

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	003 K1.01	
	Importance Rating	2.6	

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

Proposed Question: Common 1

Which ONE (1) of the following describes the reason for starting the RCP Oil Lift Pump prior to starting an RCP?

- A. To lift the #1 seal into its starting position.
- B. To lubricate the lower motor radial bearing.
- C. To raise the anti-reverse rotation assembly to disengage the pawls.
- D. To reduce motor starting torque and minimize thrust bearing friction wear.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Done by RCS pressure.
- B. Incorrect. Lift pump does not lubricate the lower bearing.
- C. Incorrect. This occurs as the pump comes up to speed.
- D. Correct. From RCS lesson "To reduce starting torque and protect the babbit surfaces on bearings, an RCP oil lift system is used to supply oil to the thrust bearing shoes and upper radial bearing before the RCP motor is started. The pressure of the oil "lifts" the thrust shoes away from the thrust runner and supplies an oil film."

Technical Reference(s): Lesson 09 - RC (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: F, 11 (As available)

Question Source: Bank # X INPO Bank

21569

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

Question History: Last NRC Exam Braidwood 2002

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	003 A1.01	_____
	Importance Rating	2.9	_____

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: RCP vibration

Proposed Question: Common 2

The plant is at 100% power.

In accordance with OTO-BB-00002, Reactor Coolant Pump Off Normal, which ONE (1) of the following conditions will require a reactor and RCP trip?

- A. Motor bearing temperature on A RCP is 175°F.
- B. Vibration on frame of B RCP is 2 MILS and rising at 1.0 MIL/HR.
- C. No. 1 Seal and Bearing inlet temperature on C RCP is 215°F.
- D. Vibration on the shaft of D RCP is 15 MILS and rising at 2.5 MIL/HR.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Setpoint is 190°F.
- B. Incorrect. Setpoint is 3 mils/hour.
- C. Incorrect. Setpoint is 230°F.
- D. Correct. At greater than 15 mils and increasing greater than 2 mils/hour, action is trip reactor, RCP and enter E-0.

Technical Reference(s): OTO-BB-00002 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B 15 B. (As available)

Question Source: Bank # _____
Modified Bank # X (Note changes or attach parent)
003B150B02A
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	004 K3.06	_____
	Importance Rating	3.4	_____

Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: RCS temperature and pressure

Proposed Question: Common 3

Given the following conditions:

- The plant is at 75% power.
- A new CVCS cation bed is placed in service.

Which ONE (1) of the following will occur if the boron saturation of this demineralizer is incomplete?

- Tave will rise.
- Reactor power will lower.
- Small rise in letdown flow.
- Lithium concentration will rise.

Proposed Answer: A

Explanation (Optional):

South Texas, Unit 1 On 8-6-90 a boron dilution event occurred as a result of placing a chemical and volume control system mixed bed demineralizer into service, which had not been sampled for effluent boron concentration. The bed had not been in service for several months. The dilution caused thermal power to increase gradually from 100% to 101% while the highest Nuclear Instrumentation power range channel reached 103.5%. Operators responded to the gradual power and coolant temperature rise by several increasingly larger rod insertions and boron additions.

Root Cause

...More detailed investigation revealed that the boration of this mixed bed was done in parallel with another bed in service and as such the boration was not totally accomplished.

It was also recognized that when a bed has been laid up for a lengthy period of time, boron absorption into internal vessel surfaces and resin bead surfaces could also cause reduction in boron concentration of the bed effluent.

Technical Reference(s): System lesson CVCS, Pg. 116A1d Obj. A1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A1d (As available)

Question Source: Bank # X Callaway 0110110B19A

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	005 K5.03	
	Importance Rating	2.9	

Knowledge of the operational implications of the following concepts as they apply the RHRS: Reactivity effects of RHR fill water

Proposed Question: Common 4

The plant is in MODE 6. Refueling is in progress.

Which ONE (1) of the following requirements is designed to limit the potential for unexpected criticality events?

- A. Greater than 23 feet of borated water is maintained above the reactor vessel flange to limit the effect of inadvertent dilution events.
- B. An SRO in containment is responsible for all activities related to refueling to ensure that positive reactivity is **NOT** added.
- C. At least 1 Source Range channel is required to be OPERABLE to monitor source range counts.
- D. One loop of RHR is required to be in operation to prevent boron stratification of the RCS.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. 23 feet is required for fuel movement and is required for decay heat removal.
- B. Incorrect. SRO directs fuel movement, but would not prevent a return to criticality (location of fuel assemblies directed by others, ie, reactor engineer).
- C. Incorrect. Source range channels are used to monitor the core reactivity conditions but would not prevent a challenge to criticality and 2 are required.
- D. Correct. A purpose of RHR during refueling is to mix the borated coolant to minimize the possibility of criticality.

Technical Reference(s): Tech Spec 3.9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: 07 RHR - H (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	006 K4.10	
	Importance Rating	2.9	

Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following: Redundant pressure meters

Proposed Question: Common 5

Which ONE (1) of the following describes the logic to provide an automatic OPEN signal to accumulator isolation valves (EP HV-8808A thru D)?

- A. 2 of 4 PZR pressure channels greater than P-11.
- B. 3 of 4 PZR pressure channels greater than P-11.
- C. 1 of 3 PZR pressure channels greater than 1970 psig.
- D. 2 of 3 PZR pressure channels greater than 1970 psig.

Proposed Answer: D

Explanation (Optional):

These valves receive an open signal when RCS pressure increases above 1970 psig (P 11 permissive) and also on a SIS. By procedure the valves are open above 1000 psig and closed below 1000 psig in the RCS. Coincidence is 2/3.

Technical Reference(s): 7250D64 Sheet 6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Accumulators – A, EP-HV8808A thru D (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 X

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	007 A2.02	
	Importance Rating	2.6	

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

Proposed Question: Common 6

The plant is at 100% power.

The following annunciators are received:

- 34E, PRT PRESS HI
- 34D, PRT LEV HILO

PRT level is 92%.

PRT pressure is 8 psig.

Which ONE (1) of the following describes the actions that will be taken to restore PRT parameters in accordance with plant procedures?

- A. Lower PRT level to the RCDT, then lower PRT pressure.
- B. Lower PRT level to the RCDT, which will also lower pressure.
- C. Lower PRT level via the Containment normal sumps, which will also lower pressure.
- D. Lower PRT level via the Containment normal sumps, then lower PRT pressure.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. No adjustment should be necessary.
- B. Correct. When level is lowered, pressure will decrease.
- C. Incorrect. The containment sumps are not normally used.
- D. Incorrect. The containment sumps are not normally used.

Technical Reference(s): OTN-BB-00004 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D-17 M. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 A3.08	
	Importance Rating	3.6	

Ability to monitor automatic operation of the CCWS, including: Automatic actions associated with the CCWS that occur as a result of a safety injection signal

Proposed Question: Common 7

Given the following conditions:

- The plant is at 50% power.
- 'B' CCW pump supplying 'B' safety loop and all non-safety CCW loads.

An Automatic Safety Injection occurs.

Which ONE (1) of the following describes the response of the 'A' CCW Train?

- Both 'A' CCW Train pumps remain shutdown.
- 'A' CCW pump STARTS at the 5 second step of the LOCA sequencer.
- 'C' CCW pump STARTS at the 5 second step of the LOCA sequencer.
- 'A' CCW pump STARTS at the 5 second step of the LOCA sequencer, 'C' CCW pump STARTS at the 10 second step of the LOCA sequencer.

Proposed Answer: B

Explanation (Optional):

A safety injection signal (SIS) will initiate the following automatic emergency operation of the component cooling water system.

* If there is no CCW pump running in the associated train, the LOCA sequencer will start CCW pumps A & B at the 5 second step. Pumps C and D will remain in standby.

* If 'C' ('D') CCW pump is running prior to the LOCA sequencer actuation, then 'C' ('D') CCW pump will continue to run and the 'A' ('B') pump will NOT be started by the sequencer.

* If the associated pump 'A' ('B') fails to start, then pump 'C' ('D') will receive a start signal at the 10 second step of the sequencer.

- A. Incorrect. "A" pump starts.
- B. Correct. If no pump running, pump "A" starts.
- C. Incorrect. "A" pump starts at 5 seconds.
- D. Incorrect. "C" pump will start at 10 seconds if "A" does not start.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: 10 CCW C. 1. (As available)

Question Source: Bank # _____
 Modified Bank # X (Note changes or attach parent)
0110100B15A
 New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	008 K2.02	
	Importance Rating	3.0	

Knowledge of bus power supplies to the following: CCW pump, including emergency backup

Proposed Question: Common 8

Given the following conditions::

- Reactor power is 100%.
- The crew is swapping CCW pumps.
- Currently A and C CCW pumps are RUNNING.
- B and D CCW pumps are in Standby.

A loss of power occurs to bus NB02.

The diesel generator starts and re-energizes the bus.

All equipment operates as designed.

Which ONE (1) of the following describes the CCW pumps that will be running?

- A. A CCW Pump only.
- B. A and B CCW Pumps only.
- C. A and C CCW Pumps only.
- D. A, B and C CCW Pumps.

Proposed Answer: D

Explanation (Optional):

A loss of site power will cause all the CCW pumps to be shed from their associated NB bus. They are then sequenced back on by the shutdown sequencer. At the 5 second step in the load sequence, pumps A and B will start. Pumps C or D will start at the 10 second step if their associated pump (A or B) fails to start.

- A. Incorrect. The loss of power to NB02 will start a pump (B) on that bus, the A and C pumps on NB01 will remain running. This would be correct if NB01 was lost.
- B. Incorrect. A and C will remain running.
- C. Incorrect. The loss of power is on the opposite bus.
- D. Correct. Loss of power to NB02 will start pump B. A and C are unaffected and will remain running.

Technical Reference(s): Lesson Plan CCW (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: CCW -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 X
 55.43 _____

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 9

Given the following conditions:

- The plant is in MODE 3, at normal operating pressure and temperature.
- The crew is initiating auxiliary spray in accordance with OTN-BB-00005, Pressurizer and Pressurizer Pressure Control.
- The operator is verifying spray line delta T is acceptable.

Which ONE (1) of the following states the MINIMUM regenerative heat exchanger outlet temperature allowable for Auxiliary Spray initiation under these conditions?

- A. 240°F
- B. 260°F
- C. 320°F
- D. 340°F

Proposed Answer: C

Explanation (Optional):

Do NOT initiate Aux Spray flow if the temperature difference between PZR vapor space and the outlet of the Regen Hx is > 320°F.

- A. Incorrect. This uses RCS cold leg temperature (557°F and subtracts 320).
- B. Incorrect. This uses RCS cold leg temperature and 300°F which is a normal temperature limit for using auxiliary spray.
- C. Correct. Pressurizer temperature is approximately 637°F (2235 psig) and subtracts 320.
- D. Incorrect. This is 637°F minus 300°F.

Technical Reference(s): OTN-BB-00005 Rev 6 (Attach if not previously provided)

Steam Tables

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

Learning Objective: CVCS – B. 21. a. b. 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	010 K1.01	
	Importance Rating	3.9	

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

Proposed Question: Common 10

The plant is at 50% power.

The controlling Pressurizer Pressure channel fails HIGH.

Assuming **NO** action by the crew, which ONE (1) of the following will cause the reactor to trip?

- A. OP Delta T.
- B. Safety Injection.
- C. Low pressurizer pressure.
- D. High pressurizer pressure.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. OP Delta T has had pressure component removed, but would not trip even with a pressure input from 50% power.
- B. Incorrect. In response to the failed channel, spray valves will open causing actual RCS pressure to decrease. Above P-7, low pressurizer pressure is active.
- C. Correct. Trip is active >P-7.
- D. Incorrect. RCS pressure will decrease. High pressure trip coincidence not met with only one channel failed.

Technical Reference(s): OTO-BB-00006 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B72 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	012 K2.01	
	Importance Rating	3.3	

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

Proposed Question: Common 11

Which ONE (1) of the following provides power to SSPS B input relays?

- A. NN02 only.
- B. NN04 only.
- C. NN02 and NN04 only.
- D. NN01, NN02, NN03 and NN04.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. NN02 provides channel 2 power.
- B. Incorrect. NN04 provides power to B SSPS output relays and condenser steam dump relays.
- C. Incorrect. NN02 and NN04 provides power to SSPS B DC power.
- D. Correct. Input relays from all 4 protective channels are fed from NN01, NN02, NN03 and NN04.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: RPS - G (As available)

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

New
 X

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	012 A3.06	
	Importance Rating	3.7	

Ability to monitor automatic operation of the RPS, including: Trip logic

Proposed Question: Common 12

Given the following conditions:

- The plant is operating at 30% reactor power, steady state.
- I&C technicians are performing a calibration on Power Range Channel N-41.
- One I&C technician mistakenly pulls the control power fuses on N-42.
- Realizing his mistake, he reinserts the fuses for N-42 and then pulls the control power fuses for the correct channel, N-41, causing a Reactor Trip.

Which ONE (1) of the following describes the reason for the reactor trip?

- A. PR positive rate trip.
- B. Overpower Delta T trip.
- C. IR neutron flux high setpoint trip.
- D. PR neutron flux high setpoint trip.

Proposed Answer: A

Explanation (Optional):

- A. Correct. One rate trip channel tripped when N-42 fuses pulled. The second.
- B. Incorrect. Only 1 channel tripped.
- C. Incorrect. Not affected.
- D. Incorrect. Only one channel tripped.

Technical Reference(s): Excure Nuclear Instruments (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Excure NI – E. (As available)

Question Source: Bank # X
0110270C02A
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	013 K1.14	_____
	Importance Rating	3.1	_____

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

Proposed Question: Common 13

Which ONE (1) of the following signals provides the DIRECT INPUT to CLOSE KA-FV-29, Instrument Air Supply to Containment?

- A. SI
- B. CISA
- C. CISB
- D. CSAS

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. SI initiates CIA, but not direct to valve
- B. Correct. KA FV 29 supplies instrument air to containment from the Auxiliary Building instrument air header and is located in the south piping penetration room in the Auxiliary Building. It is the containment isolation valve for instrument air. It will shut (fail closed) on a CIS A signal or on loss of air.
- C. Incorrect. CISB closes CCW valves and initiates CSAS
- D. Incorrect. Initiated at same pressure as CISB.

Technical Reference(s): Lesson – Service and Instrument Air (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B. 7. (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	013 K5.01	
	Importance Rating	2.8	

Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Definitions of safety train and ESF channel

Proposed Question: Common 14

Concerning the Auxiliary Feedwater Actuation Signal (AFAS), there are ____ (1) ____ channels of narrow range steam generator level instrumentation on each steam generator which input to ____ (2) ____ channels of auxiliary feed actuation.

- | | ____ (1) ____ | ____ (2) ____ |
|----|---------------|---------------|
| A. | 2 | 2 |
| B. | 2 | 3 |
| C. | 4 | 2 |
| D. | 4 | 3 |

Proposed Answer: D

Explanation (Optional):

There are three channels of aux feed actuation - two motor driven and one turbine driven. Each gets input from 4 steam generator narrow range level instruments.

Technical Reference(s): Lesson ESFAS (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: ESFAS B. 4. (As available)

Question Source: Bank # _____
Modified Bank # X INPO 21425 (Note changes or attach parent)

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X
55.43 _____

Comments:

Braidwood 2002

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

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

Proposed Question: Common 15

Given the following conditions:

- The plant is operating at 100% power.
- The crew is investigating a high vibration alarm on vibration monitoring panel RP312.
- The operator at the panel reports excessively high vibration on the “D” Containment Cooler.
- Currently, all containment coolers are in operation in “SLOW” speed. Containment temperature is 110°F.

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

- A. The “D” Containment Cooler may be secured, if desired by the CRS. No other actions are required.
- B. Stop the “D” Containment Cooler and verify all CRDM fans are running.
- C. Stop the “D” Containment Cooler and start the Pressurizer Cooling Fan.
- D. Shift the speed of the Containment Coolers to “FAST”.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The pressurizer fan must be in operation if **RCS** temperature (not containment temperature) is above 120°F.
- B. Incorrect. The pressurizer fan, not the CRDM fans is started.
- C. Correct. If the “D” cooler is not running, the pressurizer fan must be started.
- D. Incorrect. Fast speed will not address the situation.

Technical Reference(s): OTN-GN-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: 40 Containment Ventilation, B. (As available)
1., 2., 3., 4.

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	004 K4.15	
	Importance Rating	3.0	

Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: Interlocks associated with operation of orifice isolation valves

Proposed Question: Common 16

Given the following conditions:

- The crew is re-establishing letdown following a steam break inside containment.
- Adverse containment conditions exist.
- Indicated pressurizer level is 30%.
- All Orifice Isolation valves HV-8149A, B and C have lost control air.
- The RO places Letdown Isolation valve LCV-459 in OPEN.

Which ONE (1) of the following describes LC-459 response, and the reason for the response?

- Opens because pressurizer level is greater than 17% and all orifice isolation valves are closed.
- Remains closed because pressurizer level must be greater than 37% (17 plus 20%) due to adverse containment.
- Remains closed because all orifice isolation valves are open.
- Remains closed because all orifice isolation valves are closed.

Proposed Answer: A

Explanation (Optional):

- Correct. Conditions of greater than 17% satisfied and all orifice isolation valves are closed (fail position on loss of air).
- Incorrect. 22% is indication only, the interlock setpoint will not change.
- Incorrect. All orifice isolations fail closed.
- Incorrect. Adverse containment would affect the indication only, once the level channels is above 17%, the interlock is satisfied and orifice isolations fail closed.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: CVCS B. 1., 2., 3., 4. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	022 G2.1.2	
	Importance Rating	3.0	

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

Proposed Question: Common 17

The plant is at full power.

While performing a surveillance, one train of CSAS actuates.

Which ONE (1) of the following describes the action(s) that is (are) immediately required?

- A. Trip the reactor only.
- B. Trip the reactor and stop all RCPs only.
- C. Place Containment Spray pumps in Pull-To-Lock.
- D. Trip the reactor, stop all RCPs and actuate the second train of Containment Spray.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Due to spurious operation, no reactor trip necessary.
- B. Incorrect. If the actuation was appropriate, these actions would be correct.
- C. Correct. Due to spurious operation, the spray pumps are stopped to prevent damaging plant equipment (ie RCPs).
- D. Incorrect. Spurious actuation, actuating second train unnecessary.

Technical Reference(s): OTO-SA-00002 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B66 – B. (As available)

Question Source: Bank # X Callaway
003B660B01A

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	039 K3.05	
	Importance Rating	3.6	

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

Proposed Question: Common 18

Given the following conditions:

- The plant is at 3% power, EOL.
- Steam Dumps are maintaining RCS Tave in AUTOMATIC in Steam Pressure mode.
- ONE (1) Atmospheric Steam Dump valve fails OPEN.

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

- RCS Tave will RISE and reactor power will LOWER.
- RCS Tave will LOWER and reactor power will RISE.
- RCS Tave will RISE and reactor power will RISE.
- RCS Tave will LOWER and reactor power will LOWER.

Proposed Answer: B

Explanation (Optional):

- Incorrect. Tave will decrease and power will increase.
- Correct. Increasing steam flow will result in an RCS cooldown. The -MTC (EOL) will add positive reactivity which will increase reactor power.
- Incorrect. Tave will decrease.
- Incorrect. Reactor power will increase.

Technical Reference(s): OTO-AB-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B02 – B. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	059 A2.07	
	Importance Rating	3.0	

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

Proposed Question: Common 19

Given the following conditions:

- The plant is at 72%.
- A Main Feed pump trips on low lube oil pressure.

What action, if any, is necessary for the crew will perform to lower reactor power to within the capacity of the remaining Main Feed pump?

- No action is required; power is currently within the capacity of the remaining pump.
- Boration will be aligned via Emergency Boration valve with rod control in AUTOMATIC.
- Inserting control rods in MANUAL and boration from the RWST as needed.
- The operator will insert rods in Manual until annunciator 65E TREF / TAUCT LO is received then boration from the BAST will be initiated.

Proposed Answer: B

Explanation (Optional):

- Incorrect. Power reduction is required above 65%.
- Correct. Per Attachment A, emergency boration is initiated and rods are placed in AUTO if power is above 65%.
- Incorrect. The RWST is not normally used and rods are in AUTO.
- Incorrect. Rods are driven in until annunciator 65E is received, then rods are placed in auto in the previous version of the procedure as an immediate action.

Technical Reference(s): B-10, B. (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	061 K6.02	
	Importance Rating	2.6	

Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Pumps

Proposed Question: Common 20

Given the following conditions:

- The plant is at 100% power.
- The TDAFP is out of service.
- A lockout of NB01 occurs.
- The plant trips and all equipment operates as designed.
- NB01 remains deenergized.

Which ONE (1) of the following states the steam generators that are currently being supplied by Auxiliary Feedwater?

- A. SGs A and B.
- B. SGs A and D.
- C. SGs B and C.
- D. SGs B and D.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. AFW pump B supplies A and D.
- B. Correct. Supplied by MDAFW pump B.
- C. Incorrect. These 2 steam generators are supplied by MDAFW pump A.
- D. Incorrect. B MDAFW pump supplies, D, B would be supplied by MDAFW A.

Technical Reference(s): Lesson Aux Feedwater (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Aux Feedwater – C., D. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	_____
	Group #	1	_____
	K/A #	062 a1.01	_____
	Importance Rating	3.4	_____

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: Significance of D/G load limits

Proposed Question: Common 21

According to Technical Specifications, every 31 days a diesel generator must be synchronized loaded for greater than 60 minutes at a load between 5580 KW and 6201 KW.

Which ONE (1) of the following describes the significance of this load band?

- A. This is between 70 and 80% of the maximum load limit.
- B. This is between 90 and 100% of the maximum load limit.
- C. This is between 90 and 100% of the continuous load limit.
- D. This is between 100 and 110% of the continuous load limit.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Maximum load limit is 7441 KW, the limits given would be 75 to 83% of the maximum load.
- B. Incorrect. Maximum load limit is 7441 KW, the limits given would be 75 to 83% of the maximum load.
- C. Correct. Continuous load is 6201 KW, 5580 is 90% of this limit.
- D. Incorrect. 5580 is 90% of the limit.

Technical Reference(s): OTN-NE-00001A, tech Spec 3.8.1 (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	063 K4.02	
	Importance Rating	2.9	

Knowledge of dc electrical system design feature(s) and/or interlock(s) which provide for the following: Breaker interlocks, permissives, bypasses and cross-ties.

Proposed Question: Common 22

Given the following conditions:

- The plant is at 100% power.
- The crew is aligning 125 VDC bus NK01 to swing battery charger NK25 in accordance with procedure OTN-NK-00001, Class 1E 125 VDC Electrical System.
- To align the bus to the swing charger, keyswitch NKHS0011 on NK71 is placed in the NK25 position.

Which ONE (1) of the following conditions must be met to allow placing keyswitch NKHS0011 to the NK25 position?

- The bus must be de-energized.
- NK25 must be aligned to NK01.
- Battery charger NK21 must be de-energized.
- The battery must be available to supply the bus during the transfer.

Proposed Answer: B

Explanation (Optional):

- Incorrect. The bus is normally energized when the transfer occurs.
- Correct. To prevent misalignment, electrical interlock of having the swing charger handswitch selected to the bus must be satisfied.
- Incorrect. The Charger is not de-energized until after the alignment, if necessary.
- Incorrect. Having the battery available ensures a “bumpless” transfer but does not prevent the transfer.

Technical Reference(s): OTN-NK-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: X (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	063 A4.01	
	Importance Rating	2.8	

Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses

Proposed Question: Common 23

During operation at power with the Reactor Trip Breakers (RTBs) closed, a loss of 125 VDC control power to one of the RTBs occurs.

As a result of the loss of DC power:

- A. MCB indication is lost and the RTB is NOT capable of tripping on a SHUNT trip.
- B. MCB indication is lost and the RTB trips OPEN due to loss of power to the SHUNT coil.
- C. MCB indication remains lit, however, the RTB is NOT capable of tripping on an SHUNT trip.
- D. MCB indication remains lit however, the RTB trips OPEN due to loss of power to the SHUNT coil.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Indication and shunt trip receives power from NK. Loss of NK results in a loss of indication and shunt trip capability.
- B. Incorrect. The breaker does not trip.
- C. Incorrect. Indication is lost.
- D. Incorrect. Indication and shunt trip capability lost.

Technical Reference(s): Lesson Reactor Protection (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RPS G., K. (As available)

Question Source: Bank # _____
Modified Bank # X Callaway (Note changes or attach parent)
0110270G01B
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	064 K6.08	
	Importance Rating	3.2	

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks

Proposed Question: Common 24

Given the following conditions:

- The plant is at 100% power.
- The "B" Emergency Diesel Generator is running for a surveillance.
- A fire signal is received in the "B" Diesel Generator room.

What effect, if any, does the fire alarm have on the operation of the "B" Diesel Generator fuel oil system?

- There will be no effect on the fuel oil transfer system.
- The fuel oil transfer pump will immediately stop.
- The fuel oil transfer pump will stop at the normal setpoint and then remain shutdown.
- The engine driven fuel oil pump will immediately stop.

Proposed Answer: A

Explanation (Optional):

- Correct. While the diesel is running, the transfer pump will stop due to a fire signal IF HS-A is in ISO/RUN. In normal, the trip is bypassed.
- Incorrect. This would be correct if HS-A was in ISO/RUN.
- Incorrect. While the diesel is running, the pump runs continuously.
- Incorrect. The potentially affected pump is the fuel oil transfer pump.

Technical Reference(s): KE – Standby Generation (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Standby Generation AA (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	073 A4.01	
	Importance Rating	3.9	

Ability to manually operate and/or monitor in the control room: Effluent release

Proposed Question: Common 25

A radioactive liquid release from Discharge Monitor Tank 'A' is in progress.

A YELLOW alarm is received on HB-RE-18, Radwaste Building Discharge Line Radiation Element.

Which ONE (1) of the following describes the status of Liquid Radwaste discharge valve, HB-FV-866, and the release?

- A. HB-FV-866 has throttled to a lower release rate.
- B. HB-FV-866 is closed to terminate the release, but will open automatically when the alarm clears.
- C. HB-FV-866 is closed to terminate the release and will remain closed until reopened by the operator.
- D. HB-FV-866 has remained open and the release is continuing.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. FV-866 does not throttle.
- B. Incorrect. Once closed it must be reopened.
- C. Incorrect. True if in RED alarm.
- D. Correct. Valve will remain open for the current plant conditions.

Technical Reference(s): OTA-SP-RM011 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Liquid Radwaste H (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>1</u>	<u> </u>
	K/A #	<u>076 K1.19</u>	<u> </u>
	Importance Rating	<u>3.6</u>	<u> </u>

Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems: SWS emergency heat loads

Proposed Question: Common 26

Which ONE (1) of the following lists all the signals that would result in pumping UHS water to the Circ and Service Water Cooling Tower Basin?

- A. Safety Injection.
- B. Shutdown Sequencer Actuation.
- C. LSP with AFAS signal.
- D. Safety Injection or Shutdown Sequencer Actuation.

Proposed Answer: C

Explanation (Optional):

On a LSP w/AFAS signal these ESW to Service Water return valves remain open and the return valves to the UHS stay closed. This will result in pumping UHS water to the Circ & Service Water Cooling Tower Basin. Operator action is required to prevent main cooling tower basin overflow.

A, B and D occur for SI and for the shutdown sequencer.

C correct, for SI the containment cooler return bypass valve opens to increase ESW flow per cooler from 1100 gpm to 2000 gpm.

Technical Reference(s): Lesson Essential Service Water (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: ESW A. 2., 3. (As available)

Question Source: Bank #

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	078 K4.01	
	Importance Rating	2.7	

Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: Manual/automatic transfers of control

Proposed Question: Common 27

Given the following conditions:

- Air compressor sequencer is in the C-A-B position.
- All compressors are in Automatic.
- A leak causes air pressure to begin to lower from the normal operating pressure.
- Air pressure is currently 116 psig and lowering slowly.

Which ONE (1) of the following describes the air compressors that are running?

Compressor(s)...

- A. A, B and C.
- B. C only.
- C. A and C only.
- D. A and B only.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The lead and lag air compressors (C and A) start at 119 and 117 psig. In Manual, the B air compressor would start at 117 psig.
- B. Incorrect. A starts at 117 psig.
- C. Incorrect. A would start at 117psig.
- D. Incorrect. A and C compressors would be running.

Technical Reference(s): Service and Instrument Air (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Service and Instrument Air E. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	001 K2.02	
	Importance Rating	3.6	

Knowledge of bus power supplies to the following: One-line diagram of power supply to trip breakers

Proposed Question: Common 29

Given the following conditions:

- The plant is operating at 100% power.
- 480 VAC Load Center PG20 is removed from service.
- The supply breaker to 480 VAC Load Center PG19 opens.

Which ONE (1) of the following describes the effect on the Rod Control System?

- Control rods remain energized from the remaining Rod Drive MG set.
- Control rods will fall but the reactor trip breakers must be opened locally.
- A reactor trip will occur due to a second Rod Control General Warning signal.
- Control rods will fall, resulting in a reactor trip signal, and the reactor trip breakers will open.

Proposed Answer: D

Explanation (Optional):

- Incorrect. Both MG sets are d-energized.
- Incorrect. A reactor trip signal (ie low pressurizer pressure, steam generator level) to cause the breakers to open.
- Incorrect. No General Warning associated with the MG sets.
- Correct. Rods are de-energized and fall into the core. A trip signal will be generated to open the trip breakers.

Technical Reference(s): Rod Control (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Rod Control – H. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	011 K6.04	
	Importance Rating	3.1	

Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Operation of PZR level controllers

Proposed Question: Common 30

Given the following conditions:

- The plant is at 100% power.
- Pressurizer level is on program and in automatic.
- The crew is preparing to shutdown.

Before the shutdown is started, the controlling pressurizer level transmitter fails at its current output.

Assuming NO action by the crew, which ONE (1) of the following describes the effect on charging flow and pressurizer level as plant load is reduced?

- Charging flow rises. Pressurizer heaters will energize at 5% above program level.
- Charging flow rises. Heaters will **not** energize, pressurizer level will rise to the trip setpoint.
- Charging flow lowers. At 17%, letdown will isolate and pressurizer heaters will turn off.
- Charging flow lowers. Letdown will **not** isolate and pressurizer level will lower until the pressurizer is empty.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Charging flow will decrease as program level decreases and level is seen to be high.
- B. Incorrect. Charging will decrease.
- C. Correct. Program pressurizer level will decrease as power is reduced. Charging will attempt to reduce level to match program by decreasing charging flow. At 17%, letdown will isolate due to the backup channel.
- D. Incorrect. Letdown will isolate.

Technical Reference(s): Rx Instrumentation (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B74 -A. (As available)

Question Source: Bank # X McGuire
2002 NRC
Exam
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam McGuire 2002 NRC Exam

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	014 G2.1.27	
	Importance Rating	2.8	

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

Proposed Question: Common 31

What ONE (1) of the following describes a function of the Rod Insertion Monitor?

- A. Computes a rod insertion limit based on auctioneered high Tave and compares it to rod position from the pulse to analog converter.
- B. Computes a rod insertion limit based on auctioneered high Tave and compares it to rod position from the Group Step Demand Counters.
- C. Computes a rod insertion limit based on auctioneered high RCS Delta T and compares it to rod position from the pulse to analog converter.
- D. Computes a rod insertion limit based on auctioneered high RCS Delta T and compares it to rod position from the Group Step Demand Counters.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Based on RCS Delta T.
- B. Incorrect. Based on RCS Delta T and compares the output to pulses from the PA converter.
- C. Correct. Computes a rod insertion based on RCS high DT and compares it to rod position based on pulses from the PA converter.
- D. Incorrect. Uses PA converter.

Technical Reference(s): Lesson Rod Control (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Rod Control – Q. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	015 K2.02	
	Importance Rating	3.3	

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

Proposed Question: Common 32

Given the following conditions:

- A Reactor Startup is in progress.
- Control Bank B is at 50 steps.
- Source Range channels indicate 200 CPS.

A loss of NN02 occurs.

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

- A. Verify reactor trip.
- B. Reinsert control rods.
- C. Verify LCV-112D and E are opening and LCV-112B and C are closing.
- D. Halt the startup and Implement OTO-NN-00001, "Loss of Safety Related Instrument Power."

Proposed Answer: A

Explanation (Optional):

- A. Correct. NN02 is the power supply to source range channel 32. A loss of power will cause the high flux bistable for N32 to trip and the reactor will trip. Immediate action of E-0 is to verify a reactor trip.
- B. Incorrect. The reactor will trip.
- C. Incorrect. Dilution mitigation is train dependant. All 4 valves would not be opening if the loss of power caused the system to actuate.
- D. Incorrect. E-0 will be performed.

Technical Reference(s): Excure NIS (Attach if not previously provided)

Safeguards Power

Proposed references to be provided to applicants during examination: None

Learning Objective: B-45 – A., J. (As available)

Question Source: Bank # _____

Modified Bank # X Callaway (Note changes or attach parent)
0110280J01B

New _____

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>017 G2.1.28</u>	<u> </u>
	Importance Rating	<u>3.1</u>	<u> </u>

Conduct of Operations: Knowledge of the purpose and function of major system components and controls.

Proposed Question: Common 33

Which ONE (1) of the following is the highest temperature that you would expect the Core Exit Thermocouples to be valid?

- A. 700 °F.
- B. 1200 °F.
- C. 2300 °F.
- D. 3200 °F.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. The thermocouples will indicate accurately from 0°F to 700°F.
- B. Incorrect. This is the ECCS acceptance criteria.
- C. Correct. During accident conditions, the thermocouples will operate satisfactorily to 2300°F.
- D. Incorrect. This is a reversal of the 2300 number.

Technical Reference(s): Lesson Incore Instrumentation (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Incore Instrumentation – J. (As available)

Question Source: Bank # X Callaway
 0110290J02A

Modified Bank # _____ (Note changes or attach parent)

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	029 A3.01	
	Importance Rating	3.8	

Ability to monitor automatic operation of the Containment Purge System including: CPS isolation.

Proposed Question: Common 34

Given the following conditions:

- The plant is in Mode 6.
- S/D Purge is in service.
- During core off-load a fuel assembly is dropped.
- The gas channel for Radiation Monitor GTRE22 alarms HIHI.
- The gas channel for Radiation Monitor GTRE33 alarms HI.

Which ONE (1) of the following describes the response of the Containment Purge System?

- A. Continues to operate normally.
- B. All S/D Purge isolation dampers close.
- C. Only Train 'A' S/D Purge isolation dampers close.
- D. Only Train 'B' S/D Purge isolation dampers close.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. HI HI on RE33 cause purge isolation.
- B. Correct. GTRE22 will provide cross trip and close all dampers.
- C. Incorrect. GTRE22 will provide cross trip and close all dampers.
- D. Incorrect. Even though GTRE33 won't cause CPIS, GTRE22 will still close all dampers.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: ESFAS – B., 1. (As available)

Question Source: Bank # X Callaway
NRC Exam
2000
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam Callaway NRC Exam 2000

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	041 A3.05	
	Importance Rating	2.9	

Ability to monitor automatic operation of the SDS, including: Main steam pressure

Proposed Question: Common 35

Which ONE (1) of the following steam pressure setpoints corresponds to the pressure at which the S/G Atmospheric Steam Dump (ASD) will be fully open?

- A. 1092 psig
- B. 1125 psig
- C. 1185 psig
- D. 1197 psig

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. No load setpoint.
- B. Incorrect. When ASD begins to open.
- C. Correct. ASD fully open 60 psig above open setpoint.
- D. Incorrect. Setpoint for second safety.

Technical Reference(s): Main Steam (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Main Steam B., 1. (As available)

Question Source: Bank # X Callaway
0110200B11A

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	2	
	K/A #	045 K1.19	
	Importance Rating	3.4	

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

Proposed Question: Common 36

Which ONE (1) of the following is the minimum required for AMSAC to be "ARMED"?

- A. 1 of 2 turbine impulse channels greater than 33% power.
- B. 2 of 2 of the turbine impulse channels greater than 33% power.
- C. 2 of 4 steam generator levels below 12% for 25 seconds.
- D. 3 of 4 steam generator levels below 12% for 25 seconds.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Both channels required.
- B. Correct. Both channels arm AMSAC.
- C. Incorrect. This would partially satisfy actuation logic (2 of 4 low is reactor trip).
- D. Incorrect. This is actuation logic.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: AMSAC B. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>079 A4.01</u>	<u> </u>
	Importance Rating	<u>2.7</u>	<u> </u>

Ability to manually operate and/or monitor in the control room: Cross-tie valves with IAS

Proposed Question: Common 38

Which ONE (1) of the following describes the operation of Service Air Supply valve KA-PV-11 on lowering instrument air pressure?

- A. Closes at 80 psig.
- B. Opens at 80 psig.
- C. Closes at 110 psig.
- D. Opens at 110 psig.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Valves begin to fail.
- B. Incorrect. Valve would be closed at this pressure.
- C. Correct. Closes to isolate at 110 psig.
- D. Incorrect. Does not open, but misconception that it must open to supply air to IA.

Technical Reference(s): Service and Instrument Air (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Service and Instrument Air B., 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	APE 007 EA1.02	
	Importance Rating	3.8	_____

Ability to operate and monitor the following as they apply to a reactor trip: MFW System

Proposed Question: Common 39

Given the following conditions:

- A reactor trip from 100% power has occurred.
- All equipment is operating as designed.
- RCS Tave is stable at 557°F.

Which ONE (1) of the following describes the status of the Main Feedwater System?

	Main Feedwater Pumps	Main Feedwater Regulating Valves	Feedwater Regulating Bypass Valves
A.	RUNNING	THROTTLED	OPEN
B.	RUNNING	CLOSED	THROTTLED
C.	TRIPPED	THROTTLED	CLOSED
D.	TRIPPED	CLOSED	CLOSED

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Main Feed Pumps trip <564 deg F. Valves all closed
- B. Incorrect. Main Feed Pumps Tripped. Bypasses closed
- C. Incorrect. FRVs closed
- D. Correct

Technical Reference(s): ES-0.1 Step 6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Main Feedwater 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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 008 AK2.03	
	Importance Rating	2.5	

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Controllers and positioners

Proposed Question: Common 40

Given the following conditions:

- A reactor trip has occurred.
- Pressurizer pressure is lowering and pressurizer level is rising rapidly.

Which ONE (1) of the following indications is consistent with the event in progress?

- Rising containment sump level.
- Rising secondary radiation.
- Red light for Pressurizer PORV BB-PCV-455A.
- Red light for AB-PV002, Steam Generator 'B' Atmospheric Steam Dump Valve.

Proposed Answer: C

Explanation (Optional):

- Incorrect. Pressurizer level decrease for RCS leak.
- Incorrect. Pressurizer level decrease for SGTR.
- Correct. Indications consistent for vapor space break, which could be due to an open PORV.
- Incorrect. Pressurizer level would decrease.

Technical Reference(s): MCB indications ?? (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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	EPE 009 EK3.12	
	Importance Rating	3.4	

Knowledge of the reasons for the following responses as they apply to the small break LOCA: Letdown isolation

Proposed Question: Common 41

The plant is at 100% power in a normal full power lineup.

The crew has entered OTO-BB-00003, "Reactor Coolant System Excessive Leakage" due to a suspected RCS leak.

Current conditions:

- Containment radiation is rising.
- Containment humidity and temperature are rising.
- Pressurizer level is lowering slowly.
- Charging flow has risen.
- Indicated Letdown flow on BG FI-132 is 70 gpm.
- The CRS directs that Letdown be isolated.

Which ONE (1) of the following describes the reason for isolating letdown?

- A. To raise pressurizer level prior to commencing a plant shutdown.
- B. To obtain a more accurate leak rate determination.
- C. The leak may be upstream of the BG-FI-132 orifice.
- D. The leak may be downstream of the BG-FI-132 orifice.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Level is raised prior to cooldown.
- B. Incorrect. A leak rate is determined with letdown unisolated.
- C. Correct. Flow is "abnormally low" and as such, the leak may be upstream of the orifice. The crew should consider isolating letdown.
- D. Incorrect. This would be the case if flow was high.

Technical Reference(s): OTO-BB-00003, Reactor Coolant System Excessive Leakage, Step 6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B – 16, D. (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	EPE 011 G2.1.23	
	Importance Rating	3.9	

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

Proposed Question: Common 42

Given the following conditions:

- SI actuated due to a LOCA.
- "A" and "B" SI Pumps are TRIPPED.
- RCS pressure is 250 PSIG.
- Containment pressure is 51 psig.
- All other equipment is running per design.
- The crew is performing actions of E-0, Reactor Trip or Safety Injection.

Which ONE (1) of the following describes the required action and reason for the action with respect to the Reactor Coolant Pumps (RCP's)?

- A. Stop all RCP's to minimize fluid mass loss out of the break.
- B. Stop all RCP's to prevent mechanical damage to the pump and motor.
- C. Leave all RCP's running to provide forced cooling flow of the RCS.
- D. Leave all RCP's running to prevent phase separation of RCS liquid.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. LBLOCA, RCS mass loss is not the concern. RCS is already lost.
- B. Correct. RCPs are tripped because CCW is isolated and CIS-B and Spray is flowing.
- C. Incorrect. Would NOT leave running. RCS Subcooling is lost.
- D. Incorrect. Would NOT leave running. Phase separation may occur in SBLOCAs after RCPs are tripped, leading to core uncover

Technical Reference(s): E-0 Foldout (Attach if not previously provided)
ERG Executive Volume

Proposed references to be provided to applicants during examination: _____

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 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 025 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 conditions:

- The plant is in MODE 5.
- The RCS is drained to just above mid-loop.
- 'B' RHR Pump is in service providing shutdown cooling.

The Reactor Operator notes the following indications:

- RHR Pump 'B' discharge flow (EJ FI-619) is unstable.
- RHR Pump 'B' discharge pressure (EJ PI-615) is unstable.

The Primary Equipment Operator reports the noise level of 'B' RHR pump has risen significantly from last observation.

Which ONE (1) of the following actions is required by OTO-EJ-00001, Loss of RHR Flow?

- Secure 'B' RHR Pump and vent the RHR system.
- Feed any S/G to at least 66% wide range level.
- Raise 'B' RHR Pump flow until it stabilizes.
- Start 'A' RHR Pump and secure 'B' RHR Pump.

Proposed Answer: A

Explanation (Optional):

- A. Correct. If the RHR pump is cavitating, SECURE it.
- B. Incorrect. The S/G cannot be used for a heat sinks unless the loops are filled.
- C. Incorrect. If the RHR pump is cavitating , SECURE it.
- D. Incorrect. OTO-EJ-0001 cautions the operator to NOT start the standby RHR pump unless the cause of the loss of flow is known and corrective action has been taken.

Technical Reference(s): OTO-EJ-00001, Loss of RHR Flow, Rev 16 – Immediate Actions (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: OAF E-3, G. (As available)

Question Source: Bank # X Callaway Exam 2004, Q#6

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam Callaway Exam 2004

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

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

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

Proposed Question: Common 44

The plant is at 100% power.

The following events occur:

- CCW flow is lost to the "B" RCP.
- Upper bearing temperature 175°F and rising at 5°F/minute.
- Lower bearing temperature 185 and rising at 5°F/minute.

Seal injection flow has been maintained to the RCP.

Which ONE (1) of the following describes the MAXIMUM time allowed before the crew must stop the "B" RCP?

- A. 2 minutes.
- B. 4 minutes.
- C. 6 minutes.
- D. 10 minutes.

Proposed Answer: A

Explanation (Optional):

Per RK 22-71C,

CAUTION:

IF a total loss of CCW to one or more RCP motors has occurred, the affected RCP(s) can only be operated for 10 minutes OR until RCP upper or lower bearing oil temperatures reach 195°F, before it will be necessary to stop the pump(s).

A correct, in 2 minutes lower bearing at 195F.

Technical Reference(s): Per RK 22-71C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: CCW RO/SRO E (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 027 AA2.04	
	Importance Rating	3.7	

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Tech-Spec limits for RCS pressure

Proposed Question: Common 45

Given the following conditions:

- The plant is in MODE 5.
- COMS is ARMED.

Which ONE (1) of the following instruments failing HIGH would cause Pressurizer PORV BB-PCV-455A to OPEN?

- Loop 1 Hot Leg temperature.
- Loop 2 Cold Leg temperature.
- BB PT-403, Train B Wide Range RCS pressure.
- BB PT-405, Train A Wide Range RCS pressure.

Proposed Answer: D

Explanation (Optional):

COMS uses the coldest wide range temperature to calculate an allowed maximum pressure to maintain pressure less than allowed by tech specs.

This calculated pressure is compared to actual wide range pressure and will open the PORV when actual exceeds calculated. An alarm will sound just prior to the PORV opening.

COMS Train A uses Loops 1 and 2 hot legs and Loops 3 and 4 cold legs to determine allowable pressure above which the PORV will open. Allowable pressure is compared to RCS pressure as measured by BB PT-405.

COMS Train B uses Loops 3 and 4 Hot Legs and Loops 1 and 2 Cold Legs to determine allowable pressure. Allowable pressure is compared to RCS pressure as measured by BB PT-403.

- A. Incorrect. Calculated pressure would increase, RCS would be below lift setpoint.
- B. Incorrect. Loop 2 inputs to COMS Train B.
- C. Incorrect. BB-PT-403 inputs to COMS Train B.
- D. Correct. If BB-PT-405 fails high, RCS pressure is determined to be above calculated setpoint. PORV-455A will open.

Technical Reference(s): System Description 30 – (Attach if not previously provided)
 Reactor Instrumentation
 Drawing 7250D64 Sheet 17

Proposed references to be provided to applicants during examination: None

Learning Objective: A-17 –B., 1., 2. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
 55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	EPE 029 EA1.10	
	Importance Rating	3.6	_____

Ability to operate and monitor the following as they apply to a ATWS: Rod control function switch

Proposed Question: Common 46

Which ONE (1) of the following describes the actions that will be taken to insert control rods at step 1 of FR-S.1, Response to Nuclear Power Generation/ATWS?

- A. Allow the rods to insert in AUTOMATIC until speed is less than 48 spm then manually insert rods.
- B. Allow the rods to insert in AUTOMATIC until rod motion stops then manually insert rods.
- C. Allow rods to remain in AUTOMATIC throughout the event while performing remaining ATWS actions.
- D. Immediately place rod control switch in MANUAL and insert rods.

Proposed Answer: A

Explanation (Optional):
Per FR-S.1

- A. Correct. Rods in auto until less than 48 spm.
- B. Incorrect. Manually insert rods.
- C. Incorrect. Bank select not used.
- D. Incorrect. This was the action in Revision 4.

Technical Reference(s): FR-S.1, Step 1 Revision 5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D-29, Objective B (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	EPE 038 EA1.35	
	Importance Rating	3.5	

Ability to operate and monitor the following as they apply to a SGTR: Steam dump condenser

Proposed Question: Common 47

Given the following conditions:

- The crew is preparing to perform a cooldown in accordance with E-3, Steam Generator Tube Rupture using the condenser steam dumps.
- RCS Tavg is 559°F.

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

- Place the steam dump controller in MANUAL and the mode control switch in TAVG, fully open the Group 1 valves.
- Place the steam dump controller in MANUAL and the mode control switch in TAVG, fully open all Group 1 thru 4 valves.
- Place the steam dump controller in MANUAL and the mode control switch in STM PRESS, slowly open the Group 1 valves only.
- Place the steam dump controller in MANUAL and the mode control switch in STM PRESS, slowly open all Group 1 thru 4 valves.

Proposed Answer: D

Explanation (Optional):

D. Correct.

RCS Tave is above the P-12 setpoint, so all steam dumps are available. E-3 instructs the operator to place the controller in Steam Pressure and achieve maximum cooldown rate.

Technical Reference(s): E-3 Step 6. System Lesson 20 (Attach if not previously provided)
Main Steam, Pg. 39

Proposed references to be provided to applicants during examination: None

Learning Objective: 20 Main Steam – B. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 040 AA1.05	
	Importance Rating	4.5	

Ability to operate and / or monitor the following as they apply to the Steam Line Rupture: Manual and automatic RPS trip initiation

Proposed Question: Common 48

A plant shutdown is in progress with the following conditions:

- Pressurizer pressure is 1900 psig.
- Steam line pressure is 750 psig.
- All other conditions are normal.

A large steam break occurs upstream of 'B' MSIV resulting in a complete depressurization of 'B' steam generator in 1 minute.

No manual action is taken.

Which ONE (1) of the following describes the ESF actuations initiated?

- SLIS due to high negative rate of 'B' steam line pressure.
- SLIS due to low 'B' steam line pressure.
- SIS due to high negative rate of 'B' steam line pressure.
- SIS and SLIS due to low 'B' steam line pressure.

Proposed Answer: A

Explanation (Optional):

- Correct. Low pressure negative rate causes SLIS below P-11. Low steam pressure SIS is blocked.
- Incorrect. Low steamline pressure is blocked. SI blocked below P-11.
- Incorrect. SIS blocked.
- Incorrect. Both signals blocked.

Technical Reference(s): Lesson RPS (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RPS C (As available)

Question Source: Bank # _____
Modified Bank # X Callaway (Note changes or attach parent)
0110270F02A
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	_____
	Group #	1	_____
	K/A #	APE 054 AA2.02	
	Importance Rating	4.1	_____

Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): Differentiation between loss of all MFW and trip of one MFW pump

Proposed Question: Common 49

The plant is at 100% power.

What effect would actuation of Train “A” Safety Injection have on the Main Feedwater Pumps?

- A. Both main feedwater pumps trip when the SI occurs.
- B. Both main feedwater pumps will run until tripped by P-4, Low Tave FWIS.
- C. “A” main feedwater pump trips due to the SI, “B” will trip on P-4, Low Tave FWIS.
- D. “A” main feedwater pump trips due to the SI, “B” will continue to run until stopped by the operator.

Proposed Answer: A

Explanation (Optional):

- A. Correct. SI causes both MFPs to trip.
- B. Incorrect. The MFPs trip due to SI.
- C. Incorrect. The B MFP will trip on SI.
- D. Incorrect. A total loss of feed will occur – the B MFP will be tripped.

Technical Reference(s): Main Feedwater (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Main Feedwater D (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 056 AK1.01	
	Importance Rating	3.7	

Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Principle of cooling by natural convection

Proposed Question: Common 50

Given the following:

- The plant trips from full power following a loss of offsite power.
- The crew has entered ES-0.1, Reactor Trip Response.
- Natural Circulation is being verified.

Current plant conditions:

- Highest Core Exit Thermocouple = 590°F and stable.
- RCS pressure = 2050 psig.
- Steam Generator pressures (all 4) = 985 psig and stable.
- RCS hot leg (all loops) = 585°F and stable.
- RCS cold legs temperatures are 540 - 545°F and stable.

In accordance with EOP addendum 1, which ONE (1) of the following describes the status of Natural Circulation cooling?

Natural Circulation...

- Exists and may be enhanced by opening Condenser Steam Dumps.
- Exists and may be enhanced by opening SG Atmospheric Dump Valves.
- Does NOT exist, but may be established by opening Condenser Steam Dumps.
- Does NOT exist, but may be established by opening SG Atmospheric Dump Valves.

Proposed Answer: B

Explanation (Optional):

Per addendum 1:

- 1) RCS subcooling based on core exit T/Cs GREATER THAN 30°F.
- 2) S/G Pressures stable or decreasing.
- 3) RCS Hot Leg Temperatures stable or decreasing.
- 4) Core Exit T/Cs stable or decreasing.
- 5) RCS Cold Leg Temperatures at saturation temperature for S/G Pressure

- A. Incorrect. Condenser Steam Dumps are not available
- B. Correct. Tcold is appropriate for SG pressure.
- C. Incorrect. It exists, and Condenser is unavailable due to loss of Circ Water
- D. Incorrect. It exists.

Technical Reference(s): ES-0.1 Step 10 (Attach if not previously provided)

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

Learning Objective: D6, J. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

WTSI Bank 2004 NRC Region 2, 2005 NRC Region 1

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

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

Proposed Question: Common 51

Given the following conditions::

- Reactor power is 100%.
- 'A' CCP is in service.
- 120 gpm letdown.

The yellow train ESFAS status panel audible alarm is received.

The RO immediately determines that the CCP suction has shifted from the VCT to the RWST.

Which ONE (1) of the following is the cause of the CCP suction swapover to the RWST?

- Loss of power to instrument bus NN01 causing BG-LI-112 to fail low.
- Loss of power to instrument bus NN04 causing BG-LI-185 to fail low.
- Loss of power to instrument bus NN01 causing BG-LI-112 to fail high.
- Loss of power to instrument bus NN04 causing BG-LI-185 to fail high.

Proposed Answer: B

Explanation (Optional):

- Incorrect. The train would be red. Yellow is NN04.
- Correct. Loss of power to LI-185 fails it low causing swapover to the RWST.
- Incorrect. LI-112 did not lose power.
- Incorrect. LI-185 fails low. This would not cause immediate swapover.

Technical Reference(s): OTO-NN-0001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B45 – A. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 058 AA2.01	
	Importance Rating	3.7	

Ability to determine and interpret the following as they apply to the Loss of DC Power: That a loss of dc power has occurred; verification that substitute power sources have come on line

Proposed Question: Common 52

Given the following conditions:

- The plant is in MODE 1.
- Bus NK03 is being powered from NK25.
- All equipment is OPERABLE.
- A loss of NG01 occurs.

Which ONE (1) of the following describes the effect on the NK system?

- A. NK01 is being supplied by its battery; NK03 is being supplied from NK25.
- B. NK01 is being supplied by NK21; NK03 is being supplied by its battery.
- C. NK01 is being supplied by NK21; NK03 is being supplied by NK25.
- D. Both NK01 and NK03 are being supplied by their batteries.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Power to NK25 is NG01, no auto switch to PG19 and the initial conditions state normal alignment – which is NG01.
- B. Incorrect. Power to NK01 is NG01.
- C. Incorrect. Loss of NG01 results in loss of normal power to NK21 and NK25.
- D. Correct. Both buses lose normal power and will be on battery power.

Technical Reference(s): Safeguards Power (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Safeguards Power, I. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	APE 062 AA1.07	
	Importance Rating	2.9	

Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water: Flow rates to the components and systems that are serviced by the CCWS; interactions among the components

Proposed Question: Common 53

The plant is at full power. All control systems are in a normal lineup.

A running service water pump trips on undervoltage.

Which ONE (1) of the following describes the plant response?

- A. Service water system flow lowers to approximately half of its previous value until the operator starts the standby service water pump. Service water continues to supply ESW loads.
- B. The standby service water pump automatically starts and restores system flow. Service water continues to supply ESW loads.
- C. The ESW pumps start, service water to ESW isolates. Only one service water pump will be running until the operator starts the standby pump.
- D. The ESW pumps start, service water to ESW isolates. The standby service water pump automatically starts and restores system flow.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. The standby pump will automatically start.
- B. Correct. Service will remain aligned, the standby pump will start.
- C. Incorrect. Service remains aligned to ESW, the standby pump starts.
- D. Incorrect. Service water remains aligned to ESW.

Technical Reference(s): Circ & Service Water (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Circ and SW F. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E04 EK3.2	
	Importance Rating	3.4	

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

Proposed Question: Common 54

The crew is responding to a plant transient and are currently in procedure ECA-1.2, "LOCA Outside Containment".

Which ONE (1) of the following describes the reason for allowing some time to elapse between each valve manipulation?

- A. Prevent valve motor overheating due to excessive operation.
- B. To allow check on indications of leak in auxiliary building.
- C. Allows system pressure to respond to repositioning.
- D. Prevents overcurrent trips on valve motor breakers.

Proposed Answer: C

Explanation (Optional):

Per ECA-1.2 Note, To remind operators to wait some amount of time for pressure to respond during valve manipulations.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D14 B. (As available)

Question Source: Bank # X Callaway
003D140D01A
Modified Bank # _____ (Note changes or attach parent)

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E11 EK3.4	
	Importance Rating	3.6	

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

Proposed Question: Common 55

Given the following conditions:

- The crew has entered ECA-1.1, Loss of Emergency Coolant Recirculation from E-1, Loss of Reactor or Secondary Coolant.
- Containment pressure is 13 psig.
- 2 containment cooler fans are running in slow.
- All ECCS equipment is running.
- RWST level is 18%.

The crew is determining containment spray requirements.

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

- Leave one containment spray pump running to promote mixing of hydrogen.
- Secure both containment spray pumps to pump cavitation.
- Leave one containment spray pump running to aid in containment cooling.
- Secure both containment spray pumps, there is adequate containment cooling from the containment cooling fans.

Proposed Answer: D

Explanation (Optional):

Per table for step 7, with less than 3 containment coolers running and containment pressure below 24 psig, no containment spray pumps are necessary. In the background document, if the RWST level is below the switchover setpoint, a best estimate criteria is used instead of the design basis heat removal criteria.

- A. Incorrect. Both should be secured.
- B. Incorrect. Not to conserve inventory
- C. Incorrect. Both secured
- D. Correct. Below 24 psig, 2 containment coolers are adequate.

Technical Reference(s): ECA-1.1 Step 7 and Background (Attach if not previously provided)

Proposed references to be provided to applicants during examination: ECA-1.1

Learning Objective: _____ (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	1	
	K/A #	E12 EA1.3	
	Importance Rating	3.4	

Ability to operate and / or monitor the following as they apply to the (Uncontrolled Depressurization of all Steam Generators) Desired operating results during abnormal and emergency situations.

Proposed Question: Common 56

Which ONE (1) of the following describes the reason for reducing AFW flow to minimum in accordance with ECA-2.1, Uncontrolled Depressurization of All SGs?

- A. Maintain minimum feed flow to ensure CST inventory is maintained until RHR can be placed in service.
- B. Maintain minimum feed flow to ensure adequate heat sink is maintained and entry to FR-H.1, Response to Loss of Secondary Heat Sink, will **not** be required.
- C. Establish a minimum verifiable flow to ensure components remain wet so that thermal stresses are minimized upon a feed flow increase.
- D. Establish a minimum verifiable flow to reduce the risk of overfilling Steam Generators.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. CST inventory suitable for all AFW flows
- B. Incorrect. May meet entry for FR-H.1 but would be kicked back out due to action in ECA-2.1
- C. Correct.
- D. Incorrect. Overfill will not be a concern, although pressure is lowering, which would have same cooling effect as overfilling

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D16 (As available)

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

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:
WTSI Bank. Region 1 and Region 2 NRC Exams

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u> </u>
	Group #	<u>2</u>	<u> </u>
	K/A #	<u>APE 036 AA1.02</u>	
	Importance Rating	<u>3.1</u>	<u> </u>

Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: ARM system

Proposed Question: Common 57

While moving fuel assemblies in the Fuel Storage building, area monitors SDRE-37 and SDRE-38 go into Hi alarm.

What conditions are necessary for the audible and flashing alarm indications to reset?

- A. Both will reset as soon as the alarm is acknowledged.
- B. The audible alarm will reset only when the alarm is acknowledged, the flashing alarm will reset only when the condition clears.
- C. The flashing alarm will reset only when the alarm is acknowledged, the audible alarm will reset only when the condition clears.
- D. Both will reset when the alarm is acknowledged if the alarm condition is clear.

Proposed Answer: D

Explanation (Optional):

D correct, The audible "high alarm" condition may be acknowledged on the Remote indicator, but will not reset until the alarm condition is cleared. The visual flashing alarm light on the Remote Indicator will continue to function until the alarm condition is cleared.

Technical Reference(s): Process and Area Rad Monitors (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Process and Area Rad Monitors (As available)
 - B.

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	APE 037 AA1.06	
	Importance Rating	3.8	

Ability to operate and / or monitor the following as they apply to the Steam Generator Tube Leak: Main steam line rad monitor meters)

Proposed Question: Common 58

The plant is at 100% power.

A small steam generator tube leak is causing steam line radiation monitor AB-RE-16A to read 100 GPD.

If power is reduced to 50%, which ONE (1) of the following describes the response of AB-RE-16A?

- A. Indication will lower due to the reduction in N-16 production.
- B. Indication will lower due to the reduction in iodine production.
- C. Indication will remain the same due to the continued tube leakage.
- D. Indication will rise because there is less steam flow but the same amount of radiation.

Proposed Answer: A

Explanation (Optional):

The steam line radiation monitors detect N-16 from the tube leakage. Once the unit is shutdown, N-16 production ceases and the indication will decrease.

A correct.

Technical Reference(s): B-14 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Process and Area RMS - B (As available)

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

Question History: Last NRC Exam Diablo Canyon NRC Exam 2005

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	APE 059 AK1.02	
	Importance Rating	2.6	

Knowledge of the operational implications of the following concepts as they apply to Accidental Liquid Radwaste Release:
Biological effects on humans of various types of radiation, exposure levels that are acceptable for nuclear power plant personnel,
and the units used for radiation-intensity measurements and for radiation exposure levels

Proposed Question: Common 59

How does Callaway ensure that any liquid radioactive release to the environment does not exceed the limits set in 10CFR20 and 10CFR50?

- A. By setting release rates using the ODCM.
- B. By only discharging from authorized outfalls.
- C. By monitoring releases using EPA guidelines.
- D. By only allowing a discharge if the radiation monitor is operable.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Public limits protected by maintaining limits less than federal limits.
- B. Incorrect. Discharges From unauthorized outfalls are NPDES violations.
- C. Incorrect. EPA guidelines not based on not exceeding NRC guidelines.
- D. Incorrect. If rad monitor inoperable, discharge still possible (grap samples).

Technical Reference(s): A34 - _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None _____

Learning Objective: A _____ (As available)

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

New

X

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

X

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E01 EK3.1	
	Importance Rating	3.0	

Knowledge of the reasons for the following responses as they apply to the (Reactor Trip or Safety Injection/Rediagnosis) Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

Proposed Question: Common 60

The crew has entered ES-0.0, Rediagnosis.

Which ONE (1) of the following procedures would NOT be entered from ES-0.0, Rediagnosis?

- A. ES-0.1, Reactor Trip Response because SI must be in service or required to perform ES-0.0.
- B. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, because the FRPs do not apply while in ES-0.0.
- C. ECA-2.1, Uncontrolled Depressurization of All Steam Generators, because E-2, Faulted Steam Generator Isolation, must be performed first.
- D. E-1, Loss of Reactor or Secondary Coolant, because ES-0.0 directs the operator to E-0, Reactor Trip or Safety Injection, if SI is required.

Proposed Answer: A

Explanation (Optional):

- A. Correct. To perform ES-0.0, E-0 must be completed and SI in service or required.
- B. Incorrect. Once out of E-0, FRPs apply.
- C. Incorrect. All steam generator pressure boundaries intact is checked in ES-0.0.
- D. Incorrect. SI is in service.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D05 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E03 EK3.2	
	Importance Rating	3.4	

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

Proposed Question: Common 61

Given the following conditions:

- A LOCA has occurred.
- The crew is performing the actions of ES1.2, Post LOCA Cooldown and Depressurization.
- All equipment is operating as designed.
- SI has been reset.

Just prior to initiating an RCS cooldown, the low steamline pressure SI is blocked.

Which ONE (1) of the following is the reason for blocking the low steamline SI?

- A. To allow manual operation of SI equipment.
- B. To prevent auto restart of secured SI equipment.
- C. To unblock the steam line isolation from high rate signal.
- D. To allow the cooldown to be performed using the condenser steam dumps.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. This is why SI is reset.
- B. Incorrect. The reason is to allow the MSIVs to remain open when pressure decreases below the SI setpoint.
- C. Incorrect. The object is not to place the high rate into the circuit (it is always available).
- D. Correct. Per ES-0.1 background, blocking low steamline pressure SI allows the MSIVs to remain open and the condenser steam dumps to be used for the cooldown.

Technical Reference(s): ES-1.2 Background (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D10 – 2. (As available)

Question Source: Bank # _____
Modified Bank # X Callaway (Note changes or attach parent)
003D100E02A
New _____

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E07 EA2.2	
	Importance Rating	3.3	

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

Proposed Question: Common 62

Following a LOCA with subsequent ECCS failures, the crew is performing the actions in FR-C.2, Response To Degraded Core Cooling.

- RCS pressure is rising.
- Core Cooling has NOT been restored.

Which ONE (1) of the following describes the required operation of the Pressurizer PORVs in this event?

- A. Leave closed and ISOLATED until required to establish a vent path prior to RCP restart.
- B. Leave closed and UNISOLATED for automatic overpressure protection as necessary.
- C. Leave closed and ISOLATED to prevent further loss of RCS inventory.
- D. Manually OPEN to depressurize the RCS to facilitate SI accumulator injection.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Possible action in FR-C.1
- B. Correct.
- C. Incorrect. Always available, do not isolate
- D. Incorrect. Action in FR-C.1

Technical Reference(s): FR-C.2 Background (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D25, Q. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:
WTSI Bank, 2003 NRC Exam Region 1

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E08 EK2.1	
	Importance Rating	3.4	

Knowledge of the interrelations between the (Pressurized Thermal Shock) 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 63

Procedure EP FR-P.1, "Response to Imminent Pressurized Thermal Shock", contains less restrictive SI termination criteria than other procedures.

Why is it desirable to terminate SI if these less restrictive criteria are met?

- A. To conserve water in the RWST.
- B. SI flow may have contributed to the RCS cooldown.
- C. RCS heat removal is via the steam generators and SI flow is NOT required.
- D. The other SI termination criteria will have already been met when FR-P.1 is entered.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. RWST inventory is not an issue in P.1.
- B. Correct. SI if present is a significant factor to any cold leg temperature decrease and can be a contributor to overpressure.
- C. Incorrect. Heat removal is required.
- D. Incorrect. SI termination is not a prerequisite for procedure entry.

Technical Reference(s): D28 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D28 (As available)

Question Source: Bank # X INPO 22428
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam Diablo Canyon 2002

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E09 EA2.2	
	Importance Rating	3.4	

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

Proposed Question: Common 64

The crew is performing an RCS cooldown and depressurization in accordance with ES-0.2, Natural Circulation Cooldown.

When would a transition to ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS) or ES-0.4, Natural Circulation Cooldown With Steam Void In Vessel (Without RVLIS) be appropriate?

- A. CRDM fan trips.
- B. RVLIS indication is lost.
- C. Subcooling lowers below required value.
- D. The depressurization cannot be stopped when there is indication of void formation.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Less CRDM fans requires more subcooling but not procedure transition.
- B. Incorrect. Loss of RVLIS would only be factor if a transition out of ES-0.2 was required.
- C. Incorrect. If subcooling is less than required, depressurization is stopped.
- D. Correct. If the cooldown results in a void and must continue, transition out of ES-0.2 is appropriate.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D07 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	E14 EK2.1	
	Importance Rating	3.4	

Knowledge of the interrelations between the (High Containment Pressure) 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 65

The following plant conditions exist:

- A large break LOCA has occurred.
- LOCA sequencer is activated.
- 20 seconds after sequencer activation CSAS signal generated.

When will the containment spray pumps receive a start signal?

- A. As soon as the CSAS activation occurs.
- B. 5 seconds after CSAS activation.
- C. 20 seconds after CSAS activation.
- D. 25 seconds after CSAS activation.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Must 25 seconds. This is to prevent the spray pump from starting at the same time another load is being sequenced onto the NB bus.
- B. Incorrect. Time is 25 seconds after LOCA sequencer reaches step 3 (15 seconds).
- C. Correct. If a CSAS is not present at time 3 (15 seconds), a 25 second time delay is initiated. After the 25 second time delay, the spray pump will start if a CSAS occurs. In this case, CSAS occurs 5 seconds after step 3 and therefore will occur in 20 seconds.
- D. Incorrect. Time is 25 seconds from step 3 of sequencer.

Technical Reference(s): Lesson Containment Spray (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Containment Spray G. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	1	
	K/A #	G2.1.16	
	Importance Rating	2.9	

Ability to operate plant phone, paging system, and two-way radio.

Proposed Question: Common 67

What are the responsibilities of the URO in regard to the Fire Brigade?

- A. Notify fire protection engineer, sound plant emergency alarm.
- B. Sound plant emergency alarm, start fire pumps, and notify the Emergency Duty Officer of plant conditions.
- C. Sound fire alarm, perform immediate actions of E-0, announce fire location over Gaitronics.
- D. Sound fire alarm, announce fire location over Gaitronics, and maintain communication between the control room and emergency scene.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. FPE notification the responsibility of Shift Supervisor.
- B. Incorrect. Notifying county FD not a URO responsibility.
- C. Incorrect. Immediate E-0 actions not part of the fire brigade responsibilities.
- D. Correct. All of these actions are the URO responsibility.

Technical Reference(s): APA-ZZ-00743, section 4.6 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A30, E. APA-ZZ-00743 (As available)

Question Source: Bank # X Callaway
003A30E02A
Modified Bank # _____ (Note changes or attach parent)

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge
Comprehension or Analysis

 X

10 CFR Part 55 Content:

55.41 X

55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.25	
	Importance Rating	2.5	

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

Proposed Question: Common 68

All NK batteries are OPERABLE.

This means that an NK battery can provide power to required loads for at least how long following a loss of all AC?

- A. 120 minutes.
- B. 180 minutes.
- C. 200 minutes.
- D. 240 minutes.

Proposed Answer: C

Explanation (Optional):

C correct, according to Tech Spec bases, each battery adequate capacity to carry the required load continuously for at least a 200 minute duty cycle.

Technical Reference(s): Tech Spec 3.8.3 bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A13 – C. (As available)

Question Source: Bank # X Callaway
003A13C102A
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	2	
	K/A #	G2.2.2	
	Importance Rating	4.0	

Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.

Proposed Question: Common 69

Given the following conditions:

- A reactor startup is in progress.
- The reactor is critical in the Source Range.
- Power is being raised to the Intermediate Range to take critical data.

How will both Source Ranges be removed from service?

- The operator must push both "BLOCK" pushbuttons on RL003 when one of the Intermediate Ranges is above 10^{-10} amps.
- The operator must push both "BLOCK" pushbuttons on RL003 when both Intermediate Ranges are above 10^{-10} amps.
- The operator must push at least one of the "BLOCK" pushbuttons on RL003 when one of the Intermediate Ranges is above 10^{-10} amps.
- The operator must push at least one of the "BLOCK" pushbuttons on RL003 when both Intermediate Ranges are above 10^{-10} amps.

Proposed Answer: A

Explanation (Optional):

A correct, coincidence is 1 of 2 IR above 10^{-10} amps. BLOCK pushbuttons are train dependent, therefore both must be pushed.

Technical Reference(s): Excore NIS (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: NIS D. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Modified from 2004 NRC Exam #15

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

Ability to control radiation releases.

Proposed Question: Common 71

Given the following conditions:

- A rapid load reduction from 100% power to 65% power was performed approximately 3 hours ago.
- The Letdown Line Radiation Monitor is in alarm.
- Chemistry confirms RCS activity exceeds Technical Specification limits.
- The CRS directs a plant shutdown be performed.

Which ONE (1) of the following actions is subsequently performed to limit the release of radioactivity?

- A. MSIVs are closed.
- B. SG atmospheric dump valve setpoints are raised.
- C. RCS is cooled down below 500°F.
- D. Maximum condensate polishers are placed in service.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. MSIV closure would not stop release through MSSV
- B. Incorrect. Would not stop release through MSSV
- C. Correct. <500 will make saturation pressure below lift setpoints
- D. Incorrect. Will minimize secondary contamination, but will not stop release through MSSV

Technical Reference(s): TS 3.4.16 bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D17, BB. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

WTSI Bank NRC Exam 2002, 2003, 2004 R 1, R2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.31	
	Importance Rating	3.3	

Knowledge of annunciators, alarms and indications, and use of the response instructions.

Proposed Question: Common 72

The plant is at 50% power.

A loop 1 Thot channel fails high.
No operator action has been taken at this time.

Which ONE (1) of the following is the **first** indication of this failure?

- A. Window 66A, LOOP 1 Δ T HI DEV and window 66C, LOOP 1 T AVG HI DEV.
- B. Window 66B, LOOP 1 Δ T LO DEV and window 66D, LOOP 1 T AVG LO DEV.
- C. Window 67A, 68A and 69A, LOOP 2, 3, 4 Δ T HI DEV and window 67C, 68C, and 69C LOOP 2, 3, 4 LOOP TAVG HI DEV.
- D. Window 67B, 68B and 69B, LOOP 2, 3, 4 Δ T LO DEV and window 67D, 68D, and 69D LOOP 2, 3, 4 LOOP TAVG LO DEV.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. These windows will not come in until the loop is defeated.
- B. Incorrect. Wrong failure direction.
- C. Incorrect. The other loops will be lower than the failed loop.
- D. Correct. The other loops will be lower than the failed loop and will alarm first.

Technical Reference(s): OTO-RL-RK066 Rev 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B-17, B. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

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

Ability to identify post-accident instrumentation.

Proposed Question: Common 73

Which ONE (1) of the following instruments is considered Post Accident Instrumentation?

- A. Gammametrics
- B. Narrow range RCS Tcold
- C. Cold Calibrated Pressurizer Level
- D. Steam Generator Narrow Range Level

Proposed Answer: A

Explanation (Optional):

- A. Correct. Wide range gammametrics is PAM instrumentation.
- B. Incorrect. Wide range temperature is PAM.
- C. Incorrect. Hot calibrated channels are PAM.
- D. Incorrect. Wide range is PAM.

Technical Reference(s): Tech Spec 3.3.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Excore NIS - G (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	3	
	Group #	4	
	K/A #	G2.4.12	
	Importance Rating	3.4	

Knowledge of general operating crew responsibilities during emergency operations.

Proposed Question: Common 74

Given the following conditions:

- The crew is performing step 1 of E-0, Reactor Trip or Safety Injection.
- 3 Rod Bottom Lights are **not** lit.
- One RTB indicates closed.
- IR SUR is -0.2.
- Power Range indication is approximately 0%.

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

- A. Proceed to step 2 and verify the Turbine is tripped.
- B. Perform a manual reactor trip, then proceed to step 2 and verify the Turbine is tripped.
- C. Perform a manual reactor trip, and go to FR-S.1 if the closed RTB does not open. If the RTB breaker opens, go to step 2 and verify the Turbine is tripped.
- D. Perform a manual reactor trip, and go to FR-S.1 if the closed RTB does not open or if more than 1 of the rods remain out. If the RTB opens and rods fall, go to step 2 and verify the Turbine is tripped.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. The answer to step 1 is no, so the RNO should be performed.
- B. Correct. The RNO for step should be performed but even if the breaker or the rods do not change status, the reactor is tripped and the entry conditions for FR-S.1 are not met.
- C. Incorrect. No entry conditions for S.1.
- D. Incorrect. No entry conditions for S.1.

Technical Reference(s): E-0, step 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D04 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

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

Knowledge of the emergency plan.

Proposed Question: Common 75

Which ONE (1) of the following is the LOWEST emergency classification at which the Emergency Response Organization (ERO) MUST be activated?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

Proposed Answer: B

Explanation (Optional):

B correct. ERO activated Alert or higher.

Technical Reference(s): EIP-ZZ-00102 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (As available)

Question Source: Bank # X INPO Bank
23377
Modified Bank # (Note changes or attach parent)
New

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 X
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	APE 008 AA2.30	
	Importance Rating	_____	4.7

Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: Inadequate Core Cooling

Proposed Question: SRO 76

Given the following conditions:

- Reactor Trip and safety injection have occurred.
- RCPs have been stopped.
- RVLIS PUMPS OFF indication is 10%.
- Core Exit Thermocouples are indicating 745°F and rising.
- PZR level is currently indicating >100%.
- PZR pressure has stabilized at 1200 psig.
- RCS Wide Range Hot Leg Temperatures are indicating 680°F and rising.

Which ONE (1) of the following describes the conditions that currently exist?

- A. A pressurizer vapor space break has occurred and a transition to FR-C.1, "Response to Inadequate Core Cooling," is required.
- B. A pressurizer vapor space break has occurred and a transition to FR-C.2, "Response to Degraded Core Cooling," is required.
- C. An RCS hot leg break has occurred and a transition to FR-C.1, "Response to Inadequate Core Cooling," is required.
- D. An RCS hot leg break has occurred and a transition to FR-C.2, "Response to Degraded Core Cooling," is required.

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Indications are for entry to FR-C.1
- C. Incorrect. Vapor Space break indicated by pressurizer level increase
- D. Incorrect. Vapor space break and FR-C.1 is correct procedure

Technical Reference(s): Core Cooling CSF Status Tree (Attach if not previously provided)

Proposed references to be provided to applicants during examination: Core Cooling CSF Status Tree

Learning Objective: D10, G. (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:
WTSI Bank 2004 NRC Exam R2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	EPE 011 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 77

Which ONE (1) of the following describes the reason that Technical Specifications allows isolating the SI Accumulators below 1000 psig during a plant shutdown?

- A. Accumulator nitrogen injection to the RCS is a larger risk as the RCS is depressurized.
- B. The potential for a Low Temperature Overpressure event in Mode 4 or 5 is minimized with the accumulators isolated.
- C. Accumulator boron concentration is typically less than required Mode 5 boron concentration.
- D. ECCS injection is sufficient to ensure peak clad temperature remains below 2200°F if a LOCA were to occur.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. This is why Accumulators are isolated in many EOPs.
- B. Incorrect. Accumulators would not pressurize the RCS high enough for LTOP event.
- C. Incorrect. Required boron concentration in an accumulator is higher than any required shutdown boron concentration.
- D. Correct. Below 1000 psig, ECCS injection is sufficient to maintain core cooling.

Technical Reference(s): Bases Tech Spec 3.5.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A08, L. (As available)

Question Source: Bank # X Diablo Canyon NRC Exam 2005
Modified Bank # _____ (Note changes or attach parent)
New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments:
Diablo Canyon 2005

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	APE 022 AA2.03	
	Importance Rating	_____	3.6

Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: Failures of flow control valve or controller

Proposed Question: SRO 78

Given the following conditions:

- The plant is at 100% power with all systems in normal alignments.
- The RO determines that Pressurizer level is trending DOWN and VCT level is trending UP.
- RCS temperature and pressure are stable.

Which ONE (1) of the following describes the event in progress and action required?

- Charging line leak outside containment. Isolate the leak in accordance with OTO-BB-00003, Reactor Coolant System Excessive Leakage
- Pressurizer Level Transmitter has failed low. Select an alternate channel in accordance with OTO-BG-00001, Pressurizer Level Control Malfunction
- Charging flow control valve failure. Establish Manual control of Charging flow or isolate Letdown in accordance with the applicable OTAs
- Letdown line leak outside containment. Isolate the leak in accordance with OTO-BB-00003, Reactor Coolant System Excessive Leakage

Proposed Answer: C

Explanation (Optional):

- Incorrect. VCT Level would not be trending up
- Incorrect. Pressurizer level would be trending up for operable channel and VCT level would be trending down
- Correct
- Incorrect. VCT level would be trending down

Technical Reference(s): OSP BG-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: CVCS EO N. (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 #	EPE 038 G2.1.32	
	Importance Rating	_____	3.8

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

Proposed Question: SRO 79

Given the following conditions:

- A steam generator tube rupture has occurred.
- Cooldown and depressurization is complete.
- SI has been secured and normal charging and letdown established.
- Pressurizer level is 33% and lowering.
- Ruptured Steam Generator level is 85% and lowering.

Which ONE (1) of the following actions is performed by the crew to maintain stable plant conditions?

- A. Turn on heaters to raise RCS pressure.
- B. Raise charging to raise RCS pressure.
- C. Turn on heaters to prevent a loss of RCS subcooling.
- D. Raise charging to compensate for RCS shrinkage.

Proposed Answer: A

Explanation (Optional):

- A. Correct. In this case RCS pressure is less than SG pressure and letdown is greater charging. RCS pressure must be raised. Adverse containment no longer exist, therefore the action is to turn on pressurizer heaters.
- B. Incorrect. This would be correct if pressurizer level was lower or adverse containment still existed.
- C. Incorrect. The object is raise pressure, no concern at this point with subcooling.
- D. Incorrect. If the action was to increase charging, this would be plausible, as this is the reason for other sections of the EOP figure.

Technical Reference(s): E-3, background (Attach if not previously provided)

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

Learning Objective: D17 JJ. (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 #	APE 059 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.

Proposed Question: SRO 80

Given the following conditions:

- Reactor trip and safety injection have occurred.
- The crew has entered FR-H.1, Response to Loss of Secondary Heat on a RED condition for the Heat Sink CSF Status Tree.
 - RCS pressure - 1600 psig.
 - SG pressures - 1040 psig in all SGs.
 - A, B, and D SG wide range levels are 25% and slowly trending down.
 - C SG wide range level is 30% and slowly trending down.
 - Total AFW flow is 0 gpm.

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

- A. Initiate secondary depressurization to establish Condensate flow in accordance with FR-H.1.
- B. Exit FR-H.1 and enter E-1, Loss of Reactor or Secondary Coolant.
- C. Trip all RCPs and initiate Bleed and Feed in accordance with FR-H.1
- D. Raise the setpoint of C SG ADV to conserve SG inventory in accordance with FR-H.1.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect, this would be appropriate if RWST was below 36% (foldout page)
- B. Incorrect, RCS pressure is greater than SG pressure
- C. Correct, with adverse containment, setpoint for bleed and feed is 42%.
- D. Incorrect, this would be appropriate if not at bleed and feed criteria.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D26, 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 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	1
	K/A #	E04 EA2.1	
	Importance Rating	_____	_____

Ability to determine and interpret the following as they apply to the (LOCA Outside Containment) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question: SRO 81

The crew has completed the actions of ECA-1.2, LOCA Outside Containment.

- Pressurizer level is 35% and rising.
- Steam Generator narrow range levels are 30%.
- Subcooling is 35°F.
- RCS pressure is 1400 psig and rising.

Which ONE (1) of the following procedures will be performed next?

- ES-1.1, SI Termination.
- E-0, Reactor Trip or Safety Injection.
- E-1, Loss of Reactor or Secondary Coolant.
- ECA-1.1, Loss of Emergency Coolant Recirculation.

Proposed Answer: C

Explanation (Optional):

- Incorrect, no direct transition to ES-1.1
- Incorrect, no transition to E-0.
- Correct, because pressure is rising, transition is to E-1. All SI termination are satisfied, so from E-1, the transition to ES-1.1 will be made.
- Incorrect, pressure is rising. Transition to ECA-1.1 if lowering.

Technical Reference(s): E-1 and ECA-1.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: D14, C., D08, P. (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 #	001 AA2.03	
	Importance Rating	_____	4.8

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: SRO 82

The plant is at 100% power.

- Rod Control is in AUTO.
- Power Range channel N41 fails high.
- Control Bank D Rods automatically insert.
- Tref is 5°F higher than Tave.
- Control Bank D AUTO motion continues. Rods are currently at 205 steps and inserting at approximately 48 steps/minute.

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

- A. Trip the reactor and enter E-0, Reactor Trip or Safety Injection.
- B. Initiate boration to maintain Bank D above the RIL in accordance with OTO-SE-00001, Nuclear Instrument Malfunction.
- C. Verify no runback in progress and verify rod motion stops when demand stops in accordance with OTO-SF-00001, Rod Control Malfunctions.
- D. Place rod control in manual in accordance with OTO-SE-00001, Nuclear Instrument Malfunctions.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect, the reactor is tripped if rod motion does not stop.
- B. Incorrect, action is to place rod control in manual. Boration may be performed later for ASI control or PDIL.
- C. Incorrect, rods should be placed in manual because they should not be moving and there is a confirmed instrument failure.
- D. Correct.

Technical Reference(s): OTO-SF-00001, drawing 7250D64 Sheet 9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B76, A. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	APE 037 G2.2.22	
	Importance Rating	_____	4.1

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

Proposed Question: SRO 83

Reactor power is 75%

RCS leak rate data is as follows:

- Total RCS leakage rate is 10.1 gpm.
- Leakage to PRT is 8.0 gpm.
- Leakage to the Reactor Coolant Drain Tank is 1.3 gpm.
- Total primary to secondary leakage is 0.48 gpm.

Which ONE (1) of the following Technical Specification RCS leakage limits, if any, has been exceeded?

- A. Identified.
- B. Unidentified.
- C. Primary to Secondary.
- D. RCS leakage is within Tech Spec limits.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect, allowed 10 gpm identified, total is 9.3.
- B. Incorrect, unidentified is 0.8 gpm.
- C. Correct, limit is 600 gpd, or 0.416 gpm.
- D. Incorrect, Primary to secondary is excessive

Technical Reference(s): Tech Spec 3.4.13 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A2, I.3 (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	1
	Group #	_____	2
	K/A #	060 AA2.06	_____
	Importance Rating	_____	3.8

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

Proposed Question: SRO 84

Given the following conditions:

- The crew is preparing to perform a containment purge.
- At this time **neither** Aux Building Normal Exhaust fan, CGL03A nor CGL03B, is running.

Which ONE (1) of the following describes the action required to ensure that backflow from containment to the Aux Building does **NOT** occur during the containment purge?

- Ensure either GL HIS-32, damper for CGL03A, or GL HIS-33, damper for CGL03B, is closed.
- Ensure the containment purge supply fan is stopped until at least ONE Aux Building Normal Exhaust fan is running.
- Ensure both GL HIS-32, damper for CGL03A, and GL HIS-33, damper for CGL03B, are open.
- Ensure the Mini Purge system is **not** run in conjunction with the Shutdown Purge system.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Per OTN-GT-00001, if the fan is not running, the associated damper should be closed. For the CGL03A and B fans, the dampers are GL 32 and 33. Only one is required to be closed.
- B. Incorrect. This is appropriate if there is positive airflow from containment when a hatch is open.
- C. Incorrect. The purge can only be performed if one damper is closed.
- D. Incorrect. This is a precaution for operating the mini purge or shutdown purge system.

Technical Reference(s): OTN-GT-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Ventilation – Primary EO N. (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 #	_____	1
	Group #	_____	2
	K/A #	E14 G2.4.6	
	Importance Rating	_____	4.0

Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.

Proposed Question: SRO 85

Given the following conditions:

- A LOCA has occurred.
- Due to several component failures, the crew was required to perform ECA-1.1, Loss of Emergency Coolant Recirculation.
- The Crew is now entering FR-Z.1, Response to High Containment Pressure.
- Containment pressure is 61 psig and STABLE.
- BOTH Containment Spray Pumps are OFF.

Which ONE (1) of the following describes the strategy for reducing Containment Pressure?

- A. START both Containment Spray Pumps in accordance with FR-Z.1. RED CSF conditions take precedence over ECA actions.
- B. OPERATE Containment Spray Pumps in accordance with the guidance in ECA-1.1, as directed by FR-Z.1. Continue in FR-Z.1 until exit criteria is met.
- C. Perform ONLY the FR-Z.1 actions that do NOT conflict with or undo the action taken in ECA-1.1. Two Containment Coolers will provide adequate depressurization to meet the Containment Safety Function requirements.
- D. Do NOT perform actions of FR-Z.1 until the RWST LOLO level alarm is clear and Containment Spray Pumps may be restarted. Ensure all other automatic actions related to containment isolation have occurred as required

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. FR-Z.1 Step 1 RNO says start IAW ECA-1.1.
- B. Correct.
- C. Incorrect. First part is true, but 2 Containment Coolers will NOT meet safety function.
- D. Incorrect. No restriction on RWST level. Level given is for swapover to ES-1.3, which takes precedence over FR-Z.1 if met on a lowering level

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

Proposed references to be provided to applicants during examination: None

Learning Objective: D11 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 _____
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	006A2.12	_____
	Importance Rating	_____	4.8

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

Proposed Question: SRO 86

Given the following conditions:

- A reactor trip has occurred.
- The crew has transitioned to ES-0.1, Reactor Trip Response.

The following conditions develop:

- RCS pressure is 1950 psig and lowering slowly.
- Charging Pump "A" is RUNNING.
- Charging Pump "B" is in STANDBY.
- Charging flow is offscale HIGH.
- Letdown is isolated.
- RCS temperature is 542°F and slowly lowering.
- PZR level is 4% and lowering.

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

- Initiate SI and continue in ES-0.1.
- Initiate SI and return to E-0, Reactor Trip Or Safety Injection.
- Start CCPs as required to maintain PZR level and continue in ES-0.1.
- Start CCPs as required to maintain PZR level and return to E-0.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Requires a reactor trip but not SI.
 B. Incorrect. Requires a reactor trip but not SI.
 C. Incorrect. Applies after the reactor is shutdown.
 D. Correct. Applies at any time.

Technical Reference(s): OTO-BB-00001 (Attach if not previously provided)
OTO-BB-00003

Proposed references to be provided to applicants during examination: None

Learning Objective: B14, D.; B16, D. (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:

WTSI Bank 2004 NRC Exam R2

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	010 A2.03	_____
	Importance Rating	_____	4.2

Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: PORV failures

Proposed Question: SRO 87

Given the following conditions:

- The plant is at 35% power.
- All pressurizer heaters are "ON".
- Green lights for RCS Spray valves, BB-ZL-455B and BB-ZL-455C are "LIT".
- RCS pressure is 1880 psig and lowering slowly.
- Pressurizer tailpipe temperature is 185°F.
- RED and GREEN lights for Pressurizer PORV PCV-455A are "LIT".
- PCV-455A control switch is in "CLOSE".

Based upon current plant conditions, which ONE (1) of the following actions is required?

- A. Close block valve HV-8000A. Maintain power to HV-8000A in accordance with Technical Specifications action requirements.
- B. Trip the reactor. Enter E-0, Reactor Trip or Safety Injection, and close block valve HV-8000A when directed in the EOPs.
- C. Close block valve HV-8000A. Remove power from HV-8000A in accordance with Technical Specifications action requirements.
- D. Trip the reactor, initiate Safety Injection, and go to E-0, Reactor Trip or Safety Injection.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect, this is done if the PORV is inoperable due to seat leakage.
- B. Correct, RCS pressure is at the trip setpoint, the reactor should be tripped, as part of isolation, the block valve should be closed in an effort to stop the depressurization.
- C. Incorrect, this action would be if the reactor was not tripped and the PORV was inoperable for causes other than seat leakage.
- D. Incorrect, not below SI setpoint and would be required if the PORV could not be isolated.

Technical Reference(s): TS 3.4.11, Lesson RPS (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RPS C. (As available)

Question Source: Bank # X DCPN NRC
Exam 2005

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 2, 5

Comments:
DCPN NRC 2005

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	1
	K/A #	064 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 88

Which ONE of the following events requires a 1 Hour report to the NRC in accordance with 10CFR55.72?

- A. Initiation of a plant shutdown in accordance with T.S. 3.0.3 due to a common mode safety related component failure
- B. Initiation of a Licensee Event Report (LER) due to the plant being in an unanalyzed condition
- C. Confirmed violation of Fitness for Duty requirements by a licensed Senior Reactor Operator
- D. Failure of BOTH EDGs for 15 minutes following a reactor trip and loss of off-site power

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. 4 Hour Report
- B. Incorrect. 4 Hour Report
- C. Incorrect. 4 Hour Report
- D. Correct. Event will be classifiable as ALERT, 1 hour report.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: A32 C. (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:
WTSI Bank 2005 Region 1 NRC

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>1</u>
	K/A #	<u>076 A2.02</u>	_____
	Importance Rating	_____	<u>3.1</u>

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

Proposed Question: SRO 89

Following shutdown sequencer actuation, both ESW pumps are running supplying ESW loads.

Two (2) Service Water pumps are running.

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

- A. Stop one of the Service Water pumps to prevent pump runout in accordance with the applicable OTAs.
- B. Stop one of the Service Water pumps to prevent high service water header pressure in accordance with the applicable OTAs.
- C. Leave both Service Water pumps running to meet system load requirements in accordance with OTO-SA-00001, ESF Actuation Verification and Restoration.
- D. Leave both Service Water pumps running to allow the systems to be crossed tied and the ESW pumps secured in accordance with OTO-SA-00001, ESF Actuation Verification and Restoration.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect, two pumps are normally running to meet system loads (prevent runout)
- B. Correct, with limited loads, both pumps running will cause system pressure to rise and go out of the normal band (less than 70 psig).
- C. Incorrect, a pump should be secured.
- D. Incorrect, a pump should be secured.

Technical Reference(s): OTA-RL-RK18C (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: Circ and Service Water G (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 #	103 G2.1.14	
	Importance Rating		3.3

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

Proposed Question: SRO 90

Given the following conditions:

- The plant is in MODE 6.
- Refueling is in progress.
- A Fuel Assembly is dropped on the Refueling Cavity floor.
- Bubbles appear to be coming from the vicinity of the dropped assembly.
- Containment radiation monitors are rising rapidly.

Which ONE (1) of the following is the first action taken?

- A. Evacuate unnecessary personnel from Containment.
- B. Manually actuate Containment Purge Isolation (CPIS).
- C. Evacuate unnecessary personnel from the Fuel Building.
- D. Manually actuate a Fuel Building Isolation (FBIS).

Proposed Answer: A

Explanation (Optional):

- A. Correct.
- B. Incorrect. Would be performed later once Ctmt is secured.
- C. Incorrect. Accident not in Fuel Building.
- D. Incorrect. Accident not in Fuel Building.

Technical Reference(s): OTA-RL-RK-65 Window A (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 4,7

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	001 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 91

Given the following conditions:

- The plant was at 75% power.
- Control Bank D rods were at 216 steps with Rod Control in AUTO.
- A failure of Turbine Impulse channel, AC PT-505 occurred.
- Rod Control was then placed in MANUAL.

The following conditions now exist:

- Rod Control is in MANUAL
- Demand Counters indicate 192 steps for both groups in Control Bank D.
- DRPI indicates ONE (1) rod in Control Bank D group 1 at 216 steps, and ONE (1) rod in Control Bank D group 2 at 210 steps.
- All other Control Bank D rods indicate 192 steps.

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

- Trip the reactor and enter E-0, Reactor Trip or Safety Injection in accordance with the Main Body of OTO-SF-00001, Rod Control Malfunctions.
- Enter OTO-SF-00001, Rod Control Malfunctions, and perform actions of section 4.0, Dropped/Misaligned Control Rods, to realign rods.
- Enter OTO-AC-00003, Turbine Impulse Pressure Channel Failure, and select PT-506 for Tave control to terminate the initiating transient.
- Enter OTO-SF-00001, Rod Control Malfunctions, and initiate boration to realign control rods and restore Shutdown Margin.

Proposed Answer: A

Explanation (Optional):

NOTE, as a result of the new procedure, just "cook book" procedure use, C could be entered, however, an SRO should realize this procedure would not address the more important problem of 2 misaligned rods.

- A. Correct, 2 rods are misaligned, each in different banks, reactor trip is required.
- B. Incorrect, this would be correct if only 1 rod was misaligned.
- C. Incorrect, the procedure would direct the crew to this procedure, but this procedure would not address the misaligned rods, which require a reactor trip.
- D. Incorrect, this procedure was recently deleted when OTO-SF-00001 was rewritten and no longer exists.

Technical Reference(s): OTO-SF-00001 Rev 5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B76, D. (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge _____

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 _____

55.43 2, 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>2</u>
	K/A #	<u>002 G2.1.28</u>	
	Importance Rating	_____	<u>3.3</u>

Conduct of Operations: Knowledge of the purpose and function of major system components and controls.

Proposed Question: SRO 92

According to Technical Specification bases, which ONE (1) of the following must be OPERABLE to prevent an overpressure event causing RCS pressure to exceed 110% of design pressure?

- A. 2 pressurizer safeties.
- B. 3 pressurizer safeties.
- C. 3 safeties and 2 pressurizer PORVs
- D. 2 safeties and 2 pressurizer PORVs.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. All 3 safeties required.
- B. Correct. All 3 safeties are required to meet the safety analysis.
- C. Incorrect. 2 PORVs not required.
- D. Incorrect. PORVs not required and 3 safeties required.

Technical Reference(s): Tech Spec 3.6.10 bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: RCS B. (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 1

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	2
	Group #	_____	2
	K/A #	011 A2.03	_____
	Importance Rating	_____	3.9

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

Proposed Question: SRO 93

Given the following conditions:

- The plant is at 100% power.
- Pressurizer level begins to lower.
- Charging flow rises.
- Containment radiation is rising.
- The reactor operator reports pressurizer level is lowering approximately 1% every 2 minutes.
- The crew has entered OTO-BB-00003, RCS Excessive Leakage.

Based on the current rate of pressurizer level reduction, which ONE (1) of the following actions is required in accordance with OTO-BB-00003?

- A. Initiate RCS boration to Cold Shutdown boron concentration.
- B. Start a second charging pump and raise pressurizer level to 70%.
- C. Trip the reactor and enter E-0, Reactor Trip or Safety Injection.
- D. Initiate a plant shutdown in accordance with OTG-ZZ-00004, Power Operation, Load Decrease Between 100% and 10% Power.

Proposed Answer: D

Explanation (Optional):

Indications exist of an RCS leak. Per OTO-BB-0000, 1% pressurizer level is approximately 60 gallons.

- A. Incorrect, boration will not occur until the plant is in MODE 3.
- B. Incorrect, level is not raised until the reactor is shutdown.
- C. Incorrect, reactor trip is required if leak rate is greater than 50 gpm. Current leak rate is approximately 30 gpm.
- D. Correct, a normal shutdown is performed if RCS leak is less than 50 gpm.

Technical Reference(s): OTO-BB-00003 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B16, 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 _____
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	1
	K/A #	G2.1.33	_____
	Importance Rating	_____	4.0

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

Proposed Question: SRO 94

Given the following conditions:

- The plant is in Mode 2.
- Reactor startup is in progress.
- Control Banks are being withdrawn.
- Source Range Channel N-31 fails LOW

Which ONE (1) of the following describes a power level at which suspension of rod withdrawal is required in accordance with Technical Specifications?

Reactor power is equal to...

- A. 5×10^{-11} amps Intermediate Range.
- B. 1×10^{-8} amps Intermediate Range.
- C. the Point of Adding Heat.
- D. the P-10 Permissive.

Proposed Answer: A

Explanation (Optional):

- A. Correct. Source Range required at this IR Power level
- B. Incorrect. At 10^{-8} amps, power is above P-6 and SR is deenergized
- C. Incorrect. POAH is approximately 1% power.
- D. Incorrect. P-10 is 10% power.

Technical Reference(s): Tech Spec 3.3.1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A21 B. (As available)

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

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
55.43 2

Comments: WTSI Bank – (Callaway... **NOT** last 2 NRC exams) Previous NRC – Region 4

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	2
	K/A #	G2.2.33	_____
	Importance Rating	_____	2.9

Knowledge of control rod programming.

Proposed Question: SRO 95

Given the following conditions:

- A reactor startup is in progress.
- A malfunction of the Rod Control Bank Overlap Unit has caused Control Bank D Rods to begin withdrawing 20 steps earlier than designed.

Which ONE (1) of the following describes the impact of this malfunction if it were allowed to continue during the power increase?

- A. QPTR limits will be challenged.
- B. Shutdown margin will be reduced if a reactor trip occurs.
- C. Power Peaking factors will rise to unacceptable values.
- D. The Safety Analysis for ejected rod worth will be invalid.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Any change should be similar in all quadrants.
- B. Incorrect. There is more potential reactivity insertion from this position.
- C. Correct. TS Basis.
- D. Incorrect. Safety Analysis for ejected rod worth is a fixed value that will not change due to rod mispositioning or improper bank overlap.

Technical Reference(s): TS Basis 3.1.6-3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: B76 (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

Comments:
WTSI Bank Previous NRC Region 1

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

The following plant conditions exist:

MODE 5
RCS LOOPS FILLED
RHR TRAIN A OPERABLE - IN OPERATION
RHR TRAIN B OPERABLE - SECURED

SG A WR LEVEL 55%
SG B WR LEVEL 70%
SG C WR LEVEL 22%
SG D WR LEVEL 50%

The Outage Shift Manager desires to commence an outage on RHR TRAIN B to perform a system modification.

Which ONE (1) of the following describes the acceptability of removing RHR TRAIN B from an OPERABLE status under these conditions?

- A. It IS acceptable as long as the RCS loops remain filled.
- B. It IS acceptable as long as RCS temperature remains below 200°F.
- C. It is NOT acceptable. SG level is inadequate for heat removal.
- D. It is NOT acceptable. A Loss of Safety Function would exist.

Proposed Answer: C

Explanation (Optional):

C correct, 2 steam generators greater than 66% required. See reference

Technical Reference(s): SOER 87-1 (Attach if not previously provided)
ODP-ZZ-0-00027
TS 3.4.7

Proposed references to be provided to applicants during examination: ODP-ZZ-00027 and TS 3.4.7

Learning Objective: _____ (As available)

Question Source: Bank # X Callaway
SOER
01A-01C
 Modified Bank # _____ (Note changes or attach parent)
 New _____

Question History: Last NRC Exam _____

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

10 CFR Part 55 Content: 55.41 _____
 55.43 2,3

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	3
	K/A #	G2.3.8	_____
	Importance Rating	_____	3.2

Knowledge of the process for performing a planned gaseous radioactive release.

Proposed Question: SRO 97

Given the following conditions:

- The plant is in Mode 1.
- CTMT Mini Purge system was placed in service at 1407.
- At 1437, CTMT Mini Purge was secured due to the supply fan tripping.

The fan problem has been corrected and you intend to restart the CTMT Mini Purge.

Which ONE (1) of the following is the LATEST time in which the CTMT Mini Purge can be restarted without requiring HP to resample CTMT atmosphere and generate a new release permit?

- A. 1507
- B. 1537
- C. 1607
- D. 1637

Proposed Answer: D

Explanation (Optional):

D correct, In accordance with OTN-GT-00001, a containment purge or vent release may be stopped and reinitiated without terminating the release permit provided the time between stopping the release and restarting the release does not exceed two hours.

Technical Reference(s): OTN-GT-00001 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: A12 – B. (As available)

Question Source: Bank # X Callaway
003A12B502A
 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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	3
	K/A #	G2.3.10	_____
	Importance Rating	_____	3.3

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

Proposed Question: SRO 98

A job must be performed under the following conditions:

- Dose rate at job location is 90 mrem/hr.
- Airborne Radioactivity Area from particulates due to weld grinding:
 - Internal dose if respirator is worn is 0 mrem.
 - Internal dose if **no** respirator is worn is 82 mrem.
- Time to complete job while wearing a respirator is 3.5 hours.
- Time to complete job **without** wearing a respirator is 2.75 hours.

Which ONE (1) of the following describes whether a respirator will be worn, and why?

- A. No, wearing a respirator will raise total exposure.
- B. Yes, wearing a respirator will lower total exposure.
- C. No, wearing a respirator will make no difference to the total exposure.
- D. Yes, a respirator must be worn anytime airborne radiation is present.

Proposed Answer: B

Explanation (Optional):

Without respirator: Total dose = 90 mrem/hr x 2.75 hours + 82 mrem = 329.5 mrem.

With respirator: Total dose = 90 mrem/hr x 3.5 hours = 315 mrem.

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

Proposed references to be provided to applicants during examination: None

Learning Objective: T68.0410.8, Radiation Worker (As available)
Category II, B

Question Source: Bank # _____
Modified Bank # X Callaway (Note changes or attach parent)
NRC 2000
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 4

Comments:
Callaway NRC 2000 (M)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	4
	K/A #	G2.4.4	
	Importance Rating	_____	4.3

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

Proposed Question: SRO 99

The plant is in Mode 1 at 100% reactor power when a loss of off-site power occurs.

- NB01 and NB02 are **NOT** reenergized by the Emergency Diesel Generators.
- Both Reactor Trip Breakers are CLOSED.
- Reactor power is 2% and LOWERING.

Which ONE (1) of the following describes the required operating crew response?

- Immediately enter ECA-0.0, Loss of ALL AC Power. At step 1, transition to FR-S.1, Response to Nuclear Power Generation.
- Enter E-0, Rx Trip or Safety Injection. Initiate emergency boration and manually insert the control rods.
- Immediately enter ECA-0.0, Loss of ALL AC Power and manually trip the Reactor.
- Enter E-0, Rx Trip or Safety Injection. Initiate emergency boration and dispatch an operator to locally open the Reactor Trip Breakers.

Proposed Answer: C

Explanation (Optional):

- Do not perform FR procedures until directed during Loss of all AC
- No power to borate in E-0
- Correct.
- Dispatching someone to open RTBs is performed as part of ECA-0.0 action

Technical Reference(s): EOP User's Guide (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: E-3 (As available)

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

Question History: Last NRC Exam 2004 SRO
#85

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

10 CFR Part 55 Content: 55.41 _____
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	3
	Group #	_____	4
	K/A #	G2.4.38	_____
	Importance Rating	_____	4.0

Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.

Proposed Question: SRO 100

Which ONE (1) of the following Emergency Coordinator responsibilities may be delegated?

- A. Classifying and declaring emergencies and requesting the formation of emergency teams.
- B. Authorizing personnel exposure in excess of 10CFR20 limits and directing operations of emergency response organizations.
- C. Initiating the implementation of on-site protective actions and directing operations of emergency response organizations.
- D. Initiating the implementation of on-site protective actions and assuming decision-making responsibilities for implementing strategies identified in the Severe Accident Management Guidelines.

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. Classifying cannot be delegated.
- B. Incorrect. Authorizing exposure greater than 10CFR20 cannot be delegated.
- C. Correct. Both may be delegated.
- D. Incorrect. Decision making cannot be delegated.

Technical Reference(s): EIP-ZZ-00102 (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 5

Comments: