U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NO: 50-354/95-21

LICENSEE: Public Service Electric and Gas Company
Hancocks Bridge, New Jersey 08038

FACILITY: Hope Creek Nuclear Generating Station

DATES: December 18-21, 1995

EXAMINERS: T. Walker, Sr. Operations Engineer
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CHIEF EXAMINER: _____ 1/23/96
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Operator Licensing and
Human Performance Branch
Division of Reactor Safety

APPROVED BY: _____ 1/22/96
Glenn W. Meyer, Chief Date
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

EXAMINATION SUMMARY

Examination Report 50-354/95-21 (OL)

Initial examinations were administered to four senior reactor operator (SRO) instant applicants and one senior reactor operator upgrade applicant during the period of December 18-21, 1995, at Hope Creek Generating Station.

OPERATIONS

All applicants passed the examination. The applicants were well prepared for all portions of the examinations.

DETAILS

1.0 INTRODUCTION

The NRC administered initial examinations to four senior reactor operator (SRO) instant applicants and one senior reactor operator upgrade applicant. The examinations were administered in accordance with NUREG-1021, "Examiner Standards," Revision 7.

2.0 PREEXAMINATION ACTIVITIES

The facility staff reviewed the written examinations on December 7, 1995, in the NRC Region I office. The simulator scenarios and job performance measures (JPMs) were validated during the week of December 11, 1995, on the facility's simulator, and in the plant. The facility staff, who were involved with these reviews, signed security agreements to ensure that the initial examinations were not compromised.

3.0 EXAMINATION RESULTS AND RELATED FINDINGS, OBSERVATIONS, AND CONCLUSIONS

3.1 Examination Results

The results of the examinations are summarized below:

	SRO Pass/Fail
Written	5/0
Operating	5/0
Overall	5/0

In a letter, dated December 21, 1995 (Attachment 2), Public Service Electric and Gas (PSE&G) provided two comments on the written examination. The NRC accepted the comments. As a result, one question was determined to have two correct answers, and one question was deleted from the written examination. The NRC resolution of facility comments is summarized in Attachment 3.

3.2 Facility Generic Strengths and Weaknesses

The following is a summary of the strengths and weaknesses noted during initial examination administration. This information is being provided to aid the licensee in upgrading their training program.

Written Examination

The following questions related to the following specific knowledge/ability topics and were missed by more than half of the applicants, indicating a generic weakness in the subject:

Question 3 Ability to recognize indications of reactor instability

Question 18	Knowledge of the bases for resetting the reactor scram during an anticipated transient without scram (ATWS)
Question 25	Knowledge of the bases for operating recirculation pumps during an ATWS
Question 47	Knowledge of the bases for securing suppression chamber sprays when primary containment pressure decreases
Question 95	Ability to determine the impact of a broken reed switch on control rod motion
Question 100	Ability to determine the Technical Specification limiting condition for operation (LCO) for inoperable control room ventilation radiation monitors

Operating Examination

No specific generic strengths or weaknesses were noted during the operating examinations. Overall, the applicants were well prepared for the examinations.

3.3 Emergency Operating Procedure Usage

During the written examination review and validation of the operating test materials, the examiners identified several aspects in the implementation of the emergency operating procedures (EOPs) for which there was no specific written guidance, or in which the direction in the flowcharts appeared unclear. These aspects included use of HPCI during ATWS conditions, termination and prevention of injection systems, definition of secondary containment areas with respect to temperature and radiation level monitoring, and use of alternate methods for emergency depressurization. Expectations for operator performance of these aspects were discussed with training personnel prior to administration of the examinations. All of the applicants performed as expected during the examinations, indicating that training was effective.

4.0 EXIT MEETING

An exit meeting was conducted on December 21, 1995. Examiner observations related to simulator fidelity (Attachment 4) and EOP usage (Section 3.3) were discussed. The facility was reminded to submit comments on the written examination within 5 working days. The support given by all of the PSE&G personnel enabled the examination to be developed and administered effectively.

Attachments:
1. SRO Examination and Answer Key
2. Facility Comments on Written Examinations
3. NRC Resolution of Facility Comments on the Written Examinations
4. Simulation Facility Report

ATTACHMENT 1

SRO EXAMINATION AND ANSWER KEY

U. S. NUCLEAR REGULATORY COMMISSION
SITE-SPECIFIC
WRITTEN EXAMINATION

APPLICANT INFORMATION	
Name: MASTER	Region: I
Date: 12/18/1995	Facility/Unit: HOPE CREEK
License Level: SRO	Reactor Type: BWR-GE4

INSTRUCTIONS

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 percent. Examination papers will be picked up 4 hours after the examination starts.

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

_____
Applicant's Signature

RESULTS	
Examination Value	~~100~~ 99 Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

A N S W E R S H E E T

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	___
002	a	b	c	d	___
003	a	b	c	d	___
004	a	b	c	d	___
005	a	b	c	d	___
006	a	b	c	d	___
007	a	b	c	d	___
008	a	b	c	d	___
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036	a	b	c	d	___
037	a	b	c	d	___
038	a	b	c	d	___
039	a	b	c	d	___
040	a	b	c	d	___
041	a	b	c	d	___
042	a	b	c	d	___
043	a	b	c	d	___
044	a	b	c	d	___
045	a	b	c	d	___

A N S W E R S H E E T

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	___

A N S W E R S H E E T

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 left-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. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

8. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.

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

10. Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.

11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.

12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.

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

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

15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.

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

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

18. 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)

The Unit was operating at 60% power when Reactor Recirculation Pump B tripped. Plant conditions following the recirculation pump trip are as follows:

- Reactor power is 49% of rated thermal power.
- Core flow is 37% of rated.

Which one of the following is the action that must be taken by the operators? (HC.OP-AB.ZZ-0300, Reactor Power Oscillations, Attachment 1, Power to Flow Maps, is attached for reference.)

a. Insert control rods to less than 80% rod line following the rod sequence.

b. Insert control rods to less than 70% rod line following the rod sequence.

c. Increase the speed of Recirculation Pump A to increase core flow to between 40% and 45% of rated core flow.

d. Restart Recirculation Pump B to increase core flow to greater than 45% of rated core flow.

QUESTION: 002 (1.00)

The Unit was operating at 90% power when Reactor Recirculation Pump B tripped. Plant conditions are as follows:

- Jet pump flow rate indicated for loop A is 40 E6 lbm/hr.
- Jet pump flow rate indicated for loop B is 3 E6 lbm/hr.
- Reactor Recirc pump A indicated flow rate is 20,000 gpm.
- Reactor Recirc pump A indicated speed is 40%.
- Core Flow Recorder indicates 34 E6 lbm/hr.

Which one of the following is the ACTUAL core flow rate?

a. 43 E6 lbm/hr

b. 40 E6 lbm/hr

c. 37 E6 lbm/hr

d. 34 E6 lbm/hr

QUESTION: 003 (1.00)

The reactor is operating at power when a recirculation flow reduction event results in entry into the EXIT REGION of the Power to Flow Map (Attachment 1 of AB.ZZ.0300, attached for reference.) Plant conditions prior to the event were as follows:

- Reactor power 90% of rated thermal power.
- APRMs indicated 90% +/- 3%.
- All LPRMs above downscale alarms and below upscale alarms.
- LPRMs near center of core indicate 95% +/- 3%.
- Period meter indicates infinity.

Which one of the following neutron instrumentation responses POSITIVELY indicates reactor instability after core flow first reaches its lowest flow rate?

a. APRMs indicate 60% +/- 5%.

b. LPRMs near center of the core indicate 70% +/- 4%.

c. Period meter indicates a negative period then a positive period approximately every 2 seconds.

d. LPRM downscale alarms occur at 5 seconds, 30 seconds, and 90 seconds.

QUESTION: 004 (1.00) deleted

The Unit is operating at 75% power with 4 circulating water pumps running.

Which one of the following describes the expected sequence of actions if condenser vacuum has degraded from 2.5 inches Hg Absolute Vacuum to 6.0 inches Hg Absolute Vacuum when two circulating water pumps trip?

Main turbine trips,

a. recirc pumps runback to 45% speed and MSIVs close.

b. recirc pumps runback to 45% speed and reactor feed pumps trip.

c. recirc pumps runback to 30% speed and reactor feed pumps trip.

d. recirc pumps runback to 30% speed and MSIVs close.

QUESTION: 005 (1.00)

Emergency Diesel Generator (D/G) B surveillance testing is being conducted. A loss of offsite power occurs one minute after the operator closes the D/G B output breaker onto its bus.

Which one of the following states the response of the D/G output breaker and the operator action that should be taken to ensure the associated D/G loads are repowered?

a. D/G output breaker remains closed, and the operator verifies that the D/G assumes the bus loads sequentially.

b. D/G output breaker remains closed, the operator depresses the breaker trip pushbutton to open the breaker, and then manually recloses the breaker.

c. D/G output breaker trips open, and the operator manually recloses the breaker.

d. D/G output breaker trips open, the operator verifies the breaker automatically recloses.

QUESTION: 006 (1.00)

Select the choice below that completes the following statements.

A large LOCA is in progress, causing boiling in the variable leg of a reactor water level instrument. At the onset of boiling in the variable leg, the differential pressure (dp) across the reactor level instrument dp cell will _____, resulting in an erroneously _____ reactor level indication.

a. decrease; high

b. decrease; low

c. increase; high

d. increase; low

QUESTION: 007 (1.00)

Which one of the following describes plant conditions for which the FUEL ZONE range level instrument will accurately indicate reactor vessel water level? (Assume reactor water level is constant in each of the following.)

a. Hot Shutdown, RPV pressure 920 psig, recirculation pump A tripped, and recirculation pump B running at minimum speed.

b. Cold Shutdown, RPV pressure 0 psig, both recirculation pumps secured, and shutdown cooling in service.

c. Reactor scrammed from power operations, RPV pressure 920 psig, both recirculation pumps tripped, and HPCI injecting to RPV.

d. Reactor emergency depressurized, RPV pressure 0 psig, both recirculation pumps tripped, and core spray injecting to RPV.

QUESTION: 008 (1.00)

Which one of the following describes the response of the pumps for the Service Water (SW) and the Safety Auxiliaries Cooling (SAC) systems if the operator depresses the "A" PCIS MANUAL pushbutton?

a. "A" SW pump and "A" SACS pump immediately start if they were not running.

b. "A" and "C" SW pumps and "A" and "C" SACS pumps immediately start if they were not running.

c. "A" SACS pump immediately starts if not running, and "A" SW pump immediately trips if running.

d. "A" and "C" SACS pumps immediately start if not running, and "A" and "C" SW pumps immediately trip if running.

QUESTION: 009 (1.00)

Plant conditions are as follows:

- Mode Switch is in SHUTDOWN.
- MSIVs are open.
- Both Reactor Recirculation Pumps are shutdown.
- Shutdown cooling has just been placed into service.
- RWCU filter demineralizers A and B are in service.
- Main turbine is tripped.

Which one of the following describes the expected plant response to a loss of RPS Bus B?

a. Inboard MSIVs close; loss of RWCU inboard and outboard isolation valve indications

b. Inboard MSIVs close; RWCU isolates; shutdown cooling isolates

c. Loss of inboard MSIV indication; RWCU isolates; shutdown cooling isolates

d. Loss of inboard MSIV indication; loss of RWCU inboard and outboard isolation valve indications

QUESTION: 010 (1.00)

The Unit is operating at 100% power when a LOCA and a loss of offsite power occur. Emergency diesel generators respond as expected.

Which one of the following describes the effect on the operation of the 1E and Non-1E 125 VDC Battery Chargers?

a. 1E and Non-1E chargers are load shed, and both are automatically restored by load sequencing.

b. 1E and Non-1E chargers are load shed, the 1E chargers is automatically restored by load sequencing, and the Non-1E chargers will automatically load if the load shed is overridden.

c. 1E chargers remain in service, and the Non-1E chargers are load shed and cannot be returned to service.

d. 1E chargers remain in service, and the Non-1E chargers are load shed and can be manually restored by overriding the load shed and reenergizing the MCCs.

QUESTION: 011 (1.00)

The Unit is operating at 100% power when 125 VDC to all the Turbine Controls is lost.

Which one of the following describes the effect on the Main Turbine Controls and Trips?

a. The turbine will automatically trip. The turbine bypass valves will fail closed.

b. Turbine will automatically trip. The turbine bypass valves will control with a reduced response time.

c. Turbine will remain on line. If a turbine trip is required, the operator can remotely trip the turbine by depressing the turbine trip pushbutton on 10C651D.

d. Turbine will remain on line. If a turbine trip is required, the operator can only trip the turbine by tripping of the local mechanical tripping device.

QUESTION: 012 (1.00)

During manual transfer between Chilled Water and Reactor Auxiliary Cooling System (RACS) the operator is required to close HV9532-1 CHW ISLN RTN VLV and HV9532-2 CHW SUP ISLN VLV.

What would be the effect of NOT performing this action?

a. A loss of head tank level would occur in the Chilled Water System.

b. A RACS pump trip on RACS head tank low level would occur.

c. Cooling wate to the reactor recirculation pumps would be isolated.

d. RACS pumps would run out causing an overcurrent trip.

QUESTION: 013 (1.00)

The Unit is operating at 100% power.

Which one of the following describes the response of the main turbine to a Power to Load Unbalance (PLU) conditi n?

a. Turbine control valves are fast closed by the energization of the fast-acting solenoids and the intercept valves are fully closed by a zero grounded signal.

b. Turbine control valves are fast closed by the energization of the fast-acting solenoids and intercept valves are closed by a turbine overspeed signal.

c. Load selector automatically runs back to 40% causing the control valves and the intercept valves to ramp closed.

d. Load selector automatically runs back to 23.5% causing the control valves to ramp closed, and the intercept valves are tripped closed.

QUESTION: 014 (1.00)

An abnormal condition has resulted in the following Unit conditions:

- Reactor power is 38% power.
- Main turbine load is 23%.
- Turbine bypass valves are partially open.
- Total main steam flow is 38%.
- Annunciator "TCV Fast Close and MSV Trip Byp" is ON.

Which one of the following describes the expected response of the reactor if a main turbine trip occurs?

a. Reactor immediately scrams when turbine valves close.

b. Reactor scrams on high reactor pressure.

c. Reactor continues to operate at 38% power.

d. Reactor continues to operate and power decreases to 30%.

QUESTION: 015 (1.00)

The Unit is operating at 85% power when EHC Steam Throttle Pressure detector A fails UPSCALE.

Which one of the following is the IMMEDIATE operator action that is required to take control of the turbine control and bypass valves?

a. Reduce the setpoint of the Pressure Regulator B.

b. Reduce the Maximum Combined Flow Limit potentiometer.

c. Increase the setpoint of the Load Limit Set potentiometer.

d. Increase the Pressure Setpoint Bias of Pressure Regulator B.

QUESTION: 016 (1.00)

Which one of the following causes the MSIVs to close following a Loss of All Offsite Power? (Assume no operator actions.)

a. Loss of main condenser vacuum

b. Loss of instrument gas and instrument control air compressors

c. Loss of power to the RPS Busses

d. Loss of AC power to the MSIV solenoid operated test pilot valves

QUESTION: 017 (1.00)

The reactor mode switch is in STARTUP and reactor power is 8%.

Which one of the following conditions will cause a HALF SCRAM to be generated by the Reactor Protection System (RPS)?

a. Inboard MSIVs A and B fail closed.

b. Three main turbine stop valves fail closed.

c. APRM D drifts to 16%.

d. IRM D increases to 113.5% on range 10.

QUESTION: 018 (1.00)

A scram has just occurred and the operators are executing EOP-100, Reactor Scram.

Which one of the following is the reason that step S-10 directs the operator to reset the scram if conditions permit?

a. To reestablish the normal primary vessel boundaries by isolating the CRD HCU from the scram discharge volume (SDV) and closing the SDV vent and drain valves.

b. To minimize the amount of time that the operator is unable to manually insert control rods in the event that all control rods are not fully inserted.

c. To reduce the potential for CRD pump runout and reduce the amount of time for the HCU accumulators to recharge.

d. To prevent excessive discharge of hot radioactive water to the Reactor Building Equipment Drain Sump.

QUESTION: 019 (1.00)

The Unit is operating at 70% reactor power when outboard MSIV B fails closed.

Which one of the following describes the response of the reactor?

a. RPV pressure will decrease and stabilize at a lower pressure.
Reactor power will decrease and stabilize at a lower power.
RPV water level will decrease and then return to normal level.

b. RPV pressure will decrease and stabilize at a lower pressure.
Reactor power will decrease and stabilize at a lower power.
RPV water level will increase and stabilize at a higher level.

c. RPV pressure will increase and stabilize at a higher pressure.
Reactor power will increase and stabilize at a higher power.
RPV water level will increase and stabilize at a higher level.

d. RPV pressure will increase and stabilize at a higher pressure.
Reactor power will increase and stabilize at a higher power.
RPV water level will decrease and then return to normal level.

QUESTION: 020 (1.00)

RCIC automatically initiated during a reactor water level transient.

Which one of the following describes the alignment of the RCIC system if reactor water level subsequently reaches +54 inches and continues to increase?

	HV-4282 Trip Throttle Valve	HV-FO45 Steam Supply Valve	HV-FO13 Pump Discharge Valve	SV-FO19 Minimum Flow Valve
a.	closed	open	closed	open
b.	closed	open	open	closed
c.	open	closed	closed	closed
d.	open	closed	open	open

QUESTION: 021 (1.00)

Unit shutdown to Cold Shutdown is in progress. RHR loop B is operating in the Shutdown Cooling mode. Plant conditions are as follows:

- RHR heat exchanger inlet temperature = 160 deg. F.
- RHR heat exchanger outlet temperature = 155 deg. F.
- RHR loop B flow = 5000 gpm
- RPV pressure = 0 psig.
- Reactor Shutdown Range level indicator = +45 inches.

Which one of the following would provide the operator with an indication that stratification of the reactor coolant in the reactor vessel is occurring?

a. RHR heat exchanger inlet and outlet temperatures each increase by 5 deg. F.
Reactor vessel flange thermocouple temperature increases from 160 to 170 deg. F.

b. Reactor vessel water level increases from +45 to +50 inches.
Reactor vessel flange thermocouple temperature increases from 160 to 165 deg. F.

c. Bottom head thermocouple temperature = 165 deg. F, slowly increasing.
Reactor vessel flange thermocouple temperature = 160 deg. F, slowly increasing.
Recirc loop B temperature = 160 deg. F slowly increasing

d. Bottom head thermocouple temperature = 155 deg. F, decreasing.
Reactor vessel flange thermocouple temperature = 160 deg. F, slowly increasing.
Recirc loop B temperature = 155 deg. F, slowly decreasing

QUESTION: 022 (1.00)

An abnormal event has required the Unit to be scrammed from 100% power operations and the reactor has rapidly depressurized to 100 psig. The operator observes the following drywell temperatures and reactor water levels:

Drywell Temperatures	Reactor Water Levels
- A2266 = 320 deg. F	R623A-B21 Wide Range A = -135 inches
- A2274 = 315 deg. F	R623B-B21 Wide Range B = +10 inches
- A2277 = 310 deg. F	3683B-B21 Narrow Range A = +0 inches
- A2280 = 350 deg. F	3683A-B21 Narrow Range B = +15 inches
- A2281 = 345 deg. F	P615-B21 Fuel Zone A = -111 inches
- A2283 = 325 deg. F	P615-B21 Fuel Zone B = -118 inches
- A2284 = 360 deg. F	
- A2287 = 335 deg. F	

Which one of the following is the ACTUAL reactor water level indication?

a. -135 inches

b. -118 to -111 inches

c. 0 inches

d. +10 to +15 inches

QUESTION: 023 (1.00)

Plant conditions are as follows:

- Reactor has been in Cold Shutdown for only 2 days following power operation.
- Reactor water level is +30 inches.
- Both reactor recirc pumps are tagged out of service.
- Shutdown cooling has isolated and the shutdown cooling suction valves cannot be opened.

Which one of the following operator actions will reverse or prevent reactor vessel stratification AND provide alternate decay heat removal?

a. Place RWCU system in service.

b. Insert a manual scram to maximize CRD flow to the bottom head region.

c. Start a second CRD pump and maximize CRD cooling water dp.

d. Raise reactor water level until the "High Reactor Level" annunciator is received.

QUESTION: 024 (1.00)

Plant conditions are as follows:

- Reactor scrammed from 80% power.
- All control rods are fully inserted.
- RCIC and HPCI have failed.
- No injection system or alternate injection system is available.
- Reactor pressure is 295 psig and currently stable.
- Reactor water level is -161 inches and decreasing 10 inches/min.

Which one of the following is the action that must be directed by the NSS?

a. Initiate Steam Cooling and attempt to restore an injection system then Emergency depressurize when level drops to -200 inches.

b. Initiate Alternate Level Control and attempt to restore an injection system then Emergency Depressurize when level drops to -190 inches.

c. Initiate Emergency Depressurization and provide core cooling with steam flow through SRVs while attempting to restore injection.

d. Initiate Emergency Depressurization and then Primary Containment Flooding to restore core submergence.

QUESTION: 025 (1.00)

Following an ATWS, the reactor recirc pumps have been runback to minimum speed and reactor power on the APRMs is 3%.

Which one of the following is the reason for leaving the reactor recirculation pumps in operation during the ATWS?

a. To prevent thermal stratification.

b. To maximize boron mixing.

c. To prevent transition boiling in the core.

d. To minimize core flux peaking.

QUESTION: 026 (1.00)

Following a loss of feedwater transient, reactor water level decreases to -45 inches and reactor pressure increases to 1100 psig. After 4 minutes, plant conditions are as follows:

- EOP 101 is being implemented.
- Reactor pressure is 950 psig.
- Reactor level is +5 inches.
- APRMs indicate 11%.
- SLC system is in normal standby lineup.
- One SRV is stuck open.
- Suppression pool temperature is 103 deg. F increasing at 3 deg. F per minute.

Which one of the following describes the status of the SLC automatic initiation logic and the SLC initiation requirements?

a. SLC should NOT have automatically initiated. Manual initiation is required.

b. SLC should NOT have automatically initiated. Manual initiation is NOT required.

c. SLC failed to automatically initiate. Manual initiation is required.

d. SLC failed to automatically initiate. Manual initiation is NOT required.

QUESTION: 027 (1.00)

An event on the Unit has required entry into the EOPs. Reactor water level is being controlled per EOPs. Plant conditions are as follows:

- RPV pressure 65 psig, slowly decreasing
- RPV level -175 inches, rapidly decreasing
- Suppression pool temperature 200 deg. F
- Suppression Chamber pressure 0.5 psig
- Suppression pool level 10 feet

Which one of the following describes the use of RHR in accordance with EOPs?

a. Start all RHR pumps and immediately increase injection flow rate to a maximum of 6,800 gpm per pump to restore level.

b. Start all RHR pumps and increase injection flow rate to a maximum of 12,000 gpm per pump to restore level.

c. Start one RHR pump per loop and slowly ramp injection rate up to a maximum of 6,800 gpm to restore level.

d. Start one RHR pump per loop and slowly ramp injection rate up to a maximum of 12,000 gpm to restore level.

QUESTION: 028 (1.00)

An ATWS event is in progress. Plant conditions are as follows:

- RPV pressure 1060 psig
- Suppression pool level 40 inches and stable
- Suppression pool temperature 130 deg. F and increasing

Which one of the following is the LOWEST suppression pool temperature at which an emergency depressurization must be performed per the EOPs?

a. 220 deg. F

b. 200 deg. F

c. 180 deg. F

d. 140 deg. F

QUESTION: 029 (1.00)

During an accident, drywell pressure rapidly increases to 41 psig and drywell temperature reaches 298 deg. F.

Which one of the following describes the expected response of drywell pressure when the operator initiates drywell sprays?

a. Initially drywell pressure slowly decreases, then the rate of drywell pressure reduction becomes faster.

b. Initially drywell pressure rapidly decreases, then the rate of drywell pressure reduction becomes slower.

c. Initially drywell pressure rapidly decreases, and the rate of drywell pressure reduction becomes faster.

d. Initially drywell pressure slowly decreases, and the rate of drywell pressure reduction becomes slower.

QUESTION: 030 (1.00)

During an accident, suppression pool water level reaches 150 inches (12.2 feet) and stabilizes, and reactor pressure is 1070 psig.

Which one of the following states the suppression chamber components that cannot function properly?

a. Suppression chamber-to-drywell vacuum breakers
Suppression chamber spray nozzles

b. Reactor Building-to-suppression chamber vacuum breakers
SRV tailpipe T-quenchers

c. Suppression chamber-to-drywell vacuum breakers
SRV tailpipe T-quenchers

d. Reactor Building-to-suppression chamber vacuum breakers
Suppression chamber spray nozzles

QUESTION: 031 (1.00)

A LOCA in conjunction with an ATWS is in progress and no operator actions have been taken. Unit conditions are as follows:

- Reactor Power	10%, decreasing
- Reactor Pressure	1000 psig, controlled by SRVs
- Reactor Water Level	0 inches, steady
- Drywell Temperature	340 deg. F, increasing
- Drywell Pressure	31 psig, increasing
- Suppression Pool Temperature	120 deg. F, increasing
- Suppression Pool Level	80 inches, steady
- Suppression Chamber Pressure	12.5 psig, increasing

Which one of the following is the action that must be directed by the NSS?

a. ONLY initiate suppression chamber sprays.

b. ONLY initiate drywell sprays.

c. Initiate emergency depressurization and suppression pool cooling.

d. Initiate suppression pool cooling and drywell sprays.

QUESTION: 032 (1.00)

The Unit is operating at power when a rapid decrease of Instrument Air pressure to 0 psig occurs.

Which one of the following describes a consequence from a sustained loss of instrument air?

a. Reactor recirculation pumps eventually trip

b. All MSIVs slowly close

c. Secondary condensate min flow valves drift fully closed

d. RACS temperature flow control valves drift fully closed

QUESTION: 033 (1.00)

The SPDS Drywell Temperature Control display provides a Margin to Action Table for drywell temperature conditions.

Which one of the following is the information used by SPDS to determine the VALUE of the drywell temperature margin that is displayed in the Margin to Action Table?

a. The highest drywell temperature

b. The average drywell temperature

c. The temperature point selected by the operator

d. The highest of the two instruments that input to SPDS

QUESTION: 034 (1.00)

Which one of the following is the purpose of the Heat Capacity Temperature Limit (HCTL) Curve?

a. To prevent exceeding the Primary Containment Pressure limit during EMERGENCY DEPRESSURIZATION before the blowdown energy transfer is within the capacity of the containment vent.

b. To prevent exceeding the Primary Containment Pressure limit during a DESIGN BASIS LOCA before the blowdown energy transfer is within the capacity of the containment vent.

c. To prevent dynamic pressure loads from exceeding the structural limits of the suppression pool and submerged suppression chamber components during an EMERGENCY DEPRESSURIZATION.

d. To prevent dynamic pressure loads from exceeding the structural limits of the suppression pool and submerged suppression chamber components during a DESIGN BASIS LOCA.

QUESTION: 035 (1.00)

Which one of the following is the reason for closing the MSIVs prior to evacuating the Control Room?

a. To prevent uncontrolled reactor inventory loss and depressurization through the operating turbine driven feedwater pumps

b. To provide positive reactor pressure and level control at the Remote Shutdown Panel without reliance on automatic operation of the turbine bypass valves

c. To quickly reduce the main turbine speed after it trips by reducing condenser vacuum

d. To reduce radiation levels in areas that fire fighters and plant operators may require access

QUESTION: 036 (1.00)

During an ATWS following 100% power operation, HPCI is placed into operation to maintain reactor water level. Subsequently, the NSS determines that suppression pool level can NOT be maintained above 25 inches.

Which one of the following is the reason for securing HPCI irrespective of whether adequate core cooling is assured, per EOP 102A Step SP/L-13?

a. To prevent damage to the suppression chamber from overpressurization

b. To prevent damage to the HPCI pump due to insufficient net positive suction head

c. To prevent suppression pool temperature from entering the action area of the Heat Capacity Temperature Limit Curve

d. To prevent HCTL Margin for suppression pool temperature from entering the action area of the Heat Capacity Level Limit Curve

QUESTION: 037 (1.00)

The Unit is operating at 100% rated power when the main steam line radiation monitors suddenly increase to the Main Steam Line Radiation High High alarm setpoint.

Which one of the following Chemistry reports indicates that the Steam Line High High Radiation alarm is a valid condition?

a. The concentration of organic chemicals is abnormally high.

b. The concentration of resin fines is abnormally high.

c. The concentration of Iodine-131 is abnormally high.

d. The concentration of Cobalt-60 is abnormally high.

QUESTION: 038 (1.00)

The Unit has been shutdown for refueling following 100 days of power operation upon determining that several fuel assemblies have sustained cladding damage. Current plant conditions are as follows:

- Shutdown cooling in service.
- Fuel pool cooling in service.
- RWCU is temporarily out of service.
- Damaged assemblies are being moved to the fuel sipping machine.

Which one of the following describes the effect of the damaged fuel assemblies on the plant during the refueling outage?

a. ONLY gamma radiation streaming

b. ONLY increased radiation levels in the fuel pool cooling system piping

c. Gamma radiation streaming AND increased radiation levels in the shutdown cooling piping

d. Increased radiation levels in the fuel pool cooling system piping AND the shutdown cooling piping

QUESTION: 039 (1.00)

A reactor startup is in progress. Plant conditions are as follows:

- Reactor Power is 3%.
- Reactor Pressure is 650 psig.
- One accumulator low pressure alarm is received.
- CRD pump A is running with CRD discharge header pressure at 725 psig.
- CRD pump B is out of service.

Which one of the following describes the required operator action per the Abnormal Operating Procedures?

a. Fully insert and disarm the control rod associated with the inoperable accumulator.

b. Verify at least one withdrawn control rod can be inserted one notch.

c. Scram the reactor if a second CRD HCU accumulator low pressure alarm annunciates.

d. Immediately place the Reactor Mode Switch in SHUTDOWN.

QUESTION: 040 (1.00)

The Unit is operating at 100% power when a CRD Temperature High alarm is received.

Which one of the following could have caused the CRD high temperature condition?

a. Leaking scram discharge valve

b. Eroded CRD cooling water orifice

c. CRD flow control valve fails fully open

d. Stabilizing valve fails fully open

QUESTION: 041 (1.00)

A RWCU Backwash Receiver Tank drain line has cracked during a transfer to Radwaste and is spilling into the Reactor Building. Reactor Building Area Radiation conditions are as follows:

Reactor Building Area	Beginning of Shift Area Radiation	Current Area Radiation
- RWCU Pump Room	2 mr/hr	2400 mr/hr
- RWCU Heat Exchanger Room	3 mr/hr	1100 mr/hr
- RWCU Backwash Tank Room	3.5 mr/hr	4500 mr/hr
- General Area outside of RWCU Backwash Tank Room	1.2 mr/hr	1000 mr/hr
- Other Reactor Building Areas	2 to 5 mr/hr	not in alarm

Which one of the following is the required action that must be directed by the NSS?

a. Continue reactor operation and attempt to stop the tank leakage.

b. Commence a normal reactor shutdown to cold shutdown.

c. Scram the reactor and commence a normal cooldown.

d. Scram the reactor and commence an emergency depressurization.

QUESTION: 042 (1.00)

EOP 104, Radioactive Release Control, has been entered.

Which one of the following is the reason that the operator is directed to ensure that the Turbine Building Ventilation fans are running?

a. Reduce radioactive releases.

b. Prevent radioactive releases.

c. Provide an elevated monitored release point.

d. Filter radioactivity from the Turbine Building atmosphere.

QUESTION: 043 (1.00)

Given the following plant conditions:

- The Unit is operating at rated power.
- The "B" Core Spray suction valve has failed closed.
- Two days later the "D" Core Spray pump motor becomes grounded due to water spraying on the windings.

Which one of the following is the REQUIRED action?

a. Restore both pumps within 5 days or be in Hot Shutdown within the next 12 hours.

b. Restore both pumps within 7 days or be in Hot Shutdown within the next 12 hours.

c. Restore one pump within 5 days or be in Cold Shutdown within the next 36 hours.

d. Restore one pump within 7 days or be in Cold Shutdown within the next 36 hours.

QUESTION: 044 (1.00)

A main steam line has ruptured and the MSIVs have closed, but the MSIVs in the ruptured steam line are leaking significantly, resulting in a continuous offsite radiation release and entry into EOP 104. The Health Physics Supervisor has reported that a health physics rapid response survey team, located at Hope Creek and the plant access road, has determined that the Dose Equivalent Iodine-131 concentration is 1 x 10E-5 uc/cc. All control rods are fully inserted.

Which one of the following is the action that must be directed by the NSS?

a. Continue a normal reactor cooldown and depressurization and monitor Turbine Building radiation release rates.

b. Continue a normal reactor cooldown and depressurization and place the MSIV and feedwater sealing systems in service.

c. Rapidly depressurize the RPV with RCIC, HPCI, and main steam line drains and monitor Turbine Building radiation release.

d. Open 5 ADS valves to depressurize the reactor vessel and place the MSIV and feedwater sealing systems in service.

QUESTION: 045 (1.00)

In EOP-101, RPV Control, if SRVs are cycling, the operator is directed to manually open SRVs until RPV pressure drops to 935 psig.

Which one of the following is the reason for stopping the reactor pressure reduction at 935 psig?

a. To ensure the turbine bypass valves do not have the opportunity to stick closed

b. To prevent MSIVs from closing on low main steam line pressure

c. To minimize the amount of steam that is sent to the suppression pool

d. To prevent excessive loss of reactor coolant inventory

QUESTION: 046 (1.00)

A loss of all high pressure injection event is in progress. Plant conditions are as follows:

- All control rods have fully inserted.
- Reactor water level is -240 inches and decreasing.
- Suppression pool level is 75 inches.
- Containment radiation monitors indicate 20 R/hr and increasing.
- Only one SRV can be opened.

Which one of the following states the alternate methods of rapidly depressurizing the reactor that would MINIMIZE the radioactive release to the environment?

a. Turbine bypass valves, RCIC, HPCI, and RFPTs

b. Turbine bypass valves, RFPTs, main steam line drains, and SJAEs

c. HPCI, RCIC, and head vent

d. SJAEs, main steam line drains, and head vent

QUESTION: 047 (1.00)

An accident is in progress. Suppression chamber sprays have been initiated, and suppression chamber pressure is 2.0 psig and decreasing.

Which one of the following is a reason for securing suppression chamber sprays when suppression chamber pressure decreases to 1.68 psig, per EOP-102B, Step PCC-1?

a. To prevent inducing chugging in the drywell downcomers

b. To prevent de-inerting the primary containment atmosphere

c. To prevent exceeding the drywell to suppression chamber design differential pressure

d. To prevent exceeding the capacity of the drywell-to-suppression chamber vacuum breakers

QUESTION: 048 (1.00)

Which one of the following is the MINIMUM emergency event classification in which a PRECAUTIONARY PAR may be developed?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

QUESTION: 049 (1.00)

An on-coming Senior Reactor Operator has worked the following control room shift schedule during a refueling outage.

Monday:	Day off
Tuesday:	0700 to 1700
Wednesday:	0700 to 1500
Thursday:	0700 to 1700
Friday:	0700 to 1900
Saturday:	0700 to 1700
Sunday:	0700 to 2300
Monday:	?

Which one of the following is the MAXIMUM number of hours the operator may work on Monday without obtaining special authorization from the Operations Department Manager in accordance with NA-AP.ZZ-0005?

a. 6 hours

b. 8 hours

c. 10 hours

d. 14 hours

QUESTION: 050 (1.00)

A manual 6-inch isolation valve in the feedwater system is positioned with its stem parallel to the floor. The valve is closed and has a handwheel operator. Which one of the following describes the proper technique for an operator to open the valve?

a. While standing directly in front of the valve stem, operate the valve handwheel to open the valve fully; then apply additional force to backseat the valve.

b. While standing directly in front of the valve stem, operate the valve handwheel to open the valve fully; then close the valve slightly to ensure the valve is not backseated.

c. While standing slightly to the side of the valve stem, operate the valve handwheel to open the valve fully; then apply additional force to backseat the valve.

d. While standing slightly to the side of the valve stem, operate the valve handwheel to open the valve fully; then close the valve slightly to ensure the valve is not backseated.

QUESTION: 051 (1.00)

A throttle valve has been positioned 10 turns open and requires independent verification.

Which one of the following describes the method required for independent verification of the throttle valve position?

a. The verifier should observe the positioning of the valve and count the number of handwheel turns as the valve is being positioned.

b. The verifier should observe the positioning of the valve and then close the valve, counting the number of handwheel turns. The verifier should then reopen the valve the number of turns counted.

c. The verifier should NOT observe the positioning of the valve; after the valve is positioned, the verifier should observe stem position and system response.

d. The verifier should NOT observe the positioning of the valve; after the valve is positioned, the verifier should close the valve, counting the number of handwheel turns; the verifier should then reopen the valve the number of turns counted.

QUESTION: 052 (1.00)

Which one of the following is the most restrictive classification that applies to the area containing a radiation source that is producing a dose rate of 87 mrem/hour at 30 cm from the source?

a. Contamination area

b. High radiation area

c. Radiation area

d. Very high radiation area

QUESTION: 053 (1.00)

Technical Specifications require that the Primary Containment Instrument Gas System low-low pressure alarm system receive a channel functional test on a MONTHLY basis. The last three dates on which this surveillance was performed are 0600 on July 15, 0600 on August 19, and 0600 on September 18.

Which one of the following date/time combinations is the latest date on which this surveillance can be accomplished without exceeding the maximum interval requirements of Technical Specifications?

a. By 0600 on October 18

b. By 0600 on October 22

c. By 2359 on October 23

d. By 2359 on October 26

QUESTION: 054 (1.00)

Work must be performed in the Reactor Building near a point source that is producing a gamma radiation measurement of 500 mrem/hr at a distance of 2 feet. Which one of the following methods of work performance will result in the lowest total personnel radiation exposure?

a. Operators A and B working together require 3 hours to perform the work at a distance of 16 feet from the point source.

b. Operator B requires 1 hour to perform the work at a distance of 4 feet from the point source.

c. Operators A and B working together require 1 hour to perform the work at a distance of 8 feet from the point source.

d. Operator A requires 2 hours to perform the work at a distance of 8 feet from the point source.

QUESTION: 055 (1.00)

An equipment operator is issued a self-contained breathing apparatus (SCBA) to perform search and rescue functions in an area that is deficient in oxygen. Which one of the following is an acceptable SCBA cylinder pressure when received from respirator issue personnel?

a. 2250 psig

b. 3250 psig

c. 4250 psig

d. 5250 psig

QUESTION: 056 (1.00)

The plant is operating at 50% power when an equipment operator reports to the control room that all cooling tower aircraft warning lights are out. The report occurred at 1200 on a Sunday. Which one of the following describes the requirement for notifying the Federal Aviation Administration (FAA), Millville Flight Service Station?

a. If the lights cannot be lit within 1 hour, the FAA should be notified.

b. If the lights cannot be lit within 15 minutes, the FAA must be notified.

c. If the lights cannot be lit before dusk, the FAA must be notified.

d. The FAA must be notified immediately.

QUESTION: 057 (1.00)

The Unit is operating at 75% power with the normal shift manning as listed in NC.NA-AP.ZZ-0005(Q), Station Operating Practices.

Which one of the following individuals (by position title) CANNOT be a member of the fire brigade? (Assume the minimum shift crew necessary for safe shutdown of the Unit is satisfied when the fire brigade is manned.)

a. SSS

b. STA

c. NCO

d. NEO

QUESTION: 058 (1.00)

An oncoming shift NCO is returning to the control room after being on vacation for 14 days. Which one of the following describes the requirement for reviewing associated logs?

a. Prior to assuming the shift, the NCO shall review relevant logs for the past 7 days; no other log reviews are necessary.

b. Prior to assuming the shift, the NCO shall review relevant logs for the past 7 days; after assuming the shift, the NCO shall review the remainder of the relevant logs for the past 14 days.

c. Prior to assuming the shift, the NCO shall review relevant logs for the past 3 days; no other log reviews are necessary.

d. Prior to assuming the shift, the NCO shall review relevant logs for the past 3 days; after assuming the shift, the NCO shall review the remainder of the relevant logs for the past 7 days.

QUESTION: 059 (1.00)

A Residual Heat Removal (RHR) System Pump has just been secured after running continuously for 6 days. 15 minutes after being secured, the operator determines that the pump should be running but the conditions do not constitute an emergency.

Which one of the following describes how long the operator must wait before restarting the RHR System Pump?

a. No further waiting required.

b. 15 minutes additional wait.

c. 30 minutes additional wait.

d. 45 minutes additional wait.

QUESTION: 060 (1.00)

Which one of the following describes the requirement for taking log readings that are required to be recorded once per shift?

a. Within 2 hours prior to the middle of the shift.

b. Within 2 hours after the middle of the shift.

c. Within 2 hours prior to the shift turnover.

d. Within 2 hours after the shift turnover.

QUESTION: 061 (1.00)

Which one of the following may sign the Tagging Release if the person whose name is on the tag cannot be located?

a. Operating Engineer

b. Work Control Center Nuclear Shift Supervisor if authorized by the Site Protection Manager

c. Job Supervisor if authorized by the Station General Manager

d. Site Protection Manager

QUESTION: 062 (1.00)

A 30 year old Category 2 Worker has an accumulated lifetime dose of 27.4 Rem. His supervisor wishes to increase his administrative limit to 4000 mrem/year TEDE.

Which one of the individuals listed below is the minimum authority permitted to approve the increase?

a. Vice President-Nuclear Operations.

b. Station General Manager.

c. Radiation Protection Manager.

d. Senior Radiation Protection Supervisor.

QUESTION: 063 (1.00)

Which one of the following describes the only position on the shift complement specified in the Technical Specifications that can NOT be reduced temporarily by one less than the minimum to accommodate unexpected absence of on-duty shift crew members?

a. SNSS

b. NSS

c. STA

d. SSS

QUESTION: 064 (1.00)

The Unit is operating at 100% power. Plant conditions are as follows:

- Feedwater flow rate is 95% of rated.
- Both reactor recirc pumps are operating at 92% speed.

Which one of the following conditions will cause an Intermediate Runback of the reactor recirc pumps?

a. Complete loss of stator cooling water pressure

b. Reactor water level +10 inches and slowly decreasing

c. Feedwater flow rate decreases to 15% rated

d. Loss of one secondary condensate pump

QUESTION: 065 (1.00)

Prior to starting a recirc pump in an idle loop, the speed of the pump in the operating loop should be decreased until the operating loop flow is less than 50% of rated loop flow.

Which one of the following describes the purpose of such a flow reduction?

a. To limit the cold water reactivity addition effect

b. To prevent possible damage to jet pump riser brace

c. To prevent a large uncontrolled thermal stress on the pump casing

d. To limit the thermal stress on the CRD housing to stub tube welds

QUESTION: 066 (1.00)

Which one of the following describes the purpose of the 5 second time delay relay in the Low Pressure Coolant Injection (LPCI) pump start circuit for RHR pumps C/D?

a. With Offsite power available, to allow RHR pumps C and D to start under "NO LOAD" conditions while their discharge check valves are seated by the discharge pressure of pumps A and B

b. With Offsite power available, to allow time for the starting surge current of RHR pumps A and B to return to normal.

c. During a loss of offsite power (LOP), to allow time for the starting surge current of RHR pumps A and B to return to normal.

d. During a LOP, to allow RHR pumps C and D to start under "NO LOAD" conditions while their discharge check valves are seated by the discharge pressure of pumps A and B

QUESTION: 067 (1.00)

During a LOCA, the following conditions exist at the Unit:

- RHR Pump A, B, C and D INIT AND SEALED IN are lighted.
- RHR Pump A, B, C and D RUNNING are lighted.
- RHR Pump mini-flow valves HV-F007A, B, C and D are closed.

Which one of the following describes the action the operator must take as soon as possible?

a. Open EG-HV-2512A and B RHR HX SACS RTN ISLN MOVs.
Close HV-F048A and B RHR HX SHELL SIDE BYP MOVs.

b. Arm and Depress Loop A AND B AND C AND D MANUAL INIT pushbuttons to confirm and ensure LPCI initiation.

c. Open RHR pump mini-flow valves HV-F007A, B, C and D.
When loop flow indicates 10,000 gpm, close the mini-flow valves.

d. Open HV-F027A and B RHR LOOP SUPP CHAMBER SPRAY HDR ISLN MOVs.
Close HV-F016A and B RHR LOOP OUTBD CONT SPRAY ISLN MOVs.

QUESTION: 068 (1.00)

During a small break LOCA, HPCI automatically initiated. The following conditions exist.

- Reactor vessel water level increased to +65 inches.
- The operator has taken no actions regarding HPCI.
- Currently, HPCI turbine rpm indicates zero (0).
- Currently, reactor vessel level is 50 inches and slowly decreasing.
- Drywell pressure is 5 psig.

Which one of the following describes an operator action that is required to restart the HPCI Turbine?

a. Manually initiate HPCI by arming and depressing the manual initiation pushbutton.

b. Manually initiate HPCI by opening turbine control valve FV-4879 when reactor water level decreases to +38 inches.

c. Depress Level 8 seal-in reset pushbutton and remote manually open the turbine stop valve FV-4880.

d. Depress Level 8 seal-in reset pushbutton and verify the pump discharge valve HV-F006 automatically opens.

QUESTION: 069 (1.00)

Which one of the following describes the IMMEDIATE operator action to be taken upon the inadvertent initiation of HPCI?

a. Enter HC.OP-AB.ZZ-0500(Q), Rx Power Oscillations and take appropriate actions.

b. Actuate Isolation Logic A and C by depressing their trip pushbutton.

c. Shut the pump discharge isolation valve HV-F007 using the Control Room hand switch.

d. Run back reactor recirculation flow and insert rods as necessary to reduce reactor power.

QUESTION: 070 (1.00)

The following conditions exist at the Unit:

- The plant is in Operational Condition 1.
- Core spray pumps BP-206 and DP-206 are operating in the full flow test mode.

Core Spray Suction Valve, BE-HV-F001D position indication limit switch fails, producing a signal corresponding to an intermediate valve position.

Which one of the following describes the resulting system conditions?

a. DP-206 will continue running. Automatic start of DP-206 is inhibited but manual start is NOT.

b. DP-206 will continue running. Automatic and manual starts of DP-206 are not affected.

c. DP-206 will trip. "CORE SPRAY LOGIC D OUT OF SVCE" annunciator will actuate. DP-206 automatic start is inhibited, but manual start is NOT.

d. DP-206 will trip. "CORE SPRAY LOGIC D OUT OF SVCE" annunciator will actuate. Automatic and manual starts of DP-206 are inhibited.

QUESTION: 071 (1.00)

Which one of the following describes the bases for the thermal overload protection bypass circuit in the Core Spray motor operated valves (MOV)?

a. To prevent inadvertent valve motor trips during periodic testing.

b. To improve the overload characteristics of the valve control circuit.

c. To allow for the operation of the valves during cable run fires to meet safe shutdown 10 CFR Appendix R requirements.

d. To ensure the valves reposition when required by safety function.

QUESTION: 072 (1.00)

A Caution in HC.OP-SO.BE-001, Core Spray System Operation, states:

> If "INIT AND SEALED IN A(B, C, D)" is on and Core Spray auto initiation has NOT occurred, BOTH pumps in a loop must be manually started.

Which one of the following describes the reason that BOTH pumps must be manually started?

a. To prevent pump runout if the reactor vessel is depressurized.

b. To provide positive control of emergency bus loading.

c. To prevent unnecessarily starting the respective core spray pump EDG.

d. To meet the 10CFR single failure criteria in the event that one of the suction strainers is blocked.

QUESTION: 073 (1.00)

Which one of the following will enable the start of the SLC pumps?

Depress the RRCS "MANUAL INITIATION PERMISSIVE" and "MANUAL INITIATION" pushbuttons in:

a. Logic "A" of channel "A" and logic "A" of channel "B".

b. Logic "B" of channel "A" and logic "A" of channel "B".

c. Logic "A" of channel "A" and logic "B" of channel "A".

d. Logic "B" of channel "B" and logic "B" of channel "A".

QUESTION: 074 (1.00)

Unit conditions are as follows:

- Loss of offsite power has occurred.
- Emergency Diesel Generator "B" cannot be started.

Which one of the following Standby Liquid Control components are electrically available if the NSS determines that SLC injection is required?

a. ONLY "A" SLC pump and BOTH squib valves

b. ONLY "B" SLC pump and BOTH squib valves

c. ONLY "A" SLC pump and ONLY squib valve F004A

d. ONLY "B" SLC pump and ONLY squib valve F004B

QUESTION: 075 (1.00)

The following conditions exist at the Unit:

- The reactor is operating at 100% power, steady state.
- REACTOR SCRAM TRIP LOGIC A1 in alarm.
- REACTOR SCRAM TRIP LOGIC A2 in alarm.
- APRM SYS "A" UPSCALE TRIP/INOP in alarm.
- APRM UPSCALE in alarm.
- NEUTRON MONITORING SYSTEM in alarm.
- APRM/RBM FLOW REF OFF NORMAL in alarm.
- ROD OUT MOTION BLOCK in alarm.
- RBM UPSCALE OR INOPERATIVE in alarm.
- Reactor core flow recorder indicates 100%, steady state.

Which one of the following identifies the cause of the annunciator actuations?

a. An ATWS is in progress.

b. RPS "A" bus is DEENERGIZED.

c. APRM "A" has failed UPSCALE.

d. Recirculation flow unit "A" has failed DOWNSCALE.

QUESTION: 076 (1.00)

Which one of the following describes the reason that RPS EPAs (Electrical Protection Assemblies) trip on abnormal electrical conditions?

a. To prevent welding of RPS system contacts

b. To prevent welding of RPS system breakers

c. To prevent blowing the scram logic fuses

d. To prevent fusing of the scram pilot solenoids

QUESTION: 077 (1.00)

Unit conditions are as follows:

- Reactor power is 85%.
- Reactor Water Level Control Channel "B" is controlling.
- All three reactor feed pumps are in AUTO.

Which one of the following describes the response of the Reactor Water Level Control and Feedwater systems if a leak develops through the Channel "B" level detector equalizing valve? (Assume no operator actions are taken.)

a. Actual reactor water level will increase resulting in a High Level Alarm.

b. Reactor feed pump turbine "B" will trip on high indicated water level.

c. Reactor water level control will transfer to single element and control on the lowest indicating of the operable level channels.

d. Actual reactor water level will be automatically controlled in the normal level range.

QUESTION: 078 (1.00)

A reactor startup is in progress. The following data were obtained with NO control rod motion:

TIME	SRM A	SRM B	SRM C	SRM D
10:10:00	750	700	450	600
10:11:00	960	900	550	920
10:12:00	1250	1200	700	1200
10:13:00	1920	1800	920	1940
10:14:00	2680	2630	1140	2680

The reactor was declared critical at 1011. Which one of the following describes the reactor period at that time?

a. Between 110 and 130 seconds.

b. Between 130.1 and 160 seconds.

c. Between 160.1 and 190 seconds.

d. Between 190.1 and 220 seconds.

QUESTION: 079 (1.00)

Unit conditions are as follows:

- Reactor is at 75% power.
- APRM "D" has just failed downscale.
- No operator actions have been taken.

Which one of the following describes the expected response of the Rod Block Monitor (RBM) system?

a. RBM channel "B" automatically shifts to APRM "F".

b. RBM channel "B" output trip functions are automatically bypassed.

c. RBM channel "A" generates a channel downscale trip.

d. RBM channel "A" generates a channel inoperative trip.

QUESTION: 080 (1.00)

The Unit is operating at 80% power when the "RPV LEVEL 4" annunciator alarms and the operator observes an unexplained decrease of reactor vessel water level at 5 inches/min.

Which one of the following describes the IMMEDIATE operator action in accordance with HC.OP-AB.ZZ-200, Reactor Level Control Malfunction?

a. Reduce reactor power to maintain reactor water level between level +30 inches and +39 inches.

b. Reduce reactor power to maintain reactor water level above +12.5 inches and below +54 inches.

c. Scram the reactor, start RCIC, and maintain reactor water level between level +30 inches and +39 inches.

d. Scram the reactor, start RCIC, and maintain reactor water level above +12.5 inches and below +54 inches.

QUESTION: 081 (1.00)

The following conditions exist at the Unit:

- A shutdown to HOT STANDBY per OP-IO.ZZ-004 is in progress.
- The operator must break Main Condenser vacuum for scheduled maintenance.
- IRMs are indicating 55% on Range 6.
- Reactor pressure is 850 psig and turbine bypass valves are closed.
- RCIC is maintaining reactor water level.
- MSIVs are open.
- The main turbine is tripped.
- The four Main Condenser Low Vacuum Bypass Switches are in NORMAL.

Which one of the following describes the effect on the plant if the operator breaks main condenser vacuum?

a. MSIVs will close and the reactor will continue to operate.

b. MSIVs will close and a reactor scram will occur.

c. MSIVs will remain open and the reactor will continue to operate.

d. MSIVs will remain open and a reactor scram will occur.

QUESTION: 082 (1.00)

Following a plant transient the RCIC turbine actuated automatically. Reactor water level increased to +60 inches. Subsequently, reactor water level decreased to +5 inches.

Which one of the following describes the ONLY operator actions necessary to restart the turbine?

a. Close the turbine trip throttle valve (HV-4282) then reopen the valve.

b. Close the steam supply valve (HV-F045) then reopen the valve.

c. Reset the automatic isolation logic, close the turbine trip throttle valve (HV-4282) then reopen the valve.

d. Arm and depress the manual initiation pushbutton.

QUESTION: 083 (1.00)

A reactor startup is in progress with the reactor mode switch in STARTUP. SRM Channel "A" is NOT fully inserted.

Which one of the following describes the plant condition that will result in a control rod withdrawal block?

a. SRM "A" indicates 50 cps and all IRMs are on range 3.

b. SRM "A" indicates 50 cps and all IRMs are on range 8.

c. SRM "A" indicates 75 cps and all IRMs are on range 2.

d. SRM "A" indicates 125 cps and all IRMs are on range 2.

QUESTION: 084 (1.00)

The following plant conditions exist:

- A reactor transient is in progress.
- Drywell pressure increased to 2.0 psig and is now 1.5 psig.
- Reactor water level is -140 inches.
- 60 seconds have elapsed since the initial high drywell pressure.
- One loop of RHR is in operation.

Which one of the following states the response of the ADS to plant conditions with no operator action?

a. ADS will auto-actuate in 5 minutes.

b. ADS will auto-actuate in 4 minutes.

c. ADS will auto-actuate in 45 seconds.

d. ADS will not auto-actuate.

QUESTION: 085 (1.00)

Which one of the following describes the operation of the Reactor Building-to-Torus Vacuum Breakers butterfly isolation valve?

When Reactor Building pressure exceeds the Torus pressure by:

a. 0.25 psid a pneumatic actuator opens the butterfly isolation valve.

b. 0.25 psid a motor actuator opens the butterfly isolation valve.

c. 2.5 psid a pneumatic actuator opens the butterfly isolation valve.

d. 2.5 psid a motor actuator opens the butterfly isolation valve.

QUESTION: 086 (1.00)

A LOCA has occurred and Reactor water level is -140 inches.

Which one of the following describes the steps necessary to close the CRD pump motor 1E and non-1E breakers to restart a CRD pump?

a. Close the non-1E circuit breaker by depressing the close pushbutton, and close the 1E circuit breaker by depressing the CRD pump START pushbutton.

b. Close the 1E circuit breaker by depressing the close pushbutton, and close the non-1E circuit breaker by depressing the CRD pump START pushbutton.

c. Depress the LOCA override pushbutton, close the non-1E circuit breaker by depressing the close pushbutton, and close the 1E circuit breaker by depressing the CRD pump START pushbutton.

d. Depress the LOCA override pushbutton, close the 1E circuit breaker by depressing the close pushbutton, and close the non-1E circuit breaker by depressing the CRD pump START pushbutton.

QUESTION: 087 (1.00)

During rod scram timing, rod 26-19 is observed to scram (fully) in 2 seconds.

Which one of the following describes the observed condition and possible consequences?

a. Fast scram times can result from excessive accumulator gas pressure and can damage the Bellville washers.

b. Fast scram times can result from worn lower stop piston seals and can damage the index tube.

c. Slow scram times can result from inadequate accumulator gas pressure and can result in fuel cladding damage.

d. Slow scram times can result from worn drive piston seals and can result in fuel cladding damage.

QUESTION: 088 (1.00)

Following a reactor scram and loss of feedwater, the plant is being cooled down using HPCI in full flow recirculation. A review of the operating logs indicates that reactor pressure for the past two hours is as follows:

Time	Reactor Pressure (psig)
0000	950
0015	925
0030	900
0045	850
0100	700
0115	650
0130	550
0145	300
0200	250

Which one of the following describes the effect of the cool down rate on the reactor vessel?

a. The cool down rate is within the administrative RPV temperature change restrictions and the stress limits are within the design assumptions for cyclic operation.

b. The cool down rate is within the administrative RPV temperature change restrictions but the stress limits are outside the design assumptions for cyclic operation.

c. The cool down rate is outside the administrative RPV temperature change restrictions but the stress limits are within the design assumptions for cyclic operation.

d. The cool down rate is outside the administrative RPV temperature change restrictions and the stress limits are outside the design assumptions for cyclic operation.

QUESTION: 089 (1.00)

With the reactor critical, the NCO withdraws control rods to establish a 100 second period. When the SRM channels reach the upscale rod block set point, the NCO notes the following:

- IRM channels A & C indicate 15/125 of scale (Range 3).
- IRM channels D & H indicate 25/125 of scale (Range 3).
- IRM channel B indicates 20/125 of scale (Range 3).
- IRM channels E, F, and G are downscale (Range 1).

Which one of the following actions is required?

a. Place IRM E or G in the tripped condition within 1 hour and be in Hot Shutdown within twelve hours.

b. Place IRM E or F in the tripped condition within 1 hour and be in Hot Shutdown within twelve hours.

c. Place IRM E or G in the tripped condition within twelve hours.

d. Place IRM E or F in the tripped condition within twelve hours.

QUESTION: 090 (1.00)

Which one of the following will close all the Main Steam Line Drain Header Outboard Isolation Valves AND all the MSIVs?

a. Arming and depressing NS4 channel A and B pushbuttons.

b. Arming and depressing NS4 channel A and C pushbuttons.

c. Arming and depressing NS4 channel B and D pushbuttons.

d. Arming and depressing NS4 channel C and D pushbuttons.

QUESTION: 091 (1.00)

The following conditions exist at the Unit:

- The plant is operating at 100% power, steady state.
- All reactor feedpumps are in operation.
- All primary and secondary condensate pumps are in operation.

Which one of the following describes the response of the feedwater pumps if secondary condensate pumps BP137 and CP137 trip due to electrical faults?

a. The reactor feedpumps will runback to 80%.

b. The reactor feedpumps will runback to 70%.

c. One (1) reactor feedpump will trip.

d. Two (2) reactor feedpumps will trip.

QUESTION: 092 (1.00)

Given the following conditions at the Unit:

- The plant is shutdown making preparations for Shutdown Cooling (SDC) using the "B" Loop of Residual Heat Removal (RHR) system.
- Both Recirculation Pumps are shutdown with their discharge valves closed.

How is the RHR Pump that is initially being started for SDC protected from damage due to no-flow? (Assume the system is being started in accordance with the procedure.)

a. The pump minimum flow valve will open to provide flow until the SDC valves are opened.

b. The pump will automatically trip on low suction pressure if flow is less than 3000 gpm.

c. The operator will open the minimum flow valve until SDC flow is greater than 1270 gpm.

d. The operator is required to establish pump flow to the reactor vessel immediately after starting the pump.

QUESTION: 093 (1.00)

Which one of the following describes the cause of a ROD DRIFT alarm with no rod motion command preset?

a. During the test mode of operation, a rod has been identified which has an even reed switch made up.

b. During the test mode of operation, a rod has been identified which has an odd reed switch made up.

c. During the scan mode of operation, a rod has been identified which has an even reed switch made up.

d. During the scan mode of operation, a rod has been identified which has an odd reed switch made up.

QUESTION: 094 (1.00)

The amber FREE RODS indicator on the Rod Sequence Control System panel is illuminated.

Which one of the following describes the rods which are displayed with an amber LED indicator?

a. All the rods bypassed at Panel 10C659.

b. All the rods in the currently selected group.

c. All the rods in the selected group that are free to be WITHDRAWN from the core.

d. All the rods permitted to move in the direction selected by the DIRECTION pushbutton.

QUESTION: 095 (1.00)

The following conditions exist at the Unit:

- Reactor power is 10% during a startup.
- Rod 26-31 has a broken reed switch at position 16.
- Position 16 is the Maximum Limit for the rod group containing rod 26-31.
- The pull sheet specifies position 16 as the correct position for rod 26-31.
- All other rods in that group are at position 16.
- The SNSS orders the rod pulled to position 18 with the concurrence of the Reactor Engineer.
- A substitute position has been successfully selected for RSCS.
- Rod 26-31 is not contained in the next sequential rod group of the pull sheet.

Which one of the following describes the effect that attempting to withdraw rod 26-31 to position 18 will have on the Rod Worth Minimizer (RWM) and the Rod Sequence Control System (RSCS)?

a. No rod motion block from RWM, no rod motion block from RSCS.

b. Withdraw block from RWM, withdraw block from RSCS.

c. No rod motion block from RWM, withdraw block from RSCS.

d. Withdraw block from RWM, no rod motion block from RSCS.

QUESTION: 096 (1.00)

The following conditions exist at the Unit:

- The plant is operating at 100% power, steady state.
- Recirculation Pump A No. 1 seal cavity pressure indicates 1032 psig.
- Recirculation Pump A No. 2 seal cavity pressure indicates 1032 psig.
- Flow switch "A" alarms low.

Which one of the following describes the cause of this condition? Use the attached figure for reference.

a. Plugging of restricting orifice 1.

b. Plugging of restricting orifice 2.

c. Failure of No. 1 seal.

d. Failure of No. 2 seal.

QUESTION: 097 (1.00)

Which one of the following describes a condition which will cause the RWCU Blowdown Flow Control Valve (HV-F033) to close automatically?

a. Channel "A" manual isolation.

b. SLC "B" pump start.

c. -38 inches RPV level.

d. Downstream pressure indicating 145 psig.

QUESTION: 098 (1.00)

During refueling operations, Technical Specifications require a 24 hour minimum delay time between subcriticality and the movement of fuel.

Which one of the following is the basis for this minimum time requirement?

a. To ensure that the radioactive decay of the short-lived fission products has occurred.

b. To ensure that decay heat load will be within the capacity of the spent fuel pool cooling system.

c. To ensure that decay heat load will be within the capacity of one shutdown cooling system heat exchanger.

d. To ensure that dissolved fission product gases in the reactor coolant come out of solution before the head is removed.

QUESTION: 099 (1.00)

Which one of the following terms describes the process of determining an instrument's operability by visually comparing its indication to other independent instrument channels measuring the same variable (as defined in Technical Specifications)?

a. Channel Calibration

b. Channel Functional Test

c. Channel Operational Test

d. Channel Check

QUESTION: 100 (1.00)

The Unit is operating at 100% power when an operator determines that the Control Room Ventilation Radiation Monitors for Channels 4858C and 4858C1 are inoperable.

Which one of the following describes the actions that the NSS must direct?

a. Trip ONE of the inoperable channels within one (1) hour, or within the next (6) hours initiate Control Room Emergency Filtration in the pressurization mode.

b. Trip BOTH of the inoperable channels within one (1) hour, or within the next six (6) hours initiate Control Room Emergency Filtration in the pressurization mode.

c. Within ONE (1) hour initiate and maintain Control Room Emergency Filtration system in the pressurization mode.

d. Within SIX (6) hours initiate and maintain Control Room Emergency Filtration system in the pressurization mode.

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

ANSWER: 001 (1.00)

b.

REFERENCE:

HC.OP-AB.ZZ-0300, rev 6, pg 1 and Attachment 1 (include attachment on exam.)
LP-114, ELO-1

295001A201 [3.5/3.8]

295001A201 ..(KA's)

ANSWER: 002 (1.00)

a.

REFERENCE:

HC.OP-AB.ZZ-0300, rev 6, NOTE on pg 2
LP-114, ELO-3

295001A203 [3.3/3.3]

295001A203 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

HC.OP-AB.ZZ-0300, rev 6, Discussion, pg 3 and 4
LP-114, ELO-3

295001A106 [3.3/3.4]

295001A106 ..(KA's)

deleted

ANSWER: 004 (1.00)

c.

REFERENCE:

HC.OP-AB.ZZ-0208, rev 5, pg 1 and step 5.1, pg 3
LP-114, ELO-3

295002K203 [3.5/3.6]

295002K203 ..(KA's)

ANSWER: 005 (1.00)

d.

REFERENCE:

HC.OP-AB.ZZ-135, rev 13, Discussion step 5.16, pg 14
LP-68, ELO-7 and 14

295003A102 [4.2/4.3]

295003A102 ..(KA's)

ANSWER: 006 (1.00)

d.

REFERENCE:

LP-126A, rev 1, para 2)b) on pg 14

295008G007 [3.2/3.3]

295008G007 ..(KA's)

ANSWER: 007 (1.00)

d.

REFERENCE:

LP-02, rev 1, pg 22 and para VII.A.1, pg 39, ELO-5

295031A201 [4.6/4.6]

295031A201 ..(KA's)

ANSWER: 008 (1.00)

a.

REFERENCE:

HC.OP-SO.SM-0001
LP-44, Obj. 2.c

223002A402 [3.9/3.8]

223002A402 ..(KA's)

ANSWER: 009 (1.00)

c.

REFERENCE:

OP-AB.ZZ-0110, rev 4, pg 1, 2, and Discussion steps 5.3 and 5.4, pg 4

295003A204 [3.5/3.7]

295003A204 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

LP-69, Table 5, Distribution Fact Sheet, ELO-1 and 2

263000K601 [3.2/3.5]

263000K601 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

LP-69, pg 47, ELO-7
OP-AB.ZZ-0150, rev 2, Discussion Step 5.4, pg 4

295004K203 [3.3/3.3]

295004K203 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

OP-AB.ZZ-201, rev 2, Step 5.5, pg 3.

295018A101 [3.3/3.4]

295018A101 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

LP-51, pg 20 and 24, ELO-2.e and 9

241000A108 [3.3/3.2]

241000A108 ..(KA's)

ANSWER: 014 (1.00)

b.

REFERENCE:

LP-22, pg 32 and Item 21 of Table 2, ELO-4

295005A204 [3.7/3.8]

295005A204 ..(KA's)

ANSWER: 015 (1.00)

b.

REFERENCE:

OP-AB.ZZ-0120, rev 1, pg 2

295007G010 [3.9/3.8]

295007G010 ..(KA's)

ANSWER: 016 (1.00)

c.

REFERENCE:

LP-46, pg 25 - 27, Fig. 9

295003K204 [3.4/3.5]

295003K204 ..(KA's)

ANSWER: 017 (1.00)

c.

REFERENCE:

LP-38, pg 30 - 32, ELO-4

295006K201 [4.3/4.4]

295006K201 ..(KA's)

ANSWER: 018 (1.00)

b.

REFERENCE:

LP-123, pg 17, step S-10, ELO-4
EOP-100, Step S-10

295006G007 [3.8/4.1]

295006G007 ..(KA's)

ANSWER: 019 (1.00)

d.

REFERENCE:

LP-46, TLO-5 and 6, no specific plant information located.
LP-59, pg 19 - 21

295007K206 [3.5/3.7]

295007K206 ..(KA's)

ANSWER: 020 (1.00)

c.

REFERENCE:

LP-30, para. IV.F.3, pg 81 and 82, ELO-5

295008K206 [3.4/3.6]

295008K206 ..(KA's)

ANSWER: 021 (1.00)

d.

REFERENCE:

LP-28, pg 70, ELO-11 and 12 (Facility check SDC flow rate.)
OP-AB.ZZ-142, rev 6, Discussion, pg 4
295021A204 [3.6/3.6]

295021A204 ..(KA's)

ANSWER: 022 (1.00)

a.

REFERENCE:

EOP Caution 1
LP-126A, TLO-1.c

295028A203 [3.7/3.9]

295028A203 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

OP-AB.ZZ-142, rev 6, pg 2
LP-I87002, ELO-1, 2, and 3

295021K202 [3.2/3.2]

295021K202 ..(KA's)

ANSWER: 024 (1.00)

a.

REFERENCE:

EOP 201, Step ALC-12 to ALC-14
LP-129, TLO-2

295031G012 [3.9/4.5]

295031G012 ..(KA's)

ANSWER: 025 (1.00)

b.

REFERENCE:

LP-124B, pg 21, ELO-8

295015K103 [3.8/3.9]

295015K103 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

LP-024, pg 8, 10
NAP-0005

295037K202 [4.0/4.2]

295037K202 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

EOP 101 Curve RCL-P-2, and EOP 101, Step ALC-15
LP-129, Step ALC-15, pg 23 B-2

295026G012 [3.8/4.5]

295026G012 ..(KA's)

ANSWER: 028 (1.00)

c.

REFERENCE:

EOP 102A, Curve SPT-T-1 and SPL-L-1
NOTE: dHTC = 20 deg. F
HCTL = 200 deg. F
LP-125B, ELO-5

295030A202 [3.9/3.9]

295030A202 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

LP-126B, pg 18, ELO-4 and 6

295024A111 [4.2/4.2]

295024A111 ..(KA's)

ANSWER: 030 (1.00)

c.

REFERENCE:

LP-31, Fig. 7 ELO-3 and LP-125B ELO 5b
EOP 102A Curve SLP-L-2

295029K206 [3.4/3.5]

295029K206 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

EOP 102A and 102B, Curve DWP-P-1
LP-126B, TLO-1

295024G012 [3.9/4.5]

295024G012 ..(KA's)

ANSWER: 032 (1.00)

a. or d

REFERENCE:

OP-AB.ZZ-131, rev 12, Discussion step 5.4, pg 4 and pg 2 & 3
LP-75, ELO-14 and 15

295019K202 [2.9/3.0]

295019K202 ..(KA's)

ANSWER: 033 (1.00)

b.

REFERENCE:

LP-126A, pg 21, ELO-4 (related ELO)

295012A201 [3.8/3.9]

295012A201 ..(KA's)

ANSWER: 034 (1.00)

a.

REFERENCE:

LP-125A, pg 18

295013K302 [3.6/3.8]

295013K302 ..(KA's)

ANSWER: 035 (1.00)

b.

REFERENCE:

OP-AB.ZZ-130, pg 3
LP-114, ELO-3

295016G011 [4.1/4.2]

295016G011 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

EOP 102A, Step SP/L-13
LP-125B, pg 22, ELO-6

295030K201 [3.8/3.9]

295030K201 ..(KA's)

ANSWER: 037 (1.00)

c.

REFERENCE:

OP-AB.ZZ-203, rev 4, pg 3
LP-114, ELO-3

295020K203 [3.1/3.3]

295020K203 ..(KA's)

ANSWER: 038 (1.00)

d.

REFERENCE:

OP-AB.ZZ-101, rev 2, Discussion pg 2
LP-114, ELO-3

295023K101 [3.6/4.1]

295023K101 ..(KA's)

ANSWER: 039 (1.00)

c.

REFERENCE:

OP-AB.ZZ-105, rev 2, pg 1
LP-114, ELO-1

295022A101 [3.1/3.2]

295022A101 ..(KA's)

ANSWER: 040 (1.00)

a.

REFERENCE:

OP-AB.ZZ-105, rev 2, Discussion pg 2
LP-114, ELO-3

201003G008 [3.6/3.4]

201003G008 ..(KA's)

ANSWER: 041 (1.00)

b.

REFERENCE:

EOP 103, Step RB/R-9
LP-127, ELO- 1 and 3

295033G012 [3.8/4.4]

295033G012 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

LP-128, RR-7, pg 8, ELO-3
EOP 104, Step RR-7

295017K302 [3.3/3.5]

295017K302 ..(KA's)

ANSWER: 043 (1.00)

a.

REFERENCE:

Technical Specification 3.5.1

295031G003 [3.6/4.3]

295031G003 ..(KA's)

ANSWER: 044 (1.00)

d.

REFERENCE:

EOP-104, Step RR-9 thru RR-12
LP-128, TLO-3

295038A201 [3.3/4.3]

295038A201 ..(KA's)

ANSWER: 045 (1.00)

c.

REFERENCE:

EOP-101, Step RC/P-7
LP-124C, pg 19, ELO-8

295025K301 [4.2/4.3]

295025K301 ..(KA's)

ANSWER: 046 (1.00)

c.

REFERENCE:

EOP-202, step ED-12

295017G012 [3.8/4.5]

295017G012 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

EOP-102B, Step PCC-1
LP-126B, para. i. and j., pg 15 and 16, ELO-6

295024K301 [3.6/4.0]

295024K301 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

ECG Attachment 3, rev 9, pg 5

294001A116 [2.9/4.7]

294001A116 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

NC.NA-AP.ZZ-0005, rev 5, step 5.6.2, pg 15

294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

NC.NA-AP.ZZ-0005(Q), Rev. 5, Attach. 7, page 1

KA 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 051 (1.00)

a.

REFERENCE:

NC.NA-AP.ZZ-0005(Q), Rev. 5, Attach 10, page 3

KA 294001K101 [3.7/3.7]

294001K101 ..(KA's)

ANSWER: 052 (1.00)

c.

REFERENCE:

NC.NA-AP.ZZ-0024(Q), Rev. 4, page 50

KA 294001K104 [3.3/3.6]

294001K104 ..(KA's)

ANSWER: 053 (1.00)

d.

REFERENCE:

Tech Spec 4.5.1.d.1 and T.S. 4.0.2 and 4.0.5
must be performed 31 + .25(31) = 38 days from 18 Sept or Oct 26

294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 054 (1.00)

a.

REFERENCE:

Radiation Exposure Theory, Inverse Square Law
I1(D1 squared) = I2(D2 squared)
I2 = I1(D1 squared)/(D2 squared)

a. I2 = 500(4)/64 = 31.25 mrem/hour
Total Dose (TD) = (31.25 mrem/hr)(2 hr)(1 operator) = 62.5 mrem

b. I2 = 500(4)/16 = 125 mrem/hour
TD = (125 mrem/hour)(1 hour)(1 operator) = 125 mrem

c. I2 = 500(4)/64 = 31.25 mrem/hour
TD = (31.25 mrem/hour)(1 hour)(2 operators) = 62.5 mrem

d. I2 = 500(4)/256 = 7.8125 mrem/hour
TD = (7.8125 mrem/hour)(3 hours)(2 operators) = 46.9 mrem

KA 294001K104 [3.3/3.6]

294001K104 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

NC.NA-AP.ZZ-0045(Q), Rev. 2, page 11

KA 294001K113 [3.2/3.6]

294001K113 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

HC.OP-AP.ZZ-0005(Q), Rev. 3, page 4

294001A110 [3.6/4.2]

294001A110 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

HC.OP-AP.ZZ-0005(Q), Rev. 3, page 9

KA 294001K116 [3.5/3.8]

294001K116 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

HC.OP-AP.ZZ-0107(Q), Rev. 10, page 5

KA 294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 059 (1.00)

a.

REFERENCE:

HC.OP-AP.ZZ-0109(Q), Rev. 8, Attachment 1, pg. 2 of 3

KA 294001K106 [3.2/3.4]

294001K106 ..(KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

HC.OP-AP.ZZ-0110(Q), Rev. 5, pg. 13

KA 294001A106 [3.4/3.6]

294001A106 ..(KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

NC.NA-AP.ZZ-0015, Rev. 2, pg. 6, para 5.1.1.

KA 294001K102 [3.9/4.5]

294001K102 ..(KA's)

ANSWER: 062 (1.00)

b.

REFERENCE:

NC.NA-AP.ZZ-0024(Q), Rev. 4, Attachment 2, pg. 3.

KA 294001K103 [3.3/3.8]

294001K103 ..(KA's)

ANSWER: 063 (1.00)

a.

REFERENCE:

NC.NA-AP.ZZ-0005(Q), Rev. 5, Attachment 6, pg. 2, para. 4.

KA 294001A103 [2.7/3.7]

294001A103 ..(KA's)

ANSWER: 064 (1.00)

d.

REFERENCE:

302H-000.00H-000020-14, Rev. 8, pg. 29 and 30, sect 6.e, EO R9

KA 202002K402 [3.0/3.0]

202002K402 ..(KA's)

ANSWER: 065 (1.00)

b.

REFERENCE:

302H-000.00H-000019-14, Rev. 8, pg. 75, sect. 6.a, EO R13

KA 202002A407 [3.3/3.2]

202002A407 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

302H-000.00H-000028-12, Rev. 8, pg. 62, sect. D.1.d.

KA 203000K601 [3.6/3.7]

203000K601 ..(KA's)

ANSWER: 067 (1.00)

a.

REFERENCE:

302H-000-00H-000028-12, Rev. 8, pg. 69, Sect. VII.B, E09.
HC.OP-SO.BC-0001(Q), Rev. 17, pg. 16, Step 5.3.1.H.

KA 203000G013 [4.2/3.9]

203000G013 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

302H-000.00H-000026-15, Rev. 1, pg. 106, Sect. 2.C.2)e).EO5.

KA 206000K301 [4.0/4.0]

206000K301 ..(KA's)

ANSWER: 069 (1.00)

d.

REFERENCE:

HC.OP-AB.ZZ-0204(Q), Rev. 1, Step 3.1.
302H-000.00H-000026-15, Rev. 8, pg. 116, Sect. C.1.a, EO 15.

KA 206000A217 [3.9/4.3]

206000A217 ..(KA's)

ANSWER: 070 (1.00)

b.

REFERENCE:

302H000.00H-000027-13, Rev. 1, pg. 30, Sect. C.1.a.4. EO5

KA 209001A108 [3.3/3.2]

209001A108 ..(KA's)

ANSWER: 071 (1.00)

d.

REFERENCE:

302H-000.00H-000027-13, Rev. 1, Table 1, comment. EO.9c

209001A301 [3.6/3.6]

209001A301 ..(KA's)

ANSWER: 072 (1.00)

a.

REFERENCE:

302H-000.00H-000027-13, Rev. 1, pg. 32, Sect. C.1.b.4)e). EO6

KA 209001A401 [3.8/3.6]

209001A401 ..(KA's)

ANSWER: 073 (1.00)

c.

REFERENCE:

302H-000.00H-000023-11, Rev. 1, pg. 18, Sect. III.B.3.c.2)a) EO12

KA 211000G009 [4.2/4.0]

211000G009 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

302H-000.00H-000023-11, Rev. 1, pg. 33, Sect. V.A.1, EO 5.a

KA 211000K202 [3.1/3.2]

211000K202 ..(KA's)

ANSWER: 075 (1.00)

d.

REFERENCE:

302H-000.00H-000022-13, Rev. 8, pg. 28, Sect IV.C.2.k. EO4

KA 212000K101 [3.7/3.9]

212000K101 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

302H-000.00H-000022-13, Rev. 8, pg. 17, Sect. III.C.2.a&c EO3

KA 212000K601 [3.6/3.8]

212000K601 ..(KA's)

ANSWER: 077 (1.00)

d.

REFERENCE:

302H-000.00H-000059, pg 20, ELO-11
302H-000.00H-000002, ELO-3

259002K605 [3.5/3.5]

259002K605 ..(KA's)

ANSWER: 078 (1.00)

c.

REFERENCE:

OP-IO.ZZ-003, rev 35, pg 13 (Period = 2 x 1.445)
302H-000.00H-000013-10, Rev. 8, pg. 16, Sect. III.B.9.6, EO 10

KA 215004A401 [3.9/3.8]

215004A401 ..(KA's)

ANSWER: 079 (1.00)

b.

REFERENCE:

LP-17, pg 41 and Fig. 2, ELO 7 and 8.b

215002A203 [3.1/3.3]

215002A203 ..(KA's)

ANSWER: 080 (1.00)

a.

REFERENCE:

302H-000.00H-000002-11, Rev. 8, pg. 46, Sect. VIII, C.1.b. EO 10
OP.AB-ZZ-200, rev 5, pg 2

KA 216000G014 [3.8/3.5]

216000G014 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

HC.OP-IO.ZZ-0007, rev 5, pg 7 - 9
302H-000.00H-000045-11, Rev. 8, pg. 29, Sect. IV.C.1.a., and Fig 7A, EO 4

KA 223002A102 [3.7/3.7]

223002A102 ..(KA's)

ANSWER: 082 (1.00)

d.

REFERENCE:

302H-000.00H-000030-14, Reactor Core Isolation Cooling, ELO-5/18, pg 80 to 82

KA 217000K406 [3.5/3.5]

217000K406 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

302H-000.00H-000013-10, Source Range Monitoring System, ELO-6, pg. 26.

KA 215004K401 [3.7/3.7]

215004K401 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

302-000.00H-000029-14, Automatic Depressurization System, ELO-4, pg. 31

KA 218000K501 [3.8/3.8]

218000K501 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

302H-000.00H-000031-09, Primary Containment and Support Systems, ELO-8, pg 18, 32-33

KA 223001K306 [3.3/3.6]

223001K306 ..(KA's)

ANSWER: 086 (1.00)

d.

REFERENCE:

302H-000.00H-000006-10, Control Rod Drive Hydraulics, ELO-13, pg. 45

KA 201001K107 [3.4/3.4]

201001K107 ..(KA's)

ANSWER: 087 (1.00)

a.

REFERENCE:

L.P. 302H-000.00H-000005-10, Control Rod and Control Rod Drive Mechanism, ELO 8, pg. 33.
Tech Spec 3/4.1.3.2 and 3/4.1.3.3

KA 201003G007 [3.6/3.6]

201003G007 ..(KA's)

ANSWER: 088 (1.00)

d.

REFERENCE:

LP 302H-000.00H-000001-09, Reactor Vessel Internals, TLO 4, pg. 37/38
KA 290002A204 [3.7/4.1]

290002A204 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

302H-000.004-000014-09, Intermediate Range Monitoring System, ELO-6, Table 3
Technical Specifications 3.3.1 and 3.3.6

KA 215003G005 [3.2/4.2]

215003G005 ..(KA's)

ANSWER: 090 (1.00)

d.

REFERENCE:

302H-000.00H-000046-12, Rev. 8, pg. 57, Sect. IV.C.2.b, EO 10

KA 239001A301 [4.2/4.2]

239001A301 ..(KA's)

ANSWER: 091 (1.00)

d.

REFERENCE:

302H-000.00H-000052-14, Rev. 8, pg. 48, Sect. IV.C.3.a. EO 16.

KA 256000K304 [3.6/3.7]

256000K304 ..(KA's)

ANSWER: 092 (1.00)

d.

REFERENCE:

SO.BC-0001, rev. 17, step 5.5.5, pg 19

205000A102 [3.3/3.2]

205000A102 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

302H-000.00H-000007-09, Rev. 8, pg. 33, Sect IV.B.4, EO 4

KA 201002A303 [3.2/3.2]

201002A303 ..(KA's)

ANSWER: 094 (1.00)

d.

REFERENCE:

301H-00H-000010-11, Rev. 8, pg. 12, Sect. III.C.4.c.b, EO 4

KA 201004G009 [3.8/3.6]

201004G009 ..(KA's)

ANSWER: 095 (1.00)

b.

REFERENCE:

302H-000.00H-000009-09, Rev. 8, pg. 10, Sect. III.B.1.b.2)b) EO8

KA 201006K402 [3.5/3.5]

201006K402 ..(KA's)

ANSWER: 096 (1.00)

b.

REFERENCE:

302H-000.00H-000019-14, Rev. 8, pg. 19, Sect. III.B.5.c.5) EO10
Exam Bank Question 844 Record #828

KA 202001A210 [3.5/3.9]

202001A210 ..(KA's)

ANSWER: 097 (1.00)

d.

REFERENCE:

302H-000.00H-000021-09, Rev. 8, Sect. III.B.9.b.3)a) EO10

KA 204000A301 [3.3/3.3]

204000A301 ..(KA's)

ANSWER: 098 (1.00)

a.

REFERENCE:

Technical Specifications 3/4.9.4, pg B 3/4 9-1

234000G006 [2.5/3.7]

234000G006 ..(KA's)

ANSWER: 099 (1.00)

d.

REFERENCE:

Tech Spec Definitions

294001A113 [4.5/4.3]

294001A113 ..(KA's)

ANSWER: 100 (1.00)

c.

REFERENCE:

LP-96, pg 32 and 33, ELO-8
Tech. Spec Table 3.3.7.1-1, pg 3/4 3-63 to 3/4 3-65

290003G005 [2.9/3.9]

290003G005 ..(KA's)

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

A N S W E R K E Y

MULTIPLE CHOICE

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

A N S W E R K E Y

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

A N S W E R K E Y

092 d

093 d

094 d

095 b

096 b

097 d

098 a

099 d

100 c

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

S R O E x a m B 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	9000382
002	1.00	9000383
003	1.00	9000384
004	1.00	9000385
005	1.00	9000386
006	1.00	9000387
007	1.00	9000388
008	1.00	9000389
009	1.00	9000390
010	1.00	9000391
011	1.00	9000392
012	1.00	9000393
013	1.00	9000394
014	1.00	9000395
015	1.00	9000396
016	1.00	9000397
017	1.00	9000398
018	1.00	9000399
019	1.00	9000400
020	1.00	9000401
021	1.00	9000402
022	1.00	9000403
023	1.00	9000404
024	1.00	9000405
025	1.00	9000406
026	1.00	9000407
027	1.00	9000408
028	1.00	9000409
029	1.00	9000410
030	1.00	9000411
031	1.00	9000412
032	1.00	9000413
033	1.00	9000414
034	1.00	9000415
035	1.00	9000416
036	1.00	9000417
037	1.00	9000418
038	1.00	9000419
039	1.00	9000420
040	1.00	9000421
041	1.00	9000422
042	1.00	9000423
043	1.00	9000424
044	1.00	9000425
045	1.00	9000426
046	1.00	9000427
047	1.00	9000428
048	1.00	9000429
049	1.00	9000430

S R O E x a m B 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
050	1.00	9000431
051	1.00	9000432
052	1.00	9000433
053	1.00	9000434
054	1.00	9000435
055	1.00	9000436
056	1.00	9000437
057	1.00	9000438
058	1.00	9000439
059	1.00	9000440
060	1.00	9000441
061	1.00	9000442
062	1.00	9000443
063	1.00	9000444
064	1.00	9000445
065	1.00	9000446
066	1.00	9000447
067	1.00	9000448
068	1.00	9000449
069	1.00	9000450
070	1.00	9000451
071	1.00	9000452
072	1.00	9000453
073	1.00	9000454
074	1.00	9000455
075	1.00	9000456
076	1.00	9000457
077	1.00	9000458
078	1.00	9000459
079	1.00	9000460
080	1.00	9000461
081	1.00	9000462
082	1.00	9000463
083	1.00	9000464
084	1.00	9000465
085	1.00	9000466
086	1.00	9000467
087	1.00	9000468
088	1.00	9000469
089	1.00	9000470
090	1.00	9000471
091	1.00	9000472
092	1.00	9000473
093	1.00	9000474
094	1.00	9000475
095	1.00	9000476
096	1.00	9000477
097	1.00	9000478
098	1.00	9000479

S R O E x a m B 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
099	1.00	9000480
100	1.00	9000481
	100.00	
	100.00	

SRO Exam BWR Reactor

Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
058	1.00	294001A103
063	1.00	294001A103
049	1.00	294001A103
060	1.00	294001A106
053	1.00	294001A106
056	1.00	294001A110
099	1.00	294001A113
048	1.00	294001A116
051	1.00	294001K101
050	1.00	294001K101
061	1.00	294001K102
062	1.00	294001K103
054	1.00	294001K104
052	1.00	294001K104
059	1.00	294001K106
055	1.00	294001K113
057	1.00	294001K116
PWG Total	17.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
065	1.00	202002A407
064	1.00	202002K402
067	1.00	203000G013
066	1.00	203000K601
069	1.00	206000A217
068	1.00	206000K301
070	1.00	209001A108
071	1.00	209001A301
072	1.00	209001A401
073	1.00	211000G009
074	1.00	211000K202
075	1.00	212000K101
076	1.00	212000K601
078	1.00	215004A401
083	1.00	215004K401
080	1.00	216000G014
082	1.00	217000K406
084	1.00	218000K501
085	1.00	223001K306
081	1.00	223002A102

S R O E x a m B 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 SYSTEMS

Group I

QUESTION	VALUE	KA
008	1.00	223002A402
013	1.00	241000A108
077	1.00	259002K605
PS-I Total	23.00	

Group II

QUESTION	VALUE	KA
086	1.00	201001K107
093	1.00	201002A303
094	1.00	201004G009
095	1.00	201006K402
096	1.00	202001A210
097	1.00	204000A301
092	1.00	205000A102
079	1.00	215002A203
089	1.00	215003G005
098	1.00	234000G006
010	1.00	263000K601
100	1.00	290003G005
PS-II Total	12.00	

Group III

QUESTION	VALUE	KA
087	1.00	201003G007
040	1.00	201003G008
090	1.00	239001A301
091	1.00	256000K304
088	1.00	290002A204
PS-III Total	5.00	
PS Total	40.00	

SRO Exam BWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
005	1.00	295003A102
009	1.00	295003A204
016	1.00	295003K204
018	1.00	295006G007
017	1.00	295006K201
015	1.00	295007G010
019	1.00	295007K206
034	1.00	295013K302
025	1.00	295015K103
035	1.00	295016G011
046	1.00	295017G012
042	1.00	295017K302
038	1.00	295023K101
029	1.00	295024A111
031	1.00	295024G012
047	1.00	295024K301
045	1.00	295025K301
027	1.00	295026G012
028	1.00	295030A202
036	1.00	295030K201
007	1.00	295031A201
043	1.00	295031G003
024	1.00	295031G012
026	1.00	295037K202
044	1.00	295038A201
EPE-I Total	25.00	

Group II

QUESTION	VALUE	KA
003	1.00	295001A106
001	1.00	295001A201
002	1.00	295001A203
004	1.00	295002K203
011	1.00	295004K203
014	1.00	295005A204
006	1.00	295008G007
020	1.00	295008K206
033	1.00	295012A201
012	1.00	295018A101
032	1.00	295019K202
037	1.00	295020K203
021	1.00	295021A204

SRO Exam BWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

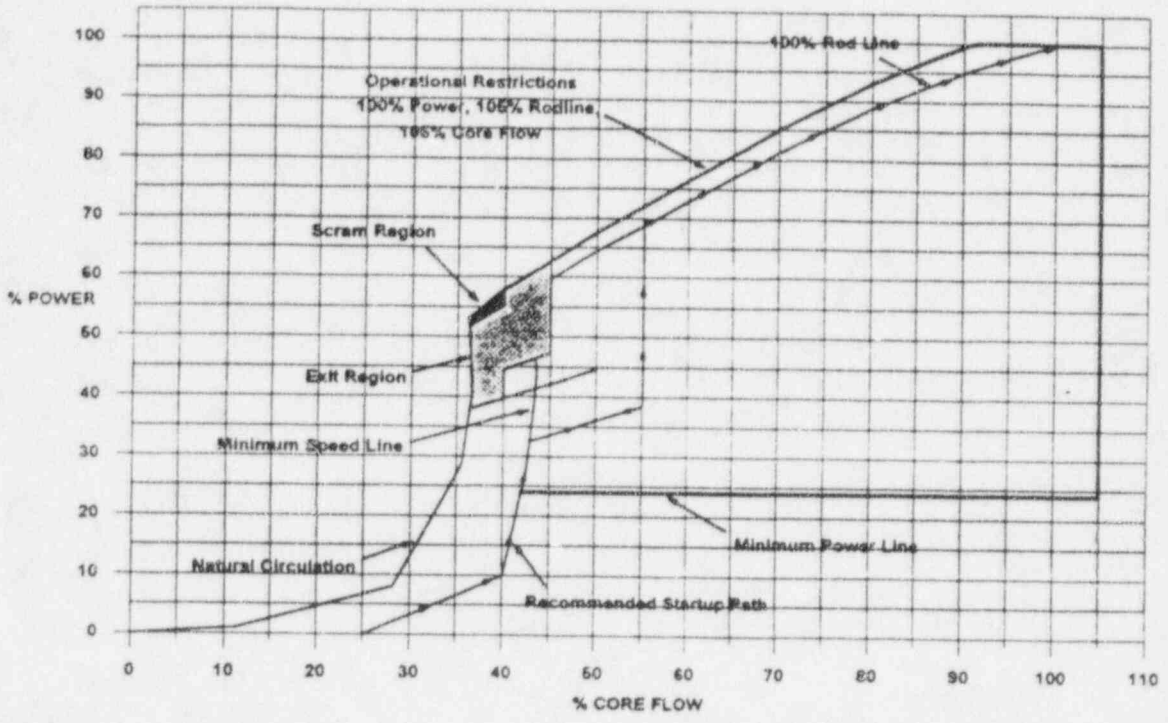
Group II

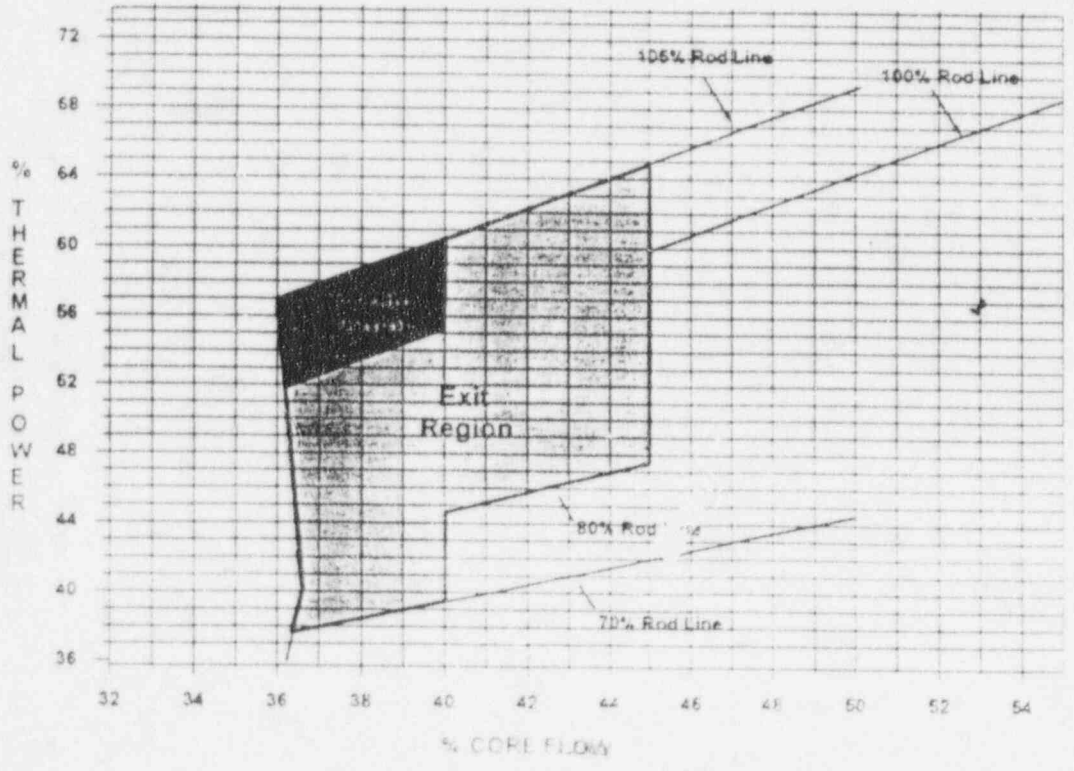
QUESTION	VALUE	KA
023	1.00	295021K202
039	1.00	295022A101
022	1.00	295028A203
030	1.00	295029K206
041	1.00	295033G012
EPE-II Total	18.00	
EPE Total	43.00	
Test Total	100.00	

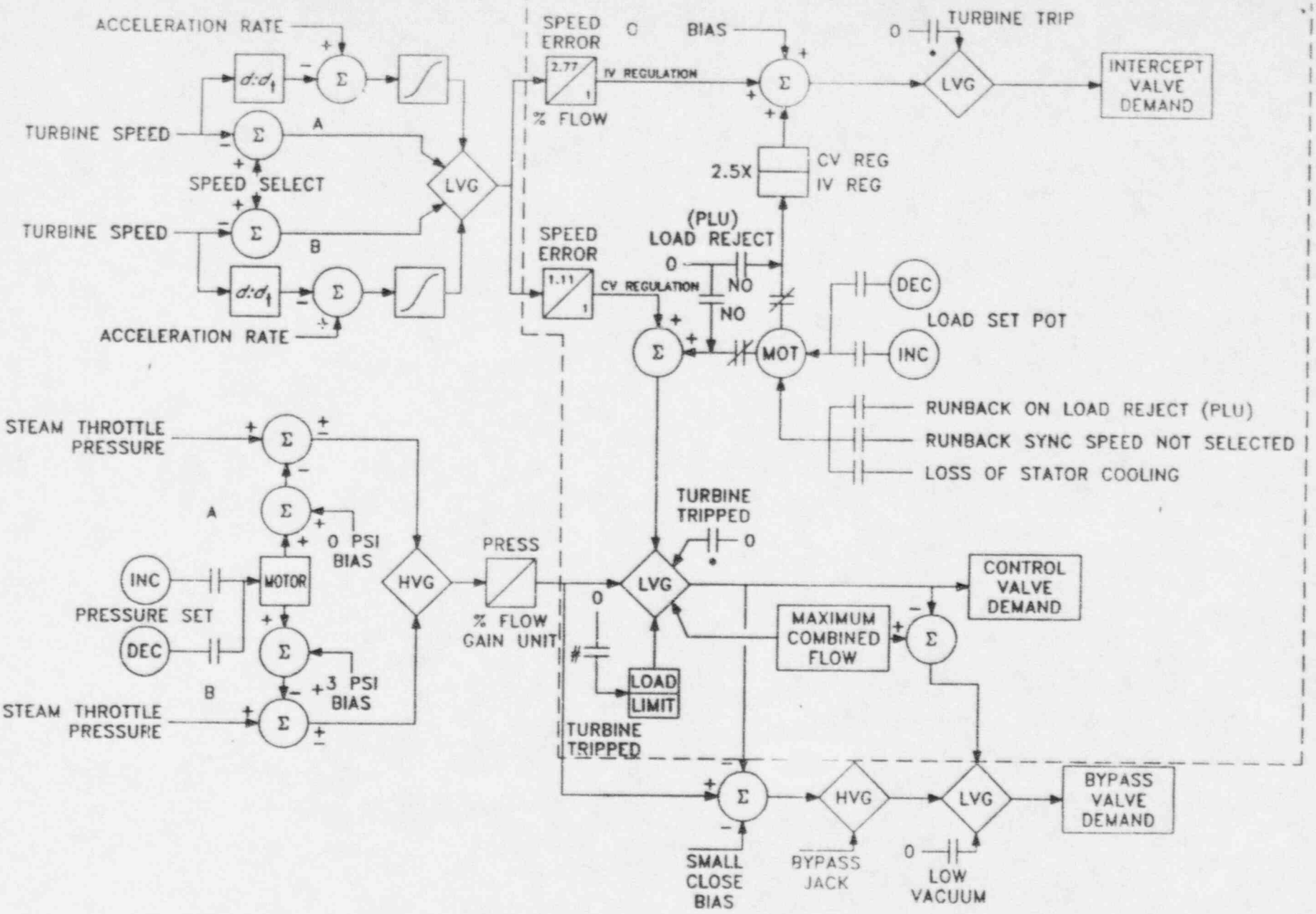
ATTACHMENT 1
POWER TO FLOW MAPS

POWER TO FLOW MAP

HOPE CREEK



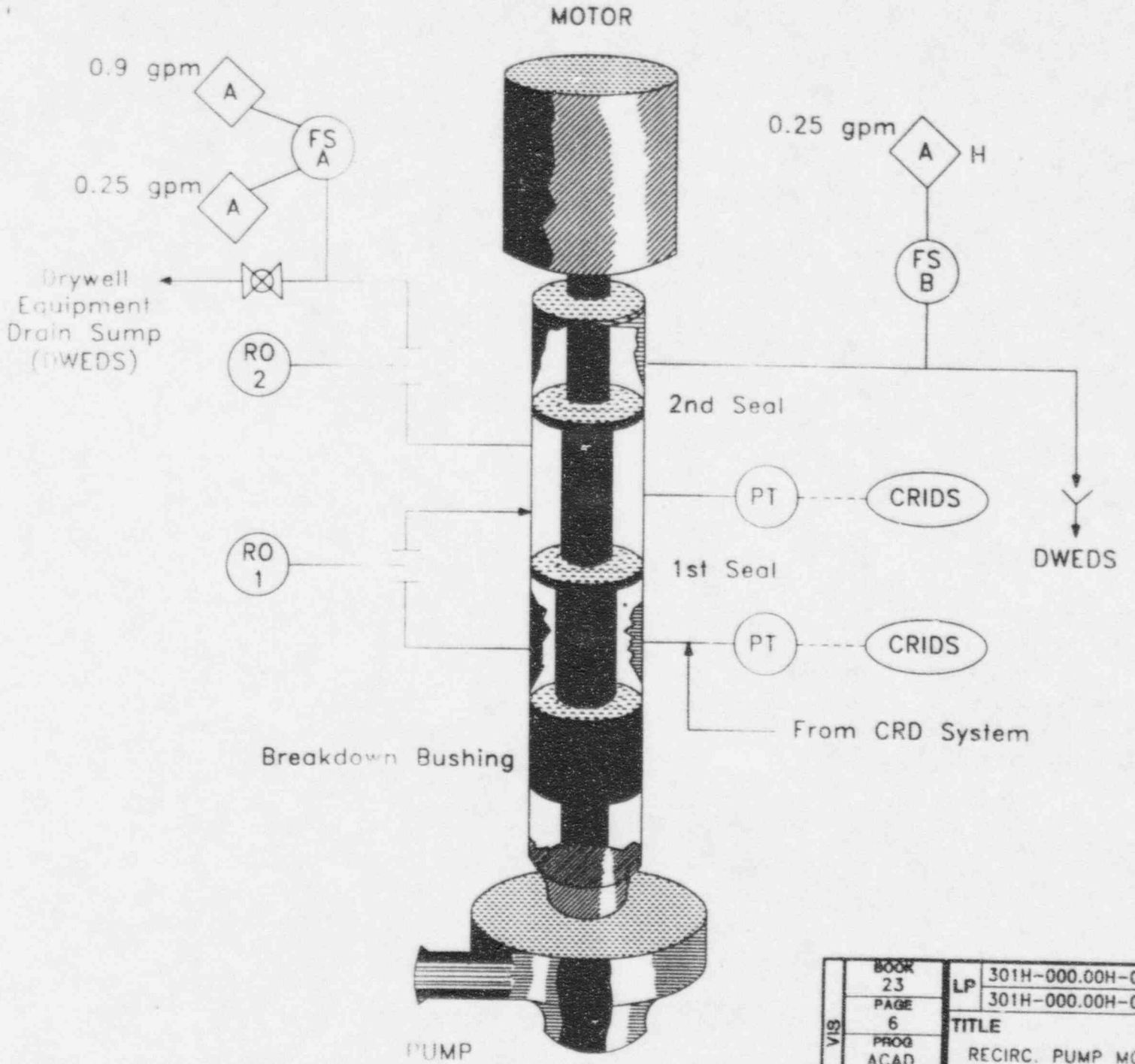




* FROM PS-100A/B (<800 PSIG)

\# FROM STOP VALVE POSITION (TSV 1-4 <90% OPEN)

AV SERVICES	BOOK 9	LP	301H-000.00H-00CH02	REV 4
	PAGE 14		302H-000.00H-000051	
	PROG ACAD11	TITLE	EHC LOGIC/LOAD CONTROL UNIT	FIG 5
	DWG AV1569M			HOPE CREEK



VIS	BOOK 23	LP	301H-000.00H-008B03	REV 0
	PAGE 6		301H-000.00H-000019	
	PROG ACAD	TITLE	RECIRC. PUMP MOTOR AND SEAL	FIG 5
	DWG			

HOPE CREEK

EQUATIONS AND CONVERSIONS

EQUATIONS

$\dot{Q} = \dot{m}C_p\Delta T$

$\dot{Q} = \dot{m}\Delta h$

$\dot{Q} = UA\Delta T$

$K_{eff} = 1/(1 - \rho)$

$\rho = (K_{eff} - 1)/K_{eff}$

$SUR = 26.06/\tau$

$\ell^* = 1 \times 10^{-4}$ seconds

$\lambda_{eff} = 0.1$ seconds^{-1}

$P = P_o 10^{SUR(t)}$

$P = P_o e^{(t/\tau)}$

$A = A_o e^{-\lambda t}$

$CR_{S/D} = S/(1 - K_{eff})$

$CR_1(1 - K_{eff1}) = CR_2(1 - K_{eff2})$

$1/M = CR_1/CR_X$

$F = PA$

$\dot{m} = \rho A\bar{v}$

$\dot{W}_{Pump} = \dot{m}\Delta P v$

$E = IR$

Eff. = Net Work Out/Energy In

$$v(P_2 - P_1) + \frac{(\bar{v}_2^2 - \bar{v}_1^2)}{2g_c} + \frac{g(z_2 - z_1)}{g_c} = 0$$

$g_c = 32.2$ lbm-ft/lbf-sec^2

CONVERSIONS

1 Mw = 3.41×10^6 Btu/hr

1 hp = 2.54×10^3 Btu/hr

1 Btu = 778 ft-lbf

°C = (5/9)(°F

°F = (9/5)(

1 Curie = 3.7×10^{10} dps

1 kg = 2.21 lbm

1 gal_{water} = 8.35 lbm

1 ft^3_{water} = 7.48 gal

ATTACHMENT 2

FACILITY COMMENTS ON WRITTEN EXAMINATIONS

Public Service
Electric and Gas
Company

Louis F. Storz
Senior Vice President Nuclear Operations

Public Service Electric and Gas Company P.O. Box 236, Hancocks Bridge, NJ 08038 609-339-5700

December 21, 1995
NTC-95-3259

Mr. T. Timothy Martin
Regional Administrator
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Martin:

EXAMINATION REVIEW COMMENTS - HOPE CREEK LICENSE EXAMINATION

Attached are comments on questions used on the written examination administered at Hope Creek Generating Station on December 18, 1995. These comments have been developed following the examination. They are in addition to comments provided by Messrs. Sparks, Bauer, Joullian, Mohney, and Bready during the pre-examination review conducted in your King of Prussia office on December 7, 1995. The number of post-examination comments are few and indicative of a well-written exam and a successful pre-exam review.

The following format has been used to document specific comments:

a. NRC question, answer, and reference
b. facility comment including a recommendation for resolution; and
c. support documentation.

The comments are presented in the same order as originally numbered on the SRO examination.

If you have any questions, comments, or need additional information, please call William O'Malley at (609) 339-3809, or Clyde Bauer at (609) 339-3853. They will provide the requested information or will see that you are contacted by the appropriate person.

Sincerely,

Attachments

A. NRC Question, Answer and Reference

QUESTION: 004 (1.00)

The Unit is operating at 75% power with 4 circulating water pumps running.

Which one of the following describes the expected sequence of actions if condenser vacuum has degraded from 2.5 inches Hg Absolute Vacuum to 6.0 inches Hg Absolute Vacuum when two circulating water pumps trip?

Main turbine trips,:

a. recirc pumps runback to 45% speed and MSIVs close.

b. recirc pumps runback to 45% speed and reactor feed pumps trip.

c. recirc pumps runback to 30% speed and reactor feed pumps trip.

d. recirc pumps runback to 30% speed and MSIVs close.

ANSWER: 004 (1.060)

c.

REFERENCE:

HC.OP-AB.ZZ-0208, rev 5, pg 1 and step 5.1, pg 3
LP-114, ELO - 3

295002K203 [3.5/3.6]

295002K203 ..(K.A's)

B. facility comment including a recommendation for resolution

We feel there is no correct answer provided for this question.

In the stem, two circulating water pumps trip when condenser vacuum is 6" HgA. This is also the most degraded vacuum mentioned in the stem of the question.

- Per HC.OP-AB.ZZ-0208(Q), Automatic Action 2.2 (Recirc Pump Full Runback) does occur.
- Automatic Action 2.3 (Main Turbine Trip) does not occur until 7.5" HgA
- Automatic Action 2.4 (Reactor Feed Pumps Trip) does not occur until 10" HgA.
- Automatic Action 2.5 (MSIV Closure) does not occur until 21.5" HgA.

Thus each possible answer is incorrect.

Recommendation for resolution: Remove the question from the examination.

C. support documentation

HC.OP-AB.ZZ-0208(Q), MAIN CONDENSER LOW VACUUM, Revision 5

APPROVED: _____ Operations Manager - HCO Date 9/28/93

MAIN CONDENSER LOW VACUUM

1.0 SYMPTOMS

1.1 Alarms

a. MAIN CONDENSER A VACUUM LO

b. MAIN CONDENSER B VACUUM LO

c. MAIN CONDENSER C VACUUM LO

1.2 Decreasing condenser vacuum

2.0 AUTOMATIC ACTIONS

2.1	Recirc Pump Intermediate Runback	4.5" HGA and loss of Circ Water Pump when 4 are running.
2.2	Recirc Pump Full Runback	5.8" HGA and loss of Circ Pump resulting in two or less running.
2.3	Main Turbine Trip	7.5" HGA
2.4	Reactor Feed Pump Trip	10" HGA
2.5	MSIV Closure	21.5" HGA
2.6	Bypass Valve Closure	22.9" HGA

3.0 IMMEDIATE OPERATOR ACTIONS

3.1 REDUCE reactor power as necessary to maintain main condenser pressure less than 5.0" HGA.

3.2 START or RESTART Circulating Water Pumps if tripped.

A. NRC Question, Answer and Reference

QUESTION: 032 (1.00)

The Unit is operating at power when a rapid decrease of Instrument Air pressure to 0 psig occurs.

Which one of the following describes a consequence from a sustained loss of instrument air?

a. Reactor recirculation pumps eventually trip

b. All MSIVs slowly close

c. Secondary condensate min flow valves drift fully closed

d. RACS temperature flow control valves drift fuily closed

ANSWER: 032 (1.000)

a

REFERENCE:

OP-AB.ZZ-131, rev 12, Discussion step 5.4, pg 4 and pg 2 & 3
LP-75, ELO-14 and 15

295019K202 [2.9/3.0]

295019K202 ..(KA's)

B. facility comment including a recommendation for resolution

We feel there are two correct answers provided for this question. The choice "a" is correct (as shown on the answer key), however "d" is also correct.

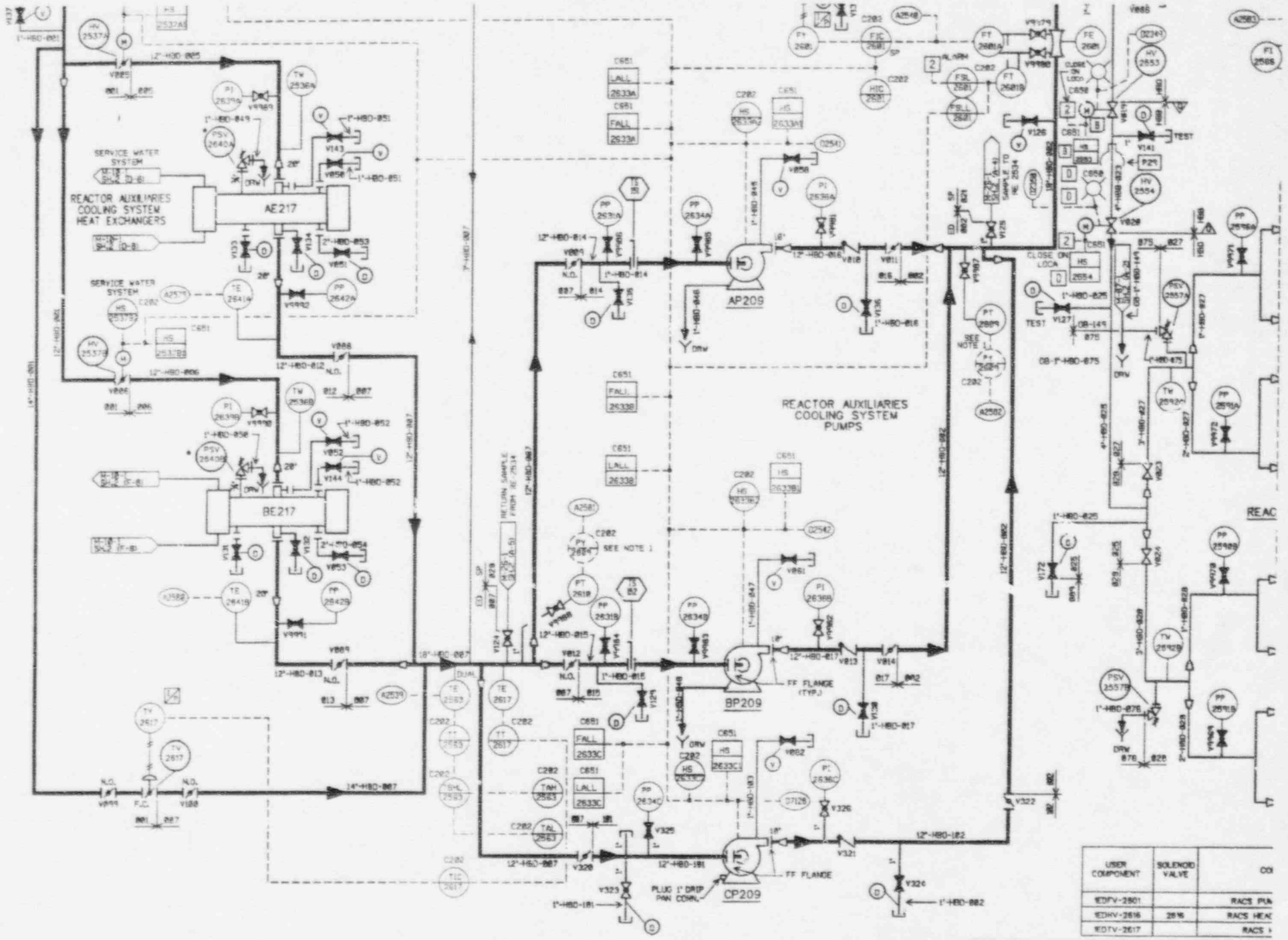
Piping and Instrumentation Diagram, M-13-1, Reactor Auxiliaries Cooling shows RACS temperature control valve (TV-2617) is a bypass around the heat exchangers (AE217 and BE217) that fails closed.

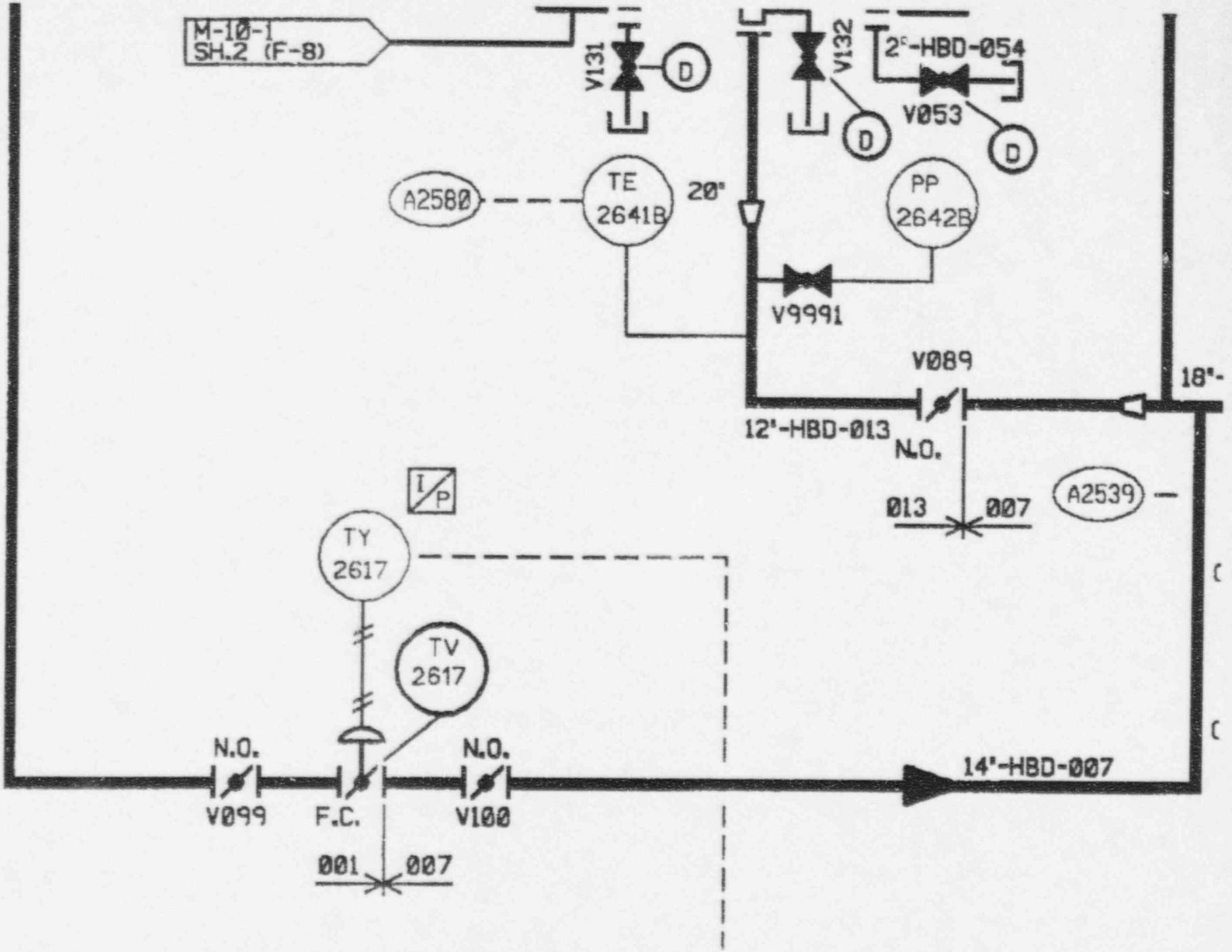
Thus choices "a" and "d" are both correct.

Recommendation for resolution: Modify the answer key to accept either "a" or "d" as correct.

C. support documentation

M-13-1, Rev. 029 - Reactor Auxiliaries Cooling


REACTOR AUXILIARIES COOLING SYSTEM HEAT EXCHANGERS
AE217
BE217
REACTOR AUXILIARIES COOLING SYSTEM PUMPS
AP209
BP209
CP209
SERVICE WATER SYSTEM
SERVICE WATER SYSTEM
12"-HBD-805
12"-HBD-806
12"-HBD-807
14"-HBD-807
12"-HBD-812
12"-HBD-813
12"-HBD-814
12"-HBD-815
12"-HBD-816
12"-HBD-817
12"-HBD-882
12"-HBD-181
12"-HBD-182
18"-HBD-807
1"-HBD-849
1"-HBD-850
1"-HBD-851
1"-HBD-852
2"-HBD-853
2"-HBD-854
1"-HBD-846
1"-HBD-847
1"-HBD-848
1"-HBD-183
1"-HBD-882
1"-HBD-181
1"-HBD-816
1"-HBD-817
1"-HBD-825
1"-HBD-826
1"-HBD-876
1"-HBD-828
1"-HBD-827
2"-HBD-827
3"-HBD-827
4"-HBD-825
3"-HBD-829
2"-HBD-828
8"-1"-HBD-144
8"-1"-HBD-875
8"-1"-HBD-876
RETURN SAMPLE FROM RE 2614
SAMPLE TO RE 2634
SEE NOTE 1
FF FLANGE (TYP.)
FF FLANGE
PLUG 1" DRIP PAN CONN.
CLOSE ON LOCA
TEST
DRW
REAC
USER COMPONENT
SOLENOID VALVE
RACS PUM
RACS HEAT
RACS


M-10-1
SH.2 (F-8)
V131
D
V132
2"-HBD-054
V053
D
D
A2580
TE
2641B
20"
PP
2642B
V9991
V089
18"-
12"-HBD-013
N.O.
013
007
A2539
I/P
TY
2617
TV
2617
N.O.
N.O.
14"-HBD-007
V099
F.C.
V100
001
007

ATTACHMENT 3

NRC RESOLUTION OF FACILITY COMMENTS ON WRITTEN EXAMINATION

Question 4	Facility comment accepted. The question was deleted from the examination.
Question 32	Facility comment accepted. The answer key was revised to accept both A and D as correct answers.

ATTACHMENT 4

SIMULATION FACILITY REPORT

Facility License: NPF-57

Facility Docket No: 50-354

Operating Test Administration: December 19-21, 1995

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

ITEM	DESCRIPTION
Secondary Containment Radiation Levels	It was not possible to develop a realistic scenario that resulted in high radiation levels (>1000 times normal) in two areas of secondary containment that could be monitored by the applicants on the simulator. Radiation levels had to be artificially supplied by the simulator operators to get to levels that required emergency depressurization due to high radiation levels in secondary containment.