

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

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

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



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:







\_\_\_\_\_  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: None

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

Question Source: Bank # \_\_\_\_\_  
Modified Bank # OPSSYS106 (Note changes or attach parent)  
Q #14  
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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>005 K4.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.9</u>       | <u>          </u> |

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 14B, DH Cooler 1 Outlet Flow Control Valve, 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?

RCS cooldown rate remains constant since all decay heat is being removed using the steam generators in Mode 4.

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

RCS cooldown rate rises because flow through the DH cooler rises as DH 14B fails open to its mechanical stop, and DH 13B fails closed.

RCS cooldown rate remains constant since DH 1B, DH Pump 1 Discharge to RCS, is throttled to limit decay heat flow.

Proposed Answer: C

Explanation (Optional):

Incorrect. Decay heat removed with SGs and the DH System in Mode 4.

Incorrect. DH 13B fails closed and DH 14B fails to mechanical stop.

Correct.

Incorrect. DH 1B is only throttled during reduced RCS inventory.

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:



\_\_\_\_\_  
\_\_\_\_\_

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>006 K1.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>4.3</u>       | <u>          </u> |

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 \_\_\_\_\_.

starts when EDG output breaker AC 101 closes

starts five seconds after AC 101 closes

starts 25 seconds after AC 101 closes

will NOT start automatically

Proposed Answer:           B

Explanation (Optional):

Incorrect. #3 sequencer will actuate HPI Pump 5 seconds after breaker closed.

Correct.

Incorrect. 25 seconds is if the pump fails to start the first time.

Incorrect. #1 AND #3 sequencer would have to be lost to prevent auto start of HPI Pump 1.



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

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.

NN 3863, Quench Tank N2 Pressure Regulator, is leaking by.

In order to control Quench Tank pressure, RC 222, Quench Tank Vent to Vent Header Valve, \_\_\_\_\_ to reduce pressure and \_\_\_\_\_ to stop the pressure reduction.

is opened manually; is closed manually

opens automatically; closes automatically

is opened manually; closes automatically

opens automatically; is closed manually

Proposed Answer:           A

Explanation (Optional):

Correct. RC 222 has no automatic functions

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>008 A3.05</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.0</u>       | <u>          </u> |

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?

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

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

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

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):

Correct. Low flow on Loop 1 will open loop 2 valves. Pump 1 and 3 breakers open will close loop 1 valves.

Incorrect.

Incorrect.

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 # \_\_\_\_\_ (Note changes or attach parent)

Modified Bank # X Bank Item  
36773

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:

**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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>012 K6.11</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.9</u>       | <u>          </u> |

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.

An RCP monitor contact fails open.

Total RCS flow fails to 145 mpph.

A Loop 1 RCS flow transmitter fails to ZERO mpph.

Power imbalance fails to ZERO %.

Proposed Answer:           C

Explanation (Optional):

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.

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.

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.

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.





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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>022 A1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

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 22 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?

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

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. L&P 2.2.5 specifies CAC not to be stopped for OL.

Incorrect. OL not functional in SLOW.

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.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>026 K4.07</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.8</u>       | <u>          </u> |

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 **B**CTMT SPRAY PUMP 1 AUTO CONTROL VALVE

CS 1531 **B**CTMT SPRAY PUMP 2 AUTO CONTROL VALVE

DH 7A **B**BWST OUTLET ISOLATION VALVE LINE 2

DH 7B **B**BWST OUTLET ISOLATION VALVE LINE 1

DH 9A **B**DH PUMP 2 SUCTION FROM EMERGENCY SUMP

DH 9B **B**DH PUMP 1 SUCTION FROM EMERGENCY SUMP

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

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.

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

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):

Incorrect. CS Pumps are not stopped and valve operation is reversed.

Incorrect. CS Pumps are not stopped.

Incorrect. Valve interlock is reversed and CS 1530/1531 out of position.

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)

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\_\_\_\_\_

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>026 K2.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.7</u>       | <u>          </u> |

Knowledge of bus power supplies to the following: MOVs

Proposed Question: Common 15

The following plant conditions exist:

- a plant was at 100% power.
- switchyard fault caused a loss of off-site power.
- G 1 failed to start.
- G 2 is supplying the respective bus.
- 10 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

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

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

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

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



| Examination Outline Cross-reference: | Level             | RO               | SRO               |
|--------------------------------------|-------------------|------------------|-------------------|
|                                      | Tier #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>039 K5.08</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

Knowledge of the operational implications of the following concepts as they apply to the MRSS: Effect of steam removal on reactivity

Proposed Question:           Common 16

The following plant conditions existed:

The plant was at 50% power and 450 generated megawatts.

All systems were in a normal lineup.

Tave was 582°F.

A Turbine Bypass Valve then failed open. The turbine control remains in ICS automatic control. What will be the expected response of the following parameters 15 minutes after the TBV failed open, assuming no operator action? Reactor power will \_\_\_\_\_, Tave will \_\_\_\_\_ and generated megawatts will \_\_\_\_\_.

- A.    remain the same; decrease; decrease
- B.    increase; decrease; remain the same
- C.    increase; remain the same; remain the same
- D.    remain the same; remain the same; decrease

Proposed Answer:           C

Explanation (Optional):

Incorrect. A head bubble will not form if RCPs are operating.

Incorrect. Pressurizer level is manually controlled during a cooldown.

Correct.

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 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?

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

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

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.

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):

Incorrect. Runback is not complete

Incorrect. Reactor trip criteria not present

Correct.

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)

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\_\_\_\_\_

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>061 K3.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>4.4</u>       | <u>          </u> |

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 T of SG 2.
- B.    Specific Rule 5, PTS requirements.
- C.    Cooldown rate of the reactor vessel head.
- D.    Cooldown rate of SG 1 shell.

Proposed Answer:           D

Explanation (Optional):

Tube to Shell T not an issue with SG 2  
PTS invoked for high MU/HPI flows  
Concern if no RCPs are running  
Correct. SG 1 shell will cool down via ambient heat losses

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

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\_\_\_\_\_

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>062 K4.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.8</u>       | <u>          </u> |

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.

Subsequently, a lockout of A bus occurs.

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

- 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
- 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
- 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
- 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: None

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>062 A2.11</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.7</u>       | <u>          </u> |

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, with its breaker racked in.  
 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?

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

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

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

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):

Correct.

Incorrect. Pumps will Auto Start but #3 is running in place of #1.

Incorrect. #1 will not start.

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:



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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>064 K3.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

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?

EDG 1 will start but the output breaker will NOT AUTO CLOSE until EDG 1 lockout relay is manually reset.

EDG 1 will start and the output breaker will AUTO CLOSE and energize the bus after control power has been restored to C1 bus.

No equipment actuations will occur. The EDG Lockout Relay must be manually reset before EDG 1 will start or the output breaker will AUTO CLOSE.

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

Proposed Answer:           C

Explanation (Optional):

Incorrect. EDG 1 will not start with a lockout.

Incorrect. EDG will not start and breaker will not close until the EDG lockout is reset.

Correct.

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:



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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>076-A4.04</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.3</u>       | <u>          </u> |

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?

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.

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.

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.

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):

CCW heat exchanger valves go open on an SFAS level 2

Correct

CCW heat exchanger valves go open on an SFAS level 2. TPCW cooling automatically transfers to Circ Water

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>076 K1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.4</u>       | <u>          </u> |

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 1%.

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 in service, taking suction on the deaerator.

Neither Main Feed Pump is in service.

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?

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

Line up Circulating Water to supply primary loads on Service Water Loop 1.

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

Lineup and start the Startup Feedwater Pump and shutdown the Motor Driven Feed Pump.

Proposed Answer: C

Explanation (Optional):

Incorrect. Trip criteria not met

Incorrect. SW loads will realign to Circ Water on SFAS

Correct.

Incorrect. SUFP can not be used in Mode2

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-111-03K (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:







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.

The Rod Control Panel and Reactor Demand are ~~ICS~~ in MANUAL while troubleshooting a power supply problem.

All other ICS stations are in AUTOMATIC.

A single control rod then drops **without** causing a reactor trip.

Tave is 575 ~~°F~~, lowering slowly.

Annunciator 4-2-E, PZR LVL LO, is actuated.

PZR level is 196 ~~°F~~ lowering slowly.

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

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

Reduce the MU 32 setpoint to 180 ~~°F~~ to minimize the rise in PZR level when Tave is restored.

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

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):

Incorrect. It is not necessary to raise the setpoint for this to occur after Tave stabilizes.

Correct. The change in PZR level will track, accordingly.

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.

Incorrect. This disregards RCP seal injection.



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

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?

Pressure boundary

RCS pressure isolation valve

Identified

Controlled

Proposed Answer:           C

Explanation (Optional):

Incorrect. Leak is isolable.

Incorrect. PZR RLF is NOT an RCS Pressure Isolation Valve (TS Table 3.4-2).

Correct. In the surveillance procedure Quench Tank leakage is part of the identified leakage calculation.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>011 A2.08</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.6</u>       | <u>          </u> |

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.

lower; raise

lower; reduce

higher; raise

higher; reduce

Proposed Answer:           C

Explanation (Optional):

Level indicates high if compensation fails high

Level indicates high if compensation fails high. MU flow will need to be raised since the indicated level is high

Correct



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

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?

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

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

Automatically selects Loop 1.

Automatically selects Loop 2.

Proposed Answer:           C

Explanation (Optional):

Incorrect. Auto response will occur with ICS in full auto. With Loop 2 below setpoint, manual selection cannot occur

Incorrect. Auto response will occur with ICS in full auto. Cannot override

Correct.

Incorrect. Loop with highest flow is selected

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

Proposed references to be provided to applicants during examination: None

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>086 K5.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>       | <u>          </u> |

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?

Manually trip ACB 34560 and ACB 34561.

Manually trip ABS 34620.

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

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

Proposed Answer:           D

Explanation (Optional):

Incorrect. Tripping ACB 34560 and 34561 does not deenergize the transformer.

Incorrect. Tripping ABS 34620 does not deenergize the transformer.

Incorrect. Power is less than 40%.

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:



DB-OP-02014Proposed references to be provided to applicants during examination: NoneLearning 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:



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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>041 A1.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>       | <u>          </u> |

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.

870

920

995

1025

Proposed Answer: C

Explanation (Optional):

Incorrect. 0 bias with turbine tripped but reactor critical.

Incorrect. 50 PSIG bias with reactor and turbine reset.

Correct. 125 PSIG bias with reactor tripped.

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:



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:



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?

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

Trip all four Reactor Coolant Pumps.

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

Isolate seal return by closing MU 38.

Proposed Answer: C

Explanation (Optional):

Incorrect. MU 19 is closed to isolate seal injection

Incorrect. CCW still available

Correct. PZR level is below 160 inches with no makeup

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: None

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 #            | <u>1</u>      | <u>          </u> |
|                                      | Group #           | <u>1</u>      | <u>          </u> |
|                                      | K/A #             | <u>AA1.23</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>    | <u>          </u> |

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 indications/equipment can be used to verify the current plant condition?

SPDS.

SFAS Channels 1, 2, 3, 4 data lights.

SFRCS output module lights.

RPS Channels 1, 2, 3, 4 bistable output state lights.

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. SFAS data lights would not be used to verify parameters unless post trip during accident conditions

Incorrect. SFRCS output modules would be verification of an actual pump trip SFRCS actuation

Incorrect. RPS output state lights would be a verification of at least 2 RCPs tripped

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

Proposed references to be provided to applicants during examination: None

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 is required to re-establish makeup?

Align MU Pump 2 to BWST to provide makeup flow.

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

Lineup and start HPI piggyback operation.

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

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. No required to vent a pump that has not shown indication of cavitation

Incorrect. No required to vent a pump that has not shown indication of cavitation

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: None

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:







Proposed references to be provided to applicants during examination: None

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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>1</u>          | <u>          </u> |
|                                      | K/A #             | <u>027 AK3.04</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.8</u>        | <u>          </u> |

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 \_\_\_\_\_.

decrease; colder Pressurizer spray bypass flow

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

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

Increase; makeup flow response to low Pressurizer level

Proposed Answer: D

Explanation (Optional):

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

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

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

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.



Proposed references to be provided to applicants during examination: None

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 = 750 psig

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

increased / decreased

increased / increased

decreased / decreased

remained the same / remained the same

Proposed Answer: B

Explanation (Optional):

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

Correct. During cooldown the SCM increases due to maintaining RC pressure above the RCP NPSH curve. SGTL size will increase due to the increase in primary to secondary DP.

Incorrect. SCM and SGTL size has increased.

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?

AFW is isolated to OTSG 1-1 only.

AFW is isolated to OTSG 1-2 only.

AFW is isolated to BOTH OTSGs.

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?

AFW is maintaining OTSG levels at 40@ AVVs are maintaining Tave at 530°F **B**535°F.

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

AFW is maintaining OTSG levels at 40@ Main Steam Safety Valves are maintaining Tave at 535°F **B**540°F.

AFW is maintaining OTSG levels at 49@ AVVs are maintaining Tave at 545°F **B**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 . 552EF.

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 = 550°F, lowering slowly.  
 T-cold Loop 1 = 493°F, lowering slowly.  
 T-cold Loop 2 = 495°F, lowering slowly.  
 SG 1/2 pressures = 640 psig, lowering slowly.  
 AVVs = 10% open, manually controlled.  
 AFW flows = 140 gpm to each OTSG.  
 SG 1/2 levels = 124 inches, steady.

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

OTSG steam flow conditions are low.

Loop Delta T is too large

OTSG levels do not satisfy OTSG Level rule requirements.

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

Proposed Answer: B

Explanation (Optional):

Incorrect. Feed/steam flow exists, which is all that is necessary.

Correct. Loop Delta T is above 50 deg F.

Incorrect. Although not at required level, not a criterion for natural circ.

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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>1</u>          | <u>          </u> |
|                                      | K/A #             | <u>056 AA2.54</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.9</u>        | <u>          </u> |

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?

