Site-Specific Written Examination
Davis-Besse
Reactor Operator
Answer Key

1.	C	26.	C	51.	C
2.	A	27.	B	*52. *52a.	D A,B
3.	C	28.	A	53.	B
4.	C	29.	B	54.	B
5.	C	30.	C	55.	B
6.	B	31.	C	56.	C
7.	A	32.	C	57.	C
8.	A	33.	C	58.	A
9.	A	34.	D	59.	C
10.	C	35.	B	60.	B
11.	A	36.	A	61.	A
12.	C	37.	C	62.	C
13.	A	38.	B	63.	A
14.	D	39.	D	64.	C
15.	A	40.	C	65.	A
16.	C	41.	A	66.	D
17.	B	42.	A	67.	A
18.	C	43.	A	68.	A
19.	D	44.	D	69.	B
20.	A	45.	D	70.	D
21.	A	46.	C	71.	C
22.	D	47.	B	72.	C
23.	C	48.	A	73.	C
24.	C	49.	B	74.	A
25.	B	50.	B	75.	A

* Some applicant exams graded based on question 52a. vice question 52.

Site-Specific Written Examination
Davis-Besse
Senior Reactor Operator
Answer Key

1.	C	26.	C	51.	C	76.	A
2.	A	27.	B	*52. *52a.	D A,B	77.	A
3.	C	28.	A	53.	B	78.	B
4.	C	29.	B	54.	B	79.	C
5.	C	30.	C	55.	B	80.	A
6.	B	31.	C	56.	C	81.	D
7.	A	32.	C	57.	C	82.	D
8.	A	33.	C	58.	A	83.	A
9.	A	34.	D	59.	C	84.	B
10.	C	35.	B	60.	B	85.	C
11.	A	36.	A	61.	A	86.	C
12.	C	37.	C	62.	C	87.	A
13.	A	38.	B	63.	A	88.	D
14.	D	39.	D	64.	C	89.	B
15.	A	40.	C	65.	A	90.	C
16.	C	41.	A	66.	D	91.	D
17.	B	42.	A	67.	A	92.	D
18.	C	43.	A	68.	A	93.	A
19.	D	44.	D	69.	B	94.	C
20.	A	45.	D	70.	D	95.	C
21.	A	46.	C	71.	C	96.	A
22.	D	47.	B	72.	C	97.	C
23.	C	48.	A	73.	C	98.	D
24.	C	49.	B	74.	A	99.	D
25.	B	50.	B	75.	A	100.	D

Some applicant exams graded based on question 52a. vice question 52.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 K5.05	
	Importance Rating	3.8	

Knowledge of the operational implications of the following concepts as they apply to the RCPS: The dependency of RCS flow rates upon the number of operating RCPs

Proposed Question: Common 1

The plant was at 100% power.

RCP 1-1 tripped.

Which one of the following explains why the RPS flux/Δflux/flow bistables will trip to cause a reactor trip?

A. As flow decreases, the calculated power-trip-setpoint INCREASES faster than the plant runback can decrease reactor power.

B. As the rods are driven in during the runback, the axial power imbalance INCREASES beyond the positive side of the imbalance trip envelope.

C. As flow decreases, the calculated power-trip-setpoint DECREASES faster than the plant runback can decrease reactor power.

D. As the rods are driven in during the runback, the axial power imbalance DECREASES below the negative side of the imbalance trip envelope.

Proposed Answer: C

Explanation (Optional):

A. Trip setpoint decreases
B. API becomes more negative
C. Correct
D. Trip setpoint would not be reached on a RCP runback

Technical Reference(s): DB-OP-02515 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-504-09K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 K1.13	
	Importance Rating	2.5	

Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: RCP bearing lift oil pump

Proposed Question: Common 2

Which one of the following is an interlock that must be satisfied, for any Reactor Coolant Pump, before it can be started?

A. Lift oil pressure > 600 psig for the pump

B. Seal return flow > 3.0 gpm for the pump

C. Demin water flow > 2 gph for standpipe flush

D. Seal return temperature < 200ºF

Proposed Answer: A

Explanation (Optional):

A. Correct. The pump will not start unless lift oil pressure is > 600 psig.
B. Incorrect. Trip criteria but not an interlock.
C. Incorrect. Administrative limit but not an interlock
D. Incorrect. Trip criteria but not an interlock.

Technical Reference(s): DB-OP-06005 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-105-04K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	004 A3.18	
	Importance Rating	2.8	

Ability to monitor automatic operation of the CVCS, including: Interpretation of letdown orifice isolation valve position indicators

Proposed Question: Common 3

The following plant conditions exist:

- The unit was at 100% power.
- An SFAS Incident Level 2 actuation occurred.
- Assume that each valve listed in the choices indicates OPEN in the control room.

Which one of the following correctly identifies the valve that should have automatically closed?

A. MU 1A, RC LETDOWN CLR 1-1 INLET ISOLATION

B. MU 2B, RC LETDOWN CLR INLET ISOLATION

C. MU 3, LETDOWN STOP

D. MU 4, LETDOWN BLOCK ORIFICE ISOLATION

Proposed Answer: C

Explanation (Optional):

A. Incorrect. All are in the letdown flowpath but do not receive an SA Level 2 closure signal.
B. Incorrect. All are in the letdown flowpath but do not receive an SA Level 2 closure signal.
C. Correct. MU 3 will auto close on SA Level 2.
D. Incorrect. All are in the letdown flowpath but do not receive an SA Level 2 closure signal.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-106-12K (As available)

Question Source: Bank #

Modified Bank # OPSSYS106 Q #14 (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 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	005 K4.03	
	Importance Rating	2.9	

Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following: RHR heat exchanger bypass flow control

Proposed Question: Common 4

The following plant conditions exist:

- The plant is in Mode 4.
- RCS Cooldown is in progress.
- DH Cooler 1 is in service. DH Cooler 1 Outlet Flow Control Valve, DH 14B, is throttled open 10%. DH 13B, DH Cooler 1 Bypass Flow Control Valve, is throttled open 30%.
- Total DH flow is approximately 3000 gpm.

A total loss of Instrument Air pressure occurs.

Which one of the following describes the effect on the RCS cooldown rate?

A. RCS cooldown rate remains constant because DH 14B fails ‘as-is’.

B. RCS cooldown rate lowers because flow through the DH cooler lowers as DH Cooler Bypass flow control valve DH 13B fails open.

C. RCS cooldown rate rises because flow through the DH cooler rises as DH 14B fails open and DH 13B fails closed.

D. RCS cooldown rate remains the same because total DH flow will remain the same as DH 13B fails ‘as-is’ and DH 14B fails at its mechanical stop.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. DH 14B fails open.
B. Incorrect. DH 13B fails closed.
C. Correct.
D. Incorrect. DH 13B fails closed. DH 14A mechanical stop is at approximately 30%, the valve is only 10% open.

Technical Reference(s): DB-OP-02528 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-1303 (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 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 A1.16	
	Importance Rating	4.1	

Ability to predict and/or monitor changes in parameters associated with operating ECCS controls, including: RCS temperature, including superheat, saturation, and subcooled

Proposed Question: Common 5

The following plant conditions exist:

- DH Pump 2 is tagged out and disassembled for motor bearing replacement.
- The reactor tripped due to a loss of offsite power.
- A small break LOCA occurred approximately 2 hours ago.
- An SFAS Level 2 actuation occurred and all safety systems responded as expected.
- BWST level is 9 ft.
- RCS pressure is 480 psig.
- RCS temperature is 400°F.

Which one of the following is the correct operator action?

A. Place the HPI Alternate Minimum Recirc flowpath in service.

B. Maintain BWST level greater than 9 feet by refilling from the Clean Waste System.

C. Piggyback both HPI Pumps, then transfer LPI suction to the emergency sump.

D. Transfer LPI suction to the emergency sump, then stop both HPI pumps.

Proposed Answer: C

Explanation (Optional):

A. BWST depletion rate is too high to place the HPI alternate recirc in service
B. This guidance is only provided for a SGTR
C. Correct
D. HPI Pumps would lose suction if not piggybacked prior to transfer

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: OPS-GOP-309-04K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 K1.02	
	Importance Rating	4.3	

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

Proposed Question: Common 6

The following plant conditions exist:

- The plant is at 100% power.
- SFAS Ch. 1 sequencer is out of service and removed for maintenance.
- All other equipment is operating as required

An SFAS Level 2 trip occurs in conjunction with a loss of offsite power.

Which one of the following describes the response of HPI Pump 1 to these conditions?

HPI Pump 1 _____.

A. starts when EDG output breaker AC 101 closes

B. starts five seconds after AC 101 closes

C. starts 25 seconds after AC 101 closes

D. will NOT start automatically

Proposed Answer: B

Explanation (Optional):

A. Incorrect. #3 sequencer will actuate HPI Pump 5 seconds after breaker closed.
B. Correct.
C. Incorrect. 25 seconds is if the pump fails to start the first time.
D. Incorrect. #1 AND #3 sequencer would have to be lost to prevent auto start of HPI Pump 1.

Technical Reference(s): Tech Spec 3.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-302-2K (As available)

Question Source: Bank # X OLC-36940 Editorially Modified

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 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007 A1.02	
	Importance Rating	2.7	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Maintaining quench tank pressure

Proposed Question: Common 7

The following plant conditions exist:

- The unit is at 100% power.
- The PZR PORV is leaking by.
- The Quench Tank Circulating Pump control is in AUTO.

Which ONE of the choices correctly completes the following statement describing how Quench Tank parameters are controlled?

The Quench Tank Circulating Pump automatically starts to circulate water through the heat exchanger when tank _____.

A. water temperature reaches 150ºF and it continues to run until stopped by the control room operator

B. water temperature reaches 150ºF and it automatically stops when water temperature reaches 125ºF

C. pressure reaches 70 psig and it continues to run until stopped by the control room operator

D. pressure reaches 70 psig and it automatically stops when pressure reaches 25 psig

Proposed Answer: A

Explanation (Optional):

A. Correct. AUTO start on temperature, MANUAL stop.
B. Incorrect. AUTO start only. Guidance is for the operator to stop the pump at 125 ˚F.
C. Incorrect. AUTO starts on temperature. Pressure values in distractors are high pressure alarm setpoint (70 #) and normal pressure (25 #).
D. Incorrect. AUTO starts on temperature. Pressure values in distractors are high pressure alarm setpoint (70 #) and normal pressure (25 #).

Technical Reference(s): DB-OP-06004, pg. 31 (Attach if not previously provided)
OS 1A Sheet 3 an 4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-104-05K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 A3.05	
	Importance Rating	3.0	

Ability to monitor automatic operation of the CCWS, including: Control of the electrically operated, automatic isolation valves in the CCWS

Proposed Question: Common 8

The following plant conditions exist:

- CCW Pump 1 is running.
- CCW Pump 2 is in standby.
- CCW Pump 1 trips on overcurrent.

Assuming no action by the crew, which one of the following describes the impact on the CCW System?

A. CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) closed
CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) open

B. CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) open
CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) closed

C. CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) closed
CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) closed

D. CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) open
CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) open

Proposed Answer: A

Explanation (Optional):

A. Correct. Low flow on Loop 1 will open loop 2 valves. Pump 1 and 3 breakers open will close loop 1 valves.
B. Incorrect.
C. Incorrect.
D. Incorrect.

Technical Reference(s): DB-OP-02523 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-304-06K (As available)

Question Source: Bank # ____
Modified Bank # X Bank Item 36773 (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 ____

Comments:

8 Original Question

The following plant conditions exist:

- CC Pump 1 is running.
- CC Pump 2 is in standby.
- Service Water Pump 1 trips.

Without operator action, which one of the following describes the final state of the CCW System?

A.
- CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) closed
- CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) open
- CCW Pump 2 running
- CCW Pump 1 off

B.
- CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) open
- CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) closed
- Neither CCW pump running

C.
- CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) open
- CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) closed
- CCW Pump 1 running
- CCW Pump 2 off

D.
- CC 5095, 5097, and 2645 (Loop 1 Non-Essential Isolation Valves) closed
- CC 5096, 5098, and 2649 (Loop 2 Non-Essential Isolation Valves) open
- Both CCW pumps running

Answer: C

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 A3.01	
	Importance Rating	3.0	

Ability to monitor automatic operation of the PZR PCS, including: PRT temperature and pressure during PORV testing

Proposed Question: Common 9

Reactor Coolant System heatup is in progress per DB-OP-06900, Plant Heatup.

- RCS temperature is 360°F.
- RCS pressure is 675 psig.

PORV testing, per DB-SP-03363 is initiated.

Which of the following conditions would require termination of the PORV cycle test?

A. Quench Tank pressure of 85 psig.

B. Reactor Coolant Drain Tank temperature of 165°F.

C. Pressurizer level of 80 inches.

D. RCS pressure drops to 600 psig.

Proposed Answer: A

Explanation (Optional):
Limit and Precautions of DB-SP-03363 specify Quench Tank pressure limit of 80 psig, RCDT temperature limit of 200°F, Pzr level limit of 85 inches and RCS pressure drop limit of 550 psig.

Technical Reference(s): DB-SP-03363 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-104-03K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	012 K6.11	
	Importance Rating	2.9	

Knowledge of the effect that a loss or malfunction of the following will have on the RPS: Trip setpoint calculators

Proposed Question: Common 10

The following plant conditions exist:

- Reactor power is 100%, with ICS in full automatic.
- No surveillance testing in progress.

Based on these conditions, identify the one statement below that describes an RPS cabinet trip string input failure that will cause the RPS Channel to trip.

A. An RCP monitor contact fails open.

B. Total RCS flow fails to 145 mpph.

C. A Loop 1 RCS flow transmitter fails to ZERO mpph.

D. Power imbalance fails to ZERO %.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. This failure mode will not result in a change to the high flux trip based on number of RCPs running, and therefore a channel trip will not occur. This high flux trip setpoint for 4 RCPs operating is the same as the setpoint for 3 RCPs operating.

B. Incorrect. This failure mode will raise the overpower trip setpoint based on total RCS flow and power imbalance, and a channel trip will not occur.

C. Correct. Zero (loop) flow with normal imbalance will generate an output (flux trip setpoint) signal that is less than 100% power, causing the RPS channel to trip on Flux/Flow/Imbalance.

D. Incorrect. This failure mode will raise (rather than lower) the overpower trip setpoint based on total RCS flow and power imbalance, and a channel trip will not occur.

Technical Reference(s): DB-OP-06403 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-504-10K (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 ____
- Comprehension or Analysis X

10 CFR Part 55 Content:
- 55.41 X
- 55.43 ____

Comments:
TMI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 K2.01	
	Importance Rating	3.6	

Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control

Proposed Question: Common 11

The plant is in Mode 5

Breaker D1P 19, DC Breaker to SFAS Channel 3 trips.

What effect does DIP 19 tripping have on SFAS components?

DC powered valves will _____

A. reposition to their SFAS position.

B. NOT reposition on an actual SFAS actuation.

C. only reposition if SFAS Channel 1 trips.

D. NOT reposition since SFAS components are in Shutdown Bypass.

Proposed Answer: A

Explanation (Optional):

A. Correct. Valves will lose solenoid power and reposition to their SFAS position
B. Valves will reposition
C. Valves are powered from individual channels and not affected by other channels
D. Shutdown Bypass does not prevent valve movement on a loss of DC power

Technical Reference(s): DB-OP-06405 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-506-10K (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	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 A1.01	
	Importance Rating	3.6	

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

Proposed Question: Common 12

The following plant conditions exist:

- A LOCA caused an SFAS actuation.
- Containment Pressure is 18 psig, lowering slowly.
- The white motor overload light on the control board for Containment Air Cooler 1 (CAC 1) just illuminated.

Which one of the following is the correct action?

A. Block and stop CAC 1. Align CAC 3 for Train 1 operation.

B. Verify CAC 1 has tripped. Align CAC 3 for Train 1 operation.

C. Leave CAC 1 in service. The overload is anticipated during a LOCA.

D. Shift CAC 1 to fast speed. Notify the TSC if stator temperature reaches 347˚F.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. L&P 2.2.5 specifies CAC not to be stopped for OL.
B. Incorrect. OL not functional in SLOW.
C. Correct. L&P 2.2.5 and CAUTION in Emergency Operations section of DB-OP-06016 indicates CAC is not stopped for OL during a LOCA.
D. Incorrect. Similar to action for stator temperature alarm during normal operation. Temperature limit is 347 ˚F for a LOCA.

Technical Reference(s): DB-OP-06016 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-306-09K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 A2.04	
	Importance Rating	2.9	

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

Proposed Question: Common 13

The following plant conditions exist:

- The plant is at 100% power.
- Service Water Pump 1 has tripped.

Which one of the following is correct concerning the CAC 1?

A. Stop CAC 1 and close the SW inlet valve.

B. Shift CAC 1 to slow speed and fully open the temperature control valve.

C. Leave CAC 1 in fast speed and close the SW inlet valve.

D. Start Service Water Pump 3 to restore service water to CAC 1.

Proposed Answer: A

Explanation (Optional):
#1 CAC is stopped to prevent water hammer in the tubes.

Technical Reference(s): DB-OP-02511 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-111-02K (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	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	026 K4.07	
	Importance Rating	3.8	

Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Adequate level in containment sump for suction (interlock)

Proposed Question: Common 14

The following plant conditions exist:

- A large break LOCA initiated an SFAS Level 4 actuation.
- The operating crew is preparing to implement DB-OP-02000, Attachment 7, Transferring LPI Suction to the Emergency Sump.

Which one of the following correctly describes operations relative to containment spray (CS)?

Valve Identification:

- CS 1530 – CTMT SPRAY PUMP 1 AUTO CONTROL VALVE
- CS 1531 – CTMT SPRAY PUMP 2 AUTO CONTROL VALVE
- DH 7A – BWST OUTLET ISOLATION VALVE LINE 2
- DH 7B – BWST OUTLET ISOLATION VALVE LINE 1
- DH 9A – DH PUMP 2 SUCTION FROM EMERGENCY SUMP
- DH 9B – DH PUMP 1 SUCTION FROM EMERGENCY SUMP

A. Stop both CS Pumps. Close DH 7A and DH 7B. Verify DH 9A and DH 9B stroke open. Re-start both CS Pumps and verify CS 1530 and CS 1531 are fully open.

B. Stop both CS Pumps. Open DH 9A and DH 9B. Verify DH 7A and DH 7B stroke closed and CS 1530 and CS 1531 go to the throttled position. Re-start both CS Pumps.

C. Close DH 7A and DH 7B. Verify DH 9A and DH 9B stroke open. Verify CS 1530 and CS 1531 are fully open.

D. Open DH 9A and DH 9B. Verify DH 7A and DH 7B stroke closed, and CS 1530 and CS 1531 go to the throttled position.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. CS Pumps are not stopped and valve operation is reversed.
B. Incorrect. CS Pumps are not stopped.
C. Incorrect. Valve interlock is reversed and CS 1530/1531 out of position.
D. Correct. Proper interlock and position. CS 1530/1531 throttle to ensure proper NPSH.

Technical Reference(s): DB-OP-02000, pg. 290 (Attach if not previously provided)

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 X
Comprehension or Analysis _____

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Not possible to exactly match K/A - no automatic level interlock preventing transfer. Closest match is auto throttling of CS 1530/1531 for NPSH.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	026 K2.02	
	Importance Rating	2.7	

Knowledge of bus power supplies to the following: MOVs

Proposed Question: Common 15

The following plant conditions exist:

- The plant was at 100% power.
- A switchyard fault caused a loss of off-site power.
- EDG 1 failed to start.
- EDG 2 is supplying the respective bus.
- Two minutes later an SFAS Level 2 actuation occurred.

Which one of the choices correctly identifies the position of the following valves?

- CS 1530 – CTMT SPRAY PUMP 1 AUTO CONTROL VALVE
- CS 1531 – CTMT SPRAY PUMP 2 AUTO CONTROL VALVE
- DH 7A – BWST OUTLET ISOLATION VALVE LINE 2
- DH 7B – BWST OUTLET ISOLATION VALVE LINE 1

A. CS 1530-CLOSED; CS 1531-OPEN; DH 7A-OPEN; DH 7B-OPEN

B. CS 1530-OPEN; CS 1531-CLOSED; DH 7A-OPEN; DH 7B-OPEN

C. CS 1530-CLOSED; CS 1531-OPEN; DH 7A-CLOSED; DH 7B-OPEN

D. CS 1530-OPEN; CS 1531-CLOSED; DH 7A-OPEN; DH 7B-CLOSED

Proposed Answer: A

Explanation (Optional):

A. Correct. CS 1530 powered via Bus C1 and DH 7A/7B locked OPEN.
B. Incorrect. Power available to CS 1531.
C. Incorrect. DH 7A locked open.
D. Incorrect. Power available to CS 1531 and DH7B locked open.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)
DB-OP-06013, pg. 30

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-306-10K (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K5.05	
	Importance Rating	2.7	

Knowledge of the operational implications of the following concepts as they apply to the MRSS: Bases for RCS cooldown limits

Proposed Question: Common 16

Tech. Spec. RCS cooldown rate is limited to 100°F/Hr to prevent:

A. Reactor head steam bubble formation.

B. Excessive pressurizer outsurge into the RCS.

C. Non-ductile failure of an RCS boundary.

D. Exceeding Makeup System capacity through a single injection line.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. A head bubble will not form if RCPs are operating.
B. Incorrect. Pressurizer level is manually controlled during a cooldown.
C. Correct.
D. Incorrect. Two makeup pumps will maintain RCS inventory.

Technical Reference(s): Tech Spec Bases 3/4.4.9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-103-09K (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 X
55.43

Comments:
Tech Spec Bases question

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	059 G2.1.27	
	Importance Rating	2.8	

Conduct of Operations: Knowledge of system purpose and or function.

Proposed Question: Common 17

Which one of the following describes the purpose of the Start-Up Feed Pump?

A. Provide a source of aux. feedwater to the steam generators when the Motor Driven Feed Pump is out of service above 40% power.

B. Provide a source of water to the steam generators during emergency situations where no other source of feedwater is available.

C. Provide a source of main feedwater to the steam generators during approach to criticality.

D. Provide a source of water for feedwater iron removal during plant heatup.

Proposed Answer: B

Explanation:

A. Cannot use the SUFP in Modes 1, 2, or 3
B. Correct
C. Cannot use the SUFP in Modes 1, 2, or 3
D. Not enough flow for iron removal

Technical Reference(s): DB-OP-06226 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-207-01K (As available)

Question Source: Bank # X Editorial Modification

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 #	2	
	Group #	1	
	K/A #	059 A2.07	
	Importance Rating	3.0	

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Tripping of MFW pump turbine

Proposed Question: Common 18

The following plant conditions exist:

- The plant is at 90% power.
- ICS is in full automatic.
- The following alarms are received in the control room:
- 8-4-A, MFPT1 TRIP
- 10-1-A, MFP 1 DISCH HI TRIP
- 14-3-D, ICS MFP LOSS OR LO DEAR RUNBACK
- Generator load is lowering and stabilizes at approximately 700 MWe.
- Main Feedwater Control Valves are opening.

Which one of the following actions is required?

A. Stabilize the plant using DB-OP-06401, ICS procedure section for plant stabilization following a runback.

B. Trip the reactor and enter DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture.

C. Place SG/RX Demand Station in HAND and perform runback at 20% per minute to 55% power in accordance with DB-OP-06401, ICS procedure.

D. Place Feedwater Loop Demand stations in HAND and stabilize OTSG levels in accordance with DB-OP-02526, Steam Generator Overfill.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Runback is not complete
B. Incorrect. Reactor trip criteria not present
C. Correct.
D. Incorrect. Feedwater valves are opening because there is not enough feed for the current power level

Technical Reference(s): DB-OP-06401 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-514-03K (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 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 K3.01	
	Importance Rating	4.4	

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

Proposed Question: Common 19

The plant was at 100% power.
The MDFP is out of service for maintenance.

- The reactor tripped due to a loss of Main Feedwater.
- AFPT 1 tripped and can not be restarted.
- SG 1 has boiled dry.
- AFP 2 is feeding SG 2.
- RCS temperature is being controlled with AVV 2 in manual.

Which one of the following will limit the cooldown rate of the RCS?

A. Tube to shell ΔT of SG 2.

B. Ability to reach cold shutdown boron concentration in the RCS.

C. Ability to maintain the RCS at minimum adequate SCM.

D. Cooldown rate of SG 1 shell.

Proposed Answer: D

Explanation (Optional):

A. Tube to Shell ΔT not an issue with SG 2
B. Boron concentration can be raised using the Makeup System
C. Minimum SDM controlled with pressurizer spray
D. Correct. SG 1 shell will cool down via ambient heat losses

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-306-03K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 K4.03	
	Importance Rating	2.8	

Knowledge of ac distribution system design feature(s) and/or interlock(s) which provide for the following: Interlocks between automatic bus transfer and breakers

Proposed Question: Common 20

The following plant conditions exist:

- The plant is at 100% power.
- All systems are in a normal lineup.
- A lockout of A bus has occurred.

Which one of the following describes the impact on buses that are NORMALLY powered from A Bus?

A.
- C1 fast transfers to BD transformer
- C2 is fed power from C1 bus
- Power is lost to E2 and E3
- E5 continues to receive power from its normal source

B.
- EDG-1 starts to supply power to C1 bus
- Power is lost to C2 bus
- E2 and E3 transfer to the alternate B bus supply
- Power is lost to E5

C.
- C1 fast transfer to BD transformer
- Power is lost to C2 bus
- Power is lost to E2 and E3 bus
- E5 continues to receive power from its normal source

D.
- EDG-1 starts to supply power to C1
- C2 is fed power from C1
- E2 and E3 transfer to the alternate B bus supply
- Power is lost to E5

Proposed Answer: A

Explanation (Optional):
A. Correct.
B. Incorrect. EDG will not start if fast dead transfer occurs
C. Incorrect. C2 will be back-fed from C1
D. Incorrect. EDG will not start if fast dead transfer occurs

Technical Reference(s): DB-OP-06314 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-404-11K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 A2.11	
	Importance Rating	3.7	

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Aligning standby equipment with correct emergency power source (D/G)

Proposed Question: Common 21

The following plant conditions exist:

- The plant is at 100% power. ICS is in full automatic.
- CCW 3 Pump is in standby as CCW 1 Pump.
- CCW Pump 1 breaker is racked in following maintenance activities.
- CCW Pump 2 is running.
- A loss of offsite power occurs.
- All equipment operates as designed.

Which one of the following describes the action required to ensure CCW is operating correctly?

A. Verify #3 and #2 CCW pumps start after their respective EDG output breakers close.

B. Verify #1 and #2 CCW pumps start after their respective EDG output breakers close.

C. Verify all 3 CCW pumps start after output breakers for their respective EDG close.

D. Verify #2 CCW Pump starts and trip one of the two CCW Pumps running on C1 bus after their respective EDG output breakers close.

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. Pumps will Auto Start but #3 is running in place of #1.
C. Incorrect. #1 will not start.
D. Incorrect. Only #3 will start on C1 bus.

Technical Reference(s): OS-21 Sheet 3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-405-14K (As available)

Question Source: Bank #
Modified Bank # X 50168 (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 K1.02	
	Importance Rating	2.7	

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

Proposed Question: Common 22

The plant is in Mode 1 at 85% power when 4.16 KV Bus C1 is de-energized due to a bus fault. Assuming the crew takes no actions, which one of the following describes the electrical supply to Essential Instrument Distribution Panel Y1?

A. Rectified power from E12A through Inverter YV1.

B. E16A through a constant voltage transformer via the Static transfer Switch on Inverter YV1.

C. DC Distribution Panel D1P supplied from Battery Charger DBC1P through Inverter YV1.

D. DC Distribution Panel D1P supplied from the Station Battery 1P through Inverter YV1.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Battery will supply on loss of power. E12A lost
B. Incorrect. E16A has lost power
C. Incorrect. Battery Charger will have no power
D. Correct.

Technical Reference(s): DB-OP-06319 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-408-03K (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		
	Comprehension or Analysis	X	
10 CFR Part 55 Content:	55.41	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	064 K3.03	
	Importance Rating	3.6	

Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: ED/G (manual loads)

Proposed Question: Common 23

The following events have occurred:

- A LOCKOUT of bus C1 has occurred due to a ground fault.
- EDG 1 has been TRIPPED using the EMERGENCY SHUTDOWN pushbutton.
- The cause of the ground fault has been located and corrected.

Which one of the following will be the result of resetting the C1 bus lockout?

A. The NORMAL supply breaker will AUTO CLOSE and energize the bus.

B. EDG 1 will start and the output breaker will AUTO CLOSE, even if the EDG lockout relay is not reset.

C. EDG 1 will start and the output breaker will AUTO CLOSE and energize the bus after the EDG Lockout Relay is manually reset.

D. The ALTERNATE supply breaker will AUTO CLOSE and energize the bus.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. The normal feeder will not automatically close.
B. Incorrect. EDG will not start and breaker will not close until the EDG lockout is reset.
C. Correct.
D. Incorrect. Alternate supply will not automatically close.

Technical Reference(s): DB-OP-02521 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-406-03K (As available)

Question Source: Bank # X
Editorial Mod
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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 K4.01	
	Importance Rating	4.0	

Knowledge of PRM system design feature(s) and/or interlocks which provide for the following: Release termination when radiation exceeds setpoint

Proposed Question: Common 24

Which one of the following combinations will cause AUTOMATIC closure of WM 1876, Miscellaneous Waste Discharge Common Outlet Valve, during a release of the Miscellaneous Waste Monitor Tank?

1. Low flow through the radiation element.

2. High release rate.

3. Loss of dilution flow.

4. High radiation on either radiation element.

A. 1, 3

B. 2, 4

C. 1, 4

D. 2, 3

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Loss of dilution flow will not trip valve
B. Incorrect. High release rate does not input to valve
C. Correct.
D. Incorrect. High release rate and low dilution flow will not input to valve

Technical Reference(s): DB-OP-02050 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-111-04K (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 X
- 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	076-A4.04	
	Importance Rating	3.3	

Ability manually operate and/or monitor in the control room: Emergency Heat Loads

Proposed Question: Common 25

A LOCA causes Reactor Coolant System pressure to drop to 1400 psig.

Which one of the following describes the response of the Service Water System?

A. Cooling water to the in-service CCW heat exchangers will throttle to maintain CCW temperature. Cooling of TPCW will automatically swap from Service Water to Circulating Water.

B. Cooling water flow to the in-service CCW heat exchangers will be maximized. Cooling of TPCW will automatically swap from Service Water to Circulating Water.

C. Cooling water to the in-service CCW heat exchangers will throttle to maintain CCW temperature. Cooling water to TPCW will automatically isolate and must be manually realigned.

D. Cooling water flow to the in-service CCW heat exchangers will be maximized. Cooling water to TPCW will automatically isolate and must be manually realigned.

Proposed Answer: B

Explanation (Optional):

A. CCW heat exchanger valves go open on an SFAS level 2
B. Correct
C. CCW heat exchanger valves go open on an SFAS level 2. TPCW cooling automatically transfers to Circ Water
D. TPCW cooling automatically transfers to Circ Water

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-305-03K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	076 K1.01	
	Importance Rating	3.4	

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

Proposed Question: Common 26

The following plant conditions exists:

- A plant startup is in progress.
- Reactor power is 2%.
- Service Water Pumps 2 and 3 are operating.
- Service Water Pump 1 is INOPERABLE.
- CCW Pump 1 is in operation.
- The Motor Driven Feedwater Pump is taking suction on the deaerator and is the only source of feedwater.

Service Water Pump 3 trips on instantaneous overcurrent as indicated by a relay target at the breaker.

What actions would be appropriate for the conditions present?

A. Trip the reactor, trip all four RCPs, and go to DB-OP-02000.

B. Line up circulating water to cool primary loads on Service Water Loop 1.

C. Start a CCW Pump on CCW Loop 2 and shift the non-essential CCW loads to CCW Loop 2.

D. Attempt to restart Service Water Pump 3 from the Control Room hand switch and the local hand switch if necessary.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Trip criteria not met
B. Incorrect. SW loads will realign to Circ Water on SFAS
C. Correct.
D. Incorrect. Would not take local control to start a pump that has tripped on overcurrent

Technical Reference(s): DB-OP-02511 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-111-03K (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
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 K2.02	
	Importance Rating	3.3	

Knowledge of bus power supplies to the following Emergency air compressor

Proposed Question: Common 27

A lockout on _____ will cause the Emergency Instrument air compressor to shut down.

A. "AC" Bus tie Transformer

B. Bus "D2"

C. Bus "D1"

D. Bus "A"

Proposed Answer: B

Explanation (Optional):

A. D2 will transfer to BD transformer on an AC transformer lockout
B. Correct. Bus D2 supplies the EIAC
C. D2 will transfer to BD transformer on a D1 Bus lockout
D. D2 will transfer to BD transformer on an A Bus lockout

Technical Reference(s): DB-OP-06251 (Attach if not previously provided)
DB-OP-06317

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-602-14A (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 K1.03	
	Importance Rating	3.1	

Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: Shield building vent system

Proposed Question: Common 28

Which one of the following Containment Hydrogen Control Systems (Post LOCA) takes suction from the Containment Dome and discharges to the lower levels of Containment?

A. Containment Recirculation System

B. Hydrogen Dilution Blowers

C. Hydrogen Recombination System

D. Hydrogen Purge System

Proposed Answer: A

Explanation (Optional):
Containment Recirculation distributes air from the containment dome to lower levels in containment during normal operation to prevent temperature stratification and emergency operation to prevent hydrogen buildup in the top of containment

Technical Reference(s): DB-OP-06501 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-108-1K (As available)

Question Source: Bank # X 31928
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	X
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	001 K3.01	
	Importance Rating	2.9	

Knowledge of the effect that a loss or malfunction of the CRDS will have on the following: CVCS

Proposed Question: Common 29

The following plant conditions exist:

- The unit is at 100% power.
- ICS is in MANUAL while troubleshooting a power supply problem.
- A single control rod dropped without causing a reactor trip.
- Tave is 575 ˚F, lowering slowly.
- Annunciator 4-2-E, PZR LVL LO, is actuated.
- PZR level is 196”, lowering slowly.

Which one of the following describes the correct action and the basis for that action?

A. Raise the MU 32 setpoint to initiate PZR level on a trend towards the 100% power setpoint to ensure design basis assumptions are met.

B. Reduce the MU 32 setpoint to 180” to minimize the rise in PZR level when Tave is restored.

C. Place MU 32 in HAND and maximize makeup flow to ensure the PZR heaters remain energized.

D. Place MU 32 in HAND and match makeup to letdown to prevent a shift to the alternate MU Pump suction source.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. It is not necessary to raise the setpoint for this to occur after Tave stabilizes.
B. Correct. The change in PZR level will track, accordingly.
C. Incorrect. MU 32 would automatically attempt to restore PZR level to the pre-existing setpoint value and present level is well above that interlock setpoint.
D. Incorrect. This disregards RCP seal injection.

Technical Reference(s): DB-OP-02516 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-116-03K (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 X
- 55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	A3.01	
	Importance Rating	3.7	

Ability to monitor automatic operation of the RCS, including: Reactor Coolant Leak Detection System

Proposed Question: Common 30

The following plant conditions exist:

- The unit is at 100% power.
- All major systems are in automatic.
- Computer Point T773 RC PRZR PWR RLF OUT TEMP indicates 306°F.
- PZR Quench Tank level and pressure are increasing very slowly.

In accordance with technical specifications, which one of the following is the correct classification for this leakage?

A. Pressure boundary

B. RCS pressure isolation valve

C. Identified

D. Controlled

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Leak is isolable.
B. Incorrect. PZR RLF is NOT an RCS Pressure Isolation Valve (TS Table 3.4-2).
C. Correct. In the surveillance procedure Quench Tank leakage is part of the identified leakage calculation.
D. Incorrect. Controlled leakage from RCP seal leak off

Technical Reference(s): TS Definition 1.14 (Attach if not previously provided)
DB-SP-03357

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-410-01K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011 A2.08	
	Importance Rating	2.6	

Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of level compensation.

Proposed Question: Common 31

The following plant conditions exist:

- The unit is at 100% power.
- All major controls are in AUTO.
- PZR Level is 220 inches.
- LT RC14-2 is selected for PZR Level control.
- TE RC15-1 is selected as the temperature instrument for PZR Level control.

Using the numbers in parentheses below, which one of the choices correctly fills in the blanks of the following statement?

If TE RC15-1 fails HIGH, LT RC14-2 indication will be _____. The Reactor Operator should place MU 32 in HAND and _____ makeup flow.

A. lower; raise

B. lower; reduce

C. higher; raise

D. higher; reduce

Proposed Answer: C

Explanation (Optional):

A. Level indicates high if compensation fails high
B. Level indicates high if compensation fails high. MU flow will need to be raised since the indicated level is high
C. Correct
D. MU flow will need to be raised since the indicated level is high

Technical Reference(s): DB-OP-02513 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-113-04K (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 X
- 55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	016 K1.01	
	Importance Rating	3.4	

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

Proposed Question: Common 32

The following plant conditions exist:

- The plant is initially operating at 85% power with ICS in full AUTOMATIC.
- Tave is selected to Loop 2.
- RCP 2-2 trips.

The Reactor Operator observes the following indications for RCS flow:

- RCS loop 2 rapidly lowers to 46 mpph.
- RCS loop 1 rapidly rises to 78 mpph.

Which of the following describes the operation of HIS-RC7, Tave Selector switch?

A. No automatic response, the operator may manually select only Loop 2.

B. No automatic response, the operator may manually select only Loop 1.

C. Automatically selects Loop 1.

D. Automatically selects Loop 2.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Auto response will occur with ICS in full auto. With Loop 2 below setpoint, manual selection cannot occur
B. Incorrect. Auto response will occur with ICS in full auto. Cannot override
C. Incorrect. Loop 1 is out of range for 100% power. Loop with highest flow is selected
D. Correct.

Technical Reference(s): OS-001A Sheet 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-507-04K (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	015 K2.01	
	Importance Rating	3.3	

Knowledge of bus power supplies to the following: NIS channels, components, and interconnections

Proposed Question: Common 33

Which one of the following combinations represents the correct association of NI channels to power sources?

A. NI-1 & NI-5 are powered from Y1 and NI-2 & NI-6 are powered from Y2.

B. NI-4 & NI-8 are powered from Y4 and NI-3 & NI-7 are powered from Y3.

C. NI-2 & NI-6 are powered from Y1 and NI-4 & NI-8 are powered from Y3.

D. NI-2 & NI-4 are powered from Y2 and NI-1 & NI-3 are powered from Y4.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. NI-2 & NI-6: RPS Ch 1 Y1
B. Incorrect. NI-1 & NI-5: RPS Ch 2 Y2
C. Correct. NI-4 & NI-8: RPS Ch 3 Y3
D. Incorrect. NI-3 & NI-7: RPS Ch 4 Y4

Technical Reference(s): DB-OP-06403 (Attach if not previously provided)
DB-OP-02505

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-504-04K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	086 K5.03	
	Importance Rating	3.1	

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

Proposed Question: Common 34

The following plant conditions exist:

- The unit is at 35% power, holding following a power reduction for maintenance.
- The crew is responding to Annunciator Alarm 9-1-G, FIRE OR RADIATION TRBL.
- Deluge actuation is indicated by FSA-MAIN-TRANS C-3310 YD-PROT.

Which one of the following is the correct action?

A. Manually trip ACB 34560 and ACB 34561.

B. Manually trip ABS 34620.

C. De-energize the transformer by initiating a manual reactor trip.

D. De-energize the transformer by initiating a manual turbine trip.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Tripping ACB 34560 and 34561 does not deenergize the transformer.
B. Incorrect. Tripping ABS 34620 does not deenergize the transformer.
C. Incorrect. Power is less than 40%.
D. Correct. Turbine trip required at < 40% power.

Technical Reference(s): DB-OP-02529 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-129-05K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	035 K6.03	
	Importance Rating	2.6	

Knowledge of the effect of a loss or malfunction on the following will have on the S/GS: S/G level detector

Proposed Question: Common 35

The following plant conditions exist:

- 100% power.
- All major controls in AUTO.
- The diaphragm ruptures on the D/P cell causing an instantaneous change in the level signal to the Operating Range level channel selected as the controlling input.

Assuming no operator action, which one of the following correctly describes SG level response?

A. Level transmitter output fails HIGH. Actual level would decrease until the low level limit is reached.

B. Level transmitter output fails HIGH. Actual will level remain the same due to SASS transfer.

C. Level transmitter output fails LOW. Actual level would increase until the high level limit is reached.

D. Level transmitter output fails LOW. Actual level will remain the same due to SASS transfer.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Correct direction but SASS will shift control to the alternate channel.
B. Correct. ZERO D/P indicates HIGH level and SASS shifts control to the alternate channel.
C. Incorrect. Incorrect direction and response.
D. Incorrect. Incorrect direction but SASS response correct.

Technical Reference(s): LP OLC-BAT-I626 (Attach if not previously provided)
DB-OP-02014

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-516-04K (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 X

55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	045 A4.01	
	Importance Rating	3.1	

Ability to manually operate and/or monitor in the control room: Turbine valve indicators (throttle, governor, control, stop, intercept), alarms, and annunciators

Proposed Question: Common 36

Which one of the following meets the procedural criteria for confirmation of a turbine trip?

A. All HP TURBINE STOP VALVE lights illuminated on center console C5708.

B. All HP TURBINE STOP VALVES indicate closed on the Plant Computer.

C. Annunciator Alarm 8-1-B, T-G MASTER TURB TRIP, actuated.

D. Annunciator Alarm 15-1-E, TURBINE TRIP, actuated.

Proposed Answer: A

Explanation (Optional):
A. Correct. Lights illuminate with stop valves closed.
B. Incorrect. Plant Computer not used for safety-related decisions.
C. Incorrect. Alarm not actuated from stop valve position.
D. Incorrect. Indicates that an auto turbine trip parameter has been exceeded.

Technical Reference(s): DB-OP-02501 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-01K (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	041 A1.02	
	Importance Rating	3.1	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SDS controls, including: Steam pressure.

Proposed Question: Common 37

The following plant conditions exist:

- The unit is holding at 50% power while main turbine lubricating oil pressure fluctuations are being investigated.
- All major controls are in AUTO.
- Main Steam pressure is 870 PSIG.

Which one of the choices correctly completes the following statement?

If an automatic turbine trip occurs, Main Steam pressure will be maintained at _____ PSIG.

A. 870

B. 920

C. 995

D. 1025

Proposed Answer: C

Explanation (Optional):

A. Incorrect. 0 bias with turbine tripped but reactor critical.
B. Incorrect. 50 PSIG bias with reactor and turbine reset.
C. Correct. 125 PSIG bias with reactor tripped.
D. Incorrect. AVV setpoint. No indication that power or vacuum has been lost.

Technical Reference(s): DB-OP-06201 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-202-06K (As available)

Question Source: Bank #
Modified Bank # 38714 (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	079 G2.1.23	
	Importance Rating	3.9	

Station Air: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Proposed Question: Common 38

A plant shutdown is in progress.

Prior to removing the turbine from service DB-OP-06903, Plant Shutdown and Cooldown directs placing both sets of Instrument Air Dryers in service due to high Instrument Air flow rates when the _____

A. GE Air Relay Valve repositions.

B. Turbine Bypass Valves are placed in service.

C. Feedwater Heater Emergency Drain Valves reposition.

D. Turning Gear automatically engages.

Proposed Answer: B

Explanation (Optional):

A. TBV air requirements exceed flow capability of one set of air dryers. IA capable of adequately supplying other loads

Technical Reference(s): DB-OP-06903 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-206-03K (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	X
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	008 AK1.01	
	Importance Rating	3.2	

Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves

Proposed Question: Common 39

Which of the following provides the most credible indication that the Power Operated Relief Valve (PORV) is stuck open?

A. Pressurizer level is stable or slowly decreasing with stable Tave and stable Reactor Coolant System pressure.

B. The “red” indicating light on the PORV switch (HISRC2-6) is illuminated.

C. The “blue” PORV indicating light on Panel C5705 is “illuminated”

D. Reactor Coolant System Pressure is decreasing, Tave is stable and Pressurizer level is stable or slowly increasing.

Proposed Answer: D

Explanation (Optional):

A. RCS pressure will not be stable
B. The red indicating light on the PORV switch indicates solenoid position and is not a positive indication of PORV position.
C. The blue light indicates solenoid power is available
D. Correct

Technical Reference(s): DB-OP-02513 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-113-01K (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		
	Comprehension or Analysis	X	
10 CFR Part 55 Content:	55.41	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	009 G2.4.50	
	Importance Rating	3.3	

Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Proposed Question: Common 40

The following plant conditions exist:

- The plant is at 100% power.
- Makeup Pump 1 is out of service.

The Reactor Operator notices the following:

- SEAL INJ FLOW LO, 6-5-C
- SEAL INJ TOTAL FLOW, 6-6-C
- PZR LVL LO, 4-2-E
- Running Makeup Pump discharge pressure 0 psig
- MU32, PZR LEVEL CONTROL, indicates 100% demand
- MU19, RCP SEAL INJ FLOW CONTROL, indicates 100% demand
- PZR level is 156 inches

Which one of the following is the action required by the crew under these conditions?

A. Isolate seal injection by closing MU 66A, B, C, & D.

B. Trip all four Reactor Coolant Pumps.

C. Trip the Reactor and go to DB-OP-02000.

D. Isolate seal return by closing MU 38.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. MU 19 is closed to isolate seal injection
B. Incorrect. CCW still available
C. Correct. PZR level is below 160 inches with no makeup
D. Incorrect. Isolating seal return would not mitigate a loss of makeup

Technical Reference(s): DB-OP-02512 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-112-02K (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
- Comprehension or Analysis X

10 CFR Part 55 Content:
- 55.41 X
- 55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	AA1.23	
	Importance Rating	3.1	

Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): RCP vibration

Proposed Question: Common 41

While at 70% RTP, four (4) RCPs in service.

The Reactor Operator notices the following:

- 6-1-A, 1-1 MOTOR VIB HI
- 6-2-A, 1-1 SEAL RET TEMP HI
- 6-3-A, 1-1 SEAL RET FLOW HI
- 6-5-A, MONITOR SYSTEM TROUBLE
- Seal return temperature for RCP 1-1 is 150°F and stable.

Which one of the following combinations of indications/equipment will be used to verify the current plant condition?

A. Plant Computer OR SPDS.

B. SFAS data lights in Channels 1, 2, 3, 4 OR SFRCS output module lights.

C. SFRCS output module lights AND plant computer.

D. SFRCS output module lights AND SFAS data lights in Channels 1, 2, 3, 4.

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. SFAS data lights would not be used to verify parameters unless post trip during accident conditions
C. Incorrect. SFRCS output modules would be verification of an actual pump trip SFRCS actuation
D. Incorrect. SFRCS only used to verify pump trip SFRCS actuation

Technical Reference(s): DB-OP-02515 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-115-04K (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	022 G2.1.30	
	Importance Rating	3.9	

Conduct of Operations: Ability to locate and operate components, including local controls.

Proposed Question: Common 42

The following plant conditions exist:

- The plant is at 100% power.
- ICS is in full AUTO.

The Reactor Operator notices the following:

- 6-5-C, SEAL INJ FLOW LO
- 6-6-C, SEAL INJ TOTAL FLOW
- MU Pump 1 is running.
- Discharge pressure and flow is erratic.
- MU-32 is opening.
- MU-19 is opening.
- MU tank level is 6” and lowering.
- PZR level is 176 inches and lowering.

The crew enters DB-OP-02512, Loss of RCS Makeup, and trips MU Pump 1.

Which one of the following additional actions will be performed to re-establish makeup?

A. Vent MU Pump 1. Align MU Pump 2 to BWST to provide makeup flow.

B. Vent MU Pump 2. Piggyback MU Pump 2 from Decay Heat Pump 2 to provide makeup flow.

C. Vent BOTH MU pumps. Piggyback either pump from the Decay Heat Pumps to provide makeup flow.

D. Vent BOTH MU pumps. Align either pump to MU tank to provide MU flow.

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. No required to vent a pump that has not shown indication of cavitation
C. Incorrect. No required to vent a pump that has not shown indication of cavitation
D. Incorrect. Suction source will be the BWST

Technical Reference(s): DB-OP-02512 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-SYS-112-02K (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025 AK2.02	
	Importance Rating	3.2	

Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: LPI or Decay Heat Removal/RHR pumps

Proposed Question: Common 43

The following plant conditions exist:

- The plant is in Mode 5.
- LI 10577A and LI 10577B RCS level indicators, indicate 18 inches.
- The running DH pump trips.

Which one of the following explains why the standby DH pump is NOT started immediately after the running DH pump trips?

A. To prevent damage to the standby pump due to possible vortexing in the suction header.

B. To prevent overpressurizing the DH system downstream of the DH pumps.

C. To prevent lifting the relief valves on the DH pump suction header.

D. To prevent damage to the standby pump due to water hammer in the DH system.

Proposed Answer: A

Explanation (Optional):

A. Correct. Reduced inventory, vortexing is a concern.
B. Incorrect.
C. Incorrect.
D. Incorrect.

Technical Reference(s): DB-OP-02527 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-127-04K (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	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	026 AA2.06	
	Importance Rating	2.8	

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

Proposed Question: Common 44

Which one of the following describes the operation of the LPI, HPI, and MU pumps during a loss of Component Cooling Water?

A. HPI and LPI may be operated for up to one hour. MU pumps must be tripped immediately.

B. MU pumps may be operated for up to one hour. HPI and LPI pumps must be tripped immediately.

C. MU, LPI, and HPI must be stopped immediately. When CCW is re-established, HPI and LPI pumps may be restarted.

D. MU, LPI, and HPI may be operated for up to one hour.

Proposed Answer: D

Explanation (Optional):

A. Incorrect.
B. Incorrect.
C. Incorrect.
D. Correct. All ECCS pumps (HPI. LPI, MU) may be operated for up to one hour on loss of CCW.

Technical Reference(s): DB-OP-02523 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-123-03K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	027 AK3.04	
	Importance Rating	2.8	

Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: Why, if pressurizer level is lost and then restored, that pressure recovers much more slowly

Proposed Question: Common 45

The following plant conditions exist:

- The plant is at 100% power.
- An instrument failure has caused Tave to decrease to 575°F.
- Annunciator 4-2-E, PZR LVL LO, is in alarm.
- The instrument failure has been resolved and RCS Tave is recovering.

As Tave recovers, with no further operator action, RCS pressure will _____ due to _____.

A. decrease; colder Pressurizer spray bypass flow

B. increase; compressing the steam bubble resulting in an increase in superheat of the steam

C. Decrease, insufficient Pressurizer heater capacity to compensate for low temperature water insurge

D. Increase; makeup flow response to low Pressurizer level

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Spray bypass flow is inconsequential for this energy balance. Pressure will rise due to insure.

B. Incorrect. Compressing the steam bubble (due to level rise) does not result in or increase superheat. It results in reduced steam quality.

C. Incorrect. Pressurizer such that pressure will decrease <u>following</u> Tave recovery. This effect is masked during the temperature recovery by item d below.

D. Correct. Due to low Pressurizer level, resulting from RCS thermal contraction, Makeup flow goes to maximum resulting in faster and larger magnitude of insurge than that expected by the temperature transient alone.

Technical Reference(s): DB-OP-02004 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-104-15K (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:
Need to analyze given conditions to determine plant response.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	029 EA2.01	
	Importance Rating	4.4	

Ability to determine and interpret the following as they apply to an ATWS: Reactor nuclear instrumentation

Proposed Question: Common 46

The following plant conditions exist:

- A manual reactor trip was performed, and the crew has entered DB-OP-02000.

Which one of the following indicates that the trip was UNSUCCESSFUL and an ATWS has occurred?

A. Three Group 7 rods did NOT insert.

B. Intermediate Range NIs indicate 10^{-7} amps and slowly lowering.

C. Power Range NIs indicate 15% and slowly lowering.

D. A and B reactor trip breakers indicate closed. C and D reactor trip breakers indicate open.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. If 3 rods stuck, not an ATWS, but a requirement for boration for SDM.
B. Incorrect. Normal indication.
C. Correct.
D. Incorrect. A and C, or B and D.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-302-05K (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	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	038 EK1.01	
	Importance Rating	3.1	

Knowledge of the operational implications of the following concepts as they apply to the SGTR: Use of steam tables

Proposed Question: Common 47

Given the following:

INITIAL CONDITIONS:

- OTSG Tube Rupture in progress
- RCS temperature = 525°F
- RCS pressure = 1200 psig
- RCS cooldown in progress

CURRENT CONDITIONS:

- RCS temperature = 425°F
- RCS pressure = 550 psig

From initial to current conditions, subcooling margin has _____ and SG tube leakage rate has _____.

A. increased / increased

B. increased / decreased

C. decreased / decreased

D. remained the same / remained the same

Proposed Answer: B

Explanation (Optional):

A. Incorrect. SCM will increase however, the leak rate will decrease since the delta P between primary and secondary has decreased.

B. Correct. During cooldown the SCM increases due to maintaining RC pressure above the RCP NPSH curve. SGTL size will decrease due to the decrease in primary to secondary DP (RCS to Secondary DP initial conditions = 350 psig / current conditions = 200 psig).

C. Incorrect. SCM has increased.

D. Incorrect. Parameters will not remain the same if DP changes

Technical Reference(s): Steam Tables (Attach if not previously provided)
DB-OP-02000

Proposed references to be provided to applicants during examination: Steam Table

Learning Objective: OPS-GOP-300-07K (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	040 AA1.03	
	Importance Rating	4.3	

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

Proposed Question: Common 48

The following plant conditions exist:

- A reactor trip from 100% power has occurred.
- All equipment has automatically operated as designed.
- OTSG pressures are currently as follows:
  - OTSG 1-1 - 460 psig and trending DOWN
  - OTSG 1-2 - 620 psig and trending DOWN

Which one of the following correctly describes the status of OTSG isolation?

A. AFW is isolated to OTSG 1-1 only.

B. AFW is isolated to OTSG 1-2 only.

C. AFW is isolated to BOTH OTSGs.

D. AFW is isolated to NEITHER OTSG.

Proposed Answer: A

Explanation (Optional):
The last OTSG to fall below 620 psig is still fed. On a low pressure signal, the first OTSG to fall below 620 psig is isolated, and the AFP feeding it is realigned to the OTSG with the higher pressure.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-306-06A (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	054 AA2.06	
	Importance Rating	4.0	

Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): AFW adjustments needed to maintain proper Tave. and S/G level

Proposed Question: Common 49

The following plant conditions exist:

- A loss of Condenser Vacuum has occurred.
- Both Main Feedwater Pumps have tripped.
- The reactor is tripped.
- All systems responded properly.

Which one of the following describes the operation of the Secondary System for these conditions, assuming no operator actions?

A. AFW is maintaining OTSG levels at 40". TBVs are maintaining Tave at 530°F – 535°F.

B. AFW is maintaining OTSG levels at 49". Main Steam Safety Valves are maintaining Tave at 545°F – 555°F.

C. AFW is maintaining OTSG levels at 40". Main Steam Safety Valves are maintaining Tave at 535°F – 540°F.

D. AFW is maintaining OTSG levels at 49". TBVs are maintaining Tave at 545°F – 555°F.

Proposed Answer: B

Explanation (Optional):
SFRCS trip on reverse DP or low SG levels → AFW controls at 49". Post trip MSSV pressure maintained at 1050 psig ≈ 552°F.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-303-04K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	055 EK1.02	
	Importance Rating	4.1	

Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural Circulation cooling

Proposed Question: Common 50

The following plant conditions exist:

- Tripped from full power due to loss of offsite power (LOOP).
- RCS pressure = 1585 psig.
- Incore Thermocouple temperatures = 555°F, increasing at 1°F/minute.
- T-hot Loop 1/2 = 545°F, lowering slowly.
- T-cold Loop 1 = 510°F, steady.
- T-cold Loop 2 = 512°F, steady.
- OTSG 1/2 pressures = 715 psig, steady.
- AVVs = 10% open, manually controlled.
- AFW flows = 140 gpm to each OTSG, manually controlled.
- OTSG 1/2 levels = 124 inches, steady.

Based on these conditions, identify the one operational condition that describes the basis for NOT DECLARING the existence of Natural Circulation.

A. OTSG steam flow conditions are low.

B. Incore Thermocouple temperatures are trending upward.

C. OTSG levels do not satisfy OTSG Level rule requirements.

D. T-cold temperatures are NOT being controlled by OTSG conditions.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Feed/steam flow exists, which is all that is necessary.
B. Correct. Incores are not tracking T-hot, indicates not natural cir.
C. Incorrect. Although not at required level, not a criterion for natural circ.
D. Incorrect. Coupling of OTSGs appears to be occurring.

Technical Reference(s): DB-OP-06903 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-202-06K (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 ____
- Comprehension or Analysis X

10 CFR Part 55 Content:
- 55.41 X
- 55.43 ____

Comments:
TMI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	056 AA2.54	
	Importance Rating	2.9	

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Breaker position (remote and local)

Proposed Question: Common 51

On a loss of offsite power, the 90% undervoltage relay for Bus C1 failed to actuate.

Which one of the following actions will occur following the start of EDG 1?

A. C1 bus will lockout.

B. AC101 (EDG 1 output breaker) will not close in.

C. AC101 (EDG 1 output breaker) will close in, reenergizing bus C1 only.

D. C2 will reenergize when AC101 (EDG output breaker) closes in due to AC110 remaining closed

Proposed Answer: C

Explanation (Optional):

A. Incorrect. No condition for lockout. Requires a fault.
B. Incorrect. With 90% undervoltage relay not actuated, 59% relay starts EDG and connects.
C. Correct.
D. Incorrect. 59% relay will open AC110.

Technical Reference(s): DB-SC-03114 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-405-05K (As available)

Question Source:	Bank #	X ORQ-37841	
	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	X	
	55.43		

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	057 AA1.04	
	Importance Rating	3.5	

Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: RWST and VCT valves

Proposed Question: Common 52

The plant is at 100% power.
The RCS pressure low trip bistable (BA 304) in SFAS Channel 3 has been tripped to comply with a Tech. Spec action statement

Which one of the following describes how a subsequent loss of Y1 bus will affect the Makeup and Purification System?

A. Seal Return will be lost due to MU 59A, MU 59B, MU 59C and MU 59D going closed

B. Seal Injection will be lost to RCP 1-1 and RCP 2-2 due to MU 66B and MU 66C going closed

C. RCS Makeup will be lost due to MU 6422 going closed

D. Letdown will be lost due to MU 2A going closed

Proposed Answer: D

Explanation (Optional):
A. Incorrect. MU 59 valves are SFAS level 3 actuated
B. Incorrect. MU 66 valves are SFAS level 3 actuated
C. Incorrect. MU 6422 is not an SFAS valve
D. Correct. MU2A is an SFAS level 2 valve. BA 304 will actuate level 2 output modules

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-506-05K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	062 AA1.04	
	Importance Rating	2.7	

Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water: CRDM high-temperature alarm system

Proposed Question: Common 53

The following plant conditions exist:

- The plant is at 100% power. ICS is in full automatic.
- All other systems are in normal configuration.
- CCW Loop 1 is in service.

The following alarm is received:

- 5-6-D, CRD BOOSTER PMP ΔP HI/FLOW LO

- CC 1567A, CCW TO CRDM, had failed closed and cannot be reopened.
- Computer alarms T206, T207, T213 are received (CRD motor stator temp)
- CRD motor stator temps are between 174°F and 182°F, and rising slowly.

Which one of the following describes the action required next?

A. Start both CRD ventilation fans.

B. Trip the reactor and enter DB-OP-02000.

C. Start the standby CRD booster pump and monitor CRD motor stator temperature trend.

D. Place CCW Loop 2 in service and shutdown CCW Loop 1.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Fans for CMNT atmosphere, not specifically CRDs
B. Correct. Any CRD motor temperature >180, trip reactor
C. Incorrect. Action if CRD Booster pump failed
D. Incorrect. Part of action loss of CCW

Technical Reference(s): DB-OP-02523 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-123-02K (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 X
- 55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E04 EA1.1	
	Importance Rating	4.4	

Ability to operate and / or monitor the following as they apply to the (Inadequate Heat Transfer) Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: Common 54

Given the following:

INITIAL CONDITIONS:

- Reactor power = 100%

CURRENT CONDITIONS:

- Loss of Main Feedwater
- Loss of ALL AFW
- SFRCS tripped on high steam to feedwater differential pressure

Assuming NO action by the crew, which one of the following is correct concerning the first hour of this event?

A. PZR level will initially decrease and then stabilize at approximately 220 inches.

B. Decay heat will initially be removed via Main Steam Safety Valves and then by the PORV cycling.

C. RCS pressure will initially decrease and then stabilize at approximately 2155 psig.

D. SFAS Levels 1, 2, and 3 will initially actuate on low RCS pressure and eventually SFAS Level 4 may actuate on high-high containment pressure.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. PZR level will initially decrease on the reactor trip. After the trip the RCS will heat up due to no water feeding the SGs. This will cause PZR level to increase, eventually going solid.

B. Correct. Decay heat will initially be removed via MSSVs and then by the PORV cycling. Until the existing water is steamed from the SGs the MSSVs will remove core heat. After the SGs are dry the RCS will heat up and pressurize until the PORV lifts. The PORV will continue to cycle removing decay heat until RCS inventory is depleted.

C. Incorrect. RCS pressure will initially decrease on the reactor trip due to PZR level decreasing. After the trip the RCS will heat up due to no water feeding the SGs. This will cause PZR level to increase, eventually going solid. As a result RCS pressure will also increase.

D. Incorrect. Although RCS pressure will initially decrease on the reactor trip Containment pressure will not increase to the SFAS level 4 setpoint within an hour

Technical Reference(s): EOP Tech Basis Document (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-300-10K (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 ____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43 ____

Comments:

TMI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E05 EK2.2	
	Importance Rating	4.2	

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

Proposed Question: Common 55

The following plant conditions exist:

- The reactor has tripped.
- SG 2 was isolated by the SFRCS low pressure trip and indicates 0 psig.
- A main steam safety valve on SG 1 is leaking.
- RCS cooldown rate due to the leakage is 45°F per hour.

Which one of the following is the correct operator response?

A. Isolate AFW to both SGs and initiate makeup/HPI cooling.

B. Use AFW Pumps to feed SG 1.

C. Use MDFP to feed both SGs.

D. Align SUFP to feed SG1.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. The cooldown rate on SG1 is < 100%F/hr., cooldown may continue using SG1.
B. Correct.
C. Incorrect. SG 2 cannot be feed due to the SFRCS trip.
D. Incorrect. SUFP would only be aligned due to a lack of heat transfer.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-306-06A (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E10 EK3.3	
	Importance Rating	4.0	

Knowledge of the reasons for the following responses as they apply to the (Post-Trip Stabilization) Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.

Proposed Question: Common 56

The following plant conditions exist:

- The reactor automatically tripped from 95% power.
- All expected automatic and operator actions have occurred.
- The Unit Supervisor is directing trip recovery actions in accordance with DP-OP-06910, Trip Recovery.

Placing the Turbine Bypass Valves in HAND prior to resetting the CRD breakers will _____.

A. maintain the required shutdown margin above the Technical Specification minimum

B. prevent pressurizer level from increasing offscale high when the CRD breakers are reset

C. prevent an uncontrolled cooldown of the reactor coolant system when the CRD Breakers are reset

D. ensure steam generator pressure remains below the Main Steam Safety Valve setpoint

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Cooldown will not be significant enough to challenge SDM.
B. Incorrect. Pressurizer level will decrease.
C. Correct.
D. Incorrect. Steam pressure will remain below setpoints for MSSVs because it will lower when CRD breakers are reset.

Technical Reference(s): DB-OP-06910 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-207-02K (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 X
- 55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	051 AA2.02	
	Importance Rating	3.9	

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

Proposed Question: Common 57

While operating at 50% power, the following symptoms are observed:

- High condenser pressure alarm.
- Mechanical hogger auto starts.
- Condenser pressure is 7.9 in. HgA and slowly increasing.
- All systems are operating as designed.

Which one of the following is the appropriate action?

A. Commence a rapid shutdown to less than 28% power, then manually trip the turbine and carry out the actions of DB-OP-02500, Turbine Trip.

B. Trip MFPTs and ensure ICS runs the plant back in accordance with DB-OP-06401, Integrated Control System Operating Procedure.

C. Trip the turbine and carry out the actions of DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture.

D. Commence immediate plant shutdown to establish Mode 3 conditions in accordance with DB-OP-06902, Power Operations.

Proposed Answer: C

Explanation (Optional):

A. Incorrect.
B. Incorrect.
C. Correct. Turbine trip criteria is met. 7.5” Hg. Reactor will trip on turbine trip at 50% power
D. Incorrect.

Technical Reference(s): DB-OP-02518 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-118-05K (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	059 AK1.01	
	Importance Rating	2.7	

Knowledge of the operational implications of the following concepts as they apply to Accidental Liquid Radwaste Release: Types of radiation, their units of intensity and the location of the sources of radiation in a nuclear power plant

Proposed Question: Common 58

Which one of the following describes the type of activity contained in an accidental release of the Clean Waste Monitor Tank (CWMT)?

A. Mostly beta-gamma

B. Delayed neutron and fission gasses

C. Alpha-neutron and fission gasses

D. Mostly alpha and beta

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect.
C. Incorrect.
D. Incorrect.

Technical Reference(s): ODCM (Attach if not previously provided)
10CFR20

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-607-03A (As available)

Question Source:	Bank #	X WTSI 44473 Prairie Island NRC Exam	
	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	X	
	55.43		

Comments:
May need a new KA for this one.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	060 G2.4.31	
	Importance Rating	3.3	

Emergency Procedures/Plan: Knowledge of annunciators, alarms and indications, and use of the response instructions

Proposed Question: Common 59

A WGDT Batch release is in progress when the following alarms are received:

- 9-3-A, UNIT VENT RAD HI
- R840, Unit Vent Rad. RE 4598BA/BB
- R841, Unit Vent Rad. RE 4598AA/AB

RE 4598AA and RE 4598BA indication continues to rise.
All equipment operates as designed.

Which one of the following describes the MINIMUM action required in the control room?

A. Verify Control Room ventilation shuts down and HVAC dampers close. Verify at least one train of Control Room Emergency Ventilation automatically start.

B. Place the Control Room ventilation in the recirculation mode. Manually start at least one train of Control Room Emergency Ventilation.

C. Verify Control Room ventilation shuts down and HVAC dampers close. Manually start BOTH trains of Control Room Emergency Ventilation.

D. Place the Control Room ventilation in the recirculation mode. Verify BOTH trains of Control Room Emergency Ventilation automatically start.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. CREVS does not automatically start
B. Incorrect. Both Trains must be initiated.
C. Correct.
D. Incorrect. CREVS does not automatically start.

Technical Reference(s): DB-OP-02009 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-606-06K (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 X
- 55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	068 AK2.07	
	Importance Rating	3.3	

Knowledge of the interrelations between the Control Room Evacuation and the following: ED/G

Proposed Question: Common 60

A Control Room evacuation is in progress.

Which of the following electrical sources is protected during the performance of DB-OP-02519, Serious Control Room Fire?

A. Both Emergency Diesel Generators

B. Emergency Diesel Generator 1 only

C. Emergency Diesel Generator 2 only

D. Station Blackout Diesel Generator

Proposed Answer: B

Explanation (Optional):
Only train 1 components are protected during a serious control room fire

Technical Reference(s): DB-OP-02519, Attachment 2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-119-03K (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	X
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	076 AK3.06	
	Importance Rating	3.2	

Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity : Actions contained in EOP for high reactor coolant activity

Proposed Question: Common 61

A rapid shutdown is in progress due to a SG tube rupture in accordance with DB-OP-02000.

During the shutdown annunciator 2-1-A, LETDOWN RADIATION HI alarms.

Which one of the following actions is taken to minimize off-site releases?

A. Place the Vacuum Vent Filter in service.

B. Place the Mechanical Hogger in service and shutdown the Steam Jet Air Ejectors.

C. Place a second Purification Demineralizer in service and increase Letdown flow.

D. Place the Letdown filter in service.

Proposed Answer: A

Explanation (Optional):

A. Correct. Vacuum vent filter will filter condenser off-gas discharge
B. Incorrect. Mechanical hogger still discharges to the station vent
C. Incorrect. Letdown is isolated for the SGTR
D, Incorrect. Letdown is isolated for the SGTR

Technical Reference(s): DB-OP-02531 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-SYS-131-11K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	A02 AK3.4	
	Importance Rating	3.7	

Knowledge of the reasons for the following responses as they apply to the (Loss of NNI-X) RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.

Proposed Question: Common 62

The following plant conditions exist:

- Reactor power is 100%.
- Station annunciators have lost power.

The RO reports the following:

- No indicating lights lit on any of the ICS stations.
- Main feedwater block valves are closing
- MFPT speed is at 4400 rpm.

Which one of the following is the required response and the reason for the response?

A. Trip both main feedwater pumps.
Prevents overfeeding the steam generators due to MFPT speed increasing.

B. Trip both main feedwater pumps.
Prevents overfeeding the steam generators due to main and startup feedwater valves failing 50% open.

C. Initiate AFW and isolate both steam generators.
Prevents overfeeding the steam generators due to main and startup feedwater valves failing 50% open.

D. Initiate AFW and isolate both steam generators.
Prevents overfeeding the steam generators due to MFPT speed increasing.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Main FW Pump trip not required. MFP speed decreases
B. Incorrect. Main FW Pump trip not required.
C. Correct.
D. Incorrect. MFP speed decreases.

Technical Reference(s): DB-OP-02532 (Attach if not previously provided)
DB-OP-02000

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-132-01K (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	A07 AA2.2	
	Importance Rating	3.3	

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

Proposed Question: Common 63

The following plant conditions exist:

- The plant was at 100% power.
- A Circulating Water System pipe rupture has occurred.
- The crew is performing action contained in DB-OP-02517, Circulating Water Pump Trip/Circulating Water System Ruptures.

Which one of the following identifies plant equipment that may be required to be shutdown to prevent damage due to flooding?

A. All three Condensate Pumps

B. Both Auxiliary Feedwater Pumps

C. All three CCW Pumps

D. All three TPCW Pumps

Proposed Answer: A

Explanation (Optional):

A. Correct. The affected area is the East and West Condenser Pit, elevation 567.
B. Incorrect. AFW pumps are in a separate room and a curb protects their openings at elevation 585.
C. Incorrect. CCW pumps are in a separate room at elevation 585.
D. Incorrect. TPCW Pumps are at Elevation 585.

Technical Reference(s): DB-OP-02517 & AB discussion (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-117-02K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E13 EA1.3	
	Importance Rating	3.4	

Ability to operate and / or monitor the following as they apply to the (EOP Rules) Desired operating results during abnormal and emergency situations.

Proposed Question: Common 64

A small break LOCA has occurred resulting in a loss of Subcooling Margin (SCM).

The following plant conditions currently exist:

- RCS pressure is 1300 psig.
- RCS T-cold is 545°F and decreasing.
- RCS average incore temperature is 542°F and decreasing.
- Pressurizer level is 45” and increasing.
- Steam generator levels are being maintained per Specific Rule 3.

Which one of the following statements is correct, given the above conditions?

A. Maintain maximum HPI flow until pressurizer level is restored to 80 – 120 inches and cooldown at less than 50°F/hr.

B. Throttle HPI flow to maintain a minimum of 95 gpm for emergency boration and cooldown at less than 100°F/hr.

C. Throttle HPI flow to maintain RCS pressure at minimum adequate SCM and cooldown at less than 50°F/hr.

D. Maintain maximum HPI flow except to prevent exceeding pressure-temperature limits and cooldown at less than 100°F/hr until the plant is in Mode 5.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Wrong action on HPI flow
B. Incorrect. Wrong cooldown rate
C. Correct. PTS concerns, must throttle HPI while minimizing cooldown rate
D. Incorrect. Wrong action on HPI flow and wrong rate

Technical Reference(s): Steam Tables (Attach if not previously provided)
DB-OP-02000

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-301-05S (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E14 EK3.2	
	Importance Rating	3.0	

Knowledge of the reasons for the following responses as they apply to the (EOP Enclosures) Normal, abnormal and emergency operating procedures associated with (EOP Enclosures).

Proposed Question: Common 65

The following plant conditions exist:

- A LOCA has occurred.
- The reactor is tripped.
- All equipment has operated as designed with the exception of HPI Pump 1, which is tripped.
- RCS pressure is 1000 psig, lowering slowly.

Which one of the following describes the operation of HPI for these conditions?

A. HPI flow will be balanced to ensure adequate flow to the RCS.

B. HPI flow will be balanced to prevent HPI pump runout.

C. HPI flow will be balanced to satisfy HPI pump minimum flow requirements.

D. HPI flow will NOT be balanced because piggyback operation is providing adequate flow through the HPI lines.

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. Runout not a concern, but large flows through a break are a concern
C. Incorrect. Minimum flow requirements are addressed by recirc valves
D. Incorrect. Piggyback flow provides greater flow rates on SBLOCA, but not reason for whether or not to balance HPI flow

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)
EOP Basis Document

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-301-03S (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.23	
	Importance Rating	3.9	

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

Proposed Question: Common 66

Which one of the following lists the order that equipment is placed in service during a plant startup?

A.
1. MFPT to auto
2. S/G Rx demand
3. Rx demand to auto
4. Rod control panel to auto

B.
1. Rod control panel to auto
2. Rx demand to auto
3. Feedwater loop demands to auto
4. MFPT to auto

C.
1. Rx demand to auto
2. Turbine control to ICS
3. MFPT to auto
4. Rod control to auto

D.
1. Rod control panel to auto
2. Feedwater loop demands to auto
3. Turbine control to ICS
4. Rx demand to auto

Proposed Answer: D

Explanation (Optional):

A. Incorrect.
B. Incorrect.
C. Incorrect.
D. Correct. Plant procedures direct the sequence listed in D.

Technical Reference(s): DB-OP-06901 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-204-03A (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:
The examinee must be able to comprehend which equipment to place in service to start up the plant.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.24	
	Importance Rating	2.8	

Ability to obtain and interpret station electrical and mechanical drawings.

Proposed Question: Common 67

Components contained within a "Dashed Box" on an Operations Schematic are _____

A. abandoned in place.

B. operating at 100% power.

C. in a standby condition at 100% power.

D. in an abnormal position due to a Temporary Modification.

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. Indicated by colored flowpaths
C. Incorrect. Indicated by colored flowpaths
D. Incorrect. Separate sheets are attached to OS sheets for TMs.

Technical Reference(s): EN-DP-01030 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: ONL-BQT-127-05K (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	X
	55.43	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.21	
	Importance Rating	3.1	

Ability to obtain and verify controlled procedure copy.

Proposed Question: Common 68

The Control Rod Drive Exercise Test is scheduled for the upcoming shift.

DB-OP-06402, CRD Operating Procedure, can be verified current by _____.

A. using the Curator controlled view library

B. referring to NG-DB-00225, Procedure Use and Adherence

C. referring to Operations Directive PR-01, Operations Procedure Maintenance

D. using the Production – Shared Services module in SAP

Proposed Answer: A

Explanation (Optional):

A. Correct.
B. Incorrect. Guidance for using procedures.
C. Incorrect. PR-01 provides guidance for altering procedures.
D. SAP is used for work management.

Technical Reference(s): NG-NA-00107 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: ONL-BQT-127-05K (As available)

Question Source: Bank # X

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam 2004 Exam

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.26	
	Importance Rating	2.5	

Knowledge of refueling administrative requirements.

Proposed Question: Common 69

The plant is in Mode 6.

Refueling Operations are in progress.

You have been assigned as the Bridge Spotter for fuel movements.

Which one of the following describes your responsibilities for this assignment?

A. Perform second check of the expected Bridge Mast position as determined by the Fuel Handling Director. You may have NO other responsibilities.

B. Perform independent verification of Bridge Mast position when directed by the Fuel Handling Director. You may have concurrent responsibilities such as Fuel Transfer Mechanism Operator.

C. Independently observe all Bridge and Crane Operations to ensure that operation is in accordance with Fuel Movement Sequence Sheets. You may have NO other responsibilities.

D. Coordinate with Bridge Operator and control room to ensure Bridge Index and Mast position are as required by the Fuel Movement Sequence Sheets. You may have concurrent responsibilities such as Fuel Transfer Mechanism Operator.

Proposed Answer: B

Explanation (Optional):

A. Incorrect. Concurrent Responsibilities are allowed. Not a second check but an independent observation.
B. Correct.
C. Incorrect. Concurrent Responsibilities are allowed. Fuel Movement Sequence Sheets are controlled by Fuel Handling Director.
D. Incorrect. Independent check is required. Spotter does not coordinate, and index is not coordinated with control room.

Technical Reference(s): DB-OP-00030 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-FHT-201-01K (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.22	
	Importance Rating	3.4	

Knowledge of limiting conditions for operations and safety limits.

Proposed Question: Common 70

Which one of the following sets of parameters is kept within limits to prevent exceeding DNB limits?

A. Axial Power Imbalance, Quadrant Power Tilt, RCS Flow, Control Rod Position

B. Axial Power Imbalance, RCS Pressure, PZR level, Thermal Power

C. RCS temperature, Quadrant Power Tilt, PZR level, Control Rod Position

D. RCS temperature, RCS pressure, RCS flow, Thermal Power

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Axial Power, Quadrant Power are control rod parameters
B. Incorrect. Pressurizer level is inventory
C. Incorrect.
D. Correct. TS Section 2

Technical Reference(s): Tech Spec 3.2.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-420-01K (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 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.11	
	Importance Rating	2.7	

Ability to control radiation releases.

Proposed Question: Common 71

The following plant conditions exist:

- A clean liquid radwaste release is in progress from Clean Waste Monitor Tank 1 to the collection box.
- Annunciator 7-1-B, CLEAN WASTE SYSTEM OUT RAD HI is in alarm.
- The operator determines that RE 1770A, Clean Waste System Outlet Radiation Monitor, is above its high trip setpoint.

Which one of the following is the expected automatic response of the Clean Liquid Waste System?

A. The operating clean Waste Monitor Tank Transfer Pump trips and WC 1771, Clean Liquid Radwaste Discharge Isolation Valve, receives a close signal.

B. The operating Clean Waste Monitor Tank Transfer Pump trips and WC 1704, CWMT Outlet Flow Control Valve, receives a close signal.

C. The operating clean Waste Monitor Tank Transfer Pump continues to operate and WC 1771, Clean Liquid Radwaste Discharge Isolation Valve, receives a close signal.

D. The operating clean Waste Monitor Tank Transfer Pump continues to operate and WC 1704, CWMT Outlet Flow Control Valve, receives a close signal.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. The CWMT pumps will not trip.
B. Incorrect. The CWMT pumps will not trip.
C. Correct.
D. Incorrect. Discharge will not align to the CWRT.

Technical Reference(s): OS-028A, Sheet 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-521-07K (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:
The examinee must determine from the conditions the appropriate system response.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.4	
	Importance Rating	2.5	

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

Proposed Question: Common 72

Approval for an operator to exceed 1000 mR (TEDE) per year for work at Davis-Besse requires the approval of _____ and the _____ is required to monitor the individual's dose.

A. Supervisor - Radiation Protection; Manager - RP

B. Manager - DB Operations; NRC

C. Manager - DB Operations; Manager - RP

D. Supervisor - Radiation Protection; NRC

Proposed Answer: C

Explanation (Optional):

A. Incorrect.
B. Incorrect.
C. Correct.
D. Incorrect.

Technical Reference(s): NG-DB-00243 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-511-01K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.49	
	Importance Rating	4.0	

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Proposed Question: Common 73

After attempting to trip the reactor in the control room, the NIs still read 50%.

Which one of the following describes the preferred order in which the Control Rod Drives should be manually deenergized, according to DB-OP-02000 Immediate Operator Actions?

A. Manually trip the three reactor trip breakers in the Low Voltage Switchgear rooms. Manually deenergize the CRD system by tripping BE-211 and BF-211. Momentarily deenergize 480 VAC Unit substations E-2 and F-2 simultaneously.

B. Manually trip the three reactor trip breakers in the Low Voltage Switchgear rooms. Momentarily deenergize 480 VAC Unit substations E-2 and F-2 simultaneously. Manually deenergize the CRD system by tripping BE-211 and BF-211.

C. Momentarily deenergize 480 VAC Unit substations E-2 and F-2 simultaneously. Manually trip the three reactor trip breakers in the Low Voltage Switchgear rooms. Manually deenergize the CRD system by tripping BE-211 and BF-211.

D. Momentarily deenergize 480 VAC Unit substations E-2 and F-2 simultaneously. Manually deenergize the CRD system by tripping BE-211 and BF-211. Manually trip the three reactor trip breakers in the Low Voltage Switchgear rooms.

Proposed Answer: C

Explanation (Optional):
A. Incorrect. E2 and F2 deenergized first.
B. Incorrect. E2 and F2 deenergized first.
C. Correct.
D. Incorrect. BE-211 and BF-211 are last in order.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-302-05K (As available)

Question Source: Bank # X OLE-3031

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 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.21	
	Importance Rating	3.7	

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.

Proposed Question: Common 74

Which one of the following parameters or plant conditions has the highest priority for action when performing DB-OP-02000, RPS, SFAS, SFRCS Trip, or SGTR?

A. Post-trip NI power rising

B. OTSG pressures rapidly lowering

C. Incore thermocouples indicate superheat

D. Reactor Building pressure rapidly rising

Proposed Answer: A

Explanation (Optional):
A. Correct. Rule 1 is reactivity control.
B. Incorrect. Will lead to PTS or overcooling (XHT). Lower priority.
C. Incorrect. Second priority behind reactivity control.
D. Incorrect. Will require actuation of SFAS but lower priority than reactivity and core cooling.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-300-05K (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G 2.4.19	
	Importance Rating	2.7	

Knowledge of EOP layout, symbols, and icons.

Proposed Question: Common 75

The hierarchy of performance of DB-OP-02000 actions is:

1. Immediate Actions
2. Actions for Symptoms
3. Specific Rules

Selections:

A. 1, 3, 2

B. 3, 1, 2

C. 1, 2, 3,

D. 3, 2, 1

Proposed Answer: A

Explanation (Optional):

A. Correct. Layout of EOPs requires performance of immediate actions, Rules, and response to other symptoms
B. Incorrect.
C. Incorrect.
D. Incorrect.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-300-05K (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 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	015 G2.2.25	
	Importance Rating		3.7

Equipment Control Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

Proposed Question: SRO 76

Initial plant conditions
- The reactor is at 2% power.
- A plant startup is in progress.

RCP 1-1 is tripped due to a low oil level in the motor thrust bearing.

Which one of the following describes the implications on continuing the plant startup?

A. The plant startup CAN continue if the High Flux and Flux/Delta Flux/Flow trip setpoints are verified/reduced.

B. The plant startup CAN continue if a RCS Loop 2 RCP is tripped to equalize RCS Loop flows

C. The plant startup CANNOT continue since the DNBR Tech Spec LCO will NOT be met with only 3 RCPs running.

D. The plant startup CANNOT continue since the SGs will NOT lift off of low level limits simultaneously.

Proposed Answer: A

Explanation (Optional):
A. Correct
B. Incorrect. Tripping a loop 2 pump would be a 3.0.3 entry
C. Incorrect. DNBR LCO is met with 3 RCPs
D. Incorrect. SGs can lift off LLLs at different power levels

Technical Reference(s): TS 3.4.1 Basis (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-431-03K (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 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	029 EA2.06	
	Importance Rating		3.9

Ability to determine or interpret the following as they apply to a ATWS: Main turbine trip switch position indication

Proposed Question: SRO 77

The following plant conditions exist:

- A reactor trip was required.
- An ATWS has occurred.
- Main Generator load is 430 MWe and lowering at a rate of approximately 150 MWe per minute.

Which one of the following actions is required?

A. The turbine is NOT tripped. Attempt to trip the reactor and turbine in accordance with DB-OP-02000, RPS, SFAS, SFRCS, and SG Tube Rupture.

B. The turbine is tripped. Attempt to trip the reactor in accordance with DB-OP-02000.

C. The turbine is tripped. Initiate RCS boration in accordance with Specific Rule 1, Reactivity Control.

D. The turbine is NOT tripped. Initiate RCS boration and SFRCS in accordance with Specific Rule 1.

Proposed Answer: A

Explanation (Optional):
If turbine load is decreasing consistent with a runback or auto rod insertion, then it is not tripped. Actions for tripping are contained in DB-OP-02000. Specific Rule 1 will address reactivity control but would not apply at this point in the event.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-302-02K (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 #	038 G2.1.14	
	Importance Rating		3.3

Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.

Proposed Question: SRO 78

Which one of the following conditions would require notification of ALL Davis-Besse managers?

A. Loss of Cooling Tower aviation lighting.

B. A SG tube leak exceeding technical specification LCO limits.

C. A planned Yellow Risk Category entry due to maintenance on the Motor Driven Feed Pump.

D. MU 20, Hydrogen Manual Isolation to Makeup Tank valve is found out of position.

Proposed Answer: B

Explanation (Optional):
All other actions are performed and may require action by Chemistry or RP, but each entry to DB-OP-02531 requires action per attachments 2 and 3.

Technical Reference(s): DB-OP-00002 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-510-01K (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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	057 G2.4.4	
	Importance Rating		4.3

Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry level conditions for emergency and abnormal operating procedures

Proposed Question: SRO 79

The following plant conditions have occurred from 80% power:

- ICS runback in progress.
- Deaerator #1 level indicates 0 feet.
- Deaerator #2 level indicates 7.8 feet.
- #1 MFPT speed indicates 0 rpm.
- #2 MFPT speed indicates 4950 rpm.
- The following annunciators (among others) are LIT:
    - 9-3-G, FIRE WTR DSL PMP ON
    - 7-3-A, COMPUTER MLPLXR PWR XFER
    - 14-2-D, ICS/NNI 118 VAC PWR TRBL
    - 4-4-E, PZR HTR SOURCE FAULT

Which one of the following describes the cause of these indications, and the action required?

A. Loss of NNI-X. Stabilize the plant by placing ICS Hand/Auto stations in HAND in accordance with DB-OP-02532, Loss of NNI/ICS Power.

B. Loss of 125 VDC panel DAP. Stabilize the plant by placing ICS Hand/Auto stations in HAND in accordance with DB-OP-02537, Loss of D1P and DAN.

C. Loss of 120 VAC instrument bus YAU. Trip the reactor in accordance with DB-OP-02541, Loss of YAU.

D. Loss of 120 VAC instrument bus Y1. Trip the reactor in accordance with DB-OP-02001, Electrical Distribution Alarm Panel 1.

Proposed Answer: C

Explanation:
Runback due to MFPT 1 High Disch pressure. YAU supplies MFPT 1, DEAR 1

Technical Reference(s): DB-OP-02541 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-141-01K (As available)

Question Source:	Bank #		
	Modified Bank #	X ORQ-0544	(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	5	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	058 AA2.02	
	Importance Rating		3.6

Ability to determine and interpret the following as they apply to the Loss of DC Power: 125V dc bus voltage, low/critical low, alarm

Proposed Question: SRO 80

The plant is operating at 100% power.

The following conditions are noted:

1. Annunciators

   - DC PANEL VOLTAGE LO, 1-5-F
   - DC BUS 2 TRBL, 1-6-G

2. Voltage Indicators

   - 125 VDC PNL D2N, EI 6272 reads 0 VDC
   - 4160 V BUS D2, EI 6261 reads 4.23 KV
   - 13.8 KV BUS B, EI 6257 reads 14 KV

3. Breaker Status

   - BUS D2 breaker indications are all OFF
   - BUS B source breaker indications are all OFF

Which one of the following procedures will be the FIRST to be implemented, under these conditions?

A. DB-OP-02540, Loss of D2N and DBN

B. RA-EP-01500, Emergency Classification

C. DB-OP-02504, Rapid Shutdown

D. DB-OP-02521, Loss of AC Bus Power Sources

Proposed Answer: A

Explanation (Optional):
Entry conditions exist for loss of DC Bus. Other procedures will apply but be implemented later

Technical Reference(s): DB-OP-2540 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-137-01K (As available)

Question Source: Bank # X OLC-4149
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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	062 AA2.01	
	Importance Rating		3.5

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: Location of a leak in the SWS

Proposed Question: SRO 81

The following plant conditions have occurred while operating in Mode 1 at 95% RTP:

Annunciator Alarms

- (11-3-C) SW PMP 3 STRNR DISCH PRESS LO
- (11-6-C) SW PMP 3 STRNR DP HI
- (11-3-B) CCW HX 3 OUTLET TEMP HI

Computer Alarms

- (X002) SW PMP MTR TRBL
- (T083) CC HX 3 OUT TEMP
- (P945) SW HDR 1 PRESS

Which one of the following sections of DB-OP-02511, Loss of Service Water Pumps/Systems, would you enter based on the above conditions?

A. Loss of all Service Water Pumps

B. Service Water Non-Seismic Line Rupture

C. Loss of SW Loop 2

D. Loss of SW Loop 1

Proposed Answer: D

Explanation (Optional):

A. Incorrect. No indication of problem with SW pump 1 or 2. One of them has to be running, also no indication of SW header 2 low pressure, implying that pump 2 is running on header 2.

B. Incorrect. This would also affect both SW headers. There would also be indication of high temperature on TPCW heat exchangers.

C. Incorrect. No indication of SW header 2 problem, i.e. low pressure.

D. Correct.

Technical Reference(s): DB-OP-02511 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-111-01K (As available)

Question Source: Bank # X 29029

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 5

Comments:

Requires analysis of provided indications to determine the proper procedure section to use.

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	033 AA2.12	
	Importance Rating		3.1

Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Maximum allowable channel disagreement

Proposed Question: SRO 82

The following plant conditions exist:

- Plant startup in progress.
- NI-1 and NI-2 are indicating $2X10^4$ CPS
- NI-3 indicates 5X10-11 amps
- NI-4 indicates 2X10-9 amps
- NI-5, 6, 7, 8 indicate 0%

Which one of the following describes the operability of the NIs, and the actions, if any, that are necessary?

A. Source Range and Intermediate Range NIs are operable, since Power Range indicates <10%.

B. Source Range NIs and Intermediate Range NIs are outside of tolerance but will be deenergized when Power Range NIs indicate >10%.

C. NI-3 is reading too low for the current Source Range level. The channel must be repaired prior to raising power above 5%.

D. NI-4 is reading too high for the current Source Range level. The channel must be repaired prior to raising power above 5%.

Proposed Answer: D

Explanation (Optional):
NI-4 is approximately 1 decade high for the current source range level. Maximum disagreement for IR detectors is 0.5 Decades. NI-4 is INOP.

Technical Reference(s): DB-OP-03006 (Attach if not previously provided)
OPS-SYS-502-09K

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 1/2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	051 G2.1.33	
	Importance Rating		4.0

Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: SRO 83

The following plant conditions exist:

- The plant is operating at 100% power. ICS is in full auto.
- A loss of condenser vacuum occurs.
- The crew is reducing power to maintain vacuum.
- A leaking vacuum breaker is discovered and the load reduction was stopped at 82% power 10 minutes after the load reduction was commenced.

Which one of the following describes the Technical Specification implications of this event?

A. RCS sample for Iodine isotopes ONLY must be performed in 2 – 6 hours.

B. RCS sample for Iodine isotopes and gross activity must be performed in 2 – 6 hours.

C. RCS sample for iodine isotopes ONLY must be performed in 2 – 6 hours ONLY if power remains below 85% for the next 50 minutes.

D. RCS sample for iodine isotopes and gross activity must be performed in 2 – 6 hours ONLY if power remains below 85% for the next 50 minutes.

Proposed Answer: A

Explanation (Optional):
Iodine only, gross activity is performed on a regular schedule. Iodine whenever there is a power change of 15% in 1 hour.

Technical Reference(s): TS 3.4.8 SR 4.4.8 (Attach if not previously provided)
DB-OP-02504

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-434-04K (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 #		1
	Group #		2
	K/A #	E13 G2.4.6	
	Importance Rating		4.0

Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.

Proposed Question: SRO 84

The following plant conditions exist:

- The plant was at 100% power.
- A loss of all off-site power.
- C1 Bus locked out and EDG 1 has been Emergency Shutdown.
- EDG 2 started and is supplying power to D1 bus.
- CCW pump 2 is running with normal amps.
- SW 2 is not running.

Which one of the following actions is required in accordance with DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture?

A. Trip EDG 2 immediately in accordance with Specific Rule 6.

B. Trip EDG 2 when CCW temperature reaches 120^{o}F in accordance with Specific Rule 6.

C. Start the SBODG to supply Bus C1 in accordance with DB-OP-02000 Supplementary Actions.

D. Go to DB-OP-02521, Loss of AC Bus Sources for further actions.

Proposed Answer: B

Explanation (Optional):
When EDG running with no Service Water flow to that train, run it until 120 deg F on CCW temperature. Trip immediately if CCW is lost.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-301-07K (As available)

Question Source: Bank # ORQ-42581

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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	A01 AA2.1	
	Importance Rating		3.7

Ability to determine and interpret the following as they apply to the (Plant Runback) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: SRO 85

The following plant conditions exist:

- Plant power is initially at 60%.
- ACB 34560 is open and tagged for maintenance.
- A Bus and B Bus are supplied from the Auxiliary Transformer.

- The System Dispatcher inadvertently opened ACB 34561.
- Power Load unbalance has reduced the Turbine Load Reference to 40%.
- ICS is running back the plant to Low Level limits.

Which one of the following procedures will be used for this situation?

A. DB-OP-02500, Turbine Trip

B. DB-OP-02504, Rapid Shutdown

C. DB-OP-02520, Load Rejection

D. DB-OP-02521, Loss of AC Bus Power Sources

Proposed Answer: C

Explanation (Optional):
Indications given indicate a load rejection has occurred. Turbine has not tripped, and although gen breakers are open, a loss of power has not occurred

Technical Reference(s): DB-OP-02520 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-120-01K (As available)

Question Source: Bank # OLC-3774
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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	003 A2.05	
	Importance Rating		2.8

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of VCT pressure on RCP seal leakoff flows

Proposed Question: SRO 86

Given the following conditions:

- The plant is at 100% power. ICS is in full automatic.
- The following alarm is received:
  - 2-3-C, MU TK PRESS LO
- MU Tank Pressure is 17 psig and very slowly lowering.
- MU Tank level is 58 inches and stable.

Which one of the following are the plant conditions presented by this event and the action required?

A. RCP controlled leakage may exceed technical specification limits. Refer to DB-OP-02515, RCP Malfunctions, to restore seal leakoff within limits.

B. Minimum NPSH for the MU Pumps has been lost. Refer to DB-OP-02512, Loss of RCS Makeup, to raise MU Tank level to restore NPSH.

C. RCP controlled leakage rises and MU Pump NPSH lowers. Add hydrogen to the MU Tank in accordance with DB-OP-06033, Hydrogen Addition and Degasification.

D. RCP seal leakoff may lower below the minimum allowable. Adjust RCP seal leakoff flow in accordance with DB-OP-06006, Makeup and Purification System.

Proposed Answer: C

Explanation (Optional):
Seal leakoff will rise as there is a lower backpressure against the leakoff. The major concern is loss of MU pump NPSH on MU Tank pressure below 15 psig.

Technical Reference(s): DB-OP-02002 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-106-09K (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 #	006 G2.4.4	
	Importance Rating		4.3

Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Proposed Question: SRO 87

The following plant conditions exist:

- A LOCA has occurred.
- BOTH HPI Pumps have tripped and CANNOT be restarted.
- All other equipment is operating as designed.
- Incore temperatures are 565°F and rising.
- RCS pressure is 1200 psig and lowering.
- The crew is evaluating action to take in DB-OP-02000.

Which one of the following procedure sections will be performed to mitigate this event?

1. Specific Rule 2, Actions for Lack of Subcooling Margin
2. Specific Rule 3, MU/HPI/LPI Flow Initiation, Throttling, and Termination
3. Section 6.0, Lack of Heat Transfer
4. Section 9.0, Inadequate Core Cooling

A. 1 and 2

B. 1 and 4

C. 2 and 3

D. 3 and 4

Proposed Answer: A

Explanation (Optional):

A. Correct. SCM has been lost
B. Incorrect. No indications of ICC.
C. Incorrect. No indications of LOHT
D. Incorrect. No indications of ICC. No indications of LOHT

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)
EOP Bases Document

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-301-01S (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 #	034 A2.01	
	Importance Rating		3.6

Ability to predict the impacts of the following malfunctions or operations on the fuel handling system and use procedures to correct, control, or mitigate those malfunctions or operations: Dropped Fuel Assembly

Proposed Question: SRO 88

The following plant conditions exist:

- During fuel transfer operations, a spent fuel assembly is DROPPED to the bottom of the fuel transfer canal in the Spent Fuel Pool Area.
- Fuel Handling personnel in the Spent Fuel Pool area suspect the fuel assembly has been damaged.

Which one of the following actions is required to control the release of radioactivity?

A. Establish Containment closure

B. Trip RE 5405A, Radwaste Area Exhaust Monitor

C. Start CTMT Purge Ventilation

D. Trip RE 8446/8447, FH EXH. SYS. CH1/CH2

Proposed Answer: D

Explanation (Optional):
A. Incorrect. Establishing integrity will not help
B. Incorrect. Tripping 5405A will not help
C. Incorrect. Purge would be shut down if FHA was in containment
D. Correct

Technical Reference(s): DB-OP-02530 (Attach if not previously provided)
AB Discussion Book

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-130-03K (As available)

Question Source:	Bank #	ORQ-36885	
	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	5,7	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	059 G2.2.22	
	Importance Rating		4.1

Equipment Control Knowledge of limiting conditions for operations and safety limits.

Proposed Question: SRO 89

Which one of the following describes the Technical Specification LCO requirements of the feed pump turbine trip logic for the Anticipatory Reactor Trip System (ARTS)?

	Total Channels	Channels to Trip	Minimum Operable
A.	4	2	2
B.	4	2	3
C.	2	1	1
D.	2	1	2

Proposed Answer: B

Explanation (Optional):
2 channels on each Feed Pump, 2 of 4 required to trip. 3 is minimum operable prior to required action.

Technical Reference(s): TS table 3.3-17 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-SYS-505-07K (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 1/2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	073 G2.1.33	
	Importance Rating		4.0

Conduct of Operations: Ability to recognize indications for system operating parameters which are entry level conditions for technical specifications

Proposed Question: SRO 90

The plant is at 100% power.

Which one of the following describes the MINIMUM condition for which Technical Specification action will be required?

A. One Containment Vessel Accident Range Monitor is declared inoperable.

B. Both Condenser Off-Gas Process Radiation Monitors and both Main Steam Line Radiation Monitors are declared inoperable.

C. Both Containment Gaseous AND both Containment Particulate Activity normal range radiation monitors are declared inoperable.

D. One Station Vent Accident Range Radiation Monitor is declared inoperable

Proposed Answer: C

Explanation (Optional):
A. Incorrect. Both gaseous and particulate required before in action statement
B. Incorrect. Not a tech spec required radiation monitor
C. Correct.
D. Incorrect. High range is not a tech spec radiation monitor

Technical Reference(s): TS 3.4.6.1 (Attach if not previously provided)
DB-OP-06412

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-434-02K (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	1/2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	039 A2.04	
	Importance Rating		3.7

Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunctioning steam dump.

Proposed Question: SRO 91

The following plant conditions exist:

- A turbine trip at 100% power resulted in an automatic reactor trip.
- The crew has performed the immediate actions of DB-OP-02000.
- Steam Pressure in both headers in 900 PSIG, lowering.
- Tave is 532 ˚F, lowering.
- All turbine bypass valves indicate open.

Which one of the following is the correct action?

A. Enter and perform DB-OP-02525, Steam Leaks, in parallel with DB-OP-02000.

B. Enter and perform DB-OP-02543, Rapid Cooldown, in parallel with DB-OP-02000.

C. Implement DB-OP-02000, Specific Rule 5 – PTS Requirements.

D. Transition to DB-OP-02000, Symptom Mitigation Section 7.0 – Overcooling.

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Procedure does not address secondary malfunctions.
B. Incorrect. Procedure is for performing a rapid cooldown, not mitigation.
C. Incorrect. PTS requirements have not been exceeded.
D. Correct. Overcooling definition has been exceeded.

Technical Reference(s): DB-OP-02000 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-306-01K (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 #	072 G2.1.32	
	Importance Rating		3.8

ARM: Ability to explain and apply all system limits and precautions.

Proposed Question: SRO 92

The following plant conditions exist:

- The unit is at 100% power.
- An internal power supply for Radiation Monitor RE8446, FUEL HDLG TRAIN 1 has failed.
- A channel check indicates RE8447 FUEL HDLG TRAIN 2 is operable.
- A crew is scheduled to move irradiated fuel within the Spent Fuel Pool during this shift.

Which one of the following correctly describes how this failure impacts compliance with the Limiting Condition for Operation (LCO) for TS 3.9.12, Storage Pool Ventilation, and the planned movement of irradiated fuel?

A. The LCO is satisfied because RE8447 is capable of actuating both EVS trains. The planned fuel movement may proceed.

B. The LCO is satisfied because RE8447 is capable of actuating EVS Train 2. The planned fuel movement may proceed.

C. The action statement for 3.9.12 must be entered. EVS Train 1 must be placed in operation prior to the planned fuel movement.

D. The action statement for 3.9.12 must be entered. EVS Train 2 must be placed in operation prior to the planned fuel movement.

Proposed Answer:

Explanation (Optional):

A. Incorrect. RE8447 only actuates Train 2.
B. Incorrect. TS and facility interpretation requires both trains to be operable.
C. Incorrect. IAW TS, the operable train must be actuated.
D. Correct. IAW TS, the operable train is actuated.

Technical Reference(s): TS 3.9.12 (Attach if not previously provided)

DB-OP-06412

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-439-02K (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 2,7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	086 A2.04	
	Importance Rating		3.9

Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure to actuate the FPS when required, resulting in fire damage

Proposed Question: SRO 93

The following plant conditions exist:

- The unit is at 100% power.
- The crew is responding to Annunciator Alarm 9-1-G, FIRE OR RADIATION TRBL, and has entered DB-OP-02529, Fire Procedure.
- The fire is in the #3 Mechanical Penetration Room.
- The RO reports that PZR level indicator LI-RC14-4 and OTSG level indicator LI-SP09A1 have both begun to oscillate.

Which one of the following describes the correct action?

A. Enter DB-OP-02501, Serious Station Fire, and determine the proper attachment. Initiate a reactor trip and perform actions in DB-OP-02000 and DB-OP-02501 in parallel.

B. Enter DB-OP-02501 and determine the proper attachment. Initiate a reactor trip and return to DB-OP-02501 when all DB-OP-02000 actions are complete.

C. Continue in DB-OP-02529 while initiating a controlled shutdown in accordance with DB-OP-06903, Plant Shutdown and Cooldown.

D. Continue in DB-OP-02529 while initiating a controlled shutdown in accordance with DB-OP-02504, Rapid Shutdown.

Proposed Answer: A

Explanation (Optional):

A. Correct. Fluctuating safety-related indicators indicate need to enter DB-OP-02501. DB-OP-02000 is performed in parallel.
B. Incorrect. DB-OP-02000 is performed in parallel.
C. Incorrect. The plant shutdown is initiated by reactor trip.
D. Incorrect. The plant shutdown is initiated by reactor trip.

Technical Reference(s): DB-OP-02501 (Attach if not previously provided)
DB-OP-01003

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-129-06K (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 #		3
	Group #		1
	K/A #	G2.1.33	
	Importance Rating		4.0

Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: SRO 94

The following plant conditions exist:

- Reactor power is 100%.
- DH Pump 1 is out of service for motor bearing replacement.

An EO reports that EDG 2 lube oil temperature is 83°F, which according to DB-OP-06316, Diesel Generator Operating Procedure makes the EDG inoperable.

Which one of the following statement is correct?

A. Enter T.S. 3.9.8.2 – Decay heat Removal and Coolant Circulation.

B. Enter T.S. 3.0.3.

C. Enter T.S. 3.0.5.

D. Enter T.S. 3.1.2.5 – Reactivity Control System: Decay Heat Pump.

Proposed Answer: C

Explanation (Optional):

A. Incorrect. Mode 6 Tech Spec.
B. Incorrect. T.S. 3.0.3 is not applicable due to being within the T.S. action statements.
C. Correct.
D. Incorrect. DHP only required at low RCS pressures for reactivity control.

Technical Reference(s): T.S. 3.0.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-430-01K (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		
	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 #	G2.1.4	
	Importance Rating		3.4

Knowledge of shift staffing requirements

Proposed Question: SRO 95

The following plant conditions exist:

- The plant is at 100% power.
- Two ROs and one SRO are in the Control Room.

Which one of the following must occur to allow ONE of the ROs to go to the fifth floor lunch room?

A. The SRO, RO and a trainee remain in ATCA until the other RO returns.

B. Any operation personnel that attended Turnover must be in the Control Room.

C. Another RO or SRO, who attended turnover, must be in the Control Room before the RO leaves.

D. The SRO and RO must remain in ATCA until the other RO returns.

Proposed Answer: C

Explanation (Optional):
A. Incorrect. Trainee does not count
B. Incorrect. Must be RO or SRO
C. Correct.
D. Incorrect. Need 1 more RO

Technical Reference(s): DB-OP-00100 (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

Learning Objective: OPS-GOP-502-04K (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	2	

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.20	
	Importance Rating		3.3

Knowledge of the process for managing troubleshooting activities.

Proposed Question: SRO 96

Which one of the following describes the conditions under which Shift Manager approval is required for implementation of an approved Problem Solving Plan (PSP) IAW NOP-ER-3001, Problem Solving and Decision Making Process?

A. All PSPs must be approved for implementation by the Shift Manager.

B. Only High Risk PSPs that affect operating equipment or can present a reactor trip hazard.

C. Only PSPs for troubleshooting activities on safety-related equipment.

D. Only medium or high risk PSPs where troubleshooting activities take place outside of clearance boundaries.

Proposed Answer: A

Explanation (Optional):

A. Correct. PSPs need different approval requirements based upon risk level but implementation or any changes must be approved by the SM
B. Incorrect.
C. Incorrect.
D. Incorrect.

Technical Reference(s): NOP-ER-3001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-TSD-010-04K (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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.25	
	Importance Rating		3.7

Knowledge of basis in technical specifications limiting conditions for operation and safety limits

Proposed Question: SRO 97

Which one of the following describes the bases for the power-imbalance envelope defined in Technical Specifications, Section 3/4.2, Power Distribution Limits?

A. To assure that an acceptable power distribution is maintained for control rod misalignment analysis.

B. To assure that the potential effects of control rod misalignment on steam line break accident analyses are minimized.

C. To assure LOCA analysis bounds on maximum linear heat rate for maximum cladding temperature limits.

D. To assure that the nuclear uncertainty factor in LOCA analyses will not exceed the Final Acceptance Criteria.

Proposed Answer: C

Explanation (Optional):
LOCA analysis bounds is given as the bases for power-imbalance in Tech Specs

Technical Reference(s): TS Basis 3.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: OPS-GOP-420--3K (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 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	G2.3.1	
	Importance Rating		3.0

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

Proposed Question: SRO 98

Which of the following parameter limits is established to ensure that radiation releases will remain within the limits of 10CFR20?

A. Primary system activity

B. Secondary system activity

C. Primary to secondary leakage

D. Liquid Waste discharge activity

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Primary system activity ensures small fraction of limits of 10CFR100 will not be exceeded for an accident.

B. Incorrect. Secondary system activity is caused by primary to secondary leakage and level of primary activity. No relation to 10CFR20 limits.

C. Incorrect. Primary to secondary leakage related to primary activity, and ensures small fraction of 10CFR 100 limits are not exceeded in an accident.

D. Correct. Only choice with limits related to 10CFR20 release to unrestricted areas.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-521-01K (As available)

Question Source: Bank # X
WT 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 2,4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G2.4.1	
	Importance Rating		4.6

Knowledge of EOP entry conditions and immediate action steps.

Proposed Question: SRO 99

The following plant conditions exist:

- The plant is at 28% power on low level limits.
- RCS Temperature is 582°F and stable.
- Annunciator 12-1-A, MN STM LINE 1 RAD HI, is in alarm.
- Annunciator 9-4-A, VACM SYS DISCH RAD HI, is in alarm.
- Both Makeup Pumps are running.
- Letdown is isolated.
- Pressurizer level is at 200 inches and decreasing at 5 inches/minute.

Which one of the following sets of actions should be taken?

A. Continue in DB-OP-02531, Steam Generator Tube Leak and perform a normal Reactor shutdown to Mode 3.

B. Continue in DB-OP-02531, Steam Generator Tube Leak and perform a rapid plant shutdown to Mode 3.

C. Enter DB-OP-02000, immediately trip the Reactor and route to the Steam Generator Tube Rupture section when directed in the Supplementary Actions.

D. Enter DB-OP-02000, route to the Steam Generator Tube Rupture section and trip the Reactor after transferring steam loads to the Turbine Bypass Valves.

Proposed Answer: D

Explanation (Optional):
If Pzr level is stable with letdown isolated and 2 MUP's running, decreasing Pressurizer level would indicate a SG Tube Leak in excess of Makeup capacity, or a SGTR. Entry into DB-OP-02000 is the proper action. The SGTR section provides guidance for shutting down the Reactor.

A. Incorrect. Leak rate exceeds Makeup capacity. OP-02531 step 4..4 directs routing to DB-OP-02000.
B. Incorrect. Leak rate exceeds Makeup capacity. OP-02531 step 4..4 directs routing to DB-OP-02000. Rapid Shutdown should continue using DB-OP-02000, Section 8.
C. DB-OP-02000, Section 8 (SGTR) provides guidance to shut down the Reactor so-as to avoid lifting the secondary code safeties.
D. Correct.

Technical Reference(s): DB-OP-02531 (Attach if not previously provided)
DB-OP-02000

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-302-01K (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 ____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G2.4.33	
	Importance Rating		2.8

Knowledge of the process used to track inoperable alarms.

Proposed Question: SRO 100

A nuisance annunciator on the Radwaste Alarm Panel 7 in the Control Room must be disabled.

Which one of the following procedures will provide the guidance for disabling and tracking the status of this annunciator?

A. NOP-OP-1001, Clearance/Tagging Program

B. NG-EN-00313, Control of Temporary Modifications

C. DB-OP-02007, Radwaste Alarm Panel 7 Annunciators

D. DB-OP-06411, Station Annunciator Operating Procedure

Proposed Answer: D

Explanation (Optional):

A. Incorrect. Guidance for isolating equipment for which a procedure is not available
B. Incorrect. Guidance for TMods specifically excludes control room annunciators covered by DB-OP-06411
C. Incorrect. Guidance for responding to specific annunciator alarms
D. Correct.

Technical Reference(s): DB-OP-06411 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPS-GOP-504-08K (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	3,5	

Comments: