



Constellation Energy
Generation Group

July 13, 2007

*Received
7/17/07*

Mr. John Caruso
Division of Reactor Safety
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Subject: R.E. Ginna Nuclear Power Plant
Docket No. 50-244

DRAFT 2007 License Written Exam

Dear Mr. Caruso,

Enclosed please find the Draft written exam for the Ginna 2007 License Class. The Ginna Training Department in conjunction with Western Technical Services constructed the exam utilizing the guidance of NUREG-1021, Rev. 9 and NUREG-1122, Rev. 2. In accordance with 10CFR55.49 and NUREG-1021 section ES-201 Attachment 1 these materials shall be withheld from public disclosure until after the examinations are completed.

If you have any questions or comments, please contact the General Supervisor, Operations Training, James Reid at (585) 771-5415 or via e-mail james.g.reid@constellation.com.

Sincerely,

Mark Geckle

Manager, Nuclear Training

Attachments Enc.

Attachments:

Written Examination Quality Checklist	Form ES-401-6
PWR Examination Outline	Form ES-401-2
Generic Knowledge and Abilities Outline (Tier3)	Form ES-401-3
Record of Rejected K/A's	Form ES-401-4
Written Examination Question Worksheets	Form ES-401-5
Applicable reference materials for exam questions	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>003 K1.03</u>	<u> </u>
	Importance Rating	<u>3.3</u>	<u> </u>

Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: RCP seal system

Proposed Question: Common 1

Which ONE (1) of the following describes the flow through the RCP seals during normal operation in Mode 1?

	<u>#1 Seal flow</u>	<u>#2 Seal flow</u>	<u>#3 Seal flow</u>
A.	3 GPM	3 GPH	100 cc/hr
B.	5 GPM	5 GPH	100 cc/hr
C.	3 GPM	3 GPH	100 cc/min
D.	5 GPM	5 GPH	100 cc/min

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Plausible because seal leakoff is approximately 5 GPM
- C. Incorrect. 100 cc/min is too high, actual flow is 100 cc/hr
- D. Incorrect. See B and C

Technical Reference(s) R1301C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO-1.07A (As available)

Question Source:	Bank #	<u>X</u>	
	Modified Bank #	<u> </u>	(Note changes or attach parent)
	New	<u> </u>	

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____10 CFR Part 55 Content: 55.41 5

Comments:

McGuire 2005 NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>1</u>	
	K/A #	<u>004 K6.17</u>	
	Importance Rating	<u>4.4</u>	

Knowledge of the operational implications of the following concepts as they apply to the CVCS: Flow paths for emergency boration

Proposed Question: Common 2

Given the following:

- Crew has entered FR-S.1, RESPONSE TO REACTOR RESTART/ATWS
- Emergency boration via MOV-350 is not working (MOV jammed)
- 1 Charging pump and 1 Boric Acid pump are running

Which ONE (1) of the following is the next method to be used to establish boric acid injection?

- A. Open RWST to Charging pumps (LCV-112B)
- B. Open the bypass around MOV-350
- C. Open Blender outlet to Charging Pump suction (FCV-110B)
- D. Initiate "normal boration"

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Would be performed if normal boration did not work
- B. Incorrect. Would be performed if control room actions did not succeed
- C. Incorrect. Would be performed if normal boration did not work
- D. Correct.

Technical Reference(s) FR-S.1 (Attach if not previously provided)
ER-CVCS.1

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRS1C 2.01 (As available)

Question Source: Bank # C000.1016

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

Question History: Last NRC Exam 2004 Ginna RO 21

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

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>005 K4.11</u>	<u> </u>
	Importance Rating	<u>3.5</u>	<u> </u>

Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following: Lineup for low head recirculation mode (external and internal)

Proposed Question: Common 3

Following a large break LOCA from 100% power, ECCS will be aligned for low head recirculation.

The following conditions exist:

- The B RHR Pump has failed and is unavailable.
- RHR Pump Suction from Containment Sump B, MOV-850A, cannot be opened.
- RHR Pump Suction from Containment Sump B, MOV-850B, has been opened.

Which ONE (1) of the following describes the action(s) necessary prior to initiate low head recirculation flow?

- A. Close the Breaker for MOV-851B, RHR Pump Suction from Containment Sump B, Open MOV-851B and then Start the A RHR Pump.
- B. Open MOV-704 A and B, RHR Pump Suction Crosstie Valves, and then Start the A RHR Pump.
- C. Start the A RHR Pump.
- D. There is no action that can be taken in this situation to initiate low head recirculation flow, other than restoring the B RHR Pump, or opening MOV-850A.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. MOV 851B is Normally Open with its Breaker locked Open, it does not need to be opened.
- B. Incorrect. MOV-704A and B are open with their Breakers locked Open at power. They do not need to be opened.
- C. Correct.
- D. Incorrect. The design of the system allows for single failures of both the RHR Pump and

the RHR Pump Suction from Containment Sump B.

Technical Reference(s) ES-1.3 (Attach if not previously provided)
EOP Att 14.3

Proposed references to be provided to applicants during examination: None

Learning Objective: RES13C 2.01 (As available)

Question Source: Bank # _____
Modified Bank # C005.0072 (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>1</u>	
	K/A #	<u>005 G2.4.49</u>	
	Importance Rating	<u>4.0</u>	

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

Proposed Question: Common 4

Given the following:

- The plant is in Mode 5, Reduced Inventory Operations in progress
- RHR Loop "A" is operating.
- Instrument Air is lost to FCV-624, RHR Heat Exchanger "A" Outlet Valve.
- RHR Pump "A" discharge pressure and flow are oscillating.
- RHR flow indicates approximately 1500 GPM.
- The ~~CRF~~ ^{CPS} has entered AP-RHR.2, Loss of RHR While Operating at RCS Reduced Inventory Conditions.

Of the following choices, which ONE (1) of the following describes the effect on the plant due to the failure, and the FIRST action that will be required in AP-RHR.2?

- A. RCS temperature will rise; Place RHR Pump "A" in Pull - Stop
- B. RCS temperature will rise; Reduce RHR flow to less than 500 GPM
- C. RCS temperature will lower; Place RHR Pump "A" in Pull - Stop
- D. RCS temperature will lower; Reduce RHR flow to less than 500 GPM

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Incorrect temperature indication, incorrect action
- B. Incorrect. Temperature will lower because more water is going through the heat exchanger
- C. Incorrect. Incorrect action
- D. Correct.

Technical Reference(s) AP-RHR.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP25C 2.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 K6.02	
	Importance Rating	3.4	

Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Core flood tanks (accumulators)

Proposed Question: Common 5

Given the following:

The plant is in Mode 1.

SI Accumulator parameters are as follows:

- "A" SI Accumulator pressure – 690 psig
- "A" SI Accumulator boron concentration – 2560 ppm
- "B" SI Accumulator pressure – 785 psig
- "B" SI Accumulator boron concentration – 3035 ppm

Which ONE (1) of the following describes the impact on the ability of the ECCS to perform its design function?

The inoperability of...

- A. "A" SI Accumulator affects the long term cooling capability of the ECCS.
- B. "B" SI Accumulator affects the long term cooling capability of the ECCS.
- C. "A" SI Accumulator affects the ability of ECCS to maintain a coolable core geometry.
- D. "B" SI Accumulator affects the ability of ECCS to maintain a coolable core geometry.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. "A" SI accumulator is inoperable because pressure is below the TS required value
- B. Incorrect. "B" SI Accumulator is within limits, although close to high out of spec
- C. Correct. Coolable geometry is affected by the SI Accumulator ability to reflood following a

LBLOCA

D. Incorrect. "B" SI Accumulator is in spec

Technical Reference(s) TS 3.5.1 and basis (Attach if not previously provided)
R2701CProposed references to be provided to applicants during examination: NoneLearning Objective: EO 1.07a (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 X10 CFR Part 55 Content: 55.41 5
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007 K5.02	
	Importance Rating	3.1	

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

Proposed Question: Common 6

Given the following:

- The plant is in Mode 4.
- RCS temperature is 335°F.
- A bubble is being formed in the PRZR.

Which ONE (1) of the following describes a plant restriction while forming a bubble, and the method(s) used to ensure the conditions are met?

- A. RCS pressure is maintained less than 350 psig to prevent operation of the Overpressure Protection system; Letdown Backpressure control is maintained automatically at the setpoint.
- B. RCS pressure is maintained greater than 350 psig to ensure the bubble does not form under the reactor vessel head; Letdown Backpressure control is maintained automatically at the setpoint.
- C. RCS pressure is maintained less than 350 psig to prevent operation of the Overpressure Protection system; Charging flow and/or PRZR spray are manually adjusted as the bubble is forming.
- D. RCS pressure is maintained greater than 350 psig to ensure continued RCP operation; Charging flow and/or PRZR spray are manually adjusted as the bubble is forming.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Correct action but pressure is maintained below 350 psig
- C. Incorrect. Incorrect action but correct restriction. Actions are for maintaining Letdown flow below 70 GPM
- D. Incorrect. Incorrect restriction and incorrect action

Technical Reference(s) O-1.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: ROP00C 1.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 A2.02	
	Importance Rating	3.2	

Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low surge tank level.

Proposed Question: Common 7

Given the following:

- The plant is at 100% power.
- The following annunciator is received:
 - A-5, CCW Surge Tank Hi Level 58.8%
- The HCO determines that the alarm is valid.
- Normal charging and letdown is in service.
- CCW Surge Tank is at 59% and raising slowly.
- R-17, CCW Radiation Monitor, is stable, and NOT in alarm.

Which ONE (1) of the following describes a potential cause of the alarm, and procedure that could be used to mitigate its consequences?

- Read*
- A. The CCW Surge Tank Fill Valve is leaking by its seat, and AP-CCW.1, Leakage into the Component Cooling Loop," should be addressed.
 - B. There is a tube leak in the Sealwater Heat Exchanger, and AP-CCW.1, Leakage into the Component Cooling Loop," should be addressed.
 - C. There is a tube leak in the Sealwater Heat Exchanger, and AP-CCW.2, Loss of CCW During Power Operation," should be addressed.
 - D. There is a tube leak in the Non-Regenerative Heat Exchanger, and AP-CCW.2, Loss of CCW During Power Operation," should be addressed.

Proposed Answer: A

Explanation (Optional):

- A. Correct. If valve is leaking by seat makeup water will enter CCW system when RMW pumps are started. Step 13 of AP-CCW.1 provides mitigation steps.
- B. Incorrect. If there is a tube leak in the SW HX the flow would be from CCW to Sealwater return flow and CCW Tank level would decrease.

- C. Incorrect. Although AP-CCW.2 addresses a Sealwater HX tube leak, If there is a tube leak in the SW HX the flow would be from CCW to Sealwater return flow and CCW Tank level would decrease. The given symptoms do not support such a leak.
- D. Incorrect. A NRHX tube leak would result in increased inventory in the CCW system, however, R017 would also be in alarm. Additionally, a leak of this nature would require the use of AP-CCW.1 and not 2.

Technical Reference(s) AP-CCW.2, AR-A-5 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7, 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 A1.08	
	Importance Rating	3.2	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PZR PCS controls including: Spray nozzle DT

Proposed Question: Common 8

Given the following conditions:

- A reactor trip and loss of off-site power have occurred.
- The crew is performing ES-0.2, Natural Circulation Cooldown.
- The HCO is preparing to initiate Auxiliary Spray to depressurize the RCS.
- PRZR pressure is 2235 psig.
- PRZR level is 24%.

Of the following choices, which ONE (1) of the following describes the MINIMUM allowable temperature for initiating Auxiliary Spray in accordance with ES-0.2?

Regenerative Heat Exchanger...

- A. Inlet temperature 355°F
- B. Inlet temperature 335°F
- C. Outlet temperature 355°F
- D. Outlet temperature 335°F

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Inlet temperature will not be an accurate indication of Spray Line Delta T because Charging is heated up in the RHX. Number is for 300 degree DT
- B. Incorrect. Correct DT but incorrect parameter
- C. Incorrect. Correct parameter but incorrect value
- D. Correct.

Technical Reference(s) ES-0.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RES 1.02 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>010 G2.1.2</u>	<u> </u>
	Importance Rating	<u>3.0</u>	<u> </u>

Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.

Proposed Question: Common 9

Given the following:

- The plant is at 90% power.
- The following annunciators are received:
 - (F-18) PRZR Safety Valve Outlet High Temperature 145 degrees F
 - (AA-13) PRZR Safety Valve Position
 - (F-10) PRZR Low Pressure 2185 PSI
- PRZR pressure is 2160 psig and trending DOWN slowly.

Which ONE (1) of the following describes the NEXT action required to stabilize the plant in accordance with AP-PRZR.1, Abnormal Pressurizer Pressure?

- A. Trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- B. Place the PRZR Pressure Controller, 431K, in MANUAL and raise output.
- C. Ensure Heaters are energized and PRZR Spray valves are closed.
- D. Close PORV Block Valves 1 at a time to attempt to stop the pressure decrease.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Incorrect because a trip setpoint has not been exceeded
- B. Incorrect. Output is checked at 50%, controller would not be placed in manual unless it indicated malfunction
- C. Correct.
- D. Incorrect. Action for PORV leak. Indication is SV leak

Technical Reference(s) AP-PRZR.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP11C 2.01 (As available)

Question Source: Bank # _____
Modified Bank # B010.0022 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>1</u>	
	K/A #	<u>012 K5.01</u>	
	Importance Rating	<u>3.3</u>	

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

Proposed Question: Common 10

Which ONE (1) of the following reactor trip signals provides protection against DNB (Departure from Nucleate Boiling)?

- A. Over Power Delta T
- B. High Pressurizer Level
- C. Bus 11A Underfrequency
- D. Steam Generator LO-LO Water Level

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Fuel Integrity is protected by OPDT
- B. Incorrect. Backup for High PZR Pressure
- C. Correct. Bus supplies RCPs, which provide the flow input for DNBR calculation
- D. Incorrect. SG Low Low Level is a backup for High Pressure

Technical Reference(s) TS 3.3.1 Basis (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: RTS03C 1.03 (As available)

Question Source:	Bank #	<u>X</u>	
	Modified Bank #	<u></u>	(Note changes or attach parent)
	New	<u></u>	

Question History: Last NRC Exam Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content:	55.41	<u>5</u>
	55.43	<u>2</u>

Comments:

WTSI Westinghouse Generic

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 K6.01	
	Importance Rating	2.7	

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

Proposed Question: Common 11

Given the following:

- The plant is at 100% power.
- All control systems are in their normal alignments.
- Pressurizer Pressure Transmitter PT-429 has failed LOW.
- All actions have been taken to remove the transmitter from service in accordance with the appropriate plant procedures.

Which ONE (1) of the following describes the logic required from the remaining operable pressurizer pressure channels to initiate (1) a Low Pressurizer Pressure Reactor Trip, and (2) a Low Pressurizer Pressure Safety Injection actuation?

- A. (1) 1 out of 2
(2) 1 out of 3
- B. (1) 1 out of 3
(2) 1 out of 2
- C. (1) 1 out of 2
(2) 1 out of 2
- D. (1) 1 out of 3
(2) 1 out of 3

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Opposite of actual
- B. Correct.
- C. Incorrect. Reactor Trip receives inputs from 4 channels
- D. Incorrect. Safety Injection receives input from 3 channels

Technical Reference(s) R1901C, R3501C (Attach if not previously provided)
ER-INST.1

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07d (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 7

Comments:

Have similar in WTSI Bank for different failures

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 A1.09	
	Importance Rating	3.4	

Ability to predict and/or monitor changes in parameters (to Prevent exceeding design limits) associated with operating the ESFAS controls including: T-hot

Proposed Question: Common 12

Given the following:

- ECA-2.1, Uncontrolled Depressurization of All Steam Generators is being performed.
- The crew has reduced AFW flow to both steam generators (SG) to 50 gpm as they continue attempts to isolate the SGs.

Which ONE (1) of the following describes the expected plant response to the AFW flow reduction and what actions will be taken to mitigate the effect?

