U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281

License Nos.: DPR-32, DPR-37

Report Nos.: 50-280/97-300, 50-281/97-300

Licensee: Virginia Power Company

Facility: Surry Nuclear Plant Units 1 & 2

Location: Surry, VA

Dates: August 4 - 7, 1997

Examiners: James H. Moorman, III

James H. Moorman, III, Chief License Examiner
Ronald F. Aiello, License Examiner
Paul M. Steiner, License Examiner

Approved by: T. A. Peebles

Thomas A. Peebles, Chief,
Operator Licensing and Human Performance Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Surry Nuclear Plant Units 1 & 2
NRC Examination Report Nos. 50-280/97-300, 50-281/97-300

During the period August 4 - 7, 1997, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examiner Standards, NUREG-1021, Revision 7. This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Operations

- Two Senior Reactor Operator (SRO) and three Reactor Operator (RO) candidates received written examinations and operating tests. All examinations were administered by NRC operator licensing examiners. The written examination was administered on August 4, 1997, and the operating tests were administered August 5 - 6, 1997. All candidates passed the examination. (Section O5.1)

- Candidate Pass/Fail

	SRO	RO	Total	Percent
Pass	2	3	5	100%
Fail	0	0	0	0%

- Simulator examination security practices were reviewed and determined to be acceptable, although not proceduralized. (Section O5.2)

- During the examination, a minor procedure discrepancy was noted. (Section O8.1)

Report Details

Summary of Plant Status

During the period of the examinations, Unit 1 and Unit 2 were at 100 percent power.

I. Operations

O5 Operator Training and Qualifications

O5.1 Initial Operator Licensing Examinations

NRC examiners conducted regular, announced operator licensing initial examinations during the period August 4 - 7, 1997. NRC examiners administered examinations in accordance with the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7. Two SRO and three RO applicants received written examinations and operating tests.

The NRC developed the RO and SRO written examinations and operating tests in accordance with the guidelines specified in NUREG-1021, Revision 7 and NUREG 0122, Examiner Handbook for Developing Licensing Written Examinations, Rev. 5.

The written examinations were reviewed and validated by members of the Surry training staff working under a security agreement. The review was conducted July 7 - 9, 1997 in the NRC Region 2 offices.

A post-examination review of the written examination determined that due to a change in licensee procedures, one question had no correct answer. This question was on both the RO and SRO examinations and was deleted.

All portions of the operating test were reviewed and validated July 21 - 24, 1997 using the Surry Nuclear Plant Simulator. The Surry training and simulator support staff, under security agreement, provided assistance with the review and validation.

All five candidates passed the examination. One SRO candidate passed with a marginal score on the walkthrough portion of the operating test.

O5.2 Review of Simulator Examination Security Measures

During the period July 21 - 22, 1997, a member of the NRC Headquarters Operator Licensing Branch was on site to review examination security measures as they related to use of the plant reference simulator.

The review determined that adequate security measures were taken by the Surry training department to support NRC examinations, but these measures were not proceduralized.

O8 Miscellaneous Operations Issues

O8.1 Examiner Observations

During the course of examination administration, the examiners noted a minor discrepancy in one of the licensee's procedures. Abnormal Procedure 0-AP-1.01, Control Rod Misalignment provides instructions for recovering a dropped control rod. Step 12 of the procedure directs the operator to reset the Nuclear Insrtumentation dropped rod signal. The reset is accomplished by taking the Power Range Test switch on the affected channel(s) to reset then returning the switch to the center position. The step in 0-AP-1.02 that provides guidance for the reset does not direct the operator to return the switch to the center position. The switch is not a spring loaded, return to center switch. The licensee initiated corrective action when this discrepancy was discovered.

V. Management Meetings

X1. Exit Meeting Summary

At the conclusion of the site visit, the examiners met with representatives of the plant staff listed on the following page to discuss the results of the examinations and other issues.

None of the material provided to the examiners was identified by the licensee as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Crist, Operations Manager
M. Gabriele, Operations Shift Supervisor
C. Lovett, Licensing Supervisor
B. Marshall, Training Specialist
H. McCallum, Operations Training Supervisor
D. Modlin, Oversight Specialist
B. Shriver, Assistant General Manager - Operations and Maintenance
T. Sowers, Training Manager

NRC

R. Musser, Senior Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

SIMULATION FACILITY REPORT

Facility Licensee: Virginia Power - Surry Nuclear Plant

Facility Docket Nos.: 50-280 and 50-281

Operating Tests Administered on: August 4 - 7, 1997

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.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

ITEM	DESCRIPTION

No discrepancies that had not been previously identified were noted.

Master
Surry 97-300

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 2

CANDIDATE'S NAME: MASTER

FACILITY: Surry 1 & 2

REACTOR TYPE: PWR-WEC3

DATE ADMINISTERED: 97/08/04

INSTRUCTIONS TO CANDIDATE:

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

TEST VALUE	CANDIDATE'S SCORE	%	
99.00 ~~100.00~~		%	TOTALS
	FINAL GRADE		

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

Candidate's Signature

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	___
009	a	b	c	d	___
010	a	b	c	d	___
011	a	b	c	d	___
012	a	b	c	d	___
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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 ___~~ Question deleted

100 a b c d ___

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

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

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

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

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

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

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

7. 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)

Which ONE of the following correctly describes the power source for the containment cooling system fans?

a. One of the Containment Air Recirculation fans and ALL of the Control Rod Drive Mechanism Cooling fans are powered from the emergency buses.

b. One of the Containment Air Recirculation fans and one PAIR of Control Rod Drive Mechanism Cooling fans are powered from the non-emergency buses.

c. Two of the Containment Air Recirculation fans and one PAIR of the Control Rod Drive Mechanism Cooling fans are powered from the emergency buses.

c. Two of the Containment Air Recirculation fans and ALL of the Control Rod Drive Mechanism Cooling fans are powered from the non-emergency buses.

QUESTION: 002 (1.00)

Given the following plant conditions:

- Tavg loop A --- 575 degrees F
- Tavg loop B --- 573 degrees F
- Tavg loop C --- 571 degrees F
- Tavg Defeat switch --- B-C position
- Tref --- 569 degrees F
- Rod Control System --- Automatic

Which ONE of the following statements describes HOW the Rod Control System will respond?

a. Rods will step in at 72 steps/min to match loop A Tavg with Tref.

b. Rods will step in at 40 steps/min to match loop B Tavg with Tref.

c. Rods will step out at 40 steps/min to match loop C Tavg with Tref.

d. Rods will step out at 72 steps/min to match loop A Tavg with Tref.

QUESTION: 003 (1.00)

Which ONE of the following statements describes HOW the Rod Control System will respond when the Startup Pushbutton is depressed?

a. Internal rod control system memory circuits reset and the reactor trip breakers open if the trip breakers are closed.

b. Internal rod control system alarms reset and the reactor trip breakers open if the trip breakers are closed.

c. Individual Rod Position Indication [IRPI] circuits reset and the ROD CONTROL SYSTEM NON-URGENT FAILURE alarm illuminates.

d. Slave Cycler Counters and the Bank Overlap Counters reset.

QUESTION: 004 (1.00)

Which ONE of the following conditions will cause the ROD CONTROL MG TRIPPED alarm to actuate?

a. An AMSAC signal.

b. A Reactor trip signal.

c. A Ground on the output of either rod control MG set.

d. Depressing the reactor trip breaker reset pushbutton.

QUESTION: 005 (1.00)

Which ONE of the following sets of conditions will cause RCP 1C breaker to OPEN?

