Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	005AA1.01	
Importance Rating	3.6	3.4

Proposed Question:

Technical Specifications require all full-length control rods to be OPERABLE in Modes 1 and 2 (with special test exceptions).

Which ONE of the following would cause a control rod to be INOPERABLE?

A. The CRDM stationary gripper coil turns OFF after the movable gripper coil turns ON during rod withdrawal.

B. The CRDM lift coil turns ON while the movable gripper coil is ON during rod withdrawal.

C. The CRDM lift coil turns ON and then the movable gripper coil turns ON during rod insertion.

D. The CRDM stationary gripper coil turns OFF before the movable gripper coil turns ON during rod insertion.

Proposed Answer: D

Explanation:

A, B & C. Incorrect because they are normal sequences of coil operation during rod movement.

Technical Reference(s): T61.0110 6 LP-26, Rod Control, Pages 14 & 15
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F T61.0110 6 LP-26, Rod Control

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Inoperable Rod-Malfunctioning Coil Currents

Outline #: B001 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	015/17G2.1.32	
Importance Rating	3.4	3.8

Proposed Question:

OTN-BB-00003, Reactor Coolant Pumps, permits two successive starts of a RCP (provided the motor is allowed to coast to a stop between starts).

Which ONE of the following describes the bases for the RCP starting limits?

Limit the number of RCP starts in a short period to time prevents damage to the:

A. RCP motor stator windings.

B. RCP breaker protection relays.

C. RCP breaker junction terminals.

D. RCP motor armature insulation.

Proposed Answer: A

Explanation:

RCP starting limitations are provided to ensure that the motor stator windings are not overheated by applying high starting currents several times without allowing the windings to cool.

Technical Reference(s): OTN-BB-00003, Reactor Coolant Pumps, Rev. 013, Page 3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C.8 T61.003A 6 LP A-20

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 2

Comments: RCP Starting Limitations

Outline #: B002 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	E09EK1.3	
Importance Rating	3.3	3.6

Proposed Question:

The plant has suffered a Loss of all AC Power.

Which ONE of the following sets of parameters indicates that natural circulation is occurring?

A. S/G Pressure 235 psig and STABLE, T_{HOT} 301°F and INCREASING.

B. S/G Pressure 435 psig and INCREASING, T_{COLD} 435°F and STABLE.

C. S/G Pressure 585 psig and INCREASING, T_{HOT} 530°F and DECREASING.

D. S/G Pressure 685 psig and STABLE, T_{COLD} 503°F and STABLE.

Proposed Answer: D

Explanation:

A. Incorrect because T_{HOT} not stable or decreasing.
B & C. Incorrect because S/G pressure not stable or decreasing.

Technical Reference(s): T61.003D 6 LP-23, Page 36
(Attach if not previously provided) ECA-0.1, Rev. 1B1, Page 16

Proposed references provided to applicants during examination: None

Learning Objective: K T61.003D 6 LP-23

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: Natural Circulation Indications (IPE/PRA)

Outline #: B003 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	1	1
	K/A #	024G2.4.4	
	Importance Rating	4.0	4.3

Proposed Question:

Which ONE of the following is an entry condition for OTO-ZZ-00003, Loss of Shutdown Margin?

A. Mode 3, following Reactor Trip at 0950 and RCS Tavg 545°F at 1115.

B. Mode 2, with Reactor Power at 5% and Control Bank C at 35 steps.

C. Mode 3, with RCS temperature decrease of 100°F in 20 minutes with ECCS operating in the Injection phase.

D. Mode 5, with Shutdown Margin Calculation indicating the core net reactivity of –1100 pcm.

Proposed Answer: B

Explanation:

A. Incorrect because cooldown is NOT uncontrolled.
B. Rods are below the Rod Insertion Limits.
C. Incorrect because Safety Injection has already occurred.
D. Incorrect because required SDM is –1,000 pcm.

Technical Reference(s): OTO-ZZ-00003, Loss of Shutdown Margin, Rev. 008, Page 1
(Attach if not previously provided) T61.003B 6 LP B-61, Page 2

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP B-61

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 2

Comments: OTO-ZZ-00003 Entry Conditions

Outline #: B004 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	026AK3.03	
Importance Rating	4.0	4.2

Proposed Question:

The plant is at 100% power with the following conditions:

- 'C' CCW pump OOS
- 'A' CCW Train in Service, 'B' CCW Train in Standby
- NCP in Service with 120 gpm Letdown Flow

The 'A' CCW pump trips due to unknown reasons.

Which ONE of the following includes required immediate actions?

A. Restart the 'A' CCW pump, if pump fails to restart, then start either 'B' or 'D' CCW pump and transfer the service loop to the 'B' CCW train.

B. Start either 'B' or 'D' CCW pump then transfer the service loop to the 'B' CCW train.

C. Trip the Reactor Coolant Pumps and the Reactor, enter E-0, Reactor Trip/Safety Injection, then transfer the service loop to the 'B' CCW train.

D. Verify 'B' CCW pump starts automatically then transfer the service loop to the 'B' CCW train.

Proposed Answer: B

Explanation:

A. Incorrect because procedure OTO-EG-00001 specifically states otherwise.
C. Incorrect because not required unless CCW is lost for 10 minutes or RCP high temperature limit is reached.
D. Incorrect because there is no automatic start for opposite train CCW pump.

Technical Reference(s): OTO-EG-00001, CCW System Malfunction, Rev. 005, Page 3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003B 6 LP B-29

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5, 10 **55.43** ____

Comments: Loss of CCW Pump – Operator Actions

Outline #: B005 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	2
K/A #	027AA2.16	
Importance Rating	3.6	3.9

Proposed Question:

A Pressurizer Pressure instrument has failed low. All immediate and subsequent operator actions have been completed for the failed instrument per OTO-BB-00006, Pressurizer Pressure Channel Failure.

Which ONE of the following remains INACCURATE despite the fact that the alternate instruments have been selected?

(Assume NO actions have been performed by I&C personnel.)

A. Pressurizer Pressure Control

B. Pressurizer Pressure Recorder

C. OPΔT/OTΔT Temp Recorder

D. Core Subcooling Monitor

Proposed Answer: D

Explanation:

A, B & C. Incorrect because the failed channel can be selected away by the operator.
D. Correct because a failed input to the subcooling monitor must be disabled by I&C Technicians.

Technical Reference(s): OTO-BB-00006, Pressurizer Pressure Channel Failure, Rev. 007
(Attach if not previously provided) Pages 2-4 and Attachment 1

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003B 6 LP B-19

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: Pzr Pressure Instrument Fails Low

Outline #: B006 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	1	1
	K/A #	040AK1.06	
	Importance Rating	3.7	3.8

Proposed Question:

Which ONE of the following red paths is MOST LIKELY to occur for a steam line break on a single S/G outside containment resulting in a Reactor Trip and Safety Injection? (Assume that all safeguards equipment functions as designed.)

A. Response to Imminent Pressurized Thermal Shock Condition (FR-P.1)

B. Response to Loss of Secondary Heat Sink (FR-H.1)

C. Response to Inadequate Core Cooling (FR-C.1)

D. Response to High Containment Pressure (FR-Z.1)

Proposed Answer: A

Explanation:

This event can result in an uncontrolled cooldown from a faulted S/G followed by a subsequent re-pressurization of the RCS due to the Safety Injection.

Technical Reference(s): T61.003D 6 LP-3, Pages 20-22
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F, G T61.003D 6 LP-3

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: Steam Line Break Outside CTMT

Outline #: B007 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	E08EA1.3	
Importance Rating	3.6	4.0

Proposed Question:

FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, is in progress.

Which ONE of the following conditions is acceptable using Attachment 7, on the following page, for RCS Post-Soak Cooldown Limitations during recovery from the PTS condition?

A. RCS cold legs = 200°F. RCS wide range pressure = 0 psig.

B. RCS cold legs = 250°F. RCS wide range pressure = 300 psig.

C. RCS cold legs = 300°F. RCS wide range pressure = 400 psig.

D. RCS cold legs = 400°F. RCS wide range pressure = 300 psig.

Proposed Answer: C

Explanation:

A, B & D. Incorrect because outside the allowed band.

Technical Reference(s): FR-P.1, Attachment 7, Rev. 1B1
(Attach if not previously provided)

Proposed references provided to applicants during examination: FR-P.1, Attach 7, Rev. 1B1

Learning Objective: E T61.003D 6 LP-28

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

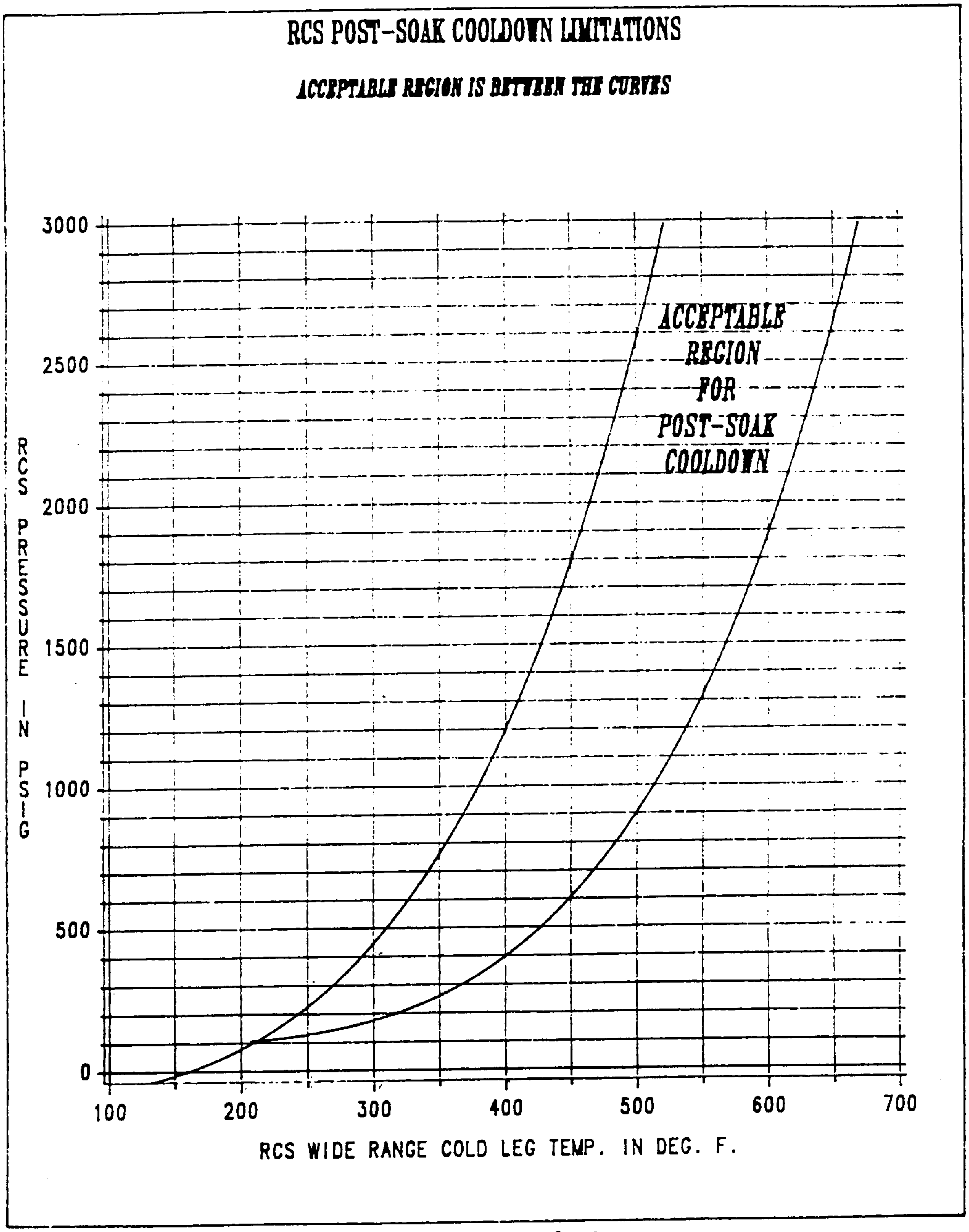
10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: RCS Post-Soak C/D Limits Following PTS

Outline #: B008 **B008Author:** PJM

Proced. No. FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	Attachment 7	Rev. 1B1

RCS POST-SOAK COOLDOWN LIMITATIONS CURVE



Page 1 of 1

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	1	1
	K/A #	051AK3.01	
	Importance Rating	2.8	3.1

Proposed Question:

A loss of condenser vacuum is occurring due to unknown reasons and power has been reduced from 100% to 75% over the last 5 minutes.

The following plant conditions exist:

- Auct High Tavg 593°F
- Reactor / Turbine Power 75% / 775 MWe
- LP 'A' Condenser Pressure 5.8" Hga
- LP 'B' Condenser Pressure 6.2" Hga
- LP 'C' Condenser Pressure 6.5" Hga

Which ONE of the following describes the expected operation of the condenser steam dumps with these conditions:

A. Less than 12 steam dumps are available and all available dumps are FULLY OPEN.

B. ALL 12 condenser steam dumps are available and all are FULLY OPEN.

C. Less than 12 steam dumps are available and all available dumps are PARTIALLY OPEN.

D. Less than 12 steam dumps are available and all are CLOSED.

Proposed Answer: A

Explanation:

The steam dumps that discharge to the 'B' and 'C' Condenser are not available because those condenser pressures are > 6" Hga. The remaining steam dumps are fully open because the Tavg/Tref mismatch is > 13.7°F.

Technical Reference(s): T61.0110 6 LP-20, Main Steam, Pages 36-42
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.0110 6 LP-20 Main Steam

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: Loss of Steam Dumps With Loss of Vacuum

Outline #: B009 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	055EK1.01	
Importance Rating	3.3	3.7

Proposed Question:

During the performance of ECA-0.0, Loss of All AC Power, battery NK11 discharge ammeter is reading 275 amps.

Which ONE of the following is the MAXIMUM time that NK01 could remain operable assuming the battery was fully charged initially?

A. 2 hours

B. 4 hours

C. 6 hours

D. 8 hours

Proposed Answer: C

Explanation:

NK11 battery capacity is 1650 amp-hours. Discharge rate is 275 amps.
Time = 1650 amp-hours ÷ 275 amps = 6 hours

Technical Reference(s): T61.0110 6 LP-6, Safeguards Power, Pages 22-24
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-6, Safeguards Power

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43**

Comments: Battery Discharge Rate (IPE/PRA)

Outline #: B010 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	1	1
	K/A #	057AA2.19	
	Importance Rating	4.0	4.3

Proposed Question:

The plant is in Mode 2 at 3% Reactor Power, commencing warm-up of the main turbine.

Which ONE of the following could be a direct result of a loss of Vital AC Instrument Bus NN02?

A. Intermediate Range High Flux Reactor Trip.

B. Source Range High Flux Reactor Trip.

C. Charging Pump Suction Swaps to the RWST.

D. Idle Component Cooling Water Pump Start.

Proposed Answer: A

Explanation:

A. Correct because IR High Flux Reactor Trip is not blocked until 15% Reactor Power.
B. Incorrect because the SR High Flux Reactor Trip is blocked.
C. Incorrect because this is caused by a loss of NN01 or NN04.
D. Incorrect because this is caused by a Loss of NN01 or NN04.

Technical Reference(s): OTO-NN-00001, Loss of Safety Related Instrument Power, Rev 5
(Attach if not previously provided) Attachments 1B, 2B, and 4B

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP B-45

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: Auto Actions on Loss of NN02

Outline #: B011 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	067AA1.08	
Importance Rating	3.4	3.7

Proposed Question:

A breaker fault in the NB01 Switchgear has resulted in a large fire. Installed Fire Suppression Systems have been ACTUATED.

Which ONE of the following describes how this fire will be extinguished?

A. Fire Brigade will apply foam to the fire.

B. Halon will be dumped into the room.

C. Carbon dioxide will be dumped into the room.

D. Deluge valve and sprinklers will actuate.

Proposed Answer: B

Explanation:

Halon is the only installed protection in the ESF switchgear rooms.

Technical Reference(s): T61.0110 6 LP-35, Fire Protection, Pages 83, 91 and 92
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: H T61.0110 6 LP-35, Fire Protection

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Fire in NB01 Switchgear

Outline #: B012 **Author:** RGB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	068AK2.02	
Importance Rating	3.7	3.9

Proposed Question:

The following plant conditions exist:

- Mode 1, 12% Reactor Power
- Power Ascension in progress
- A fire occurs requiring an immediate evacuation of the control room.
- The Operators are UNABLE to trip the reactor or perform the other IMMEDIATE ACTIONS of OTO-ZZ-00001, Control Room Inaccessibility, before exiting the control room.

Which ONE of the following actions will cause the Reactor Protection System to initiate a reactor trip?

A. Tripping the main turbine from the front standard.

B. Locally de-energizing PG19.

C. Tripping the normal feeder breaker to NB02.

D. Tripping all 4 RCP breakers at PA01 and PA02.

Proposed Answer: D

Explanation:

A. Incorrect due to being below P-9.
B. Incorrect because no automatic trip would occur and PG20 would continue to power the other rod drive MG set.
C. Incorrect because no trip signal is generated from a loss of NB02. NE02 would energize the bus.

Technical Reference(s): E-0, Attachment 1, Rev. 1B5
(Attach if not previously provided) OTO-ZZ-00001, Attachment 2, Rev. 018

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-27, Reactor Protection

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Activating RPS from Outside the Control Room

Outline #: B013 **Author:** RGB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	E14EK2.1	
Importance Rating	3.4	3.7

Proposed Question:

A large steam line break occurs inside containment. A Safety Injection occurs on Containment Pressure. Containment pressure is 30 psig when step 10 of Attachment 12 of E-0, "Check if CTMT Spray is Required", is performed.

Which ONE of the following is the reason for stopping all four RCP's?

A. They are an unnecessary addition of heat to Containment.

B. All RCP cooling water flow is automatically isolated.

C. Air is too dense for the motor cooler fans to keep the motor cool.

D. Containment structural failure is imminent.

Proposed Answer: B

Explanation:

At 27 psig, a CSAS and CISB will occur.
A. Although they are adding heat, this is incorrect.
B. Correct. When the CISB is received, all CCW to the RCP's will automatically isolate.
C. The Containment Coolers are running in slow speed because of the air density.
D. Containment pressure may cause containment structural failure, but design pressure is 60 psig.

Technical Reference(s): E-0, Attachment 12, Rev. 1B5, Pages 8 and 9
(Attach if not previously provided) T61.003D 6 LP-4, Page 23

Proposed references provided to applicants during examination: None

Learning Objective: W T61.003D 6 LP-4

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Manual Actions on High CTMT Pressure

Outline #: B014 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	1	1
	K/A #	E06EK2.2	
	Importance Rating	3.8	4.1

Proposed Question:

The crew has implemented FR-C.1, Response to Inadequate Core Cooling.

Which ONE of the following combinations of core exit thermocouples (TC's) and indicated temperatures would require starting RCP's, even if the normally required support conditions could not be met?

	# of TC's	Indicated Temp
A.	2	2450°F
B.	4	1750°F
C.	6	1350 °F
D.	8	750°F

Proposed Answer: C

Explanation:

You must have at least 5 thermocouples greater than 1200°F to require starting RCPs without the required support conditions.

Technical Reference(s): T61.003D 6 LP-25, Pages 8 and 34
(Attach if not previously provided) FR-C.1, Rev. 1B3, Page 15

Proposed references provided to applicants during examination: None

Learning Objective: J, M T61.003D 6 LP-25

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: RCP Requirements for Inadequate Core Cooling

Outline #: B015 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	1	1
K/A #	076AA2.02	
Importance Rating	2.8	3.4

Proposed Question:

The following plant conditions exist:

- Mode 1, 100% Reactor Power
- RCS specific activity is 50 microcuries/gm DOSE EQUIVALENT I-131

Which ONE of the following is the Chemistry sampling requirements per OTO-BB-00005, Reactor Coolant System High Activity?

A. Normal 72 hours sample requirements are necessary.

B. Once per 24 hours until activity decreases for 3 consecutive samples.

C. As directed by the On-Shift Chemistry Supervisor.

D. Once per 4 hours until activity decreases to less than 1 microcurie/gm.

Proposed Answer: D

Explanation:

A. Incorrect because RCS activity is above Tech Spec limit. Increases sampling required.
B. & C. Incorrect sample frequency.

Technical Reference(s): OTO-BB-00005, Rev. 6, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP B-18

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ______ **55.43** 5

Comments: High RCS Activity Sampling Requirements

Outline #: B016 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	1
K/A #	003AK1.11	
Importance Rating	2.5	3.5

Proposed Question:

The plant was at 100% power when a control rod located near the outside of the core drops fully into the core. The plant is stabilized at 93% power.

Which ONE of the following correctly indicates the most affected power distribution parameter AND at what time after the rod drop that core parameter is expected to be closest to its associated Technical Specification limit?

(Assume no other changes in plant status.)

	Power Distribution Parameter	Time Following Rod Drop
A.	Axial Flux Difference	Immediately
B.	Quadrant Power Tilt Ratio	Immediately
C.	Axial Flux Difference	4-6 hours
D.	Quadrant Power Tilt Ratio	4-6 hours

Proposed Answer: D

Explanation:

A rod that drops fully into the core appears as a uniform axial poison and has little impact on AFD, but has a large effect on QPTR. Due to the decay of iodine and xenon the impact is most pronounced at the 4-6 hour time period.

Technical Reference(s): T61.0070 6, Power Distribution Limits, Pages 47-49 and 66
(Attach if not previously provided) Flux Maps for HFP ARO and HFP Rod D-8 Dropped

Proposed references provided to applicants during examination: None

Learning Objective: J, K T61.0070 6, Power Distribution Limits

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: Long Term Effect of Dropped Rod

Outline #: B017 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	007EK1.05	
Importance Rating	3.3	3.8

Proposed Question:

A reactor startup is in progress. Power level is at $1E^{-7}$ amps when a reactor trip occurs due to a Nuclear Instrumentation Channel failure.

Which ONE of the following is the approximate length of time before the Source Range NIs will automatically energize?

A. 2 minutes

B. 5 minutes

C. 10 minutes

D. 15 minutes

Proposed Answer: C

Explanation:

SUR following a trip is –1/3 dpm. SR NIs energize at $6E^{-11}$ amps.
$1E^{-7}$ amps to $6E^{-11}$ amps is 3.4 decades.
3.4 decades ÷ .333 dpm = 10.2 minutes.

Technical Reference(s): T61.003D 6 LP-6, Page 21
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.003D 6 LP-6

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: How Long For Source Ranges to Energize on Rx Trip

Outline #: B018 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	008AK2.02	
Importance Rating	2.7	2.7

Proposed Question:

The plant is operating at 100% power with normal operating temperature and pressure when a pressurizer safety valve inadvertently lifts. The PRT pressure is 20 psig.

Which ONE of the following describes the condition of the steam entering the PRT?

A. Superheated steam at 668°F.

B. Superheated steam at 653°F

C. Saturated steam/water mixture at 259°F.

D. Saturated steam/water mixture at 228°F.

Proposed Answer: C

Explanation:

C. Only correct answer using Steam Tables and Mollier Diagram.

Technical Reference(s): T61.0070 6 LP-13, Characteristics of Steam & Water, Page 33
(Attach if not previously provided)

Proposed references provided to applicants during examination: Steam Tables/Mollier Diagram

Learning Objective: B, C T61.0070 6 LP-13, Characteristics of Steam & Water

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

Question History: **Last NRC Exam** ____

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Indication of Stuck Open Pzr Safety

Outline #: B019 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	009EA1.04	
	Importance Rating	3.7	3.5

Proposed Question:

Which ONE of the following could indicate a 10 gpm letdown leak between BGHV8152, CVCS Letdown System Outer CTMT Iso Valve, and the containment penetration?

A. BGPCV0131, CVCS Letdown Hx Outlet PCV, CLOSING to maintain pressure at setpoint.

B. INCREASED Component Cooling Water flow to the Letdown Heat Exchanger.

C. BGFI0132, CVCS Letdown Hx Outlet Flow Indicator, INCREASING.

D. BGTI0126, Regen Hx Charging Outlet Temperature Indicator, DECREASING.

Proposed Answer: A

Explanation:

Leak between containment and BGHV8152 will decrease letdown flow through BGPCV0131. This will cause BGPCV0131 to throttle close to maintain pressure and prevent flashing in letdown line.

Technical Reference(s): T61.0110 6 LP-11, CVCS, Page 19
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B.8 T61.0110 6 LP-11, CVCS

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Indications of Small LOCA in CVCS (IPE/PRA)

Outline #: B020 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	1
	K/A #	011EA1.13	
	Importance Rating	4.1	4.2

Proposed Question:

The plant was initially in Mode 1. The following plant conditions now exist:

- A large break LOCA has occurred inside Containment
- Only the 'B' Train of Safety Injection AUTOMATICALLY ACTUATED
- Train 'A' ECCS components have been STARTED/OPERATED MANUALLY
- RWST level is 35% and DECREASING
- 'B' Train RHR Ctmt Recirc Sump Suction Valve, EJ HV-8811B, is OPEN
- 'A' Train RHR Ctmt Recirc Sump Suction Valve, EJ HV-8811A, is CLOSED

Which ONE of the following describes why the 'A' RHR Pump must be temporarily STOPPED to complete the switchover to the Cold Leg Recirculation mode of ECCS?

A. RHR System Hot Leg Recirculation Valve, EJ HV-8716A, must be CLOSED in order to OPEN RHR Ctmt Recirculation Sump Suction Valve, EJ HV-8811A.

B. RWST to RHR Pump Suction Valve, BN HV-8812A, must be CLOSED in order to OPEN Ctmt Recirculation Sump Suction Valve, EJ HV-8811A.

C. RWST to RHR Pump Suction Valve, BN HV-8812A, must be CLOSED in order to OPEN RHR to Charging Pump Valve, EJ HV-8804A.

D. RHR to Accumulator Injection Valve, EJ HV-8809A, must be CLOSED in order to OPEN RHR Ctmt Recirculation Sump Suction Valve, EJ HV-8811A.

Proposed Answer: B

Explanation:

A, C & D. Incorrect because no interlock between these valves.

Technical Reference(s): T61.0110 6 LP-7, RHR, Pages 13 and 14
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B.4 T61.0110 6 LP-7, RHR

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Manually Align ECCS Components (IPE/PRA)

Outline #: B021 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	1
K/A #	E04EK1.2	
Importance Rating	3.5	4.2

Proposed Question:

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

Why should operators wait some amount of time during each valve repositioning per this procedure?

A. Prevents overcurrent trips on valve motor breakers.

B. Allows system pressure to respond to repositioning.

C. Prevent valve motor overheating due to excessive operation.

D. To allow check on indications of leak in auxiliary building.

Proposed Answer: B

Explanation:

A. Incorrect because breakers overcurrent trips are jumpered.
C. Incorrect because valve motor overheating is not a concern.
D. Incorrect because no remote indication required, but note on page 2 has personnel searching.

Technical Reference(s): T61.003D 6 LP-14, Page 9
(Attach if not previously provided) ECA-1.2, Rev. 1B1, Pages 2-4

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003D 6 LP-14

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: Precaution During Valve Strokes in ECA-1.2

Outline #: B022 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	E03EK1.2	
Importance Rating	3.6	4.1

Proposed Question:

The following plant conditions exist:

- An RCS pipe break has occurred.
- The crew is currently in ES-1.2, Post LOCA Cooldown and Depressurization, attempting to isolate SI Accumulators.
- EPHV8808A, 'A' SI Accumulator Outlet Valve, will not close.

Which ONE of the following describes how the operators should address the stuck open 'A' SI Accumulator Outlet Valve?

A. Vent the 'A' SI Accumulator to the CTMT building.

B. Continue the cooldown and allow the SI Accumulator to discharge.

C. Dispatch an operator to close the valve locally.

D. Drain the 'A' SI Accumulator to the Reactor Coolant Drain Tank.

Proposed Answer: A

Explanation:

A. Only correct answer per the response not obtained step for isolating accumulators.

Technical Reference(s): T61.003D 6 LP SD-8, Page 9
(Attach if not previously provided) ES-1.2, Rev. 1B2, Page 21

Proposed references provided to applicants during examination: None

Learning Objective: H T61.003D 6 LP SD-8

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 8, 10 **55.43** ____

Comments: ES-1.2 RNO Actions

Outline #: B023 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	1
	K/A #	E02EK2.2	
	Importance Rating	3.5	3.9

Proposed Question:

The following plant conditions exist:

- Mode 3 following a manual Reactor Trip and Safety Injection
- RCS pressure 1600 psig and STABLE
- Average of the 10 highest reading Core Exit Thermocouples is 580°F
- Pressurizer level 20% and INCREASING at 0.5% per minute
- Containment temperature 140°F
- Containment radiation 7 R/hr
- S/G narrow range levels: 22%, 10%, 10%, 21%
- AFW flow: 50,000 lbm/hr to each S/G

The Control Room Supervisor is at Step 6 of E-1, Loss of Reactor or Secondary Coolant, and is trying to determine if ECCS flow should be REDUCED.

Which ONE of the following operator actions is appropriate for the above conditions? (Use E-1 Attachment 2, RCS Subcooling Curves, on the following page.)

A. SI termination criteria is met and transition should be made to ES-1.1, SI Termination.

B. SI termination criteria is NOT met since RCS subcooling is less than the required value, and further actions in E-1 are to be performed.

C. SI termination criteria is met if AFW flow is adjusted to > 300,000 lbm/hr. Do NOT transition to ES-1.1, SI Termination, until AFW flow is adjusted.

D. SI termination criteria is NOT met since pressurizer level is still low and further actions in E-1 are to be performed.

Proposed Answer: A

Explanation:

B. Incorrect because RCS subcooling is sufficient.
C. Incorrect because heat sink is satisfied by S/G levels.
D. Incorrect because pressurizer level is sufficient.

Technical Reference(s): T61.003D 6 LP-8, Page 41
(Attach if not previously provided) E-1, Rev. 1B3, Page 9

Proposed references provided to applicants during examination: E-1, Attach 2, Rev. 1B3

Learning Objective: P T61.003D 6 LP-8

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

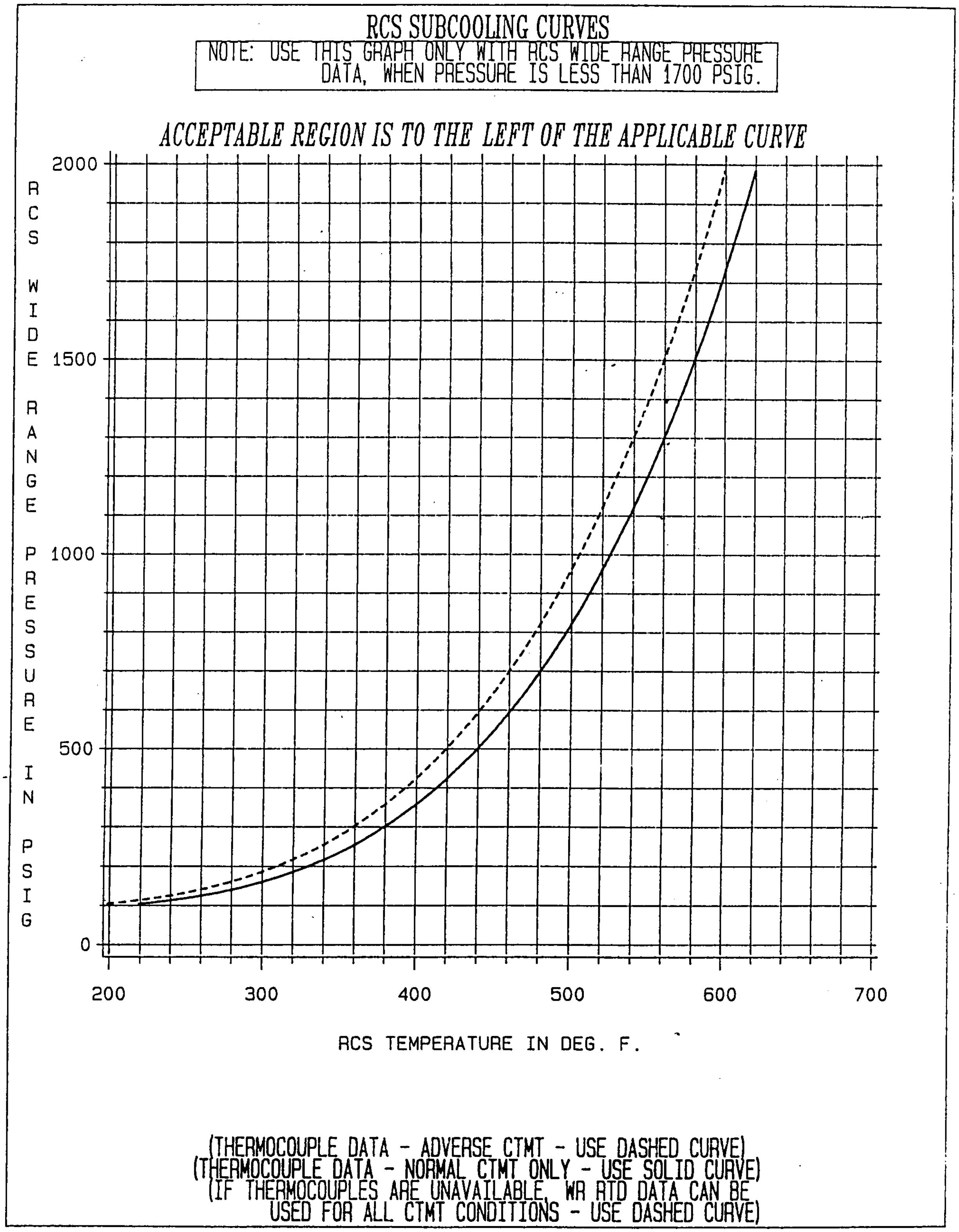
10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Primary Coolant Indication for SI Termination

Outline #: B024 **Author:** DGL

Proced. No. E-1	LOSS OF REACTOR OR SECONDARY COOLANT	Attachment 2	Rev. 1B3

RCS SUBCOOLING CURVES



Page 2 of 2

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	022AK3.02	
	Importance Rating	3.5	3.8

Proposed Question:

The following plant conditions exist:

- NCP is running, 120 gpm letdown.
- BGFT121, CVCS CHG HDR TO REGEN HX FLOW XMTR, fails.
- As a result, BGFCV124 closes.
- The NCP handswitch red light is lit.
- BGHV8109, NCP Recirculation Valve, is open.

The following annunciators are received:

- CHARGING LINE FLOW LOW
- SEAL INJECTION TO RCP FLOW LOW
- NCP FLOW LOW

Which ONE of the following actions should be taken immediately?

A. Take manual control of BGFCV124 and open it.

B. Start a CCP and secure the NCP.

C. Open BGHV8357A or B to restore seal injection.

D. Close all letdown orifice isolation valves.

Proposed Answer: A

Explanation:

A. Correct. Since the NCP is not a problem, then the next immediate action required by OTO-BG-00002 is to open any valves that have closed.
B. This would be the correct action if the NCP had failed.
C. This would work on a CCP but the NCP has no physical connection to BGHV8357, Seal Injection.
D. Isolating letdown is a subsequent action if charging cannot be restored expeditiously.

Technical Reference(s): OTO-BG-00002, Rev. 004, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003B 6 LP B-22

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: Valve Closure in Charging Line

Outline #: B025 **Author:** PJM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	2	2
K/A #	025AA1.02	
Importance Rating	3.8	3.9

Proposed Question:

The following plant conditions exist:

- The plant is in Mode 5
- Midloop operations are in progress
- SG hot and cold leg manway covers are removed
- SG nozzle dams are installed in the hot legs
- SG nozzle dams are NOT installed on the cold legs
- Loss of RHR cooling occurs

Which ONE of the following could occur as a result of this event?

A. Steam formation in the hot leg will cause an erroneously low RCS Loop Level indication.

B. Steam formation in the reactor vessel head will displace water from the reactor vessel and force water out the cold leg manways.

C. Steam formation in the reactor vessel head will increase RCS pressure and blow out the hot leg nozzle dams.

D. Steam formation in the hot leg will ultimately collapse, resulting in severe water hammer.

Proposed Answer: B

Explanation:

A. Pressure increase causes erroneously HIGH Level indication.
C. Pressure is relieved by cold leg opening.
D. No phenomenon will occur to collapse steam formation.

Technical Reference(s): T61.003E 6 LP E-3, Page 3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003E 6 LP E-3

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Loss of RHR at Midloop

Outline #: B026 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	032G2.4.11	
	Importance Rating	3.4	3.6

Proposed Question:

The following plant conditions exist:

- The plant is in Mode 6
- N43 is normalized to 100% for testing
- Core Alterations are in progress
- N31 indicates 150 cps
- N32 indicates 165 cps

Which ONE of the following automatic actions and required actions should occur if N42 were to fail HIGH?

A. Charging pumps suctions swap from the VCT to the RWST. Place the Flux Doubling Normal / Test Switch to the TEST position and re-align charging from the RWST.

B. Source Range NIs high voltage is de-energized. Suspend core alternations and positive reactivity changes; initiate action to restore one Source Range NI.

C. Containment Evacuation alarm sounds. Evacuate all unnecessary personnel from containment.

D. Fed Reg Bypass Valves fail CLOSED. Switch control to MANUAL and re-establish S/G levels.

Proposed Answer: B

Explanation:

A & C. Incorrect because response is for SR NIs failing high.
B. Correct, two PR NI >10% will de-energize both SR NIs.
D. Incorrect because actions for PR NI failing high, except FRBV should fail open.

Technical Reference(s): T61.003B 6 LP B-49, Page 1
(Attach if not previously provided) OTO-SE-00001, Rev. 009, Pages 2 and 3

Proposed references provided to applicants during examination: None

Learning Objective: A, B T61.003B 6 LP B-49

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: Loss of Source Range Due to P-10

Outline #: B027 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	033AA2.02	
	Importance Rating	3.3	3.6

Proposed Question:

A plant startup is in progress with power indicating $1E^{-8}$ amps on both channels of IR nuclear instruments.

Which ONE of the following will occur if IR channel N35 fails to 22%, current equivalent?

A. IR High Flux Reactor Trip.

B. IR Rod Stop will stop outward rod motion.

C. PR Low Flux Reactor Trip.

D. Pzr High Level Reactor Trip is unblocked.

Proposed Answer: B

Explanation:

A. Incorrect because this does not occur until 1 of 2 IR are > 25%, current equivalent.
B. Correct because this occurs when 1 of 2 IR are > 20%, current equivalent.
C. Incorrect because this does not occur until 2 of 4 PR are > 25%.
D. Incorrect because this does not occur until 2 of 4 PR are > 10%.

Technical Reference(s): OTO-SA-00001, Rev. 010, Table II
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.0110 6 LP-26, Rod Control

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** **55.43** 5

Comments: Indication of IR Channel Failure

Outline #: B028 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	037G2.4.11	
	Importance Rating	3.4	3.6

Proposed Question:

During normal operation, GERE92, Condenser Air Removal Rad Monitor alarms. A steam generator tube leak is suspected. Given the following information:

- Charging Flow: 120 gpm
- Letdown Flow: 75 gpm
- Pressurizer Level: 57% and STABLE
- Tavg: 584.4°F and STABLE
- RCP Seal Injection Flow: 8 gpm per pump
- RCP Seal Leakoff Flow: 3 gpm per pump

Which ONE of the following is the approximate steam generator tube leakage rate?

A. 25 gpm

B. 33 gpm

C. 37 gpm

D. 45 gpm

Proposed Answer: B

Explanation:

Leakage Rate = Charging flow - (Letdown Flow + Seal Leakoff Flow) + (Δ Pzr Level X 60 gal/%)
Leakage Rate = 120 - (75 + 12) + (0 X 60)
Leakage Rate = 120 - 87 + 0 = 33 gpm

Technical Reference(s): T61.003B 6 LP SB-14, Page 8
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003B 6 LP SB-14

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: Quantify S/G Tube Leak

Outline #: B029 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	038EK3.06	
	Importance Rating	4.2	4.5

Proposed Question:

A Steam Generator Tube Rupture combined with a Loss of Offsite Power has occurred.

Which ONE of the following is the PREFERRED method to INITIALLY DEPRESSURIZE the RCS?

A. Cycle Pressurizer Heaters.

B. Use Auxiliary Spray.

C. Use Normal Pressurizer Spray.

D. Use a Pressurizer PORV.

Proposed Answer: D

Explanation:

A. Incorrect because not a method described in E-3.
B. Incorrect because Aux Spray comes after PZR PORV in order of preference.
C. Incorrect because RCP's unavailable to provide normal spray.

Technical Reference(s): T61.003D 6 LP-17, Page 73
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: V T61.003D 6 LP-17

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5, 10 **55.43** ____

Comments: Ruptured S/G Depressurization Methods (IPE/PRA)

Outline #: B030 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	054AK3.04	
	Importance Rating	4.4	4.6

Proposed Question:

The plant is in Mode 1 at 75% reactor power.

Which ONE of the following is a correct IMMEDIATE ACTION for a main feed pump trip under these conditions per OTO-AE-00001, Feedwater System Malfunction?

A. Manually trip the reactor and enter E-0, Reactor Trip or Safety Injection.

B. Quickly run back turbine generator load to less than 60% or 750 MWe.

C. Use normal boration/adjust turbine load as necessary to match Tave and Tref.

D. Restore steam generator level to the program level of 50%.

Proposed Answer: B

Explanation:

A. Incorrect because power is not > 80%.
C. Incorrect because this is a subsequent action.
D. Incorrect because this action is for a Feed Reg Valve failure.

Technical Reference(s): OTO-AE-00001, Rev. 005, Pages 2 and 3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP B-10

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: Immediate Actions for MFP Trip

Outline #: B031 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	2	2
	K/A #	058AA2.03	
	Importance Rating	3.5	3.9

Proposed Question:

Which ONE of the following will occur during an Emergency Start (SIS) of the NE02 Diesel Generator coincident with a loss of the NK supply to the field flash circuit?

A. At 85 rpm, an initial diesel generator field flash will be attempted.

B. At 125 rpm, the low speed relay de-energizes the starting air solenoids.

C. At 471 rpm, the high speed relay will attempt a redundant field flash.

D. At 514 rpm, the "At Voltage - At Frequency" white lights will illuminate.

Proposed Answer: C

Explanation:

A. Incorrect because initial flash occurs at 125 rpm.
B. Incorrect because starting air solenoids de-energize at 85 rpm.
D. Incorrect because lights won't illuminate due to field flash failures.

Technical Reference(s): T61.0110 6 LP-3, Standby Generation, Pages 54 and 55
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: K T61.0110 6 LP-3, Standby Generation

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ___ **55.43** 5

Comments: Loss of DC Power for Field Flash

Outline #: B032 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	1
Group #	3	3
K/A #	028AA1.02	
Importance Rating	3.4	3.4

Proposed Question:

The following plant conditions exist:

- Reactor is in Mode 3 at 557°F Tavg and 2235 psig
- Current RCS boron is 800 ppm
- An ECP boron of 600 ppm is needed
- The Reactor Makeup Mode Selector Switch, BG HS-25, is in DILUTE
- The Total Flow Counter BG FY-111B is set for 130 gallons
- A dilution is started
- Pressurizer level control is in AUTOMATIC and the controlling channel, BG LT-459, fails LOW

Which ONE of the following represents the long term impact on RCS boron concentration, assuming NO operator actions are taken?

A. The boron will approach 600 ppm based on the FCV-110A control setpoint.

B. The boron will be slightly LESS than 800 ppm based on the 130 gallon dilution.

C. The boron will be HIGHER than 800 ppm based on a LOW pressure SI shifting charging suction to RWST.

D. The boron will be HIGHER than 800 ppm based on an AUTO swap to the RWST on low VCT level.

Proposed Answer: D

Explanation:

PZR level channel failure will cause a loss of letdown, which will cause VCT level to decrease. Auto VCT makeup is inhibited when in the dilute mode. Auto swap occurs at 5% in the VCT causing an increase in RCS boron concentration.
A & B. Incorrect because boron increases, not decreases.
C. Incorrect because RCS pressure is not affected.

Technical Reference(s): T61.0110 6 LP-11, CVCS, Pages 13, 23, 24 and 26
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-11, CVCS

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Effect of Pzr Level Channel Failure on RMCS

Outline #: B033 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	1
	Group #	3	2
	K/A #	065AA2.08	
	Importance Rating	2.9	3.3

Proposed Question:

The following plant conditions exist:

- At 0830, a loss of all offsite power occurred.
- At 0845, a Safety Injection occurred due to a faulted S/G.
- All equipment has operated as designed.
- Restoration of instrument air to containment is in progress.
- EFHV43 and EFHV44, ESW to 'A' and 'B' air compressors, are closed.

Which ONE of the following has caused EFHV43 and EFHV44 to close?

A. Loss of Instrument Air.

B. Blackout Load Shed.

C. LOCA Load Shed.

D. High D/P.

Proposed Answer: A

Explanation:

A. When all the instrument air compressors stop, instrument air pressure decreases until EFHV43/44 fail closed.
B. A blackout load shed occurs due to the loss of offsite power, but EFHV43/44 are not shed.
C. A LOCA load shed occurs due to the SI, but EFHV43/44 are not shed.
D. EFHV43/44 are designed to close on high D/P during an ESW leak, but no pipe break has occurred.

Technical Reference(s): T61.0110 6 LP-14, Service & Instrument Air, Page 38
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: H T61.0110 6 LP-14, Service & Instrument Air

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: Failure Mode of EFHV43/44

Outline #: B034 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	001K5.04	
Importance Rating	4.3	4.7

Proposed Question:

The following plant conditions exist:

- Rod H-8 in Control Bank "D" (CB D) was misaligned low.
- Rod H-8 was withdrawn 15 steps to align it with the other rods in CB D.
- The P/A converter AUTO/MAN switch was broke in the Auto position.

Which ONE of the following conditions occurs because of the P/A converter being in AUTO when rod H-8 was recovered?

A. Rod Control Non-Urgent Failure alarm when CB D rods initially moved in.

B. Rod Control Urgent Failure alarm when CB D initially moved in.

C. Rod Bank Lo alarm will be received with CB D actually above setpoint.

D. Rod Bank Lo alarm will be received with CB D actually below setpoint.

Proposed Answer: D

Explanation:

A. Some rod problems cause a Non-Urgent alarm, but not this problem.
B. Some rod problems cause an Urgent alarm, but not this problem.
C. Wrong direction.
D. With the PA converter still in Auto when the CB D rod is moved out, the PA converter will count the rods 15 steps further out than they actually are. When this is input into the rod insertion limit computer, which generates the ROD BANK LO and LOLO alarms, the rods will be 15 steps below where they need to be when an alarm occurs.

Technical Reference(s): T61.0110 6 LP-26, Rod Control, Pages 34-36
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: P, Q T61.0110 6 LP-26, Rod Control

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ____

Comments: Rod Insertion Limit/ P/A Converter Malfunction

Outline #: B035 **Author:** PJM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	003A1.07	
Importance Rating	3.4	3.4

Proposed Question:

The Callaway Plant is operating at 30% power and it is necessary to secure the 'B' Reactor Coolant Pump due to high vibration. After the RCP is tripped, the 'B' Loop ΔT _________________ and the other Loop ΔTs _________________. (Assume unit load is held constant.)

A. Increases, Decrease

B. Increases; Increase

C. Decreases; Decrease

D. Decreases; Increase

Proposed Answer: D

Explanation:

When the 'B' RCP is secured at power, the 'B' S/G steam flow will decrease to approximately zero and the three remaining S/Gs steam flows will increase equally. Since 'B' S/G steam flow has decreased, 'B' RCS Loop ΔT will decrease. Since 'A', 'C', and 'D' S/G steam flows have increased, their associated RCS Loop ΔTs will increase.

Technical Reference(s): T61.003B 6 LP SB-6, Page 6
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP SB-6

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43**

Comments: Securing RCP At Power

Outline #: B036 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	004K6.13	
Importance Rating	3.1	3.3

Proposed Question:

The following plant conditions exist:

- VCT Automatic Makeup has failed.
- The Reactor Operator has completed a MANUAL makeup to the VCT.
- Approximately 15 minutes later, Control Bank "D" rods begin to INSERT slowly in automatic.
- Tavg/Tref mismatch is +2°F.
- Pzr level has increased approximately 1%.
- Reactor power indicates 100.3% on all channels.

Which ONE of the following may have caused these indications?

A. The Total Flow Counter, BGFY111B, was inadvertently set too LOW.

B. The Boric Acid Counter, BGFY110B, was inadvertently set too LOW.

C. The Reactor Makeup Water Flow Controller, BGFK111, was inadvertently set too LOW.

D. The Boric Acid Flow Controller, BGFK110, was inadvertently set too HIGH.

Proposed Answer: B

Explanation:

A. Incorrect because this would cause an inadvertent boration due to less dilution water being added.
B. Correct because this would cause an inadvertent dilution due to less boric acid being added.
C. Incorrect because this would cause the dilution water to be added at a slower rate than desired, but the total amount of dilution water added would not change.
D. Incorrect because this would cause the boric acid to be added at a quicker rate than desired, but the total amount of boric acid added would not change.

Technical Reference(s): T61.0110 6 LP-11, CVCS, Pages 82 and 83
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: G.5 T61.0110 6 LP-11, CVCS

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Boration Control Malfunction

Outline #: B037 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	013A2.01	
Importance Rating	4.6	4.8

Proposed Question:

The following plant conditions exist:

- Pressurizer Pressure is 1600 psig
- CTMT Pressure is 18 psig
- CTMT Radiation is 13 R/hr and increasing
- All S/G Pressures are 900 psig
- No operator actions have been performed

Which ONE of the following ESFAS Actuations should have automatically actuated?

A. SLIS and CRVIS

B. SIS and CISB

C. CRVIS and BSPIS

D. CSAS and SIS

Proposed Answer: A

Explanation:

A. Correct because Hi-2 (17 psig) and Hi-1 (3.5 psig) setpoints have been satisfied.
B & D. Incorrect because CTMT pressure is below Hi-3 (27 psig).
C. Incorrect because BSPIS actuation setpoints have not been satisfied.

Technical Reference(s): OTO-SA-00001, Engineered Safety Features Actuations Verification and Restoration, Rev. 010, Table 1
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003B 6 LP B-48

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: ESFAS Response to LOCA

Outline #: B038 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	1	1
	K/A #	017K4.01	
	Importance Rating	3.4	3.7

Proposed Question:

Which ONE of the following COULD cause the 'A' Train Subcooling Meter to indicate a SUPERHEATED condition?

A. Loop 3 Wide Range T_{HOT} fails LOW.

B. Wide Range Pressure Channel 403 fails LOW.

C. Loop 4 Wide Range T_{COLD} fails HIGH.

D. Wide Range Pressure Channel 405 fails HIGH.

Proposed Answer: C

Explanation:

A. Incorrect because feeds 'B' Train - wrong direction.
B. Incorrect because feeds 'B' Train.
D. Incorrect because wrong direction.

Technical Reference(s): T61.0110 6 LP-30, Reactor Instrumentation, Page 12
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-30

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: CET Input to Subcooling Monitor

Outline #: B039 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	1	1
	K/A #	022K2.01	
	Importance Rating	3.0	3.1

Proposed Question:

The following plant conditions exist:

- The unit is at 100% power with all systems aligned normally
- The switchyard is in its preferred lineup with Ring Bus Breakers 52-2 and 52-3 CLOSED
- A lockout occurs on 345KV Swyd Bus 'B'

Which ONE of the following describes the response of the Containment Cooling Fans?

A. All fans CONTINUE to RUN in the PRESELECTED speed.

B. A & C fans are SHIFTED to SLOW speed by the shutdown sequencer.

C. B & D fans DE-ENERGIZE and are RESTARTED in FAST speed by the shutdown sequencer.

D. A & C fans DE-ENERGIZE and are RESTARTED in the PRESELECTED speed by the shutdown sequencer.

Proposed Answer: D

Explanation:

A. Incorrect because A & C de-energize.
B. Incorrect because shutdown sequencer does not shift fan speeds.
C. Incorrect because B & D fans remain running.

Technical Reference(s): T61.0110 6 LP-40, Containment Ventilation, Page 16
(Attach if not previously provided) T61.0110 6 LP-1, Switchyard, Page 5

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-40

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Containment Coolers Power Supply

Outline #: B040 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	1	1
	K/A #	022A4.01	
	Importance Rating	3.6	3.6

Proposed Question:

The plant is initially operating at 100%. A large Steam Line Rupture in Containment has resulted in the following:

- CTMT Temperature is 180°F
- CTMT Pressure is 8 psig

Which ONE of the following describes the response of the Containment Coolers?

A. 'A' Containment Cooler supplies the Instrument Tunnel in FAST speed.

B. 'B' Containment Cooler supplies the Pressurizer Enclosure Compartment in SLOW speed.

C. 'C' Containment Cooler flows DIRECTLY to the containment atmosphere in SLOW speed.

D. 'D' Containment Cooler flows DIRECTLY to the containment atmosphere in FAST speed.

Proposed Answer: C

Explanation:

A. Incorrect because fans run in slow speed.
B. Incorrect because fusable link melts to open large damper that directs air flow directly to the open CTMT atmosphere.
D. Incorrect because fans run in slow speed.

Technical Reference(s): T61.0110 6 LP-40, Containment Ventilation, Pages 9, 10 and 23
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: D T61.0110 6 LP-40

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: CTMT Cooler Operation on SI

Outline #: B041 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	056K1.03	
Importance Rating	2.6	2.6

Proposed Question:

The following plant conditions exist:

- Mode 1, 100% power, all equipment in a normal full power lineup
- 4A Low Pressure Feedwater Heater level instrumentation indicates Hi Hi level.

Which ONE of the following describes the effect on MAIN FEEDWATER?

A. Temperature increases.

B. Flow increases.

C. Temperature decreases.

D. Flow decreases.

Proposed Answer: C

Explanation:

A. Incorrect because temperature will decrease.
B. Incorrect because flow is affected only when level is Hi Hi in heater 1A or 2A.
C. Correct because heater 4A Hi Hi level causes extraction valves to close, heating FW less, thus temperature decreases.
D. Incorrect because flow is affected only when level is Hi Hi in heater 1A or 2A.

Technical Reference(s): T61.0110 6 LP-32, Feedwater Heater Extraction, Drains and Vents, Pages 37 and 65
(Attach if not previously provided)
OTS-AF-00003, Rev. 007, Removal and Return of Train 'A' LP Feedwater Heaters During Normal Operations, Page 2

Proposed references provided to applicants during examination: None

Learning Objective: G T61.0110 6 LP-32

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 2-9 **55.43** ____

Comments: MFW Temperature Response to LP Htr Isolation

Outline #: B042 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	059K1.04	
Importance Rating	3.4	3.4

Proposed Question:

The following plant conditions exist:

- A plant startup is in progress
- The plant is at 9% power
- Control Systems are in normal system alignment
- The output of Power Range NI channel N44 gradually fails HIGH
- No operator actions are taken

Which ONE of the following is the INITIAL plant response?

A. OPΔT trip setpoint increases.

B. Steam generator levels increase.

C. Axial flux mismatch alarm illuminates.

D. Control rods will step in to maintain Tavg.

Proposed Answer: B

Explanation:

A. Incorrect because no power input to OPΔT.
C. Incorrect because output failure does not affect axial flux.
D. Incorrect because rods are normally in manual and nothing has occurred to cause Tavg to be high.

Technical Reference(s): T61.0110 6 LP-23, Main Feedwater System, Page 53
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: G T61.0110 6 LP-23

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 2-9 **55.43** ____

Comments: S/G Water Level Control

Outline #: B043 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	1	1
	K/A #	059A1.07	
	Importance Rating	2.5	2.6

Proposed Question:

The following plant conditions exist:

- Mode 1, 100% power, all systems in a normal full power alignment.
- AEPT508, Feed Pump Discharge Header Pressure, fails off scale HIGH.

Which ONE of the following is the expected INITIAL plant response?

A. Main Feedwater Pump speed increases.

B. Main Feedwater Pump speed decreases.

C. Main Feedwater Regulating Valves open.

D. Main Feedwater Regulating Valves close.

Proposed Answer: B

Explanation:

A. Incorrect because the DP error signal will decrease speed.
C & D. Incorrect because main steam/main feed DP is not an input to MFRV's.

Technical Reference(s): T61.0110 6 LP-23, Main Feedwater System, Pages 46-48
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-23

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ____

Comments: MFP Speed Change Due To AEPT508 Failure

Outline #: B044 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	061K5.01	
Importance Rating	3.6	3.9

Proposed Question:

The reactor tripped 5 minutes ago.

Which ONE of the following completes the statement concerning the heat transfer relationship between the RCS and Steam Generators?

The heat transfer rate between the RCS and the S/Gs will:

A. decrease as RCS temperature increases and AFW flow increases.

B. decrease as AFW temperature decreases and AFW flow increases.

C. increase as AFW temperature increases and RCS flow decreases.

D. increase as RCS temperature increases and AFW flow increases.

Proposed Answer: D

Explanation:

A. Incorrect because if RCS temperature increases, then ΔT increases and heat transfer rate increases.
B. Incorrect because if AFW temperature decreases and AFW flow increases, then the heat transfer rate increases.
C. Incorrect because if AFW temperature increases, then ΔT decreases and heat transfer rate decreases.

Technical Reference(s): T61.003D 6 LP-26, FRG Heat Sink (H) Series, Page 52
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: R T61.003D 6 LP-26

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ____

Comments: Relationship Between AFW Flow and RCS Heat Transfer

Outline #: B045 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	068K6.10	
Importance Rating	2.5	2.9

Proposed Question:

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

Which ONE of the following conditions would AUTOMATICALLY terminate the release?

