

1. 001 AK3.01 001/001 AK3.01/3.2/3.6/1/2/M/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 60% power and stable.
- Control Bank D is at 174 steps.
  
- The following THEN occurs:
  - Control Bank D rods start withdrawing.
  - A failure of automatic rod control is diagnosed.
  - Rod Control is placed in Manual with Control Bank D at 177 steps.
  - All rod motion stops.
  - 1C5 AOP1, Uncontrolled Withdrawal of an RCCA, is entered.

Control rods will be inserted in manual to the original height to...

- A. prevent raising charging flow.
- B. prevent exceeding QPTR limits.
- C. restore RCS pressure to normal.
- D. restore Tavg to Tref.

*Justification:*

- A. *Incorrect. Plausible as charging flow will increase to establish new Pressurizer Level for higher Tavg, but incorrect as charging flow will automatically return to normal.*
- B. *Incorrect. Plausible as rod motion will affect QPTR, but rods moving in a bank will NOT result in exceeding limits.*
- C. *Incorrect. The Automatic pressure control system will increase spray flow to lower the RCS pressure rise caused by RCS temperature rise from the rod movement. Plausible if student thinks adjusting rods is necessary for RCS pressure control.*
- D. *Correct. Step 2.4.5 A. of 1C5 AOP1 directs the operator to adjust the rod position or RCS boron to restore Tave equal to Tref*

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***K/A Statement: Knowledge of the reasons for the following responses as they apply to the Continuous Rod Withdrawal: Manually driving rods into position that existed before start of casualty***

Technical Reference(s): 1C5 AOP1, Section 2.4

Proposed references to be provided to applicants during examination: None

Learning Objective: P8184L-005 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   5, 10    
55.43       

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

2. 001 K4.15 001/001 K4.15/2.7/3.0/2/2/M/RO/N/N/FINAL

Given the following conditions:

- Unit 2 is at 30% power and stable.
- Control rod K7 is 15 steps lower than the other rods in control bank D.
- The decision has been made to realign control rod K7 to control bank D per 2C5 AOP5, Misaligned Rod, Stuck Rod, and/or RPI Failure or Drift.

To realign rod K-7, the crew will disconnect the lift coil(s) for...

- A. the affected GROUP (except K7) and adjust the affected GROUP step counter to the misaligned rod position.
- B. the affected BANK (except K7) and determine the average RPI position for all rods in the affected bank.
- C. control rod K7 and determine the average RPI position for all rods in the affected bank.
- D. control rod K7 and adjust both control BANK D step counters to the misaligned rod position.

*Justification:*

- A. *Incorrect. All lift coils in the affected bank (except K7) must be disconnected.*
- B. *Correct. Refer to section 2.5.4 of 1C5 AOP5*
- C. *Incorrect. All lift coils in the affected bank (except K7) must be disconnected. The second part is correct.*
- D. *Incorrect. All lift coils in the affected bank (except K7) must be disconnected.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: Operation of latching controls for groups and individual rods***

Technical Reference(s): 1C5 AOP5

Proposed references to be provided to applicants during examination: None

Learning Objective: P8184L-005 Obj 4b

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

3. 002 K5.19 002/002 K5.19/2.6/2.9/2/2/M/RO/N/N/FINAL

Neutron embrittlement causes a(n) \_\_\_\_\_ in the reactor vessel nil ductility transition temperature and is used to determine \_\_\_\_\_?

- A.  increase  
MINIMUM RCS temperature
- B. decrease  
MINIMUM RCS temperature
- C. increase  
MAXIMUM RCS pressure
- D. decrease  
MAXIMUM RCS pressure

Justification:

- A. Correct. PTLR indicates ART has been adjusted for radiation effects
- B. Incorrect. Plausible as this is the affected RCS parameter, but not the correct affect on nil ductility temperature.
- C. Incorrect. Plausible as this is the appropriate change in nil ductility temperature, but pressure is not determined by nil ductility temperature at normal RCS temperature.
- D. Incorrect. Plausible due to symmetry and if neutron embrittlement is not understood by examinee.

**K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the RCS: Neutron embrittlement**

Technical Reference(s): PTLR Section 4 (ART), GFES (PI-OPS-GFS-023L)

Proposed references to be provided to applicants during examination: None

Learning Objective: PI-OPS-GFS-023L Obj 6

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  \_\_\_\_\_

Question History: Last NRC Exam \_\_\_ N/A \_\_\_\_\_

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

10 CFR Part 55 Content:  
55.41  5  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

4. 003 K1.04 003/003 K1.04/2.6\*/2.9\*/2/1/M/RO/N/N/FINAL

Given the following conditions:

- 1ECA-0.0, Loss of ALL Safeguards AC power, is in effect.

The seal water INJECTION is isolated to prevent \_\_\_\_\_.

The seal water RETURN LINE is isolated to prevent \_\_\_\_\_.

- A. steam formation in the RCP Seals due to RCP thermal barrier heating.  
radioactive release within the Auxiliary Building due to overfilling the VCT.
- B. damage to RCP shaft when a charging pump is started as part of the recovery.  
radioactive release within the Auxiliary Building due to overfilling the VCT.
- C. radioactive release within the Auxiliary Building due to overfilling the VCT.  
steam formation in the RCP Seals due to RCP thermal barrier heating.
- D. steam formation in the RCP Seals due to RCP thermal barrier heating.  
damage to RCP shaft when a charging pump is started as part of the recovery.

*Justification:*

- A. *Incorrect. Plausible as this is the action for isolation of RCP thermal barrier CC system return in the same step of ECA-0.0 and second part is correct.*
- B. *Correct. 1ECA-0.0 basis page 5 paragraph 1 states the seal return line is isolated to prevent overfilling the VCT and seal injection lines are isolated to prevent damage to the seal and shaft.*
- C. *Incorrect. Plausible as both statements are basis from this step, but not applicable to the actions given.*
- D. *Incorrect. Plausible as this is the action for isolation of RCP thermal barrier CC system return in the same step of ECA-0.0 and second part is correct.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: CVCS***

Technical Reference(s): 1ECA-0.0 Basis (page 5 of 14)

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-247 Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

5. 004 K5.07 001/004 K5.07/2.8/3.2/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- The crew is performing a reactor startup IAW 1C1.2, Unit 1 Startup Procedure.
- Reactor power is  $1 \times 10^{-8}$  amps and stable.
  
- Automatic Makeup to the VCT occurs.
- During the automatic make up, CV-31199, BA INLT TO BLENDER, remains CLOSED.

With NO operator action, what describes the plant response?

	<u>Makeup Effect</u>	<u>Reactivity/Startup Rate</u>
A.	Boration	Positive
B.	Dilution	Negative
C.	Boration	Negative
D✓	Dilution	Positive

*Justification:*

- A. *Incorrect. Plausible as startup rate is correct response to inadvertent dilution however the transient is a dilution not a boration.*
- B. *Incorrect. Plausible as this is a dilution effect however the SUR will be positive.*
- C. *Incorrect. Plausible as this would be accurate for a boration if effects of this valve failing is not recognized.*
- D. *Correct. System flow diagram XH-1-39 shows that when CV-31199 is closed only RMU water is supplied to the blender*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the CVCS: Relationship between SUR and reactivity***

Technical Reference(s): XH-1-39, 1C1.2, B12A

Proposed references to be provided to applicants during examination: None

Learning Objective: P8172L-001a #7b

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   5    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

6. 005 AA1.01 003/005 AA1.01/3.6/3.4/1/2/M/RO/N/N/FINAL

Given the following conditions:

- 1C5 AOP5, Misaligned Rod, Stuck Rod, and/or RPI Failure or Drift, is in effect.
- A Control Bank D rod was determined to be misaligned.
- Unit 1 is at 75% power.
- Control Bank D is at 178 steps.
- One Control Bank "D" rod indicates at 150 steps.
- The appropriate lift coil disconnects were placed in disconnect.
- The in-hold-out lever was taken to "IN" to determine if the rod is stuck or misaligned.

Which of the following indicates a STUCK rod?

	<u>TAVE</u>	<u>RPI</u>	<u>STEP COUNTERS</u>
A✓	constant	constant	decrease
B.	constant	decrease	constant
C.	decrease	decrease	decrease
D.	decrease	constant	constant

*Justification:*

- A. *Correct. Step 2.4.2.C.6.e of 1C5 AOP5 indicates the cause for this is a Stuck Rod*
- B. *Incorrect. Plausible as if step counter operation is confused with RPI operation.*
- C. *Incorrect. Plausible if indications are selected for a misaligned rod.*
- D. *Incorrect. Plausible if RPI failed is assumed and disconnect switches are assumed to effect step counter operation. Also satisfies symmetry.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to operate and / or monitor the following as they apply to the Inoperable / Stuck Control Rod: CRDS***

Technical Reference(s): 1C5 AOP5 step 2.4.2.C.6.e

Proposed references to be provided to applicants during examination: None

Learning Objective: P8184L-005 Obj. 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

7. 005 K3.01 001/005 K3.01/3.9/4.0/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is in MODE 4
- 12 RHR pump is in service for cooldown.
- 12 RCP is running.
- RCS temperature is being maintained constant at 330°F.
- CV-31236, 12 RHR HX RC OUTLET FLOW, air supply line breaks.

As a result of the loss of air, the control valve will fail \_\_\_\_\_ and RCS temperature will \_\_\_\_\_.

- A. ✓ open,  
lower
- B. open,  
rise
- C. closed,  
lower
- D. closed,  
rise

*Justification:*

- A. *Correct. XH-1-39 indicates CV-31236 is a fail open valve and would increase cooling to the RCS.*
- B. *Incorrect. Plausible since CV fails open but temperature will lower due to more cooling.*
- C. *Incorrect. Plausible since temperature will lower due to more cooling, but CV fails open.*
- D. *Incorrect. Plausible if student thinks CV fails closed as this is the proper temperature response for CV failing closed.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the effect that a loss or malfunction of the RHRS will have on the following: RCS***

Technical Reference(s): XH-1-31, B15, RHR System

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-003 #3d

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

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

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

8. 006 K6.02 002/006 K6.02/3.4/3.9/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- A cooldown to COLD SHUTDOWN is in progress.
- RCS Tavg is 400°F.
- RCS pressure is 990 psig.
- BOTH SI Accumulator Discharge Isolation supply breakers are ON.
- MV-32071, 11 Accumulator Isolation valve is closed with its switch in AUTO.
- MV-32072, 12 Accumulator Isolation valve is open with its switch in AUTO.

-LOOP B COLD LEG experiences a double-ended pipe break at the reactor vessel nozzle (Design Basis LOCA).

- Containment pressure peaks at 10 psig.

11 Accumulator will \_\_\_\_\_.

12 Accumulator will \_\_\_\_\_.

- A. be isolated by MV-32071  
inject into the Reactor Vessel
- B. be isolated by MV-32071  
spill onto the containment floor
- C. inject into the Reactor Vessel  
inject into the Reactor Vessel
- D.  inject into the Reactor Vessel  
spill onto the containment floor

*Justification:*

- A. *Incorrect. Plausible as Safety injection is bypassed, but the containment pressure initiation at 3.5 psig is not bypassed. 11 accumulator discharge valve will auto open on the SI signal and inject into the RCS and if assumptions of design basis LOCA are not known.*
- B. *Incorrect, Plausible as this is the correct response of the 12 accumulator, and Safety injection is bypassed, but the containment pressure initiation is not bypassed. 12 accumulator will dump into containment due to the break location.*
- C. *Incorrect. Plausible as this is the correct response of the 11 accumulator, and if assumptions of design basis LOCA are not known.*
- D. *Correct. SI actuates on 3.5 psig containment pressure which opens the discharge valve on 11 Accumulator and 12 Accumulator goes to the floor of containment through the break.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

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

Technical Reference(s): TS 3.5.1, 1C1.3 step 5.5.16, USAR section 6.2.2.2.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P9180L-005 Obj 9b

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

9. 007 EK2.02 001/007 EK2.02/2.6/2.8/1/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is at 16% power and stable.
- Frequency on Bus 11 and 12 goes to 57 HZ for one (1) second AND returns to 60 HZ.

What are the positions for the RCP breakers and the Reactor Trip breakers?

	<u>RCP Breakers</u>	<u>Reactor Trip Breakers</u>
A. ✓	Open	Open
B.	Open	Shut
C.	Shut	Shut
D.	Shut	Open

Justification:

- A. Correct. 58.275 trips RCP breakers. both RCP breakers open gives Rx trip
- B. Incorrect, see A.
- C. Incorrect, see A
- D. Incorrect, see A

**K/A Statement: Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects**

Technical Reference(s): B8, 47005-0301, 0302

Proposed references to be provided to applicants during examination: None

Learning Objective: P8184L-004 Obj 3e

Question Source: Bank # P8184L-004 028  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

10. 007 K3.01 001/007 K3.01/3.3/3.6/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- A Reactor trip AND Safety Injection occur.
  
- Several minutes after the Safety Injection, the following indications are noted:
  - Containment Radiation Monitors are in HIGH alarm.
  - Containment humidity is rising.
  - Containment pressure is rising.
  - 47016-0304, CONTAINMENT SUMP A LEVEL HIGH, is LIT.
  - 47012-0406, PRZR RELIEF TANK HI TEMP/LVL/PRESS OR LO LVL, is alarming.

What has caused the above indications?

- A. A Pressurizer PORV is stuck open.
- B. A RCP #1 seal has failed.
- C. A Steam Generator Blowdown piping connection has severed.
- D. An Incore Thimble Tube has ruptured at the bottom of the reactor vessel.

*Justification:*

- A. *Correct. A stuck open Pressurizer PORV will fill up the PRT and blow the rupture disc leading to high containment humidity, pressure, and radiation levels.*
- B. *Incorrect. Plausible if the student believes the #1 seal failure will cause a leak to containment, or that the #1 seal leakoff could go the PRT instead of the VCT.*
- C. *Incorrect. Plausible because this will increase pressure and humidity in containment, but will not increase radiation levels and will not fill up the PRT.*
- D. *Incorrect. Plausible as this failure will fill up the thimble tube and leak to the seal table. This will increase radiation levels, humidity, and pressure in containment but will not fill up the PRT.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment***

Technical Reference(s): 1C4 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8170L-003 Obj 3d, 4b

Question Source: Bank # P8170L-003-100  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

11. 008 A2.08 001/008 A2.08/2.5/2.7\*/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power
- CV-31202, 11 Letdown Heat Exchanger Temperature Control Valve, CLOSES due to a malfunction.

As a result, Letdown temperature will \_\_\_\_\_ and the operator will be required to \_\_\_\_\_.

- A. decrease,  
verify Letdown diverts to the VCT
- B.  increase,  
verify Letdown diverts to the VCT
- C. increase,  
borate per 1C12.5, Boron Concentration Control
- D. decrease,  
borate per 1C12.5, Boron Concentration Control

*Justification:*

- A. *Incorrect. Plausible as this is the appropriate reaction to the casualty, but wrong trend on letdown temperature.*
- B. *Correct.*
- C. *Incorrect. Plausible as this is the correct temperature trend, but the wrong mitigation action.*
- D. *Incorrect. Plausible for symmetry.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of shutting (automatically or otherwise) the isolation valves of the letdown cooler***

Technical Reference(s): B14

Proposed references to be provided to applicants during examination: None

Learning Objective: P8172L-001A Obj 3e, 4b.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:

55.41  5   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

12. 008 AA1.01 001/008 AA1.01/4.2/4.0/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 50% power.
- One of the Pressurizer PORVs is leaking by.
- C47012-0109, Przr Safety / Relief Valve Flow, is LIT.

The crew is required to close \_\_\_\_\_ Block Valve(s)  
and monitor for lowering \_\_\_\_\_.

- A.  ONE,  
Pressurizer Relief Valve outlet temperature
- B. BOTH,  
Pressurizer Relief Valve outlet temperature
- C. ONE,  
Pressurizer Relief Tank liquid temperature
- D. BOTH,  
Pressurizer Relief Tank liquid temperature

*Justification:*

- A. Correct. 1C4 AOP1, Table 1.
- B. Incorrect. Plausible as this will isolate the leaking PORV, but it is not procedurally directed.
- C. Incorrect. Plausible as sequential isolation is procedurally directed, but tailpipe temperature is faster and procedurally driven method.
- D. Incorrect. Plausible as this will isolate the leaking PORV and PRT temp will change, but these actions are not procedurally driven.

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to operate and / or monitor the following as they apply to the Pressurizer Vapor Space Accident: PZR spray block valve and PORV block valve***

Technical Reference(s): 1C4 AOP1, Table 1, C47012-0109

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-235 Obj A5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

13. 010 2.4.11 001/010 2.4.11/4.0/4.2/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- The Blue Channel Pressurizer Pressure fails HIGH.

Pressurizer Spray Valves will \_\_\_\_\_.

The operator will stabilize the plant by \_\_\_\_\_.

- A. OPEN,  
energizing ALL Pressurizer Heaters
- B. OPEN,  
closing Pressurizer Spray Valves in MANUAL
- C. CLOSE,  
de-energizing ALL Pressurizer Heaters
- D. CLOSE,  
opening Pressurizer Spray Valves in MANUAL

*Justification:*

- A. *Incorrect. Plausible as spray valves do open, however heaters are not sufficient to overcome spray.*
- B. *Correct.*
- C. *Incorrect. Plausible as taking spray to manual is a required action, but not in this direction.*
- D. *Incorrect. Plausible as this would be the appropriate action if candidate assumes all heaters energize.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Pressurizer Pressure Control: Knowledge of abnormal condition procedures.***

Technical Reference(s): 1C51.3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-251 ATT3 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

14. 010 K4.03 001/010 K4.03/3.8/4.1/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Cooldown is in progress per 1C1.3, Unit 1 Shutdown.
- RCS temperature 320°F and stable.
- RCS pressure 340 psig and stable.
- 11 RHR pump is in service.
- OPPS has just been enabled.
  
- RCS pressure transmitter PT-419 spikes HIGH.

What is the plant response?

- A.  MV-32231, Loop B Hot Leg to RHR Pump SUCTION, will CLOSE.  
Both PRZR PORV's will OPEN.
- B. MV-32066 Loop B Cold Leg RHR INJECTION, will CLOSE.  
Both PRZR PORV's will stay CLOSED.
- C. MV-32231 Loop B Hot Leg to RHR Pump SUCTION will CLOSE.  
Both PRZR PORV's will stay CLOSED.
- D. MV-32066 Loop B Cold Leg RHR INJECTION, will CLOSE.  
Both PRZR PORV's will OPEN.

*Justification:*

- A. *Correct.*
- B. *Incorrect. Plausible as most systems isolate discharge rather than supply to allow for recirc, but not in this system. PORV operation is plausible if assumed 2/4 logic as in a normal setup.*
- C. *Incorrect. Plausible as this is the correct valve to isolate and if PORV logic is assumed to require 2/4 logic as normal.*
- D. *Incorrect. Plausible as most systems isolate discharge rather than supply to allow for recirc, but not in this system and PORV response is correct.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of PZR PCS design feature(s) and/or interlock(s) which provide for the following: Over pressure control***

Technical Reference(s): B15, P8184L-003

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-003 Obj 7

Question Source: Bank # P8180L-003-9  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

15. 011 EA2.11 002/011 EA2.11/3.9/4.3/1/1/M/RO/N/N/FINAL  
A Unit 1, Large Break LOCA is in progress.

The FIRST SI pump is required to be secured once...

- A. RWST level reaches 33%.
- B. RCS pressure is < 550 psig.
- C. RHR flow is verified >950 gpm AND RCS pressure is < 550 psig.
- D. RWST level is below 33% AND BOTH trains of Safeguards Pumps verified available for recirc.

Justification:

- A. *Incorrect. Plausible as this is the level at which you transition to 1ES-1.2, Transfer to Recirculation where SI pumps will be secured.*
- B. *Incorrect. Plausible as this is the pressure used in adverse containment to determine if SI pumps are required to be restarted.*
- C. *Incorrect. Plausible as this is pressure and flow conditions used to verify that SI pumps are no longer required.*
- D. *Correct. At 33% the info page directs entry into 1ES-1.2 then SI pumps are stopped once both trains are verified operating.*

**K/A Statement: Ability to determine or interpret the following as they apply to a Large Break LOCA: Conditions for throttling or stopping HPI**

Technical Reference(s): 1ES-1.2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT 34 Obj 5a

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   10    
55.43   5  

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

16. 012 K1.05 001/012 K1.05/3.8\*/3.9/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- SP 1035B, Reactor Protection Logic Test at Power - Train B, is in progress.
- Reactor Trip Breaker "A" is CLOSED.
- Reactor Trip Bypass Breaker "A" is racked to DISCONNECT.
- Reactor Trip Breaker "B" is OPEN.
- Reactor Trip Bypass Breaker "B" is CLOSED.

What is the system response following an inadvertent Safety Injection signal AND Reactor Trip Bypass Breaker "B" fails to OPEN?

- A. Rods fail to insert.
- B. Turbine fails to trip.
- C. Train "B" Safety Injection signal can NOT be RESET.
- D. Steam dumps fail to arm.

Justification:

- A. Incorrect. Reactor trips due to Reactor Trip Breaker "A" opens.
- B. Incorrect. Plausible if candidate thinks reactor trip to turbine trip logic is train specific
- C. Correct. 'B' train P-4 contacts won't allow Train 'B' SI to reset
- D. Incorrect. Reactor Trip Breaker "A" opening trips the turbine which arms to steam dump.

**K/A Statement: Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: ESFAS**

Technical Reference(s): B18C, Figure B18C-6

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-004 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis   X  

10 CFR Part 55 Content:

55.41   7, 8    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

17. 013 K2.01 001/013 K2.01/3.6\*/3.8/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- 1E-1, Loss of Reactor or Secondary Coolant, is in progress.
- Safety Injection signal is RESET.

Offsite Power is THEN lost.

- D1 and D2 start and load onto Bus 15 and Bus 16.
- The Safety Injection pumps are no longer running, BUT they were verified running before the Loss of offsite power.

Should the SI pumps have restarted automatically upon restoration of power and why?

- A✓ Yes, the pumps should have started because the breakers remained closed.
- B. Yes, the SI signal should have re-initiated once power is restored.
- C. No, the sequencer will start the SI pumps in 5 seconds.
- D. No, the SI signal has been reset.

*Justification:*

- A. *Correct.*
- B. *Incorrect. Power restoration has no input into the SI signal.*
- C. *Incorrect. The SI pumps are not part of the sequencer, 5 seconds is for RHR pumps.*
- D. *Incorrect. The SI pump breakers will remain closed during the loss of power to the safeguards buses. The SI pumps are not part of the sequencer and, therefore, their breakers do not open upon loss of power. As a result when power is restored the SI pumps will resume operation regardless of whether an SI signal is present.*

*With the SI signal reset, no further automatic SI signal will be generated to restart safeguards equipment. Normal sequencing of safeguards loads onto the emergency bus after diesel generator startup will not occur and will have to be done manually.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control***

Technical Reference(s): B18C, B20.5-3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-004 Obj 3e

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

18. 015 K1.03 001/015 K1.03/3.1\*/3.1/2/2/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is at 80% power and stable.
- A control rod is suspected of partially inserting into the core.
- Currently the control rod indicates approximately 40 steps by Individual Rod Position Indication (IRPI).
- This control rod is located adjacent to Power Range instrument N-44.

What selection supports the diagnosis of an actual mispositioned rod?

- A. The N-44 meter reads HIGHER than the other three, due to LOWER localized temperatures in the RCS.
- B. ALL Power Range Nuclear instruments will read slightly LOWER than pre-event values due to NEGATIVE reactivity insertion.
- C. Annunciator 47013-0201, Power Range Negative Flux Rate Channel Alert, is LIT due to HIGH localized power reduction.
- D. N-44 delta I indicates MORE POSITIVE due to flux shift to a HIGHER enriched region of the core.

Justification:

- A. *Incorrect. This distractor used based on RCS temperature perturbations affecting NI indications. Lower temperature causes more thermalization in the core and less leakage to the NI. This is why NI indication actually decreases, any error in this reasoning would lead to this distractor being selected.*
- B. *Incorrect. This distractor used based on RCS temperature perturbations affecting NI indications. Lower temperature causes more thermalization in the core and less leakage to the NI. This is why NI indication actually decreases, any error in this reasoning would lead to this distractor being selected.*
- C. *Correct.*
- D. *Incorrect. Local flux would be driven to the bottom, however since power is distributed, it is plausible that overall flux will shift to the top. This actually occurs with banks of rods at EOL, due to lack of enriched fuel at the bottom of the core.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the physical connections and/or cause-effect relationships between the NIS and the following systems: CRDS***

Technical Reference(s): C47013-0201, 1C5 AOP5

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-230 OBJ A.5

Question Source: Bank # P8184L-002-57  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 5, 6, 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

19. 022 2.4.46 002/022 2.4.46/4.2/4.2/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- 12 Charging pump is out of service.
- C47015-0208 & 0209, 11 & 12 RCP #1 Seal Inlet or Outlet Hi Temp are LIT.
- All RCP seal water return temperatures have slowly risen from 150°F to 195°F.
- C47015-0206 & 0207, 11 & 12 RCP Labyrinth Seal Lo D/P, are LIT.

What would cause these conditions?

- A. 4.16KV Safeguards Bus 15 locks out.
- B. 4.16KV Safeguards Bus 16 locks out.
- C. Seal water return line blockage.
- D. 12 RCP #2 Seal has failed.

*Justification:*

- A. *Incorrect. Plausible as this would normally power the odd numbered pumps, however charging pumps are an exception.*
- B. *Correct.*
- C. *Incorrect. Plausible as this will cause the temperature transients indicated, but not the changes in d/p.*
- D. *Incorrect. Plausible as this will cause the temperature transients indicated, but not the changes in d/p.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: 022 Loss of Reactor Coolant Makeup 2.4.46 Ability to verify that the alarms are consistent with the plant conditions.**

Technical Reference(s): B12A, 1C12.1 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT 25

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

20. 022 K1.04 002/022 K1.04/2.9\*/2.9\*/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- BOTH units are at 100% power
- Chilled Water is aligned to ALL CFCUs and CRDM cooling units.
- Unit 2 experiences a Safety Injection.

What is the expected cooling lineup for Unit 1 and Unit 2?

<u>Unit 1 FCU's</u>	<u>Unit 1 CRDM's</u>	<u>Unit 2 FCU's</u>	<u>Unit 2 CRDM's</u>
A. Cooling Water	Isolated	Chilled Water	Chilled Water
B. Chilled Water	Chilled Water	Cooling Water	Isolated
C. Chilled Water	Chilled Water	Chilled Water	Chilled Water
<input checked="" type="checkbox"/> D. Cooling Water	Isolated	Cooling Water	Isolated

Justification:

- A. Incorrect. Plausible if confuse SI effect on both units.
- B. Incorrect. Plausible if confuse SI effect on both units.
- C. Incorrect. Plausible if confuse SI effect on both units.
- D. Correct.

**K/A Statement: Knowledge of the physical connections and/or cause effect relationships between the CCS and the following systems: Chilled Water**

Technical Reference(s): B19, B35, B37A, NF-86186-3, 2E-0 ATT. L

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-009H Obj 4

Question Source: Bank # P8180L-009H 043  
 Modified Bank # \_\_\_\_\_  
 New \_\_\_\_\_

Question History: Last NRC Exam 2004 RO NRC EXAM

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 4, 9  
 55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

21. 025 AK1.01 001/025 2.1.2/3.0/4.0/1/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is in Reduced Inventory with Train 'A' RHR providing shutdown cooling.

The following indications are then noted:

- RCS ultrasonic level is 12 inches and decreasing rapidly.
- 11 RHR flow was initially 1000 gpm and is now reading near ZERO and is fluctuating.
- 11 RHR pump amps are low and fluctuating.

What action is required to be taken FIRST to mitigate these conditions?

- A. Start 12 RHR pump.
- B. Stop 11 RHR pump.
- C. Remove letdown from service.
- D. Direct the containment rover to vent RHR piping.

*Justification:*

- A. *Incorrect. Plausible as this would preserve cooling, however with a common header it would result in air binding of 12 RHR pumps.*
- B. *Correct. Per step 2.4.3 of D2 AOP1 "Loss of Coolant in a Reduced Inventory Condition." Stopping the pump will stop the air ingestion and prevent damage to the RHR pump, preserving it for restart once the loss of level is stopped and level is recovered. Also, RHR is a likely source of inventory loss*
- C. *Incorrect. Plausible as this may slow level loss if the failure is in the CVCS system, but it would not prevent damage to RHR pump from air ingestion.*
- D. *Incorrect. Plausible as this is an appropriate action if the pump were merely cavitating, however the pump does not have a water supply.*

*Questions tests impact of low RCS level on RHR system (air ingestion) and appropriate recovery sequence. 12 inch RCS level is below midloop and results in vortexing at the RHR inlet*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Loss of RHR, Knowledge of operator responsibilities during all modes of plant operation.***

Technical Reference(s): D2 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT 38

Question Source: Bank # P8140L-107 2  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam 2004 RO NRC EXAM

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 10  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

22. 026 A1.05 001/026 A1.05/3.1/3.4/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- A large break LOCA occurred on Unit 1.
- Containment spray has actuated.
- Containment pressure is lowering.
- RWST level is 40% and slowly lowering.
- Caustic Addition Standpipe level is 96% and stable.

What is the plant effect of these conditions?

- A. Containment pressure peaks at a higher value due to reduced heat capacity of the spray.
- B✓ Corrosion of components in containment increases due to the lower pH of the spray.
- C. Containment radiation levels are higher due to increased iodine gas production.
- D. Containment hydrogen peaks at a higher value due to reduced scrubbing from the spray.

*Justification:*

- A. *Incorrect. Plausible if effect of pH on heat capacity is unknown.*
- B. *Correct. CA standpipe is at normal operating level, indicating that there has been no injection of caustic in spray flow. This will result in less neutralizing (lower pH) of containment sump.*
- C. *Incorrect. Plausible if effect of spray on iodine not recognized and fact that iodine will not increase rad levels.*
- D. *Incorrect. Plausible if effect of NaOH in the spray water on hydrogen not known.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Chemical additive tank level and concentration***

Technical Reference(s): B18D, C47019:0103

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-003 Obj. 3

Question Source: Bank # P8180L-002 019  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 5  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

23. 026 A4.05 002/026 A4.05/3.5/3.5/2/1/M/RO/N/N/FINAL

Given the following conditions:

- A large break LOCA occurred on Unit 1.
- Containment pressure peaked at 30 psig and has lowered to 10 psig.
- Per 1ES-1.2, Transfer to Recirculation, the Containment Spray signal is being RESET.
- CS-46001, Containment Spray Reset Train A, has been depressed.
- C47019-0103, Containment Spray Actuated, is LIT.

C47019-0103, Containment Spray Actuated annunciator window \_\_\_\_\_ be LIT because \_\_\_\_\_.

- A.  should,  
both trains must be reset
- B.  should,  
the Containment Spray pumps must be stopped
- C.  should NOT,  
only ONE train needs to be reset
- D.  should NOT,  
containment pressure is below the 23 psig setpoint

*Justification:*

- A.  Correct.
- B.  Incorrect. Plausible as pumps operating is a common alarm criteria, but not in this case and the alarm should be lit.
- C.  Incorrect. Plausible as either train will cause the alarm to light, but both must be reset to clear it.
- D.  Incorrect. Plausible as many systems actuation signals will clear when the conditions are no longer met, but not this system.

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to manually operate and/or monitor in the control room:  
Containment spray reset switches***

Technical Reference(s): 47019-0103, B18D

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-002 Obj 3.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

24. 026 AA1.07 001/026 AA1.07/2.9/3.0/1/1/M/RO/N/N/FINAL

Given the following conditions:

- A Loss of All AC power has occurred on Unit 1.
- After 10 minutes, power was restored to Bus 15.
- 1ECA-0.1, Loss of All Safeguards AC Power Recovery Without SI Required, is in progress.
- Actions to start a component cooling pump are being performed.

Why are CC-16-2 and CC-16-3, RCP CC Return Manual Isolation Valves verified closed prior to restarting the component cooling pump?

- A✓ Prevent steam introduction into the component cooling pumps.
- B. Reduce component cooling heat loads to the minimum based on cooling water loads.
- C. Prevent damage to the RCP Motor bearings due to excessive cooldown rate.
- D. Maximize flow to the CVCS components for re-establishing charging, letdown, and seal return.

*Justification:*

- A. *Correct. See Below*
- B. *Incorrect. Plausible as reducing heat loads is a required action for this procedure, however is not the basis for these valves being closed.*
- C. *Incorrect. Plausible as thrust bearing cooling is important, but is not a concern for the motor bearings.*
- D. *Incorrect. Restoring CVCS loads is done in subsequent steps, but is not the basis for this step.*

*The purpose of this step is to prevent potential RCP seal damage and the introduction of steam into the component cooling water system when a CC pump is started. The operator should check the status of RCP seal isolation in preparation for loading the charging pumps and CC pump on the safeguards bus. If the RCP has been isolated (by local actions specified in 1ECA-0.0), the operator proceeds to Step 2.*

*If the operator determines that the seal injection isolation valves are open or their position is not known, the operator should check charging pump status. If a pump is running, the operator is instructed to go to Step 2 to continue plant recovery. If a charging pump is not running, the operator should attempt to isolate the seal injection line by dispatching personnel to locally close the seal injection isolation valves. The operator should not start a charging pump until seal injection is isolated to avoid potential RCP damage.*

*If the operator determines that the thermal barrier CC return isolation valves are open, the operator should check CC pump status. If a pump is running, the operator is instructed to go to Step 2 to continue plant recovery. In this situation, the CC pump has already started upon AC power restoration and thermal barrier flow has been initiated. The operator should be aware of potential CC operational problems. If the CC pumps are not running, the operator is instructed to close the CC return isolation valves.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: Flow rates to the components and systems that are serviced by the CCWS; interactions among the components***

Technical Reference(s): 1ECA-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 47 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43       

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

25. 027 AK2.03 001/027 AK2.03/2.6/2.8/1/1/C/A/RO/Y/B/FINAL

The controlling pressurizer pressure channel fails to 2230 psig.

What is the expected behavior of the pressurizer pressure control board master controller deviation and output meters?

<u>Deviation Meter</u>	<u>Output Meter</u>
A. Slightly negative	Steadily decreasing to 0
B. Pegged low	32.5% and stable
C. Slightly positive	67.5% and stable
D. Pegged high	Steadily decreasing to 0

Justification:

- A. Correct. Actual minus setpoint = -5 psig, with deviation of 1 psig/% so -4.375%. Since "actual" (as measured by controlling channel) pressure never changes, integral will cause output to decrease to 0 over the next minute.
- B. Incorrect. Deviation is incorrect, output assumes no integral.
- C. Incorrect. Deviation in wrong direction, incorrect output.
- D. Incorrect. Assumes system controlling to this pressure.

**K/A Statement: Knowledge of the interrelations between Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners**

Technical Reference(s): C7, B7

Proposed references to be provided to applicants during examination: None

Learning Objective: P8170L-005, Objective 3

Question Source: Bank # P8170L-005 52  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam 2007 NRC Exam

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

26. 027 K2.01 001/027 K2.01/3.1\*/3.4\*/2/2/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- D1 Diesel Generator is out of service.
- 4.16KV Safeguards Bus 16 LOCKS OUT.

\_\_\_\_\_ FCU's are operating and  
Containment Cooling System T.S. LCO requirements are \_\_\_\_\_.

- A. NO  
NOT met
- B. NO  
met
- C. TWO  
NOT met
- D. TWO  
met

*Justification:*

- A. *Incorrect. Plausible if candidate fails to realize Bus 15 will be powered from an offsite source.*
- B. *Incorrect. Plausible if candidate fails to realize Bus 15 will be powered from an offsite source, but believes the Bus 15 fans are still operable T.S. requirements are met.*
- C. *Correct. 2 fans are running and both trains are required by T.S.*
- D. *Incorrect. Plausible as two fans are running and are sufficient for design basis cooling needs, but does not meet T.S. requirements.*

*Fan coil units #11[21] and #13[23] are powered from safeguards MCC 1X Bus 1[MCC 2X Bus 1]. Fan coil units #12[22] and #14[24] are powered from safeguards MCC 1X Bus 2 [MCC 2X Bus 2].*

*Fan coils #-1 and #-3 receive signals from Train A of the engineered safety features (ESF) and fan coils #-2 and #-4 receive signals from Train B of ESF. Fan running lights on the control board indicate the fan running speed. Control of the cooling water valves associated with the fan coil units is discussed in B-35.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Knowledge of bus power supplies to the following: fans**

Technical Reference(s): B19, Load List, T.S. 3.6.5

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-009H Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

27. 028 2.4.31 001/028 2.4.31/4.2/4.1/1/2/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- Pressurizer level selector switch is in the (2/3) White/Blue position.

The variable leg of the blue channel of pressurizer level develops a leak.

Which of the following is the response of the pressurizer level control system to this leak?

- A. ONLY the high level alarm will annunciate.
- B. ONLY the low level alarm will annunciate and letdown will isolate.
- C. The level deviation alarm will annunciate, B/U heaters will energize, and charging pump speed will lower to minimum.
- D. The level deviation and low level alarms will annunciate, letdown will isolate, and charging pump speed will increase to maximum.

*Justification:*

- A. *Incorrect. This alarm comes from the (white)bistable channel not the controlling channel.*
- B. *Incorrect. Incomplete response, only 2 of the plant responses used.*
- C. *Incorrect. Opposite charging response, plausible if variable leg leak is diagnosed to fail the controlling channel high.*
- D. *Correct. Variable leg leak will cause the controlling channel to fail low.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Pressurizer Level Malfunction, Knowledge of annunciator alarms, indications, or response procedures.***

Technical Reference(s): 1C51.3, Figure B7-20

Proposed references to be provided to applicants during examination: None

Learning Objective: P8179L-006 Obj 3

Question Source: Bank # P8170L-006-9  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

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

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

28. 029 EA2.02 001/029 EA2.02/4.2/4.4/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- C47017-0304, 11 STM GEN LO-LO LVL REACTOR TRIP, first out annunciator is LIT.

The required crew response is to \_\_\_\_\_.