- RCS hot leg temperatures will eventually begin to increase due to reduction of SG inventory and the crew will then transition to FR-H.1, Response to Loss of Secondary Heat Sink.
- RCS hot leg temperatures will eventually begin to increase due to reduction in SG inventory and the crew will then raise AFW flow while continuing in ECA-2.1, Uncontrolled Depressurization of All Steam Generators.
- The SGs will eventually become completely depressurized due to inadequate secondary heat sink and the crew will then transition to E-2, Faulted Steam Generator Isolation.
- The SGs will eventually become completely depressurized due to inadequate secondary heat sink and the crew will then transition to FR-H.1, Response to Loss of Secondary Heat Sink.

Proposed Answer: B

Explanation (Optional):

- Incorrect. Will not go to FR-H.1 as long as capability for AFW is maintained
- Correct. AFW remains throttled until Thot begins to increase, then it is raised to stabilize Thot
- Incorrect. The SGs depressurize because of the event. E-2 is not used until 1 SG repesurizes

D. Incorrect. Do not go to FR-H.1 if capability to feed remains

Technical Reference(s) ECA-2.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC21C 2.01 (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 10

Comments:

Previous NRC VC Summer 2006. E12 test item

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 K4.03	
	Importance Rating	2.8	

Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Automatic Containment Isolation.

Proposed Question: Common 13

Given the following:

- The plant is in Mode 1.
- Containment Mini-Purge is in operation.
- All other ventilation systems are in their normal alignments.
- Subsequently, the following events occur:
 - RCS pressure lowering.
 - PRZR level lowering.
 - Main Steam pressure lowering.
 - Containment pressure stable.
 - The crew manually initiates a reactor trip and safety injection.

Which ONE (1) of the following correctly describes the operation of the Containment Ventilation System?

- A. Containment Mini-Purge will isolate. All other ventilation will remain running as prior to the safety injection.
- B. Containment Mini-Purge will isolate. CRDM cooling fans and Containment compartment cooling fans will stop.
- C. Containment Mini-Purge will remain running until Containment pressure or radiation levels exceed the trip setpoint. All other ventilation will remain running as prior to the safety injection.
- D. Containment Mini-Purge will remain running until Containment pressure or radiation levels exceed the trip setpoint. CRDM cooling fans and Containment compartment cooling fans will stop.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Containment Ventilation Isolation will stop the mini-purge (Any SI)
- B. Incorrect. CVI does not trip these fans
- C. Incorrect. SI will stop the mini-purge, but plausible because these other signals also stop it
- D. Incorrect. SI will stop the mini-purge, but plausible because these other signals also stop

it

Technical Reference(s) R2101C (Attach if not previously provided)
EOP Att 3

Proposed references to be provided to applicants during examination: None

Learning Objective: EO-1.04 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	026 G2.2.22	
	Importance Rating	3.4	

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

Proposed Question: Common 14

Given the following:

The plant is in Mode 1.

<u>TIME</u>	<u>EVENT</u>
1310	Containment Spray Pump "A" declared INOPERABLE due to a failed surveillance.
1339	Containment Spray Pump "B" also declared INOPERABLE due to the results of a common cause failure analysis.
1406	Plant Shutdown to Mode 3 commenced.
1421	Containment Spray Pump "A" returned to OPERABLE status.
1449	Containment Spray Pump "B" returned to OPERABLE status.

Which ONE (1) of the following describes the Technical Specification requirements for operation of the plant?

Plant conditions...

- A. require that the Shutdown to Mode 3 is completed no later than 1939.
- B. require that the Shutdown to Mode 3 is completed no later than 2006.
- C. allowed the plant shutdown to be terminated no earlier than 1421.
- D. allowed the plant shutdown to be terminated no earlier than 1449.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Represents 6 hours from inoperability of 2nd pump.
- B. Incorrect. Represents 6 hours from initiation of plant shutdown
- C. Correct. When the condition requiring entry to 3.0.3 no longer applies, shutdown may be terminated
- D. Incorrect. Condition requiring entry to 3.0.3 was cleared when first pump was returned to operable status

Technical Reference(s) TS 3.6.6, TS 3.0.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.12, 1.13 (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 10
55.43 2

Comments:

Modified from WTSI Bank but credit as bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K3.04	
	Importance Rating	2.5	

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

Proposed Question: Common 15

Given the following:

- A reactor trip has occurred.
- All equipment is operating as designed.
- The crew has entered E-0, Reactor Trip or Safety Injection.
- Plant conditions as follows:
 - RCS pressure is 1600 psig and lowering slowly.
 - RCS temperature is 500°F.
 - "A" SG pressure is 680 psig and stable.
 - "B" SG pressure is 380 psig and lowering.
 - Containment pressure is 6.5 psig and rising.

Which ONE (1) of the following describes the status of feedwater, and the required action based on plant conditions?

- A. Main Feedwater Pumps are running; Feedwater flow must be throttled to each SG to maintain RCS cooldown rate within limits.
- B. Main Feedwater Pumps are running; Feedwater flow must be isolated to SG "B".
- C. Main Feedwater Pumps are tripped; Aux Feedwater flow must be throttled to each SG to maintain RCS cooldown rate within limits.
- D. Main Feedwater Pumps are tripped; Aux Feedwater flow must be isolated to SG "B".

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. SI has actuated with the conditions presented. MFPs would be tripped
- B. Incorrect. SI has actuated with the conditions presented.

- C. Incorrect. AFW to a faulted SG must be isolated, so the fault is not fed
D. Correct.

Technical Reference(s) E-2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REP02C 2.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K1.01	
	Importance Rating	3.1	

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

Proposed Question: Common 16

Given the following:

- The plant was at 100% power.
- "A" SG Atmospheric Relief Valve (ARV) is in Manual.
- A load rejection is occurring.
- SG pressures are currently 1090 psig and stable.
- NO action has been taken.

Which ONE (1) of the following describes the status of "A" Steam Generator?

"A" SG ARV is...

- A. open; all SG Safety Valves are closed.
- B. closed; all SG Safety Valves are closed.
- C. open; ONE (1) SG Safety Valve is open.
- D. closed; ONE (1) SG Safety Valve is open.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The ARV is snapped open because the controller is in manual
- B. Incorrect. The ARV receives a snap open signal at 1060 psig when the controller is in manual
- C. Correct. Low set SV is 1085 psig. The other 3 SVs open at 1140 psig
- D. Incorrect. ARV is open

Technical Reference(s) R4001C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07b, c (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 5,7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>1</u>	
	K/A #	<u>059 K1.04</u>	
	Importance Rating	<u>3.4</u>	

Knowledge of the physical connections and/or cause-effect relationships between the MFW and the following systems: S/GS water level control system

Proposed Question: Common 17

Given the following:

- The Plant is operating at 35% Power.
- All systems are in a normal configuration.
- A power supply failure in the Advanced Digital Feedwater Control System (ADFCS) occurs.
- ADFCS is deenergized.

Which ONE (1) of the following describes the impact this failure will have on the Main Feedwater System?

- A. The Feedwater Regulating Valves will fail as is; the running Main Feedwater Pump will trip.
- B. The Feedwater Regulating Valves will fail closed; the running Main Feedwater Pump will continue to run.
- C. The Feedwater Regulating Valves will transfer to manual; the running Main Feedwater Pump will trip.
- D. The Feedwater Regulating Valves will transfer to manual; the running Main Feedwater Pump will continue to run.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Valves fail closed and pump does not receive a trip signal
- B. Correct.
- C. Incorrect. Valves will close on loss of power to ADFCS
- D. Incorrect.

Technical Reference(s) R4401C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.05a, b (As available)

Question Source: Bank # C000.1377
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 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 A1.05	
	Importance Rating	3.6	

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: AFW flow/motor amps

Proposed Question: Common 18

Given the following:

Following a reactor trip, the CO is throttling the TDAFW Pump discharge flow control valve closed when the following annunciator is received:

- AR H-10, AUXILIARY FEEDWATER PUMP LIGHT LOAD

Which ONE (1) of the following describes the status of the TDAFW flowpath at the time the alarm is received?

- A. TDAFW flow has reached a setpoint of 100 GPM.
- B. TDAFW flow has reached a setpoint of 80 GPM.
- C. TDAFW discharge pressure has reached a setpoint of 1350 psig.
- D. TDAFW discharge pressure has reached a setpoint of 1085 psig.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. The recirc valve will open at 80 gpm and close at 100 gpm flow. If the flow has just dropped below 100 gpm and has not reached the Valve Open setpoint of 80 gpm, then the valve could be closed with the lo flow alarm setpoint of < 100 gpm realized.
- C. Incorrect. MDAFW discharge pressure at >1350 used to cause the alarm
- D. Incorrect. TDAFW discharge pressure at >1350 will cause the alarm. 1085 is design pressure *↳ MDAFW?*

Technical Reference(s) R4201C (Attach if not previously provided)
AR-H-10

Proposed references to be provided to applicants during examination: NONELearning Objective: EO 1.11a (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 A2.09	
	Importance Rating	TBD	

Ability to(a) predict the impact of the following malfunctions or operations on the AFW system; and (b) based on those predictions use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Total loss of feedwater

Proposed Question: Common 19

Given the following:

- A reactor trip has occurred due to a loss of feedwater.
- Subsequent failures required the crew to enter FR-H.1, Response to Loss of Secondary Heat Sink.
- RCS pressure is 2280 psig.
- Containment pressure is 2 psig.
- The crew has started the TDAFW Pump.
- Current conditions are as follows:
 - "A" SG WR level has decreased to 55 inches
 - "B" SG WR level has decreased to 52 inches
 - RCS pressure has increased to 2330 psig.
- The crew is referring to Attachment 22, Attachment Restoring Feed Flow.

Which ONE (1) of the following describes the action required to restore AFW flow, prior to checking RCS temperatures in accordance with Attachment 22?

- A. Feed as desired until WR level is >100 inches.
- B. Feed as desired until NR level is >7%.
- C. Feed at no greater than 100 GPM until WR level is >100 inches.
- D. Feed at no greater than 100 GPM until NR level is >7%.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. WR 100 inches is the adverse value for bleed and feed criteria

- B. Correct.
- C. Incorrect. WR 100 inches is adverse value for bleed and feed, and 100 GPM restriction is only if WR level is less than 50 inches
- D. Incorrect. Do not have to feed <100 GPM if SG levels were above 50 inches

Technical Reference(s) FR-H.1, Att. 22 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	062 K2.01	
	Importance Rating	3.3	

Knowledge of bus power supplies to the following: Major system loads

Proposed Question: Common 20

Given the following:

- A loss of all AC power occurred 10 minutes ago.
- The crew is performing actions of ECA-0.0, Loss of All AC Power.
- Power has NOT been restored.

Which ONE (1) of the following describes the status of the 120 VAC Instrument Buses?

- Turned off by
upon loss
of power*
- A. 1A, 1B, 1C, 1D energized.
- B. 1A, 1B, 1C, 1D de-energized.
- C. 1A and 1C energized. 1B and 1D de-energized.
- D. 1A and 1C de-energized. 1B and 1D energized.
- TRIP*

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. Power will be maintained to 1A and 1C IB's. IB 1B and 1D must be manually re-energized on loss of all AC power. (MCC-1B and MCC-1C will be de-energized)
- D. Incorrect.

Technical Reference(s) R0901C (Attach if not previously provided)
P-10

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07 (As available)

Question Source: Bank # _____

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 5

Comments:

Lower Cog Bank item

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>062 A4.07</u>	<u> </u>
	Importance Rating	<u>3.1</u>	<u> </u>

Ability to manually operate and/or monitor in the control room: Synchronizing and paralleling of different ac supplies

Proposed Question: Common 21

Given the following conditions:

- EDG "B" is being synchronized to its associated bus for surveillance.
- When the Synch switch is placed in "ON", the synchroscope pointer begins to move very slowly in the COUNTER-CLOCKWISE direction.

Which ONE (1) of the following actions is required prior to synchronizing the EDG?

- A. Position EDG Auto Voltage control rheostat to RAISE
- B. Position EDG Auto Voltage control rheostat to LOWER
- C. Place EDG Governor Control switch to RAISE
- D. Place EDG Governor Control switch to LOWER

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Voltage controls VARS in parallel. Voltage mismatch may result in high current flow when the breaker is closed, but will not change speed
- B. Incorrect.
- C. Correct. To make the synchroscope change direction, the EDG speed must be raised to a higher value than grid frequency (related to speed)
- D. Incorrect. Action would make synchroscope go faster in the slow direction

Technical Reference(s) R0801C (Attach if not previously provided)
PT-12.1, 12.2

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.09 (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 5

Comments:

Numerous similar bank items

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 A4.03	
	Importance Rating	3.0	

Ability to manually operate and/or monitor in the control room: Battery discharge rate

Proposed Question: Common 22

Given the following:

- A loss of all AC Power has occurred.
- The crew has entered ECA-0.0, Loss of All AC Power.
- Battery "A" current flow is approximately 150 amps.

Which ONE (1) of the following describes the MINIMUM time that battery "A" will remain operable if DC Bus "A" load shedding is NOT performed, and the MINIMUM voltage required for the bus to remain available?

- A. 4 Hours; 120 VDC
- B. 4 Hours; 105 VDC
- C. 8 Hours; 120 VDC
- D. 8 Hours; 105 VDC

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Correct time but voltage incorrect. Voltage is nominally the DC low volt alarm setpoint
- B. Correct.
- C. Incorrect. Plausible because at 150 amps discharge rate, it will be 8 hours to full discharge based on the rating of the battery. Incorrect due to wrong voltage
- D. Incorrect. Plausible because at 150 amps discharge rate, it will be 8 hours to full discharge based on the rating of the battery.

Technical Reference(s) ECA-0.0, R0901C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 7, 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>064 K2.03</u>	<u> </u>
	Importance Rating	<u>3.2</u>	<u> </u>

Knowledge of bus power supplies to the following: Control power

Proposed Question: Common 23

Which ONE (1) of the following describes the effect of a loss of Battery "A" on the operation of EDG "A"?

- A. EDG "A" will automatically start if required, but control power to the "A" Fuel Transfer System is lost.
- B. EDG "A" will automatically start if required, but remote operation from the MCB is lost.
- C. EDG "A" will NOT automatically start if required, due to loss of power to the Start Relay.
- D. EDG "A" will NOT automatically start if required, due to loss of power to the Air Start Valve

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. The transfer panel loses control power, resulting in inability to transfer to LOCAL operation
- C. Incorrect. Battery "B" supplies alternate power to a redundant start relay
- D. Incorrect. Battery "B" supplies power to a redundant air start valve solenoid

Technical Reference(s) R0801C (Attach if not previously provided)
ER-ELEC.2

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.10b (As available)

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

New	<u>X</u>
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Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	<u></u>

10 CFR Part 55 Content:	55.41	<u>7</u>
		<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 K3.01	
	Importance Rating	3.6	

Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: Radioactive effluent releases

Proposed Question: Common 24

Given the following:

- The plant is in Mode 1.
- A Gas Decay Tank release is in progress.
- The following alarm is received:
 - E-16, RMS PROCESS MONITOR HI ACTIVITY
- The crew responds in accordance with AR-RMS-14.1, PLANT VENT GAS FAIL
- R-14 indicates downscale

Which ONE (1) of the following describes the effect on the release and associated actions that are required?

- A. The release is automatically terminated. Initiate A-52.12 (ODCM)
- B. The release is automatically terminated. The release may be reinitiated provided that 2 independent samples are obtained and 2 qualified personnel perform valve alignments. Contact RP and I & C to determine the cause and initiate repair.
- C. The release continues. Manually terminate the release and initiate A-52.12 (ODCM)
- D. The release continues. The release may continue provided that 2 independent samples are obtained and 2 qualified personnel perform valve alignments. Contact RP and I & C to determine the cause and initiate repair.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The release will only terminate on high radiation, not on detector failure
- B. Incorrect. The release will not terminate automatically

- C. Correct. IAW AR-RMS-14.1, also contact RP and I&C
D. Incorrect. The release must be terminated when the alarm is received

Technical Reference(s) AR-RMS-14.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.06 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10, 12

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>1</u>	
	K/A #	<u>076 A3.02</u>	
	Importance Rating	<u>3.7</u>	

Ability to monitor automatic operation of the SWS, including: Emergency heat loads

Proposed Question: Common 25

Given the following conditions:

- A reactor trip has occurred.
- The crew has entered E-0, Reactor Trip or Safety Injection.
- RCS pressure indicates 1720 psig.
- Containment pressure indicates 4.5 psig.
- PZR level indicates 5%.
- All equipment is running as designed.

