":
(announce as necessary)

- Containment Building
- Fuel Building

___ 3. **IF** the damaged fuel is located in the Containment Bldg, **THEN** perform the following:

a. Ensure **BOTH** of the following BOP-ESFAS actuations:

- CPIAS
- CREFAS

b. Record the time of the CREFAS Actuation.

_____

c. Direct personnel to ensure **BOTH** of the following:

- The personnel air lock doors are closed
- The equipment hatch is closed

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

16

Appears on:		SRO EXAM
	Tier 2 Group 2	
K/A #	38034K105	
Importance Rating:		3.40

Given the following plant conditions:

- Unit 1 is in Mode 6 with core off-load in progress.
- Point ID SENS5 “Startup Channel 1 Boron Dilution” is in alarm.
- SU monitor SEN-JR-5 on B04 indicates upscale for Channel 1.
- The Audio Channel Select toggle switch in the “Channel 2” position.
- The audible count rate is ~ 1 count every 2 to 3 seconds and has not changed.
- SEN-JI-5, SU channel 2 meter is reading 1.

Which ONE of the following states ALL the actions that should be taken IAW Tech Specs?

A. Suspend positive reactivity additions immediately.

B. Restore RCS boron concentration to within limits within 1 hour.

C. Suspend Core alterations AND positive reactivity additions immediately.

D. Determine the RCS Boron concentration immediately and at the monitoring frequency specified in the COLR.

Answer: C

Learning Objective:
L97323 Given count rate information State the required actions to take if count rate has increased.

Knowledge of the interrelations between the Fuel Handling Incidents and the following: Fuel handling equipment

Reference Id:	Q10250
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (1) Conditions and limitations in the facility license.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: T.S. 3.9.2

Knowledge of the physical connections and/or cause-effect relationships between the Fuel Handling System and the following systems: Shutdown monitor.

A, B incorrect, incomplete or inaccurate TS action statements.
D incorrect, this would be correct for the alarm circuit being INOP.

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two startup range monitors (SRMs) shall be OPERABLE.
APPLICABILITY: MODE 6.
ACTIONS
----------NOTE----------
Enter applicable Conditions and Required Actions of
LCO 3.3.12, "Boron Dilution Alarm System (BDAS)" for
BDAS made inoperable by SRMs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SRM inoperable.		
	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend positive reactivity additions.	Immediately
B. Two required SRMs inoperable.		
	B.1 Initiate action to restore one SRM to OPERABLE status.	Immediately

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17

Appears on:		SRO EXAM
	Tier 2 Group 2	
K/A #	34056A205	
Importance Rating:		2.50

Given the following plant conditions:

- Unit 1 is at 40% power
- One train of Circulating Water is in operation
- The Hotwell sodium (Na) concentration is 35 ppm
- Hotwell cation conductivity is pegged high (flashing 19.99 mmho/cm).
- Hotwell level is 45 inches.

Based on these conditions the CRS should…

A. enter the "Alarm Response" Procedure and swap demineralizer beds.

B. enter the "Condenser Tube Rupture" AOP and direct a reactor trip.

C. enter the “Alarm Response" Procedure and trip the main turbine.

D. enter the "Condenser Tube Rupture" AOP and direct a manual initiation of RPCB.

Answer: B

Learning Objective:
L95424 As an operating crew mitigate a Condenser Tube Rupture by performing actions

Reference Id:	Q6637
Difficulty:	2.00
Time to complete:	4
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Memory
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ10, Condenser Tube Rupture, Appendix O Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Condenser tube leakage. C incorrect; this would lower power rapidly and is IAW loss of vacuum procedure and ARP but could adversely affect a condenser tube leak. D incorrect; this would lower power rapidly and is IAW Condenser Tube Rupture procedure if there is enough time and stabilization at 40% is possible. A incorrect, this would be beneficial but would not alleviate the condition fast enough. B correct per the procedure. NOTE: The hotwell drawoff valves isolate on high cation conductivity.

Appendix O, Condenser Tube Rupture Trip Criteria

---------- NOTE ----------

Using normal Circ Water concentration values, a leak rate of ~14 GPM is estimated to result in the affected hotwell sodium reaching 35 ppm. A double ended condenser tube break can result in an ingress of Circ Water in excess of 200 gpm.

IF ANY of the following exist:

- TRIP VALUES reached or exceeded
- A trend indicates that a Steam Generator TRIP VALUES may be exceeded prior to completing a rapid downpower

THEN perform the following:

a. Ensure reactor tripped.
b. PERFORM 40EP-9EO01, Standard Post Trip Actions.
c. PERFORM Appendix M, Condenser Tube Rupture Post Trip Actions

PARAMETER TRIP VALUE

Steam Generator
(In-Line Monitor or Sample)
Sodium 1.0 ppm (1000 ppb) or more with a corresponding rise in Cation Conductivity.
Cation Conductivity 15 ∝mho/cm or more with a corresponding rise in Sodium.
(Applies also to Sulfates and Chlorides, however these indications will lag sodium).
Sulfates 1.0 ppm (1000 ppb) or more with a corresponding rise in Cation Conductivity. (Lags sodium)
Chloride 1.0 ppm (1000 ppb) or more with a corresponding rise in Cation Conductivity. (Lags sodium)

Condenser
(Local Indication)
Hotwell sodium 35 ppm (35,000 ppb) or more

End of Appendix

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

18

Appears on:		SRO EXAM
	Tier 2 Group 2	
K/A #	37072G2429	
Importance Rating:		4.00

Given the following plant conditions:

- Unit 1 and 3 are at 100% power.
- Unit 2 is in Mode 5.
- Radiography is in progress in the Unit 2 Aux Bldg.
- At 12:00 PM, Unit 3 chemistry informs you that they have a confirmed RU-143 Plant Vent reading of 1.44E-03 uCi/cc.
- At 1:00 PM, the radiography source in the Unit 2 Aux Bldg becomes accidentally EXPOSED.
- Unit 2 RU-18 (Control Room) goes into alarm and is confirmed to be reading 20 mR/hr.
- Also at this same time, Unit 3 chemistry makes a follow up report that RU-143 reading is the same and has not changed since the last report.

Based on these conditions, which ONE of the following individuals has the responsibility of the On-Shift Emergency Coordinator at 1:00 PM?

A. U1 Shift Manager

B. U2 Shift Manager

C. U1 SM relieves U3 SM at this time

D. U2 SM relieves U3 SM at this time

Answer: A

Learning Objective:
L65140 Given an Emergency event, direct emergency plan actions as the Emergency Coordinator IAW EPIP-01, STSC actions.

Reference Id:	Q10251
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (1) Conditions and limitations in the facility license.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: EAL Tables Technical Reference: EPIP-99, Appendix A Knowledge of emergency plan An NUE is in progress in Unit 2 at the same time an ALERT is present in Unit 1. EPIP-01 requires that for multiple events prior to initial classification that the U1 SM is designated as the On-Shift EC.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

19

Appears on:		SRO EXAM
	Tier 3	
K/A #	216	
Importance Rating:		4.30

A LOCA has occurred on Unit 1. Due to High Radiation Levels in the Auxiliary Building, the EC has declared a SAE. The following additional actions have been taken:

- The Classification has been made.
- The TSC and OSC are manned.
- ENS Notifications have been made.
- ERDS have been activated.

The NEXT mandatory action for the EC to perform is a Site _____.

A. Assembly followed by Evacuation.

B. Assembly followed by Accountability.

C. Accountability followed by Evacuation.

D. Accountability followed by Early Dismissal.

Answer: B

Learning Objective:
L103040 Describe 10CFR50.54(x) how it is implemented.

L12043 Describe 10CFR50.54(x) and 10CFR72.32(d) and how they are implemented.

Reference Id:	Q9907
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (1) Conditions and limitations in the facility license.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9OP02, Conduct of Shift Ops Ability to supervise and assume a management role during plant transients and upset conditions B correct, assembly and accountability are mandatory at the SAE level. D incorrect, early dismissal in not mandatory. A, C incorrect, evacuation is not mandatory until GE declared.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

20

Appears on:		SRO EXAM
	Tier 3	
K/A #	2111	
Importance Rating:		3.80

Given the following conditions:

- The unit is at 100% power.
- A Regulating Group CEA slips 10 inches into the core.

Based on these conditions, the applicable COLR graph requires that the crew BEGIN reducing power within _____ minutes of the event to prevent _____,

A. 2 a large effect on the available SDM for accident analysis

B. 10 a significant effect on the distortion of the core power distribution

C. 30 a large effect on the ejected CEA worth used in accident analysis

D. 45 a significant effect on the Core POL causing it to read in the non-conservative direction

Answer: B

Learning Objective:

L89762	Given a set of plant conditions apply the one hour or less actions statements of T.S. 3.1
L11400	Concerning Technical Specifications state the legal requirements of the Tech Specs (and their bases)

Reference Id:	Q27574
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (2) Facility operating limitations in the technical specifications and their bases.
Cognitive Level:	Memory
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40AO-9ZZ11, CEA Malfunctions Knowledge of less than one hour technical specification action statements for systems

CEA MALFUNCTIONS 40AO-9ZZ11 Page 8 of 55

3.0 DROPPED OR SLIPPED CEA MODE 1 OR 2

INSTRUCTIONS

---------- **NOTE** ----------

The effects of a boration to the RCS may take 4 to 6 minutes to be seen, therefore initiating a boration (step 12.) should done as soon as possible.

____8. Perform the following to start a power reduction **within 10 minutes** of the initial CEA deviation:

a. Log the start time for power reduction.
_____ (time)

b. Lower the turbine load to raise Tave 3°F greater than Tref.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

21

Appears on:		SRO EXAM
	Tier 3	
K/A #	2225	
Importance Rating:		3.70

What is the basis of the Technical Specification requirement to open the Reactor Trip Breakers in the event that two CEAs are misaligned by greater than 9.9 inches?

A. Prevents challenge to ASI trip

B. Minimizes the potential for fuel damage

C. Minimizes the effect of a possible ejected CEA

D. Minimizes the possibility of operating without required SDM

Answer: B

Learning Objective:

L89761 Identify the basis of Technical Specification LCOs for section 3.1

Reference Id:	Q9672
Difficulty:	2.00
Time to complete:	2
10CFR Category:	55.43 (2) Facility operating limitations in the technical specifications and their bases.
Cognitive Level:	Memory
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: T.S. 3.1.5.D.1 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits A, C, D incorrect, these are impacted but are not the main concern.

CEA Alignment B 3.1.5.D.1

Continued operation is not allowed in the case of more than one CEA misaligned from any other CEA in its group by > 9.9 inches. For example, two CEAs in a group misaligned from any other CEA in that group by > 9.9. inches, or more than one CEA group that has a least one CEA misaligned from any other CEA in that group by > 9.9 inches. This is indicative of a loss of power distribution and a loss of safety function, respectively. Multiple CEA misalignments should result in automatic protective action. Therefore, with two or more CEAs misaligned more than 9.9 inches, this could result in a situation outside the design basis and immediate action would be required to prevent any potential fuel damage. Immediately opening the reactor trip breakers minimizes these effects.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

22

Appears on:		SRO EXAM
	Tier 3	
K/A #	2234	
Importance Rating:		3.20

Given the following plant conditions:

- A plant trip from 100% power has occurred.
- Critical rod position has been calculated for an end of core startup 36 hours after a trip from 100% power equilibrium conditions.
- The ECRP is Group 5 @ 30 inches.
- Upon subsequent startup, the Reactor goes critical at Group 5 @ 45 inches.

Which ONE of the following conditions would cause this condition?

A. RCS pressure is increased 25 psig.

B. The startup is delayed approximately 2 hours.

C. The boron concentration is decreased by 10 ppm.

D. The steam bypass pressure control setpoint is raised by 100 psig.

Answer: D

Learning Objective:
L11005 Given that a Reactor startup is to be performed describe the method used in calculating an Estimated Critical Condition

100866 Active Question Bank 2004

Reference Id:	Q16222
Difficulty:	3.00
Time to complete:	3
10CFR Category:	55.43 (6) Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity.
Cognitive Level:	Comprehension / Anal
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: Core Data Book Knowledge of the process for determining the internal and external effects on core reactivity A incorrect, no appreciable pressure reactivity coefficient. B incorrect, delay of 2 hrs means less Xe 135, + reactivity, lower critical condition C incorrect, lower boron, + reactivity addition, lower critical position. D correct, raising SBCS setpoint, raises RCS temperature, - reactivity addition at EOC, higher CEA position to go critical.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

23

Appears on:		SRO EXAM
	Tier 3	
K/A #	236	
Importance Rating:		3.10

Given the following plant conditions:

- A large break LOCA has occurred.
- Due to emergency conditions a gaseous radioactive release from Containment must be performed to relieve pressure in the containment and bring the plant to a safer condition.

Which ONE of the following is the lowest level of approval that may authorize this release without a release permit?

A. RMS Supervisor

B. Unit Dept Leader

C. Emergency Director

D. Control Room Supervisor

Answer: D

Learning Objective:
L57256 Given that abnormal conditions require exceeding ODCM requirements describe whose authority is needed to exceed requirements and what reporting is necessary

100866 Active Question Bank 2004

Reference Id:	Q6695
Difficulty:	3.00
Time to complete:	4
10CFR Category:	55.43 (3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.
Cognitive Level:	Memory
Question Source:	PV Bank Not Modified
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 74RM-9EF20, GASEOUS RADIOACTIVE RELEASE PERMITS AND OFFSITE DOSE ASSESSMENT. Knowledge of the requirements for reviewing and approving release permits. SM/CRS must approve releases >ODCM.

GASEOUS RADIOACTIVE RELEASE PERMITS AND OFFSITE DOSE ASSESSMENT
74RM-9EF20 Page 74 of 81

Appendix J - Release Permit Review And Approval Matrix

d. Under abnormal (emergency) conditions verbal approval for exceeding ODCM Requirement limits may be given by the CRS/Shift Manager when performing the release if it will bring the plant in to a safer condition. A notification to the NRC within one hour in accordance with 10CFR50.72 will be required after approval. **If ODCM Requirement limits for dose are exceeded (ODCM sections 4.4a, 4.4b, 4.1a, 4.1b, 4.2a or 4.2b) comply with ODCM Requirement 5.1.**

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

24

Appears on:		SRO EXAM
	Tier 3	
K/A #	246	
Importance Rating:		4.00

Given the following plant conditions:

- Unit 1 reactor has tripped.
- A loss of vacuum has occurred.
- PBA-S03 is de-energized and faulted.
- PKA-M41 is de-energized.
- AFB-P01 has tripped due to a ground fault.

Which ONE of the following is a major recovery action for this event?

A. Initiate a MSIS to conserve SG inventory.

B. Locally operate AFA-P01 to restore feed flow to the SG.

C. Trip 2 of the RCPs and Leave 2 running to reduce the RCS heat input.

D. Commence a cooldown to SDC to repair the cause of the entry into the ORP.

Answer: B

Learning Objective:
L57493 Describe the responsibilities of the Fire Team Advisor in regards to Emergency Notification And Response.

Reference Id:	Q10252
Difficulty:	2.00
Time to complete:	3
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Memory
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: NONE Technical Reference: 40DP-9AP11, LOAF Tech Guide, pg 7 Knowledge of symptom based EOP mitigation strategies. A is incorrect; per the LOAF procedure the MSIS is bypassed to ensure steam is available for AFA operation. Inventory is conserved by closing the Blowdown and SG sample valves. C is incorrect; ALL RCPs are secured IAW the LOAF procedure to reduce heat input.T2/L2 criteria is correct for a SIAS condition. D is incorrect; a plant cooldown is not required at this time to recover from the LOAF condition, starting AFA will restore feed flow and mitigate the LOAF condition.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

25

Appears on:		SRO EXAM
	Tier 3	
K/A #	2430	
Importance Rating:		3.60

Given the following plant conditions:

- Unit 1 was in Mode 3, cooling down for a refueling outage.
- Engineering personnel, who were performing a routine boric acid walkdown, discover a small accumulation of boric acid residue on a reactor coolant system loop 2 hot leg instrument nozzle.
- The nozzle was visually inspected during the last refueling outage and no leakage was identified at that time.

Which ONE of the following identifies the most limiting time in which the NRC is required to be notified of this event?

Notify the NRC within...

A. 4 hours

B. 8 hours

C. 30 days

D. 60 days

Answer: A

Learning Objective:
11190 Utilize the event reporting manual to determine event reportability.

Reference Id:	Q10262
Difficulty:	3.00
Time to complete:	5
10CFR Category:	55.43 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Anal
Question Source:	New
Comment:	Proposed Reference to be provided to applicant during examination: Event Reporting Manual Technical Reference: Event Reporting Manual Knowledge of which events related to system operations/status should be reported to outside agencies. A is correct; this event is a pressure boundary leakage. Therefore this requires a further shutdown to mode 6. B is incorrect; but could be arrived at via ID60 for pressure boundary leakage.

PALO VERDE NUCLEAR GENERATING STATION
EVENT REPORTING MANUAL 301 of 451
ID 20 INITIATION of any nuclear plant shutdown required by TS 04 hr.

2005 LOIT Senior Reactor Operator NRC Exam (SRO Only Questions)

Cognitive Level Summary

Number of questions linked:	25	Percentage
Memory	5	20%
Comprehension / Analysis	20	80%

Question Source Summary

Number of questions linked to source:	25	Percentage
New		
New	15	60%
Modified		
INPO Bank Modified	0	
Modified PV Bank	1	
Total Modified	1	4%
Bank		
INPO Bank Not Modified	0	
PV Bank Not Modified	9	
Total BANK	9	36%