- A. initiate a manual Safety Injection and enter 1E-0
- B. manually insert control rods if power is greater than 5%
- C. manually open the FRV to feed 11 S/G back into normal band
- D. verify S/G levels are below the reactor trip setpoints, THEN manually trip the reactor

Justification:

- A. Incorrect. Plausible if student assumes lo-lo level is indicative of an event which would require SI.
- B. Incorrect. Plausible as this is an immediate action for FR-S.1, but not required before E-0 actions.
- C. Incorrect. Plausible as this would remedy the lo-lo S/G level, but is not the appropriate response.
- D. Correct.

Either the RO or the BOP are authorized to initiate a reactor trip prior to or while concurrently informing the SRO.

**K/A Statement: Ability to determine or interpret the following as they apply to a ATWS: Reactor trip alarm**

Technical Reference(s): FP-OP-COO-01, 1E-0,

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-224 Obj 2

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   10    
55.43   5  

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

29. 029 K3.01 002/029 K3.01/2.9/3.1/2/2/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 in Mode 5.
- Containment Air Lock Doors are CLOSED.
- Containment In-Service Purge system is in service.
- C47048 1R-11, Contmt / Shield Bldg Vent Air Particle Monitor, alarms HIGH.
- In-Service purge Exhaust Dampers do NOT CLOSE when required.

As a result, containment pressure will \_\_\_\_\_ due to \_\_\_\_\_.

- A. remain constant  
exhaust dampers closing on interlock with the supply dampers
- B. remain constant  
both supply and exhaust fans tripping
- C. decrease  
the continued exhaust fan operation
- D. increase  
the continued supply fan operation

*Justification:*

- A. *Incorrect. Plausible as some systems have supply/exhaust interlocks, but this system is not one of them.*
- B. *Incorrect. Plausible as often the pumps/fans will be tripped rather than dampers closed, but not in this system.*
- C. *Correct.*
- D. *Incorrect. Plausible as the supply fan does remain operating, but it is isolated by the associated dampers.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: Containment parameters***

Technical Reference(s): B19, 1C19.2, NF-40762-2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-009E Obj 3e

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

30. 035 K6.02 001/035 K6.02/3.1/3.5/2/2/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.

Subsequently the following conditions are observed:

- 11 SG Pressure is 680 psig and lowering.
- 11 SG Level is 52% NR and rising.
- 11 SG Steam Flow is  $3.6 \times 10^6$  lbm/hr and rising.
- 11 SG Feed Flow is  $3.5 \times 10^6$  lbm/hr and lowering.

What event is in progress?

- A. A S/G tube ruptured.
- B. The 11 FRV Bypass Valve failed open.
- C. A Turbine runback is in progress.
- D. A S/G PORV failed open.

*Justification:*

- A. *Incorrect. A tube rupture would not cause steam flow to increase.*
- B. *Incorrect. The FRV bypass failing open would not cause steam flow to increase.*
- C. *Incorrect. A runback would cause S/G level to decrease due to shrink*
- D. *Correct. S/G level increase due to swell, S/G pressure decrease due to increase in steam demand.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the effect of a loss or malfunction on the following will have on the S/GS: Secondary PORV***

Technical Reference(s): B7-25, B8

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 45 Obj 6b

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

31. 038 EA1.44 001/038 EA1.44/3.4\*/3.4/1/1/M/RO/N/N/FINAL

Given the following conditions:

- 1E-3, Steam Generator Tube Rupture, is in progress.
- 11 S/G is ruptured.

Subsequently the following conditions are observed:

- 11 S/G level indicates 2% NR with an AFW flow of 210 gpm.
- 12 S/G level indicates 1% NR with an AFW flow of 225 gpm.

What is the operator response with regard to S/G water level control?

- A. AFW flow to 12 S/G can be isolated if desired.
- B. AFW flow to 11 S/G is required to be isolated at this time.
- C. AFW flow to BOTH S/Gs is required to be isolated when 11 S/G level rises above 5% NR.
- D. AFW flow to ONLY 11 S/G is required to be isolated when 11 S/G rises above 5% NR.

*Justification:*

- A. *Incorrect. S/G level is required to be maintained >5%.*
- B. *Incorrect. The ruptured S/G is required to be maintained >5% to ensure a thermal layer exists above the tubes.*
- C. *Incorrect. S/G level is being maintained 5% in intact S/Gs. Therefore, AFW flow to 12 SG is not required to be isolated.*
- D. *Correct. Per 1E-3, step 4.b*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to operate and monitor the following as they apply to a SGTR:  
Level operating limits for S/Gs***

Technical Reference(s): 1E-3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-251 ATT. 11 Obj 6

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43       

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

32. 039 K4.07 003/039 K4.07/3.4/3.7/2/1/M/RO/N/B/FINAL

Given the following conditions:

- 11 SG steam flow is 400,000 lbm/hr.
- 12 SG steam flow is 600,000 lbm/hr.
- RCS Tavg is 520°F.
- Containment Pressure is 0 psig.
- RCS Pressure is 1750 psig.
- Aux Building Fire Alarms are alarming.

Which MSIV's have exceeded their automatic isolation setpoints?

- A. BOTH 11 AND 12 MSIVs.
- B. ONLY 12 MSIV.
- C. ONLY 11 MSIV.
- D. NEITHER 11 OR 12 MSIV.

*Justification:*

- A. *Incorrect. Plausible if low RCS pressure SI (1830#), Hi stm flow (.505 x E6), and Lo-Lo Tave (540°F) setpoints are not recognized.*
- B. *Correct.*
- C. *Incorrect. Plausible if low RCS pressure SI (1830#), Hi stm flow (.505 x E6), and Lo-Lo Tave (540°F) setpoints are not recognized.*
- D. *Incorrect. Plausible if low RCS pressure SI (1830#), Hi stm flow (.505 x E6), and Lo-Lo Tave (540°F) setpoints are not recognized.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: Reactor building isolation***

Technical Reference(s): B18C

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-006 Obj 3

Question Source: Bank # P8180L-006 042  
Modified Bank #             
New           

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge   X    
Comprehension or Analysis       

10 CFR Part 55 Content:

55.41   7    
55.43       

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

33. 045 A3.11 002/045 A3.11/2.6\*/2.9\*/2/2/M/RO/N/N/FINAL

Given the following conditions:

- 1E-0, Reactor Trip or Safety Injection, is in progress.
- 1E-0, Attachment L is in progress.
- 8H16 and 8H17, Generator Output Breakers, are closed.

What action is required?

- A. Manually OPEN 345KV Motor Operated Disconnects for breakers 8H16 and 8H17.
- B. Dispatch operators to locally OPEN Generator Output Breakers 8H16 and 8H17.
- C. Manually OPEN Generator Output Breakers 8H16 and 8H17 AND Generator Field Breaker.
- D. Manually initiate a Main Generator 86 Lockout.

*Justification:*

- A. *Incorrect. Plausible as opening MOD's would remove the generator from the grid, but MOD's are not designed to be opened under load.*
- B. *Incorrect. Plausible as opening generator breakers locally would remove the generator from the grid, however this would not be performed unless it were not possible from the control room.*
- C. *Correct*
- D. *Incorrect. Plausible as an 86 lockout is what the generator should have generated to open the breakers, but this action can not be performed manually..*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Ability to monitor automatic operation of the MT/G system, including: Generator trip**

Technical Reference(s): 1E-0, Attachment L, Step 13

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 24 Obj 2b

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

34. 054 AK1.01 002/054 AK1.01/4.1/4.3/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 2 is at 65% power.
- Containment humidity is rising rapidly.
- All Steam Generator Levels and Pressures are stable.
- 21 S/G Feed Regulating Valve is 80% open.

Subsequently, a Containment Pressure SI signal is generated with the following conditions:

- 21 S/G pressure is 500 psig and lowering RAPIDLY.
- 22 S/G pressure is 800 psig and lowering SLOWLY.

Upon completion of operator action, 22 TDAFW Pump will be SUPPLIED steam from \_\_\_\_\_.

- A. BOTH 21 AND 22 SGs
- B. 22 SG ONLY
- C. 21 SG ONLY
- D. NEITHER 21 OR 22 SG

*Justification:*

- A. *Incorrect. Plausible if it is assumed S/G trends post trip are just normal variations in cooldown rate and given pressures are high enough in both SGs to supply the TDAFW Pump.*
- B. *Correct.*
- C. *Incorrect. Plausible if initial conditions are confused and 22 S/G is assumed to be ruptured vice 21 having a feed leak.*
- D. *Incorrect. Plausible if lowering pressure in both S/G is misdiagnosed to indicate both S/G are faulted.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

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

Technical Reference(s): 2E-2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-239 Obj B

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

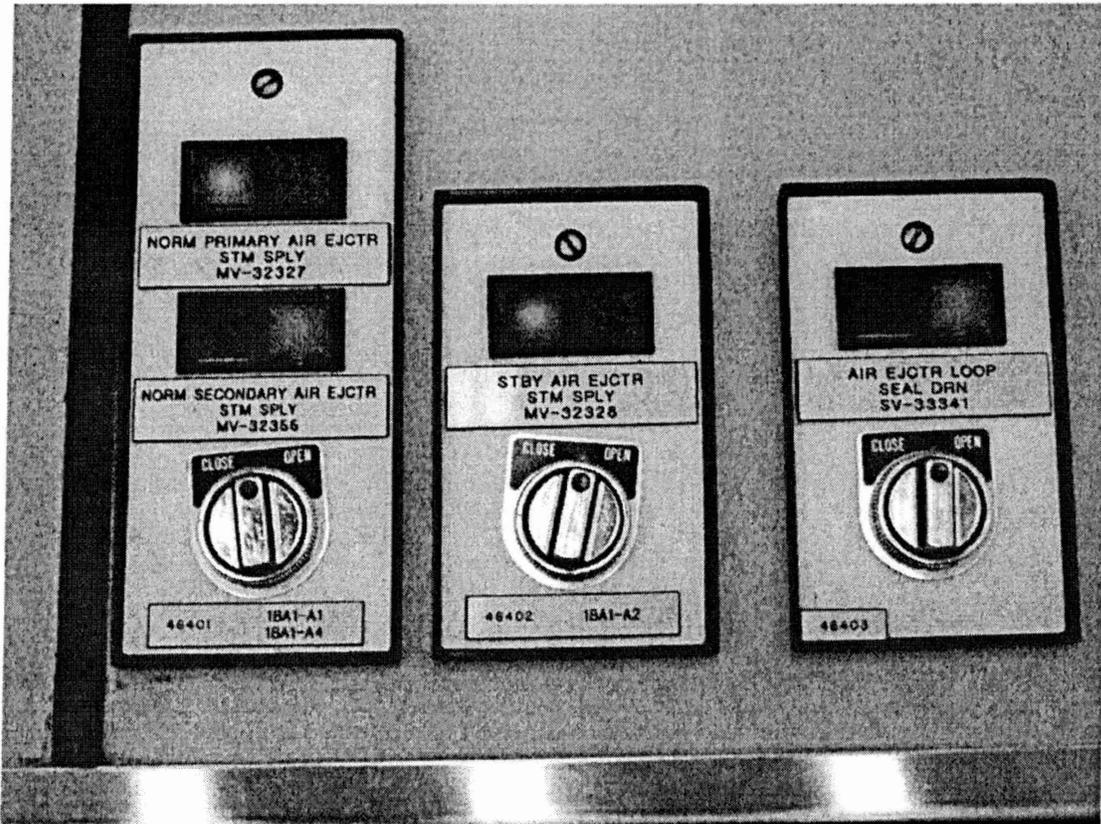
10 CFR Part 55 Content:  
55.41  8, 10   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

35. 055 2.2.44 001/055 2.2.44/4.6/4.1/2/1/C/A/RO/N/N/FINAL

Given the following conditions:



- The conditions in the above photograph are seen on the control board.
- A Unit 2 startup is in progress.
- Condenser vacuum is being established.
- Condenser vacuum is 21 in. Hg.

What operator action (if any) is required and why?

- A. No action is required until vacuum reaches 24.5 in. Hg.
- B. No action is required, vacuum is established with the given conditions.
- C. Place Normal Service First Stage Jets in service to minimize air inleakage.
- D. Place Normal Service First Stage Jets in service to finish drawing vacuum.

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

Justification:

- A. Incorrect. Plausible as 24.5 in. Hg. is the alarm for low vacuum in the ERCS system and required response is to place another ejector in service.
- B. Incorrect. Plausible if student fails to recognize given indications or assumes vacuum is adequate.
- C. Incorrect. Plausible as this is the correct action if it did NOT occur automatically, but increased vacuum results in increased air inleakage.
- D. Correct. See Below

*This procedure is used to establish condenser vacuum during a unit startup. The normal service No. 2 and No. 3 air ejector second stage jets are placed in service first. When the condenser vacuum reaches 20 in. Hg., then the steam supply valve to the normal service first stage jets opens automatically. If it is necessary to establish condenser vacuum more rapidly than is possible using the air ejector, then the hogger ejectors may be used.*

**K/A Statement: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.**

Technical Reference(s): C26, 2C1.2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 13 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   6, 7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

36. 055 EK1.02 001/055 EK1.02/4.1/1/1/C/A/RO/Y/N/FINAL

Given the following conditions:

- 2ECA-0.0, Loss of All Safeguards AC Power, is in progress.
- The Lead Operator performing the rapid depressurization of both SG's to 300 psig.
- Pressure in both SG's reached 180 psig before the depressurization was stopped.

What is the potential operational implication that could result from the excessive SG depressurization?

- A. An integrity Red Path could be received due to the excessive RCS cooldown.
- B. Nitrogen injection from the accumulators may occur, interrupting natural circulation flow in the RCS.
- C. Low steam pressure may cause the TDAFW pump to trip on low discharge pressure, resulting in a loss of heat sink.
- D. Voiding may occur in the reactor vessel, causing the upper portion of the core to become uncovered and potentially causing fuel damage.

*Justification:*

- A. *Incorrect. The RCS must be cooled to near 200°F at low pressures to reach a RED path and SG saturation pressure is about 395°F, also transitions to FR procedures not made during ECA-0.0.*
- B. *Correct. Depressurization is designed to inject accumulators and excessive cooldown may result in nitrogen injection that could create a "hard" bubble in the SG's and degrade/stop natural circulation cooling.*
- C. *Incorrect. The AFW pump discharge trip is bypassed by placing the selector switch in MANUAL.*
- D. *Incorrect. Per the caution voiding is expected on the depressurization to 300 psig and it should not be stopped if it occurs. The voiding is expected during natural circulation in the upper head, but will not go lower than the RCS loop connections (well above the fuel) as natural circulation will collapse bubbles that make it into the loops.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling***

Technical Reference(s): 1ECA-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-247, Objective 8

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   8, 10    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

37. 058 AA2.01 002/058 AA2.01/3.7/4.1/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- 11 Battery Charger trips on overload.
- The Reactor trips SIMULTANEOUSLY.

\_\_\_\_\_ indicates that a loss of DC power has occurred and restoration can be verified by \_\_\_\_\_.

- A.  Generator output breakers being closed,  
47024-1201, 11 DC Panel Undervoltage, annunciator clearing
- B. Generator output breakers being closed,  
Blue Instrument Channel bistable status lights are LIT
- C. RCP Breakers Tripping,  
47024-1201, 11 DC Panel Undervoltage, annunciator clearing
- D. RCP Breakers Tripping,  
Blue Instrument Channel bistable status lights are LIT

*Justification:*

- A. *Correct.*
- B. *Incorrect. Plausible as generator output breakers will not open, but the instrument bus will swap power supplies and NOT be affected.*
- C. *Incorrect. Plausible as Bus 11 will temporarily lose control power, but this will not cause breakers to trip and the annunciator is accurate.*
- D. *Incorrect. Plausible as Bus 11 will temporarily lose control power, but this will not cause breakers to trip and Blue instrument Channel will swap power supplies and NOT be affected.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: 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***

Technical Reference(s): C47024-1201, 1C20.9 AOP1,

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-005 Obj 7.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

38. 059 A3.06 001/059 A3.06/3.2/3.3/2/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 2 is at 100% power.
- The reactor inadvertently trips.

What will be the expected secondary plant response?

- A. S/G levels initially increase due to swell.  
Both MFW pumps will trip when Tave is less than 547°F.
- B. S/G levels initially decrease due to shrink.  
Both MFW pumps will trip when Tave is less than 554°F.
- C. S/G levels initially increase due to swell.  
Both Main Feed Regulating Valves close when Tave is less than 547°F.
- D. S/G levels initially decrease due to shrink.  
Both Main Feed Regulating Valves close when Tave is less than 554°F.

*Justification:*

- A. *Incorrect. The listed SG level response is for a up-power not a down-power. Both MFW pumps trip on a SI signal or on Hi-Hi SG levels, plausible if candidate confuses FRV and MFW pump responses. Also 547°F is low low tave setpoint, plausible if candidate confuses the low and the low low tave setpoints.*
- B. *Incorrect. The SG response is correct. Both MFW pumps trip on a SI signal or on Hi-Hi SG levels, plausible if candidate confuses FRV and MFW pump responses.*
- C. *Incorrect. The listed SG level response is for a up-power not a down-power. 547°F is low low tave setpoint, plausible if candidate confuses the low and the low low tave setpoints with the FRV response.*
- D. *Correct.*

*Low Tavg 2/4, with Rx Trip*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to monitor automatic operation of the MFW, including:  
Feedwater isolation***

Technical Reference(s): B7-27

Proposed references to be provided to applicants during examination: None

Learning Objective: P8170L-003B Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

39. 059 AK1.01 001/059 AK1.01/2.7/3.1/1/2/M/RO/N/N/FINAL

What type of release would be expected during an accidental spill of liquid from the tank listed?

<u>Tank</u>	<u>Type of Release from Tank</u>
A. <input checked="" type="checkbox"/> Non-Aerated Sump Tank.....	Dissolved fission gases, mostly beta-gamma radiation
B. Waste Holdup Tank .....	Low levels of dissolved fission gases, mostly delayed neutron and alpha radiation
C. Volume Control Tank.....	Dissolved fission gases, mostly delayed neutron and alpha radiation
D. Reactor Makeup Tank.....	Low levels of dissolved fission gases, mostly beta-gamma radiation

Justification:

- A. Correct. The Non-Aerated Sump Tank would not have fuel therefore no neutron or alpha radiation.
- B. Incorrect, WHT recieves drains from floor drains and would not have any delayed neutrons of alpha radiation.
- C. Incorrect, VCT would not have any delayed neutron radiation.
- D. Incorrect, RMU tank is processed water and has no radiation concerns.

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

Technical Reference(s): B21B, B21B-2

Proposed references to be provided to applicants during examination: None

Learning Objective: FL-GAT-RWT-001L Obj RWT04 & RWT05

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_  
 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  8, 10   
 55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

40. 059 K4.16 001/059 K4.16/3.1\*/3.2\*/2/1/M/RO/N/M/FINAL

Unit 1 is at 100% power.

What will cause only **ONE** Main Feed Pump to trip?

- A. 12 SG level at 70% N.R.
- B. RCS pressure at 1770 psig.
- C. 11 Condensate Pump breaker trips.
- D. Feedwater pump suction pressure at 220 psig.

*Justification:*

- A. *Incorrect. 2/3 SG levels >67% on either SG will trip both MFP's.*
- B. *Incorrect. With RCS pressure at 1770 psig, a automatic SI would occur which would trip both MFW pumps.*
- C. *Correct.*
- D. *Incorrect. Plausible since feedwater pumps suction pressure trip is actually 200 psig ,but condensate pumps auto start at 220 psig.*

*An automatic feedwater pump trip signal is generated by any one of the following conditions:*

- *Lube oil pressure less than 6 psig when the pump is operating.*
- *A turbine trip with both feedwater pumps operating on that unit (#11 and #21 pumps only )*
- *Loss of 2/3 condensate pumps with both feedwater pumps operating on that unit (#11 and #21 pumps only).*
- *Loss of all three condensate pumps on the associated unit.*
- *Pump suction pressure less than 200 psig for greater than 5 seconds. The time delay allows time for the condensate bypass line valve to open and the standby condensate pump to start.*
- *An undervoltage condition on the associated 4 .16KV bus for greater than 5 seconds. (1/2 coincidence < 75%).*
- *A High-High level on either instrumentation train on either SG . (2/3 > 67%).*
- *SI*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: Automatic trips for MFW pumps***

Technical Reference(s): B28A

Proposed references to be provided to applicants during examination: None

Learning Objective: P8174L-003 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # P8174L-003-16  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

41. 061 2.4.18 001/061 2.4.18/3.3/4.0/2/1/M/RO/N/N/FINAL

What is the basis for isolating Auxiliary Feedwater flow to the faulted steam generator with a feedline break?

- A. To minimize the CST level loss.
- B. To minimize the potential of rupturing a SG tube.
- C. To maximize the energy release from the faulted SG.
- D. To maximize the cooldown capability of the non-faulted SG.

Justification:

- A. Incorrect. Plausible as CST inventory is preserved by securing this flow, but this is not the basis for this action.
- B. Incorrect. Plausible as rupturing is a concern for re-initiation of AFW, but is not a concern when securing.
- C. Incorrect. Plausible if faulted and non-faulted S/G operations are confused.
- D. Correct. The temperature differential across the non-faulted S/G would increase when feedwater was isolated to a faulted S/G since they would be removing a larger decay heat load.

**K/A Statement: Auxiliary Feedwater Knowledge of the specific bases for EOPs.**

Technical Reference(s): 1E-2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-239 Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  1

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

42. 061 K5.05 001/061 K5.05/2.7/3.2/2/1/M/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- ERCS point 1T2871A, 12 MD AFWP DISC Temp is reading 180°F and slowly rising.
- Turbine Building operator reports that the 12 MD AFW pump casing is too hot to touch.
- Shift Supervisor enters C28.1 AOP1, STEAM BINDING OF AN AUXILIARY FEEDWATER PUMP.

Which of the following is the required action(s)?

- A. Close the affected pump discharge MOV's and start the pump.
- B. Start the affected pump and vent the casing until a solid stream of water is observed.
- C. Close the discharge MOV's and allow pump to cool, then vent the pump casing until a solid stream of water is observed.
- D. Manually re-seat the affected pumps discharge MOV's and allow the pump to cool while monitoring pump casing and discharge temperatures.

*Justification:*

- A. *Incorrect. While this would place the pump on recirculation and cool the pump it is not procedurally driven.*
- B. *Incorrect. Pump is vented before starting.*
- C. *Correct.*
- D. *Incorrect. Plausible since manually seating MOV's could reduce possible leakby but this would cause the MOV's to become inoperable.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the operational implications of the following concepts as they apply to the AFW: Feed line voiding and water hammer***

Technical Reference(s): C28.1 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-007 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   5    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

43. 062 2.4.8 001/062 2.4.8/3.8/4.5/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- A Reactor trip and Safety Injection has occurred.
- C47020-0204, Loop A Cooling Water Lo Press, is LIT.
- C47520-0203, Loop A Cooling Water Lo Press, is LIT.
- Loop "A" header pressure indicated 32 psig and lowering slowly.

What describes the procedure flowpath and action?

- A. **Perform** 1E-0, Reactor Trip and Safety Injection, AND C35 AOP1, Loss of Pumping Capacity or Supply Header with SI, **concurrently**.
- B. **Complete** 1E-0, Reactor Trip and Safety Injection, and **THEN** perform C35 AOP1, Loss of Pumping Capacity or Supply Header with SI.
- C. **Perform** only the immediate actions of 1E-0, Reactor Trip or Safety Injection, and **THEN** perform C35 AOP1, Loss of Pumping Capacity or Supply Header with SI.
- D. **Perform** immediate actions of 1E-0, Reactor Trip or Safety Injection, and **THEN concurrently perform** 1E-0 and C35 AOP1, Loss of Pumping Capacity or Supply Header with SI.

*Justification:*

- A. *Incorrect. Immediate actions of 1E-0 should always be performed first prior to performing actions of AOP's. Plausible since both procedures are required to be performed.*
- B. *Incorrect. Immediate actions of 1E-0 should always be performed first prior to performing actions of AOP's. Plausible since both procedures are required to be performed.*
- C. *Incorrect. Immediate actions of 1E-0 should always be performed first prior to performing actions of AOP's. Plausible since both procedures are required to be performed.*
- D. *Correct.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of how abnormal operating procedures are used in conjunction with EOP's.***

Technical Reference(s): 1E-0, C35 AOP1, SWI O-10

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-251 ATT. 14 Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   10    
55.43   5  

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

44. 062 K2.01 001/062 K2.01/3.3/3.4/2/1/M/RO/N/B/FINAL

Which of the following sets of EM panel power supplies is correct?

<u>1EMA</u>	<u>1EMB</u>	<u>2EMA</u>	<u>2EMB</u>
A. Norm: INV 17	Alt: PNL 217	Alt: PNL 117	Norm: INV 28
B. Alt: PNL 217	Norm: INV 18	Norm: INV 27	Alt: PNL 217
C. Norm: INV 17	Alt: PNL 117	Alt: PNL 217	Norm: INV 28
D. Alt: PNL 217	Norm: INV 18	Norm: PNL 117	Alt: PNL 117

Justification:

- A. Correct.
- B. Incorrect. Plausible since power supply to 2EMB is the only part wrong.
- C. Incorrect. Plausible since power supply to 1EMB and 2EMA are the only parts wrong.
- D. Incorrect. Plausible since power supply to 2EMA is the only part wrong.

**K/A Statement: Knowledge of bus power supplies to the following: Major system loads**

Technical Reference(s): B20.8 Figures 8-5 and 8-6

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-015 Obj. 3

Question Source: Bank # P8186L-015  
 Modified Bank # \_\_\_\_\_  
 New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
 55.41 7  
 55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

45. 063 A2.01 001/063 A2.01/2.5/3.4/2/1/M/RO/Y/B/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- During maintenance on 11 DC Panel a electrical jumper causes the 125VDC POSITIVE BUS lead to GROUND.

What is the result AND what is required NEXT?

- A. C47024-1101, 11 DC PANEL GROUND DETECTION, is LIT.  
Dispatch an operator to locally investigate the alarm.
- B. C47024-1201, 11 DC PANEL UNDERVOLTAGE, is LIT.  
Check battery condition using ERCS display DC1.
- C. Reactor Trip ONLY.  
Perform immediate actions of 1E-0, Reactor Trip or Safety Injection.
- D. Reactor Trip and Safety Injection.  
Perform immediate actions of 1E-0, Reactor Trip or Safety Injection.

*Justification:*

- A. *Correct. This is an ungrounded system, therefore a ground will only cause an Undervoltage on the affected side. Ground detection alarm will annunciate requiring the responding operator to dispatch the outplant operator to check the local panel for indications.*
- B. *Incorrect. This will not cause a panel undervoltage, only a voltage difference between the positive and negative sides of the bus. Plausible if operator does not understand the construction of the DC panel and the effect of the electrician's actions.*
- C. *Incorrect. Plausible if the operator believes that the electrician's actions would lead to a loss of DC power on bus A which would cause a Reactor trip.*
- D. *Incorrect. Plausible if the student believes that SI is deenergize to actuate.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Grounds**

Technical Reference(s): NF-40301-1, C47042-1101& 1201

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-005, Objectives 5

Question Source: Bank # P8186L-005 22  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam 2007 NRC RO Exam

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

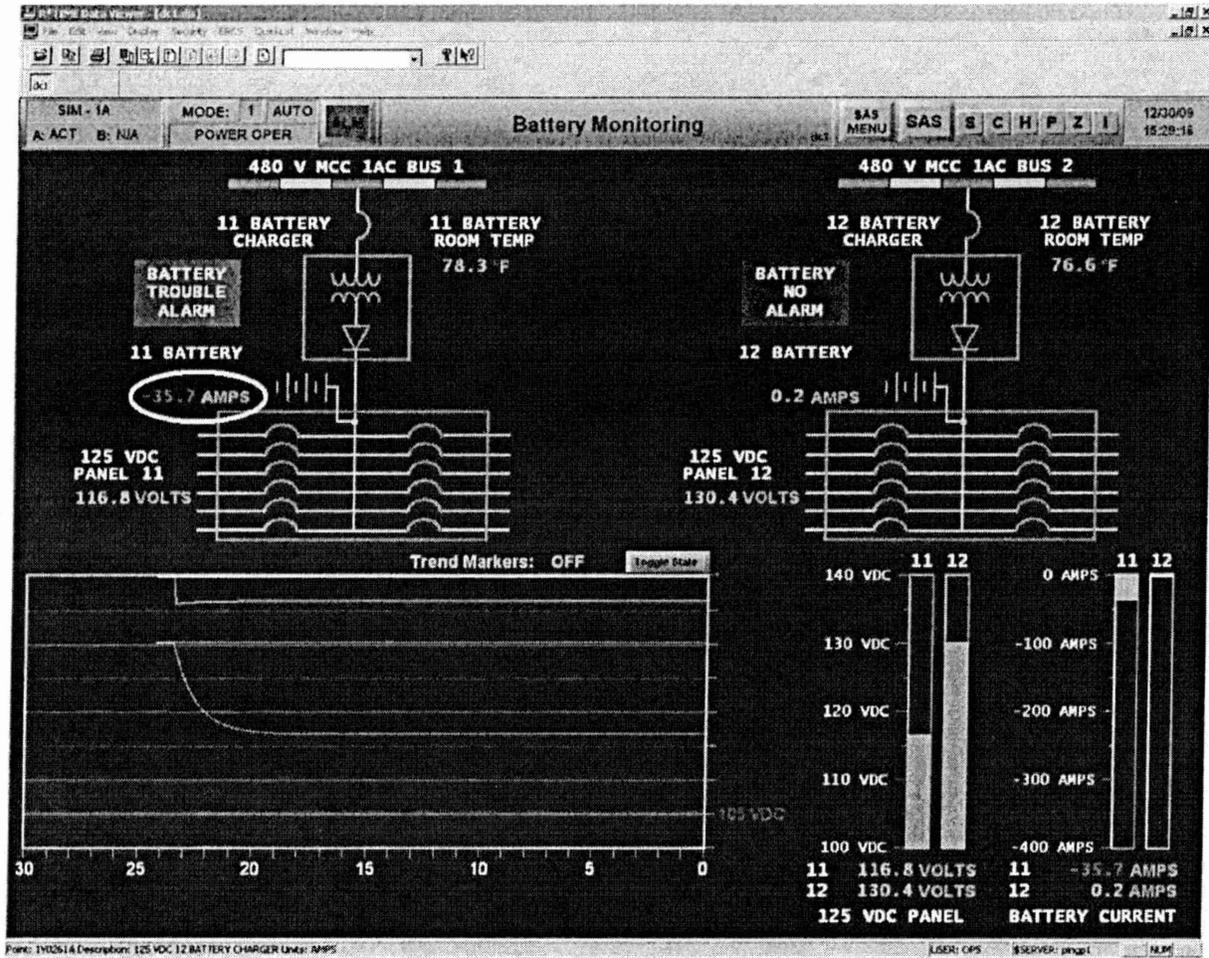
55.41 5  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

46. 063 A4.03 002/063 A4.03/3.0/3.1/2/1/C/A/RO/N/N/FINAL

Given the following conditions:



- The conditions in the above photograph are seen on ERCS.

What describes the relationship between the Battery and the Battery Charger?

- A. NEGATIVE amps indicated on ERCS DC1 indicates current flow OUT of the battery to the associated 480V Bus.
- B. NEGATIVE amps indicated on ERCS DC1 indicates current flow OUT of the battery to the DC Bus.
- C. POSITIVE amps indicated on ERCS DC1 indicates current flow OUT of the battery to the DC Bus.
- D. POSITIVE amps indicated on ERCS DC1 indicates current flow OUT of the battery to the associated 480V Bus.

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

Justification:

- A. Incorrect. Plausible as negative amps does indicate battery discharge, but this is not the appropriate flow path.
- B. Correct.
- C. Incorrect. Plausible as positive amps would indicate flow of current between battery and the DC Bus, but not in the direction indicated.
- D. Incorrect. Plausible as positive amps would indicate flow between the battery and the 480V bus, but not in the direction indicated.

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

Technical Reference(s): B20.9

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-005 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

47. 064 2.1.23 001/064 2.1.20/4.3/4.4/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 1 is in a normal electrical lineup.
- D1 Diesel Generator is loaded to 2600 KW during performance of SP 1295, D1 Diesel Generator 6 Month Fast Start Test.
- The control room operator is adjusting load and voltage when the SPEED CONTROL switch sticks in the LOWER position and cannot be changed.

What describes the FIRST action the operator should take?

- A. Trip breaker 15-2, BUS 15 SOURCE FROM D1 DSL GEN
- B. Stop D1 using CS-46935, D1 DIESEL GENERATOR
- C. Direct the local operator to perform an emergency shutdown of D1.
- D. Trip breaker 15-3, BUS 15 SOURCE FROM 1RY AUX XFMR

Justification:

- A. Correct. Removing DG from bus prior to any other action preserves safeguards power.
- B. Incorrect. Action that would secure the DG, not procedurally driven.
- C. Incorrect. Action that would secure the DG, not procedurally driven.
- D. Incorrect. Action would isolate the bus, not procedurally driven

**K/A Statement: Ability to perform specific system and integrated plant procedures during all modes of plant operation.**

Technical Reference(s): SP1295, C20.7

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-004 Obj 4

Question Source: Bank # P8186L-004 25  
 Modified Bank # \_\_\_\_\_  
 New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
 55.41 10  
 55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

48. 064 K6.07 001/064 K6.07/2.7/2.9/2/1/C/A/RO/N/B/FINAL

Given the following conditions:

- Unit 2 is at 100% power.
- The Relief valve on D6 1A Starting Air Receiver has failed OPEN.
- D6 Diesel Generator 1A Starting Air Receiver has been isolated.

If a Unit 2 SI occurs, D6 Diesel Generator will.....

- A. **NOT** start.
- B. Start on Engine 2 **ONLY** and run on Engine 2 **ONLY**.
- C. Start on Engine 2 **ONLY** and run on **BOTH** engines.
- D. Start and run on **BOTH** engines.

*Justification:*

- A. *Incorrect. Plausible if student does not recognize that only one of the two starting air systems is needed to start both engines on D6.*
- B. *Incorrect. Plausible if student does not recognize that only one of the two starting air systems is needed to start both engines on D6.*
- C. *Incorrect. Plausible if student does not recognize that only one of the two starting air systems is needed to start both engines on D6.*
- D. *Correct. Each engine has two air systems feeding air distributors on respective sides of the engine, so both engines will receive starting air.*

*(Note: "Start" means the air system operates to turn over the diesel, "run" means fuel is supplied to the cylinder to rotate the generator)*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Air receivers***

Technical Reference(s): B20.7

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-014 Obj 3

Question Source: Bank # P8186L-014 10  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

49. 065 AK3.08 002/065 AK3.08/3.7/3.9/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- 11 Steam Generator tube rupture occurs.
- The Instrument Air header is depressurized.
- 1E-3, Steam Generator Tube Rupture, is in progress.

The RCS cooldown will be performed with \_\_\_\_\_ S/G using the \_\_\_\_\_.

- A. 11,  
S/G PORV
- B. 11,  
steam dump
- C. 12,  
S/G PORV
- D. 12  
steam dump

*Justification:*

- A. *Incorrect. Plausible as the PORV is the appropriate depressurization method, but using the ruptured S/G will not establish the required subcooling to allow for RCS de-pressurization to stop the RCS-SG leak.*
- B. *Incorrect. Plausible as the steam dumps are the preferred method of cooldown if operable and the steam dump permissive interlock is met, however without instrument air steam dump valves will not operate. Also you do not want to cooldown on the ruptured steam generator.*
- C. *Correct. SG PORV will be operated locally on the intact SG per 1E-3 step 7c RNO.*
- D. *Incorrect. Plausible as this is the correct generator to cooldown on and the preferred method, however steam dump valves will not operate without instrument air and it is, therefore, unavailable.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Actions contained in EOP for loss of instrument air***

Technical Reference(s): 1E-3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 44

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5, 10   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

50. 068 A4.02 001/068 A4.02/3.2/3.1/2/2/M/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- A 25 GPD tube leak in 11 Steam Generator has existed for the last 180 days.
- Steam Generator Blowdown is aligned to the river for chemistry concerns with Radiation Protection Manager permission.
- 1R-19, Steam Generator Blowdown radiation monitor goes into HIGH alarm.

What are the expected control room indications that the release is terminated?

- A. MV-32040 & MV-32044, "A" STEAM GEN BD ISOLATION VALVES, indicate **CLOSED**.  
11 Steam Generator Blowdown flow on recorder 42040 indicates **ZERO**.
- B. 11 and 12 Steam Generator Blowdown flows on recorder 42040 indicates **ZERO**.
- C. MV-32040 & MV-32044, "A" STEAM GEN BD ISOLATION VALVES, indicate **CLOSED**.  
MV-32043 & MV-32058, "B" STEAM GEN BD ISOLATION VALVES, indicate **CLOSED**.  
11 and 12 Steam Generator Blowdown flows on recorder 42040 indicate **ZERO**.
- D. CV-31414, "A" STM GEN BD, hand controller indicates **ZERO** output.

*Justification:*

- A. *Incorrect, Plausible because 11 SGB flow will be zero, but candidate may believe that the MV's close on high rad and CI. Candidate might think R19 is only associated with 11 SG.*
- B. *Correct, Both SGB CV will close on R19 Hi Rad, but hand controllers will still indicate demand output. The only indication in control room is the flow recorder.*
- C. *Incorrect, Plausible if candidate confuses MV closure signals*
- D. *Incorrect, Both SGB CV will close on R19 Hi Rad, but hand controllers will still indicate demand output. Plausible if student does not understand indication on hand controller and also thinks R19 is only associated with 11 SG.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Ability to manually operate and/or monitor in the control room: Remote radwaste release**

Technical Reference(s): 1C4 AOP2, B21B

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-242 Obj 9

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  13   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

51. 073 A1.01 001/073 A1.01/3.2/3.5/2/1/M/RO/N/B/FINAL

Given the following conditions:

- C21.3-10.1, Releasing Radioactive Gas From 121 Low Level Gas Decay Tank is in progress.
- While initially throttling CV-31271, GAS DCY TNKS TO PLNT VNT, 2R-30 and 2R-37 readings rise SLIGHTLY ABOVE the expected values in the release permit.

The crew is required to...

- A. immediately terminate the release.
- B. take no action UNTIL an alarm is recieved.
- C. re-evaluate the expected values for the release IF no alarms are received.
- D. throttle CV-31271 to reduce 2R-30 and 2R-37 below the expected readings.

*Justification:*

- A. *Incorrect. Plausible as the expected value is a limit in this case, but is not required at this point in the procedure if student believes the expected value can NOT be exceeded.*
- B. *Incorrect. The operator must throttle CV-31271 to reduce count rate below the established count rate.*
- C. *Incorrect. Grab samples are common to verify rad monitor readings, but are not used in this case.*
- D. *Correct. IAW C21.3-10.1 step 7.13.9.*

**K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels**

Technical Reference(s): C21.3-10.1

Proposed references to be provided to applicants during examination: none

Learning Objective: P8182L-001C Obj 5

Question Source: Bank # P8182L-002 82  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 5  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

52. 076 A2.01 001/076 A2.01/3.5/3.7/2/1/M/RO/N/B/FINAL

Given the following conditions:

- Unit 1 and 2 are at 100% power.
- "A" train cooling water flow is 7000 gpm.
- "B" train cooling water flow is 6800 gpm.
- 47023-0603, SEISMIC MONITORING PANEL, is LIT.
- EVENT ALARM is received on Seismic Monitoring Panel 121.
- Floor vibrations are felt in the control room.
- AB-3, Earthquakes is entered.
- Subsequently, Safeguards bay level is 14 feet and lowering.

What action is the crew required to perform NEXT?

- A. Reduce cooling water flow to less than 13,000 gpm.
- B. Trip BOTH reactors and enter 1(2)E-0, Reactor Trip or Safety Injection.
- C. Trip all 4 Circulating Water Pumps.
- D. Evaluate the earthquake severity per Attachment A.

*Justification:*

- A. *Incorrect. Plausible as this is the design limit for a single cooling water pump, but is not applicable in this casualty.*
- B. *Correct.*
- C. *Incorrect, Plausible as this action is procedurally directed, but is not the NEXT action required.*
- D. *Incorrect, Plausible as this action is procedurally directed, but is not the NEXT action required.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: 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: Loss of Service Water System***

Technical Reference(s): AB3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140L-231 Obj B.1

Question Source: Bank # P8176L-003 56  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 10  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

53. 076 AK3.05 001/076 AK3.05/2.9/3.6/1/2/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 2 is at 100% power.
- Chem Lab reports the RCS activity for Iodine 131 is 180  $\mu\text{Ci}/\text{gm}$ .
- In-service demineralizer decontamination factor is 2.

Information: 2R-9 (Reactor Coolant Letdown Line).  
2R-11 (CTMT/Shield Bldg Vent).  
2R-12 (CTMT/Shield Bldg Vent).

What action and procedural guidance is correct for Iodine removal?

- A.  Monitor 2R-9 and place the standby mixed bed demineralizer in service.
- B. Monitor 2R-11, 2R-12, and divert letdown to the hold up tank.
- C. Monitor 2R-9 and isolate normal letdown and place excess letdown in service.
- D. Monitor 2R-11, 2R-12, and place mixed beds and cation bed demineralizers in service.

*Justification:*

- A. *Correct. 2-R-9 monitors for high RCS activity; demin beds reduce RCS activity per references, see below.*
- B. *Incorrect. R-11/12 monitors only during a gas release; hold up tank does not remove RCS activity.*
- C. *Incorrect. Placing excess letdown in service will bypass the demineralizers.*
- D. *Incorrect. R-11/12 monitors only during a gas release.*

1. Have mixed bed demineralizer sampled both influent and effluent.
2. IF decontamination factor for in-service demineralizer is less than 10, THEN shift to the standby mixed bed demineralizer per C12.2, CVCS PURIFICATION AND CHEMICAL ADDITION

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity: Corrective actions as a result of high fission-product radioactivity level in the RCS***

Technical Reference(s): C47047 2R-09

Proposed references to be provided to applicants during examination: None

Learning Objective: P8172L-001A Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5, 10   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

54. 078 A3.01 001/078 A3.01/3.1/3.2/2/1/M/RO/N/N/FINAL

Given the following conditions:

- Both units are at 100% power.
- The Instrument Air System is in a normal lineup.
- Instrument Air Header Pressure decreases to 95 psig.

What is the expected status of the system following the above event?

- A. One compressor is running loaded.
- B. Two compressors are running loaded.
- C. Three compressors are running loaded.
- D. Three compressors are running loaded AND MV-32318, SERVICE AIR HDR ISOL VLV, is CLOSED.

Justification:

- A. *Incorrect. Plausible if student confuses the many setpoints in the IA system*
- B. *Correct.*
- C. *Incorrect. Plausible if student confuses the many setpoints in the IA system*
- D. *Incorrect. Plausible if student confuses the many setpoints in the IA system*

**K/A Statement: Ability to monitor automatic operation of the IAS, including: Air pressure**

Technical Reference(s): C34

Proposed references to be provided to applicants during examination: None

Learning Objective: P8178L-005 Obj 3e

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

55. 078 K3.02 001/078 K3.02/3.4/3.6/2/1/M/RO/N/B/FINAL

The normal Instrument Air supply to 121 Control Room Chiller is isolated.

121 Control Room Chiller is . . . .

- A. OPERABLE if the SUM of bottles A and B are above 2700 psig.
- B. NOT OPERABLE if EITHER bottle A or B drops below 2700 psig.
- C. OPERABLE if it remains running
- D. NOT OPERABLE if the chiller control air system is using the backup air supply.

Justification:

- A. Correct
- B. Incorrect. Plausible as this is slightly above nominal full bottle pressure.
- C. Incorrect, Bottles must be filled if below 4000 psig. When filling commences the chiller is inoperable
- D. Incorrect, both bottles combined need to be above 4000 psig but not an operability issue.

C37.11, step 5.2.3

C34 AOP 1, Attachment A

**K/A Statement: Knowledge of the effect that a loss or malfunction of the IAS will have on the following: Systems having pneumatic valves and controls**

Technical Reference(s): C37.11, C34 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-009I Obj 4

Question Source: Bank # P8178L-005 007  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

56. 086 A1.01 001/086 A1.01/2.9/3.3/2/2/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- Fire header pressure drops to 94 psig.

What is the fire protection system response to the pressure decrease?

	<u>Jockey Pump</u>	<u>MD Fire Pump</u>	<u>Diesel Driven Fire Pump</u>
A.	Running	Standby	Running
B.	Standby	Running	Standby
C.	Standby	Standby	Running
D✓	Running	Running	Standby

Justification:

- A. *Incorrect, Plausible as the Jockey pump is running, but motor driven and diesel driven start order has been reversed.*
- B. *Incorrect, Plausible as Jockey pump is not designed to provide flow, but would be running and other pumps status is accurate.*
- C. *Incorrect, Plausible as Jockey pump is not designed to provide flow, but would be running and motor driven and diesel driven start order has been reversed.*
- D. *Correct. Jockey Pump starts at 110 psig, MDFP starts at 98 psig, Diesel starts at 93 psig*

*Conflicting numbers are given in F5 App K. and C31/B31A. Header Pressure of 94 psig has been selected to ensure Motor Driven is operating and Diesel Driven is NOT.*

	<u>F5</u>	<u>C31/B31A</u>
Jockey	108-113	110-115
Screenwash	102	106
Motor Driven	95	98
Diesel Driven	90	93

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire header pressure**

Technical Reference(s): F5 App K., B31A and C31

Proposed references to be provided to applicants during examination: None

Learning Objective: P8178L-002 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7   
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

57. 103 A1.01 001/103 A1.01/3.7/4.1/2/1/M/RO/N/N/FINAL

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- Containment/Aux Building chillers are OOS for maintenance.
- CFCU's are on Cooling Water with an inlet temperature of 73°F.
- Containment temperature is 99°F and slowly rising.
- Containment pressure is 1.8 psig and slowly rising.
- Containment humidity is 80% and slowly rising.

What action is required to maintain containment within operating limits?

- A✓ Place the post LOCA vent system in service to reduce containment pressure.
- B. Place the containment in-service purge system in-service to reduce pressure.
- C. Align all containment fan coil units to the dome to reduce temperature and humidity.
- D. Manually initiate Containment Spray to reduce containment temperature and humidity.

*Justification:*

- A. *Correct, Per C19.4 Post LOCA vent to be placed in service when containment pressure exceeds 1.3 psig.*
- B. *Incorrect, Plausible as this pressure over 1.3 psig is limitation mentioned in In-Service Purge system however it would not be appropriate to use it in this situation.*
- C. *Incorrect, Plausible as this would remedy the situation give, but would remove cooling from operating RCP's.*
- D. *Incorrect, Plausible if the student misunderstands the given indications to indicate a LOCA and believes this action is warranted.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment System controls including: Containment pressure, temperature, and humidity***

Technical Reference(s): C19.4

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-008 Obj 12a

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   5    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

58. 2.1.29 001/2.1.29/4.1/4.0/3/M/RO/N/B/FINAL

Given the follow conditions:

- An outplant operator is performing a system checklist.
- The outplant operator is required to THROTTLE open a manual valve five turns using a handwheel.

A second operator is required to perform \_\_\_\_\_ during this evolution.

- A. self checking
- B. concurrent verification
- C. independent verification
- D. reference procedure usage

Justification:

- A. *Incorrect. Plausible as this is an error reduction technique, but not the one used in this instance.*
- B. *Correct.*
- C. *Incorrect. Plausible as it is an independant operator, but this does not meet requirements of an independant verification.*
- D. *Incorrect. Plausible as using a second operator would fulfil this function, but this is not a verification method.*

**K/A Statement: Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.**

Technical Reference(s): FP-OP-COO-01

Proposed references to be provided to applicants during examination: None

Learning Objective: P9150L-024 Obj 4

Question Source: Bank # P8140L-201 20  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 10  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

59. 2.1.41 001/2.1.41/2.8/3.7/3/M/RO/N/B/FINAL

Which of the following is a description of how a Rod Control Cluster Assembly (RCCA) is changed in a fuel assembly located inside containment?

- A. 1) manipulator removes the RCCA from the spent fuel assembly.  
2) places it in the basket of the change fixture.  
3) change fixture gripper picks up the RCCA.  
4) places it in the receiving fuel assembly in the upender.
- B. 1) manipulator places a spent fuel assembly with an RCCA in one basket on the change fixture.  
2) change fixture gripper picks up the RCCA from the assembly.  
3) places it in the receiving fuel assembly in the upender.
- C✓ 1) manipulator places a spent fuel assembly with an RCCA in one of the baskets on the change fixture.  
2) places the receiving fuel assembly in the basket next to the spent fuel assembly  
3) change fixture gripper then picks up the RCCA.  
4) shifts it to the receiving fuel assembly.
- D. 1) manipulator places a spent fuel assembly with an RCCA in one of the baskets on the change fixture.  
2) manipulator operator then removes the RCCA from the assembly with the manipulator.  
3) places it in the receiving fuel assembly in the core.

*Justification:*

- A. *Incorrect. Inserts are not changed in the upender. It is physically possible to do this.*
- B. *Incorrect. Inserts are not changed in the upender. It is physically possible to do this.*
- C. *Correct.*
- D. *Incorrect. Inserts are not inserted in the core area. It is physically possible to do this.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the refueling process.***

Technical Reference(s): C17

Proposed references to be provided to applicants during examination: None

Learning Objective: P8182L-003 Obj 2

Question Source: Bank # P8182L-003 70  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 2, 10  
55.43 6

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

60. 2.2.14 001/2.2.14/3.9/4.3/3/M/RO/N/B/FINAL

Which of the following is correct concerning the performance of Checklists?

- A. IF the component status is the same as the status on the checklist AND there are NO safety tags on the component, THEN place your initials in the initial box.
- B. IF the component status is the same as the status on the checklist AND there IS a safety tag on the component, THEN place your initials in the initial box AND place the component on the discrepancy list.
- C. IF the component status is NOT the same as the status on the checklist AND there are NO safety tags on the component, THEN reposition the component AND place your initials in the initial box.
- D. IF the component status is NOT the same as the status on the checklist AND there IS a safety tag on the component, THEN place your initials in the initial box.

*Justification:*

- A. *Correct. Per C1.1 only if the component is in the same position and there are no tags can the checklist be initialed without further action.*
- B. *Incorrect. Plausible as the component is in the required position and should be added to the discrepancy list, however the step should not be signed off.*
- C. *Incorrect. Plausible as if the component is able to be repositioned it will be, but in such a case SS SHALL be obtained.*
- D. *Incorrect. Plausible if it is assumed the tagged position of the component is an acceptable alternative to the status given by the checklist.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the process for controlling equipment configuration or status.***

Technical Reference(s): 1C1.1 pg 5-6

Proposed references to be provided to applicants during examination: None

Learning Objective: P9150L-003 Obj. 7

Question Source: Bank # P9150L-003 007  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

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

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

61. 2.2.36 002/2.2.36/3.1/4.2/3/M/RO/N/N/FINAL

Given the following condition:

- Offsite OE was distributed indicating possible imminent failure of a component in 21 DC Battery Charger.
- 21 DC Battery Charger was removed from service for part replacement.
- The Portable Battery Charger has been installed to replace 21 DC Battery Charger.

The Portable Battery Charger \_\_\_\_\_ qualified backup equipment.

T.S. LCO 3.8.4.A is \_\_\_\_\_.

- A.  is met
- B.  is NOT met
- C.  is NOT met
- D.  is NOT NOT met

*Justification:*

- A. *Correct.*
- B. *Incorrect. Plausible as T.S. is met, but if examinee does not recognize the portable is qualified.*
- C. *Incorrect. Plausible if it is assumed the installed battery chargers are required even if the portable is qualified..*
- D. *Incorrect. Plausible as T.S. would not be met if the portable were not qualified equipment.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.***

Technical Reference(s): T.S 3.8.4

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-005 Obj 10d

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

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

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

62. 2.2.6 001/2.2.6/3.6/3.0/3/M/RO/N/B/FINAL

Given the following conditions:

- Operators are performing an approved procedure on Unit 2.
- Step 23 of the procedure has a Temporary Change Request (TCR).
- The TCR is signed by the Unit 1 RO (first approver) and Unit 2 SS (second approver).
- The TCR has no other signatures or initials.
- The TCR requires a flow rate greater than the Design Limit specified in the Precautions and Limitations Sections.

What actions should be taken with regard to performing Step 23?

- A✓ Do not perform the step, TCR's which change the intent or scope are NOT permitted.
- B. Do not perform the step until TWO Licensed Senior Reactor Operators view AND approve another TCR.
- C. Perform the step as revised and submit a TCR to modify the Precautions AND Limitations Sections.
- D. Perform the step as revised AND have the Shift Supervisor initial the step.

*Justification:*

- A. *Correct. Changes to intent / design is not allowed.*
- B. *Incorrect. Plausible as this is the correct action, but the wrong approval authority*
- C. *Incorrect. Plausible as this would be a correct action if the TCR were acceptable.*
- D. *Incorrect. Plausible as this would be appropriate in an emergency, but there is nothing to indicate an emergency exists in the stem.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the process for making changes to procedures.***

Technical Reference(s): FP-G-DOC-04, Section 5.9, QF0013

Proposed references to be provided to applicants during examination: None

Learning Objective: P9150L-003 Obj 9.

Question Source: Bank # P9150L-003 9  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 10  
55.43 3

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

63. 2.3.11 002/2.3.11/3.8/4.3/3/M/RO/N/B/FINAL

When transferring contents of an ADT Monitor Tank, what design feature prevents the release of the contents to the discharge canal?

- A. At a MINIMUM, at least ONE manual valve only is maintained closed and locked.
- B. At a MINIMUM, at least ONE control valve only, interlocked with the radiation monitor R-18, WASTE LIQUID DISPOSAL LIQUID EFFLUENT MONITOR, is maintained closed.
- C. At a MINIMUM, at least TWO manual valves are maintained closed and locked.
- D. At a MINIMUM, at least TWO control valves in the release pathway are maintained closed with ONE of the valves locked and the other interlocked with the radiation monitor R-18, WASTE LIQUID DISPOSAL LIQUID EFFLUENT MONITOR.

Justification:

- A. Incorrect. Plausible as this is adequate isolation for a many liquid transfers.
- B. Incorrect. Plausible as there is a valve interlocked with R-18, but this is not the minimum requirement.
- C. Incorrect. Plausible as this is the appropriate isolation for high energy systems, but not the procedural method for ADT tank transfers.
- D. Correct.

CV-31256 (RCV-018), Waste Liquid Common Discharge Header Valve, which is interlocked to close on high radiation sensed by RE-18, AND CV-31841, Waste Liquid Common Discharge Header Keylock Release Valve, are maintained closed with CV-31841 locked, during all operations not involving a liquid release.

**K/A Statement: Ability to control radiation releases**

Technical Reference(s): C21.1.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8182L-001A Obj 4

Question Source: Bank # P8182L-001A 001  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 13  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

64. 2.3.14 001/2.3.14/3.4/3.8/3/M/RO/N/N/FINAL

Given the following conditions:

- Refueling is in progress.
- A spent fuel element is being moved from the reactor to the upender.
- The spent fuel element is dropped to the bottom of the canal and ruptures.

What products released from the ruptured spent fuel element will present the MOST immediate hazard?

- A. Hydrogen gas.
- B. Alpha radiation from fission products.
- C. Gamma radiation from Iodine and Krypton gases.
- D. Gamma radiation from fission and corrosion products.

*Justification:*

- A. *Incorrect. Plausible as hydrogen is a hazardous chemical present in fuel, but is not the present hazard.*
- B. *Incorrect. Plausible as this form of radiation is most damaging form of radiation, but at the distance and shielding offered by spent fuel pool this would not be the MOST immediate hazard.*
- C. *Correct.*
- D. *Incorrect. Plausible as this is an appropriate hazard, but not outside of the fuel cell.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.***

Technical Reference(s): USAR Section 14F HA

Proposed references to be provided to applicants during examination: None

Learning Objective: P8182L-003 Obj 3c

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  12   
55.43  4

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

65. 2.4.2 001/2.4.2/3.9/4.1/3/C/A/RO/N/B/FINAL

Given the following conditions:

- A Unit 1 startup is in progress per 1C1.2, Unit 1 Startup Procedure.
- Reactor power is 6% and stable.
- The RO withdraws rods one step.
- Rods continue to step OUT, AFTER the RO releases the switch.
- Reactor power reaches 28% prior to a MANUAL reactor trip.
- 1E-0, Reactor Trip or Safety Injection, is entered.

An automatic reactor trip should \_\_\_\_\_ occurred  
due to \_\_\_\_\_.

- A. NOT have,  
Intermediate Range High Flux Trip being manually blocked per procedure at the  
initial power level
- B. have,  
P-7 enabling 'at power trips' when power exceeded the setpoint
- C. NOT have,  
Power Range Trip - Low Setpoint trip setpoint NOT being reached
- D✓ have,  
Power Range Trip - Low Setpoint trip setpoint being exceeded.

*Justification:*

- A. *Incorrect. Plausible as this trip would be blocked >10% (P-10), however under these conditions that action would not have taken place.*
- B. *Incorrect. Although at-power trips automatically enabled they are not NIS power trips.*
- C. *Incorrect. Setpoint is 25% and is exceeded.*
- D. *Correct. Setpoint 25% and requires manual action to block. IR trip setpoint also would give trip but this option is not presented.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. Note: The issue of setpoints and automatic safety features is not specifically covered in the systems sections***

Technical Reference(s): 1C1.2 section 5.14, B-8 table B8-1, B8-2

Proposed references to be provided to applicants during examination: None

Learning Objective: P8184L-004 Obj 7

Question Source: Bank #         P8184L-004 59          
Modified Bank #                                   
New                                 

Question History: Last NRC Exam         2004 RO NRC EXAM        

Question Cognitive Level:

Memory or Fundamental Knowledge                   
Comprehension or Analysis                 X                

10 CFR Part 55 Content:

55.41         7          
55.43                         

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

66. 2.4.42 001/2.4.42/2.6/3.8/3/M/RO/N/N/FINAL

A General Emergency has been declared.  
All of the facilities /centers are fully staffed.

Which of the following coordinate the OFFSITE radiological monitoring during emergencies and recovery operations?

- A. Control Room.
- B. Technical Support Center.
- C.  Emergency Operating Facility.
- D. Operations Support Center.

Justification:

- A. *Incorrect. Plausible as the control direct most activities, but not the one listed.*
- B. *Incorrect. Plausible as the TSC coordinates inplant radiological monitoring.*
- C. *Correct. After the EOF is staffed, the responsibility is passed to the EOF.*
- D. *Incorrect. Plausible as the OSC will deploy the required personnel in the plant.*

**K/A Statement: Knowledge of emergency response facilities.**

Technical Reference(s): F3

Proposed references to be provided to applicants during examination: None

Learning Objective: P7405L-001 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New

Question History: Last NRC Exam  N/A

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

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

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

67. 2.4.6 001/2.4.6/3.1/4.0/3/M/RO/N/B/FINAL

During which set of conditions below is it appropriate to use 1ES-0.0, Rediagnosis?

During performance of . . .

- A. 1FR-S.1, Response to Nuclear Generation/ATWS, AND the reactor is locally tripped.
- B. 1E-0, Reactor Trip or Safety Injection, when diagnosis steps are completed AND the cause of the SI has NOT been determined.
- C✓ 1E-1, Response to Loss of Reactor or Secondary Coolant, when operators are unsure if they are in the correct procedure.
- D. 1ECA-0.0, Loss of All AC Power, when a steam generator begins to depressurize in an uncontrolled manner AND has NOT been isolated.

Justification:

- A. *Incorrect. 1FR-S.1 contains steps to verify reactor trip has occurred and transition back to 1E-0.*
- B. *Incorrect. 1E-0 diagnosis will continue until the appropriate procedure is selected or SI termination criteria is reached. Entry criteria for 1ES-0.0 is not met until a transition has been made from 1E-0 to another 1E-series procedure.*
- C. *Correct. Per 1ES-0.0 entry conditions.*
- D. *Incorrect. ECA-0.0 is not transitioned from until directed and per entry conditions 1ECA-0.0 is not an E-series procedure which allows use of 1ES-0.0.*

**K/A Statement: Knowledge of symptom based EOP mitigation strategies**

Technical Reference(s): 1ES-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-011 Obj B1

Question Source: Bank # P8197L-011 74  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam 2004 RO NRC EXAM

Question Cognitive Level:

Memory or Fundamental Knowledge	<u>  X  </u>
Comprehension or Analysis	<u>      </u>

10 CFR Part 55 Content:

55.41	<u>  10  </u>
55.43	<u>    5  </u>

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

68. E04 EK2.2 002/E04 EK2.2/3.8/4.0/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- A LOCA Outside Containment occurs and can NOT be isolated.

As a result, Transfer to Recirculation \_\_\_\_\_ occur due to \_\_\_\_\_.

- A. will,  
Sump B being filled from RHR pit drains
- B. will,  
using Containment Spray pumps to fill Sump B
- C. will NOT,  
Sump B being empty
- D. will NOT,  
radiological concerns in the auxiliary building

*Justification:*

- A. *Incorrect. Plausible as Sump B drains are pumped to containment to recover water, but these drains are not adequate to fill sump B..*
- B. *Incorrect. Plausible as Containment Spray pumps would add significant water to Sump B, but this action is not procedurally directed.*
- C. *Correct.*
- D. *Incorrect. Plausible if radiological concerns are severe enough to prevent performance of Att. K actions to align for recirc however these actions are not required to go to recirc.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the interrelations between the LOCA Outside Containment and the following: Facility's heat removal systems, including primary coolant, emergency coolant, decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.***

Technical Reference(s): 1ES-1.2, 1E-1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-012 Obj 22.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   7    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

69. E05 2.1.7 002/E05 2.1.7/4.4/4.7/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- A Large Break LOCA has occurred.
- 1E-1, Loss of Reactor or Secondary Coolant, is in progress.
- AFW flow can not be established.
- All SG NR levels are off-scale low.
- The crew enters 1FR-H.1, Response to Loss of Secondary Heat Sink.

The following is observed:

- RCS Pressure is 25 psig and slowly lowering.
- Intact SG pressures are 475 psig and lowering.

Steam Generators are \_\_\_\_\_ because \_\_\_\_\_.

- A. required,  
secondary heat sink is required
- B. required,  
S/G tubes must remain covered to avoid damage.
- C. NOT required,  
reintroduction of AFW would cause damage.
- D. NOT required,  
decay heat is NOT being transferred to the S/Gs.

*Justification:*

- A. *Incorrect. Plausible as many LOCA situations require Secondary heat sink, however secondary heat sink is not required if SGs are at a higher pressure than the RCS. They act as a heat source.*
- B. *Incorrect. Plausible as many LOCA situations require Secondary heat sink, however secondary heat sink is not required if SGs are at a higher pressure than the RCS and under other circumstances maintaining the S/G tubes covered is relevant.*
- C. *Incorrect. Plausible as S/Gs are NOT required, because RCS pressure is below SG pressure and reintroduction of AFW to a hot, dry S/G can cause damage.*
- D. *Correct.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.***

Technical Reference(s): 1E-1, 1FR-H.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-014 Obj 25

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

70. E06 EA2.2 003/E06 EA2.2/3.6/3.8/1/2/M/RO/N/B/FINAL

Given the following conditions:

- Unit 1 LOCA, is in progress.
- The crew is in 1FR-C.1, "Inadequate Core Cooling".

The RO observes the following conditions:

- RCS Pressure is 475 psig and slowly lowering.
- RVLIS Full Range is 35% and lowering.
- CETC Temp is 1300°F and rising.
- RCS Hot Leg Temp is 450°F and rising.
- Both RCPs are stopped.
- Both SG WR levels are 52% WR and stable.
- 4.16KV Safeguards Bus 15 is Locked Out.
- 12 SI pump is OOS for maintenance.
- 12 RHR pump tripped on overload.

Which of the following is true regarding RCPs?

- A. RCPs are started to force water inventory from the pressurizer into the core to collapse possible voids in the upper head region.
- B. RCPs are started to provide temporary cooling of the RCS until makeup flow can be established.
- C. RCPs are left OFF to prevent damaging the pumps because of low seal differential pressures.
- D. RCPs are left OFF to limit their heat input into the core which could challenge core cooling.

*Justification:*

- A. *Incorrect. Plausible as voids exist in the given condition, but void collapse is not the purpose of starting the RCPs.*
- B. *Correct. Per FR-C.1.*
- C. *Incorrect. Plausible as pump damage is likely, but not a concern for the given situation.*
- D. *Incorrect. Plausible as pumps are a considerable heat source, but not in this situation.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the interrelations between the Inadequate Core Cooling and the following: RCP***

Technical Reference(s): 1FR-C.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-014 Obj 16

Question Source: Bank # P8197L-014 139  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

71. E10 EK2.2 001/E10 EK2.2/3.6/3.8/1/2/M/RO/N/B/FINAL

2ES-0.4, Natural circulation cooldown with steam voids in the vessel, is in progress.

RVLIS full range level is maintained greater than 82% to ...

- A. maintain adequate core cooling by keeping the fuel covered.
- B. keep the core exit thermocouples covered for an accurate indication of subcooling.
- C.  prevent disrupting natural circulation flow due to voids entering the hot legs.
- D. prevent a water solid condition in the pressurizer which would result in a loss of pressure control.

*Justification:*

- A. *Incorrect. Plausible as this is the normal function of RVLIS, but not in this situation.*
- B. *Incorrect. Plausible as this is an effect of maintaining RVLIS level, but is not the bases.*
- C. *Correct*
- D. *Incorrect. Plausible as this is the normal method of pressure control, but not with given conditions.*

***K/A Statement: Knowledge of the interrelations between the Natural Circulation with Steam Void in Vessel with/without RVLIS and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility***

Technical Reference(s): 2ES-0.4

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-011, Obj E

Question Source: Bank # P8197L-011 061  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

72. E11 EK3.3 001/E11 EK3.3/3.8/3.8/1/1/C/A/RO/N/M/FINAL

Number: <b>1ECA-1.1</b>	Title: <b>LOSS OF EMERGENCY COOLANT RECIRCULATION</b>	Revision Number: <b>REV. 10</b>
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																																				
5	<p>Determine Containment Spray Requirements:</p> <p>a. Determine number of spray pumps required from table:</p> <table border="1"> <thead> <tr> <th>RWST LEVEL</th> <th>CONTAINMENT PRESSURE</th> <th>FCUs RUNNING IN SAFEGUARDS MODE</th> <th>SPRAY PUMPS REQUIRED</th> </tr> </thead> <tbody> <tr> <td rowspan="4">GREATER THAN 33 %</td> <td>GREATER THAN 46 PSIG</td> <td>N/A</td> <td>2</td> </tr> <tr> <td rowspan="2">BETWEEN 20 PSIG AND 46 PSIG</td> <td>LESS THAN 2</td> <td>2</td> </tr> <tr> <td>2 OR 3</td> <td>1</td> </tr> <tr> <td>4</td> <td>0</td> </tr> <tr> <td></td> <td>LESS THAN 20 PSIG</td> <td>N/A</td> <td>0</td> </tr> <tr> <td rowspan="3">BETWEEN 33% AND 8.0%</td> <td>GREATER THAN 46 PSIG</td> <td>N/A</td> <td>2</td> </tr> <tr> <td rowspan="2">BETWEEN 20 PSIG AND 46 PSIG</td> <td>1 OR 2</td> <td>1</td> </tr> <tr> <td>3 OR 4</td> <td>0</td> </tr> <tr> <td></td> <td>LESS THAN 20 PSIG</td> <td>N/A</td> <td>0</td> </tr> <tr> <td>LESS THAN 8.0%</td> <td>N/A</td> <td>N/A</td> <td>0</td> </tr> </tbody> </table>	RWST LEVEL	CONTAINMENT PRESSURE	FCUs RUNNING IN SAFEGUARDS MODE	SPRAY PUMPS REQUIRED	GREATER THAN 33 %	GREATER THAN 46 PSIG	N/A	2	BETWEEN 20 PSIG AND 46 PSIG	LESS THAN 2	2	2 OR 3	1	4	0		LESS THAN 20 PSIG	N/A	0	BETWEEN 33% AND 8.0%	GREATER THAN 46 PSIG	N/A	2	BETWEEN 20 PSIG AND 46 PSIG	1 OR 2	1	3 OR 4	0		LESS THAN 20 PSIG	N/A	0	LESS THAN 8.0%	N/A	N/A	0	
RWST LEVEL	CONTAINMENT PRESSURE	FCUs RUNNING IN SAFEGUARDS MODE	SPRAY PUMPS REQUIRED																																			
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	LESS THAN 20 PSIG	N/A	0																																			
LESS THAN 8.0%	N/A	N/A	0																																			
	<p>b. Spray pumps running - EQUAL TO NUMBER REQUIRED</p>	<p>b. Manually operate spray pumps as necessary.</p>																																				

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

72. E11 EK3.3 001/E11 EK3.3/3.8/3.8/1/1/C/A/RO/N/M/FINAL

Given the following conditions:

- A Large break LOCA has occurred.
- Attempts to place ECCS in recirculation have failed as Sump B valves failed to OPEN.
- 1ECA-1.1, Loss of Emergency Coolant Recirculation, step 5 is being performed.
- Containment pressure is 29 psig and lowering.
- One RHR pump is injecting from the RWST.
- RWST level is 28% and lowering.
- Two CFCU's are running in the safeguards modes.

At the completion of Step 5, \_\_\_\_\_ Containment Spray Pumps will be running because the operator \_\_\_\_\_.

- A. NO,  
stopped the BOTH running Containment Spray Pumps
- B. ONE,  
stopped ONE Containment Spray Pump
- C. ONE,  
started ONE Containment Spray Pump
- D. TWO,  
took NO action

*Justification:*

- A. *Incorrect. Plausible as some combinations in the table result in two CS pumps running.*
- B. *Correct. Per table*
- C. *Incorrect. Plausible as this is the required number of spray pumps, but both pumps would be running in the given conditions.*
- D. *Incorrect. Plausible as pumps will have to be stopped, but procedurally one CS pump is required.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the reasons for the following responses as they apply to the Loss of Emergency Coolant Recirculation: Manipulation of controls to obtain desired operating results during abnormal, and emergency situations.***

Technical Reference(s): 1ECA-1.1

Proposed references to be provided to applicants during examination: 1ECA-1.1 page 4 included in body of exam question.

Learning Objective: P8197L-012 Obj 24

Question Source: Bank # \_\_\_\_\_  
Modified Bank # P8197L-012 143  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 5, 10  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

73. E12 EK3.1 003/E12 EK3.1/3.5/3.9/1/1/C/A/RO/N/N/FINAL

Given the following conditions:

- Unit 1 was at 100% power.
- A large steam line break on the common steam header occurred.
- Reactor trip and Safety Injection actuate.
- NONE of the MSIVs closed automatically.

With NO operator action, AFTER the initial decrease RCS pressure will \_\_\_\_\_.

- A. stabilize at a lower RCS pressure
- B. rise AND stabilize at SI pump shutoff head
- C. rise AND stabilize at normal RCS pressure (2235 psig)
- D. rise AND cycle at Pressurizer PORV pressure (2335 psig)

Justification:

- A. Incorrect. Plausible if it is assumed AFW can remove enough heat to maintain low pressure.
- B. Incorrect. Plausible if charging pumps effect are not recognized and it is assumed SI pumps are the only source of injection.
- C. Incorrect. Plausible if it is assumed normal pressurizer spray is able to compensate.
- D. Correct. With SI and no break in the RCS eventually the RCS will be cycling on the PORVs.

**K/A Statement: Knowledge of the reasons for the following responses as they apply to the (Uncontrolled Depressurization of all Steam Generators) 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.**

Technical Reference(s): 1ECA-2.1 Basis

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 ATT. 40 Obj 5a

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New   X  

Question History: Last NRC Exam   N/A  

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

10 CFR Part 55 Content:  
55.41   5, 10    
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

74. E13 EK2.1 003/E13 EK2.1/3.0/3.1/1/2/M/RO/N/B/FINAL

The crew has entered 1FR-H.2, Response to Steam Generator Overpressure.

The steam generator design pressure is exceeded when the Steam Generator pressure rises above the \_\_\_\_\_.

- A. steam dump controller setpoint of 1005 psig
- B. SG PORV controller setpoint of 1050 psig
- C.  highest SG safety setpoint of 1131 psig
- D. lowest SG safety setpoint of 1077 psig

Justification:

- A. *Incorrect. Plausible as Steam dump is normally the pressure control method during a trip.*
- B. *Incorrect. Plausible as SG PORVS are the normal method of pressure relief for high pressure, but not on the SG system.*
- C. *Correct.*
- D. *Incorrect. Plausible if it is assumed the pressure condition exists upon failure of first SG Safety to relieve the pressure.*

**K/A Statement: Knowledge of the interrelations between the (Steam Generator Overpressure) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.**

Technical Reference(s): 1FR-H.2, B27

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-014 Obj 24

Question Source: Bank # P8197L-014-171  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 7  
55.43 \_\_\_\_\_

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

75. E16 EA2.2 001/E16 EA2.2/3.0/3.3/2/1/M/RO/N/B/FINAL

Given the following plant conditions:

- A LOCA has occurred.
- The crew is performing cooldown as directed by 1ES-1.2, Post LOCA Cooldown and Depressurization.
- ECCS pumps are operating in injection mode.
- Containment Spray has been stopped.
- TWO CFCU's are running.
- Containment pressure is stable at 2.2 psig.
- The Shift Supervisor transitions to 1FR-Z.3, Response to High Containment Radiation Level, in response to a YELLOW Critical Safety Function Status Tree.

What action directed in 1FR-Z.3 will help to reduce containment radiation levels due to fission product gases?

- A. Initiate flow through the Containment Post-LOCA Hydrogen Control System.
- B. Start the idle Containment Fan Coil Units.
- C. Place Containment Cleanup Fans in service.
- D. Initiate Containment Spray.

*Justification:*

- A. *Incorrect, Not effective for rad levels.*
- B. *Incorrect, Not effective for rad levels.*
- C. *Correct.*
- D. *Incorrect, Would unnecessarily spray down containment after securing, CS only effective for removing iodines.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine and interpret the following as they apply to the (High Containment Radiation): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.***

Technical Reference(s): 1FR-Z.3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8197L-014 Obj 42

Question Source: Bank #     P8197L-014 87      
Modified Bank #                       
New                     

Question History: Last NRC Exam     N/A    

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

10 CFR Part 55 Content:  
55.41   10    
55.43     5  

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

76. S 003 2.4.1 001/003 2.4.1/4.6/4.8/2/1/M/SRO/N/B/RFI

Given the following conditions:

- Unit 2 at 100% power.
- 47512-0203, 21 or 22 RCP HI Vibration, is LIT.
- 21 RCP shaft vibration is 16 mils and rising.

What action is required?

- A. Immediately trip 21 RCP and close the associated spray valve. Enter 2E-0, Reactor Trip or Safety Injection.
- B. Immediately trip Unit 2 reactor and enter 2E-0, Reactor Trip or Safety Injection. After reactor is verified tripped, stop 21 RCP and close the associated spray valve.
- C. Perform a controlled shutdown of Unit 2 within 8 hours per 2C1.4, Power Operation, and 2C1.3, Unit Shutdown. When the reactor is shutdown, stop 21 RCP and close the associated spray valve.
- D. Immediately reduce power using 2C1.4 AOP1, Rapid Power Reduction- Unit 2, and trip the reactor from a lower power level within 5 minutes. When the reactor is shutdown, stop 21 RCP and close the associated spray valve.

*Justification:*

- A. *Incorrect, this would result in an automatic reactor trip when manual trip is required by procedure. Potential for ATWS if auto trip doesn't work.*
- B. *Correct, the ARP requires these actions for vibration levels above 14 mils*
- C. *Incorrect, 8 hour shutdown may be recalled from RCP seal leakoff AOP.*
- D. *Incorrect, 5 minute shutdown may be recalled from RCP seal leakoff AOP.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

*K/A Statement: RCP, Knowledge of EOP entry conditions and immediate action steps.*

Technical Reference(s): 47512-0203

Proposed references to be provided to applicants during examination: None

Learning Objective: P81070L-002 Obj 3

Question Source: Bank # P8170L-002-78  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 10  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

77. S 012 A2.06 001/012 A2.06/4.4/4.7/2/1/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power and stable.
- 47017-0202, PRZR LO Press Reactor Trip, is LIT.
- The Reactor fails to automatically trip.
- ALL attempts to trip the Reactor from the control room FAIL.
- The Turbine Building Operator opens the Reactor Trip Breakers locally.

What, if any, EAL is the Shift Supervisor required to declare?

- A. None
- B. Alert
- C. Site Area Emergency
- D. General Emergency

*Justification:*

- A *Incorrect. Plausible if it is assumed that since the corrective actions have been taken the declaration is no longer required.*
- B *Incorrect. Plausible as the high level step only mentions manual trip being successful and this does not include manual local action.*
- C *Correct. SS2.1 is applicable when local manual action is required to open the Reactor Trip breakers.*
- D *Incorrect. Plausible if the initial low pressure condition is incorrectly assumed to indicate an Extreme challenge to the core.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of RPS signal to trip the reactor***

Technical Reference(s): F3-2, F3-2.1 Bases.

Proposed references to be provided to applicants during examination: F3-2, EAL Charts.

Learning Objective: P7410L-034 Obj 10

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

78. S 008 2.1.20 003/008 2.1.20/4.6/4.6/2/1/C/A/SRO/N/N/RFI

Given the following conditions:

- 1ES-1.1, Post LOCA Cooldown and Depressurization, is in progress.
- The Crew is starting Step 22, Check if RCP Seal Return flow should be established.
- 1R-48, U1 CNTMT HI RNG AREA MON B, is reading 300 R/hr.
- 1R-49, U1 CNTMT HI RNG AREA MON A, is reading 300 R/hr.

To restore Component Cooling (CC) flow to the Seal Water Heat exchanger \_\_\_\_\_ CC HX crossover valve(s) is(are) required to be opened.

The SRO \_\_\_\_\_ direct RCP Seal Return Isolation Valves to be opened.

A✓ EITHER Train A OR Train B,  
will NOT

B. Train A,  
will

C. Train B,  
will

D. BOTH Train A AND Train B,  
will NOT

*Justification:*

- A. *Correct. Either train can supply the Seal Water Heat Exchanger and with given radioactivity the RCP seal injection will not be restored.*
- B. *Incorrect. Plausible as most systems have unit specific trains, though CC system is not one of them. With given RCS activity RCP seal injection will not be restored.*
- C. *Incorrect. Plausible as most systems have unit specific trains, though CC system is not one of them. With given RCS activity RCP seal injection will not be restored.*
- D. *Incorrect. Plausible if it assumed both valves must be opened to restore flow and with given radioactivity the RCP seal injection will not be restored.*

*In this step of 1ES-1.1 the SRO must determine if the RCP Seal injection should be restored. The step itself does not include any radiation checks, however the basis for the step discusses NOT restoring the flow if activities are high as this would bring high activity water into the VCT/Aux Building. With the given conditions the SRO will not restore RCP seal return to avoid this radiation hazard.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Component Cooling Water: Ability to interpret and execute procedure steps.**

Technical Reference(s): 1ES-1.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 34 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

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

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

79. S 009 EA2.01 003/009 EA2.01/4.2/4.8/1/1/C/A/SRO/N/M/RFI

Given the following conditions:

- A small break LOCA has occurred on Unit 1.
- 11 SI pump has been stopped as directed in 1ES-1.1, Post LOCA Cooldown and Depressurization.

Subsequently the Reactor Operator notes the following:

- RCS subcooling is -2°F.
- RCS pressure is 1050 psig and decreasing.
- Pressurizer level is 25% and decreasing.
- Containment pressure is 7 psig and stable.
- SG levels indicate 5% NR (49% WR) on BOTH SGs and stable.
- Total AFW flow is 250 gpm.
- ONE Charging Pump is running at maximum speed.
- RVLIS is 50% Dynamic Range with one RCP running.

The Shift Supervisor will direct the crew to \_\_\_\_\_ AND \_\_\_\_\_.

- A. increase RCS cooldown rate,  
remain in 1ES-1.1, Post LOCA Cooldown and Depressurization
- B. manually actuate Safety Injection,  
transition to 1E-1, Loss of Reactor or Secondary Coolant
- C. manually start the stopped Safety Injection Pump,  
remain in 1ES-1.1, Post LOCA Cooldown and Depressurization
- D. manually actuate Safety Injection,  
transition to FR-C.2 Response to Degraded Core Cooling

*Justification:*

- A. *Incorrect. Plausible as this will correct the issue with subcooling, but is not procedurally directed.*
- B. *Incorrect. Plausible as SI is required, however it should not be initiated by actuating SI and 1E-1 is the appropriate procedure for the given situation, but is not re-entered.*
- C. *Correct.*
- D. *Incorrect. Plausible as SI is required, however it should not be initiated by actuating SI, and though FR-C.2 has appropriate actions to raise subcooling it's entry conditions are not met.*

*Per the Information Page, SI Reinitiation Criteria is met with ADVERSE containment conditions for inability to maintain Przr level >27%. Other choices are steps in the ES procedure or transitions to other procedures.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine or interpret the following as they apply to a small break LOCA: Actions to be taken, based on RCS temperature and pressure, saturated and superheated***

Technical Reference(s): 1ES-1.1 info page

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 34 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # P8197L-012 74  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

80. S 011 A2.10 001/011 A2.10/3.4/3.6/2/2/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power.
- 11 Charging Pump is in automatic.
- 12 Charging Pump is in manual.
- 1LT-426 (Red) Pressurizer level transmitter was removed from service yesterday.
  
- 1LI-427 (White) Pressurizer level is 20% and lowering.
- 1LI-428 (Blue) Pressurizer level is 91% and slowly rising.
- 11 Charging Pump speed is lowering.
- 1FI-128, Charging Flow to Regen HX, is lowering.

What action is the Shift Supervisor required to direct?

- A. Take manual control of 11 Charging Pump and minimize charging flow per C47012-0307, PRZR HI Lvl Channel Alert.
- B. Take manual control of 11 Charging Pump and maximize charging flow per C47012-0507, PRZR Level Deviation.
- C. Remove the blue channel from service per 1C51.3, Instrument Failure Guide.
- D. Manually trip the reactor and enter 1E-0, Reactor trip and Safety Injection.

*Justification:*

- A. *Incorrect. Plausible if the high level is assumed to be the accurate level and manually action is desired to correct it.*
- B. *Incorrect. Plausible if the failed blue channel is correctly diagnosed, but trip criteria is not recognized. This action would be appropriate to recover the actual low level in the przr.*
- C. *Incorrect. Plausible as this action is appropriate if the trip criteria is not recognized, but this action would cause a reactor trip upon performance of C51 steps.*
- D. *Correct. With the given information Blue channel is failed and with a second failed channel the reactor must be tripped due to 2/3 logic satisfied for >90% Pressurizer Level. An automatic trip should have occurred with these conditions.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Failure of PZR level instrument - high***

Technical Reference(s): C51, B7, B8

Proposed references to be provided to applicants during examination: None

Learning Objective: P8170L-006 Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

81. S 015 AA2.02 004/015 AA2.02/2.8/3.0/1/1/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 50% power following a refueling outage.
- 47012-0601, 11 RCP Oil Reservoir HI/LO Lvl, is in alarm.
- 11 RCP Upper Thrust Bearing temperature on recorder 1TR-2001 is LIT.
- 11 RCP Upper Thrust Bearing temperature is currently reading 180°F and slowly rising.
- 11 RCP seal injection flow is 6 gpm.
- 11 RCP No. 1 seal leakoff is 1.2 gpm.

What action is required?

- A. Perform an emergency containment entry to add oil to 11 RCP per F2, Radiation Safety.
- B. Initiate a controlled shutdown per 1C1.4, Unit 1 Power Operation. When the reactor is shutdown, stop 11 RCP and close the associated spray valve.
- C. Lower Component Cooling system temperature to minimum per 1C14, Component Cooling System - Unit 1.
- D. Trip Unit 1 Reactor and enter 1E-0, Reactor Trip or Safety Injection. When the reactor trip is verified, stop 11 RCP and close associated spray valve.

*Justification:*

- A. *Incorrect. Plausible as oil can be added on line but actual leak location has not been identified.*
- B. *Correct. Per C47012-0601.*
- C. *Incorrect. Plausible as lower CC temperatures would aid in RCP cooling, however this is not procedurally directed.*
- D. *Incorrect. Plausible as action is required if bearing temps reach 200°F.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Abnormalities in RCP air vent flow paths and/or oil cooling system***

Technical Reference(s): C47012-0601, B3

Proposed references to be provided to applicants during examination: None

Learning Objective: P8170L-002 Obj 7

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

82. S 024 2.4.4 003/024 2.4.4/4.5/4.7/1/2/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 Instrument Air Header has depressurized due to a large air leak.
- The Reactor was manually tripped.
- ONLY ONE Charging Pump is available.
- 11 and 12 RCP seal flows are 8 gpm.
- Control Rods G11 and H8 are stuck at 100 steps.
- Per 1ES-0.1, Reactor Trip Recovery, 800 gallons of boric acid is directed to be added to the RCS for the stuck rods.

What procedure will the SS direct to be used to add the required amount of boric acid?

- A. C12.5, Boron Concentration Control.
- B. C12.6, Boric Acid Transfer Pump and Storage Tank.
- C. C12.5 AOP1, Emergency Boration of the Reactor Coolant System.
- D. 1FR-S.1, Response to Nuclear Power Generation/ATWS.

*Justification:*

- A. *Incorrect. Plausible as this would be an appropriate procedure to use, however without instrument air this is not possible..*
- B. *Incorrect. Plausible as C12.6 contains actions to align the Boric Acid Transfer Pump to the 121 BAST, if the failure is assumed to be limited to the BAST pump feed lines.*
- C. *Correct. Without IA the control valves that feed the blender will not function rendering the normal boration path unavailable. Emergency boration will still function.*
- D. *Incorrect. Plausible as 1FR-S.1 does contain actions to borate and emergency borate, however the entry conditions for 1FR-S.1 are not met.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.***

Technical Reference(s): C12.5 AOP1, 1ES-0.1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8172L-001a Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

83. S 051 AA2.02 004/051 AA2.02/3.9/4.1/1/2/M/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power.
- 'A' Condenser Vacuum is 27.9" Hg and stable.
- 'B' Condenser Vacuum is 25.9" Hg and stable.
- C47008-0108 1A/1B Condenser Vacuum HI  $\Delta P$ , is entered.

The Shift Supervisor will direct the crew to...

- A. reduce load to <350 MWe per 1C1.4, Rapid Power Reduction Unit 1.
- B. place the standby air ejector in service using C26, Air Removal System.
- C. manually trip the reactor and enter 1E-0, Reactor Trip or Safety Injection.
- D. place the hogger jet air ejectors in service using C26, Air Removal System.

*Justification:*

- A. *Incorrect. Plausible as this action is directed for a loss of circ pump in C47008-0108.*
- B. *Correct. C47008-0108 step 3 directs placing the standby air ejector in service per C26*
- C. *Incorrect. Plausible if examinee is considers the alarming setpoint of 2.0" Hg  $\Delta P$  as requiring a reactor trip, however a reactor trip is not required until 2.5"  $\Delta P$*
- D. *Incorrect. Plausible as are high capacity air ejectors, but they are not effective at removing air after 20" Hg.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

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

Technical Reference(s): C47

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-251 Att. 08 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

84. S 056 2.1.8 001/056 2.1.8/3.4/4.1/1/1/M/SRO/N/N/RFI

Given the following conditions:

- A Loss of Offsite Power has occurred.
- A Large Break LOCA is occurring on Unit 2.
- 47024-0703, D1 Emergency Generator Locked Out, is LIT.
- D2 is out of service.

What action will the Unit 1 Shift Supervisor direct to the outplant operators FIRST?

- A. Transfer 480V MCCs to Unit 2 supplies.
- B✓ Locally close valves to isolate RCP seals.
- C. Reset D1 shutdown relay THEN 86 Lockout.
- D. Dump steam using the S/G PORVS to cool down the RCS.

Justification:

- A. *Incorrect. Plausible as this action will be directed, but only if other attempts to restore power are unsuccessful.*
- B. *Correct. This is the first outplant action that will be directed as it will protect the seals.*
- C. *Incorrect. Plausible as this action is directed in the procedure at a later time, but is not the first outplant action that is required.*
- D. *Incorrect. Plausible as this action will be directed, but only if other attempts to restore power are unsuccessful.*

**K/A Statement: Ability to coordinate personnel activities outside the control room.**

Technical Reference(s): 1ECA-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 47 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

85. S 057 2.2.25 001/057 2.2.25/3.2/4.2/1/1/M/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power and stable.
- Instrument Bus 112 lost power due to a fire in 12 Inverter.
- 12 Inverter is electrically isolated.
- Instrument Bus 112 was manually repowered from Panel 117.

Per Technical Specifications, what is the operability status of INSTRUMENT BUS 112?

- A. Operable, Panel 117 is a Technical Specification equivalent for any one inverter.
- B✓ Operable, as long as the Instrument Bus voltage is maintained in specifications.
- C. Inoperable, the Instrument Bus must be supplied from the inverter.
- D. Inoperable, Panel 117 is not a regulated supply.

*Justification:*

- A. *Incorrect. Plausible as Panel 117 is the backup power supply, but this is not relevant to the operability of the Instrument AC Bus.*
- B. *Correct. Per T.S. 3.8.9 Basis the only requirement for an Instrument Bus to be operable is that it be maintained at the required voltage.*
- C. *Incorrect. Plausible as inverters have their own tech spec requiring they be operable, but this is not relevant to the question of Instrument Bus operability.*
- D. *Incorrect. Plausible as the ability to supply a regulated AC supply is a determining factor for inverter operability, but is NOT significant to Instrument Bus operability.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.***

Technical Reference(s): T.S. 3.8.9 Basis

Proposed references to be provided to applicants during examination: None

Learning Objective: P8171L-007 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

86. S 062 A2.16 001/062 A2.16/2.5/2.9/2/1/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power.
- Voltage on 4.16KV Safeguards Bus 16 is 3955 volts.

After \_\_\_\_ seconds, D2 Diesel Generator will auto start and load shedding will be initiated on 4.16KV Safeguards Bus 16.

AFTER grid voltage recovers, the Shift Supervisor will direct performance of \_\_\_\_\_ to respond to this event.

- A. 8  
1C20.5, Unit 1 - 4.16KV System
- B. 60  
1C20.5, Unit 1 - 4.16KV System
- C. 8  
1C20.5 AOP2, Reenergizing 4.16KV Bus 16
- D. 60  
1C20.5 AOP2, Reenergizing 4.16KV Bus 16

*Justification:*

- A. *Incorrect. Plausible as this is the appropriate time for a loss of voltage and this is the correct procedure, however the condition given represents a degraded voltage.*
- B. *Correct.*
- C. *Incorrect. Plausible as this is the appropriate time for a loss of voltage and this is the correct procedure if voltage were not restored, however the condition given represents a degraded voltage.*
- D. *Incorrect. plausible as this is the appropriate time for load shedding to commence, but the bus will be re-energized making this procedure the wrong choice.*

*Sixty (60) seconds after the DV signal is initiated and maintained, the DG will be started. When up to speed and voltage the offsite sources will be tripped. This will cause a load rejection and a dead bus signal which will allow the DG breaker to close. When the DG breaker closes, load restoration will occur.*

*4.16KV safeguards buses should be maintained between 4000 VAC and 4400 VAC for normal operations (this corresponds to 96.2% to 105.8% of 4160 VAC). Note that the safeguards bus restoration scheme degraded voltage allowable value (T.S.3.3.4.3.b SR) is = 3944 V and = 4002 V with a degraded voltage time delay of  $8 \pm 0.5$  seconds.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Degraded system voltages***

Technical Reference(s): B20.5, 1C20.5, C47024-0304

Proposed references to be provided to applicants during examination: None

Learning Objective: P8186L-008 Obj 5

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

87. S 067 2.2.40 003/067 2.2.40/3.4/4.7/1/2/M/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power.
- 12 Component Cooling pump is OOS for maintenance as of yesterday at noon.
- A fire occurs in the 11 Component Cooling pump.

To meet applicable LCO action statements, The Shift Supervisor will direct...

- A. restoration of ONE Component Cooling train to operable within 6 hours or be in Mode 5 within 36 hours.
- B. restoration of ONE Component Cooling train to operable within 72 hours.
- C. restoration of BOTH Component Cooling trains within 72 hours.
- D.  the unit to be in Mode 5 within 37 hours.

Justification:

- A. Incorrect. Plausible as the LCO was already entered when 12 Component Cooling pump was declared inoperable therefore the the time allowed is no longer 72 hours..
- B. Incorrect. Plausible as condition B requires this but only if actions of Condition A can not be met.
- C. Incorrect. Plausible if it is assumed condition A can be entered multiple times.
- D. Correct. LCO 3.0.3 is correct action due to no LCO existing for both trains of Component Cooling being out of service.

**K/A Statement: Ability to apply Technical Specifications for a system.**

Technical Reference(s): T.S. 3.0.3 and 3.7.7

Proposed references to be provided to applicants during examination: None

Learning Objective: P8172L-002 Obj 10

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_  
 New  \_\_\_\_\_

Question History: Last NRC Exam     N/A    

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

10 CFR Part 55 Content:  
 55.41   10    
 55.43     2    

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

88. S 069 AA2.02 003/069 AA2.02/3.9/4.4/1/2/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is at 100% power.
- A large break LOCA occurs.
- Both Containment Vacuum Breakers AND their associated check valves remain OPEN.
- Containment Isolation is MANUALLY initiated from the control room.

A(n) \_\_\_\_\_ is required to be declared. Successful restoration of Containment Integrity will be verified \_\_\_\_\_.

- A. Site Area Emergency  
by Containment pressure stabilizing
- B. Site Area Emergency  
by Containment Isolation Status lights illuminating
- C. Alert  
by Containment pressure stabilizing
- D. Alert  
by Containment Isolation Status lights illuminating

*Justification:*

- A. *Incorrect. Plausible as two barriers are lost so a site Area is appropriate however there are many factors affecting containment pressure so it is not an accurate predictor of valve position.*
- B. *Correct. A Site Area emergency exists as there is a loss of RCS integrity and Containment Integrity.*
- C. *Incorrect. Plausible if only the LOCA is considered and the containment path is assumed, incorrectly, to be an indirect path. There are many factors affecting containment pressure so it is not an accurate predictor of valve position.*
- D. *Incorrect. Plausible if only the LOCA is considered and the containment path is assumed, incorrectly, to be an indirect path and the correct verification method is listed.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Verification of automatic and manual means of restoring integrity***

Technical Reference(s): F3-2, 1E-0, F3-2.1

Proposed references to be provided to applicants during examination: F3-2, EAL Charts.

Learning Objective:

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

Other K/A:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

89. S 034 A2.01 002/034 A2.01/3.6/4.4/2/2/M/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is in Mode 6.
- As a fuel assembly was being lifted from the upender to place in the core the gripper opened and dropped the assembly approximately 1 foot.
- Gas bubbles are coming to the surface over the fuel.
- Containment Atmosphere Monitor, 1R11, readings are slowly increasing.

Per D5.2 AOP1, Damaged Fuel Assembly, and C1.6 AOP1, Containment Evacuation, the Fuel Handling SRO will notify the Control Room of the damaged fuel assembly and...

- A. initiate containment closure.
- B. sound the containment evacuation alarm.
- C. notify Nuclear Engineering and Radiation Protection.
- D. initiate accountability logging for all personnel in containment.

*Justification:*

- A. *Incorrect. Plausible as containment isolation will be necessary, but this will be performed by the control room and is not an immediate action.*
- B. *Correct. 1C1.6 AOP1 and D5.2 AOP1 both call for immediate notification of the control room and sounding of the evacuation alarm.*
- C. *Incorrect. Plausible as this action is required, but is performed by the Control Room and is not an immediate action.*
- D. *Incorrect. Plausible as accountability logging will be performed as part of the evacuation, but will be performed by security and is not an immediate action.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Dropped fuel element***

Technical Reference(s): C1.6 AOP1, D5.2 AOP1

Proposed references to be provided to applicants during examination: None

Learning Objective: P8182L-003 Obj 3c

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  7

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

90. S 041 2.4.18 001/041 2.4.18/3.3/4.0/2/2/M/SRO/N/N/RFI

Given the following conditions:

- A Steam Generator Tube Rupture has occurred on Unit 1.
- 1E-3, Steam Generator Tube Rupture, Step 7, Initiate RCS Cooldown, is being performed.

What steam release path will the SS direct to cooldown the RCS and why?

- A✓ Condenser Steam Dumps from the intact steam generator, because this path will minimize radiological release.
- B. Condenser Steam Dumps from the ruptured steam generator, because this path will prevent pressurizing the steam generator to RCS pressure.
- C. The S/G PORV on the intact steam generator, because this path will ensure adequate capacity to cooldown the RCS.
- D. The S/G PORV on the ruptured steam generator, because this path will prevent radiological contamination of the Main Steam system.

*Justification:*

- A. *Correct. Releasing steam from the intact steam generator is the preferred release path in this casualty.*
- B. *Incorrect. Plausible as steam will be released from the ruptured steam generator by the PORV as needed to prevent the overpressurization of the steam generator, but this is not the cooldown method for the RCS.*
- C. *Incorrect. Plausible as the intact steam generator is the appropriate choice for the cooldown and if capacity of the steam dumps is not recognized to be adequate.*
- D. *Incorrect. Plausible as radiological concerns are appropriate and the ruptured steam generator does maintain pressure on the PORV, but this is not the appropriate method of cooling the RCS.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of the specific bases for EOPs.***

Technical Reference(s): 1E-3 Step 7 Bases

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 43 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41 \_\_\_\_\_  
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

91. S 077 AA2.09 002/077 AA2.09/3.9/4.3/1/1/C/A/SRO/N/N/FINAL

Given the following conditions:

- Unit 1 is at 100% power.
- BKR 15-7, BUS 15 SOURCE FROM BUS CT11, is removed from its cubicle.
- A grid disturbance causes BKR 15-3, BUS 15 Source from 1RY AUX XFMR to trip.
- D1 Emergency Diesel Generator starts automatically.
- BKR 15-2, BUS 15 SOURCE FROM D1 DSL GEN, does NOT close.
- BKR 15-2 is closed from the Control Room and Bus 15 is supplied from D1.

What is the operability status of D1?

- A✓ Inoperable BUT available.
- B. Inoperable AND unavailable.
- C. Operable ONLY while BKR 15-2 remains closed.
- D. Operable AND available.

*Justification:*

- A. *Correct.*
- B. *Incorrect. Plausible if the breaker working makes the diesel available.*
- C. *Incorrect. Plausible if the diesel carrying the bus is incorrectly assumed to make it operable since it's ability to auto load isn't relevant.*
- D. *Incorrect. Plausible as the diesel is carrying the bus and if it's incorrectly assumed acceptable for the automatic function to be performed manually as it is for some other systems (i.e. PORV's)*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Operational status of emergency diesel generators***

Technical Reference(s): T.S. Basis 3.8.1 page 4,5

Proposed references to be provided to applicants during examination: None

Learning Objective: P8171L-009 Obj 3

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43  2

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

92. S 103 A2.01 002/103 A2.01/2.0\*/2.6\*/2/1/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 is in Mode 5.
- Containment has been pressurized to 46 psig per SP 1071.5, Integrated Leak Rate Test Final Preparations and Test Procedure.
- RCS Temperature is 180°F.
- IAW SP 1071.5, RCS Temperature should be held constant ( $\pm 1^\circ\text{F}$ ) for the duration of the test.
- 1HC-626A malfunctions causing CV-31237, RHR HX BYPASS, to fully OPEN.

As a result, Containment Pressure will \_\_\_\_\_ and the Shift Supervisor is required to direct entry into \_\_\_\_\_.

- A. raise  
1C15 AOP1, RHR Flow Restoration
- B. raise  
1C15 AOP3, RHR Operation Without Control Room Instrumentation or Flow Control
- C. lower  
1C15 AOP1, RHR Flow Restoration
- D. lower  
1C15 AOP3, RHR Operation Without Control Room Instrumentation or Flow Control

*Justification:*

- A. *Incorrect. Plausible as this is the appropriate pressure response, but RHR Flow restoration does not address valve failures.*
- B. *Correct.*
- C. *Incorrect. Plausible as this is the appropriate procedure response and if effects of the bypass valve failing open are not understood.*
- D. *Incorrect. Plausible if effects of the bypass valve failing open are not understood and if problem is assumed to be restoring pressure.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the Containment system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations. Integrated Leak Rate Test***

Technical Reference(s): B15-04

Proposed references to be provided to applicants during examination: None

Learning Objective: P8180L-003 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  5   
55.43  5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

93. S 2.1.14 001/2.1.14/2.5/3.3/1/1/M/SRO/N/B/RFI

Per SWI O-28, Notification of Operations Manager and NRC Resident Inspector, which of the following will REQUIRE notification of the DUTY STATION MANAGER?

- A✓ The crew enters 2C4 AOP1, Reactor Coolant Leak, and isolates the leak.
- B. An Electrician strains a calf muscle while working on plant equipment. He later goes home early to rest.
- C. A planned maintenance activity on the 21 SI Pump begins 45 minutes late.
- D. A Unit 2 operator who has the duty on Tuesday days calls in sick at 0200 on Tuesday morning.

Justification:

- A. Correct. Entry into 2C4 AOP1 requires DSM notification.
- B. Incorrect. Plausible as injuries with offsite ambulance transport do require notification, however minor injuries do not require notification of the DSM.
- C. Incorrect. Plausible as this is an LCO entry, however planned LCO entries even with a slight delay do not require DSM notification.
- D. Incorrect. Plausible as conditions where immediate staffing is required to support the operating crew requires notification, however not this situation.

***K/A Statement: Knowledge of system status criteria which require notification of plant personnel***

Technical Reference(s): SWI O-28

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 37 Obj 2

Question Source: Bank # P9150L-003 21  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_\_\_\_  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

94. S 2.1.5 003/2.1.5/2.9\*/3.9/3/M/SRO/N/M/RFI

Given the following conditions:

- Both Units are at 100% power
- At 0100 the Unit 1 Shift Supervisor receives a phone call from the Unit 1 APEO informing him he must leave the site due to a family emergency.

Which of the following is allowed per SWI O-2, Shift Organization, Operation & Turnover?

- A. The position may remain vacant until the day shift operator arrives at 0600.
- B✓ The position may be vacant for up to two hours if immediate action is taken to fill it.
- C. The position may be filled by an extra crew member who is a qualified as a Plant Attendant.
- D. The position may be vacant for up to one hour to determine if the operator can return before action is taken to fill it.

Justification:

- A. *Incorrect. Plausible if it assumed since a replacement is scheduled no action is required SWI O-2.*
- B. *Correct. Per SWI O-2, the APEO position must be filled or action taken to ensure the position is not vacant for greater than 2 hours.*
- C. *Incorrect. Plausible as plant attendants and APEO's perform similar functions, but the APEO position is not interchangeable.*
- D. *Incorrect. Plausible if it assumed there is a grace period to determine if action is required.*

**K/A Statement: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.**

Technical Reference(s): SWI O-2 pg 5 Section 6.1.8

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source: Bank # \_\_\_\_\_  
Modified Bank # P8140L-214 011  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 10  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

95. S 2.2.17 002/2.2.17/2.6/3.8/3/C/A/SRO/N/N/RFI

Given the following conditions:

PRAIRIE ISLAND NUCLEAR GENERATING PLANT		H PROCEDURE
<b>H</b>	<b>ASSESSMENT AND MANAGEMENT OF RISK ASSOCIATED WITH MAINTENANCE ACTIVITIES</b>	NUMBER: <b>H24.1</b>
		REV: <b>14</b>
		Page 9 of 74

4.23 Risk Rate Color Category - Color identifier assigned to the unit equipment out-of-service configuration based on the CONFIGURATION-SPECIFIC CDF. A color category of RED indicates that the risk rate is too high, and must be reduced immediately by placing equipment back in service, or implementing contingency or commensurate measures. The other color categories are assigned based on the length of the Risk-Informed AOT, as follows:

4.23.1 RED: Configuration-Specific CDF  $\geq 1E-3$  OR LERF  $\geq 1E-4$

- A. Do not voluntarily enter these configurations. Operations Committee must authorize operation for any length of time in this condition.
- B. Immediately restore equipment to service, or implement RISK MANAGEMENT ACTIONS to restore at least an ORANGE color category.

4.23.2 ORANGE: Risk Informed AOT  $\leq 72$  hours

Plant Manager approval to commence planned activity.

4.23.3 YELLOW: 72 hours < Risk Informed AOT  $\leq 2$  weeks

Shift Manager approval to commence planned activity.

4.23.4 GREEN: Risk-Informed AOT > 2 weeks

4.24 SSC With Elevated Importance - An SSC whose AVAILABILITY has become significantly more important to keeping risk low due to the current CONFIGURATION. These SSCs are identified in the Risk Management section of the Phase 2 Risk Assessment sheet (Important Equipment to Protect).

4.25 Shutdown - Plant operational modes 4, 5 and 6 (Prairie Island Tech Spec terms Hot Shutdown, Cold Shutdown, and Refueling)

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

95. S 2.2.17 002/2.2.17/2.6/3.8/3/C/A/SRO/N/N/RFI

- Emergent Maintenance is required for 11 SI pump.
- For present plant conditions the Allowed Out-of-service Time (AOT) for 11 SI pump is 2 days.
- The Shift Manager has given approval to commence the work.

The SS is required to...

- A. allow maintenance to commence, so long as 12 SI pump is protected.
- B. allow maintenance to commence, appropriate authorizations have been given.
- C. NOT allow maintenance to commence, appropriate approvals have NOT been received.
- D. NOT allow maintenance to commence, RED conditions can NOT be entered voluntarily regardless of approval.

Justification:

- A. *Incorrect. Plausible if it is assumed protecting the redundant train is sufficient to allow this work.*
- B. *Incorrect. Plausible if Shift Manager is assumed to be able to authorize this work.*
- C. *Correct. With the given conditions this would cause an Orange Risk Rate Color which requires Plant Manager approval to perform.*
- D. *Incorrect. Plausible if the chart is misapplied and a RED path is determined to exist.*

**K/A Statement: Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.**

Technical Reference(s): H24.1

Proposed references to be provided to applicants during examination: H24.1 page 9 included in the body of the question

Learning Objective:

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis  X

10 CFR Part 55 Content:

55.41  10   
55.43  5

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

96. S 2.2.35 002/2.2.35/3.6/4.5/3/C/A/SRO/N/N/RFI

Given the following conditions:

- RCS temperature is 250°F and stable.
- Both RCS Loops are available for operation.
- 11 RHR pump is in service.

What are Technical Specifications requirements for SI pumps in this condition and why?

- A. ONLY ONE SI pump may be capable of injecting into the core to prevent exceeding maximum cool down rate of the RCS.
- B. BOTH SI pumps must be capable of injecting into the core to ensure adequate heat removal in a Design Basis Accident.
- C. NO SI pumps may be capable of injecting into the core to prevent damage to SI pump due to runout.
- D. ONLY ONE SI pump may be capable of injecting into the core to prevent overpressurization of the RCS.

*Justification:*

- A. *Incorrect. Only one SI pump is allowed between OPPS enable temp (310°F) and SI pump disable temp (218°F) but not due to RCS overcooling.*
- B. *Incorrect. Plausible if tech spec mode of operation is not correctly identified and at power tech spec requirements are used.*
- C. *Incorrect. Plausible as making neither SI pump capable of injection would satisfy one T.S. requirement at the given conditions, but would violate another applicable T.S.*
- D. *Correct.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Ability to determine Technical Specification Mode of Operation.***

Technical Reference(s): T.S 3.4.12

Proposed references to be provided to applicants during examination: None

Learning Objective: P8171L-007 Obj 4

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  7, 10   
55.43  2

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

97. S 2.3.4 001/2.3.4/2.5/3.1/3/C/A/SRO/N/B/RFI

Given the following conditions:

- A LOCA outside containment occurred on Unit 2.
- An employee is injured and cannot leave the auxiliary building without assistance.
- Initial dose estimates are 90 R/hour gamma in the vicinity of the injured worker.
- The rescue time for a 2 person team is estimated to be 20 minutes.

What describes the requirement for a rescue team per F3-12, Emergency Exposure Control?

- A. Any emergency response personnel may be assigned to attempt the rescue by the Shift Supervisor.
- B. No rescue attempt may be made, because the projected exposure is above the allowed dose limits.
- C. Volunteers who are fully aware of the risk may attempt the rescue with Emergency Director approval.
- D. Volunteers who are fully aware of the risk may attempt the rescue with Radiation Protection Supervisor approval.

*Justification:*

- A. *Incorrect. Plausible as an individual may attempt the rescue but has wrong level of approval.*
- B. *Incorrect. Plausible as the dose does exceed the 25 rem limit, but the individual may exceed 25 Rem on a voluntary basis if they are fully aware of the risk.*
- C. *Correct. This activity must have ED approval and the volunteer must be aware of the risk.*
- D. *Incorrect. Plausible as the volunteer may attempt the rescue, but has wrong level of approval.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

***K/A Statement: Knowledge of radiation exposure limits under normal or emergency conditions.***

Technical Reference(s): F3-12

Proposed references to be provided to applicants during examination: None

Learning Objective: P9130L-003 Obj 6

Question Source: Bank # P9130L-003-41  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

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

10 CFR Part 55 Content:  
55.41 12  
55.43 4

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

98. S 2.4.11 003/2.4.11/4.0/4.2/3/M/SRO/N/B/RFI

Given the following conditions:

- Unit 1 is at 100% power and stable.
- 47020-0203, 11 CC Surge Tank HI/LO LVL, is LIT.
- 1R-39, CC System Liquid Monitor, is in HI alarm.
- 47015-0108, 11 RCP Thermal Barrier CC Water HI Flow, is LIT.

The SS will direct entry into ...

- A. 1E-0, Reactor Trip or Safety Injection.
- B. 1C1.4 AOP1, Rapid Power Reduction - Unit 1.
- C. 1C14 AOP1, Loss of Component Cooling.
- D. 1C14 AOP2, Leakage Into the Component Cooling System.

Justification:

- A. *Incorrect. Plausible if failure is recognized as thermal barrier leakage and it is assumed this condition requires the RCP to be secured.*
- B. *Incorrect. Plausible if it is assumed this condition will eventually require the securing of the RCP and rapid downpower is preferable to a full trip.*
- C. *Incorrect. Plausible as this does represent leakage in the CC system, but this AOP is to address loss of CC and is not applicable to these conditions.*
- D. *Correct.*

**K/A Statement: Knowledge of abnormal condition procedures.**

Technical Reference(s): C47020-0203

Proposed references to be provided to applicants during examination: None

Learning Objective: P8140S-200 Att. 27 Obj 4c

Question Source: Bank # P8172L-002 037  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 10  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

99. S 2.4.30 001/2.4.30/2.7/4.1/3/C/A/SRO/N/B/RFI

Given the following conditions:

- Unit 1 is operating at 100% power and stable.
- PCV-430, PRZR PORV, inadvertently opens.
- Plant stabilization actions have been completed.
- The PORV is declared out of service.

Which of the following describes the reporting, if any, that must be made to the NRC?  
(Assume the plant remains at 100% power.)

- A. None required
- B. 4 hour non-emergency report via the ENS.
- C. 8 hour non-emergency report via the ENS.
- D. 24 hour report to the NRC Resident Inspector.

Justification:

- A. Incorrect. Plausible if reporting is assumed unnecessary due to the leak being quickly isolated.
- B. Incorrect. Plausible if reporting requirements are not understood.
- C. Incorrect. Plausible if reporting requirements are not understood.
- D. Correct. PI has a commitment with the NRC to report any failures of PRZR PORV's or Safeties within 24 hours.

**K/A Statement: Knowledge of events related to system operations/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.**

Technical Reference(s): 5AWI 3.6.0

Proposed references to be provided to applicants during examination: PINGP 666

Learning Objective: P9150L-011 Obj 3

Question Source: Bank # P7410L-032 001  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam N/A

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content:

55.41 \_\_\_\_\_  
55.43 5

Comments:

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

100. S E12 2.4.41 001/040 2.4.41/2.9/4.6/1/1/C/A/SRO/N/N/RFI

Given the following conditions:

- Unit 1 was at 100% power.

The following THEN occurs:

- At 0300:
  - 11 Steam Generator faults to containment.
  - A Reactor Trip and Safety Injection occurs.
  - A Loss of Offsite Power occurs.
  - D1 and D2 start and supply Bus 15 and Bus 16.
  - C47019-0102, 12 Containment Spray Pump Locked Out, is lit.
- At 0305:
  - Bus 15 locks out.
  - Containment pressure is 29 psig and rising.
- At 0310:
  - Offsite Power is restored.

A(n) \_\_\_\_\_ should be declared within 15 minutes of \_\_\_\_\_.

- A✓ NUE  
the Bus 15 lock out
- B. Alert  
the Bus 15 lock out
- C. NUE  
losing Offsite Power
- D. Alert  
losing Offsite Power.

*Justification:*

- A. *Correct. FU1 Potential loss of containment barrier item 2 containment pressure. >23 psig with <1 full train of depressurization equipment operating.*
- B. *Incorrect. Plausible as this would be an accurate declaration if offsite power were not restored within 15 minutes.*
- C. *Incorrect. Plausible as this would be an accurate declaration if offsite power were not restored within 15 minutes.*
- D. *Incorrect. Plausible as declarations can be combined if the higher order declaration is made within the time frame to declare the lower order declaration however the higher declaration is not required by the given conditions.*

2010 PRAIRIE ISLAND ILT NRC WRITTEN EXAM

**K/A Statement: Steam Break. Knowledge of the emergency action level thresholds and classifications.**

Technical Reference(s): B15, PINGP 1576, FSAR, TS 3.5.4, F3-2

Proposed references to be provided to applicants during examination: F3-2, EAL Charts.

Learning Objective: P7410L-034 Obj 10

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_  
New  X

Question History: Last NRC Exam  N/A

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

10 CFR Part 55 Content:  
55.41  10   
55.43  5

Comments:

**You have completed the test!**