C1 bus will lockout.

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

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

C2 will reenergize when AC101 (EDG 1 output breaker) closes in due to AC110 remaining closed

Proposed Answer: C

Explanation (Optional):

Incorrect. No condition for lockout. Requires a fault.

Incorrect. With 90% undervoltage relay not actuated, 59% relay starts EDG and connects.

Correct.

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: None

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:



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 #             | 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 52a

The plant is at 100% power.

The SFAS Low-Low Pressure 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?

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

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: A, B

Explanation (Optional): Two correct answers.

A. Correct. MU 59 valves are SFAS level 3 actuated

Correct. MU 66 valves are SFAS level 3 actuated

Incorrect. MU 6422 is not an SFAS valve

Incorrect. MU2A is an SFAS level 2 valve. BA 304 will actuate level 2 output modules

Technical Reference(s): DB-SC-03112; Dwgs OS-002, SH 1 and 2 (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: Question revised during exam administration.

| 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 174EF and 182EF, and rising slowly.

Which one of the following describes the action required next?

Start both CRD ventilation fans.

Trip the reactor and enter DB-OP-02000.

Start the standby CRD booster pump.

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

Proposed Answer: B

Explanation (Optional):

Incorrect. Fans for CMNT atmosphere, not specifically CRDs

Correct. Any CRD motor temperature >180, trip reactor

Incorrect. Action if CRD Booster pump failed

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: None

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?

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

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

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

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

Proposed Answer: B

Explanation (Optional):

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.

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.

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.

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?

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

Use AFW Pumps to feed SG 1.

Use MDFP to feed both SGs.

Align SUFP to feed SG1.

Proposed Answer: B

Explanation (Optional):

Incorrect. The cooldown rate on SG1 is < 100°F/hr., cooldown may continue using SG1.

Correct.

Incorrect. SG 2 cannot be feed due to the SFRCS trip.

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 \_\_\_\_\_.

maintain the required shutdown margin above the Technical Specification minimum

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. Cooldown will not be significant enough to challenge SDM.

Incorrect. Pressurizer level will decrease.

Correct.

Incorrect. Steam pressure will remain below setpoints for MSSVs because it will lower when CRD breakers are reset.



| 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.  
Generator Output is 420 MWe

Which one of the following is the appropriate action?

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.

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect.

Incorrect.

Correct. Turbine trip criteria is met. 7.5@Hg. Reactor will trip on turbine trip at 50% power

Incorrect.





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?

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

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. CREVS does not automatically start

Incorrect. Both Trains must be initiated.

Correct.

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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>2</u>          | <u>          </u> |
|                                      | K/A #             | <u>068 AK2.07</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.3</u>        | <u>          </u> |

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?

Both Emergency Diesel Generators

Emergency Diesel Generator 1 only

Emergency Diesel Generator 2 only

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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>2</u>          | <u>          </u> |
|                                      | K/A #             | <u>076 AK3.06</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.2</u>        | <u>          </u> |

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

The plant was at 100% power with annunciator 2-1-A, LETDOWN RADIATION HI in alarm due to a small fuel leak.

A SG tube rupture has now developed and a rapid shutdown is in progress in accordance with DB-OP-02000.

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.

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

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 plant was at 100% power.

Station annunciators have lost power.

Five (5) minutes later, 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?

Trip both main feedwater pumps.

Prevents overfeeding the steam generators due to MFPT speed increasing.

Trip both main feedwater pumps.

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

Initiate AFW and isolate both steam generators.

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

Initiate AFW and isolate both steam generators.

Prevents overfeeding the steam generators due to MFPT speed increasing.

Proposed Answer: C

Explanation (Optional):

Incorrect. Main FW Pump trip not required. MFP speed decreases

Incorrect. Main FW Pump trip not required.

Correct.

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: None

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?

All three Condensate Pumps

Both Auxiliary Feedwater Pumps

All three CCW Pumps

All three TPCW Pumps

Proposed Answer: A

Explanation (Optional):

Correct. The affected area is the East and West Condenser Pit, elevation 567.

Incorrect. AFW pumps are in a separate room and a curb protects their openings at elevation 585.

Incorrect. CCW pumps are in a separate room at elevation 585.

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 resulted 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 4.

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

Maintain maximum HPI flow until natural circulation is developed and cooldown at less than 50°F/hr.

Throttle HPI flow when pressurizer level is restored to 80% and 20 inches and cooldown at less than 100°F/hr.

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

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):

Incorrect. Wrong action on HPI flow

Incorrect. Wrong cooldown rate

Correct. PTS concerns, must throttle HPI while minimizing cooldown rate

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 #            | <u>1</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>E14 EK3.2</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.0</u>       | <u>          </u> |

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?

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

HPI flow will be balanced to prevent HPI pump runout.

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

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

Proposed Answer:           A

Explanation (Optional):

Correct.

Incorrect. Runout not a concern, but large flows through a break are a concern

Incorrect. Minimum flow requirements are addressed by recirc valves

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 to auto
  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):

Incorrect.

Incorrect.

Incorrect.

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 \_\_\_\_\_.

- A. are abandoned in place
- B. are part of a plant modification that has been partially implemented
- C. indicate changes made during the last drawing revision
- D. are in an abnormal position due to a Temporary Modification

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Partial implementation usually explained in OS notes

Incorrect. Changes shown by circling components with revision number

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)



| 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 \_\_\_\_\_.

using the Curator controlled view library

Contacting Records Management

referring to Operations Directive PR-01, Operations Procedure Maintenance

using the Production Shared Services module in SAP

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Only old procedures

Incorrect. PR-01 provides guidance for altering procedures.

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)

\_\_\_\_\_



| 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?

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

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.

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.

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):

Incorrect. Concurrent Responsibilities are allowed. Not a second check but an independent observation.

Correct.

Incorrect. Concurrent Responsibilities are allowed. Fuel Movement Sequence Sheets are controlled by Fuel Handling Director.

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:



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?

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

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

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

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):

Incorrect. The CWMT pumps will not trip.

Incorrect. The CWMT pumps will not trip.

Correct.

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 X  
\_\_\_\_\_  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 X  
55.43 \_\_\_\_\_

Comments:

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



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?

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.

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.

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.

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):

Incorrect. E2 and F2 deenergized first.

Incorrect. E2 and F2 deenergized first.

Correct.

Incorrect. BE-211 and BF-211 are last in order.





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:



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:

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

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

|     |   |     |   |     |   |
|-----|---|-----|---|-----|---|
| 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.



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 #             | 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?

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

MU 2B, RC LETDOWN CLR INLET ISOLATION

MU 3, LETDOWN STOP

MU 4, LETDOWN BLOCK ORIFICE ISOLATION

Proposed Answer: C

Explanation (Optional):

Incorrect. All are in the letdown flowpath but do not receive an SA Level 2 closure signal.

Incorrect. All are in the letdown flowpath but do not receive an SA Level 2 closure signal.

Correct. MU 3 will auto close on SA Level 2.

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 (Note changes or attach parent)  
Q #14  
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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>005 K4.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.9</u>       | <u>          </u> |

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 14B, DH Cooler 1 Outlet Flow Control Valve, 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?

RCS cooldown rate remains constant since all decay heat is being removed using the steam generators in Mode 4.

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

RCS cooldown rate rises because flow through the DH cooler rises as DH 14B fails open to its mechanical stop, and DH 13B fails closed.

RCS cooldown rate remains constant since DH 1B, DH Pump 1 Discharge to RCS, is throttled to limit decay heat flow.

Proposed Answer: C

Explanation (Optional):

Incorrect. Decay heat removed with SGs and the DH System in Mode 4.

Incorrect. DH 13B fails closed and DH 14B fails to mechanical stop.

Correct.

Incorrect. DH 1B is only throttled during reduced RCS inventory.

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:



\_\_\_\_\_  
\_\_\_\_\_

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>006 K1.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>4.3</u>       | <u>          </u> |

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 \_\_\_\_\_.

starts when EDG output breaker AC 101 closes

starts five seconds after AC 101 closes

starts 25 seconds after AC 101 closes

will NOT start automatically

Proposed Answer:           B

Explanation (Optional):

Incorrect. #3 sequencer will actuate HPI Pump 5 seconds after breaker closed.

Correct.

Incorrect. 25 seconds is if the pump fails to start the first time.

Incorrect. #1 AND #3 sequencer would have to be lost to prevent auto start of HPI Pump 1.



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

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.

NN 3863, Quench Tank N2 Pressure Regulator, is leaking by.

In order to control Quench Tank pressure, RC 222, Quench Tank Vent to Vent Header Valve, \_\_\_\_\_ to reduce pressure and \_\_\_\_\_ to stop the pressure reduction.

is opened manually; is closed manually

opens automatically; closes automatically

is opened manually; closes automatically

opens automatically; is closed manually

Proposed Answer:           A

Explanation (Optional):

Correct. RC 222 has no automatic functions

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>008 A3.05</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.0</u>       | <u>          </u> |

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?

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

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

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

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):

Correct. Low flow on Loop 1 will open loop 2 valves. Pump 1 and 3 breakers open will close loop 1 valves.

Incorrect.

Incorrect.

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 (Note changes or attach parent)  
36773  
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:

**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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>012 K6.11</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.9</u>       | <u>          </u> |

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.

An RCP monitor contact fails open.

Total RCS flow fails to 145 mpph.

A Loop 1 RCS flow transmitter fails to ZERO mpph.

Power imbalance fails to ZERO %.

Proposed Answer:           C

Explanation (Optional):

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.

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.

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.

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.





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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>022 A1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

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 22 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?

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

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. L&P 2.2.5 specifies CAC not to be stopped for OL.

Incorrect. OL not functional in SLOW.

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.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>026 K4.07</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.8</u>       | <u>          </u> |

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

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

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.

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

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):

Incorrect. CS Pumps are not stopped and valve operation is reversed.

Incorrect. CS Pumps are not stopped.

Incorrect. Valve interlock is reversed and CS 1530/1531 out of position.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>026 K2.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.7</u>       | <u>          </u> |

Knowledge of bus power supplies to the following: MOVs

Proposed Question: Common 15

The following plant conditions exist:

- a plant was at 100% power.
- switchyard fault caused a loss of off-site power.
- G 1 failed to start.
- G 2 is supplying the respective bus.
- 10 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

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

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

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

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

Proposed Answer: A

Explanation (Optional):

Correct. CS 1530 powered via Bus C1 and DH 7A/7B locked OPEN.

Incorrect. Power available to CS 1531.

Incorrect. DH 7A locked open.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>039 K5.08</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

Knowledge of the operational implications of the following concepts as they apply to the MRSS: Effect of steam removal on reactivity

Proposed Question:           Common 16

The following plant conditions existed:

The plant was at 50% power and 450 generated megawatts.

All systems were in a normal lineup.

Tave was 582°F.

A Turbine Bypass Valve then failed open. The turbine control remains in ICS automatic control. What will be the expected response of the following parameters 15 minutes after the TBV failed open, assuming no operator action? Reactor power will \_\_\_\_\_, Tave will \_\_\_\_\_ and generated megawatts will \_\_\_\_\_.

- A.    remain the same; decrease; decrease
- B.    increase; decrease; remain the same
- C.    increase; remain the same; remain the same
- D.    remain the same; remain the same; decrease

Proposed Answer:           C

Explanation (Optional):

Incorrect. A head bubble will not form if RCPs are operating.

Incorrect. Pressurizer level is manually controlled during a cooldown.

Correct.

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 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?

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

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

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.

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):

Incorrect. Runback is not complete

Incorrect. Reactor trip criteria not present

Correct.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>061 K3.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>4.4</u>       | <u>          </u> |

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 T of SG 2.
- B.    Specific Rule 5, PTS requirements.
- C.    Cooldown rate of the reactor vessel head.
- D.    Cooldown rate of SG 1 shell.

Proposed Answer:           D

Explanation (Optional):

Tube to Shell T not an issue with SG 2  
PTS invoked for high MU/HPI flows  
Concern if no RCPs are running  
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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>062 K4.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.8</u>       | <u>          </u> |

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.

Subsequently, a lockout of A bus occurs.

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

- 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
- 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
- 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
- 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: None

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>062 A2.11</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.7</u>       | <u>          </u> |

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, with its breaker racked in.  
 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?

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

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

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

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):

Correct.

Incorrect. Pumps will Auto Start but #3 is running in place of #1.

Incorrect. #1 will not start.





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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>064 K3.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.6</u>       | <u>          </u> |

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?

EDG 1 will start but the output breaker will NOT AUTO CLOSE until EDG 1 lockout relay is manually reset.

EDG 1 will start and the output breaker will AUTO CLOSE and energize the bus after control power has been restored to C1 bus.

No equipment actuations will occur. The EDG Lockout Relay must be manually reset before EDG 1 will start or the output breaker will AUTO CLOSE.

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

Proposed Answer:           C

Explanation (Optional):

Incorrect. EDG 1 will not start with a lockout.

Incorrect. EDG will not start and breaker will not close until the EDG lockout is reset.

Correct.

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:



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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>076-A4.04</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.3</u>       | <u>          </u> |

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?

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.

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.

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.

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):

CCW heat exchanger valves go open on an SFAS level 2

Correct

CCW heat exchanger valves go open on an SFAS level 2. TPCW cooling automatically transfers to Circ Water

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>076 K1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.4</u>       | <u>          </u> |

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 1%.

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 in service, taking suction on the deaerator.

Neither Main Feed Pump is in service.

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?

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

Line up Circulating Water to supply primary loads on Service Water Loop 1.

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

Lineup and start the Startup Feedwater Pump and shutdown the Motor Driven Feed Pump.

Proposed Answer: C

Explanation (Optional):

Incorrect. Trip criteria not met

Incorrect. SW loads will realign to Circ Water on SFAS

Correct.

Incorrect. SUFP can not be used in Mode2

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-111-03K (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:







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.

The Rod Control Panel and Reactor Demand are ~~ICS~~ in MANUAL while troubleshooting a power supply problem.

All other ICS stations are in AUTOMATIC.

A single control rod then drops **without** causing a reactor trip.

Tave is 575 ~~°F~~, lowering slowly.

Annunciator 4-2-E, PZR LVL LO, is actuated.

PZR level is 196 ~~°F~~ lowering slowly.

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

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

Reduce the MU 32 setpoint to 180 ~~°F~~ to minimize the rise in PZR level when Tave is restored.

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

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):

Incorrect. It is not necessary to raise the setpoint for this to occur after Tave stabilizes.

Correct. The change in PZR level will track, accordingly.

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.

Incorrect. This disregards RCP seal injection.



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

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?

Pressure boundary

RCS pressure isolation valve

Identified

Controlled

Proposed Answer:           C

Explanation (Optional):

Incorrect. Leak is isolable.

Incorrect. PZR RLF is NOT an RCS Pressure Isolation Valve (TS Table 3.4-2).

Correct. In the surveillance procedure Quench Tank leakage is part of the identified leakage calculation.

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>011 A2.08</u> | <u>          </u> |
|                                      | Importance Rating | <u>2.6</u>       | <u>          </u> |

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.

lower; raise

lower; reduce

higher; raise

higher; reduce

Proposed Answer:           C

Explanation (Optional):

Level indicates high if compensation fails high

Level indicates high if compensation fails high. MU flow will need to be raised since the indicated level is high

Correct

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>016 K1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.4</u>       | <u>          </u> |

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?

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

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

Automatically selects Loop 1.

Automatically selects Loop 2.

Proposed Answer:           C

Explanation (Optional):

Incorrect. Auto response will occur with ICS in full auto. With Loop 2 below setpoint, manual selection cannot occur

Incorrect. Auto response will occur with ICS in full auto. Cannot override

Correct.

Incorrect. Loop with highest flow is selected

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

Proposed references to be provided to applicants during examination: None

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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>086 K5.03</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>       | <u>          </u> |

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?

Manually trip ACB 34560 and ACB 34561.

Manually trip ABS 34620.

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

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

Proposed Answer:           D

Explanation (Optional):

Incorrect. Tripping ACB 34560 and 34561 does not deenergize the transformer.

Incorrect. Tripping ABS 34620 does not deenergize the transformer.

Incorrect. Power is less than 40%.

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:



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:



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 #            | <u>2</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>041 A1.02</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>       | <u>          </u> |

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.

870

920

995

1025

Proposed Answer: C

Explanation (Optional):

Incorrect. 0 bias with turbine tripped but reactor critical.

Incorrect. 50 PSIG bias with reactor and turbine reset.

Correct. 125 PSIG bias with reactor tripped.

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:



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:



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?

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

Trip all four Reactor Coolant Pumps.

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

Isolate seal return by closing MU 38.

Proposed Answer: C

Explanation (Optional):

Incorrect. MU 19 is closed to isolate seal injection

Incorrect. CCW still available

Correct. PZR level is below 160 inches with no makeup

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: None

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 indications/equipment can be used to verify the current plant condition?

SPDS.

SFAS Channels 1, 2, 3, 4 data lights.

SFRCS output module lights.

RPS Channels 1, 2, 3, 4 bistable output state lights.

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. SFAS data lights would not be used to verify parameters unless post trip during accident conditions

Incorrect. SFRCS output modules would be verification of an actual pump trip SFRCS actuation

Incorrect. RPS output state lights would be a verification of at least 2 RCPs tripped

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

Proposed references to be provided to applicants during examination: None

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 is required to re-establish makeup?

Align MU Pump 2 to BWST to provide makeup flow.

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

Lineup and start HPI piggyback operation.

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

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. No required to vent a pump that has not shown indication of cavitation

Incorrect. No required to vent a pump that has not shown indication of cavitation

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: None

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:







Proposed references to be provided to applicants during examination: None

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 \_\_\_\_\_.

decrease; colder Pressurizer spray bypass flow

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

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

Increase; makeup flow response to low Pressurizer level

Proposed Answer: D

Explanation (Optional):

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

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

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

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.



Proposed references to be provided to applicants during examination: None

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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>1</u>          | <u>          </u> |
|                                      | K/A #             | <u>038 EK1.01</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.1</u>        | <u>          </u> |

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 = 750 psig

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

increased / decreased

increased / increased

decreased / decreased

remained the same / remained the same

Proposed Answer: B

Explanation (Optional):

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

Correct. During cooldown the SCM increases due to maintaining RC pressure above the RCP NPSH curve. SGTL size will increase due to the increase in primary to secondary DP.

Incorrect. SCM and SGTL size has increased.

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?

AFW is isolated to OTSG 1-1 only.

AFW is isolated to OTSG 1-2 only.

AFW is isolated to BOTH OTSGs.

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?

AFW is maintaining OTSG levels at 40@ AVVs are maintaining Tave at 530°F **B**535°F.

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

AFW is maintaining OTSG levels at 40@ Main Steam Safety Valves are maintaining Tave at 535°F **B**540°F.

AFW is maintaining OTSG levels at 49@ AVVs are maintaining Tave at 545°F **B**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 . 552EF.

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 = 550°F, lowering slowly.  
T-cold Loop 1 = 493°F, lowering slowly.  
T-cold Loop 2 = 495°F, lowering slowly.  
SG 1/2 pressures = 640 psig, lowering slowly.  
AVVs = 10% open, manually controlled.  
AFW flows = 140 gpm to each OTSG.  
SG 1/2 levels = 124 inches, steady.

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

OTSG steam flow conditions are low.

Loop Delta T is too large

OTSG levels do not satisfy OTSG Level rule requirements.

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

Proposed Answer: B

Explanation (Optional):

Incorrect. Feed/steam flow exists, which is all that is necessary.

Correct. Loop Delta T is above 50 deg F.

Incorrect. Although not at required level, not a criterion for natural circ.

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



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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>1</u>          | <u>          </u> |
|                                      | K/A #             | <u>057 AA1.04</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.5</u>        | <u>          </u> |

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?

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

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):

Incorrect. MU 59 valves are SFAS level 3 actuated

Incorrect. MU 66 valves are SFAS level 3 actuated

Incorrect. MU 6422 is not an SFAS valve

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 #             | 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 52a

The plant is at 100% power.

The SFAS Low-Low Pressure 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?

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

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: A, B

Explanation (Optional): Two correct answers.

A. Correct. MU 59 valves are SFAS level 3 actuated

Correct. MU 66 valves are SFAS level 3 actuated

Incorrect. MU 6422 is not an SFAS valve

Incorrect. MU2A is an SFAS level 2 valve. BA 304 will actuate level 2 output modules

Technical Reference(s): DB-SC-03112; Dwgs OS-002, SH 1 and 2 (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: Question revised during exam administration.

| 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 174EF and 182EF, and rising slowly.

Which one of the following describes the action required next?

Start both CRD ventilation fans.

Trip the reactor and enter DB-OP-02000.

Start the standby CRD booster pump.

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

Proposed Answer: B

Explanation (Optional):

Incorrect. Fans for CMNT atmosphere, not specifically CRDs

Correct. Any CRD motor temperature >180, trip reactor

Incorrect. Action if CRD Booster pump failed

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: None

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 #            | <u>1</u>         | <u>          </u> |
|                                      | Group #           | <u>1</u>         | <u>          </u> |
|                                      | K/A #             | <u>E04 EA1.1</u> | <u>          </u> |
|                                      | Importance Rating | <u>4.4</u>       | <u>          </u> |

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?

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

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

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

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

Proposed Answer: B

Explanation (Optional):

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.

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.

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.

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?

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

Use AFW Pumps to feed SG 1.

Use MDFP to feed both SGs.

Align SUFP to feed SG1.

Proposed Answer: B

Explanation (Optional):

Incorrect. The cooldown rate on SG1 is < 100°F/hr., cooldown may continue using SG1.

Correct.

Incorrect. SG 2 cannot be feed due to the SFRCS trip.

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 \_\_\_\_\_.

maintain the required shutdown margin above the Technical Specification minimum

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. Cooldown will not be significant enough to challenge SDM.

Incorrect. Pressurizer level will decrease.

Correct.

Incorrect. Steam pressure will remain below setpoints for MSSVs because it will lower when CRD breakers are reset.



| 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.  
Generator Output is 420 MWe

Which one of the following is the appropriate action?

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.

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect.

Incorrect.

Correct. Turbine trip criteria is met. 7.5@Hg. Reactor will trip on turbine trip at 50% power

Incorrect.





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?

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

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

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

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

Proposed Answer: C

Explanation (Optional):

Incorrect. CREVS does not automatically start

Incorrect. Both Trains must be initiated.

Correct.

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:



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 #            | <u>1</u>          | <u>          </u> |
|                                      | Group #           | <u>2</u>          | <u>          </u> |
|                                      | K/A #             | <u>076 AK3.06</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.2</u>        | <u>          </u> |

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

The plant was at 100% power with annunciator 2-1-A, LETDOWN RADIATION HI in alarm due to a small fuel leak.

A SG tube rupture has now developed and a rapid shutdown is in progress in accordance with DB-OP-02000.

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.

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

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 plant was at 100% power.

Station annunciators have lost power.

Five (5) minutes later, 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?

Trip both main feedwater pumps.

Prevents overfeeding the steam generators due to MFPT speed increasing.

Trip both main feedwater pumps.

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

Initiate AFW and isolate both steam generators.

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

Initiate AFW and isolate both steam generators.

Prevents overfeeding the steam generators due to MFPT speed increasing.

Proposed Answer: C

Explanation (Optional):

Incorrect. Main FW Pump trip not required. MFP speed decreases

Incorrect. Main FW Pump trip not required.

Correct.

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: None

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 #            | <u>1</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>A07 AA2.2</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.3</u>       | <u>          </u> |

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?

All three Condensate Pumps

Both Auxiliary Feedwater Pumps

All three CCW Pumps

All three TPCW Pumps

Proposed Answer: A

Explanation (Optional):

Correct. The affected area is the East and West Condenser Pit, elevation 567.

Incorrect. AFW pumps are in a separate room and a curb protects their openings at elevation 585.

Incorrect. CCW pumps are in a separate room at elevation 585.

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 resulted 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 4.

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

Maintain maximum HPI flow until natural circulation is developed and cooldown at less than 50°F/hr.

Throttle HPI flow when pressurizer level is restored to 80% ± 20 inches and cooldown at less than 100°F/hr.

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

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):

Incorrect. Wrong action on HPI flow

Incorrect. Wrong cooldown rate

Correct. PTS concerns, must throttle HPI while minimizing cooldown rate

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 #            | <u>1</u>         | <u>          </u> |
|                                      | Group #           | <u>2</u>         | <u>          </u> |
|                                      | K/A #             | <u>E14 EK3.2</u> | <u>          </u> |
|                                      | Importance Rating | <u>3.0</u>       | <u>          </u> |

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?

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

HPI flow will be balanced to prevent HPI pump runout.

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

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

Proposed Answer:           A

Explanation (Optional):

Correct.

Incorrect. Runout not a concern, but large flows through a break are a concern

Incorrect. Minimum flow requirements are addressed by recirc valves

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 to auto
  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):

Incorrect.

Incorrect.

Incorrect.

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 \_\_\_\_\_.

- A. are abandoned in place
- B. are part of a plant modification that has been partially implemented
- C. indicate changes made during the last drawing revision
- D. are in an abnormal position due to a Temporary Modification

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Partial implementation usually explained in OS notes

Incorrect. Changes shown by circling components with revision number

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)



| 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 \_\_\_\_\_.

using the Curator controlled view library

Contacting Records Management

referring to Operations Directive PR-01, Operations Procedure Maintenance

using the Production Shared Services module in SAP

Proposed Answer: A

Explanation (Optional):

Correct.

Incorrect. Only old procedures

Incorrect. PR-01 provides guidance for altering procedures.

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?

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

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.

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.

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):

Incorrect. Concurrent Responsibilities are allowed. Not a second check but an independent observation.

Correct.

Incorrect. Concurrent Responsibilities are allowed. Fuel Movement Sequence Sheets are controlled by Fuel Handling Director.

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:



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?

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

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

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

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):

Incorrect. The CWMT pumps will not trip.

Incorrect. The CWMT pumps will not trip.

Correct.

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 X  
\_\_\_\_\_  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 X  
55.43 \_\_\_\_\_

Comments:

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



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?

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.

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.

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.

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):

Incorrect. E2 and F2 deenergized first.

Incorrect. E2 and F2 deenergized first.

Correct.

Incorrect. BE-211 and BF-211 are last in order.



| 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):

Correct. Rule 1 is reactivity control.

Incorrect. Will lead to PTS or overcooling (XHT). Lower priority.

Incorrect. Second priority behind reactivity control.

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:



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 #            | _____              | <u>1</u>   |
|                                      | Group #           | _____              | <u>1</u>   |
|                                      | K/A #             | <u>015 G2.2.25</u> | _____      |
|                                      | Importance Rating | _____              | <u>3.7</u> |

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?

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

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

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

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

Proposed Answer: A

Explanation (Optional):

Correct

Incorrect. Tripping a loop 2 pump would be a 3.0.3 entry

Incorrect. DNBR LCO is met with 3 RCPs

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 #            | _____             | <u>1</u>   |
|                                      | Group #           | _____             | <u>1</u>   |
|                                      | K/A #             | <u>029 EA2.06</u> | _____      |
|                                      | Importance Rating | _____             | <u>3.9</u> |

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

Proposed Question: SRO 77

Following plant conditions exist:

A reactor trip was required.  
 DB-OP-02000 actions are being taken for an ATWS.  
 Main Generator load is 500 MWe and lowering at a rate of approximately 150 MWe per minute.

The EHC - EMERGENCY TRIP pushbutton is required to be depressed \_\_\_\_\_.

immediately after the reactor is shutdown

immediately after depressing the reactor trip pushbutton

when the turbine steam load is within the capacity of the Turbine Bypass Valves

when steam generators go on low level limits

Proposed Answer: A

Explanation (Optional):

Turbine trip pushbutton is pushed after the reactor is shutdown.

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 #            | _____              | <u>1</u>   |
|                                      | Group #           | _____              | <u>1</u>   |
|                                      | K/A #             | <u>038 G2.1.14</u> | _____      |
|                                      | Importance Rating | _____              | <u>3.3</u> |

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 the Duty Operations Manager and the Duty Plant Manager?

Adjustments to generated megawatts to compensate for changing condenser pressure due to weather conditions.

A SG tube leak exceeding Technical Specification LCO limits.

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

Entering Mode 3 during a scheduled plant shutdown.

Proposed Answer: B

Explanation (Optional):

Notifications required for Tech. Spec. entry.

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?

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.

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~~ DAP.

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

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



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

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?

DB-OP-02540, Loss of D2N and DBN

RA-EP-01500, Emergency Classification

DB-OP-02504, Rapid Shutdown

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 #            | _____             | <u>1</u>   |
|                                      | Group #           | _____             | <u>1</u>   |
|                                      | K/A #             | <u>062 AA2.01</u> | _____      |
|                                      | Importance Rating | _____             | <u>3.5</u> |

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?

Loss of all Service Water Pumps

Service Water Non-Seismic Line Rupture

Loss of SW Loop 2

Loss of SW Loop 1

Proposed Answer: D

Explanation (Optional):

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.

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

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

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 #            | _____             | <u>1</u>   |
|                                      | Group #           | _____             | <u>2</u>   |
|                                      | K/A #             | <u>033 AA2.12</u> | _____      |
|                                      | Importance Rating | _____             | <u>3.1</u> |

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  $2 \times 10^4$  CPS  
 NI-3 indicates  $5 \times 10^{-11}$  amps  
 NI-4 indicates  $2 \times 10^{-9}$  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?

Source Range and Intermediate Range NIs are operable, since Power Range indicates <10%.

Source Range NIs and Intermediate Range NIs are outside of tolerance but will be deenergized when Power Range NIs indicate >10%.

NI-3 is reading too low for the current Source Range level. The channel must be repaired prior to raising power above 5%.

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: None

Learning Objective: \_\_\_\_\_ (As available)

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

Question History: Last NRC Exam \_\_\_\_\_

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 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 ~~B6~~ hours.

RCS sample for Iodine isotopes and gross activity must be performed in 2 ~~B6~~ hours.

RCS sample for Iodine isotopes ONLY must be performed in 2 ~~B6~~ hours ONLY if power remains below 85% for the next 50 minutes.

RCS sample for Iodine isotopes and gross activity must be performed in 2 ~~B6~~ 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: None

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 #            | _____             | <u>1</u>   |
|                                      | Group #           | _____             | <u>2</u>   |
|                                      | K/A #             | <u>E13 G2.4.6</u> | _____      |
|                                      | Importance Rating | _____             | <u>4.0</u> |

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?

Trip EDG 2 immediately in accordance with Specific Rule 6.

Trip EDG 2 when CCW temperature reaches 120°F in accordance with Specific Rule 6.

Start the SBODG to supply Bus C1 in accordance with DB-OP-02000 Supplementary Actions.

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: None

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 #            | _____     | <u>1</u>   |
|                                      | Group #           | _____     | <u>2</u>   |
|                                      | K/A #             | A01 AA2.1 | _____      |
|                                      | Importance Rating | _____     | <u>3.7</u> |

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?

DB-OP-02500, Turbine Trip

DB-OP-02504, Rapid Shutdown

DB-OP-02520, Load Rejection

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: None

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 #            | _____            | <u>2</u>   |
|                                      | Group #           | _____            | <u>1</u>   |
|                                      | K/A #             | <u>003 A2.05</u> | _____      |
|                                      | Importance Rating | _____            | <u>2.8</u> |

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

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?

RCP controlled leakage may exceed technical specification limits. Refer to DB-OP-02515, RCP Malfunctions, to restore seal leakoff within limits.

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.

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.

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: None

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 #            | _____             | <u>2</u>   |
|                                      | Group #           | _____             | <u>1</u>   |
|                                      | K/A #             | <u>006 G2.4.4</u> | _____      |
|                                      | Importance Rating | _____             | <u>4.3</u> |

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?

Specific Rule 2, Actions for Lack of Subcooling Margin

Specific Rule 3, MU/HPI/LPI Flow Initiation, Throttling, and Termination

Section 6.0, Lack of Heat Transfer

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: None

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 #            | _____            | <u>2</u>   |
|                                      | Group #           | _____            | <u>2</u>   |
|                                      | K/A #             | <u>034 A2.01</u> | _____      |
|                                      | Importance Rating | _____            | <u>3.6</u> |

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?

Establish Containment closure

Trip RE 5405A, Radwaste Area Exhaust Monitor

Start CTMT Purge Ventilation

Trip RE 8446/8447, FH EXH. SYS. CH1/CH2

Proposed Answer: D

Explanation (Optional):

Incorrect. Establishing integrity will not help

Incorrect. Tripping 5405A will not help

Incorrect. Purge would be shut down if FHA was in containment

Correct

Technical Reference(s): DB-OP-02530 (Attach if not previously provided)  
AB Discussion Book

Proposed references to be provided to applicants during examination: None

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 #            | _____              | <u>2</u>   |
|                                      | Group #           | _____              | <u>1</u>   |
|                                      | K/A #             | <u>059 G2.2.22</u> | _____      |
|                                      | Importance Rating | _____              | <u>4.1</u> |

Equipment Control Knowledge of limiting conditions for operations and safety limits.

Proposed Question: SRO 89

Which one of the following describes the Technical Specification requirements of the feed pump turbine trip logic for the Anticipatory Reactor Trip System (ARTS)?

|    | <u>Total Channels</u> | <u>Channels to Trip</u> | <u>Minimum Operable</u> |
|----|-----------------------|-------------------------|-------------------------|
| 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: None

Learning Objective: OPS-SYS-505-07K (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)



|                                      |                   |                    |            |
|--------------------------------------|-------------------|--------------------|------------|
| Examination Outline Cross-reference: | Level             | RO                 | SRO        |
|                                      | Tier #            | _____              | <u>2</u>   |
|                                      | Group #           | _____              | <u>1</u>   |
|                                      | K/A #             | <u>073 G2.1.33</u> | _____      |
|                                      | Importance Rating | _____              | <u>4.0</u> |

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?

One Containment Vessel Accident Range Monitor is declared inoperable.

Both Condenser Off-Gas Process Radiation Monitors and both Main Steam Line Radiation Monitors are declared inoperable.

Both Containment Gaseous AND both Containment Particulate Activity normal range radiation monitors are declared inoperable.

One Station Vent Accident Range Radiation Monitor is declared inoperable

Proposed Answer: C

Explanation (Optional):

Incorrect. Both gaseous and particulate required before in action statement

Incorrect. Not a tech spec required radiation monitor

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: None

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 \_\_\_\_\_  
\_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO               | SRO        |
|--------------------------------------|-------------------|------------------|------------|
|                                      | Tier #            | _____            | <u>2</u>   |
|                                      | Group #           | _____            | <u>1</u>   |
|                                      | K/A #             | <u>039 A2.04</u> | _____      |
|                                      | Importance Rating | _____            | <u>3.7</u> |

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  $\text{F}$ , lowering.  
All turbine bypass valves indicate open.

Which one of the following is the correct action?

Enter and perform DB-OP-02525, Steam Leaks, in parallel with DB-OP-02000.

Enter and perform DB-OP-02543, Rapid Cooldown, in parallel with DB-OP-02000.

Implement DB-OP-02000, Specific Rule 5 **B**PTS Requirements.

Transition to DB-OP-02000, Symptom Mitigation Section 7.0 **B**Overcooling.

Proposed Answer: D

Explanation (Optional):

Incorrect. Procedure does not address secondary malfunctions.

Incorrect. Procedure is for performing a rapid cooldown, not mitigation.

Incorrect. PTS requirements have not been exceeded.

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 #            | _____       | <u>2</u>   |
|                                      | Group #           | _____       | <u>2</u>   |
|                                      | K/A #             | 072 G2.1.32 | _____      |
|                                      | Importance Rating | _____       | <u>3.8</u> |

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?

The LCO is satisfied because RE8447 is capable of actuating both EVS trains. The planned fuel movement may proceed.

The LCO is satisfied because RE8447 is capable of actuating EVS Train 2. The planned fuel movement may proceed.

The action statement for 3.9.12 must be entered. EVS Train 1 must be placed in operation prior to the planned fuel movement.

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: D

Explanation (Optional):

Incorrect. RE8447 only actuates Train 2.

Incorrect. TS and facility interpretation requires both trains to be operable.

Incorrect. IAW TS, the operable train must be actuated.

Correct. IAW TS, the operable train is actuated.

Technical Reference(s): TS 3.9.12 (Attach if not previously provided)

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DB-OP-06412

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Proposed references to be provided to applicants during examination: NoneLearning 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 #            | _____     | <u>2</u>   |
|                                      | Group #           | _____     | <u>2</u>   |
|                                      | K/A #             | 086 A2.04 | _____      |
|                                      | Importance Rating | _____     | <u>3.9</u> |

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?

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.

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.

Continue in DB-OP-02529 while initiating a controlled shutdown in accordance with DB-OP-06903, Plant Shutdown and Cooldown.

Continue in DB-OP-02529 while initiating a controlled shutdown in accordance with DB-OP-02504, Rapid Shutdown.

Proposed Answer: A

Explanation (Optional):

Correct. Fluctuating safety-related indicators indicate need to enter DB-OP-02501. DB-OP-02000 is performed in parallel.

Incorrect. DB-OP-02000 is performed in parallel.

Incorrect. The plant shutdown is initiated by reactor trip.

Incorrect. The plant shutdown is initiated by reactor trip.

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

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DB-OP-01003

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Proposed references to be provided to applicants during examination: NoneLearning 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 #            | _____          | <u>3</u>   |
|                                      | Group #           | _____          | <u>1</u>   |
|                                      | K/A #             | <u>G2.1.33</u> | _____      |
|                                      | Importance Rating | _____          | <u>4.0</u> |

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 statements is correct?

Enter T.S. 3.9.8.2 **B** Decay Heat Removal and Coolant Circulation.

Enter T.S. 3.0.3.

Enter T.S. 3.0.5.

Enter T.S. 3.1.2.5 **B** Reactivity Control System: Decay Heat Pump.

Proposed Answer: C

Explanation (Optional):

Incorrect. Mode 6 Tech Spec.

Incorrect. T.S. 3.0.3 is not applicable due to being within the T.S. action statements.

Correct.

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 #            | _____         | <u>3</u>   |
|                                      | Group #           | _____         | <u>1</u>   |
|                                      | K/A #             | <u>G2.1.4</u> | _____      |
|                                      | Importance Rating | _____         | <u>3.4</u> |

Knowledge of shift staffing requirements

Proposed Question: SRO 95

Which of the following is the MINIMUM on-duty shift complement allowed by Technical Specifications when in Mode 5?

- A. Two SROs, two ROs, two Non-Licensed Operators, one STA
- B. One SRO, two ROs, one Non-Licensed Operator, one STA
- C. One SRO, one RO, one Non-Licensed Operator
- D. Two SROs, one RO, two Non-Licensed Operators

Proposed Answer: C

Explanation (Optional):

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

Technical Reference(s): DB-OP-00100 (Attach if not previously provided)

\_\_\_\_\_

Proposed references to be provided to applicants during examination: None

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  
Comprehension or Analysis

  X    
\_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_\_\_\_  
55.43   2  

Comments:



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 #            | _____          | <u>3</u>   |
|                                      | Group #           | _____          | <u>2</u>   |
|                                      | K/A #             | <u>G2.2.25</u> | _____      |
|                                      | Importance Rating | _____          | <u>3.7</u> |

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?

To assure that an acceptable power distribution is maintained for control rod misalignment analysis.

To assure that the potential effects of control rod misalignment on steam line break accident analyses are minimized.

To assure LOCA analysis bounds on maximum linear heat rate for maximum cladding temperature limits.

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: None

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  
Comprehension or Analysis

X  
\_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_\_\_\_

55.43 2

Comments:





| Examination Outline Cross-reference: | Level             | RO            | SRO        |
|--------------------------------------|-------------------|---------------|------------|
|                                      | Tier #            | _____         | <u>3</u>   |
|                                      | Group #           | _____         | <u>4</u>   |
|                                      | K/A #             | <u>G2.4.1</u> | _____      |
|                                      | Importance Rating | _____         | <u>4.6</u> |

Knowledge of EOP entry conditions and immediate action steps.

Proposed Question: SRO 99

The following plant conditions exist:

- plant is at 28% power on low level limits.
- Temperature is 582°F and stable.
- Indicator 12-1-A, MN STM LINE 1 RAD HI, is in alarm.
- Indicator 9-4-A, VACM SYS DISCH RAD HI, is in alarm.
- Makeup Pumps are running.
- Low pressure is isolated.
- Surge tank level is at 200 inches and decreasing at 5 inches/minute.

Which one of the following sets of actions should be taken?

Continue in DB-OP-02531, Steam Generator Tube Leak and perform a normal Reactor shutdown to Mode 3.

Continue in DB-OP-02531, Steam Generator Tube Leak and perform a rapid plant shutdown to Mode 3.

Enter DB-OP-02000, immediately trip the Reactor and route to the Steam Generator Tube Rupture section when directed in the Supplementary Actions.

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 MUPs 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.

Incorrect. Leak rate exceeds Makeup capacity. OP-02531 step 4.4 directs routing to DB-OP-02000.

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.

DB-OP-02000, Section 8 (SGTR) provides guidance to shut down the Reactor so-as to avoid lifting the secondary code safeties.

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:





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:

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

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

|     |   |     |   |     |   |      |   |
|-----|---|-----|---|-----|---|------|---|
| 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.