

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 1
K/A #	44E02EA21	
Importance	2.70	3.70
Rating:		

The following condition exist after a Unit 1 reactor trip:

- RCS pressure 2200 psia and STABLE.
- Thot is 565°F and DECREASING SLIGHTLY.
- AFW flow 525 gpm to SG #1 (34% WR) and INCREASING SLOWLY.
- AFW flow 400 gpm to SG #2 (38% WR) and STABLE.
- Pressurizer level 40% and STABLE.
- NAN-X03 (Startup Transformer #3) has faulted.
- DG 'B' is out of service.
- SPTAs are complete.

Based on these conditions, which optimal recovery procedure should be entered?

- A. 40EP-9EO06 (LOAF)
- B. 40EP-9EO08 (Blackout)
- C. 40EP-9EO02 (Reactor Trip)
- D. 40EP-9EO07 (LOOP/LOFC)

Answer: C

Learning Objective:  
L10350

Given conditions of a reactor trip analyze whether or not entry into the Reactor Trip EOP is appropriate

Reference Id: Q9615  
Difficulty: 3.00

Time to complete: 3

10CFR Category: CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level: Comprehension / Analysis

Question Source: Bank Question

Comment:

A LOOP condition has not occurred, therefore power is still available to at least one vital bus. The only appropriate ORP therefore is the Reactor Trip.

Technical Reference: 40EP-9EO01, SPTA, Sect. 4.0, Diagnostic Actions Chart, pg. 13.

K/A Topic

Ability to determine and interpret the following as they apply to the (Reactor Trip Recovery) Facility conditions and selection of appropriate procedures during abnormal and emergency operations (43.5)

This Exam Level Appears on:		SRO
K/A #	217	SRO EXAM Tier 1 Group 1
Importance Rating:	3.70	4.40

Given the following plant conditions:

- A large-break LOCA in containment occurred on Unit 1 two and a half hours ago.
- RCS pressure is 210 psia and SLOWLY LOWERING.
- RCS subcooling is currently 14°F based on REP CET.
- Containment temperature is 190°F and SLOWLY INCREASING.
- Pressurizer level is 9% and slowly LOWERING.
- RVLMS indicates that RVUH level is 15%.

If at the current time, no flow is injecting and all systems are available, which ONE of the following should the CRS direct?

- A. Lineup hot leg injection.
- B. Lineup cold leg injection.
- C. Lineup both hot and cold leg injection.
- D. Exit LOCA and enter the functional recovery procedure.

Answer: C

Learning Objective:  
L10450

Given a Loss of Coolant condition determine the major mitigating strategies contained in 40EP-9EO03

Reference Id:	Q61841
Difficulty:	3.50
Time to complete:	4
10CFR Category:	CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Analysis
Question Source:	New
Comment:	

Under the conditions given, ample time has passed (at least 2 hrs) for simultaneous hot & cold leg injection to be aligned.

Technical Reference:  
40OP-9EO03, LOCA, Step 58, pg.28.  
40DP-9AP08, LOCA Tech Guideline, Instruction Step 58, pg 43.

K/A Topic

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 1
K/A #	42027AA211	
Importance	4.00	4.10
Rating:		

Given the following plant conditions:

- The pressurizer pressure master controller in AUTO.
- The controlling pressurizer pressure instrument 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 psia.
- 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:  
L75344

Describe the response of the Pressurizer Pressure Control System to a failure of an input transmitter.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q2657  
3.00  
3  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
Comprehension / Analysis  
Bank Question

Cognitive Level:  
Question Source:  
Comment:

The controlling PZR Press instrument controls the energization of the heaters on low press, therefore all heaters will energize and eventually cause actual RCS press to increase until a Rx trip would occur on high press.

Technical Reference: PV Simplified Control System and Logic Drawings, PZR Press Control System Functional Logic Diagram, pg. 34.

K/A Topic

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: RCS Pressure (43.5)

This Exam Level Appears on:		SRO
		SRO EXAM Tier 1 Group 1
K/A #	241	
Importance Rating:	4.30	4.60

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 Rx.
- Breaker for load center NGN-L03 will not open.

Which ONE of the following identifies the correct procedure and next required action for reactivity control?

- A. FRP - Open the Main Generator output breakers.
- B. Rx Trip - FAST CLOSE the main steam isolation valves.
- C. SPTAs - Locally open the reactor switchgear breakers.
- D. LOFC - Open NAN-S01F, feeder breaker to NGN-L03/L11/L17.

Answer: C

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

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61862  
3.00  
3  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The condition must be recognized as an ATWS and the guidance is given in the normal post trip flow path of the SPTAs.

Technical Reference: 40EP-9EO01, SPTAs, Contingency step 2.a.3, pg. 3.

K/A Topic

Knowledge of EOP entry conditions and immediate action steps (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 1
K/A #	41038EA202	
Importance	4.50	4.80
Rating:		

Given the following plant conditions:

- U1 reactor is tripped.
- RCS pressure is 1300 psia.
- PZR level is 20% and SLOWLY LOWERING.
- RCS subcooling is 50°F.
- Steam Generator #1 pressure is 980 psia and SLOWLY INCREASING.
- Steam Generator #2 pressure is 950 psia.
- RU-4 is in high alarm.
- Steam generator #1 level is 78% NR and RISING SLOWLY .
- Steam generator #2 level is 50% NR and STEADY.

Complete the following statement:

A \_\_\_\_\_ event is in progress and a potential consequence of this event if no action is taken is the \_\_\_\_\_.

- A. Loss of Coolant Accident - release of radioactivity via the Primary Safeties.
- B. Loss of All Feed - loss of RCS inventory due to lifting of the Primary Safeties.
- C. Excess Steam Demand - violation of the Pressure Temperature Limits Curve.
- D. Steam Generator Tube Rupture - release of radioactivity via the Main Steam Safeties.

Answer: D

Learning Objective:  
L61098

Given conditions of a SGTR and appropriate reference material describe the mitigation strategy used during steam generator tube ruptures

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61863  
3.00  
4  
CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

A SGTR is in progress based on given conditions. The RCS should be cooled down to ensure that the Main Steam Safeties can not lift.

Technical Reference: 40DP-9AP09, SG Tube Rupture Tech Guideline, Sect. 4.0, Procedure Strategy, pg. 8.

K/A Topic

Ability to determine or interpret the following as they apply to a SGTR: Existence of an S/G tube rupture and its potential consequences (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 1
K/A #	44E06EA22	
Importance	3.00	4.20
Rating:		

Given the following plant conditions:

- A sustained LOAF is in progress.
- # 1 SG is dry.
- # 2 SG is at 10% WR.
- A feedwater source has been restored and is available.

Which one of the following describes how the SG(s) should be fed under these conditions?

- A. Feed # 1 SG ONLY at 1000 gpm.
- B. Feed BOTH SGs at 500 gpm maximum each.
- C. Feed # 2 SG ONLY at a rate that will be greater than that required for removal of decay heat.
- D. Feed BOTH SGs at a rate that will ensure that level is recovered to the normal band within 1 hr from the dryout condition.

Answer: C

Learning Objective:  
L61371

Describe the major mitigating strategies used during a LOAF.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61864  
3.00  
5

10CFR Category:

CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
CFR5543 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.(7)  
5CFR5541 7 Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

The SG should only be fed at a rate that is recovering level and providing removal of decay heat.

Distractors A & B are numbers that used to be listed as guidelines for minimum and maximum feed rates.

Distractor D is incorrect, only the SG with a water inventory should be fed.

Technical Reference: 40DP-9AP17, Standard Appendices Tech Guideline, Appendix 38, Resetting AFA-P01, Basis, pg. 23 & 24.

K/A Topic

Ability to determine and interpret the following as they apply to the (Loss of Feedwater) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 2
K/A #	42001AA202	
Importance	4.20	4.20
Rating:		

Given the following plant conditions:

- Unit 1 is Mode 2.
- The Primary Operator is pulling Regulating Group 4 when he receives a "Continuos CEA Motion" alarm.
- The Primary Operator places CEDMCS in "STANDBY".
- The CRS notices that a rod in Regulating Group 4 is continuously moving out.

At this time, the CRS should direct the following:

- A. Trip the Reactor and leave the Charging System lined up in AUTO.
- B. Trip the Reactor and align the Charging System for Emergency Boration.
- C. Place CEDMCS in "MANUAL" and leave the Charging System lined up in AUTO.
- D. Place CEDMCS in "MANUAL INDIVIDUAL" and align the Charging System for Emergency Boration.

Answer: A

Learning Objective:  
L58554

Describe the required actions addressing a continuous rod motion accident.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61866  
3.50  
3  
CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Memory  
New

The Reactor would be tripped in this condition if the rod continues to move out, it is not necessary to realign the charging system. The plant is analyzed for one rod stuck out.

Technical Reference: 40AO-9ZZ11, CEA Malfunction, Sect. 5.0, Uncontrolled CEA Movement Mode 1 or 2, step 3.

K/A Topic

Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Position of emergency boration valve (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 2
K/A #	42033AA202	
Importance	3.30	3.60
Rating:		

If the SUBCH-1 amp of control channel NI failed to zero output, what would be the effect on the control room indication of power level for that channel?

- A. No effect.
- B. Meter would fail to zero indication.
- C. Meter would read 1/2 of EXCORE power.
- D. Meter would read twice the EXCORE power.

Answer: C

Learning Objective:  
L75661

Explain the operation of the Control Channels under normal operating conditions.

Reference Id: Q3738  
 Difficulty: 3.00  
 Time to complete: 2  
 Cognitive Level: Memory  
 Question Source: Bank Question  
 Comment:

The Control Channel uses the same signal processing drawer as the Startup Channels and, therefore, shares its power supply. If a subchannel amp fails the output to the summer would be cut in half.

Technical Reference: PV Simplified Control System and Logic Diagram Drawing, Reactor Regulating System Functional Logic Diagram, pg. 41.

K/A Topic

Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Indications of unreliable intermediate-range channel operation (43.5)



This Exam Level Appears on: SRO  
SRO EXAM  
Tier 1  
Group 2

K/A # 036G247  
Importance 3.10 3.80  
Rating:

Given the following plant conditions:

- The reactor is tripped following a Steam Generator Tube Rupture in #1 SG.
- RCS pressure is 895 psia.
- RCS subcooling is 55°F.
- Steam Generator #1 pressure is 880 psia.
- Steam generator #1 is ISOLATED.
- Steam generator #1 level is 76% NR and RISING SLOWLY.
- Steam generator #2 level is 50% NR and STEADY.

Which ONE of the following is the preferred method to control level in the isolated steam generator?

- A. Steam the #1 steam generator to atmosphere via the ADVs.
- B. Bypass the MSIV and steam the #1 steam generator to the condenser.
- C. Line-up high rate blowdown to the condenser from #1 steam generator.
- D. Lower RCS pressure below #1 steam generator pressure and allow backflow to the RCS.

Answer: D

Learning Objective:  
L11218

Given that the SGTR EOP is being implemented describe the SGTR EOP mitigation strategy

L62498

Given an SGTR Event, Tailboard the guidance included in the SGTR Emergency Procedure Technical Guideline.

L89992

As an operating crew Mitigate a SGTR in natural circulation

L61301

Describe the SGTR EOP mitigation strategy.

L61098

Given conditions of a SGTR and appropriate reference material describe the mitigation strategy used during steam generator tube ruptures

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q6933  
3.00  
4  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

All of the listed responses are acceptable methods for lowering level in the isolated SG however, the preferred action is to lower RCS press below the SG to allow backflow. This will minimize the spread of contamination.

Technical Reference: 40DP-9AP09, SGTR Tech Guideline, Instruction Step 31, pg. 32.

K/A Topic  
Knowledge of event based EOP mitigation strategies (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 2
K/A #	068G2434	
Importance	3.80	3.60
Rating:		

Given the following plant conditions:

- Unit 1 is at 80% power.
- Due to toxic gas intrusion, the SM and CRS have directed the evacuation of the control room.
- Unit 1 is tripped.
- The CRS has directed a plant cooldown from the Remote Shutdown Panel.

Based on these conditions, the operating crew will establish . . . .

- A. a cooldown by locally operating the ADV's. Operating capability from the Control Room will be retained.
- B. a cooldown by operating the ADV's from the RSP. Operating capability from the Control Room will be disabled.
- C. Steam Generator feed with AFN-P01 from the RSP. Operating capability from the Control Room will be disabled.
- D. Steam Generator feed locally with Main Feed Pumps. Operating capability from the Control Room will be retained.

Answer: B

Learning Objective:  
L11135

Describe how the plant is initially stabilized from the RSP during a Control Room evacuation.

L11137

Describe how the secondary plant is operated when the decision is made to cooldown from the RSP (including reasons why) during a Control Room evacuation.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q15796  
2.50  
5

10CFR Category:

CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
10CFR5543 5

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The operator will operate the ADVs from the RSP to control the RCS cooldown. This will disconnect operation from the CR. Other actions at the RSP include feeding with Aux Feed to maintain SG level during the cooldown.

Technical Reference: 40AO-9ZZ18, SD Outside Control Room, Appendix D, ADV Operation, Step 6, pg. 34.

K/A Topic

Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications (43.5)

This Exam Level Appears on:	SRO SRO EXAM Tier 1 Group 2
K/A #	42003AA201
Importance	3.70 3.90
Rating:	

Given the following plant conditions:

- Unit 2 is at 100% power.
- A Regulating Group 5 rod slips several inches into the core.

Which ONE of the following would NOT be used to confirm the control rod position?

- A. CPC's
- B. CEAC CRT
- C. Core Mimic
- D. CEAC Digital Display

Answer: C

Learning Objective:  
L78791

Describe the Control Room indications associated with the Control Element Drive Mechanism Control System (CEDMCS).

L10406

Given a reactor trip describe the EOP expectation concerning checking CEA positions

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61867  
3.00  
3  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

The distracters all use Reed Switch Position for indication. The CEAC digital display would not be used in a post trip condition but would be useful for this condition.

Technical Reference: EOP Operations Expectations, SPTA Step 2.

K/A Topic

Ability to determine and interpret the following as they apply to the Dropped Control Rod:  
Rod position indication to actual rod position (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 2 Group 1
K/A #	34005A203	
Importance	2.90	3.10
Rating:		

Given the following plant conditions:

- U3 is in Mode 5.
- The PZR Manway is ON.
- Train "A" Shutdown Cooling is in service with two pumps currently running to supply SDC loads.
- Train "A" experiences large swings in flow and pump amp oscillations on BOTH pumps.
- The oscillations are occurring at less than one minute intervals.

Which ONE of the following states the correct response and bases for the action taken for this condition?

- A. Stop BOTH of the running SDC Pumps. This will maintain a higher inventory in the RCS for Heat Removal.
- B. Stop BOTH of the running SDC Pumps. This will decrease the suction pressure of the pump and minimize the potential for cavitation.
- C. Stop ONE of the running SDC Pumps and reduce SDC flow to 3780 gpm. This will increase the NPSH of the pump and minimize the potential for vortexing.
- D. Stop ONE of the running SDC Pumps and reduce SDC flow to 4000 gpm. This will decrease the NPSH of the pump and minimize the potential for vortexing.

Answer: C

Learning Objective:  
L56595

Given the LMFRP HR-2 is being performed, and SDC is in service describe how adequate SDC flow is determined and what actions may be taken if adequate flow cannot be maintained

Reference Id:	Q61869
Difficulty:	3.50
Time to complete:	5
10CFR Category:	CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Comprehension / Analysis
Question Source:	New
Comment:	

With two SDC pumps running the procedure guidance is to initially only to secure 1 SDC pump in an attempt to reduce the vortexing.

Technical Reference: 40DP-9AP19, LMFRP, IC-1, Step 9, pg. 270.

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: RHR (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 2 Group 1
K/A #	36062A202	
Importance	2.20	2.60
Rating:		

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A loss of NGN-L05 & NGN-L16 has occurred due to an electrical ground.

The problem has been corrected and it is desired to reenergize the load centers. Which ONE of the following defines any special considerations that must be followed?

- A. Central Maintenance must be notified prior to energizing NGN-L16 to ensure machine shop equipment does not restart unexpectedly.
- B. There are no special considerations for re-energizing these load centers. No equipment will automatically re-start from this power supply.
- C. ECC must be contacted prior to re-energizing these load centers to ensure that sufficient capacity is available to handle the increased loads.
- D. The Rad Waste Control Room Operator must be notified prior to re-energizing either of the load centers to warn the operators of automatic starts on the Rad Waste ventilation.

Answer: D

Learning Objective:  
L62324

Given that power is being restored using the Degraded Electrical AOP identify any special considerations for restoration of power

Reference Id: Q9960  
 Difficulty: 4.00  
 Time to complete: 3  
 10CFR Category: CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
 Cognitive Level: Comprehension / Analysis  
 Question Source: Modified Bank Question  
 Comment:

These power supplies are a concern to the Radwaste CR as they will start ventilation fans and possibly affect contamination zones.

Central Maintenance has a similar concern if NGN-L45 was being repowered as it could auto start equipment in the shop.

ECC would not be concerned about these loads as they are not significant.

Technical Reference: 40AO-9ZZ12, Degraded Electrical Power, Appendix F, Restoration Considerations, Step 2 & 5 pg. 309.

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Causes and significance of grounds (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 2 Group 1
K/A #	063G223	
Importance	3.10	3.30
Rating:		

Given the following plant conditions:

- Unit 1 is operating in Mode 2.
- The supply breaker to inverter PNC-N13 is inadvertently opened at PKC-M43.
- The operator, realizing the switching mistake, recloses this breaker.

Based on these conditions, PNC-D27 will:

- A. lose its alternate power supply but remain energized.
- B. automatically align to its alternate power supply and remain there until manually transferred back to the inverter.
- C. be de-energized for as long as the supply breaker is open. Power will be restored when the breaker is closed.
- D. automatically align to its alternate power supply and then, when the inverter is restored, automatically transfer back to its normal source.

Answer: C

Learning Objective:  
L74133

Describe the circuit paths to include these major components: • Inverters • Voltage Regulators • Distribution Panels

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61870  
3.00  
2  
CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

On Unit 1 there is no static transfer switch that automatically restores power. Distractors A, B, & D would be possible answers for the other two Units.

Technical Reference: 40OP-9PN03, 120V AC Class 1E, step 5.3.13 & 5.3.14.

K/A Topic  
(multi-unit) Knowledge of the design, procedural, and operational differences between units. (43.5)

This Exam Level Appears on:	SRO
K/A #	31014A203
Importance	3.60
Rating:	4.10

SRO EXAM  
Tier 2  
Group2

Given the following plant conditions:

- Unit 1 is operating at rated power with ARO (All Rods Out).
- A Regulating Group 3 CEA (non twelve finger) slips to 140 inches withdrawn.
- Another CEA in Regulating Group 3 slips to 130 inches withdrawn.

The operating crew is required by procedure to ...

- reduce turbine load to maintain Tave and Tref within 3 degrees of each other and reduce reactor power within 10 minutes.
- trip the reactor and implement the Standard Post Trip Actions.
- reduce turbine load to maintain Tave and Tref within 3 degrees of each other and reduce reactor power within 20 minutes.
- reduce turbine load to maintain Tave and Tref within 5 degrees of each other and reduce reactor power within 10 minutes.

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:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61872  
3.00  
3  
CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Modified Bank Question

These rods are in the same group and deviate by more than 9.9 inches therefore a Rx scram is required. Reducing Turbine Load and Rx power w/i 10 min. is appropriate IAW the AOP if the rods did not deviate by more than 9.9 inches.

Technical Reference: 40AO-9ZZ11, CEA Malfunctions, Sect. 3.0, steps 3, 9, & 12.

Modified from PV Bank Q# 8990

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Dropped rod (43.5)

This Exam Level Appears on:	SRO	SRO EXAM Tier 1 Group 1
K/A #	34035A206	
Importance	4.50	4.60
Rating:		

Given the following plant conditions:

- The reactor has been manually tripped.
- A small LOCA has occurred.
- SPTAs are being performed.
- SIAS occurred on low RCS pressure.
- RCS pressure is currently 1855 psia and stable.
- RCS sub cooled margin is 33°F.
- Containment temperature is 172°F.
- 4 RCPs are running.

What effect (if any) does this LOCA have on the SGs AND what actions will help mitigate the event?

The operator should be aware for the potential for overcooling the...

- A. SG due to leak and therefore limit SGs cooldown by minimizing feed flow.
- B. RCS due to excessive feed to the SGs and therefore limit SGs to a moderate feed rate.
- C. SGs due to excessive feed to the RCS from SI and therefore limit SI flow to a moderate rate.
- D. RCS due to excessive feed from SI flow and therefore limit SI flow to a moderate rate.

Answer: B

Learning Objective:  
L10450

Given a Loss of Coolant condition determine the major mitigating strategies contained in 40EP-9EO03

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61873

3.00

5

CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis

New

During a LOCA a rapid cooldown of the RCS is of concern and the Secondary Operator should not over aggressively feed the SGs and complicate the problem.

Technical Reference: 40DP-9AP08, LOCA Tech Guideline, Instruction Step 32, pg 30.

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the SG; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Small break LOCA (43.5)



This Exam Level Appears on:	SRO
K/A #	211
Importance	3.70
Rating:	3.80
	SRO EXAM Tier 3

Given the following conditions:

- Instrument failure on feedwater control system #1.
- Steam generator #1 level is 45% narrow range and dropping slowly.
- Secondary operator believes MANUAL on the master or economizer controllers will stabilize the plant.

Which ONE of the following describes the action the secondary operator is to take for the observed indications?

- A. Inform the Control Room Staff; obtain control room supervisor concurrence; manually trip the reactor.
- B. Immediately take MANUAL control of the master controller and raise the output; inform the Control Room Staff of results.
- C. Inform the Control Room Staff; obtain control room supervisor concurrence; take MANUAL control of the master controller.
- D. Immediately take MANUAL control of the economizer controller and raise the output; inform the Control Room Staff of results.

Answer: C

Learning Objective:  
L12044

Describe the manual overriding of automatic systems.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q6834  
3.00  
2  
CFR5543 3 (3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Concurrence needs to be acquired from the CRS prior to taking an auto controller to manual and a trip signal is not eminent.

Technical Reference: 40DP-9OP02, Conduct of Shift Operations, Sect. 12.0, Manual Override of automatic systems.

K/A Topic

Knowledge of conduct of operations requirements (43.3)

This Exam Level Appears on:	SRO
K/A #	216
Importance	2.10
Rating:	4.30
	SRO EXAM Tier 3

Given the following conditions:

- A severe transient is in progress.
- The EOPs are NOT mitigating the event.
- The CRS desires to take reasonable actions that are significantly outside of the procedural guidance found in the EOPs as well as the license conditions.
- There are no actions within the scope of our license that will address the condition of the plant.
- The CRS believes that failing to take these actions will lead to adverse consequences to the public health and safety.

Based on these conditions, the CRS must...

- A. simply receive the Shift Managers permission to deviate from the EOP.
- B. invoke 10CFR50.54 (x) and wait for TSC approval for the planned action.
- C. invoke 10CFR50.54 (x) and direct the actions that the CRS feels are prudent.
- D. must wait for guidance from the TSC when the EOP fails to mitigate the event.

Answer: C

Learning Objective:  
L12043

Describe 10CFR50.54(x) and how it is implemented.

Reference Id: Q61881  
 Difficulty: 3.50  
 Time to complete: 3  
 10CFR Category: CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
 Cognitive Level: Comprehension / Analysis  
 Question Source: Bank Question  
 Comment:

Certain situations may require deviation from the EOP's or other procedures in accordance with 10CFR50.54 (x).

Technical Reference: 40DP-9OP02, Conduct of Shift Operations, Sect. 2.4, Shift Manager Responsibilities.

K/A Topic

Ability to supervise and assume a management role during plant transients and upset conditions (43.5)

This Exam Level Appears on:	SRO
K/A #	2213
Importance	3.60
Rating:	3.80

Per 40DP-9OP29 (Power Block Permit and Tagging), the MINIMUM temperature and pressure that requires two valve protection (when possible) is...

- A. 100 degrees and 500 psig.
- B. 200 degrees and 500 psig.
- C. 200 degrees and 1000 psig.
- D. 500 degrees and 1000 psig.

Answer: B

Learning Objective:  
[L57372](#)

Define a "high energy system" and describe the special precautions used when establishing isolation boundaries.

Reference Id: Q8863

Difficulty: 3.50

Time to complete: 2

10CFR Category: CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level: Memory

Question Source: Bank Question

Comment:

All distractors have credible number, but B is allowed by procedure.

Technical Reference: 40DP-9OP29, Power Block Permit & Tagging, step 3.2.11.

K/A Topic

Knowledge of tagging and clearance procedures. (43.5)

This Exam Level Appears on:	SRO	SRO EXAM
K/A #	2218	Tier 3
Importance	2.30	3.60
Rating:		

Given the following plant condition:

- RCS draining to mid-loop is in progress,
- RCS level is currently drained to 117' elevation.
- Mechanics want to bring equipment through the equipment hatch.

What level of authorization is required for opening the equipment hatch for the duration of the draindown?

- Operations Department Leader is the only one that can authorize opening the equipment hatch at this condition.
- The Shift Manager is the only one that needs to authorize opening the equipment hatch at all levels of the drain down.
- Shift manager can authorize equipment hatch until level reaches 103' 8", then the Operations Department Leader shall provide authorization.
- Shift manager can authorize equipment hatch until level reaches 111ft, then the Operations Department Leader shall provide authorization.

Answer: D

Learning Objective:  
L54663

Given a level for the RCS during draining operations, Identify the required authorization needed for opening the equipment hatch.

L93048

Describe the duties of the Shift Manager during Reduced Inventory

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q9343  
3.00  
3

10CFR Category:

CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
10CFR5543 5

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

The SM can authorize this when RCS level is >111ft. Otherwise, the Ops Dept. Ldr would need to allow this.

Technical Reference: 40OP-9ZZ20, Reduced Inventory Operations, step 2.1.1.

K/A Topic

Knowledge of the process for managing maintenance activities during shutdown operations. (43.5)

This Exam Level Appears on:	SRO
K/A #	SRO EXAM Tier 3
Importance	
Rating:	

234	
2.50	3.10

Which ONE of the following is the MAXIMUM once in a lifetime exposure limit for saving a life that the EC may direct for NON-volunteer workers (when lower dose is not practicable)?

- A. 5 REM TEDE
- B. 15 REM TEDE
- C. 25 REM TEDE
- D. 35 REM TEDE

Answer: C

Learning Objective:  
L92080

Identify the Emergency Coordinator's responsibilities associated with Emergency Exposure.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61882  
3.00  
2  
CFR5543 4

(4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Doses up to 25 REM Maximum may be used to direct non-volunteer activities for saving a life.

INPO Bank Q# 20375

Technical Reference: EPIP-01, Appendix K, Sect. 2.0, Emergency Exposure & KI Authorization.

K/A Topic

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. (43.4)

This Exam Level Appears on:	SRO	SRO EXAM Tier 3
K/A #	244	
Importance	4.00	4.30
Rating:		

Given the following plant conditions:

- Unit 3 is operating at 100% rated power.
- A loss of NKN-M46 occurs.

Which ONE of the following procedures should be used to address this event?

- A. 40EP-9EO01, SPTAs
- B. 40AO-9ZZ12, Degraded Electrical
- C. 40AO-9ZZ13, Loss of Class Instrument or Control Power
- D. 40AO-9ZZ14, Loss of Non-Class Instrument or Control Power

Answer: D

Learning Objective:  
L56883

Given plant conditions determine if the Loss of Non-Class Instrument or Control Power AOP should be executed

L76180

Given a loss of NNN-D15/16 or it's associated load centers Stabilize the plant from a loss or degradation of NNN-D15 or NNN-D16 or it's associated load centers

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q9967  
2.00  
2  
CFR5543 2 (2) Facility operating limitations in the technical specifications and their bases.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Recognition that NKN-M46 is a Non-Class power supply.

Technical Reference: 40AO-9ZZ14, Loss of Non-Class Instrument or Control Power.

K/A Topic

Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. (43.2)

This Exam Level Appears on:	SRO
K/A #	2426
Importance	2.90
Rating:	3.30

Which ONE of the following hand held fire extinguishers is available at Palo Verde for use on flammable liquid fires?

- A. Dry Chemical
- B. Carbon Dioxide
- C. Pressurized Water
- D. Pressurized Aqueous Foam

Answer: A

Learning Objective:  
L57493

Describe the responsibilities of the Fire Team Advisor in regards to Emergency Notification And Response.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61883  
2.00  
2  
CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

INPO Bank Q# 3130

K/A Topic

Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage. (43.5)

This Exam Level	SRO
Appears on:	SRO EXAM Tier 1 Group 1
K/A #	42057AA217
Importance	3.10      3.40
Rating:	

Given the following conditions:

- Unit at 100% power.
- PNC is inadvertently de-energized.
- No other malfunctions occur.

Which of the following is true?

- A. The reactor will trip.
- B. No protective actions will occur.
- C. All ESFAS systems will actuate.
- D. A reactor trip will occur along with a SIAS "A" actuation ONLY.

Answer: B

Learning Objective:  
L74138

Describe how the Class 120 VAC Instrument Power System supports the operation of the other systems

Reference Id:	Q19153
Difficulty:	3.00
Time to complete:	3
10CFR Category:	CFR5543 5      (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Memory
Question Source:	Bank Question
Comment:	

If power is lost to a single Train, the components will fail to a "safe" condition. This failure will NOT jeopardize reactor safety. If power is lost to two or more trains, a reactor trip as well as a complete ESF initiation for all outputs (i.e., CIAS, CSAS, SIAS, etc.) for both "A" and "B" Trains.

Technical Reference: PV Simplified Control System & Logic Diagram Drawings, ESFAS Aux Relay Cabinet Functional Diagram, pg 27 & 28.

K/A Topic

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: System and component status using local or remote controls (43.5)



This Exam Level Appears on: SRO  
SRO EXAM Tier 2 Group 1

K/A # 38078A201  
Importance 2.40 2.90  
Rating:

A gradual loss of Instrument Air is occurring. The area operator reports a large differential pressure across the in service Instrument Air Dryer.

Which ONE of the following actions should be taken to assist in correcting this problem?

- A. Shift Air Dryers
- B. Bypass Air Dryers
- C. Vent the Air Dryers
- D. Shutdown Air Dryers

Answer: A

Learning Objective:  
L56781

Determine the mitigating strategies of the Loss of Instrument air AOP.

Reference Id: Q61871  
Difficulty: 3.00  
Time to complete: 5  
10CFR Category: CFR5543 5  
Cognitive Level: Memory  
Question Source: Bank Question  
Comment:

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

All the distractors deal with Instrument Air Dryer actions. Only Answer A is correct in accordance with the procedure.

Technical Reference: 40AO-9ZZ06, Loss of Instrument Air, Sect. 3.0, step 8.

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the IAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Air dryer and filter malfunctions (43.5)

## Cognitive Level Summary

Number of questions linked:	25	Percentage
Memory	11	44
Comprehension / Analysis	14	56

## Question Source Summary

Number of questions linked to source:	25	Percentage
<b>New</b>		
New	7	28
<b>Modified</b>		
INPO Bank Modified	0	
PV Bank Modified	2	
Total Modified	2	8
<b>Bank</b>		
Bank Not Modified	16	64

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	41007EK202	
Importance	2.60	2.80
Rating:		

Given the following plant conditions:

- Unit 1 experiences a Reactor Trip.
- The Secondary Operator notices that the turbine fails to automatically trip, and initiates a trip by depressing the TRIP pushbutton.
- The same operator notices that the Generator Output Breakers are closed, and immediately trips them using the appropriate control switches and pushbuttons.

These operator actions will result in ...

- A. a loss of both NAN-S01 and NAN-S02.
- B. an auto-start of both Diesel Generators.
- C. an auto start of "A" Diesel Generator only.
- D. a fast bus transfer of NAN-S01 and NAN-S02.

Answer: A

Learning Objective:  
L10413

Given plant conditions following a reactor trip, describe the consequences of manually opening the Main Generator OCBs before they could open automatically

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61809  
3.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

From Bank Q# 8601

Distracter B & C are not correct, the DG's will auto start on the Rx Trip signal but not based on input from the Main Gen Brkr.

Distracter D would normally occur following a normal Generator Trip but will NOT occur if manually tripped.

K/A Topic

Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42008AA106	
Importance	3.60	3.60
Rating:		

Given the following plant conditions:

- Safety Injection Actuated
- PZR Pressure is 1800 psig and slowly DECREASING
- RCS Temperature is 550 F and slowly DECREASING
- S/G NR Levels are 1% and slowly INCREASING
- RDT Pressure is 3 psig and STABLE
- S/G Pressure's are 1000 psig and STABLE
- PZR Level is 28% and RISING
- Containment Temperature is 140°F and slowly RISING
- Containment Pressure is 8 psig and STEADY
- Containment Humidity is INCREASING

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:  
L89862

As an operating crew mitigate a Steam Space LOCA

Reference Id:	Q61761	
Difficulty:	3.00	
Time to complete:	3	
10CFR Category:	CFR5541 7	(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:	Comprehension / Analysis
Question Source:	Modified Bank Question
Comment:	

Modified from INPO Bank Q# 1080.

K/A Topic

Ability to operate and / or monitor the following as they apply to the Pressurizer Vapor Space Accident: Control of PZR level

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	41009EK303	
Importance	4.10	4.40
Rating:		

Given the following plant conditions:

- Unit 2 is experiencing a small-break LOCA.
- The Unit is at 100% power.
- All systems and controls are in a normal lineup.

Based on these conditions, which ONE of the following describes what will happen as RCS pressure DECREASES as a result of the LOCA?

- When RCS pressure reaches 1937 psia on three of four pressurizer pressure instruments, a Reactor trip and SIAS signal will be generated in both protection trains, and both Reactor trip breakers will open.
- When RCS pressure reaches 1837 psia on three of four pressurizer pressure instruments, a Reactor trip and SIAS signal will be generated in one protection train, and one Reactor trip breaker will open.
- When RCS pressure reaches 1937 psia on two of four pressurizer pressure instruments, a Reactor trip and SIAS signal will be generated in one protection train, and one Reactor trip breaker will open.
- When RCS pressure reaches 1837 psia on two of four pressurizer pressure instruments, a Reactor trip and SIAS signal will be generated in both protection trains, and both Reactor trip breakers will open.

Answer: D

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:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61810  
3.00  
3  
CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

PPS logic is established such that redundant protection is established requiring 2 of 4 transmitter inputs to cause a RPS trip condition.

INPO Q# 10497

K/A Topic

Knowledge of the reasons for the following responses as they apply to the small break LOCA: Reactor trip and safety initiation

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	41011EK202	
Importance	2.60	2.70
Rating:		

Given the following plant conditions:

- The reactor has been manually tripped
- A Large-break LOCA has occurred.
- The LOCA procedure has been implemented.

Complete the following statement:

The operators are required to trip ALL RCPs ...

- A. if a MSIS actuation occurs.
- B. if a CIAS actuation occurs.
- C. if a loss of seal injection flow occurs.
- D. if subcooled margin is less than 24 °F.

Answer: D

Learning Objective:  
L10450

Given a Loss of Coolant condition determine the major mitigating strategies contained in 40EP-9EO03

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61762  
3.00  
5  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

From Bank  
Distracters B & C are not in of themselves RCP trip criteria.  
Distracter A is not a valid post trip RCP trip criteria.

Technical Reference: 40EP-9EO01, SPTAs

K/A Topic

Knowledge of the interrelations between the Large Break LOCA and the following: Pumps

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

Given the following plant conditions:

- Unit 1 at 100 % power
- Charging Pump selector switch is in the "1-2-3" position
- PZR level is LOWERING

At which of the following Pressurizer levels would you FIRST expect the Standby Charging Pump to be operating due to an auto start?

- A. 19%
- B. 29%
- C. 38%
- D. 43%

Answer: B

Learning Objective:  
L75112

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

Reference Id:	Q61101
Difficulty:	2.00
Time to complete:	2
10CFR Category:	CFR5541 8 (8) Components, capacity, and functions of emergency systems.
Cognitive Level:	Memory
Question Source:	Bank Question
Comment:	

Distractors are all incorrect PZR levels that could correspond to the STBY or Normally Running Charging Pump auto start or stop.

Technical Reference: 40OP-9CH01, CVCS Normal Operations

K/A Topic

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

This Exam Level RO  
 Appears on: RO EXAM SRO EXAM  
 Tier 1  
 Group 1

K/A # 42026AA206  
 Importance 2.80 3.10  
 Rating:

Given the following plant conditions:

- Unit 1 is at 100% power
- Due to a loss of Stator Cooling Water, the “GEN STATOR CLG WTR LO PRESS/HI TEMP TRIP” annunciator alarms.

The logic circuitry is designed to protect the generator stator windings from high temperatures by causing a turbine trip in \_\_\_\_seconds.

- A. 50
- B. 60
- C. 70
- D. 90

Answer: C

Learning Objective:  
 L78654

Describe the automatic functions associated with the Stator Cooling System.

Reference Id:  
 Difficulty:  
 Time to complete:  
 10CFR Category:

L21063  
 2.00  
 2  
 CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
 Question Source:  
 Comment:

Memory  
 Bank Question

Distractors A, B, & D are incorrect times.  
 Answer C is based on giving the operator a chance to restore cooling water by starting the STBY pump from the Control Room.

Technical Reference: 41AL-1RK6B, “GEN STATOR CLG WTR OL PRESS/HI TEMP TRIP”

K/A Topic:

Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The length of time after the loss of CCW flow to a component before that component may be damaged.

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42027AA215	
Importance	3.70	4.00
Rating:		

Given the following plant conditions:

- The plant is operating at 100% power.
- RCS pressure is 2250 psia.
- Pressure control channel selector, RCN-HS-100 is positioned to "100X".
- Pressurizer heater control level trip channel selector, RCN-HS-100-3 is selected to "BOTH".

PZR pressure transmitter "100Y" failing high will result in:

- A. all pressurizer heaters energizing.
- B. all pressurizer heaters de-energizing.
- C. the SBCS valves receiving an auto permissive signal.
- D. the SBCS valves receiving an auto modulation signal.

Answer: C

Learning Objective:  
L75344

Describe the response of the Pressurizer Pressure Control System to a failure of an input transmitter.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q3412  
4.00  
2  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Distractors A & B are incorrect. PZR press is selected to the non-affected pressure input therefore this would not affect the PZR heater control circuit.  
Distractor D, SBCS will modulate open as designed.

Technical Reference: PV Simplified Control & Logic Drawings

Direct from bank

K/A Topic

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Actions to be taken if PZR pressure instrument fails high



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	41029EA202	
Importance	4.20	4.40
Rating:		

Given the following plant conditions:

- Reactor power at 104% full power and STEADY.
- Pressurizer pressure at 2390 psia and RISING slowly.
- Steam generator #1 level is 48% wide range and DROPPING.
- Steam generator #1 pressure is 980 psia and DROPPING.
- Steam generator #2 level is 56% wide range and RISING.
- Steam generator #2 pressure is 1180 psia and RISING.
- Containment pressure is 2.6 psig and RISING.

Based on the current plant parameters, which ONE of the following identifies the correct alarm window that should be lit.

- A. "RPS INIT" is in ALARM
- B. "SPS CH TRIP" is in ALARM
- C. "VAR OVR PWR CH TRIP" is in ALARM
- D. "LO SG 1 LVL CH PRE-TRIP" is in ALARM

Answer: A

Learning Objective:  
L77371

Describe the Supplementary Protection System including its function, instrumentation, bases, and setpoint (as described in the Technical Requirements Manual).

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q13734  
5.00  
5  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

Answer A, a RPS trip should have initiated at 2383 psia on "Hi Pzr Press Channel Trip".  
Distractor B is NOT correct. The SPS trip alarm of 2414 has not been reached.  
Distractor C, the VOPT setpoint has not been reached (110%).  
Distractor D, the Low SG level pre-trip at 47.1% WR has not been reached.

Technical Reference: Board 5A-alarm panel

K/A Topic

Ability to determine or interpret the following as they apply to an ATWS: Reactor trip alarm

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	41038EA127	
Importance	3.80	3.90
Rating:		

Given the following plant conditions:

- Unit 1 was at 100% power when a Steam Generator Tube Leak occurs on S/G #1.
- The plant has performed the operations necessary to minimize the release to the environment per the "Excessive RCS Leakrate" Abnormal Operating Procedure.
- The Unit is subsequently tripped due to an increase in S/G tube leakage.

Which ONE of the following correctly states the status of the SBCS?

- A. SBCS is not available.
- B. All SBCS valves are available.
- C. Only SBCS valves 1007 & 1008 are available.
- D. All SBCS valves except 1007 and 1008 are available.

Answer: D

Learning Objective:  
L11219

Given indications of an RCS break diagnose a SGTR

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61766  
2.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
New

The guidelines of the AOP would have disabled SBCS valves 1007 and 1008, as these would allow release directly to the environment.

Technical Reference: 40AO-9ZZ02, Excessive RCS leak rate, Appendix C, Minimize release to the environment.

K/A Topic

Ability to operate and monitor the following as they apply to a SGTR: Steam dump valve status lights and indicators

This Exam Level RO  
Appears on: RO EXAM SRO EXAM  
Tier 3

K/A # 244  
Importance 4.00 4.30  
Rating:

Given the following plant conditions:

- The plant is running at 100%
- The "B" DG is tagged out
- A loss of the grid occurs
- A unit trip occurs
- The "A" DG output breaker does not close due a PBA-S03 fault

Which ONE of the following conditions currently exists?

- A. Blackout
- B. LOOP ONLY
- C. Single bus LOP ONLY
- D. LOOP and single bus LOP ONLY

Answer: A

Learning Objective:  
L56397

Given conditions of a Blackout identify whether or not entry into the Blackout EOP is appropriate

L11790

As the Control Room Supervisor direct the actions of an Operating Crew in the mitigation of a Blackout

L61422

Given conditions of a blackout and appropriate reference material describe the mitigation strategy used during a blackout

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q14363  
2.00  
2  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Distractor B, C, & D do not match the definition for blackout condition. (i.e. loss of vital busses PBA-S03, PBB-S04)

Technical reference: 40DP-9AP13, Blackout Tech Guideline

K/A Topic

Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	2123	
Importance	3.90	4.00
Rating:		

Given the following conditions:

- Unit 1 is operating at rated power.
- PNA-D25 has been de-energized to permit replacement of one of its circuit breakers and is now ready to be returned to service.

As a minimum, which ONE of the following must be performed prior to reenergizing PNA-D25 to prevent a possible reactor trip?

- A. Set the CEAC 1 INOP flag in CPC's "B", "C" and "D".
- B. Set the CEAC 2 INOP flag in CPC's "B", "C" and "D".
- C. Bypass PPS channel "A" CREFAS and FBEVAS parameters.
- D. Bypass PPS channel "B" CREFAS and FBEVAS parameters.

Answer: A

Learning Objective:  
L11082

Given a loss of PN describe why it is necessary to bypass all trip bistables for the affected PPS channel

Reference Id:	Q61781
Difficulty:	4.00
Time to complete:	3
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Analysis
Question Source:	Bank Question
Comment:	<p>INPO Q# 1431</p> <p>Last NRC Exam: PV 3/24/1997</p> <p>Technical Reference: 40AO-9ZZ13, Loss of Class Instrument or Control Power, Sect. 4.</p> <p>K/A Topic</p> <p>Ability to perform specific system and integrated plant procedures during all modes of plant operation</p>

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42065AA206	
Importance	3.60	4.20
Rating:		

Given the following plant conditions:

- Unit 1 is at 50% power
- The crew is experiencing problems controlling feedwater flow.
- Instrument Air pressure is 40 psig and SLOWLY DECREASING.
- Letdown Line Isolation valves indicate INTERMEDIATE.

Which ONE of the following actions should be taken?

- A. Trip the reactor and go to SPTAs.
- B. Align nitrogen supply to the ADVs.
- C. Secure service air to non-vital loads.
- D. Commence a power reduction to hot shutdown.

Answer: A

Learning Objective:  
L56770

Identify who decides when a reactor trip is required.

Reference Id: Q61783

Difficulty: 2.00

Time to complete: 2

10CFR Category: CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

10CFR Category: CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
10CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level: Comprehension / Analysis

Question Source: Modified Bank Question

Comment:

Distractors B, C & D are steps for attempting to survive a slow loss of air pressure which is not true for the given conditions.  
Modified from INPO Q# 3216

Technical Reference: 40AO-9ZZ06, Loss of Instrument Air, Sect. 3, step 1.

K/A Topic

Ability to determine and interpret the following as they apply to the Loss of Instrument Air:  
When to trip reactor if instrument air pressure is de-creasing

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42028AK202	
Importance	2.60	2.70
Rating:		

Given the following plant conditions:

- Unit 1 is operating at rated power.
- Pressurizer LEVEL SETPOINT CONTROL (RCN-LIC-110) is in LOCAL-AUTO set at 52%.
- The LEVEL CONTROL SELECTOR CHANNEL X/Y switch is selected to Channel Y.
- The HEATER CONTROL SELECTOR LEVEL TRIP CHANNEL X/Y switch is in BOTH.
- A large leak develops on the variable leg of LT-110Y.

You should expect CHANNEL Y indicated level to...

- A. increase and pressurizer heaters to energize.
- B. decrease and pressurizer heaters to energize.
- C. increase and pressurizer heaters to deenergize.
- D. decrease and pressurizer heaters to deenergize.

Answer: D

Learning Objective:  
L75122

Describe the response of the Pressurizer Level Control System to a failure of a Pressurizer Level Transmitter.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q28264

3.50

3

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Modified Bank Question

Level control selected to "Y" causes PLCS to see a low level causing less letdown and an increase in Channel "X" (real) level. Heaters de-energize "seeing" a low level in channel "Y".

Technical Reference: PV Simplified Control System Drawings & Logic Diagrams, pg 35  
PZR Level Control System Functional Logic Diagram.

Modified from Bank Q# 8691

K/A Topic

Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: Sensors and detectors

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	2410	
Importance	3.00	3.10
Rating:		

A reactor startup is in progress when the high counts per second alarm occurs in the control room. Which ONE of the following best describes the cause of the alarm and the required operator action?

- A. Reactor power is at 10 E-4% and the high log power trip should be bypassed.
- B. This is an expected alarm at 2000 cps and the Control Channels should be de-energized.
- C. Reactor power is increasing too fast and the reactor should be manually tripped before an automatic trip occurs.
- D. This is an expected alarm at 2000 cps and the high voltage to the Startup detectors should be de-energized.

Answer: D

Learning Objective:  
L75653

Explain the operation of the Start-Up Channels under normal operating conditions.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q3733  
2.00  
2  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
Comprehension / Analysis  
Bank Question

Cognitive Level:  
Question Source:  
Comment:

This is a normal alarm that is received on Startup that reminds the operator to denenergize the Startup detectors to preserve their use and to switch to the Control Channels.

Technical Reference: 40OP-9ZZ03, Reactor Startup, Sect. 2, Step 2.1.

K/A Topic  
Knowledge of annunciator response procedures

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42051AA202	
Importance	3.90	4.10
Rating:		

Given the following plant conditions:

- A down power is in progress in accordance with 40OP-9ZZ05 due to an air inleakage problem on the Main Condenser.
- The Main Generator is presently operating at 380 Mwe.
- Backpressure is noted to increase to 7.3" HgA on the 'C' shell and INCREASING.

Based on these conditions, the operating crew...

- A. must immediately trip the reactor.
- B. can continue operating indefinitely.
- C. must reduce backpressure to 4" HgA or less in one hour.
- D. must reduce backpressure to 5" HgA or less in one hour.

Answer: **A**

Learning Objective:  
**L10016**

Given a Main Turbine load and Condenser Backpressure describe the required operator response to changing Main Turbine load and Condenser Backpressure ,if any

Reference Id: Q9104

Difficulty: 3.00

Time to complete: 2

10CFR Category: CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

10CFR Category: CFR5541 10CFR5543 5 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level: Memory

Question Source: Bank Question

Comment:

Answer "A" is the correct procedurally-directed action.

Distractors B, C, & D are procedure actions if the trip criteria had not been achieved already.

Technical Reference: 40AO-9ZZ07, Loss of Vacuum, Appendix G, Reactor Trip Criteria, Condition 4

K/A Topic

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Conditions requiring reactor and/or turbine trip



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42059AK304	
Importance	3.80	4.30
Rating:		

The following plant conditions exist:

- Unit 1 experienced a Steam Generator Tube Rupture from 100% power
- CRS is implementing the SGTR Optimal Recovery Procedure
- CRS directs minimizing the radioactive release to the environment

Which ONE of the following describes why two condensate demins are placed in service?

- A. Prevent activity spread to the CST.
- B. Prevent contamination of the non-ruptured SG.
- C. Minimize spreading of activity to the Auxiliary Boiler.
- D. Collect the activity that has been released to the condenser.

Answer: D

Learning Objective:  
L76976

Given a SGTR event the crew will perform required actions of SGTR ORP

Reference Id:	Q61785	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR5541 10	(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR5541	(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
	10CFR5541 5	(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 / Analysis	
Question Source:	Bank Question	
Comment:		

Distractor A, B are potential concerns but are unavoidable. Distractor C is not normally an alignment for condensate water.

Technical Reference: 40DP-9ZZ14, Contaminated Water Management, Section 3.3, Step 3.3.1.

K/A Topic

Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release: Actions contained in EOP for accidental liquid radioactive-waste release

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	44A16AK12	
Importance	3.00	3.40
Rating:		

Given the following plant conditions:

- 3 charging pumps are operating.
- Seal injection flow is 24 gpm.
- Seal bleed off flow is 9.4 gpm (total).
- Letdown flow has been ISOLATED.
- RCS temperature is STABLE.
- PZR level is LOWERING SLOWLY.
- RU-142 (all channels) are in alarm.
- RU-139 (SG #1) is in alarm.

Based on these conditions, the operating crew is required to:

- A. isolate seal bleedoff.
- B. trip the reactor immediately.
- C. commence a plant shutdown.
- D. trip the reactor if leakrate increases by 10 gpm.

Answer: B

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:	Q61789
Difficulty:	3.00
Time to complete:	3
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
	10CFR5543 5

Cognitive Level: Memory  
Question Source: Modified Bank Question  
Comment:

Other Distractors are procedurally correct, however the most limiting condition is to trip the Rx due to excessive leak rate above makeup capability.  
Modified from Bank Q# 8817.

Technical Reference: 40AO-9ZZ02, Excessive RCS leakrate, Sect. 3, step 3.

K/A Topic

Knowledge of the operational implications of the following concepts as they apply to the (Excess RCS Leakage) Normal, abnormal and emergency operating procedures associated with (Excess RCS Leakage).

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

A loss of which ONE of the following power supplies will result in the de-energization of the reactor coolant pumps?

- A. Class 4.16 KV
- B. Class 13.8 KV
- C. Non-Class 13.8 KV
- D. Non-Class 4.16 KV

Answer: C

Learning Objective:  
L67246

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

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q7260

2.00

1

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

RCPs are powered from the 13.8 KV non-vital busses.

Technical Reference: 40AO-9ZZ12, Degraded Electrical Power, Section 18.0, Loss of NAN-S01.

K/A Topic

Knowledge of bus power supplies to the following: RCPS

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	31004A302	
Importance	3.60	3.60
Rating:		

Which ONE of the following valves will go closed when the temperature out of the Regenerative Heat Exchanger reaches 450 °F?

- A. Letdown control valves LV-11OP & Q.
- B. Outside containment letdown isolation valve UV-523.
- C. Upstream containment letdown isolation valve UV-515.
- D. Downstream containment letdown isolation valve UV-516.

Answer: C

Learning Objective:  
L65886

Describe automatic functions associated with the Letdown Isolation valves to include the following: • Letdown Line to Regen Heat Exch Valve (CHB-UV-515) • Letdown Line to Regen Heat Exch Containment Isolation Valve (CHA-UV-516) • Regen Heat Exch to Letdown Heat Exch Containment Isolation Valve (CHB-UV-523)

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q7431

2.00

2

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory

Bank Question

The Upstream Isolation Valve UV-515 goes closed on high regenerative heat exchanger outlet temp.

The Downstream Isolation Valve UV-516 goes closed on a SIAS or CIAS signal.

The Letdown Isolation Valve UV-523 goes closed on Low NC flow to the letdown heat exchanger or a CIAS signal.

The Letdown Control Valves do not respond to these signals.

Technical Reference: 40AO-9ZZ05, Loss of Letdown, Appendix E, Supplementary Information.

K/A Topic

Ability to monitor automatic operation of the CVCS, including: Letdown isolation

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	31004K617	
Importance	4.40	4.60
Rating:		

Given the following plant conditions:

- A reactor trip has occurred from 100% power.
- Plant conditions require boration.
- RCS pressure is 2230 psia.
- RWT level is 65%.

Which ONE of the following Charging Pump alignments is available for boration given the above conditions?

- A. Suction to the RWT through CHE-UV-536.
- B. Alternate suction to the RWT through CH-V327.
- C. Suction to the RWT through CHN-UV-514, ensuring a BAMP pump is operating.
- D. Suction to the RWT through CHN-UV-514, ensuring the Boric Acid Makeup filter is bypassed.

Answer: B

Learning Objective:  
L58916

Given plant conditions choose which emergency boration flowpath would be selected

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61790  
3.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Distractors A, C, & D are not viable flow paths if RWT level is below 73%.

Technical Reference: 40AO-9ZZ01, Emergency Boration, Sect. 4.0, step 2.1, Appendix B, step 5.

K/A Topic

Knowledge of the effect of a loss or malfunction on the following CVCS components: Flow paths for emergency boration

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	33006A202	
Importance	3.90	4.30
Rating:		

Given the following plant conditions:

- $T_{\text{cold}}$  150°F.
- Pressurizer manway is off.
- Train "B" shutdown cooling is in service, LPSI "B" is the running pump.
- Train "A" shutdown cooling is in standby.
- No equipment is out of service.
- Train "B" shutdown cooling develops a 150 gpm leak.

In accordance with the procedure, which ONE of the following pump(s) should be used for makeup to the RCS?

- A. CS
- B. CH
- C. HPSI
- D. LPSI

Answer: C

Learning Objective:  
L56270

Given the LMFRP is being performed, the RATs, and specific plant conditions determine which success paths should be chosen

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61792  
4.00  
5  
CFR5541 5

(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:  
Question Source:  
Comment:

Memory  
Bank Question

The HPSI pump is the only SI pump that is capable of providing at least 100 gpm to each Cold leg. Unless the alignment path is changed to CS. This would not be in accordance with the LMFRP.

Technical Reference: LMFRP

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of flow path

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	33010A401	
Importance	3.70	3.50
Rating:		

Which ONE of the following identifies the relationship between the PPCS Master Controller and the PPCS spray valve controller?

As the PPCS master controller output ramps from \_\_\_\_\_ output, the spray valve controller output ramps from 0% to 100%.

- A. 0% to 50.5%
- B. 0% to 100%
- C. 33.5% to 50%
- D. 50% to 78%

Answer: C

Learning Objective:  
L75245

Describe the Control Room controls associated with the Pressurizer Spray Valve Controller including it's indications.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q3109  
2.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

The master controller sends a 33.5 to 50% output signal to the spray valve controller.

Technical Reference:  
PV Simplified Control System and Logic Diagrams Drawings, pg. 34.  
PPCS STM/Volume 43, pg.7.

K/A Topic  
Ability to manually operate and/or monitor in the control room: PZR spray valve

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	37012K501	
Importance	3.30	3.80
Rating:		

Which ONE of the following could cause the CPC calculated value of DNBR to INCREASE?

- A. Grid frequency decreases slightly.
- B. Pressurizer pressure increases by 15 psi.
- C. Reg Group 5 rods are withdrawn 10" to the ARO position.
- D. Power is increased by dilution with rods remaining at the ARO position.

Answer: B

Learning Objective:  
L78284

Explain how DNBR is calculated in the Core Protection Calculators.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61793  
2.00  
5  
CFR5541 5

(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:  
Question Source:  
Comment:

Memory  
Bank Question

DNBR=Heat Flux to cause DNB / Actual Heat Flux  
Pressurizer Pressure signal inputs directly into this calculation. If pressure goes up, DNBR goes up.  
The other conditions listed do not cause a direct affect on calculated DNBR.

Technical Reference: 72OP-9SB02, CPC/CEAC Operations

K/A Topic

Knowledge of the operational implications of the following concepts as they apply to the RPS: DNB



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	2420	
Importance	3.30	4.00
Rating:		

Given the following plant conditions:

- Pressurizer level is 20% and STEADY.
- Pressurizer Pressure is 1810 psia and SLOWLY DECREASING.
- RCS Subcooling indicates 30°F.
- Containment pressure is 2 psig.
- SG #1 pressure is 1,040 psia and STABLE.
- SG #2 pressure is 1,040 psia and STABLE.
- SG #1 level is 80% WR.
- SG #2 level is 80% WR.
- Containment temperature is 171°F and INCREASING.
- Containment humidity is 42% and INCREASING.
- Containment sump level is 22 inches.
- Containment radiation alarms are present on the Radiation Monitoring System.
- All ESFAS Actuations required have occurred.
- The CRS has entered the LOCA EOP.

Based on the above given conditions, the Primary Operator should...

- A. throttle Safety Injection, all throttle criteria are met.
- B. NOT throttle Safety Injection, SG level criteria is NOT met.
- C. NOT throttle Safety Injection, RCS subcooling criteria is not met for "harsh conditions".
- D. NOT throttle Safety Injection, Pressurizer level criteria is not met for "harsh conditions".

Answer: C

Learning Objective:  
64439

Describe the use of cautions and notes in the EOPs.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61795  
3.00  
3

CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

Answer C is the only correct answer since the only "Harsh Condition" value exceeded impacts subcooling.

Technical Reference: 40DP-9AP08, LOCA Tech Guideline, Sect. 7.0 pg.13.

Standard appendix 2, SI Throttle Criteria, page 3 of 3 to be provided during examination.

K/A Topic

Knowledge of operational implications of EOP warnings, cautions, and notes

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	32013K601	
Importance	2.70	3.10
Rating:		

Given the following plant conditions:

- Unit 1 is operating in Mode 5 with SDC in service.
- The 'A' LPSI pump is operating.
- Due to a RWT level instrument failure, an inadvertent Train 'A' RAS occurs.

Based on these conditions, what actions, if any, are necessary to maintain and/or restore the plant to a stable condition?

- A. No actions should be necessary, since the RAS is only Train 'A'.
- B. OVERRIDE and START the 'A' LPSI pump and restore SDC to service.
- C. OVERRIDE and OPEN the LPSI injection valves to restore SDC to service.
- D. OVERRIDE and OPEN the minimum recirc valves to restore minimum flow protection for the 'A' LPSI pump.

Answer: B

Learning Objective:  
L77169

Describe what will automatically initiate a Recirculation Actuation Signal (RAS) and its function.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61796  
2.00  
3  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

A RAS Train 'A' signal will trip the 'A' LPSI Pump. It will have to be overridden and restarted to restore SDC flow.

Technical Reference: 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 7.0 RAS, step 2.c.

K/A Topic

Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: Sensors and detectors

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	35022K302	
Importance	3.00	3.30
Rating:		

Given the following plant condition:

- A "Loss of Cooling Water" AOP has been entered due to a loss of NCW pumps.
- A small break LOCA subsequently occurs.
- The CRS has declared "harsh" containment conditions.

Which ONE of the following describes the impact on plant instrumentation and crew response?

These conditions adversely impact the accuracy of ...

- A. instruments whose transmitters are located inside containment and the operators should use the values in brackets.
- B. instruments whose transmitters are located inside containment and the operators should use the values NOT in brackets.
- C. the Presurrizer level instruments only, whose transmitters are located inside containment and the operators should use the values in brackets.
- D. the Steam Generator Level instruments only, whose transmitters are located inside containment and the operators should use the values NOT in brackets.

Answer: A

Learning Objective:  
L10469

Given conditions of a LOCA or ESD and containment parameters describe how the containment is cooled

Reference Id: Q61797  
 Difficulty: 2.00  
 Time to complete: 2  
 10CFR Category: CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level: Comprehension / Analysis  
 Question Source: New  
 Comment:

This condition affects all transmitters located inside containment and is referenced by procedures through the use of brackets around key parameters.

Technical Reference: 40DP-9AP08, LOCA Tech Guideline, Section 7.0 Note preceding step 1.

K/A Topic

Knowledge of the effect that a loss or malfunction of the CCS will have on the following:  
 Containment instrumentation reading

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	35026A102	
Importance	3.60	3.90
Rating:		

Given the following plant conditions:

- Unit 1 has experienced a large break LOCA
- Containment temperature is 270°F and INCREASING slowly
- Containment pressure is 7 psig and INCREASING slowly
- Containment Spray 'A' flow is 3700 gpm
- 4.16 KV Class PBB-S04 has a 86 lockout present due to a ground.
- The CRS enters the LOCA EOP and determines that the Safety Function for "Containment Temperature and Pressure Control" is NOT met.

Which ONE of the following is correct regarding the loss of "Containment Temperature and Pressure Control" Safety Function and the action that is required?

The Containment Temperature and Pressure Control Safety Function, CTPC-1 for the use of the Containment Fans is NOT being met due to...

- A. high Containment Pressure, Containment Spray header flow should be increased to greater than 3750 gpm to enable CTPC-2 for Containment Spray to be met.
- B. high Containment Pressure, Containment Spray header flow should be increased to greater than 4350 gpm to enable CTPC-2 for Containment Spray to be met.
- C. high Containment Temperature, Containment Spray header flow should be increased to greater than 4350 gpm to enable CTPC-2 for Containment Spray to be met.
- D. high Containment Temperature, Containment Spray header flow should be increased to greater than 3750 gpm to enable CTPC-2 for Containment Spray to be met.

Answer: C

Learning Objective:  
L11217

Given conditions of LOCA or ESD analyze Containment Temperature and Pressure Control to determine if the SFSC acceptance criteria is satisfied

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61801  
4.00  
3  
CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
New

CTPC-1 is not being met due to Containment Temperature being to high.  
CTPC-2 will be met if Spray Header Flow is increased to 4350 gpm.  
Technical Reference: 40EP-9EO09, Functional Recovery, pg. 21 CTPC Safety Function criteria.

K/A Topic

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment temperature

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	35026K101	
Importance	4.20	4.20
Rating:		

Given the following plant conditions:

- Reactor Coolant System pressure is 30 psia.
- A Design basis (LOCA) Loss of Coolant Accident occurred 90 minutes ago.
- All safety injection systems have operated as designed.

Which ONE of the following is the suction source for the Containment Spray pump?

- A. Recirculation sump ONLY
- B. Refueling Water Tank ONLY
- C. Recirculation Sump and RWT
- D. Spent Fuel Pool and Recirculation Sump

Answer: A

Learning Objective:  
L65084

Describe the design basis associated with SI system

Reference Id:	Q61803	
Difficulty:	3.00	
Time to complete:	5	
10CFR Category:	CFR5541 2	(2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.
10CFR Category:	CFR5541 2CFR5541 9	(2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.(9) Shielding, isolation, and containment design features, including access limitations.
Cognitive Level:	Comprehension / Analysis	
Question Source:	Bank Question	
Comment:	<p>The RWT is functionally designed to provide ~20 minutes of water during DBA LOCA scenario. A RAS signal will generate on low RWT level and the operators will assure that the only source of water at this point is recirc from the containment sump.</p> <p>Technical Reference: 40DP-9AP08, LOCA Tech Guideline, Instruction step 50.</p> <p>K/A Topic</p> <p>Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: ECCS</p>	

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34039A302	
Importance	3.10	3.50
Rating:		

Given the following plant conditions:

- Reactor has tripped from 100% power.
- Reactor coolant system pressure is 1650 psia and DROPPING.
- Pressurizer level is 10% and DROPPING.
- Steam generator levels DECREASED to 36% wide range (they were never lower) and are now INCREASING.
- AFB-P01 is feeding both SGs.
- Steam generator pressures are 1020 psia and RISING.
- Containment pressure is 7.4 psig and RISING.
- Safety Injection and Containment Isolation actuations have occurred.

Which ONE of the following states the additional engineered safety features actuation(s) present assuming all systems functioned as designed?

- A. Main Steam Isolation.
- B. Auxiliary Feedwater Actuation.
- C. Containment Spray Actuation and Main Steam Isolation.
- D. Auxiliary Feedwater Actuation and Containment Spray Actuation.

Answer: A

Learning Objective:  
L76810

List the parameters and setpoints that will cause PPS actuation.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q14667  
2.00  
2  
CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The High Containment Press MSIS setpoint is reached at > 3 psig.  
AFAS does not occur until < 25% WR.  
Containment Press must be > 8.5 psig for CSAS.

Technical Reference: 41AL-1RK5B; AFAS, CSAS, & MSIS window alarms.

K/A Topic

Ability to monitor automatic operation of the MRSS, including: Isolation of the MRSS

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34059K304	
Importance	3.60	3.80
Rating:		

Given the following plant conditions:

- Unit 1 has tripped from 100% power.
- The Loss of All Feed procedure, 40EP-9EO06 has been entered due to a loss of Main Feedwater.
- Both Steam Generators have reached Dryout condition.

Which ONE of the following describes the plant response to continued Dryout conditions in both steam generators?

- A. RCS temperature and pressure will decrease, Safety Injection will actuate.
- B. RCS temperature and pressure will increase, Pressurizer Safety Valves will lift.
- C. Steam Generator temperature and pressure will increase, Steam Generator Safety Valves will lift.
- D. Steam Generator pressure will increase and temperature will decrease. Steam Generator Safety Valves will NOT lift.

Answer: B

Learning Objective:  
L10495

Given conditions of LOAF determine the RCS response (temperature and pressure) as Steam Generator dryout occurs

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61807  
3.00  
3  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Dryout conditions in the SG will cause RCS temperature to increase due to loss of its heat sink. This will cause a corresponding increase in RCS pressure and could therefore cause primary safeties to lift.  
SG pressure can not increase if no water is present in the associated SG.

Technical Reference: 40DP-9AP11, LOAF Tech Guideline, Section 3.0, step 3.1.

K/A Topic

Knowledge of the effect that a loss or malfunction of the MFW will have on the following:  
RCS

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34059K402	
Importance	3.30	3.50
Rating:		

What setpoints and coincidence is required for a Reactor Power Cutback to occur on a loss of feedpump event? (Plant power was raised in accordance with the plant procedures)

- A. Reactor power is increased to 78% with one control oil pressure switch on either feedpump less than 75 psig.
- B. Reactor power is increased to 55% with one control oil pressure switch on both feedpumps less than 55 psig.
- C. Reactor power is increased to 78% with two control oil pressure switches on one feedpump less than 75 psig.
- D. Reactor power is increased to 55% with two control oil pressure switches on both feedpumps less than 55 psig.

Answer: C

Learning Objective:  
L24484

Describe the automatic initiation of a RPCB to include the following:

- Loss of Main Feedwater Pump
- Large Load Reject

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q2618

2.00

2

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Two control oil pressure switches provide the necessary input to each feedpump to cause a feedpump trip. By procedure, the operator manually selects the RPCB subgroups at 74% power. If he did not do this, only a setback would occur. The rods would not drop.

Technical Reference:

42AL-2RK6A, FWPT A Trip Alarm Response.

PV Simplified Control System and Logic Diagram Drawing, Reactor Power Cutback Simplified Drawing, pg.59

K/A Topic

Knowledge of MFW design feature(s) and/or interlock(s), which provide for the following:  
Automatic turbine/reactor trip runback



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34061K414	
Importance	3.50	3.70
Rating:		

Given the following plant conditions:

- Reactor Trip.
- Steam Generator (S/G) #1 Level 30% WR.
- S/G #2 Level 26% WR.
- S/G #1 Pressure 900 psia.
- S/G #2 Pressure 1110 psia.
- Annunciator "SG 2 > SG 1 PRESS CH 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. only S/G #1.
- B. only S/G #2.
- C. both S/Gs because of low S/G levels.
- D. only S/G #1 until S/G #2 pressure equals 950 psia, then both.

Answer: B

Learning Objective:  
78319

Describe the System Response to a Auxiliary Feedwater Actuation Signal.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q13038

3.00

5

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Only the higher press SG will be fed under an AFAS condition. This will ensure a faulted SG is not fed.

Technical Reference: 42AL-2RK5B, SG 2 > SG 1 PRESS CH TRIP Alarm Response, pg. 83.

K/A Topic

Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following:  
AFW automatic isolation

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	36062K201	
Importance	3.30	3.40
Rating:		

Given the following plant conditions:

- Unit 1 is operating at normal operating pressure and temperature.
- The Normal Supply Breaker to PBA-S03L trips OPEN due to a breaker failure (86 lockout present).

Which ONE of the following components is NOT available due to plant configuration?

- A. Normal Chiller 'A'
- B. Auxiliary Feedwater Pump 'A'
- C. Battery Room 'A' Normal Exhaust Fan
- D. Containment Pre-Access Air Filtration Unit 'A'

Answer: A

Learning Objective:  
L74463

Explain the operation of Switchgear PBA-S03 and PBB-S04 under normal operating conditions.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61808  
3.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

From INPO Bank Q# 13912  
Last NRC Exam: PV 11/18/96

Technical Reference: 40AO-9ZZ12, Degraded Electrical Power, PBA-S03 Loads, pg. 37.

K/A Topic  
Knowledge of bus power supplies to the following: Major system loads

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	36063A101	
Importance	2.50	3.30
Rating:		

On loss of station AC power, the PK system will provide at least \_\_\_\_\_ hours of 125 VDC power to its connected loads.

- A. 1
- B. 2
- C. 4
- D. 8

Answer: B

Learning Objective:  
L74194

Discuss the purpose and conditions under which the 125 VDC Class 1E Power System is designed to function.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q19026  
2.00  
2  
CFR5541 5

(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:  
Question Source:  
Comment:

Memory  
Bank Question

The class 1E station batteries have adequate capacity to supply and maintain a 2 hour service capability.

Technical Reference: 32ST-9PK03, 18 Month ST of Station Batteries, Sect. 1.0 Objectives, pg. 3.

K/A Topic

Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: Battery capacity as it is affected by discharge rate

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	36064K402	
Importance	3.90	4.20
Rating:		

The Diesel Generator is running in EMERGENCY MODE after a loss of power (LOP). What trips are enabled to protect the Diesel Generator?

- A. Low lube oil pressure, overspeed, generator differential.
- B. Excess engine vibration, low lube oil pressure, overspeed.
- C. Overspeed, reverse power, turbocharger low lube oil pressure.
- D. Main bearing high temperature, turbocharger bearing failure, generator differential.

Answer: A

Learning Objective:  
L75068

List and Describe the Emergency Mode Shutdowns associated with the Diesel Generators.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q10613

2.00

3

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Only Answer A contains all items that are able to trip the DG when operating in the Emergency Mode.

Technical Reference: 41AL-1RK1Z, DG A High Priority Trouble alarm.

K/A Topic

Knowledge of ED/G system design feature(s) and/or inter-lock(s), which provide for the following: Trips for ED/G while operating (normal or emergency)

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42056AK301	
Importance	3.50	3.90
Rating:		

Given the following plant conditions:

- A LOCA occurs on Unit 3 at 100% power.
- The Reactor trips.
- SIAS actuates.
- A Loss of Offsite Power subsequently occurs.
- The 'A' Diesel Generator starts and connects to its respective bus.
- The BOP-ESFAS sequencer only functions in the "LOP-only" mode (MODE 3).

Which ONE of the following describes a legitimate concern for this situation?

- A. The HPSI loop injection valves must be opened before starting the 'A' HPSI pump.
- B. The 'A' Spray Pond pump must be started manually to support Diesel Generator operation.
- C. Auxiliary Feedwater Pump AFN-P01 will start automatically and overload the bus if an AFAS is received.
- D. Loads should be started with sufficient time delay between them to prevent overloading the diesel generator.

Answer: D

Learning Objective:  
65061

Explain how the Load Sequencer changes between the different modes of operation.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61811  
4.00  
4  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

INPO Bank Q# 1493  
Last NRC Exam: PV 03/24/1997  
Technical Reference: 40OP-9SA01, BOP/ESFAS Modules Operation

K/A Topic

Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Order and time to initiation of power for the load sequencer

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	35007K101	
Importance	2.90	3.10
Rating:		

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- REAC DRN LOOP TRBL Alarm is lit on B03.
- RDT Level is 53%.
- An overpressure condition subsequently occurs that causes the Pressurizer Safety to lift and stick open.
- REAC DRN TK PRESS HI alarm is received on B03.

Which ONE of the following completes the description of the Reactor Drain Tank System operation under this condition?

- A. The RDT will release its contents to Containment.
- B. The RDT is automatically vented to the Gaseous Radwaste System.
- C. Containment Pressure or Temperature will NOT INCREASE until the RDT is manually vented to Containment.
- D. The RDT can NOT be manually vented to the Containment. Containment Pressure or Temperature will NOT INCREASE.

Answer: A

Learning Objective:  
L68040

Explain the operation of the Reactor Drain Tank (CHN-X02) under normal operating conditions.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61812  
4.00  
3

10CFR Category:

CFR5541 2 (2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.  
CFR5541 (2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.(9)  
2CFR5541 9 Shielding, isolation, and containment design features, including access limitations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

The RDT isolation valves automatically shut at 10 psig increasing pressure and can not be manually overridden to vent at that point. A 20" rupture disc set at 120 psid protects the RDT from stuck open PZR safety valve and relieves to containment. The tank can be manually vented if press is >10 psig to containment through PASS. However, this does not have enough capacity to handle a stuck open PZR safety.

Technical Reference: 40AL-9RK3A, RDT Press High Alarm Response.

K/A Topic

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

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	38008A102	
Importance	2.90	3.10
Rating:		

Given the following plant conditions:

- Unit 3 is operating at 100% power.
- Air Temperature is 115 degrees.
- Circulating Water Temperature has risen 20 degrees over the last 8 hrs.

Which ONE of the following describes the method by which the plant is assured that the Turbine Cooling Water System maintains the Turbine Cooling Water System temperatures within specification?

- A. The Plant Cooling Water Pump discharge valve is throttled.
- B. The Standby Turbine Cooling Water pump automatically starts.
- C. The Plant Cooling Water Heat Exchanger outlet valve is throttled.
- D. The Turbine Cooling Water Heat Exchanger outlet and bypass valves are manually adjusted.

Answer: D

Learning Objective:  
82259

Explain the operation of the TC Water Heat Exchangers under normal operating conditions

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q7628

2.00

3

CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Distractor A & C are incorrect, these valves are not throttled to control TC water loads.  
Distractor B is incorrect, the STBY TC Pump will not auto start to control temperature.

Technical Reference: 41OP-XTC01 (X is the associated unit number), step 4.1.3.7.

K/A Topic

Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the CCWS controls including: CCW temperature

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	37073K503	
Importance	2.90	3.40
Rating:		

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- An ALERT/HIGH alarm is received on RU-155D RCS LETDOWN monitor.

Assuming that the alarm is valid, high radiation levels could exist in all the following areas EXCEPT the:

- A. 'B' HPSI Pump Room
- B. Deboration Ion Exchanger Room
- C. Volume Control Tank (VCT) Room
- D. West Mechanical Penetration Room

Answer: A

Learning Objective:  
66723

Given a Radiation Monitor number and name describe the purposes and sample points of the Radiation Monitors at PVNGS

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61813  
2.00  
2  
CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
Modified Bank Question

All of these areas except HPSI Pump Room 'B' contain letdown flow paths that would be directly impacted by high rad levels. HPSI pump room does not contain any letdown flowpaths and would be adequately shielded to protect workers.  
Modified from INPO Q# 1348.

Technical Reference: 74RM-9EF41, Radiation Monitoring System Alarm Response, pg 54 & 73.

K/A Topic

Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Relationship between radiation intensity and exposure limits



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	

K/A #	34076A401	
Importance	2.90	2.90
Rating:		

Given the following plant conditions:

- Unit is at 100% power.
- TCW pump TCN-P01A is in service.
- A Loss of 4.16KV bus E-NBN-S01 occurs.

Which ONE of the following describes how this affects the Turbine Cooling Water System?

- A. The Control Room operator must manually start TCN-P01B.
- B. No affect, since TCN-P01A is powered from 4.16KV bus NBN-S02.
- C. TCN-P01B will auto start when discharge pressure decreases to 55 psig.
- D. TCN-P01A is load shed, then sequenced back on when the DG picks up the bus.

Answer: C

Learning Objective:  
N59765

State the power supplies to the Turbine Cooling Water pump motors.

L74172

Describe the automatic start feature associated with the Turbine Cooling Water Pumps.

82258

Explain the operation of the Turbine Cooling Water pumps under normal operating conditions

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q3820  
3.00  
2  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Answer C is correct, the STBY Pump will auto start on low hdr press of 55 psig if power is available.  
Distractor B is incorrect, TCN-P01A is powered from NBN-S01.  
Distractor D is incorrect, the pumps are not load shed but time delayed to restart if power is lost to both pumps and subsequently restored.

Technical Reference: 41AL-1RK7A, TCW HDR PRESS HI-LO, pg. 105.

K/A Topic

Ability to manually operate and/or monitor in the control room: SWS pumps

This Exam Level RO  
Appears on: RO EXAM SRO EXAM  
Tier 2  
Group 1

K/A # 34076K105  
Importance 3.80 4.00  
Rating:

Which ONE of the following provides cooling to the Emergency Diesel Generator turbochargers?

- A. Spray Pond Water
- B. Essential Chill Water
- C. Nuclear Cooling Water
- D. Essential Cooling Water

Answer: A

Learning Objective:  
L65124

Describe how the SP System supports the operation of the following systems: • Essential Cooling Water System (EW) • Circulating Water System (CW) • Diesel Generator System (DG) • Nuclear Cooling Water (NC)

67255

Describe the interface between the Spray Pond system and its support/supported systems.

67255

Describe the interface between the Spray Pond system and its support/supported systems.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:  
Cognitive Level:  
Question Source:  
Comment:

Q15906  
2.00  
1  
CFR5541 8 (8) Components, capacity, and functions of emergency systems.  
Memory  
Bank Question

While all of the listed system provide cooling medium to various heat loads throughout the plant, only the Spray Pond Water system provides cooling to the DG turgochargers.

Technical Reference: 40OP-9DG01, Emergency Diesel Generator A, Section 3.7 Shutdowns pg. 8.

K/A Topic

Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems: D/G

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	38078A301	
Importance	3.10	3.20
Rating:		

Given the following plant conditions:

- Offsite power has been lost.
- A valid alarm is received on alarm window 7B01B, "INST AIR HDR PRESS LO".
- Instrument air header pressure is 89 psig and dropping.

Which ONE of the following describes the next expected plant response?

- A. Pressurizer main spray valves fail closed.
- B. Letdown containment isolation valves fail closed.
- C. Nitrogen backup valve opens to maintain header pressure.
- D. Reactor Coolant Pump seal injection control valves fail open.

Answer: C

Learning Objective:  
L76596

Describe the automatic functions associated with the Instrument Air System.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61814

3.00

2

CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Nitrogen Backup valve opens at 85 psig decreasing.  
INPO Bank Q# 1478  
Last NRC Exam: PV Exam 3/24/97

Technical Reference: 41AL-1RK7B, INST AIR HDR PRESS LO, pg. 59.

K/A Topic

Ability to monitor automatic operation of the IAS, including: Air Pressure

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	31001K502	
Importance	2.90	3.40
Rating:		

A control rod (CEA) is withdrawn from a fully inserted position to the center of the core, its Differential worth will:

- A. increase because poison concentration decreases as the control rod approaches core center.
- B. increase because relative neutron flux increases as the control rod (CEA) approaches core center.
- C. decreases because the fuel concentration decreases at the center of the core due to high burnup in that region.
- D. decrease because moderator density decreases, causing more neutron leakage as the control rod approaches core center.

Answer: B

Learning Objective:  
6192005K105

Define control rod worth, differential control rod worth, and integral control rod worth.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q16187  
3.00  
1  
CFR5541 5

(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:  
Question Source:  
Comment:

Memory  
Bank Question

**Differential Rod Worth (DRW)** - Reactivity worth per unit change in rod position. As the rod approaches the center of the core it will enter a region of higher neutron flux and therefore its reactivity worth per unit change in rod position will increase.

Technical Reference: Reactor Theory Fundamentals

K/A Topic

Knowledge of the following operational implications as they apply to the CRDS: Definitions of differential rod worth and integral rod worth; their applications

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	2311	
Importance	2.70	3.20
Rating:		

The control room operators are responding to a Steam Generator Tube Rupture (SGTR). In order to cool down the RCS for SG maintenance the operators dump steam to the condenser using the intact SG. This method of RCS cooldown is preferred over dumping steam through the intact SG's ADVs because it minimizes....

- A. radiological releases.
- B. RCS subcooling requirements.
- C. shrink experienced by the RCS.
- D. thermal shock to the reactor vessel.

Answer: A

Learning Objective:  
L11239

Given the SGTR EOP is being performed and a cooldown to less than 550°F is required describe how and at what rate the cooldown will be performed

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:  
Cognitive Level:  
Question Source:  
Comment:

Q61817  
2.00  
3  
CFR5541 13 (12) Radiological safety principles and procedures.  
Memory  
Bank Question

The main reason for performing the RCS cooldown to the main condenser if available is to minimize the offsite release potential.  
The other distractors are potentially valid items to note but are not design bases factors.

INPO Bank Q# 20936

Technical Reference: 40DP-9AP09, SG Tube Rupture Tech Guideline, Instruction Step 9, pg. 17.

K/A Topic  
Ability to control radiation releases

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	34002A403	
Importance	4.30	4.40
Rating:		

Given the following plant conditions:

- LOCA has occurred.
- RCS temperature is 535°F.
- RCS pressure is 1050 psia.
- All Four RCPs are operating.
- Containment is HARSH.

With respect to the RCPs, the CRS should direct which ONE of the following and why?

- Trip all 4 RCPs to establish single phase natural circulation conditions.
- Trip all 4 of the RCPs to mitigate the effects of saturated conditions in the RCS.
- Leave all 4 RCPs running to help prevent an uncontrolled cooldown from occurring.
- Trip 2 of the RCPs in opposite loops as part of the trip 2 leave 2 strategy for a SIAS condition.

Answer: B

Learning Objective:  
L56480

Given a copy of the P/T curves explain the purpose and bases of the LOWER SUBCOOLING LIMIT CURVE (Minimum Subcooled).

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61820  
3.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The conditions given indicate a loss of subcooling (i.e. saturated conditions) and therefore all 4 RCPs should be tripped.

Distractor A is incorrect, the RCPs are NOT stopped to establish single phase NC but NC will be established following the RCP pump trip.

Distractor C is incorrect, the pumps should not be left running.

Distractor D is incorrect, the plant is beyond the Trip 2, Leave 2 strategy at this point.

Need Appendix 2 Curves available as handout.

Technical Reference: 40DP-9AP17, Standard Appendices Tech Guideline, Appendix 2, Figures, Lower Subcooling Limit Curve Basis.

K/A Topic

Ability to manually operate and/or monitor in the control room: Indications and controls necessary to recognize and correct saturation conditions

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	011G2132	
Importance	3.40	3.80
Rating:		

Given the following plant conditions:

- A small feedline break inside containment has resulted in containment temperature increasing from 100 °F to 160 °F.

Which ONE of the following describes how and why the increase in containment temperature will affect the indicated pressurizer level?

- A. Indicated level will be HIGHER than actual level because the reference leg fluid density decreases.
- B. Indicated level will be LOWER than actual level because the reference leg fluid density decreases.
- C. Indicated level will be HIGHER than actual level because the elevated containment temperature causes flashing in the reference leg.
- D. Indicated level will be LOWER than actual level because the elevated containment temperature causes flashing in the reference leg.

Answer: A

Learning Objective:  
L75087

Describe the function of the Pzr Level Transmitters input to the Pressurizer Level Control System

Reference Id:	Q61821
Difficulty:	3.00
Time to complete:	2
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Comprehension / Analysis
Question Source:	Bank Question
Comment:	

INPO Bank Q# 2578

Technical Reference: PLCS STM, Volume 42, pg 6 & 7.

K/A Topic

Ability to explain and apply all system limits and precautions

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	38034A102	
Importance	2.90	3.70
Rating:		

Given the following plant conditions:

- Unit 2 is Mode 6
- Preparations for lifting the Upper Guide Structure (UGS) are being made
- The Fuel transfer tube quick closure device and PCN-V118 are OPEN
- Refuel Pool level is 131' 9"
- Fuel Canal level is 131' 8" and SLOWLY LOWERING

In accordance with the procedure, which ONE of the following states the correct control room guidance for this condition?

- A. Proceed with direction to raise the UGS.
- B. Close PCN-V118, Fuel Transfer Tube Isolation.
- C. Raise Fuel Canal Level to match Refuel Pool Level.
- D. Lower Spent Fuel Pool Level to match Fuel Canal Level.

Answer: B

Learning Objective:  
L97324

State the requirements for RV water level during refueling.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61824  
4.00  
3  
CFR5541 5

(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:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The UGS lift can not proceed with these conditions. IAW the "Outage GOP", PCN-V118 and the quick closure device can not both be opened unless water level is >131 ft., 10 in.

Technical Reference:  
40OP-9ZZ23 App. W step 31.  
40OP-9ZZ23 step 11.19

K/A Topic

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fuel Handling System operating the controls including: Water level in the Refueling canal



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2111	
Importance	3.00	3.80
Rating:		

Given the following plant conditions:

- Unit 1 is operating at 80% power.
- Engineering informs the operating crew that there is a problem with Reactor Trip Circuit Breaker (RTCB) #1 which will impact its ability to open.

Based on these conditions, the operating crew is required by Tech Specs to open...

- A. RTCB #1 OR #3 immediately.
- B. RTCB #1 OR #3 within one hour.
- C. RTCB #1 AND #3 immediately.
- D. RTCB #1 AND #3 within one hour.

Answer: B

Learning Objective:  
L89772

Given a set of plant conditions apply the one hour or less actions statements of T.S. 3.3

Reference Id:	Q28235	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR5543 2	(2) Facility operating limitations in the technical specifications and their bases.

Cognitive Level:	Memory
Question Source:	Bank Question
Comment:	

T.S. 3.3.4 gives the option of opening the affected RTCB or the other one in that train within 1 hr.

Technical Reference: T.S. 3.3.4 Action B, Required Action and Completion Time.

K/A Topic

Knowledge of less than one hour technical specification action statements for systems

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	38086K503	
Importance	3.10	3.40
Rating:		

Given the following plant conditions:

- A fire has been detected in Fire Zone - 42A "Train A (Channel C) Electrical Penetration Room on the 100' of the Auxiliary Bldg.
- The fire brigade team is in the area and is currently fighting a major electrical fire with water spray.

Which ONE of the following operational considerations describes how the plant protects the electrical loads supplied from this area?

- A. The control room shuts down equipment in this Fire Analysis Area and in the two adjacent areas.
- B. The control room orders all safe shutdown equipment in this Fire Analysis Area immediately deenergized.
- C. The Fire Brigade Leader orders all impacted safe shutdown equipment in this Fire Analysis Area deenergized.
- D. The control room reviews loads supplied from this room and deenergizes potentially affected equipment as necessary.

Answer: D

Learning Objective:  
L75388

Describe the Cardox Sub-system of the Fire Protection System.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61826  
3.00  
2  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.  
Comprehension / Analysis  
New

Cognitive Level:  
Question Source:  
Comment:

There are no all inclusive actions in the 40DP-9ZZ19 for a fire. It is based on CRS review of loads in the area.

Technical Reference: 40DP-9ZZ19, Operational Consideration due to a Plant Fire, Introduction, pg. 2.

K/A Topic

Knowledge of the operational implication of the following concepts as they apply to the Fire Protection System: Effect of water spray on electrical components

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	221	
Importance	3.70	3.60
Rating:		

Given the following plant conditions:

- A reactor startup is in progress after a two week mid-cycle outage.
- The ECC has the following data:

**ECRP -500 pcm.....** Group 3 at 90 inches  
**ECRP.....** Group 4 at 74 inches  
**ECRP +500 pcm.....** All Rods Out

- Criticality is achieved and verified with Group 3 at 70 inches withdrawn.

What is the required operator response?

- A. Trip the reactor and emergency borate.
- B. Insert regulating group rods to their lower group stop.
- C. Insert regulating group rods to their lower group stop and emergency borate.
- D. Insert rods as necessary to hold at the current power level and take critical data.

Answer: B

Learning Objective:  
L11018

From memory describe the required actions if criticality is achieved below the ECRP - 500 pcm position but above the PDILs

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61828  
3.00  
3  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
Comprehension / Analysis  
Bank Question

Cognitive Level:  
Question Source:  
Comment:

Criticality is achieved before the ECRP -500 position, but above the PDILs. Therefore, IAW the Startup procedure the reg group rods need to be inserted to their lower stop. The other distractor choices are based on different rod position relative to the ECRP or plant configuration.

Technical Reference: 40OP-9ZZ03, Reactor Startup, Appendix C - Early Criticality Response, Step 1.2.

K/A Topic

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2212	
Importance	3.00	3.40
Rating:		

For a Surveillance Test that was aborted, the...

- A. paperwork can be immediately discarded.
- B. acceptance review will be completed, noting that the ST is incomplete.
- C. acceptance review will be completed only after the complete performance of the ST.
- D. paperwork is maintained, however, the acceptance review is not required to be performed.

Answer: B

Learning Objective:  
L10517

Given that an ST is being performed and is aborted describe what must be done when an ST is aborted

Reference Id:	Q10019
Difficulty:	3.00
Time to complete:	2
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
Cognitive Level:	Memory
Question Source:	Bank Question
Comment:	

Aborted ST criteria from memory. A normal acceptance review will be completed noting that the ST is incomplete.

Technical Reference: 73DP-9ZZ14, Surveillance Testing, Step 3.6.1.2, Aborted ST.

K/A Topic

Knowledge of surveillance procedures

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	033G2230	
Importance	3.50	3.30
Rating:		

Which ONE of the following is true regarding Spent Fuel Pool Cooling as related to Control Room Board or Recorder indications?

- A. Spent fuel pool levels are available.
- B. Spent fuel cooling flow is available.
- C. Spent fuel pool temperature is available.
- D. Pump bearing temperatures and alarms are available.

Answer: D

Learning Objective:  
L77410

Describe the Control Room indications associated with the PC system.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q28587  
2.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

Alarms for Distractors A, B, & C are provided in the control room but no direct readings are available. The spent fuel pool level can be monitored visually from a remote camera but not on the CR Board. The only one listed that has applicability is the PC pump alarms located on Board 7B.

Technical Reference: 41AL-1RK7B, MULTIPOINT RECORDERS ABOVE SETPOINT, RESPONSE SECTION, GROUP G, pg. 92.

K/A Topic

Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2230	
Importance	3.50	3.30
Rating:		

Given the following plant conditions:

- Unit 2 is Mode 6
- Fuel movement is in progress from Containment to the Fuel Building
- A valid "Low Fuel Pool Gate Seal Air System Pressure Alarm" is annunciated on B07
- The Auxiliary Operator reports that the Cask Loading Pit Gate Seal pressure is reading 30 psig

Which ONE of the following is the correct communication and guidance for this condition?

- A. Inform the LSRO of the potential for loss of Spent Fuel Pool Level and enter 40AO-9ZZ06, Loss of Instrument Air.
- B. Inform the LSRO of the potential for loss of Spent Fuel Pool Level and enter 40AO-9ZZ03, Loss of Cooling Water.
- C. Inform the Containment Coordinator of the potential for loss of Fuel Pool Level and enter 40AO-9ZZ06, Loss of Instrument Air.
- D. Inform the Containment Coordinator of the potential for loss of Fuel Pool Level and enter 40EP-9EO11, Lower Mode Functional Recovery.

Answer: A

Learning Objective:  
27406

State the shift crew requirements during refueling operations.

Reference Id:	Q61941	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR5541 10	(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

Cognitive Level:	Memory
Question Source:	New

Comment:

Distractors C & D are incorrect, the Refueling SRO or Limited SRO is assigned the refueling activities responsibility.  
Distractor B is incorrect as the guidance for low gate seal press is contained in the Loss of Instrument Air Procedure. The Loss of SFP level or Cooling directs the operator to Loss of Instrument Air.

Technical Reference: 41AL-1RK7B, FP GATE SEAL A/S PRESS HI/LO

K/A Topic

Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	231	
Importance	2.60	3.00
Rating:		

During an emergency situation the Emergency Coordinator has the authority to allow a worker to exceed \_\_\_\_\_ limits to protect valuable property.

- A. 10 CFR 19
- B. 10 CFR 20
- C. 10 CFR 55
- D. 10 CFR 100

Answer: B

Learning Objective:  
L92080

Identify the Emergency Coordinator's responsibilities associated with Emergency Exposure.

Reference Id: Q61829  
 Difficulty: 2.00  
 Time to complete: 2  
 10CFR Category: CFR5541 13 (12) Radiological safety principles and procedures.  
 Cognitive Level: Memory  
 Question Source: New  
 Comment:

10 CFR 100 limits apply to offsite doses.  
 10 CFR 19 & 55 are plant related CFRs but not for E-Plan.

Technical Reference: EPIP-01, STSC Actions, Step 2.6, Dose Limit Determination.

K/A Topic

Knowledge of 10 CFR: 20 and related facility radiation control requirements

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	239	
Importance	2.50	3.40
Rating:		

Given the following plant conditions:

- The radioactive effluent release permit for a containment refueling purge is current.
- Core alterations are in progress.
- Containment refueling purge is stopped.
- It is desired to restart the containment refueling purge.
- The current time is within the time constraints of the release permit.

Which ONE of the following identifies the requirement(s) to restart the containment refueling purge?

- A. Re-verify Containment Integrity is established per LCO 3.9.9.
- B. Re-perform the channel functional tests for RU-37 and RU-38.
- C. Perform ASME Section XI tests on refueling purge isolation valves.
- D. Notify Radiation Monitoring Group to evaluate the restart of the purge.

Answer: **D**

Learning Objective:  
[L57226](#)

Given that a gaseous radiological release is in progress define Operations responsibilities

Reference Id: Q61830  
 Difficulty: 3.00  
 Time to complete: 2  
 10CFR Category: CFR5543 4 (4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Cognitive Level: Memory  
 Question Source: Bank Question  
 Comment:

[INPO Bank Q# 13974](#)  
[Last NRC Exam: PV 11/18/96](#)

[Technical Reference: 40OP-9CP01, Containment Purge System, Sect. 5.0, Venting Containment, Step 5.1.4.](#)

K/A Topic  
 Knowledge of the process for performing a containment purge



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	

K/A #	2418	
Importance	2.70	3.60
Rating:		

The Blackout Optimal Recovery Procedure directs the crew to place all charging pumps in PTL (Pull to Lock) to...

- A. provide for controlled restoration of RCP seal flow.
- B. prevent inadvertent dilution on restoration of injection flow.
- C. ensure that pump suction source is aligned prior to restart.
- D. ensure pumps are not immediately anti-pumped on restoration of power.

Answer: A

Learning Objective:  
L10536

Given conditions of a Blackout state the reason that all Charging Pumps are placed in PTL

L11790

As the Control Room Supervisor direct the actions of an Operating Crew in the mitigation of a Blackout

L61430

State the reason that all Charging Pumps are placed in PTL during a blackout.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:  
  
Cognitive Level:  
Question Source:  
Comment:

Q9794  
3.00  
2  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.  
Comprehension / Analysis  
Bank Question

Placing the Charging Pump in Pull to Lock ensures controlled restoration of seal flow on recovery of power. The other conditions could exist only if the operator had realigned the charging system.

Technical Reference: 40DP-9AP13, Blackout Tech Guideline, Step Number 6, pg. 10.

K/A Topic

Knowledge of the specific bases for EOPs

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2448	
Importance	3.50	3.80
Rating:		

Given the following plant conditions:

- SBCS valves are in operation following a reactor trip.
- Valve 1001 is open 40%, controlling steam header pressure at approximately 1170 psia.
- The Secondary Operator inadvertently opens an ADV, causing steam header pressure to rapidly drop by 50 psia.

Based on these conditions, you should expect the MODULATE PERMISSIVE light to...

- A. extinguish immediately.
- B. extinguish in approximately 15 seconds.
- C. remain on, with SBCS valve 1001 remaining at its present position.
- D. remain on, with SBCS valve 1001 throttling closed to approximately 10% open.

Answer: B

Learning Objective:  
L65645

Describe how the SBCS generates its demand and permissive setpoints. • Reactor Power Cutback System • Control Element Drive Mechanism Control System

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61832  
4.00  
3  
CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

The Modulate Permissive signal does not allow the bypass valves to "quick close" through the use of a 15 sec. timer. All open valves would close at that time.

Technical Reference: PV Simplified Control System and Logic Diagram Drawings, SBCS, pg. 37.

K/A Topic

Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	37017A402	
Importance	3.80	4.10
Rating:		

Which ONE of the following is a relationship between QSPDS and the B02 post accident monitor recorders?

- A. The B02 post accident monitor recorders provide class input to the QSPDS computer for subcooled margin calculations
- B. QSPDS sends an output to the B02 post accident monitor recorders to display information concerning pressurizer pressure
- C. The B02 post accident monitor recorders provide class input to the QSPDS computer for saturation margin calculations
- D. QSPDS sends an output to the B02 post accident monitor recorders to display information concerning core exit thermocouple temperature.

Answer: D

Learning Objective:  
L76570

State which QSPDS parameters are recorded in the Control Room.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q12025  
4.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

QSPDS feeds the signal to B02. This makes A & C incorrect.  
B is incorrect, Post Accident Monitoring recorders do not display PZR Press. but do display CETs.

Technical Reference: 40OP-9SH01, QSPDS User's Guide, step 4.1.3, pg. 5.

K/A Topic

Ability to manually operate and/or monitor in the control room: Temperature values used to determine RCS/RCP operation during inadequate core cooling (i.e., if applicable, average of five highest values)

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	38075A202	
Importance	2.50	2.70
Rating:		

Given the following plant conditions:

- Unit 1 & 2 are operating at 100% power.
- Unit 3 is in MODE 6.
- Unit 1 Circulating Water Pump 'A' and 'B' both trip on an overcurrent condition.

Which ONE of the following statements best describes the status of the Circulating Water System and the procedure(s) required to mitigate the circumstances related to the affected unit, if any?

- Unit 1 CW Pump 'A' & 'B' discharge valves close. 40AO-9ZZ03, "Loss of Cooling Water" is entered for Unit 1 & 2.
- Unit 1 CW Pump 'A' & 'B' discharge valves close. 40AO-9ZZ03, "Loss of Cooling Water" is entered for Unit 1 only.
- Unit 1 CW Pump 'A' & 'B' discharge valves close. 40AO-9ZZ07, "Loss of Condenser Vacuum" is entered for Unit 1 only.
- Unit 1 CW Pump 'A' & 'B' discharge valves remain open. 40AO-9ZZ07, "Loss of Condenser Vacuum" is entered for Unit 1 only.

Answer: C

Learning Objective:  
L56165

Determine if the Loss of Condenser Vacuum procedure should be entered.

66932

Describe the automatic interlocks associated with the Circulating Water Pumps and the Discharge MOVs.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61825

4.00

4

CFR5543 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

10CFR Category:

CFR5543

5CFR5541 5

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.(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:  
Question Source:  
Comment:

Comprehension / Analysis

Modified Bank Question

The CCW discharge valves with auto close on trip of the CCW pump. The Loss of Cooling Water contains no guidance for CCW loss.

Modified from INPO Q# 20640

Technical Reference: 40AO-9ZZ07, Loss of Condenser Vacuum, Sect. 4.0, step 1, pg. 6.

K/A Topic

Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of circulating water pumps

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	2123	
Importance	3.90	4.00
Rating:		

In accordance with 02DP-0ZZ01, Verification of Plant Activities, which ONE of the following is REQUIRED for "physical verification" of throttled valve position?

- A. The manipulator and verifier work together. The valve is positioned by the manipulator only.
- B. The manipulator and verifier work together. The valve is positioned by BOTH the manipulator and verifier.
- C. The manipulator and verifier work independently. The valve is positioned by the manipulator only.
- D. The manipulator and verifier work independently. The valve is positioned by BOTH the manipulator and the verifier.

Answer: A

Learning Objective:  
L57342

Determine whether or not concurrent verification is required.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61834  
4.00  
3  
CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
New

To physically check a throttled valve requires "concurrent verification". The manipulator and verifier will work together but the valve is only checked once.

Technical Reference: 02DP-0ZZ01, Verification of Plant Activities, Sect. 4.0, step 4.1.4.

K/A Topic

Ability to perform specific system and integrated plant procedures during all modes of plant operation

This Exam Level RO  
Appears on: RO EXAM SRO EXAM  
Tier 1  
Group 1

K/A # 42062AK303  
Importance 4.00 4.20  
Rating:

Given the following conditions:

- Unit 1 is operating at rated power.
- EW Train A is in the process of being aligned to NC due to a problem with both NCW pumps.
- Each RCP has about 375 gpm of cooling water flow indicated on B04.
- An operator is standing by in the Train A SDC Heat Exchanger room to throttle the EW outlet of the SDC Heat Exchanger using EWA-HCV-53.

Based on the above conditions, you should direct the operator to throttle EWA-HCV-53:

- A. open to increase the EW pump's flowrate.
- B. closed to divert more flow to the NCW system.
- C. closed to reduce the heat load on the EW Heat Exchangers.
- D. open to overcome the increased head loss that the NCW places on the EW system.

Answer: B

Learning Objective:  
L10108

Given a loss of NC describe how flow to the RCPs is increased after EW has been cross tied

L65468

Describe the Nuclear Cooling Water Priority loads that can be supplied by the Essential Cooling Water system.

L76813

Given a Loss on Nuclear Cooling Water cross connect "A" EW to NC

N76946

Describe the interface between the Essential Cooling Water system and its support/supported systems.

Reference Id: Q8300

Difficulty: 2.00

Time to complete: 2

10CFR Category: CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

10CFR Category: CFR5541 10CFR5541 5 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(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 / Analysis

Question Source: Bank Question

Comment: Distractors A & D provide more flow to the EW system and therefore degrade cooling flow to the RCPs.

Distractor C would increase the heat load on the EW Heat Exchangers not decrease.

Technical Reference: 40AO-9ZZ0, Loss of Cooling Water, Sect. 4, Appendix A, Cross-connect EW to NC, step 8.

K/A Topic

Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water Guidance actions contained in EOP for Loss of nuclear service water

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42040AA104	
Importance	4.30	4.30
Rating:		

Given the following conditions:

- Unit 1 tripped from 100% full power.
- SPTA's are in progress
- SIAS, CIAS, and AFAS-1 have initiated.
- A Steam Line break has been identified on S/G #1.
- Steam Generator #1 pressure is 850 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.

Which ONE of the following correctly addresses the MINIMUM actions required by the ESD procedure to isolate the steam line header for this ESD event?

- A. Ensure a MSIS has actuated.
- B. Close the ADVs and the Economizer FWIVs on #1 S/G.
- C. Close the ADVs and the Economizer FWIVs on both S/Gs.
- D. Ensure MSIVs and the MSIV Bypass Valves on the affected S/G are closed.

Answer: A

Learning Objective:  
L11202

Given conditions of an ESD describe the mitigating strategy outlined in the ESD EOP

Reference Id:	Q61767	
Difficulty:	3.00	
Time to complete:	4	
10CFR Category:	CFR5541 7	(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:	Comprehension / Analysis
Question Source:	New
Comment:	

Distractors B, C, & D are part of the mitigation strategy for ESD but are not the MINIMUM required to isolate the leak.

Technical Reference: 40EP-9EO05, ESD

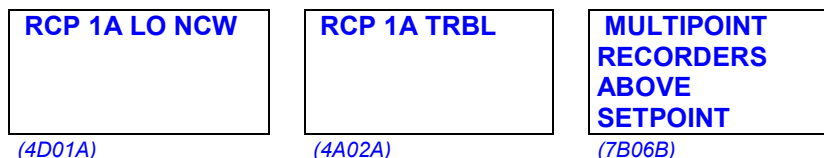
K/A Topic

Ability to operate and / or monitor the following as they apply to the Steam Line Rupture:  
Isolation of all steam lines from header

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42015AA208	
Importance	3.40	3.50
Rating:		

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

Board Annunciators in alarm:



Board Indications:

- Nuclear Cooling water flow (NCN FI 475) - 420 gpm
- Upper Thrust bearing temperature - 248°F
- Lower Journal bearing temperature - 185°F
- Upper Journal bearing temperature - 195°F
- Number 1 Seal inlet pressure - 2255 psig
- Controlled bleedoff flow - 6 gpm.

Based on these indications the crew should:

- A. begin a plant S/D.
- B. manually trip the reactor, then trip RCP 1A.
- C. stop all but one normal chiller, ensure its NC valve closes.
- D. continue plant operations at 100% power, increase monitoring of RCP parameters.

Answer: **B**

Learning Objective:  
12076

Given conditions of rising RCP motor or bearing temperatures describe the potential damage that high motor or bearing temperatures can have

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61764  
4.00  
5  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

Distractor A would have been the preferred option if a Rx Trip setpoint had not been reached.  
Distractor C & D are options if continued operation were allowed.

Technical Reference: 40AO-9ZZ04, RCP Emergencies

K/A Topic

Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on high bearing temperature



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	2120	
Importance	4.30	4.20
Rating:		

Which ONE of the following should be performed if the 125 VDC Normal Battery Charger fails?

- A. Align that train's inverter rectifier to perform the required battery charger function.
- B. Place the swing battery charger in service to replace the normal battery charger's function.
- C. Declare that train 125 VDC Vital system inoperable and commence plant shutdown.
- D. Align the maintenance supply to power that trains vital 120 VAC class power supply loads directly.

Answer: B

Learning Objective:  
L11080

Given plant conditions determine if the Loss of Class Instrument or Control Power AOP should be executed

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61782  
2.00  
3  
CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

INPO Q# 1102  
Last NRC Exam: Callaway 1 02/24/97  
Technical Reference: 40OP-9PK01  
K/A Topic  
Ability to execute procedure steps.

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42005AA101	
Importance	3.60	3.40
Rating:		

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.
- CEA positions can not be confirmed by using the CEAC CRT.
- SPTAs are in progress.

The Control Room should confirm CEA position through the use of which ONE of the following:

- A. Lower Electrical Limit
- B. Reactor Trip phase current lights
- C. CEAC digital display on CPC modules
- D. Verification of decreasing Reactor power

Answer: A

Learning Objective:  
L10406

Given a reactor trip describe the EOP expectation concerning checking CEA positions

Reference Id:	Q61784
Difficulty:	2.00
Time to complete:	2
10CFR Category:	CFR5541 7 (7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
Cognitive Level:	Comprehension / Analysis
Question Source:	New
Comment:	

Answer A is the easiest, most time efficient method of verifying individual CEA positions. Distractor B is more time consuming and should not be used per EOP Operations Expectations. Distractors C & D do not provide individual CEA position.

Technical Reference: EOP Operations Expectations, STPTA Step 2

K/A Topic

Ability to operate and / or monitor the following as they apply to the Inoperable / Stuck Control Rod: CRDS

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42069AK203	
Importance	2.80	2.90
Rating:		

In Modes 1-4, Containment integrity is maintained, while operating the 140' containment access airlock, by which ONE of the following:

- A. Administrative requirements maintain one door closed.
- B. A mechanical interlock prevents opening the second door until the first is closed.
- C. Both doors may be open but only for equipment entry and only for brief periods of time.
- D. A pressure interlock prevents opening the inside containment door with a D/P of >.5 psig.

Answer: B

Learning Objective:  
L89786

Given a set of plant conditions determine whether or not the LCOs of 3.6 are satisfied

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61787  
2.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
New

Technical Reference: T.S. 3.6.2

K/A Topic

Knowledge of the interrelations between the Loss of Containment Integrity and the following: Personnel access hatch and emergency access hatch

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34005K201	
Importance	3.00	3.20
Rating:		

Given the following plant conditions:

- The plant is in Shutdown Cooling using LPSI Pump 'B'.
- A loss of ALL offsite power has occurred.
- Diesel Generator 'B' has started and responded as expected.

Which ONE of the following describes the operation of the LPSI Pump 'B'?

- A. LPSI Pump 'B' should have restarted as soon as DG 'B' output breaker closed.
- B. LPSI Pump 'B' should have restarted 13 seconds after DG 'B' output breaker closed.
- C. LPSI Pump 'B' is NOT running. Manual restarting of the pump would be necessary.
- D. LPSI Pump 'B' is NOT running. It will restart automatically when the Load Sequencer is reset.

Answer: C

Learning Objective:  
L74423

Describe how the Class IE Electrical Distribution System supports the operation of the following systems: • Safety Injection and Shutdown Cooling System • Essential Spray Pond System • Essential Cooling Water System • Auxiliary Feedwater System • Chilled Water System • Essential Chilled Water System • Chemical and Volume Control System • HVAC Equipment • Pressurizer Pressure Control System • Diesel Generator support equipment • Fuel Pool Cooling System

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61791  
4.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Modified Bank Question

The LPSI pump will not auto restart on a Loss of Offsite Power with power restored by the Diesel Generator to the buses. The operator will be required to restart the pump manually. The Load Sequencer does not pick this up unless a SIAS condition is present.  
INPO Bank Q# 19355

Technical Reference: PV Simplified Control Logic Diagram or 36MT-9SA02, BOP ESFAS Load Sequencer Module Functional Test, Step 4.9.8 for Mode 3 Loss of Offsite Power, Step 4.8.4 for Mode 2 LOP with SIAS condition.

K/A Topic

Knowledge of bus power supplies to the following: RHR pumps

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	34056A204	
Importance	2.60	2.80
Rating:		

Given the following plant conditions:

- Unit 1 is in Mode 3
- Condensate Long-Path Recirculation is IN PROGRESS
- CDN-P01B is IN OPERATION with the suction valves from both Hotwell Sections OPEN
- Both suction valves remain OPEN
- CDN-P01A and CDN-P01C are available (miniflow headers filled)
- Hotwell Section 1 Level Transmitter LSSL-85 failure results in a CDN-P01B Trip on Low Hotwell Level (Assume the Transmitter remains 'failed')

Which ONE of the following provides a lineup to restore Long-Path Recirculation? (Assume no additional operator action is taken)

- A. CDN-P01A from Hotwell Section 2
- B. CDN-P01B from Hotwell Section 2
- C. CDN-P01A from Hotwell Section 1
- D. CDN-P01C from Hotwell Section 2

Answer: **A**

Learning Objective:  
[L67440](#)

Describe the following four Condensate System flowpaths: • Normal Line-up • Condensate Pump Miniflows • Long Path Recirc Line-up • Condensate Overboard Line-up

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61806  
4.00  
4

CFR5543 5 (5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Cognitive Level:  
Question Source:  
Comment:

Comprehension / Analysis  
Bank Question

[Last NRC Exam: 2001 RO question](#)

K/A Topic

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 mal-functions or operations: Loss of condensate pumps

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 2	
K/A #	37015A304	
Importance	3.30	3.50
Rating:		

Given the following plant conditions:

- U1 Reactor power is 100%.
- A channel check is being performed to compare Indicated power to COLSS Calorimetric power (JSCALOR).

Complete the following statement:

If Reactor power is \_\_\_\_\_ then Calorimetric Power and all Indicated Power levels must agree within \_\_\_\_\_.

- A. less than 20%, + or - .5%
- B. less than 80%, + or - .5%
- C. greater than or equal to 20%, + or - 2.0%
- D. greater than or equal to 80%, + or - 2.0%

Answer: D

Learning Objective:  
L75661

Explain the operation of the Control Channels under normal operating conditions.

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61822  
2.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
New

When Rx power is between 20% to 80%, the NI power levels must be no less than 0.5% below Actual power and no higher than 10% above Actual power. Above 80% the lower limit is > or + to 2% Actual power or = to > 2% above Actual power.  
Only D meets these guidelines.

Technical Guideline: 40ST-9ZZM1, Operations Mode 1 Surveillance Logs, page 100.

K/A Topic

Ability to monitor automatic operation of the NIS, including: Maximum disagreement allowed between channels

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 2	
	Group 1	
K/A #	35103K302	
Importance	3.80	4.20
Rating:		

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A large, audible in-leakage is reported at the equipment hatch to containment seal.

Which ONE of the following describes the action to be taken?

- A. Quantify the in-leakage so the exact amount is known.
- B. Reduce power to less than 50% until the leak is repaired.
- C. Restore structural integrity IMMEDIATELY or be in HOT STANDBY within the next 6 hours.
- D. Restore containment integrity within 1 hour or be in HOT STANDBY within the next 6 hours.

Answer: D

Learning Objective:  
L89786

Given a set of plant conditions determine whether or not the LCOs of 3.6 are satisfied

Reference Id:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61818  
2.00  
3  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
Bank Question

A loss of containment integrity as listed in T.S. 3.6.1 has occurred. This is a 1 hr T.S. item. Distractor A is referring to the Surveillance requirement for testing to identify leakage that is already identified in the given information. Distractor B & C are combinations of criteria from TS 3.6.1 and TS 3.6.2 for Containment Air Locks, however neither is entirely correct.

Technical Reference: T.S. 3.6.1

INPO Bank Q# 1262

K/A Topic

Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under normal operations

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	41074EK107	
Importance	2.80	3.20
Rating:		

In the event of "Inadequate Core Cooling" due to the Core being uncovered, the operator should restore inventory to a core covered condition as indicated by \_\_\_\_\_ or \_\_\_\_\_ on the CETs.

- A. saturation or subcooling
- B. subcooling or vaporization
- C. saturation or superheating
- D. subcooling or superheating

Answer: A

Learning Objective:  
L61243

Discuss the bases of the superheat value limit provided in the LOCA EOP.

Reference Id:	Q61868
Difficulty:	3.00
Time to complete:	3
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(8) Components, capacity, and functions of emergency systems.
	10CFR5541 8
Cognitive Level:	Comprehension / Analysis
Question Source:	New
Comment:	

Subcooling and not superheated (i.e. saturated) conditions would indicate that effective core heat removal is occurring.

Technical Reference: 40DP-9AP08, LOCA Tech Guideline, Contingency Action 37.2, pg. 34.

K/A Topic

Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling: Definition of saturated steam



This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 2	
K/A #	42067AK102	
Importance	3.10	3.90
Rating:		

Given the following plant conditions:

- Unit 1 is at 100% power and stable.
- A fire has been confirmed in the 'A' class switchgear room.
- The 'A' charging pump is in the fire analysis area (FAA).
- The 'A' and 'B' Charging Pumps are running.
- Charging flow is 88 gpm.

40DP-9ZZ19 "Operational Considerations due to a Plant Fire", provides the following information for charging pump 'A':

#### Appendix R concern

*Positive RCS inventory and pressure control by deenergizing 'A' charging pump.*

#### Action

*Disable 'A' DG on local control panel DGA-B01 DG CR*

*Open NAN-S04A CR handswitch*

*Open NAN-S03A CR handswitch*

Which ONE of the following specified actions is MANDATORY and must be performed immediately in accordance with the procedure?

- Immediately stop the 'A' charging pump from the Control Room.
- Immediately defeat the 'A' DG locally and deenergize the PBA-S03.
- Immediately direct the AO to defeat the 'A' DG. Tailboard that if required open the normal supply to PBA-S03.
- No immediate action is required by the procedure. The CRS will alert the Primary Operator to monitor 'A' charging pump and charging flow.

Answer: D

Learning Objective:  
L57499

Describe what is meant by an Impacted SS/D Function and how the procedure mitigates this impact.

Reference Id:	Q61884
Difficulty:	4.00
Time to complete:	4
10CFR Category:	CFR5541 10 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR5541 (10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(8) Components, capacity, and functions of emergency systems.
Cognitive Level:	Comprehension / Analysis
Question Source:	Bank Question
Comment:	The procedure notes that the CRS will determine which if any actions are to be taken per this procedure. Technical Reference: 40DP-9ZZ19, Operational Considerations due to a Plant Fire, Introduction. K/A Topic Knowledge of the operational implications of the following concepts as they apply to Plant Fire on Site: Fire fighting

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 1	
	Group 1	
K/A #	42025AA103	
Importance	3.40	3.30
Rating:		

Given the following plant conditions:

- Unit 2 is Mode 5 with Shutdown Cooling (SDC) in service.
- LPSI Train 'B' is operating providing SDC flow.
- The "ERFDADS SDC Low Flow" Alarm is received.
- The Primary Operator notices that the LPSI 'B' pump is no longer operating.
- The cause is unknown at this time.
- RCS level is 102 feet and steady.

Which ONE of the following methods is correct for restoring SDC flow?

- A. Restart the Train 'B' LPSI pump.
- B. Place the Train 'A' LPSI in service on SDC.
- C. Place the Train 'A' CS pump in service on SDC.
- D. Place the Train 'B' CS pump in service on SDC.

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:  
Difficulty:  
Time to complete:  
10CFR Category:

Q61885  
3.00  
2  
CFR5541 7

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Cognitive Level:  
Question Source:  
Comment:

Memory  
New

Distractor A would not be allowed until the cause is known.  
Distractors C & D both list Containment Spray Pumps which are not listed as the priority action for an ERFDADS alarm and would take longer to align than the Train 'A' LPSI Pump.

Technical Reference: 40OP-9SI01, Appendix F - Response to ERFDADS SDC Low Flow Alarm.

K/A Topic

Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: LPI pumps

This Exam Level	RO	
Appears on:	RO EXAM	SRO EXAM
	Tier 3	
K/A #	245	
Importance	2.90	3.60
Rating:		

Given the following plant conditions:

- Unit 1 reactor is at 100% power
- Both Nuclear Cooling Water pumps are lost due to electrical problems
- 40AO-9ZZ03, Loss of Cooling Water is just being initiated when the reactor trips due to an unrelated problem

The CRS should observe the following hierarchy for procedure usage in this condition:

- Immediately exit 40AO-9ZZ03, Loss of Cooling Water and GO TO 40EP-9EO01, SPTAs.
- Immediately exit 40AO-9ZZ03, Loss of Cooling Water and GO TO 40EP-9EO02, Reactor Trip.
- Continue to use 40AO-9ZZ03, Loss of Cooling Water in conjunction with 40EP-9EO02, Reactor Trip.
- Use 40AO-9ZZ03, Loss of Cooling Water in conjunction with 40EP-9EO01, SPTAs as long as crew manning is sufficient to support this activity.

Answer: D

Learning Objective:  
L10343

Given that an ORP is being implemented describe the use of an AO or OP when the reactor trips or when performing an EOP

Reference Id:	Q61886	
Difficulty:	2.00	
Time to complete:	2	
10CFR Category:	CFR5541 10	(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.
10CFR Category:	CFR5541 10CFR5543 5	(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.
Cognitive Level:	Memory	
Question Source:	Bank Question	
Comment:		

Continued use of non-EOP activities is beneficial to plant recovery in this condition along with normal SPTAs.

Technical Reference: 40DP-9AP16, Emergency Operating Procedure Users Tech Guide, Sect. 27.0, Use of Abnormal and Operating Procedures.

K/A Topic

Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions

This Exam Level RO  
Appears on: Tier 2  
Group 2

K/A # 34041K418  
Importance 3.40 3.60  
Rating:

Given the following plant conditions:

- U1 is at 100% power.
- SBCS master controller is in "LOCAL MANUAL".
- SBCS valves 1001 and 1004 have manual permissives given.
- SBCS valve 1001 has a 30% manual output signal in anticipation of rapid unloading.
- All other SBCS valves are OFF.

Given these conditions, without any operator action, which ONE of the following is correct if a large load reject occurs at this time?

- A. SBCS valve 1001 fails closed.
- B. All SBCS valves will modulate open.
- C. The reactor will trip with a turbine trip.
- D. The turbine will trip without a reactor trip.

Answer: C

Learning Objective:  
L65640

Discuss the purpose and conditions under which the Steam Bypass Control System is designed to function.

Reference Id: Q61921  
Difficulty: 3.00  
Time to complete: 3  
Cognitive Level: Comprehension / Analysis  
Question Source: New  
Comment:

The SBCS design is not sufficient to handle a large load reject with potentially only two valves available. The Reactor would trip with a turbine trip.

K/A Topic

Knowledge of SDS design feature(s) and/or interlock(s), which provide for the following:  
Turbine trip

## Cognitive Level Summary

Number of questions linked:	75	Percentage
Memory	30	40
Comprehension / Analysis	45	60

## Question Source Summary

Number of questions linked to source:	75	Percentage
<b>New</b>		
New	17	23
<b>Modified</b>		
INPO Bank Modified	1	
PV Bank Modified	6	
Total Modified	7	7
<b>Bank</b>		
Bank Not Modified	51	68