Which ONE (1) of the following describes the alignment of the Service Water system?

	<u>SW Outlets from CNMT Coolers</u>	<u>SW Supply to CCW Heat Exchangers</u>
A.	Throttled	Open
B.	Throttled	Closed
C.	Tripped Open	Open
D.	Tripped Open	Closed

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. SI signal has been generated, and CNMT Cooler valves will trip open.
- B. Incorrect. SI signal has been generated, and CNMT Cooler valves will trip open. CCW valves will remain open, a SW isolation does not exist
- C. Correct.
- D. Incorrect. SW isolation does not exist

Technical Reference(s) R5101C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.04a (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 A4.01	
	Importance Rating	3.1	

Ability to manually operate and/or monitor in the control room: Pressure gauges

Proposed Question: Common 26

The plant is at 100% power.

- Service Air Compressor is running loaded following maintenance.
- Instrument Air Compressor "C" is running unloaded.
- Instrument Air pressure is lowering.
- "A" and "B" Instrument Air Compressors in Standby.

Which ONE (1) of the following describes the Air Compressor configuration when MCB Instrument Air pressure gauge PI-2086 lowers to 103 psig?

- A. The Service Air Compressor AND Instrument Air Compressor "C" are running loaded. "A" and "B" IAC running loaded.
- B. The Service Air Compressor AND Instrument Air Compressor "C" are running loaded. "A" and "B" IAC remain in Standby.
- C. The Service Air Compressor is running loaded; the C Instrument Air Compressor is running unloaded. "A" and "B" IAC running loaded.
- D. The Service Air Compressor is running loaded; the C Instrument Air Compressor is running unloaded. "A" and "B" IAC remain in Standby.

Proposed Answer: A

Explanation (Optional):

- A. Correct. 105 psig starts backup (standby) compressors
- B. Incorrect. SA Compressor as the backup would have started and loaded at 105. Would load if running unloaded prior to reaching 105 psig
- C. Incorrect. C IAC will cycle between 110-123 psig. At this pressure it is running loaded.
- D. Incorrect. When running both compressors will unload at 123 psig, so they will both still be loaded.

Technical Reference(s) 4701C IA/SA (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.10a (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 A2.03	
	Importance Rating	3.5	

Ability to (a) predict the impacts of the following malfunctions or operations on the containment system-and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations Phase A and B isolation

Proposed Question: Common 27

Given the following:

- With the plant at 100% power, the following annunciator is received:
 - AR A-26, CONTAINMENT ISOLATION
- No other alarms are received.

Which ONE (1) of the following describes the effect on the plant, and the action that will be required?

- A. A reactor trip signal is generated; perform actions of E-0, Reactor Trip or Safety Injection. SI and CI must be reset prior to restoring Letdown.
- B. A reactor trip signal is generated; perform actions of E-0, Reactor Trip or Safety Injection. Verify Containment Isolation using Attachment 3.0, Attachment CI/CVI.
- C. A reactor trip signal is NOT generated; SI and CI must be reset prior to restoring Letdown.
- D. A reactor trip signal is NOT generated; Verify Containment Isolation using Attachment 3.0, Attachment CI/CVI.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Trip generated by SI, this is only CI. If there was a trip, action would be correct
- B. Incorrect. Trip generated by SI, this is only CI. Actions correct for actual event
- C. Incorrect. Actions would be correct if SI was generated
- D. Correct. AR-A-26 directs verification of CI/CVI if no SI has occurred

Technical Reference(s) AR-A-26 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.11a (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 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	103 A3.01	
	Importance Rating	3.9	

Ability to monitor automatic operation of the containment system, including: Containment isolation

Proposed Question: Common 28

Given the following:

An RCS leak resulted in the following conditions:

<u>TIME</u>	<u>EVENT</u>
0815	Manual Reactor Trip.
0818	Manual Safety Injection.
0826	Pressurizer Pressure 1750 psig and lowering.
0827	Containment Pressure 4 psig and rising.
0831	Containment Pressure 29 psig and rising.
0833	RCS Pressure 220 psig and stable.

Which ONE (1) of the following choices describes the EARLIEST time a Containment Isolation signal was generated?

- A. 0818
- B. 0826
- C. 0827
- D. 0831

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. CI not actuated on Manual SI
- B. Correct. SI signal generated on Low PZR pressure
- C. Incorrect. Low PZR pressure was actuated prior to Ctmt pressure
- D. Incorrect. Setpoint for Containment Spray is 28 psig

Technical Reference(s) P-7, R2101C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07b (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>2</u>	
	K/A #	<u>002 K1.07</u>	
	Importance Rating	<u>3.5</u>	

Knowledge of the physical connections and/or cause-effect relationships between the RCS and the following systems: Reactor vessel level indication system

Proposed Question: Common 29

Which ONE (1) of the following describes the purpose of the Tcold input to the Reactor Vessel Level Indicating System? (RVLIS)

Provides density compensation and measurement of specific gravity for RCS fluid for RVLIS indication...

- A. during all modes of operation.
- B. ONLY for operation with RCPs off.
- C. ONLY for operation with NO SI or RHR Flow, and when CETs NOT > Tsat.
- D. ONLY for operation with RCPs running with NO SI or RHR Flow, and when CETs NOT > Tsat.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Defeated with RCPs on or off if SI or RHR flow exists
- B. Incorrect. Active for RCPs on or off
- C. Correct.
- D. Incorrect. Active also for RCPs off

Technical Reference(s) R6701C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.02d (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011 K1.04	
	Importance Rating	3.8	

Knowledge of physical connections and/or cause-effect relationships between the PZR LCS and the following: RPS

Proposed Question: Common 30

Given the following:

- The plant is at 100% power.
- PRZR Pressure Master Controller 431K is in MANUAL.
- PRZR level transmitter LT-428 fails LOW.

Assuming no action by the crew, which ONE (1) of the following describes the effect on OT Delta T setpoint and PRZR level?

- A. OT Delta T setpoint will rise. PRZR level will rise until the reactor trips.
- B. OT Delta T setpoint will rise. PRZR level will lower until letdown isolates.
- C. OT Delta T setpoint will lower. PRZR level will rise until the reactor trips.
- D. OT Delta T setpoint will lower. PRZR level will lower until letdown isolates.

Proposed Answer: A

Explanation (Optional):

- A. Correct. LT-428 is control channel, and failing low will cause letdown to isolate. Charging flow will rise and PRZR level will continue to rise until the trip setpoint is reached. If PRZR level rises to the trip setpoint, PRZR pressure will also be higher due to the bubble being squeezed. OTDT setpoint will be higher at the higher pressure, assuming no reactor trip on High PRZR pressure
- B. Incorrect. PRZR level would lower if failure was controlling channel in opposite direction
- C. Incorrect. OTDT setpoint would lower if pressure was reduced
- D. Incorrect. OTDT setpoint would lower with reduced pressure, and PRZR would lower if failure was controlling channel in opposite direction

Technical Reference(s) R1901C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: NoneLearning Objective: EO 1.06d (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 X10 CFR Part 55 Content: 55.41 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>2</u>	
	K/A #	<u>016 G2.2.22</u>	
	Importance Rating	<u>3.4</u>	

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

Proposed Question: Common 31

Which ONE (1) of the following transmitters will require entry into the technical specification action statement for Reactor Trip System Instrumentation if it fails low?

- A. Loop "B" Wide Range Thot
- B. Loop "A" Narrow Range Tcold
- C. SG "B" Main Steam Pressure
- D. SG "A" Main Steam Flow

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. WR temperature not input to RPS, input to post accident monitoring
- B. Correct. NR temperature inputs to OTDT reactor trip instrumentation
- C. Incorrect. Input to ESFAS but no RPS function
- D. Incorrect. Input to ESFAS but not RPS

Technical Reference(s) TS 3.3.1 (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: RTS03C 1.01 (As available)

Question Source:	Bank #	
	Modified Bank #	
	New	<u>X</u>

(Note changes or attach parent)

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	017 A4.02	
	Importance Rating	3.8	

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

Proposed Question: Common 32

Given the following:

- A LOCA has occurred.
- Due to equipment failures, the crew has transitioned to FR-C.1, response to Inadequate Core Cooling.

Which ONE (1) of the following describes the operation of RCPs for this event?

- A. Any available RCPs are run for the entire event.
- B. Any available RCPs are started prior to performing secondary depressurization.
- C. One RCP at a time is started if it is available, only if secondary depressurization is ineffective, as determined by Core Exit Thermocouple temperature >1200°F.
- D. One RCP is started as soon as its associated SG NR level is greater than 7%, prior to performing secondary depressurization.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Plausible because forced circulation of the RCS is always desirable
- B. Incorrect. Plausible because procedure provides for a second depressurization step after RCP start
- C. Correct.
- D. Incorrect. SG level is desired but not required, and RCP start is after depressurization is ineffective

Technical Reference(s) FR-C.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRC1C 2.01 (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 10
_____Comments:
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	
	Group #	<u>2</u>	
	K/A #	<u>034 A3.01</u>	
	Importance Rating	<u>2.5</u>	

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

Proposed Question: Common 33

Which ONE (1) of the following describes the Fuel Handling System interlock that prevents the Manipulator Crane Mast from colliding with the South Guide stud?

- A. Bridge Travel is restricted by a zone interlock to the south end of the core if the Trolley is aligned with the Refueling Canal centerline.
- B. Bridge Travel is restricted by a zone interlock to the south end of the core if the Trolley is NOT aligned with the Refueling Canal centerline.
- C. Limit switches prevent Bridge movement in the south direction when the mast reaches the south edge of the core if the Trolley is aligned with the Refueling Canal centerline.
- D. Limit switches prevent Bridge movement in the south direction when the mast reaches the south edge of the core if the Trolley is NOT aligned with the Refueling Canal centerline.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Travel will not be restricted if aligned with cavity centerline
- B. Correct. Zone interlock for south travel unless aligned with Cavity centerline
- C. Incorrect. Limit switches prevent collision with north guide stud
- D. Incorrect. Limit switches prevent collision with the north guide stud

Technical Reference(s) R3701C (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	035 K5.03	
	Importance Rating	2.8	

Knowledge of operational implications of the following concepts as they apply to the S/GS: Shrink and swell concept.

Proposed Question: Common 34

Which ONE (1) of the following describes the function of the Feedwater Temperature input to the ADFCS?

- A. Provides a gain adjustment to the level error signal in Low Power mode to minimize effects of shrink and swell.
- B. Provides a gain adjustment to the level error signal in High Power mode to minimize effects of shrink and swell.
- C. Provides density compensation to the Feedwater flow signal in Low Power Mode to provide ADFCS stability.
- D. Provides density compensation to the Feedwater flow signal in High Power Mode to provide ADFCS stability.

Proposed Answer: A

Explanation (Optional):

- A. Correct. At low power, effects shrink and swell are more severe
- B. Incorrect. At high power provides for stability
- C. Incorrect. Provides a gain adjustment to level error, not density compensation for feed flow
- D. Incorrect. Provides a gain adjustment to level error, not density compensation for feed flow

Technical Reference(s) R4401C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.07b.6 (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	041 K3.04	
	Importance Rating	3.5	

Knowledge of the effect that a loss or malfunction of the SDS will have on the following: Reactor power

Proposed Question: Common 35

Given the following:

- A load rejection has occurred.
- Reactor power is currently 75%.
- Generator load is approximately 380 MWe.
- Group "A" Steam Dump Valves are full open.
- The arming solenoid to Group "A" Steam Dump Valves fails, losing power.

Which ONE (1) of the following describes the effect on reactor power?

Reactor power is reduced by approximately...

- A. 3.5%.
- B. 7%.
- C. 10.5%.
- D. 21%.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Valves fail closed. 2 valves in Group A, each with a capacity of 3.5%
- B. Correct. Capacity of 2 valve
- C. Incorrect. Capacity of 1 SG Safety valve
- D. Incorrect. Capacity of 2 SG Safety valves

Technical Reference(s) R4501C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.06b (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 7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>045 A1.05</u>	<u> </u>
	Importance Rating	<u>3.8</u>	<u> </u>

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including: Expected response of primary plant parameters (temperature and pressure) following T/G trip

Proposed Question: Common 36

Given the following plant conditions:

- An ATWS has occurred from 100% power.
- The crew is performing actions in accordance with FR-S.1, Response to Reactor Restart/ATWS.
- The HCO determines that the following occurs in rapid succession:
 - RCS temperature and pressure increasing
 - PZR PORVs indicate OPEN
 - PRT temperature, level, and pressure increasing

Which ONE (1) of the following has occurred?

- A. The turbine and reactor have tripped. SI has actuated.
- B. The turbine has tripped but the reactor has NOT tripped.
- C. The turbine and reactor have tripped. SI is NOT actuated.
- D. The reactor has tripped but the turbine has NOT tripped.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Parameters would decrease
- B. Correct. Characteristic of a large loss of load
- C. Incorrect. Parameters would change, but not as severe as turbine trip
- D. Incorrect. SI actuation in LP plant likely would not result in PORV lifting.

Technical Reference(s) FR-S.1 BD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRS1C 2.01 (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 7

Comments:
Robinson 2006 Audit Exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>015 K6.02</u>	<u> </u>
	Importance Rating	<u>2.6</u>	<u> </u>

Knowledge of the effect of a loss or malfunction on the following will have on the NIS : Discriminator/Compensation circuits

Proposed Question: Common 37

Which ONE (1) of the following contains BOTH conditions that will result in indicated reactor power being LOWER than actual reactor power?

- A. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too LOW
- B. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too HIGH
- C. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too HIGH
- D. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too LOW

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Both of these would result in a higher indicated power
- B. Correct. With Pulse height discrimination or IR compensation set too high, actual power would be higher than indicated (non-conservative)
- C. Incorrect. SR is incorrect, IR is correct.
- D. Incorrect. SR is correct, IR is incorrect

Technical Reference(s) R3301C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.02a.1, b.1 (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 X10 CFR Part 55 Content: 55.41 11

Comments:

WTSI Bank, used on BVPS-1 2002 exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	079 K4.01	
	Importance Rating	2.9	

Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: Cross-connect with IAS

Proposed Question: Common 38

Which ONE (1) of the following describes the operation of the Service Air/Instrument Air Cross-Tie Isolation valve, V-7000?

- A. Automatically closes when Service Air header pressure decreases to 100 psig. Must take manual actions to reopen when pressure is restored.
- B. Automatically closes when Service Air header pressure decreases to 100 psig. Automatically reopens when pressure is restored.
- C. Automatically closes when Service Air header pressure decreases to 90 psig. Must take manual actions to reopen when pressure is restored.
- D. Automatically closes when Service Air header pressure decreases to 90 psig. Automatically reopens when pressure is restored.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Operation of Service Air Header low pressure cutout valve V-7000
B. Incorrect. Correct function but incorrect pressure
C. Incorrect. Correct pressure but incorrect function.
D. Incorrect.

Technical Reference(s) 4701C (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	008 AK2.02	
	Importance Rating	3.8	

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Sensors and detectors.

Proposed Question: Common 39

Given the following:

- Pressurizer pressure is 985 psig.
- Pressurizer Relief Tank pressure is 5 psig.
- PRT temperature is 90°F.
- The reactor is shut down.

If a pressurizer safety valve begins to leak, which ONE (1) of the following is the temperature seen downstream of the leaking valve?

- A. 230°F
- B. 270°F
- C. 300°F
- D. 340°F

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Reasonable because temperature will be lower than the temperature in the PZR, and answer is within range of correct answer if an error is made on the diagram
- B. Incorrect. Normal temperature seen if valve were to leak at 100% power
- C. Correct. Constant enthalpy process, saturation temperature for 5 psig (20 psia) is approximately 300°F
- D. Incorrect. Reasonable because temperature will be lower than the temperature in the PZR, and answer is within range of correct answer if an error is made on the diagram

Technical Reference(s) Steam Tables, Mollier (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (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 14

Comments:
IP3 2003 NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	015 AK3.01	
	Importance Rating	2.5	

Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow) :
Potential damage from high winding and/or bearing temperatures

Proposed Question: Common 40

Given the following:

- The plant is at 60% power.
- CCW was lost to "A" RCP 1 minute ago.
- "A" RCP motor bearing temperatures are 180°F and rising at 5°F per minute.
- The crew is attempting to restore CCW flow to "A" RCP.

Assuming CCW CANNOT be restored to "A" RCP and the current trends continue, which ONE (1) of the following is the MAXIMUM time that "A" RCP may continue to operate from this point?

- A. 1 minute
- B. 2 minutes
- C. 3 minutes
- D. 4 minutes

Proposed Answer: A

Explanation (Optional):

- A. Correct. Can only operate for 2 minutes without CCW or 200 degrees on bearings
- B. Incorrect. Credible if they apply 2 minute rule without accounting for 1 minute passed
- C. Incorrect. Credible if they believe that 4 minutes would be too long
- D. Incorrect. Credible if they apply 5 degrees per minute and 20 degrees total

Technical Reference(s) AP-CCW.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP02C 2.01 (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 10

Comments:

Have written similar for other exams different KAs

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	022 AA1.09	
	Importance Rating	3.2	

Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: RCP seal flows, temperatures, pressures, and vibrations.

Proposed Question: Common 41

Given the following:

- The plant is at 100% power.
- (B-9) RCP 1A Labyrinth Seal Low Diff Press 15" H₂O, alarms.
- (B-10) RCP 1B Labyrinth Seal Low Diff Press 15" H₂O alarms.
- (A-4) Regenerative Letdown Outlet Hi Temp 395°F, alarms.
- Letdown line flow erratic.
- Low pressure letdown line pressure is erratic.
- "A" RCP seal injection = 0 gpm.
- "B" RCP seal injection = 0 gpm.
- Charging line flow = 0 gpm.
- Charging Pump Discharge Pressure = 1900 psig.
- R-4, R13 and R14 are trending up.
- Auxiliary Building Sump Level High Alarms frequency has increased.

Based upon these symptoms, which ONE (1) of the following describes the initiating condition?

(HCV-142, Charging Flow to Regenerative Heat Exchanger)

Charging Line leak...

- A. inside containment downstream of the regenerative heat exchanger
- B. outside containment upstream of HCV-142
- C. inside containment downstream of HCV-142 but upstream of the regenerative heat exchanger
- D. outside containment downstream of HCV-142

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Flow would be indicated if the leak was downstream of RHX and letdown would not be erratic
- B. Correct. AP-CVCS.1 Step 2 provides guidance for checking for Charging Pump Leaks. Discharge

pressure < RCS pressure with no flow and indications of increased leakage into the Aux Building (sump levels and rad monitors) are indication of a Charging Line Leak in the Aux building. The leak is upstream of HCV-142 because a leak downstream of HCV-142 would be downstream of the flow indicator and result in the leak flow being indicated on the Flow indicator.

C Incorrect. No indication of leakage in containment are given and leak has to be upstream of HCV-142 as discussed above.

D. Incorrect. See above

Technical Reference(s) AP-CVCS.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP05C 1.02 (As available)

Question Source: Bank # C000.1346
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 7

Comments:

Bank item changed 1 distractor

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	025 AK3.01	
	Importance Rating	3.1	

Knowledge of the reasons for the following responses as they apply to the Loss of Residual Heat Removal System: Shift to alternate flowpath

Proposed Question: Common 42

Given the following conditions:

- The plant is cooling down in Mode 4.
- RHR Loop "A" is in service.
- RCS temperature is 305°F.
- Both RCPs are secured.

Subsequently, "A" RHR Pump trips on overcurrent.
The crew enters the appropriate AP for the event.

Which ONE (1) of the following describes the method of restoring core cooling, in order of preference?

- A. Start "B" RHR Pump.
Start an RCP and steam SGs.
Verify Natural Circulation and steam SGs.
- B. Start an RCP and steam SGs.
Verify Natural Circulation and steam SGs.
Start an RCDD Pump to provide cooling.
- C. Start "B" RHR Pump.
Verify Natural Circulation and steam SGs.
Start an RCP and steam SGs.
- D. Verify Natural Circulation and steam SGs.
Start an RCP and steam SGs.
Start an RCDD Pump to provide cooling.

Proposed Answer: A

Explanation (Optional):

- A. Correct. With just an overcurrent trip of the RHR Pump, the procedure directs action IAW step 10, which will start another pump
- B. Incorrect. These actions are correct, with the exception that the RHR pump would be started first
- C. Incorrect. Correct first action but 2nd 2 are reversed
- D. Incorrect. 1st 2 actions are reversed

Technical Reference(s) AP-RHR.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP18C 1.03 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	026 G2.1.30	
	Importance Rating	3.9	

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

Proposed Question: Common 43

Given the following:

- A Loss of CCW has occurred.
- The crew is performing AP-CCW.2, Loss of CCW During Power Operation.
- An AO has been directed to verify normal CCW flows in accordance with ATT. 1.1, Attachment Normal CCW Flow

Which ONE (1) of the following describes the local RGP flow indications that would be considered normal?

CCW flows to the RCP's
to the RCP's
cal RGP flow indications that would be
N N

- A. 75 GPM
- B. 100 GPM
- C. 200 GPM
- D. 250 GPM

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. SI seal HX cooling is 75 GPM
B. Incorrect. Seal Return HX could be at 100 GPM to maintain correct temperature of 70-110
C. Correct.
D. Incorrect. Reactor Support Coolers are 250 GPM

Technical Reference(s) AP-CCW.2, ATT 1.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP02C 2.01 (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 5 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>027 AK2.03</u>	<u> </u>
	Importance Rating	<u>2.6</u>	<u> </u>

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners

Proposed Question: Common 44

Given the following:

- The plant is operating at 100% power.
- A failure of the controlling input to the PRZR Pressure Controller (431K) caused actual pressurizer pressure to increase to 2280 psig.
- The PRZR Pressure Controller has been placed in MANUAL at 50% demand.

Which ONE (1) of the following describes the action required to return pressure to normal?

- A. Decrease the controller output
- B. Increase the controller output.
- C. Raise the pressure setpoint adjustment
- D. Lower the pressure setpoint adjustment

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Decreasing the output would cause pressure to rise, as a lower output will turn on heaters
- B. Correct.
- C. Incorrect. Setpoint adjustment will not work in manual
- D. Incorrect. See C

Technical Reference(s) R1901C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.02 (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 7

Comments:

Previous other NRC Exams, (2005 and prior) WTSI Westinghouse Generic

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	029 G2.1.14	
	Importance Rating	2.5	

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

Proposed Question: Common 45

Given the following:

- CPS*
- An ATWS is in progress.
 - The ~~CRF~~ has entered FR-S.1, Response to Reactor Restart/ATWS.
 - The reactor will NOT trip.

Which ONE (1) of the following actions is required NEXT to shut the reactor down in accordance with FR-S.1?

- A. Immediately dispatch an AO to open Reactor Trip Breakers OR MG Set Breakers; then initiate manual rod insertion.
- B. Immediately dispatch an AO to open Reactor Trip Breakers AND MG Set Breakers; then initiate manual rod insertion.
- C. Immediately initiate manual rod insertion, then initiate RCS boration; dispatch an AO to open Reactor Trip Breakers OR MG Set Breakers if the reactor is not tripped when initial actions are complete.
- D. Immediately initiate manual rod insertion, then dispatch an AO to open Reactor Trip Breakers AND MG Set Breakers; initiate RCS boration when the initial actions are complete.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Do not send an AO until after initial actions
- B. Incorrect. See A
- C. Correct.
- D. Incorrect. Boration performed first

Technical Reference(s) FR-S.1 Step 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRS1C 2.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	038 EA2.02	
	Importance Rating	4.5	

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

Proposed Question: Common 46

Given the following conditions:

- Reactor trip and safety injection have actuated due to a steam line break upstream of "A" MSIV.
- The crew is performing E-2, Faulted SG Isolation.
- "A" SG is isolated.
- "A" SG pressure is 50 psig.
- "A" SG WR level is 60 inches and stable.
- Containment pressure is 0.2 psig and stable.
- RCS pressure is 1350 psig and stable.
- SI flow is 200 GPM and stable.

Which ONE (1) of the following describes the operational impact of these indications?

- A. The faulted SG is still blowing down and steam dump should be adjusted to minimize RCS heatup.
- B. A SGTR is occurring and actions must be taken to minimize radiological release in accordance with E-3, Steam Generator Tube Rupture.
- C. The faulted SG is blowing down and SI Termination will be performed after verifying SI not required in E-1, Loss of Reactor or Secondary Coolant.
- D. A SGTR is occurring and will be verified by radiation levels in containment and by Chemistry sample.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. SG has already blown down. WR level is constant because of the primary water being admitted through a tube

- B. Correct. Break is upstream of MSIV but outside of containment, since containment pressure is 0.2 psig
- C. Incorrect. Would be correct if a SGTR was not apparent
- D. Incorrect. Fault is outside of containment. Chemistry sample will be performed to check for SGTR

Technical Reference(s) E-2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REP02C 2.01 (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 7,10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	040 AK1.01	
	Importance Rating	4.1	

Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: Consequences of PTS

Proposed Question: Common 47

Given the following:

- SI was initiated due to a steam line break on "A" SG.
- The crew completed E-0, Reactor Trip or Safety Injection, and initially responded to an ORANGE condition on the Integrity CSF Status Tree.
- The crew completed FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.
- A soak is in progress.

Which ONE (1) of the following actions is permitted?

- A. Stop "B" SI Pump
- B. Start a Charging Pump
- C. Energize PRZR heaters
- D. Increase AFW flow to "B" SG

Proposed Answer: A

Explanation (Optional):

- A. Correct. Will not cause cooldown or raise pressure
- B. Incorrect. Would potentially raise RCS pressure
- C. Incorrect. Would raise pressure
- D. Incorrect. Would cooldown the RCS further

Technical Reference(s) FR-P.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRP1C 2.01 (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 X10 CFR Part 55 Content: 55.41 10

Comments:

Most recent – McGuire 2007 similar item

Q47

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 30 PAGE 21 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> For optimum long term pressure control, saturated conditions should be restored in the PRZR.</p>		
26	Verify PRZR Liquid Temperature (TI-424) - AT SATURATION FOR DESIRED PRESSURE	<u>IF</u> PRZR liquid temperature low, <u>THEN</u> energize PRZR heaters as necessary to establish desired temperature.
27	Check RCS Subcooling Based On Core Exit T/Cs - LESS THAN 10°F USING FIG-1.0, FIGURE MIN SUBCOOLING	<p><u>IF</u> RCS pressure less than 160 psig [200 psig adverse CNMT], <u>THEN</u> go to Step 28. <u>IF NOT</u>, <u>THEN</u> depressurize using normal spray. Return to step 17b.</p> <p><u>IF</u> normal spray <u>NOT</u> available and letdown is in service, <u>THEN</u> use auxiliary spray for any further depressurization. Return to Step 17b.</p> <p><u>IF</u> auxiliary spray <u>NOT</u> available, <u>THEN</u> return to Step 17a.</p>
28	Check Cool Down Rate In RCS Cold Legs - GREATER THAN 100°F IN ANY 60 MINUTES PERIOD	Return to procedure and step in effect.
29	Maintain RCS Pressure And Temperature Stable For At Least 1 Hour	
	a. Control steam dump and feed flow as necessary	
	b. Perform actions of other procedures in effect which do not cool down the RCS or raise RCS pressure until the RCS temperature soak has been completed	

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	054 AK1.01	
	Importance Rating	4.1	

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break)

Proposed Question: Common 48

Given the following:

- The plant is operating at 100% power.
- A Feedwater Line Break occurs at the piping connection to "A" SG.

Which ONE (1) of the following describes the effect of this event?

- A. RCS temperature lowers prior to reactor trip. SG "A" pressure stabilizes after FWIV closure.
- B. RCS temperature lowers prior to reactor trip. SG "A" continues to depressurize after FWIV closure.
- C. RCS temperature rises prior to reactor trip. SG "A" pressure stabilizes after FWIV closure.
- D. RCS temperature rises prior to reactor trip. SG "A" continues to depressurize after FWIV closure.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Temperature would lower if it was a steam break being fed. A feed break will rob the SG of water, causing it to heat up prior to the trip. No check valve keeping the SG from depressurizing
- B. Incorrect. Temperature would lower if it was a steam break being fed. A feed break will rob the SG of water, causing it to heat up prior to the trip.
- C. Incorrect. No check valve keeping the SG from depressurizing
- D. Correct.

Technical Reference(s) Feed Break Transient Analysis (Attach if not previously provided)
 E-2 BD

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (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 14

Comments:

WTSI Westinghouse Generic (56884)

Most recent use VCS Audit 3/2007 Previous NRC Salem 7/02

Q48

For an intermediate feedline break in which the control systems are incapable of compensating for the loss of flow, the secondary side would experience a slowly decreasing steam generator water level in at least one steam generator. Depending upon the height of the low-low level trip setpoint in the steam generator and size of the break, a slowly increasing primary average temperature prior to reactor trip may occur due to the loss of main feedwater and degraded steam generator heat transfer. The transient is eventually terminated by manual reactor trip or when the low-low level trip setpoint is reached in any one steam generator. This results in a reactor trip and auxiliary feedwater initiation. A subsequent turbine trip occurs due to reactor trip. If the break occurs downstream (CNMT side) of the main feedline check valve, the steam generator continues to blow down through the steam generator associated with the faulted loop until a low steamline pressure setpoint is attained resulting in a safety injection initiation and steamline and feedline isolation. The faulted steam generator will then blow down until atmospheric pressure is reached. If the break occurs upstream of the feed line check valve, the feedwater spillage is terminated and the auxiliary feedwater system is sufficient to mitigate the consequences of the resultant loss of normal feedwater transient. The system parameter trends that are used to identify a faulted S/G are an uncontrolled pressure decrease in at least one steamline or a S/G that is completely depressurized. Other symptoms include decreasing water level in at least one steam generator and slowly rising primary system average temperature prior to reactor trip. For either of the above transients, if the break occurs inside containment, an increasing containment temperature and/or pressure indication could be observed. If the break occurs outside containment, audible or visual indications may assist the operator in diagnosing the transient.

Large Secondary Break

The least likely and most severe of the postulated loss of secondary coolant events is the double-ended break. (These are the transients that are generally presented in the applicant's Safety Analysis Report.)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	055 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 49

Given the following:

- A loss of all AC power has occurred.
- The crew is performing ECA-0.0, Loss of All AC Power.
- Power has NOT been restored.
- The following annunciators are lit:
 - A-25, CONTAINMENT VENTILATION ISOLATION
 - A-26, CONTAINMENT ISOLATION

Which ONE (1) of the following describes the indication of the status of the components affected by these alarms, and the action performed to verify the status?

- A. Valve Status lights have lost power. Manually initiate both CI and CVI and determine component status by their MCB valve position indication.
- B. Valve Status lights have lost power. Component status must be verified using ATT 3.0, Attachment CI/CVI.
- C. Valve Status lights will be BRIGHT. Verification of position must also be performed using MCB valve position indication.
- D. Valve Status lights will be BRIGHT. Component status must also be verified using ATT 3.0, Attachment CI/CVI.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Valve status lights should have DC power supplied
- B. Incorrect. Valve status lights should have DC power supplied
- C. Incorrect. ATT 3.0 required if position indication to be verified
- D. Correct .

Technical Reference(s) ECA-0.0, A-25, A-26 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC00C 2.01 (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 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	057 AA2.15	
	Importance Rating	3.8	

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: That a loss of ac has occurred
Proposed Question: Common 50

Given the following:

- The plant is at 100% power.
- All equipment is in service.
- The following conditions exist:
 - All RPS Channel I status lights are illuminated.
 - NI Cabinet N-41 indication is extinguished.
 - Multiple control room annunciators are received.
 - The crew is performing appropriate actions in accordance with plant procedures.

Which ONE (1) of the following describes the event that has occurred, and the initial response of the plant?

- A. Loss of DC Distribution Panel 1A; a reactor trip will occur.
- B. Failure of Instrument Bus 1A; a reactor trip will occur.
- C. Loss of DC Distribution Panel 1A; a reactor trip will NOT occur.
- D. Failure of Instrument Bus 1A; a reactor trip will NOT occur.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Loss of DC Distribution panel would only lose the normal input to the inverter, and it would swap to alternate
- B. Incorrect. Correct failure but a trip will not automatically occur on loss of 1 inverter. (2/4 logic for RPS)
- C. Incorrect. Correct plant response but incorrect failure
- D. Correct.

Technical Reference(s) ER-INST.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RER09C 2.0 (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 7

Comments:

North Anna 2006 NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	058 AK3.02	
	Importance Rating	4.0	

Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Actions contained in EOP for loss of dc power

Proposed Question: Common 51

Given the following:

- The crew is performing actions of ECA-0.0, Loss of All AC Power.
- The CO places the MFW Pump AC Oil Pump control switches to OFF.

Which ONE (1) of the following describes the reason for this action?

- A. Prevent auto start of the pumps when power is restored.
- B. Prevents excessive thermal expansion of MFW Pump bearing material when the MFW Pump is returned to service
- C. Extend the time until depletion of Station Batteries.
- D. Assists in ensuring no oil vapor entrainment will occur if the Main Generator must be vented.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Pumps will not auto start on restoration of power because they are not class 1E powered.
- B. Incorrect. Thermal expansion should not be a concern by the time a MFW Pump would be returned to service. The unit would be shut down for a long period of time.
- C. Correct. Stopping AC pumps allows a timer to stop the DC Pumps
- D. Incorrect. Main Generator must be vented if loss of power lasts greater than 4 hours, but this is because of loss of DC power. Oil entrainment would not be a concern.

Technical Reference(s) ECA-0.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC00C 1.02 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	062 AA2.03	
	Importance Rating	2.6	

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The valve lineups necessary to restart the SWS while bypassing the portion of the system causing the abnormal condition

Proposed Question: Common 52

Given the following:

- The plant is at 80% power.
- A Service Water System Leak is occurring.
- The crew is performing actions of AP-SW.1, Service Water Leak.
- Service Water Pumps A, B, and D are running.
- A controlled plant shutdown is in progress.
- Service Water Loop "A" pressure is 42 psig.
- Service Water Loop "B" pressure is 50 psig.
- The CRS directs splitting Service Water loops.

Which ONE (1) of the following choices describes the operability of the Service Water System, and contains MINIMUM actions for isolating components for the current plant conditions?

Entry to a Technical Specification action statement is...

- A. Required; BOTH D/G SW cross-ties must be closed and BOTH SW loop cross-ties in the Screenhouse basement must be closed.
- B. Required; EITHER D/G SW cross-tie may be closed, and EITHER SW loop cross-tie in the Screenhouse basement may be closed.
- C. NOT required; BOTH D/G SW cross-ties must be closed and BOTH SW loop cross-ties in the Screenhouse basement must be closed.
- D. NOT required; EITHER D/G SW cross-tie may be closed, and EITHER SW loop cross-tie in the Screenhouse basement may be closed.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Both valves in each line not required. Either valve will split headers
B. Correct.
C. Incorrect. Both valves in each line not required. Either valve will split headers. TS 3.7.8 must be entered
D. Incorrect. TS 3.7.8 must be entered

Technical Reference(s) AP-SW.1, ATT 2.5 (Attach if not previously provided)
R5101C

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.12a (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 10
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	065 AA1.03	
	Importance Rating	2.9	

Ability to operate and / or monitor the following as they apply to the Loss of Instrument Air: Restoration of systems served by instrument air when pressure is regained

Proposed Question: Common 53

Given the following:

- The plant is at 50% power.
- A loss of Instrument Air required the crew to perform actions of AP-IA.1, Loss of Instrument Air.
- Instrument Air was isolated to the Aux Building.
- Subsequently, the leak was isolated to a small section of piping.
- Instrument Air to the Aux Building has been restored.
- The crew is preparing to restore Letdown in accordance with AP-IA.1.

Which ONE (1) of the following describes the sequence of actions required for restoration of Letdown in accordance with AP-IA.1?

(Assume all Letdown orifice and isolation valves are closed)

Recommended

Ensure ~~Charging to Loop B Cold Leg isolation valve, AOV-294~~, is...

- Closed; open Letdown orifice valves, then open Letdown isolation valves (AOV-427 and AOV-371), then open AOV-294.
- Closed; open Letdown isolation valves (AOV-427 and AOV-371), then open Letdown orifice isolation valves then open AOV-294.
- Open; open Letdown orifice valves, then open Letdown isolation valves (AOV-427 and AOV-371). *isolation*
- Open; open Letdown isolation valves (AOV-427 and AOV-371), then open Letdown orifice isolation valves.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Valve must be open to supply flow through the RHX. Wrong sequence for letdown valves
- B. Incorrect. Correct sequence for letdown valves but AOV-294 must be open
- C. Incorrect. Incorrect sequence for letdown valves
- D. Correct.

Technical Reference(s) AP-IA.1, ATT 9.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP10C 2.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E04 EK1.2	
	Importance Rating	3.5	

Knowledge of the operational implications of the following concepts as they apply to the (LOCA Outside Containment) Normal, abnormal and emergency operating procedures associated with (LOCA Outside Containment).

Proposed Question: Common 54

Given the following:

- The plant was in Mode 1.
- Reactor trip and safety injection have occurred.
- Due to high Aux Building radiation levels, the crew has entered ECA-1.2, LOCA Outside Containment.
- Actions have been taken in an attempt to isolate the break.
- The current conditions exist:
 - Aux Building Radiation Monitors are in alarm
 - PRZR level is off-scale low
 - SI flow is 0 GPM.
 - RCS pressure is 1600 psig and rising.

Which ONE (1) of the following describes the status of the leak based on the requirements of ECA-1.2?

- A. The leak is isolated based on SI flow of 0 GPM
- B. The leak is isolated based on RCS pressure rising.
- C. The leak is NOT isolated based on PRZR level indication not rising.
- D. The leak is NOT isolated based on Aux Building radiation monitor indication.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. SI flow could be 0 if RCS pressure never got below shutoff head of the SI pumps
- B. Correct. RCS pressure is the required parameter for determination of isolation

- C. Incorrect. PRZR level is not used, but it will rise after awhile when RCS inventory is restored
- D. Incorrect. Aux Building radiation is used as an entry condition to the procedure

Technical Reference(s) ECA-1.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC12C 2.01 (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 10

Comments:
WTSI Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E05 EK2.1	
	Importance Rating	3.7	

Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: Common 55

Given the following conditions:

- A Loss of Heat Sink has occurred.
- The crew is establishing RCS 'Bleed and Feed' in accordance with FR-H.1, Loss of Secondary Heat Sink.
- The RO opens one PRZ PORV. He reports that the other PORV will NOT open.

Which ONE (1) of the following describes the consequences of the PORV failure?

- A. A Red Path on the Core Cooling CSF will develop due to loss of RCS Inventory with no available makeup.
- B. RCS 'Feed and Bleed' cooling must be established to ensure sufficient SI flow at the operable PORV setpoint.
- C. The RCS may not depressurize quickly enough to ensure sufficient SI flow to provide RCS heat removal, and other RCS openings may have to be established.
- D. RCS 'Bleed and Feed' cooling must be terminated and secondary depressurization to inject Condensate pump flow must be immediately initiated.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Red path on core cooling would not exist solely due to this failure
- B. Incorrect. Feed and Bleed is not established on LP plants. The symptoms of feed and bleed would exist but the PORV is NOT allowed to cycle at its setpoint
- C. Correct.
- D. Incorrect. Bleed and feed is not terminated for Condensate flow. It is performed when Condensate flow is ineffective or not established

Technical Reference(s) FR-H.1 and BD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRH1C 2.01 (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 10,7

Comments:
2002 BVPS-1 NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E11 EA1.3	
	Importance Rating	3.7	

Ability to operate and / or monitor the following as they apply to the (Loss of Emergency Coolant Recirculation) Desired operating results during abnormal and emergency situations.

Proposed Question: Common 56

Which ONE (1) of the following describes two objectives of procedure ECA-1.1, Loss of Emergency Coolant Recirculation?

- A. Maximize SI flow to ensure core cooling and initiate makeup to the RWST to ensure RCS inventory can be maintained.
- B. Reduce SI flow to delay depletion of the RWST and stabilize RCS temperature to minimize RCS inventory requirements.
- C. Perform necessary system alignments to restore emergency coolant recirculation capability and stabilize RCS temperature to minimize RCS inventory requirements.
- D. Reduce SI flow to delay depletion of the RWST and perform necessary system alignments to restore emergency coolant recirculation capability

Proposed Answer: D

Explanation (Optional):

A Incorrect. SI is reduced to the minimum required for heat removal.

B Incorrect. Stabilizing RCS temperature is not an action or priority

C Incorrect. Stabilizing RCS temperature is not an action or priority

D Correct. The procedure has 3 objectives: Minimizes depletion of RWST, depressurize RCS to minimize break flow and cause accumulator injection, and continue attempts to restore recirculation capability

Technical Reference(s) ECA-1.1 BD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC11C 1.01 (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 10

Comments:
WTSI Bank (W Generic)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	001 AA2.03	
	Importance Rating		4.5

Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Proper actions to be taken if automatic safety functions have not taken place

Proposed Question: Common 57

Given the following:

- The plant is at 98 % power.
- Rod Control is operating in AUTOMATIC.
- Control Bank D is at 206 steps.
- Following a 10 gallon boration, Control Bank D is withdrawing at a rate of 8 steps per minute.
- Tav_g is verified to be approximately 2 degrees higher than Tref.

Based on these conditions, which ONE (1) of the following actions is required next?

- A. Place Rod Control in MANUAL.
- B. Ensure that RCS boration is terminated.
- C. Stop any turbine load changes in progress.
- D. Trip the reactor and enter E-0, Reactor Trip or Safety Injection.

Proposed Answer: A

Explanation (Optional):

- A. Correct. First action is to place rods in manual
- B. Incorrect. May have started from a boration, but this action not required for condition
- C. Incorrect. Will check turbine load stable
- D. Incorrect. Not unless placing rods in manual does not stop rod motion

Technical Reference(s) AP-RCC.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP12C 2.01 (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 10

Comments:

WTSI Westinghouse generic Salem 2002

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>032 AK3.01</u>	<u> </u>
	Importance Rating	<u>3.2</u>	<u> </u>

Knowledge of the reasons for the following responses as they apply to the Loss of Source Range Nuclear Instrumentation: Startup termination on source-range loss

Proposed Question: Common 58

Given the following:

- A reactor startup is in progress.
- Control Bank "A" is at 50 steps.
- Both Intermediate Range channels indicate approximately $1 \text{ E } -11$ amps.
- Source Range Channel N-31 fails DOWNSCALE.

Which ONE (1) of the following describes the required response and the reason for the response?

- A. Continue the reactor startup; with only one source range channel operable; 48 hours is allowed to restore two channels to service.
- B. Suspend the reactor startup; source range channels are not required to trip the reactor; however, the source range monitoring functions must be available.
- C. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.
- D. Suspend the reactor startup; with only one source range channel operable, the minimum required Source Range High Flux Trip protection is not met.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Cannot continue to Mode 1 or go above P-6.
- B. Incorrect. Source Range is required for Rx Trip.
- C. Incorrect. May not continue, and PR High Flux Low Setpoint is not enabled.
- D. Correct

Technical Reference(s) TS 3.3.1 and Basis (Attach if not previously provided)
R3301C

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.12a (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 10
55.43 2

Comments:
BVPS-1 2002

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	033 AA1.03	
	Importance Rating	3.0	

Ability to operate and / or monitor the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Manual restoration of power

Proposed Question: Common 59

Given the following:

- The plant is at 100% power.
- Intermediate Range Channel IR-N36 is being returned to service.

When the channel has been restored to service, which ONE (1) of the following describes the indication of the LEVEL TRIP BYPASS lamp, and why?

- A. Illuminated because power is above the P-10 setpoint.
- B. Illuminated because the IR High Flux trip is bypassed.
- C. Extinguished because the testing of IR-N36 will be complete.
- D. Extinguished because power is above the P-10 setpoint.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. P-10 enables 'at power' trips
- B. Incorrect. The trip for IR High flux is blocked using pushbuttons not related to the switch
- C. Correct. Switch is used for calibration and testing of the channel. When testing is complete, the switch is returned to normal
- D. Incorrect. P-10 relate to blocking trips but not the switch

Technical Reference(s) P-6, R3301C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.09 (As available)

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

Question History:	Last NRC Exam	_____
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Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content:	55.41	<u>5</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	059 AK2.01	
	Importance Rating	2.7	

Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors

Proposed Question: Common 60

Which ONE (1) of the following Radiation Monitor System monitors will cause an accidental radioactive liquid release if its alarm setpoint is set higher than required to isolate its flowpath?

- A. Component Cooling Water, R-17
- B. R-20A and R-20B, Service Water from SFP Heat Exchangers
- C. R-21, Retention Tank Monitor
- D. R-16, Service Water from Containment Fan Coolers

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. CCW monitor closes tank vent valve. Will not prevent CCW surge tank contents from causing a radioactive spill regardless of setpoint
- B. Incorrect. Monitors have no automatic function
- C. Correct. Discharge valve will close at a higher rad level than required, resulting in potentially exceeding limits of 10CFR20
- D. Incorrect. Valve has no automatic closure feature

Technical Reference(s) R3901C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.06g (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 11

Comments:

WTSI Bank item, not previously used on any NRC exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	060 EA2.06	
	Importance Rating	3.6	

Ability to determine and interpret the following as they apply to the Accidental Gaseous Radwaste: Valve lineup for release of radioactive gases

Proposed Question: Common 61

Which ONE (1) of the following Gas Decay Tank alignments will assist in preventing an accidental gaseous waste release?

- A. Inlet AOV to the Gas Decay Tank being released is open to minimize DP in the Vent Header.
- B. Outlet valves of the in-service and standby Gas Decay Tanks are locked closed prior to opening RCV-014, GDT Release AOV to Plant Vent.
- C. RCV-014 is set to maintain a constant differential release header pressure during the gas release.
- D. The outlet valve of the Gas Decay Tank being released is closed when tank pressure reaches 5 psig.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. The inlet valve is closed
- B. Correct. All other GDT outlet valves are locked close to prevent releasing those tanks inadvertently
- C. Incorrect. RCV-014 is set to release at a certain rate controlled at the WD Panel. DP is maintained by V-1040
- D. Incorrect. Valve is closed at 5 psig but purpose is to prevent drawing a vacuum on the gas analyzer when the tank is placed in service

Technical Reference(s) R3801C, S-4.2.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 5.02 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>E02 G2.1.23</u>	<u> </u>
	Importance Rating	<u>3.9</u>	<u> </u>

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

Proposed Question: Common 62

Given the following:

- ES-1.1, SI Termination, is in progress.
- Normal letdown has just been established.
- Charging Pumps are operating at maximum flow.
- The following conditions exist:
 - Containment Pressure - 3 psig
 - RCS Pressure - 1240 psig and decreasing slowly
 - Core Exit TCs - 540°F
 - Pressurizer Level - 22% and decreasing slowly

Which ONE (1) of the following is required in accordance with ES-1.1?

- A. Reinitiate Safety Injection and return to E-0, Reactor Trip or Safety Injection.
- B. Reinitiate Safety Injection and return to E-1, Loss of Reactor or Secondary Coolant.
- C. Manually operate SI pumps as necessary and go to E-0, Reactor Trip or Safety Injection.
- D. Manually operate SI pumps as necessary and go to E-1, Loss of Reactor or Secondary Coolant.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Manual SI is not required, SI has already been reset
- B. Incorrect. Manual SI is not required
- C. Incorrect. Transition to E-0 would be made from ES-0.1, but ES-1.1 directs transition to E-1
- D. Correct.

Technical Reference(s) ES-1.1 Foldout Page (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RES11C 2.01 (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 X10 CFR Part 55 Content: 55.41 10

Comments:

Various similar in Bank. This was significantly modified from Ginna Bank B000.0333, but we have others from other exams that are similar

EOP: ES-1.1	TITLE: SI TERMINATION	REV: 28 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

2. SI REINITIATION CRITERIA

Following SI termination, IF EITHER condition listed below occurs, THEN manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1:

- o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING
- OR -
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 10% [30% adverse CNMT]

3. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is lowering in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.

4. AFW SUPPLY SWITCHOVER CRITERION

IF CST level lowers to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E03 EK1.1	
	Importance Rating	3.4	

Knowledge of the operational implications of the following concepts as they apply to the (LOCA Cooldown and Depressurization) Components, capacity, and function of emergency systems.

Proposed Question: Common 63

Given the following:

- A SBLOCA has occurred.
- ES-1.2, Post LOCA Cooldown and Depressurization is in progress.
- Both RCPs are running.
- RCS pressure is 1120 psig.
- An RCS cooldown has been initiated by dumping steam to the atmosphere.

Which ONE (1) of the following describes the optimum RCP configuration, and the reason for this configuration?

- A. Both RCPs should be stopped; minimizes RCS inventory loss when the break uncovers.
- B. One RCP should be stopped; produces effective heat transfer and provides boron mixing for RHR operations.
- C. Both RCPs should be left running; ensures symmetric heat transfer to the S/Gs and prevents steam voiding in the Reactor vessel head.
- D. One RCP should be stopped; minimizes RCS heat input, and produces effective heat transfer and RCS pressure control.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Reason for initially tripping RCPs on low RCS to SG DP
- B. Incorrect. RHR operations are not considered for RCP operation in ES-1.2
- C. Incorrect. Both RCPs will provide too much heat input and potentially delay the depressurization
- D. Correct.

Technical Reference(s) ES-1.2 and BD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RES12C 2.01 (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 10

Comments:
Surry NRC Exam 2003

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E09 EK2.2	
	Importance Rating	3.6	

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

Proposed Question: Common 64

Given the following:

- A loss of off-site power has occurred.
- The crew is performing ES-0.2, Natural Circulation Cooldown.
- TWO (2) CRDM Shroud Fans have tripped upon starting and **cannot** be restarted.

Which ONE (1) of the following describes the effect on the subsequent RCS cooldown?

The crew will...

- A. remain in ES-0.2 and RCS cooldown rate will be limited to 50 degrees F per hour.
- B. remain in ES-0.2 and RCS cooldown rate will be limited to 25 degrees F per hour.
- C. transition to ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel, and RCS cooldown rate will be limited to 50 degrees F per hour.
- D. transition to ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel, and RCS cooldown rate will be limited to 25 degrees F per hour.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Cooldown rate will remain at 25 degrees F per hour
- B. Correct. No reason to transition, although head cooling is lost
- C. Incorrect. No reason for transition, although a void is more likely if RCS cooldown rate limit is exceeded
- D. Incorrect. Correct rate, but transition will not be required unless a void develops or RCS cooldown rate must be higher

Technical Reference(s) ES-0.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RES02C 2.01 (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 10

Comments:

Unused Bank question

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>E14 EK1.3</u>	<u> </u>
	Importance Rating	<u>3.3</u>	<u> </u>

Knowledge of the operational implications of the following concepts as they apply to the (High Containment Pressure) Annunciators and conditions indicating signals, and remedial actions associated with the (High Containment Pressure).

Proposed Question: Common 65

Given the following:

- A LOCA has occurred.
- The crew has transitioned to E-1, Loss of Reactor or Secondary Coolant.
- The following annunciators are received:
 - AR-A-28, CONTAINMENT SPRAY CHANNEL ALERT 2/3 >28 PSI
 - AR-A-27, CONTAINMENT SPRAY, 2/3 + 2/3 >28 PSI
- The crew verifies that the alarms are valid by checking Containment pressure 2 psi above the alarm setpoint and rising slowly.

Which ONE (1) of the following describes the status of the plant and the NEXT action that will be required?

Containment CSF Status Tree is...

- A. ORANGE; ensure that CI and CVI are actuated.
- B. RED; ensure that CI and CVI are actuated.
- C. ORANGE; verify that the MSIVs are closed.
- D. RED; verify that the MSIVs are closed.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Red is >60 psi, the current pressure is just above 28 psi
- C. Incorrect. Correct CSFST, but incorrect action

D. Incorrect. Incorrect CSFST, incorrect action

Technical Reference(s) FR-Z.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRZ1C 2.01 (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 10

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.22	
	Importance Rating	2.8	

Ability to determine Mode of Operation.

Proposed Question: Common 66

Which ONE (1) of the following describes the plant condition required for declaring entry to Mode 6?

- A. RCS temperature is less than 200°F.
- B. RCS temperature is less than 140°F.
- C. The FIRST Reactor Vessel Head stud is detensioned.
- D. The LAST Reactor Vessel Head stud is detensioned.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Plausible because it is Mode 5 entry
- B. Incorrect. Plausible because core alterations typically are not performed unless temperature is below this value
- C. Correct. Mode 6 declared when first vessel head stud is detensioned IAW TS
- D. Incorrect. Plausible because the vessel head will be ready for lift prior to refueling when the last stud is removed

Technical Reference(s) TS Definitions (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: RTS00C 1.01 (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 10
55.43 2

Comments:

North Anna Audit Exam 2007

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 67

Which ONE (1) of the following describes the major action categories for ECA-2.1, Uncontrolled Depressurization of Both Steam Generators, in the correct order?

- A. Terminate SI Flow, Control Feed Flow, Reestablish any Secondary Pressure Boundary.
- B. Terminate SI Flow, Reestablish any Secondary Pressure Boundary, Control Feed Flow.
- C. Reestablish any Secondary Pressure Boundary, Control Feed Flow, Terminate SI Flow.
- D. Reestablish any Secondary Pressure Boundary, Terminate SI Flow, Control Feed Flow.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Termination of SI flow is after controlling feed flow
- B. Incorrect. Termination of SI flow is after controlling feed flow
- C. Correct.
- D. Incorrect. Termination of SI flow is after controlling feed flow

Technical Reference(s) ECA-2.1 BD (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC21C 1.04 (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 10

Comments:

WTSI Westinghouse Generic

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

2

K/A #

G2.2.27

Importance Rating

2.6

Knowledge of the refueling process.

Proposed Question: Common 68

The Plant is in Mode 6 with movement of irradiated fuel in progress in CNMT and the Auxiliary building.

Which ONE (1) of the following conditions would require fuel movement to be stopped per Tech Specs?

- A. The Refueling Cavity level is 23' 7" and is decreasing by 1/2 inch per hour.
- B. Containment Purge has automatically been secured while performing ESFAS testing.
- C. One of the 2 available RHR pumps has been determined to be inoperable.
- D. Reactor Cavity Boron Concentration is 2290 ppm.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Cavity level required to be 23 feet
- B. Incorrect. Purge may be stopped; not required for operation
- C. Incorrect. As long as 1 is in operation and operable with cavity >23 feet, minimum requirement is met
- D. Correct. Less than minimum boron concentration (2300)

Technical Reference(s)	TS 3.9.1, COLR	(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 #

C000.1408

Modified Bank #

(Note changes or attach parent)

New

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 10
55.43 6

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.12	
	Importance Rating	3.0	

Knowledge of surveillance procedures.

Proposed Question: Common 69

The crew is preparing to perform a portion of PT-1, Rod Control System.

Which ONE (1) of the following describes a condition where the use of "N/A" is acceptable?

- A. To modify the conditions of a portion of the PT.
- B. To designate precautions or limitations that are not applicable.
- C. To designate components or sections not being used as part of the PT.
- D. To designate steps that cannot be performed as written but do not change the intent of the PT.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Modification of conditions would be a change of intent, requiring a procedure change
- B. Incorrect. Not acceptable to N/A precautions or limitations
- C. Correct. PT-1 specifically calls out N/A for sections not performed
- D. Incorrect. Procedure change is required for this

Technical Reference(s) PT-1 (Attach if not previously provided)
CNG-PR-1.01-1009

Proposed references to be provided to applicants during examination: None

Learning Objective: RAD07C 1.03 (As available)

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

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehension or Analysis _____10 CFR Part 55 Content: 55.41 10

Comments:

Editorial mods to similar bank items BV-2, IP-3

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u> </u>
	Group #	<u>3</u>	<u> </u>
	K/A #	<u>G2.3.10</u>	<u> </u>
	Importance Rating	<u>2.9</u>	<u> </u>

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Proposed Question: Common 70

Given the following:

- A high activity exists in the RCS.
- The crew is performing AP-RCS.3, High Activity in Reactor Coolant.
- The CRS has directed a Unit shutdown based on RCS activity exceeding TS limits.

Which ONE (1) of the following actions is designed to reduce RCS activity and limit potential radioactive release in accordance with AP-RCS.3?

- A. MSIVs are closed.
- B. Letdown flow is raised to 60 GPM.
- C. SG Atmospheric Relief valve setpoints are raised.
- D. Maximum condensate polishing demineralizers are placed in service.

Proposed Answer: B

Explanation (Optional):

A incorrect. If a SGTR were to occur, MSIV closure would allow for the SG ARV or SV to lift

B correct.

C incorrect. Setpoints are set IAW E-3, but not in this AP

D incorrect. Demins may be placed in service on the primary side if required, but not secondary

Technical Reference(s) AP-RCS.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP17C 1.03 (As available)

Question Source: Bank # X

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

Question History: Last NRC Exam 2004 Ginna 72 different answer

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

10 CFR Part 55 Content: 55.41 10

Comments:
WTSI various

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	3	
	K/A #	G2.3.1	
	Importance Rating	2.6	

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

Proposed Question: Common 71

A Maintenance employee with a current NRC Form 4 has the following exposure history:

- 2.6 Rem received at Calvert Cliffs for the year.
- 800 mRem received at Ginna for this year.

In accordance with Station Administrative Control Levels, which ONE (1) of the following describes (1) the maximum amount of exposure the employee may receive for the remainder of the year at Ginna without additional authorization, and (2) what is the highest level of authorization required to exceed the limit?

- A. (1) 200 mRem; (2) Radiation Protection Manager
- B. (1) 600 mRem; (2) Radiation Protection Manager
- C. (1) 200 mRem; (2) Site Vice President
- D. (1) 600 mRem; (2) Site Vice President

Proposed Answer: A

Explanation (Optional):

- A. Correct. Maximum exposure at Ginna of 1 Rem. RP Manager required to authorize higher amounts. Site VP required for authorizing greater than 4 Rem
- B. Incorrect.
- C. Incorrect.
- D. Incorrect.

Technical Reference(s) A-1, RP Admin (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 13

Comments:

Originally intended for audit. Good for NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.27	
	Importance Rating	3.0	

Knowledge of fire in the plant procedure.

Proposed Question: Common 72

Given the following:

- The Shift Supervisor orders control room evacuation because of an uncontrollable main control board fire.
- After verifying the reactor is tripped and the turbine stop valves are closed, the ARVs are set to 1005 psig and the PORVs are closed.

Which ONE (1) of the following describes the additional action required prior to leaving the control room?

- A. Manual Containment Isolation.
- B. RCPs tripped and pull-stopped.
- C. Turbine Driven AFW pump is started.
- D. MDAFW pump pull-stopped.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Manual CI not performed
- B. Correct.
- C. Incorrect. TDAFW is disabled in CR for this event
- D. Incorrect. MDAFW may be operated remotely when the control room is evacuated

Technical Reference(s) AP-CR.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP04C 2.01 (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 10

Comments:

Editorial mods and cleanup. Intended for audit, suitable for NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u> </u>
	Group #	<u>4</u>	<u> </u>
	K/A #	<u>G2.4.3</u>	<u> </u>
	Importance Rating	<u>3.5</u>	<u> </u>

Ability to identify post-accident instrumentation.

Proposed Question: Common 73

In accordance with Technical Specification, which ONE (1) of the following radiation monitoring channels is identified as a Post Accident Monitoring Instrument?

- A. R-10B, Plant Vent Iodine
- B. R-11, Containment Particulate Radiation Monitor
- C. R-12, Containment Gaseous Radiation Monitor
- D. R-29, Containment Area Radiation

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Plausible because rad monitor does provide auto function inside containment
- B. Incorrect. Plausible because rad monitor does provide auto function inside containment
- C. Incorrect. Plausible because iodine release to environment is a concern during accidents
- D. Correct. Refer to TS 3.3.3

Technical Reference(s) TS 3.3.3 (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: RTS03C 1.01 (As available)

Question Source:	Bank #	<u>X</u>	
	Modified Bank #	<u> </u>	(Note changes or attach parent)
	New	<u> </u>	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	<u></u>

10 CFR Part 55 Content:	55.41	<u>11</u>
	55.43	<u></u>

Comments:
IP3 2003 similar

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.17	
	Importance Rating	3.1	

Knowledge of EOP terms and definitions.

Proposed Question: Common 74

Which ONE (1) of the following terms is a continuing action term used in Emergency Response Procedures that directs an operator to operate appropriate components to control a specific parameter within the bounds of a procedure?

- A. Adjust
- B. Implement
- C. Establish
- D. Maintain

Proposed Answer: D

Explanation (Optional):

Incorrect.

Incorrect.

Incorrect.

Correct. See A503.1 for description of each action

Technical Reference(s) A-503.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REP50C 1.23 (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 10

Comments:
Farley 2004

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.29	
	Importance Rating	2.6	

Knowledge of the emergency plan.

Proposed Question: Common 75

Given the following:

- A Site Area Emergency has been declared.
- The Emergency Response Organization is staffed.
- A repair team consisting of 1 AO, 1 mechanic, and 1 HP technician must be sent to the Aux Building to isolate a leak.

Which ONE (1) of the following Emergency Response Facilities is responsible for assembly and preparation of the team?

- A. Control Room
- B. Technical Support Center (TSC)
- C. Operational Support Center (OSC)
- D. Emergency Operations Facility (EOF)

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. See EPIP-1.0 for description of each responsibility
- D. Incorrect.

Technical Reference(s) EPIP 1-10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RSC01C 4.0 (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 10

Comments:

New, but we have similar in style

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	009 EA 2.14	
	Importance Rating		4.4

Ability to determine or interpret the following as they apply to a small break LOCA: Actions to be taken if PTS limits are violated

Proposed Question: SRO 76

Given the following:

- A LOCA has occurred.
- The crew is performing E-1, Loss of Reactor or Secondary Coolant.
- The following conditions exist:
 - RCS pressure is 1150 psig.
 - Containment Pressure is 6 psig.
 - RCS Cold Leg temperature has decreased to from 547°F to 225°F in the last hour.

Which ONE (1) of the following describes the status of the Integrity CSF Status Tree, and the action required?

- A. Red; Enter FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.
- B. Orange; Enter FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.
- C. Orange; Enter FR-P.2, Response to Anticipated Pressurized Thermal Shock Condition.
- D. Yellow; Enter FR-P.2, Response to Anticipated Pressurized Thermal Shock Condition.

Proposed Answer: A

Explanation (Optional):

- A. Correct. RCS temperature is to the left of limit A
- B. Incorrect. RCS temperature is to the left of limit A
- C. Incorrect. Orange Path leads to FR-P.1, Yellow Path leads to FR-P.2

D. Incorrect. Yellow Path would be correct if RCS Cold Leg Temperatures were >315 degrees F

Technical Reference(s) F-0.4 CSFST (Attach if not previously provided)

Proposed references to be provided to applicants during examination:

None
0

Learning Objective: RFRP1C 2.01 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	022 G2.4.49	
	Importance Rating		4.0

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

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

Proposed Question: SRO 77

Given the following:

- A large leak in the Auxiliary Building exists on the normal Charging line.
- The crew performed actions of AP-CVCS.1, CVCS Leak, before being directed to AP-CVCS.3, Loss of All Charging Flow.

Current conditions:

- Charging and Letdown are isolated.
- VCT level is 5% and lowering.
- PRZR level is 5% and lowering.
- The crew is attempting to isolate the leak prior to restoring Charging flow.

Which ONE (1) of the following actions will be required next?

- Remain in CVCS.3 and prepare to initiate a load reduction to Hot Standby due to Charging Pump suction swapover to the RWST.
- Refer to ER-CVCS.1, Reactor Makeup Control Malfunction, to initiate manual VCT makeup.
- Refer to AP-RCS.1, Reactor Coolant Leak, to perform additional leak isolation actions
- Trip the reactor and enter E-0, Reactor Trip or Safety Injection.

Proposed Answer: D

Explanation (Optional):

- Incorrect. Will not remain in CVCS.3 but plausible because these conditions do exist

- B. Incorrect. Incorrect because a reactor trip is required, but plausible because conditions exist for this action
- C. Incorrect. This would be directed in CVCS.1, and conditions do exist that make this action plausible because PRZR level is dropping with Charging and Letdown isolated, but it could be seal leakoff
- D. Correct. 5% PRZR level is a 'monitor' step

Technical Reference(s) AP-CVCS.3 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	027 G2.2.25	
	Importance Rating		3.7

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

Proposed Question: SRO 78

Given the following:

- The plant is operating at 80% power.
- The controlling input to the Pressurizer Pressure controller (431K) fails to 2325 psig.

Which ONE (1) of the following describes the most restrictive Technical Specification implications of the event, prior to any action taken by the crew?

- A. DNB design criteria may not be met in the case of an unplanned loss of forced coolant flow.
- B. The safety limit for RCS pressure could be challenged in the case of a 100% loss of load event.
- C. DNB design criteria may not be met in the case of an uncontrolled continuous rod withdrawal event.
- D. The safety limit for the reactor core could be challenged in the case of a DBA Main Steam Line break.

Proposed Answer: A

Explanation (Optional):

- A. Correct. TS 3.4.1 basis describes DNB events and limits for pressure, temperature, and flow.
- B. Incorrect. Pressure would be lower to start with
- C. Incorrect. Uncontrolled rod withdrawal is not a DNB limiting event
- D. Incorrect. Main Steam Line break will result in overpower, but lower temperature. Therefore, this event would be less restrictive, and also not a DNB limiting event

Technical Reference(s) TS Basis 3.4.1 (Attach if not previously provided)
R1901C

Proposed references to be provided to applicants during examination: NoneLearning Objective: EO 1.12b (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	029 G2.4.30	
	Importance Rating		3.6

Emergency Procedures / Plan Knowledge of which events related to system operations/status should be reported to outside agencies.

Proposed Question: SRO 79

Given the following:

The plant was at 100% power.

<u>TIME</u>	<u>EVENT</u>
0600	Main Generator trip resulted in a turbine trip. The reactor did NOT trip.
0603	The Reactor Trip Breakers were opened locally.
0607	The crew determined that ONE (1) PRZR Safety Valve was stuck open.
0608	Safety Injection was manually initiated.
0609	The Shift Manager classified the event.

Which ONE (1) of the following describes the Emergency Classification for this event, and the LATEST time that the NRC must be notified?

- A. Alert; 0700
- B. Alert; 0709
- C. Site Area Emergency; 0700
- D. Site Area Emergency; 0709

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Alert if the reactor will trip from the Main Control Board. One hour from time of event, not classification
- B. Incorrect. Alert is incorrect, but correct time
- C. Incorrect. Correct classification, incorrect time
- D. Correct.

Technical Reference(s) EALs, 10CFR50.72 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EALs

Learning Objective: RSC02C 3.0, 6.0 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	038 EA2.17	
	Importance Rating		4.4

Ability to determine or interpret the following as they apply to a SGTR: RCP restart criteria

Proposed Question: SRO 80

Given the following:

- A SGTR has occurred.
- RCPs were secured due to RCP Trip Criteria being met.
- Ruptured SG has been IDENTIFIED and ISOLATED.
- RCS cooldown to target temperature is COMPLETE.
- RCS depressurization is COMPLETE.
- Normal charging and letdown are IN SERVICE.
- Pressurizer Level is 35%.
- RCS Subcooling is 43°F.
- Ruptured SG (NR) level is 56% and STABLE.

*Per 11.15 missed
11.18 not reviewed*

Which ONE (1) of the following describes what action(s) is (are) are performed regarding RCP status in accordance with E-3, Steam Generator Tube Rupture?

- A. RCP restart is desired for the subsequent cooldown; refer to S-2.1, Reactor Coolant Pump Operation, to determine if RCPs meet the conditions for restart.
- B. RCP restart is desired for the subsequent cooldown; continue in E-3 and evaluate RCPs to determine if they may be started.
- C. RCP start is NOT desired once they have been stopped in E-3; Select an appropriate cooldown procedure and initiate cooldown on natural circulation.
- D. RCP start is NOT desired once they have been stopped in E-3; Engineering guidance must be obtained prior to any subsequent RCP restart.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Restart conditions will be determined by attachment 15 when in the EOPs
- B. Correct.
- C. Incorrect. RCP restart is desired

D. Incorrect. RCP restart is desired

Technical Reference(s) E-3, step 42 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REP03C 2.01 (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:

Used on a 2007 Audit Exam(SQN); Was new, has not been used on an NRC exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	E12 EA2.2	
	Importance Rating		3.9

Ability to determine and interpret the following as they apply to the (Uncontrolled Depressurization of all Steam Generators)
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question: SRO 81

Given the following:

- A Steam Line Break occurred.
- The crew has entered ECA-2.1, Uncontrolled Depressurization of Both Steam Generators, due to stuck open safety valves on BOTH SGs.
- RCS temperature has decreased from 547°F to 422°F in the last hour.
- SG NR levels are both off-scale low.
- The crew is evaluating AFW flow.
- Maintenance reports that "A" SG Safety Valve has a gagging device installed.

Which ONE (1) of the following describes the action that will be taken by the crew?

- A. Reduce AFW flow to 50 GPM per SG; immediately transition to E-2, Faulted SG Isolation.
- B. Maintain a minimum total AFW flow of 200 GPM; immediately transition to E-2, Faulted SG Isolation.
- C. Reduce AFW flow to 50 GPM per SG; transition to E-2, Faulted SG isolation, upon observing a pressure increase in "A" SG.
- D. Maintain a minimum total AFW flow of 200 GPM; transition to E-2, Faulted SG isolation, upon observing a pressure increase in "A" SG.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. AFW reduction is correct because RCS temperature has dropped by more than 100 degrees in the last hour. Transition not made until pressure increase observed
- B. Incorrect. AFW flow should be reduced, but plausible because this is normal flow for SG NR level below 7%
- C. Correct.

D. Incorrect. Incorrect flow, but correct transition

Technical Reference(s) ECA-2.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: REC21C 2.01 (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 #	_____	_____
	Group #	_____	2
	K/A #	032 AA2.02	_____
	Importance Rating	_____	3.9

Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: Expected change in source range count rate when rods are moved

Proposed Question: SRO 82

Given the following:

- A reactor startup is in progress in accordance with O-1.2, Plant Startup From Hot Shutdown To Full Load.
- Estimated Critical Rod Position is Bank "D" at 130 steps.
- A log of stable Source Range Count rate is as follows:

<u>Control Bank Position</u>	<u>SR N-31</u>	<u>SR N-32</u>
"B" at 0 steps	2450 CPS	2500 CPS
"B" at 50 steps	2600 CPS	2650 CPS
"B" at 100 steps	2950 CPS	3000 CPS
"C" at 0 steps	3200 CPS	3350 CPS
"C" at 50 steps	3600 CPS	3700 CPS
"C" at 100 steps	3950 CPS	4600 CPS
"C" at 150 steps	4500 CPS	9500 CPS

Based upon current plant conditions, which ONE (1) of the following actions will be taken?

- Initiate rod withdrawal to 200 steps on Bank "C" at a startup rate not to exceed 0.5 DPM.
- Stop the reactor startup and determine the reason that Source Range N-31 is not responding as expected prior to continuing.
- Stop the reactor startup and determine the reason that Source Range N-32 is not responding as expected prior to continuing.
- Ensure that both Intermediate Range channels indicate higher than the P-6 Defeat Permissive, and then initiate rod withdrawal to 200 steps on Bank "C".

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. Source Ranges would fail channel check, apply TS 3.3.1. Must diagnose which channel is responding improperly, and other choices describe actions that can be taken during the startup, if the anomaly is either not recognized or not considered serious enough
- D. Incorrect.

Technical Reference(s) T.S. 3.3.1 (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 _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	061 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 83

Given the following:

- Refueling is in progress.
- During Fuel shuffle in Containment with an assembly in transit to the upender, the following annunciator is received in the Control Room: "E-24, "RMS Area Monitor Hi Activity."
- The HCO determines that R2 is above its alarm setpoint.
- R-11 and R-12 are rising slowly.
- The Refueling SRO reports that Refueling Cavity level is lowering slowly.

Which ONE (1) of the following describes the action required?

- In accordance with the annunciator response, direct HP to perform surveys to determine if background radiation from the reactor head is causing the elevated radiation levels.
- Enter RF-601, Fuel Handling Accident Instructions, evacuate Containment and place the fuel assembly in the upender and place the upender in a horizontal position in Containment.
- In accordance with the annunciator response, refer to AP-RCS.1, RCS Leak, to determine and correct the source of the leak.
- Enter RF-601, Fuel Handling Accident Instructions, evacuate Containment and place the fuel assembly in the bottom of the transfer slot area, in the emergency location, and leave latched with power removed from the crane."

Proposed Answer: D

Explanation (Optional):

- Incorrect. Would be performed if cavity level was normal and R-11/R-12 were not rising
- Incorrect. Would not maintain upender in horizontal position with fuel assembly if cavity is lowering.
- Incorrect. Would be performed if not in Mode 6 refueling
- Correct.

Technical Reference(s) RF-601 (Attach if not previously provided)
R3701

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.06 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5,6

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	074 EA2.08	
	Importance Rating		4.6

Ability to determine or interpret the following as they apply to a Inadequate Core Cooling: The effect of turbine bypass valve operation on RCS temperature and pressure

Proposed Question: SRO 84

Given the following:

- A LOCA has occurred.
- All SI Pumps have failed.
- RCPs are secured.
- The crew is performing E-0, Reactor Trip or Safety Injection.
- When performing diagnostic actions, the current conditions exist:
 - RCS Pressure is 675 psig.
 - Core Exit temperatures are 710 degrees F
 - RVLIS indicates 48%

Which ONE (1) of the following describes the procedure that will be entered and of the choices, the first action that is required?

- A. FR-C.1; start RCPs to establish forced circulation flow.
- B. FR-C.1; dump steam from SGs to cooldown and depressurize the RCS.
- C. FR-C.2; start RCPs to establish forced circulation flow.
- D. FR-C.2; dump steam from SGs to cooldown and depressurize the RCS.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. RCPs are started if secondary depressurization is ineffective
- B. Correct. Red path because RVLIS is below 52%
- C. Incorrect. Red path, and RCPs will be started later if secondary depressurization is ineffective
- D. Incorrect. Incorrect procedure. A red condition exists, not orange

Technical Reference(s) F.02, FR-C.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RFRC1C 2.01 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	E03 G2.1.2	
	Importance Rating		4.0

Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.

Proposed Question: SRO 85

Given the following:

- A LOCA has occurred.
- The crew is performing E-1, Loss of Reactor or Secondary Coolant.
- The following parameters exist:
 - Both SG pressures – 830 psig and slowly trending down.
 - Both SG levels – being controlled at 56% NR.
 - PRZR level – off-scale high.
 - RVLIS indicates 60%.
 - Containment Pressure – 13 psig.
 - RWST level – 74% and decreasing slowly.
 - RCS pressure – 750 psig and decreasing slowly.

Based on these indications, which ONE (1) of the following procedures will the crew be required to perform next?

- A. ES-1.1, SI Termination
- B. ES-1.2, Post LOCA Cooldown and Depressurization
- C. ES-1.3, Transfer to Cold Leg Recirculation
- D. E-2, Faulted Steam Generator Isolation

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Reasonable because parameters meet SI termination with exception of RCS pressure trend. (Subcooling not given, but would not meet criteria)
- B. Correct. RWST level too high for transfer, next procedure is ES-1.2
- C. Incorrect. RWST level too high
- D. Incorrect. SG pressures dropping due to SI flow dragging down RCS pressure (Primary is leading)

Technical Reference(s) E-1 (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: REP01C 2.01 (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 X10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

WTSI Westinghouse generic

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	004 A2.26	
	Importance Rating		3.0

Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Low VCT pressure

Proposed Question: SRO 86

Given the following conditions:

- The plant is at 100% power.
- The following annunciator is received:
 - AR-A-10, VCT PRESSURE 15 PSI 65
- The HCO determines VCT pressure is 15 psig.
- VCT level is 44%.

Which ONE (1) of the following describes the potential impact on the plant, and the action required for the impact?

- A. Charging Pump cavitation; initiate manual blended makeup to the VCT in accordance with the annunciator response.
- B. Charging Pump cavitation; go to AP-CVCS.3, Loss of All Charging Flow.
- C. RCP #1 seal leakoff flow is NOT within limits; initiate manual blended makeup to the VCT in accordance with the annunciator response.
- D. RCP #1 seal leakoff flow is NOT within limits; go to AP-RCP.1, RCP Seal Malfunction.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Correct impact but if Charging Pump is cavitating, go to CVCS.3. Action supplied is for low pressure caused by low level. Level is normal
- B. Correct.
- C. Incorrect. RCP seal leakoff will rise based on the conditions. Action is for low pressure caused by low level. Level is normal

D. Incorrect. RCP seal leakoff will rise. Action would be correct for a seal failure

Technical Reference(s) AR-A-10 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAP31C 1.03 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	005 A2.04	
	Importance Rating		2.9

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

Proposed Question: SRO 87

Given the following:

- RCS temp* *TAKE* *?*
- The plant is operating at 190 degrees F.
 - RHR Loop "A" is in service.
 - Drain Down to mid-loop is in progress.
 - PRZR Wide Range level indicates 15 inches.
 - RCS Loop Level Indicator is at 80 inches.

Subsequently, the following indications are observed:

- RCS temperature is 196 degrees F and rising.
- RHR Pump "A" flow is 0 GPM.
- RHR Pump "A" discharge pressure is 300 psig.
- RHR Pump current is stable at approximately 40 amps.
- PRZR Wide Range level indicates 17 inches.
- RCS Loop Level Indicator is at 82 inches.

Which ONE (1) of the following describes (1) the event in progress, and (2) the procedure entry that will be required?

- A. RHR Pump sheared shaft; AP-RHR.1, Loss of RHR
- B. RHR system valve failure; AP-RHR.1, Loss of RHR
- C. RHR Pump sheared shaft; AP-RHR.2, Loss of RHR While Operating at Reduced RCS Inventory Conditions
- D. RHR system valve failure; AP-RHR.2, Loss of RHR While Operating at Reduced RCS Inventory Conditions

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. A sheared shaft would not indicate discharge pressure of 300 psig.
- B. Correct. Pump is operating against closed valve, RCS is heating up, resulting in small volume change
- C. Incorrect. Wrong procedure, the RCS is not considered in RIO at this level. Also incorrect failure
- D. Incorrect. Wrong procedure; RIO is below 10 inches PRZR WR

Technical Reference(s) AP-RHR.1 (Attach if not previously provided)Proposed references to be provided to applicants during examination: NoneLearning Objective: RAP18C 2.01 (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	006 G2.2.25	
	Importance Rating		3.7

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

Proposed Question: SRO 88

Which ONE (1) of the following describes one of the accident analysis assumptions made for the operability of the ECCS, as defined in technical specification bases?

- A. Large Break LOCA; Off-Site power available; single failure of 1 EDG that disables ECCS and Containment Spray
- B. Large Break LOCA; Loss of Off-Site power; single failure of 1 EDG that disables ECCS and Containment Spray
- C. Small Break LOCA; Off-Site power available; single failure disabling 1 train of ECCS
- D. Small Break LOCA; Loss of Off-Site power; single failure disabling 1 train of ECCS

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. EDG assumed to operate for spray. Loss of off-site power is one assumption made
- B. Incorrect. EDG assumed to operate for spray
- C. Incorrect. Loss of off-site power is one assumption made
- D. Correct.

Technical Reference(s) TS 3.5.2 basis (Attach if not previously provided)
R2701C

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.12b (As available)

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

New	<u>X</u>
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Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	<u></u>

10 CFR Part 55 Content:	55.41	<u></u>
	55.43	<u>2</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		1
	K/A #	013 G2.1.12	
	Importance Rating		4.0

Conduct of Operations: Ability to apply technical specifications for a system.

Proposed Question: SRO 89

Given the following:

- The plant is at 100% power.
- One SG Narrow Range level channel on SG "B" Fails LOW.
- Actions to stabilize the plant have been taken in accordance with appropriate procedures.

Which ONE (1) of the following describes the technical specification requirements for this event?

Enter TS LCO(s)...

- A. 3.3.2, Engineered Safety Features Actuation System ONLY. Trip the associated bistable within 1 hour.
- B. 3.3.2, Engineered Safety Features Actuation System ONLY. Trip the associated bistable within 6 hours.
- C. 3.3.1, Reactor Trip System Instrumentation AND 3.3.2, Engineered Safety Features Actuation System. Trip the associated bistables within 1 hour.
- D. 3.3.1, Reactor Trip System Instrumentation AND 3.3.2, Engineered Safety Features Actuation System. Trip the associated bistables within 6 hours.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Even though channel failed low and already tripped, 3.3.1 entry is required. Incorrect time
- B. Incorrect. Correct time, incorrect entry
- C. Incorrect. Correct entry but incorrect time
- D. Correct.

Technical Reference(s) TS 3.3.1, 3.3.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RTS03C 1.01 (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 #		2
	Group #		1
	K/A #	064 G2.1.33	
	Importance Rating		4.0

Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: SRO 90

Given the following conditions:

- The plant is at 100% power.
- At 1030, EDG "A" is declared inoperable due to discovery of a cracked linkage on one of the fuel racks. Technical Specification actions are in effect.
- At 1200, RHR Pump "B" is removed from service and declared inoperable due to flange leakage.

Which ONE (1) of the following describes the MOST limiting Technical Specification action for this condition if the components CANNOT be restored to operable status?

Technical Specification 3.0.3 must be entered...

- A. immediately
- B. at 1430.
- C. at 1600.
- D. at 2230

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The redundant component does not have to be declared inoperable until 4 hours after the condition exists
- B. Incorrect. This time is for the initial condition of RHR Pump inoperability. The clock does not start until the DG is also inoperable.
- C. Correct. 4 hours after the RHR Pump is declared inoperable
- D. Incorrect. 12 hours after the initial inoperability is plausible because that is the action if 1 off-site source is lost with a redundant function also lost

Technical Reference(s) TS 3.8.1.1 and basis (Attach if not previously provided)
R0801C

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.13a (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 #		2
	Group #		2
	K/A #	029 A2.03	
	Importance Rating		3.1

Ability to (a) predict the impacts of the following mal- functions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Startup operations and the associated required valve lineups

Proposed Question: SRO 91

Given the following:

- The plant is in Mode 6.
- Core alterations are in progress.
- A Containment Purge is being prepared in accordance with S-23.2.2, Containment Purge Procedure.

Which ONE (1) of the following describes (1) an acceptable ventilation alignment, and (2) the reason for the alignment, under these conditions?

- A. (1) 2 Purge Supply Fans running; 1 Purge Exhaust Fan running; Containment Air Recirc Fans stopped.
(2) Minimize radioactive release to the environment
- B. (1) 2 Purge Supply Fans running; 1 Purge Exhaust Fan running; 1 Containment Air Recirc Fan running.
(2) Provide for adequate Containment Cooling
- C. (1) 1 Purge Supply Fan running; 2 Purge Exhaust Fans running; Containment Air Recirc Fans stopped.
(2) Provide for adequate Containment Cooling
- D. (1) 1 Purge Supply Fan running; 2 Purge Exhaust Fans running; 1 Containment Air Recirc Fan running.
(2) Minimize radioactive release to the environment

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Not acceptable to have 2 supply and 1 exhaust fan. Negative pressure in

containment is required.

- B. Incorrect. Not acceptable to have 2 supply and 1 exhaust fan. Negative pressure in containment is required. Wrong reason for the alignment
- C. Incorrect. Wrong reason but correct fan alignment
- D. Correct. Recirc fan required with Fuel Handling in progress

Technical Reference(s) S-23.2.2 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	068 G2.1.23	_____
	Importance Rating	_____	4.0

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

Proposed Question: SRO 92

Given the following:

- At 0138 during a release of the 'A' monitor tank, R-18 alarms at 6.7E5 cpm.
- The HCO determined from the R-18 recorder that the monitor alarm setpoint was set too high and that the R-18 reading had exceeded the required alarm setpoint from the start of the release at 0010 until the spike.

Which ONE (1) of the following describes the correct actions for this situation?

- A. Increase circulating water flow for maximum dilution; refer to S-4.1U, Velocity Flush of R-18.
- B. Verify RCV-018 closed; reset R-18 to the correct setpoint; restart release. Refer to the ODCM.
- C. Increase circulating water flow for maximum dilution; refer to EPIP 1-0 for potential event classification.
- D. Verify RCV-018 closed; re-sample the "A" monitor tank; refer to S-4.1U, Velocity Flush of R-18. Refer to the ODCM.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Increasing flow is plausible but for the current condition, would not be performed
- B. Incorrect. Must sample also
- C. Incorrect. Increasing flow is plausible but for the current condition, would not be performed. Also, EPIP MAY be referred to
- D. Correct.

Technical Reference(s) ODCM 3.1,AR-RMS-18 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 1.06e (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 4, 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		2
	Group #		2
	K/A #	075 G2.1.32	
	Importance Rating		3.8

Conduct of Operations: Ability to explain and apply all system limits and precautions

Proposed Question: SRO 93

Given the following:

- A Liquid Waste Release has been in progress for 2 hours.
- Reactor power has been reduced from 60% to 49% in the last 60 minutes due to a Circulating Water Pump vibration problem.
- "A" Circulating Water Pump is being removed from service in accordance with T-8A, Startup and Shutdown of Circulating Water Pumps A and B.

Based upon these conditions, which ONE (1) of the following describes the action(s) required?

- A. Notify RP to update release rate calculations or stop the release.
- B. Notify Chemistry to sample the RCS for Iodine and Gross Activity.
- C. Notify Chemistry to sample the RCS for Iodine and Gross Activity AND notify RP to update release rate calculations or stop the release.
- D. Direct that the liquid Waste release flow rate be throttled to within the capacity of 1 Circulating Water Pump, and refer to the ODCM.

Proposed Answer: A

Explanation (Optional):

- A. Correct. If Circ Water Flow Rate is changed, RP must recalculate release rate
- B. Incorrect. Power changes >15% in 1 hour require sample
- C. Incorrect. Power changes >15% in 1 hour require sample
- D. Incorrect. Flow rate will be terminated, not throttled.

Technical Reference(s) T-8A (Attach if not previously provided)
R3801C

Proposed references to be provided to applicants during examination: None

Learning Objective: EO 4.02 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 4,5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G2.1.25	
	Importance Rating		3.1

Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

Proposed Question: SRO 94

Given the following conditions:

- The plant was operating at 100% power when a reactor trip occurred on low pressurizer pressure.
- "B" S/G Tube Rupture was diagnosed, and E-3, Steam Generator Tube Rupture, was entered.
- RCS Cooldown and Depressurization is complete.

Given the following control room indications:

- SG "B" level is 32% and decreasing.
- SG "A" level is stable.
- PRZR level is 63% and increasing.

Which ONE (1) of the following describes the required operator action IAW E-3, and which ONE (1) of the following procedures will subsequently be used for the ruptured SG Cooldown if radioactive release and contamination must be minimized?

- A. Raise Charging Flow; ES-3.1, Post SGTR Cooldown Using Backfill.
- B. Raise Charging Flow; ES-3.2, Post SGTR Cooldown Using Blowdown.
- C. Energize PRZR Heaters; ES-3.2, Post SGTR Cooldown Using Blowdown.
- D. Energize PRZR Heaters; ES-3.1, Post SGTR Cooldown Using Backfill.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Incorrect action, correct procedure
- B. Incorrect. May perform if SG level was lowering, but wrong procedure
- C. Incorrect. Would perform if PRZR level was high, but wrong procedure
- D. Correct.

Technical Reference(s) E-3 Step 36 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: E-3, Step 36

Learning Objective: REP03C 2.01 (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:

Probably qualifies as modified, first time item has been written in this manner. Just call Bank

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		1
	K/A #	G2.1.5	
	Importance Rating		3.4

Ability to locate and use procedures and directives related to shift staffing and activities.

Proposed Question: SRO 95

Given the following:

- The plant is in Mode 1.
- The shift is manned to the minimum complement.
- The shift has 4 hours remaining.
- The HCO has become ill and must leave the site for emergency medical treatment.

Which ONE (1) of the following describes the requirements regarding the shift complement and the MINIMUM required action in this situation?

- A. The HCO may leave the site immediately after turnover of responsibilities to another qualified person on shift. A replacement must arrive within 2 hours.
- B. Responsibilities of the HCO may be turned over to the CO for the remainder of the shift.
- C. The HCO may leave the site immediately after turnover of responsibilities to another qualified person on shift. Action to call in a replacement must be initiated within 2 hours.
- D. The CRF may assume the responsibilities of the HCO. The Shift Manager may perform duties of CRF until normal shift relief.

Proposed Answer: A

Explanation (Optional):

- A. Correct. OPS-SHIFT-ORG and TS Section 5
- B. Incorrect. Cannot be less than minimum for greater than 2 hours due to emergency
- C. Incorrect. Action must be initiated immediately with a replacement arriving within 2 hours
- D. Incorrect. Cannot be less than minimum for greater than 2 hours

Technical Reference(s) OPS-SHIFT-ORG, TS 5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RAD03C 1.01 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 1,5

Comments:

From recent audit. Others similar

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.10	
	Importance Rating		3.3

Knowledge of the process for determining if the margin of safety, as defined in the basis of any technical specification is reduced by a proposed change, test or experiment.

Proposed Question: SRO 96

With the plant in Mode 3, The SI system engineer has requested that SI Pump "B" be started with the discharge valve throttled to 75% open to determine starting current and flow rate under these conditions.

This evolution is NOT described in current procedures, nor the Updated Final Safety Analysis Report.

The system engineer has developed a Limited Use Change to the Engineering Surveillance Test procedure for performing the evolution.

Which ONE (1) of the following describes under what conditions the Shift Manager may approve the evolution?

- A. Only upon completion of PORC review.
- B. With concurrence of one additional SRO.
- C. Upon completion of a written safety evaluation in accordance with 10CFR50.59.
- D. When the SI pump is NOT required to be operable in accordance with Technical Specifications.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. PORC may review but 10CFR50.59 evaluation must be performed
- B. Incorrect. Normal process for temporary procedure changes
- C. Correct.
- D. Incorrect. The test may be done under this condition but not required if safety evaluation is performed

Technical Reference(s) CNG-PR-1.01-1011 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (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 3

Comments:

Various similar previous NRC other facilities

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		2
	K/A #	G2.2.28	
	Importance Rating		3.5

Knowledge of new and spent fuel movement procedures.

Proposed Question: SRO 97

Which ONE (1) of the following describes the MINIMUM approval required for bypassing electrical interlocks on the Refueling Manipulator Crane in accordance with RF-301, Refueling Operations (Offload, Reload, Shuffle)?

- A. Refueling Shift Supervisor AND Reactor Engineer.
- B. Refueling SRO AND Refueling Coordinator.
- C. Refueling SRO AND Refueling Shift Supervisor.
- D. Refueling Coordinator AND Reactor Engineer.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. Direct from RF-301, Att 3
- D. Incorrect.

Technical Reference(s) RF-301 Att 3 (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 _____
55.43 6

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		3
	K/A #	2.3.9	
	Importance Rating		3.4

Knowledge of the process for performing a containment purge.

Proposed Question: SRO 98

Given the following:

- The plant is in Mode 5.
- A Containment Purge is planned.
- Containment was sampled at 0600 this morning.
- The current time is 0900.

Which ONE (1) of the following describes the LATEST time that the purge may be initiated without re-sampling Containment?

- A. 1000 today
- B. 1400 today
- C. 1800 today
- D. 0600 tomorrow

Proposed Answer: C

Explanation (Optional):

- A. Incorrect.
- B. Incorrect.
- C. Correct. 12 hours is allowed prior to re-sample
- D. Incorrect.

Technical Reference(s) S-23.2.2 (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 _____
55.43 4

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		4
	K/A #	G2.4.6	
	Importance Rating		4.0

Knowledge of symptom based EOP mitigation strategies.

Proposed Question: SRO 99

Given the following:

- The plant was initially operating at 100% power.
- High containment pressure resulted in Safety Injection and containment spray actuation.
- Steamline isolation occurred and all MSIVs have closed.
- The reactor did NOT trip automatically or manually. ←
- SG "A" indicates 300 psig and dropping.
- SG "B" pressure has stabilized.

Which ONE (1) of the following describes the correct sequence of EOP implementation?

The crew will enter E-0, Reactor Trip or Safety Injection; transition to

- FR-S.1, Response to Reactor Restart/ATWS, and when all control rods have been fully inserted, transition to E-2, Faulted Steam Generator Isolation.
- E-2, Faulted Steam Generator Isolation, and when E-2 is complete, transition to E-1, Loss Of Reactor or Secondary Coolant.
- E-2, Faulted Steam Generator Isolation, and when E-2 is complete, transition to ES-1.1, SI Termination.
- FR-S.1, Response to Reactor Restart/ATWS, and when FR-S.1 is complete, return to E-0, Reactor Trip or Safety Injection.

Proposed Answer: D

Explanation (Optional):

- Incorrect. From FR-S.1 would return to E-0. Faulted SG Isolation steps also available in FR-S.1
- Incorrect. Normal flow path if ATWS was not present
- Incorrect. SI termination criteria may be met when E-2 is complete, but ATWS actions must be performed first
- Correct.

Technical Reference(s) CSF STs (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (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:
IP2 2003 NRC Exam

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	4
	K/A #	G2.4.34	_____
	Importance Rating	_____	3.6

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

Proposed Question: SRO 100

Given the following conditions:

- The plant is in Mode 1.
- A fire is in progress in the Control Room Complex.
- Heavy smoke requires evacuation of the Control Room.

Which ONE (1) of the following describes the procedure usage for the event and the responsibility of the Head Control Operator?

- Perform ER-FIRE.0, CR Response to Fire Alarms and Reports, concurrently with AP-CR.1, Control Room Inaccessibility; Go to AFW Pump Area and transfer equipment to local control
- Discontinue use of ER-FIRE.0, CR Response to Fire Alarms and Reports; Go to AFW Pump Area and transfer equipment to local control in accordance with AP-CR.1, Control Room Inaccessibility.
- Perform ER-FIRE.0, CR Response to Fire Alarms and Reports, concurrently with AP-CR.1, Control Room Inaccessibility; Go to Screenhouse to ensure 1 Service Water Pump is running in each SW loop.
- Discontinue use of ER-FIRE.0, CR Response to Fire Alarms and Reports; Go to Screenhouse to ensure 1 Service Water Pump is running in each SW loop in accordance with AP-CR.1, Control Room Inaccessibility.

Proposed Answer: A

Explanation (Optional):

- Correct. ER-FIRE.0 directs concurrent use of the 2 procedures
- Incorrect. Would not discontinue ER-FIRE.0
- Incorrect. CRF goes to Screenhouse
- Incorrect. Would not discontinue use of ER-FIRE.0

Technical Reference(s) ER-FIRE.0, AP-CR.1 (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 _____
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments: