

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	001.AA1.04	
	Importance Rating	<u>3.8</u>	<u>3.6</u>

APE: 001 Continuous Rod Withdrawal

AA1 Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal:

AA1.04 Operating switch for emergency boration motor-operated valve operating switch.

Proposed Question # 1 :

Given the following plant conditions:

- Unit 2 is at 50% power.
- Tavg is 560.8°F.
- Tref is 562.3°F.
- Control rods are in AUTO with bank D at 175 steps, slowly stepping out.

Which one of the following could be the reason for the rod withdrawal?

- A Reactor makeup system mode switch in DILUTE position and red light only lit on STOP/START switch.
- B Emergency borate valve 8104 switch in NEUTRAL position with both green and red lights lit.
- C RWST to charging pumps suction valves 8805A and 8805B switches in NEUTRAL position with green lights only lit.
- D Reactor makeup system mode switch in AUTO, VCT level at 50%, and boric acid to blender valve FCV-110A switch in AUTO with red light only lit.

Proposed Answer: B

Explanation:

Technical Reference(s): OIM page A-3-2

Dwg 437607

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5019 Explain the conditions that affect automatic rod control while at power.

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>001.K5.02</u>	
	Importance Rating	<u>2.9</u>	<u>3.4</u>

System: 001 Control Rod Drive System

K5 Knowledge of the following operational implications as they apply to the CRDS:

K5.02 Definitions of differential rod worth and integral rod worth; their applications.

Proposed Question # 2 :

On a differential rod worth curve, the peak differential rod worth occurs:

- A      near the top of the core.
- B      near the bottom of the core.
- C      where the control rod banks overlap each other.
- D      where the highest peak to average axial neutron flux exists.

Proposed Answer:    D

Explanation:

Technical Reference(s): STG A-3A pages 2-17 to 2-19

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 65608 Explain the shape of the curves for differential and integral control rod worths versus rod position.

Question Source:	Bank #	<u>F-52242</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>2.2.4</u>	
	Importance Rating	<u>2.8</u>	<u>3.0</u>

## Generic 2.2 Equipment Control

2.2.4 (multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

Proposed Question # 3 :

Emergency operating procedures require that the pressurizer level to be greater than 57% on Unit 1, and greater than 75% on Unit 2, prior to starting an RCP, if none are running.

What physical difference in the units accounts for the different pressurizer level requirement prior to starting the first RCP?

- A Unit 2 RCPs require more NPSH, in the form of higher level in the pressurizer.
- B Unit 2 has more upper head volume that could contain a larger steam void.
- C Unit 2 has a smaller pressurizer, therefore more level is required to accommodate the anticipated void collapse.
- D Unit 2 reactor vessel head has thermocouple sensors and has been analyzed for RCP starting with higher pressurizer level.

Proposed Answer: B

Explanation:

Technical Reference(s): STG A-2A page 4-6  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8163 Explain the unit differences for RCS and reactor vessels.

Question Source: Bank # S-52692  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>004.K2.06</u>	
	Importance Rating	<u>2.6</u>	<u>2.7</u>

System: 004 Chemical and Volume Control System

K2 Knowledge of the bus power supplies to the following:

K2.06 Control Instrumentation.

Proposed Question # 4 :

The Hagan controller for the Charging Flow Control Valve FCV-128 has temporarily lost its manual power supply, while operating in automatic.

In response to the above conditions the controller will:

- A shift to manual.
- B control in AUTO, then shift to MANUAL when the power is restored.
- C NOT be affected since it is in AUTO.
- D shift to AUTO-HOLD, then to MANUAL when the power is restored.

Proposed Answer: D

Explanation:

Technical Reference(s): OP O-2 Attachment 9.1Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9290 Explain the operation of Hagan M/A station without potentiometer.

Question Source:	Bank #	<u>A-0628</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>004.K3.08</u>	
	Importance Rating	<u>3.6</u>	<u>3.8</u>

System: 004 Chemical and Volume Control System

K3 Knowledge of the effect that a loss or malfunction of the CVCS will have on the following:  
K3.08 RCP seal injection.

Proposed Question # 5 :

The plant is operating at 100% steady state conditions with Tavg at 573°F.  
All systems are functioning in AUTOMATIC mode EXCEPT ROD CONTROL, which is in MANUAL.

Concerning RCP seal injection flows, if Loop 2 Tcold fails HIGH:

- A RCP Seal Injection flow will increase due to the change in PZR reference level.
- B there is no effect because ACTUAL Tavg has not changed.
- C RCP Seal Injection flow will increase because Rods will step IN causing actual Tavg to decrease.
- D there is no effect because RCP Seal flow is dependent on the manipulation of a manual hand control valve, HCV-142.

Proposed Answer: A

Explanation:

Technical Reference(s): STG A-4A pages 2.3-12 and 3-8

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4834 Explain the effects of RCS cold leg temperature instruments failing high.

Question Source:	Bank #	<u>A-0635</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>1</u>	<u>1</u>
Group #	<u>1</u>	<u>1</u>
K/A #	005.AA1.05	
Importance Rating	<u>3.4</u>	<u>3.4</u>

APE: 005 Inoperable / Stuck Control Rod

AA1 Ability to operate and / or monitor the following as they apply to the Inoperable / Stuck Control Rod:  
AA1.05 RPI.Proposed Question # 6 :

While operating at 35% power it is determined that a rod is misaligned above its group by 15 steps.

Per procedure, which of the following actions provide indication that the rod will move if required?

- A Withdraw the affected bank OUT several steps, observing that the affected rod moves, and return the bank to original position.
- B Disconnect the unaffected rods in the bank and withdraw the affected rod OUT several steps, observing that the affected rod moves, and return the rod to original position.
- C Insert the affected bank IN several steps, observing that the affected rod moves, and return the bank to original position.
- D Disconnect the unaffected rods in the bank and insert the affected rod IN several steps, observing that the affected rod moves, and return the rod to original position.

Proposed Answer: C

Explanation:

Technical Reference(s): OP AP-12B page 4  
\_\_\_\_\_Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9936 Explain the effects associated with a stuck or misaligned rod.

Question Source: Bank # P-0016  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>006.K3.02</u>	
	Importance Rating	<u>4.3</u>	<u>4.4</u>

System: 006 Emergency Core Cooling System (ECCS)

K3 Knowledge of the effect that a loss or malfunction of the ECCS will have on the following:  
K3.02 Fuel.

Proposed Question # 7 :

A LOCA occurs which results in all core exit temperatures thermocouples reading about 1200°F.

Which method is the preferred and most effective means of cooling the core.

- A Start reactor coolant pumps one at a time.
- B Establish ECCS flow to the core.
- C Reduce RCS pressure by dumping steam to the secondary to inject the accumulators.
- D Reduce RCS pressure by opening the pressurizer PORVs to inject the accumulators.

Proposed Answer: B

Explanation:

Technical Reference(s): Lesson LMCD-FRC pps 59 and 62

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5802 Explain core cooling mechanics during accident conditions.

Question Source:	Bank #	<u>B-0528</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	008.AA1.03	
	Importance Rating	<u>2.8</u>	<u>2.6</u>

APE: 008 Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

AA1 Ability to operate and / or monitor the following as they apply to the Pressurizer Vapor Space Accident:

AA1.03 Turbine bypass in manual control to maintain header pressure.

Proposed Question # 8 :

Unit 1 is in E-1.2, Post LOCA Cooldown and Depressurization due to a stuck open pressurizer PORV.

When Tavg reaches 543 degrees:

- A all groups of steam dumps will close, then groups 1 and 2 steam dumps can be re-opened to continue the cooldown.
- B all groups of steam dumps will close, then group 1 steam dumps can be re-opened to continue cooldown.
- C groups 2, 3, and 4 of steam dumps will close, but group 1 steam dumps will stay open for the plant cooldown.
- D groups 2, 3, and 4 of steam dumps will close, then all groups of steam dumps can be re-opened to continue cooldown.

Proposed Answer: B

Explanation:

Technical Reference(s): EOP E-1.2 page 7  
STG C-2B page 2.2-5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8004 Analyze Steam Dump System control logic.

Question Source: Bank # A-0094  
Modified Bank #   
New

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 7  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>008.K2.02</u>	
	Importance Rating	<u>3.0</u>	<u>3.2</u>

System: 008 Component Cooling Water System (CCWS)  
 K2 Knowledge of the bus power supplies to the following:  
 K2.02 CCW pump, including emergency backup.

Proposed Question # 9 :

A loss of offsite power has occurred on both units.  
 All 4kV busses are being supplied by their respective Diesel Generators.

Which Diesel Generator is supplying power to CCW Pp 2-2?

- A      D/G 2-2
- B      D/G 1-2
- C      D/G 2-1
- D      D/G 2-3

Proposed Answer: C

Explanation:

Technical Reference(s): OIM page J-1-1

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8129 State the power supply to CCW pumps.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>009.EK2.03</u>	
	Importance Rating	<u>3.0</u>	<u>3.3</u>

EPE: 009 Small Break LOCA

EK2 Knowledge of the interrelations between the small break LOCA and the following:  
EK2.03 S/Gs.

Proposed Question # 10 :

The principle difference in plant response of a Large Break LOCA (LBLOCA) versus a Small Break LOCA (SBLOCA) is:

- A Only the SBLOCA results in peak clad temperatures > 1200°F.
- B Only the LBLOCA results in core uncover.
- C Only the SBLOCA clears the loop seal.
- D Only the SBLOCA needs added heat removal capacity from the S/Gs.

Proposed Answer: D

Explanation:

Technical Reference(s): Lesson LMCD-FRC pps 43 and 44

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5652 Explain RCS dynamic response to a SBLOCA.

Question Source:	Bank #	<u>P-5943</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>010.K5.01</u>	
	Importance Rating	<u>3.5</u>	<u>4.0</u>

System: 010 Pressurizer Pressure Control System (PZR PCS)

K5 Knowledge of the operational implications of the following concepts as they apply to the PZR PCS:

K5.01 Determination of condition of fluid in PZR, using steam tables.

Proposed Question # 11 :

Unit 1 is in mode 5 with the following plant conditions:

- RHR in service with RCS loop temperatures at 115°F.
- Pressurizer level at 70% cold cal.
- Pressurizer pressure at 3.5 psia.
- Vacuum refill skid pump shut down.
- Pressurizer heaters energized.

What will be the pressurizer liquid temperature when the bubble starts forming in the pressurizer?

- A 140°F
- B 144°F
- C 148°F
- D 152°F

Proposed Answer: C

Explanation:

Technical Reference(s): OP A-2:IX page 19  
Steam Tables

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

Learning Objective: 4551 Explain operational characteristics of Pressurizer.

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 5  
55.43 \_\_\_\_\_

Comments:

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

System: 011 Pressurizer Level Control System (PZR LCS)

K6 Knowledge of the effect of a loss or malfunction of the following will have on the PZR LCS:

K6.04 Operation of PZR level controllers.

Proposed Question # 12 :

Pressurizer level controller HC-459D malfunctioned and its output went immediately to 100%.

With no operator action, which one of the following occurred?

- A LCV-460 closed.
- B LCV-459 closed.
- C All heaters turned off.
- D Backup heaters turned on.

Proposed Answer: D

Explanation:

Technical Reference(s): OIM page A-4-3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4512 Analyze the Pressurizer level control logic.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>011.A2.03</u>	
	Importance Rating	<u>3.8</u>	<u>3.9</u>

System: 011 Pressurizer Level Control System (PZR LCS)

A2 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

A2.03 Loss of PZR level.

Proposed Question # 13 :

Unit 1 is losing pressurizer level.

As level continues to decrease, which set of sequential actions below should be used?

- A Isolate letdown, start a second CCP, manually initiate SI.
- B Start all available charging pumps, isolate letdown, trip the reactor.
- C Start a second CCP, isolate letdown, manually initiate SI.
- D Maximize VCT makeup, start a second CCP, manually initiate SI.

Proposed Answer: C

Explanation:

Technical Reference(s): OP AP-1 page 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3477 Describe the major actions of abnormal operating procedures.

Question Source:	Bank #	<u>P-5376</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>012.K2.01</u>	
	Importance Rating	<u>3.3</u>	<u>3.7</u>

System: 012 Reactor Protection System  
 K2 Knowledge of bus power supplies to the following:  
 K2.01 RPS channels, components, and interconnections.

Proposed Question # 14 :

A loss of 120V Bus PY-13A would affect the Solid State Protection System by:

- A inhibiting the Protection Set III bistable inputs for both trains.
- B preventing actuation of the Master Relays in Train B.
- C preventing actuation of the Slave Relays in Train A.
- D de-energizing the Channel IV bistable status and power supply.

Proposed Answer: D

Explanation:

Technical Reference(s): Lesson LPA-4 pages 5 and 9

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3993 Explain the consequences / effect of loss of SSPS power.

Question Source:	Bank #	<u>A-0118</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>013.K2.01</u>	
	Importance Rating	<u>3.6</u>	<u>3.8</u>

System: 013 Engineered Safety Features Actuation System (ESFAS)

K2 Knowledge of bus power supplies to the following:

K2.01 ESFAS / safeguards equipment control.

Proposed Question # 15 :

With the reactor at 100% power, all instrument AC power from PY-13 and PY-14 is lost to Train B of SSPS.

What will be the plant response?

- A An automatic reactor trip can NOT occur from Train A SSPS, however Train B will automatically trip the reactor.
- B The reactor will NOT automatically trip and ESF actuations will be performed by Train A.
- C The reactor will automatically trip and ESF actuations performed by Train B can NOT occur.
- D The reactor will automatically trip and ESF actuations controlled by Train B will occur, with the exception of Containment Spray.

Proposed Answer: C

Explanation:

Technical Reference(s): STG B-6B page 2.2-5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3993 Explain the consequences / effect of loss of SSPS power.

Question Source: Bank # A-2155  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam

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

10 CFR Part 55 Content:	55.41	<u>7</u>
	55.43	

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>013.A3.02</u>	
	Importance Rating	<u>4.1</u>	<u>4.2</u>

System: 013 Engineered Safety Features Actuation System (ESFAS)

A3 Ability to monitor automatic operation of the ESFAS including:

A3.02 Operation of actuated equipment.

Proposed Question # 16 :

What would cause the "AUTO SI BLOCKED" and "SAFETY INJECTION ACTUATION" PK lights to be on at the same time?

- A Only one train of SI has actuated.
- B The P-4 signal is in after SI has been reset.
- C Only one train of SI has been reset.
- D The reactor trip breakers have been closed and reopened after SI has been reset.

Proposed Answer: C

Explanation:

Technical Reference(s): STG B-6A page 3-5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3976 Analyze the control logic for ESFAS control board switches.

Question Source:	Bank #	<u>S-1288</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>014.A4.04</u>	
	Importance Rating	<u>2.7</u>	<u>2.7</u>

System: 014 Rod Position Indication System (RPIS)

A4 Ability to manually operate and / or monitor in the control room:

A4.04 Re-zeroing of rod position prior to startup.

Proposed Question # 17 :

Which one of the following groups of equipment will be reset by turning the Rod Control Startup switch to RESET position?

- A Master cycler, Slave cyclers, Bank overlap unit, Urgent alarm, Pulser, Step counters
- B Master cycler, Slave cyclers, Bank overlap unit, Urgent alarm, P/A converters, Step counters
- C Master cycler, Slave cyclers, Multiplexer, Urgent alarm, P/A converters, Step counters
- D Master cycler, Slave cyclers, Multiplexer, Urgent alarm, Pulser, Step counters

Proposed Answer: B

Explanation:

Technical Reference(s): STG A-3A page 2-80Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9917 Explain the operation of ROD CONTROL system.

Question Source:	Bank #	<u>P-1565</u>
	Modified Bank #	<u></u>
	New	<u></u>

Question History: Last 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>7</u>
	55.43	<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>016.A2.02</u>	
	Importance Rating	<u>2.9</u>	<u>3.2</u>

System: 016 Non-Nuclear Instrumentation System (NNIS)

A2 Ability to (a) predict the impacts of the following malfunctions or operations on the NNIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

A2.02 Loss of power supply.

Proposed Question # 18 :

Which one of the following describes how the Digital Feedwater Control System (DFWCS) will respond if a feedwater PRESSURE transmitter loses power?

- A All Feedwater Regulating Valve controllers shift to manual.
- B The Feedwater Regulating Valve controller for that S/G will shift to manual.
- C There is no effect since only the median signal is used.
- D MFP speed will decrease.

Proposed Answer: C

Explanation:

Technical Reference(s): OIM page C-8-4d

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4347 Explain the effects of PT-508 failure to DFWCS.

Question Source: Bank #  
Modified Bank # P-6535  
New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 5  
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>015/017.AA1.02</u>	
	Importance Rating	<u>2.8</u>	<u>2.7</u>

APE: 015/017 Reactor Coolant Pump (RCP) Malfunctions

AA1 Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump

Malfunctions (Loss of RC Flow):

AA1.02 RCP oil reservoir level and alarm indicators.

Proposed Question # 19 :

Coming out of an outage, Unit 1 has just gone critical when PK05-01, alarm number 506, "RCP 1-1 Lo Rad Brg Oil LVL Hi/Lo" comes in.

What actions should the operators take?

- A Trip the reactor, then trip RCP 1-1.
- B Trip RCP 1-1 while inserting the control banks to go subcritical.
- C Monitor RCP 1-1 oil level on the PPC to determine if level is high or low.
- D Monitor RCP 1-1 temperatures and perform a Containment entry to determine if level is high or low.

Proposed Answer: D

Explanation:

Technical Reference(s): AR PK05-01 page 5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9959 State the RCP system parameters that produce alarms.

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>017.K6.01</u>	
	Importance Rating	<u>2.7</u>	<u>3.0</u>

System: 017 In-Core Temperature Monitor System (ITM)

K6 Knowledge of the effect of a loss or malfunction of the following ITM system components:

K6.01 Sensors and detectors.

Proposed Question # 20 :

Which one of the following describes the reference junctions as they relate to the incore thermocouple system?

- A An auctioneering circuit compensates for changes in system impedance.
- B Three RTDs compensate for changes in containment temperature.
- C Three thermocouples compensate for minute differences in the incore thermocouple performance.
- D Two inverse temperature sensitive resistors compensate for changes in system conductivity.

Proposed Answer: B

Explanation:

Technical Reference(s): STG B-5 page 2.1-7

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4832 Explain the operation of In-core Temperature Monitoring system.

Question Source:	Bank #	<u>P-1425</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	<u>2</u>
Group #	<u>1</u>	<u>1</u>
K/A #	<u>022.A1.02</u>	
Importance Rating	<u>3.6</u>	<u>3.8</u>

System: 022 Containment Cooling System (CCS)

A1 Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including:

A1.02 Containment pressure.

Proposed Question # 21 :

A Safety Injection signal from low RCS pressure has tripped the reactor from 100% power. After the required time delay, Safety Injection is reset to align ECCS equipment. 5 minutes later, a steam line break occurs causing Containment pressure to increase to 25 psig.

Which one of the following describes the actions that occur in response to the steam line break?

MSIVs Close	Phase B Isolation	Spray Add Valves Open	Spray Pumps Start	Spray Pumps Discharge Valves Open
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A	Yes	No	Yes	No	No
B	No	No	Yes	Yes	No
C	Yes	Yes	No	No	Yes
D	Yes	Yes	Yes	No	No

Proposed Answer: D

Explanation:

Technical Reference(s): OIM page B-6-8Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6008 Analyze Containment Spray Pump control logic.

Question Source: Bank # A-2161  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>022.A2.05</u>	
	Importance Rating	<u>3.1</u>	<u>3.5</u>

System: 022 Containment Cooling System (CCS)

A2 Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations:

A2.05 Major leak in CCS.

Proposed Question # 22 :

CCW surge tank level indicators LI-139 and LI-140 indicate 30% and are decreasing rapidly. Assume CCW level continues the current trend.

What operator response is necessary to maintain RCP seal integrity?

- A No action is necessary, charging injection will maintain adequate RCP seal cooling after CCW is lost.
- B Firewater must be aligned as a means of cooling to a centrifugal charging pump (CCP).
- C Close the number 1 seal outlet valve within 5 minutes.
- D Close RCP thermal barrier return valve, FCV-357.

Proposed Answer: B

Explanation:

Technical Reference(s): OP AP-11 page 13  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8122 Describe the cause effect relationships between CCW and CVCS.

Question Source: Bank # A-0919  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 5  
55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>024.AK3.02</u>	
	Importance Rating	<u>4.2</u>	<u>4.4</u>

APE: 024 Emergency Boration

AK3 Knowledge of the reasons for the following responses as they apply to the Emergency Boration:

AK3.02 Actions contained in EOP for emergency boration.

Proposed Question # 23 :

Which one of the following requires an Emergency Boration per OP AP-6, "Emergency Boration"?

- A Annunciator AR PK03-13, ROD BANK LO INSERTION LIMIT, actuates (reactor in Mode 3).
- B One (1) stuck rod on a reactor trip (no ESF actuation).
- C Uncontrolled reactivity change resulting in an unexplained Tav<sub>g</sub> decrease (no change in load).
- D Uncontrolled RCS cooldown after a reactor trip (no ESF actuation).

Proposed Answer: D

Explanation:

Technical Reference(s): OP AP-6 Appendix A

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4149 Explain Emergency Boration.

Question Source:	Bank #	<u>P-1172</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>026.AA1.02</u>	
	Importance Rating	<u>3.2</u>	<u>3.3</u>

APE: 026 Loss of Component Cooling Water (CCW)

AA1 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:

AA1.02 Loads on the CCWS in the control room.

Proposed Question # 24 :

FCV-357, the CCW Return Isolation for RCP thermal barriers, will auto close on:

- A high temperature in the thermal barrier return line.
- B high pressure in the thermal barrier return line.
- C high flow in the thermal barrier return line.
- D high temperature in the seal injection return line.

Proposed Answer: C

Explanation:

Technical Reference(s): STG F-2 page 2-39

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5667 State the potential for high CCW flow signals if CCW in the thermal barrier flashes.

Question Source:	Bank #	<u>P-43685</u>
	Modified Bank #	<u></u>
	New	<u></u>

Question History: Last 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>7</u>
	55.43	<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>2</u>
	K/A #	<u>027.AK1.01</u>	
	Importance Rating	<u>3.1</u>	<u>3.4</u>

APE: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction

AK1 Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions:

AK1.01 Definition of saturation temperature.

Proposed Question # 25 :

Unit 2 has the following plant conditions:

- Reactor is at 100% power.
- All loop Tcolds are 545°F.
- All loop Thots are 610°F.
- Core exit T/Cs are 615°F.

A malfunction occurred with the pressurizer pressure control system causing RCS pressure to drop to 2000 psig without a change in reactor power.

Which one of the following approximates RCS subcooling at this time?

- A 15 degrees
- B 20 degrees
- C 25 degrees
- D 30 degrees

Proposed Answer: B

Explanation:

Technical Reference(s): OIM page T-1-1

Steam Tables

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

Learning Objective: 4587 Explain effect of failures on Pressurizer.

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

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

10 CFR Part 55 Content:	55.41 <u>8, 10</u>
	55.43 <u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>2</u>
	K/A #	<u>027.AK2.03</u>	
	Importance Rating	<u>2.6</u>	<u>2.8</u>

APE: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction  
AK2 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following:  
AK2.03 Controllers and positioners.

Proposed Question # 26 :

While operating at 100% power:

- Annunciators "PZR PRESSURE HIGH" and "PZR SAFETY OR RELIEF LINE TEMP" are on.
- Both Pressurizer Spray Valves are open.
- Indicated Pressurizer pressure is 2150 psig on all indicators.
- The Pressurizer pressure master controller is indicating 100%

What initiating failure caused these indications?

- A      A Pressurizer pressure transmitter failed.
- B      Both Pressurizer Spray Valves failed open.
- C      A Power Operated Relief Valve failed open.
- D      The Pressurizer pressure master controller failed.

Proposed Answer: D

Explanation:

Technical Reference(s): OIM page A-4-5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4573 Analyze Pressurizer control logic.

Question Source:	Bank #	<u>P-5471</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>029.EK2.06</u>	
	Importance Rating	<u>2.9</u>	<u>3.1</u>

EPE: 029 Anticipated Transient Without Scram (ATWS)

EK2 Knowledge of the interrelations between the and the following an ATWS:

EK2.06 Breakers, relays, and disconnects.

Proposed Question # 27 :

A reactor trip and SI have occurred from 100% power. E-0, "Reactor Trip or Safety Injection", has just been implemented.

The following are observed:

- "A" Reactor Trip Breaker (RTA) is OPEN
- "B" Reactor Trip Breaker (RTB) is CLOSED
- Both bypass breakers are open
- Reactor power is decreasing in the intermediate range, with SUR at -0.3 dpm
- All rods are fully INSERTED, and rod bottom lights LIT

A manual trip of the Reactor Trip Switch was performed, however the "B" Reactor Trip Breaker is still CLOSED.

What action should be taken next?

- A Transition to FR-S.1, "Response to Nuclear Power Generation/ATWS".
- B De-energize 480V busses 13D and 13E.
- C Initiate emergency boration.
- D Continue with E-0, Step 2, and dispatch operator to locally open RTB.

Proposed Answer: D

Explanation:

Technical Reference(s): EOP E-0 page 2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7920 Explain basis of emergency procedure step.

Question Source: Bank # B-0146  
Modified Bank #   
New

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 7  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>029.A3.01</u>	
	Importance Rating	<u>3.8</u>	<u>4.0</u>

System: 029 Containment Purge System (CPS)

A3 Ability to monitor automatic operation of the Containment Purge System including:  
A3.01 CPS isolation.

Proposed Question # 28 :

While observing the containment purge radiation monitor (RM44A) radiation display unit (RDU), you notice that the HIGH ALARM and CVI BYP status lights on the panel are both ON.

Based solely on the indications on the RDU, which one of the following is true regarding the containment purge CVI status?

- A A CVI signal has been sensed and a CVI has occurred.
- B The status is normal; high radiation on R-44A will cause a CVI.
- C A CVI has NOT been sensed, but the CVI actions will occur when it is sensed.
- D A CVI signal is sensed, but the CVI function is bypassed and it will NOT occur.

Proposed Answer: D

Explanation:

Technical Reference(s): STG G-4B pages 2-43 and 2-44

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3281 Explain the conditions that effect Digital Radiation Monitoring system radiation monitor indications.

Question Source:	Bank #	<u>A-0673</u>
	Modified Bank #	<u></u>
	New	<u></u>

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>2.3.4</u>	
	Importance Rating	<u>2.5</u>	<u>3.1</u>

Generic: 2.3 Radiation Control

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

Proposed Question # 29 :

An operator has a Total Effective Dose Equivalent (TEDE) of 4 REM for the current year. He has been approved to exceed the Administrative Guideline of 2 REM for the year.

How long can the operator stay in a 50 mR/hr radiation area without exceeding the DCPD Administrative Exposure Limit for the year?

- A      0 hours
- B      5 hours
- C      10 hours
- D      20 hours

Proposed Answer: C

Explanation:

Technical Reference(s): RP1.ID6 page 10Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7910 State Federal and DCPD administrative radiation control requirements.

Question Source:	Bank #	<u>B-0651</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question History: Last NRC Exam           

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>

10 CFR Part 55 Content:	55.41	<u>          </u>
	55.43	<u>  4  </u>

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>2</u>
	K/A #	<u>034.A4.02</u>	
	Importance Rating	<u>3.5</u>	<u>3.9</u>

System: 034 Fuel Handling Equipment System (FHES)

A4 Ability to manually operate and / or monitor in the control room:

A4.02 Neutron levels.

Proposed Question # 30 :

Given the following conditions:

- Unit 1 is in Mode 6 for a refueling outage.
- Refueling of the reactor core is complete.
- Source Range channel N-31 is INOPERABLE.

What indication is available to the control room operators, and what instrumentation is providing input to the "High Flux at Shutdown" alarm?

- A Indication is provided by Gamma-Metrics channels N-51, N-52, and SR channel N-32. Alarm function is provided by N-32.
- B Indication is provided by SR channel N-32, IR channels N-35 and N-36. Alarm function is provided by Gamma-Metrics channels N-51, N-52, and SR channel N-32.
- C Indication is provided by SR channel N-32 and IR channels N-35 and N-36. Alarm function is provided by SR channel N-32.
- D Indication is provided by Gamma-Metrics channels N-51, N-52, and SR channel N-32. Alarm function is provided by Gamma-Metrics channels N-51, N-52, and SR channel N-32.

Proposed Answer: A

Explanation:

Technical Reference(s): STG B-4 pages 2-72 and 3-18

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6964 State the alignments of Nuclear Instrumentation System.

Question Source:	Bank #	<u>R-45046</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

10 CFR Part 55 Content: 55.41 7  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>035.K4.06</u>	
	Importance Rating	<u>3.1</u>	<u>3.4</u>

System: 035 Steam Generator System (S/GS)

K4 Knowledge of S/GS design feature(s) and / or interlock(s) which provide for the following:  
K4.06 S/G pressure.Proposed Question # 31 :

The purpose of the Steam Generator safety valves is to:

- A limit the secondary system pressure to  $\leq 110\%$  of S/G design pressure.
- B limit the secondary system design pressure to  $\leq 1065$  psig.
- C prevent lifting the Pressurizer safety valves.
- D lift first to prevent excessive lifting of the 10% steam dump valves.

Proposed Answer: A

Explanation:

Technical Reference(s): STG A-5 page 1-5  
Tech Specs page B3.7-1Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7148 State the limits for steam generator system.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>035.A3.01</u>	
	Importance Rating	<u>4.0</u>	<u>3.9</u>

System: 035 Steam Generator System (S/GS)

A3 Ability to monitor automatic operation of the S/G including:

A3.01 S/G water level control.

Proposed Question # 32 :

The Narrow Range S/G Level Channel LT-517 has failed low. All other Level Channels indicate normal (44%).

Which of the following describes the effect on the Digital Feedwater Control System (DFWCS) at the Engineering and Maintenance Console?

- |   |   |
|---|---|
| A | Loop 1 N/R level Median Signal Selector block will display FAILURE in place of NORMAL.                        |
| B | Loop 1 N/R level Median Signal Selector block will remain with NORMAL being displayed.                        |
| C | Loop 1 and 2 N/R level Median Signal Selector block will display FAILURE in place of NORMAL (in both blocks). |
| D | Loop 1 N/R level Median Signal Selector block will display LATCH in place of NORMAL.                          |

Proposed Answer: A

Explanation:

Technical Reference(s): STG C-8B pages 3-4 and 3-7

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4330 Explain the operations associated with DFWCS.

Question Source: Bank # A-0771  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History: Last NRC Exam

Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	<u>X</u>

10 CFR Part 55 Content: 55.41 7  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>041.K6.03</u>	
	Importance Rating	<u>2.7</u>	<u>2.9</u>

System: 041 Steam Dump System (SDS) / Turbine Bypass Control

K6 Knowledge of the effect of a loss or malfunction on the following will have on the SDS:

K6.03 Controller and positioners, including ICS, S/G, CRDS.

Proposed Question # 33 :

The reactor has tripped and all offsite power has been lost.

To begin a cooldown, the operator should use the:

- A Hagan steam dump controller on CC3 to control Groups 1, 2, 3, and 4 of the Steam Dump System.
- B Individual backup N<sub>2</sub> system controls to control the 10% steam dumps.
- C Hagan steam dump controller on CC3 to control Groups 1 and 2 of the Steam Dump System only.
- D Individual 10% steam dump Hagan controllers to control the 10% dump valves.

Proposed Answer: D

Explanation:

Technical Reference(s): OIM page C-2-6

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8008 Explain conditions that effect Steam Dump System status.

Question Source:	Bank #	<u>A-0096</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>041.A3.02</u>	
	Importance Rating	<u>3.3</u>	<u>3.4</u>

System: 041 Steam Dump System (SDS) / Turbine Bypass Control  
A3 Ability to monitor automatic operation of the SDS, including:  
A3.02 RCS pressure, RCS temperature, and reactor power.

Proposed Question # 34 :

A reactor startup at End of Life is in progress with the following plant conditions:

- Control rods                      Manual
- Reactor power                    5%
- IR SUR                              0
- Steam Dumps                    Pressure mode
- HC-507                             AUTO

What would happen if the steam dump pressure controller HC-507 pot setting were to be changed to 9.10? (Normal setting is 8.38)

- A      Tavg would remain the same and reactor power would increase.
- B      Tavg would remain the same and reactor power would decrease.
- C      Tavg would increase and reactor power would decrease.
- D      Tavg would decrease and reactor power would remain the same.

Proposed Answer:    C

Explanation:

Technical Reference(s): STG C-2B page 3-3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8006 Explain the effects of operating Steam Dump System controls.

Question Source:	Bank #	<u>A-0731</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>2.3.1</u>	
	Importance Rating	<u>2.6</u>	<u>3.0</u>

Generic: 2.3 Radiation Control

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

Proposed Question # 35 :

Immediate notification of the Nuclear Regulatory Commission is required for which one of the following radiation EMERGENCY exposures?

- A      20 rem TEDE
- B      35 rem CDE, 10 rem DDE
- C      65 rem LDE
- D      300 rem SDE

Proposed Answer:    D

Explanation:

Technical Reference(s): EP RB-2 Attachment 9.6

Proposed references to be provided to applicants during examination: EP RB-2 Attachment 9.6

Learning Objective: 9820 State the time limits to make offsite notifications.

Question Source:	Bank #	<u>B-0654</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

10 CFR Part 55 Content:	55.41	<u>12</u>
	55.43	<u>4</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>054.AK1.01</u>	
	Importance Rating	<u>4.1</u>	<u>4.3</u>

APE: 054 Loss of Main Feedwater (MFW)

AK1 Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW):

AK1.01 MFW line break depressurizes the S/G (similar to a steam line break).

Proposed Question # 36 :

How does the INITIAL Tavg response for a steam line break (SLB) compare to the Tavg response for a feed line break (FLB)?

(Initial Tavg response is before automatic protective actions occur)

- A Decreases for a SLB and increases for a FLB.
- B Decreases for both a SLB and a FLB, decreases more for a FLB.
- C Increases for both a SLB and a FLB, increases more for a SLB.
- D Increases for a SLB and decreases for a FLB.

Proposed Answer: A

Explanation:

Technical Reference(s): Lesson LTAA-6 pages 13 and 19

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5461 Explain plant response to faulted S/G.

Question Source:	Bank #	<u>P-6289</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

10 CFR Part 55 Content:	55.41	<u>8, 10</u>
	55.43	<u></u>

Comments:



Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>1</u>	<u>1</u>
Group #	<u>2</u>	<u>2</u>
K/A #	<u>054.AK3.03</u>	
Importance Rating	<u>3.8</u>	<u>4.1</u>

APE: 054 Loss of Main Feedwater (MFW)

AK3 Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW):

AK3.03 Manual control of AFW flow control valves.

Proposed Question # 37 :

During a loss of feedwater accident the following indications are observed while monitoring the CSFST displays:

- S/G 1-1 WR level is 3%
- S/G 1-2 WR level is 10%
- S/G 1-3 WR level is 10%
- S/G 1-4 WR level is 8%
- Thot for ALL RCS loops is 555°F and STABLE
- Tcold for ALL RCS loops is 548°F and STABLE
- AFW flow to S/G 1-1 is 10 gpm
- AFW flow to S/G 1-2 is 90 gpm
- AFW flow to S/G 1-3 is 90 gpm
- AFW flow to S/G 1-4 is 30 gpm
- Containment pressure = 0.5 psig
- Containment radiation = background

What action(s) should be taken regarding operation of AFW to the S/Gs?

- A Limit AFW flow to S/Gs 1-1 and 1-4 to less than 100 gpm. NO restrictions apply for AFW flow to S/Gs 1-2 and 1-3.
- B Do NOT feed S/G 1-1 until RCS Thot is less than 550°F. NO restrictions apply to AFW to S/Gs 1-2, 1-3, and 1-4.
- C Increase AFW total flow to greater than or equal to 470 gpm equally to ALL S/Gs.
- D Limit AFW flow to S/G 1-1 to less than 100 gpm. NO restrictions apply to AFW flow to S/Gs 1-2, 1-3, and 1-4.

Proposed Answer: B

Explanation:

Technical Reference(s): EOP FR-H.1 foldout page

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7920 Explain basis of emergency procedure step.

Question Source: Bank # B-0586  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge  
Comprehension or Analysis

X

10 CFR Part 55 Content:

55.41 5, 10  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>2</u>
	K/A #	<u>055.K1.06</u>	
	Importance Rating	<u>2.6</u>	<u>2.6</u>

System: 055 Condenser Air Removal System (CARS)

K1 Knowledge of the physical connections and / or cause-effect relationships between the CARS and the following systems:

K1.06 PRM system.

Proposed Question # 38 :

Where is the Steam Jet Air Ejector Radiation Monitor, RE-15, physically located?

- A In the line from the air ejectors discharging outside of the turbine building.
- B In the line from the air ejectors to the plant vent.
- C In the combined discharge line of the air ejectors and Nash vacuum pump to the plant vent.
- D In the combined discharge line of the air ejectors and Nash vacuum pump to the outside of the turbine building.

Proposed Answer: B

Explanation:

Technical Reference(s): STG C-6 page 1-7

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6893 Identify the location of radiation monitoring devices.

Question Source:	Bank #	<u>S-0645</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

10 CFR Part 55 Content:	55.41	<u>2 to 9</u>
	55.43	<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>056.A2.04</u>	
	Importance Rating	<u>2.6</u>	<u>2.8</u>

System: 056 Condensate System

A2 Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

A2.04 Loss of condensate pumps.

Proposed Question # 39 :

Unit 1 is at 100% power.

- 1-1 Condensate/Booster Pump Set tripped on overcurrent and the standby Condensate/Booster Pump Set did NOT auto start.
- Efforts to manually start the standby Condensate /Booster Pump Set did NOT work.
- Main Feedwater pumps suction pressure is 225 psig.

Which action below is required by procedure?

- A Actuate Load Transient Bypass.
- B Trip the Reactor and go to EOP E-0.
- C Trip the affected Main FW Pump.
- D Actuate Safety Injection.

Proposed Answer: A

Explanation:

Technical Reference(s): OP AP-15 page 12

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7281 Explain the operation of condensate system on Load Transient Bypass.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>058.AK1.01</u>	
	Importance Rating	<u>2.8</u>	<u>3.1</u>

APE: 058 Loss of DC Power

AK1 Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power:

AK1.01 Battery charger equipment and instrumentation.

Proposed Question # 40 :

Which one of the following indicates how long a vital 125 VDC battery can supply DC loads following a loss of its battery charger with no DC load shedding?

- A      1 hour.
- B      2 hours.
- C      6 hours.
- D      8 hours.

Proposed Answer:    B

Explanation:

Technical Reference(s): STG J-9 page 1-8

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7119 State the design basis of battery capacity.

Question Source:	Bank #	<u>P-1368</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

10 CFR Part 55 Content:	55.41 <u>8, 10</u>
	55.43 <u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>059.AK1.05</u>	
	Importance Rating	<u>2.6</u>	<u>3.6</u>

APE: 059 Accidental Liquid Radwaste Release

AK1 Knowledge of the operational implications of the following concepts as they apply to Accidental Liquid Radwaste Release:

AK1.05 The calculation of offsite doses due to a release from the power plant.

Proposed Question # 41 :

An "Authorization for Discharge of Liquid Radwaste Batch" had been approved by Chemistry and the Shift Foreman for EDR-01 with FR-20 inoperable.

While discharging EDR-01, the discharge flow rate was inadvertently set at twice the flow rate allowed by the discharge permit, and the discharge was completed that way.

How did the increased flow rate affect the discharge permit?

The increased discharge flow rate:

- A made the prerelease calculation of offsite doses for the permit invalid.
- B made the alignment discharge checklist invalid for the permit.
- C did NOT affect the permit since FR-20 can be inoperable for up to 30 days.
- D did NOT affect the permit since the flow integrator readings can be used to determine flow rate.

Proposed Answer: A

Explanation:

Technical Reference(s): OP G-1:II pages 2 and 5  
CAP A-5 Attachment 11.1

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8443 State the administrative requirements of Liquid Radwaste system.

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 8, 10  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>059.AK3.02</u>	
	Importance Rating	<u>3.2</u>	<u>4.5</u>

APE: 059 Accidental Liquid Radwaste Release

AK3 Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release:

AK3.02 Implementation of E-plan.

Proposed Question # 42 :

The following sequence of events occurred:

- While discharging Floor Drain Receiver 0-1, a high radiation alarm came in on RE-18.
- The Control Operator called the Aux Board and asked the Nuclear Operator to investigate the high alarm.
- The Nuclear Operator reported that FCV-477, Liquid Radwaste Overboard Return to EDRs, opened but RCV-18, Liquid Radwaste Overboard, did NOT close.
- The Nuclear Operator closed FCV-647, Liquid Radwaste Overboard, via its key lock switch.

Which statement below describes the next course of action?

- A Declare an Alert.
- B No action required, release is terminated.
- C Declare an Unusual Event.
- D Shut down the Floor Drain Receiver pump to terminate the release.

Proposed Answer: C

Explanation:

Technical Reference(s): Lesson LPE-7 pages 20 and 21  
EP G-1 Attachment 7.1Proposed references to be provided to applicants during examination: EP G-1 Attachment 7.1

Learning Objective: 8603 State the notification requirements during an emergency.

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

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>059.K3.04</u>	
	Importance Rating	<u>3.6</u>	<u>3.8</u>

System: 059 Main Feedwater (MFW) System

K3 Knowledge of the effect that a loss or malfunction of the MFW will have on the following:  
K3.04 RCS.

Proposed Question # 43 :

For a Loss of Normal Feedwater, what type of reactor trip provides protection for the reactor?

- A      Pressurizer high pressure.
- B      Steam Generator high level.
- C      Pressurizer low pressure.
- D      Steam Generator low-low level.

Proposed Answer:    D

Explanation:

Technical Reference(s): OIM page B-6-4b

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7380 Explain plant response to loss of feedwater.

Question Source:	Bank #	<u>P-5859</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>059.A1.03</u>	
	Importance Rating	<u>2.7</u>	<u>2.9</u>

System: 059 Main Feedwater (MFW) System

A1 Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including:

A1.03 Power level restrictions for operation of MFW pumps and valves.

Proposed Question # 44 :

Above what power level does AP-15, Loss of Feedwater Flow, require a reactor trip when ONE Main Feedwater Pump trips with BOTH Main Feedwater Pumps operating?

- A 90%
- B 80%
- C 70%
- D 60%

Proposed Answer: B

Explanation:

Technical Reference(s): OP AP-15 page 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8309 State the limits for the Main Feedwater system.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>061.AA1.01</u>	
	Importance Rating	<u>3.6</u>	<u>3.6</u>

APE: 061 Area Radiation Monitoring (ARM) System Alarms

AA1 Ability to operate and / or monitor the following as they apply to the Area Radiation Monitoring (ARM) System Alarms:

AA1.01 Automatic actuation.

Proposed Question # 45 :

Unit 1 was refueling when a high alarm came in on RE-58, Spent Fuel Pool area monitor.

Which one of the following auto actions occurred?

- A Fuel Handling Building evacuation alarm.
- B Containment evacuation alarm.
- C Auxiliary Building ventilation transfer to Safeguards Only mode.
- D Fuel Handling Building ventilation transfer to Building and Safeguards mode.

Proposed Answer: A

Explanation:

Technical Reference(s): STG G-4A page 2.2-17

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8469 Analyze Radiation Monitoring system control logic.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>061.A3.01</u>	
	Importance Rating	<u>4.2</u>	<u>4.2</u>

System: 061 Auxiliary / Emergency Feedwater (AFW) System  
A3 Ability to monitor automatic operation of the AFW, including:  
A3.01 AFW startup and flows.

Proposed Question # 46 :

A plant startup is in progress per OP L-3.  
The reactor is at 9% power with Main Feedwater Pump in service.

While rolling the Main Turbine, S/G level control malfunctions result in S/G 2-2 level exceeding 75%.

Which of the following automatic actions would occur?

- A Both motor driven AFW pumps will start following a time delay.
- B Both motor driven AFW pumps will immediately start.
- C All AFW pumps will immediately start.
- D All AFW pumps will start following a time delay.

Proposed Answer: B

Explanation:

Technical Reference(s): OIM page B-6-2  
STG D-1 page 2-9

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8432 Analyze AFW pump control logic.

Question Source:	Bank #	<u>A-0687</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>062.AK3.03</u>	
	Importance Rating	<u>4.0</u>	<u>4.2</u>

APE: 062 Loss of Nuclear Service Water

AK3 Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water:

AK3.03 Guidance actions contained in EOP for Loss of Nuclear Service Water.

Proposed Question # 47 :

Which one of the following actions should be taken if the running Unit 1 ASW pump trips and no ASW pumps can be restarted on Unit 1?

- A Supply cooling water to the CCW heat exchangers via the temporary connection to the fire loop.
- B Immediately trip the unit and maintain Hot Standby conditions until ASW can be restored to support plant cooldown.
- C Supply cooling to the CCW heat exchangers via the cross-connect to the Circulating Water System.
- D Supply Unit 1 ASW via the cross-connect from Unit 2 to Unit 1 ASW.

Proposed Answer: D

Explanation:

Technical Reference(s): OP AP-10 page 2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3477 Describe the major actions of abnormal operating procedures.

Question Source: Bank # P-0471  
Modified Bank #   
New

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 4, 8  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>062.K2.01</u>	
	Importance Rating	<u>3.3</u>	<u>3.4</u>

System: 062 A.C. Electrical Distribution  
 K2 Knowledge of bus power supplies to the following:  
 K2.01 Major system loads.

Proposed Question # 48 :

After starting Auxiliary Feedwater Pump (AFW) 1-2, the BOPCO observes:

- pump amps drop to zero
- control switch white light go out
- control switch red light go out
- control switch green light come on
- numerous alarms

Which power supply has been lost?

- A DC Bus 1-3
- B 4kV Bus F
- C 4kV Bus H
- D 120V PY-12

Proposed Answer: C

Explanation:

Technical Reference(s): Drawing 437583

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8393 Interpret the meaning of AFW system control switch indications.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>063.K1.03</u>	
	Importance Rating	<u>2.9</u>	<u>3.5</u>

System: 063 D.C. Electrical Distribution

K1 Knowledge of the physical connections and / or cause-effect relationships between the DC electrical system and the following systems:

K1.03 Battery charger and battery.

Proposed Question # 49 :

The purpose of the key interlocked breakers on the Unit 1 battery chargers is to prevent:

- A paralleling DC Buses 11 and 12 through the output of Battery Charger 121.
- B paralleling Battery Chargers 131 and 132 through the output of Battery 13.
- C supplying DC Bus 11 with Battery Chargers 11 and 121 in parallel.
- D supplying DC Bus 12 with Battery Chargers 12 and 121 in parallel.

Proposed Answer: A

Explanation:

Technical Reference(s): STG J-9 page 2.1-11

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4192 State the purpose of Battery Charger 21 output breaker key interlock.

Question Source:	Bank #	<u>S-61595</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

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

10 CFR Part 55 Content:	55.41 <u>2 to 9</u>
	55.43 <u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>067.AK1.01</u>	
	Importance Rating	<u>2.9</u>	<u>3.9</u>

APE: 067 Plant Fire on Site

AK1 Knowledge of the operational implications of the following concepts as they apply to the Plant Fire on Site:

AK1.01 Fire classifications, by type.

Proposed Question # 50 :

Which one of the following types of portable fire extinguishers should be used on energized electrical equipment fires?

- A Class A
- B Class B
- C Class C
- D Class D

Proposed Answer: C

Explanation:

Technical Reference(s): Lesson FEFA320 page 10Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5784 Explain the responsibilities of shift personnel during a fire emergency.

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:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>068.AK3.02</u>	
	Importance Rating	<u>3.7</u>	<u>4.1</u>

APE: 068 Control Room Evacuation

AK3 Knowledge of the reasons for the following responses as they apply to the Control Room

Evacuation:

AK3.02 System response to turbine trip.

Proposed Question # 51 :

An explosion and lots of smoke caused an immediate control room evacuation.

The CO on Unit 1 was only able to manually trip the reactor and verify reactor trip before evacuating the control room.

What should be the next step after leaving the control room?

- A Implement Appendix B, "12/4kV Bus Alignment", of OP AP-8A.
- B Perform Appendix L, "Locally Closing Main Steam Isolation Valves", of OP AP-8A.
- C Manually trip the turbine at the turbine pedestal.
- D Monitor for charging pump cavitation while immediately verifying charging pump suction path.

Proposed Answer: C

Explanation:

Technical Reference(s): OP AP-8A page 3  
\_\_\_\_\_Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7649 Explain the actions required in control room prior to evacuation to the HSDP.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>068.K4.01</u>	
	Importance Rating	<u>3.4</u>	<u>4.1</u>

System: 068 Liquid Radwaste System

K4 Knowledge of design feature(s) and / or interlock(s) which provide for the following:

K4.01 Safety and environmental precautions for handling hot, acidic, and radioactive liquids.

Proposed Question # 52 :

Which one of the following is designed to remove oil and petroleum products from liquid rad waste?

- A Media Filter 0-2 filled with cation resin.
- B Demin 0-1 filled with a mixed resin bed.
- C Cartridge filter 0-3 with a 25 micron filter.
- D Media Filter 0-1 filled with carbon and charcoal.

Proposed Answer: D

Explanation:

Technical Reference(s): STG G-1 page 2.5-2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8458 State the purpose of the Liquid Radwaste system.

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

Question History: Last 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>7</u>
	55.43	<u>          </u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>072.K4.02</u>	
	Importance Rating	<u>3.2</u>	<u>3.4</u>

System: 072 Area Radiation Monitoring (ARM) System

K4 Knowledge of ARM design feature(s) and / or interlock(s) which provide for the following:

K4.02 Fuel building isolation.

Proposed Question # 53 :

Which one of the following will cause the Fuel Handling Building ventilation to transfer to the Iodine Removal mode?

- A RM-13, RHR Exhaust Duct Air Particulate monitor.
- B RM-29, Plant Vent Gross Gamma monitor.
- C RM-59, New Fuel Storage Area monitor.
- D RM-34, Plant Vent ALARA monitor.

Proposed Answer: C

Explanation:

Technical Reference(s): STG G-4A page 2.2-17

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8469 Analyze Radiation Monitoring system control logic.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>072.K5.02</u>	
	Importance Rating	<u>2.5</u>	<u>3.2</u>

System: 072 Area Radiation Monitoring (ARM) System

K5 Knowledge of the operational implications of the following concepts as they apply to the ARM system:

K5.02 Radiation intensity changes with source distance.

Proposed Question # 54 :

Health Physics is about to transfer a small spherical radioactive source through the Auxiliary Building. The source measures 100 mrem/hr gamma at 1 foot distance. The transport route of the source will take it 5 feet away from an Area Radiation Monitoring System (ARMS) detector.

Which one of the following describes the correct maximum radiation (due to the source) shown on the ARMS indicator?

- A 1 mrem/hr.
- B 4 mrem/hr.
- C 10 mrem/hr.
- D 20 mrem/hr.

Proposed Answer: B

Explanation:

Technical Reference(s): OIM page S-3-1Proposed references to be provided to applicants during examination: NONE

Learning Objective: 72414 Given a dose rate from a point source at a given distance, estimate the dose rate at multiples of fractions of that distance time.

Question Source:	Bank #	<u>INPO-4885</u>
	Modified Bank #	<u>          </u>
	New	<u>          </u>

Question History:	Last NRC Exam	<u>Turkey Point 3, 8/7/98</u>
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u>          </u>
	Comprehension or Analysis	<u>  X  </u>

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>073.K4.01</u>	
	Importance Rating	<u>4.0</u>	<u>4.3</u>

System: 073 Process Radiation Monitoring (PRM) System

K4 Knowledge of PRM design feature(s) and / or interlock(s) which provide for the following:

K4.01 Release termination when radiation exceeds setpoint.

Proposed Question # 55 :

Steam Generator activity increases to the Steam Generator blowdown isolation setpoint for RE-19, Blowdown Sample Monitor, initiating blowdown isolation. Chemistry is requested to verify the Steam Generator activity level.

How may the blowdown sample isolation valves be reopened?

- A Select the RE-19 and 23 Hi Rad S/G BD and Smpl V/lvs (O.C.) Isol Defeat C/O SW to "CUT IN".
- B Remove the high radiation close signal by pulling the RE-19 fuses at RMS cabinet (behind Vertical Boards).
- C Hold the valve control switch on VB3 in the open position using a device made for this purpose.
- D Reset the Phase A Containment Isolation signal.

Proposed Answer: A

Explanation:

Technical Reference(s): STG D-2 page 2-15

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5644 Demonstrate the ability to restore S/G blowdown radiation monitor flow after an automatic isolation.

Question Source:	Bank #	A-0830
	Modified Bank #	
	New	

Question History: Last NRC Exam

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	

10 CFR Part 55 Content: 55.41 7  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>073.A1.01</u>	
	Importance Rating	<u>3.2</u>	<u>3.5</u>

System: 073 Process Radiation Monitoring (PRM) System

A1 Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including:

A1.01 Radiation levels.

Proposed Question # 56 :

In the event of an accident condition, the plant vent radiation monitoring system is equipped with an extended range detection system (RM-87).

How is the extended range placed in service during an accident?

- A Automatically, on any Safety Injection signal.
- B Automatically, when very high radiation is detected by the normal range gas radiation detector (RM-14).
- C Manually, whenever a Loss of Coolant Accident occurs.
- D Manually, when radiation is detected by any of the post accident radiation monitors .

Proposed Answer: B

Explanation:

Technical Reference(s): STG G-4B page 2-24

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3285 Analyze Digital Radiation Monitoring system control logic.

Question Source:	Bank #	<u>S-3068</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>074.EK2.09</u>	
	Importance Rating	<u>2.6</u>	<u>2.6</u>

EPE: 074 Inadequate Core Cooling

EK2 Knowledge of the interrelations between the and the following Inadequate Core Cooling:

EK2.09 Controllers and positioners.

Proposed Question # 57 :

Plant conditions:

- A LOCA has occurred resulting in a reactor trip and SI from 100% power.
- FR-C.1, "Response to Inadequate Core Cooling", is currently in progress.
- The operators are trying to establish Main Feedwater flow to at least one Steam Generator.

What action(s) must be taken before the feedwater control valves can be opened?

- A      Reset SI signal, cycle the Reactor trip breakers, reset Feedwater Isolation.
- B      Reset SI signal, heat up RCS above low Tav<sub>g</sub> setpoint, reset Feedwater Isolation.
- C      Heat up RCS above low Tav<sub>g</sub> setpoint, reset Feedwater Isolation.
- D      Cycle the Reactor trip breakers, reset Feedwater Isolation.

Proposed Answer: A

Explanation:

Technical Reference(s): EOP FR-C.1 page 28Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8290 Analyze the interlocks associated with Main Feedwater system valves.

Question Source:      Bank #      A-0730

Modified Bank #                

New                

Question History:      Last NRC Exam                

Question Cognitive Level:      Memory or Fundamental Knowledge                

Comprehension or Analysis      X

10 CFR Part 55 Content:      55.41 7

55.43           

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>076.AK2.01</u>	
	Importance Rating	<u>2.6</u>	<u>3.0</u>

APE: 076 High Reactor Coolant Activity  
 AK2 Knowledge of the interrelations between the High Reactor Coolant Activity and the following:  
 AK2.01 Process radiation monitors.

Proposed Question # 58 :

Unit 1 has been operating at 100% power for three weeks with a 5 gpd tube leak in S/G 1-2.

Which one of the following will occur if RCS activity increases due to a fuel defect?

- A      RM-15 counts will increase.
- B      S/G 1-2 tube leak flow will increase.
- C      RCS Argon-40 will increase.
- D      RM-72 counts will increase.

Proposed Answer:    A

Explanation:

Technical Reference(s): OP O-4 page 2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8480 Demonstrate the ability to determine plant implications of each RMS radiation monitor indication.

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

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>2</u>
	Group #	<u>3</u>	<u>2</u>
	K/A #	<u>103.K3.01</u>	
	Importance Rating	<u>3.3</u>	<u>3.7</u>

System: 103 Containment System

K3 Knowledge of the effect that a loss or malfunction of the containment system will have on the following:

K3.01 Loss of containment integrity under shutdown conditions.

Proposed Question # 59 :

Which one of the following conditions concerning the Personnel Air Lock would exceed a Limiting Condition for Operation and require entering a Tech Spec Action Statement?

- A The outer and inner doors are opened simultaneously for a normal transient entry into containment while in MODE 4.
- B Both air lock doors fail acceptance test criteria while the plant is in MODE 6.
- C Welding cables are laid through both airlock doors while the plant is in MODE 5.
- D The outer door is opened for a normal transit entry into containment while in MODE 3.

Proposed Answer: A

Explanation:

Technical Reference(s): Tech Specs 3.6.2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9592 Demonstrate the ability to relate system information to technical specification requirements.

Question Source:	Bank #	<u>P-1490</u>
	Modified Bank #	<u></u>
	New	<u></u>

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>E01.EK2.1</u>	
	Importance Rating	<u>3.3</u>	<u>3.5</u>

Westinghouse: E01 Rediagnosis

EK2 Knowledge of the interrelations between the (Reactor Trip or Safety Injection / Rediagnosis) and the following:

EK2.1 Components, and functions of control systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question # 60 :

Assuming the Reactor Trip Breakers have opened, an automatically initiated Safety Injection Signal (SIS) can ONLY be reset if the:

- A initiating condition was the high containment pressure.
- B Reactor Trip Breakers are re-closed.
- C SIS Time Delay relay (TD1) has timed out.
- D initiating condition has cleared.

Proposed Answer: C

Explanation:

Technical Reference(s): STG B-6A page 2.2-6

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3976 Analyze the control logic for ESFAS control board switches.

Question Source:	Bank #	<u>A-0140</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>1</u>
	K/A #	<u>E02.EK1.2</u>	
	Importance Rating	<u>3.4</u>	<u>3.9</u>

Westinghouse: E02 SI Termination

EK1 Knowledge of the operational implications of the following concepts as they apply to the (SI Termination):

EK1.2 Normal, abnormal and emergency operating procedures associated with (SI Termination).

Proposed Question # 61 :

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

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

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

Proposed Answer: D

Explanation:

Technical Reference(s): Lesson LPE-P page 8

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7918 State the bases for relaxing SI termination criteria in response to imminent pressurized thermal shock condition.

Question Source:	Bank #	<u>B-0022</u>
	Modified Bank #	<u></u>
	New	<u></u>

Question History: Last 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>8, 10</u>
	55.43	<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>E03.EK3.2</u>	
	Importance Rating	<u>3.4</u>	<u>3.9</u>

Westinghouse: E03 LOCA Cooldown and Depressurization

EK3 Knowledge of the reasons for the following responses as they apply to the (LOCA Cooldown and Depressurization):

EK3.2 Normal, abnormal and emergency operating procedures associated with (LOCA Cooldown and Depressurization).

Proposed Question # 62 :

Procedure EOP E-1.2, "Post LOCA Cooldown and Depressurization", states: "Depressurize the RCS to Refill the Pressurizer". One reason this action is performed is to ensure that the PZR level does not drop off scale when an RCP is started in a subsequent step.

Why would PZR level decrease after an RCP is started?

- A Due to the increased core heat removal.
- B Due to the collapse of any voids in the RCS.
- C Due to the increased heat input into the RCS from the RCP.
- D Due to the decreased RCS subcooling after the RCP start.

Proposed Answer: B

Explanation:

Technical Reference(s): Westinghouse Background Doc  
ES-1.2 page 113

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7181 Explain how RCP operation effects ECCS reduction sequence.

Question Source: Bank # P-0199  
Modified Bank #   
New

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 5, 10  
55.43

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>E05.2.4.21</u>	
	Importance Rating	<u>3.7</u>	<u>4.3</u>

Westinghouse: E05 Loss of Secondary Heat Sink

2.4 Emergency Procedures / Plan

2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions including:

1. Reactivity control
2. Core cooling and heat removal
3. Reactor coolant system integrity
4. Containment conditions
5. Radioactivity release control.

Proposed Question # 63 :

Unit 1 has experienced a reactor trip from 15% power.

Safety Injection was NOT actuated and NOT required.

E-0, "Reactor Trip or Safety Injection", has been performed, and a transition to E-0.1, "Reactor Trip Response", has occurred.

The following indications are observed:

- Tavg is STABLE at 547°F
- Pressurizer level is 11% and DECREASING slowly
- RCS subcooling is 32°F and DECREASING slowly
- All NR S/G levels are 33 – 35%; AFW flows indicate 0 gpm
- Containment pressure is 1.8 psig and INCREASING slowly

The proper response to the above conditions is:

- A      Manually start ECCS pumps and continue with E-0.1.
- B      Go to FR-I.2, "Response to Low Pressurizer Level".
- C      Actuate SI and return to E-0 step 1.
- D      Go to FR-H.1, "Response to Loss of Secondary Heat Sink".

Proposed Answer: C

Explanation:

Technical Reference(s): EOP E-0.1 Foldout Page

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5701 Explain when to use ECCS flow to restore PZR level.

Question Source:      Bank #      B-0171  
Modified Bank #      \_\_\_\_\_  
New      \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>E08.EK1.2</u>	
	Importance Rating	<u>3.4</u>	<u>4.0</u>

Westinghouse: E08 Pressurized Thermal Shock

EK1 Knowledge of the operational implications of the following concepts as they apply to the (Pressurized Thermal Shock)

EK1.2 Normal, abnormal and emergency operating procedures associated with (Pressurized Thermal Shock).

Proposed Question # 64 :

The final step of procedure EP FR-P.1' "Response to Imminent Pressurized Thermal Shock", states "Determine if RCS Temperature Soak is Required".

What is the purpose of a soak?

- A To stabilize RCS pressure and temperature and ensure RCS temperature and pressure control.
- B To determine if RCS subcooling has been reduced to a minimum in order to minimize RCS pressure stresses on the cooldown.
- C To allow the thermal stresses which were imposed on the RCS cold legs to decrease.
- D To allow the thermal stresses which were imposed on the reactor vessel wall to decrease.

Proposed Answer: D

Explanation:

Technical Reference(s): Lesson LMCD-FRP page 13

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6769 State the purpose RCS temperature soak required in FR-P.1.

Question Source: Bank # B-0020  
Modified Bank #   
New

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:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>E11.EK2.2</u>	
	Importance Rating	<u>3.9</u>	<u>4.3</u>

Westinghouse: E11 Loss of Emergency Coolant Recirculation

EK2 Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following:

EK2.2 Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Proposed Question # 65 :

While responding to a LOCA, a transition to ECA-1.1, "Loss of Emergency Coolant Recirculation Capability", was performed due to a loss of emergency coolant recirculation.

Make up is being added to the RWST and ECCS is reduced to one train of SI flow.

What are these actions designed to do?

- A Delay the time to RWST depletion.
- B Prevent damage to vital equipment.
- C Permit the RCS to stabilize at an equilibrium condition.
- D Restore emergency coolant recirculation capability.

Proposed Answer: A

Explanation:

Technical Reference(s): DCPP Step Description/Deviation for  
ECA-1.1 page 22

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6902 Explain the benefit of delaying rate of depletion of RWST when emergency coolant recirculation is not available.

Question Source: Bank # B-0053  
Modified Bank #             
New           

Question History: Last NRC Exam           

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

10 CFR Part 55 Content: 55.41 7  
55.43           

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>2</u>	<u>2</u>
	K/A #	<u>E11.EA2.1</u>	
	Importance Rating	<u>3.4</u>	<u>4.2</u>

Westinghouse: E11 Loss of Emergency Coolant Recirculation

EA2 Ability to determine and interpret the following as they apply to the (Loss of Emergency Coolant Recirculation):

EA2.1 Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Proposed Question # 66 :

During a LOCA, emergency coolant recirculation capability was lost, and ECA-1.1, "Loss of Emergency Coolant Recirculation" is currently in progress.

A RED path is identified on the CONTAINMENT status tree, and transition to FR-Z.1, "Response to High Containment Pressure", is performed.

What procedure should be used to operate the containment spray pumps, and why?

- A FR-Z.1, because it provides for GREATER containment spray.
- B FR-Z.1 because it takes precedence over ECA-1.1.
- C ECA-1.1, because an ECA should be completed prior to transferring to an FR.
- D ECA-1.1, because it provides for REDUCED containment spray.

Proposed Answer: D

Explanation:

Technical Reference(s): DCPP Step Description/Deviation for  
FR-Z.1 page 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7920 Explain basis of emergency procedure step.

Question Source:	Bank #	<u>B-0078</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>4</u>	<u>4</u>
	K/A #	<u>2.4.45</u>	
	Importance Rating	<u>3.3</u>	<u>3.6</u>

Generic: 2.4 Emergency Procedures / Plan

2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.

Proposed Question # 67 :

The following plant conditions exist:

- Core off load is in progress.
- The FHB Bridge Crane is positioned over the intended fuel rack and the crew is about to commence lowering the fuel assembly.
- Fuel Handling Building Rad Monitors RE-58 and RE-59 alarm.
- An increase in the gas bubbles being released from the element is noted.

Which of the following actions should the FHB crane operator immediately take?

- A Exit the FHB and notify the control room for instructions.
- B Lower the assembly to the bottom of the fuel rack, then exit the FHB.
- C Open the supply breaker to the bridge crane and exit the FHB.
- D Place the fuel assembly in the upender and lower the upender then exit the FHB.

Proposed Answer: B

Explanation:

Technical Reference(s): OP AP-21 page 3Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6540 Explain the actions to take on a fuel handling building evacuation alarm.

Question Source:	Bank #	<u>B-0049</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>1</u>
	Group #	<u>3</u>	<u>3</u>
	K/A #	<u>E13.EK1.3</u>	
	Importance Rating	<u>2.8</u>	<u>3.0</u>

Westinghouse: E15 Containment Flooding

EK1 Knowledge of the operational implications of the following concepts as they apply to the (Containment Flooding):

EK1.3 Annunciators and conditions indicating signals, and remedial actions associated with (Containment Flooding).

Proposed Question # 68 :

Following a reactor trip and SI, a MAGENTA path is observed on the Containment status tree.

Wide range recirculation sump level (PAM1) indicates 100 ft on both channels.

What is the significance of this recirculation sump level?

- A This is the expected sump level after a Main Steamline rupture in containment.
- B An unidentified source of water is leaking into containment.
- C This is the expected sump level after a large break LOCA.
- D The entire contents of the RWST has been discharged into the containment.

Proposed Answer: B

Explanation:

Technical Reference(s): DCPP Step Description/Deviation for  
FR-Z.2 page 1

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9704 Identify entry conditions for the FRPs.

Question Source:	Bank #	<u>B-0088</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

10 CFR Part 55 Content:	55.41	<u>8, 10</u>
	55.43	<u></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>2.1.32</u>	
	Importance Rating	<u>3.4</u>	<u>3.8</u>

Generic: 2.1 Conduct of Operations

2.1.32 Ability to explain and apply all system limits and precautions.

Proposed Question # 69 :

During power operation Tech Spec LCO 3.2.1 requires that Heat Flux Hot Channel Factor be maintained within the Limits set by the COLR.

How can the operators be assured that Heat Flux Hot Channel Factor is being maintained within limits on a continuous basis?

- A The Heat Flux Hot Channel Factor is not measurable, but inferred from a power distribution map using the incore detectors. The map is done every 31 days and if within limits it can be inferred that it has been within limits since last performed.
- B The Heat Flux Hot Channel Factor is part of the core design and Westinghouse patterns the core design to ensure Heat Flux Hot Channel Factor will not be violated.
- C The Heat Flux Hot Channel Factor is controlled by maintaining the core within the limits of AFD, QPTR, and control rod insertion limits.
- D The Heat Flux Hot Channel Factor will alarm if it goes above the setpoint limits and the operators will need to reduce power as directed by the LCO until the alarm clears.

Proposed Answer: C

Explanation:

Technical Reference(s): Tech Specs page B3.2-1  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9694 Discuss Technical Specification bases.

Question Source: Bank # B-0046  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 10  
55.43 2

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>2.1.1</u>	
	Importance Rating	<u>3.7</u>	<u>3.8</u>

Generic: 2.1 Conduct of Operations

2.1.1 Knowledge of conduct of operations requirements.

Proposed Question # 70 :

Licensed operators have the authority and responsibility to place the plant in a safe condition when they determine that reactor safety is in jeopardy.

In accordance with DCCP administrative procedures, this authority includes which one of the following examples?

- A A CO may take action to initiate a reactor trip to protect the reactor when a setpoint is judged unavoidable, but must have SFM concurrence to initiate a Safety Injection.
- B A CO initiates a Reactor Trip or Safety Injection in response to a plant parameter which is approaching the trip or SI setpoint and is judged by the CO as unavoidable.
- C Licensed operators may take action to initiate a Reactor Trip or Safety Injection when called for in a procedure, but only if the applicable setpoint is being approached.
- D Licensed operators are responsible for taking action to trip or otherwise shut down the reactor anytime that minimum control room manning requirements are not met.

Proposed Answer: B

Explanation:

Technical Reference(s): OP1.DC10 page 4  
\_\_\_\_\_Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9846 Explain who is responsible for the operation of equipment.

Question Source:	Bank #	<u>P-63197</u>
	Modified Bank #	<u></u>
	New	<u></u>
Question History:	Last NRC Exam	<u></u>
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></u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	<u>3</u>
	Group #	<u>1</u>	<u>1</u>
	K/A #	<u>2.1.3</u>	
	Importance Rating	<u>3.0</u>	<u>3.4</u>

Generic: 2.1 Conduct of Operations  
2.1.3 Knowledge of shift turnover practices.

Proposed Question # 71 :

During shift turnover, if your relief is not fit for duty, you should:

- A NOT complete the turnover and have the relief report to the Shift Foreman or the Fitness for Duty Coordinator.
- B complete the turnover but immediately report to the Shift Foreman so he can make the decision about the relief's condition.
- C NOT complete the turnover and have the relief report to the Fitness for Duty Coordinator.
- D NOT leave watch station and inform Shift Foreman so he can make the decision about the relief's condition.

Proposed Answer: D

Explanation:

Technical Reference(s): OM12.DC1 page 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3589 Discuss the aspects of position turnover.

Question Source:	Bank #	<u>P-5236</u>
	Modified Bank #	<u></u>
	New	<u></u>

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>1</u>	_____
	K/A #	<u>001.A4.13</u>	_____
	Importance Rating	<u>2.7</u>	_____

System: 001 Control Rod Drive System

A4 Ability to manually operate and / or monitor in the control room:

A4.13 Stopping other changes in plant, e.g., turbine, S/G, SDBCS, boration, before adjusting rods.

Proposed Question # 72 :

While ramping load from 50% to 100%, a loss of all annunciators, including the Ronan CRT and alarm typewriter, occurs.

You're first action is to:

- A place the Control Rods in MANUAL.
- B notify plant management of a possible entry into an Emergency Classification.
- C contact Operational Support Team to investigate the problem.
- D immediately stop all load changes.

Proposed Answer: D

Explanation:

Technical Reference(s): AR PK15-22 page 5

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7784 Demonstrate the ability to determine plant implications from annunciator status.

Question Source:	Bank #	<u>B-0282</u>
	Modified Bank #	_____
	New	_____

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>2</u>	_____
	K/A #	<u>029.A4.01</u>	_____
	Importance Rating	<u>2.5</u>	_____

System: 029 Containment Purge System (CPS)

A4 Ability to manually operate and / or monitor in the control room:

A4.01 Containment purge flow rate.

Proposed Question # 73 :

Unit 1 is in Mode 6 with a Containment Purge in progress via E-3 and S-3 fans.

RCV-11, Containment Purge Exhaust Valve I.C., drifts closed due to a limit switch problem.

Which one of the following indications would notify the operator of a loss of purge flow problem?

- A Low flow alarm on fan E-3.
- B Low flow alarm on fan S-3.
- C Low flow alarm on plant vent flow recorder, FR-12.
- D Overcurrent alarm on fan E-3.

Proposed Answer: A

Explanation:

Technical Reference(s): AR PK15-18 page 2STG H-4 page 1-4Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5119 Analyze logic associated with Containment Purge system.

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

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

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

Comments:



Examination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO <u>2</u> <u>3</u> <u>045.A4.02</u> <u>2.7</u>	SRO _____ _____ _____ _____
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System: 045 Main Turbine Generator (MT/G) System  
 A4 Ability to manually operate and / or monitor in the control room:  
 A4.02 T/G controls, including breakers.

Proposed Question # 74 :

In response to an electric grid disturbance, the Generator Underfrequency relay protection scheme acts to DIRECTLY trip the:

- A Unit Lockouts (86G1, 86G11) ONLY.
- B reactor and turbine ONLY.
- C turbine ONLY.
- D 500kV generator breakers ONLY.

Proposed Answer: D

Explanation:

Technical Reference(s): Drawing 500825

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5303 Explain the electrical protection relays and monitoring components.

Question Source:	Bank #	<u>A-0586</u>
	Modified Bank #	_____
	New	_____

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

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

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1      

Group #

3      

K/A #

E13.EK3.4      

Importance Rating

3.1      

Westinghouse: E13 Steam Generator Overpressure

EK3 Knowledge of the reasons for the following responses as they apply to the (Steam Generator Overpressure):

EK3.4 RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.

Proposed Question # 75 :

With the plant initially at 100% power, reactor trip and safety injection automatically actuated due to Pressurizer low pressure.

The following conditions exist:

- RCS subcooling is 0°F
- Containment pressure is 2.2 psig, rising
- RCS pressure is 1135 psig, stable
- S/G pressures are 1120 psig, stable
- S/G NR levels are less than 0%
- S/G 1-1 AFW flow is 220 gpm
- S/G 1-2 AFW flow is 220 gpm
- S/G 1-3 AFW flow is 0 gpm
- S/G 1-4 AFW flow is 0 gpm

Which one of the following is the end point for the HEAT SINK Critical Safety Function Status Tree?

- A FR-H.1, "Response to Loss of Secondary Heat Sink"
- B FR-H.2, "Response to Steam Generator Overpressure"
- C FR-H.4, "Response to Loss of Normal Steam Release Capabilities"
- D FR-H.5, "Response to Steam Generator Low Level"

Proposed Answer: B

Explanation:

Technical Reference(s): EOP F-0 Attachment 3Proposed references to be provided to applicants during examination: EOP F-0 Attachment 3

Learning Objective: 9704 Identify entry conditions for the FRPs.

Question Source:

Bank #

P-55158

Modified Bank #

New

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

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

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

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	_____
Group #	<u>2</u>	_____
K/A #	<u>002.A1.11</u>	_____
Importance Rating	<u>2.7</u>	_____

System: 002 Reactor Coolant System (RCS)

A1 Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCS controls including:

A1.11 Relative level indications in the RWST, the refueling cavity, the PZR and the reactor vessel during preparation for refueling.

Proposed Question # 76 :

Unit 1 is filling the Refueling Cavity in preparation for refueling.  
Each foot of level change in the cavity takes approximately 13,680 gallons.

When the operators stopped the fill at the 115' elevation to check for leaks, the RWST level was 88.5%

What will be the approximate level in the RWST when the Refueling Cavity is at the 138' elevation?

- A 10%
- B 15%
- C 20%
- D 25%

Proposed Answer: C

Explanation:

Technical Reference(s): OP B-2:II page 4  
V. 9 page IE-9.2b, RWST Volume

Proposed references to be provided to applicants during examination: V. 9 page IE-9.2b, RWST Volume

Learning Objective: 5824 Demonstrate the ability to maintain refueling cavity level.

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

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

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

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2      

Group #

1      

K/A #

003.2.4.47      

Importance Rating

3.4      

System: 003 Reactor Coolant Pump System (RCPS)

2.4 Emergency Procedures / Plan:

2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

Proposed Question # 77 :

RVLIS dynamic range recorder indication is initially 110%.

The 230kV yard is lost and the reactor trips.

The dynamic range on the recorder now indicates 33%.

Why has the recorder indication changed?

- A Large negative change in density compensation from T-hot.
- B Reverse flow in the loop that is used to monitor dynamic head.
- C A Loss of Coolant Accident is in progress.
- D There is no forced flow through the core.

Proposed Answer: D

Explanation:

Technical Reference(s): STG A-2D page 2-3Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8865 Explain RVLIS indication / interpretation.

Question Source:

Bank #

A-0544

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge

Comprehension or Analysis

X

10 CFR Part 55 Content:

55.41 1055.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>1</u>	_____
	K/A #	<u>003.K6.04</u>	_____
	Importance Rating	<u>2.8</u>	_____

System: 003 Reactor Coolant Pump System (RCPS)

K6 Knowledge of the effect of a loss or malfunction on the following will have on the RCPS:

K6.04 Containment isolation valves affecting RCP operation.

Proposed Question # 78 :

A reactor trip and safety injection have occurred.

What is the status of the Reactor Coolant Pump No. 1 seal leak off flow under these conditions?

No. 1 seal leak off flow is flowing to the:

- A Volume Control Tank.
- B Containment Structure Sump.
- C Reactor Coolant Drain Tank.
- D Pressurizer Relief Tank.

Proposed Answer: D

Explanation:

Technical Reference(s): OIM page A-6-1Proposed references to be provided to applicants during examination: NONELearning Objective: 7367 Discuss ESFAS actuation effects on plant equipment.

Question Source:	Bank #	<u>A-0062</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>2</u>	_____
	K/A #	<u>012.K3.02</u>	_____
	Importance Rating	<u>3.2</u>	_____

System: 012 Reactor Protection System (RPS)

K3 Knowledge of the effect that a loss or malfunction of the RPS will have on the following:  
K3.02 T/G.Proposed Question # 79 :

FCV-520, S/G 1-2 Main Feedwater Regulating valve, fails closed at 100% power and the Reactor does not trip at the S/G Low Level set point.

Following the ATWS, the reactor is tripped by de-energizing 480 V Busses 13D &amp; E.

Describe the response of the main turbine with no further operator action.

- A The turbine tripped when the "Reactor Trip Initiate" signal was sensed.
- B The turbine tripped by mechanical overspeed.
- C The turbine tripped when SI actuated.
- D The turbine tripped as soon as the low level was sensed on S/G 1-2.

Proposed Answer: C

Explanation:

Technical Reference(s): OIM page C-3-5  
OIM page B-6-11Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3372 Analyze the TURBINE CONTROL system control logic.

Question Source:	Bank #	<u>P-0434</u>
	Modified Bank #	_____
	New	_____

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

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	<u>      </u>
	Group #	<u>1</u>	<u>      </u>
	K/A #	<u>015/017.AA2.01</u>	<u>      </u>
	Importance Rating	<u>3.0</u>	<u>      </u>

APE: 015/017 Reactor Coolant Pump (RCP) Malfunctions

AA2 Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow)

AA2.01 Cause of RCP failure.

Proposed Question # 80 :

The following RCP conditions apply:

- Seal injection flows for 1-1 through 1-4 RCP's: 9.0, 9.5, 8.5, 9.0 gpm.
- Pump 1-3: #1 seal leakoff flow is NORMAL.
- Pump 1-3: #2 seal leakoff flow is HIGH.
- Pump 1-3: Standpipe Low Level in alarm.
- Pump 1-3: seal DP: 2200 psig.

What is the cause of the off-normal flows for RCP 1-3?

- A      #1 seal bypass valve is open.
- B      #1 seal failure.
- C      #2 seal failure.
- D      #3 seal failure.

Proposed Answer:   D  

Explanation:

Technical Reference(s): AR PK05-03 pages 6 and 7Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6137 Explain the effects of RCP seal failures.

Question Source:	Bank #	<u>A-0721</u>
	Modified Bank #	<u>      </u>
	New	<u>      </u>

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>1</u>	_____
	K/A #	<u>015.A4.02</u>	_____
	Importance Rating	<u>3.9</u>	_____

System: 015 Nuclear Instrumentation System (NIS)

A4 Ability to manually operate and / or monitor in the control room:

A4.02 NIS indicators.

Proposed Question # 81 :

Given the following:

- A reactor startup is in progress.
- SR Channel N-31 indicates  $5 \times 10^4$  cps.
- SR Channel N-32 indicates  $7 \times 10^4$  cps.
- IR Channel N-35 indicates  $2 \times 10^{-8}$  amps
- IR Channel N-36 indicates  $2 \times 10^{-10}$  amps

Which one of the following describes the NIS response indicated by these readings?

- A All SR and IR Channels are functioning correctly; SR high level trip has been blocked.
- B SR Channel N-32 is reading abnormally high for existing conditions.
- C IR Channel N-35 is reading abnormally high for existing conditions.
- D IR Channel N-36 is reading abnormally low for existing conditions.

Proposed Answer: C

Explanation:

Technical Reference(s): OIM page B-4-1  
\_\_\_\_\_Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5206 State the normal reading of NIS parameters during system operation.

Question Source:	Bank #	
	Modified Bank #	<u>INPO-2945</u>
	New	_____
Question History:	Last NRC Exam	<u>Watts Bar 1, 2/26/96</u>
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41	<u>7</u>
	55.43	_____

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2      

Group #

1      

K/A #

017.K1.02      

Importance Rating

3.3      

System: 017 In-Core Temperature Monitor System (ITM)

K1 Knowledge of the physical connections and / or cause-effect relationships between the ITM system and the following systems:

K1.02 RCS.

Proposed Question # 82 :

Two of the incore thermocouple inputs to the Subcooled Margin Monitor are normally cut out on Unit 1 because:

- A they are spare thermocouples for the Subcooled Margin Monitor.
- B they are used to calibrate the rest of the incore thermocouples.
- C they read the reference junction box temperature rather than the core exit temperature.
- D they read the temperature of the upper head rather than the core exit temperature.

Proposed Answer: D

Explanation:

Technical Reference(s): STG A-1 page 4-8Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8183 Interpret the meaning of In-core Temperature Monitor control switch indications.

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 2 to 955.43       

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1      

Group #

1      

K/A #

024.2.1.25      

Importance Rating

2.8      

APE: 024 Emergency Boration

2.1 Conduct of Operations:

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

Proposed Question # 83 :

Unit 1 tripped from 100% power due to a Main Turbine Trip.

While performing the actions of E-0.1, "Reactor Trip Response", the Control Operator notices that Rod Control Bank B has NO rod bottom lights or rod position indicating lights ON.

What action is required?

A      Emergency Borate 3600 gallons.

B      Emergency Borate 4800 gallons.

C      Emergency Borate 7200 gallons.

D      Emergency Borate 8100 gallons.

Proposed Answer: A

Explanation:

Technical Reference(s): OP AP-6 Appendix A  
STG A-3A page 4-5Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4149 Explain Emergency Boration.

Question Source:

Bank #

B-0888

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge  
Comprehension or AnalysisX

10 CFR Part 55 Content:

55.41 10  
55.43 5

Comments:

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	<u>2</u>	_____
Group #	<u>3</u>	_____
K/A #	<u>045.K1.06</u>	_____
Importance Rating	<u>2.6</u>	_____

System: 045 Main Turbine Generator (MT/G) System

K1 Knowledge of the physical connections and / or cause-effect relationships between the MT/G system and the following systems:

K1.06 RCS, during steam valve test.

Proposed Question # 84 :

Unit 1 was conducting STP M-21C, Main Turbine Valve testing at 30% power with **rods in manual** and Tavg on program.

While increasing the Valve Position Limit (VPL), the pushbutton stuck and the VPL increased to 120% and then rolled over to 0%.

Assuming no operator action, which of the following is true regarding the RCS response to this transient?

- A The reactor did NOT trip and Tavg decreased to T-no load.
- B The reactor did NOT trip and Tavg was stabilized on the load rejection controller.
- C The reactor tripped and Tavg was stabilized on the reactor trip controller.
- D The reactor tripped and Tavg was stabilized on the 10% steam dumps.

Proposed Answer: B

Explanation:

Technical Reference(s): STP M-21C pages 3 and 7  
STG C-2B pages 2.2-3 and 2.2-15

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3372 Analyze the TURBINE CONTROL system control logic.

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

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

10 CFR Part 55 Content:	55.41 <u>2 to 9</u>
	55.43 _____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	_____
	Group #	<u>1</u>	_____
	K/A #	<u>055.2.2.27</u>	_____
	Importance Rating	<u>2.6</u>	_____

EPE: 055 Loss of Offsite and Onsite Power (Station Blackout)

2.2 Equipment Control:

2.2.27 Knowledge of the refueling process.

Proposed Question # 85 :

Unit 1 is in MODE 6 starting a refueling outage with the following conditions:

- Shutdown for 5 days.
- Nozzle dams installed.
- Upper internals installed.
- Reactor vessel level is 138 feet.
- RCS temperature is 105°F.
- Making preparations to remove the first assembly.

With a loss of all AC power, how long before the RCS temperature reaches 200°F?

- A      8 min.
- B      24 min.
- C      136 min.
- D      366 min.

Proposed Answer: B

Explanation:

Technical Reference(s): OP AP SD-1 Appendix B

Proposed references to be provided to applicants during examination: OP AP SD-1 Appendix B

Learning Objective: 3836 Explain decay heat operational characteristics.

Question Source:	Bank #	
	Modified Bank #	<u>P-65991</u>
	New	_____
Question History:	Last NRC Exam	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41	_____
	55.43	<u>6</u>

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2      

Group #

1      

K/A #

056.K1.03      

Importance Rating

2.6      

System: 056 Condensate System

K1 Knowledge of the physical connections and / or cause-effect relationships between the Condensate System and the following systems:

K1.03 MFW.

Proposed Question # 86 :

Select the reason for the Condensate System alignment shift during a severe load rejection.

- A To provide increased heat transfer from the Main Generator Hydrogen Coolers.
- B To provide increased heat transfer from the Main Generator Stator Coil Coolers
- C To provide increased suction pressure for the Main Feedwater pumps.
- D To minimize cavitation of the No. 2 Heater Drain Tank pump.

Proposed Answer: C

Explanation:

Technical Reference(s): STG C-7A page 2.1-58Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7324 State the purpose of load transient bypass system.

Question Source:

Bank #

S-0654

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge

X

Comprehension or Analysis

      

10 CFR Part 55 Content:

55.41 2 to 955.43       

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

2      

Group #

1      

K/A #

061.K1.04      

Importance Rating

3.9      

System: 061 Auxiliary / Emergency Feedwater (AFW) System

K1 Knowledge of the physical connections and / or the cause-effect relationships between the AFW and the following systems:

K1.04 RCS.

Proposed Question # 87 :

Emergency Operating Procedure EOP E-0, "Reactor Trip or Safety Injection" requires the verification of automatic Auxiliary Feedwater actuation.

Which one of the following correctly describes a basis for the requirement?

- A To ensure that the steam generators are removing RCS heat, to prevent RCS overpressurization.
- B To ensure that RCS voids are limited to the Reactor Vessel head.
- C To prevent uncontrolled filling of the Steam Generators, and subsequent shrinkage.
- D To prevent an imbalance in Steam Generator cooldown.

Proposed Answer: A

Explanation:

Technical Reference(s): DCPP Step Description/Deviation for  
EOP E-0 page 23

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7920 Explain basis of emergency procedure step.

Question Source:

Bank #

P-1263

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge

X

Comprehension or Analysis

      

10 CFR Part 55 Content:

55.41 2 to 955.43       

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>      </u>
	Group #	<u>2</u>	<u>      </u>
	K/A #	<u>064.2.1.32</u>	<u>      </u>
	Importance Rating	<u>3.4</u>	<u>      </u>

System: 064 Emergency Diesel Generator (ED/G) System

2.1 Conduct of operations

2.1.32 Ability to explain and apply all system limits and precautions.

Proposed Question # 88 :

Unit 1 has experienced a Safety Injection due to an RCS leak.

The following conditions are present:

- D/G 1-2 is INOPERABLE.
- Offsite power is NOT available.
- 4kV Vital busses F and G are CROSS TIED.
- D/G 1-3 is supplying Vital busses F and G.
- D/G 1-3 is currently loaded to 2800 kW.

Assuming D/G 1-3 has never been overloaded previously, how long can D/G 1-3 operate in this condition?

- A      30 hours.
- B      100 hours.
- C      500 hours.
- D      1000 hours.

Proposed Answer: C

Explanation:

Technical Reference(s): EOP ECA-0.3 page11  
EOP ECA-0.3 Appendix QProposed references to be provided to applicants during examination: EOP ECA-0.3 Appendix Q

Learning Objective: 6466 Explain Diesel Generator Load Limit vs. Yearly Operating Hours graph.

Question Source:	Bank #	<u>B-0607</u>
	Modified Bank #	<u>      </u>
	New	<u>      </u>

Question History: Last NRC Exam       

Question Cognitive Level:	Memory or Fundamental Knowledge	<u>      </u>
	Comprehension or Analysis	<u>X</u>

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>1</u>	_____
	K/A #	<u>068.2.1.32</u>	_____
	Importance Rating	<u>3.4</u>	_____

System: 068 Liquid Radwaste System

2.1 Conduct of Operations

2.1.32 Ability to explain and apply all system limits and precautions.

Proposed Question # 89 :

A Liquid Radwaste Discharge Permit and Checklist have been completed in accordance with OP G-1 in preparation for overboard discharge of an Equipment Drain Receiver.

Checklist status is as follows:

- One Circulating Water Pump is RUNNING.
- One Auxiliary Salt Water Pump is RUNNING.
- RE-18, Radwaste Effluent Radiation Monitor, is OOS.
- FR-20, Radwaste Effluent Recorder, is OOS.

Based on the information given, could the Shift Foreman authorize the discharge and why?

- A YES; samples can be analyzed and flow rate can be estimated.
- B YES; the alternate radiation monitor and flow recorder could be used.
- C NO; both the discharge radiation monitor and the flow recorder are out of service.
- D NO; there is insufficient dilution flow.

Proposed Answer: A

Explanation:

Technical Reference(s): ECG 39.3 pages 1 and 4Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9523 Demonstrate the ability to apply 10CFR regulations.

Question Source:	Bank #	<u>B-0295</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	_____
	Group #	<u>3</u>	_____
	K/A #	<u>076.K4.03</u>	_____
	Importance Rating	<u>2.9</u>	_____

System: 076 Service Water System (SWS)

K4 Knowledge of the SWS design feature(s) and / or interlock(s) which provide for the following:  
K4.03 Automatic opening features associated with SWS isolation valves to CCW heat exchangers.Proposed Question # 90 :

The Turbine Building Nuclear Operator reports air leakage at the FCV-602 actuator (ASW to CCW HX).

If not repaired, what is the adverse consequence of this leakage on a loss of air?

- A Loss of unit crosstie capability.
- B Auto isolation of the in service CCW HX.
- C Inability to isolate the CCW HX from the control room.
- D Inability to split ASW trains during hot leg recirculation.

Proposed Answer: C

Explanation:

Technical Reference(s): STG E-5 page 2-15Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8097 Discuss aspects of heat sinks and sources for CCW system.

Question Source:	Bank #	<u>A-0638</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>2</u>	<u>      </u>
	Group #	<u>2</u>	<u>      </u>
	K/A #	<u>086.K6.04</u>	<u>      </u>
	Importance Rating	<u>2.6</u>	<u>      </u>

System: 086 Fire Protection System (FPS)

K6 Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the:

K6.04 Fire, smoke, and heat detectors.

Proposed Question # 91 :

How can the control operators determine the inputs currently in alarm for the Fire Water and Cardox systems if the fire detection system computer is inoperable?

- A      Monitor the Pyrotronics smoke detector panels.
- B      Monitor the fire detection system data gathering (PFAC) panels 4 and 5 on the East wall of the Control Room.
- C      Monitor the fire detection system data gathering (PFAC) panels 1, 2, and 3 on the West wall of the Control Room.
- D      The inputs in alarm cannot be determined when the computer is out of service.

Proposed Answer:      C  

Explanation:

Technical Reference(s): OP K-2C page 13  
                                   OP K-2C Att. 9.3 pages 1 and 2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8240 Identify the location of Fire Detection system alarm indications in control room.

Question Source:	Bank #	<u>A-0136</u>
	Modified Bank #	<u>      </u>
	New	<u>      </u>

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

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

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1      

Group #

2      

K/A #

E04.EA2.2      

Importance Rating

3.6      

Westinghouse: E04 LOCA Outside Containment

EA2 Ability to determine and interpret the following as they apply to the (LOCA Outside Containment)

EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question # 92 :

EOP E-0, "Reactor Trip or Safety Injection", provides guidance to go to ECA-1.2, "LOCA Outside Containment", based on the following CHECK.

- A Personnel reports of major leak in Auxiliary Building.
- B Auxiliary Building High Radiation alarm.
- C Auxiliary Building High Sump Level alarms.
- D Low RWST level with no increase in Containment Sump level.

Proposed Answer: B

Explanation:

Technical Reference(s): EOP E-0 page 15Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5441 State the symptoms of major accidents.

Question Source:

Bank #

P-45755

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge

X

Comprehension or Analysis

      

10 CFR Part 55 Content:

55.41

55.43 5

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

1      

Group #

1      

K/A #

E07.EA2.2      

Importance Rating

3.3      

Westinghouse: E07 Saturated Core Cooling

EA2 Ability to determine and interpret the following as they apply to the (Saturated Core Cooling)

EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Proposed Question # 93 :

Which one of the following represents the greatest risk to core cooling, when the RCS reaches saturation?

- A      Loss of RCS inventory.
- B      Loss of adequate heat sink.
- C      Loss of RHR shutdown cooling.
- D      Loss of high head injection.

Proposed Answer: A

Explanation:

Technical Reference(s): Lesson LMCD-FRC page 38Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5771 Explain the RCS subcooling response to accident conditions.

Question Source:

Bank #

P-5771

Modified Bank #

      

New

      

Question History:

Last NRC Exam

      

Question Cognitive Level:

Memory or Fundamental Knowledge

X

Comprehension or Analysis

      

10 CFR Part 55 Content:

55.41

55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>1</u>	_____
	Group #	<u>3</u>	_____
	K/A #	<u>E15.EK2.1</u>	_____
	Importance Rating	<u>2.8</u>	_____

Westinghouse: E15 Containment Flooding

EK2 Knowledge of the interrelations between the (Containment Flooding) and the following:

EK2.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question # 94 :

A reactor trip and Si have occurred as a result of a large break LOCA.

E-1.3, "Transfer to Cold Leg Recirculation" has just been completed.

The STA reports the following conditions associated with the Containment critical safety function:

- Containment pressure 2.0 psig.
- Containment sump level 98 ft.
- Containment radiation 1400 R/hr.

Which one of the following is an immediate containment concern?

- A Inadequate suction to the RHR pumps.
- B Flooding vital equipment in containment.
- C Erroneous instrumentation readings.
- D Containment structural integrity.

Proposed Answer: B

Explanation:

Technical Reference(s): EOP F-0 Attachment 6DCPP Step Description/Deviation for FR-Z.2 step 1Proposed references to be provided to applicants during examination: NONE

Learning Objective: 6819 Explain the effect of high water levels in containment.

Question Source:	Bank #	<u>B-0002</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO <u>3</u> <u>2</u> <u>2.2.13</u> <u>3.6</u>	SRO _____ _____ _____ _____
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Generic: 2.2 Equipment Control  
2.2.13 Knowledge of clearance and tagging procedures.

Proposed Question # 95 :

Under the following conditions:

- A turbine building sump pump has been cleared for routine maintenance.
- The clearance has been reported on, and a maintenance red tag has been hung.
- No work has been done to the pump.
- A problem has developed with the other sump pump, making it desirable to place the cleared pump back in service.
- The Sub-clearance requestor can NOT be located.

Who may remove this red tag?

- A Any Maintenance Foreman familiar with the clearance.
- B The Unit Shift Foreman.
- C The Senior Control Operator.
- D The Nuclear Operator removing the clearance with the concurrence of the Senior Control Operator.

Proposed Answer: B

Explanation:

Technical Reference(s): OP2.ID2 pages 2 and 3

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 241311 Explain the use of a Red tag.

Question Source:	Bank #	<u>CLR009</u>
	Modified Bank #	_____
	New	_____

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

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

Comments:

Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

2

K/A #

2.2.33

Importance Rating

2.5

Generic: 2.2 Equipment Control

2.2.33 Knowledge of control rod programming.

Proposed Question # 96 :

Assume the following plant conditions:

- Reactor power is 50%.
- Rod Control is in MANUAL.
- Turbine power is steady state.
- Tavg is 563.5°F.
- Tavg program is 547°F to 572°F from 0% to 100% power.

What will initial rod speed be if rod control is placed in auto?

- A 8 steps per minute.
- B 32 steps per minute.
- C 40 steps per minute.
- D 72 steps per minute.

Proposed Answer: C

Explanation:

Technical Reference(s): OIM page A-3-2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5019 Explain the conditions that affect automatic rod control while at power.

Question Source:

Bank #

A-0552

Modified Bank #

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge  
Comprehension or AnalysisX

10 CFR Part 55 Content:

55.41

55.43 6

Comments:



Examination Outline Cross-reference:

Level

RO

SRO

Tier #

3

Group #

3

K/A #

2.3.11

Importance Rating

2.7

Generic: 2.3 Radiation Control

2.3.11 Ability to control radiation releases.

Proposed Question # 97 :

Several Auxiliary Building radiation alarms are received.

It is confirmed that a Waste Gas Decay Tank has ruptured, and is depressurizing into the Auxiliary Building.

What action must be taken to prevent the offsite release of radioactive particulate and iodine?

- A Select "S" signal test, secure one Aux Bldg Ventilation train, and energize charcoal heaters.
- B Stop all Aux Bldg supply and exhaust fans, and energize charcoal heaters.
- C Push "Status Reset" at POV1 and POV2, and reset the "S" signal.
- D Locally close dampers that isolate the Waste Gas Decay Tank rooms.

Proposed Answer: A

Explanation:

Technical Reference(s): OP AP-14 page 2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5512 State the alignments for the Auxiliary Building Ventilation System.

Question Source:

Bank #

B-0367

Modified Bank #

New

Question History:

Last NRC Exam

Question Cognitive Level:

Memory or Fundamental Knowledge

X

Comprehension or Analysis

10 CFR Part 55 Content:

55.41

55.43

Comments:

Examination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO <u>3</u> <u>4</u> <u>2.4.29</u> <u>2.6</u>	SRO _____ _____ _____ _____
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Generic 2.4 Emergency Procedures / Plan  
2.4.29 Knowledge of the emergency plan.

Proposed Question # 98 :

While operating at 100% power a flow mismatch between charging, letdown and seal return of 55 gpm exists and is INCREASING.  
A second charging pump is started and letdown is isolated; however PZR level is slowly DECREASING, while containment pressure and radiation are both INCREASING.  
Safety Injection is manually initiated.

Classify this event per the Emergency Plan.

- A      No classification required.
- B      Unusual Event.
- C      Alert.
- D      Site Area Emergency.

Proposed Answer:       C  

Explanation:

Technical Reference(s): EP G-1 Att. 7.1 page 8

Proposed references to be provided to applicants during examination: EP G-1 Attachment 7.1

Learning Objective:    8509 Demonstrate the ability to classify emergency plan events.

Question Source:	Bank # Modified Bank # New	<u>B-0117</u> _____ _____
Question History:	Last NRC Exam	_____
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	_____ <u>  X  </u>
10 CFR Part 55 Content:	55.41 55.43	_____ <u>  5  </u>

Comments:

Examination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO <u>3</u> <u>4</u> <u>2.4.14</u> <u>3.0</u>	SRO _____ _____ _____ _____
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Generic: 2.4 Emergency Procedures / Plan  
2.4.14 Knowledge of general guidelines for EOP flowchart use.

Proposed Question # 99 :

A steam generator tube rupture occurs. The operators are about to enter E-3, "Steam Generator Tube Rupture", when a CSF MAGENTA path on Core Cooling occurs.

The Shift Engineer notices the MAGENTA path and recommends transitioning to FR-C.2, "Response to Degraded Core Cooling".

Before entering FR-C.2, the SE/crew should verify that a RED path:

- A     on ANY CSFST does NOT exist OR a MAGENTA path on Subcriticality does NOT exist.
- B     OR MAGENTA path on Subcriticality does NOT exist.
- C     on ANY CSFST does NOT exist OR a MAGENTA path on Subcriticality OR Heat Sink does NOT exist.
- D     on Subcriticality does NOT exist.

Proposed Answer:     A

Explanation:

Technical Reference(s): EOP F-0 page 2  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5435 State rules of usage for emergency procedures.

Question Source:	Bank # <u>B-0555</u>
	Modified Bank #     _____
	New     _____

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	<u>3</u>	_____
	Group #	<u>4</u>	_____
	K/A #	<u>2.4.48</u>	_____
	Importance Rating	<u>3.3</u>	_____

Generic 2.4 Emergency procedures / Plan

2.4.48 Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Proposed Question # 100 :

While operating at 100% power, a valid reactor trip signal is received.

An automatic reactor trip has NOT occurred and NO operator actions have yet been taken.

Based on the above conditions the operator should:

- A Verify control rods are inserting in AUTO at maximum rate per FR-S.1, "Response to Nuclear Power Generation / ATWS".
- B Manually insert control rods per FR-S.1, "Response to Nuclear Power Generation / ATWS".
- C Manually de-energize 480V Busses 13D and 13E per E-0, "Reactor Trip or Safety Injection".
- D Manually trip the reactor per E-0, "Reactor Trip or Safety Injection".

Proposed Answer: D

Explanation:

Technical Reference(s): EOP E-0 page 2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9693 State the steps and transitions in procedures that are considered immediate actions.

Question Source:	Bank #	<u>B-0152</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level Tier # Group # K/A # Importance Rating	RO _____ _____ _____ _____ _____	SRO <u>2</u> <u>3</u> 007.2.4.28 <u>3.3</u>
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System: 007 Pressurizer Relief Tank / Quench Tank System (PRTS)

2.4 Emergency Procedures / Plan:

2.4.28 Knowledge of procedures relating to emergency response to sabotage.

Proposed Question # 72 :

Unit 1 was in MODE 4 doing a STP M-45, Containment Inspection.

An explosive device was found on top of the Pressurizer Relief Tank in close proximity to Main Steam Leads 1 and 2.

How should the Shift Foreman classify this event per the Emergency Plan?

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

Proposed Answer: B

Explanation:

Technical Reference(s): EP G-1 Attachment 7.1 page 9

Proposed references to be provided to applicants during examination: EP G-1 Attachment 7.1

Learning Objective: 8513 Demonstrate the ability to evaluate effect sabotage event could have on plant operation.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>2</u>
	K/A #	_____	008.AA2.05
	Importance Rating	_____	<u>3.9</u>

APE: 008 Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

AA2 Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident:

AA2.05 PORV isolation (block) valve switches and indicators.

Proposed Question # 73 :

The crew is responding to stuck open pressurizer PORV, PCV-474.

When the BOPCO went to CLOSE on the control switch for block valve, 8000A, the valve did NOT close. The red light stayed lit.

Which one of the following could have been the cause of the block valve not closing?

- A The normal breaker open.
- B The redundant breaker open.
- C The motor thermal overload open.
- D The 480V/120V control power fuse blown.

Proposed Answer: C

Explanation:

Technical Reference(s): Drawing 437587Proposed references to be provided to applicants during examination: Drawing 437587

Learning Objective: 4607 Demonstrate the ability to determine Pressurizer valve status from control room indications.

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

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>2</u>
	K/A #	_____	012.2.2.8
	Importance Rating	_____	<u>3.3</u>

System: 012 Reactor Protection System (RPS)

2.2 Equipment Control:

2.2.8 Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.

Proposed Question # 74 :

DCPP wanted to raise the Steam Generator low level reactor trip setpoint from 7.2% to 15%.

What process was used to determine if the proposed change involved an unreviewed safety question?

- A Safety Analysis Report.
- B Nuclear Safety Oversight Review.
- C Operability Evaluation.
- D Licensing Basis Impact Evaluation.

Proposed Answer: D

Explanation:

Technical Reference(s): TS3.ID2 Attachment 8.1Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9675 State the purpose of an LBIE (Licensing Basis Impact Evaluation).

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

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

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

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>3</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>024.2.2.30</u>
	Importance Rating	_____	<u>3.3</u>

APE: 024 Emergency Boration

2.2 Equipment Control:

2.2.30 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.

Proposed Question # 75 :

Which one of the following conditions, occurring during refueling operations, would require emergency boration per Technical Specification 3.9.1, "Boron Concentration"?

- A Boron concentration decreases by 50 ppm from 2050 ppm in a period of 1 hour.
- B Boron concentration of the RCS is 1950 ppm.
- C Keff is 0.95.
- D Keff decreases by 1% from 0.95 in a period of 1 hour.

Proposed Answer: B

Explanation:

Technical Reference(s): Tech Specs 3.9.1  
COLR 1-12 page 4

Proposed references to be provided to applicants during examination: COLR 1-12 page 4

Learning Objective: 9697I Identify 3.9 Technical Specification LCOs.

Question Source:	Bank #	<u>INPO-927</u>
	Modified Bank #	_____
	New	_____

Question History:	Last NRC Exam	<u>Farley 1, 0/12/98</u>
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Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	_____

10 CFR Part 55 Content:	55.41	_____
	55.43	_____

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>2</u>
	K/A #	_____	<u>038.2.4.15</u>
	Importance Rating	_____	<u>3.5</u>

EPE: 038 Steam Generator Tube Rupture (SGTR)

2.4 Emergency Procedures / Plan:

2.4.15 Knowledge of communications procedures associated with EOP implementation.

Proposed Question # 76 :

A Steam Generator Tube Rupture has occurred.

The event has been classified and notifications are being made to Off-site Agencies.

The NRC requests an open communication channel with the Control Room.

Which one of the following individuals, knowledgeable of the event, should NOT be used for this purpose?

- A An unassigned Control Operator.
- B A Senior Control Operator.
- C A Control Room Assistant.
- D A Shift Technical Advisor.

Proposed Answer: C

Explanation:

Technical Reference(s): EP G-3 page 2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8524 State the basis for requiring that only certain shift members make notifications to, and maintain open communications with, NRC.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>2</u>
	K/A #	_____	039.2.4.11
	Importance Rating	_____	<u>3.6</u>

System: 039 Main and Reheat Steam System (MRSS)

2.4 Emergency Procedures / Plan:

2.4.11 Knowledge of abnormal condition procedures.

Proposed Question # 77 :

MSR 11A has had a loss of air to both the normal and spill valves on the LP Drain Tank.

Which one of the following describes the plant response?

- A Drip flow to #1 FW Heaters will INCREASE from the LP Drain Tank, causing #1 FW Heaters outlet temperature to INCREASE.
- B Steam flow to the Main Condenser will INCREASE, causing the output of the Main Generator to INCREASE.
- C #2 Heater Drain Tank level will INCREASE, causing #2 Heater Drain Tank pump flow to INCREASE.
- D LP Drain Tank level will DECREASE and plant efficiency will DECREASE.

Proposed Answer: D

Explanation:

Technical Reference(s): STG C-5 pages 2-19 and 2-20Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3411 Explain abnormal moisture separator reheater system operations.

Question Source:	Bank #	<u>A-0545</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	040.AA2.03
	Importance Rating	_____	<u>4.7</u>

APE: 040 Steam Line Rupture

AA2. Ability to determine and interpret the following as they apply to the Steam Line Rupture:

AA2.03 Difference between steam line rupture and LOCA.

Proposed Question # 78 :

Given the following plant conditions:

- Unit 1 was operating at 100% power.
- A Reactor Trip and Safety Injection has just occurred due to high Containment pressure.
- Pressurizer level and pressure are falling rapidly.
- RCS temperature is 520°F and falling.

Which one of the following is the cause of the above indications?

- A Small break LOCA.
- B Pressurizer vapor space leak.
- C Steam generator tube rupture
- D Steam line break.

Proposed Answer: D

Explanation:

Technical Reference(s): Lesson LTAA-6 page13Proposed references to be provided to applicants during examination: NONE

Learning Objective: 12435 DESCRIBE the plant responses for various types of events or accidents.

Question Source:	Bank #	<u>INPO-980</u>
	Modified Bank #	_____
	New	_____
Question History:	Last NRC Exam	<u>Farley 1, 3/12/98</u>
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41	_____
	55.43	<u>5</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	051.AA2.01
	Importance Rating	_____	<u>2.7</u>

APE: 051 Loss of Condenser Vacuum

AA2 Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum:

AA2.01 Cause for low vacuum condition.

Proposed Question # 79 :

A loss of condenser vacuum without a corresponding increase in air ejector  
(after condenser) vent flow indicates:

- A A decrease in circ water temperature.
- B Loss of seal water to the expansion joint.
- C Fouling of the condenser tubes.
- D A loss of gland steam to the turbine seals.

Proposed Answer: C

Explanation:

Technical Reference(s): Lesson LPA-7 pages 6 and 10Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4974 Explain possible causes of off normal conditions for Condenser and Condenser Air Removal system.

Question Source:	Bank #	<u>A-2133</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	051.2.2.12
	Importance Rating	_____	<u>3.4</u>

APE: 051 Loss of Condenser Vacuum

2.2 Equipment Control:

2.2.12 Knowledge of surveillance procedures.

Proposed Question # 80 :

Unit 1 is running STP M-21A, "Main Turbine/Generator Trip Functional Tests".

The "Test Handle" has just been placed in the TEST position in preparation for doing the Low Vacuum Trip Test (Simulated).

The control room reports that actual condenser vacuum has dropped to the turbine trip setpoint.

With no operator action, which one of the following will occur?

- A The turbine low vacuum trip device will NOT actuate, and the turbine will NOT trip.
- B The turbine low vacuum trip device will NOT actuate, but the turbine will trip.
- C The turbine low vacuum trip device will actuate, and the turbine will trip.
- D The turbine low vacuum trip device will actuate, but the turbine will NOT trip.

Proposed Answer: D

Explanation:

Technical Reference(s): STG C-3B page 2.2-7  
STP M-21A pages 6 and 7Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3372 Analyze the TURBINE CONTROL system control logic.

Question Source:	Bank #	_____
	Modified Bank #	_____
	New	<u>X</u>
Question History:	Last NRC Exam	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41	<u>10</u>
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>3</u>
	K/A #	_____	056.AA2.42
	Importance Rating	_____	<u>4.1</u>

APE: 056 Loss of Offsite Power

AA2 Ability to determine and interpret the following as they apply to the Loss of Offsite Power:

AA2.42 Occurrence of a reactor trip.

Proposed Question # 81 :

Unit 2 was operating at 75% power with all systems aligned for normal operation.

The electrical grid was experiencing frequency and voltage upsets affecting generator relay protection.

Actuation of which one of the following generator relays will result in a reactor trip?

- A Generator Underfrequency.
- B Generator Out-of-step.
- C Generator Overvoltage.
- D Generator Negative sequence.

Proposed Answer: C

Explanation:

Technical Reference(s): Drawing 500825Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5303 Explain the electrical protection relays and monitoring components.

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

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	057.AA2.20
	Importance Rating	_____	<u>3.9</u>

APE: 057 Loss of Vital AC Electrical Instrument Bus

AA2 Ability to determine and interpret the following as they apply to the Loss of Vital AC Electrical Instrument Bus:

AA2.20 Interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed to restore normal equipment operation.

Proposed Question # 82 :

A fault has occurred on UPS IY-12 static switch such that no electricity will flow through the switch.

Which one of the following correctly describes how the 120 V vital bus, PY-12, can be energized?

- A Automatic transfer via blocking diode to UPS IY-12 DC source.
- B Automatic transfer via bypass switch to Backup Regulating Transformer, TRY-12.
- C Manual transfer to Backup Regulating Transformer, TRY-12's alternate source.
- D Manual transfer via bypass switch to Backup Regulating Transformer, TRY-12.

Proposed Answer: D

Explanation:

Technical Reference(s): Drawing 437547

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 4391 State the purpose of inverter AC UPS Backup Regulating Transformer.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # P-1280  
New \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>2</u>
	K/A #	_____	065.AA2.07
	Importance Rating	_____	<u>3.2</u>

APE: 065 Loss of Instrument Air

AA2 Ability to determine and interpret the following as they apply to the Loss of Instrument Air:

AA2.07 Whether backup nitrogen supply is controlling valve position.

Proposed Question # 83 :

Unit 1 was at 100% power when a total loss of instrument air occurred.

What must be done so that the 10% steam dumps can be controlled, and what is the source of control pressure to operate the valves?

- A Leave Hagan controller in auto, control is via backup nitrogen.
- B Leave Hagan controller in auto, control is via backup air bottles.
- C Place Hagan controller in manual, control is via backup air bottles.
- D Cut in toggle switch on VB-3, control is via backup nitrogen.

Proposed Answer: A

Explanation:

Technical Reference(s): Dwg 106725 sheets 56 and 57STG C-2B page 2.1-14Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8042 Explain physical connections and/or cause effect relationships between the Steam Dump system and other systems.

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

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

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

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

Comments:



Examination Outline Cross-reference:

Level	RO	SRO
Tier #	_____	<u>1</u>
Group #	_____	<u>1</u>
K/A #	_____	068.AA2.01
Importance Rating	_____	<u>4.3</u>

APE: 068 Control Room Evacuation

AA2 Ability to determine and interpret the following as they apply to the Control Room Evacuation:

AA2.01 S/G level.

Proposed Question # 84 :

AP-8A, "Control Room Inaccessibility – Establish Hot Standby", is being used to establish control of the plant from the Hot Shutdown Panel (HSDP).

The following S/G parameters are noted:

- The turbine driven AFW Pump is secured.
- AFW supply valves, LCV-110, 111, 115, and 113 are in automatic.
- S/G 1-1 indicated level at HSDP 51% and STABLE.
- S/G 1-2 indicated level at HSDP 59% and slowly DECREASING.
- S/G 1-3 indicated level at HSDP 63% and STABLE.
- S/G 1-4 indicated level at HSDP 61% and slowly INCREASING.

The SFM directs you to control S/G levels in the normal band.

What actions should be taken with respect to the S/G LCVs?

- A Position LCV-115 and 113 to manual and control S/G 1-3 and 1-4 levels from the HSDP.
- B Position LCV-110 and 111 to manual and control S/G 1-1 and 1-2 levels from the HSDP.
- C Position LCV-110, 111, 115, and 113 to manual and control S/G levels from the HSDP.
- D Locally control LCV-110, 111, 115, and 113 with their handwheels and control S/G levels.

Proposed Answer: B

Explanation:

Technical Reference(s): OP AP-8A pages 9 and 10Proposed references to be provided to applicants during examination: OP AP-8A Figure 2

Learning Objective: 4464 Explain the operation of AFW system at hot shutdown panel.

Question Source: Bank # B-0633

Modified Bank # \_\_\_\_\_

New \_\_\_\_\_

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

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

Comprehension or Analysis X

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>1</u>
	K/A #	_____	068.2.2.24
	Importance Rating	_____	<u>3.8</u>

System: 068 Liquid Radwaste System

2.2 Equipment Control:

2.2.24 Ability to analyze the affect of maintenance activities on LCO status.

Proposed Question # 85 :

A Liquid Radwaste Discharge Permit and Checklist have been completed in accordance with OP G-1 in preparation for overboard discharge of an Equipment Drain Receiver.

Checklist status is as follows:

- One Circulating Water Pump is RUNNING.
- One Auxiliary Salt Water Pump is RUNNING.
- RE-18, Radwaste Effluent Radiation Monitor, is OOS.
- FR-20, Radwaste Effluent Recorder, is OOS.

Based on the information given, could the Shift Foreman authorize the discharge and why?

- A NO; both the discharge radiation monitor and the flow recorder are OOS.
- B NO; there is insufficient dilution flow.
- C YES; samples can be analyzed and flow rate can be estimated.
- D YES; the alternate radiation monitor and flow recorder could be used.

Proposed Answer: C

Explanation:

Technical Reference(s): ECG 39.3 pages 1 and 4Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9523 Demonstrate the ability to apply 10CFR regulations.

Question Source:	Bank #	<u>B-0295</u>
	Modified Bank #	_____
	New	_____

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>2</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>017.2.4.33</u>
	Importance Rating	_____	<u>2.8</u>

System: 071 Waste Gas Disposal System

2.4 Emergency Procedures / Plan:

2.4.33 Knowledge of the process used track inoperable alarms.

Proposed Question # 86 :

Unit 1 is operating at 100% power with the following conditions:

- WASTE GAS VENT HEADER HI HI PRESSURE has been repeatedly actuating greater than six times per hour.
- The Aux Building watch has investigated and reports the Vent Header pressure stable at 1.4 psig.

Based on the above indications, which action below was NOT correct?

- A An Action Request designating the problem as Emergent Work was generated.
- B The Aux Building watch was designated to monitor the Vent Header pressure daily.
- C An Annunciator Problem Evaluation Sheet was filled out by the Control Operator and approved by the Shift Foreman.
- D An Annunciator Defeat Log was approved by the Shift Manager and implemented.

Proposed Answer: B

Explanation:

Technical Reference(s): OP1.DC24 pages 2 and 3  
OP1.DC24 Attachment 7.1

Proposed references to be provided to applicants during examination: OP1.DC24 Attachment 7.1

Learning Objective: 9620 Explain administrative requirements for a temporary modification.

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 10  
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>2</u>
	K/A #	_____	E05.2.1.25
	Importance Rating	_____	<u>3.1</u>

Westinghouse: E05 Loss of Secondary Heat Sink

2.1 Conduct of Operations:

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

Proposed Question # 87 :

A loss of heat sink existed. The operators are performing FR -H.1, "Response to Loss of Secondary Heat Sink".

- The Subcooling Monitor is OOS.
- RCS pressure is 1300 psig and stable.
- The 5 hottest corroborating core exit T/C's are 600 °F.

What is the status of the core exit fluid?

- A      superheated
- B      saturated
- C      subcooled
- D      super critical

Proposed Answer: A

Explanation:

Technical Reference(s): Steam Tables

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

Learning Objective: 4563 Demonstrate the ability to interpret Subcooling Monitor indications during plant operation.

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>E07.2.4.18</u>
	Importance Rating	_____	<u>3.6</u>

Westinghouse: E07 Saturated Core Cooling  
2.4 Emergency Procedures / Plan:  
2.4.18 Knowledge of the specific bases for EOPs.

Proposed Question # 88 :

Step 2 of FR-C.3, "Response to Saturated Core Conditions", checks if the RHR system has been placed in service in the shutdown cooling mode.

Which of the following describes the basis for this step?

- A If RHR is in service in the shutdown cooling mode, the saturated core cooling condition is a problem with RHR and this procedure will not address this condition.
- B To ensure a MAGENTA or RED condition in Core Cooling will not arise while performing this procedure.
- C To verify RHR is aligned for long term cooling if the appropriate conditions are met.
- D If RHR is in service in the shutdown cooling mode, the saturated core cooling condition is a problem with RHR and this procedure will identify and isolate the affected train.

Proposed Answer: A

Explanation:

Technical Reference(s): DCPP Step Description/Deviation for  
FR-C.3 page 2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7920 Explain basis of emergency procedure step.

Question Source:	Bank #	<u>INPO-19274</u>
	Modified Bank #	_____
	New	_____
Question History:	Last NRC Exam	<u>Braidwood 1, 10/20/00</u>
Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	<u>10</u>
	55.43	_____

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>E12.2.2.34</u>
	Importance Rating	_____	<u>3.2</u>

Westinghouse: E12 Uncontrolled Depressurization of All Steam Generators

2.2 Equipment Control:

2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity.

Proposed Question # 89 :

During operation at 100% power at EOL, Unit 1 experienced a large steam line break on the common steam header.

- A Reactor Trip and Safety Injection occurred.
- NONE of the MSIV's closed automatically or manually.

Which one of the following describes the response of core reactivity following the Reactor Trip and Safety Injection?

- A      Reactivity INCREASED due to the RCS cooldown then DECREASED due to the Safety Injection.
- B      Reactivity DECREASED throughout the whole transient.
- C      Reactivity DECREASED due to the RCS cooldown then INCREASED due to the Safety Injection.
- D      Reactivity INCREASED throughout the whole transient.

Proposed Answer: A

Explanation:

Technical Reference(s): FSAR pages 15.4-21 and 15.4-22  
FSAR figures 15.2.13-3 and 15.4.2-2

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3444 Explain the plant's response to reactivity addition accidents described in the FSAR.

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 \_\_\_\_\_  
55.43      6

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>1</u>
	Group #	_____	<u>3</u>
	K/A #	_____	<u>E13.2.4.35</u>
	Importance Rating	_____	<u>3.5</u>

Westinghouse: E13 Steam Generator Overpressure

2.4 Emergency Procedures / Plan:

2.4.35 Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.

Proposed Question # 90 :

FR-H.2, "Response to Steam Generator Overpressure" has a step to locally dump steam from the affected Steam Generators.

You are tasked with locally controlling S/G 1-1 PCV-19 to dump steam.

Which statement is correct concerning the operation of the local handwheel.

- A The breaker must be racked out PRIOR to operating the handwheel.
- B The handwheel is only for jacking the steam dump valve closed.
- C The handwheel is only for jacking the steam dump valve open.
- D The handwheel is for jacking the steam dump valve both open and closed.

Proposed Answer: C

Explanation:

Technical Reference(s): STG C-2B page 2.1-2  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 8008 Explain conditions that effect Steam Dump status.

Question Source: Bank # A-0647  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

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

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>2.1.13</u>
	Importance Rating	_____	<u>2.9</u>

Generic: 2.1 Conduct of Operations

2.1.13 Knowledge of facility requirements for controlling vital / controlled access.

Proposed Question # 91 :

The Protected Area at DCPD is:

- A all PG&E controlled properties associated with DCPD outside of the plant Vital Areas.
- B all the land along the access roads from the Avila Gate to the Montana De Oro gate.
- C an area within the Owner-controlled Area, encompassed by physical barriers, to which access is controlled for security purposes.
- D that area at the DCPD site that is set aside for the protection of endangered species.

Proposed Answer: C

Explanation:

Technical Reference(s): General Employee Training via CBT  
question number KS2-1Proposed references to be provided to applicants during examination: NONE

Learning Objective: Security #2: Identify the three types of Security areas at DCPD.

Question Source: Bank # KS2-1  
 Modified Bank # \_\_\_\_\_  
 New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 10  
 55.43 5

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>1</u>
	K/A #	_____	<u>2.1.33</u>
	Importance Rating	_____	<u>4.0</u>

Generic: 2.1 Conduct of Operations

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

Proposed Question # 92 :

The Technical Specification surveillance that is affected by the inoperability of the PPC is:

- A RCS Flow Rate.
- B Axial Flux Difference.
- C Heat Flux Hot Channel Factors.
- D Accident Monitoring Instrumentation.

Proposed Answer: B

Explanation:

Technical Reference(s): AR PK15-21 page 3Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9697 Identify Technical Specification LCOs.

Question Source:	Bank #	<u>A-0156</u>
	Modified Bank #	_____
	New	_____
Question History:	Last NRC Exam	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	<u>X</u>
	Comprehension or Analysis	_____
10 CFR Part 55 Content:	55.41	_____
	55.43	<u>2, 3</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>2</u>
	K/A #	_____	<u>2.2.31</u>
	Importance Rating	_____	<u>2.9</u>

Generic: 2.2 Equipment Control

2.2.31 Knowledge of procedures and limitations involved in initial core loading.

Proposed Question # 93 :

A refueling is in progress when the audible count rate indication in the control room fails.

During the next hour, the following evolutions were expected to take place.

- Move the source from one core location to another.
- Remove 4 assemblies from the core.
- Reposition the temporary nuclear detectors.
- Reposition the underwater camera.

What is your direction as the SRO in charge of refueling regarding the evolutions listed above?

- A Do NOT allow the movement of the source or fuel assemblies until the audible count rate indication in the control room is again operable.
- B Do NOT allow any of the evolutions to occur until the audible count rate indication in the control room is again operable.
- C Allow the movement of the source, camera, and temporary detectors to occur, but the boron concentration must be verified within 12 hours.
- D Allow all of the evolutions to occur as long as the boron concentration is determined within 12 hours.

Proposed Answer: A

Explanation:

Technical Reference(s): Tech Spec pages 1.1-2, 3.9-2, B3.9-5  
OP B-8DS1 page 5Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9529I Demonstrate the ability to determine required 3.9 LCO status.

Question Source: Bank # \_\_\_\_\_  
Modified Bank # B-0537  
New \_\_\_\_\_

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

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>2</u>
	K/A #	_____	<u>2.2.14</u>
	Importance Rating	_____	<u>3.0</u>

Generic: 2.2 Equipment Control

2.2.14 Knowledge of the process for making configuration changes.

Proposed Question # 94 :

Which situation would require a Temporary Modification (TMOD)?

- A Installing a temporary hose to drain a pump cleared for maintenance.
- B Leaving a pump suction strainer installed following flushing.
- C Lifting a lead as part of a surveillance test.
- D Installing a jumper on cleared equipment using an approved work order.

Proposed Answer: B

Explanation:

Technical Reference(s): CF4.ID7 pages 2 and 6Proposed references to be provided to applicants during examination: NONE

Learning Objective: 9620 Explain administrative requirements for a temporary modification.

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # B-0205  
 New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
 55.43 3

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>2</u>
	K/A #	_____	<u>2.2.32</u>
	Importance Rating	_____	<u>3.3</u>

Generic: 2.2 Equipment Control

2.2.32 Knowledge of the effects of alterations on core configuration.

Proposed Question # 95 :

While refueling, two fuel assemblies of different enrichments were inadvertently loaded into the wrong core position. The error was not caught during reload verification.

Which one of the following would detect the error first during startup testing?

- A Core physics data at  $10^{-8}$  amps.
- B Incore flux detectors.
- C Power range QPTR.
- D Incore thermocouple data

Proposed Answer: B

Explanation:

Technical Reference(s): FSAR pages 15.3-6 and 15.3-7Proposed references to be provided to applicants during examination: NONE

Learning Objective: 3444 Explain the plant's response to reactivity addition accidents described in the FSAR.

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

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

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>6</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>3</u>
	K/A #	_____	2.3.10
	Importance Rating	_____	<u>3.3</u>

Generic: 2.3 Radiation Control

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

Proposed Question # 96 :

Several Auxiliary Building radiation alarms are received. It is confirmed that a Waste Gas Decay Tank has ruptured, and is depressurizing into the Auxiliary Building.

What action must be taken to prevent the offsite release of radioactive particulate and iodine?

- A Stop all Aux Bldg supply and exhaust fans, and energize charcoal heaters.
- B Push "Status Reset" at POV1 and POV2, and reset the "S" signal.
- C Locally close dampers that isolate the Waste Gas Decay Tank rooms.
- D Select "S" signal test, secure one Aux Bldg Ventilation train, and energize charcoal heaters.

Proposed Answer: D

Explanation:

Technical Reference(s): OP AP-14 page 2Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5512 State the alignments for Auxiliary Building Ventilation System.

Question Source:	Bank #	<u>B-0367</u>
	Modified Bank #	_____
	New	_____

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

10 CFR Part 55 Content:	55.41	_____
	55.43	<u>4</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>3</u>
	K/A #	_____	<u>2.3.3</u>
	Importance Rating	_____	<u>2.9</u>

Generic: 2.3 Radiation Control

2.3.3 Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).

Proposed Question # 97 :

An offsite transportation accident occurs near the plant involving a radioactive shipment from DCPD to the low-level burial grounds.

Select the correct response for DCPD personnel in this case:

- A PG&E has no responsibility for this accident and may only assist if asked by the carrier or county.
- B Other than determining the classification requirements per EP G-1, PG&E should have NO involvement in this accident.
- C Since the accident involved radioactive materials from DCPD, PG&E is responsible for implementing EP R-7 and other appropriate EP procedures to mitigate the accident.
- D Other than the reporting requirements of IDAP XI1.ID2, PG&E should have NO involvement in this accident..

Proposed Answer: A

Explanation:

Technical Reference(s): EP R-7 page 2  
\_\_\_\_\_

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 7338 Explain the operations for offsite radioactive accidents and spills.

Question Source: Bank # P-5951  
Modified Bank # \_\_\_\_\_  
New \_\_\_\_\_

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

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

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 4

Comments:



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>4</u>
	K/A #	_____	<u>2.4.4</u>
	Importance Rating	_____	<u>4.3</u>

Generic: 2.4 Emergency Procedures / Plan

2.4.4 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Proposed Question # 98 :

The following is the leak rate history for Steam Generator 1-1:

- Past week 90 gpd.
- 0600 yesterday 90 gpd.
- 2200 yesterday 90 gpd.
- 0200 today 110 gpd.
- 0300 today 160 gpd.

What action(s) is (are) required?

- A Continue to monitor S/G 1-1 conditions, and enter AP-3, "Steam Generator Tube Failure" if leakage exceeds 500 gpd.
- B Reduce to  $\leq 50\%$  power within 1 hour, and be in Mode 3 within the next 2 hours.
- C Initiate a manual Safety Injection.
- D Reduce to  $\leq 50\%$  power at up to 50 Mw/min and be in Mode 3 within 6 hours.

Proposed Answer: B

Explanation:

Technical Reference(s): OP O-4 pages 5 through 10  
T.S. 3.4.13

Proposed references to be provided to applicants during examination: OP O-4 Instructions pages 5 - 10

Learning Objective: 3794 Interpret the indication(s) of S/G tube leakage.

Question Source:	Bank #	<u>B-0344</u>
	Modified Bank #	_____
	New	_____
Question History:	Last NRC Exam	_____
Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehension or Analysis	<u>X</u>
10 CFR Part 55 Content:	55.41	<u>10</u>
	55.43	<u>2</u>

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>4</u>
	K/A #	_____	<u>2.4.32</u>
	Importance Rating	_____	<u>3.5</u>

Generic: 2.4 Emergency Procedures / Plan

2.4.32 Knowledge of operator response to loss of all annunciators.

Proposed Question # 99 :

While ramping load from 50% to 100% power, a loss of all annunciators, including the Ronan CRT and the alarm typewriter, occurs.

Your first action is to:

- A      immediately stop all load changes.
- B      place the control rods in MANUAL.
- C      notify plant management of a possible entry into an Emergency Classification.
- D      contact the Operational Support Team to investigate the problem.

Proposed Answer:    A

Explanation:

Technical Reference(s): AR PK15-22 page 5

Proposed references to be provided to applicants during examination: NONE

Learning Objective:    7784 Demonstrate the ability to determine plant implications from annunciator status.

Question Source:	Bank #	<u>B-0282</u>
	Modified Bank #	_____
	New	_____

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

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

Comments:

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	_____	<u>3</u>
	Group #	_____	<u>4</u>
	K/A #	_____	<u>2.4.27</u>
	Importance Rating	_____	<u>3.5</u>

Generic: 2.4 Emergency Procedures / Plan  
2.4.27 Knowledge of fire in the plant procedure.

Proposed Question # 100 :

Which one of the following is correct, concerning a Control Room response to a fire?

- A A Senior Control Operator is always designated as the Fire Brigade Leader. This operator must be Fire Brigade Leader qualified.
- B Any Fire Brigade qualified operator shall accompany the Industrial Fire Officer, who shall be the Fire Brigade Leader.
- C A Fire Brigade qualified Senior Control Operator shall be designated as the Fire Brigade Leader, with four qualified aerators as the Fire Brigade. The Industrial Fire Officer will be on hand to advise the SCO.
- D A licensed Operator will accompany the Fire Brigade Leader, unless the Licensed Operator is the Fire Brigade Leader.

Proposed Answer: D

Explanation:

Technical Reference(s): CP M-6 page 1

Proposed references to be provided to applicants during examination: NONE

Learning Objective: 5472 State the administrative requirements for fire brigade.

Question Source:	Bank #	<u>P-1411</u>
	Modified Bank #	_____
	New	_____

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

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

Comments: