Question 1

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	1
	K/A #	007 Rx Trip, EA2.06 Ability to determine or interpret the following as they apply to a Rx Trip: Occurrance of a Rx Trip
	Importance Rating	4.3

Question 1:

Pressurizer Pressure Transmitter PT-0102B failed low and no operator actions have been taken. Then during normal 100% power operations, Nuclear Instrumentation (NI) Channel NI-8 failed high. All other equipment performs as designed.

What procedure should the SRO be directing actions from immediately following the NI channel failure?

A) Reactor Protective System and Anticipated Transient without Scram (ATWS) System SOP-36 to bypass the affected RPS trip function.

B) Reactor Protective System and Anticipated Transient without Scram (ATWS) System SOP-36 to place the affected RPS trip function into a Tripped Condition.

C) Alarm and Response Procedure EK-0917 for alarm "Rod Withdrawl Prohibit"

D) Standard Post-Trip Actions EOP 1.0

Proposed Answer: D

Explanation (Optional):

D) Standard Post-Trip Actions EOP 1.0 is the correct answer due to a Rx Trip from Thermal Margin/Low Pressure Trip. Pressurizer Pressure bi-stables are required to be tripped 7 days after the failure of the pressure transmitter per Tech Spec 3.3.1 therefore the TM/LP channel B is in a tripped condition. NI channel NI-8 will cause the TM/LP setpoint to be exceeded on channel D, and thus a 2/4 coincidance is made up and a Rx Trip results.

Technical Reference(s): Tech Spec. 3.3.1__________ (Attach if not previously provided)
ARP-21 EK-06
Nuclear Instrumentation Lesson Plan

M-201 sh2

Proposed references to be provided to applicants during examination: ________________

Learning Objective: ________________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 2

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	1
	K/A #	008 Pzr Vapor Space Accident - AK2.02 Knowledge of the interrelationships between the Pzr Vapor Space Accident and Sensors and detectors
	Importance Rating	2.7

Question 2:

The plant is experiencing a coolant leak. Given the following set of plant conditions:

Steam Generator levels are at 66% and steady
Quench Tank level is 75% and steady
Containment Radiation levels are increasing
Pressurizer Level is increasing
Charging Flow has increased
Letdown Flow has decreased

Which of the following is a possible location of the leakage?

A) Pressurizer Safety Valve

B) Charging Line inside of Containment

C) Pressurizer Vapor Space

D) Letdown Line inside of Containment

Proposed Answer: C

Explanation (Optional):

Due to the increasing Containment Radiation levels and the increasing Pressurizer level answer C) is correct. If a Pressurizer Safety valve were leaking Quench tank level would be increasing not steady. If the charging or letdown line were leaking Pressurizer level would not be increasing. However the decreasing Primary System Pressure will cause Charging flow to increase and Letdown flow to decrease.

Technical Reference(s): Primary Coolant System Lesson Plan

Steam Generator Water Level Control Lesson Plan________

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

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

Question History: Last NRC Exam ____________
(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 ______

Level of Difficulty: __2__

Comments:

Question 3

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	1
	K/A #	009 Small Break LOCA, EK1.02 Knowledge of the operational implications of the following concepts as they apply to a SBLOCA: Use of Steam Tables
	Importance Rating	3.5

Question 3:

Determine the Pressurizer Relief line tailpipe temperatures for two different Small Break Loss of Coolant Accidents (SBLOCA) through Pressurizer Safety Valves. The first temperature should be determined assuming PCS pressure is 2000 psig with Quench Tank pressure at 5 psig. The second tailpipe temperature should be determined assuming PCS pressure is 1000 psig with a Quench Tank pressure of 25 psig.

	Case 1	Case 2
A)	230^{B}F	270^{B}F
B)	230^{B}F	310^{B}F
C)	310^{B}F	270^{B}F
D)	270^{B}F	230^{B}F

Proposed Answer: B

Explanation (Optional):

Using the steam tables, 2000 psig for initial pressure, 20 psia for back-pressure, and 1000 psig for second initial pressure, and 40 psia for back-pressure the answers obtained were 230^{B}F & 310^{B}F.

Technical Reference(s): Steam Tables (Eighteenth Printing © 1967)

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

Learning Objective: ____________________________ (As available)

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 ______

Level of Difficulty: __4__

Comments:

Question 4

Examination Outline Cross-Reference:	Level	RO
	Tier #	1
	Group #	1
	K/A #	011 Large Break LOCA, EK2.02 Knowledge of the interrelations between a LBLOCA and pumps
	Importance Rating	2.6

Question 4:

What is the primary reason that the Primary Coolant Pump's (PCP's) are tripped following a Large Break Loss of Coolant Accident (LBLOCA)?

A) To prevent Primary Coolant Pump (PCP) motor damage due to high humidity.

B) To limit the amount of heat being added to the Primary Coolant System.

C) To improve reactor vessel water level monitoring capability.

D) To limit the amount of Primary Coolant being lost out of the break.

Proposed Answer: D

Explanation (Optional):

The Basis document for EOP-1.0 states "For large break LOCA events, this curve (minimum pressure for PCP operation) would obviously be exceeded and the second two PCP's would be tripped. The minimum pressure for PCP operation curve is primarily based on net positive suction head for PCP operation.

EOP-4.0 states that the reason they trip the last two PCPs is to minimize inventory lost out the break. That is, the quicker you secure the running PCPs the more inventory you have in the PCS. Palisades Management also agrees with this answer during 5/6/05 meeting at RIII office.

Technical Reference(s): EOP-1.0 Basis Document

EOP-4.0 Basis Document

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

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

Question History: Last NRC Exam _____________
(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 ______

Level of Difficulty: __2__

Comments:

Question 5

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	1
	K/A #	015/017 RCP Malfunction, AK3.04 Knowledge of the reasons for the following responses as they apply to the PCP malfunctions (Loss of PCS flow): Reduction of power to below the steady state power-to-flow limit
	Importance Rating	3.1

Question 5:

Which statement explains the relationship between Primary Coolant Pump (PCP) flow rate and Primary Coolant System (PCS) / Reactor Core parameters?

A) Lowering PCP flow causes a higher T_{hot} temperature into the steam generators and thus a lower Steam Generator pressure for a given power level.

B) Loss of one PCP causes a larger temperature differential across the core leading to quadrant power tilt concerns.

C) Lowering PCP flow causes a rise in PCS temperature leading to an increase in the TM/LP setpoint.

D) Plugging Steam Generator tubes will reduce PCP flow which will reduce the temperature differential across the core.

Proposed Answer: C

Explanation (Optional):

Lowering PCP flow will cause an increase in core ÎT. Therefore T_{hot} has increased which reduces the margin to the DNB point thus increasing the TM/LP setpoint. That is, the Rx will trip at a higher measured PCS pressure.

A) is not correct because an increased T_{hot} would cause a higher S/G pressure

B) is not correct because the higher core ÎT will not cause a QPTR excursion.

D) is not correct because reducing flow increases core ÎT.

Technical Reference(s): Tech Spec. Bases for RPS Instrumentation B 3.3.1

Proposed references to be provided to applicants during examination:_________________

Learning Objective:
_________________________ (As available)

Question Source:
Bank #__PCP-CK11.0___
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_____

Level of Difficulty: __3__

Comments:

Question 6

Examination Outline Cross-Reference:

Level**RO**
Tier # 1
Group # 1
K/A #022 Loss of Rx Coolant Makeup, AA1.02 Ability to operate and/or monitor the following as they apply to the Loss of Rx Coolant makeup: CVCS charging low flow alarm, sensor, and indication.
Importance Rating 3.0

Question 6:

Given the following plant conditions:

The pressurizer level transmitter selected for level control is inadvertantly isolated at the transmitter
The variable leg of the transmitter is depressurized
Reactor power is at 100%
Actual pressurizer level was initially at program level

Which one of the following represents the plant's response to the above stated conditions?

A) Pressurizer Level Hi-Lo alarm, backup heaters energize, and letdown flow goes to maximum

B) Pressurizer Level CH "A" or "B" Lo-Lo alarm, letdown flow goes to maximum, and spray valves throttle further open

C) Pressurizer Level CH "A" or "B" Lo-Lo alarm, letdown goes to minimum, and spray valves throttle further closed

D) Pressurizer Level Hi-Lo alarm, letdown to minimum, and both backup charging pumps start

Proposed Answer:

D

Explanation (Optional):

D) is correct because Pressurizer level control see low pressurizer level when the level transmitter is isolated and variable leg de-pressurized. (Hi DP at transmitter = low level)

Technical Reference(s):
Pressurizer Level Control Ssytem Lesson Plan

Proposed references to be provided to applicants during examination:
__None__

Learning Objective:
__________________________ (As available)

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

Question History:
Last NRC Exam_____________

(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_____

Level of Difficulty: __3__

Comments:

Question 7

Examination Outline Cross-Reference:

Level **RO**

Tier # 1

Group # 1

K/A #025 Loss of RHR, AA2.04 Ability to determine and interpret the following as they apply to the Loss of RHR: Location and isolation of leaks.

Importance Rating 3.3

Question 7:

The plant is currently in a refueling outage. The plant has been shut down for the past five days and the Shutdown Cooling System is currently in operation. The PCS is at 110°F and the Pressurizer is vented to the Containment atmosphere. The following plant parameter changes were observed:

- Pressurizer Level is decreasing
- Low Pressure Safety Injection Pump flow has decreased
- Quench tank level is increasing
- Containment Radiation Monitors are reading normal

Which ONE of the following events is consistent with the above conditions?

A) Shutdown Cooling Suction Line Relief Valve RV-3164 has lifted

B) Shutdown Cooling Containment Isolation Valve Pressure Relief Valve RV-0401 has lifted

C) PCP Controlled Bleed-off Return line Relief Valve RV-2062 has lifted

D) Shutdown Cooling Temperature Control Valve CV-3025 has closed

Proposed Answer:

A

Explanation (Optional):

If RV-3164 lifted all of the conditions would be true. B) is not correct because this relief valve relieves to DPCT. C) is not correct because this relief valve relieves to DPCT. D) is not correct because suction pressure would increase due to increasing temperatures.

Technical Reference(s):

Print M204 sh. 1

Print M202 sh. 1

Shutdown Cooling Lesson Plan

Proposed references to be provided to applicants during examination:
___None___

Learning Objective:
_________________________ (As available)

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

Question History:
Last NRC Exam____________
(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_____

Level of Difficulty: __2__

Comments:

Question 8

Examination Outline Cross-Reference:
Level **RO**
Tier # 1
Group # 1
K/A # Generic K/A for Loss of CCW, 2.1.30 Ability to locate and operate components, including local controls during a Loss of Component Cooling Water
Importance Rating 3.9

Question 8:

Component Cooling Water (CCW) has been lost to Containment for greater than 10 minutes. Per ONP-6.2 "Loss of Component Cooling" why is CCW flow manually re-initiated and where is this performed from? Assume access to all plant area's is possible, all plant conditions are stable, and CCW flow restoration is desired.

A) Manual flow is re-initiated to prevent thermal shock and possible equipment damage. This is performed from inside Containment 590' level, east using PCP & CRDM return isolation valves.

B) Manual flow is re-initiated to prevent a possible low system pressure auto start on a standby CCW pump. This is performed from inside Containment 590' level, east using return isolation valves.

C) Manual flow is re-initiated to prevent steam binding of the CCW pumps. This is performed from inside the CCW Pump Room, 590' Level using the CCW Return from Containment isolation (MV-CC713).

D) Manual flow is re-initiated to prevent thermal shock and possible equipment damage. This is performed from inside the Main Control Room.

Proposed Answer:
A

Explanation (Optional):
A) is correct per ONP-6.2

B) is not correct due to low system pressure is not a concern

C) is not correct due to steam binding & MV-CC713

D) is not correct due to Main Control Room

Technical Reference(s):
ONP-6.2

Proposed references to be provided to applicants during examination:
____None____

Learning Objective:
____________________________ (As available)

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

Question History:
Last NRC Exam_____________

(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_____

Level of Difficulty: __3__

Comments:

Question 9

Examination Outline Cross-Reference:

Level **RO**

Tier # 1

Group # 1

K/A #027 Pzr Pressure Control Malfunction, AK1.01 Knowledge of the operational implications of the following concept as it applies to PZR Pressure Control malfunctions: Definition of saturation temperature

Importance Rating 3.1

Question 9:

The Plant is operating at steady state 100% power conditions. Which of the following would cause the Primary Coolant System to get closer to its Saturation Temperature?

A) Controlling Pressurizer Pressure Transmitter PT-0101A failing low

B) Pressurizer Spray valve CV-1057 loses Instrument Air

C) Pressurizer Pressure Controller output fails high

D) Steam Generator ADV inadvertently opens

Proposed Answer:

C

Explanation (Optional):

C) is the correct answer because the PZR spray valve is air to open fail closed. An increased air signal out of the PZR Pressure Controller will open the spray valves and decrease PZR Pressure thus getting closer to Tsat. A) is not correct because a low pressure will cause htrs on spray's closed. B) is not correct because spray valves fail closed. D) is not correct because PCS temperature will decrease further from Tsat.

Technical Reference(s):

Pressurizer Pressure Control System Lesson Plan

Proposed references to be provided to applicants during examination:

None

Learning Objective:

__________________________ (As available)

Question Source:

Bank #_____

Modified Bank #_____ (Note changes or attach parent)

New__X___

Question History:

Last NRC Exam____________

(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_____

Level of Difficulty: __3__

Comments:

Question 10

Examination Outline Cross-Reference:
Level **RO**
Tier # 1
Group # 1
K/A # 038 SGTR, EK3.09 Knowledge of the reasons for the following as it applies to a SGTR: Criteria for securing / throttling ECCS
Importance Rating 4.1

Question 10:

During a SGTR, Emergency Operating Procedure EOP-5.0 is in progress. Given the following plant parameters:

- PCS subcooling 33°F
- Pressurizer Level is 30%
- Containment Pressure is 0.85 psig
- Both Steam Generator Narrow Range Levels are at 55%
- RVLMS channels indicate 71 inches above the bottom fuel alignment plate
- Auxiliary Feedwater Pumps in operation with flow normal
- Both High Head Safety Injection pumps in operation with HPSI flow normal
- Containment Radiation levels are normal

Based on the above mentioned plant parameters and per EOP-5.0, Steam Generator Tube Rupture Procedure, is the SI Pump throttling criteria met and why?

A) SI Pump throttling criteria is NOT met because Pressurizer Level is NOT acceptable.

B) SI Pump throttling criteria is NOT met since PCS Subcooling is NOT acceptable.

C) SI Pump throttling criteria is met because all required parameters are acceptable.

D) SI Pump throttling criteria is NOT met because RVLMS Indication is NOT acceptable.

Proposed Answer:
D

Explanation (Optional):

D) is correct because RVLMS must indicate greater than 102 inches above the bottom of the fuel alignment plate. All other answers are not correct because indications met throttling criteria. C) is not correct because because a S/G is considered available with level between 60% & 70% or level being restored by AFW of MFW.

Technical Reference(s):
EOP-5.0 step #16

EOP-5.0 Basis Document

Proposed references to be provided to applicants during examination:
__None__

Learning Objective:
_________________________ (As available)

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

Question History:
Last NRC Exam____________

(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_____

Level of Difficulty: __3__

Comments:

Question 11

Examination Outline Cross-Reference:

Level **RO**

Tier # 1

Group # 1

K/A #040 Steam Line Rupture, AK3.04 Knowledge of the reasons for the following as they apply to a Main Steam Line Rupture: Actions contained in EOP's for Steam Line Ruptures

Importance Rating 4.5

Question 11:

When all PCPs are stopped during an Excess Steam Demand Event, why is it necessary to be steaming the least affected S/G prior to dryout of the most affected S/G?

A) To ensure mixing of the PCS is maintained to avoid overcooling of the cold legs due to safety injection flow.

B) To prevent lifting PZR Safety Valves or Pressurized Thermal Shock rupture of the PCS.

C) To ensure the cooldown of the PCS continues so that Safety Injection may be terminated.

D) To conserve inventory in the Condensate Storage Tanks so that Shutdown Cooling conditions can be achieved within 8 hours.

Proposed Answer:

B

Explanation (Optional):

B) is correct based on the caution on page 13 of EOP-6.0 and the basis document for EOP-6.0.

Technical Reference(s):

EOP-6.0

EOP-6.0 Basis Document

Proposed references to be provided to applicants during examination:
__None__

Learning Objective:
_________________________ (As available)

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

Question History:
Last NRC Exam____________
(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_____

Level of Difficulty: __3__

Comments:

Question 12

Examination Outline Cross-Reference:
Level **RO**
Tier # 1
Group # 1
K/A #054 Loss of MFW, AA1.01 Ability to operate or monitor the following as they apply to a Loss of Main Feedwater: AFW controls, including the use of alternate AFW sources
Importance Rating 4.5

Question 12:

During a Loss of Main Feedwater the following plant conditions were observed.

- Both S/G narrow range levels are 29%
- Inverter #2 failed immediately prior to the Loss of Main Feedwater
- Motor Driven Aux. FW. Pump P-8A is Out of Service for Maintenance

Which Aux. Feedwater pump(s) should be running, and if the normal Condensate Storage Tank water supply were to become unavailable, what would their alternate water source(s) be?

A) Both the Turbine Driven Aux. FW Pump P-8B with alternate water source from Service Water, and the Motor Driven Aux. FW Pump P-8C with alternate water source from Fire Protection should be running.

B) Only the Motor Driven Aux. FW Pump P-8C should be running with alternate water source from Service Water.

C) Only the Turbine Driven Aux. FW Pump P-8B should be running with alternate water source from Fire Protection.

D) Both the Turbine Driven Aux. FW Pump P-8B with alternate water source from Fire Protection, and the Motor Driven Aux. FW Pump P-8C with alternate water source from Service Water should be running.

Proposed Answer: C

Explanation (Optional):

C) is correct because inverter #2 failure prevents P-8C from starting due to LSPT lockout which makes all other answers wrong. P-8B can only be supplied with FP while P-8C can only be supplied with SW.

Technical Reference(s):

AFW lesson plan
Print M-207 sh 2

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ___________________________ (As available)

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

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 13

Examination Outline Cross-Reference:	Level		**RO**
		Tier #	1
		Group #	1
		K/A #	055 Station Blackout, EA2.05 Ability to determine and interpret the following as it applies to a Station Blackout: When a battery is approaching fully discharged.
		Importance Rating	3.4

Question 13:

During a Station Blackout what indication(s) are available to determine when Battery No. 1 (D01) is approaching a fully discharged condition?

A) **ONLY** Voltage indication for Battery No. 1 can be used.

B) **EITHER** Voltage or Amperage indications for Battery No. 1 can be used.

C) **ONLY** Amperage indications for Battery No.1 can be used.

D) **EITHER** Voltage, Amperage, CR annunciator, or Frequency indications for Battery No. 1 can be used.

Proposed Answer: A or B (see post examination comment below)

Explanation (Optional):

Voltage and Amp indication is available during a Station Blackout for DC buses. MCR annunciators will be unavailable during a Station Blackout.

Technical Reference(s): EOP-3.0 Station Blackout
Electrical Lesson Plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________________ (As available)

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

Question History: Last NRC Exam ____________
(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 _____

Level of Difficulty: __2__

Comments:

Facility Comment:

Distractor B: "**EITHER** Voltage or Amperage..." could be interpreted to imply that either voltage ALONE, or amperage ALONE could be used, but NOT both. While amperage does respond and may be helpful in diagnosing a battery near fully discharged condition it cannot be used alone. High or low amperage can be indicative of battery loading. Without a relative voltage reading, amperage indication alone is not adequate for diagnosing a battery approaching a fully discharged condition.

EOP-3.0 Station Blackout, requires that if bus voltage drops to 105 volts that the shunt trip push buttons be pressed for that bus. This ensures the battery can perform its safety function prior to being overdutied. The requirement does not mention bus amperage. Therefore, Distractor A is also acceptable.

Facility Recommendation: accept both A and B as correct.

NRC Resolution:

Upon review of the question and the facility comment it was decided to accept both A and B as correct answers. The intent of the question was that the candidate recognized that both Voltage (in EOP-3.0) and Amperage (in EOP Supplement 7) indications are available to diagnose a battery problem that could result in loss of the battery. However, at least one of the candidates argued that since procedure EOP-3.0 Station Blackout uses only voltage to indicate that action must be taken to prevent a battery from becoming dangerously discharged answer "A.", **"ONLY** Voltage indication for Battery No. 1 can be used.", should also be considered correct. The argument for answer "A" also being a correct answer was reasonable and both answers A and B were accepted as correct.

Question 14

Examination Outline Cross-Reference:	Level		**RO**
		Tier #	1
		Group #	1
		K/A #	Generic K/A for LOOP, 2.1.12 Ability to apply Technical Specifications for a system. Relating to a Loss of Offsite Power.
		Importance Rating	2.9

Question 14:

The plant is in Mode 1. During an electrical storm Safeguard Transformer 1-1 was damaged and became de-energized at 03:00 hours today due to a lightning strike. Diesel Generator 1-2 was declared inoperable at 00:00 hours today prior to the lightning strike to conduct preventative maintenance and the applicable LCO was entered. Per the Technical Specifications what are the required actions following the lightning strike assuming the plant electrical system functioned as designed?

A) Verify the operability of the Offsite Source from Start-up Transformer 1-2 ONLY by 04:00 hours today.

B) Verify the operability of the Offsite Sources from BOTH Start-up Transformer 1-2 and Station Power Transformer 1-2 by 04:00 hours today.

C) Verify the operability of the Offsite Source from Station Power Transformer 1-2 ONLY by 04:00 hours today.

D) Enter LCO 3.0.3 Immediately.

Proposed Answer: A

Explanation (Optional):
Per Tech Spec 3.8.1 condition B Station Power Trans 1-2 is not one of the qualified offsite circuits.

Technical Reference(s):
Tech Spec 3.8.1

Proposed references to be provided to applicants during examination: None

Learning Objective: ____________________________ (As available)

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

Question History: Last NRC Exam ____________
(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 ______

Level of Difficulty: __2__

Comments: This question is basically only asking the candidate if he knows the qualified offsite circuits.

Question 15

Examination Outline Cross-Reference: Level **RO**

Tier #	1
Group #	1
K/A #	057 Loss of a Vital AC Instr. Bus, AA1.04 Ability to operate or monitor the following as it applies to a Loss of Vital AC Instrument Bus power: RWST & VCT valves
Importance Rating	3.5

Question 15:

The plant is operating at steady state 100% power conditions with normal component alignment. A fault occurs on Instrument AC Bus Y01 and ONP-24.5 Loss of Instrument AC Bus Y01 has been entered. Immediately following the required Reactor Trip, what is the status of Charging and Letdown, and the positions of VCT outlet valve MO-2087 and SIRWT outlet valve MO-2160?

A) Charging goes to minimum, with Letdown maximized. VCT outlet valve MO-2087 is OPEN and SIRWT outlet valve MO-2160 is CLOSED.

B) Charging goes to minimum, with Letdown maximized. VCT outlet valve MO-2087 is CLOSED and SIRWT outlet valve MO-2160 is OPEN.

C) Charging goes to maximum with Letdown minimized. VCT outlet valve MO-2087 is OPEN and SIRWT outlet valve MO-2160 is CLOSED.

D) Charging goes to maximum with Letdown minimized. VCT outlet valve MO-2087 is CLOSED and SIRWT outlet valve MO-2160 is OPEN.

Proposed Answer: D

Explanation (Optional):

Per ONP-24.5 maximum charging and zero letdown with charging pump suction shifting to SIRWT.

Technical Reference(s):

ONP-24.5 Loss of Instrument Bus Y01

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __3__

Comments: VCT level transmitter and Pressurizer level transmitter fail low on loss of IB Y01.

Question 16

Examination Outline Cross-Reference:	Level		**RO**
		Tier #	1
		Group #	1
		K/A #	058 Loss of DC Power, AK3.01 Knowledge of the reasons for the following responses as it applies to a Loss of DC power: Use of DC control power by the D/G's
		Importance Rating	3.4

Question 16:

Complete the following sentences assuming power supply fuse FUZ/D018-1 to DC Distribution Panel D11A has blown (panel D11A de-energized).

1) If paralleled to Bus 1C Diesel Generator 1-1 _________________________.
2) If Diesel Generator 1-1 were in standby _____________________________.

A) 1) ...would continue to operate normally.
   2) ...it would NOT be capable of an automatic or manual start.

B) 1) ...would trip due to over-speed.
   2) ...it would NOT be capable of an automatic start, but could be started manually.

C) 1) ...would continue to operate normally.
   2) ...it would NOT be capable of an automatic start, but could be started manually.

D) 1) ...may experience severe damage.
   2) ...it would NOT be capable of an automatic or manual start.

Proposed Answer: D

Explanation (Optional):

D) is correct per ONP-2.3 loss of DC effects D/G 1-1 by Lose ability to start, control, and load.

Technical Reference(s): ONP-2.3

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __2__

Comments:

Question 17

Examination Outline Cross-Reference: Level **RO**

Tier #	1
Group #	1
K/A #	062 Loss of Service Water, AK3.04 Knowledge of the reasons for the following responses as it applies to the Loss of Service Water: Effect on the service water discharge flow header of a loss of CCW
Importance Rating	3.5

Question 17:

During a plant transient all Component Cooling Water (CCW) pumps tripped and couldn't be restarted. Predict how this failure would affect the Service Water System.

A) Service Water header pressure will **decrease** and Service Water return header temperature will **increase.**

B) Service Water header pressure will **increase** and Service Water return header temperature will **increase**.

C) Service Water header pressure will **decrease** and Service Water return header temperature will **decrease**.

D) Service Water header pressure will **increase** and Service Water return header temperature will **decrease**.

Proposed Answer: D

Explanation (Optional):

D) The total loss of CCW removes the CC heat load so SW return header temperature goes down. The CC temperature control throttles SW TCV closed thus increasing SW header pressure.

Technical Reference(s): M208 sh 1a
M209 sh 3

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

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

Question History: Last NRC Exam _____________
(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 ______

Level of Difficulty: __3__

Comments: They must also realize that with no CCW SWS return temps would decrease since the CCW heat load is removed.

Question 18

Examination Outline Cross-Reference:	Level		RO
		Tier #	1
		Group #	1
		K/A #	065 Loss of IA, AA1.02 Ability to operate or monitor the following as it applies to a Loss of Instrument Air: components served by IA to minimize drain on system
		Importance Rating	2.6

Question 18:

A painter accidentally stepped on a Instrument Air (IA) line in the plant near the Shutdown Cooling Hx and broke it. The IA system was aligned normally with compressor C-2A running. IA system pressure has dropped to 83 psig as a result. What automatic action(s) will occur on the IA system as a result of this leak?

A) Compressor C-2B and C-2C auto start and Service Air Header Isolation Valve CV-1212 auto **closes**.

B) Instrument Air Low Pressure alarm annunciates and Shutdown Cooling Hx outlet valve CV-3025 fails **open.**

C) **ONLY** Compressor C-2B and C-2C auto start.

D) **ONLY** Service Air Header Isolation Valve CV-1212 auto **closes**.

Proposed Answer: A

Explanation (Optional): A) is correct because the standby compressor will auto start at 88 psig and CV-1212 will close at 85 psig CV-3025 fails closed

Technical Reference(s): ONP-7.1

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 19

Examination Outline Cross-Reference:	Level		RO
		Tier #	1
		Group #	2
		K/A #	003 Dropped Control Rod, AK3.08 Knowledge of the reasons for the following responses as it applies to a dropped rod: Criteria for inoperable control rod
		Importance Rating	3.5

Question 19:

Which of the following conditions requires a Control Rod to be called Inoperable? (Assume initial plant conditions at full power)

A) Control Rod indicates 4.5 inches from the rods in its group.

B) Rod 12 drops to 126" withdrawn.

C) Rod 39 drops to 126" withdrawn.

D) Rod 5 seal leakoff high temperature alarm is in.

Proposed Answer: B

Explanation (Optional): Per the Tech Spec Bases 3.1.4

Technical Reference(s): Tech Spec 3.1.4 and Bases

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __2__

Comments:

Question 20

Examination Outline Cross-Reference:	Level		RO
		Tier #	1
		Group #	2
		K/A #	024 Emergency Boration, AA1.05 Ability to operate or monitor the following as it applies to Emergency Boration: Performance of the letdown system during emergency boration
		Importance Rating	3.1

Question 20:

The plant is being maintained in Mode 3 at Normal Operating Temperature and Pressure. It has been decided that a plant cooldown is required. The Emergency Boration valve MO-2140 was opened and Concentrated Boric Acid pump P-56A was started to establish the required shutdown margin prior to the cooldown. Without any other operator action how will the CVCS system respond?

A) Charging Pump flow will remain the same and Letdown flow will decrease.

B) Divert Valve CV-2056 will open on high VCT level and Letdown flow will decrease.

C) VCT Pressure will increase and Divert Valve CV-2056 will open on high VCT level.

D) Charging Pump flow will increase and VCT Pressure will increase.

Proposed Answer: __C__

Explanation (Optional):

C) is the correct answer because 94.4% is the setpoint for CV-2056 to divert and with increasing VCT level, VCT pressure will increase. Charging flow should not change since PZR level is not changing. Letdown flow may increase slightly due to the change in system back-pressure during the divert.

Technical Reference(s):

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam __________

(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 _____

Level of Difficulty: __2__

Comments:

Question 21

Examination Outline Cross-Reference:	Level	RO
	Tier #	1
	Group #	2
	K/A #	032 Loss of Source Range NI, AA2.04 Ability to determine and interpret the following as it applies to a Loss of Source Range NI: Satisfactory source range / intermediate range overlap
	Importance Rating	3.1

Question 21:

A reactor start-up is in progress with reactor power increasing at a rate of 0.3 DPM. The following instrument readings were observed.

Instruments	Readings
SR NI-1	30CPS
SR NI-2	35CPS
WR NI-3	1 X 10^{-6}% Power
WR NI-4	2 X 10^{-7}% Power

If 3 out 4 instruments are operating properly, based on the readings above, which of the following statements is correct?

A) SR NI-1 indication is reading incorrectly and WR NI-3 is reading correctly.

B) SR NI-1indication is reading correctly and WR NI-3 is reading incorrectly.

C) SR NI-2 indication is reading incorrectly and WR NI-4 is reading correctly.

D) SR NI-2 indication is reading correctly and WR NI-4 is reading incorrectly.

Proposed Answer: D

Explanation (Optional):

D) is correct because when SR is approximately 3cps WR should be approximately $1X10^{-7}$%.

Technical Reference(s): NIS lesson plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

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

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 22

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	2
	K/A #	037Generic K/A for S/G Tube Leak, 2.1.32 Ability to explain and apply all system limits and precautions for a S/G tube leak
	Importance Rating	3.4

Question 22:

During a Steam Generator Tube Rupture, the operator isolates the affected Steam Generator __________A__________. The initial cooldown of the PCS is aimed at _______B_______ affected S/G.

A	B
A) when the hot leg temp is < 524^{B}F	preventing re-opening of the MSSV's on the
B) when the cold leg temp is < 524^{B}F	reducing the amount of PCS water transferred into the
C) when S/G level is >30%	reducing off-site dose from the
D) prior to S/G level reaching 70%	establishing subcooling margin between the PCS and the

Proposed Answer: A

Explanation (Optional):

Per the FSAR "The operator isolates the affected S/G when the hot leg temp is 525F or less. The initial cooldown of the PCS is aimed at preventing re-opening of the MSSV's on the affected S/G."

Technical Reference(s):

Chapter 14 of the FSAR

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __3__

Comments:

Question 23

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	2
	K/A #	051 Loss of Condenser Vacuum, AK3.01 Knowledge of the reasons for the following responses as it applies to a Loss of Condenser Vacuum: Loss of Steam Dump capability upon loss of condenser vacuum
	Importance Rating	2.8

Question 23:

The plant is operating at 100% Rx power when a failure of Cooling Tower Pump P-39A has caused condenser vacuum to degrade. Loss of Condenser Vacuum procedure ONP-14 has been entered. A rapid power reduction (per ONP-26) was ordered by the SRO. Following the power reduction, and reactor trip, condenser pressure stabilized at 15" Hg. During the rapid downpower, what was the fastest allowable rate of power reduction, and assuming condenser pressure remains constant what would PCS temperature be after the reactor trips?

A) 60%/Hr and 532^{B}F

B) 300%/Hr and 532^{B}F

C) 60%/Hr and 535^{B}F

D) 300%/Hr and 535^{B}F

Proposed Answer: D (correct answer changed see post examination comment below)

Explanation (Optional):

D) is correct because ONP-26 allows a 300%/Hr power reduction and with condenser vacuum at 15" TBV is available so PCS temperature is controlled by TBV's. PCS temp would be maintain at 535°F according to previous plant history.

Technical Reference(s):

FSAR Fig. 7-58

ONP-26 Rapid Power Reduction

ONP-14 Loss of Condenser Vacuum

Main Steam System Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __3__

Comments: Facility Comment:

The question stem asks, "what would PCS temperature be." The briefing provided to the candidates just prior to the exam, in accordance with Appendix E of NUREG 1021, Rev. 9, instructed them to answer all questions based on actual plant operation, procedures, and references, and that if they believed the answer would be different based on simulator operation or training references, they should answer based on the *actual plant.*

By design, the turbine bypass valve (TBV) does control main steam header pressure at 900 psia (531.95 degrees F at saturation). However, pressure losses between the main steam header and the steam generators, along with efficiency losses in the steam generators, resulted in a stable Tave of slightly less than 535 degrees F.

This question and answer B reflect system design, but not actual plant response. Please see attached copies of both actual plant data and simulator response that show that actual PCS temperature (Tave) stabilizes at approximately 535 degrees F with turbine bypass valve available.

Facility Recommendation: Change correct answer to D.

NRC Resolution:

Data from actual 1998, 2004, and 2005 reactor trips were used to verify that for the conditions given in the stem of the question actual PCS temperature (Tave) stabilizes at approximately 535 degrees F. The correct answer was changed to “D” to reflect actual plant response.

Question 24

Examination Outline Cross-Reference:	Level	RO
	Tier #	1
	Group #	2
	K/A #	059 Accidental Liquid RW Release, AK2.01 Knowledge of the interrelationships between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors
	Importance Rating	2.7

Question 24:

During a Liquid Radwaste Release process radiation monitor RE-1049 setpoints are set at _____A_____, and if this setpoint is exceeded _____B_____.

	A	B
A)	1.5 times the calculated count rate	Only Liquid Release isol. valves CV-1049 & CV-1051 close
B)	1.5 times the background count rate	Liquid Release isol. valves CV-1049 & CV-1051 close and Treated Waste Monitor pumps P-58A/B will trip
C)	1.1 times the calculated count rate	Only Liquid Release isol. valves CV-1049 & CV-1051 close
D)	1.1 times the background count rate	Liquid Release isol. valves CV-1049 & CV-1051 close and Treated Waste Monitor pumps P-58A/B will trip

Proposed Answer: __A__

Explanation (Optional):

A) is the setpoint and automatic actuations for RE-1049

Technical Reference(s): Radiation Monitoring System Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 25

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	2
	K/A #	060 Accidental Gaseous RW Release, AK3.01 Knowledge of the reasons for the following response as it applies to an Accidental Gaseous Radwaste Release: Implementation of the E-plan
	Importance Rating	2.9

Question 25:

One of the Waste Gas Decay Tanks that was recently isolated has been discovered leaking into the Auxiliary Building. Plans are being made to transfer the contents of the leaking tank to a standby tank to limit the amount of radioactive gas inadvertently released. Which Radiation Monitor could be used to discover this problem and if an Emergency Classification should be declared what is the lowest classification which would require a site accountability?

A) The Waste Gas Radiation Monitor RIA-1113 is used to discover the problem, and an event classification of Alert would require site accountability.

B) The Waste Gas Radiation Monitor RIA-1113 is used to discover the problem, and an event classification of Site Area Emergency would require site accountability.

C) The Vent Stack Monitor RIA-2326 is used to discover the problem, and an event classification of Alert would require site accountability.

D) The Vent Stack Monitor RIA-2326 is used to discover the problem, and an event classification of Site Area Emergency would require site accountability.

Proposed Answer: C

Explanation (Optional): C) is the correct answer because a WGDT leak into the Aux. Bldg. would not be detected by RIA-1113. The Vent Stack monitor would have to detect the leakage. Emergency Classifications of Alert requires a site assembly.

Technical Reference(s): Radiation Monitoring Lesson Plan

EI-1, Emergency Classification and Actions

Proposed references to be provided to applicants during examination: None

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments:

Question 26

Examination Outline Cross-Reference:	Level	RO
	Tier #	1
	Group #	2
	K/A #	061 Area Rad Monitoring, AA1.01 Ability to operate or monitor the following as it applies to Area Radiation Monitoring System Alarms: Automatic Actuations
	Importance Rating	3.6

Question 26:

During a refueling outage with Containment Radiation Monitors RIA-2316 & RIA-2317 keylock switches in the 'IN' position, a fuel assembly is accidentally dropped inside containment. Containment Radiation Monitor RIA-2316 goes into alarm but RIA-2317 does not go into alarm due to an instrument failure. How will the plant respond?

A) Manual system alignments will have to be performed since the Containment Refueling Monitors are a 2/2 coincidence.

B) Containment Isolation actuates, **only the running** Control Room HVAC system switches to Emergency mode.

C) Containment Isolation actuates, **both** Control Room HVAC systems switch to Emergency mode.

D) Containment Isolation actuates, **neither** Control Room HVAC system switches to Emergency mode.

Proposed Answer: __C__

Explanation (Optional):

C) is correct because the CHR actuation occurs on a 1 / 2 coincidence, the running Control Room HVAC system switches to Emergency mode, the standby Control Room HVAC system starts, and the 'Containment HI Radiation' alarm does not comes in (actuated from different rad monitors).

Technical Reference(s): Radiation Monitoring System Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 27

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	1
	Group #	2
	K/A #	076 High Rx Coolant Activity AA2.02Ability to determine and interpret the following as it applies to High Rx Coolant Activity: Corrective actions required for high fission product activity in PCS
	Importance Rating	2.8

Question 27:

The reactor is at 90% power. A very small pin hole leak exists in one of the fuel rods. PCS activity has increased and chemistry wants you to reduce it. What action is prescribed to decrease PCS activity in this situation?

A) Placing a Cation Resin Demineralizer in service

B) Placing a Anion Resin Demineralizer in service

C) Raise charging and letdown flow rates

D) Adding Lithium Hydroxide to the PCS

Proposed Answer: C

Explanation (Optional): C) is the correct answer because the question is asking for the most effective method of decreasing PCS activity.

Technical Reference(s): CVCS Lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 28

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	003 RCP, K6.02 Knowledge of the effects of a loss or malfunction on the following will have on the PCP's: PCP seals and seal water supply
	Importance Rating	2.7

Question 28:

Following a loss of component cooling water flow to Primary Coolant Pump (PCP) P-50D, what pump parameter would require a pump shutdown?

A) Lower guide bearing temperature equal to 173^{B}F

B) Controlled Bleed-off temperature equal to 183^{B}F

C) Lower seal temperature equal to 183^{B}F

D) Thrust bearing temperature equal to 178^{B}F

Proposed Answer: D

Explanation (Optional): PCP bearing temp > 175^{B}F requires a PCP trip

Technical Reference(s): PCP Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __2__

Comments: Requires knowledge of PCP trip criteria

Question 29

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	003 RCP, A4.05 Ability to manually operate or monitor in the control room: PCP seal leakage detection instrumentation
	Importance Rating	3.1

Question 29:

With the reactor operating at 100% power the following plant conditions exist:

- Instrument Air Compressor C-2B is out of service for maintenance
- Service Water Pump P-7B is out of service for maintenance
- Charging Pump P-55B is out of service for maintenance

If an over-current fault occurs on 480VAC Bus No. 11 how will Primary Coolant Pumps be affected 30 minutes after the fault assuming no operator actions?

A) PCP parameters would not change

B) PCP seal bleedoff flow will be directed to the Primary System Drain Tank

C) PCP will trip on the loss of 480VAC Bus No. 11

D) PCP cooling water flow will be isolated

Proposed Answer: B

Explanation (Optional): B) is correct because with C-2B OOS and a loss of 480vac bus No.11 you lose C-2A & C-2C, therefore you lose IA to the plant and PCP bleedoff flow will be directed to the primary drain tank when CV-2099 fails closed.

Technical Reference(s): ONP-7.1 Loss of Instrument Air

Electrical print E-1 sh.1

Proposed references to be provided to applicants during examination: None

Learning Objective: ____________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam ______________

(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 ______

Level of Difficulty: 4

Comments: Requires knowledge of loads on bus no. 11 and which way bleedoff return line isolation valve fails.

Question 30

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	004 Chemical and Volume Control, A1.02 Ability to predict or monitor changes in parameters (to prevent exceeding design limits) associated with operating CVCS including Tavg & Tref
	Importance Rating	3.4

Question 30:

While at power near the middle of the fuel cycle a field operator inadvertently valves in the new standby purification demineralizer in the CVCS. What would be an indication in the Main Control Room that the operator made this mistake?

A) Letdown flow will decrease

B) Reactor Power will decrease

C) PCS temperature will increase

D) Pressurizer level will decrease

Proposed Answer: C

Explanation (Optional):

C) is the correct answer since the new resin will remove boron from the letdown stream and a dilution will occur.

Technical Reference(s):

CVCS lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 31

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	004 Generic K/A for Chemical and Volume Control, 2.2.12 Knowledge of surveillance procedures relating to the CVCS
	Importance Rating	3.0

Question 31:

Which ONE of the following surveillance procedures contains actions that BLOCK MO-2169 and MO-2170, Gravity Feed Valves, from operating during a portion of the test?

A) QO-1, Safety Injection System

B) CVCO-4, Periodic Test Procedure - Charging Pumps

C) CVCO-5, Periodic Test Procedure - Concentrated Boric Acid Pumps

D) QO-27, Inservice Testing of CVCS Control, Motor-Operated and Check Valves.

Proposed Answer: A

Explanation (Optional): Per QO-1, Safety Injection System, the gravity feed valves are rendered inop and are blocked from actuating during this test.

Technical Reference(s): QO-1 Safety Injection System

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __2__

Comments:

Question 32

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	005 RHR, K1.01 Knowledge of the physical connections or cause-effect relationships between the RHR system and the following: CCW system
	Importance Rating	3.2

Question 32:

Given the following plant conditions:

- Preparations for placing Shutdown Cooling in service are in progress.
- MO-3015 and MO-3016, SDC from PCS isolations, are Closed.
- P-52A, CCW pump, is in service.
- Per SOP-3, the NCO opens CV-0937, SDC Hx inlet to establish CCW flow to the SDC Hx's.
- No other operator actions have been performed.

How does the above set of conditions affect the CCW System?

A) Excessively low ΔP on CCW Hx's

B) Standby CCW pump auto starts

C) CCW System begins to heat up

D) Excessive vibration occurs on SDC Hx's

Proposed Answer: B

Explanation (Optional): B) is the correct answer because only one CC pump is running prior to opening CV-0937. CV-0937 is in a 20" line so a standby CC pump will start on low CC system pressure if only one CC pump is operating. There is a caution in SOP-3 to this effect as well (step 7.3.2.e)

Technical Reference(s): SOP-3, Safety Injection System

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: 2

Comments:

Question 33

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	005 RHR, A2.03 Ability to predict the impacts of the following malfunctions on the RHR system, and based on those predictions, use procedures to correct, control, or mitigate the consequences of this malfunction or operation: RHR pump/motor malfunction
	Importance Rating	2.9

Question 33:

Following a Large Break LOCA the Low Pressure Safety Injection Pump P-67A did not start as required. All other equipment functioned as designed. Which of the following statements would be consistent with this situation?

A) Low oil pressure prevented pump P-67A from starting and Low Pressure Safety Injection flow is only going to two PCS cold legs

B) Safety Injection System relay SIS-X2 failed to actuate which prevented pump P-67A from starting and Low Pressure Safety Injection flow is going to all four PCS cold legs

C) The Low Pressure Safety Injection Pump breaker DC control power fuse blew which prevented pump P-67A from starting and Low Pressure Safety Injection flow is going to all four PCS cold legs

D) The Low Pressure Safety Injection Pump breaker closed and tripped open on Overcurrent which prevented pump P-67A from running and Low Pressure Safety Injection flow is only going to two PCS cold legs

Proposed Answer: C

Explanation (Optional):

C) is correct since the operating Low Pressure Safety Injection pump is providing flow to all four PCS cold legs. Low oil pressure does not prevent the pump start, all other equipment is working so SIS-X2 worked properly. Bkr needs DC power to work correctly.

Technical Reference(s): SIS lesson plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 2

Comments:

Question 34

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	006 Emergency Core Cooling, K2.04 Knowledge of the bus power supplies to the following: ESFAS operated valves
	Importance Rating	3.6

Question 34:

480V Motor Control Center No. 1 has been inadvertently de-energized. How will this affect ESFAS operated valves and equipment?

A) High Pressure Safety Injection isolation valves on Train 1 will fail as is and Hydrogen Recombiner M69A will be inoperable

B) High Pressure Safety Injection isolation valves on Train 2 will fail as is and Hydrogen Recombiner M69B will be inoperable

C) High Pressure Safety Injection isolation valves on Train 1 will fail as is and Hydrogen Recombiner M69B will be inoperable

D) High Pressure Safety Injection isolation valves on Train 2 will fail as is and Hydrogen Recombiner M69A will be inoperable

Proposed Answer: C

Explanation (Optional):

C) is correct because all loop 1 HPSI isolation valves are powered from MCC No. 1 and they fail as is. Hydrogen Recombiner M69B is also powered from MCC No. 1 as well.

Technical Reference(s): Electrical Drawing E-5 SH. 1

SIS lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 35

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	006 Emergency Core Cooling, A3.05 Ability to monitor automatic operation of the ECCS including: Safety Injection Pumps
	Importance Rating	3.4

Question 35:

During a Tech Spec required shutdown to Mode 5 a plant de-pressurization is in progress. Charging Pump P-55A is running. The Pressurizer Pressure Transmitters readings were observed at...

PT-0104A	1680 psia
PT-0104B	1700 psia
PT-0105A	1670 psia
PT-0105B	1695 psia

...when both the SIAS Block Switches were taken to “BLOCK”. Subsequently the PCS de-pressurization continued to 1500 psia. Determine which statement is correct regarding the condition of plant equipment?

A) All Charging Pumps are running, both Low Pressure Safety Injection Pumps are running, and both High Pressure Safety Injection Pumps are running

B) All Charging Pumps are running, neither Low Pressure Safety Injection Pump is running, and neither High Pressure Safety Injection Pump is running

C) Only Charging Pump P-55A is running, neither Low Pressure Safety Injection Pump is running, and neither High Pressure Safety Injection Pump is running

D) Only Charging Pump P-55C is **not** running, both Low Pressure Safety Injection Pumps are running, and both High Pressure Safety Injection Pumps are running

Proposed Answer: A

Explanation (Optional): A) is correct because SIS should have actuated. 3 out of 4 Pressurizer Pressure Transmitters need to be reading less than 1687 psia to allow the block of SIS. SIS should have actuated on low Pressurizer Pressure at 1605 psia.

Technical Reference(s): SIS Lesson Plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: 3

Comments:

Question 36

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	007 Pzr Quench Tank, K3.01 Knowledge of the effect that a loss or malfunction of the PRT will have on Containment
	Importance Rating	3.3

Question 36:

Initially the plant was at 100% Rx power with all plant parameters normal. A Pressurizer Safety Valve started leaking by. Quench Tank pressure was increasing at a rate of 5 psig/min. How long would it take before containment radiation levels would start to increase?

A) 10 minutes

B) 15 minutes

C) 20 minutes

D) 25 minutes

Proposed Answer: C

Explanation (Optional): Normal Quench Tank pressure is 3 psig. Quench Tank rupture disk gives way at 100 psig. Therefore, (100 - 3 psig) / 5 psig/min = 19.4 min

Technical Reference(s): PCS Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 37

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	008 CCW, K4.01 Knowledge of CCW design features and interlocks which provide for the following: Automatic start of standby pump
	Importance Rating	3.1

Question 37:

The plant was initially at 100% Rx power with all systems in normal alignment. A Safety Injection Actuation then occurred with a Loss of Off-Site Power. Component Cooling Water pump P-52B auto started but not Component Cooling Water pump P-52A. What conditions must exist for Component Cooling Water pump P-52C to auto start?

A) Component Cooling Water pump P-52C will auto-start immediately

B) Component Cooling Water pump P-52C will auto-start when the DBA Sequencer reaches 40-42 seconds.

C) Component Cooling Water pump P-52C will auto-start immediately only if CC system pressure is less than 80 psig.

D) Component Cooling Water pump P-52C will auto-start if CC system pressure is less than 80 psig with DBA Sequencer at 40-42 seconds.

Proposed Answer: D

Explanation (Optional): D) is correct because P-52C will start at 40-42 seconds on the sequencer when CCW system pressure is less than 80 psig.

Technical Reference(s): CCW Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __3__

Comments:

Question 38

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	010 Pzr Pressure Control, K5.01 Knowledge of the operational implications of the following concepts as it applies to the PZR PCS: Determination of conditions of fluid in the PZR using steam tables
	Importance Rating	3.5

Question 38:

The Pressurizer is initially at steady state with Pressurizer pressure at 2060 psia and Pressurizer liquid temperature at 640ºF. What will INITIALLY happen if charging flow were to increase, causing Pressurizer level to increase? (Assume Pressurizer heaters and sprays are OFF)

A) Pressurizer steam will initially become superheated

B) Pressurizer steam will remain in a saturated condition

C) Pressurizer steam moisture content will increase

D) Pressurizer steam enthalpy will decrease

Proposed Answer: A

Explanation (Optional): Per Steam Tables 1

Technical Reference(s): Steam Tables

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 39

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	012 Rx Protection, K4.04 Knowledge of RPS design feature(s) and /or interlock(s) which provide for the following: Automatic or manual enable/disable of RPS trips
	Importance Rating	3.2

Question 39:

Given the following plant conditions:

- Reactor power is less than 1E-4%
- Low power physics testing is in progress

Which one of the following sets of RPS trips are bypassed when placing the Zero Power Mode Bypass switch on the RPS channel in BYPASS?

A) High Start-up Rate, Low S/G Pressure, and Low S/G Level

B) High Start-up Rate, TM/LP, and Low S/G Pressure

C) PCS Low Flow, TM/LP, and Low S/G Pressure

D) PCS Low Flow, TM/LP, and Low S/G Level

Proposed Answer: ___C___

Explanation (Optional): C) is correct according the RPS lesson plan page 47.

Technical Reference(s): RPS Lesson Plan

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: ____________________________ (As available)

Question Source: Bank # ___X___

Modified Bank # ______ (Note changes or attach parent)

New _____

Question History: Last NRC Exam ______________

(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 ______

Level of Difficulty: ___3___

Comments:

Question 40

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	013 ESF Actuation, A1.02 Ability to predict or monitor changes in parameters (toprevent exceeding design limits) associated with operation of the ESFAS controls including: Containment press., temp, & humidity
	Importance Rating	3.9

Question 40:

The plant has been operating at 100% reactor power for the last 128 days. A steam line break outside of containment has caused main steam line pressures to drop to 450 psia. The main steam isolation valves closed to isolate the break and S/G pressures are on their way back to 900 psia but PZR level is off-scale low. If all systems responded as designed and the operators have only monitored plant response and have **not** taken any immediate actions, how did the Containment Air Coolers respond?

A) Containment Air Cooler alignment remains the same since break was outside of Containment.

B) VHX-4 inlet valve CV-0869 Opens, all High Capacity SW Valves remain Open (CV-0861, CV-0864, CV-0873, CV-0867), and all ‘B’ fans trip

C) VHX-4 inlet valve CV-0869 Closes, all High Capacity SW Valves Open (CV-0861, CV-0864, CV-0873, CV-0867), and all ‘A’ fans trip

D) VHX-4 inlet valve CV-0869 Closes, all High Capacity SW Valves Open (CV-0861, CV-0864, CV-0873, CV-0867), and all ‘B’ fans trip

Proposed Answer: __D__

Explanation (Optional): The low main steam line header pressure causes Pressurizer pressure to decrease below 1605 psia the SIAS setpoint

Technical Reference(s): CAC Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 41

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	022 Containment Cooling, A2.04 Ability to predict a) the impacts of the following malfunctions or operations on the Cnmt Cooling Sys: b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the following malfunction or operation: Loss of Service Water
	Importance Rating	2.9

Question 41:

If the Service Water flow paths to Containment Air Coolers VHX-1 and VHX-2 were isolated and drained for maintenance at the same time, which train(s) of Containment Cooling would be capable of performing their design function following a design basis accident? (Assume all other equipment is functional)

A) **Both** Containment Cooling Left Train and Containment Cooling Right Train would be capable of responding to a design basis accident

B) **Neither** Containment Cooling Left Train or Containment Cooling Right Train would be capable of responding to a design basis accident

C) Containment Cooling Left Train **would,** but Containment Cooling Right Train **would not** be capable of responding to a design basis accident

D) Containment Cooling Left Train **would not,** but Containment Cooling Right Train **would** be capable of responding to a design basis accident

Proposed Answer: C

Explanation (Optional): C) is correct according to CAC Lesson Plan. Cont Cooling Train 1 consists of P-54B&C and VHX-4 so it will be functional during the maint.

Technical Reference(s): Containment Air Cooler Lesson Plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 2

Comments:

Question 42

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	026 Containment Spray, A4.01 Ability to manually operate or monitor in the MCR: Cnmt Spray controls
	Importance Rating	4.5

Question 42:

The operating crew has entered ONP-17, Loss of Shutdown Cooling. Attachment 4, Alternate PCS / Core Heat Removal Method (PCS Integrity Not Established) which prohibits the use of Containment Spray (CS) pumps for shutdown cooling unless the PCS is vented by the equivalent of removing a Pzr Manway. Why is this condition specified?

A) To ensure Net Positive Suction Head requirements of the CS pumps are met

B) To prevent over-pressurizing the PCS

C) To prevent over-pressurizing the CS pump suction piping

D) To prevent water hammer when isolation valves are opened

Proposed Answer: C

Explanation (Optional): C) is correct according to the cnmt spray lesson plan and ONP-17, Loss of Shutdown Cooling.

Technical Reference(s): Cnmt Spray Lesson Plan
ONP-17, Loss of Shutdown Cooling

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

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

Question History: Last NRC Exam __________

(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 _____

Level of Difficulty: __3__

Comments:

Question 43

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	039 Generic K/A for Main and Reheat Steam, 2.2.2 Ability to manipulate the controls as required to operate the facility between shutdown and designated power levels (Main & Reheat Steam)
	Importance Rating	4.0

Question 43:

During a Unit start up, according to SOP- 8, Main Turbine and Generating Systems, at what power are the MSR's placed in service, and if the automatic RAMP button is used, how long will it take the MSR valves to ramp to full open?

A) 25% turbine generator power, 20 minutes

B) 25% turbine generator power, 2 hours

C) 30% turbine generator power, 20 minutes

D) 30% turbine generator power, 2 hours

Proposed Answer: D

Explanation (Optional): D) is correct according to SOP-8, Main Turbine and Generator Systems

Technical Reference(s): SOP-8, Main Turbine and Generator Systems

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __4__

Comments:

Question 44

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	059 Main Feedwater, K1.05 Knowledge of the physical connections or cause-effect relationship between the MFW sys and the RCS
	Importance Rating	3.1

Question 44:

A plant start up is in progress at 10% reactor power. Power has been held steady for the last 2 hours for the Chemistry Department. A feedwater transient has just occurred which resulted in excessive feedwater flow going to the Steam Generators. Which of the following is a correct statement regarding the over-feed condition if not corrected over the next 2 minutes?

A) Steam Generator level **increases** and Charging pump flow INITIALLY **decreases**

B) Steam Generator level **decreases** and Charging pump flow INITIALLY **increases**

C) Steam Generator level **increases** and Charging pump flow INITIALLY **increases**

D) Steam Generator level **decreases** and Charging pump flow **remains constant**

Proposed Answer: C

Explanation (Optional): C) is correct because the SGWLCS lesson plan **doesn't** indicate that a overfeed condition causes an initial shrink of the S/G. The decrease in PCS temperature will contract the PCS volume which will drop PZR level requiring increased charging to maintain PZR level on program. Shrink and swell only occur on steam flow changes.

Technical Reference(s): SGWLC Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __2__

Comments:

Question 45

Examination Outline Cross-Reference:

Level	**RO**
Tier #	2
Group #	1
K/A #	061 Aux. Feedwater, K2.02 Knowledge of the bus power supplies to the following: AFW electric driven pumps
Importance Rating	3.7

Question 45:

The plant has experienced an inadvertent feedwater isolation signal requiring a Reactor Trip. S/G levels have fallen below 30%. The P-8A, Aux Feedwater Pump did not start as designed due to a breaker alignment problem. When is the P-8C, Aux Feedwater Pump designed to start and what is its power supply?

A) P-8C starts immediately following the AFAS signal, and it's powered from Bus 1D

B) P-8C starts immediately after P-8A fails to start, and it's powered from Bus 1C

C) P-8C starts 30.5 sec following the AFAS signal, and it's powered from Bus 1D

D) P-8C starts 112.5 sec following the AFAS signal, and it's powered from Bus 1C

Proposed Answer: C

Explanation (Optional): D) is correct. There is a 30.5 sec delay for P-8C to start following the AFAS if P-8A is not delivering flow. P-8C is powered from Bus 1D.

Technical Reference(s): AFW lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __3__

Comments:

Question 46

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	062 AC Electrical Distribution K3.02 Knowledge of the effect that a loss or malfunction of the AC distribution system will have on the following: D/G's
	Importance Rating	4.1

Question 46:

The Plant is operating at steady state 100% Rx power. Breaker 152-106, S/U Xfmr 1-2, is Out of Service and the applicable LCO is in effect. Safeguards / Sta. Pwr. Incoming Breaker 152-105 trips open on overcurrent which de-energizes 2400V Bus 1C. Diesel Generator 1-1 will ...?

A) start on an undervoltage signal, come up to speed and voltage and energize Bus 1C after all load breakers to Bus 1C automatically trip open

B) start on an undervoltage signal, come up to speed and voltage and **will not** energize Bus 1C

C) start on an undervoltage signal, come up to speed and voltage and **will only** energize Bus 1C if all load breakers to Bus 1C are manually opened

D) **not** start as the result of this occurrence

Proposed Answer: B

Explanation (Optional): B) is the correct answer. Since 152-105 tripped on overcurrent the bus is 'locked out'. The D/G will start on undervoltage but it's output breaker will not close

Technical Reference(s): D/G lesson plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: 2

Comments:

Question 47

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	063 DC Electrical Distribution K4.01 Knowledge of DC electrical system design features or interlocks which provide for the following: Manual/Automatic transfer of control
	Importance Rating	2.7

Question 47:

How would the 120V Instrument AC Bus supply breakers to ABT Y-50 respond to a battery charger failure that de-energized 480V MCC-1, and how will the breakers respond when power is restored to 480VAC MCC-1?

A) Y-50 will transfer to MCC-2 in approx. 10 seconds, and when power is restored will transfer back to MCC-1 in approx. 10 seconds.

B) Y-50 will transfer to MCC-2 in approx. 10 seconds, and when power is restored will need to be manually restored to MCC-1.

C) Y-50 will immediately transfer to MCC-2, and when power is restored will immediately transfer back to MCC-1.

D) Y-50 will immediately transfer to MCC-2, and when power is restored will auto restore to MCC-1 in approx. 30 seconds.

Proposed Answer: D

Explanation (Optional): D) is correct according to lesson plan. Emergency supply breaker Y-50 closes within 1 sec and as long as control switch is in auto normal supply breaker will close in approximately 30 sec following power being restored to MCC-1

Technical Reference(s): 125 Volt DC, 120 Volt Preferred AC and Instrument AC lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 48

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	064 Emergency D/G, K6.08 Knowledge of the effect of a loss or malfunction of the following will have on the D/G's: Fuel Oil Storage Tanks
	Importance Rating	3.2

Question 48:

During a Diesel Generator No. 1-1 run, Fuel Oil Transfer Pump P-18A fails immediately after it has completed filling the D/G No. 1-1 day tank. Fuel Oil transfer Pump P-18B is currently disassembled for maintenance. How long can the Diesel Generator continue to operate at rated load before it runs out of fuel?

A) 1 hour

B) 4 hours

C) 15 hours

D) 24 hours

Proposed Answer: C

Explanation (Optional): C) is correct according to the FSAR

Technical Reference(s): FSAR Section 8.4.1.3

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 49

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	073 Process Radiation Monitoring, K5.02 Knowledge of the operational implications as they apply to concepts involving the Process Radiation Monitoring system: Radiation intensity changes with source distance
	Importance Rating	2.5

Question 49:

Two Instrument Maintenance technicians will be working on one of the plant's process radiation monitors. The dose rate is 200mR at 1 foot away from the monitor. The workers will be 3 feet away from the monitor while performing their calibration. The job will take them two hours to complete. What should the total estimated dose for the job be?

A) 44 mR

B) 88 mR

C) 134 mR

D) 268 mR

Proposed Answer: B

Explanation (Optional): 1/9 x 200 = 22.2mR/hr x 2hr x 2 workers = 88 mR

Exposure varies inversely as the square of distance from a point source

Technical Reference(s):

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: ___________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: ___2___

Comments:

Question 50

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	076 Service Water, K3.07 Knowledge of the effects that a loss or malfunction of the service water system will have on the following: ESF loads
	Importance Rating	3.7

Question 50:

During a Loss of Service Water it has become necessary to **lower** Service Water flow to unnecessary components to prevent run out of the Fire Protection Pump(s). Which of the following groups of ESF loads, if SW is isolated, will result in the largest **increase** in Fire Pump discharge pressure?

A) Containment Air Coolers, Component Cooling Water Hx's, and Diesel Generators

B) Containment Air Coolers, ESF Room Coolers, and Diesel Generators

C) Component Cooling Water Hx's, ESF Room Coolers, and Control Room HVAC Condensers

D) Control Room HVAC condensers, Containment Air Coolers, and Plant Air Compressors

Proposed Answer: A

Explanation (Optional): A) is correct according to ONP-6.1 attachment 2.

Technical Reference(s): ONP-6.1 Attachment 2

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __4__

Comments:

Question 51

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	076 Service Water, A1.02 Ability to predict or monitor changes in parameters (to prevent exceeding design limits) associated with operating the service water system controls including: Rx & Turbine Bldg. closed cooling water temps
	Importance Rating	2.6

Question 51:

If the Turbine Bldg. were to experience a loss of Non-Critical Service water due to a piping system malfunction, which annunciators would alert the control room operators that a reactor trip was required?

A) EK-0260 H2 Cooler Hi Temp, and EK-1165 Non-Critical Serv Water Lo Press

B) EK-0259 Exciter Cooler Hi Temp, and EK-1165 Non-Critical Serv Water Lo Press

C) EK-0171 Condensate Pump Room Flooding, and EK-0259 Exciter Cooler Hi Temp

D) EK-0259 Exciter Cooler Hi Temp, and EK-0260 H2 Cooler Hi Temp

Proposed Answer: B

Explanation (Optional): B) is correct according to ONP-6.1. If both EK-0259 and EK1165 are in alarm we must trip the reactor to prevent Exciter damage.

Technical Reference(s): ONP-6.1 Immediate Actions

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 52

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	078 Instrument Air, K3.02 Knowledge of the IA system design features or interlocks which provide for the following: System having pneumatic valves and control
	Importance Rating	3.4

Question 52:

During a refueling outage the P-8C, Aux. Feedwater Pump is being used to add water to the Steam Generators. While the P-8C Aux. Feedwater Pump is running, Instrument Air is lost to both Discharge Flow Control Valves CV-0736A and CV-0737A due to an inadvertent isolation. How will the isolation of Instrument Air to CV-0736A and CV-0737A affect the Aux. Feedwater System?

A) CV-0736A and CV-0737A will fail CLOSED.

B) CV-0736A and CV-0737A will fail AS IS, due to N_2 backup; when N_2 backup is depleted, valves will fail CLOSED.

C) CV-0736A and CV-0737A will fail AS IS, due to N_2 backup; when N_2 backup is depleted, valves will fail OPEN.

D) CV-0736A and CV-0737A will fail OPEN.

Proposed Answer: D

Explanation (Optional): D) is correct according to ONP-7.1 Loss of Instrument Air attachment 2

Technical Reference(s): ONP-7.1 Loss of Instrument Air attachment 2

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 53

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	078 Instrument Air, A3.01 Ability to monitor automatic operation of the IA system including: air pressure
	Importance Rating	3.1

Question 53:

Instrument Air Compressor C-2A is in operation with the C-2B Compressor in standby. C-2C Compressor is tagged out for maintenance. An air leak caused air header pressure to drop to 85 psig prior to the leak being isolated at which time header pressure returned to 110 psig. How would the C-2B Air Compressor respond to this instrument air pressure transient?

A) C-2B will not auto-start during this instrument air transient

B) C-2B will auto-start and continue to run unloaded until placed in Standby by the Control Room Operator

C) C-2B will auto-start, but will stop after running unloaded for a short period of time

D) C-2B will auto-start and run fully loaded until placed in Standby by the Control Room Operator

Proposed Answer: C

Explanation (Optional): C) is the correct answer according to the Instrument and Service Air lesson plan

Technical Reference(s): Instrument and Service Air lesson plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __2__

Comments:

Question 54

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	1
	K/A #	103 Containment, K4.06 Knowledge of Cnmt sytem design features or interlocks which provide for the following: Cnmt Isolation Sys.
	Importance Rating	3.1

Question 54:

A Primary Coolant System leak inside of containment has caused a Containment High Radiation Signal. Containment Pressure peaked at 2.2 psig and Pressurizer Pressure has dropped to 1830 psia and is holding steady. The reactor has been tripped. How will decay heat be removed from the PCS in this situation? (EOP-1.0 Immediate Actions have been completed)

A) Aux. Feedwater and Atmospheric Dump Valves

B) Aux. Feedwater and Turbine Bypass Valves

C) Main Feedwater and Atmospheric Dump Valves

D) Main Feedwater and Turbine Bypass Valves

Proposed Answer: B

Explanation (Optional): B) is correct because Immediate Actions of EOP-1.0 isolates Main Feedwater. MSIV's do not close on Cnmt High Rad signal.

Technical Reference(s):	Containment Bldg. Lesson Plan EOP Supplement #6 Check-sheet for Cnmt Isolation

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Question 55

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	1
	K/A #	103 Containment, A3.01 Ability to monitor automatic operation of the containment system including: Cnmt Isolation
	Importance Rating	3.9

Question 55:

Following a Small Break LOCA Containment Pressure peaked at 3.5 psig and containment radiation peaked at 15R/Hr. Which of the following valves would you expect to have automatically CLOSED?

A) MSIV's, Main Feed Reg Valves, & S/G Blowdown Isolation Valves

B) Charging Header Isolation Valves, Letdown Isolation Valves, & Component Cooling Water Return Valve

C) Demin Water to Quench Tank Isolation Valve, Hydrogen Monitor Isolation Valves, & S/G Blowdown Isolation Valves

D) Bypass Feed Reg Valves, Primary Sampling Isolation Valves, and Shield Coolant Surge Tank Fill Valve

Proposed Answer: C

Explanation (Optional): C) is correct according to Cnmt Bldg. Lesson Plan & Checksheet for Cnmt Isolation. As well as the Logic diagram for High Cont. Radiation. MSIV's don't close on high cnmt rads.

Technical Reference(s): Cnmt Bldg. Lesson Plan

EOP Supplement 6, Checksheet for Cnmt Isolation & CCW Restoration

Cnmt High Rad Logic Diagram

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 56

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	2
	K/A #	011 Pzr Level Control, K6.04 Knowledge of the effect of a loss or malfunction on the following will have on the Pzr level control sys: Operation of PZR level controllers
	Importance Rating	3.1

Question 56:

The plant has been operating at 70% reactor power for the last 6 hours. Pressurizer Level Control Channel ‘A’ LIC-0101A is controlling Pressurizer level. A fault on Instrument Bus Y-10 causes it to become de-energized. How will the Pressurizer Level Control System respond to this failure?

A) Pressurizer Level Control System is not affected

B) Letdown flow is maximized and Charging Flow is minimized

C) Letdown flow is minimized and Charging Flow is maximized

D) Pressurizer Level will stablize at 42%

Proposed Answer: C

Explanation (Optional): C) is the correct answer. Y-10 powers LIC-0101A and a loss of power causes zero output from controller thus max charging and min letdown. 42% was picked as a distractor because if Tave loop is lost level will go to no load valve 42%.

Technical Reference(s): Pressurizer Level Control System Lesson Plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: 3

Comments:

Question 57

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	014 Rod Position Indication, A1.04 Ability to predict or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Rod Position Indication system controls including: Axial and Radial power distribution
	Importance Rating	3.5

Question 57:

Concerning Control Rod Drive Group 3, for what ranges will the group be sequenced into the core, and why are the control rod groups sequenced into and out of the core?

A) Selected Group 2 control rods > 52"
Selected Group 4 control rods < 80"
To maintain an acceptable core flux distribution during rod motion

B) Selected Group 2 control rods > 80"
Selected Group 4 control rods < 52"
To maintain adequate shutdown margin

C) Selected Group 2 control rods > 80"
Selected Group 4 control rods < 52"
To maintain an acceptable core flux distribution during rod motion

D) Selected Group 2 control rods > 52"

Selected Group 4 control rods < 80"

To maintain adequate shutdown margin

Proposed Answer: C

Explanation (Optional): C) is the correct answer. Proper bank overlap must be maintained. Group 2 must be >80" and group 4 must be <52". Bank overlap maintains the flux profile within limits.

Technical Reference(s):

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments:

Question 58

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	015 Nuclear Instrumentation, A2.02 Ability to a) predict the impact of the following malfunctions or operations on the NIS; and b) based on these predictions, use procedures to correct, control, or mitigate the consequences of the malfunctions: Faulty or erratic operation of detectors or compensating components
	Importance Rating	3.1

Question 58:

Reactor Power is being held at 10% due to a chemistry sample problem. During the hold a SR/WR NI-1/3A detector HV power supply amplifier malfunction causes the output to fail high. The consequences of this failure will be...

A) VHPT on 1 of 4 channels and the Reactor does **not** trip

B) VHPT on 2 of 4 channels and the Reactor trips

C) High SUR Trip on 1 of 4 channels and the Reactor does **not** trip

D) High SUR Trip on 2 of 4 channels and the Reactor trips

Proposed Answer: __D__

Explanation (Optional): D) is correct according to the lesson plan. One WR failing high trips 2 of 4 SUR trips thus the Rx trips.

Technical Reference(s): Nuclear Instrumentation Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 59

Examination Outline Cross-Reference:

Level	**RO**
Tier #	2
Group #	2
K/A #	017 Incore Temperature Monitoring, A3.01 Ability to monitor automatic operation of the incore temperature monitoring system including: Indications of normal, natural and interrupted circulation of the RCS
Importance Rating	3.6

Question 59:

Following the loss of all Primary Coolant Pumps the following plant conditions were observed on the PCS:

- CET's = 580ᴮF
- PCS Pressure 1750 psia
- Loop T_{hot} = 582ᴮF and constant
- Loop T_{cold} = 547ᴮF and lowering
- Pressurizer Heater and Sprays available

Is natural circulation flow occurring and if not why?

G) Yes, natural circulation is occurring

B) No, natural circulation is NOT occurring because the core ªT is not adequate

C) No, natural circulation is NOT occurring because the PCS is not adequately subcooled

D) No, natural circulation is NOT occurring because T_{hot} is greater than CET's

Proposed Answer: __A__

Explanation (Optional): A) is correct according to natural circ verification criteria of EOP-8.0 and EOP-3.0.

Technical Reference(s): EOP-3.0 Station Blackout Recovery

EOP-8.0 Loss of Offsite Power/Forced Circulation Recovery

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __4__

Comments:

Question 60

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	027 Containment Iodine Removal, A4.03 Ability to manually operate or monitor in the MCR: Cnmt Iodine Removal System fans
	Importance Rating	3.3

Question 60:

Following a large break Loss of Coolant Accident in which all Containment Spray is in service, how many Containment Air Cooler Fans are required and why are they required?

A) One Containment Air Cooler Fan is required to support Containment Spray operation for Containment Heat Removal

B) One Containment Air Cooler Fan is required to support Containment Spray operation to ensure adequate mixing of containment for iodine removal purposes

C) Two Containment Air Cooler Fans are required to support Containment Spray operation for Containment Heat Removal

D) Two Containment Air Cooler Fans are required to support Containment Spray operation to ensure adequate mixing of containment for iodine removal purposes

Proposed Answer: B

Explanation (Optional): B) is correct according to the CAC lesson plan. When CS is in service for iodine removal purposes 1 CAC fan is assumed to ensure adequate mixing.

Technical Reference(s): CAC Lesson Plan

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: 3

Comments:

Question 61

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	028 Generic K/A for the Hydrogen Recombiner, 2.1.27 Knowledge of the Hydrogen Recombiner and Purge control systems purpose and function
	Importance Rating	2.8

Question 61:

During a Large Break Loss of Coolant Accident, hydrogen enters the containment atmosphere from several different sources which may require the initiation of the Hydrogen Recombiner(s). Which of the following contains sources of Hydrogen that are the main contributers to the buildup of hydrogen within the containment?

A) Metal steam reaction between zirconium cladding and the PCS
Radiolytic decomposition of water in the PCS and containment sump
Hydrogen in the PCS at time of LOCA

B) Hydrogen inside the fuel rod gap space
Radiolytic decomposition of water in the PCS and containment sump
Hydrogen in the PCS at time of LOCA

C) Hydrogen inside the fuel rod gap space
Radiolytic decomposition of water in the PCS and containment sump
Corrosion of metals exposed to Containment Spray solution

D) Decomposition of TSP within containment sump
Hydrogen in the PCS at time of LOCA
Radiolytic decomposition of water in the PCS and containment sump

Proposed Answer: ___A___

Explanation (Optional): A) is the correct list according to TS bases 3.6.7

Technical Reference(s): Tech Spec 3.6.7
Lesson Plan Objective CH2_E01.01

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: __________________________ (As available)

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

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: ___3___

Comments:

Question 62

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	2
	K/A #	029 Containment Purge, K1.02 Knowledge of the physical connection or cause-effect relationship between the containment purge system and the following: Cnmt radiation monitors
	Importance Rating	3.3

Question 62:

During a refueling outage the containment purge supply and exhaust isolation valves were open with the containment purge supply fan running. Each Refueling Containment High Radiation channel keylock switch is in the "IN" refueling position. A spent fuel assembly was dropped inside of containment. Rad Monitor RIA-2316 went into HIGH alarm but Rad Monitor RIA-2317 did **not** alarm. How would the Refueling Containment High Radiation signal be processed?

A) Closes the Containment Purge Exhaust Isolation Valves ONLY

B) Actuates Containment Isolation Signal ONLY

C) Actuates Containment Isolation Signal and Component Cooling Water Isolation

D) Does not actuate any Containment Isolation Valves

Proposed Answer: __B__

Explanation (Optional): B) is the correct answer according to Radiation Monitoring System Lesson Plan

Technical Reference(s): Tech Spec bases 3.3.6

Tech Spec bases 3.9.3

Radiation Monitoring Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ___________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 63

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	034 Fuel Handling Equipment, K4.02 Knowledge of the design features or interlocks which provide for the following: Fuel movement
	Importance Rating	2.5

Question 63:

According to SOP-28 Fuel Handling Systems, when a new fuel assembly is required to be placed into the Spent Fuel Pool which of the following is required?

A) The fuel elevator mechanical upper inspection limit switch is jumpered/bypassed

B) The bypass interlock key switch is used to override the upper inspection limit switch

C) The fuel elevator mechanical upper inspection limit switch is jumpered/bypassed and the Spent Fuel Handling Machine must be outside of the fuel elevator zone

D) The bypass interlock key switch is used to override the upper inspection limit switch and the Spent Fuel Handling Machine must be over the Tilt Pit

Proposed Answer: B

Explanation (Optional): B) is the correct answer according to SOP-28 Fuel Handling

Technical Reference(s): SOP-28 Fuel Handling

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 64

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	072 Area Rad Monitoring, K3.01 Knowledge of the effect that a loss or malfunction of the Area Radiation monitoring system will have on the following: Cnmt Vent Isolation
	Importance Rating	3.2

Question 64:

During the movement of irradiated fuel inside the containment during a refueling outage, an accident occurs and the Containment Radiation Monitors fail to go into high alarm. The Control Room Operator Depresses only **ONE** of the CHR High Rad Initiate Pushbuttons. What will the automatic response of the Containment Ventilation System be?

A) Only one half of the Containment Purge Supply and Exhaust Isolation valves will close and Air Room Purge Fan V-46 will trip

B) Only one half of the Containment Purge Supply and Exhaust Isolation valves will close and Air Room Recirc Fan V-46 will **not** trip

C) All Containment Purge Supply and Exhaust Isolation valves will close and Air Room Purge Fan V-46 will trip

D) All Containment Purge Supply and Exhaust isolation valves will close and Air Room Purge Fan V-46 will **not** trip

Proposed Answer: __C__

Explanation (Optional): C) is the correct answer according to the Cnmt Bldg. Lesson Plan.

Technical Reference(s): Cnmt Bldg. Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ________________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 65

Examination Outline Cross-Reference:	Level	RO
	Tier #	2
	Group #	2
	K/A #	075 Circulating Water, K4.01 Knowledge of the circulating water system design features and interlocks which provide for the following: Heat Sink
	Importance Rating	2.5

Question 65:

When the Control Switch for the Cooling Tower Pump, P-39A, is taken to Start how does the Circulating Water System respond?

A) P-39A starts, and then the associated Condenser inlet MOV Opens approximately 33%

B) P-39A starts, and then the associated Condenser inlet MOV throttles Closed approximately 33%

C) The associated Condenser inlet MOV Opens approximately 33%, and then P-39A starts

D) The associated Condenser inlet MOV throttles Closed approximately 33% and then P-39A starts

Proposed Answer: C

Explanation (Optional): C) is the correct answer according to the Circulating Water System Lesson Plan

Technical Reference(s): Circulating Water System Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 66

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.1.22 Ability to determine MODE of Operation
	Importance Rating	2.8

Question 66:

A plant shutdown is required for refueling. When can the Operating Crew declare that they have reached Mode 6?

A) When the Reactor Head is removed with SDM > 1%

B) When the Reactor Head is removed with SDM N/A

C) When the first Reactor Vessel Closure Bolt less than fully tensioned with SDM > 1%

D) When the first Reactor Vessel Closure Bolt less than fully tensioned with SDM N/A

Proposed Answer: C or D (see post examination comment below)

Explanation (Optional): D) is correct according to TS table 1.1-1, MODES
C) is also correct.

Technical Reference(s): Tech Spec Table 1.1-1, MODES

Proposed references to be provided to applicants during examination: None

Learning Objective: ________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __2__

Comments:

Facility Comment:

The question does not ask for the definition of Mode 6. The stem presents a decision point and asks, "When can the Operating Crew declare that they have ***reached*** Mode 6?" As soon as the first reactor vessel closure bolt is less than fully tensioned, the conditions of the stem are met. Since both answers C and D contain this Condition (less than fully tensioned), and since SDM is N/A for Mode 6, answer C and D are both correct.

Answer A and B are not correct, since the crew would have to declare Mode 6 entry long before the conditions of A and B are true.

Facility Recommendation: Accept both C and D as correct.

NRC Resolution:

Upon review of the question and the facility comment it was decided to accept both C and D as correct answers. The intent of the question was to test the candidates ability to recognize entry into Mode 6 based on the definition of Mode 6, answer "D". However, the stem of the question set up a situation in which the plant was leaving Mode 5, which requires a SDM > 1%, and entering Mode 6. Under these conditions although a SDM > 1% would not be required by the definition of Mode 6 it would be present as a requirement of Mode 5. Therefore answer "C" and "D" are both correct.

Question 67

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.1.25 Ability to obtain and interpret station reference material such as graphs, monographs, and tables which contain performance data
	Importance Rating	2.8

Question 67:

Pressurizer Level Indicator LIC-0101B is reading 60% on the main control board. The plant is currently being cooled down and depressurized. Pressurizer pressure is currently 1500 psia. Containment air temperature is at 140°F. Based on these conditions determine **Actual** Pressurizer Level?

A) 50%

B) 54%

C) 58%

D) 64%

Proposed Answer: B

Explanation (Optional): B) is correct using figures 1 of 2 and 2 of 2 for PZR lvl corrections hot cal.

Technical Reference(s): PZR Lvl correction Hot Cal Figures
Tech Spec 3.6.5 Containment Temperature

Proposed references to be provided to applicants during examination:

PZR Lvl correction Hot Cal Figures
PZR Lvl correction Cold Cal Figures

Learning Objective: __________________________ (As available)

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 _____

Level of Difficulty: __3__

Comments:

Question 68

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.1.29 Knowledge of how to conduct and verify valve line-ups
	Importance Rating	3.4

Question 68:

Given the following conditions:

- The main flow through a pipe in a safety-related system at normal pressure is 250 gpm.
- A vent valve on the pipe will allow 10 gpm if full open at normal pressure.
- A drain valve on the pipe will allow 18 gpm if full open at normal pressure.

During the performance of a system checklist for system startup, which of the following describes the locking device requirements for these valves?

	VENT VALVE	DRAIN VALVE
A)	Lock Required	Lock Required
B)	Lock NOT Required	Lock NOT Required
C)	Lock NOT Required	Lock Required
D)	Lock Required	Lock NOT Required

Proposed Answer: ___C___

Explanation (Optional): C) is the correct answer according to Admin Proc. 4.02, Control of Equipment, step 5.3.2.a.3

Technical Reference(s): Admin Proc. 4.02, Control of Equipment

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: ___3___

Comments:

Question 69

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.2.13 Knowledge of the tagging and clearance procedures
	Importance Rating	3.6

Question 69:

According to Administrative Procedure 4.10, Personnel Protective Tagging, for the centrifugal pump depicted below with its suction piping leaking in the identified location, which valves and in what order would it be acceptable to isolate the leak for a Tag Out?

```
 Valve C
7-----®-------
                   Valve B              Valve A
         Ù --------®----b—-----------®--------7
        Pump          Leak
```

A) Valves C, B, then A

B) Valve B, then A

C) Valves B, A, then C

D) Valve A, then B

Proposed Answer: ___A___

Explanation (Optional): A) is correct according to the Warning in Admin Proc. 4.10

Technical Reference(s): Admin Proc. 4.10 Personnel Protective Tagging attachment 1

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 70

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.2.12 Knowledge of surveillance procedures
	Importance Rating	3.0

Question 70:

During the monthly MO-45 Control Room Channel Checks surveillance an out of tolerance reading was observed. Once the reading is recorded and determined to be out of spec / tolerance it is circled in red. What other actions are required to be taken per the procedure?

A) Reported to Supervisor in charge of surveillance following completion of the surveillance, and Evaluated by the Supervisor during his review of the surveillance after its completion

B) Reported to Supervisor in charge of surveillance immediately, and Evaluated by the Supervisor prior to proceeding to the next step

C) Reported to Supervisor in charge of surveillance following completion of the surveillance, and Evaluated by the Supervisor prior to starting next surveillance

D) Reported to the Supervisor in charge of surveillance immediately, and Evaluated by the Supervisor during his review of the surveillance after its completion

Proposed Answer: B

Explanation (Optional): B) is the correct answer according to MO-45, Control Room Channel Checks

Technical Reference(s): MO-45, Control Room Channel Checks

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ___________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 71

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized
	Importance Rating	2.5

Question 71:

For an adult worker, who has not declared a pregnancy, the lowest Annual Administrative Dose Control Level is ______A______ and to exceed this limit the ______B______ must authorize it.

	A	B
A)	1000mR	Plant Manager
B)	1000mR	Radiation Protection Manager
C)	2000mR	Plant Manager
D)	2000mR	Radiation Protection Manager

Proposed Answer: D

Explanation (Optional): D) is correct according to the Admin Dose Control for Adult Occupational Doses procedure 7.04 attachment 1

Technical Reference(s): Admin Procedure 7.04, Radiation Dosimetry attachment 1

Proposed references to be provided to applicants during examination: __None__

Learning Objective: _________________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 72

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.3.9 Knowledge of the process for performing a containment purge
	Importance Rating	2.5

Question 72:

The plant is in MODE 3 at normal operating pressure and temperature. To reduce containment activity levels, it is desired to perform a Purge of the Containment. What actions would have to be taken to Purge the Containment Building?

A) Open the Purge Supply and Exhaust Valves
Start the Air Room Purge Supply Fan V-46
Ensure one of the Main Exhaust Fans is operating V-6A/B

B) Ensure one of the Main Exhaust Fans is operating V-6A/B
Open the Purge Supply and Exhaust Valves
Start the Air Room Purge Supply Fan V-46

C) Open the Purge Supply and Exhaust Valves
Ensure one of the Main Exhaust Fans is operating V-6A/B
Start the Air Room Purge Supply Fan V-46

D) Align Containment Purge through CWRT T-64D Rupture Disk

Proposed Answer: D

Explanation (Optional): D) is correct according to SOP-24, Ventilation and Air Conditioning System. Cnmt purge can not be done in MODE 3 except through CWRT T-64D.

Technical Reference(s): SOP-24, Ventilation and Air Conditioning System

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 73

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.3.11 Ability to control radiation releases
	Importance Rating	2.7

Question 73:

The following plant conditions exist:

- All Waste Gas Decay Tanks are full except the tank currently in service
- A Containment Purge is in Progress
- D/G 1-2 is currently running for surveillance testing
- Minimum crew manning is onsite due to a Holiday

Waste Gas Decay Tank T-68B needs to be released but Radiation Monitor RE-1113 is NOT OPERABLE. What conditions must exist for the WGDT to be released?

A) Radiation Monitor RE-1113 must be returned to OPERABLE status
The Containment Purge must be secured

B) Two independent verifications of the release rate calculation are performed
Two qualified Aux. Operators independently verify the WGDT discharge line-up
Plant Stack Radiation Monitor is continuously monitored throughout the release

C) Two independent tank samples are collected
Two independent verifications of the release rate calculation are performed
Two qualified Aux. Operators independently verify the WGDT discharge line-up
The Containment Purge must be secured

D) Two independent tank samples are analyzed

Two independent verifications of the release rate calculation are performed

Two qualified Aux. Operators independently verify the WGDT discharge line-up

Plant Stack Radiation Monitor is continuously monitored throughout the release

Proposed Answer: C

Explanation (Optional): C) is correct according to SOP-18A, Radioactive Waste System - Gaseous. The cnmt purge must be secured and independent verifications need to be performed on everything. The plant stack doesn't need to be monitored constantly.

Technical Reference(s): SOP-18A, Radioactive Waste System - Gaseous.

Proposed references to be provided to applicants during examination: None

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments:

Question 74

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.4.3 Ability to identify post-accident instrumentation
	Importance Rating	3.5

Question 74:

Technical Specification 3.3.7 Post Accident Monitoring (PAM) Instrumentation is required so that operators, following a major accident, will be able to monitor critical plant parameters. Which of the lists below contains only Post Accident Monitoring Instrumentation?

A) Wide Range Neutron Flux, Aux. Feedwater Flow Indication, and Reactor Vessel Water Level

B) Wide Range Neutron Flux, PCS Wide Range Pressure, S/G Wide Range Level

C) PCS Wide Range Pressure, Charging Header Flow Indication, Containment Area Radiation Monitors (high range)

D) S/G Narrow Range Level, PCS Wide Range Pressure, Core Exit Temperature Indications

Proposed Answer: B

Explanation (Optional): B) is correct according to TS 3.3.7. Aux. Feedwater and Charging Header Flow Indications are not required for PAM.

Technical Reference(s): TS Table 3.3.7-1

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __4__

Comments:

Question 75

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.4.27 Knowledge of fire in the plant procedures
	Importance Rating	3.0

Question 75:

All of the following Fire Alarms on Panel C-47B require IMMEDIATE sounding of the Fire Alarm and call out of the Fire Brigade **EXCEPT**:

a. Charging Pump Areas

b. Corridor 106 on Elev. 590'

c. Remote Shutdown Panel & Stairwell

d. Safeguards Area , Injection & Spray Pump

Proposed Answer: D

Explanation (Optional): D) is the correct answer according to Palisades personnel.

Technical Reference(s): Fire Protection Implementing Procedure FPIP-3, Plant Fire Brigade.

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 76

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	026 Loss of Component Cooling Water, Generic K/A 2.4.24 Knowledge of loss of cooling water procedures
	Importance Rating	3.7

Question 76:

The plant is operating at 100% Reactor Power in steady state conditions when a loss of Component Cooling Water occurs. ONP-6.2, Loss of Component Cooling Water has been entered and all CCW pumps have tripped and can **not** be restarted. If CCW flow can not be re-established what actions will be required and in what order are the actions to be performed?

A) Trip the Reactor, then enter EOP-1.0, then isolate PCP Contorlled Bleed-Off line, then stop the PCPs.

B) Trip the Reactor, then stop the PCPs, then enter EOP-1.0, then isolate PCP Controlled Bleed-off line.

C) Stop the PCPs, then trip the Reactor, then isolate PCP Controlled Bleed-off line, then enter EOP-1.0.

D) Trip the Reactor, then stop the PCPs, then isolate PCP Controlled Bleed-off line, and then enter EOP-1.0.

Proposed Answer: B

Explanation (Optional): B) is correct according to ONP-6.2 Loss of Component Cooling Water procedure step 4.3

Technical Reference(s): ONP-6.2 Loss of Component Cooling Water

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

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

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __2__

Comments:

Question 77

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	029 ATWS EA2.04 Ability to determine or interpret the following as it applies to a ATWS: CVCS Charging pump operating indications
	Importance Rating	3.3

Question 77:

The plant has been operating at 100% Reactor power for the last 3 months. One of the PCPs has just tripped but the Reactor did not trip. Following the PCP trip, Bus 1D has de-energized due to a ground over-current event. The Functional Recovery Procedure has been entered and the success path dealing with Control Rod Insertion has failed. The success path dealing with Boration Using CVCS will be utilized next. What is the **priority** for Charging Pump suction alignment for boration in this procedure?

A) 1. SIRWT
2. BAST through Gravity Feed Valves

B) 1. BAST through Gravity Feed Valves
2. BAST through Boric Acid Pumps

C) 1.BAST through Boric Acid Pumps
2. SIRWT

D) 1. BAST through Gravity Feed Valves
2. SIRWT

Proposed Answer: __D__

Explanation (Optional): D) is correct according to Functional Recovery Procedure EOP-9.0 Success Path RC-2

Technical Reference(s): Functional Recovery Procedure EOP-9.0 Success Path RC-2

Functional Recovery Procedure EOP-9.0 Success Path RC-1

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 78

Examination Outline Cross-Reference:	Level	SRO
	Tier #	1
	Group #	1
	K/A #	038 S/G Tube Rupture, Generic K/A 2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized
	Importance Rating	3.1

Question 78:

Given the following conditions:

- A Steam Generator Tube Rupture on 'A' S/G has occurred.
- EOP Supplement 12, 'A' S/G SGTR Isolation Checklist is in progress.

Which one of the following describes actions ALL of which are required and why?

A) * Ensure Flash Tank and Blowdown Tank vent valves are CLOSED.
* Align Turbine Building Sump to Oil Separator.
* Isolate 'A' S/G Steam Dump Drain Traps.

to minimize spreading of contamination and an unmonitored release to the environment.

B) * Ensure Flash Tank and Blowdown Tank vent valves are OPEN.
* Align Turbine Building Sump to Dirty Waste Drain Tank.
* Isolate 'A' S/G Steam Dump Drain Traps.

to ensure Blowdown Tank is available for S/G draining, and that contaminated water will be processed by the Radwaste System.

C) * Isolate P-8B AFW Pp. steam supply via one manual valve.
 * Align Turbine Building Sump to Equipment Drain Tank.
 * Ensure Flash Tank and Blowdown Tank vent valves are OPEN.

to ensure Blowdown Tank is available for S/G draining, and that contaminated water will be processed by the Radwaste System.

D) * Isolate P-8B AFW Pp. steam supply via one manual valve.
 * Align Turbine Building Sump to Dirty Waste Drain Tank.
 * Ensure Flash Tank and Blowdown Tank vent valves are CLOSED.

to minimize spreading of contamination and an unmonitored release to the environment.

Proposed Answer: D

Explanation (Optional): D) is the correct answer according to EOP Supplement 12 and its Basis.

Technical Reference(s): EOP Supplement 12 and its Basis

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam _____________

(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 _____

Level of Difficulty: ___4___

Comments:

Question 79

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	040 Steam Line Rupture - Excessive Heat Transfer Ability to determine and interpret the following as it applies to a steam line rupture: Conditions requiring a reactor trip K/A AA2.02
	Importance Rating	4.6

Question 79:

The following plant conditions were observed:

- Containment Pressure has increased 1 psig in the last 3 minutes
- Containment Temperature 135°F and Increasing
- PCS Pressure 2000 psia and Decreasing
- PCS subcooling Increasing
- Pressurizer Level Decreasing
- Reactor power 102% and Increasing
- RIA-2323 and RIA-2324 Main Steamline Radiation monitor levels are increasing

Based on the above stated conditions what actions are required to be taken?

A) Reduce reactor power to less than 100% and enter ONP- 23.1, Primary Coolant Leakage

B) Reduce reactor power to less than 50% within the next 1 hour and be in MODE 3 with PCS temperature less than 524°F within 4 hours per ONP-23.2, S/G Tube Leakage

C) Trip the reactor, enter EOP-1, Standard Post-Trip Actions, and enter EOP-6, Excessive Steam Demand Event

D) Trip the reactor, enter EOP-1, Standard Post-Trip Actions, then enter EOP-9 Functional Recovery Procedure

Proposed Answer: D

Explanation (Optional): C) is the correct answer because a major steam leak is occurring inside of the containment. With the excess steam demand event affecting the plant in such a way to increase reactor power 2% and cause containment pressure to increase the correct operator action is to trip the reactor, verify the reactor is tripped, then close the MSIV's to ensure one S/G is available for the subsequent cooldown. With main steam line radiation levels increasing a SGTR or tube leak is occurring which requires entry into EOP-9.0

Technical Reference(s): EOP-1.0, Reactor Trip Response

EOP-6.0, Excessive Steam Demand Event Basis Document

EOP-9.0, Functional Recovery Procedure

Proposed references to be provided to applicants during examination: None

Learning Objective: _________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __2__

Comments:

Question 80

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	056 Loss of Off-Site Power Ability to determine and interpret the following as it applies to a Loss of Offsite Power: Operational status of Emergency D/G's K/A AA2.14
	Importance Rating	4.6

Question 80:

Given the following:

- The reactor trips due to a loss of all AC Power (Station Blackout)
- Power was lost at 0832 hours
- The operators are following the appropriate EOP's associated with this event

Which one of the following is the LATEST time by which the Emergency Diesel Generators or Offsite power must restore power to ensure that the Station Batteries are NOT over-dutied and thus capable of performing their design function.

A) 1032 hours

B) 1232 hours

C) 1432 hours

D) 1632 hours

Proposed Answer: __B__

Explanation (Optional): B) is the correct answer according to UFSAR Section 8.4.2.3

Technical Reference(s): UFSAR Section 8.4.2.3

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ____________________________ (As available)

Question Source: Bank # __X__

Modified Bank # _____ (Note changes or attach parent)

New _____

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 81

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	062 Loss of Nuclear Service Water, Ability to determine and interpret the following as it applies to a loss of service water: Normal values for the service water header flow rates and the flow rates to the components cooled by service water K/A AA2.05
	Importance Rating	3.1

Question 81:

You are the Main Control Room Supervisor when alarm EK-1347, 'Containment Air Coolers Serv Water Leak' annunciated. What caused this alarm to come in and what actions will you direct the Operator to take?

A) High level alarm in CAC leak detection sump caused the alarm and the direction to be given is to isolate SW to containment one **header** at a time

B) High level alarm in CAC leak detection sump caused the alarm, and the direction to be given is to isolate SW to one **CAC** at a time

C) A large flow difference between SW into containment and SW out of containment caused the alarm and the direction to be given is to isolate SW to containment one header at a time

D) A large flow difference between SW into containment and SW out of containment caused the alarm and the direction to be given is to isolate SW to one **CAC** at a time

Proposed Answer: D

Explanation (Optional): D) is the correct answer according to the CAC lesson plan

Technical Reference(s): CAC Lesson Plan
Annunciator Response EK-1347

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

QUESTION DELETED

Question 82

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	2
	K/A #	028 Pressurizer Level Control Malfunction, Ability to determine and interpret the following as it applies to Pzr Level Control Malfunctions: Charging and Letdown flow capacities K/A AA2.09
	Importance Rating	3.2

Question 82:

Given the following:

- Power level is stable at 100%.
- Pressurizer level is being controlled by Pressurizer Level Controller LIC-0101A.
- The output of level controller LIC-0101A has just failed at 100% output signal.
- No other failures occur.

Assuming no Operator actions, what will charging flow be after the level controller output failure, and what is the expected plant response?

a. 0 gpm; and the Reactor will trip on Thermal Margin/Low Pressure.

b. 33 gpm; and Pressurizer level cycles in an approximately 11% band.

c. 44 gpm; and Pressurizer level stablizes at 57%.

d. 133 gpm; and the Reactor will then trip on High Pressurizer Pressure.

Proposed Answer: ___B___(Question deleted from examination see facility comment below)

Explanation (Optional): B) is correct according to Palisades personnel. Back up level control system will take over and limit level fluctuations.

Technical Reference(s): CVCS Lesson Plan

PLCS Lesson Plan

ARP EK-0761, Pressurizer Level Hi / Lo

Proposed references to be provided to applicants during examination: ___None__

Learning Objective: ___________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Facility Comment:

This question has no correct answer. The correct answer was selected originally based on an understanding of the backup pressurizer level control system design, specifically, that it controls in an approximately 11 percent band. However, with the presurizer level control malfunction standing, the pressurizer level will actually oscillate over a 2 percent range, the range between where the backup program takes control (~-6%) and where it gets a signal to reset (~-4%).

Facility Recommendation: Delete question from exam since no correct answer is provided.

NRC Resolution:

Review of the controller design, verified that no correct answer was provided and the question was deleted. The conditions given in the stem would have resulted in control transferring back and forth between the failed and operable controller resulting an oscillation between - 4% and - 6%.

Question 83

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	033 Loss of Intermediate Range NI, Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Tech Spec limits if both intermediate-range channels have failed K/A AA2.10
	Importance Rating	3.8

Question 83:

During a Reactor Start-Up and while withidrawing shutdown rods both Source Range Nuclear Instrumentation detectors are reading approximately 500 cps and neither Wide Range Nuclear Instrumentation detector have moved off the 10^{-7}% reading. The Reactor Engineer has just informed you that he believes both WR Nuclear detectors are **not** working properly. Given this information, what actions are you required to take?

A) Enter Tech Spec Action 3.0.3 IMMEDIATELY

B) Immediately discontinue the Start-Up and restore **one** Wide Range instrument channel to OPERABLE status prior to MODE 2

C) Maintain power less than 10^{-4}% with High Start-Up Rate Trips bypassed

D) Immediately discontinue the Start-Up and restore **both** Wide Range instrument channels to OPERABLE status prior to MODE 2

Proposed Answer: D

Explanation (Optional): believe D) is the correct answer but the tech spec is not crystal clear on which condition to enter and which actions to take. With

SR counts at 500 cps we are less than 10^{-4}% RTP so TS 3.3.1 does not apply.

Technical Reference(s): Tech Spec 3.3.1

Tech Spec Bases 3.3.1

GOP-4.0, Mode 3 > 525F to Mode 2

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ___________

(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 _____

Level of Difficulty: __4__

Comments: Need to verify this answer with Palisades personnel. ("D" is the correct answer)

Question 84

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	059 Accidental Liquid Radwaste Release, Ability to determine and interpret the following as it applies to an Accidental Liquid Radwaste Release: The occurrence of automatic safety actions as a result of high process radiation monitoring system signal K/A AA2.05
	Importance Rating	3.9

Question 84:

During normal 100% Reactor Power Operations the NCO reports that the Circulating Water Discharge Radiation Monitor, RIA-1323, indicates WARNING (Yellow Indicating light lit) and is reading 700cpm. What automatic actions, if any, occurred as a result of this radiation reading.

A) None

B) Main Control Board Annunciator EK-1365, ‘Process Liq Monitoring Hi Rad’ alarm ONLY

C) Main Control Board Annunciator EK-1365, ‘Process Liq Monitoring Hi Rad’ will alarm, and the Radwaste Discharge Isolation Valves, CV-1049 and CV1051 will close ONLY

D) Main Control Board Annunciator EK-1365, ‘Process Liq Monitoring Hi Rad’ will alarm, the Radwaste Discharge Isolation Valves CV-1049 and CV-1051 will close, and the Turbine Bldg Waste Oil Effluent Pumps P-206A & B will trip

Proposed Answer: A

Explanation (Optional): A) is the correct answer according to the Radiation Monitoring lesson plan.

Technical Reference(s): Radiation Monitoring Lesson Plan

FSAR Table 11-15, Radioactive Waste Management & Radiation Protection

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments:

Question 85

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	2
	K/A #	CE/A11 RCS Overcooling - PTS Ability to determine and interpret the following as they apply to RCS Overcooling: Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments K/A AA2.2
	Importance Rating	3.4

Question 85:

An Excessive Steam Demand Event occurred inside containment. All Engineered Safety Systems functioned as designed except for the B MSIV. The following plant conditions are observed:

- Containment Pressure 17 psig and slowly DECREASING
- Containment Temperature 248°F
- PCS Pressure 700 psia
- PCS Temperature 400°F
- A S/G level 65% and stable
- A S/G Pressure 550 psia
- B MSIV shows dual indication
- B S/G Pressure 250 psia
- Pzr Level 35% and slowly DECREASING
- RVLMS channels indicate PCS level is at 148 inches

Is SIAS Throttle Criteria met and what is the major consequence of not isolating the "MOST AFFECTED" S/G?

A) SIAS Throttling Criteria is **NOT** met and the major consequence of not isolating the most affected S/G is a potential release path exists until it is isolated

B) SIAS Throttling Criteria is **NOT** met and the major consequences of not isolating the most affected S/G is continuing the uncontrolled PCS cooldown

C) SIAS Throttling Criteria **IS** met and the major consequence of not isolating the most affected S/G is a potential release path exists until it is isolated

D) SIAS Throttling Criteria **IS** met and the major consequences of not isolating the most affected S/G is continuing the uncontrolled PCS cooldown

Proposed Answer: B

Explanation (Optional): B) is the correct answer since SIAS throttle criteria is 40% for PZR Lvl under degraded containment conditions. 1A S/G is available for maintaining/cooling down the PCS. 1A S/G level is being restored by the Aux. Feedwater system. (ESF system)

Technical Reference(s): EOP-6.0 Excessive Steam Demand Event

EOP-6.0 Excessive Steam Demand Event Basis Document

Proposed references to be provided to applicants during examination: None

Learning Objective: ____________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New X

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments: Should know SI termination criteria for ESDE.

Question 86

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	2
	Group #	1
	K/A #	005 Residual Heat Removal, Ability to apply Technical Specifications for a System Generic K/A 2.1.12
	Importance Rating	4.0

Question 86:

For Technical Specifications 3.4.6 PCS Loops - Mode 4, and 3.4.7 PCS Loops - Mode 5, Loops Filled, one of the requirements is that "PCP's P-50A and P-50B shall not be operated simultaneously." What is the bases for this requirement?

A) If both P-50A and P-50B are in operation, the shutdown cooling pumps could not meet their required flow requirements due to the increase in back-pressure

B) If both P-50A and P-50B are in operation, the relief valve on the suction of the shutdown cooling pumps may lift during operation

C) If both P-50A and P-50B are in operation, the pressure limits associated with Technical Specification LCO's would have to be lower

D) If both P-50A and P-50B are in operation, this could cause increased cooling rates which could result in exceeding cooldown rate limits

Proposed Answer: C

Explanation (Optional): C) is the correct answer according to Tech Spec Bases 3.4.7. States that the simultaneous operation of PCP's P-50A & B which allows the pressure limits on 3.4.3 & 3.4.12 to be higher than they would be without this limitation." Therefore, the pressure limits specified in 3.4.3 & 3.4.12 would be lower if both PCP's were allowed to operate.

Technical Reference(s): Tech Spec 3.4.6 PCS Loops - Mode 4
Tech Spec 3.4.7 PCS Loops - Mode 5, Loops Filled
Tech Spec Bases for 3.4.6
Tech Spec Bases for 3.4.7

Proposed references to be provided to applicants during examination: __None__

Learning Objective: _________________________ (As available)

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

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __4__

Comments:

Question 87

Examination Outline Cross-Reference:	Level	SRO
	Tier #	1
	Group #	1
	K/A #	010 Pressurizer Pressure Control Ability to a) predict the impacts of the following malfunctions or operations on the Pzr Press. Control Sys., and b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the malfunction: Spray Valve Failure K/A A2.02
	Importance Rating	3.9

Question 87:

Given the following plant conditions:

- The plant is operating at normal 100% Reactor Power under steady state conditions.
- All systems are aligned normally.
- A failure in the control circuit to Pressurizer Spray Valve CV-1057 causes it to fail full OPEN.
- The NCO has taken manual control of the Spray Valve but can not close the Spray Valve.
- Pressurizer Pressure continues to **lower**.

What are your required actions as the Control Room Supervisor and what procedural guidance applies?

A. Enter ONP-18, Pressurizer Pressure Control Malfunctions, then order a Reactor Trip and enter EOP-1.0, Standard Post Trip Actions, then order tripping of PCP P-50A ONLY.

B. Order a Reactor Trip and enter EOP-1.0, Standard Post Trip Actions, then order tripping of PCPs P-50B and P-50C.

C. Per ARP EK-0753, 0754 PZR Pressure Deviation Hi/Lo alarm, take manual control of PZR Htr's to stablize PZR Pressure.

D. Enter ONP-18, Pressurizer Pressure Control Malfunctions, then order a Reactor Trip and enter EOP-1.0, Standard Post Trip Actions, then order tripping of P-50B ONLY.

Proposed Answer: D

Explanation (Optional): B) is correct because P-50B feeds CV-1057 and the Rx should be tripped to stop the depressurization.

Technical Reference(s): ONP-18 Pressurizer Pressure Control Malfunctions

Print M-201 sh1

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments:

Question 88

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	2
	Group #	1
	K/A #	063 DC Electrical Distribution, Ability to recognize indications of system operating parameters which are entry-level conditions for Techncial Specifications Generic K/A 2.1.33
	Importance Rating	4.0

Question 88:

On February 2, the temperature sensed by TC-1554, V-33 Cable Spreading Room Supply temperature controller, failed high. An alert Aux. Operator has diagnosed this condition and has requested a compensatory action be put in place. As the Control Room Supervisor what actions would you direct the Aux. Operator to take and why?

A) Direct the Aux. Operator to monitor Cable Spreading Room temperatures and make sure Emergency Exhaust Fan V-47 is started when room temperature reaches 100°F to prevent the Cable Spreading Room from exceeding its FSAR design basis temp of 104°F

B) Direct the Aux. Operator to monitor Cable Spreading Room temperatures and increase chilled water flow as necessary to prevent the Cable Spreading Room from exceeding its Environmental Qualification Temperature of 110°F

C) Direct the Aux. Operator to monitor Battery Room temperatures and decrease chilled water flow as necessary to make sure the Battery Room does not decrease below its minimum temp of 60°F

D) Direct the Aux. Operator to monitor Battery Room temperatures and if necessary, provide additional heating to ensure Battery Room does not decrease below its minimum temp of 70°F

Proposed Answer: __D__

Explanation (Optional): D) is the correct answer according to TS 3.8.6. Battery Cell minimum temp is 70°F. If the TC fails high the steam supply valve should close, outside air damper should open, and recirc damper should close.

Technical Reference(s): Tech Spec 3.8.6

Print M–218 sh1

SOP-24 Ventilation and Air Conditioning System

FSAR Section 9.8 Ventilation Systems

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ______________

(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 ______

Level of Difficulty: __4__

Comments: Might change question to ask when battery becomes inop and what actions are required.

Question 89

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	2
	Group #	1
	K/A #	073 Ability to a) predict the impacts of the following malfunctions or operations on the Process Radiation Monitoring System; and b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the malfunction or operation: Detector Failure K/A A2.02
	Importance Rating	3.2

Question 89:

Continuous Air Monitor RIA-1818B for CRHVAC Unit V-96 on the Main Control Room Ventilation System has caused Main Control Room Alarm EK0240, 'CR HVAC Train B RIA-1818B Hi Rad / Fail' to actuate. A detector failure was discovered which causes this detector to be inoperable. What actions are required to be performed?

A) The affected CRHVAC Train shall be placed in Emergency Mode **within 1 hour;** **OR** the opposite CRHVAC train **must be** started and the affected train **must be** Caution Tagged to only run in Emergency Mode

B) The affected CRHVAC Train shall be placed in Emergency Mode **immediately;** **OR** the opposite CRHVAC train must be started **immediately** and the affected train **must be** Caution Tagged to only run in Emergency Mode

C) The affected CRHVAC Train can remain in operation in the Normal Mode for

30 days as long as an alternate means of sampling airborne radiation for the affected train is established

D) The affected CRHVAC Train can remain in operation in the Normal Mode indefinitely as long as an alternate means of sampling airborne radiation for the affected train is established

Proposed Answer: __B__

Explanation (Optional): B) is correct according to the CRHVAC lesson plan and SOP-24. If the airborne detector fails one must immediately go to Emergency Mode or switch to the other train

Technical Reference(s):

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 90

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	1
	Group #	1
	K/A #	103 Containment, Knowledge of the emergency plan Generic K/A 2.4.29
	Importance Rating	4.0

Question 90:

After a Large Break LOCA occurs Containment conditions are as follows:

- Containment pressure 65 psia
- Containment Hydrogen Concentration 4.5%
- Containment Radiation Level 3000 R/Hr

Does a “Potential Loss of Containment” condition currently exist and if so why?

A) No Potential Loss of Containment condition exists

B) Yes, a Potential Loss of Containment condition exists due to High Containment Pressure

C) Yes, a Potential Loss of Containment condition exists due to High Containment Hydrogen Concentration

D) Yes, a Potential Loss of Containment condition exists due to High Containment Radiation Level

Proposed Answer: ___C___

Explanation (Optional): C) is the correct answer bases on the Site Emergency Plan. Cnmt H_2 conc > 4% or Cnmt press > 70 psia or SED's Opinion justifies potential loss of containment.

Technical Reference(s): EI-1 Site Emergency Plan Classification and Actions

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: ___4___

Comments:

Question 91

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	2
	Group #	2
	K/A #	028 Hydrogen Recombiner & Purge Control, Ability to a) predict the impacts of the following malfunctions or operations on the Hydrogen Recombiner & Purge Control System; and b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the malfunction or operation: LOCA conditions and related concerns over hydrogen K/A A2.02
	Importance Rating	3.9

Question 91:

A Large Break LOCA with a Loss of Off-site Power has occurred and procedure EOP-4.0, Loss of Coolant Accident Recovery is in progress. Containment Hydrogen Concentration is currently 1.5% and one of the Hydrogen Recombiners is being placed into service per SOP-5, Containment Air Cooling and Hydrogen Recombining System. The Feeder Breaker to MCC 9, 52-1304 located on Bus 13 is Opened in conjunction with starting the Hydrogen Recombiner. Why is this breaker opened?

A) This breaker removes power from the Hydrogen Monitor Containment Isolation valves so that Containment Hydrogen concentrations can be continuously monitored while the Recombiner is in operation

B) This breaker removes power from non-vital equipment inside Containment in the vicinity of the Hydrogen Recombiners to reduce the possibility of an electrical spark near their intakes

C) This breaker removes power from non-vital equipment inside Containment on MCC 9 to allow the D/G to pick up the load of a Hydrogen Recombiner

D) This breaker removes power from non-vital equipment inside Containment that may disrupt air flow into the Hydrogen Recombiners intake

Proposed Answer: B

Explanation (Optional): B) is the correct answer according to the EOP-4.0, Loss of Coolant Accident Recovery Basis Document.

Technical Reference(s): EOP-4.0 Loss of Coolant Accident Recovery Basis Document

EOP-4.0 Loss of Coolant Accident Recovery

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam __________

(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 ______

Level of Difficulty: __3__

Comments:

Question 92

Examination Outline Cross-Reference:	Level	**RO**
	Tier #	2
	Group #	2
	K/A #	045 Main Turbine Generator, Ability to execute procedure steps following a turbine generator trip at low power, Generic K/A 2.1.20
	Importance Rating	4.2

Question 92:

A plant Start-Up is in progress with Reactor Power at 12% just **prior to** Turbine Generator Synchronization. A leak on the Turbine Lube Oil System has occurred that can not be controlled. All standby oil pumps have started and oil pressure is still decreasing. As the Control Room Supervisor what orders would you give and approximately what is the expected demand signal on the Turbine Bypass controller just prior to synchronization?

A) Trip the Reactor and enter EOP-1.0 Standard Post Trip Recovery procedure, between 25% and 50%

B) Trip the Turbine and enter ONP-1 Loss of Load procedure; between 25% and 50%

C) Trip the Reactor and enter EOP-1.0 Standard Post Trip Recovery procedure; greater than 60%

D) Trip the Turbine and enter ONP-1 Loss of Load procedure; greater than 60%

Proposed Answer: D

Explanation (Optional): D) is the correct answer because we are less than 15% Rx power. Therefore the Rx does not need to be tripped in this case. A note in the procedure for turbine synchronization states to have turbine bypass controller demand at above 60% prior to synchronization. Since all we did was trip the Turbine bypass controller demand should be about the same.

Technical Reference(s): ONP-1 Loss of Load

SOP-8 Main Turbine and Generating Systems

Main Steam Lesson Plan

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 93

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	2
	Group #	2
	K/A #	068 Liquid Radwaste, Knowledge of SRO responsibilities for auxiliary systems that are outside the MCR, Generic K/A 2.3.3
	Importance Rating	2.9

Question 93:

Given the following plant conditions:

- On "B" shift the plant is at 40% power.
- An approved liquid radwaste batch release is in progress.
- The following valid alarm has just annunciated EK-2535, Dilution Wtr Pump P-40B Trip
- A report immediately comes in from an Auxiliary Operator (who was near Bus 1E) that it sounded like a breaker tripped on the bus, and that the breaker appears to have tripped on overcurrent.
- NO other alarms have annunciated.

What action is required and why?

A) Dispatch an Auxiliary Operator to reduce the liquid batch flow rate to one half of the initial flow rate to ensure proper dilution water flow is maintained.

B) Dispatch an Auxiliary Operator to locally monitor the cooling tower basin levels, since actual levels are now below the indicated range of the level instruments.

C) Request the RMC Supervisor to have two additional samples taken of the Mixing Basin, since there is now less dilution water flow to the discharge canal.

D) Ensure that the liquid batch release is terminated and notify the RMC Supervisor, since there is now inadequate dilution water flow to the discharge canal.

Proposed Answer: D

Explanation (Optional): D) is correct based on Palisades personnel input. Palisades wrote this question

Technical Reference(s): ARP-24, window 18 & 25

Tech Spec 3.4.9

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ______________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 94

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications
	Importance Rating	4.0

Question 94:

Given the following plant conditions:

- Total PCS leakage is 6.1 gpm
- Primary to Secondary leakage into 1A S/G is 0.25 gpm
- Primary to Secondary leakage into 1B S/G is 0.15 gpm
- Leakage from valve packing of the PZR Spray Valve has been quantified at 1.5 gpm
- Leakage into the Quench tank has been calculated at 3.7 gpm

Determine which, if any, of the PCS Operational LEAKAGE limits are being exceeded and why.

A) No Operational Leakage limits are being exceeded

B) The Unidentified PCS leakage limit is being exceeded

C) The Pressure boundary leakage limit is being exceeded

D) The Primary to Secondary leakage limit is being exceeded

Proposed Answer: __B__

Explanation (Optional): B) is the correct answer according to Palisades personnel. They indicate that any leakage into the Quench tank is considered unidentified leakage.

Total S/G leakage is greater than 432 gpd but this limit is 'through any one S/G'.

Technical Reference(s): TS 3.4.13, PCS Operational leakage

Proposed references to be provided to applicants during examination: __None__

Learning Objective: ________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __2__

Comments:

Question 95

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.1.32 Ability to explain and apply all system limits and precautions
	Importance Rating	3.8

Question 95:

All plant equipment functioned as designed following a Large Break LOCA. When and why are the Charging Pump suctions aligned to the SIRWT in EOP-4.0, Loss of Coolant Accident Recovery?

A) Approximately 30 to 45 minutes; to reduce the effects of boric acid precipitation in the core

B) Approximately 30 to 45 minutes; to prevent Charging Pump cavitation due to a loss of suction

C) Within 1 hour; to ensure adequate SIRWT inventory is injected into the PCS / Containment

D) Within 1 hour; to ensure adequate shutdown margin is established

Proposed Answer: A

Explanation (Optional): A) is the correct answer according to EOP-4.0, Loss of Coolant Accident Recovery, step 43. When required shutdown boron conc. is established align Charging Pumps to SIRWT to reduce the effects of boric acid precipitation.

Technical Reference(s): EOP-4.0, Loss of Coolant Accident Recovery

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 96

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.2.32 Knowledge of the effects of alterations on core configuration
	Importance Rating	3.3

Question 96:

Following a refueling outage, during core reloading in what manner is the core reloaded and why?

A) The core reloading is started at the center of the core and loaded towards the periphery to ensure both source range detectors are monitoring the core

B) The core reloading is started near an operable source range detector and loaded to the center of the core so that core uncoupling does not occur

C) The core reloading is started at the center of the core and loaded towards the periphery to ensure a potential critical configuration is not shielded from the source range detectors

D) The core reloading is started near an operable source range detector and loaded to the center of the core so that the initial fuel assemblies are supported by the core barrel

Proposed Answer: B

Explanation (Optional): B) is the correct answer according to EM-04-29 Guidelines for Preparing Fuel Movement Plans. One wants the excore detectors to monitor the fuel assembles as they are placed back in the core. The best place for that is directly in front of one of them not the center of the core. We do not want the core to become uncoupled because then we may get a critical condition that is shielded from our detectors.

Technical Reference(s): EM-04-29, Guidelines for Preparing Fuel Movement Plans

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New __X__

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 97

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.3.1 Knowledge of 10 CFR 20 and related facility radiation control requirements
	Importance Rating	3.0

Question 97:

Given the following conditions:

The plant is at 28% power.

A worker and HP Technician need to enter Containment and will be working in a 1.5R/hr. field for approximately two minutes.

ON Control Room equipment is out of service.

Which of tfollowing describe responsibilities of the Control Room Supervisor that are BOTH correct?

A) Approve the high rad area entry with your signature, and provide verification that normal conditions exist inside Containment.

B) Station an Auxiliary Operator outside the Personnel Airlock to record the time of opening, and inform the workers to notify you when exiting Containment.

C) Provide verification that normal conditions exist inside Containment and inform the workers to notify you when exiting Containment.

D) Approve the high rad area entry with your signature, and inform the workers to notify you just prior to opening the Personnel Airlock outer door.

Proposed Answer: ___C___

Explanation (Optional): C) is the correct answer according to Palisades Occupational Dose Limits for Adults listed in Administrative Procedure 7.04, Radiation Dosimetry

Technical Reference(s): Administrative Procedure 7.04

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: ________________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: ___3___

Comments:

Question 98

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposures
	Importance Rating	3.3

Question 98:

The following plant conditions exist inside of Containment:

- A Large Break LOCA has occurred
- PCS pressure is 55 psia
- Containment Pressure is 40 psig and slowly DECREASING
- One Containment Spray Pump is running
- Both Low Pressure SI pumps are running
- Both High Pressure SI pumps are running

If the correct amount of Trisodium Phosphate (TSP) is located inside of containment how will this effect the post LOCA containment environment and at what containment pressure can Containment Spray (CS) be secured per EOP-4.0, Loss of Coolant Accident Recovery?

A) The TSP will maintain the Containment Sump water pH between 7-8 to prevent stress corrosion cracking of stainless steel components, and CS can be secured at less than 4 psig containment pressure

B) The TSP will maintain the Containment Sump water pH between 7-9 to remain within the assumptions of the analysis for post LOCA Hydrogen concentration, and CS can be secured at less than 4 psig containment pressure

C) The TSP will maintain the Containment Sump water pH between 7-8 to maintain iodine released from fuel failures in solution and out of the containment atmosphere, and CS may be secured at less than 3 psig containment pressure

D) The TSP will maintain the Containment Sump water pH between 7-9 which prevents stress corrosion cracking of stainless steel components, and CS may be secured at less than 3 psig containment pressure

Proposed Answer: ___C___

Explanation (Optional): C) is the correct answer according to the Tech Spec bases 3.5.5 for TSP.

Technical Reference(s): TSP Tech Spec 3.5.5 Bases

Proposed references to be provided to applicants during examination: ___None___

Learning Objective: ____________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New ___X___

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: __3__

Comments:

Question 99

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.4.6 Knowledge of symptom bases EOP mitigation strategies
	Importance Rating	4.0

Question 99:

The EOP's are a collection of the best available technical information to be used in dealing with an emergency in the plant. If an accident were to occur what is the Safety Function Hierarchy that is used when restoring Vital Auxiliary Systems after the restoration of electrical power?

A) Service Water, Component Cooling Water, then Instrument Air

B) Instrument Air, Service Water, then Component Cooling Water

C) Component Cooling Water, Service Water, then Instrument Air

D) Service Water, Instrument Air, then Component Cooling Water

Proposed Answer: A

Explanation (Optional): A) is the correct answer according to the Intro to EOP System Basis Document. The Safety Function Hierarchy is:

Maint. of Vital Aux's (electric)

Maint of Vital Aux's (water) SW then CCW

Maint of Vital Aux's (air) IA

Technical Reference(s): Introduction to EOP System Basis

Proposed references to be provided to applicants during examination: __None__

Learning Objective: __________________________ (As available)

Question Source: Bank # ______

Modified Bank # ______ (Note changes or attach parent)

New __X___

Question History: Last NRC Exam _____________

(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 ______

Level of Difficulty: __3__

Comments:

Question 100

Examination Outline Cross-Reference:	Level	**SRO**
	Tier #	3
	Group #	N/A
	K/A #	Generic K/A 2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency director
	Importance Rating	4.0

Question 100:

If the Shift Manager becomes incapacitated and you assume his duties, during an emergency, what responsibilities as the Site Emergency Director can you ***not*** delegate?

A) Authorize exceeding 10CFR20 dose limits for emergency workers
Recommend 'Protective Action Recommendations' to the State
Request Onsite Federal assistance

B) Declaration of the appropriate 'Emergency Classification'
Recommend 'Protective Action Recommendations' to the State
Authorize distribution of Potassium Iodine (KI)

C) Approve decisions regarding site evacuation
Authorize exceeding 10CFR20 dose limits for emergency workers
Declaration of the appropriate 'Emergency Classification'

D) Request Onsite Federal assistance
Authorize distribution of Potassium Iodine (KI)
Approve decisions regarding site evacuation

Proposed Answer: C

Explanation (Optional): C) is the correct answer according to Emergency Implementing Procedure EI-2.1, Site Emergency Director

Technical Reference(s): Emergency Implementing Procedure EI-2.1, Site Emergency Director

Proposed references to be provided to applicants during examination: None

Learning Objective: ______________________ (As available)

Question Source: Bank # _____

Modified Bank # _____ (Note changes or attach parent)

New X

Question History: Last NRC Exam ____________

(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 _____

Level of Difficulty: 3

Comments: