Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295001 AK1.02	
	Importance Rating	3.3	3.5

295001 Partial or Complete Loss of Forced Core Flow Circulation AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : (CFR: 41.8 to 41.10) AK1.02 Power/flow distribution

Proposed Question: # 1

Plant conditions are as follows:

- 100% power.
- 95% core flow.
- A spurious trip of Feedwater Pump 'A' occurs.
- A runback of both reactor recirculation pumps occurs.
- NO operator actions are taken

Which ONE of the following is the approximate reactor power and core flow value one minute later based on automatic actions and the above conditions?

A. 57% reactor power, 35% core flow

B. 66% reactor power, 45% core flow

C. 65% reactor power, 52% core flow

D. 75% reactor power, 60% core flow

Proposed Answer: B

Explanation (Optional): Plant is on approximately 102% rod line initially, power comes down on same rod line in response to flow reduction. Runback to # 2 speed limiter; (44%), occurs if less than two RFPs operating and RPV level less than 196.5 inches is sensed. AOP-8 provides estimate of power at 75% for runback of 1 pump, 65% for trip of 1 pump, 52% for trip of both pumps, a runback of two pumps will be to 44% and approximately 62% power.

A. Incorrect – this value is in response to trip of both recirculation pumps
B. Correct – this value is in response to runback to 44% of both recirculation pumps
C. Incorrect – this value is in response to trip of one recirculation pump
D. Incorrect – this value is in response to runback to 44% of one recirculation pump

Technical Reference(s): RAP-7.3.16 Rev 41 (Attach if not previously

provided)

AOP-8 Rev 29

Proposed references to be provided to applicants during examination: RAP-7.3.16 Attachment # 4 Power to Flow Map

Learning Objective: SDLP-02I EO-1.09.A & B (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295003 AK2.02	
	Importance Rating	4.1*	4.2*

295003 Partial or Complete Loss of A.C. Power AK2. Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: (CFR: 41.7 / 45.8) AK2.02 Emergency generators

Proposed Question: # 2

The plant is operating at 100% power with a normal electrical lineup when the following annunciators alarm:

- 09-8-3-25 Bus 10300 Reserve Supp Bkr 10312 Trip
- 09-8-3-26 Bus 10300 Norm Supp Bkr 10302 Trip

Assume **NO** operator actions have been taken and all equipment functions as designed.

What will be the status of the 4 kV emergency bus breakers after this event?

A. ACB 10502 (EDG A Load Bkr) Closed,
ACB 10512 (EDG C Load Bkr) Closed,
ACB 10304 (Bus 10300 – 10500 Tie Bkr) Closed,
ACB 10514 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10504 (EDG A & C Tie Bkr) Open.

B. ACB 10502 (EDG A Load Bkr) Closed,
ACB 10512 (EDG C Load Bkr) Closed,
ACB 10304 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10514 (Bus 10300 – 10500 Tie Bkr) Closed,
ACB 10504 (EDG A & C Tie Bkr) Open.

C. ACB 10502 (EDG A Load Bkr) Closed,
ACB 10512 (EDG C Load Bkr) Closed,
ACB 10304 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10514 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10504 (EDG A & C Tie Bkr) Closed.

D. ACB 10502 (EDG A Load Bkr) Closed,
ACB 10512 (EDG C Load Bkr) Closed,
ACB 10304 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10514 (Bus 10300 – 10500 Tie Bkr) Open,
ACB 10504 (EDG A & C Tie Bkr) Open.

Proposed Answer: D

Explanation (Optional): Stem results in a loss of power to the 10300 Bus, the EDGs A&C auto start and force parallel , (ACB 10504 closes initially then subsequently opens when a EDG > 90% and closes onto the 10500 bus) The resultant bkr alignment per OP-22 Step G.1.2 will be 10512 closed, 10502 closed, 10504 open, 10304 open, 10514 open.

A. Incorrect – ACB 10304 (Bus 10300 – 10500 Tie Bkr) should be Open vice Shut.
B. Incorrect – ACB 10514 (Bus 10300 – 10500 Tie Bkr) should be Open vice Shut.
C. Incorrect – ACB 10504 (EDG A & C Tie Bkr) should be Open vice Shut.
D. Correct – Breakers are in correct position per OP-22 Step G.1.2.

Technical Reference(s): OP-22 Rev.52 Step G.1.2 (Attach if not previously provided)

AOP-16 Rev 14

Proposed references to be provided to applicants during examination: NONE

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295004 AK3.03	
	Importance Rating	3.1	3.5

295004 Partial or Complete Loss of D.C. Power - AK3. Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: (CFR: 41.5 / 45.6) AK3.03 Reactor SCRAM: Plant-Specific

Proposed Question: # 3

Plant startup is in progress with reactor power at 39%.
All systems are in a normal lineup per procedures with the following exception:

- Bus 10300 loads remain supplied from off-site power due to mechanical binding in breaker NSS TO BUS 10300 BKR 10302.

Subsequently, a loss of DC Power System 'A' occurs with a resulting reactor scram.

What is the reason for the reactor scram?

A. Main turbine trip from high RPV water level, due to loss of DC power to the selected Rx Wtr Lvl column.

B. Inboard MSIV closure due to loss of DC power to the solenoids.

C. Main turbine trip due to loss of DC power to EHC trip logic.

D. Low RPV water level due to loss of DC power to Feedwater and Steam flow instruments.

Proposed Answer: C

Explanation (Optional):

A. Incorrect – Loss of DC power system A affects Rx Wtr Lvl 06LI-94A & C, not RX WTR LVL 06LI-94B, which is the normal selected column.

B. Incorrect –Rx would have scrammed due to response noted in the Correct answer prior to any MSIV closure caused by loss of both DC & AC control power. To lose power to the Inboard MSIV solenoids would require 29AOV-80A-D MSIV DC Inboard Solenoids powered from 71DC-A2 & 29AOV-80A-D MSIV AC Inboard Solenoids powered from RPS "A" to be de-energized. Power has been lost to the DC solenoids however, RPS MG Set 1A is fed from MCC-251 fed via 10500 which would not lose power till the generator trips & the 10500 buss loses power as it will not transfer due to loss of DC control power to the 10500 breakers.

C. Correct Response - Main turbine trip from loss of DC power to EHC trip logic, If Rx power > 29 %, a Rx scram will occur from main turbine stop valve closure.

D. Incorrect - Loss of DC Power System 'A' results in a downscale failure of FDWTR flow 06FI-89A & Stm flow 06FI-88A & C. Control power is lost to RFP 'A' but RFP 'B' is not affected. The Rx would have scrammed due to response noted in the Correct answer prior to any scrams caused by water level from Steam /FW flow mismatch & loss of RFPT A speed control.

Technical Reference(s): AOP-45 R 9 (Attach if not previously provided)

AOP-21 R 21, AOP-16 R 14, OP-46B R 26, OP-65 R 106

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-94A EO-1.10.F (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295005 AA1.04	
	Importance Rating	2.7	

295005 Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENRATOR TRIP: (CFR:41.7 / 45.6) AA1.04 Main Generator controls

Proposed Question: # 4

The plant is at 100% power when annunciator 09-7-1-26 MAIN GEN EXCITER FIELD BKR TRIP alarms. All systems/components function per design.

Circuit breakers 71PCB-10042 and 71PCB-10052 open
Disconnect 71 MOD-10031 opens
The Exciter Field Breaker opens

What turbine component(s)/parameters condition caused the generator breakers' response?

A. Low bearing oil pressure at ≤ 10 psig

B. Turbine Stop and Intermediate Stop valves closed

C. Low EHC pressure at ≤ 800 psig

D. Turbine Bypass valves closed

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: 1.10 SDLP 94D (As available)

Question Source: Bank # _____

	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295006 AA2.03	
	Importance Rating	4.0	4.2*

295006 SCRAM -AA2. Ability to determine and/or interpret the following as they apply to SCRAM: (CFR: 41.10 / 43.5 / 45.13) AA2.03 Reactor water level

Proposed Question: # 5

A plant startup was in progress with the following plant conditions:

- Reactor power was 10%.
- FDWTR STARTUP VLV (34FCV-137) was in AUTO controlling RPV level.
- Reactor Feed Pump (RFP) 'A' in-service.
- Subsequently, RFP 'A' tripped and RPV level approached 180 inches before RFP 'B' could be started and placed in service.
- The lowest RPV water level observed was 150 inches.
- A manual scram was initiated when RPV level reached 180 inches.

The following conditions now exist:

- Reactor power at 0%, all control rods inserted.
- Reactor Scram has been reset.
- RPV pressure is 900 psig and stable.
- RFP 'B' in service.
- FDWTR STARTUP VLV (34FCV-137) is in AUTO indicating fully shut.
- RPV level at 206.5 inches and slowly rising (~4 inches per minute).

Which of the following is the reason RPV water level is rising?

A. Thermal expansion of the cool Feedwater injected after the scram.

B. Level swell due to normal turbine steam bypass valve operation.

C. Level swell due to a failed open SRV.

D. Level rise due to HPCI automatic injection.

Proposed Answer: A

Explanation (Optional):

A. Correct response – In response to the scram, FDWTR STARTUP VLV (34FCV-137) is at its setpoint & closed, FW is no longer injecting, cold FW is now heating up & causing swelling of RPV level.

B. Incorrect – Bypass valves are closed due to pressure setpoint is 970 psig per OP-65.

C. Incorrect – Stem provides that post scram the RPV pressure is 900 psig & stable thus a failed SRV is not responsible for RPV level swell.

D. Incorrect – At 10% power as given in stem, level will not reach the HPCI initiation setpoint on level, additionally, level would have recovered with RCIC & FW prior to the HPCI injection valve opening. See stem 150 Inches lowest level observed.

Technical Reference(s): AOP-1 R 43 (Attach if not previously provided)

OP-65 R 106

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.02 (As available)

Question Source: Bank # _____

Modified Bank # 24512 RBS (Note changes or attach parent)

New _____

Question History: Last NRC Exam RBS 2/1/03

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295016 G 2.4.12	
	Importance Rating	3.4	

295016 Control Room Abandonment G2.4.12 Knowledge of general operating crew responsibilities during emergency operations. (CFR: 41.10 / 45.12)

Proposed Question: # 6

With the plant at 100% power a large smoky fire occurs in the Control Room and the CRS announces that he has entered AOP-43 and control room evacuation is required. You are the ATC operator.

Per AOP-43, which of the following actions are you as the ATC operator required to complete before leaving the Control Room?

A. Trip the main turbine at Panel 09-5

B. Initiate SLC

C. Transfer RPS MG Set to ALT

D. Start at least one EDG

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): AOP-43 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

	New	X

Question History:	Last NRC Exam	
Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	
10 CFR Part 55 Content:	55.41	
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295018 AK1.01	
	Importance Rating	3.5	3.6

295018 Partial or Complete Loss of Component Cooling Water AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : (CFR: 41.8 to 41.10)

AK1.01 Effects on component/system operations

Proposed Question: # 7

The Plant is operating at 90% power with one Reactor Building Closed Loop Cooling (RBCLC) pump tagged out of service.
An electrical problem causes the two running RBCLC pumps to trip.

Operators have the ability to restore cooling via Emergency Service Water to **EACH** of the following **EXCEPT**:

A. Drywell Ventilation Coolers

B. RWCU Pump Coolers

C. Control Rod Drive Hydraulic Pump Coolers

D. Drywell Equipment Drain Sump Cooler

Proposed Answer: B

Explanation (Optional): RWCU Pump Coolers are NOT supplied by ESW.

A. Incorrect – Can be manually aligned for cooling with ESW.
B. Correct Response - RWCU Pump Coolers are NOT supplied by ESW
C. Incorrect – Can be manually aligned for cooling with ESW
D. Incorrect – Can be manually aligned for cooling with ESW

Technical Reference(s): AOP-11 R15 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-15 EO-1.06.B (As available)

Question Source:	Bank #	_____	
	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	_____

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:	55.41	_____
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295019 AK2.09	
	Importance Rating	3.3	3.3

295019 Partial or Complete Loss of Instrument Air AK2. Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: (CFR: 41.7 / 45.8) AK2.09 Containment

Proposed Question: # 8

Drywell sprays are in service to support EOP actions when a complete loss of nitrogen occurs.

Due to a logic failure, the drywell spray valves (10MOV-26A & B, 10MOV-31A & B) have been opened locally using the local handwheels.

Is the Torus AUTOMATICALLY protected from exceeding design parameter(s) under these conditions **and** why/why not?

A. Yes. Drywell vacuum breakers will open to relieve Torus pressure to the Drywell.

B. Yes. Reactor Building to Torus vacuum breakers will open at 0.5 psid, Reactor Builc

C. No. Drywell vacuum breakers fail closed on a loss of pneumatic pressure and will fail to relieve Torus pressure to the Drywell.

D. No. Reactor Building to Torus vacuum breakers are isolated by pneumatically operated butterfly valves, which fail closed on a loss of pneumatic pressure.

Proposed Answer: D

Explanation (Optional): Per DBD-016A, AOP-12 and SDLP-16B Inst N2 supplies 27AOV-101A(B) RB to Torus Vacuum Bkr isolations which fail closed on a loss of pneumatics. Per stem as DW pressure lowers from spray operation, it will result in torus to DW vacuum breaker (purely mechanical) opening to relieve higher torus pressure to DW. As torus pressure lowers, the RB atmosphere would normally be relieved to the torus via the 27AOV-101A(B) path but due to a loss of pneumatics, these valves will fail closed.

A. Incorrect – Inst N2 supplies 27AOV-101A(B) RB to Torus Vacuum Bkr isolations which fail closed on a loss of pneumatics thus the containment is not protected automatically from a negative pressure condition. DW vacuum breaker functions independently of IA but will not prevent containment failure under the conditions given in the stem.
B. Incorrect – Inst N2 supplies 27AOV-101A(B) RB to Torus Vacuum Bkr isolations which fail closed on a loss of pneumatics thus the containment is not protected automatically from a negative pressure condition. DW vacuum breaker functions independently of IA but will not prevent containment failure under the conditions given in the stem.
C. Incorrect – Inst N2 supplies 27AOV-101A(B) RB to Torus Vacuum Bkr isolations which fail closed on a loss of pneumatics thus the containment is not protected automatically from a negative pressure condition. DW vacuum breaker functions independently of IA but will not prevent containment failure under the conditions given in the stem.
D. Correct – Inst N2 supplies 27AOV-101A(B) RB to Torus Vacuum Bkr isolations which fail closed on a loss of pneumatics thus the containment is not protected automatically from a negative pressure condition.

Technical Reference(s): DBD-016A Rev 5 (Attach if not previously provided)

AOP-12 Rev 26

Proposed references to be provided to applicants during examination: _____

Learning Objective: SDLP-16B EO-1.10.B (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295021 AK3.05	
	Importance Rating	3.6	

295021 Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING (CFR: 41.5 / 45.6) AK3.05 Establishing alternate heat removal flow paths.

Proposed Question: # 9

The reactor is shutdown at 70 psig with the 'B' RHR pump in shutdown cooling.

- RPV level is 195 inches.
- 'B' reactor recirc pump is running.

Subsequently, a loss of off-site power (LOOP) occurs.

- All EDGs start and load onto the emergency busses.
- Reactor pressure increases to 115 psig.

Given the above conditions, which of the following actions will remove decay heat from the core?

A. Manually start RCIC

B. Increase RPV water level to 230 inches

C. Ensure 'B' RHR pump restarts

D. Start 'A' RHR pump

Proposed Answer: A

Explanation (Optional): With a reactor pressure increase of 30 psig from the starting condition of 70 psig, shutdown cooling would isolate. RCIC would be choice to remove heat and reduce reactor pressure

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295023 AA1.02	
	Importance Rating	2.9	3.1

295023 Refueling Accidents AA1. Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: (CFR: 41.7 / 45.6) AA1.02 Fuel pool cooling and cleanup system

Proposed Question: # 10

The plant is shutdown for a refueling outage with the fuel pool gates installed.
Annunciator: 09-3-1-9 Fuel Pool Cool & Cln Up Trouble alarms.
The NPO reports that the spent fuel pool level is slowly dropping and the running fuel pool cooling pump has tripped.

Which one of the following methods is available to provide makeup to the spent fuel pool?

A. Align and inject core spray into the reactor cavity.

B. Start the second fuel pool pump to refill the pool.

C. Align condensate transfer to the skimmer surge tanks.

D. Start a second control rod drive pump to inject into the reactor cavity.

Proposed Answer: C

Explanation (Optional): Per the stem the loss of level has caused the FPC pump to trip on low surge tank level. With the gates installed the only viable method listed of making up level is condensate transfer. The other methods are not available due to the gates installed refer to note in AOP-53.

A. Incorrect - not available due to the gates installed refer to note in AOP-53.
B. Incorrect – will not add water, pump takes suction off the surge tank which receives water from the pool which has a lowering level.
C. Correct - guidance is given in AOP-53 to utilize this method regardless of the gate status.
D. Incorrect - not available due to the gates installed refer to note in AOP-53.

Technical Reference(s): AOP-53 Rev 8 (Attach if not previously provided)

Proposed references to be provided to applicants during _____

examination: _____

Learning Objective: SDLP-19 EO-1.15.A (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295024 EA2.02	
	Importance Rating	3.9	

295024 EA 2.02 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE (CFR: 41.10 / 43.5 / 45.13) Drywell Temperature

Proposed Question: # 11

The reactor was at 100% power when a small break LOCA (SBLOCA) and loss of off-site power (LOOP) occurs. All automatic actions occur as designed.

HPCI flow is 4300 gpm
Drywell pressure is 18 psig and stable
Reactor pressure is 1000 psig and stable
Reactor water level is 100 inches and increasing

The crew has entered EOP-4 Primary Containment Control.

Regarding containment integrity, which of the following is the most important parameter or equipment condition to track prior to initiating drywell sprays?

A. Drywell temperature

B. Drywell pressure

C. Torus temperature

D. Torus level

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): EOP-4 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295025 G2.1.7	
	Importance Rating	3.7	4.4

295025 High Reactor Pressure - 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation. (CFR: 43.5 / 45.12 / 45.13)

Proposed Question: # 12

A transient has occurred at full power with the following indications:

- 06PI-90A, Reactor Pressure 'A' indicates 1041 psig.
- 06PI-90B, Reactor Pressure 'B' indicates 1042 psig.
- Reactor vessel water level is 201 inches
- Reactor power is 100% on APRM recorders

All equipment responded as designed.

Which of the following actions is required for this transient?

A. Insert CRAM rods.

B. Reduce both Recirc pumps to minimum speed.

C. Fully open bypass valves with the Bypass Valve Jack.

D. Lower RPV pressure with the pressure set DECREASE pushbutton.

Proposed Answer: D

Explanation (Optional):

A. Incorrect – Not required for given pressure, if RPV pressure >1080 pig this action would be required Per EOP-2. Per AOP-6, immediate actions are to scram on lowering pressure.

B. Incorrect – per AOP-3 step F.2.2 Lower Rx power level by approximately 5 % per RAP-7.3.16.

C. Incorrect – No procedural guidance exists, per ARP 09-5-1-38 R3 decrease RPV pressure to a value < the alarm point by using pressure set DECREASE pushbutton.

D. Correct – per AOP-6 R 7 step F.2.1 Verify backup EHC pressure regulator stabilizes RPV pressure (approximately 3 psi > initial pressure).

Technical Reference(s): ARP 09-5-1-38 R3, AOP-6 R 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.03.A (As available)

Question Source: Bank # _____

Modified Bank # 28023 (Note changes or attach parent)

New _____

Question History: Last NRC Exam 9/26/03 Monticello

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295026 EK1.01	
	Importance Rating	3.0	3.4

295026 Suppression Pool High Water Temperature - EK1. Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE:
(CFR: 41.8 to 41.10) EK1.01 Pump NPSH

Proposed Question: # 13

Following a loss of coolant accident (LOCA), the 'A' Core Spray is in service per EOP-2.

Which of the following sets of conditions assures adequate NPSH for Core Spray?

A. Torus Over Pressure 1 psig
Torus Water Temperature 200 ºF.
'A' Core Spray Flow 3,500 gpm.

B. Torus Over Pressure 5 psig
Torus Water Temperature 205 ºF.
'A' Core Spray Flow 4,000 gpm.

C. Torus Over Pressure 7 psig
Torus Water Temperature 215 ºF.
'A' Core Spray Flow 4,500 gpm.

D. Torus Over Pressure 10 psig
Torus Water Temperature 230 ºF.
'A' Core Spray Flow 5,000 gpm.

Proposed Answer: B

Explanation (Optional): Left Answer at 7 psig due to 2 choices are on a pressure line (5 & 10 psig) and 2 are not (1 psig and 7psig).

A. Incorrect – A 5 psig overpressure would be required for the given flow/temperature combination.

B. Correct – The overpressure lines represent the maximum limits of Core Spray flow & temperatures. If overpressure falls between the lines, the limits are the lower, most conservative line. This choice falls between the 0 psig & 5 psig lines. The conservative choice requires a torus over pressure of 5 psig to insure NPSH.

C. Incorrect - A 10 psig overpressure would be required for the given flow/temperature combination.

D. Incorrect - The given flow/temperature combination is "off the chart". Temperature or flow must be reduced to at least the 10 psig over pressure line to meet the pump NPSH limits.

Technical Reference(s): EOP-2 & 4 & 11 MIT-301.11B (Attach if not previously provided)

OP-14 Attachment # 4

Proposed references to be provided to applicants during examination: EOPs 2, & 11 OP-14 Attachment # 4

Learning Objective: MIT-301.11B, EO 1.01 (As available)

Question Source: Bank # 5920- VY Bank 2005 VY Q # 14

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam 2005 VY

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295028 EK2.03	
	Importance Rating	3.6	3.8

295028 High Drywell Temperature EK2. Knowledge of the interrelations between HIGH DRYWELL

TEMPERATURE and the following: (CFR: 41.7 / 45.8) EK2.03 Reactor water level indication

Proposed Question: # 14

Given the following conditions:

- The plant is at 100% power.
- The RPV water level reference leg backfill system is out of service due to CRD supply pipe leak- the pipe is currently tagged out for maintenance.
- Feedwater control is in MANUAL.
- A loss of drywell cooling causes elevated drywell temperature and pressure.

Which statement below describes Narrow Range Level instrument response and the reason for this response?

Assume **NO** operator action.

A. There will be NO change in indicated level because the reference and variable leg densities both increase.

B. There will be NO change in indicated level because the narrow range instruments are density compensated.

C. Indicated level will decrease because of increased reference leg density.

D. Indicated level will increase because of decreased reference leg density.

Proposed Answer: D

Explanation (Optional): On elevated DW temperature, the Narrow Range instrument would sense/indicate a level higher than normal. The X dimension (reference leg) is greater than the Y dimension (variable leg). The pressure reduction due to density change is greater than the change in the variable leg causing the indicated level to be greater than actual level. Additionally, the FW level instrument is density compensated due to variations in RPV water temperature by sensing RPV pressure to compensate for the normal temperature of the reference leg being more dense that the RPV water, the pressure exerted by 1 ft of water in the reference leg would be greater than that of 1 ft of RPV water, with the conditions given in the stem, higher DW temperature this would not offset the density compensation.

A. Incorrect-The reference leg density is affected more due to length than the variable leg thus the indicated level would be higher than normal.
B. Incorrect- The reference leg density is affected more due to length than the variable leg thus the indicated level would be higher than normal. Additionally, the FW level instrument is density compensated by sensing RPV pressure to compensate for the normal temperature of the reference leg being more dense that the RPV water, the pressure exerted by 1 ft of water in the reference leg would be greater than that of 1 ft of RPV water, with the conditions given in the stem, higher DW temperature this would not offset the density compensation.
C. Incorrect- The reference leg density is affected more due to length than the variable leg thus the indicated level would be higher than normal.
D. Correct - The reference leg density is affected more due to length than the variable leg thus the indicated level would be higher than normal. Additionally, the FW level instrument is density compensated by sensing RPV pressure to compensate for the normal temperature of the reference leg being more dense that the RPV water, the pressure exerted by 1 ft of water in the reference leg would be greater than that of 1 ft of RPV water, with the conditions given in the stem, higher DW temperature this would not offset the density compensation.

Technical Reference(s): OP-27A Rev 10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-02B EO-1.10.E (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295030 EK3.06	
	Importance Rating	3.6	3.8

295030 Low Suppression Pool Water Level EK3. Knowledge of the reasons for the following responses
as they apply to LOW SUPPRESSION POOL WATER LEVEL: (CFR: 41.5 / 45.6) EK3.06 Reactor SCRAM

Proposed Question: # 15

Given the following:

- The reactor is at 100% power.
- A Torus level lowering transient is in progress.
- Torus level reaches13.00 feet and continues to lower.
- A manual scram is inserted in accordance with EOP's.

What is the basis for this action?

A. SRV tailpipe vacuum breakers are uncovered, so the containment will be directly pressurized if the SRV's lift as Torus level continues to lower.

B. Tech Specs requires an immediate reactor scram.

C. Limits the energy which may subsequently be discharged into the primary containment.

D. Low pressure ECCS is inoperable and unavailable due to NPSH and vortex concerns.

Proposed Answer: C

A. Incorrect – SRV tailpipe vacuum breakers are normally uncovered as they relieve DW atmosphere pressure to the SRV tailpipes to prevent after a SRV lift the steam condensation from causing a low pressure condition that draws water up from the Torus into the tailpipe which on a subsequent SRV lift would result in equipment damage.

B. Incorrect – TS has a two hour action to recover level to normal and then a 12 Hour period to be n Mode 3.

C. Correct – Entering EOP-2 assures that, if possible, the Rx is scrammed & shutdown is assured by control rod insertion before RPV depressurization is initiated. The inability to maintain torus water level above 10.75 ft. represents a clearly degraded plant condition. Entering EOP-2, places the Rx in a lower energy state and permits actions to be initiated which limit the energy which may subsequently be discharged into the primary Cnmt. Entry into EOP-2 must be explicitly stated because conditions requiring entry into EOP-4 do not necessarily require entry into EOP-2. Therefore, a scram may not yet have been initiated. Directing that EOP-2 be entered, rather than explicitly stating here "Initiate a Rx scram," coordinates actions currently being executed if EOP-2 has already been entered. (Note: EOP-2 requires initiating a Rx scram only if one has not previously been initiated.) In addition, entry to EOP-2 must be made because it is through EOP-2 that the transfer to RPV ED is affected.

D. Incorrect – Low pressure ECCS is inoperable and unavailable due to NPSH and vortex concerns is addressed in Torus temperature leg and is associated with the HCTL on torus temperature and RPV pressure relationships.

Technical Reference(s): EOP BASES (Attach if not previously provided)

SAG-2 R6

Proposed references to be provided to applicants during examination: NONE

Learning Objective: MIT-301.11E EO-4.05 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295031 EA1.13	
	Importance Rating	4.3*	4.3*

295031 Reactor Low Water Level EA1. Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL: (CFR: 41.7 / 45.6) EA1.13 Reactor water level control

Proposed Question: # 16

The reactor was operating at 33% power when a main turbine trip occurred due to an electrical fault in the main generator.

- All immediate actions have been taken per AOP-1, Reactor Scram.
- Reactor Scram was successful with all rods inserted.
- Reactor conditions have stabilized with pressure controlled on the bypass valves automatically.
- Feedwater Pump 'A' has been tripped and feedwater controls adjusted as normally expected when responding to AOP-1, Reactor Scram.

The SNO is ready to transfer feedwater level control to automatic when the SNO notes reactor level is at 200 inches and stable.

Which of the following is done first for these conditions to establish automatic control?

A. Transfer control from Low Flow Control Valve (34FCV-137) to RFP 'B' MGU in manual.

B. Transfer control from Low Flow Control Valve (34FCV-137) in manual to automatic.

C. Transfer control for Feedwater Pump 'B' from manual on the MGU to manual on the MSC.

D. Transfer control for Feedwater Pump 'B' from Single-Element to Three-Element RFP Control.

Proposed Answer: B

Explanation (Optional):The plant has scrammed, operators are trained to take manual control of FW, trip one RFP shut the discharge valves of RFP's and control level via the startup valve. Stem sets up for this condition. Question asks the candidate what is the correct action to take next per OP-2A. At 30% power, pressure was controlled within the capacity of the Bypass Valves and HPCI & RCIC would not have been initiated to complicate level control.

A. Incorrect – Control will be transferred to the low flow valve in automatic with the RFP in automatic – this action results in opening the RFP Disch 34MOV-100B valve which is beyond the feedwater capacity need for the plant conditions.

B. Correct - The Low Flow Control Valve (34FCV-137) is in manual & needs to be in automatic.

C. Incorrect – The control is maintained on the MGU per current plant conditions- this will not support placing controls in automatic.

D. Incorrect – Shifting RFP from Single-Element to Three-Element control is not permitted by procedure as there is a NOTE that 3- Element control is for Rx power above 25% power.

Technical Reference(s): OP-2A Rev 59 (Attach if not previously provided)

AOP-1 Rev 43

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.03.A (As available)

Question Source: Bank # _____

Modified Bank # 23495 (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295037 EA2.07	
	Importance Rating	4.0	4.2*

295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown - EA2. Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: (CFR: 41.10 / 43.5 / 45.13)
EA2.07 Containment conditions/isolations

Proposed Question: # 17

EOP-3, FAILURE TO SCRAM has been entered.
Plant conditions are as follows:

- The plant is at 14% power with two SRVs OPEN.
- Reactor water level is 75 inches.
- Reactor pressure is 800 psig.
- Torus water temperature is 115 ºF.
- Torus water level is 16 ft.

Which of the following combined conditions require boron injection?

A. Reactor Power and Torus Temperature.

B. Reactor Power and Torus Level.

C. Torus Temperature and RPV Pressure.

D. RPV Pressure and Torus Water Level.

Proposed Answer: A

Explanation (Optional):
A. Correct Response – Rx power & torus temperature are used for Boron Injection Initiation Temperature (BITT) per EOP-11 R1
B. Incorrect – These parameters are not used for boron injection criteria.
C. Incorrect – These parameters are not used for boron injection criteria.
D. Incorrect – These parameters are not used for boron injection criteria.

Technical Reference(s): EOP-11 R 1 (Attach if not previously provided)

EOP-3 R 8

Proposed references to be provided to applicants during examination: NONE

Learning Objective: MIT 301.11D EO-1.06 (As available)

Question Source: Bank # _____

Modified Bank # 26940 (Note changes or attach parent)

New _____

Question History: Last NRC Exam Monticello 9/26/03

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295038 G2.4.18	
	Importance Rating	2.7	3.6

295038 High Off-Site Release Rate -2.4.18 Knowledge of the specific bases for EOPs. (CFR: 41.10 / 45.13)

Proposed Question: # 18

A Torus pressure or temperature condition which cannot be maintained within which **ONE** of the following limits would require the Torus to be vented **IRRESPECTIVE** of the Offsite Radioactivity Release Rate?

A. Heat Capacity Temperature Limit

B. Pressure Suppression Pressure

C. Primary Containment Pressure Limit

D. SRV Tail Pipe Level Limit

Proposed Answer: C

Explanation (Optional): Per EOP-4 R7 Before Torus pressure reaches the PCPL (vent); Vent the primary containment to control pressure below the PCPL. Defeat interlocks & exceed offsite radioactivity release rate limits if necessary (EP-6).
A. Incorrect - Per EOP-4 R7 If Torus temperature & RPV pressure cannot be maintained below the HCTL, Then Emergency RPV depressurization is required.
B. Incorrect – Per EOP-4 R7 WAIT until torus pressure cannot be maintained below the PSP -Emergency RPV depressurization is required.
C. Correct Response - Per EOP-4 R7 Before Torus pressure reaches the PCPL (vent); Vent the primary containment to control pressure below the PCPL. Defeat interlocks & exceed offsite radioactivity release rate limits if necessary (EP-6).
D. Incorrect - Per EOP-4 R7 Torus water level & RPV pressure cannot be maintained below the SRV Tail Pipe Level Limit **IF** the core will still be adequately cooled, **THEN** terminate injection into the RPV from sources external to the primary containment, except SLC or CRD when required to shutdown the Rx. Torus water level & RPV pressure cannot be restored & maintained below the SRV Tail Pipe Level Limit- Emergency RPV depressurization is required.

Technical Reference(s): EOP-4 R7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: MIT-301.11E EO-4.07 (As available)

Question Source: Bank # 19697

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam 6/14/01 Fermi Unit # 2

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	600000 AK1.02	
	Importance Rating	2.9	3.1

600000 Plant Fire On Site - AK1 Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site: AK1.02 Fire Fighting

Proposed Question: # 19

The plant is operating at normal 100% power when a fire occurs in the "A" Emergency Diesel Generator room. The Fire Brigade leader has said it is a serious fire and off-site Fire Department support is required.

In addition to AOP-28, Operation During Plant Fires, what other AOP shall be entered?

A. AOP-43 Plant Shutdown From Outside The Control Room

B. AOP-17 Loss Of 10400 Bus

C. AOP-19 Loss Of 10600 Bus

D. AOP-1 Reactor Scram

Proposed Answer: D

Explanation (Optional):

A. Incorrect – Only required in fires of specific electrical rooms (not the EDG room)
B. Incorrect – Bus is associated with the B/D EDGs
C. Incorrect – Bus is associated with the B/D EDGs
D. Correct - AOP 28 says the SM shall, on a serious fire, enter AOP-1 or the EOPs (no applicable EOP entry conditions in stem).

Technical Reference(s): AOP-28 R18 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.06 (As available)

Question Source: Bank # # 5728

Modified Bank # (Note changes or attach

		_____
		_____ parent)
	New	X _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X _____
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	295018 AK2.01	
	Importance Rating	3.3	

295018 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: (CFR: 41.7 / 45.8) AK2.01 System loads.

Proposed Question: # 20

The reactor is operating at 100% power.

Annunciator 09-6-2-31 RBC HDR PRESS LO is received. Low RBCLC system pressure is verified and the standby pump will NOT start.

Which ONE of the following will be AUTOMATICALLY supplied with cooling water if RBCLC header pressure continues to lower?

A. DW ventilation coolers

B. PASS system cooler

C. DW Equipment Drain Sump cooler

D. Reactor Recirc pump and motor coolers

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach

_____
_____ parent)
New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295009 AA2.03	
	Importance Rating	2.9	2.9

295009 Low Reactor Water Level AA2. Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL: (CFR: 41.10 / 43.5 / 45.13) AA2.03 Reactor water cleanup blowdown rate

Proposed Question: # 21

A plant startup is in progress per OP-65 Startup and Shutdown procedure.
The following conditions exist:

- Power is in the IRM range with coolant temperature approaching 212 ºF.
- The ATC is in control of withdrawing control rods.
- The SNO2 is controlling reactor water level.
- The SNO is preparing the secondary plant for the introduction of steam.
- The 'A' CRD pump is running.
- Annunciator 09-5-1-28, Rx Wtr Lvl Alarm Hi or Lo is received.
- Water level on panel 09-5 is 193 inches.

Per OP-65, what actions are needed to restore reactor water level to the normal band?

A. Start a second CRD pump and maximize flow.

B. Throttle closed on RWCU blowdown flow.

C. Reduce CRD pump flow to minimum.

D. Throttle closed on FW Start-up Valve - 34FCV-137.

Proposed Answer: B

Explanation (Optional): Stem provides low level alarm comes in at 196.5 inches, to correct the condition it is necessary to raise level. OP-65 provides two options at this point: RWCU blowdown or FW start-up valve (34FCV-137) operation, adding more water will affect core reactivity by adding positive reactivity.

A. Incorrect – Will cause level to rise- but will affect control rod drive speeds & will affect core reactivity by adding positive reactivity also not directed by OP-65.

B. Correct- will reduce inventory loss, once > 212 F steam loads will contribute to loss which can be compensated by educing blowdown flow- it is directed by OP-65.

C. Incorrect – Will cause level to lower- but will affect control rod drive speeds- level needs to be raised, NOT directed by OP-65

D. Incorrect – Will cause level to rise- is one of choices allowed by OP-65 for level control, but direction should be to throttle down.

Technical Reference(s): OP-65 Rev 106 (Attach if not previously provided)

ARP 09-5-1-28 Rev 4
OP-28 Rev 71

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-OP65A EO-1.14.B (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295013 AK2.01	
	Importance Rating	3.6	3.7

295013 High Suppression Pool Temperature
Knowledge of the interrelations between HIGH SUPPRESSION POOL TEMPERATURE and the following: (CFR: 41.7 / 45.8) AK2.01 Suppression pool cooling

Proposed Question: # 22

A steam line break has occurred in the Primary Containment, several control rods failed to fully insert with the following:

- RPV level is 200 inches.
- RPV pressure is 420 psig.
- Drywell pressure is 4.5 psig.
- Drywell temperature is 180 ºF.
- Torus pressure is 2.5 psig.
- Torus temperature is 106 ºF.

Which one of the following residual heat removal system lineups is required?

A. RHR Loop A in suppression pool cooling, RHR Loop B in Drywell spray.

B. RHR Loop A & B in Torus spray.

C. RHR Loop A & B in suppression pool cooling.

D. RHR Loop A in Torus spray, RHR Loop B in Drywell spray.

Proposed Answer: C

Explanation (Optional): EOP-4 requires operating all available RHR pumps for torus cooling that are not needed to ensure adequate core cooling. Per the stem level is 200 inches = adequate core cooling via submergence. Torus spray is required to be initiated prior to 15 psig but is currently low, starting at a low pressure will challenge the containment by taking longer to secure sprays and pressure lowering while this is happening, with the lower pressure of RPV at 420 psig and a steam break pressure will continue to rise in the Drywell, spraying the Torus will not control the Torus pressure at this condition as it is being compressed by the elevated DW pressure from the break. Spraying the DW is not required till DW pressure is 15 psig, currently it is below 15 psig.

A. Incorrect – Spraying the DW is not required till DW pressure is 15 psig, currently it is below 15 psig.
B. Incorrect – Torus spray is required to be initiated prior to 15 psig but is currently low, starting at a low pressure will challenge the containment, with the lower pressure of RPV at 420 psig and a steam break pressure will continue to rise in the Drywell, spraying the Torus will not control the Torus pressure at this condition as it is being compressed by the elevated DW pressure from the break.
C. Correct– EOP-4 requires operating all available RHR pumps for torus cooling that are not needed to ensure adequate core cooling. Per the stem level is 200 inches = adequate core cooling via submergence.
D. Incorrect – Torus spray is required to be initiated prior to 15 psig but is currently low, starting at a low pressure will challenge the containment, with the lower pressure of RPV at 420 psig and a steam break pressure will continue to rise in the Drywell, spraying the Torus will not control the Torus pressure at this condition as it is being compressed by the elevated DW pressure from the break. Spraying the DW is not required till DW pressure is 15 psig, currently it is below 15 psig.

Technical Reference(s): EOP-4 Rev 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOP-4 (w/o entry conditions)

Learning Objective: MIT-301.11E EO-4.03 (As available)

Question Source: Bank # _____
Modified Bank # 22265 (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295017 AA2.04	
	Importance Rating	3.6	4.3*

295017 High Off-Site Release Rate AA2. Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: (CFR: 41.10 / 43.5 / 45.13) AA2.04 †Source of off-site release

Proposed Question: # 23

The plant has experienced a radiological accident condition.
The following are currently alarmed:

- 09-3-2-29 RX BLDG VENT RAD MON HI
- 09-3-1-40 RX BLDG ARM RAD HI

The Area of the radiation release is from the:

A. Post Accident Sample System exhaust

B. RWR MG Room ventilation exhaust

C. Standby Gas Treatment System exhaust

D. Reactor Building Ventilation exhaust

Proposed Answer: D

Explanation (Optional): 09-3-1-40 RX BLDG ARM RAD HI provides direction to isolate control and relay room ventilation. 09-3-2-29 RX BLDG VENT RAD MON HI -This alarm is at 5 X 10^3 cpm which is below the alert level of $9.9E^5$ cpm. With the two alarms in the Rx Bldg the source is the Rx Bldg. NO entry into EOP-6 is not entered due to levels are below the Alert level. RX BLDG Exhaust is below the HI HI level so that SGT will not be running refer to ARP 09-3-2-40 RX BLDG VENT RAD MON HI HI RWR MG SET ventilation exhaust is not monitored and discharges to the roof. PASS ties to Turbine building Ventilation so none of the listed alarms would be consistent with a radiation problem in the PASS area.

A. Incorrect – PASS ties to Turbine building Ventilation so none of the listed alarms would be consistent with a radiation problem in the PASS area.
B. Incorrect – RWR MG SET ventilation exhaust is not monitored and discharges to the roof. NO entry into EOP-6 is not entered due to levels are below the Alert level.
C. Incorrect – RX BLDG Exhaust is below the HI HI level so that SGT will not be running refer to ARP 09-3-2-40 RX BLDG VENT RAD MON HI HI for initiation of RX VENT ISOL & SGT Start. NO entry into EOP-6 is not entered due to levels are below the Alert level.
D. Correct – With the two alarms in the Rx Bldg the source is the Rx Bldg. Levels are below the alert level so EOP-6 is Not required.

Technical Reference(s): ARP-09-3-2-29 Rev 6
ARP-09-3-1-40 Rev 8
IAP-2 Rev 27 Attmt # IAP-2.1
EOP-6 Rev 7
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-17 EO-1.14 (As available)

Question Source: Bank # _____
Modified Bank # 5683 (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295022 AK1.02	
	Importance Rating	3.6	3.7

295022 Loss of CRD Pumps AK1. Knowledge of the operational implications of the following concepts as they apply to LOSS OF CRD PUMPS: (CFR: 41.8 to 41.10) AK1.02 Reactivity control

Proposed Question: # 24

The plant is in a startup at 29% power with all systems normal.

Subsequently the following occurs:

- at 0800 the 'A' CRD pump trips
- at 0805 annunciator 09-5-1-43 CRD ACCUM PRESS LO OR LVL HI is in alarm and two yellow ACCUM lights are lit on the full core display
- at 0810 the 'B' CRD pump is started

Upon re-adjusting drive water pressure, the drive water differential pressure is 350 psid.

When the accumulator alarms are cleared IAW OP-25 Section G, the startup is resumed.

What is an operational implication of the drive water differential pressure remaining at 350 psid?

A. Double notching of **ANY** control rod may occur.

B. Double notching of **ONLY** the two control rods that had accumulator alarms may occur.

C. The coupling check for **ANY** rods will indicate an uncoupled rod

D. The coupling check for **ONLY** the two control rods which had accumulator alarms will indicate an uncoupled rod

Proposed Answer: A

Explanation (Optional):

-

Technical Reference(s): OP-25 (Attach if not previously provided)

AOP-69 Rev 7

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.03 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295032 EK3.01	
	Importance Rating	3.5	3.8

295032 High Secondary Containment Area Temperature- EK3. Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE :

(CFR: 41.5 / 45.6) EK3.01 Emergency/normal depressurization

Proposed Question: # 25

An unisolable leak from the RWCU system is in progress.

All attempts to isolate the leak have been unsuccessful, and the following plant conditions exist:

- RPV pressure is 800 psig and lowering slowly.
- RPV level is 150 inches and steady.
- All injection systems are available with Condensate/ Feedwater in service.
- All control rods are inserted into the core.
- 'A' RWCU Pump Room is 230 ºF.
- RWCU Heat Exchanger Room is 205 ºF.
- All other Reactor Building location temperatures are < 103 ºF.

What is the required action **AND** the reason for conducting a normal **OR** emergency depressurization (ED)?

A. ED required because one area is above max safe temperature indicating a potential threat to secondary containment integrity.

B. Normal cooldown using the turbine bypass valves is required because the main condenser is available.

C. ED required because more than one area is above the max safe temperature indicating a potential threat to equipment reliability.

D. Normal cooldown using SRVs is required because use of the SRVs will limit the spread of contamination.

Proposed Answer: C

Explanation (Optional): 'A' RWCU Pump Room 230 ºF is > max safe 225 ºF and RWCU Heat Exchanger Room 205 ºF is > max safe 203 ºF. With a unisolable RWCU leak per EOP-5 a ED is required vice a normal cooldown.

A. Incorrect – ED is required, however reason is > 2 max safe temperatures per EOP-5.

B. Incorrect – With a unisolable RWCU leak & 2 max safe temperatures per EOP-5 a ED is required vice a normal cooldown.

C. Correct Response – ED is required, reason 2 or more areas above max safe is indication of wide spread problem which may pose a direct and immediate threat to the Rx Bldg integrity, equipment in the secondary containment and continued safe operation of the plant.

D. Incorrect - With a unisolable RWCU leak & 2 max safe temperatures per EOP-5 a ED is required vice a normal cooldown.

Technical Reference(s): EOP-5 Rev 7 (Attach if not previously provided)

EOP Bases

Proposed references to be provided to applicants during examination: EOP-5 w/o entry conditions.

Learning Objective: MIT-301.11F EO-1.07 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		
	Group #		
	K/A #	295034 EA2.01	
	Importance Rating		

295034 Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION: (CFR:41.10 / 43.5 / 45.13) EA2.01 Ventilation radiation levels.

Proposed Question: # 26

During movement of spent fuel from the reactor, a fuel bundle is dropped and is damaged. What auto-actuated design feature(s) ensure 10CFR100 limits are not exceeded?

A. SBGT actuates on High Stack Radiation

B. SBGT actuates on High Radiation in exhaust air from refuel floor.

C. Supply and exhaust Normal Reactor Building Ventilation fans trip on high Radiation in RB exhaust air plenum.

D. Normal Reactor Building Ventilation system isolates on HI Area Radiation Monitor on refuel floor.

Proposed Answer: B

Explanation (Optional):

–

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

	New	X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295036 EK1.01	
	Importance Rating	2.9	

295036 Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL (CFR: 41.8 to 41.10) EK 1.01 Radiation releases

Proposed Question: # 27

The plant is shutdown at 60 psig.

- •RHR 'B' is in shutdown cooling
- •Reactor water level is 220 inches and slowly decreasing
- •A high floor drain sump level in the East Crescent alarms

The crew has entered EOP-5 'Secondary Containment Control.'

- •Drywell pressure is 1.0 psig and steady
- •Annunciator 09-75-2-6 RX BLDG VENT ISOL is in alarm
- •It is noted that Standby Gas Treatment system has actuated.

Given the above conditions, what is the most important parameter/condition that must be monitored?

A. Reactor Building temperature

B. Reactor Building Equipment Drain Sump level

C. Reactor pressure

D. Reactor Building radiation levels

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during _____

examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	203000 A1.09	
	Importance Rating	2.9	2.9

203000 RHR/LPCI: Injection Mode (Plant Specific) - A1. Ability to predict and/or monitor changes in
parameters associated with operating the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) controls including: (CFR: 41.5 / 45.5) A1.09 Component cooling water systems

Proposed Question: # 28

When operating Loop 'A' RHR in the LPCI mode, RHR heat exchanger 'A' shell outlet temperature is maintained _____ by throttling RHRSW DISCH VLV FROM HX 'A', 10MOV-89A to establish _____?

A. > 68 ºF, 2500 to 4000 gpm per pump

B. < 190 ºF, 4000 to 6500 gpm per pump

C. > 68 ºF, 4000 to 6500 gpm per pump

D. < 190 ºF, 2500 to 4000 gpm per pump

Proposed Answer: A

Explanation (Optional): Per OP-13A; Step D.1.8 (& G.8.4) Maintain RHR HX A shell outlet temperature > 68 ºF using one or a combination of the following methods:

- Throttle RHRSW DISCH VLV FROM HX A 10MOV-89A to establish 2500 to 4000 gpm per pump.

NOTE THAT Per OP-13C; Attachment # 1, Step 5. Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm per RHRSW pump.
Step 8. WHILE performing the following step, maintain torus water temperature (NOT RHR HX A shell outlet temperature) ≥ TO 72 ºF ON EPIC-A-3380 (SPWT).
9. Control containment heat removal rate using one or a combination of the following methods:

- Throttle RHRSW DISCH VLV FROM HX A(B) IOMOV-89A(B).

A. Correct Response - Per OP-13A Step D.1.8 (& G.8.4) Maintain RHR HX A shell outlet temperature > 68 ºF using one or a combination of the following methods: Throttle 10MOV-89A to establish 2500 to 4000 gpm per pump

B. Incorrect – No high temperature limit for the HX shell outlet provided Per OP-13A. Vortex limit of 190 ºF is based on Torus temperature, However, directions are to Throttle 10MOV-89A to establish 2500 to 4000 gpm per pump.

C. Incorrect - Per OP-13A Step D.1.8 (& G.8.4) Maintain RHR HX A shell outlet temperature > 68 ºF is correct, however, directions are to Throttle 10MOV-89A to establish 2500 to 4000 gpm per pump.

D. Incorrect - No high temperature limit for the HX shell outlet provided Per OP-13A. Vortex limit of 190 ºF is based on Torus temperature, However, directions are to Throttle 10MOV-89A to establish 2500 to 4000 gpm per pump.

Technical Reference(s): OP-13A R 14 (Attach if not previously provided)

OP-13C R 9

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-10 EO-1.13.A (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	205000 A2.03	
	Importance Rating	3.2	3.2

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode) - A2. Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)
A2.03 A.C. failure

Proposed Question: # 29

The plant is in Mode 4 with the following conditions:

- 'B' RHR pump is running in shutdown cooling (SDC) mode.
- Reactor coolant system (RCS) temperature is 180 ºF and steady.

Subsequently, a sustained loss of Bus 10600 occurs.

SDC is lost due to _____(1)_____ and Procedures _____(2)_____ are used to mitigate the consequences.

	(1)	(2)
A.	RHR pump loss only	AOP-59 Loss of RPS Bus A Power **AND** AOP-18B
B.	RHR pump loss only	AOP-60 Loss of RPS Bus B Power **AND** AOP-30 Loss of Shutdown Cooling
C.	RHR pump loss and SDC isolations	AOP-60 Loss of RPS Bus B Power **AND** AOP-30 Loss of Shutdown Cooling
D.	RHR pump loss and SDC isolations	AOP-59 Loss of RPS Bus A Power **AND** AOP-18B

Proposed Answer: C

- Explanation (Optional):

A. Incorrect - (1) Answer does **NOT** address fact that SDC is lost due to isolation due to loss of RPS "B". (2) Entry for Loss of RPS B (AOP-60) vice Loss of RPS A (AOP-59) and Entry for Loss of Switchgear L-26 (AOP-19B) vice Loss of Switchgear L-25 (AOP-18B) due to conditions in stem.

B. Incorrect (1) Answer does **NOT** address fact that SDC is lost due to isolation due to loss of RPS "B". (2) Entry into Loss of RPS B (AOP-60) and Loss of SDC (AOP-30) are both correct procedures for the conditions in the stem.

C. Correct Response – (1) RHR Pump trips due to loss of power and receives a trip signal due to loss of suction flow path from the SDC isolations as a result of the Loss of RPS-B, (2) Sustained loss of 10600 results in loss of RPS 'B' (AOP-60) which leads to isolation of SDC. 'A' RHR is lost upon loss of 10500 requiring entry into Loss of SDC (AOP-30).

D. Incorrect – (1) RHR Pump trips due to loss of power and receives a trip signal due to loss of suction flow path from the SDC isolations as a result of the Loss of RPS-B. (2) Entry for Loss of RPS B (AOP-60) vice Loss of RPS A (AOP-59) and Entry for Loss of Switchgear L-26 (AOP-19B) vice Loss of Switchgear L-25 (AOP-18B) due to conditions in stem.

Technical Reference(s): AOP-30 R 19 AOP-59 R 7 (Attach if not previously provided)

AOP-60 R 5 AOP-18B R 1

Learning Objective: LP-AOP EO-1.02 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	206000 A3.08	
	Importance Rating	3.7	3.6

206000 High Pressure Coolant Injection System - A3. Ability to monitor automatic operations of the HIGH PRESSURE COOLANT INJECTION SYSTEM including: (CFR: 41.7 / 45.7) A3.08 Condensate storage tank level: BWR-2,3,4

Proposed Question: # 30

The plant was at 100% power with Condensate Storage Tanks (CSTs) 12A and 12B with 100,000 gallons each.

A small break loss of coolant accident (SBLOCA) and loss of offsite power (LOOP) occurred.

All automatic actions functioned as designed.

Current plant conditions are:

- Drywell pressure is 20 psig.
- RPV pressure is 1000 psig and slowly lowering.
- HPCI is being utilized for RPV level control at full rated flow.
- RPV level is +30 inches and stable.
- 'A' loop of RHR is in suppression pool cooling.
- 'B' loop of RHR is in drywell spray.

Assuming this condition continued for 1 hour, what would the MINIMUM level in the CSTs be?

A. 324 inches

B. 150 inches

C. 60 inches

D. 0 inches

Proposed Answer: C

Explanation (Optional): Per OP-15, In standby, HPCI flow indicator controller is in AUTO with a setpoint of 4,250 gpm. HPCI pump suction is normally lined up to the CSTs. The lower 100,000 gallons of water in each CST is available only to HPCI & RCIC. The alternate HPCI suction supply is the torus. HPCI pump suction shifts from CSTs to torus when: Low CST level - < 59.5".

Per ARP-09-3-3-7 R 4, HPCI Lvl Lo CST trip is set at 60 ".
Per ARP-09-6-2-10 R 5, CST Level Low: 238.19 ", CST Level High: 350.81 "
Suction valves from the torus and the CSTs are DC powered and would still transfer during LOOP.

A. Incorrect - HPCI suction is normally the CSTs & would be taking suction from the CST till low CST level is achieved. HPCI pump suction shifts from the CSTs to the torus upon Low CST level - < 60 inches.

B. Incorrect - HPCI flowrate is 4250 gpm X 60 minutes = 255,000 gallons pumped, the Two CSTs added together provide only 200,000 gallons per the stem resulting in a HPCI suction shift to the Torus at approximately 60 inches in the CSTs

C. Correct Response – HPCI flowrate is 4250 gpm X 60 minutes = 255,000 gallons pumped, the Two CSTs added together provide only 200,000 gallons per the stem resulting in a HPCI suction shift to the Torus at approximately 60 inches in the CSTs.

D. Incorrect - HPCI flowrate is 4250 gpm X 60 minutes = 255,000 gallons pumped, the Two CSTs added together provide only 200,000 gallons per the stem resulting in a HPCI suction shift to the Torus at approximately 60 inches in the CSTs.

Technical Reference(s): OP-15 R 54 (Attach if not previously provided)

ARP-09-3-3-7 R 4

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-23 EO-1.05.A.1 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	209001 A4.02	
	Importance Rating	3.5	3.4

209001 Low Pressure Core Spray System -A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.02 Suction valves

Proposed Question: # 31

The plant is in Mode 5 and the 'A' core spray loop is being used to fill the reactor cavity from the CSTs per procedure OP-30A.

An I&C functional test error causes Channel A and Channel B drywell pressure instrument to go full scale.

The following alarms are received in the control room:

- 09-3-1-22 Core Spray Sys A Logic Activated.
- 09-3-2-22 Core Spray Sys B Logic Activated.

60 seconds from receiving the alarms, what is the position of the A and B core spray suction valves (14MOV-7A & B)?

	14MOV-7A	14MOV-7B
A.	Closed	Closed
B.	Closed	Open
C.	Open	Closed
D.	Open	Open

Proposed Answer: B

Explanation (Optional): Per OP-30A as stated in the stem the 'A' loop CS suction valve14MOV-7A is shut with suction aligned to the CST vice the Torus. There are NO automatic functions that will reposition 14MOV-7A & B, they are operated manually. The normal lineup for 14MOV-7A & B is open thus 14MOV-7B is open.

A. Incorrect – Per OP-30A as stated in the stem the 'A' loop CS suction valve14MOV-7A is shut with suction aligned to the CST vice the Torus. There are NO automatic functions that will reposition 14MOV-7A & B, they are operated manually. The normal lineup for 14MOV-7A & B is open thus 14MOV-7B is open

B. Correct -Per OP-30A as stated in the stem the 'A' loop CS suction valve14MOV-7A is shut with suction aligned to the CST vice the Torus. There are NO automatic functions that will reposition 14MOV-7A & B, they are operated manually. The normal lineup for 14MOV-7A & B is open thus 14MOV-7B is open

C. Incorrect - Per OP-30A as stated in the stem the 'A' loop CS suction valve14MOV-7A is shut with suction aligned to the CST vice the Torus. There are NO automatic functions that will reposition 14MOV-7A & B, they are operated manually. The normal lineup for 14MOV-7A & B is open thus 14MOV-7B is open.

D. Incorrect -Per OP-30A as stated in the stem the 'A' loop CS suction valve14MOV-7A is shut with suction aligned to the CST vice the Torus. There are NO automatic functions that will reposition 14MOV-7A & B, they are operated manually. The normal lineup for 14MOV-7A & B is open thus 14MOV-7B is open.

Technical Reference(s): OP-30A Rev 11 (Attach if not previously provided)

OP-14 Rev 31

Proposed references to be provided to applicants during examination: None

Learning Objective: SDLP-14 EO-1.14.A (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	211000 G2.2.12	
	Importance Rating	3.0	3.4

211000 Standby Liquid Control System 2.2.12 Knowledge of surveillance procedures. (CFR: 41.10/45.13)

Proposed Question: # 32

The plant is operating at 100% power.
The SLC quarterly surveillance test ST6HA is in progress with 55 gpm flow on the 'A' system when an ATWS occurs.

What actions, if any, are required in the reactor building to allow control room operators to inject boron with the 'A' pump?

A. Manually reposition valves in accordance with the restoration section of the ST.

B. 'A' SLC pump motor breaker must be racked in to allow pump starting from the control room.

C. Locally fire the 'A' SLC squib valve to establish the flow path to the reactor.

D. No actions required. The 'A' SLC pump remains lined up for injection of boron during this surveillance procedure.

Proposed Answer: A

Explanation (Optional):
A. Correct - SLC tank suction is isolated, must be unisolated to line- up the flow path. ST- 6HA Step 8.1.4 refers to section 9.1 for restoring the line-up for injection- open the tank suction valve.
B. Incorrect – Pump breaker is not racked out during ST-6HA.
C. Incorrect – Squib valves are fired by remote pump start.
D. Incorrect – SLC tank suction is isolated, must be unisolated to line- up the flow path.

Technical Reference(s): ST-06HA Rev 2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-11 EO-1.13.F (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	212000 K1.04	
	Importance Rating	3.4	3.6

212000 Reactor Protection SystemK1. Knowledge of the physical connections and/or cause/effect relationships between REACTOR PROTECTION SYSTEM and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.04 A.C. electrical distribution

Proposed Question: # 33

The reactor is operating at 100% power with the electrical distribution system in the normal configuration when a loss of MCC 251 occurs.

What effect, if any, does this have on the scram solenoids 10 seconds after the loss of the MCC?

A. The 'A' scram solenoids are deenergized.

B. The 'B' scram solenoids are deenergized.

C. Both the 'A' and 'B' scram solenoids are deenergized.

D. Both the 'A' and 'B' scram solenoids remain energized.

Proposed Answer: A

Explanation (Optional): Per ARP-09-5-1-05 a loss of the normal power MCC-251 will result in a RPS 'A' trip (1/2 scram).

A. Correct- Per ARP-09-5-1-05 a loss of the normal power MCC-251 will result in a RPS 'A' trip (1/2 scram).

B. Incorrect- RPS 'B is still powered from its MCC.

C. Incorrect- Per ARP-09-5-1-05 a loss of the normal power MCC-251 will result in a RPS 'A' trip (1/2 scram). RPS 'B is still powered from its MCC.

D. Incorrect- Per ARP-09-5-1-05 a loss of the normal power MCC-251 will result in a RPS 'A' trip (1/2 scram). RPS 'B is still powered from its MCC.

Technical Reference(s): ARP-09-5-1-05 Rev 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-05 EO-1.03 (As available)

Question Source:	Bank #	_____	
	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	_____

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	_____

10 CFR Part 55 Content:	55.41	_____
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215003 K1.01	
	Importance Rating	3.9	3.9

215003 Intermediate Range Monitor (IRM) System - K1. Knowledge of the physical connections and/or cause effect relationships between INTERMEDIATE RANGE MONITOR (IRM) SYSTEM and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.01 RPS

Proposed Question: # 34

The following conditions exist during a plant startup:

- Reactor Mode Switch is in the "Startup" position.
- IRM 'G' BYPASSED and its instrument drawer selector switch is in the "STANDBY" position.
- All other IRM's are on Range 4.

Which ONE of the following conditions correctly describes AUTOMATIC plant response if IRM 'G' is taken out of "BYPASS"?

A. RPS 'A' & 'B' Full Scram.

B. Rod Withdrawal Block and RPS 'A' Half Scram.

C. Rod Withdrawal Block and RPS 'B' Half Scram.

D. Rod Withdrawal Block and NO Half Scram.

Proposed Answer: B

Explanation (Optional): IRM G is assigned to RPS A and a IRM INOP will occur in startup if the drawer is in standby and the Bypass switch is placed out of "Bypass'
Per ARP 09-5-I-41 R 2 NEUTRON MON SYS Trip a. With mode switch NOT in RUN, the following will cause a trip of a RPS trip channel. 2. IRM INOP AUTOMATIC ACTIONS 1. Half Scram for either RPS trip channel. Companion Instruments APRM E - IRM G
1. RPS trip channel A relays 5A-KI2A, C, E, G
Per ARP 09-5-2-2 R 4, Rod Withdrawal Block, CAUSES • Reactor Mode Switch in Startup/Hot Standby or Refuel: - IRM inoperative
Per ARP-09-5-2-52 R 4 IRM TRIP SYS A INOP OR UPSCALE TRIP - DEVICE IRM A, C, E, or G AUTOMATIC ACTIONS - Mode switch NOT in RUN: Rod block AND RPS A half scram
CAUSES - Instrument malfunction (inop):- IRM mode switch not in operate

A. Incorrect – Per ARP-09-5-2-52 Rod Withdrawal Block & RPS 'A' Half Scram
B. Correct – Per ARP-09-5-2-52 Rod Withdrawal Block & RPS 'A' Half Scram
C. Incorrect – Per ARP-09-5-2-52 Rod Withdrawal Block & RPS 'A' Half Scram
D. Incorrect – Per ARP-09-5-2-52 Rod Withdrawal Block & RPS 'A' Half Scram

Technical Reference(s): ARP-09-5-2-52 R 4 (Attach if not previously provided)

ARP 09-5-I-41 R 2
ARP 09-5-2-2 R 4

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-07B EO-1.09.B (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215004 K3.02	
	Importance Rating	3.4	3.4

215004 Source Range Monitor (SRM) System K3. Knowledge of the effect that a loss or malfunction of
the SOURCE RANGE MONITOR (SRM) SYSTEM will have on following: (CFR: 41.7 / 45.4)
K3.02 Reactor manual control: Plant-Specific

Proposed Question: # 35

Reactor startup is in progress per OP-65. The reactor is **NOT** critical.

SRMs are all operable and read as follows:

Channel	A	B	C	D
Counts per second	2×10^3	3×10^3	2×10^3	5×10^3

Predict the effect of a loss of SRM C High voltage Power supply, **AND** what would be the necessary action to continue the startup?

	EFFECT	NECESSARY ACTION
A.	Half Scram	Suspend startup until repairs are complete.
B.	Rod Block	Suspend startup until repairs are complete.
C.	Half Scram	Bypass affected channel and continue startup.
D.	Rod Block	Bypass affected channel and continue startup.

Proposed Answer: D

Explanation (Optional): SRMs provide no scram signal in normal configuration as stated in the stem. A SRM will go INOP on a loss of high voltage and will cause a rod block only for conditions in the stem.

A. Incorrect – SRMs provide no scram signal in normal configuration.
B. Incorrect - SRM will go INOP on a loss of high voltage & will cause a rod block, SRM can be bypassed per OP-16 at which time the startup may continue.
C. Incorrect – SRMs provide no scram signal in normal configuration.
D. Correct - SRMs provide no scram signal in normal configuration. SRM will go INOP on a loss of high voltage & will cause a rod block only, SRM can be bypassed per OP-16 at which time the startup may continue

Technical Reference(s): OP-16 Rev 27 (Attach if not previously provided)

ARP 09-5-2-2 Rev 4
ARP 09-5-2-51 Rev 4

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-07B EO-1.14.C (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	215005 K4.07	
	Importance Rating	3.7	3.7

215005 Average Power Range Monitor/Local Power Range Monitor System - K4. Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7) K4.07 Flow biased trip setpoints

Proposed Question: # 36

The following plant conditions exist:

- Reactor power – 75%.
- Total Recirculation drive loop flow – 70% (22.1 Mlbm/hr).
- Recirculation loops in operation – Both.

Which **ONE** of the following is the APRM Upscale Thermal Power Trip Setpoint?

A. 120.0 %

B. 117.0 %

C. 111.0 %

D. 109.0 %

Proposed Answer: B

A. Incorrect - With Core Flow 70% the APRM Upscale Thermal Power Trip is clamped at 117 %
B. Correct - With Core Flow 70% the APRM Upscale Thermal Power Trip is clamped at 117 %
C. Incorrect - With Core Flow 70% the APRM Upscale Thermal Power Trip is clamped at 117 %
D. Incorrect – With Core Flow 70% the APRM Upscale Thermal Power Trip is clamped at 117 %

Technical Reference(s): ARP 09-5-2-54 R 6 (Attach if not previously provided)

TS-3.3.1.1 & COLR R 23

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-07C EO-1.05 A.3.D (As available)

Question Source: Bank # _____

Modified Bank # 21838 (Note changes or attach parent)

New _____

Question History: Last NRC Exam 1/1/01 Perry

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	217000 K5.06	
	Importance Rating	2.7*	2.7

217000 Reactor Core Isolation Cooling System (RCIC) - K5. Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): (CFR: 41.5 / 45.3) K5.06 Turbine operation

Proposed Question: # 37

RCIC was operating following an initiation when an apparent spurious RCIC turbine trip is received.

The SNO attempts a RCIC turbine reset by having an NPO close and then open the RCIC Turbine Trip Throttle Valve.

The NPO completes the task and the SNO has the following indications of RCIC:

- RCIC TURB TRIP/THROT VLV - green light ON, red light OFF
- RCIC TURB GOV VLV - green light ON, red light ON
- RCIC Steam Supply Inboard Isolation Valve 13MOV-15 - green light OFF, red light ON

Which **ONE** of the following describes the current condition of RCIC?

A. RCIC is tripped requiring local mechanical linkage to be reset.

B. RCIC is reset and will start as soon as 13MOV-131, RCIC Turbine Steam Inlet Isolation Valve, begins to open.

C. RCIC is reset and will start after RCIC Turbine Steam Inlet Isolation Valve, is full open.

D. RCIC is tripped requiring ISOL SIG A & B RESET pushbuttons to be depressed.

Proposed Answer: A

A. Correct – Per OP-19, When RCIC trips, the RCIC Turbine Trip/Throttle Valve 13HOV-1 closes & must be manually reset locally.
B. Incorrect – RCIC is tripped & will NOT be at speed.
C. Incorrect – With RCIC TURB TRIP/THROT VLV- green light ON & red light off, this indicates that the HOV-1 is Not Open.
D. Incorrect – RCIC is not isolated as indicated by 13MOV-15 - green light OFF, red light ON

Technical Reference(s): OP-19 R 44 (Attach if not previously provided)

ARP 09-4-1-14 R 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-13 EO-1.14.C (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach parent)

New _____

Question History: Last NRC Exam 4/1/2000 Grand Gulf

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	218000 K6.01	
	Importance Rating	3.9	4.1

218000 Automatic Depressurization System - K6. Knowledge of the effect that a loss or malfunction of
the following will have on the AUTOMATIC DEPRESSURIZATION SYSTEM: (CFR: 41.7 / 45.7)

K6.01 RHR/LPCI system pressure: Plant-Specific

Proposed Question: # 38

The plant was operating at 100% power, with the 'B' RHR pump out of service for maintenance. Subsequently a small break LOCA (SBLOCA) occurs.

The plant configuration is as follows:

- Reactor vessel water level is + 55 inches
- HPCI is injecting with discharge pressure at 1000 psig
- ADS Normal/Override switches on Panel 09-4 are in the Normal position
- Annunciator 09-4-1-28 [ADS Timers Actuated] lit 3 minutes ago
- Core Spray and RHR pumps are running in minimum flow, although annunciator 09-4-1-26 [Core Spray or RHR running] is not lit
- Drywell pressure is 2.5 psig

What is the status of all SRVs?

	Valves A, B, C, D, E, G, H	**Valves F, J, K, L**
A.	OPEN	OPEN
B.	OPEN	CLOSED
C.	CLOSED	CLOSED
D.	CLOSED	OPEN

Proposed Answer: C

Explanation (Optional): RPV pressure is below the SRV lift setpoint as determined by HPCI discharge at 1000 psig, no SRVS will be open. ADS valves will not open due to no input into the ADS logic from RHR or CS pump operation as noted by 09-4-1-26 [Core Spray or RHR running] is not lit. Valves A, B, C, D, E, G, H are ADS valves. Valves F, J, K, L are non ADS valves.

A. Incorrect – RPV pressure is below the SRV lift setpoint as determined by HPCI discharge at 1000 psig, no SRVS will be open. ADS valves will not open due to no input into the ADS logic from RHR or CS pump operation as noted by 09-4-1-26 is not lit.

B. Incorrect – RPV pressure is below the SRV lift setpoint as determined by HPCI discharge at 1000 psig, no SRVS will be open. ADS valves will not open due to no input into the ADS logic from RHR or CS pump operation as noted by 09-4-1-26 is not lit.

C. Correct - RPV pressure is below the SRV lift setpoint as determined by HPCI discharge at 1000 psig, no SRVS will be open. ADS valves will not open due to no input into the ADS logic from RHR or CS pump operation as noted by 09-4-1-26 is not lit.

D. Incorrect – RPV pressure is below the SRV lift setpoint as determined by HPCI discharge at 1000 psig, no SRVS will be open. ADS valves will not open due to no input into the ADS logic from RHR or CS pump operation as noted by 09-4-1-26 is not lit.

Technical Reference(s): OP-68 Rev 18 (Attach if not previously provided)

ARP-09-4-1-28 Rev 5
ARP-09-4-1-17 Rev 5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-02J EO-1.06.D (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	223002 A1.02	
	Importance Rating	3.7	

223002 Primary Containment Isolation System/Nuclear Steam Supply System Shut-off
Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF controls including:(CFR: 41.5 / 45.5) A1.02 Valve closures

Proposed Question: # 39

The reactor was at 100% power, conducting LPRM calibration with TIPs per RAP-7.3.14. Subsequently, a small break loss of coolant accident (SBLOCA) and loss of off-site power (LOOP) occurs.

- Drywell pressure is 2.5 psig and increasing
- Reactor water level decreased to 100 inches and is now stable.
- All automatic actions have occurred.

Assuming **NO** operator action, what isolation valves will be the last to close?

A. Group I valves

B. TIP ball valves

C. Drywell vent and purge valves

D. Reactor sample valves

Proposed Answer: B

Explanation (Optional):
During LPRM calibration with TIPs per RAP-7.3.14, TIPs will be extended into RV. Upon receipt of a PCIS initiation, the TIPs will shift to fast speed, retract from the RV, and then the TIP ball valves will shut to isolate the system. This will take ~45 seconds, while the ventilation isolation will occur within 10-15 seconds.

Technical Reference(s): RAP-7.3.14 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	239002 A2.02	
	Importance Rating	3.1	

239002 Ability to (a) predict the impacts of the following on the RELIEFS/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR:41.5 / 45.6) A2.02 Leaky SRV.

Proposed Question: # 40

While operating at 100% power, the following conditions exist:

Annunciator 09-4-1-16 SRV LEAKING is in alarm
Annunciator 09-4-2-6 SRV SONIC MON ALRM HI is extinguished
02TR-166 indicates 295°F for SRV D and approximately 135°F for the remaining SRVs
Panel 09-4 SRV solenoid energized indications are all extinguished
RPV pressure is 1040 psig and stable

Which ONE of the following identifies the status of the SRVs and the appropriate action(s) to be taken for this condition?

A. An SRV is leaking. Initiate a CR for Engineering to evaluate.

B. An SRV is open. Initiate an immediate plant shutdown.

C. An SRV is open. Initiate a plant shutdown within one hour.

D. An SRV is leaking. Initiate an immediate plant shutdown.

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source:	Bank #	_____	
	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	_____

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	_____
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	259002 A3.04	
	Importance Rating	3.2	3.2

259002 Reactor Water Level Control System - A3. Ability to monitor automatic operations of the REACTOR WATER LEVEL CONTROL SYSTEM including: (CFR: 41.7 / 45.7) A3.04 Changes in reactor feedwater flow

Proposed Question: # 41

Plant startup is in progress per OP-65.
Reactor power is 20% and Feedwater is in a normal lineup per OP-2A.

Loss of DC Power System B occurs.

(1) Describe the RPV water level response, if any, to this power supply loss.
(2) What action, if any, is required to respond to the effect on RPV water level?

A. (1) Reactor level increases.
(2) Take manual control of FW flow, control level at 196.5 to 206.5 inches.

B. (1) Reactor level decreases.
(2) Take manual control of FW flow, control level at 196.5 to 206.5 inches.

C. (1) Reactor level increases.
(2) Maintain FW flow in Automatic, level will stabilize at approximately 214 inches.

D. (1) Reactor level stays the same.
(2) No action required.

Proposed Answer: A

Explanation (Optional): PER OP-2A -FWLC is normally selected to Water Column B which is affect by a loss of DC B. Also with power 20% will be in single element level control till > 25 % power per OP-2A. Per AOP-46 loss of DC B, PV level will rise fast due to 06LI-94B failing downscale which is controlling FWLC in conditions given in the stem. AOP-41 is entered for the level rise and provides directions to place FW in manual and maintain 196.5 to 206.5".

A. Correct – Per AOP-46 loss of DC B, PV level will rise fast due to 06LI-94B failing downscale which is controlling FWLC in conditions given in the stem. AOP-41 is entered for the level rise and provides directions to place FW in manual and maintain 196.5 to 206.5".

B. Incorrect – Per AOP-46 loss of DC B, PV level will rise fast due to 06LI-94B failing downscale which is controlling FWLC in conditions given in the stem.

C. Incorrect – Per AOP-46 loss of DC B, PV level will rise fast due to 06LI-94B failing downscale which is controlling FWLC in conditions given in the stem. AOP-41 is entered for the level rise and provides directions to place FW in manual and maintain 196.5 to 206.5".

D. Incorrect – Per AOP-46 loss of DC B, PV level will rise fast due to 06LI-94B failing downscale which is controlling FWLC in conditions given in the stem.

Technical Reference(s): AOP-46 Rev 13 (Attach if not previously provided)

AOP-41 Rev 7

OP-2A Rev 59

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP71B EO-1.09.A.10 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	261000 A4.07	
	Importance Rating	3.1	3.2

261000 Standby Gas Treatment System - A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.07 System flow

Proposed Question: # 42

The plant is in a startup at 70% power. Drywell pressure has risen to 2.0 psig and 'A' SBGT is being used to vent the drywell per OP-37.

(1) In this mode of operation, what is the design flowrate of 'A' SBGT?
(2) If the existing flowrate is too high, how should the flowrate be reduced if at all?

A. (1) 6000 scfm.
(2) Throttle SGT Fan A Suct Isol Valve, 01-125SGT-2A locally.

B. (1) 6000 scfm.
(2) No procedural direction for flowrate adjustment.

C. (1) 3000 scfm.
(2) Throttle SGT Fan A Suct Isol Valve, 01-125SGT-2A locally.

D. (1) 3000 scfm.
(2) No procedural direction for flowrate adjustment.

Proposed Answer: B

Explanation (Optional): PER DBD-027, flow rate for SGTS is 6000 scfm, also in OP-20 expected to be 5800 scfm. To adjust the flowrate if too high is done per ST-39D by adjusting SGT Fan A Suct Isol Valve, 01-125SGT-2A locally (normally it is locked at 635 open) but this is for adjusting the flowrate and maintaining the reactor building d/p. For the conditions given in the step there is no procedure guidance to make the flow rate adjustment. The correct action would be to shift SGTS trains and initiate corrective action to adjust the A train flowrate per ST-39D. A review of procedures and the DBD did not provide a lower flowrate when venting the DW, the flowrate would be expected to be in the 5800 scfm band when venting through the 6" pipe.

A. Incorrect – For the conditions given in the step there is no procedure guidance to make the flow rate adjustment

B. Correct – OP-20 flowrate is 6000 scfm, For the conditions given in the step there is no procedure guidance to make the flow rate adjustment.

C. Incorrect – OP-20 flowrate is 6000 scfm, For the conditions given in the step there is no procedure guidance to make the flow rate adjustment.

D. Incorrect – OP-20 flowrate is 6000 scfm, For the conditions given in the step there is no procedure guidance to make the flow rate adjustment.

Technical Reference(s): DBD-027 Rev 3 (Attach if not previously provided)

OP-20 Rev 35
OP-37 Rev 76
ST-39D Rev 22

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-01B EO-1.09.D (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		
	Group #		
	K/A #	262001 G 2.4.48	
	Importance Rating	3.5	3.8

262001 A.C. Electrical Distribution
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. (CFR: 43.5 / 45.12)

Proposed Question: # 43

A plant startup is in progress with power at 50%. You have been directed to transfer 10100 bus from reserve to normal service per Section D.20 of OP-46A.

- The RPS bus is lined up to the normal source.
- You observe that Incoming and Running meter voltage difference is 300 volts.

Given the above conditions, what is the most likely consequence of closing NSS to Bus 10100 BKR 10102?

The transfer will cause.....

A. a half scram due to RPS EPA undervoltage trip.

B. a full scram due to RPS EPA undervoltage trip

C. the Normal supply breaker to trip on bus overcurrent

D. the Reserve supply breaker to trip on bus overvoltage

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	262002 K1.01	
	Importance Rating	2.8	3.1

262002 Uninterruptable Power Supply (A.C./D.C.) - K1. Knowledge of the physical connections and/or cause-effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.01 Feedwater level control: Plant-Specific

Proposed Question: # 44

The plant is at 100% power.
The following alarm; "UPS Gen Volts Lo" annunciates at panel 09-8 for 60 seconds.

Assuming all automatic actions function as designed, and with **NO** operator action, which ONE of the following will occur?

A. Loss of Feedwater control signal, full scram on low reactor vessel water level.

B. Loss of 'A', 'C', 'E' APRMs, half scam.

C. Loss of 'B', 'D', 'F' APRMs, half scam.

D. Loss of Feedwater control signal, full scram from turbine trip.

Proposed Answer: D

Explanation (Optional): Per AOP-21 for a loss of UPS as indicated by the UPS Gen Volts Lo alarm which is a symptom of either a complete loss or momentary loss of UPS, (stem provides 60 seconds as cue to complete loss) RWR will runback, RFPS will lock up at pre power loss position, RPV level will rise quickly due to stm/feed flow mismatch, with no operator action the main turbine will trip on high RPV level. UPS is not a power supply to the APRMS – they are powered from RPS MG sets.

A. Incorrect – Level will cause a high RPV level trip of turbine and a scram.

B. Incorrect – UPS is not a power supply to the APRMS – they are powered from RPS MG sets.

C. Incorrect – UPS is not a power supply to the APRMS – they are powered from RPS MG sets.

D. Correct - UPS Gen Volts Lo alarm indicates a complete loss of UPS, RWR will runback, RFPS will lock up at pre power loss position, RPV level will rise quickly due to stm/feed flow mismatch, with no operator action the main turbine will trip on high RPV level.

Technical Reference(s): AOP-21 R21 (Attach if not previously provided)

ARP-09-8-1-17 Rev 3

Proposed references to be provided to applicants during examination: _____

Learning Objective: SDLP-71F EO-1.15.A (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	263000 K2.01	
	Importance Rating	3.1	3.4

263000 D.C. Electrical Distribution - K2. Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.01 Major D.C. loads

Proposed Question: # 45

The plant is at 100% power.
All systems are operating normally when a loss of DC Power System 'A' occurs.

Which ONE of the following valves loses electric stroke capability due to the loss of DC Power System 'A'?

A. 13MOV-18 - RCIC Pump Suct from Cond Stor Isol Valve.

B. 23MOV-15 - HPCI Steam Supply Inbd Isol Valve.

C. 13MOV-15 - RCIC Steam Supply Inbd Isol Valve.

D. 23MOV-59 - HPCI Turb Exh Line Vac Breaker Valve.

Proposed Answer: A

Explanation (Optional): 13MOV-18 is powered from 71BMCC-1 (DC system A) per attachment # 2 of AOP-45 on a loss of DC all RCIC MOVS will lose power except 13MOV-15 which is powered from a AC source (71MCC-163), The HPCI valves listed are powered from a AC source.

A. Correct -13MOV-18 is powered from 71BMCC-1 (DC system A) per attachment # 2 of AOP-45 on a loss of DC all RCIC MOVS will lose power except 13MOV-15.
B. Incorrect – AC powered from 71MCC-153.
C. Incorrect - AC powered from 71MCC-163.
D. Incorrect - AC powered from 71MCC-163.

Technical Reference(s): AOP-45 Rev 9 (Attach if not previously provided)

OP-15 Rev 54
OP-19 Rev 46

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-71B EO-1.09.A.2 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	264000 K3.02	
	Importance Rating	3.9	

264000 Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on the following: (CFR: 41.7 / 45.4) K3.02 A.C. electrical distribution.

Proposed Question: # 46

The plant is in Mode 2 when a Loss of Off-site Power (LOOP) occurs. The NPO dispatched to monitor Emergency Generator operation reports the following;

EDG 'A' HIGH WATER TEMP annunciator is in alarm
EDG 'A' jacket water temperature reads 210°F

Which of the following describes the status of bus 10500 and bus 10600?

	Bus 10500	**Bus 10600**
A.	De-energized	De-energized
B.	Energized	De-energized
C.	Energized	Energized
D.	De-energized	Energized

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach

		parent)
New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	300000 K4.03	
	Importance Rating	2.8	

300000 Knowledge of INSTRUMENT AIR SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7) K4.03 Securing of IAS upon loss of cooling water.

Proposed Question: # 47

The plant is operating at 100% power when the TBCLC system is lost.

Which of the following sensing points provides the FIRST signal to trip the Air compressors?

A. Low Compressor cooling water pressure

B. High Compressor intercooler air temperature

C. Low TBCLC flow

D. High compressor bearing oil pressure

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	400000 G 2.4.11	
	Importance Rating	3.4	3.6

400000 Component Cooling Water
Knowledge of abnormal condition procedures: (CFR: 41.10 / 43.5 / 45.13).

Proposed Question: # 48

The reactor scrammed from 100% power approximately 10 minutes ago due to MSIV closure. Plant conditions are as follows:

HPCI failed to start on Low-Low reactor level
Reactor level is 100 inches and slowly decreasing
All other ECCS equipment is operating as designed
Drywell pressure is 2.3 psig and slowly rising
Drywell temperature is 285°F and rising
Annunciator 09-6-2-22 RBC MAKEUP TK LVL HI OR LO is in alarm
Annunciator 09-4-2-12 DW FLOOR SUMP LEAKAGE is in alarm

In response to the alarms, the crew isolates RBCLC flow to the drywell.

Per EOP-4, what actions will maximize drywell cooling?

A. Re-establish RBCLC flow to the drywell coolers.

B. Initiate Emergency Depressurization.

C. Establish drywell cooling from ESW IAW AOP-11, Section F.2.4

D. Initiate Drywell Sprays as soon as conditions permit.

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	261000 A1.04	
	Importance Rating	3.0	3.3

261000 Standby Gas Treatment System - A1. Ability to predict and/or monitor changes in
parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: (CFR: 41.5 / 45.5) A1.04 Secondary containment differential pressure

Proposed Question: # 49

A large break LOCA and a Loss of Offsite Power (LOOP) has occurred.

- DW pressure is 15 psig.
- 'A' & 'C' EDG's failed to start.
- SGT Disch Header To Stack Isol Valve 01-125SGT-1 did not change position.
- All other plant equipment functioned as designed.

What, if any, action is **REQUIRED** to maintain the reactor building at a negative pressure?

A. No action required.

B. Reposition SGT Disch Header To Stack Isol Valve 01-125SGT-1.

C. Stop Reactor Building Supply Fan FN-5B.

D. Stop Below Elevation 369' Exhaust Fan FN-12B.

Proposed Answer: A

Explanation (Optional): Valve 01-125SGT-1 is a manually operated butterfly valve, which is normally open.

A. Correct – For RB isolated on high DW pressure, flow rate of SGT is 5600-5800 scfm. System is normally aligned to provide this flow upon initiation.

B. Incorrect – SBGT valve 01-125SGT-1 is the SGT disch header to stack isolation valve and is normally open and remains open on initiation.

C. Incorrect – RB ventilation will be in recirc mode due to RB isolation. Stopping supply and exhaust fans will not maintain the RB negative.

D. Incorrect – RB ventilation will be in recirc mode due to RB isolation. Stopping supply and exhaust fans will not maintain the RB negative.

Technical Reference(s): OP-20 R 35 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-01B EO-1.03 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	262001 A2.04	
	Importance Rating	3.8	4.2

262001 A.C. Electrical Distribution - A2. Ability to (a) predict the impacts of the following on
the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6) A2.04 Types of loads that, if deenergized, would degrade or hinder plant operation

Proposed Question: # 50

The plant is at 100% power.
RX WTR LVL COLUMN SEL switch is in A-LEVEL while calibrating the B-Level instrument.
Subsequently, L26 is discovered to be over-heating and needs to be IMMEDIATELY deenergized.

The Crew must implement Procedure(s) _____?

A. AOP-59 Loss of RPS 'A' Power and AOP-41 Feedwater Malfunction (Rising Feedwater Flow- High RPV Water Level)

B. AOP-59 Loss of RPS 'A' Power.

C. AOP-60 Loss of RPS 'B' Power.

D. AOP-60 Loss of RPS 'B' Power and AOP-41 Feedwater Malfunction (Rising Feedwater Flow- High RPV Water Level).

Proposed Answer: C

Explanation (Optional): Per AOP-19B R 1, Loss of Switchgear L26 Automatic Action is a loss of RPS Bus B and a PCIS Group II Isolation
Per AOP-46 R 13 DC Power System B (note will not lose the DC bus for a period of time) will lose the charger so this AOP will be entered but per Automatic Actions -Loss of DC Power System B If RX WTR LVL COLUMN SEL 06-S1 switch is in A-LEVEL, RPV water level will not be affected.

A. Incorrect – Loss of L26 will impact RPS B not A, per stem loss of DC Bus B will not affect level if on water column A.
B. Incorrect – Loss of L26 will impact RPS B not A,
C. Correct – Loss of Switchgear L26 Automatic Action is a loss of RPS Bus B (AOP-60) & a PCIS Group II Isolation (AOP-15)
D. Incorrect – Per stem loss of DC Bus B will not affect level if on water column A. (note will not lose the DC bus for a period of time)

Technical Reference(s): AOP-19B R 1 AOP-46 R 13 (Attach if not previously provided)

AOP-60 R 5 AOP-59 R 7
AOP-15 R 26

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.06 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	262002 K4.01	
	Importance Rating	3.1	3.4

262002 Uninterruptible Power Supply (A.C./D.C.) K4. Knowledge of UNINTERRUPTIBLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)
K4.01 Transfer from preferred power to alternate power supplies

Proposed Question: # 51

Which of the following sets of conditions will cause an automatic uninterrupted transfer of the UPS M-G set from the AC Motor Drive to the DC Motor Drive?

A. AC motor over-temperature, generator under-frequency

B. M-G Set over-speed, generator under-frequency

C. Generator ground, generator under-voltage

D. Generator over-current, generator over-load

Proposed Answer: A

Explanation (Optional): Refer to OP-46B Page 10 & 11
A. **Correct** - Any of the following conditions will cause an automatic uninterrupted transfer from normal AC motor drive to DC motor drive: Main feeder undervoltage (three phase), Main feeder undervoltage (single phase), **AC motor overtemperature, Generator underfrequency**
B. Incorrect – Any of the following conditions will cause an M-G set shutdown and an automatic interrupted transfer from MG set DC drive to alternate feeder: MG set overspeed, DC motor overload, DC motor undervoltage, Generator underfrequency (after 5 sec TD), Generator undervoltage
C. Incorrect – Any of the following conditions will cause an M-G set shutdown and an automatic interrupted transfer from M-G set to alternate feeder: Generator undervoltage, Generator overload, Generator overcurrent, Generator ground
D. Incorrect – Any of the following conditions will cause an M-G set shutdown and an automatic interrupted transfer from M-G set to alternate feeder: Generator undervoltage, Generator overload, Generator overcurrent, Generator ground

Technical Reference(s): OP-46B (Attach if not previously provided)

Proposed references to be provided to applicants during _____

examination: _____

Learning Objective: SDLP-71F EO-1.05.C.1 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	263000 A4.02	
	Importance Rating	3.2	3.1

263000 D.C. Electrical Distribution - A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.02 Battery voltage indicator: Plant-Specific

Proposed Question: # 52

The 125 VDC Station Battery Charger, 71BC-1A for 125 VDC Power System 'A' has been placed in a Normal Startup per OP-43A.
The Panel 09-8, 125 VDC Batt Bus Voltage meter is reading 135 VDC.

What adjustments, if any, will the operator make in this situation?

A. Adjust voltages using the FLOAT potentiometer on the battery charger to set volta

B. No adjustments needed because this voltage is acceptable.

C. Adjust voltages using the EQUALIZE potentiometer on the battery charger to set v

D. No adjustments are needed provided the local battery meter, 71VM-BAT-1ABC volts indicates between 136 and 137.5 VDC.

Proposed Answer: A

Explanation (Optional): Per OP-43A, Step D.1.2 -Review Step D.1.7 & associated notes & caution, & ensure a flat blade screwdriver is available to adjust float voltage potentiometer R3.
Step D.1.7 - IF charger output current remains ≥ to 310 DC amperes on 71AM-BC-1A for more than one minute, THEN perform the following:
NOTE: Float voltage potentiometer R3 is located below FLOAT label on Float/Equalize toggle switch on front of 71BC-1A.
a. Adjust float voltage potentiometer R3 to establish between 290 & 310 DC amperes on 71AM-BC-1A.
b. As charger output current lowers, adjust float voltage potentiometer R3 to maintain the following:

- 131 to 133 DC volts on 71VM-BAT-1ABC
- Between 290 and 310 DC amperes on 71AM-BC-1A

A. Correct - As charger output current lowers, adjust float voltage potentiometer R3 to maintain the following: 131 to 133 DC volts on 71VM-BAT-1ABC
B. Incorrect – 140 VDC too high, maintain 131 to 133 DC volts on 71VM-BAT-1ABC
C. Incorrect – Per stem a Normal startup indicates in Float, requires adjustment of Float pot to achieve desired voltages of 131 -133 VDC
D. Incorrect – Voltages given are for equalize charge, stem Per stem a Normal startup indicates in Float, requires adjustment of Float pot to achieve desired voltages of 1

Technical Reference(s): OP-43A R 22 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-71B EO-1.13.A (As available)

Question Source: Bank # _____

Modified Bank # 28794 (Note changes or attach parent)

New _____

Question History: Last NRC Exam 11/29/04 Perry

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	205000 K5.03	
	Importance Rating	2.8	3.1

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode) - K5. Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): (CFR: 41.5 / 45.3) K5.03 Heat removal mechanisms

Proposed Question: # 53

The plant is in shutdown cooling. **NO** reactor recirculation pumps are running. Per OP-13D, which of the following is the **MINIMUM** water level which allows for adequate natural circulation flow within the reactor vessel to ensure accurate temperature indication?

Approximately _____ inches.

A. 370

B. 130

C. 287

D. 235

Proposed Answer: D

Explanation (Optional): Per OP-13D, CAUTION - If RPV water level is < 234.5 inches with no forced core recirculation, reactor coolant temperature indications could be invalid due to insufficient natural circulation.

A. Incorrect – Top of Vessel Flange does not satisfy question.
B. Incorrect – feedwater penetration does not satisfy question.
C. Incorrect – MSL centerline does not satisfy question.
D. Correct – Per OP-13D, CAUTION - If RPV water level is < 234.5 inches with no forced core recirculation, reactor coolant temperature indications could be invalid due to insufficient natural circulation

Technical Reference(s): OP-13D R 18 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-10 EO-1.13.D (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	201003 A2.02	
	Importance Rating	3.7	3.8

201003 Control Rod and Drive Mechanism - A2. Ability to (a) predict the impacts of the following on
the CONTROL ROD AND DRIVE MECHANISM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.02 Uncoupled rod

Proposed Question: # 54

During a plant startup, control rod 14-19 was withdrawn to position 48.
During the coupling check:

- Position indication was lost.
- Control rod overtravel alarmed.
- Control rod drift alarmed.

This is an indication that control rod 14-19 _____(1)_____.
The crew is required to enter procedure _____(2)_____.

A. (1) is uncoupled
(2) AOP-69, CONTROL ROD DRIVE PUMP TROUBLE

B. (1) is uncoupled
(2) AOP-25, UNCOUPLED CONTROL ROD

C. (1) is stuck
(2) AOP-24, STUCK CONTROL ROD

D. (1) is stuck
(2) AOP-27, CONTROL ROD DRIFT

Proposed Answer: B

Explanation (Optional): Per AOP-25 B SYMPTOMS: 09-5-2-4 ROD OVERTRAVEL is received during a coupling check of control rod.

Per ARP 09-5-2-4 R 3, ROD OVERTRAVEL DEVICE Reed Switch S-50 SETPOINT 2 inches beyond full out position

Per OP-26 R 22, Control Rod Drift A red drift light comes on & annunciator 09-5-2-3 ROD DRIFT alarms when either of the following conditions occur:

- A control rod that is not selected moves off a latched even numbered position.
- A control rod that is selected moves off an even numbered position or past an odd numbered position after rod sequence timer has stopped.

Per AOP-24 R 8 Stuck Control Rod- A. ENTRY CONDITIONS Control rod cannot be moved with drive water d/p at 400 psig or less B. SYMPTOMS - Failure of RPIS to indicate rod motion, -Failure of nuclear instrumentation to respond to rod, - Abnormally high or low drive water flow

A. Incorrect – AOP-69 is not correct for a uncoupled rod as indication by conditions in stem.

B. Correct – Enter AOP-25 due to B SYMPTOMS: 09-5-2-4 Rod Overtravel is received during a coupling check of control rod. Per ARP 09-5-2-4 R 3, Rod Overtravel Device Reed Switch S-50 setpoint 2 inches beyond full out position

C. Incorrect – AOP-24 conditions are not met for a stuck rod.

D. Incorrect – AOP-27 conditions are not met for a control rod drift.

Technical Reference(s): AOP-25 R 7 (Attach if not previously provided)

ARP 09-5-2-4 R 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.01 (As available)

Question Source: Bank # _____

Modified Bank # 23679 (Note changes or attach parent)

New _____

Question History: Last NRC Exam 3/17/03 Fermi #2

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	202001 G 2.1.7	
	Importance Rating	3.7	

202001 Recirculation System Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation. (CFR: 43.5 / 45.12 / 45.13)

Proposed Question: # 55

The plant was operating at 100% power when the 'B' RWR pump tripped. The CRS directed entry into AOP-8, Loss or Reduction of Reactor Coolant Flow.

The following plant conditions exist:

- Reactor Power is approximately 65%
- 'A' RWR pump speed is 88% and unchanged
- Annunciator 09-5-2-44 APRM UPSCALE is in alarm

Per AOP-8, what operator action is required?

A. Lower the speed of the 'A' RWR pump

B. Raise the speed of the 'A' RWR pump.

C. Insert control rods per RAP-7.3.16, Plant Power Changes.

D. Insert a manual scram and enter AOP-1, Reactor Scram.

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): ARP 09-5-2-44 (Attach if not previously provided)

AOP-8

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	202002 K1.08	
	Importance Rating	3.1	3.2

202002 Recirculation Flow Control System - K1. Knowledge of the physical connections and/or cause effect relationships between RECIRCULATION FLOW CONTROL SYSTEM and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.08 Feedwater flow

Proposed Question: # 56

The plant is at 90% power. Subsequently, the 'A' Reactor Feed Pump trips.

What **AUTOMATIC** action, if any, will preclude a reactor water Low-Low level being reached?

A. No automatic action will preclude reaching reactor water Low-Low level.

B. Recirc flow runback to 30%.

C. Recirc flow runback to 44%.

D. Reactor scram.

Proposed Answer: C

Explanation (Optional): Per AOP-42, AUTOMATIC Actions for loss of 1 RFP, - RFP trip annunciator alarms - RPV water level lowers - If RPV water level lowers to 196.5 inches, both RWR MG sets run back to 44% speed - Operating RFP should restore level
Loss of both RFPs, or loss of two condensate or condensate booster pumps: - Pump trip annunciators alarm - RWR MG sets run back to 30% speed when total feedwater flow reaches 20% - - RPV water level lowers rapidly -196.5 inches annunciator alarms - 177 inches: the following occur: Reactor scram

A. Incorrect – Loss of 1 RFP, concurrent with RPV level of 196.5", Both RWR MG sets runback to 44% speed. Operating RFP should restore level to normal.
B. Incorrect – Loss of Both RFPs or 2 Condensate/Booster Pumps- Both RWR MG sets runback to 30% speed when total FW flow reaches 20%.
C. Correct – Loss of 1 RFP, concurrent with RPV level of 196.5", Both RWR MG sets runback to 44% speed. Operating RFP should restore level to normal.
D. Incorrect – Loss of 1 RFP, concurrent with RPV level of 196.5", Both RWR MG sets runback to 44% speed. Operating RFP should restore level to normal.

Technical Reference(s): AOP-42 R12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.02 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	216000	
	Importance Rating	2.8	

216000 Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER INSTRUMENTATION: (CFR: 41.7 / 45.7) K6.02 D.C. electrical distribution

Proposed Question: # 57

The reactor is in Mode 4 with an outage of 'A' Battery in progress. DC power system 'A' is energized from Battery Charger 'A'. All other DC and AC components are in the normal lineup.

Subsequently, a Loss of Off-Site Power (LOOP) occurs. The EDGs start and load onto their respective busses.

Assuming **NO** operator action, what reactor vessel water level instruments are available in the control room?

A. All reactor vessel water level instruments are available.

B. 06LI-94C is available.

C. 06LI-94B is available.

D. All reactor vessel water level instruments will be available after the EDGs re-energize their busses.

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	219000 K2.02	
	Importance Rating	3.1	

219000 RHR/LPCI: Torus/Suppression Pool Cooling Mode
Knowledge of electrical power supplies to the following: (CFR:41.7) K2.02 Pumps

Proposed Question: # 58

Plant conditions are as follows:

- 90% power.
- Torus temperature is 90 ºF and rising slowly.
- 4160Kv Bus 10600 is deenergized and remains deenergized

Which one of the following describes the RHR loops and RHRSW pumps available for Torus Cooling per OP-13B and OP-13C based on the above conditions?

	RHR Pumps	RHR SW Pumps
A.	10P-3A, 10P-3C	10P-1A, 10P-1C
B.	10P-3A, 10P-3B	10P-1A, 10P-1C
C.	10P-3C, 10P-3D	10P-1B, 10P-1D
D.	10P-3B, 10P-3D	10P-1B, 10P-1D

Proposed Answer: B

Explanation (Optional):
A.

Technical Reference(s): OP-13B Rev 9 (Attach if not previously provided)
OP-13C Rev 9

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-10 EO-1.04 (As available)

Question Source: Bank #

	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	230000 A4.06	
	Importance Rating	4.0	

230000 RHR/LPCI Torus/Suppression Pool Spray Mode
Ability to manually operate and/or monitor in the control room: (CFR:41.7 / 45.5 to 45.8)
A4.06 Valve logic reset following automatic initiation of LPCI/RHR in injection mode.

Proposed Question: # 59

The following plant conditions exist:

Drywell pressure is 10 psig and steady
Drywell temperature is 150°F and steady
RPV Fuel Zone level is -10 inches and steady

The operator has taken switch 10A-S17A (SPRAY CONTROL) to MANUAL

Which ONE of the following describes torus spray response, if any, **AND** why?

A. Torus spray will not initiate due to drywell pressure.

B. Torus spray will not initiate due to RPV level.

C. Torus spray will initiate once the SPRAY CONTROL switch is allowed to spring return to NORMAL

D. Torus spray will initiate as long as the SPRAY CONTROL switch is held in MANUAL.

Proposed Answer: B

Explanation (Optional):
If Fuel Zone level indicates <0 inches, the DW and Torus spray valve override of fuel zone level keylock switch 10A-S18A(B) must be taken to manual override position to allow opening of DW and/or torus spray valves

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	234000 K1.04	
	Importance Rating	3.3	

234000 Knowledge if the physical connections and/or cause effect relationships between FUEL HANDLING EQUIPMENT and the following: (CFR:41.2 to 41.9 / 45.7 to 45.8) K1.04 Reactor manual control system: Plant specific

Proposed Question: # 60

Given the following conditions:

- •ALL hoists full up
- •ALL hoists unloaded
- •Mode switch in Refuel
- •All rods fully inserted

For these conditions, which ONE of the following combinations will result in a rod withdrawal block?

A.	Frame mounted hoist not full up	AND	Refuel Bridge near or over the core
B.	Placing Mode switch to STARTUP / HOTSTANDBY	AND	Refuel bridge over the Spent Fuel Pool
C.	Fuel grapple not full up	AND	Refuel Bridge near or over the core
D.	Fuel grapple and frame mounted hoists not full up	AND	Refuel bridge over the Spent Fuel Pool

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	290002 K3.03	
	Importance Rating	3.3	3.4

290002 Knowledge of the effect that a loss or malfunction of the REACTOR VESSEL INTERNALS will have on the following: (CFR: 41.7 / 45.4) K3.03 Reactor power

Proposed Question: # 61

You are the ATC operator. The plant is at 100% power when you observe the following:

- •Reactor power lowers
- •Main generator output lowers
- •Main steam flow lowers
- •Indicated core flow lowers
- •Core plate differential pressure lowers
- •Recirculation Loop 'A' flow rises

What is the cause of these indications?

A. There has been a malfunction in EHC

B. An SRV is stuck open

C. 'A' reactor recirculation pump controller has failed downscale

D. One or more jet pumps in the 'A' loop has malfunctioned

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): AOP-29 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	241000	
	Importance Rating	3.8	

241000 Reactor/Turbine Pressure Regulating System
Knowledge of REACTOR/TURBINE PRESSURE REGULATING SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7) K4.01 Reactor pressure control

Proposed Question: # 62

The plant was at 100% power when a low vacuum turbine trip occurred. All immediate actions of AOP-1 are complete.

Plant parameters are as follows:

- •Two circulating water pumps are running
- •RPV level 200 inches and stable
- •RPV pressure 950 psig and stable
- •RPV level control is with RCIC
- •Condenser vacuum is 9 inches Hg and steady

The CRS has directed reactor pressure be controlled with the turbine bypass valves.

Which of the following describes the actions required to accomplish the CRSs direction?

A. Reset the turbine trip and lower the EHC pressure setpoint

B. Reset the turbine trip and raise the EHC pressure setpoint

C. Raise the bypass opening jack setpoint

D. Lower the bypass opening jack setpoint

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during _____

examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	295034 EA2.01	
	Importance Rating	2.8	

259001 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR FEEDWATER SYSTEM controls including: (CFR:41.5 / 45.5) A1.05 RFP turbine control vale position: Turbine-driven only.

Proposed Question: # 63

The plant is in cold shutdown. Mechanical maintenance has reported that the 'A' RFPT has a problem. The High Pressure (HP) Steam Control Valve is closed and separated from its linkage. Mechanically, the arm is intact but the HP steam control valve is closed via the secondary piston.

If a reactor startup were to commence, the 'A' RFPT ___(1)____ be available at 500 psig reactor pressure and ___(2)____ be available above 50% power.

	(1)	(2)
A.	would	would NOT
B.	would	would
C.	would NOT	would NOT
D.	would NOT	would

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank #	_____	(Note changes or attach parent)
New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	271000 A3.05	
	Importance Rating	2.9	

271000 Ability to monitor automatic operations of the OFF GAS SYSTEM including:(CFR:41.7 / 45.7) A3.05 System indicating lights and alarms.

Proposed Question: # 64

The plant is at 100% power.
A malfunction in the Hydrogen Water chemistry controller causes a full flow of H2 into the feed water.

The following alarms are received in the Control Room:

- •09-6-4-35 H2 ADDITION SYS TROUBLE
- •09-3-3-1 MAIN STM RAD MON HI
- •09-3-2-27 OFF GAS RAD MON HI

You dispatch an operator to 89 HAP and he reports annunciator 89HAP-1-3 OFF GAS EXCESS O2 LOW alarm is lit.

Describe the response of the Off Gas system:

A. The recombiner will continue to operate.

B. The recombiner will trip.

C. The SJAE Off Gas Trip Suction air operated valves 38AOV-113 A and B will close.

D. The Off Gas Outlet Isolation valve 01-107AOV-100 will close.

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): AOP-24A (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	286000 A4.01	
	Importance Rating	3.3	3.2

286000 Fire Protection System Ability to manually operate and/or monitor in the control room: (CFR:41.7 / 45.5 to 45.8) A4.01 System alarms and indicating lights

Proposed Question: # 65

Given the following conditions:

- The Fire Protection water system has been actuated
- Fire Protection water system pressure has lowered to 85 psig
- All Fire Protection pumps have functioned as designed
- No operator action has been taken to start Fire Protection pumps

Which of the following describes the status of the Fire Protection System water pumps?

A. All three Fire Pumps are running and will shutdown when system pressure exceeds the reset point.

B. All three Fire Pumps are running and will NOT shutdown when system pressure exceeds the reset point.

C. Only the electric motor driven pump (76P-2) is running and it will shutdown when system pressure exceeds the reset point.

D. Only the diesel driven fire pumps (76P-1 and 76P-4) are running and they will NOT shutdown when system pressure exceeds the reset point.

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source:	Bank #	_____	
	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G 2.2.11	
	Importance Rating	3.0	

G 2.1.11 Knowledge of less than one hour technical specification action statements for systems. (CFR:43.2 / 45.13)

Proposed Question: # 66

The plant is at 100% power with all systems operating normally. Which one of the following conditions requires Technical Specification action in less than one hour?

A. MSIV 29AOV-80A is declared inoperable.

B. Inoperable control room boundary.

C. Both 'A' and 'B' batteries voltage is 2.13 volts per connected cell.

D. 'A' and 'B' RHR pumps are declared inoperable.

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: TS Table 3.8.6-1

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	G	
	Group #	2	
	K/A #	G 2.1.33	
	Importance Rating	3.4	

G 2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 / 45.3)

Proposed Question: # 67

The following plant conditions exist:

- Plant is at 100% power
- Scaffolding is being erected in the HPCI room for planned maintenance
- Fuel sipping is in progress in the fuel pool
- A liquid waste discharge, per OP-49 is in progress
- It is mid-February and lake temperature is 34°F

Which of the following are entry level conditions specified in the Technical Specifications?

A. Annunciator 09-6-1-26 INTAKE STRUCTURE HTRS 6A/6B NOT ON is in alarm

B. Annunciator 09-1-19 ARM DOWNSCALE is in alarm

C. Air compressor 'A' trips.

D. Diesel fire pump 76P-4 is tagged out for maintenance.

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach

		_____	
		_____	parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.18	
	Importance Rating	2.9	3.0

2.1.18 Ability to make accurate / clear and concise logs / records / status boards / and reports. (CFR: 45.12 / 45.13)

Proposed Question: # 68

Which **ONE** of the following describes the correct use of narrative logs as described in EN-OP-107, "eSOMS Narrative Log Module Users Manual"?

A. Only the Shift Manager can make changes to an approved eSOMs Narrative Log.

B. All operators on the shift may edit their entries on a turned over log.

C. Only the operator who made the entry may edit it prior to the log being turned over.

D. The Shift Manager or the individual who made the entry can make changes to an approved eSOMs Narrative Log.

Proposed Answer: C

Explanation (Optional):

A. Incorrect – No changes are permitted by anyone to an approved log.
B. Incorrect – A turned over log can not be changed.
C. Correct – Per EN-OP-107, step 5.15
D. Incorrect – No changes are permitted by anyone to an approved log.

Technical Reference(s): EN-OP-107 R2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AP EO-46.04 (As available)

Question Source: Bank # PNPS

Modified Bank # (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 10
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.30	
	Importance Rating	3.5	3.3

2.2.30 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. (CFR: 45.12)

Proposed Question: # 69

Per RAP-7.1.04B, "Refueling Procedure", which one of the following is a responsibility of a Reactor Operator during core alterations?

A. Verify completion of daily refueling checks.

B. Monitor the Source Range Monitors for rising counts.

C. Ensure the Refueling Checklist is completed daily

D. Complete the ICA Transfer Forms and transmit to the Reactor Engineer

Proposed Answer: B

Explanation (Optional):

A. Incorrect – Responsibility of Refuel Bridge SRO as defined in RAP-7.1.04B Step 6.7

B. Correct – RO responsibility as defined in RAP-7.1.04B Step 5.2

C. Incorrect – Responsibility of Refuel Bridge SRO as defined in RAP-7.1.04B Step 6.7

D. Incorrect – Responsibility of Refuel Bridge SRO as defined in RAP-7.1.04B Step 6.7

Technical Reference(s): RAP-7.1.04B R22 (Attach if not previously provided)

RAP-7.1.04C R5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: SDLP-08A EO-1.13.B (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach parent)

New _____

Question History: Last NRC Exam 2002 Clinton

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	G	
	Group #		
	K/A #	G 2.2.22	
	Importance Rating	3.4	

G. 2.2.22 Knowledge of limiting conditions for operations and safety limits (CFR: 43.2 / 45.2)

Proposed Question: # 70

Determine which of the following combinations of reactor power and reactor pressure constitute a Safety Limit violation.

	Reactor power	Reactor pressure
A.	15% RTP	750 psig
B.	24% RTP	770 psig
C.	28% RTP	775 psig
D.	32% RTP	810 psig

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	2.3.1	
	Importance Rating	2.6	3.0

2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements.
(CFR: 41.12 / 43.4. 45.9 / 45.10)

Proposed Question: # 71

A pump room has general area dose rates ranging from 10 mrem/hr to 115 mrem/hr.
Average floor contamination levels are 2000 dpm/100 cm^2 gamma.

Which **ONE** of the following lists the minimum required area posting for the pump room per EN-RP-108, "Radiation Protection Posting"?

A. Radiation Area and Contamination Area.

B. Radiation Area and High Contamination Area.

C. High Radiation Area and Contamination Area.

D. High Radiation Area and High Contamination Area.

Proposed Answer: C

Explanation (Optional):

A. Incorrect – The area requires a High Radiation Area sign even if doses drop at times to 10 mr/hr.
B. Incorrect – A High Contamination Area requires >100,000 dpm/100 cm^2 gamma
C. Correct – >100 mrem/hr makes it a HRA. A contamination level > 1000 dpm/100
D. Incorrect - A High Contamination Area requires >100,000 dpm/100 cm^2 gamma

Technical Reference(s): EN-RP-108 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AP EO-31.02 (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach parent)

New _____

Question History: Last NRC Exam 2005 Limerick 1 Q # 72

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	G	
	Group #	3	
	K/A #	G 2.3.11	
	Importance Rating	2.7	

G 2.3.11 Ability to control radiation releases (CFR: 45.9 / 45.10)

Proposed Question: # 72

During a planned discharge of the 'A' Waste Tank, a valve positioning error results in simultaneously discharging the 'B' Waste Tank. The specific activity of the 'B' Waste Tank is ten times (10X) higher than the 'A' Waste Tank.

What design feature(s) and/or administrative controls ensure 10CFR20 limits are not exceeded?

A. Per OP-49, three circulating water pumps are required to be running for all liquid radioactive waste discharges.

B. The discharge flow control valve will reduce the flow if activity is > 10-7 μCi/ml.

C. Per OP-49, the tempering gate is always set at 0% for all liquid radioactive waste discharges.

D. Radiation monitor 17RM-350 Hi-Hi setpoint will close valve 20AOV-230 and 20AOV-231 and isolate the discharge.

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

	New	X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.10	
	Importance Rating	2.9	3.3

2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10)

Proposed Question: # 73

An ALARA work analysis must be performed for a job requiring entry to a High Radiation Area.

- The worker who will perform the job has received 1650 mr TEDE this year.
- The worker has no undocumented quarters this year.
- The work is in a 400 mr/hr field and will take one hour.
- Shielding can be placed by the worker to reduce the dose rate by 50%, however, 100 mr total would be received to install/remove the shielding.
- A special tool is available which will allow the job to be performed farther from the radiation source in an area that is 200 mr/hr without shielding.
- Using the special tool will extend the job to 1.5 hours.

Which **ONE** of the following describes:
(1) The method that would result in the lowest worker dose exposure, **AND**
(2) Whether the workers routine annual administrative TEDE limit would be exceeded?

A (1) Use BOTH the shielding and the special tool.
(2) The TEDE limit would NOT be exceeded.

B. (1) Use NO shielding, but use the special tool.
(2) The TEDE limit would NOT be exceeded.

C. (1) Use NO shielding, but use the special tool.
(2) The TEDE limit would BE exceeded.

D. (1) Use BOTH the shielding and the special tool.
(2) The TEDE limit would BE exceeded.

Proposed Answer: A

Explanation (Optional):

A. Correct – This would result in a 250 mr dose: 100 mr to install/remove shielding + 150 mr (100 mr X 1.5) by using the special tool.
B. Incorrect – This would result in a 300 mr dose (200 mr x 1.5)
C. Incorrect – Routine annual admin limit is 2000 mr and would not be exceeded.
D. Incorrect – Routine annual admin limit is 2000 mr and would not be exceeded.

Technical Reference(s): EN-RP-201 R2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AP EO-28.03 (As available)

Question Source: Bank # X
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.29	
	Importance Rating	2.6	4.0

2.4.29 Knowledge of the emergency plan. (CFR: 43.5 / 45.11)

Proposed Question: # 74

A Site Area Emergency has been declared.

Fifty-five minutes later, all required emergency response facilities are manned and the EOF is operational.

Per the JAF Emergency Plan, which **ONE** of the following individuals is responsible for the management of onsite response?

A. Shift Manager as the Emergency Director

B. Site Duty Manager as the Emergency Director

C. Technical Support Center Manager

D. Emergency Plant Manager

Proposed Answer: D

Explanation (Optional):

A. Incorrect – The SM, acting as the ED, did have this responsibility but is no longer the PED if the EOF is operational.

B. Incorrect – The Site Duty Manager makes notifications to corporate and does not act as the ED.

C. Incorrect – The TSC Manager can act as the ED but, with the EOF operational, the ED duties are assumed at the EOF.

D. Correct – The Emergency Plant Manager can direct onsite plant operations.

Technical Reference(s):	EAP-14.2 R24	(Attach if not previously provided)
	E-plan Section 5 R4	

Proposed references to be provided to applicants during examination: NONE

Learning Objective: EP-12.4.2 EO-3.01 (As available)

Question Source:	Bank #		
	Modified Bank #	X	(Note changes or attach parent)
	New		

Technical Reference(s): EAP-14.2 R24 (Attach if not previously provided)

E-plan Section 5 R4

Proposed references to be provided to applicants during examination: NONE

Learning Objective: EP-12.4.2 EO-3.01 (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach parent)

New _____

Question History: Last NRC Exam VY 2005 - Q # 75

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.18	
	Importance Rating	2.7	3.6

2.4.18 Knowledge of the specific bases for EOPs. (CFR: 41.10 / 45.13)

Proposed Question: # 75

EOP-3 has the operator verify recirculation runback to minimum prior to tripping the recirculation pumps.

Per EOP-3 basis, the reason for this is to prevent: _____

A. MSIV closure.

B. Main Turbine trip.

C. Condensate Pump trip.

D. A rapid pressure increase which may lift a relief valve.

Proposed Answer: B

Explanation (Optional): In order to effect a rapid power reduction, if the main turbine is on line, the RWR pumps are ran back to minimum speed. This increases the void production in the core which increases the slowing down length of the neutrons increasing the chances of resonance capture, thereby adding negative reactivity to shutdown the reactor. If RWR pumps are tripped from too high a speed, a resulting level swell could result in a trip of the Main turbine affecting the main condenser heat sink ability to remove all the heat generated from the Rx, would be limited to just the main turbine bypass valve capacity as the major heat rejection method which could ultimately result in challenges to the containment from heat addition from SRVs..

A. Incorrect – The MSIVs close on a low level, not a high level.

B. Correct – The runback of the recirc pumps minimizes the vessel level swell after the trip. The swell could result in the loss of the turbine/generator system.

C. Incorrect – The feedwater pumps trip on a high reactor level, not the condensate pumps.

D. Incorrect – The runback inserts negative reactivity, which lowers power and will cause a decrease in pressure.

Technical Reference(s): BWROG EPG/SAG Guidelines (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: MIT-301.11D EO-1.07 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295034 G 2.2.13	
	Importance Rating		3.8

295004 Partial or Complete Loss of DC Power
Knowledge of tagging and clearance procedures. (CFR:41.10 / 45.13)

Proposed Question: # 76

The plant is at 100% power.

A ground of 75 VDC is present on 71DC-A2. During implementation of AOP-22, 'DC Power System Ground Isolation,' circuit 9 of 71 DC-A2 is identified as the source of the ground. A tagging order has been prepared to OPEN circuit 9 and as FSS you have been given the tagging order.

1.) Should you approve the tagging order?
2.) What is your basis for approval/disapproval.

	1.)	2.)
A.	Yes	Equipment affected will only result in entering LCO
B.	No	Equipment affected will cause EDG start
C.	Yes	Equipment affected is not required for the existing mode.
D.	No	Equipment affected will cause a full scram.

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: List of circuits powered from 71DC-A2

Learning Objective: _____ (As available)

Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	
	55.43	(2)(3)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295006 G 2.4.27	
	Importance Rating		3.5

295006 SCRAM G 2.4.27 Knowledge of fire in the plant procedure. (CFR:41.10 / 43.5 / 45.13)

Proposed Question: # 77

The plant is at 100% power. The electrical distribution system is in the normal lineup.

- An I&C surveillance being performed on the 'E' APRM has generated a ½ scram.
- Fire in the East Electric Bay causes de-energization of the 'B' RPS MG Set Supply Breaker.
- Control rod 26-27 remains at position 48.
- All other equipment functions as designed

As CRS what action(s) do you direct the crew to take for these conditions?

A. Bypass the 'E' APRM, reset the scram

B. Place the 'B' RPS on alternate power supply, reset the scram

C. Execute AOP-1.

D. Evacuate the Control Room and continue actions at the Remote Shutdown Panel

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach

		parent)
New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295016 EA2.01	
	Importance Rating		3.6

295016 Control Room Abandonment G. 2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies. (CFR: 43.5 / 45.11)

Proposed Question: # 78

The plant is at 100% power when the following occurs:

- An NPO reports a significant fire in the Relay Room.
- The reactor is automatically scrammed.
- 'D' RHR pump has lost control room indication.
- 'B' RHR pump has spuriously started.

Per EAP-1.1,

1.) Which of the following agencies must be notified **FIRST**? AND
2.) What is the time requirement for the report?

	1.)	2.)
A.	New York State	One hour
B.	New York State	Fifteen minutes
C.	NRC	One Hour
D.	NRC	Fifteen minutes

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): AOP-43 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 (1)(2)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295021 AA2.07	
	Importance Rating		3.1

295034 Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: (CFR:41.10 / 43.5 / 45.13) AA2.07 Reactor recirculation flow.

Proposed Question: # 79

The plant is in Mode 3. The following plant conditions exist:

- •RPV pressure is 40 psig
- •RPV water level is 200 inches
- •'A' RWR pump is operating
- •RHR 'A' is operating in shutdown cooling
- •RWCU is in normal operation

A loss of bus 10300 occurs, due to a bus lockout.
All automatic actions function as designed.

1.) What parameter do you direct the crew to control to ensure adequate temperature monitoring of the reactor core?
2.) What procedure is utilized for control of the selected parameters?

	1.)	2.)
A.	Shutdown cooling flow > 6000 gpm	OP-13D
B.	RPV water level is >200 inches	AOP-30
C.	Shutdown cooling flow is > 4000 gpm	OP-13D
D.	RPV water level is > 240 inches	AOP-30

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295024 G2.2.17	
	Importance Rating		3.4

295024 High Drywell Pressure
Knowledge of the process for managing maintenance activities during power operations. (CFR: 43.5 / 45.13)

Proposed Question: # 80

The plant is at 100% power. Several I&C jobs are currently active. One crew of I&C personnel is all that is available to perform work.

Given the I&C resource limitations, which of the following job activities must receive the highest work priority?

A. Drywell high pressure input to RPS requires repair.

B. An ST on low level ECCS initiation drops dead in three days.

C. 'A' Service Air compressor failure has occurred due to a failed control board.

D. Calibration of 'A' Waste Sample tank level transmitter is due today.

Proposed Answer: A

Explanation (Optional

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History:	Last NRC Exam	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	
	55.43	(3)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295028 EA2.05	
	Importance Rating		3.8

295028 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: (CFR:41.10 / 43.5 / 45.13) EA2.05 Torus/suppression chamber pressure: Plant Specific

Proposed Question: # 81

An ATWS and a small break loss of coolant accident (SBLOCA) have occurred. The crew first addressed the ATWS, and now all rods are in. Current plant conditions are:

- Torus pressure 27 psig
- Torus level 14 ft
- Drywell temperature 220°F
- Drywell pressure 30 psig
- RPV pressure 700 psig and slowly lowering
- RPV level 100 inches and slowly rising

With these conditions, the CRS must direct _____(1)_____. As spray(s) reduces drywell temperature, the torus pressure will _____(2)_____ than drywell pressure.

	(1)	(2)
A.	Drywell spray only	eventually be higher
B.	Torus and drywell spray	eventually be higher
C.	Drywell spray only	remain lower
D.	Torus and drywell spray	remain lower

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): EOP-4 (Attach if not previously provided)

EOP-11

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	295030 EA2.04	
	Importance Rating		3.7

295030 Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: (CFR:41.10 / 43.5 / 45.13) EA2.04 Drywell/suppression chamber differential pressure: Mark I&II.

Proposed Question: # 82

The following plant conditions exist:

- •RPV level is -10 inches and steady
- •RPV Pressure is 850 psig and steady
- •Torus level is 9.5 ft and slowly decreasing
- •Four control rods are at position 04
- •Reactor Power is on range 4 of IRMs
- •Torus temperature is 155°F and slowly rising
- •RCIC is injecting
- •SLC is injecting with SLC tank level 70% and lowering
- •All low pressure ECCS systems are running

Terminate and prevent IAW EP-5 has been completed for HP and LP systems

Which ONE of the following is the:

1.) Required action
2.) Its basis?

	1.)REQUIRED ACTION	2.) BASIS
A.	Emergency Depressurize the RPV by opening 7 ADS valves	maintain the pressure suppression feature of the torus.
B.	Emergency Depressurize the RPV by opening 7 ADS valves.	adequate core cooling has been lost.
C.	Anticipate Emergency Depressurization of the RPV by opening Bypass Valves	maintain the pressure suppression feature of the torus.
D.	Anticipate Emergency Depressurization of the RPV by opening Bypass valves.	adequate core cooling has been lost.

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): EOP-2, EOP-3, (Attach if not previously provided)

EOP-4, EOP-11

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295002 G2.4.11	
	Importance Rating	3.4	3.6

295002 Loss of Main Condenser Vacuum - 2.4.11 Knowledge of abnormal condition procedures. (CFR: 41.10 / 43.5 / 45.13)

Proposed Question: # 83

Main turbine load is 213 MWe with the 09-5-1-52 TCV FAST CLOSURE & TSV TRIP BYPASSED annunciator in alarm.

Main Condenser vacuum is 24.5 inches Hg and steady.

1.) What direction do you provide to the crew to implement immediately?
2.) What procedure provides the applicable direction?

	1.)	2.)
A.	Place spare steam jet air ejectors in service	OP-24C, Condenser Air Removal
B.	Start condenser air removal pumps.	OP-24C, Condenser Air Removal
C.	Trip the Reactor Feed Pump Turbines.	AOP-41, Feedwater Malfunction (Rising FW Flow- High RPV water Level)
D.	Trip the Main Turbine.	AOP-31, Loss of Condenser Vacuum

Proposed Answer: D

Explanation (Optional):

A. Incorrect - Subsequent action in AOP-31
B. Incorrect – Subsequent action in AOP-31
C. Incorrect –RFPTs trip on low vacuum but are not required to be manually tripped.
D. Correct – Vacuum is low enough (<25") and turbine load is low enough (<255MWe) to require a manual turbine trip.

Technical Reference(s): AOP-31 R17 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AOP EO-1.03.A (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295009 AA2.02	
	Importance Rating		3.7

295009 Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL: (CFR: 41.10 / 43.5 / 45.13) AA2.02 Steam flow/feed flow mismatch.

Proposed Question: # 84

The reactor is at 100% power when a feedwater controller failure results in feedwater flow at 0% with steam flow at 100%.

1.) Assuming **NO** operator action, but all automatic actions function, what will be the lowest RPV water level observed in the first two minutes?
2.) What procedure provides the appropriate subsequent operator action?

	1.)	2.)
A.	189 inches	AOP-42, Feedwater Malfunction (Lowering FW Flow)
B.	177 inches	AOP-1, Reactor Scram
C.	90 inches	EOP-2, RPV Control
D.	0 inches	EOP-2, RPV Control

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source:	Bank #	_____	
	Modified Bank #	_____	(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	_____

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	_____
	55.43	(5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	295035 EA2.01	
	Importance Rating		3.9

295035 Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: (CFR: 41.8 TO 41.10) EA2.01 Secondary containment pressure: Plant-Specific.

Proposed Question: # 85

Reactor Building (RB) ventilation is in normal operation, when a trip of all supply fans occurs.

NO automatic actions occur.

1.) What action do you direct the crew to take?
2.) What is the purpose of this action?

	1.)	2.)
A.	Start SBGT	Increase building ΔP
B.	Trip SBGT	Increase building ΔP
C.	Trip all RB exhaust fans	Decrease building ΔP
D.	Isolate RB ventilation	Decrease building ΔP

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	203000 A2.09	
	Importance Rating		3.4

203000 Ability to (a) predict the impacts of the following on the RHR/LPCI:INJECTION MODE (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR:41.5 / 45.6) A2.09 inadequate system flow

Proposed Question: # 86

A loss of coolant accident (LOCA) and Loss of Offsite Power (LOOP) has occurred with the existing plant conditions as follows:

- 'B' and 'D' EDGs failed to start
- Reactor pressure 50 psig and steady
- RPV level + 1 inch and slowly decreasing
- Drywell pressure 25 psig and slowly decreasing
- 'B' RHR pump tripped on overcurrent
- 'A' LPCI loop injection flow 5900 gpm
- 'A' Core Spray injection flow 4300 gpm
- 'A' Drywell/Torus Spray flow 3000 gpm

The crew has implemented EOP-2 and EOP-4 to control RPV level and containment pressure, respectively.

1.) What action is required to address both EOPs, in the correct priority? **AND**
2.) What is the basis for this/these actions?

	1.)	2.)
A.	Increase LPCI flow by terminating Drywell/Torus Spray flow	Submergence adequate core cooling takes precedence over containment sprays
B.	Increase Drywell Spray flow	Containment takes precedence over submergence adequate core cooling
C.	Increase both LPCI and Drywell Spray	High Drywell pressure (>20 psig) allows increased RHR flow
D.	Decrease both LPCI and Drywell Spray	RHR has exceeded its design flow

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	209001 A2.03	
	Importance Rating		3.6

209001 Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR:41.5 / 45.6) A2.03 A.C. failures

Proposed Question: # 87

The plant has experienced a loss of coolant accident (LOCA) with a 100% guillotine break on the 'B' recirc loop discharge line, on the RPV side of the 02MOV-53 B, Recirc Pump B Disch Isol Valve. The following plant conditions exist:

- 'A' Core Spray is injecting at 3000 gpm
- 'B' Core Spray is injecting at 3000 gpm
- 'A' loop RHR is injecting at 22,000 gpm
- 'B' loop RHR is spraying the drywell
- RPV level is 0 inches and lowering

Subsequently, a loss of L15 bus occurs.

Which of the following EOP directions will turn, or limit, the lowering RPV level? (Assume **ONLY** control room actions taken).

A. Maximize 'A' loop RHR loop LPCI injection

B. Realign and maximize 'B' loop RHR LPCI injection

C. Maximize 'A' Core Spray injection

D. Maximize 'B' Core Spray injection

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	272000 G2.4.21	
	Importance Rating	3.7	4.3

215004 Source Range Monitor (SRM) System - 2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control. (CFR: 43.5 / 45.12)

Proposed Question: # 88

While operating at 100% power, a station blackout occurred. Approximately 30 minutes later plant parameters are as follows:

- All control rods except rod 26-27 have been determined to be full in
- RPV pressure is 1000 psig and steady
- Drywell pressure is 1.7 psig and steady
- RCIC is operating at 100 gpm
- RPV level is indeterminate
- All SRMs are indicating between 1,000 and 100,000 cps and lowering
- APRMs are downscale

1.) Which of the following best describes core status? **The reactor...**
2.) What procedure provides the appropriate direction

	1.)	2.)
A.	is NOT shutdown and adequate core cooling is NOT assured.	EOP-3, Failure to Scram
B.	is shutdown and adequate core cooling is NOT assured.	EOP-7, RPV Flooding
C.	is shutdown and adequate core cooling is assured.	AOP-1, Reactor Scram
D.	is NOT shutdown and adequate core cooling is assured.	EOP-3, Failure to Scram

Proposed Answer: B

Explanation (Optional):

A. Incorrect - The Rx is shutdown with downscale APRMs and decreasing SRM count rate. There is no ACC if level can not be determined (must be > or = TAF to insure ACC)
B. Correct – The Rx is shutdown with downscale APRMs and decreasing SRM count rate. There is no ACC if level can not be determined (must be > or = TAF to insure ACC)
C. Incorrect – The Rx is shutdown with downscale APRMs and decreasing SRM count rate. There is no ACC if level can not be determined (must be > or = TAF to insure ACC)
D. Incorrect – The Rx is shutdown with downscale APRMs and decreasing SRM count rate. There is no ACC if level can not be determined (must be > or = TAF to insure ACC)

Technical Reference(s): EP-1 R9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: MIT-301.11D EO- 1.03 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 5

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	218000 A2.04	
	Importance Rating	4.1	4.2*

218000 Automatic Depressurization System - A2. Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.04 ADS failure to initiate

Proposed Question: # 89

The plant has scrammed from 100% power. Plant parameters at T=0 were as follows:

- HPCI has isolated from high area temperature
- Reactor water level is -6 inches and lowering slowly
- Drywell pressure is 14 psig and steady
- All Core Spray and RHR pumps are running on minimum flow
- Reactor pressure is 650 psig and lowering slowly
- Annunciator 09-4-1-28, ADS TIMERS ACTUATED, alarm is lit

Plant parameters at T=5 minutes are as follows:

- HPCI remains isolated
- Reactor water level is -10 inches and continues to lower slowly
- Drywell pressure is 14 psig and steady
- All Core Spray and RHR pumps are running on minimum flow
- Reactor pressure is 615 psig and lowering slowly
- Annunciator 09-4-1-28, ADS TIMERS ACTUATED, alarm is lit

Per EN-OP-115, Conduct of Operations, what immediate action is required to insure Adequate Core Cooling? (Assume **NO** previous procedures entered **NOR** any operator actions taken).

A. Open all Turbine Bypass Valves.

B. Open all ADS valves

C. Override ADS and attempt to restart HPCI

D. Override ADS and establish normal RPV cooldown at <100 deg. F/hr

Proposed Answer: B

Explanation (Optional):

A. Incorrect - Using the bypass valves is an action that would need to be directed from the EOPs
B. Correct – reactor pressure indicates that ADS has failed to automatically open and is needed to insure ACC (inject with LP ECCS).
C. Incorrect – Overriding ADS is an action that would need to be directed from the EOPs
D. Incorrect – Overriding ADS is an action that would need to be directed from the EOPs

Technical Reference(s): EN-OP-115 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NONE

Learning Objective: LP-AP EO-46.03 (As available)

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attach parent)
New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 (5)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	262001 G2.1.6	
	Importance Rating	2.1	4.3

262001 A.C. Electrical Distribution - 2.1.6 Ability to supervise and assume a management role during plant transients and upset conditions. (CFR: 43.5 / 45.12 / 45.13)

Proposed Question: # 90

While operating at power, a loss of off-site power (LOOP) occurs.
The following conditions exist:

- The LOOP is expected to continue for several hours.
- The Shift Manager was touring the RCA, is now contaminated and will take at least 20 minutes to return to the control room.
- The STA is in the control room.

As the CRS, what are your responsibilities, IAW EAP-1.1, Off-site Notifications?

A. Classify the event; assign off-site notifications to the STA.

B. Assign EAL determination and offsite notifications to the STA.

C. Assume Emergency Director responsibilities and assign the control room communication aide to notify NY State that an Notification of Unusual Event (NUE) exists.

D. Assume Emergency Director responsibilities. Make required notifications once the SM has returned to the control room and concurred with the emergency classification.

Proposed Answer: C

Explanation (Optional): Per EN-OP-115, CRS Responsibilities [8] CRS during a transient should not become in a single activity that distracts from the rest of operations in the control room. (e) Assumes the roles and responsibilities of the SM if the SM becomes incapacitated. Immediately Notify Operations Management. [11] STA (d) shall not be assigned tasks that detract from the STA role during abnormal or emergency conditions.

A. Incorrect – Per EAP-1., assigns control room communication aide to make notifications to ensure CRS is not distracted from event response.
B. Incorrect –Per EN-OP-115, Would result in distracting the STA from primary duties to monitor plant response if STA made the notifications. Communications Aide (NPO) is designated for this activity, STA does provide backup on EAL determination making recommendations.
C. Correct – Per EN-OP-115, CRS assumes SM role in event SM is not available. Co
D. Incorrect – Communications Aide (NPO) is designated to make offsite notifications

Technical Reference(s): EN-OP-115 R 5, AP-12.11 R7 (Attach if not previously provided)

EAP-1.1 R 61, IAP-2 R 27

Proposed references to be provided to applicants during examination: IAP-2 R 27

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 (1)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	G 2.4.50	
	Importance Rating		3.3

G 2.4.50 Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Proposed Question: # 91

The plant is at 100% power with all systems normal.
The following alarm is received: 09-5-1-38 RX PRESS ALARM HI.
NO automatic actions have occurred.

1.) What is the alarm setpoint?
2.) What is the required action?

	1.)	2.)
A.	1051 psig	Reduce reactor pressure using Bypass Valves
B.	1080 psig	Reduce EHC Pressure setpoint
C.	1051 psig	Reduce EHC Pressure setpoint
D.	1080 psig	Insert manual scram

Proposed Answer: C

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	219000A2.03	
	Importance Rating		3.2

219000 Ability to (a) predict the impacts of the following on the RHR/LPCI:TORUS/SUPPRESSION POOL COOLING MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR:41.5 / 45.6) A2.03 Valve closures.

Proposed Question: # 92

Following an inadvertent MSIV closure from 100% power, the plant experienced an ATWS and Loss of Offsite Power (LOOP). The following plant parameters exist:

- Reactor power is 65%
- Drywell pressure is 1.5 psig
- Suppression Pool temperature is 112°F
- 'B' RHR loop is aligned for suppression pool cooling
- All SRVs are cycling
- RPV level is 100 inches and being deliberately lowered per EOP-3
- The DW and TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A&B switch has been taken to MANUAL OVERRIDE

As RPV level is lowered per EOP-3:

1.) Describe the effect on suppression pool cooling

2.) Describe the actions required to reduce suppression pool temperature

	1.)	2.)
A.	MSIV closure will seal in at 59.5 inches, which will eliminate the main condenser as heat sink	Install MSIV jumpers per EP-2 to maintain MSIVs open.
B.	Torus cooling valves will isolate at 59.5 inches, which will eliminate heat removal to RHRSW	Reopen torus cooling valves RHR TEST CLG & SPRAY, 10MOV-39B and TORUS CLG 10MOV-34B
C.	RHR Hx BYPASS VALVES 10 MOV-66A&B will open at 59.5 inches, which will eliminate heat removal to RHRSW	Close 10MOV-66 A&B, RHR Hx BYPASS VALVES

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (5)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	234000 A2.01	
	Importance Rating		3.7

234000 Ability to (a) predict the impacts of the following on the FUEL HANDLING EQUIPMENT; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.01 Interlock failure

Proposed Question: # 93

Refueling is in progress and bundle 37-42 is scheduled to be moved from the core to the fuel pool. The following sequence occurs:

- •Upon reaching "Grapple Down" and "Slack Cable", the grapple switch is actuated.
- •The "Grapple Closed" light is illuminated.
- •Upon lifting bundle 37-42, the hoist loading is 900 lbs, but the "Hoist Loaded" light remains out.

1.) Describe the effect, if any, of refueling interlocks on further lifting of the bundle
2.) Describe the action, per RAP-7.1.04B, the Refueling Bridge operator must take

	1.)	2.)
A.	No interlocks are affected	Return the bundle to full down
B.	Full up stop is defeated	Use up jog switch to obtain grapple normal up light
C.	Movement to the pool inhibited	Jumper refuel interlock limit switch #2
D.	Unlatching is inhibited	Place bundle in fuel pool and initiate WR

Proposed Answer: A

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (7)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G2.1.12 SRO 55.43(b)(2)	
	Importance Rating	2.9	4.0

2.1.12 Ability to apply technical specifications for a system. (CFR: 43.2 / 43.5 / 45.3)

Proposed Question: # 94

The plant is at 100% power.
The SLC Pump Operability and Discharge Check Valve surveillance has just been completed.
Your review of the test results reveals the following:

- 'A' Pump discharge pressure; 1300 psig, flow 52 gpm
- 'B' Pump discharge pressure; 1335 psig, flow 51 gpm

Additionally, the RO has just reported the following SLC parameters:

- SLC Tank Volume 4250 gallons
- SLC Tank concentration 10% wt%
- SLC Tank Temperature 51 ºF

What direction does Tech Specs give for these conditions, if any?

A. No action is required. The LCO for SLC is satisfied.

B. Immediately attempt to correct the deficiency, If not corrected within 8 hours, be in Mode 3 within 12 hours of required action and completion time not met.

C. Immediately attempt to correct the deficiency, If not corrected within 8 hours, be in Mode 3 within 12 hours of discovery.

D. Commence an orderly reactor shutdown such that the reactor is in cold shutdown within 24 hours.

Proposed Answer: B

Explanation (Optional): See attached TS 3.1.7

A. Incorrect –Concentration vs. solution temperature does not meet figure 3.1.7-2 req
B. Correct – Per LCO 3.1.7 Action
C. Incorrect – Concentration vs. solution temperature does not meet figure 3.1.7-2 rec
D. Incorrect – Concentration vs. solution temperature does not meet figure 3.1.7-2 rec

Technical Reference(s): TS LCO 3.1.7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: TS LCO 3.1.7

Learning Objective: SDLP-11 EO-1.18 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (2)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G2.1.10	
	Importance Rating	2.7	3.9

2.1.10 Knowledge of conditions and limitations in the facility license. (CFR: 43.1 / 45.13)

Proposed Question: # 95

With the plant at 100% power, you discover the last performance of ST-6HA, Standby Liquid Control 'A' Side Quarterly Operability Test, was completed one hundred- five (105) days ago.

Which ONE of the following is the implication of this discovery?

A. The surveillance interval of TS SR3.0.2 is not exceeded and the LCO is still met. TS SR 3.0.3 does not apply.

B. The surveillance interval of TS SR3.0.2 is exceeded and the applicable TS actions must be entered. TS SR 3.0.3 does not apply.

C. TS SR 3.0.3 applies for a missed ST. The LCO must be declared not met and the applicable TS actions entered.

D. TS SR 3.0.3 applies for a missed ST. Declaring the LCO statement not met can be delayed for up to 24 hours to perform the ST.

Proposed Answer: A

Explanation (Optional):

A. Correct – Quarterly is 92 days X 1.25 = 115 days which is < 105 days, the SR is into the 1.25 grace period which has not been exceeded.
B. Incorrect – Quarterly is 92 days X 1.25 = 115 days which is < 105 days, the SR is into the 1.25 grace period which has not been exceeded.
C. Incorrect – TS SR 3.03 does not apply for declaring the LCO not met.
D. Incorrect – TS SR 3.03 does not apply for declaring the LCO not met. Provided the ST is completed within the 115 day period and the risk management has been performed.

Technical Reference(s): TS SR 3.02 TS SR 3.03 (Attach if not previously provided)

ST-6HA R 3

Proposed references to be provided to applicants during TS SR 3.0 Series

examination: _____

Learning Objective: SDLP-11 EO-1.18 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (2)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.8	
	Importance Rating	1.8	3.3

2.2.8 Knowledge of the process for determining if the proposed change / test / or experiment involves an unreviewed safety question. (CFR: 43.3 / 45.13)

Proposed Question: # 96

Per EN-LI-101, which of the following are considered unreviewed Safety Questions?

1. Emergency actions that depart from TS are needed to protect the public health and safety.
2. The possibility of an accident exists that has not been evaluated by the FSAR.
3. The PCIS isolation time for the MSIVs is being increased by 50%.
4. Change the design basis limit for a fission product barrier as described in the FSAR.
5. An emergency event that can not be classified by the Emergency plan.

A. 1, 2, 3

B. 3, 4, 5

C. 2, 3, 4

D. 2, 3, 5

Proposed Answer: C

A. Incorrect - Emergency actions that depart from TS are needed to protect the public health & safety have been evaluated & do not meet this criteria.
B. Incorrect – E-Plan events outside EALs are covered by EAL 9.1 Judgment of individual with Command Authority.
C. Correct –Meets EN-LI-101 Attachment 9.1 criteria.
D. Incorrect – E-Plan events outside EALs are covered by EAL 9.1 Judgment of individual with Command Authority.

Technical Reference(s): EN-LI-101 R3 10CFR 50.59 (Attach if not previously provided)

Proposed references to be provided to applicants during NONE

examination: _____

Learning Objective: LP-AP EO-4.04 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 (3)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.24	
	Importance Rating	2.6	3.8

2.2.24 Ability to analyze the affect of maintenance activities on LCO status.(CFR: 43.2 / 45.13)

Proposed Question: # 97

The plant is at 100% power.
Electrical Maintenance has submitted a work package to overhaul the 10MOV-15A, RHR Pump A Shutdown Cooling Suction Isolation, motor actuator. The work package requires the 10MOV-13A, RHR Pump A Torus Suction Isolation, to be closed to allow manual operation of the 10MOV-15A valve limit switches.

What Limiting Condition(s) of Operation, if any, will be in effect?

A. No LCO required.

B. LCO 3.5.1

C. LCO 3.4.7, LCO 3.5.1, LCO 3.6.1.3

D. LCO 3.5.1, LCO 3.6.1.9, LCO 3.6.2.3

Proposed Answer: B

Explanation (Optional): To open the 15A valve, the 13A valve must be closed, taking the RHR pump out of service.
A. Incorrect - RHR pump A is inoperable with MOV 13A closed.
B. Correct – LCO 3.5.1
C. Incorrect – SDC not required in MODE 1, MOV-13A is not a PCIV.
D. Incorrect – Suppression Pool Cooling (Containment Spray) subsystem requires only one pump per subsystem.

Technical Reference(s):	LCO 3.5.1 LCO 3.4.7	(Attach if not previously provided)
	LCO 3.6.1.3 LCO 3.6.1.9, LCO 3.6.2.3	

Proposed references to be provided to applicants during examination:	LCO 3.5.1, 3.4.7, 3.6.1.3, 3.6.1.9, 3.6.2.3

Learning Objective:			(As available)
Question Source:	Bank #		
	Modified Bank #	X	(Note changes or attach parent)
	New		
Question History:	Last NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis	X	
10 CFR Part 55 Content:	55.41		
	55.43	(2)	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	G 2.3.3	
	Importance Rating		2.9

2.3.3 Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g. /waste disposal and handling systems). (CFR: 43.4 / 45.10)

Proposed Question: # 98

The plant is starting up with the reactor at 50% power.

A liquid radwaste release per OP-49 is planned on your shift. The following is noted on the liquid radwaste release permit provided to you for review and approval:

- Required dilution factor — 100 DF
- Time in recirc — 0900 4/14/08
- Time of sample — 1200 4/14/08
- Specific activity — 3.8x10-4µCi/ml
- Number of circulating pumps required — 3
- Discharge rate — 20 gpm

Per procedure SP-01.05, Waste Water Sampling and Analysis,

1.) Determine whether you may approve the permit , **AND**
2.) The basis for your decision.

	1.) Approve/Disapprove	2.) Basis
A.	Disapprove	May not run 3 circulating pumps at this power level
B.	Approve	Acceptable to run all circulating pumps at this power level
C.	Disapprove	Inadequate recirculation time
D.	Approve	Activity is below 10CFR100 limits

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 (4)

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	G.2.3.1	
	Importance Rating	2.6	3.0

G.2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. (CFR: 41.12 / 43.4 45.9 /45.10)

Proposed Question: # 99

A Planned Special Exposure (PSE) is required.

A PSE is __(1)_____.
When authorizing a PSE, 10 CFR 20 ___(2)_____ are taken into account.

	(1)	(2)
A.	Used whenever immediate measures are required to save lives or equipment.	Annual TEDE limits of 10 Rem and Lifetime TEDE limits of 50 Rem
B.	An infrequent exposure to radiation separate from and in addition to annual limits.	Annual TEDE limits of 5 Rem and Lifetime TEDE limits of 25 Rem
C.	Used whenever immediate measures are required to save lives or equipment.	Annual TEDE limits of 5 Rem and Lifetime TEDE limits of 25 Rem
D.	An infrequent exposure to radiation separate from and in addition to annual limits.	Annual TEDE limits of 10 Rem and Lifetime TEDE limits of 50 Rem

Proposed Answer: B

Explanation (Optional):

A. –
B. –
C. –
D.

Technical Reference(s): EN-RP-207, Planned Special Exposure (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 _____

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G 2.4.3	
	Importance Rating		3.8

G 2.4.3 Ability to identify post-accident instrumentation (CFR:41.6 / 45.4)

Proposed Question: # 100

With the Unit at 100% power, I&C reports that 'A' radiation monitor 17RM-431 circuit board associated with TURB BLDG EXH RAD MON INOP OR HI alarm, has failed. This is the same failure which occurred to the 'B' channel two months ago. The 'B' channel repair is waiting on a circuit board to arrive from the vendor.

What action(s) and time limits, if any, are required to be taken for the second failure?

A. No additional actions are required since this is not a Tech Spec required system.

B. Obtain grab samples and restore required channel to operable status within 30 days, or provide explanation in next Radiation Release Report why inoperability was not corrected within 30 days.

C. Obtain grab samples and restore required channel to operable status within 30 days or initiate a condition report immediately.

D. Verify that the plant is not in an unanalyzed condition AND within 12 hours obtain the Operations Manager approval of the compensatory actions.

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): _____ (Attach if not previously provided)

_____

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Question Source: Bank # _____

Modified Bank # X (Note changes or attach

		_____	
		_____	parent)
	New	_____	

Question History:	Last NRC Exam	_____	
Question Cognitive Level:	Memory or Fundamental Knowledge		_____
	Comprehension or Analysis		X
10 CFR Part 55 Content:	55.41	_____	
	55.43	(2)	

Comments: