U. S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No.:	50-213
Report No.:	96-09
License No.:	DPR-61
Licensee:	Notheast Nuclear Energy Co.
Facility:	Connecticut Yankee Atomic Power Station (Haddam Neck)
Location:	Haddam and Waterford, CT
Dates:	August 19 - 24, 1996
Chief Examiner:	P. Bissett, Senior Operations Engineer/Examiner, Region I
Examiners:	S. Barr, Operations Engineer/Examiner, Region I F. Jaggar, NRC Consultant Examiner J. Prell, Senior Operations Engineer/Examiner, Region I
Approved By:	Glenn W. Meyer, Chief Operator Licensing and Human Performance Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Connecticut Yankee Atomic Power Station
Inspection Report No. 50-336/96-09

Operations

The six reactor operator (RO) candidates and six senior reactor operator (SRO) candidates were well prepared for the written and operating examinations. Simulator performance by the candidates, including communications, was generally very good. All twelve candidates passed their examination.

REPORT DETAILS

I. Operations

05 Operator Training and Qualifications

05.1 Reactor Operator and Senior Reactor Operator Initial Examinations

a. Scope

The examiners administered initial licensing examinations to six senior reactor operator (SRO) candidates and six reactor operator (RO) candidates in accordance with NUREG-1021, "Examiner Standards," Revision 7. the six SRO candidates, three were SRO instant (SROI) candidates and three wer SRO upgrade (SROU) candidates.

b. Observations and Findings

The results of the SRO and RO examinations are summarized below:

	SRO Pass/Fail	RO Pass/Fail	Total Pass/Fail
Written	6/0	6/0	12/0
Operating	6/0	6/0	12/0
Overall	6/0	6/0	12/0

Haddam Neck training and operations staff reviewed the written examination and assisted in the validation of the operating examination during the week of August 5, 1996. The staff was very cooperative and helpful throughout the entire validation process and provided high quality comments and recommendations on the proposed examination. Their involvement helped to ensure the technical accuracy of the examination. All Haddam Neck personnel involved in the validation process signed security agreements to ensure that the proposed examinations were not compromised.

The operating examinations were conducted from August 19 through August 23, 1996. The operating examinations consisted of 2 simulator scenarios and 10 JPMs for the RO candidates; 2 simulator scenarios and 5 JPMs for the SROU candidates, and; 3 simulator scenarios and 10 JPMs for the SROI candidates. All JPMs were followed up with two system-related questions. All candidates were also examined concerning administrative requirements of the Haddam Neck facility. The written examinations were administered on August 24, 1996. The written examinations consisted of 100 multiple choice questions for both the SROs and ROs. The training department was provided a copy of the as-administered written examinations immediately after the examination administration, as an opportunity to provide comments for any validity issues with the examination questions. No formal comments, deletions, or corrections, however, resulted from this review.

Based on the grading of the written examination, the following questions were missed by more than half of the applicants, indicating a weakness in the general understanding of the subject.

RO14/SRO13	Expected HPSI pump discharge pressure during a design basis LOCA.
RO19/SRO23	Magnitude of RCS temperature change due to rod movement at BOL.
RO3	Effects of electrical breaker control during a loss of DC control power.
RO36	Deenergization of DC emergency lighting following a station blackout.
RO40	RCS leakage classifications.
RO80	Response of RCPs to a loss of a DC bus.
RO89	Incorporation of TPCs into NOPs.
SRO39	Basis for having 2 CW pumps in operation during a radioactive liquid release.
SRO49	Required TS actions following a loss of MCC 12.
SRO75	Shift Manager actions subsequent to a control room evacuation.
SRO89	Procedure for exiting a RCA in which alpha contamination is present.

Job performance measures were appropriately performed by all candidates during the walkthrough portion of the operating exam. All candidates appeared very knowledgeable of the purpose and location of plant equipment.

Simulator performance by the candidates was, for the most part, very good. Communications evaluations for all four crews ranged from acceptable to very good. The examiners noted that as time progressed through each scenario, communications between crew members became more direct, succinct, and to the point. One generic concern arose during the conduct of the simulator scenario portion of the examination. In this particular instance, two control rods remained stuck out following a reactor trip. In two instances, the RO candidates failed to bring this condition to the attention of the SRO. Followup discussion indicated that they were indeed aware of the condition, however did not feel that it was of such importance that the SRO needed to be interrupted and made aware of the situation. The examination team disagreed with this reasoning based on the fact that

instances may occur in which multiple rods may remain stuck out and may factor in subsequent decision making on the part of the SRO. The examiners stated that all crew members should always be aware of present plant conditions. Facility representatives acknowledged the examiner's concern and stated that this area would be revisited during the next training cycle.

c. Review of UFSAR commitments

A recent discovery of a licensee operating their facility in a manner contrary to the updated final safety ananlysis report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and /or parameters to the UFSAR descriptions. While performing the preexamination activities discussed in this report, the inspectors reviewed applicable portions of the UFSAR that related to the selected examination questions or topic areas. The particular areas looked at were Section 13.5, concerning plant procedures and Section 12.3, concerning radiation protection design features. No discrepancies were identified as a result of this review.

d. Conclusions

All of the twelve candidates were well prepared for both the written and operating that were administered. As a result, all 6 ROs and 6 SROs passed the examinations and were issued licenses. Crew communications were, for the most part, very good during the simulator portion of the examination. Licensed operator training personnel and operations personnel were extremely helpful in their efforts to ensure that the examination contents were valid and performance based. There were no post-written exam comments provided to the NRC by Haddam Neck training representatives. Also, the simulator scenarios progressed as expected during the examination week. Overall, this indicated that a thorough review was performed by both operations and training personnel during the preexam review week.

V. Management Meetings

XI Exit Meeting Summary

On August 23, 1996, the examiners discussed their observations from the examination with Haddam Neck management. The examiners discussed generic applicant performance, including the concern with operator control board awarness as detailed in paragraph 5.1.b above. The examiners also expressed their appreciation for the cooperation and assistance that was provided during both the preparation and examination week. Haddam Neck personnel present at the exit meeting included the following:

R. McBeth	Connecticut Yankee Assistant Training Supervisor
F. Nygard	Connecticut Yankee Senior Operator Instructor
J. Smith	Northeast Utilities Manager, Operator Training
J. Stanford	Connecticut Yankee Operations Manager

Attachments:
1. RO Written Examination w/Answer Key
2. SRO Written Examination w/Anwer Key

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 1

CANDIDATE'S NAME: _____

FACILITY: Haddam Neck

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 96/08/24

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%
100.00		% TO 3
	FINAL GRADE	

All work done on this examination is my own. I have neither given nor received aid.

_____
Candidate's Signature

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092 a b c d ___

093 a b c d ___

094 a b c d ___

095 a b c d ___

096 a b c d ___

097 a b c d ___

098 a b c d ___

099 a b c d ___

100 a b c d ___

(********** END OF EXAMINATION **********)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.

2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.

3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.

4. Use black ink or dark pencil ONLY to facilitate legible reproductions.

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.

6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

7. The point value for each question is indicated in parentheses after the question.

8. If the intent of a question is unclear, ask questions of the examiner only.

9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.

10. To pass the examination, you must achieve a grade of 80% or greater.

11. There is a time limit of four (4) hours for completion of the examination.

12. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

Which ONE (1) of the following methods is used to reset a Differential Fault on the Diesel Generator?

a. Press the EG Normal Stop Pushbuttons and ECP Alarm Reset.

b. Reset the 87X Lockout Relay on EG breaker cubicle and close the Exciter Field Breaker inside the excitation cabinet.

c. Take the EG breaker control switch on the Diesel Aux Board in the control room to the TRIP position and release to the AUTO position.

d. Take the diesel output breaker control switch on the excitation panel to the TRIP position and release to the AUTO position.

QUESTION: 002 (1.00)

A loss of all AC power has occurred, but the diesels are not running. An operator dispatched to investigate reports a START FAILURE alarm on all diesel control panels. The operator then depresses the normal shutdown pushbuttons and resets the engine control panel alarm. What effect does this have on the diesel?

a. Prevents diesel start for 11.5 minutes.

b. Causes another start attempt.

c. Prevents diesel start until the start failure lockout is reset.

d. Aligns the diesel for a manual start attempt.

QUESTION: 003 (1.00)

The plant is operating at 100% power when the secondary side control operator receives a MAIN TRANSFORMER ACCESSORIES ALARM. The auxiliary operator reports that no cooler group fans or pumps are running and none can be started. What action is required?

a. Reduce load as necessary to maintain transformer oil temperature less than 180 deg F.

b. Reduce load to 50% within two hours.

c. Restore transformer cooling within one hour or reduce load to 50% within the following hour.

d. Immediately commence a plant shutdown and, if winding limits are exceeded, trip the reactor and turbine.

QUESTION: 004 (1.00)

What effect does a loss of DC control power have on a 4 KV breaker?

a. Control room operation is lost, but breakers can be operated locally by manual spring charging and actuation of operating mechanisms.

b. Stored energy breakers can be operated from the control room; solenoid operated breakers can only be operated locally.

c. Stored energy breakers can be locally closed or opened; solenoid operated breakers can only be locally opened.

d. Stored energy breakers can be locally operated with previously charged operating springs; solenoid operated breakers require manual spring charging for local operation.

QUESTION: 005 (1.00)

Which of the following describes an interlock for operation of RCS loop isolation valves?

a. Loop T-cold may not be more than 20 deg F below any other loop T-cold in order to open that loop's cold leg isolation valve.

b. Loop T-cold must be within 32 deg F of all loops ave T-cold in order to open that loop's isolation valves.

c. The cold leg isolation valve cannot be opened in a loop with a running RCP unless the bypass valve is open as well.

d. Loop T-ave must be within 12 deg F of T-ave of the other loops to open that loop's isolation valves.

QUESTION: 006 (1.00)

Which of the following describes steam generator level response if the controlling level channel fails LOW?

a. Level increases until overfill protection is actuated at 74%, resulting in reactor trip.

b. Level initially increases, then stabilizes above program.

c. Level will continue to control at the same setpoint value since SGWLC will automatically select an alternate level channel.

d. Level will control 5% below setpoint at the level deviation setpoint.

QUESTION: 007 (1.00)

What effect does a loss of Semi-Vital 120 VAC have on the performance of FR-H.1?

a. Loss of semi-vital power may CAUSE entry into FR-H.1 by creating a common mode failure to start of all auxiliary feed pumps.

b. Initiation of feed and bleed cooling may be hampered because one pressurizer PORV would be inoperable.

c. Mitigation may be hampered because two main feed regulating valves fail shut.

d. Initiation of feed and bleed cooling would be prevented because BOTH PORVs are inoperable.

QUESTION: 008 (1.00)

Which of the following is a backup source for containment spray?

a. Service water

b. Fire water

c. Demineralized water

d. Primary makeup water

QUESTION: 009 (1.00)

What interlock protects the RHR system from overpressurization?

a. RHR cannot be placed in service unless LTOP is armed.

b. RHR isolation valves cannot be opened if RCS pressure is over 400 psig.

c. RHR suction valve will not open if loop 1 or 2 T-hot is over 325 deg F.

d. RHR isolation valves auto close if pressure exceeds 380 psig.

QUESTION: 010 (1.00)

What is the allowable deviation of pressurizer level from program, and how soon must level be restored to within this tolerance following a transient or power maneuver?

a. +/- 5%; 1 hour

b. +/- 2%; 2 hours

c. +/- 5%; 2 hours

d. +/- 2%; 1 hour

QUESTION: 011 (1.00)

The plant is operating at 100% when the following occurs:
- LD-TCV-113A shifts to the VCT position.
- LD-TCV-113B automatically closes isolating fow to R20.

Which ONE (1) of the following events would initiate these actions?

a. VCT level reached 87%.

b. Excessive letdown flow through the demineralizers.

c. CCW temperature control valve (CC-TCV-112) for the NRHX failed closed.

d. Letdown pressure at the demineralizers exceeded 200 psig.

QUESTION: 012 (1.00)

What is the purpose of the RCP #1 seal bypass valve?

a. Ensures adequate flow to #2 & #3 RCP seals when #1 seal leakoff is low.

b. Provides additional cooling flow for the lower bearing under certain conditions.

c. Allows meeting minimum leakoff flow criteria for pump starts at low RCS pressure.

d. Diverts hot water flowing past thermal barrier to VCT if seal injection is lost.

QUESTION: 013 (1.00)

A design basis LOCA has occurred and SI has initiated. As the RWST pumps down, an auxiliary operator is dispatched to verify normal operation of the HPSI pumps. What should the operator observe for HPSI pump discharge pressure?

a. 1300 - 1450 psig.

b. 800 - 1000 psig.

c. 230 - 320 psig

d. 40 - 60 psig.

QUESTION: 014 (1.00)

The following conditions exist:

- Pressurizer pressure channel 1 is out of service for maintenance and has been placed in the tripped condition.
- The reactor operator notices that pressurizer pressure channel 2 is drifting downward approximately 15 psig every hour.
- All other pressurizer pressure and RCS loop pressures are stable and at normal values.

Based upon the above, what action is required?

a. Place channel 2 in the tripped condition.

b. Manually trip the reactor.

c. Reduce power level until the VLPT reaches its minimum level.

d. Within one hour, initiate action to place the plant in hot standby within the next 6 hours.

QUESTION: 015 (1.00)

What action is taken in ECA-0.0 to minimize RCS inventory loss if AC power cannot be restored for an extended time?

a. Provide alternate fire water cooling to RCP seals.

b. Depressurize RCS through PORVs to minimize inventory loss through RCP seals.

c. Use N2 pressure to inject BASTs

d. Depressurize the SGs to cooldown & depressurize the RCS.

QUESTION: 016 (1.00)

A turbine trip has occurred from 100% power. The reactor has failed to trip. A pressurizer safety appears to have failed open. A station blackout occurs, and the terry turbine aux feed pump trips.

What procedure should be implemented?

a. FR-S.1

b. FR-H.1

c. ECA-0.0

d. ECA-0.2

QUESTION: 017 (1.00)

The crew is performing ECA-0.0. Diesels and offsite power will not be available for at least an hour. Which of the following loads is NOT placed in TPO?

a. CCW Pumps

b. SW Pumps

c. Electric AFW Pumps

d. Charging Pumps

QUESTION: 018 (1.00)

In which of the following circumstances would FR-H.1 NOT be performed to completion?

a. SI initiates during performance of the procedure.

b. The FR-H.1 red path occurs during response to a large break LOCA.

c. The FR-H.1 red path occurs during response to a steamline break with failure of the MSIVs to close.

d. The FR-H.1 red path occurs after initiation of FR-P.1 due to a thermal shock red path.

QUESTION: 019 (1.00)

The main steam header pressure transmitter PT-1203 has failed low during a reactor trip/turbine trip from 100% power. How will tha HPSD system pressure control valves respond during the trip?

a. PCVs will remain closed following the trip.

b. PCVs will open and remain full open following the trip.

c. PCVs will fully open and remain open once Tave is greater than 545 degress F.

d. PCVs will fully open when Tave is greater than 545 degrees F, then ramp close as temperature decreases from 544 degrees F to full close at 535 degrees F.

QUESTION: 020 (1.00)

Which of the following describes the difference in operation of the pressure control valves versus the temperature control valves in the high pressure steam dump system?

a. The temperature control valves trip open sequentially as temperature error increases; the pressure control valves modulate.

b. The pressure controller signal is disabled until Tave decreases below 535 degrees F following a reactor trip.

c. The pressure control valves respond to the auctioneered high signal from either the pressure or temperature controllers.

d. All valves respond to the pressure controller; only the temperature control valves respond to the temperature controller.

QUESTION: 021 (1.00)

What is the difference between the high pressure and low pressure steam dump systems?

a. The high pressure steam dump system controls plant temperature and pressure following a trip; the low pressure steam dump system is used for cooldown.

b. The high pressure steam dump system is used for pressure and temperature control; the low pressure steam dump is a turbine overspeed protection system.

c. The low pressure steam dump system backs up the high pressure steam dump system by dumping steam from the high pressure turbine exhaust.

d. The low pressure steam dump system operates below 20% power as indicated by turbine first stage pressure; the high pressure system operates above 20%.

QUESTION: 022 (1.00)

The plant is operating at 100% power. A loss of both generator air side seal oil pumps occurs. What provides seal oil under these conditions?

a. Main oil pump.

b. Standby seal oil pump auto starts.

c. DC oil pump.

d. Turning gear oil pump after required turbine trip.

QUESTION: 023 (1.00)

Tave is 535 degrees F at beginning of life conditions. Which ONE (1) of the following actions will force Tave to increase to 536 degrees F?

a. Move Bank B control rods from about 280 steps to about 283 steps.

b. Move Bank B control rods from about 283 steps to about 280 steps.

c. Move Bank B control rods from about 310 steps to about 313 steps.

d. Move Bank B control rods from about 313 steps to about 310 steps.

QUESTION: 024 (1.00)

In which of the following circumstances would RCPs be run without meeting normal start criteria?

a. Initial start when filling and venting RCS after a refueling outage.

b. CETs greater than 1200 deg F in FR-C.1.

c. Recovery from feed and bleed cooling in FR-H.1.

d. RCS depressurization in E-3.

QUESTION: 025 (1.00)

Why are steam generators depressurized in FR-C.1?

a. To depressurize the RCS and facilitate injection with available pumps.

b. To cooldown the RCS to protect RCP seals.

c. To maximize feed flow and natural circulation.

d. To prevent additional loss of inventory from lifting a pressurizer PORV or safety

QUESTION: 026 (1.00)

After the completion of the first 4 steps of E-0, when must the RCPs be tripped in the event of a loss of all component cooling pumps?

a. Immediately

b. When bearing temperatures exceed 180 deg F.

c. Within 5 minutes.

d. If minimum seal injection flow cannot be maintained.

QUESTION: 027 (1.00)

The plant is operating at 90% power. You observe generator load, Tave, and steam pressure decrease slightly while nuclear power increases. Which of the following could cause these indications?

a. Lowering condenser vacuum.

b. One HPSD valve failing open.

c. Loss of a feedwater heater string.

d. Turbine control valve drifting shut.

QUESTION: 028 (1.00)

The following conditions exist:

- The plant has tripped from 100% power.
- SI has initiated and the crew has transitioned from E-0 to E-1.
- CETs indicate 700 degrees F
- All aux feed pumps have tripped.
- No main feedwater pumps are available.
- Containment area rad monitors are alarming.
- SG levels are < 7% NR

Based upon the above, which ONE (1) of the following procedures should be performed?

a. FR-C.1

b. FR-C.2

c. FR-H.1

d. FR-Z.1

QUESTION: 029 (1.00)

The aux feed system provides high discharge header temperature alarms. What is the significance of such an alarm?

a. It indicates a pump being run for an excessive time against shutoff head.

b. It indicates terry turbine shaft seal leakage into the pump.

c. It indicates check valve backleakage and possible pump vapor binding.

d. It indicates inadequate pump cooling flow.

QUESTION: 030 (1.00)

The plant is operating at 75% with rods in AUTO during a load ascension. A continuous rod withdrawal initiates. Which of the following describes how this will affect the variable lower pressure trip (VLPT) setpoint?

a. The setpoint will decrease because of RCS pressure increases.

b. The setpoint increases because RCS pressure decreases after pressurizer spray initiates.

c. The setpoint increases because Tave increases.

d. The setpoint increases because of shifts in QPTR and AFD.

QUESTION: 031 (1.00)

A reactor trip has occurred from 100%. The turbine has not tripped either automatically or manually. What is the next required action?

a. Trip the turbine locally.

b. Shut the main steam trip valves.

c. Manual runback.

d. Manual safety injection.

QUESTION: 032 (1.00)

The plant was operating at 100% when a reactor trip and safety injection occurred. The following conditions exist:

- SI on low pressurizer pressure.
- Pressurizer level initially went to zero, then came back on scale and rapidly climbed to 100%
- RCS pressure is 1100 psig and slowly decreasing.
- Containment radiation channels are alarming.

Which of the following would cause these indications?

a. Small cold leg LOCA.

b. Pressurizer PORV failed open.

c. Small hot leg LOCA.

d. Steamline break.

QUESTION: 033 (1.00)

A LOCA has occurred and SI has actuated. During the performance of E-1, The crew transitions to FR-Z.1 "Response to High Containment Pressure" due to an orange path condition. During the performance of FR-Z.1, a red path condition for core cooling is recognized and a valid "RWST at switchover LVL" alarm annunciates. Which of the following is the required sequence of actions?

a. Complete FR-Z.1, then FR-C.1, then ES-1.3.

b. Stop FR-Z.1, perform FR-C.1, then ES-1.3, then complete FR-Z.1.

c. Stop FR-Z.1, perform ES-1.3, complete FR-Z.1, then perform FR-C.1.

d. Stop FR-Z.1, perform ES-1.3, then FR-C.1, then complete FR-Z.1

QUESTION: 034 (1.00)

The plant is at 85% power. The RO notices that the rods are driving in, and that RCS temperature has ramped down from 552 degrees F to 535°F and that steam header pressure is decreasing. What is the most probable cause for this transient?

a. Pressurizer pressure increasing.

b. T-hot failed high.

c. First stage pressure failed low.

d. NI channel failed high.

QUESTION: 035 (1.00)

A RCP can be operated without seal injection water during abnormal conditions provided:

a. The pressure differential across the labyrinth seal exceeds 60 inches water.

b. RCP seal leakage is 7 gpm or less.

c. Component cooling flow through the thermal barrier is greater than 15 gpm.

d. RCS temperature is less than 150 degrees F.

QUESTION: 036 (1.00)

Which of the following statements best describes the operation of the demineralizer bypass valve, LD-TCV-113A?

a. Normally bypass the demineralizers when letdown temperature is less than 140 degrees F.

b. Auto control of the valve is provided from TC-111 (letdown temperature out of the regenerative heat exchanger).

c. On a loss of containment air, the valve fails to the demineralizer position.

d. Valve repositions to the VCT when letdown temperature increases to 140 degrees F.

QUESTION: 037 (1.00)

Why are there baskets full of tri-sodium phosphate located adjacent to the containment sump?

a. Decrease pH of sump water to prevent boric acid induced corrosion damage to carbon steel components in containment after a LOCA.

b. Decrease pH of sump water to minimize corrosion induced H2 generation in containment post accident conditions.

c. Increase pH of sump water to minimize fouling of containment spray nozzles and RHR heat exchanger heat transfer surfaces, which will be unaccessible for maintenance following a LOCA.

d. Increase pH to minimize the possibility of corrosion cracking in certain metal components following a LOCA.

QUESTION: 038 (1.00)

When pumping down the containment sump, where is the sump liquid pumped to?

a. Aerated drains tanks.

b. Primary drains tank.

c. Volume control tank.

d. Waste test tank.

QUESTION: 039 (1.00)

A minimum of two circulating water (CW) pumps are required to be in operation during a radioactive liquid release. Which ONE (1) of the following is the basis for having a minimum of two CW pumps?

a. Keep the discharge canal flooded.

b. Prevent backflowing liquid radwaste into the main condensor.

c. Provide nomial dilution flow due to boron concentration considerations.

d. Provide additional dilution flow in the event that the liquid discharge orifice passes more than the design flow.

QUESTION: 040 (1.00)

A waste liquid release is in progress. The release is automatically terminated by an R-22 alarm. Upon investigation, the alarm is determined to be due to an instrument failure. In accordance with technical specifications, under what conditions can the release be continued?

a. Only if the channel is repaired.

b. The release can be immediately reinitiated as long as the service water rad monitor is still operable.

c. The release can be reinitiated provided that another sample is taken and verified to be within release limits AND concurrence is obtained from the Operations Manager.

d. The release can be reinitiated provided that two independent samples are analyzed, and both the release calculations and discharge lineup are independently verified.

QUESTION: 041 (1.00)

An unrecoverable loss of control air is in progress. Which of the following components must be tripped or closed by the operators to prevent damage to that component?

a. Terry Turbines.

b. Main Steam Trip and Bypass Valves.

c. Main Turbine.

d. Reactor Coolant Pumps.

QUESTION: 042 (1.00)

A plant trip has resulted from a loss of control air. Which of the following is a method for controlling plant temperature?

a. Through nitrogen backup to the atmospheric relief for each SG.

b. Through nitrogen backup to a common atmospheric dump for all SGs.

c. Through rolling the main turbine with steam supplied through MS trip valve bypass valves.

d. Through secondary feed with AFW pumps and bleed through blowdown.

QUESTION: 043 (1.00)

When do you trip the reactor during a loss of control air?

a. 90 psig decreasing

b. 80 psig decreasing

c. 65 psig decreasing

d. 50 psig decreasing

QUESTION: 044 (1.00)

What action must be taken with regard to level control in a ruptured SG?

a. Isolate all feed flow to a ruptured SG as soon as it is identified.

b. Feed the ruptured SG to 7%, then isolate all feed.

c. Isolate all feed flow to the rupture SG as soon as it is identified UNLESS it is the only available heat sink.

d. Attempt to control ruptured SG level at the no-load program setpoint

QUESTION: 045 (1.00)

Following a station blackout, how long does the operator have to deenergize emergency lighting?

a. Within 1 hour.

b. Within 1 1/2 hours.

c. Within 2 hours.

d. Within 2 1/2 hours.

QUESTION: 046 (1.00)

Which of the following is not a means of reducing RCS presssure in E-3?

a. Normal spray.

b. Aux spray.

c. Pressurizer PORVs.

d. Secure heaters and reduce pressurizer level.

QUESTION: 047 (1.00)

The plant is at 100% power with all systems in AUTO. What is your first action in response to a continuous rod insertion?

a. Place rods in manual and withdraw to their original position.

b. Verify no T-ave/T-ref deviation.

c. Place rods in manual, adjust turbine load to match Tave & Tref.

d. Place rods in manual, trip the reactor if motion continues.

QUESTION: 048 (1.00)

The plant is operating at 80% power. A rod drop occurs. How is plant temperature stabilized?

a. Allow automatic rod withdrawal to compensate for the insertion.

b. Dilute.

c. Manually reduce turbine load.

d. Manually withdraw rods OR reduce load at SCO's discretion.

QUESTION: 049 (1.00)

The plant is at 100%. A loss of MCC 12 has occurred. What technical specification will require action within one hour?

a. T.S. 3.4.4 RELIEF VALVES.

b. T.S. 3.5.1 ECCS SUBSYSTEMS

c. T.S. 3.6.2 CONTAINMENT AIR RECIRC SYSTEM

d. T.S. 3.8.3 ONSITE POWER DISTRIBUTION

QUESTION: 050 (1.00)

Leakage past the reactor vessel flange O-rings is detected. How would this leakage be classified?

a. Pressure boundary leakage.

b. Identified leakage.

c. Uncontrolled leakage.

d. Unidentifed leakage.

QUESTION: 051 (1.00)

Which of the following are the parameters on the Safety Limit curve?

a. Outlet temperature, RCS pressure, % power.

b. RCS pressure, inlet temperature, RCS flow.

c. % power, inlet temperature, RCS flow.

d. RCS pressure, inlet temperature, % power.

QUESTION: 052 (1.00)

Why is the maximum operating limit for RCS pressure reduced as temperature is decreased?

a. At low RCS temperature, RHR is placed in service - RHR design pressure is lower than RCS design pressure.

b. At low RCS temperature, the RCS can fail at substantially lower pressure than it would fail at normal operating temperature.

c. At low RCS temperature, pressure transients are faster due to the ineffectiveness or unavailability of pressurizer spray.

d. At low RCS temperature, differential expansion may bind pressurizer safeties, reducing maximum relief capacity.

QUESTION: 053 (1.00)

Why must the normal charging path be isolated to establish aux spray?

a. To prevent runout of the inservice charging pump.

b. To prevent excessive diversion of seal injection flow.

c. To ensure flow goes to the pressurizer rather than the loops.

d. To prevent steam blowback into the loops.

QUESTION: 054 (1.00)

There is a fire in the control room. PORVs have started to cycle spuriously. What action is required?

a. Shut the block valves.

b. Reduce RCS pressure to try to keep the PORVs shut.

c. Place the SB-1 switches for the PORVs in the CLOSE position.

d. Initiate safety injection.

QUESTION: 055 (1.00)

How is shutdown margin verified to be within limits with the plant at 100% power?

a. Perform a shutdown margin calculation per the Technical Requirements Manual.

b. Verify shutdown banks are fully withdrawn.

c. Verify all control rods are above insertion limits.

d. Verify boron concentration is sufficient to ensure 2000 pcm SDM in the event of a trip which places the plant in the HZP ARI condition.

QUESTION: 056 (1.00)

What is the purpose of the pressure compensation input to rod control?

a. This turbine first stage pressure signal is used in conjunction with flux compensation to generate a rate of power mismatch input for rod speed and direction calculation.

b. This pressurizer pressure compensation signal provides an anticipatory temperature input since plant pressure responds faster than loop RTDs.

c. This direct input from turbine first stage pressure to rod control provides an anticipatory temperature input by bypassing the signal processing delay associated with T-ref calculation.

d. This pressurizer pressure compensation allows fine tuning of the nuclear flux input to adjust for fluctuations due to variations in void fraction due to nucleate boiling.

QUESTION: 057 (1.00)

When can fuel offload commence in a refueling outage?

a. When decay heat level is less than 0.1% of rated thermal power.

b. 100 hours after shutdown.

c. When RCS temperature is less than 140 deg F and refueling cavity clarity meets turbidity limits.

d. At time specified by reactor engineering.

QUESTION: 058 (1.00)

The plant has been shutdown for one week and is at is at mid-loop for maintenance. Two steam generators are drained for inspection; the other two are at normal shutdown level. A loss of RHR occurs. How long until core uncovery?

a. Less than 1 hour.

b. Approximately 8 hours.

c. Approximately 16 hours.

d. More than 24 hours.

QUESTION: 059 (1.00)

What is the reason for checking RCS pressure when initiating emergency boration in FR-S.1?

a. To ensure PORVS/Safeties are maintaining RCS pressure within limits.

b. To determine if action is necessary to ensure pressure is low enough for charging to inject boron.

c. To check for conditions requiring charging pump trip.

d. To determine if RCS depressurization is required to use SI as an alternate injection path.

QUESTION: 060 (1.00)

Which of the following lists 3 of the inputs to rod control?

a. Tave, Tref, Delta-T.

b. Power range deviation drawer rate signal, Tave, Tref.

c. Rate of change of difference between NI power and Turbine power, Tave, Tref.

d. T-ave, T-ref, generator load.

QUESTION: 061 (1.00)

During RCS draindown to midloop, indications of an air bound in-service RHR pump are observed. What action is required?

a. STOP the running pump and START the standby pump.

b. STOP the running pump.

c. Commence raising level; maintain the RHR pump in service for core cooling.

d. Halt draindown, reduce RHR flow until cavitation indications clear.

QUESTION: 062 (1.00)

What parameter determines Rod Insertion Limits?

a. Mega-watts thermal power

b. PRNI nuclear power

c. Turbine first stage pressure

d. Tave

QUESTION: 063 (1.00)

When must the plant be tripped in response to a loss of condenser vacuum?

a. If decreasing condenser vacuum cannot be stabilized with a second set of air ejectors.

b. Less than 21.5 in Hg vacuum.

c. If decreasing vacuum is due to a clogged waterbox tubesheet.

d. When decreasing vacuum has blocked steam dump actuation.

QUESTION: 064 (1.00)

Post-LOCA, CD 1/2 and one other radiation monitor can be used to determine if severe fuel damage has occurred. The other monitor is:

a. R-[illegible], Containment Manipulator Crane

b. R-32, Containment Charging Floor

c. R-37, Containment Hatch

d. R-14A, Stack Monitor

QUESTION: 065 (1.00)

Which of the following radiation monitoring channels are isolated by an HCP signal?

a. R11, R12

b. R15, R16A & B

c. CD-1 & 2, R-32

d. R-14A, R-31

TEST CROSS REFERENCE
S R O E x a m P W R R e a c t o r
O r g a n i z e d b y K A G r o u p

PLANT WIDE GENERICS

QUESTION	VALUE	KA
088	1.00	194001A101
100	1.00	194001A102
098	1.00	194001A103
086	1.00	194001A109
097	1.00	194001A111
094	1.00	194001A116
085	1.00	194001A116
093	1.00	194001K102
096	1.00	194001K103
089	1.00	194001K104
090	1.00	194001K105
099	1.00	194001K106
087	1.00	194001K107
092	1.00	194001K108
091	1.00	194001K114
095	1.00	194001K115
PWG Total	16.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
056	1.00	001000A104
060	1.00	001000K104
055	1.00	001000K504
062	1.00	001000K504
034	1.00	001000K565
047	1.00	001050G001
035	1.00	003000A107
012	1.00	003000A109
053	1.00	004000K117
036	1.00	004000K404
011	1.00	004010A401
079	1.00	013000A302
070	1.00	014000A203
069	1.00	015000K103
066	1.00	017020A101
037	1.00	026000G004
008	1.00	026000K401
078	1.00	059000K402
083	1.00	061000A202
029	1.00	061000A206
082	1.00	061000K111

TEST CROSS REFERENCE

SRO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
050	1.00	9000244
051	1.00	9000245
052	1.00	9000247
053	1.00	9000248
054	1.00	9000249
055	1.00	9000250
056	1.00	9000251
057	1.00	9000252
058	1.00	9000253
059	1.00	9000254
060	1.00	9000255
061	1.00	9000256
062	1.00	9000257
063	1.00	9000258
064	1.00	9000259
065	1.00	9000260
066	1.00	9000261
067	1.00	9000263
068	1.00	9000264
069	1.00	9000266
070	1.00	9000267
071	1.00	9000268
072	1.00	9000269
073	1.00	9000270
074	1.00	9000272
075	1.00	9000273
076	1.00	9000274
077	1.00	9000275
078	1.00	9000276
079	1.00	9000277
080	1.00	9000278
081	1.00	9000279
082	1.00	9000280
083	1.00	9000281
084	1.00	9000296
085	1.00	9000297
086	1.00	9000298
087	1.00	9000299
088	1.00	9000300
089	1.00	9000302
090	1.00	9000303
091	1.00	9000304
092	1.00	9000305
093	1.00	9000306
094	1.00	9000308
095	1.00	9000310
096	1.00	9000312
097	1.00	9000313
098	1.00	9000314

TEST CROSS REFERENCE

S R O E x a m P W R R e a c t o r

O r g a n i z e d b y Q u e s t i o n N u m b e r

QUESTION	VALUE	REFERENCE
001	1.00	9000192
002	1.00	9000193
003	1.00	9000194
004	1.00	9000195
005	1.00	9000196
006	1.00	9000197
007	1.00	9000199
008	1.00	9000200
009	1.00	9000201
010	1.00	9000202
011	1.00	9000204
012	1.00	9000205
013	1.00	9000206
014	1.00	9000207
015	1.00	9000208
016	1.00	9000209
017	1.00	9000210
018	1.00	9000211
019	1.00	9000212
020	1.00	9000213
021	1.00	9000214
022	1.00	9000215
023	1.00	9000216
024	1.00	9000217
025	1.00	9000218
026	1.00	9000219
027	1.00	9000220
028	1.00	9000221
029	1.00	9000222
030	1.00	9000223
031	1.00	9000224
032	1.00	9000225
033	1.00	9000226
034	1.00	9000227
035	1.00	9000228
036	1.00	9000229
037	1.00	9000230
038	1.00	9000231
039	1.00	9000232
040	1.00	9000233
041	1.00	9000234
042	1.00	9000235
043	1.00	9000236
044	1.00	9000238
045	1.00	9000239
046	1.00	9000240
047	1.00	9000241
048	1.00	9000242
049	1.00	9000243

ANSWER KEY

092 d

093 d

094 c

095 c

096 a

097 b

098 c

099 b

100 b

(********** END OF EXAMINATION **********)

A N S W E R K E Y

046	d	069	c
047	b	070	b
048	c	071	b
049	a	072	d
050	b	073	d
051	d	074	a
052	b	075	c
053	c	076	b
054	c	077	c
055	c	078	c
056	b	079	d
057	b	080	d
058	b	081	a
059	b	082	c
060	b	083	a
061	b	084	b
062	a	085	c
063	b	086	c
064	c	087	b
065	a	088	d
066	a	089	d
067	b	090	b
068	b	091	b

ANSWER KEY

MULTIPLE CHOICE

001	b
002	b
003	d
004	c
005	a
006	c
007	b
008	b
009	b
010	a
011	c
012	b
013	b
014	d
015	d
016	c
017	b
018	b
019	d
020	c
021	b
022	a
023	a
024	b
025	a
026	a
027	b
028	c
029	c
030	c
031	b
032	b
033	d
034	c
035	d
036	d
037	d
038	a
039	c
040	d
041	d
042	b
043	d
044	b
045	a

ANSWER: 099 (1.00)

b.

REFERENCE:

NOP2.4-2 Reactor Coolant Pump Operation, pg. 3

[3.4/3.4]

194001K106 ..(KA's)

ANSWER: 100 (1.00)

b.

REFERENCE:

ACP 1.2-6.13 Emergency Response Procedures Generation Guidelines, pg. 22
ACP 1.2-6.15 pg.8

[4.1/3.9]

194001A102 ..(KA's)

(********** END OF EXAMINATION **********)

REFERENCE:

CY-OP-LO-ADMIN-LS L83000

[2.8/3.4]

194001K103 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

ODI #1 pg., 12

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 098 (1.00)

c.

REFERENCE:

ODI #157 pg., 1

[2.5/3.4]

194001A103 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

CY-OP-LO-ADMIN-L83000

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 095 (1.00)

c.

REFERENCE:

93 HN exam

[3.8/3.8]

194001K115 ..(KA's)

ANSWER: 096 (1.00)

a.

ANSWER: 091 (1.00)

b.

REFERENCE:

WCM 2.4-4, Att 11

[3.3/3.6]

194001K114 ..(KA's)

ANSWER: 092 (1.00)

d.

REFERENCE:

WCM 2.4-8

[3.5/3.4]

194001K108 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

WCM2.4-1, Equipment Tagging, pg. 12

[3.7/4.1]

194001K102 ..(KA's)

REFERENCE:

ACP 1.2-6.4, pg. 9

[3.3/3.4]

194001A101 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

RPM 2.7-2, Personnel Monitoring, pg.1

[3.3/3.5]

194001K104 ..(KA's)

ANSWER: 090 (1.00)

b.

REFERENCE:

WCM 2.4-7, Containment Access, Att. 1, pg. 12.
1994 NRC Exam

[3.1/3.4]

194001K105 ..(KA's)

REFERENCE:

ADM 1.1-158, pg. 7,8,9

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 086 (1.00)

c.

REFERENCE:

ADM 1.1-60 pg. 2

[2.7/3.9]

194001A109 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

HN question bank ID 19130

[3.6/3.7]

194001K107 ..(KA's)

ANSWER: 088 (1.00)

d.

ANSWER: 083 (1.00)

a.

REFERENCE:

PIB CH 21

[3.2/3.6]

061000A202 ..(KA's)

ANSWER: 084 (1.00)

b.

REFERENCE:

AOP 3.2-10

[2.9/3.5]

000026A201 ..(KA's)

ANSWER: 085 (1.00)

c.

REFERENCE:

PIB ch 67

[4.0/4.3]

000057A219 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

PIB ch 21

[3.9/4.2]

061000K401 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

PIB ch 21

[2.7/2.8]

061000K111 ..(KA's)

ANSWER: 078 (1.00)

c.

REFERENCE:

PIB ch 19

[3.3/3.5]

059000K402 ..(KA's)

ANSWER: 079 (1.00)

d.

REFERENCE:

PIB ch 5

[4.1/4.2]

013000A302 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:

AOP 3.2-50

[4.2/4.5]

000068K318 ..(KA's)

ANSWER: 076 (1.00)

b.

REFERENCE:

AOP 3.2-50

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:

bank q72

[4.0/4.2]

000068A203 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

ES-0.1

[3.5/4.4]

000005A203 ..(KA's)

ANSWER: 074 (1.00)

a.

REFERENCE:

PIB 2.6

[3.4/3.8]

000028A202 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

AOP 3.2-23

[3.6/4.1]

014000A203 ..(KA's)

ANSWER: 071 (1.00)

b.

REFERENCE:

TS 3.3.2

[3.7/4.1]

000015K102 ..(KA's)

ANSWER: 072 (1.00)

d.

REFERENCE:

AOP 3.2-17, fac Q98

[3.5/3.6]

000015G011 ..(KA's)

ANSWER: 068 (1.00)

b.

REFERENCE:

FR-S.1 background.

[4.2/4.3]

000029K306 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

facility bank question 3

[3.1/3.1]

015000K103 ..(KA's)

ANSWER: 070 (1.00)

b.

REFERENCE:

PIB ch 82

[3.3/3.6]

072000K401 ..(KA's)

ANSWER: 066 (1.00)

a.

REFERENCE:

status trees

[3.7/3.9]

017020A101 ..(KA's)

ANSWER: 067 (1.00)

b.

REFERENCE:

CAF

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 063 (1.00)

b.

REFERENCE:

AOP 3.2-33

[3.9/4.1]

000051A202 ..(KA's)

ANSWER: 064 (1.00)

c.

REFERENCE:

LP REF:L08200

[3.4/3.6]

072000A101 ..(KA's)

ANSWER: 065 (1.00)

a.

REFERENCE:

PIB ch 80.

[3.2/3.4]

001000K104 ..(KA's)

ANSWER: 061 (1.00)

b.

REFERENCE:

AOP 3.2-12 pg. 2,6
NOP2.4-10, pg. 12

[3.4/3.7]

000025A207 ..(KA's)

ANSWER: 062 (1.00)

a.

REFERENCE:

Figure 8.1, TRSCO

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 058 (1.00)

b.

REFERENCE:

NOP 2.4-10 Att 5. PROVIDE ATT 1-7 AS REFERENCE

[3.4/3.6]

000025G007 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

Background for FR-S.1

[4.2/4.4]

000024K302 ..(KA's)

ANSWER: 060 (1.00)

b.

REFERENCE:

TS 3.1.1.1

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

PIB ch 80 pg 27

[3.7/3.9]

001000A104 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

refueling TS

[2.6/3.5]

034000G006 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

CAF

[3.4/3.4]

004000K117 ..(KA's)

ANSWER: 054 (1.00)

c.

REFERENCE:

AOP 3.2-57

[3.3/3.7]

000067G010 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

TS 3.4.6.2

[3.6/4.1]

002020G005 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

TS 2.0

[3.6/4.1]

002020G005 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

PIB 2.4 pg 7

[3.3/3.6]

002000K518 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

AOP 3.2-23

[3.2/3.7]

000003K101 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

TS - 1 hour for porv block valve

[3.3/3.7]

000057G003 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

LP REF: L3201 ECA-0.0

[3.5/3.9]

000055A104 ..(KA's)

ANSWER: 046 (1.00)

d.

REFERENCE:

E-3

[4.3/4.1]

000038A104 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

AOP 3.2-23

[3.7/3.8]

001050G001 ..(KA's)

ANSWER: 043 (1.00)

d.

REFERENCE:

EOP 3.1-34

[3.6/4.2]

000065A206 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

E-3

[4.1/4.7]

000038A201 ..(KA's)

ANSWER: 045 (1.00)

a.

REFERENCE:

T.S. 3.3.3.7 Table 3.3.3.9 Action #46

[2.7/3.1]

068001G001 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

EOP 3.1-34

[2.9/3.4]

000065K303 ..(KA's)

ANSWER: 042 (1.00)

b.

REFERENCE:

MS sys desc, EOP 3.1-34

[2.9/3.1]

000065G007 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

PIB ch 12

[2.7/2.9]

068000K107 ..(KA's)

ANSWER: 039 (1.00)

c.

REFERENCE:

CY-OP-LO-ADMIN-L89990 EO 1c

[3.8/3.9]

068000A403 ..(KA's)

ANSWER: 040 (1.00)

d.

REFERENCE:

LP-CY-OP-LO-PRISYS-L00220, Reactor Coolant Pump, page 22: EO-6

[3.4/3.4]

003000A107 ..(KA's)

ANSWER: 036 (1.00)

d.

REFERENCE:

LP-CVC-01-C, Chemical and Volume Control System, page 16: EO-3

[3.2/3.1]

004000K404 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

PIB ch 5 pg 21
TS basis B 3/4 5.4 pg. 5-2 and UFSAR pg. 6.1-2

[3.2/3.4]

026000G004 ..(KA's)

ANSWER: 033 (1.00)

d.

REFERENCE:

ERG users guide

[4.2/4.2]

000011A111 ..(KA's)

ANSWER: 034 (1.00)

c.

REFERENCE:

LP-ROD-010C, Rod Control System, pages 35-37; EO-11
NOP2.2-1 85% 552 degrees Tave att 6

[3.2/3.6]

001000K565 ..(KA's)

ANSWER: 035 (1.00)

d.

ANSWER: 030 (1.00)

c.

REFERENCE:

ANSWER: 031 (1.00)

b.

REFERENCE:

E-0

[2.8/2.9]

045000G014 ..(KA's)

ANSWER: 032 (1.00)

b.

REFERENCE:

[4.1/4.2]

010000A203 ..(KA's)

REFERENCE:

[3.3/3.6]

039000A205 ..(KA's)

ANSWER: 028 (1.00)

c.

REFERENCE:

EOP rules of usage

[3.2/3.2]

000054G012 ..(KA's)

ANSWER: 029 (1.00)

c.

REFERENCE:

PIB ch 21

[2.7/3.0]

061000A206 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

ERG background

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 026 (1.00)

a.

REFERENCE:

AOI

[3.6/3.5]

000026G010 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

PIB ch 23/26

[2.5/2.6]

045050G004 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

HN exam bank QIDL 16087

[3.4/3.8]

000024K101 ..(KA's)

ANSWER: 024 (1.00)

b.

REFERENCE:

FR-C.1

[4.0/4.4]

000074K311 ..(KA's)

REFERENCE:

PIB ch 17

[3.7/3.9]

041020K417 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

PIB ch 25

[2.8/2.9]

041020G004 ..(KA's)

ANSWER: 022 (1.00)

a.

REFERENCE:

FR-H.1 step 1

[4.4/4.6]

000054K304 ..(KA's)

ANSWER: 019 (1.00)

d.

REFERENCE:

LP REF: SECSYS LO1700
PROC REF: ANN 4.4-1

[2.7/2.9]

041020K603 ..(KA's)

ANSWER: 020 (1.00)

c.

ANSWER: 016 (1.00)

c.

REFERENCE:

EOP rules of usage, ECA-0.0

[3.9/4.0]

000055G012 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

ECA-0.0

[4.3/4.6]

000055K302 ..(KA's)

ANSWER: 018 (1.00)

b.

REFERENCE:

PIB ch 5 pg 142 (pump curve, total flow limited to 2000 gpm/Pp by injection line throttle valves)

[2.6/2.9]

006000K613 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

None provided by the facility.

[2.9/4.1]

012000G006 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

ECA-0.0

[4.4/4.7]

000056K302 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

LP L00400

[3.6/3.1]

004010A401 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

PIB ch 2.2 pg 32

[2.8/2.8]

003000A109 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

[4.2/4.3]

026000K401 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

PIB ch 6 pg 15

[3.2/3.5]

005000K407 ..(KA's)

ANSWER: 010 (1.00)

a.

REFERENCE:

T.S. 3.4.3

[3.2/3.8]

011000G005 ..(KA's)

ANSWER: 006 (1.00)

c.

REFERENCE:

PIB ch 81 pg 33

[3.4/3.6]

035010A203 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

PIB ch 2.4

[4.0/3.8]

010000A403 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

ANN 4.9-32B, 37

[3.3/3.4]

062000G001 ..(KA's)

ANSWER: 004 (1.00)

c.

REFERENCE:

4KV PIB ch 64

[3.5/3.7]

063000K302 ..(KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

PIB ch 2.1

[3.8/3.9]

002020G001 ..(KA's)

ANSWER: 001 (1.00)

b.

REFERENCE:

HN exam bank QID: 16053

[3.1/3.5]

064000A304 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

PIB 72 pg 120-121

[2.8/3.2]

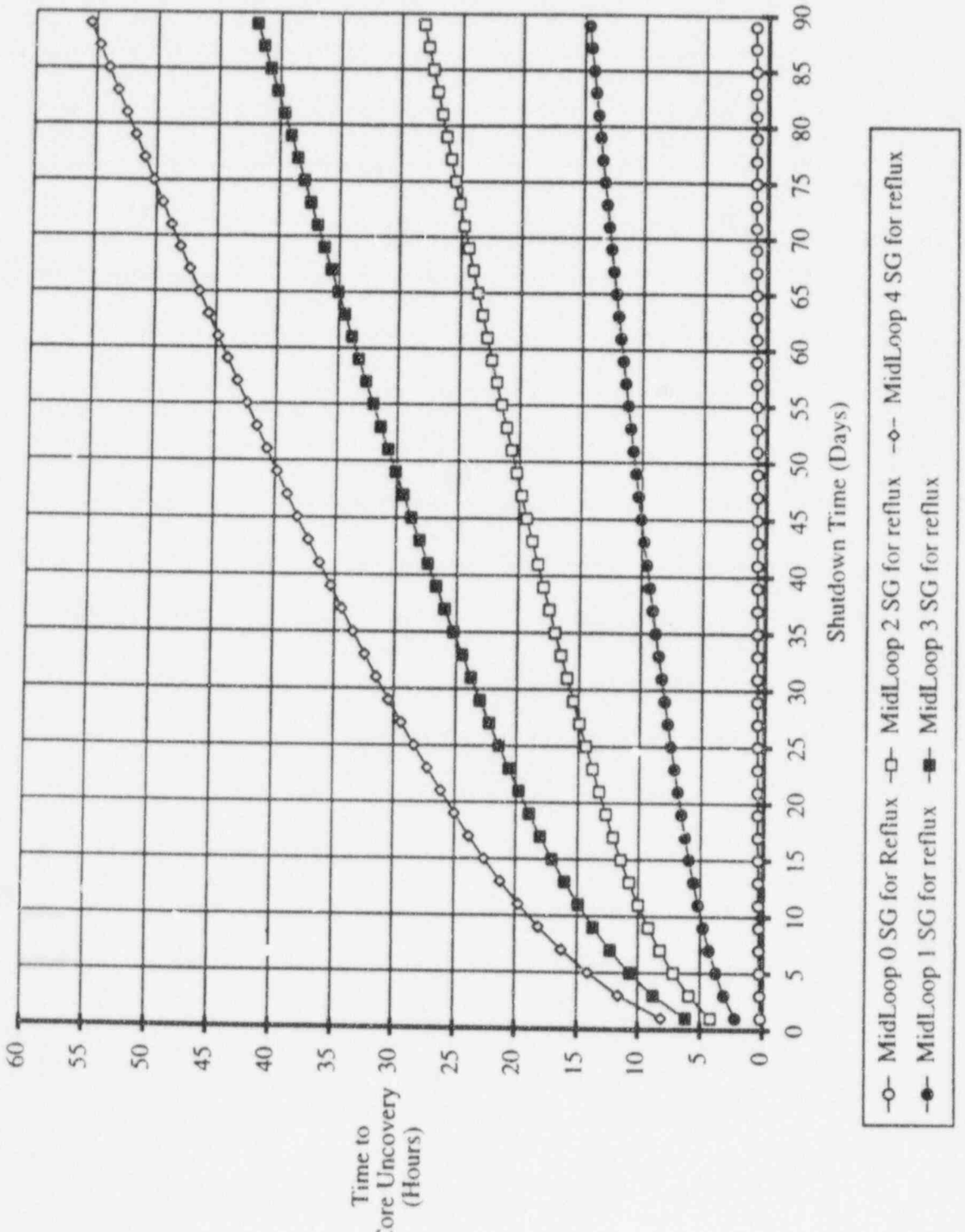
064000K405 ..(KA's)

ANSWER: 003 (1.00)

d.

Attachment 5

Loss of RHR Core Uncovery Time vs. Shutdown Time at Mid-Loop Level



Note: Initial RCS temperature is assumed to be 140°F.

QUESTION: 100 (1.00)

Which ONE (1) of the following steps in the emergency operating procedures need not be performed in sequence?

a. Steps designated by letters.

b. Steps designated by bullets.

c. Steps designated by numbers.

d. Steps designated in the RESPONSE NOT OBTAINED column.

(********** END OF EXAMINATION **********)

QUESTION: 098 (1.00)

Which ONE of the following is the MINIMUM number of shifts that a licensed individual must actively perform operator functions to maintain a license in an active status? Assume eight (8) hour shifts are in effect.

a. Five (5) shifts per calendar quarter.

b. Five (5) shifts per calendar year.

c. Seven (7) shifts per calendar quarter.

d. Seven (7) shifts per calendar year.

QUESTION: 099 (1.00)

An attempt to start a reactor coolant pump (RCP) was made at 1045, but the pump was stopped before it reached full speed.

Which ONE (1) of the following is the earliest time that an attempt to restart the RCP can be made?

a. 11:00

b. 11:15

c. 11:30

d. 11:45

QUESTION: 096 (1.00)

Which ONE (1) of the following represents the MAXIMUM dose limit that may be authorized in an emergency situation to save critical plant equipment?

a. 25 Rem

b. 50 Rem

c. 75 Rem

d. 100 Rem

QUESTION: 097 (1.00)

Which ONE (1) of the following individuals is NOT permitted to operate reactor controls under the instruction or supervision of a licensed operator?

a. A licensed reactor operator who recently failed a NRC administered senior reactor operator upgrade examination.

b. A reactor engineer doing rod motion checks following a refueling.

c. A licensed reactor operator whose license has become inactive per the requirements of 10CFR55.

d. A nuclear system operator enrolled in a current license training course to obtain ana operator license and has received the necessary training.

QUESTION: 094 (1.00)

The shift supervisor is responsible for initiating an evacuation of the site during a general emergency. Which ONE (1) of the following is NOT one of the criteria that must be evaluated prior to an evacuation?

a. Determine if a release of radioactivity is in progress.

b. Evaluate current meterorlogical data.

c. Determine if a sufficient number of personnel are available to support the evacuation.

d. Evaluate the severity of the environmental data.

QUESTION: 095 (1.00)

A generator hydrogen leak is occurring. Which of the following is the lowest hydrogen concentration that would be an explosive/fire hazard?

a. 1%

b. 3%

c. 5%

d. 7%

QUESTION: 092 (1.00)

You are the relief crew supervisor. An entry into containment is required. Containment ambient temperature is approximately 105 degrees F on average. Which ONE (1) of the following is correct regarding containment entry?

a. A heat stress evaluation is not required because operations will be performing SURs, which does not involve performing any manual work.

b. A breathing air permit is required prior to entering containment.

c. A designated rescue team, consisting of at least 2 members, is required.

d. A heat stress evaluation must be requested because air ambient temperature is greater than 95 degrees F.

QUESTION 093 (1.00)

Which of the following correctly describes a purpose or condition of a No-Tag designation?

a. Can remain active only for a period of up to two (2) weeks.

b. Can only be requested by CONVEX.

c. Notes a temporary operating restriction.

d. May be used as required within an approved clearance boundary to aid in ensuring that the valve is incorporated into the system restoration when the tags are cleared.

QUESTION: 091 (1.00)

The following plant conditions exist:

- A mechanic is conducting a steam-side inspection of the 'A' main condenser.
- After a while, his attendant, who is stationed outside the access manway, loses communication with the mechanic.
- Repeated attempts to contact the mechanic fail.
- There are no other individuals in the area.

In the above situation, which of the following describes the guidance given by WCM 2.4-4, "Confined Space and Hazardous Atmosphere Work Practices?"

a. The attendant should enter the space and attempt to find the mechanic.

b. The attendant must contact the control room and emergency response team using a radio or other communication device without leaving the area.

c. The attendant must get the permission of the Shift Manager before entering the space to find the mechanic.

d. The attendant must inform the control room of the situation and then enter the space to find the mechanic.

QUESTION: 090 (1.00)

Given the following conditions:

1. The plant is in MODE 2.
2. A routine containment entry is planned.

WHICH ONE (1) of the following is the MINIMUM number of personnel that are required for the containment entry?

a. Two (2)

b. Three (3)

c. Four (4)

d. Five (5)

QUESTION: 088 (1.00)

In accordance with ACP 1.2-6.4 "Temporary Procedure Changes (TPC)," within how many days (excluding any extensions) should a TPC be incorporated in an NOP upon approval of the TPC?

a. 30 days

b. 60 days

c. 90 days

d. 120 days

QUESTION: 089 (1.00)

You have been assigned to perform a valve lineup. As part of your pre-job brief you are notified that there is ALPHA contamination in your work area. The RWP also is annotated that ALPHA contamination is present. Once you have completed your job task, how do you exit the RCA?

a. Perform an automatic frisk using the PCM-1, then exit the RCA.

b. Perform an automatic frisk using the PCM-1, then a manual frisk using an RM-14/HP210, then exit the RCA.

c. Perform a manual frisk using a Ludlum-177/43-2, then exit the RCA.

d. Perform an automatic frisk using the PCM-1, then a manual frisk using a Ludlum-177/43-2, then exit the RCA.

QUESTION: 086 (1.00)

The plant has tripped due to a loss of coolant accident. The Unit Supervisor has become ineffective in performing required duties, but does not want to be relieved. Another senior reactor operator has agreed to relieve him. Who must concur with the relief?

a. Duty Officer

b. NRC Senior Resident Inspector

c. Operations Manager

d. Any licensed reactor operator

QUESTION: 087 (1.00)

Using the following list of safety requirements, breaker operating equipment and protective equipment, determine which one of the following describes the MINIMUM requirements when racking in a breaker for a circulating water pump?

1. A CONVEX clearance
2. Large rackout crank
3. Face shield
4. Orange flash jacket
5. High voltage gloves
6. Rubber mat to stand on
7. Safety glasses

a. 1, 5 and 6

b. 2, 3, 4, 5 and 7

c. 2, 3, 4, 6 and 7

d. 2, 3, 4, 5, 6, and 7

QUESTION: 084 (1.00)

The plant is operating at 100% power. Service water pressure is 5 psig above its low pressure alarm setpoint. CCW surge tank level is steadily increasing. Which of the following would be the source of leakage?

a. Waste gas compressor seal.

b. RCP thermal barrier.

c. Regenerative heat exchanger.

d. CCW heat exchanger.

QUESTION: 085 (1.00)

Emergency equipment related to the emergency plan must be tested periodically. Which of the following is NOT required to be tested on a daily or weekly basis?

a. Emergency notification and response system.

b. NRC emergency notification system.

c. EOF emergency diesel battery and EOF emergency diesel.

d. Site annunication alarm.

QUESTION: 082 (1.00)

Where do the terry turbine aux feed pumps exhaust to?

a. Main condenser

b. Gland exhaust condenser

c. Atmosphere

d. Floor drain system

QUESTION: 083 (1.00)

What effect does a loss of control air have on the aux feed system?

a. Main feed bypass valves fail open.

b. Main feed bypass valves fail open; turbine AFW pumps steam admission valves fail open resulting in pump start.

c. Main feed bypass and turbine AFW steam admission valves fail shut.

d. Main fed bypass valves fail shut; turbine AFW pump steam admission valves fail open resulting in the pumps running in recirculation.

QUESTION: 079 (1.00)

An SI with loss of offsite power has occurred. Which of the following will not automatically start?

a. CAR fans.

b. LPSI pumps.

c. SW pumps.

d. CCW pumps.

QUESTION: 080 (1.00)

The DC bus breaker supplying the C vital inverter trips. What effect does this have on the associated instrument bus?

a. C bus transfers to its backup inverter.

b. C inverter transfers to "B" 125 VDC bus.

c. C bus is deenergized.

d. C inverter transfers to its backup AC source

QUESTION: 081 (1.00)

Which of the following provides an alternate direct suction source for the AFW pumps?

a. Condensate storage tank

b. Main condenser hotwell

c. Fire main

d. Primary water storage tank

QUESTION: 077 (1.00)

The control room has been evacuated. AOP 3.2-50 "Operations Outside the Control Room" has been completed. Plant cooldown is in progress. How is cooldown rate monitored?

a. Lowest loop Tave.

b. Steam generator saturation temperature.

c. CETs and loop Tc.

d. CETs and SG saturation temperature.

QUESTION: 078 (1.00)

What is the response of the main feed reg valves to a turbine trip from 100% power?

a. They remain as is.

b. They fully open, then close when aux feed initiates.

c. They fully open, then close when Tave decreases below 545 degrees F.

d. They trip shut with the turbine trip, but may be reopened if above 545 degF.

QUESTION: 074 (1.00)

The plant is at 100% power when RCS Tave fails low. What effect does this have on final pressurizer level?

a. Level decreases because T-ave determines program level.

b. Level decreases because rods start stepping in.

c. Level is unaffected because T-ref determines program level.

d. Level increases because rods start stepping out.

QUESTION: 075 (1.00)

Control room evacuation is necessary. All required control room actions were completed prior to the evacuation. You are the Shift Manager. What is your next action?

a. Locally trip the reactor.

b. Locally trip the turbine.

c. Locally align feed flow.

d. Locally start the EDGs.

QUESTION: 076 (1.00)

Which of the following states actions that should be completed prior to evacuating the control room due to a fire?

a. Trip the reactor and turbine, safety inject.

b. Trip the reactor and turbine, place PORV SB-1 switches in close.

c. Trip the reactor and turbine, commence emergency boration.

d. Trip the reactor, turbine, and RCPs; initiate aux feed.

QUESTION: 072 (1.00)

When operating at 100%, the following indications occur:

- HI-LO seal water return flow annunciator.
- #3 RCP seal water return pegged high.
- Labryinth seal dP indicates negative 30 inches.
- Lower bearing temperature indicates 150 degrees F and increasing rapidly.

What actions are required.

a. Reduce power below P-8, then trip the pump.

b. Shut #3 seal return valve commence a rapid shutdown if lower bearing temperature does not stabilize within 5 minutes.

c. Trip the pump.

d. Trip the reactor, then trip the pump.

QUESTION: 073 (1.00)

A reactor trip has occurred. Two rods have failed to fully insert. One rod is stuck fully withdrawn; one rod is stuck exactly halfway out. What action is required by ES-0.1?

a. Emergency borate 250 gallons from BAST.

b. Emergency borate 750 gallons from BAST.

c. Emergency borate 1125 gallons from BAST.

d. Emergency borate 1500 gallons from BAST.

QUESTION: 070 (1.00)

A plant transient occurs. You observe the following.

- One rod bottom light energized.
- Associated IRPI indicates the rod at zero.
- T-ave above T-ref and increasing.
- No initial pressurizer pressure or level decrease.

Which of the following would cause these indications?

a. Dropped rod with rods in MANUAL.

b. Dropped rod indication due to failed low IRPI.

c. Dropped rod with rods in AUTO.

d. Dropped rod with failure of turbine to run back.

QUESTION: 071 (1.00)

The plant is operating at 100% power. One RCP trips, but the reactor scram breakers do not open. With no operator action, which of the following indicates the plant response?

a. AFW actuation

b. Main steamline isolation

c. SI

d. Main feed isolation

QUESTION: 068 (1.00)

Why is the turbine tripped in the event of an ATWS?

a. To prevent turbine overspeed.

b. To conserve SG inventory against the possibility of a loss of all feed.

c. To prevent SI from excessive cooldown.

d. To shift steam load to the steam dumps, which will modulate closed with boration or manual rod insertion.

QUESTION: 069 (1.00)

The plant is at 100% power with all systems in AUTO. The upper detector for PRNI channel 4 fails low. If channel 4 is selected for input to rod control, how will the rod control system respond?

a. Rods will step in until the flux rate signal decays.

b. Rods will step in continuously due to NI vs turbine power mismatch.

c. Rods will not move.

d. Rods will step out (until a rod stop is reached) due to anticipated temperature error.

QUESTION: 066 (1.00)

What is the maximum temperature indication available from the CETs, and what temperature reading would require use of FR-C.1?

a. 2300 deg F; 1200 deg F

b. 2000 deg F; 1000 deg F

c. 1800 deg F; 900 deg F

d. 1200 deg F; 700 deg F

QUESTION: 067 (1.00)

The following plant conditions exist:

- Plant is at midloop.
- RCS is not intact.
- A station blackout occurs.

What is the purpose of opening both PORVs?

a. To ensure adequate overpressure protection since this is a low temperature operating condition.

b. To provide a vent path so RCS pressurization due to heatup will not preclude gravity makeup from RWST if necessary.

c. To provide a means of controlling plant pressure since sprays are unavailable.

d. To prevent drawing a vacuum in the RCS, which would cause false level indication in the event of a leak.

SRO Exam PWR Reactor

Organized by KA Group

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
081	1.00	061000K401
004	1.00	063000K302
039	1.00	068000A403
038	1.00	068000K107
040	1.00	068001G001
064	1.00	072000A101
065	1.00	072000K401
PS-I Total	28.00	

Group II

QUESTION	VALUE	KA
052	1.00	002000K518
005	1.00	002020G001
051	1.00	002020G005
050	1.00	002020G005
013	1.00	006000K613
032	1.00	010000A203
007	1.00	010000A403
010	1.00	011000G005
014	1.00	012000G006
057	1.00	034000G006
006	1.00	035010A203
027	1.00	039000A205
003	1.00	062000G001
001	1.00	064000A304
002	1.00	064000K405
PS-II Total	15.00	

Group III

QUESTION	VALUE	KA
009	1.00	005000K407
021	1.00	041020G004
020	1.00	041020K417
019	1.00	041020K603
031	1.00	045000G014
022	1.00	045050G004
PS-III Total	6.00	

TEST CROSS REFERENCE
SRO Exam PWR Reactor
Organized by KA Group

PLANT SYSTEMS

QUESTION	VALUE	KA
PS Total	49.00	

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
048	1.00	000003K101
073	1.00	000005A203
033	1.00	000011A111
072	1.00	000015G011
071	1.00	000015K102
023	1.00	000024K101
059	1.00	000024K302
084	1.00	000026A201
026	1.00	000026G010
068	1.00	000029K306
063	1.00	000051A202
045	1.00	000055A104
016	1.00	000055G012
017	1.00	000055K302
080	1.00	000057A219
049	1.00	000057G003
054	1.00	000067G010
077	1.00	000068A203
076	1.00	000068G010
075	1.00	000068K318
025	1.00	000074K311
024	1.00	000074K311
EPE-I Total	22.00	

Group II

QUESTION	VALUE	KA
061	1.00	000025A207
058	1.00	000025G007
067	1.00	000025K101
046	1.00	000038A104
044	1.00	000038A201
028	1.00	000054G012
018	1.00	000054K304
043	1.00	000065A206

SRO Exam PWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group II

QUESTION	VALUE	KA
042	1.00	000065G007
041	1.00	000065K303
EPE-II Total	10.00	

Group III

QUESTION	VALUE	KA
074	1.00	000028A202
015	1.00	000056K302
EPE-III Total	2.00	
EPE Total	34.00	
Test Total	100.00	

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 1

CANDIDATE'S NAME: _____

FACILITY: Haddam Neck

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 96/08/24

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%
100.00		% TOTALS
	FINAL GRADE	

All work done on this examination is my own. I have neither given nor received aid.

_____
Candidate's Signature

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092	a	b	c	d	___
093	a	b	c	d	___
094	a	b	c	d	___
095	a	b	c	d	___
096	a	b	c	d	___
097	a	b	c	d	___
098	a	b	c	d	___
099	a	b	c	d	___
100	a	b	c	d	___

(********** END OF EXAMINATION **********)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.

2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.

3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.

4. Use black ink or dark pencil ONLY to facilitate legible reproductions.

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.

6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

7. The point value for each question is indicated in parentheses after the question.

8. If the intent of a question is unclear, ask questions of the examiner only.

9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.

10. To pass the examination, you must achieve a grade of 80% or greater.

11. There is a time limit of four (4) hours for completion of the examination.

12. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

Which ONE (1) of the following methods is used to reset a Differential Fault on the Diesel Generator?

a. Press the EG Normal Stop Pushbuttons and ECP Alarm Reset.

b. Reset the 87X Lockout Relay on EG breaker cubicle and close the Exciter Field Breaker inside the excitation cabinet.

c. Take the EG breaker control switch on the Diesel Aux Board in the control room to the TRIP position and release to the AUTO position.

d. Take the diesel output breaker control switch on the excitation panel to the TRIP position and release to the AUTO position.

QUESTION: 002 (1.00)

A loss of all AC power has occurred, but the diesels are not running. An operator dispatched to investigate reports a START FAILURE alarm on all diesel control panels. The operator then depresses the normal shutdown pushbuttons and resets the engine control panel alarm. What effect does this have on the diesel?

a. Prevents diesel start for 11.5 minutes.

b. Causes another start attempt.

c. Prevents diesel start until the start failure lockout is reset.

d. Aligns the diesel for a manual start attempt.

QUESTION: 003 (1.00)

What effect does a loss of DC control power have on a 4 kV breaker?

a. Control room operation is lost, but breakers can be operated locally by manual spring charging and actuation of operating mechanisms.

b. Stored energy breakers can be operated from the control room; solenoid operated breakers can only be operated locally.

c. Stored energy breakers can be locally closed or opened; solenoid operated breakers can only be locally opened.

d. Stored energy breakers can be locally operated with previously charged operating springs; solenoid operated breakers require manual spring charging for local operation.

QUESTION: 004 (1.00)

Which of the following describes an interlock for operation of RCS loop isolation valves?

a. Loop T-cold may not be more than 20 deg F below any other loop T-cold in order to open that loop's cold leg isolation valve.

b. Loop T-cold must be within 32 deg F of all loops ave T-cold in order to open that loop's isolation valves.

c. The cold leg isolation valve cannot be opened in a loop with a running RCP unless the bypass valve is open as well.

d. Loop T-ave must be within 12 deg F of T-ave of the other loops to open that loop's isolation valves.

QUESTION: 005 (1.00)

Which of the following describes steam generator level response if the controlling level channel fails LOW?

a. Level increases until overfill protection is actuated at 74%, resulting in reactor trip.

b. Level initially increases, then stabilizes above program.

c. Level will continue to control at the same setpoint value since SGWLC will automatically select an alternate level channel.

d. Level will control 5% below setpoint at the level deviation setpoint.

QUESTION: 006 (1.00)

Why is it necessary to have a Low Temperature Overpressure Protection system?

a. At low RCS temperature, RHR is placed in service - RHR design pressure is lower than RCS design pressure.

b. At low RCS temperature, the RCS can fail at substantially lower pressure than it would fail at normal operating temperature.

c. At low RCS temperature, pressure transients are faster due to the ineffectiveness or unavailability of pressurizer spray.

d. At low RCS temperature, differential expansion may bind pressurizer safeties, requiring an alternate powered overpressure system.

QUESTION: 007 (1.00)

What effect does a loss of Semi-Vital 120 VAC have on the performance of FR-H.1?

a. Loss of semi-vital power may CAUSE entry into FR-H.1 by creating a common mode failure to start of all auxiliary feed pumps.

b. Initiation of feed and bleed cooling may be hampered because one pressurizer PORV would be inoperable.

c. Mitigation may be hampered because two main feed regulating valves fail shut.

d. Initiation of feed and bleed cooling would be prevented because BOTH PORVs are inoperable.

QUESTION: 008 (1.00)

Which of the following is a backup source for containment spray?

a. Service water

b. Fire water

c. Demineralized water

d. Primary makeup water

QUESTION: 009 (1.00)

What interlock protects the RHR system from overpressurization?

a. RHR cannot be placed in service unless LTOP is armed.

b. RHR isolation valves cannot be opened if RCS pressure is over 400 psig.

c. RHR suction valve will not open if loop 1 or 2 T-hot is over 325 deg F.

d. RHR isolation valves auto close if pressure exceeds 380 psig.

QUESTION: 010 (1.00)

What is the allowable deviation of pressurizer level from program, and how soon must level be restored to within this tolerance following a transient or power maneuver?

a. +/- 5%; 1 hour

b. +/- 2%; 2 hours

c. +/- 5%; 2 hours

d. +/- 2%; 1 hour

QUESTION: 011 (1.00)

The plant is in hot standby. What is the RCS pressure safety limit, and how quickly must pressure be reduced if this limit is exceeded?

a. 2335 psig; 30 min.

b. 2435 psig; 5 min.

c. 2585 psig; 30 min.

d. 2735 psig; 5 min.

QUESTION: 012 (1.00)

The plant is operating at 100% when the following occurs:
- LD-TCV-113A shifts to the VCT position.
- LD-TCV-113B automatically closes isolating fow to R20.

Which ONE (1) of the following events would initiate these actions?

a. VCT level reached 87%.

b. Excessive letdown flow through the demineralizers.

c. CCW temperature control valve (CC-TCV-112) for the NRHX failed closed.

d. Letdown pressure at the demineralizers exceeded 200 psig.

QUESTION: 013 (1.00)

What is the purpose of the RCP #1 seal bypass valve?

a. Ensures adequate flow to #2 & #3 RCP seals when #1 seal leakoff is low.

b. Provides additional cooling flow for the lower bearing under certain conditions.

c. Allows meeting minimum leakoff flow criteria for pump starts at low RCS pressure.

d. Diverts hot water flowing past thermal barrier to VCT if seal injection is lost.

QUESTION: 014 (1.00)

A design basis LOCA has occurred and SI has initiated. As the RWST pumps down, an auxiliary operator is dispatched to verify normal operation of the HPSI pumps. What should the operator observe for HPSI pump discharge pressure?

a. 1300 - 1450 psig.

b. 800 - 1000 psig.

c. 230 - 320 psig

d. 40 - 60 psig.

QUESTION: 015 (1.00)

The main steam header pressure transmitter PT-1203 has failed low during a reactor trip/turbine trip from 100% power. How will tha HPSD system pressure control valves respond during the trip?

a. PCVs will remain closed following the trip.

b. PCVs will open and remain full open following the trip.

c. PCVs will fully open and remain open once Tave is greater than 545 degress F.

d. PCVs will fully open when Tave is greater than 545 degrees F, then ramp close as temperature decreases from 544 degrees F to full close at 535 degrees F.

QUESTION: 016 (1.00)

Which of the following describes the difference in operation of the pressure control valves versus the temperature control valves in the high pressure steam dump system?

a. The temperature control valves trip open sequentially as temperature error increases; the pressure control valves modulate.

b. The pressure controller signal is disabled until Tave decreases below 535 degrees F following a reactor trip.

c. The pressure control valves respond to the auctioneered high signal from either the pressure or temperature controllers.

d. All valves respond to the pressure controller; only the temperature control valves respond to the temperature controller.

QUESTION: 017 (1.00)

What is the difference between the high pressure and low pressure steam dump systems?

a. The high pressure steam dump system controls plant temperature and pressure following a trip; the low pressure steam dump system is used for cooldown.

b. The high pressure steam dump system is used for pressure and temperature control; the low pressure steam dump is a turbine overspeed protection system.

c. The low pressure steam dump system backs up the high pressure steam dump system by dumping steam from the high pressure turbine exhaust.

d. The low pressure steam dump system operates below 20% power as indicated by turbine first stage pressure; the high pressure system operates above 20%.

QUESTION: 018 (1.00)

The plant is operating at 100% power. A loss of both generator air side seal oil pumps occurs. What provides seal oil under these conditions?

a. Main oil pump.

b. Standby seal oil pump auto starts.

c. DC oil pump.

d. Turning gear oil pump after required turbine trip.

QUESTION: 019 (1.00)

Tave is 535 degrees F at beginning of life conditions. Which ONE (1) of the following actions will force Tave to increase to 536 degrees F?

a. Move Bank B control rods from about 280 steps to about 283 steps.

b. Move Bank B control rods from about 283 steps to about 280 steps.

c. Move Bank B control rods from about 310 steps to about 313 steps.

d. Move Bank B control rods from about 313 steps to about 310 steps.

QUESTION: 020 (1.00)

In which of the following circumstances would RCPs be run without meeting normal start criteria?

a. Initial start when filling and venting RCS after a refueling outage.

b. CETs greater than 1200 deg F in FR-C.1.

c. Recovery from feed and bleed cooling in FR-H.1.

d. RCS depressurization in E-3.

QUESTION: 021 (1.00)

After the completion of the first 4 steps of E-0, when must the RCPs be tripped in the event of a loss of all component cooling pumps?

a. Immediately

b. When bearing temperatures exceed 180 deg F.

c. Within 5 minutes.

d. If minimum seal injection flow cannot be maintained.

QUESTION: 022 (1.00)

The plant is operating at 90% power. You observe generator load, Tave, and steam pressure decrease slightly while nuclear power increases. Which of the following could cause these indications?

a. Lowering condenser vacuum.

b. One HPSD valve failing open.

c. Loss of a feedwater heater string.

d. Turbine control valve drifting shut.

QUESTION: 023 (1.00)

The aux feed system provides high discharge header temperature alarms. What is the significance of such an alarm?

a. It indicates a pump being run for an excessive time against shutoff head.

b. It indicates terry turbine shaft seal leakage into the pump.

c. It indicates check valve backleakage and possible pump vapor binding.

d. It indicates inadequate pump cooling flow.

QUESTION: 024 (1.00)

The plant is operating at 75% with rods in AUTO during a load ascension. A continuous rod withdrawal initiates. Which of the following describes how this will affect the variable lower pressure trip (VLPT) setpoint?

a. The setpoint will decrease because of RCS pressure increases.

b. The setpoint increases because RCS pressure decreases after pressurizer spray initiates.

c. The setpoint increases because Tave increases.

d. The setpoint increases because of shifts in QPTR and AFD.

QUESTION: 025 (1.00)

A reactor trip has occurred from 100%. The turbine has not tripped either automatically or manually. What is the next required action?

a. Trip the turbine locally.

b. Shut the main steam trip valves.

c. Manual runback.

d. Manual safety injection.

QUESTION: 026 (1.00)

The plant was operating at 100% when a reactor trip and safety injection occurred. The following conditions exist:

- SI on low pressurizer pressure.
- Pressurizer level initially went to zero, then came back on scale and rapidly climbed to 100%
- RCS pressure is 1100 psig and slowly decreasing.
- Containment radiation channels are alarming.

Which of the following would cause these indications?

a. Small cold leg LOCA.

b. Pressurizer PORV failed open.

c. Small hot leg LOCA.

d. Steamline break.

QUESTION: 027 (1.00)

The plant is at 85% power. The RO notices that the rods are driving in, and that RCS temperature has ramped down from 552 degrees F to 535°F and that steam header pressure is decreasing. What is the most probable cause for this transient?

a. Pressurizer pressure increasing.

b. T-hot failed high.

c. First stage pressure failed low.

d. NI channel failed high.

QUESTION: 028 (1.00)

A RCP can be operated without seal injection water during abnormal conditions provided:

a. The pressure differential across the labyrinth seal exceeds 60 inches water.

b. RCP seal leakage is 7 gpm or less.

c. Component cooling flow through the thermal barrier is greater than 15 gpm.

d. RCS temperature is less than 150 degrees F.

QUESTION: 029 (1.00)

Which of the following statements best describes the operation of the demineralizer bypass valve, LD-TCV-113A?

a. Normally bypass the demineralizers when letdown temperature is less than 140 degrees F.

b. Auto control of the valve is provided from TC-111 (letdown temperature out of the regenerative heat exchanger).

c. On a loss of containment air, the valve fails to the demineralizer position.

d. Valve repositions to the VCT when letdown temperature increases to 140 degrees F.

QUESTION: 030 (1.00)

Why are there baskets full of tri-sodium phosphate located adjacent to the containment sump?

a. Decrease pH of sump water to prevent boric acid induced corrosion damage to carbon steel components in containment after a LOCA.

b. Decrease pH of sump water to minimize corrosion induced H2 generation in containment post accident conditions.

c. Increase pH of sump water to minimize fouling of containment spray nozzles and RHR heat exchanger heat transfer surfaces, which will be unaccessible for maintenance following a LOCA.

d. Increase pH to minimize the possibility of corrosion cracking in certain metal components following a LOCA.

QUESTION: 031 (1.00)

When pumping down the containment sump, where is the sump liquid pumped to?

a. Aerated drains tanks.

b. Primary drains tank.

c. Volume control tank.

d. Waste test tank.

QUESTION: 032 (1.00)

An unrecoverable loss of control air is in progress. Which of the following components must be tripped or closed by the operators to prevent damage to that component?

a. Terry Turbines.

b. Main Steam Trip and Bypass Valves.

c. Main Turbine.

d. Reactor Coolant Pumps.

QUESTION: 033 (1.00)

A plant trip has resulted from a loss of control air. Which of the following is a method for controlling plant temperature?

a. Through nitrogen backup to the atmospheric relief for each SG.

b. Through nitrogen backup to a common atmospheric dump for all SGs.

c. Through rolling the main turbine with steam supplied through MS trip valve bypass valves.

d. Through secondary feed with AFW pumps and bleed through blowdown.

QUESTION: 034 (1.00)

When do you trip the reactor during a loss of control air?

a. 90 psig decreasing

b. 80 psig decreasing

c. 65 psig decreasing

d. 50 psig decreasing

QUESTION: 035 (1.00)

Why must level in a ruptured steam generator be fed greater than 7%?

a. To prevent chemical dryout on uncovered tubes.

b. To maximize available heat transfer area.

c. To allow RCS depressurization without depressurizing the SG.

d. To ensure dilution of RCS activity by mixing with clean secondary water.

QUESTION: 036 (1.00)

Following a station blackout, how long does the operator have to deenergize DC emergency lighting?

a. Within 1 hour.

b. Within 1 1/2 hours.

c. Within 2 hours.

d. Within 2 1/2 hours.

QUESTION: 037 (1.00)

Which of the following is not a means of reducing RCS presssure in E-3?

a. Normal spray.

b. Aux spray.

c. Pressurizer PORVs.

d. Secure heaters and reduce pressurizer level.

QUESTION: 038 (1.00)

The plant is at 100% power with all systems in AUTO. What is your first action in response to a continuous rod insertion?

a. Place rods in manual and withdraw to their original position.

b. Verify no T-ave/T-ref deviation.

c. Place rods in manual, adjust turbine load to match Tave & Tref.

d. Place rods in manual, trip the reactor if motion continues.

QUESTION: 039 (1.00)

The plant is operating at 80% power. A rod drop occurs. How is plant temperature stabilized?

a. Allow automatic rod withdrawal to compensate for the insertion.

b. Dilute.

c. Manually reduce turbine load.

d. Manually withdraw rods OR reduce load at SCO's discretion.

QUESTION: 040 (1.00)

Leakage past the reactor vessel flange O-rings is detected. How would this leakage be classified?

a. Pressure boundary leakage.

b. Identified leakage.

c. Uncontrolled leakage.

d. Unidentifed leakage.

QUESTION: 041 (1.00)

Which of the following are the parameters on the Safety Limit curve?

a. Outlet temperature, RCS pressure, % power.

b. RCS pressure, inlet temperature, RCS flow.

c. % power, inlet temperature, RCS flow.

d. RCS pressure, inlet temperature, % power.

QUESTION: 042 (1.00)

Whose authorization is required to perform a reactor startup following a safety limit violation?

a. NRC

b. Manager Technical Support

c. Chief Nuclear Officer

d. Outage Manager

QUESTION: 043 (1.00)

Why must the normal charging path be isolated to establish aux spray?

a. To prevent runout of the inservice charging pump.

b. To prevent excessive diversion of seal injection flow.

c. To ensure flow goes to the pressurizer rather than the loops.

d. To prevent steam blowback into the loops.

QUESTION: 044 (1.00)

There is a fire in the control room. PORVs have started to cycle spuriously. What action is required?

a. Shut the block valves.

b. Reduce RCS pressure to try to keep the PORVs shut.

c. Place the SB-1 switches for the PORVs in the CLOSE position.

d. Initiate safety injection.

QUESTION: 045 (1.00)

How is shutdown margin verified to be within limits with the plant at 100% power?

a. Perform a shutdown margin calculation per the Technical Requirements Manual.

b. Verify shutdown banks are fully withdrawn.

c. Verify all control rods are above insertion limits.

d. Verify boron concentration is sufficient to ensure 2000 pcm SDM in the event of a trip which places the plant in the HZP ARI condition.

QUESTION: 046 (1.00)

What is the purpose of the pressure compensation input to rod control?

a. This turbine first stage pressure signal is used in conjunction with flux compensation to generate a rate of power mismatch input for rod speed and direction calculation.

b. This pressurizer pressure compensation signal provides an anticipatory temperature input since plant pressure responds faster than loop RTDs.

c. This direct input from turbine first stage pressure to rod control provides an anticipatory temperature input by bypassing the signal processing delay associated with T-ref calculation.

d. This pressurizer pressure compensation allows fine tuning of the nuclear flux input to adjust for fluctuations due to variations in void fraction due to nucleate boiling.

QUESTION: 047 (1.00)

The plant has been shutdown for one week and is at is at mid-loop for maintenance. Two steam generators are drained for inspection; the other two are at normal shutdown level. A loss of RHR occurs. How long until core uncovery?

a. Less than 1 hour.

b. Approximately 8 hours.

c. Approximately 16 hours.

d. More than 24 hours.

QUESTION: 048 (1.00)

What is the reason for checking RCS pressure when initiating emergency boration in FR-S.1?

a. To ensure PORVS/Safeties are maintaining RCS pressure within limits.

b. To determine if action is necessary to ensure pressure is low enough for charging to inject boron.

c. To check for conditions requiring charging pump trip.

d. To determine if RCS depressurization is required to use SI as an alternate injection path.

QUESTION: 049 (1.00)

Which of the following lists 3 of the inputs to rod control?

a. Tave, Tref, Delta-T.

b. Power range deviation drawer rate signal, Tave, Tref.

c. Rate of change of difference between NI power and Turbine power, Tave, Tref.

d. Tave, Tref, generator load.

QUESTION: 050 (1.00)

During RCS draindown to midloop, indications of an air bound in-service RHR pump are observed. What action is required?

a. STOP the running pump and START the standby pump.

b. STOP the running pump.

c. Commence raising level; maintain the RHR pump in service for core cooling.

d. Halt draindown, reduce RHR flow until cavitation indications clear.

QUESTION: 051 (1.00)

What parameter determines Rod Insertion Limits?

a. Mega-watts thermal power

b. PRNI nuclear power

c. Turbine first stage pressure

d. Tave

QUESTION: 052 (1.00)

When must the plant be tripped in response to a loss of condenser vacuum?

a. If decreasing condenser vacuum cannot be stabilized with a second set of air ejectors.

b. Less than 21.5 in Hg vacuum.

c. If decreasing vacuum is due to a clogged waterbox tubesheet.

d. When decreasing vacuum has blocked steam dump actuation.

QUESTION: 053 (1.00)

Post-LOCA, CD 1/2 and one other radiation monitor can be used to determine if severe fuel damage has occurred. The other monitor is:

a. R-31, Containment Manipulator Crane

b. R-32, Containment Charging Floor

c. R-37, Containment Hatch

d. R-14A, Stack Monitor

QUESTION: 054 (1.00)

Which of the following radiation monitoring channels are isolated by an HCP signal?

a. R11, R12

b. R15, R16A & B

c. CD-1 & 2, R-32

d. R-14A, R-31

QUESTION: 055 (1.00)

What is the maximum temperature indication available from the CETs, and what temperature reading would require use of FR-C.1?

a. 2300 deg F; 1200 deg F

b. 2000 deg F; 1000 deg F

c. 1800 deg F; 900 deg F

d. 1200 deg F; 700 deg F

QUESTION: 056 (1.00)

The plant is at midloop. A loss of all AC occurs. What method is available for RCS makeup?

a. Terry turbines powered from house heating steam.

b. Gravity feed from RWST.

c. Diesel fire pumps.

d. Portable generator power for desired pumps.

QUESTION: 057 (1.00)

Why is the turbine tripped in the event of an ATWS?

a. To prevent turbine overspeed.

b. To conserve SG inventory against the possibility of a loss of all feed.

c. To prevent SI from excessive cooldown.

d. To shift steam load to the steam dumps, which will modulate closed with boration or manual rod insertion.

QUESTION: 058 (1.00)

Which of the following is NOT an available method to verify reactor trip during a station blackout?

a. Neutron flux decreasing.

b. Rod bottom lights lit.

c. Intermediate range startup rate negative.

d. Source range startup rate negative.

QUESTION: 059 (1.00)

The plant is at 100% power with all systems in AUTO. The upper detector for PRNI channel 4 fails low. If channel 4 is selected for input to rod control, how will the rod control system respond?

a. Rods will step in until the flux rate signal decays.

b. Rods will step in continuously due to NI vs turbine power mismatch.

c. Rods will not move.

d. Rods will step out (until a rod stop is reached) due to anticipated temperature error.

QUESTION: 060 (1.00)

A plant transient occurs. You observe the following.

- One rod bottom light energized.
- Associated IRPI indicates the rod at zero.
- T-ave above T-ref and increasing.
- No initial pressurizer pressure or level decrease.

Which of the following would cause these indications?

a. Dropped rod with rods in MANUAL.

b. Dropped rod indication due to failed low IRPI.

c. Dropped rod with rods in AUTO.

d. Dropped rod with failure of turbine to run back.

QUESTION: 061 (1.00)

The plant is operating at 100% power. One RCP trips, but the reactor scram breakers do not open. With no operator action, which of the following indicates the plant response?

a. AFW actuation

b. Main steamline isolation

c. SI

d. Main feed isolation

QUESTION: 062 (1.00)

When operating at 100%, the following indications occur:

- HI-LO seal water return flow annunciator.
- #3 RCP seal water return pegged high.
- Labryinth seal dP indicates negative 30 inches.
- Lower bearing temperature indicates 150 degrees F and increasing rapidly.

What actions are required.

a. Reduce power below P-8, then trip the pump.

b. Shut #3 seal return valve commence a rapid shutdown if lower bearing temperature does not stabilize within 5 minutes.

c. Trip the pump.

d. Trip the reactor, then trip the pump.

QUESTION: 063 (1.00)

Which combination of RCPs gives the most spray flow?

a. 1 and 2

b. 1 and 3

c. 2 and 3

d. 3 and 4

QUESTION: 064 (1.00)

The plant is at 100% power when RCS Tave fails low. What effect does this have on final pressurizer level?

a. Level decreases because T-ave determines program level.

b. Level decreases because rods start stepping in.

c. Level is unaffected because T-ref determines program level.

d. Level increases because rods start stepping out.

QUESTION: 065 (1.00)

Which of the following states actions that should be completed prior to evacuating the control room due to a fire?

a. Trip the reactor and turbine, safety inject.

b. Trip the reactor and turbine, place PORV SB-1 switches in close.

c. Trip the reactor and turbine, commence emergency boration.

d. Trip the reactor, turbine, and RCPs; initiate aux feed.

QUESTION: 066 (1.00)

The control room has been evacuated. AOP 3.2-50 "Operations Outside the Control Room" has been completed. Plant cooldown is in progress. How is cooldown rate monitored?

a. Lowest loop Tave.

b. Steam generator saturation temperature.

c. CETs and loop Tc.

d. CETs and SG saturation temperature.

QUESTION: 067 (1.00)

What is the response of the main feed reg valves to a turbine trip from 100% power?

a. They remain as is.

b. They fully open, then close when aux feed initiates.

c. They fully open, then close when Tave decreases below 545 degrees F.

d. They trip shut with the turbine trip, but may be reopened if above 545 degF.

QUESTION: 068 (1.00)

An SI with loss of offsite power has occurred Which of the following will not automatically start?

a. CAR fans.

b. LPSI pumps.

c. SW pumps.

d. CCW pumps.

QUESTION: 069 (1.00)

The DC bus breaker supplying the C vital inverter trips. What effect does this have on the associated instrument bus?

a. C bus transfers to its backup inverter.

b. C inverter transfers to "B" 125 VDC bus.

c. C bus is deenergized.

d. C inverter transfers to its backup AC source

QUESTION: 070 (1.00)

Which of the following provides an alternate direct suction source for the AFW pumps?

a. Condensate storage tank

b. Main condenser hotwell

c. Fire main

d. Primary water storage tank

QUESTION: 071 (1.00)

Where do the terry turbine aux feed pumps exhaust to?

a. Main condenser

b. Gland exhaust condenser

c. Atmosphere

d. Floor drain system

QUESTION: 072 (1.00)

What effect does a loss of control air have on the aux feed system?

a. Main feed bypass valves fail open.

b. Main feed bypass valves fail open; turbine AFW pumps steam admission valves fail open resulting in pump start.

c. Main feed bypass and turbine AFW steam admission valves fail shut.

d. Main fed bypass valves fail shut; turbine AFW pump steam admission valves fail open resulting in the pumps running in recirculation.

QUESTION: 073 (1.00)

Which ONE (1) of the following events will result from the Boric Acid Flow control valve BA-FCV-112B failing closed during automatic makeup to the VCT?

a. Decrease in shutdown margin.

b. Inadvertent boration from the RWST.

c. Inadvertent boration from the BAMT.

d. Loss of suction to the BA pumps.

QUESTION: 074 (1.00)

Given the following conditions:

1. The plant is in MODE 6.
2. One (1) source range neutron flux monitor is out of service.
3. The source range audio count rate drawer is out of service.
4. Core alterations are in progress.

Which ONE (1) of the following technical specification action statements should be implemented?

a. Suspend all operations involving positive reactivity changes.

b. Emergency borate the RCS until a boron concentration of 2150 ppm is established.

c. Immediately evacuate the refueling area until the audio count rate is returned to service.

d. Immediately determine remaining source range neutron flux monitors are operable by performing SUR 5.1-OA, "Steady State Operational Surveillance - Mode 6."

QUESTION: 075 (1.00)

During normal operation, a low level alarm on the spent fuel pool (SFP) alarms. It is decided to raise the level to the normal band. Which ONE (1) of the following is the preferred method of raising the level in the SFP?

a. Align the purification pump to take a suction on the RWST.

b. Align the purification pump to take a suction on the RWST, and isolate the SFP purification system.

c. Direct water from the charging blender directly to the SFP cooling system.

d. Line up the primary water header to the SFP.

QUESTION: 076 (1.00)

Which ONE (1) of the following conditions indicates an adverse containment at the present time?

a. Containment dose rate is 1 X 10E4 R/hr.

b. Containment pressure is 7 psig.

c. Containment temperature is 200 degrees F.

d. Containment integrated dose is 1 X 10E3 R.

QUESTION: 077 (1.00)

The reactor is critical at 1E-2% power. Vital inverter B output breaker trips open resulting in a loss of vital bus B. Which of the following will result?

a. Loss of SR2, WR2, PR2 nuclear instrument channels.

b. Reactor trip due to deenergization of WR2 instrument channel.

c. Reactor trip due to deenergization of SR2 instrument channel.

d. Reactor trip due to indicated WR High SUR.

QUESTION: 078 (1.00)

Given the following conditions:

1. The plant is being shutdown to HOT STANDBY due to a steam generator tube leak.

Which ONE (1) of the following procedurally does NOT require a reactor t[illegible] and entry into E-0, "Reactor Trip or Safety Injection?"

a. When leakage exceeds 40 gpm.

b. When all available charging pumps are running and letdown has automatically throttled to minimum.

c. When letdown flow combined with the tube rupture flow exceeds charging pump capacity and pressurizer pressure cannot be maintained.

d. When charging flow reaches maximum output with all available charging pumps running.

QUESTION: 079 (1.00)

A high containment pressure (HCP) signal causes valve operations which isolate certain radiation monitors. Which of the following: (i) lists radiation monitors isolated on a HCP signal, and (ii) correctly states whther these monitors may or may not be unisolated prior to reset of the HCP signal?

a. SG blowdown, letdown; may be unisolated prior to HCP reset.

b. Containment particulate and gas, SG blowdown; may not be unisolated prior to HCP reset.

c. Containment particulate and gas, SG blowdown, letdown; may be unisolated prior to HCP reset.

d. Containment particulate and area radiation; may not be unisolated prior to HCP reset.

QUESTION: 080 (1.00)

Assuming no operator action, how will the reactor coolant pumps (RCP) respond to a reactor trip due to a loss of DC Bus B/BX?

a. RCPs 1 & 3 will trip 52 seconds after the turbine trip, while RCPs 2 & 4 will remain running on offsite power.

b. RCPs 1, 2, 3, will shutdown 52 seconds after the turbine trip, while RCP 4 will remain running on offsite power.

c. All four RCPs will automatically trip at the time of the turbine trip.

d. All four RCPs shutdown 52 seconds after the turbine trip.

QUESTION: 081 (1.00)

While operating at 100% power, an operator receives a "C" and "D" Vital AC Trouble alarm and no other alarms. Upon investigation, it is determined that the "C" inverter failed. Why was power not lost to Vital "C" loads?

a. Vital inverter "C" static switch transferred to inverter "D" output.

b. Vital inverter "C" static switch transferred to MCC-12 CVT supply.

c. Vital inverter "C" crosstie switch transferred to inverter "D" output.

d. Vital inverter "C" static switch transferred to inverter "A" output.

QUESTION: 082 (1.00)

EOP 3.1-48 "Cavity Seal Failure," immediate action states that in the event of a cavity seal failure accident, the irradiated fuel assembly being moved outside the core envelope should be stored. Which one of the following is a "stored location" as defined in EOP 3.1-48.

a. Lowered to the bottom of the refueling cavity and unlatched.

b. Suspended from the refueling machine and latched.

c. Lowered to the bottom of the transfer canal in a predetermined spot, and unlatched.

d. Placed into the fuel transfer car with fuel transfer car in the vertical and unlatched.

QUESTION: 083 (1.00)

The following plant conditions exist:

1. Cold shutdown.
2. RCS temperature at 150 degrees F.
3. B RHR pump running.
4. B and C CCW pumps running.

The plant experiences a total loss of offsite power. Which of the following indicates the necessary operator action(s) in order to maintain CCW cooling to the RHR heat exchangers?

a. Verify one (1) CCW pump automatically sequences onto each emergency diesel generator.

b. Verify that the CCW pumps automatically start on low discharge pressure after the 480 busses are reenergized from their respective emergency diesel generators.

c. Manually start a CCW pump after verifying its associated 480V bus reenergized.

d. Reset the 480V bus undervoltage lockout relay for the CCW pump to be started, and then start the CCW pump.

QUESTION: 084 (1.00)

Given the following conditions:

1. All fire system components are in their normal opeerating alignment.
2. Fire system pressure decreased to 75 psig due to a leak and has subsequently beeen restored to 125 psig.
3. Assume no operator actions have been taken.

Which ONE (1) of the following describes the operating status of the Fire system?

	Pressure Maintenance Pump	Electric Pump	Diesel Pump
a.	ON	ON	ON
b.	ON	OFF	OFF
c.	OFF	ON	ON
d.	OFF	OFF	OFF

QUESTION: 085 (1.00)

Given the following conditions:

1. The plant is in MODE 2 at 3% power and slowly increasing.
2. Tavg indicates 523 degrees F.

Which ONE (1) of the following actions complies with Technical Specification 3.1.1.6, "Minimum Temperature for Criticality?"

a. Restore Tavg to 525 degrees in 15 minutes.

b. Restore Tavg to 530 degrees in 30 minutes.

c. While the RCS Tavg is less than 535 degrees, log Tavg once per 30 minutes.

d. While the RCS Tavg is less than 535 degrees, log Tavg once per hour.

QUESTION: 086 (1.00)

Which ONE (1) of the following is an indication of an intersystem LOCA through the core deluge check valves?

a. RWST level is decreasing faster than HPSI/LPSI injection flow.

b. RWST temperature is increasing.

c. HPSI pump amp meters indicate less than 115 amps.

d. LPSI pump discharge pressure is less than 405 psig.

QUESTION: 087 (1.00)

The plant is operating at 100% power. Service water pressure is 5 psig above its low pressure alarm setpoint. CCW surge tank level is steadily increasing. Which of the following would be the source of leakage?

a. Waste gas compressor seal.

b. RCP thermal barrier.

c. Regenerative heat exchanger.

d. CCW heat exchanger.

QUESTION: 088 (1.00)

Using the following list of safety requirements, breaker operating equipment and protective equipment, determine which one of the following describes the MINIMUM requirements when racking in a breaker for a circulating water pump?

1. A CONVEX clearance
2. Large rackout crank
3. Face shield
4. Orange flash jacket
5. High voltage gloves
6. Rubber mat to stand on
7. Safety glasses

a. 1, 5 and 6

b. 2, 3, 4, 5 and 7

c. 2, 3, 4, 6 and 7

d. 2, 3, 4, 5, 6, and 7

QUESTION: 089 (1.00)

In accordance with ACP 1.2-6.4 "Temporary Procedure Changes (TPC)," within how many days (excluding any extensions) should a TPC be incorporated in an NOP upon approval of the TPC?

a. 30 days

b. 60 days

c. 90 days

d. 120 days

QUESTION: 090 (1.00)

With the plant operating in Mode 1, WHICH ONE (1) of the following activities is allowed when only ONE (1) licensed operator is present "at the controls," per NOP 2.0-7, "Operations Department Shift Staffing Requirements?"

a. Use the rest room facility.

b. Initiate a surveillance on the diesel auxiliary boards.

c. Check the inside of the ICC cabinets.

d. Acknowledge alarm on the L.P. Steam dump control panel.

QUESTION: 091 (1.00)

You have been assigned to perform a valve lineup. As part of your pre-job brief you are notified that there is ALPHA contamination in your work area. The RWP also is annotated that ALPHA contamination is present. Once you have completed your job task, how do you exit the RCA?

a. Perform an automatic frisk using the PCM-1, then exit the RCA.

b. Perform an automatic frisk using the PCM-1, then a manual frisk using an RM-14/HP210, then exit the RCA.

c. Perform a manual frisk using a Ludlum-177/43-2, then exit the RCA.

d. Perform an automatic frisk using the PCM-1, then a manual frisk using a Ludlum-177/43-2, then exit the RCA.

QUESTION: 092 (1.00)

Given the following conditions:

1. The plant is in MODE 2.
2. A routine containment entry is planned.

WHICH ONE (1) of the following is the MINIMUM number of personnel that are required for the containment entry?

a. Two (2)

b. Three (3)

c. Four (4)

d. Five (5)

QUESTION: 093 (1.00)

Which of the following correctly describes a purpose or condition of a No-Tag designation?

a. Can remain active only for a period of up to two (2) weeks.

b. Can only be requested by CONVEX.

c. Notes a temporary operating restriction.

d. May be used as required within an approved clearance boundary to aid in ensuring that the valve is incorporated into the system restoration when the tags are cleared.

QUESTION: 094 (1.00)

A radiation monitor has come into alarm. According to AOP 3.2-2, High Activity Level, what action can the operator take to clear the alarm?

a. Raise the alarm limit slightly above the indicated level.

b. Raise the alarm limit to two (2) times background.

c. Raise the alarm limit up to the maximum setpoint.

d. Raise the alarm limit up to one and a half (1.5) times background.

QUESTION: 095 (1.00)

WHICH ONE (1) of the following is the MINIMUM number of plant personnel required to man the fire brigade per NOP 2.0-7, "Operations Department Shift Staffing Requirements?"

a. Four (4) which CANNOT include those required for safe shutdown of the plant.

b. Four (4) which CAN include those required for safe shutdown of the plant.

c. Five (5) which CANNOT include those required for safe shutdown of the plant.

d. Five (5) which CAN include those required for safe shutdown of the plant.

QUESTION: 096 (1.00)

A generator hydrogen leak is occurring. Which of the following is the lowest hydrogen concentration that would be an explosive/fire hazard?

a. 1%

b. 3%

c. 5%

d. 7%

QUESTION: 097 (1.00)

WHICH ONE (1) of the following is NOT TRUE in regard to independent verification of valve position.

a. If a discrepancy is discovered while independently verifying a valve position, one shall immediately contact their supervisor for resolution.

b. Observation of the relative height of a valve stem may be used as the sole determinant of a valve's position.

c. Independendent verification requirements may be waived by the shift supervisor if excessive radiation exposures would result.

d. During valve lineups requiring independent verification, two qualified operators may work together; however, each operator must verify valve/breaker position, including locked status, if applicable.

QUESTION: 098 (1.00)

Which ONE (1) of the following individuals is NOT permitted to operate reactor controls under the instruction or supervision of a licensed operator?

a. A licensed reactor operator who recently failed a NRC administered senior reactor operator upgrade examination.

b. A reactor engineer doing rod motion checks following a refueling.

c. A licensed reactor operator whose license has become inactive per the requirements of 10CFR55.

d. A nuclear system operator enrolled in a current license training course to obtain ana operator license and has received the necessary training.

QUESTION: 099 (1.00)

Which ONE of the following is the MINIMUM number of shifts that a licensed individual must actively perform operator functions to maintain a license in an active status? Assume eight (8) hour shifts are in effect.

a. Five (5) shifts per calendar quarter.

b. Five (5) shifts per calendar year.

c. Seven (7) shifts per calendar quarter.

d. Seven (7) shifts per calendar year.

QUESTION: 100 (1.00)

An attempt to start a reactor coolant pump (RCP) was made at 1045, but the pump was stopped before it reached full speed.

Which ONE (1) of the following is the earliest time that an attempt to restart the RCP can be made?

a. 11:00

b. 11:15

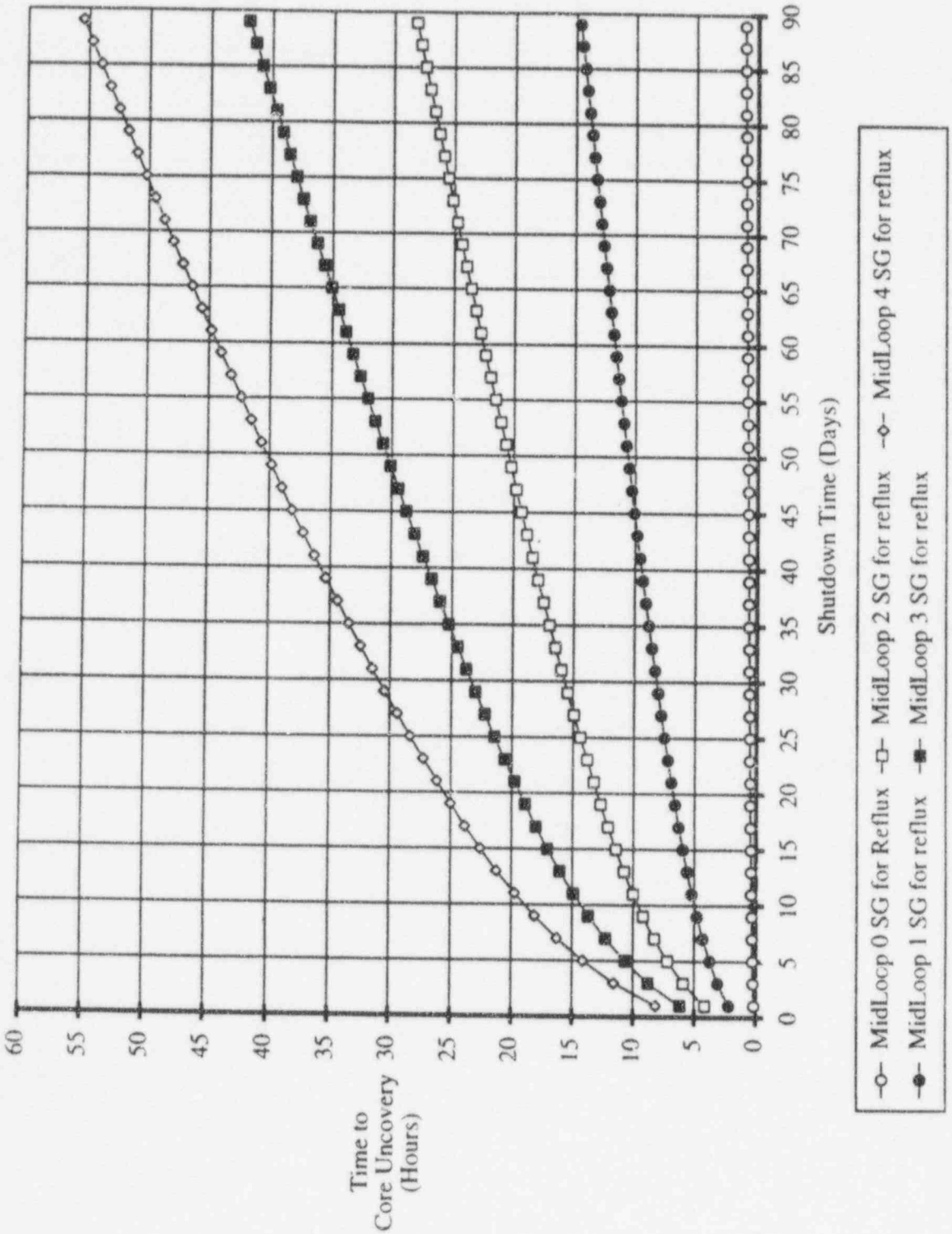
c. 11:30

d. 11:45

(********** END OF EXAMINATION **********)

Attachment 5

Loss of RHR Core Uncovery Time vs. Shutdown Time at Mid-Loop Level



Note: Initial RCS temperature is assumed to be 140°F.

ANSWER: 001 (1.00)

b.

REFERENCE:

HN exam bank QID: 16053

[3.1/3.5]

064000A304 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

PIB 72 pg 120-121

[2.8/3.2]

064000K405 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

4KV PIB ch 64

[3.5/3.7]

063000K302 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

PIB ch 2.1

[3.8/3.9]

002020G001 ..(KA's)

ANSWER: 005 (1.00)

c.

REFERENCE:

PIB ch 81 pg 33

[3.4/3.6]

035010A203 ..(KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

PIB 2.4 pg 7

[3.8/4.1]

010000K403 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

PIB ch 2.4

[4.0/3.8]

010000A403 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

[4.2/4.3]

026000K401 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

PIB ch 6 pg 15

[3.2/3.5]

005000K407 ..(KA's)

ANSWER: 010 (1.00)

a.

REFERENCE:

T.S. 3.4.3

[3.2/3.8]

011000G005 ..(KA's)

ANSWER: 011 (1.00)

d.

REFERENCE:

T.S. 2.1.2

[3.2/3.8]

010000G005 ..(KA's)

ANSWER: 012 (1.00)

c.

REFERENCE:

LP L00400

[3.6/3.1]

004010A401 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

PIB ch 2.2 pg 32

[2.8/2.8]

003000A109 ..(KA's)

ANSWER: 014 (1.00)

b.

REFERENCE:

PIB ch 5 pg 142 (pump curve, total flow limited to 2000 gpm/Pp by
in ion line throttle valves,

[2.6/2.9]

006000K613 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

LP REF: SECSYS L01700
PROC REF: ANN 4.4-1

[2.7/2.9]

041020K603 ..(KA's)

ANSWER: 016 (1.00)

c.

REFERENCE:

PIB ch 17

[3.7/3.9]

041020K417 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

PIB ch 25

[2.8/2.9]

041020GC04 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

PIB ch 23/26

[2.5/2.6]

045050G004 ..(KA's)

ANSWER: 019 (1.00)

a.

REFERENCE:

HN exam bank QIDL 16087

[3.4/3.8]

000024K101 ..(KA's)

ANSWER: 020 (1.00)

b.

REFERENCE:

FR-C.1

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 021 (1.00)

a.

REFERENCE:

AOP

[3.6/3.5]

000026G010 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

[3.3/3.6]

039000A205 ..(KA's)

ANSWER: 023 (1.00)

c.

REFERENCE:

PIB ch 21

[2.7/3.0]

061000A206 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

ANSWER: 025 (1.00)

b.

REFERENCE:

E-0

[2.8/2.9]

045000G014 ..(KA's)

ANSWER: 026 (1.00)

b.

REFERENCE:

[4.1/4.2]

010000A203 ..(KA's)

ANSWER: 027 (1.00)

c.

REFERENCE:

LP-ROD-010C, Rod Control System, pages 35-37; EO-11
NOP2.2-1 85% 552 degrees Tave att 6

[3.2/3.6]

001000K565 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

LP-CY-OP-LO-PRISYS-L00220, Reactor Coolant Pump, page 22: EO-6
[3.4/3.4]

003000A107 ..(KA's)

ANSWER: 029 (1.00)

d.

REFERENCE:

LP-CVC-01-C, Chemical and Volume Control System, page 16: EO-3
[3.2/3.1]

004000K404 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

PIB ch 5 pg 21
TS basis B 3/4 5.4 pg. 5-2 and UFSAR pg. 6.1-2

[3.2/3.4]

026000G004 ..(KA's)

ANSWER: 031 (1.00)

a.

REFERENCE:

PIB ch 12

[2.7/2.9]

068000K107 ..(KA's)

ANSWER: 032 (1.00)

d.

REFERENCE:

EOP 3.1-34

[2.9/3.4]

000065K303 ..(KA's)

ANSWER: 033 (1.00)

b.

REFERENCE:

MS sys desc, EOP 3.1-34

[2.9/3.1]

000065G007 ..(KA's)

ANSWER: 034 (1.00)

d.

REFERENCE:

EOP 3.1-34

[3.6/4.2]

000065A206 ..(KA's)

ANSWER: 035 (1.00)

c.

REFERENCE:

E-3 background

[4.2/4.5]

000038K306 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

LP REF: L3201 ECA-0.0

[3.5/3.9]

000055A104 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

E-3

[4.3/4.1]

000038A104 ..(KA's)

ANSWER: 038 (1.00)

b.

REFERENCE:

AOP 3.2-23

[3.7/3.8]

001050G001 ..(KA's)

ANSWER: 039 (1.00)

c.

REFERENCE:

AOP 3.2-23

[3.2/3.7]

000003K101 ..(KA's)

ANSWER: 040 (1.00)

b.

REFERENCE:

TS 3.4.6.2

[3.6/4.1]

002020G005 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

TS 2.0

[3.6/4.1]

002020G005 ..(KA's)

ANSWER: 042 (1.00)

a.

REFERENCE:

T.S. 2.0

[3.6/4.1]

002020G005 ..(KA's)

ANSWER: 043 (1.00)

c.

REFERENCE:

CAF

[3.4/3.4]

004000K117 ..(KA's)

ANSWER: 044 (1.00)

c.

REFERENCE:

AOP 3.2-57

[3.3/3.7]

000067G010 ..(KA's)

ANSWER: 045 (1.00)

c.

REFERENCE:

TS 3.1.1.1

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

PIB ch 80 pg 27

[3.7/3.9]

001000A104 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

NOP 2.4-10 Att 5. PROVIDE ATT 1-7 AS REFERENCE

[3.4/3.6]

000025G007 ..(KA's)

ANSWER: 048 (1.00)

b.

REFERENCE:

Background for FR-S.1

[4.2/4.4]

000024K302 ..(KA's)

ANSWER: 049 (1.00)

b.

REFERENCE:

PIB ch 80.

[3.2/3.4]

001000K104 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

AOP 3.2-12 pg. 2,6
NOP2.4-10, pg. 12

[3.4/3.7]

000025A207 ..(KA's)

ANSWER: 051 (1.00)

a.

REFERENCE:

Figure 8.1, TRSCO

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

AOP 3.2-33

[3.9/4.1]

000051A202 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

LP REF:L08200

[3.4/3.6]

072000A101 ..(KA's)

ANSWER: 054 (1.00)

a.

REFERENCE:

PIB ch 82

[3.3/3.6]

072000K401 ..(KA's)

ANSWER: 055 (1.00)

a.

REFERENCE:

status trees

[3.7/3.9]

017020A101 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

AOP 3.2-12

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

FR-S.1 background.

[4.2/4.3]

000029K306 ..(KA's)

ANSWER: 058 (1.00)

b.

REFERENCE:

ECA-0.0; loss of power to RPI.

[4.2/4.5]

000029K301 ..(KA's)

ANSWER: 059 (1.00)

c.

REFERENCE:

facility bank question 3

[3.1/3.1]

015000K103 ..(KA's)

ANSWER: 060 (1.00)

b.

REFERENCE:

AOP 3.2-23

[3.6/4.1]

014000A203 ..(KA's)

ANSWER: 061 (1.00)

b.

REFERENCE:

TS 3.3.2

[3.7/4.1]

000015K102 ..(KA's)

ANSWER: 062 (1.00)

d.

REFERENCE:

AOP 3.2-17, fac Q98

[3.5/3.6]

000015G011 ..(KA's)

ANSWER: 063 (1.00)

d.

REFERENCE:

bank q69

[3.6/3.7]

010000K103 ..(KA's)

ANSWER: 064 (1.00)

a.

REFERENCE:

PIB 2.6

[3.4/3.8]

000028A202 ..(KA's)

ANSWER: 065 (1.00)

b.

REFERENCE:

AOP 3.2-50

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

bank q72

[4.0/4.2]

000068A203 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

PIB ch 19

[3.3/3.5]

059000K402 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

PIB ch 5

[4.1/4.2]

013000A302 ..(KA's)

ANSWER: 069 (1.00)

d.

REFERENCE:

PIB ch 67

[4.0/4.3]

000057A219 ..(KA's)

ANSWER: 070 (1.00)

a.

REFERENCE:

PIB ch 21

[3.9/4.2]

061000K401 ..(KA's)

ANSWER: 071 (1.00)

c.

REFERENCE:

PIB ch 21

[2.7/2.8]

061000K111 ..(KA's)

ANSWER: 072 (1.00)

a.

REFERENCE:

PIB CH 21

[3.2/3.6]

061000A202 ..(KA's)

ANSWER: 073 (1.00)

a.

REFERENCE:

HN 11/94 exam
CY-OP-LO-AOP-L2201, pg. 20 of 26

[3.1/3.6]

000022A203 ..(KA's)

ANSWER: 074 (1.00)

a.

REFERENCE:

HN 11/94 exam

[2.8/3.3]

000032G008 ..(KA's)

ANSWER: 075 (1.00)

d.

REFERENCE:

HN 11/94 exam

[2.9/3.1]

033000A302 ..(KA's)

ANSWER: 076 (1.00)

b.

REFERENCE:

HN 11/94 exam

[3.7/3.9]

000011G007 ..(KA's)

ANSWER: 077 (1.00)

a.

REFERENCE:

HN11/94 exam

[3.0/3.5]

000033A201 ..(KA's)

ANSWER: 078 (1.00)

~~b.~~ a.

REFERENCE:

HN 11/94 exam
AOP 3.2-31, pg. 4

[4.2/4.4]

000037K307 ..(KA's)

ANSWER: 079 (1.00)

b.

REFERENCE:

HN 11/94 exam

[3.0/3.1]

000061G009 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:

HN exam bank ID 15333
LP Ref:L3202, Proc. ref: 3.1-49

[3.5/3.9]

000058A203 ..(KA's)

ANSWER: 081 (1.00)

b.

REFERENCE:

HN Exam bank ID14372
LP REF: L1901, PROC REF: AOP 3.2-15

[3.2/3.7]

000057A206 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

HN exam bank ID 15653

[3.7/4.1]

000036A303 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

HN exam bank ID 13274
LP REF: S90206, PROC REF: ECA-0.0

[3.5/3.6]

000056A206 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

HN exam 11/94

[3.3/3.3]

086000A401 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

HN Exam 11/94

[3.6/4.1]

002000G005 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

HN exam 11/94

[3.5/3.8]

000009A202 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

AOP 3.2-10

[2.9/3.5]

000026A201 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

HN question bank ID 19130

[3.6/3.7]

194001K107 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

ACP 1.2-6.4, pg. 9

[3.3/3.4]

194001A101 ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

1994 NRC exam
NOP 2.0-7, "Operations Department Shift Staffing Requirements," pg. 2
and Att. 2

[2.7/3.9]

194001A109 ..(KA's)

ANSWER: 091 (1.00)

d.

REFERENCE:

RPM 2.7-2, Personnel Monitoring, pg.1

[3.3/3.5]

194001K104 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

WCM 2.4-7, Containment Access, Att. 1, pg. 12.
1994 NRC Exam

[3.1/3.4]

194001K105 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

WCM2.4-1, Equipment Tagging, pg. 12

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 094 (1.00)

d.

REFERENCE:

HN exam bank QID: 16255
Check AOP 3.2-2

[2.8/3.4]

194001K103 ..(KA's)

ANSWER: 095 (1.00)

c.

REFERENCE:

94 HN exam

[3.5/4.2]

194001K116 ..(KA's)

ANSWER: 096 (1.00)

c.

REFERENCE:

93 HN exam

[3.8/3.8]

194001K115 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

ODI #170, pg. 2 & 3

[3.6/3.7]

194001K101 ..(KA's)

ANSWER: 098 (1.00)

b.

REFERENCE:

ODI #1 pg., 12

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 099 (1.00)

c.

REFERENCE:

ODI #157 pg., 1

[2.5/3.4]

194001A103 ..(KA's)

ANSWER: 100 (1.00)

b.

REFERENCE:

NOP2.4-2 Reactor Coolant Pump Operation, pg. 3

[3.4/3.4]

194001K106 ..(KA's)

(********** END OF EXAMINATION **********)

ANSWER KEY

MULTIPLE CHOICE

001	b
002	b
003	c
004	a
005	c
006	b
007	b
008	b
009	b
010	a
011	d
012	c
013	b
014	b
015	d
016	c
017	b
018	a
019	a
020	b
021	a
022	b
023	c
024	c
025	b
026	b
027	c
028	d
029	d
030	d
031	a
032	d
033	b
034	d
035	c
036	a
037	d
038	b
039	c
040	b
041	d
042	a
043	c
044	c
045	c

ANSWER KEY

046	b	069	d
047	b	070	a
048	b	071	c
049	b	072	a
050	b	073	a
051	a	074	a
052	b	075	d
053	c	076	b
054	a	077	a
055	a	078	~~b~~ a.
056	b	079	b
057	b	080	d
058	b	081	b
059	c	082	c
060	b	083	c
061	b	084	c
062	d	085	a
063	d	086	b
064	a	087	b
065	b	088	b
066	c	089	d
067	c	090	c
068	d	091	d

ANSWER KEY

092 b

093 d

094 d

095 c

096 c

097 b

098 b

099 c

100 b

(********** END OF EXAMINATION **********)

TEST CROSS REFERENCE

RO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
001	1.00	9000192
002	1.00	9000193
003	1.00	9000195
004	1.00	9000196
005	1.00	9000197
006	1.00	9000198
007	1.00	9000199
008	1.00	9000200
009	1.00	9000201
010	1.00	9000202
011	1.00	9000203
012	1.00	9000204
013	1.00	9000205
014	1.00	9000206
015	1.00	9000212
016	1.00	9000213
017	1.00	9000214
018	1.00	9000215
019	1.00	9000216
020	1.00	9000217
021	1.00	9000219
022	1.00	9000220
023	1.00	9000222
024	1.00	9000223
025	1.00	9000224
026	1.00	9000225
027	1.00	9000227
028	1.00	9000228
029	1.00	9000229
030	1.00	9000230
031	1.00	9000231
032	1.00	9000234
033	1.00	9000235
034	1.00	9000236
035	1.00	9000237
036	1.00	9000239
037	1.00	9000240
038	1.00	9000241
039	1.00	9000242
040	1.00	9000244
041	1.00	9000245
042	1.00	9000246
043	1.00	9000248
044	1.00	9000249
045	1.00	9000250
046	1.00	9000251
047	1.00	9000253
048	1.00	9000254
049	1.00	9000255

QUESTION	VALUE	REFERENCE
050	1.00	9000256
051	1.00	9000257
052	1.00	9000258
053	1.00	9000259
054	1.00	9000260
055	1.00	9000261
056	1.00	9000262
057	1.00	9000264
058	1.00	9000265
059	1.00	9000266
060	1.00	9000267
061	1.00	9000268
062	1.00	9000269
063	1.00	9000271
064	1.00	9000272
065	1.00	9000274
066	1.00	9000275
067	1.00	9000276
068	1.00	9000277
069	1.00	9000278
070	1.00	9000279
071	1.00	9000280
072	1.00	9000281
073	1.00	9000282
074	1.00	9000283
075	1.00	9000284
076	1.00	9000285
077	1.00	9000286
078	1.00	9000287
079	1.00	9000288
080	1.00	9000289
081	1.00	9000290
082	1.00	9000291
083	1.00	9000292
084	1.00	9000293
085	1.00	9000294
086	1.00	9000295
087	1.00	9000296
088	1.00	9000299
089	1.00	9000300
090	1.00	9000301
091	1.00	9000302
092	1.00	9000303
093	1.00	9000306
094	1.00	9000307
095	1.00	9000309
096	1.00	9000310
097	1.00	9000311
098	1.00	9000313

RO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
099	1.00	9000314
100	1.00	9000315
	100.00	
	100.00	

TEST CROSS REFERENCE
RO Exam PWR Reactor
Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
089	1.00	194001A101
099	1.00	194001A103
090	1.00	194001A109
098	1.00	194001A111
097	1.00	194001K101
093	1.00	194001K102
094	1.00	194001K103
091	1.00	194001K104
092	1.00	194001K105
100	1.00	194001K106
088	1.00	194001K107
096	1.00	194001K115
095	1.00	194001K116
PWG Total	13.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
046	1.00	001000A104
049	1.00	001000K104
051	1.00	001000K504
045	1.00	001000K504
027	1.00	001000K565
038	1.00	001050G001
028	1.00	003000A107
013	1.00	003000A109
043	1.00	004000K117
029	1.00	004000K404
012	1.00	004010A401
068	1.00	013000A302
059	1.00	015000K103
055	1.00	017020A101
067	1.00	059000K402
072	1.00	061000A202
023	1.00	061000A206
071	1.00	061000K111
070	1.00	061000K401
031	1.00	068000K107
053	1.00	072000A101
054	1.00	072000K401
PS-I Total	22.00	

TEST CROSS REFERENCE
RO Exam PWR Reactor
Organized by KA Group

PLANT SYSTEMS

Group II

QUESTION	VALUE	KA
085	1.00	002000G005
004	1.00	002020G001
041	1.00	002020G005
040	1.00	002020G005
042	1.00	002020G005
014	1.00	006000K613
026	1.00	010000A203
007	1.00	010000A403
011	1.00	010000G005
063	1.00	010000K103
006	1.00	010000K403
010	1.00	011000G005
060	1.00	014000A203
030	1.00	026000G004
008	1.00	026000K401
075	1.00	033000A302
005	1.00	035010A203
022	1.00	039000A205
003	1.00	063000K302
001	1.00	064000A304
002	1.00	064000K405
084	1.00	086000A401

PS-II Total	22.00	

Group III

QUESTION	VALUE	KA
009	1.00	005000K407
017	1.00	041020G004
016	1.00	041020K417
015	1.00	041020K603
025	1.00	045000G014
018	1.00	045050G004

PS-III Total	6.00	

PS Total	50.00	

EMERGENCY PLANT EVOLUTIONS

Group I

TEST CROSS REFERENCE
RO Exam PWR Reactor
Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
062	1.00	000015G011
061	1.00	000015K102
019	1.00	000024K101
048	1.00	000024K302
087	1.00	000026A201
021	1.00	000026G010
052	1.00	000051A202
036	1.00	000055A104
081	1.00	000057A206
069	1.00	000057A219
044	1.00	000067G010
066	1.00	000068A203
065	1.00	000068G010
020	1.00	000074K311
EPE-I Total	14.00	

Group II

QUESTION	VALUE	KA
039	1.00	000003K101
086	1.00	000009A202
076	1.00	000011G007
073	1.00	000022A203
050	1.00	000025A207
047	1.00	000025G007
056	1.00	000025K101
058	1.00	000029K301
057	1.00	000029K306
074	1.00	000032G008
077	1.00	000033A201
078	1.00	000037K307
037	1.00	000038A104
035	1.00	000038K306
080	1.00	000058A203
079	1.00	000061G009
EPE-II Total	16.00	

Group III

QUESTION	VALUE	KA
064	1.00	000028A202

RO Exam PWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group III

QUESTION	VALUE	KA
082	1.00	000036A303
083	1.00	000056A206
034	1.00	000065A206
033	1.00	000065G007
032	1.00	000065K303
EPE-III Total	6.00	
EPE Total	36.00	
Test Total	100.00	