A. Cooling tower blowdown flow rate is REDUCED to 6000 gpm.

B. RW bldg discharge rad monitor, HB RE-18, FAILS resulting in a Hi Hi alarm.

C. Steam generator blowdown surge tank level INCREASES to the Hi Hi setpoint.

D. A Hi Hi alarm on S/G blowdown discharge rad monitor causes BM FV-54 to CLOSE.

Proposed Answer: B

Explanation:

A. Incorrect because setpoint is < 5000 gpm.
C & D. Incorrect because these signals cause a S/G Blowdown and Sample Process Isolation.

Technical Reference(s): OTA-SP-RM011, Radiation Monitor Control Panel RM-11, Rev. 020, Attachment 1, Page 37
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: Q.2 T61.0110 6 LP-16

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: LRW Discharge With Inoperable Monitor

Outline #: B046 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	1	1
	K/A #	071K4.04	
	Importance Rating	2.9	3.4

Proposed Question:

Which ONE of the following describes the plant response to a Hi Hi Radiation Alarm on GH RE-10B, Radwaste Building Exhaust Fans Discharge Header Radiation Monitor?

A. Radwaste Building Supply Unit (SGH01) STOPS.

B. Waste Gas Compressors (SHA02A & B) STOP.

C. Catalytic Hydrogen Recombiners (SHA01A & B) ISOLATE.

D. Gas Decay Tanks to RW HVAC Discharge Valve (HA HCV-14) ISOLATES.

Proposed Answer: D

Explanation:

A, B & C. Incorrect because equipment not affected by high radiation alarm.

Technical Reference(s): T61.0110 6 LP-16, Radwaste Systems, Page 20
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-16

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Automatic Action on High Radiation

Outline #: B047 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	1	1
K/A #	072G2.2.22	
Importance Rating	3.4	4.1

Proposed Question:

Which ONE of the following Area Radiation Monitors is required by the Final Safety Analysis Report (FSAR)?

A. SDRE0027, CTMT Purge Filter Unit

B. SDRE0033, Control Room

C. SDRE0037, Spent Fuel Pool

D. SDRE0041, Manipulator Bridge

Proposed Answer: C

Explanation:

A, B & D Incorrect because they are not listed in the FSAR.
C. Correct because it is FSAR 16.3.3.6.

Technical Reference(s): FSAR 16.3.3.6, Spent Fuel Pool Criticality Monitor
(Attach if not previously provided) T61.0110 6 LP-36, Process Radiation and Area Radiation Monitoring System, Page 23

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-36

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: Fuel Handling ARM Required By FSAR

Outline #: B048 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	002A3.03	
Importance Rating	4.4	4.6

Proposed Question:

Callaway Plant is in Mode 3 cooling down for a Refueling outage. The Reactor Operator has been directed to decrease RCS pressure to 1950 psig.

Which ONE of the following would the Reactor Operator have to set the Pressurizer Pressure Master Control, BBPK455A, to maintain the RCS at 1950 psig in Auto? (Narrow Range Pzr Pressure range is from 1700 to 2500 psig.)

A. 1.77 turns

B. 2.55 turns

C. 3.13 turns

D. 4.41 turns

Proposed Answer: C

Explanation:

$$\begin{array}{r} 1950 \\ \underline{-\ 1700} \\ 250 \end{array}$$

80 psig per turn

$$\frac{250}{80} = 3.13$$

Technical Reference(s): OOA-RL-00004, Main Control Board Controllers and Potentiometers, Rev. 005, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B.7 T61.0110 6 LP-9, Reactor Coolant System

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Master Pzr Press Controller Setting

Outline #: B049 **Author:** PJM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	006A4.02	
Importance Rating	4.0	3.8

Proposed Question:

The following plant conditions exist:

- Mode 4 with a cooldown in progress per OTG-ZZ-00004, Plant Cooldown Hot Standby to Cold Shutdown
- 'B' RHR train is to be placed in a cooldown lineup per OTN-EJ-00001, Residual Heat Removal System

Which ONE of the following will prevent OPENING EJ-HV-8701B, RHR Pump 'B' Suct Iso?

A. EMHV8814B, SI Pump 'B' Recirc to RWST Iso, OPEN.

B. BBPI0405, RCS Wide Range Press Xmtr, reading 306 psig.

C. EJHV8811B, CTMT Recirc Sump 'B' to RHR Pump 'B' Suct Iso, OPEN.

D. BNHV8812B, RWST to RHR Pump 'B' Suct Iso Vlv, CLOSED.

Proposed Answer: C

Explanation:

A. Incorrect because this valve does not have an interlock.
B. Incorrect because RCS pressure is less than the 360 psig interlock.
D. Incorrect because the valve is in its correct position to satisfy the interlock.

Technical Reference(s): T61.0110 6 LP-7, Residual Heat Removal, Page 12
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.0110 6 LP-7

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: ECCS Valve Interlocks

Outline #: B050 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	2	2
	K/A #	010A1.08	
	Importance Rating	3.2	3.3

Proposed Question:

Which ONE of the following correctly identifies the parameters and values used by an operator to ensure the temperature difference between the PZR and the Spray Fluid are within the specified limit(s) in the Technical Specifications when initiating PZR Spray?

	Spray Source	ΔT Limit	Parameters Monitored To Satisfy ΔT Limit
A.	Normal Spray Aux Spray	275°F 583°F	RCS hot leg loop temperature and PZR vapor space temperature. Regen HX charging inlet temperature and PZR vapor space temperature.
B.	Normal Spray Aux Spray	275°F 320°F	RCS cold leg loop temperature and PZR vapor space temperature. Regen HX charging outlet temperature and PZR vapor space temperature.
C.	Normal Spray Aux Spray	320°F 583°F	RCS hot leg loop temperature and PZR vapor space temperature. Regen HX charging inlet temperature and PZR vapor space temperature.
D.	Normal Spray Aux Spray	320°F 320°F	RCS cold leg loop temperature and PZR vapor space temperature. Regen HX charging outlet temperature and PZR vapor space temperature.

Proposed Answer: D

Explanation:

A. Normal spray limit is 320°F and supplied from cold leg, aux spray supplied from Regen Hx outlet.
B. Normal spray limit is 320°F.
C. Normal spray supplied from cold legs and aux spray from Regen Hx outlet.

Technical Reference(s): OTN-BB-00005, Pressurizer and Pressurizer Pressure Control, Rev. 006, Page 1 and 6
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003A 6 LP A16

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

Question History: **Last NRC Exam** Callaway Apr 99 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ____

Comments: Spray Nozzle ΔT Limits

Outline #: B051 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	016K3.03	
Importance Rating	3.0	3.1

Proposed Question:

The following plant conditions exist:

- Mode 1, 17% power, plant startup in progress.
- 'A' MFP is in AUTO.
- ABUS0500Z, Steam Dump Selector Switch, is selected to STEAM PRESSURE mode.
- ABPT0507, Main Steam Header Pressure, fails HIGH.

Which ONE of the following correctly describes the plant response?

A. Feed Pump speed will INCREASE. Steam Dumps will CLOSE, and will not reopen until the Steam Dump Mode Selector switch is placed in TAVG mode.

B. Feed Pump speed will DECREASE. Steam Dumps will CLOSE, and will not reopen until both Steam Dump Interlock Selector switches are RESET.

C. Feed Pump speed will INCREASE. Steam Dumps will OPEN, and will not close until one Steam Dump Interlock Selector switch is placed in OFF.

D. Feed Pump speed will DECREASE. Steam Dumps will OPEN, and will not close until ABPK0507, Steam Header Pressure Controller, is placed in MANUAL.

Proposed Answer: C

Explanation:

A. Incorrect because a high steam pressure will cause dumps to open.
B. Incorrect because feed pump speed will increase and steam dumps will open.
C. Correct because feed pump speed will increase due to the DP between feed/steam pressure and the dumps open in response to increasing indicated steam pressure.
D. Incorrect because placing the steam dump controller in manual will not close the valves until zero output and feed pump speed will increase.

Technical Reference(s): OTO-AB-00004, Steam Header Pressure Channel Failure,
(Attach if not previously provided) Rev. 003, Pages 1 and 2

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003B 6 LP-B5

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Steam Dump Response To ABPT507 Failure

Outline #: B052 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	1
K/A #	026A3.01	
Importance Rating	4.3	4.5

Proposed Question:

The following plant conditions exist:

- Safety Injection actuated on Low Pzr Pressure and has NOT been RESET.
- CTMT pressure is 10 psig and increasing at 1 psig/minute.
- NB01 is energized from off-site power.
- NB02 is inadvertently de-energized by opening NB0209, NB02 MN FDR BKR FROM XNB02.
- NB0211, NB02 EMERG FEED FROM B STBY DG NE02, closes re-energizing NB02 from NE02.
- A CSAS actuates at the same time NB0211 closes.

Which ONE of the following correctly states the time at which the Containment Spray Pumps will start?

	'A' CS Pump	'B' CS Pump
A.	Immediately	Immediately
B.	Immediately	15 seconds
C.	15 seconds	15 seconds
D.	15 seconds	40 seconds

Proposed Answer: B

Explanation:

A. Incorrect because the 'B' LOCA sequencer will restart when NB0211 closes.
B. Correct because the 'A' LOCA sequencer has timed out and the 'B' LOCA sequencer will sequence starting at time '0'.
C & D. Incorrect because the 'A' LOCA sequencer has timed out allowing 'A' CS pump to start immediately.

Technical Reference(s): T61.0110 6 LP-18, Containment Spray System, Page 14
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: G T61.0110 6 LP-18

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: CTMT Spray Pump Response To LOCA

Outline #: B053 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	2	2
	K/A #	033K4.05	
	Importance Rating	3.1	3.3

Proposed Question:

The plant has been shutdown for 10 days and is in a refueling outage. One third of the core has been off-loaded to the Spent Fuel Pool. An accident has caused damage to the Spent Fuel Pool and level is DECREASING uncontrollably. The fuel transfer tube has been ISOLATED. The only source of makeup is Essential Service Water, which can just keep up with the leak.

Which ONE of the following is correct?

A. The Shutdown Margin in the Spent Fuel Pool will continue to DECREASE with eventual criticality being obtained in the Spent Fuel Pool.

B. The Shutdown Margin in both the Spent Fuel Pool and the Reactor Cavity will DECREASE until criticality is obtained in both the Spent Fuel Pool and the Reactor.

C. The Shutdown Margin in the Spent Fuel Pool will DECREASE but criticality will NOT be obtained because the fuel is depleted.

D. The Shutdown Margin in the Spent Fuel Pool will continue to DECREASE but criticality will NOT be obtained because of the fuel storage geometry.

Proposed Answer: D

Explanation:

A. Incorrect because geometry prevents criticality even with unborated water.
B. Incorrect because transfer tube is isolated to prevent refueling pool dilution.
C. Incorrect because geometry prevents criticality even with new fuel.

Technical Reference(s): T61.003E 6 LP E-5, Page 8
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003E 6 LP E-5

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: SFP Dilution - Shutdown Margin

Outline #: B054 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	2	2
	K/A #	035K6.01	
	Importance Rating	3.2	3.6

Proposed Question:

The plant is in Mode 1, 100% power. An inadvertent Main Steam Line Isolation occurs resulting in a reactor trip.

Which ONE of the following correctly describes the steam generator response? (Assume no operator action.)

A. Rapid pressure increase causes steam generator levels to increase, steam generator PORVs and Safety Valves lift relieving the pressure, steam generator levels decrease and main feedwater level control increases feed to regain level.

B. Rapid pressure increase causes steam generator levels to increase, steam generator PORVs lift relieving the pressure, steam generator levels decrease and auxiliary feedwater will feed to regain level.

C. Rapid pressure increase causes steam generator levels to decrease, steam generator PORVs and Safety Valves lift to relieve the pressure, steam generator levels decrease and auxiliary feedwater will feed to regain level.

D. Rapid pressure increase causes steam generator levels to decrease, steam generator PORVs lift relieving the pressure, steam generator levels decrease and main feedwater level control increases feed to regain level.

Proposed Answer: C

Explanation:

A. Incorrect because pressure increase causes S/G levels to decrease and main feedwater will be unavailable due to the feedwater isolation that will occur.
B. Incorrect because pressure increase causes S/G levels to decrease.
D. Incorrect because main feedwater is unavailable due to the feedwater isolation that will occur.

Technical Reference(s): T61.003B 6 LP SB-15, Plant S/U with Off-Normal Conditions-Chg Vlv Failure, Stm Dump Failure, DRPI Failure, Closure of all MSIVs, Page 9
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003B 6 LP B-48

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ______

Comments: Inadvertent Main Steam Line Isolation

Outline #: B055 **Author:** SMP

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	2	2
	K/A #	039K3.04	
	Importance Rating	2.5	2.6

Proposed Question:

The following plant conditions exist:

- The plant has sustained a transient event
- All S/G pressures have increased
- All 20 S/G safety valves are open

Which ONE of the following is the LOWEST Main Feedwater Pump discharge pressure necessary to provide flow to the S/Gs?

A. 1126 psig

B. 1186 psig

C. 1223 psig

D. 1235 psig

Proposed Answer: D

Explanation:

D. Correct because the highest pressure setpoint for the main steam safety valves is 1234 psig. Since all safety valves are open, the minimum S/G pressure would be 1234 psig. This would require the feed pump discharge pressure to be at least 1235 psig to provide feed flow.

Technical Reference(s): T61.0110 6 LP-20, Main Steam, Page 25
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B.1 T61.0110 6 LP-20

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: MFW Pump Discharge Pressure During Transient

Outline #: B056 **Author:** SMP

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

Proposed Question:

The plant is at 100% power with all systems in their normal lineups. Annunciator 14A, S/U XFMR LOCKOUT, alarms due to failure of the Startup Transformer (SUT).

Which ONE of the following occurs as a result of the SUT failure?

A. A load shed occurs on NB01 and NB02.

B. Both emergency diesels NE01 and NE02 start.

C. An automatic Reactor Trip and Turbine Trip actuates.

D. Both the normal and alternate feeder breakers to NB02 trip.

Proposed Answer: D

Explanation:

A & B. Incorrect because only NB02 affected
C. Incorrect because no reactor trip or turbine trip.

Technical Reference(s): (Attach if not previously provided)
T61.0110 6 LP-6, Safeguards Power, Pages 5 and 6
T61.0110 6 LP-2, Service Power, Page 17
T61.0110 6 LP-51, LSELS, Page 5

Proposed references provided to applicants during examination: None

Learning Objective: A, B T61.0110 6 LP-6

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Loss of Startup Transformer

Outline #: B057 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	064A3.07	
Importance Rating	3.6	3.7

Proposed Question:

A periodic load test is being performed on NE02, Standby Diesel Generator 'B' in accordance with OSP-NE-00001B. NE02 has been paralleled with 4160V Bus NB02 and is carrying 6 MW of real load. A Main Steamline break occurs and containment pressure increases to 20 (twenty) psig.

Which ONE of the following describes the response of the Load Shedding Emergency Load Sequencing System (LSELS)?

A. The LOCA Sequencer starts the Containment Spray Pumps at Step 3 (Time 15 seconds).

B. The Shutdown Sequencer starts the 'A' Essential Service Water Pump at Step 5 (Time 25 seconds).

C. The LOCA Sequencer starts the Safety Injection Pumps at Step 1 (Time 5 seconds).

D. The Shutdown Sequencer starts the Residual Heat Removal Pumps at Step 2 (Time 10 seconds).

Proposed Answer: C

Explanation:

A. Incorrect because the CTMT Spray Pumps start at $\geq$ 27 psig.
B & D. Incorrect because the Shutdown Sequencer does not actuate.

Technical Reference(s): T61.0110 6 LP-51, Load Shedding Emergency Load Sequencing, Pages 2, 7 and 8
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-51

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Load Sequencing During SI

Outline #: B058 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	073K1.01	
Importance Rating	3.6	3.9

Proposed Question:

The following plant conditions exist:

- 'A' and 'B' CCW Pumps are running.
- The Service Loop is being supplied by 'B' CCW train.
- 'A' Component Cooling Water Radiation Monitor EGRE0009 has exceeded the Hi Hi ALARM setpoint.

Which ONE of the following automatic actions occur in addition to receiving an audible ALARM on the RM-11?

A. EGRV0009, CCW SRG TK A VENT CTRL VLV remains OPEN, EGRV0010, CCW SRG TK B VENT CTRL VLV remains OPEN.

B. EGRV0009, CCW SRG TK A VENT CTRL VLV remains OPEN, EGRV0010, CCW SRG TK B VENT CTRL VLV CLOSES.

C. EGRV0009, CCW SRG TK A VENT CTRL VLV CLOSES, EGRV0010, CCW SRG TK B VENT CTRL VLV remains OPEN.

D. EGRV0009, CCW SRG TK A VENT CTRL VLV CLOSES, EGRV0010, CCW SRG TK B VENT CTRL VLV CLOSES.

Proposed Answer: C

Explanation:

A. Hi Hi radiation does affect the surge tank vent valves.
B. The B vent valve is not affected, the A is.
C. The vent valve and makeup valve for a CCW train close on Hi Hi radiation on its associated train radiation monitor. The Service Loop has no effect on which vent and makeup valve isolate.
D. Hi Hi radiation on one train does not affect the other.

Technical Reference(s): T61.0110 6 LP-10, Component Cooling Water, Page 10
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C.5 & 6 T61.0110 6 LP-10

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 2-9 **55.43** ____

Comments: Response to CCW Rad Mon Alarm

Outline #: B059 **Author:** PJM

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

Proposed Question:

The following plant conditions exist:

- Compressor Sequencer Selector Switch, KAHS0043, is selected to the CAB position.
- All three air compressors are selected to AUTOMATIC.
- 'A' Air Compressor (CKA01A) is running unloaded.
- 'B' Air Compressor (CKA01B) is not running.
- 'C' Air Compressor (CKA01C) is running loaded.
- KA-PV-11, Service Air Isolation Valve is open.

Which ONE of the following describes the correct system response to an air leak that results in air system pressure decreasing to 105 psig?

A. Only CKA01A and CKA01C are running and both are loaded.

B. All three air compressors are running, but only two are loaded.

C. Only CKA01A and CKA01C are running and both are loaded, KA-PV-11 is closed.

D. All three air compressors are running and all three are loaded, KA-PV-11 is closed.

Proposed Answer: D

Explanation:

For this failure, the 2nd air compressor would load, the 3rd air compressor would start and load, and service air would isolate.

Technical Reference(s): T61.0110 6 LP-14, Service and Instrument Air, Page 37
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-14

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

Question History: **Last NRC Exam** Callaway Apr 99 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Loss of Instrument Air Pressure

Outline #: B060 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	2
Group #	2	2
K/A #	086G2.4.27	
Importance Rating	3.0	3.5

Proposed Question:

A Callaway Plant employee has discovered a fire. Life safety is not threatened.

Which ONE of the following would be the correct actions of plant personnel?

A. First attempt to extinguish using any available fire fighting equipment, then call the Control Room.

B. First notify Control Room, then use any available fire fighting equipment, then report to your supervisor.

C. First notify Control Room, then use closest available extinguisher (if practical), then report to Fire Brigade Leader.

D. First attempt to extinguish the fire using closest available extinguisher (if practical), then report to Fire Brigade Leader.

Proposed Answer: C

Explanation:

A. Incorrect because the Control Room is called first.
B. Incorrect because the individual should report to the Fire Brigade Leader.
D. Incorrect because the Control Room is called first.

Technical Reference(s): EIP-ZZ-00226, Fire Response Procedure for Callaway Plant,
(Attach if not previously provided) Rev. 006, Attachment 2, Page 1 of 1

Proposed references provided to applicants during examination: None

Learning Objective: A.3 T61.003A 6 LP A-35

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: Actions Upon Discovery of Fire

Outline #: B061 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	3	3
	K/A #	008K3.02	
	Importance Rating	2.9	3.1

Proposed Question:

The following plant conditions exist:

- Mode 1, 90% power, EOL
- All systems are in a normal full power lineup
- SEHS9, Rod Control Auto/Manual Select Switch, is in AUTO
- Control Bank 'D' begins stepping in slowly

Which ONE of the following events caused this response from rod control?

A. Regenerative Heat Exchanger tube leak.

B. Letdown Heat Exchanger tube leak.

C. Seal Water Heat Exchanger tube leak.

D. Excess Letdown Heat Exchanger tube leak.

Proposed Answer: C

Explanation:

A. Incorrect because both sides of this heat exchanger are RCS water.
B. Incorrect because RCS is at a higher pressure than CCW.
C. Correct because CCW is at a higher pressure than Seal Water.
D. Incorrect because Excess Letdown is normally isolated.

Technical Reference(s): T61.0110 6 LP-10, Component Cooling Water System, Page 22
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: H T61.0110 6 LP-10

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Control Rod Response to CCW Dilution

Outline #: B062 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	2
	Group #	3	3
	K/A #	078K3.02	
	Importance Rating	3.4	3.6

Proposed Question:

The following plant conditions exist:

- The plant is in Mode 4
- RCS temperature is 205°F
- RCS pressure is 340 psig
- RHR is in service
- An unisolable leak in the Instrument Air system has occurred
- Instrument Air system pressure is 60 psig and DECREASING

Which ONE of the following describes how the RHR System will respond?

A. RHR Heat Exchanger Bypass Valves EJ FCV-618 & 619 will fail OPEN and cause RCS temperature to DECREASE.

B. RHR Heat Exchanger Bypass Valves EJ FCV-618 & 619 will fail CLOSED and cause RCS temperature to INCREASE.

C. RHR Heat Exchanger Flow Control Valves EJ HCV-606 & 607 will fail OPEN and cause RCS temperature to DECREASE.

D. RHR Heat Exchanger Flow Control Valves EJ HCV-606 & 607 will fail CLOSED and cause RCS temperature to INCREASE.

Proposed Answer: C

Explanation:

A. Incorrect because bypass fails closed.
B. Incorrect because will cause temperature to decrease.
D. Incorrect because valve fails open.

Technical Reference(s): T61.0110 6 LP-7, Residual Heat Removal, Page 15 and 16
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.010 6 LP-7

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: RHR System Air Operated Valves

Outline #: B063 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	3	3
	Group #	1	1
	K/A #	G2.1.1	
	Importance Rating	3.7	3.8

Proposed Question:

You are the on-duty Reactor Operator. In accordance with plant policy, which ONE of the following non-licensed individuals may you allow to start the 'A' Safety Injection (SI) Pump from Panel RL017 in the Control Room?

A. Any system engineer authorized by the Shift Supervisor who is performing SI system surveillances.

B. Any assistant equipment operator performing OJT on the SI system who is being monitored by the Control Room Supervisor.

C. Any individual who is in a license training program under my direct observation.

D. Any electrical maintenance supervisor troubleshooting why the SI pump vibration readings are abnormal.

Proposed Answer: C

Explanation:

The only non-licensed individuals authorized to operate main control board controls are personnel enrolled in a license training program. Individuals listed in responses A, B and D would have an interest in starting the pump but could not be authorized to start it from the main control board.

Technical Reference(s): ODP-ZZ-00010, Qualification/OJT Program, Rev. 014, Page 5
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: H T61.003A 6 LP A-4

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** ____

Comments: License Candidate Requirements in Main CR

Outline #: B064 **Author:** RBM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	1	1
K/A #	G2.1.11	
Importance Rating	3.0	3.8

Proposed Question:

The following plant conditions exist:

- A Rx Startup is in progress following a mid-cycle outage
- Rx power has been stabilized at $1E^{-8}$ amps
- RCS temperature is at the no-load value
- Critical data has been taken
- Prior to any additional control rod movement, a single S/G Safety Valve on SG 'D' fails open and remains open
- RCS T_{avg} decreases 9°F and reactor power starts to increase

Which ONE of the following states the most restrictive action required to satisfy Technical Specification LCO(s)?

A. Reduce power range high flux reactor trip setpoints to $\leq$ 85% rated thermal power.

B. Restore the inoperable S/G safety valve to operable status prior to entering Mode 1.

C. Restore T_{avg} or be in Mode 2 with K_{eff} < 1.0 and all RCS $T_{Cold} \geq$ 500°F within 30 min.

D. Immediately initiate emergency boration to restore adequate Shutdown Margin.

Proposed Answer: C

Explanation:

A. Incorrect because LCO 3.7.1 allows 36 hours.
B. Incorrect because must repair S/G safety or be in Mode 3.
D. Incorrect because failure does not satisfy symptoms for loss of SDM.

Technical Reference(s): Technical Specifications LCO 3.4.2, RCS Minimum Temperature
(Attach if not previously provided) for Criticality. T/S Interpretation 32, Rev. 8, Page 6

Proposed references provided to applicants during examination: None

Learning Objective: K T61.0110 6 LP-9, Reactor Coolant System

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: Minimum Temperature for Criticality T/S

Outline #: B065 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	1	1
K/A #	G2.1.18	
Importance Rating	2.9	3.0

Proposed Question:

Which ONE of the following events is required to be recorded in the RO Narrative Log?

A. ESW system ESFAS alarm that is unexpected.

B. Security intrusion alarm on door number 22033.

C. Main Feedwater System chemical additions.

D. Unscheduled placement of simulator halon to inhibit.

Proposed Answer: A

Explanation:

A. Correct because required by ODP-ZZ-00006.
B. Incorrect because logged by Security.
C. Incorrect because logged by Chemistry.
D. Incorrect because requires initiation of FPIP.

Technical Reference(s): ODP-ZZ-00006, Operations Department Narrative Logs,
(Attach if not previously provided) Rev. 008, Pages 5 and 6

Proposed references provided to applicants during examination: None

Learning Objective: B.3 T61.003A 6 LP A-2

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

Question History: **Last NRC Exam** ____

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** ____

Comments: RO Log Entries

Outline #: B066 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	3	3
	Group #	1	1
	K/A #	G2.1.32	
	Importance Rating	3.4	3.8

Proposed Question:

A precaution and limitation in OTN-EG-00001, Component Cooling Water System, informs the operator that EGHV0069A/B (EG HS-69) and EGHV0070A/B (EG HS-70), CCW Supply/Return to Radwaste, must be opened simultaneously.

Which ONE of the following is the reason for this requirement?

A. Satisfy the system high flow interlock.

B. Satisfy the system low flow interlock.

C. Minimize potential of system water hammers.

D. Ensure proper flow is maintained to containment system loads.

Proposed Answer: A

Explanation:

These valves have an auto closure signal on high differential pressure. This signal results from system high flow versus system low flow. Valve cycling can result in system water hammers and improper flow balances, however this is not the reason for the precaution asked about in this question.

Technical Reference(s): OTN-EG-00001, Component Cooling Water Systems, Rev. 018, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C.5 T61.003A 6 LP A-9

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 2

Comments: Precautions and Limitations for Radwaste Supply

Outline #: B067 **Author:** RBM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	2	2
K/A #	G2.2.11	
Importance Rating	2.5	3.4

Proposed Question:

Because of an administrative oversight OSP-NE-00001A, Standby Diesel Generator 'A' Periodic Tests **(a Continuous Use Procedure)** must be performed within the next 20 minutes to comply with the surveillance frequency requirements. The Secondary Equipment Operator reports that he CANNOT perform the Pre-Start Checks as required by the Initial Conditions in 20 minutes.

Which ONE of the following describes the action to be taken?

A. With SS permission, the diesel can be run without performing the Pre-Start Checks since it is always in standby and ready to start.

B. Generate a Temporary Change Notice for the Initial Conditions that removes the requirement for performing the Pre-Start Checks.

C. With SS permission, just perform selected portions of the Pre-Start checks so the diesel can be started within 20 minutes.

D. The Pre-Start Checks must be performed regardless of the time required to complete them.

Proposed Answer: D

Explanation:

A & C. Incorrect because must perform Continuous Use Procedures exactly as written.
B. Incorrect because cannot TCN an Initial Condition.

Technical Reference(s): APA-ZZ-00100, Procedure Adherence, Rev. 014, Pages 5 and 6
(Attach if not previously provided) APA-ZZ-00114, Temporary Changes to Procedures, Rev. 017, Page 2

Proposed references provided to applicants during examination: None

Learning Objective: C.1 T61.003A 6 LP A-29

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 3

Comments: Continuous Use Procedure Adherence

Outline #: B068 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	2	2
K/A #	G2.2.13	
Importance Rating	3.6	3.8

Proposed Question:

An Electrician has called the Control Room requesting that the RO stroke CLOSED EJ HV-8804A, RHR TRAIN 'A' TO CHARGING PUMP SUCT ISO, for MOVATS testing. A LOCAL CONTROL (LC) tag is hanging on the MCB Handswitch.

Which ONE of the following complies with APA-ZZ-00310, Workman's Protection Assurance and Caution Tagging?

A. Stroke EJ HV-8804A if the Electrician is signed on to the LC.

B. The RO must sign on to the LC in addition to the Electrician requesting the valve stroke.

C. The RO may stroke the valve after verifying the LC is on SS Hold.

D. The Electrician signed on to the LC must come to the Control Room to operate the handswitch.

Proposed Answer: A

Explanation:

B. Incorrect because only one person can be signed on a LC.
C. Incorrect because equipment on SS Hold must not be operated.
D. Incorrect because MCB equipment may only be operated by a Licensed Operator.

Technical Reference(s): APA-ZZ-00310, Workman's Protection Assurance and Caution Tagging, Rev. 017, Pages 4, 19 and 20. SOS 98-1657
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A.2 T61.003A 6 LP A-33

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** ____

Comments: Operation of Equipment Under Local Control Tag

Outline #: B069 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	3	3
	Group #	2	2
	K/A #	G2.2.22	
	Importance Rating	3.4	4,1

Proposed Question:

Which ONE of the following combinations of Borated Water Volume, Boron Concentration, and Solution Temperature would meet the Technical Specification LCO for the RWST in Mode 4?

	Borated Water Volume	Boron Concentration	Solution Temperature
A.	395,000 gal	2325 ppm	65°F
B.	350,000 gal	2385 ppm	85°F
C.	400,000 gal	2415 ppm	95°F
D.	412,000 gal	2450 ppm	105°F

Proposed Answer: C

Explanation:

A. Incorrect because boron concentration is less than 2350 ppm.
B. Incorrect because volume is less than 394,000 gal.
D. Incorrect because temperature is above 100°F.

Technical Reference(s): Technical Specifications 3.5.4, Refueling Water Storage Tank, LCO
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: G T61.003A 6, LP A-10

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: LCO For Refueling Water Storage Tank

Outline #: B070 **Author:** RGB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	2	2
K/A #	G2.2.33	
Importance Rating	2.5	2.9

Proposed Question:

OTG-ZZ-00005, Plant Shutdown 20% Power to Hot Standby, requires the reactor operator to ensure proper sequence and overlap occurs as rods are inserted as specified in the COLR.

Which ONE of the following represents proper bank overlap for their respective bank?

	Control Bank B	Control Bank C
A.	185 Steps	70 Steps
B.	185 Steps	72 Steps
C.	218 Steps	105 Steps
D.	218 Steps	113 Steps

Proposed Answer: A

Explanation:

A. Correct 185 - 115 = 70
B. Incorrect because 185 - 113 = 72
C. Incorrect because 218 - 113 = 105
D. Incorrect because 218 - 105 = 113

Technical Reference(s): T61.0110 6 LP-26, Rod Control, Page 11
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: D.6 T61.0110 6 LP-26, Rod Control

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ______ **55.43** 6

Comments: Rod Bank Overlap

Outline #: B071 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	3	3
	Group #	3	3
	K/A #	G2.3.1	
	Importance Rating	2.6	3.0

Proposed Question:

An accessible area where an individual could receive a dose equivalent greater than ________________ in one hour at a distance 12 inches from the radiation source is classified as a ____________________.

A. 1000 mrem; CAUTION HIGH RADIATION AREA

B. 100 mrem; RADIATION AREA

C. 100 mrem; HOT SPOT

D. 1000 mrem; DANGER HIGH RADIATION AREA

Proposed Answer: D

Explanation:

A. Incorrect because > 1000 mrem/hr. is a DHRA.
B. Incorrect because > 100 mrem/hr. is a CHRA.
C. Incorrect because a Hot Spot is defined as having a contact reading > 100 mrem/hr. and dose rate is 5 times greater than the Target Dose Rate of the area at 12 inches.

Technical Reference(s): HDP-ZZ-01500, Radiological Posting, Rev. 016, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: D T61.003A 6 LP A-31

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 12 **55.43** 4

Comments: Radiological Posting

Outline #: B072 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	3	3
K/A #	G2.3.11	
Importance Rating	2.7	3.2

Proposed Question:

The following plant conditions exist:

- Reactor has tripped
- Safety Injection has actuated
- All equipment has actuated per design
- GE RE-92 Hi Hi alarm
- 'B' S/G NR Level 5% and INCREASING with AFW ISOLATED
- 'C' S/G pressure DECREASING in an uncontrolled manner

Which ONE of the following describes the positions of the steam supply valves to the Turbine Driven AFW Pump after all Emergency Procedure actions have been completed?

	'B' S/G ABV0085	'C' S/G ABV0087
A.	OPEN	OPEN
B.	OPEN	CLOSED
C.	CLOSED	OPEN
D.	CLOSED	CLOSED

Proposed Answer: D

Explanation:

A, B & C. Incorrect because both ABV0085 and ABV0087 would be closed. Based on the information provided, the MDAFPs would be available.

Technical Reference(s): T61.003D 6 LP-15, E-2 Faulted Steam Generator Isolation, Page 20
(Attach if not previously provided)
T61.003D 6 LP-17, E-3 Steam Generator Tube Rupture, Pages 37 and 38

Proposed references provided to applicants during examination: None

Learning Objective:
G T61.003D 6 LP-15
J, NN T61.003D 6 LP-17

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** ____

Comments: Release Termination on Ruptured and Faulted S/G

Outline #: B073 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	4	4
K/A #	G2.4.20	
Importance Rating	3.3	4.0

Proposed Question:

Per ODP-ZZ-00025, Emergency Operating Procedure Usage, in which ONE of the following cases may AFW be THROTTLED to less than 300,000 lbm/hr?

	S/G NR Level	Ctmt Temp	Ctmt Rad
A.	A-30% C-24% B-29% D-33%	210°F	1 R/hr
B.	A-3% C-17% B-2% D-6%	125°F	10 R/hr
C.	A-17% C-18% B-14% D-21%	115°F	1×10^6 R/hr
D.	A-16% C-0% B-13% D-6%	180°F	1×10^5 R/hr

Proposed Answer: B

Explanation:

A, C & D. Incorrect because requires > 35% NR level when Adverse Containment Conditions exist ($\geq$ 160°F or $\geq 10^5$ r/hr).

Technical Reference(s): ODP-ZZ-00025, Emergency Operating Procedure Usage,
(Attach if not previously provided) Rev. 004, Page 4

Proposed references provided to applicants during examination: None

Learning Objective: DD T61.003D 4 LP-1
R T61.003D 6 LP-4

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** ____

Comments: AFW Flow / S/G Level Requirements with Adverse Containment

Outline #: B074 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	3
Group #	4	4
K/A #	G2.4.23	
Importance Rating	2.8	3.8

Proposed Question:

The following plant conditions exist:

- Large Break LOCA in progress
- Crew is performing FR-Z.1, Response To High Containment Pressure, due to an ORANGE path on Containment Pressure
- CTMT Pressure is 31 psig and INCREASING
- Annunciator 47C, RWST LEV LOLO 1 AUTO XFR, has just ACTUATED

Which ONE of the following should be performed?

A. CONTINUE in FR-Z.1, when completed, transition to ES-1.3, Transfer To Cold Leg Recirculation. Upon completion transition to E-1, Loss of Reactor or Secondary Coolant.

B. CONTINUE in FR-Z.1 until Containment Pressure is LESS THAN 25 psig, then transition to ES-1.3, Transfer to Cold Leg Recirculation.

C. SUSPEND performance of FR-Z.1, transition to ES-1.3, Transfer To Cold Leg Recirculation. Upon completion return to FR-Z.1.

D. SUSPEND performance of FR-Z.1, transition to ES-1.3, Transfer To Cold Leg Recirculation. Complete ES-1.3 through Step 3, then return to FR-Z.1.

Proposed Answer: D

Explanation:

A & B. Incorrect because FR-Z.1 should be suspended and a transition to ES-1.3 made.
C. Incorrect because ES-1.3 should only be completed through Step 3.

Technical Reference(s): T61.003D 6 LP-11, ES-1.3 Transfer To Cold Leg Recirculation, Page 11
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003D 6 LP-11

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43**

Comments: Prioritization of Emergency Operating Procedures

Outline #: B075 **Author:** RGB

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	1	
	Group #	2	
	K/A #	029G2.4.1	
	Importance Rating	4.3	

Proposed Question:

The plant has sustained an ATWS. The crew has entered FR-S.1, Response to Nuclear Power Generation. The BOP operator was unable to trip the turbine by pressing the Manual Turbine Trip pushbutton.

Which ONE of the following actions should the BOP operator attempt next?

A. Manually run back the turbine.

B. Fast close MSIVs and bypass valves.

C. Open the generator output breakers.

D. Check the AFW pumps running.

Proposed Answer: A

Explanation:

Answer is directly from the procedure. Distracters are written in sequence they appear after attempting a manual runback of the turbine.

Technical Reference(s): FR-S.1, Response to Nuclear Power Generation, Rev. 1B3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003D. 6 LP 29

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

Question History: **Last NRC Exam** ____

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: ATWS Immediate Actions

Outline #: R001 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	3	
K/A #	036AK3.03	
Importance Rating	3.7	

Proposed Question:

The following plant conditions exist:

- A fuel assembly has just been removed from the core
- Immediately after initiating transit to the upender the refueling cavity level is reported to be a foot below normal and dropping at a visible rate

Which ONE of the following is the preferred course of action?

A. Stop the fuel movement at the current location in the refueling pool.

B. Place the fuel assembly back into the reactor vessel.

C. Place the fuel assembly in the upender and lower it to the horizontal position.

D. Position the mast over the deepest part of the cavity and lower the assembly to the bottom.

Proposed Answer: B

Explanation:

The spent fuel pool racks and reactor vessel are the only safe storage locations during a loss of refuel pool level event.

Technical Reference(s): OTO-EC-00001, Loss of Refuel Pool Level, Rev. 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J.5 T61.003E 6 LP E-5

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5, 10 **55.43** ____

Comments: Actions on Decreasing Refuel Pool Level

Outline #: R002 **Author:** DGL

Examination Outline Cross-reference:

	RO	SRO
Level		
Tier #	2	
Group #	1	
K/A #	001K4.23	
Importance Rating	3.4	

Proposed Question:

Which ONE of the following will prevent outward rod motion in MANUAL rod control?

A. Selected Turbine Impulse Pressure channel is reading 13% equivalent power.

B. Two ΔT channels are within 3% of the overtemperature ΔT trip setpoint.

C. Control Bank D rods are positioned at 222 steps.

D. One Power Range NI is reading 102%.

Proposed Answer: B

Explanation:

A. Incorrect because C-5 interlock does not prevent rod motion.
C. Incorrect because C-11 interlock does not prevent rod motion.
D. Incorrect because power must be $\geq$ 103% for C-2 interlock to stop rod motion.

Technical Reference(s): OTO-SA-00001, Table II, Rev. 10
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.0110 6 LP-26, Rod Control

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Rod Motion Inhibit

Outline #: R003 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	1	
	K/A #	003K3.04	
	Importance Rating	3.9	

Proposed Question:

The plant is in Mode 1 at 46% reactor power.

Which ONE of the following conditions will initiate a reactor trip?

A. 2 of 3 detectors on 2 of 4 loops indicating <90% RCS loop flow.

B. PA01 and PA02 bus frequency drops to 58 Hz for 2 seconds.

C. 2 of 3 detectors indicate 82% on pressurizer water level.

D. PA01 bus voltage drops to 12,000 volts for 0.5 seconds.

Proposed Answer: A

Explanation:

B. Incorrect because frequency must drop to 57.2 Hz to cause a trip.
C. Incorrect because level must increase to 92% to cause a trip.
D. Incorrect because PA01 and PA02 would both have to drop below 10,584 volts to cause a trip.

Technical Reference(s): E-0, Attachment 1, Rev. 1B5
(Attach if not previously provided) OTO-SA-00001, Table III, Rev. 10

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-27, Reactor Protection

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

Question History: **Last NRC Exam** ___
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ___

Comments: Rx Trip Due to Loss of RCP

Outline #: R004 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	1	
	K/A #	004K5.20	
	Importance Rating	3.6	

Proposed Question:

The following plant conditions exist:

- Reactor power 80%
- Rod control is in manual
- All other controls are in automatic
- All parameters are stable; Xenon, Tavg, turbine load, PZR level, SG pressure, reactor power

Emergency boration is performed for TWO (2) minutes.

Assuming NO operator actions, which ONE of the following is the parameter that will return to its original value when steady state conditions are attained?

A. RCS Tavg

B. PZR level

C. SG pressure

D. Reactor power

Proposed Answer: D

Explanation:

A. Incorrect because RCS Tavg will decrease to compensate for the negative reactivity from emergency boration.
B. Incorrect because Auct Hi Tavg will go down and so will PZR program level causing actual level to be lower.
C. Incorrect because Tavg will decrease therefore T steam will decrease.

Technical Reference(s): T61.0070 6, Reactivity Variations and Reactor Control
(Attach if not previously provided) Page 95, 96, 115, 116, 117, 118

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0070 6, Reactivity Variations and Reactor Control

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ______

Comments: Reactivity Effect of Boration

Outline #: R005 **Author:** SMP

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

Proposed Question:

Which ONE of the following describes component status when the ESFAS Status Panel Component Level Window is DARK following actuation?

A. The component is NOT in its safeguards position, but is capable of being aligned.

B. A condition has PREVENTED the automatic operation of the component from its signal.

C. The component is DE-ENERGIZED and not capable of being aligned to its safeguards position.

D. The component has responded CORRECTLY to its emergency actuation signal.

Proposed Answer: A

Explanation:

B & C. Incorrect because it would be lit AMBER.
D. Incorrect because it would be lit WHITE.

Technical Reference(s): T61.0110 6 LP-52, Engineered Safety Feature Actuation
(Attach if not previously provided) Page 32 and 33

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-52, ESFAS

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: ESFAS Status Panel Indication

Outline #: R006 **Author:** RAN

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	1	
	K/A #	015K4.07	
	Importance Rating	3.7	

Proposed Question:

The following plant conditions exist:

- Power range channel N-41 = 9%
- Power range channel N-42 = 11%
- Power range channel N-43 = 8%
- Power range channel N-44 = 8%
- Reactor shutdown is in progress

The Reactor Operator inadvertently depresses the UNBLOCK pushbutton on SEHS-10, SR Trip BLOC/UNBLOCK for source range channel N32.

Which ONE of the following describes the status of the Source Range Nuclear Instruments?

A. Source Range Channels N31 and N32 will remain DE-ENERGIZED due to P-10.

B. Source Range Channel N31 remains DE-ENERGIZED and N32 will ENERGIZE.

C. Source Range Channels N31 and N32 will ENERGIZE.

D. Source Range Channels N31 and N32 will ENERGIZE while the switch is depressed, then DE-ENERGIZE when the switch is released.

Proposed Answer: B

Explanation:

A. Incorrect because P-10 logic is 2/4 above 10%.
C. Incorrect because block controls consist of two controls, one for each train.
D. Incorrect because N31 remains energized.

Technical Reference(s): T61.0110 6 LP-28, Excore Nuclear Instruments
(Attach if not previously provided) Page 14 and 15

Proposed references provided to applicants during examination: None

Learning Objective: D T61.0110 6 LP-28, Excore Nuclear Instruments

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Source Range Permissive

Outline #: R007 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	1	
	K/A #	015A2.02	
	Importance Rating	3.1	

Proposed Question:

Which ONE of the following describes the affect on a Source Range Channel if the pulse height discriminator failed to a lower value?

The output would:

A. decrease due to the filtering which narrows the pulse height window.

B. decrease due to the removal of the higher amplitude neutron pulses.

C. increase due to the increased gamma interaction inside the detector.

D. increase due to counting of some of the lower amplitude gamma pulses.

Proposed Answer: D

Explanation:

A. Output increases due to a narrower pulse height window.
B. Failure will NOT remove any neutron pulses.
C. Failure does NOT affect interactions inside the detector.

Technical Reference(s): T61.0110 6 LP-28, Excore Nuclear Instrumentation
(Attach if not previously provided) Page 11

Proposed references provided to applicants during examination: None

Learning Objective: B.1.C T61.010 6 LP-28, Excore Nuclear Instrumentation

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

Question History: **Last NRC Exam** Callaway Apr 99 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: SR Discriminator Failure

Outline #: R008 **Author:** DGL

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

Proposed Question:

Which ONE of the following Core Exit Thermocouple (CETC) readings indicates the highest temperature during accident conditions at which a CETC will operate satisfactorily?

A. 700°F

B. 1200°F

C. 2300°F

D. 3200°F

Proposed Answer: C

Explanation:

A. FR-C.2 Orange Path criteria.
B. FR-C.1 Red Path criteria.
D. Common misconception.

Technical Reference(s): T61.0110 6 LP-29, Incore Instrumentation, Page 10
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.0110 6 LP-29, Incore Instrumentation

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

Question History: **Last NRC Exam** Callaway Apr 99 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Thermocouple Failures

Outline #: R009 **Author:** DGL

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

Proposed Question:

The following plant conditions exist:

- The plant is at 7% power on the steam dumps to the condenser
- Turbine rolling up to 1800 rpm
- All operating Condensate Pumps TRIP

Which ONE of the following describes the system response?
(ASSUME no operator action is taken.)

	MFPs	MDAFPs	Reactor Trip
A.	Trip	Start on S/G Low Low Level	On S/G Low Low Level
B.	Do Not Trip	Start on S/G Low Low Level	On Turbine Trip
C.	Trip	Start on MFW Pump Trip	On S/G Low Low Level
D.	Do Not Trip	Start on Reactor Trip	On Turbine Trip

Proposed Answer: C

Explanation:

A. Incorrect because MDAFPs start immediately on MFP trip.
B & D. Incorrect because MFP trip on trip of all condensate pump.
General – AFW will not support 7% reactor power.
S/G levels will decrease to Rx Trip Setpoint → Turbine Trip from Rx Trip.

Technical Reference(s): T61.0110 6 LP-23, Main Feedwater System, Page 45
(Attach if not previously provided) T61.0110 6 LP-25, Auxiliary Feedwater System, Page 20

Proposed references provided to applicants during examination: None

Learning Objective: D T61.0110 6 LP-23, Main Feedwater System
F T61.0110 6 LP-25, Auxiliary Feedwater Systems

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Trip of All Condensate Pumps

Outline #: R010 **Author:** RAN

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	061A3.01	
Importance Rating	4.2	

Proposed Question:

Which ONE of the following sets of conditions would result in an actuation of the ATWS Mitigation System (AMSAC)? Consider ONLY the AMSAC System.

	S/G NR Level		Elapsed Time	First Stage Impulse Pressure AC PT-505	First Stage Impulse Pressure AC PT-506
A.	A-10% B-13%	C-11% D-9%	40 sec.	100 psig	100 psig
B.	A-9% B-8%	C-10% D-9%	27 sec.	560 psig	565 psig
C.	A-0% B-1%	C-0% D-0%	21 sec.	760 psig	755 psig
D.	A-10% B-14%	C-13% D-11%	38 sec.	685 psig	690 psig

Proposed Answer: B

Explanation:

A. Incorrect because Pimp < 33%.
C. Incorrect because there is a 25 second time delay.
D. Incorrect because 2 S/Gs > 12% NR.

Technical Reference(s): OTA-RL-RK083, Rev. 3, TCN 02-0101, ATWS
(Attach if not previously provided) SG Level Pre-trip

Proposed references provided to applicants during examination: None

Learning Objective: B T61.0110 6 LP-54, AMSAC

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: AMSAC Actuation of AFW

Outline #: R011 **Author:** RGB

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	2	
	K/A #	011A2.10	
	Importance Rating	3.4	

Proposed Question:

The following plant conditions exist:

- Mode 1
- Rx power 100%, normal operating temperature, normal operating pressure
- NCP in service with BGFCV124 in auto
- Letdown flow is 120 gpm
- PZR level controller BBLK459 is in auto
- BBLT461 is the upper select PZR level control channel

BBLT461 fails HIGH. NO operator action is taken.

Which ONE of the following will occur as a result of BBLT461 failing?

A. The reactor will trip, but not as a result of PZR level.

B. After a time period, the reactor will trip on high PZR level.

C. After a time period, the reactor will trip on low PZR level.

D. The reactor will trip immediately on high PZR level.

Proposed Answer: B

Explanation:

A. Incorrect because the Rx will trip on high PZR level.
B. Correct because charging flow will decrease and so will PZR level. At 17% on the lower selected channel, letdown flow will isolate and PZR level will go up. After a time period, PZR level will reach 92% and trip the reactor.
C. Incorrect because there is not a Rx trip on low PZR level.
D. Incorrect because PZR high level trip coincidence is 2 of 3.

Technical Reference(s): T61.0110 6 LP-30, Reactor Instrumentation, Page 33
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.0110 6 LP-30, Reactor Instrumentation

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: PZR Level Channel Fails High

Outline #: R012 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	2	
	K/A #	012A4.06	
	Importance Rating	4.3	

Proposed Question:

With the plant in Mode 3, the MCB handswitch for the Reactor Trip Breakers is rotated to the CLOSE position.

Which ONE of the below conditions would prevent the reactor trip breakers from closing?

A. Pressurizer level at 95%

B. RCS Pressure at 1800 psig

C. Pressurizer Level at 17%

D. RCS Pressure at 2400 psig

Proposed Answer: D

Explanation:

A. Level above trip setpoint, but trip not enabled.
B. Pressure below trip setpoint, but trip not enabled.
C. Letdown Isolation Setpoint only – no trip.

Technical Reference(s): OTO-SA-00001, Rev. 010, ESFAS Verification and Restoration, Table III. E-0, Rev. 1B5, Rx Trip or SI, Attachment 1
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: D T61.0110 6 LP-27, Reactor Protection

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

Question History: **Last NRC Exam** Callaway June 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43**

Comments: Operation of the Rx Trip Breakers

Outline #: R013 **Author:** FXB

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	2	
	K/A #	014K5.01	
	Importance Rating	2.7	

Proposed Question:

The following plant conditions exist:

- Annunciator 80B, RPI NON-URGENT ALARM, is illuminated
- DRPI General warning LED is flashing for rod H-8
- There are NO rod control system alarms illuminated
- DRPI indication for rod H-8 is 222 steps (Control Bank 'D', Group 2)
- DRPI indications for remaining Control Bank 'D' rods are 216 steps.
- Step counter indication for Control Bank 'D' Group 1 is 216 steps.
- Step counter indication for Control Bank 'D' Group 2 is 215 steps.

Which ONE of the following has occurred in the rod position indication system?

A. Data 'A' failure

B. Data 'B' failure

C. Bank D, Group 1 step counter has failed

D. Bank D, Group 2 step counter has failed

Proposed Answer: A

Explanation:

A. Correct because accuracy for Data A failure is +10,-4.
B. Incorrect because accuracy for Data B failure is –10,+4.
C & D. Incorrect because the step counters are functioning correctly.

Technical Reference(s): T61.0110 6 LP-26, Digital Rod Position Indication, Page 43
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: S T61.010 6 LP-26, DRPI

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ______

Comments: DRPI Data Failure

Outline #: R014 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	2	
	K/A #	029K4.02	
	Importance Rating	2.9	

Proposed Question:

The following plant conditions exist:

- CTMT Shutdown Purge Exhaust Fan ON
- CTMT Shutdown Purge Supply Fan OFF
- CTMT Personnel Hatches both OPEN (interlocks defeated)
- CTMT Equipment Hatch OPEN

The CTMT Coordinator has identified a positive air flow from CTMT to the outside atmosphere through the equipment hatch.

Which ONE of the following actions is required for this condition?

A. Manually actuate a Containment Purge Isolation Signal.

B. Manually actuate a Control Room Ventilation Isolation Signal.

C. Shift the Auxiliary Building Normal Exhaust Fans to Fast Speed.

D. Start at least one train of Fuel Building/Auxiliary Building Emergency Exhaust.

Proposed Answer: C

Explanation:

C. is the procedurally required action for this specified condition.
A, B & D will not ensure the air flow from CTMT to the outside atmosphere is terminated.

Technical Reference(s): OTN-GT-00001, Rev. 017, CTMT Purge System, Page 2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B.3 T61.003A 6 LP-A-12

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

Question History: **Last NRC Exam** ______
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ______

Comments: Maintain Negative Pressure In CTMT

Outline #: R015 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	2	
	K/A #	055K3.01	
	Importance Rating	2.5	

Proposed Question:

A seal water malfunction on the running condenser vacuum pump results in a degrading main condenser vacuum.

Which ONE of the following is the setpoint at which the standby condenser vacuum pump will automatically start?

A. 5.0 inches Hga

B. 5.5 inches Hga

C. 6.0 inches Hga

D. 6.5 inches Hga

Proposed Answer: A

Explanation:

B. No automatic action.
C. Blocks condenser steam dumps.
D. No automatic action.

Technical Reference(s): T61.0110 6 LP-22, Condensate System, Page 35
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: L T61.0110 6 LP-22, Condensate System

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

Question History: **Last NRC Exam** Callaway Apr 99 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Vacuum Pump Auto Starts

Outline #: R016 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	063K3.02	
Importance Rating	3.5	

Proposed Question:

Which ONE of the following statements describes the effect of a loss of DC control power to 4160 VAC breaker NB0112, NB01 MN FDR BKR FROM XNB01? (Assume that the breaker is the only component affected by the loss of DC power.)

A. The breaker will fail in its current position and cannot be tripped or closed from the MCB.

B. The breaker will fail in its current position and can be tripped but not closed from the MCB.

C. The breaker will trip and can be closed but not tripped from the MCB.

D. The breaker will trip and cannot be tripped or closed from the MCB.

Proposed Answer: A

Explanation:

B. Incorrect because the 152 trip coil is energized to actuate.
C & D. Incorrect because the breaker will fail in its current position.

Technical Reference(s): E-23NB12, Bus NB01 Feeder Bkr NB0112 Schematic Diagram
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.0110 6 LP-6, Safeguards Power

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Loss of DC Control Power

Outline #: R017 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	075K4.01	
Importance Rating	2.5	

Proposed Question:

The following plant conditions exist:

- Mode 1, 80% reactor power, 975 MWe
- 'A' and 'C' Circ Water pumps in operation
- Ambient Dry Bulb temperature is -5°F, Cooling Tower Basin temperature is 45°F

Utilizing Attachment 1 of OTN-DA-00001 on the following page, which ONE of the following is the correct status of the cooling tower?

A. Two bypass valves will open with two circ water pumps running.

B. All water flow is directed to the center of the cooling tower.

C. Three bypass valves will open with two circ water pumps running.

D. All water flow is directed to the outer portion of the cooling tower.

Proposed Answer: A

Explanation:

A. Correct because Attachment 1 requires bypass operation and the number of bypass valves opened in auto bypass is equal to the number of circ pumps operating.

Technical Reference(s): OTN-DA-00001, Rev. 012, Attachment 1,
(Attach if not previously provided) T61.0110 6 LP-10, Circ & Service Water, Page 25

Proposed references provided to applicants during examination: OTN-DA-00001 Attach 1

Learning Objective: D T61.0110 6 LP-4, Circ and Service Water

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

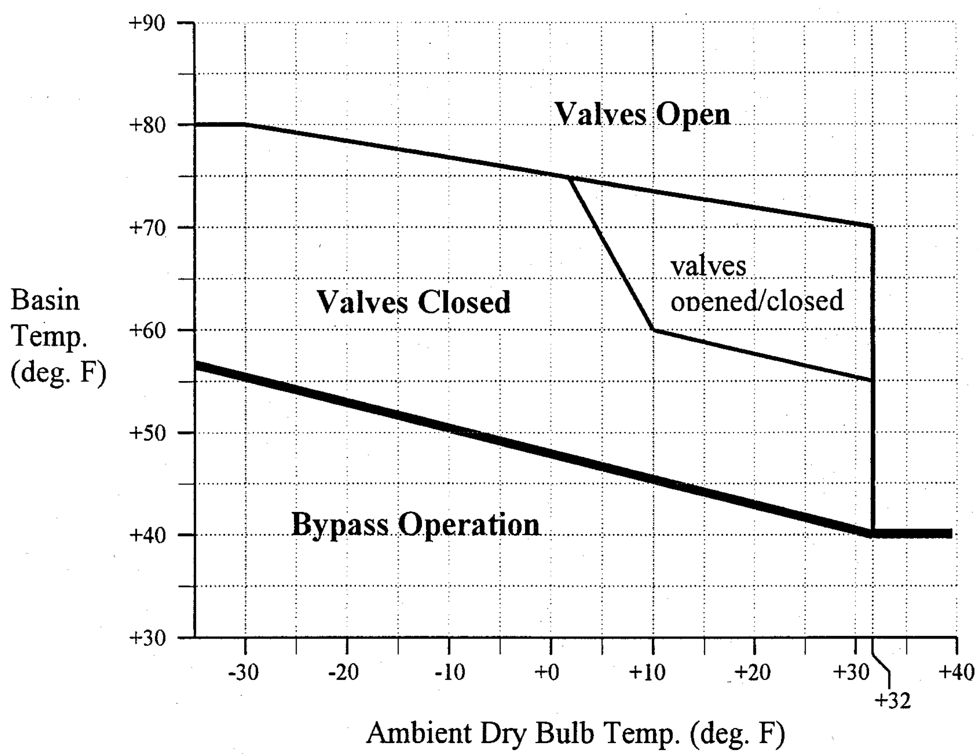
10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Cooling Tower Bypass Valve Operation

Outline #: R018 **Author:** SMP

OTN-DA-00001
Rev. 012

Cooling Tower Freeze Protection Curve



Select one of the following to maintain backpressure at approximately 2.1 Hg abs.:

I. 3 pump operation and throttle the lower C.W. passes
II. 3 pump operation and FREEZE-PROTECT or FREEZE-PROTECT and throttled
III. 2 pump operation and normal throttle

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	3	
K/A #	005A1.03	
Importance Rating	2.5	

Proposed Question:

The plant is in Mode 4. A plant cooldown is in progress with RHR Train 'A' in a cooldown lineup. The Reactor Operator is directed to stop the plant cooldown. The Reactor Operator then CLOSES EGHV0101, 'A' CCW to 'A' RHR Hx.

Which ONE of the following events occur?

A. 'A' CCW flashes in the 'A' RHR heat exchanger causing the 'A' CCW surge tank level to increase.

B. 'A' ESW flashes in the 'A' CCW heat exchanger causing a water hammer in 'A' ESW.

C. 'A' RHR flashes in the 'A' RHR heat exchanger causing the 'A' RHR suction relief to lift.

D. 'A' ESW flashes in the 'A' CCW heat exchanger causing the heat exchanger tube side relief valve to lift.

Proposed Answer: A

Explanation:

A. The RHR Hx is cooled by CCW. When CCW flow is terminated, then the heat from the RHR fluid will cause CCW to flash. When CCW flashes, the void formation will cause surge tank level to go up.
B. ESW is at a higher pressure than CCW consequently it should not flash.
C. The RHR system is at a high pressure than CCW consequently it should not flash.
D. ESW is at a higher pressure than CCW consequently it should not flash.

Technical Reference(s): T61.0110 6 LP-10, Component Cooling Water System, Page 8 & 15

(Attach if not previously provided) CARS 198600054, CCW Flashed to Steam in RHR Hx 'B'

Proposed references provided to applicants during examination: None

Learning Objective: E T61.010 6 LP-10, Component Cooling Water System

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** ____

Comments: Isolating CCW to RHR Hx

Outline #: R019 **Author:** SMP

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	3	
K/A #	007A2.05	
Importance Rating	3.2	

Proposed Question:

The following plant conditions exist:

- PZR Relief Tank Level Hi/Lo ALARMING on HIGH LEVEL
- PZR Relief Tank Pressure ALARMING on HIGH PRESSURE

Which ONE of the following combinations contain sources, ALL of which should be monitored for leakage into the PRT?

A. RHR Pump Suction Reliefs (EJ8708A/B), RCP Seal Leakoff Relief (BG8121), and CVCS Letdown Relief (BG8117)

B. ECCS Accumulator Reliefs (EJ8855A-D), RHR Pump Suction Relief (EJ8708A/B), and CVCS Letdown Relief (BG8117).

C. RCP Seal Leakoff Relief (BG8121), CVCS Letdown Relief (BG8117) and RHR Discharge Reliefs (EJ8856A/B)

D. Safety Injection Pump Suction Reliefs (EM8858A), RHR Pump Suction Reliefs (EJ8708A/B), and RCP Seal Leakoff Relief (BG8121).

Proposed Answer: A

Explanation:

B. ECCS Reliefs go to atmosphere.
C. RHR Discharge Reliefs go to RHUT.
D. Safety Injection Suction Relief go to RHUT.

Technical Reference(s): T61.0110 6 LP-9, Reactor Coolant System, Page 53
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E T61.010 6 LP-9, Reactor Coolant System

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

Question History: **Last NRC Exam** Callaway June 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Impact of Pressure Increase on PRT

Outline #: R020 **Author:** FXB

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	3	
	K/A #	034G2.2.30	
	Importance Rating	3.5	

Proposed Question:

Which ONE of the following is a responsibility of the Reactor Operator in the Control Room during refueling operations?

A. Checking source range counts while a fuel assembly is being placed in the core.

B. Verifying proper operation of the Containment Evacuation alarm every shift.

C. Maintaining a 1/M plot while reloading fuel during a core shuffle.

D. Updating the temporary and final locations of all fuel assemblies using the PC program "SHUFFLE".

Proposed Answer: A

Explanation:

A. Required by ETP-ZZ-00035.
B. Incorrect because verification of proper operation is not required shiftly.
C. Incorrect because 1/M plot is maintained by the Reactor Engineer.
D. Incorrect because fuel assembly locations are tracked by the Reactor Engineer.

Technical Reference(s): OTG-ZZ-00007, Rev. 015, Refueling, Page 16
(Attach if not previously provided) ETP-ZZ-00035, Rev. 019, Refueling Performance, Page 1 and 2

Proposed references provided to applicants during examination: None

Learning Objective: C T61.003E 6 LP E-1

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 7

Comments: RO Responsibility During Core Reload

Outline #: R021 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	3	
	K/A #	045A4.01	
	Importance Rating	3.1	

Proposed Question:

Which ONE of the following describes the operation of the Main Turbine Steam Valves during Control Valve Chest Warming?

A. Main Stop Valve #2 Bypass is Open.

B. All Intermediate Stop Valves are Shut.

C. Control Valves #1, #2 and #3 are Open.

D. All Main Stop Valves are Open.

Proposed Answer: A

Explanation:

B. Incorrect because all intermediate stop valves are open.
C. Incorrect because all 4 control valves are shut.
D. Incorrect because main stop valves 1, 3 and 4 are shut.

Technical Reference(s): T61.0110 6 LP-38, Main Turbine Controls and Control Oil, Page 59
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.0110 6 LP-38, Main Turbine CTRL & CTRL Oil

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Main Turbine Chest Warming

Outline #: R022 **Author:** SMP

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	3	
	K/A #	076K2.08	
	Importance Rating	3.1	

Proposed Question:

The following plant conditions exist:

- Mode 1, 100% Reactor Power
- Both Trains of ESW – normal standby lineup

The normal feeder breaker to XNB02 is accidentally tripped OPEN by a Janitor/Groundskeeper working in the area. When the 'B' MDAFP pump started, a fault occurred resulting in a loss of NB02.

Which ONE of the following describes the response of the 'A' ESW Train to this event?

A. 'A" ESW pump AUTOMATICALLY STARTS – valve(s) in the 'A' ESW Train will reposition to provide a flowpath.

B. 'A' ESW pump AUTOMATICALLY STARTS – 'B' Train powered valve(s) in the 'A' ESW Train must be locally manually repositioned to provide a flowpath for 'A' Train.

C. 'A' ESW pump must be MANUALLY STARTED – valve(s) in the 'A' ESW Train will reposition to provide a flowpath.

D. 'A' ESW pump must be MANUALLY STARTED – 'B' Train powered valve(s) in the 'A' ESW Train must be locally manually repositioned to provide a flowpath for 'A' Train.

Proposed Answer: A

Explanation:

B. Incorrect because a flowpath is provided by EF HV-51 and EF HV-37 receiving an OPEN signal. 'B' Train powered valves in 'A' ESW Train only isolate the train from service water.

C & D. Incorrect because the 'A' ESW pump will automatically start due to undervoltage on NB02 and low flow to the 'A' Train CTMT Coolers.

Technical Reference(s): T61.0110 6 LP-5, Essential Service Water, Page 33
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: C T61.0110 6 LP-5, Essential Service Water

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

Question History: **Last NRC Exam** Callaway Dec 98 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: ESW Valve Power Supplies (IPE/PRA)

Outline #: R023 **Author:** RGB

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #	2	
	Group #	3	
	K/A #	103A3.01	
	Importance Rating	3.9	

Proposed Question:

Which ONE of the following describes the containment atmosphere radiation monitors GT-RE-31 and GT-RE-32?

A. They sample containment via the hydrogen control system and are isolated from containment by a CIS A actuation.

B. They sample upstream of the containment isolation valves for the hydrogen control system and are NOT isolated by a CIS A actuation.

C. They sample between the containment isolation valves on the mini purge exhaust line and initiate a CPIS on high high activity.

D. They sample from the containment purge exhaust line outside containment and initiate a CPIS on high high activity.

Proposed Answer: A

Explanation:

A. GT-RE-31 and GT-RE-32 are physically connected to a draw containment air from the hydrogen control system. The isolation valves in these lines receives a signal to close on a CIS A. There are no isolation signals generated from these two radiation monitors.
B. They sample through the iso valves and are isolated.
C. They do not sample from the purge system.
D. They do not sample from the purge system.

Technical Reference(s): T61.0110 6 LP-40, Containment Ventilation, Page 36 & 38
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: K T61.0110 6 LP-40, Containment Ventilation

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

Question History: **Last NRC Exam** Callaway June 97 NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 7 **55.43** ____

Comments: Rad Monitor Response to CIS A

Outline #: R024 **Author:** PJM

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	4	
K/A #	G2.4.1	
Importance Rating	4.3	

Proposed Question:

The plant is in Mode 1 at 25% reactor power. Which ONE of the following would cause the crew to enter E-0, Reactor Trip or Safety Injection?

A. 'A' Steam Generator level is at 10% on all channels and the reactor has not tripped.

B. The main turbine stop valves have closed and the reactor has not tripped.

C. Pressurizer level channel 459 is at 98% and the reactor has not tripped.

D. 'C' RCP breaker has just tripped open and the reactor has not tripped.

Proposed Answer: A

Explanation:

A. Should have resulted in a reactor trip.
B. Would only result in a reactor trip of above 50% power.
C. Pressurizer level trip requires 2 of 3 channels above 92%.
D. The trip of one RCP only trips the reactor if above 48% power.

Technical Reference(s): T61.003D 6 LP-4, Page 6
(Attach if not previously provided) E-0, Attachment 1, Rev. 1B5

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003D 6 LP-4

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

Question History: **Last NRC Exam** Callaway Jun 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: Reactor Trip Requirements 25%

Outline #: R025 **Author:** RBM

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		1
	Group #		1
	K/A #	001AK3.02	
	Importance Rating		4.3

Proposed Question:

Which ONE of the following is a Technical Specification bases for observing that the RCCAs are positioned above their respective insertion limits during normal operation?

A. Ensures that assumptions for SDM and power distribution peaking factors are preserved.

B. Ensures that the trip instrumentation is within its normal operating range.

C. Ensures that the moderator temperature coefficient is within its analyzed range.

D. Ensures that the pressurizer is capable of being operable with a steam bubble.

Proposed Answer: A

Explanation:

B, C & D. Incorrect because they are the Technical Specification bases (B3.4.2) for RCS minimum temperature for criticality.

Technical Reference(s): Tech Spec Bases B3.1.6 Applicable Safety Analyses
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A.4 T61.003A 6 LP-A3

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: Tech Spec Limits for Control Rods

Outline #: S001 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		1
	Group #		1
	K/A #	029G2.4.16	
	Importance Rating		4.0

Proposed Question:

An ATWS has occurred and the crew is at step 6 of FR-S.1, Response to Nuclear Power Generation, when a safety injection occurs.

Which ONE of the following describes the correct actions to be taken?

A. Assign an RO to perform Attachment 12 of E-0 while continuing in FR-S.1.

B. Immediately exit FR-S.1 and implement E-0, Reactor Trip or Safety Injection.

C. Restart the Normal Charging Pump to re-initiate immediate boration.

D. Immediately after the reactor is verified tripped, exit FR-S.1 and implement E-0.

Proposed Answer: A

Explanation:

B & D. Incorrect because FR-S.1 must be completed prior to exiting.
C. Incorrect because normal charging pump is not required. Both CCPs start during SI.

Technical Reference(s): FR-S.1, Response to Nuclear Power Generation, Rev. 1B3
(Attach if not previously provided) Page 7; T61.003D 6 LP-1, Page 39

Proposed references provided to applicants during examination: None

Learning Objective: Q.2 T61.003D 6 LP-1

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: ATWS Coincident with SI

Outline #: S002 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		1
Group #		1
K/A #	059AA2.02	
Importance Rating		3.9

Proposed Question:

The liquid radwaste discharge monitor, HB-RE-18, has been declared inoperable.

Which ONE of the following describes the actions that will permit discharging a Discharge Monitor Tank (DMT)?

A. The Superintendent, Rad Chem must approve the release permit.

B. The liquid release may continue up to 14 days with no further action.

C. Two independent samples of the DMT must be analyzed, and two technically qualified staff members must independently verify the release rate calculation and discharge valve lineup.

D. Samples must be taken every 30 minutes while the discharge is in progress to verify the effluent is within the FSAR discharge requirements.

Proposed Answer: C

Explanation:

A. Incorrect because the Superintendent, Rad Chem is the senior member of Radwaste Management
B. Incorrect because discharge may continue for 14 days, but requires actions described in C.
D. Incorrect because no frequency of sampling required.

Technical Reference(s): FSAR Chapter 16, Table 16.11-2
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A.2.a T61.003A 6 LP-A34

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: LRW Release Permit

Outline #: S003 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		1
Group #		1
K/A #	062G2.2.25	
Importance Rating		3.7

Proposed Question:

Which ONE of the following plant conditions will result in the 'A' ESW Train being inoperable?

A. 'A' ESW Pump Room Supply Fan is inoperable for maintenance.

B. 'A' ESW Pump Room Unit Heater inoperable with ESW Pump Room temperature of 70°F.

C. TEF01A, 'A' Prelube Storage Tank, drained for maintenance.

D. NE01, 'A' Emergency DG, inoperable due to a governor failure.

Proposed Answer: A

Explanation:

B. Incorrect because operable as long as room temperature is greater than 50°F.
C. Incorrect because Prelube Storage Tanks are not required for operability.
D. Incorrect because operable as long as the 'B' ESW train is operable.

Technical Reference(s): Tech Spec Bases B3.7.8 LCO
(Attach if not previously provided) ODP-ZZ-00002, Equipment Status Control, Rev. 019, Attachment 4, Pages 19 and 20
Tech Spec LCO 3.8.1 Condition B

Proposed references provided to applicants during examination: None

Learning Objective: G T61.0110 6 LP-5, Essential Service Water

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: ESW Tech Spec Bases

Outline #: S004 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		1
Group #		1
K/A #	069G2.1.12	
Importance Rating		4.0

Proposed Question:

Which ONE of the following conditions would VIOLATE Technical Specification requirements for Containment Building Penetrations?

A. Both Containment Personnel Air Lock doors are OPEN with core offload in progress. Administrative controls are in place to ensure that one door is capable of being CLOSED.

B. Additional ventilation for personnel in Containment is being provided through the Emergency Air Lock via temporary blowers while draining the Refueling Pool following core offload.

C. Performing Control Rod Drag testing following core reload while scaffolding is being REMOVED from Containment via the Equipment Hatch.

D. Performing valve lineups to DRAIN the secondary side of all four steam generators with the RCS Tavg at 185°F.

Proposed Answer: C

Explanation:

A. Incorrect because this is specifically allowed by LCO 3.9.4 Item b.

B & D. Incorrect because no core alterations or movement of irradiated fuel within CTMT are in progress and below Mode 4.

Technical Reference(s): Tech Spec LCO 3.9.4
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003E 6 LP-E4

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: CTMT Integrity Tech Spec

Outline #: S005 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		1
	Group #		2
	K/A #	W/E11EA2.1	
	Importance Rating		4.2

Proposed Question:

The following plant conditions exist:

- A Loss of Coolant Accident has occurred
- RWST level is 48%
- Both RHR pumps tripped on overcurrent during SI actuation
- All other equipment functioned as designed

The crew is verifying Cold Leg Recirculation Capability per E-1, Loss of Reactor or Secondary Coolant, Attachment 5.

Which ONE of the following actions are required?

A. Transition to ECA-1.1, Loss of Emergency Coolant Recirculation.

B. Remain in E-1, Loss of Reactor or Secondary Coolant until directed to transition to ES-1.3, Transfer to Cold Leg Recirculation.

C. Transition to ES-1.3, Transfer to Cold Leg Recirculation, when RWST level reaches 36%.

D. Transition to ECA-1.2, LOCA Outside Containment.

Proposed Answer: A

Explanation:

B. Incorrect because Cold Leg Recirculation is not available.
C. Incorrect because the crew is at a transition step for ECA-1.1.
D. Incorrect because there is no indications of Abnormal Auxiliary Building radiation.

Technical Reference(s): E-1, Loss of Reactor or Secondary Coolant, Rev. 1B3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: T T61.003D 6 LP-8

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** **55.43** 5

Comments: Transition to Loss of Emergency Coolant Recirc (IPE/PRA)

Outline #: S006 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		1
Group #		2
K/A #	W/E16EA2.1	
Importance Rating		3.3

Proposed Question:

The following plant conditions exist:

- A large break LOCA has occurred
- Containment pressure is 11 psig
- Containment recirc sump level is 16 inches
- Containment radiation level is 150 R/hr
- RWST level is 56%

Which ONE of the following procedures should be utilized for the above conditions?

A. FR-Z.3, Response to High Containment Radiation Level.

B. FR-Z.2, Response to High Containment Recirc Sump Level.

C. FR-Z.1, Response to High Containment Pressure.

D. ES-1.3, Transfer to Cold Leg Recirculation

Proposed Answer: A

Explanation:

B. Incorrect because containment recirc sump level is less than 138 inches.
C. Incorrect because containment pressure is less than 27 psig.
D. Incorrect because RWST level is greater than 36%.

Technical Reference(s): CSF-1, Attachment 5, Rev. 1B0
(Attach if not previously provided) E-1, Foldout Page, Rev. 1B3

Proposed references provided to applicants during examination: None

Learning Objective: T T61.003D 6 LP-1

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: Response to High CTMT Radiation

Outline #: S007 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		1
Group #		3
K/A #	036G2.2.25	
Importance Rating		3.7

Proposed Question:

During the movement of irradiated fuel assemblies within containment, there must be a minimum of 23 feet of water above the top of the reactor vessel flange.

Which ONE of the following is the Technical Specification bases for this requirement?

A. To ensure adequate shielding for personnel who are working on the refueling bridge.

B. To retain iodine fission product activity in the water during fuel handling accident.

C. To provide sufficient subcooling to assure adequate natural circulation cooling.

D. To provide adequate net positive suction head for the RHR Pumps.

Proposed Answer: B

Explanation:

A. Incorrect because water provides shielding, but it is not the bases for the requirement.
C. Incorrect because forced cooling is utilized during fuel movement.
D. Incorrect because RHR pumps do not require 23 feet of water for adequate NPSH.

Technical Reference(s): Tech Spec Bases B3.9.7 Background
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003E 6 LP-E4

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: Fuel Handling Tech Spec Bases

Outline #: S008 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		1
	Group #		3
	K/A #	056G2.4.21	
	Importance Rating		4.3

Proposed Question:

The following plant conditions exist:

- Reactor has tripped due to a Loss of Off-Site Power
- Pressurizer level is 20% and increasing
- Pressurizer pressure is 2000 psig and increasing
- CETC temperatures are 590°F and stable
- RVLIS (pumps off) indicates 110%
- All RCS Cold Leg temperatures are 550°F and stable

Which ONE of the following describes the status of the RCS Inventory Safety Function?

A. Being maintained because cold leg temperatures are greater than 275°F.

B. Being maintained because pressurizer level is greater than 17%.

C. Not being maintained because RCS subcooling is less than 23°F subcooled.

D. Not being maintained because pressurizer level is less than program level.

Proposed Answer: B

Explanation:

A. Incorrect because this parameter satisfies the Integrity Safety Function.
C. Incorrect because RCS subcooling is adequate. This satisfies the Core Cooling Safety Function.
D. Incorrect because program level is 25%. Only required to be greater than 17%.

Technical Reference(s): CSF-1, Critical Safety Function Status Trees, Attachment 6, Rev. 1B0
(Attach if not previously provided)

Proposed references provided to applicants during examination: Steam Tables

Learning Objective: H T61.003C 6 LP-7

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: CSF Status During Loss of Off-site Power

Outline #: S009 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		1
K/A #	014A2.03	
Importance Rating		4.1

Proposed Question:

The following plant conditions exist:

- Reactor power is 45%
- Control Rod Deviation alarm is lit
- Rod at Bottom alarm is lit
- Two/More Rods at Bottom alarm is lit
- Power Range Channel Deviation alarm is lit
- Rod Bottom LEDs are lit for Shutdown Bank 'A' Rods P4 and D2

Which ONE of the following describes an applicable Technical Specification and the required procedure response to these conditions?

A. T/S 3.2.4, Quadrant Power Tilt Ration, is applicable and procedures require that the axial flux difference and quadrant power tilt ratio be checked.

B. T/S 3.1.4, Rod Group Alignment Limits, is applicable and procedures require you to trip the reactor and perform E-0, Reactor Trip or Safety Injection.

C. T/S 3.1.4, Rod Group Alignment Limits, is applicable and up to two rods are allowed to be restored per OTO-SF-00004, Misalignment of Control Rods.

D. T/S 3.1.5, Shutdown Bank Insertion Limits, is applicable and procedures require you to recover the dropped control rods per OTO-SF-00003, Dropped Control Rod.

Proposed Answer: B

Explanation:

A. Incorrect because QPTR is not applicable due to power level.
C. Incorrect because two dropped rods require a reactor trip.
D. Incorrect because OTO-SF-00003 only allows recovery of a single dropped rod.

Technical Reference(s): OTO-SF-00003, Dropped Control Rod, Rev. 008
(Attach if not previously provided) Tech Spec 3.1.4

Proposed references provided to applicants during examination: None

Learning Objective: B T61.003B 6 LP-B54

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Multiple Dropped Rods

Outline #: S010 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		1
K/A #	015G2.1.12	
Importance Rating		4.0

Proposed Question:

The following plant conditions exist:

- Reactor power is 100%
- Annunciator 78B, PR Upper Detector Flux Dev, is in alarm
- Annunciator 78F, Power Range Tilt, is in alarm
- The maximum QPTR is determined to be 1.04

Assuming QPTR is not reduced, within two hours reactor power must be reduced to at least ____?

A. 50%

B. 74%

C. 88%

D. 94%

Proposed Answer: C

Explanation:

Must reduce thermal power $\geq$ 3% from RTP for each 1% of QPTR > 1.00

Technical Reference(s): Tech Spec 3.2.4, QPTR
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: A.2 T61.003A 6 LP-A3

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

Question History: **Last NRC Exam**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

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

Comments: QPTR Tech Spec

Outline #: S011 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		1
K/A #	061G2.2.25	
Importance Rating		3.7

Proposed Question:

Which ONE of the following correctly describes the bases for CST Water Inventory required by Technical Specifications?

Ensure that sufficient cooling water is available to maintain _________.

A. Hot Shutdown for 6 hours followed by a controlled cooldown to RHR entry conditions.

B. Hot Standby for 4 hours followed by a controlled cooldown to RHR entry conditions.

C. Hot Standby for 6 hours followed by a controlled cooldown to cold shutdown.

D. Hot Shutdown for 4 hours followed by a controlled cooldown to cold shutdown.

Proposed Answer: B

Explanation:

A. Incorrect because you maintain Hot Standby for 4 hours.

C & D. Incorrect because you maintain Hot Standby for 4 hours and are only required to achieve RHR entry conditions.

Technical Reference(s): Tech Spec Bases B3.7.6 LCO
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F.7 T61.003A 6 LP-A1

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** **55.43** 2

Comments: CST Tech Spec Bases

Outline #: S012 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		2
	Group #		1
	K/A #	063G2.2.22	
	Importance Rating		4.1

Proposed Question:

The following plant conditions exist:

- RCS Tave is 400°F
- Pressurizer pressure is 2235 psig
- Source Range NIs are 140 cps

Which ONE of the following Class 1E 125 VDC system alignments will result in an operable NK bus?

A. Load Center NG01 to Swing Charger NK25 to bus NK04.

B. Load Center NG04 to Swing Charger NK26 to bus NK02.

C. Load Center PG20 to Swing Charger NK26 to bus NK03.

D. Load Center PG19 to Swing Charger NK25 to bus NK01

Proposed Answer: B

Explanation:

A. Incorrect because NK25 can not be aligned to NK04.
C. Incorrect because NK26 can not be aligned to NK03.
D. Incorrect because NK25 must be fed from its safety related NG load center.

Technical Reference(s): Tech Spec Bases B3.8.4 LCO
(Attach if not previously provided) Safeguards Power Lesson Plan, Pages 21 and 22

Proposed references provided to applicants during examination: None

Learning Objective: G T61.010 6 LP-6, Safeguards Power

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2

Comments: 125 VDC Tech Spec

Outline #: S013 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		2
K/A #	011A2.03	
Importance Rating		3.9

Proposed Question:

The following plant conditions exist:

- Mode 1, 50% Reactor Power
- Pzr Lev Ctrl Sel Sw, BB LS-459D is selected to L459/L460
- Pzr Level channels indicate as follows:
  - Channel BBLT459 is 41%
  - Channel BBLT460 is 0%
  - Channel BBLT461 is 41%

Which ONE of the following actions are required to satisfy procedural requirements and Technical Specifications?

A. Switch BB LS-459D to L459/L461 and trip channel BBLT460 Pzr High Level Bistable within 6 hours.

B. Switch BB LS-459D to L459/L461 and trip channel BBLT460 Pzr High and Low Level Bistables within 6 hours.

C. Switch BB LS-459D to L459/L461 and trip channel BBLT460 Pzr High Level Bistable within 6 hours; place excess letdown in service.

D. Switch BB LS-459D to L459/L461 and trip channel BBLT460 Pzr High and Low Level Bistables within 6 hours; place excess letdown in service.

Proposed Answer: A

Explanation:

B. Incorrect because there is no Pzr Low Level Bistable.
C. Incorrect because normal letdown can be returned to service.
D. Incorrect because there is no Pzr Low Level Bistable and Normal Letdown can be returned to service.

Technical Reference(s): OTO-BB-00007, Pzr Level Channel Failure, Rev. 005
(Attach if not previously provided) Tech Spec LCO 3.3.1

Proposed references provided to applicants during examination: None

Learning Objective: A T61.003B 6 LP-B20
I.2 T61.003A 6 LP-A2

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Response to Pzr Level Malfunction

Outline #: S014 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		2
K/A #	012A2.01	
Importance Rating		3.6

Proposed Question:

The following plant conditions exist:

- Mode 2, Reactor Power is 3%
- RCS Loop 1 RTD Channel has failed and all associated bistables have been tripped
- Sometime later in the shift, Power Range NI Channel N44 fails high (bistables have NOT been tripped)

Which ONE of the following statements describes the appropriate action to be taken?

A. Continue the startup. T/S 3.3.1 allows the startup to continue as long as the inoperable channel is placed in the tripped condition within 6 hours.

B. Enter T/S 3.0.3 and begin a unit shutdown per OTG-ZZ-00005, Plant Shutdown 25% Power to Hot Standby.

C. Trip the reactor and enter procedure E-0, Reactor Trip or Safety Injection.

D. Hold the startup. T/S 3.3.1 prevents entry into Mode 1 until N44 is operable.

Proposed Answer: B

Explanation:

Loop 1 RTD failure and Power Range Channel N44 failure will place the plant in T/S 3.0.3 due to two channels of OTΔT being inoperable. This will require a plant shutdown to Hot Standby.

Technical Reference(s): Tech Specs 3.3.1 and 3.0.3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F.1 T61.003A 6 LP-A1
I.2 T61.003A 6 LP-A2

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Multiple Rx Prot Channel Failures

Outline #: S015 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		2
	Group #		2
	K/A #	029A2.04	
	Importance Rating		3.2

Proposed Question:

The plant is in Mode 1. CTMT Mini Purge system has been in service since 1407. At 1437, CTMT Mini Purge was secured due to the supply fan tripping. The fan problem has been corrected and it is desired to restart the CTMT Mini Purge.

Which ONE of the following is the LATEST time in which the CTMT Mini Purge can be restarted without requiring HP to resample CTMT atmosphere and generate a new release permit?

A. 1607

B. 1637

C. 1707

D. 1737

Proposed Answer: B

Explanation:

A. Incorrect because only 1.5 hours has elapsed.
C & D. Incorrect because > 2 hours has elapsed.

Technical Reference(s): OTN-GT-00001, CTMT Purge System, Rev. 017, Page 14
(Attach if not previously provided) T61.003A 6 LP-A12, Pages 4 and 5

Proposed references provided to applicants during examination: None

Learning Objective: B.5 T61.003A 6 LP-A12

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: HP Sampling Requirements for Release Permit

Outline #: S016 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		2
K/A #	034A2.02	
Importance Rating		3.9

Proposed Question:

New fuel receipt is in progress in the Fuel Building. The Fuel Building rollup door is closed. While lifting a new fuel storage cask containing 2 new fuel assemblies, a sling fails and the cask is dropped 47 feet to the truck bay floor.

Which ONE of the following describes the actions to be taken per OTO-KE-00001, Fuel Handling Accident?

A. Contact Reactor Engineer for guidance, evacuate unnecessary personnel from the Fuel Building, and manually initiate CPIS.

B. Contact Reactor Engineer for guidance, manually initiate FBIS, and manually initiate CRVIS.

C. Contact Reactor Engineer for guidance, evacuate unnecessary personnel from the Fuel Building, and manually initiate FBIS.

D. Manually initiate CPIS, manually initiate FBIS, and manually initiate CRVIS

Proposed Answer: C

Explanation:

A. Incorrect because you do no need to initiate a CPIS.
B. Incorrect because you do not need to initiate a CRVIS.
D. Incorrect because you do not need to initiate a CPIS or CRVIS.

Technical Reference(s): OTO-KE-00001, Fuel Handling Accident, Rev. 005
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: I.4, I.5 T61.003E 6 LP-E5

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: Dropped Fuel Cask

Outline #: S017 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		2
K/A #	103G2.1.33	
Importance Rating		4.0

Proposed Question:

Which ONE of the following conditions represents a loss of Containment Integrity per Technical Specifications?

A. While in Mode 1, an operator opens the outer door of the Containment Personnel Air Lock.

B. While in Mode 3, during an inspection of the equipment hatch, it is determined that the hatch is NOT sealed.

C. While in Mode 4, containment internal pressure is found to be 1.2 psig.

D. While in Mode 5, both containment emergency air lock doors are found open.

Proposed Answer: B

Explanation:

A. Incorrect because one door is allowed to be open at a time in Modes 1-4.
C. Incorrect because allowable CTMT pressure is $\geq$ -0.3 psig and $\leq$ +1.5 psig.
D. Incorrect because there are no requirements for Mode 5.

Technical Reference(s): Tech Specs 3.6.1, 3.6.2, and 3.6.4
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T61.003A 6 LP-A6

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2, 3

Comments: Loss of CTMT Integrity

Outline #: S018 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		3
K/A #	005A2.02	
Importance Rating		3.7

Proposed Question:

The following plant conditions exist:

- The plant is in Mode 5.
- RCS temperature is 140°F.
- RCS pressure is 320 psig.
- Cold Overpressure Protection Mitigation System (COMS) protection is being satisfied by the 'A' and 'B' RHR Suction Relief Valves.

It has been determined that the 'B' RHR Suction Relief Valve setpoint is set incorrectly and the relief valve is now inoperable.

Which ONE of the following actions would satisfy the Technical Specification requirement for COMS?

A. Restore the 'B' RHR Suction Relief Valve to operable status within 72 hours.

B. Depressurize and vent the RCS through a vent of $\geq$ 1.0 in^2 within 8 hours.

C. Align the 'A' and 'B' Pzr PORVs for COMS protection within 24 hours.

D. Increase all RCS cold leg temperatures to > 275°F within 12 hours.

Proposed Answer: C

Explanation:

A. Incorrect because Technical Specifications only allows 24 hours.
B. Incorrect because this is the action for two inoperable relief valves and the required vent size is $\geq$ 2.0 in^2.
C. Correct because any combination of operable Pzr PORVs or RHR Suction relief valves will satisfy the COMS requirement and 24 hours is the correct completion time.
D. Incorrect because this is the required action if you can not isolate the SI Accumulators for COMS within 1 hour.

Technical Reference(s): Technical Specification 3.4.12 COMS
(Attach if not previously provided) OSP-BB-00003, Rev 9, Page 1

Proposed references provided to applicants during examination: None

Learning Objective: B.5 T61.003A 6 LP A-17

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

Question History: **Last NRC Exam** ______

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 5 **55.43** 5

Comments: RHR Overpressure Protection

Outline #: S019 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		2
Group #		3
K/A #	076G2.1.12	
Importance Rating		4.0

Proposed Question:

The following plant conditions exist:

- The plant was operating at 4% reactor power
- Both trains of Essential Service Water (ESW) were determined to be inoperable
- The operators placed the plant in HOT STANDBY exactly 4 hours after determining that the second ESW train was inoperable

Which ONE of the following time limits apply to placing the plant in HOT SHUTDOWN and then COLD SHUTDOWN?

A. HOT SHUTDOWN must be achieved within 6 hours of reaching HOT STANDBY and COLD SHUTDOWN must be achieved within an additional 30 hours.

B. HOT SHUTDOWN must be achieved within 6 hours of reaching HOT STANDBY and COLD SHUTDOWN must be achieved within an additional 24 hours.

C. HOT SHUTDOWN must be achieved within 9 hours of reaching HOT STANDBY and COLD SHUTDOWN must be achieved within an additional 30 hours.

D. HOT SHUTDOWN must be achieved within 9 hours of reaching HOT STANDBY and COLD SHUTDOWN must be achieved within an additional 24 hours.

Proposed Answer: D

Explanation:

Both ESW trains being inoperable places the plant in T/S 3.0.3. this allows a total of 7 hours to reach Hot Standby, a total of 13 hours to reach Hot Shutdown, and a total of 37 hours to reach Cold Shutdown.

Technical Reference(s): Tech Spec 3.0.3
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F.1 T61.003A 6 LP-A1

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

Question History: **Last NRC Exam** ____
(Optional – Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 2, 5

Comments: Inoperable ESW Trains

Outline #: S020 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		3
Group #		1
K/A #	G2.1.26	
Importance Rating		2.6

Proposed Question:

A permit required confined space entry is to be conducted at the Water Treatment Plant blowdown line manhole.

Which ONE of the following is true regarding this entry?

A. The attendant may enter the space if necessary, to rescue the entrant.

B. The work supervisor must be present whenever personnel are in the confined space.

C. Each entrant shall use a chest or full body harness.

D. The Medical Emergency Response Team will perform any emergency rescue if necessary.

Proposed Answer: C

Explanation:

A. Incorrect because the attendant shall not enter the space under any circumstances.
B. Incorrect because the attendant, not the work supervisor, must be present.
D. Incorrect because the Fire Brigade serves as the rescue team.

Technical Reference(s): APA-ZZ-00802, Confined Space Program, Rev. 011
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: F.4 T61.003A 6 LP A-30

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

Question History: **Last NRC Exam** Callaway Feb 97 NRC Exam
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** ____

Comments: Confined Space Entry Requirements

Outline #: S021 **Author:** FXB

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		3
Group #		3
K/A #	G2.3.10	
Importance Rating		3.3

Proposed Question:

The plant is in Mode 2. A Reactor Building entry is required for repair of a component.

Which ONE of the following the MAXIMUM number of personnel allowed in the Reactor Building?

A. 10

B. 15

C. 20

D. 25

Proposed Answer: C

Explanation:

During Mode 2, the maximum number of personnel allowed in the Reactor Building is 20 and the minimum number is 2.

Technical Reference(s): HDP-ZZ-06100, Reactor Building Access, Rev. 001
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: E.5 T61.003A 6 LP A-6

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** **55.43** 4

Comments: CTMT Entry Requirements

Outline #: S022 **Author:** DGL

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		3
	Group #		4
	K/A #	G2.4.7	
	Importance Rating		3.8

Proposed Question:

Which ONE of the following is the basis for maintaining SG Narrow Range Level > 4% in at least one intact SG when depressurizing intact SGs to 220 psig in ECA-0.0, Loss of All AC Power?

A. Narrow Range Level is the only indication of SG inventory available after a Loss of All AC Power.

B. Ensures proper thermal stratification in the SGs in the event of a Steam Generator Tube Rupture.

C. Ensures the capability to cooldown once AC power is restored.

D. Ensures an adequate heat sink exists to remove heat from the RCS.

Proposed Answer: D

Explanation:

During the rapid depressurization of SGs, level could drop out if the narrow range resulting in a loss of adequate heat sink. If this occurs, the depressurization should be stopped.

Technical Reference(s): T61.003D 6 LP-22, Page 48
(Attach if not previously provided) ECA-0.0, Loss of All AC Power, Rev. 1B2, Page 18

Proposed references provided to applicants during examination: None

Learning Objective: R T61.003D 6 LP-22

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** 10 **55.43** 5

Comments: ECA-0.0 Mitigation Strategy

Outline #: S023 **Author:** DGL

Examination Outline Cross-reference:

Level	RO	SRO
Tier #		3
Group #		4
K/A #	G2.4.22	
Importance Rating		4.0

Proposed Question:

A steam line has ruptured inside containment resulting in a reactor trip and safety injection. E-0, Reactor Trip or Safety Injection had been entered and the operating crew has transitioned to E-1, Loss of Reactor or Secondary Coolant. While monitoring the CSF status trees, you determine that an ORANGE path exists for SUBCRITICALITY.

Which ONE of the following actions should be performed by the crew?

A. Continue current pass through the status trees, if no RED path is encountered then implement FR-S.1.

B. Complete the actions of E-1, then implement FR-S.1.

C. Immediately implement FR-S.1, then continue current pass through the status trees.

D. Implement FR-S.1 at the discretion of the Shift Supervisor.

Proposed Answer: A

Explanation:

All options are plausible in that they are actions that could be considered by the crew as to when to implement FR-S.1. According to the EOP rules of usage, however, response A is the correct action.

Technical Reference(s): T61.003D 6 LP-1, Page 26
(Attach if not previously provided) CSF-1, Critical Safety Function Status Trees, Rev. 1B0

Proposed references provided to applicants during examination: None

Learning Objective: L T61.003D 6 LP-1

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

Question History: **Last NRC Exam** ____
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: CSF Implementation Requirements

Outline #: S024 **Author:** RBM

Examination Outline Cross-reference:	**Level**	**RO**	**SRO**
	Tier #		3
	Group #		4
	K/A #	G2.4.29	
	Importance Rating		4.0

Proposed Question:

Which ONE of the following is the LOWEST Emergency Plan Classification at which the Emergency Response Data System (ERDS) must be activated?

A. Unusual Event

B. Alert

C. Site Emergency

D. General Emergency

Proposed Answer: B

Explanation:

If an Alert or higher emergency classification is declared, the ERDS must be activated as soon as possible or within one hour of the declaration.

Technical Reference(s): T68.1020 6, Emergency Coordinator
(Attach if not previously provided)

Proposed references provided to applicants during examination: None

Learning Objective: J T68.1020 8

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

Question History: **Last NRC Exam**

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

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

10 CFR Part 55 Content: **55.41** ____ **55.43** 5

Comments: Emergency Response Data System

Outline #: S025 **Author:** DGL