Valve Reference:

MOV-1587, Loop C Bypass Line Isolation Valve
MOV-1594, Loop C Hot Leg Isolation Valve
MOV-1595, Loop C Cold Leg Isolation Valve

a. MOV-1587 SHUT, with MOV-1594 or MOV-1595 SHUT.

b. MOV-1587 SHUT, with MOV-1594 and MOV-1995 OPEN.

c. MOV-1587 OPEN, with MOV-1594 and MOV-1595 SHUT.

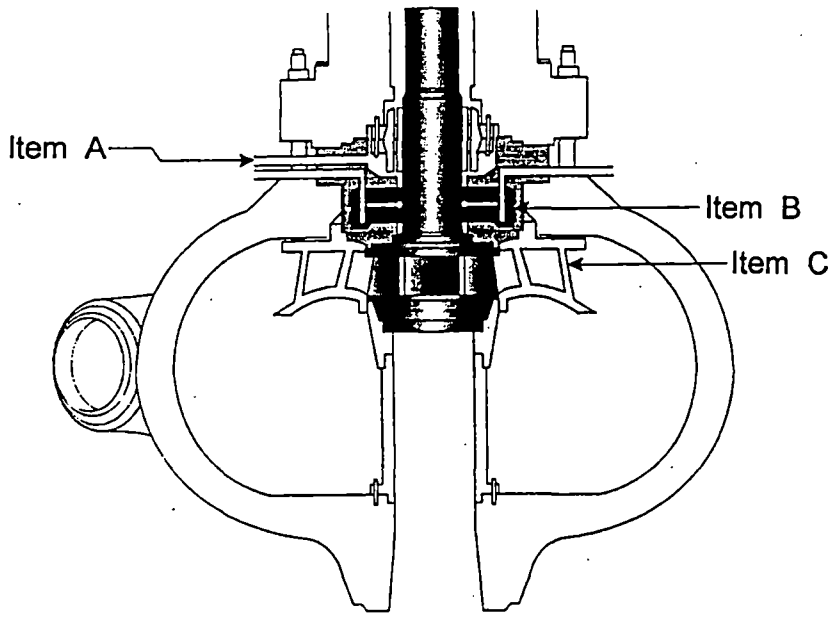
d. MOV-1587 OPEN, with MOV-1594 or MOV-1595 OPEN.

QUESTION: 006 (1.00)

Given the ATTACHED Reactor Coolant Pump (RCP) drawing, which ONE of the following NAMES the RCP components identified as ITEMS A, B, and C?

	ITEM A	ITEM B	ITEM C
a.	Injection Water Inlet	Thermal Barrier Heat Exchanger	Diffuser
b.	CCW Inlet	No. 2 Seal	Impeller
c.	No. 2 Seal Leakoff	Lower Radial Bearing	Impeller
d.	No. 1 Seal Leakoff	No. 3 Seal	Diffuser

REACTOR COOLANT PUMP HYDRAULIC SECTION



QUESTION: 007 (1.00)

Which ONE of the following statements explains why the MAXIMUM flow rate through FCV-1122, normal charging flow control valve, is limited by the automatic control system?

a. To ensure VCT makeup capacity is not exceeded.

b. To prevent charging pump overheating.

c. To prevent masking a small RCS leak.

d. To ensure charging pumps do NOT operate at runout conditions.

QUESTION: 008 (1.00)

HCV-1200A, B, and C, letdown orifice isolation valves, have quick disconnects to allow local operation of the valves to provide an alternate letdown flow path. Which ONE of the following describes the alternate flow path and reason for providing the alternate flowpath?

a. To the VCT during a station blackout scenario.

b. To the RWST during an Appendix R fire scenario.

c. To the PRT during a loss of instrument air.

d. To the VCT during solid plant operation.

QUESTION: 009 (1.00)

Which ONE of the following sets of functions are PERFORMED individually by VCT level transmitters LT-1112 and LT-1115?

	LT-1115	LT-1112
a.	Stops auto makeup at 34%	Initiates swap over to the RWST at 13%
b.	Starts auto makeup at 27%	Controls LC-1115 for diverting LCV-1115A at the setpoint on the controller
c.	Actuates the low level alarm at 24%	Controls LC-1112 for diverting LCV-1112A at the setpoint on the controller
d.	Initiates Swap over to the RWST at 13%	Initiates high level divert of LCV-1112 to PRT at 85%

QUESTION: 010 (1.00)

Which ONE of the following statements describes a condition that would cause annunciator SI VALVE OUT OF POSITION (A-D-4) to illuminate?

a. Accumulator discharge valves (1865A & B) fully open.

b. Charging pump discharge valves (1869A & B) fully closed

c. Suction valves (1862A & B) from RWST to LHSI pumps NOT fully open.

d. RWST cross-tie air operated valves (TV-SI-102A & TV-SI-102B) NOT fully closed.

QUESTION: 011 (1.00)

Which ONE of the following EXPLAINS the function of the 60 second safety injection (SI) timer?

a. To prevent an automatic SI after SI is reset.

b. To prevent a spurious SI immediately after resetting SI.

c. To prevent a spurious SI injection from charging the Pressurizer solid and undesired operation of the Pressurizer PORVs.

d. To prevent manual repositioning of SI components before automatic positioning of SI components have been completed for a valid SI signal.

QUESTION: 012 (1.00)

Given the following plant condition:

- Reactor critical below P-6

Which ONE of the following REACTOR RESPONSES will occur?

	Source Range N31 Instrument Power Fuse Blows When Not In Bypass	Source Range N31 Instrument Power Fuse Blows When In Bypass	Source Range N32 Control Power Fuse Blows When In Bypass
a.	Reactor Trips	Reactor Trips	Reactor Trips
b.	Reactor Does Not Not Trip	Reactor Trips	Reactor Does Trip
c.	Reactor Trips	Reactor Does Not Trip	Reactor Trips
d.	Reactor Does Not Trip	Reactor Does Not Trip	Reactor Does Not Trip

QUESTION: 013 (1.00)

Select the option to fill in the blanks:

An intermediate range nuclear instrument SUR during a reactor startup indicates higher than actual when it is _____ compensated and the source range nuclear instrument will re-energize at too high a power level when both intermediate range nuclear instruments are _____ compensated.

a. Over; Under.

b. Over; Over.

c. Under; Under.

d. Under; Over.

QUESTION: 014 (1.00)

Which ONE of the following Nuclear Instrumentation Drawers contains the specific circuit(s) that causes the NIS PR CHANNEL AVERAGE FLUX DEVIATION alarm to annunciate?

a. N41, N42, or N43 Drawers.

b. N44 Drawer.

c. Miscellaneous Indication and Control Drawer.

d. Comparator and Rate Drawer.

QUESTION: 015 (1.00)

If containment pressure is 9 psig, which ONE of the following DESCRIBES the Containment Air Recirculation Fans operating status?

	FAN 1A	FAN 1B	FAN 1C
a.	ON	OFF	OFF
b.	ON	ON	OFF
c.	OFF	ON	ON
d.	OFF	OFF	ON

QUESTION: 016 (1.00)

If S/G C experiences a major feedline break at the point where the main feedline enters S/G C, which ONE of the following AFW flow rates is FEASIBLE?

	COMBINED FLOW TO S/Gs A & B	FLOW TO S/G C
a.	350 gpm	350 gpm
b.	325 gpm	375 gpm
c.	300 gpm	400 gpm
d.	275 gpm	425 gpm

QUESTION: 017 (1.00)

Which ONE of the following statements identifies the MAXIMUM administrative release rate for a Waste Gas Decay Tank (WGDT) and the basis for the limit?

	LIMIT	BASIS
a.	2.0 cfm	The total body exposure of an individual at the nearest exclusion area boundary will not exceed 0.5 rem in an event of 2 hours duration.
b.	2.0 cfm	The concentration of oxygen in the discharge flow will be limited to less than or equal to 2 percent by volume.
c.	3.0 cfm	The concentration of hydrogen in the discharge flow will be limited to less than 4 percent by volume.
d.	3.0 cfm	The release rate of the monitoring instrumentation only reads up to 3.0 cfm.

QUESTION: 018 (1.00)

Given the following plant conditions:

- PROCESS VENT STK HI PART RAD (RMA-A4) is illuminated
- The alarm is verified to be valid
- The process vent flow device is verified operable

Which ONE of the following statements EXPLAINS the reason for stopping the CV pumps in response to the alarm?

a. To prevent an unmonitored release through a ruptured KO Drum.

b. There is a possibility of rupturing the isolated WGDTs.

c. There is a possibility of damaging the CV pump discharge hose.

d. To prevent a hydrogen explosion after FCV-GW-101, WGDT isolation valve, closes.

QUESTION: 019 (1.00)

Which ONE of the following sets of conditions BLOCK both the feedwater bypass valves and the main feed regulating valves?

a. Reactor Trip and Safety Injection.

b. Reactor Trip and auctioneered median Tavg of 554 degrees.

c. Safety Injection and 2/3 channels S/G HI HI level of (75%).

d. Safety Injection and 1/2 feedwater pump breakers open.

QUESTION: 020 (1.00)

The following plant conditions exist after starting the first main feedwater pump, 1-FW-P-1A, and restoring system components to automatic:

- Suction pressure is 475 psig
- Recirculation flow is 4100 gpm
- Pump flow is 4700 gpm
- Lube oil pressure is 15 psig

Which ONE of the following states the main feedwater pump, 1-FW-P-1A, parameter that has exceeded its normal limit?

a. Suction pressure.

b. Recirculation flow.

c. Pump flow.

d. Lube oil pressure.

QUESTION: 021 (1.00)

Which ONE of the following states the Technical Specification requirement for the MINIMUM number of operable CETCs per quadrant?

a. 2.

b. 3.

c. 4.

d. 6.

QUESTION: 022 (1.00)

Which ONE of the following configurations is used in the Flux Thimble Thermocouple System (FTTC)?

a. One (1) thermocouple is located in the tip of each of the flux thimbles.

b. Three (3) thermocouples are located in the tip of each of the flux thimbles.

c. Five (5) thermocouples are assigned to In Core Cooling Monitor (ICCM) Train A.

d. Ten (10) thermocouples are assigned to In Core Cooling Monitor (ICCM) Train A.

QUESTION: 023 (1.00)

Which ONE of the following AUTOMATIC ISOLATIONS is associated with the Liquid Radwaste system?

a. The discharge tunnel high radiation monitor isolates liquid waste discharge on a high radiation level.

b. The low level liquid waste (LLLW) pumps stop on low level in their respective tank.

c. The inlet valve to the liquid waste (LW) ion exchangers closes on high conductivity.

d. The safeguards sump is isolated from the LW system on an SI signal.

QUESTION: 024 (1.00)

Given the following plant conditions:

- RCS loop A operating with Tcold at 325 degrees F and Thot at 327 degrees F
- RCS loop B operating with Tcold at 325 degrees F and Thot at 326 degrees F
- RCS loop C hot leg isolation valve was fully opened at 1325
- RCS loop C bypass valve was fully opened at 1330
- RCS loop C Tcold is 305 degrees F
- RCS loop C Thot is 307 degrees F
- RCP C was started at 1335
- Current time is 1335

Which ONE of the following times is the EARLIEST TIME that the RCS loop C cold leg stop valve can be opened?

a. 1450.

b. 1455.

c. 1500.

d. 1505.

QUESTION: 025 (1.00)

Given the following plant conditions:

- All reactor coolant pumps have been stopped for 30 minutes
- The RCS is SOLID
- S/G A pressure is 35 psig
- S/G B pressure is 45 psig
- S/G C pressure is 60 psig
- Loop A Tcold is 235 degrees F
- Loop B Tcold is 245 degrees F
- Loop C Tcold is 255 degrees F

Which ONE of the following actions must be performed BEFORE RCP A can be started?

a. The RCP can be started with the existing conditions.

b. Reduce S/G A pressure to approximately 23 psig.

c. Reduce S/G B pressure to approximately 30 psig.

d. Reduce S/G C pressure to approximately 50 psig.

QUESTION: 026 (1.00)

Given the attached Surry Operating P/T Curve, which ONE of the following statements provides the BASIS for the PZR/PZR Spray Delta-T Limit curve?

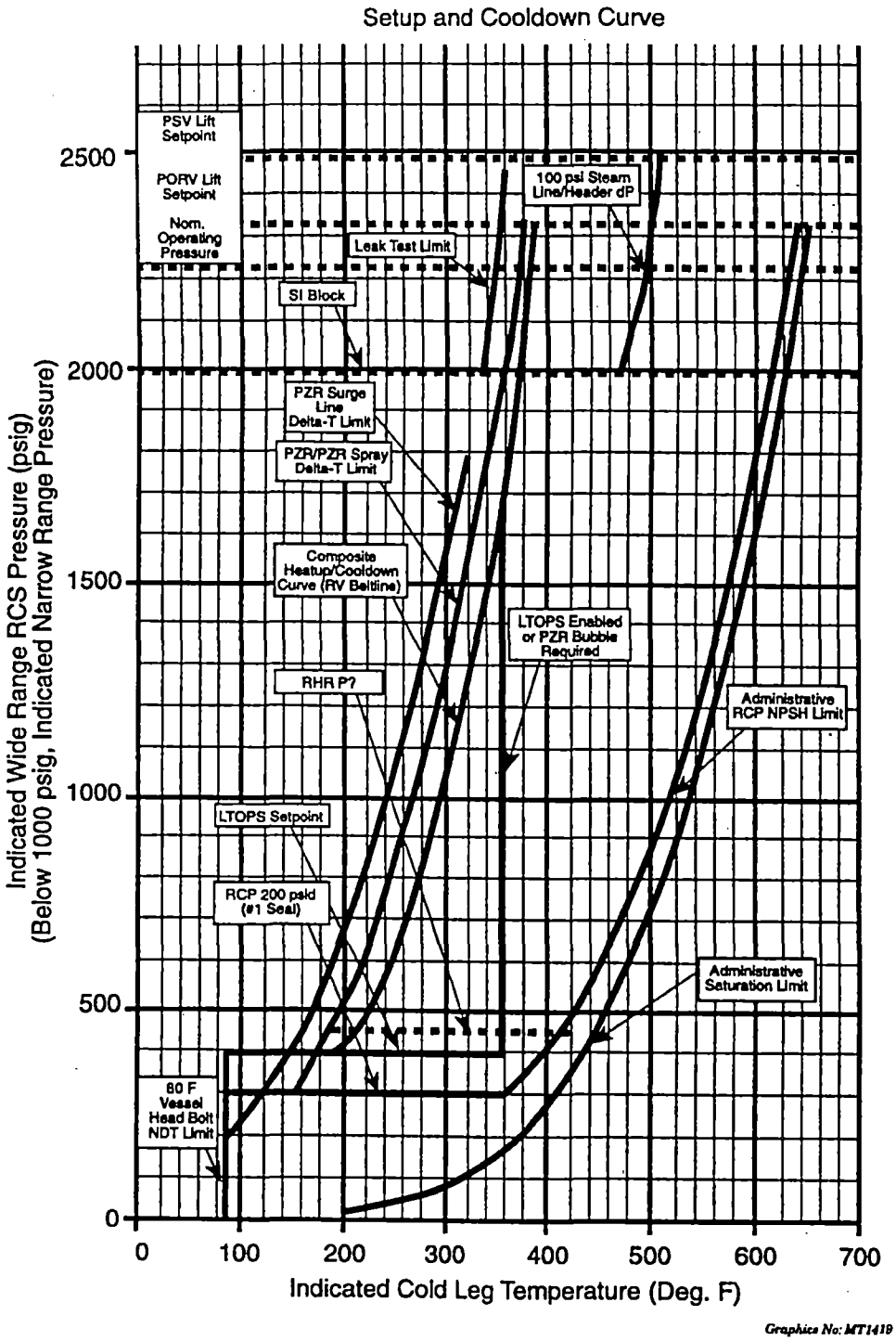
a. The curve is based on the difference in measurement location and the location of interest.

b. The curve is based on the pressurizer 50 degree F per hour cooldown limit adjusted for a 21 psi correction where temperature is sensed.

c. The curve is based on the 300 degree F administrative limit adjusted for instrument uncertainty to ensure technical specification limits are not exceeded.

d. The curve is based on the maximum temperature differential across the pressurizer surge line (303 degree F) adjusted for temperature and pressure measurement errors.

SURRY OPERATING P/T CURVE



SURRY OPERATING P/T CURVE

QUESTION: 027 (1.00)

Which ONE of the following conditions MUST BE SATISFIED in order to CLOSE the containment spray (CS) pump suction valves, MOV-CS-100A and B?

a. The CS pump breaker is open, racked in, and the HI-HI CLS signal has been reset.

b. The discharge header isolation valves, MOV-CS-101A, B, C and D are closed, and the HI-HI CLS and SI signals have been reset.

c. MOV-CS-100A and B breaker is racked in, the MOV's handswitch placed in Close, and the SI signal has been reset.

d. RWST EMPTY alarm (A-B-1) is NOT actuated, and the HI-HI CLS and SI signals have been reset.

QUESTION: 028 (1.00)

Which ONE of the following automatic actuations occur when a CLS is RESET?

a. The containment instrument air compressor suction valves from containment open automatically.

b. The air ejector vent to containment valve opens automatically if the air ejector radiation monitor is still in alarm.

c. The containment particulate and gas radiation monitor trip valves open automatically.

d. The CLS SYSTEM COIL FAILURE alarm (B-A-4) resets when the HI CLS relays are momentarily energized and then deenergized.

QUESTION: 029 (1.00)

Given the following plant conditions:

- The SI system is operating in the long-term recirc mode lineup
- The HHSI pump header flow transmitter readings are:

  FT-943 (normal header) indicates 110 gpm
  FT-943A (normal header) indicates 110 gpm
  FT-940 (alternate header) indicates 110 gpm
  FT-940A (alternate header) indicates 0 gpm

Which ONE of the following flow rates is being injected into the RCS?

a. 110 gpm.

b. 220 gpm.

c. 330 gpm.

d. 440 gpm.

QUESTION: 030 (1.00)

Given the following plant conditions:

- The plant is in HOT SHUTDOWN
- Accumulator A has 975 cubic feet of borated water with a boron concentration of 2225 ppm boron and a cover pressure of 600 psia
- Accumulator B has 985 cubic feet of borated water with a boron concentration of 2250 ppm boron and a cover pressure of 610 psia
- Accumulator C has 995 cubic feet of borated water with a boron concentration of 2275 ppm boron and a cover pressure of 600 psia
- RWST contains 389,100 gallons of borated water with a boron concentration of 2350 ppm boron concentration and a solution temperature of 44 degrees F

Which ONE of the following actions must be performed before Technical Specifications permit proceeding to POWER OPERATION?

a. Accumulator A boron concentration must be increased.

b. Accumulator B cover pressure must be reduced.

c. Accumulator C volume of borated water must be reduced.

d. RWST temperature must be increased.

QUESTION: 031 (1.00)

Which ONE of the following statements describes the FUNCTION of the rod position indicating system rod bottom bypass bistable?

a. Bypass the rod drop alarm for control banks B, C, and D only when the associated step counter is less than 20 steps.

b. Bypass the rod drop alarm for control banks B, C, and D only when the associated step counter indicates less than 35 steps.

c. Block the rod drop alarm for control rod banks B, C, and D only when operating with some of the control rods fully inserted.

d. Block the rod drop alarm for control rod banks B, C, and D only when operating with control bank D rods between 20 and 35 steps.

QUESTION: 032 (1.00)

Given the following plant conditions:

- Rod control is in manual
- Rod control bank A rods are fully withdrawn
- Rod control bank B rods are fully withdrawn
- Rod control bank C rods are at 151 steps
- A fuse in power cabinet 2BD for a bank D group 2 rod blows and causes the associated rod to drop

Which ONE of the following statements describes the plant response to the blown fuse?

a. Control rods CAN be moved in manual and the rod bottom light for the control rod with the blown fuse will be illuminated.

b. Control rods CANNOT be moved in manual and the rod bottom light for the control rod with the blown fuse will be illuminated.

c. Control rods CANNOT be moved in manual and the RPI ROD BOTTOM < 20 STEPS alarm will be illuminated.

d. Control rods CAN be moved in manual and the RPI ROD BOTTOM < 20 STEPS alarm will be illuminated.

QUESTION: 033 (1.00)

Given the following conditions for the pressurizer pressure master controller:

- Potentiometer is set to 5.68
- In automatic
- Output is 50 percent

Which ONE of the following statements describes HOW the pressurizer pressure is responding?

a. 2145 psig - increasing.

b. 2185 psig - decreasing.

c. 2205 psig - increasing.

d. 2235 psig - stable.

QUESTION: 034 (1.00)

Which ONE of the following pressurizer heaters will be LOST if 1B1 is deenergized?

a. Proportional heaters.

b. "A" backup heaters.

c. "B" backup heaters.

d. "D" backup heaters.

QUESTION: 035 (1.00)

Given the following plant conditions:

- Tavg is 563 degrees F
- Pressurizer level is in automatic control
- Pressurizer level is at the programmed level

Which ONE of the following approximate levels EXISTS in the pressurizer?

a. 34.3%.

b. 41.6%.

c. 46.1%.

d. 56.1%.

QUESTION: 036 (1.00)

Which ONE of the following reactor trips uses the logic circuit presented in the attached logic diagram?

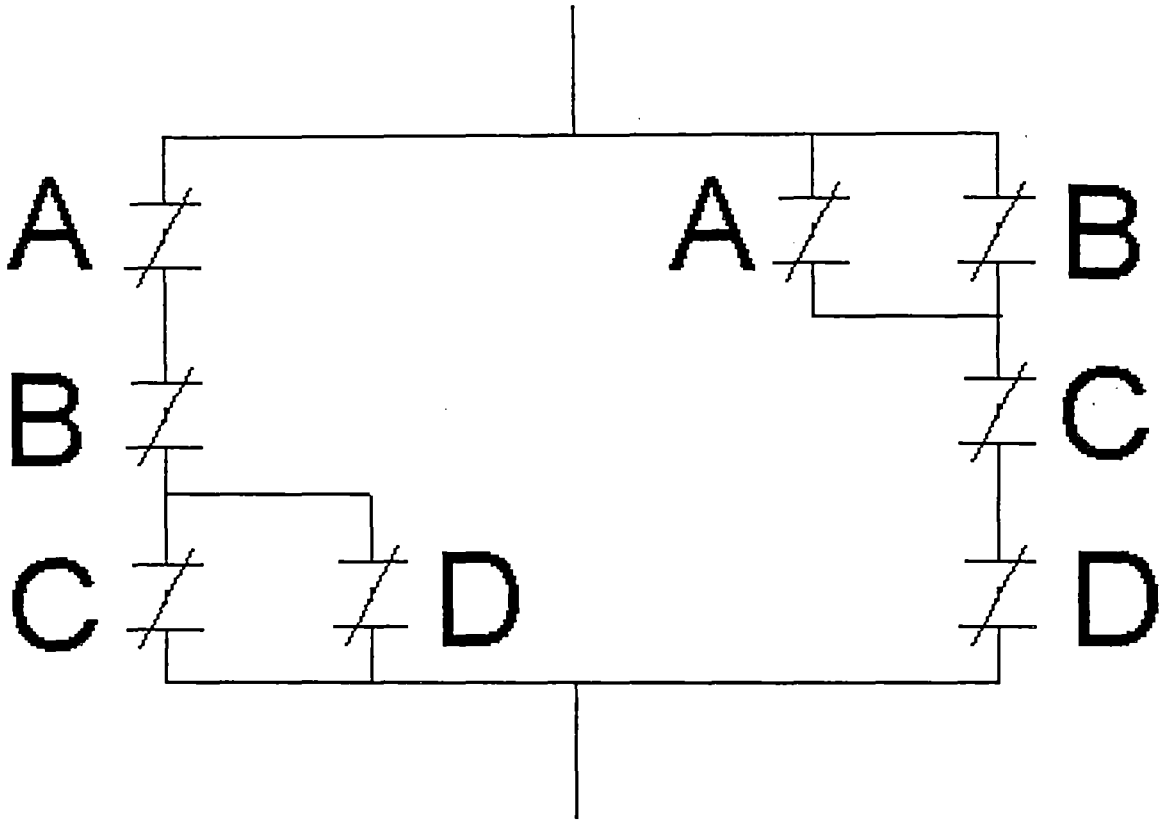
a. Power range high flux trip low.

b. Overtemperature Delta T (OTDT).

c. Pressurizer pressure high.

d. Turbine trip.

LOGIC CIRCUIT DIAGRAM



NOTE: The contacts are shown in the energized (closed) position. When a protective signal is received, the contacts open.

QUESTION: 037 (1.00)

Given the following plant conditions:

- Reactor power is 90 percent
- Control rod bank D is at 180 steps
- Rod control is in automatic
- The median delta T signal selector output fails high

Which ONE of the following statements describes the RESPONSE to the median delta T output failure?

a. The OTDT Rx TRIP alarm will be illuminated.

b. The OPDT Rx TRIP alarm will be illuminated.

c. Rod Bank D EXTRA-LOW alarm will be illuminated.

d. Delta T Dev A - B (3.5 F) or Delta T Dev A - C (3.5 F) alarms will be illuminated.

QUESTION: 038 (1.00)

Which ONE of the following statements describes the location of the spent fuel pool (SFP) cooling and purification system discharge to the RWSTs?

a. Purification suction.

b. SFP cooling pumps suction.

c. SFP heat exchanger outlet piping.

d. Outlet of the purification filter.

QUESTION: 039 (1.00)

Given the following plant condition:

- S/G PORV controller setpoint is set to 60%

Which ONE of the following states (gives) the S/G PORV opening pressure setpoint?

a. 800 psig.

b. 850 psig.

c. 900 psig.

d. 950 psig.

QUESTION: 040 (1.00)

Given the following plant conditions:

- Unit 1 reactor power is 30 percent
- A steam leak occurs on the A S/G main steamline between the A S/G trip valve and the tap for the A S/G supply to the TDAFW pump

If the HIGH STEAM LINE FLOW STEAM GENERATOR 1A CHANNEL 3 alarm illuminates, which ONE of the following FLOW RATES describes the minimum steam flow rate from S/G A?

a. Steam flow equivalent to 34% power.

b. Steam flow equivalent to 38% power.

c. Steam flow equivalent to 47% power.

d. Steam flow equivalent to 108% power.

QUESTION: 041 (1.00)

Which ONE of the following switch positions are required for the #1 EDG to start when the #1 EDG start pushbutton on the main control room EDG control panel is depressed?

	ECC LOCAL/AUTO SWITCH	AUTO/EXERCISE SWITCH
a.	LOCAL	AUTO
b.	LOCAL	EXERCISE
c.	AUTO	AUTO
d.	AUTO	EXERCISE

QUESTION: 042 (1.00)

Given the following plant conditions:

- Unit 1 is operating at 40% power
- Unit 2 is operating at 45% power
- Power is lost to the Unit 1 "A" DC bus

Which ONE of the following protective functions will be LOST?

a. AMSAC on Unit 1.

b. EDG #3 automatic start.

c. EDG #1 automatic loading.

d. Steam-driven AFW pump automatic start.

QUESTION: 043 (1.00)

Which ONE of the following statements DESCRIBES the two conditions that must be satisfied in order to restore the reserve station service transformer tap changer circuit to normal following an auto start inhibit signal?

a. SI signals and HI-HI CLS signal reset.

b. SI signals reset and LTC reset pushbutton on the Unit 1 benchboard reset.

c. Placing the GDC-17 master test switch and master reset switch in reset.

d. Going to trip or PTL on the reserve station transformer and going to reset on the GDC-17 panel master reset switch.

QUESTION: 044 (1.00)

Which ONE of the following statements describes HOW the residual heat removal [RHR] system is connected to the reactor coolant system [RCS]?

a. Takes suction from the top of loop A hot leg and discharges to the bottom of loops A and C cold legs.

b. Takes suction from loop A hot leg below the center line and discharges to the top of loops B and C cold legs.

c. Takes suction from the top of loop B cold leg and discharges to the bottom of loops B and C cold legs.

d. Takes suction from loop B cold leg below the centerline and discharges to the top of loops A and C cold legs.

QUESTION: 045 (1.00)

Why does Technical Specification 3.10, Refueling, allow the residual heat removal loop to be removed from operation for up to 1 hour per 8-hour period during the performance of core alterations?

a. To allow shifting the lineup of the RHR pumps and heat exchangers.

b. To allow measurement of reactor vessel level without introducing an RHR flow error to the level calculation.

c. To perform a decay heat calculation to verify Reactor Engineering core performance data.

d. To prevent RHR flow from pulling the manipulator mast over.

QUESTION: 046 (1.00)

Which ONE of the following statements IDENTIFIES systems and/or components that discharge to the pressurizer relief tank (PRT).

a. Pressurizer PORVs, RHR relief valves, and VCT relief valve.

b. Pressurizer safety valves, pressurizer drain valves, and RHR relief valves.

c. Seal return heat exchanger relief valve, pressurizer PORVs, and the nitrogen system.

d. CVCS letdown piping relief valve, RCP seal return relief valve, and RHR Relief valves.

QUESTION: 047 (1.00)

When operating, which ONE of the following leaking components would result in an INCREASING level in the Component Cooling Water Surge Tank?

a. Excess Letdown Heat Exchanger.

b. Bearing Cooling Water Cooler.

c. Regenerative Heat Exchanger.

d. Component Cooling Water Heat Exchanger

QUESTION: 048 (1.00)

Which ONE of the following statements describes WHY the booster relay was installed in the steam dump system?

a. To reduce excessive plant cooldown by reducing the time to vent off the air from the steam dump valve operator after the signal cleared.

b. To reduce excessive plant cooldown by increasing the time to vent off the air from the steam dump valve operator after the signal cleared.

c. To improve steam dump response time by applying instrument air (IA) directly from the IA header in the trip open mode of operation.

d. To improve steam dump response time by applying IA to the steam dump valves through the E/P converter and the valve positioner.

QUESTION: 049 (1.00)

Which ONE of the following statements DESCRIBES when 1-SW-263 is designed to CLOSE? (Refer to the attached drawing of the service water subsystem)

a. If a low suction pressure is sensed on 1-VS-P-1A, 1-VS-P-1B, or 1-VS-P-1C.

b. If a low discharge pressure is sensed 1-VS-P-1A, 1-VS-P-1B, or 1-VS-P-1C.

c. If flooding is detected in either #3 MER or #4 MER.

d. If a fire is detected in either #3 MER or #4 MER.

QUESTION: 050 (1.00)

Given the following plant conditions:

- Containment instrument air compressor 1-IA-C-4A is running continuously in HAND
- Containment instrument air compressor 1-IA-C-4B starts in AUTO

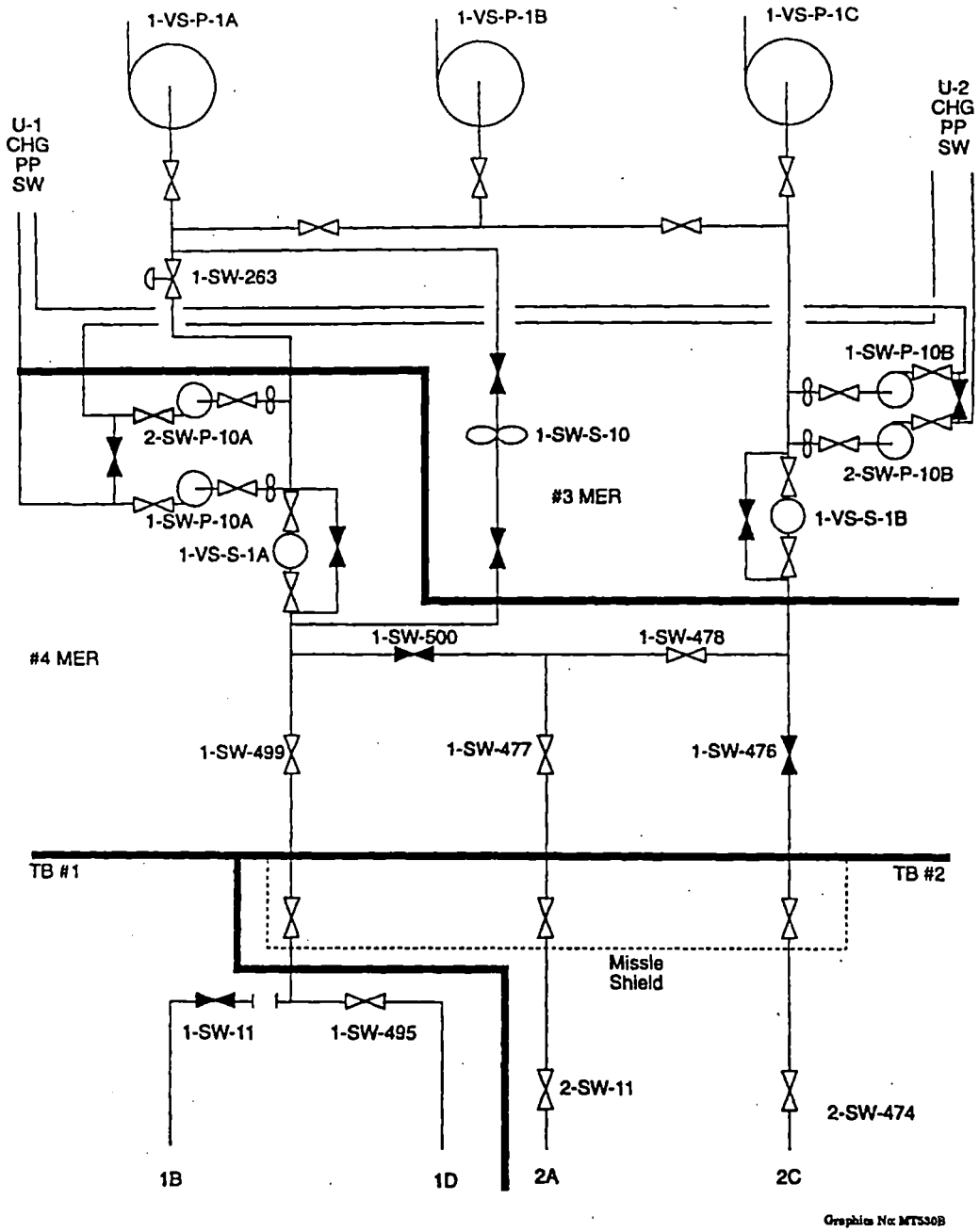
Which ONE of the following conditions CAUSED 1-IA-C-4B to start?

a. The 1-IA-C-4A containment instrument air compressor unloader failed to energize at 95 psig.

b. The 1-IA-C-4A containment instrument air compressor unloader failed to de-energize at 85 psig.

c. The 1-IA-C-4A containment instrument air compressor operated unloaded for greater than six (6) minutes.

d. The 1-IA-C-4A containment instrument air compressor operated fully loaded for greater than six (6) minutes.



SERVICE BUILDING SERVICE WATER SUBSYSTEM

QUESTION: 051 (1.00)

Which ONE of the following describes the minimum time the door operator to containment should take to equalize pressure when making a containment entry?

a. 2 minutes.

b. 3 minutes.

c. 4 minutes.

d. 5 minutes.

QUESTION: 052 (1.00)

Given the following plant conditions:

- At 1000 power was reduced to 73% following confirmation that a bank D group 1 control rod was stuck
- At 1115 a bank D group 2 control rod has been verified to be 15 steps above its group step counter.

Which ONE of the following ACTIONS should be PERFORMED in response to the given plant conditions?

a. Trip the reactor.

b. Determine if shutdown margin (SDM) is satisfied before 1215.

c. Reduce the high neutron flux trip setpoint to less than 75% before 1600.

d. Be in hot shutdown before 2200.

QUESTION: 053 (1.00)

Given the following in-core flux traces for in-core locations B-5 and B-7, which ONE of the following statements DESCRIBES the ACTUAL plant conditions?

a. Control rod B-6 is stuck at 60 steps.

b. Control rod B-6 is stuck at 160 steps.

c. Control rod C-6 is stuck at 130 steps

d. Control rod C-6 is on the bottom.

QUESTION: 054 (1.00)

Step 4 of 1-AP-39.00, NATURAL CIRCULATION OF RCS, reads as follows:

"VERIFY RCS HOT LEG TEMPERATURE - LESS THAN 550 DEGREES F"

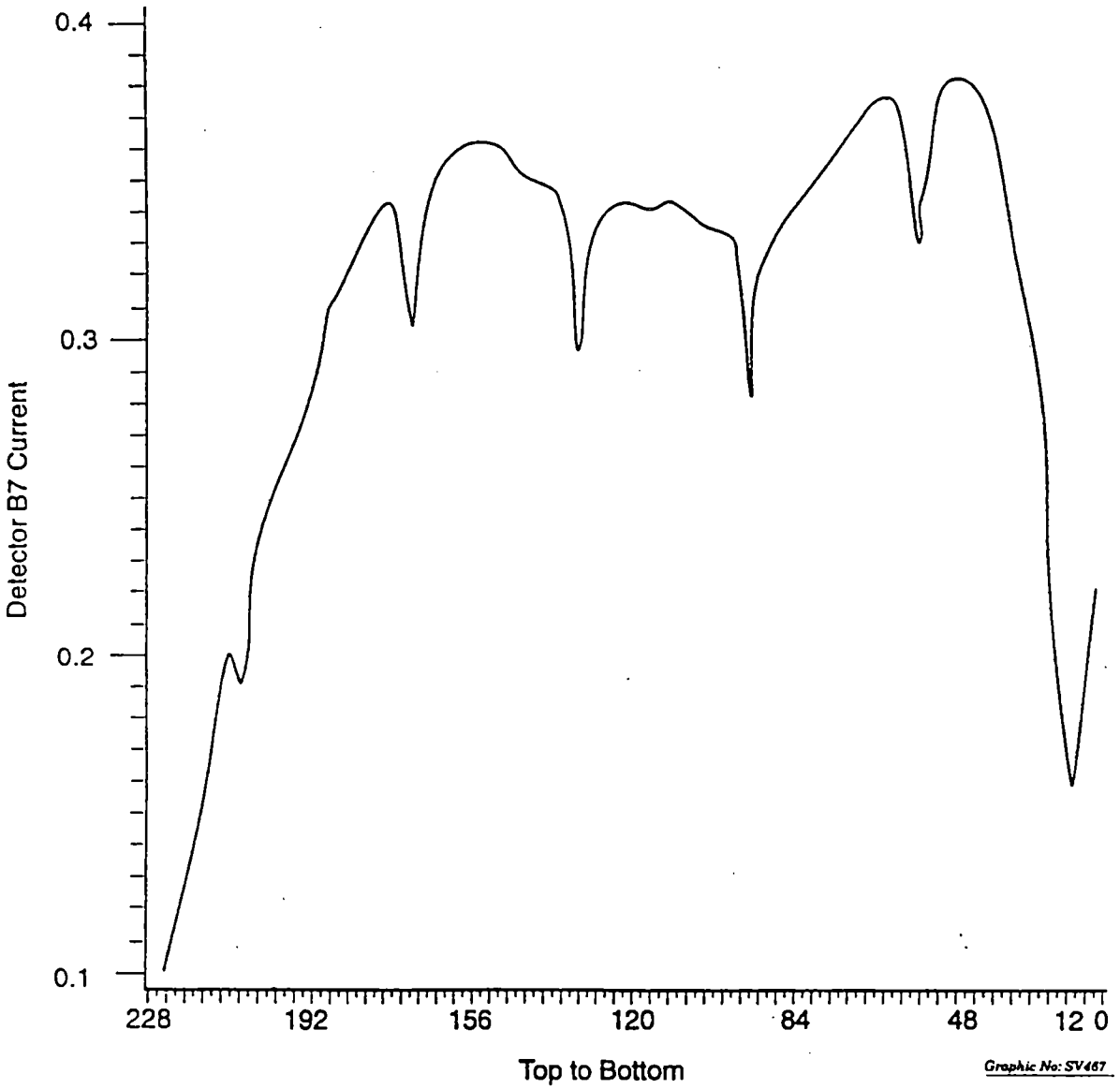
Which ONE of the following reasons describes WHY RCS hot leg temperatures are verified less than 550 degrees F during RCS natural circulation?

a. To ensure that there is NO voiding anywhere in the RCS.

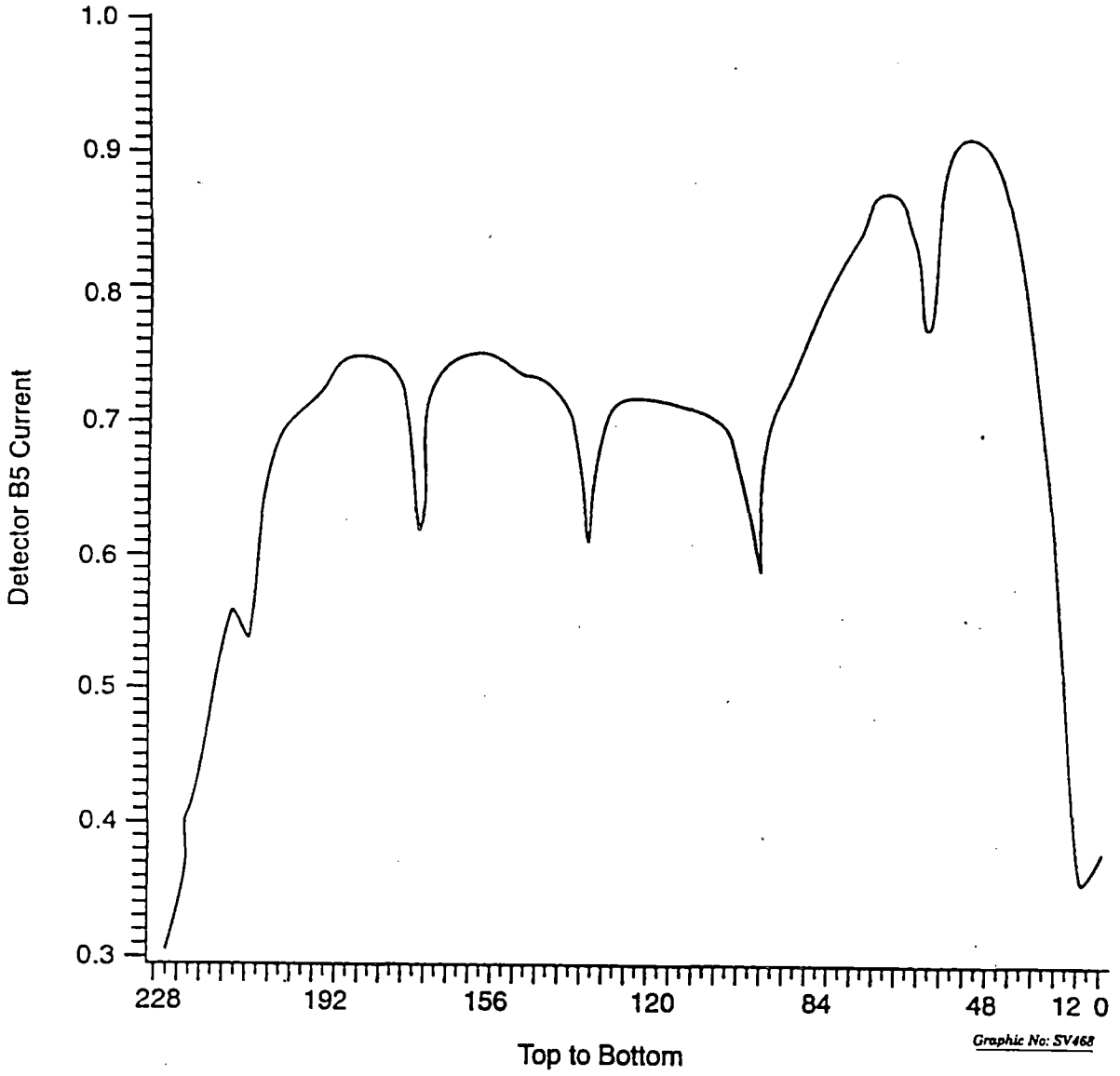
b. To ensure that a steam bubble is maintained in the pressurizer and that there is NO voiding in the reactor vessel head.

c. To ensure that the secondary safety valves are NOT being used for primary temperature control.

d. To ensure that there is an adequate temperature differential between the RCS and the secondary to promote natural circulation.



MISALIGNED ROD TRACE, B-7



MISALIGNED ROD TRACE B5

QUESTION: 055 (1.00)

Given the following plant conditions:

- The plant is operating at 100% power
- The loop "A" reactor coolant pump (RCP) tripped on overcurrent (motor winding shorted)
- A reactor trip occurred
- The steam dumps actuated normally in response to the reactor trip
- 1-E-0, REACTOR TRIP OR SAFETY INJECTION, has been entered
- A safety injection (SI) occurs about 90 seconds after RCP "A" tripped

Which ONE of the following explains WHY the safety injection occurred? (Assume no equipment or instrument failures caused the SI)

a. S/G "A" feed flow was excessive and decreased the "A" S/G pressure below the header-to-line SI setpoint.

b. S/G "B" feed flow was excessive and caused RCS pressure to decrease below the RCS low pressure SI setpoint.

c. S/G "C" feed flow was excessive and decreased the "C" S/G pressure below the header-to-line SI setpoint.

d. The RCS pressure transient following the reactor and RCP "A" trip decreased RCS pressure below the RCS low pressure SI setpoint.

QUESTION: 056 (1.00)

Which ONE of the following methods will increase RCS boron concentration at the GREATER rate?

a. Borate through the blender with the boric acid pump in fast speed.

b. Maximize charging flow rate with charging pump suction lined up to the RWST.

c. Emergency borate through manual valve, CH-228, with the boric acid pump in fast speed.

d. Emergency borate through normal valve, MOV-1350, with the boric acid pump in fast speed.

QUESTION: 057 (1.00)

Which ONE of the following statements describes the REASON that 1-AP-15.00, LOSS OF COMPONENT COOLING, Step 1 directs the operators to trip the reactor?

a. To prepare to restore component cooling by minimizing heat loads on the component cooling system.

b. To prepare to initiate natural circulation of the RCS.

c. To prepare to enter containment to close TV-CC-120 to isolate the RCP thermal barriers within 4 hours.

d. To prepare to secure charging and seal injection until an alternate letdown flow path is established to control pressurizer level.

QUESTION: 058 (1.00)

Given the following plant conditions:

- Plant operating at 83% power
- All control systems are in automatic
- Pressurizer pressure transmitter PT-444 fails LOW

If no operator action is taken, which ONE of the following stable pressures will exist in the RCS following the PT-444 failure?

a. 1775 psig.

b. 2000 psig.

c. 2235 psig.

d. 2335 psig.

QUESTION: 059 (1.00)

Which ONE of the following sets of actions are IMMEDIATE ACTIONS specified in 1-FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS?

a. VERIFY REACTOR TRIP, and VERIFY AFW PUMPS RUNNING.

b. Manually insert control rods, and close MSTVs.

c. Manually start MD AFW pumps, and INITIATE EMERGENCY BORATION OF RCS.

d. Send operator to locally trip the reactor, and reduce turbine load using the limiter.

QUESTION: 060 (1.00)

Given the following plant conditions:

- Plant is operating at 50% power - increasing
- S/G level in all 3 S/Gs increasing
- Feedwater flow increasing
- Control rods stepping out in automatic

Which ONE of the following events has OCCURRED?

a. Continuous rod withdrawal.

b. Feedwater break.

c. Steam break.

d. RCS dilution.

QUESTION: 061 (1.00)

Given the following plant conditions:

- A reactor trip with a safety injection occurred
- The crew has correctly transitioned from 1-E-0, REACTOR TRIP OR SAFETY INJECTION to 1-E-1, LOSS OF REACTOR OR SECONDARY COOLANT
- The crew has completed 1-E-1, Step 14, CHECK IF LHSI PUMPS SHOULD BE STOPPED
- The crew has entered 1-E-1, Step 15, CHECK SG AND RCS PRESSURES

Which ONE of the following statements EXPLAINS the CONSEQUENCE of moving past step 15 with a depressurizing SG?

a. The crew could be directed to ES-1.1, SI TERMINATION, and premature SI termination.

b. The crew could be directed to ES-1.2, POST-LOCA COOLDOWN & DEPRESSURIZATION and encounter more restrictive SI termination criteria than necessary.

c. The crew may be incorrectly directed to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRC.

d. Continued operation with a faulted steam generator will cause a loss of the AFW pumps due to the loss of makeup water.

QUESTION: 062 (1.00)

Given the following plant conditions:

- Plant operating at 85% power
- Generator MW is decreasing slowly
- Annunciator 1F-B6, Turbine Low Vacuum, illuminated about 5 minutes ago
- Annunciator 1F-C3, Turbine Low Vacuum trip illuminates

Which ONE of the following statements DESCRIBES HOW the plant will respond?

a. The steam dumps do NOT open.

b. The steam dumps trip open.

c. The steam dumps modulate open.

d. The NRVs will trip shut.

QUESTION: 063 (1.00)

Given the following plant condition:

- Unit 1 operating at 92% power
- Unit 2 operating at 100% power
- A station blackout occurs

Which ONE of the following identifies the MAXIMUM number of AFW pumps that can be running following the station blackout (consider AFW pumps for both units)?

a. 3.

b. 4.

c. 5.

d. 6.

QUESTION: 064 (1.00)

In the event of a LOSS OF ALL AC POWER, which ONE of the following statements describes HOW plant parameters respond following the initial perturbations caused by the plant trip from 100% power?

a. S/G pressure decreases due to steam dump and S/G PORV failure to operate.

b. S/G levels decrease due to steam/feed flow mismatch, and loop flow coasts down due to the RCP trip.

c. Plant average temperature and pressurizer level return to near normal full load values.

d. Plant average temperature and pressurizer level will return to normal no load values.

QUESTION: 065 (1.00)

If vital bus VB 1-III is lost, which ONE of the following statements explains WHY 1-AP-10.03, LOSS OF VITAL BUS III directs the operators to trip the reactor?

a. To prevent overfeed of S/G B.

b. Power to blender control and indication are lost.

c. Automatic RCS pressure control and letdown are lost.

d. To ensure the reactor is shutdown prior to tripping RCP "A".

QUESTION: 066 (1.00)

Which ONE of the following statements describes HOW all the station's emergency, vital, and DC power could be lost in the event of a serious fire in the turbine building?

a. The fire could disable controls and prevent access to the water box isolation MOVs, and cause an uncontrolled canal draw down concurrent with a loss of CW pumps.

b. The fire could disable controls and cause the turbine to overspeed and create missile hazards.

c. The fire could cause a loss of integrity of the CW/SW rubber expansion boots and cause flooding of the ESGRs.

d. The fire could cause a generator explosion and create missile hazards.

QUESTION: 067 (1.00)

Given the following plant conditions:

- A small fire occurs in the control room
- The fire is quickly brought under control
- Both units are stable
- The main control room is habitable
- Fire damage is limited to the PAM Panel on Unit 1

Which ONE of the following procedures will be the plant CONTROLLING PROCEDURE?

a. 0-FCA-1.00, LIMITING MCR FIRE.

b. VPAP-2802, NOTIFICATIONS AND REPORTS.

c. 0-AP-20.00, MAIN CONTROL ROOM INACCESSIBILITY.

d. 0-AP-48.00, FIRE PROTECTION - OPERATIONS RESPONSE.

QUESTION: 068 (1.00)

Given the following plant conditions:

- The control room has been evacuated
- The Transfer Relay Panel Transfer Switch for the emergency borate valve is placed in the Aux Pnl position (refer to the attached drawing)
- The Transfer Relay Panel Main Selector Switch for the emergency borate valve is placed in the Override position (refer to the attached drawing)

Which ONE of the following statements describes HOW operation of the emergency borate valve is AFFECTED by the given switch alignment?

a. The emergency borate valve opens when the main selector switch is placed in Override.

b. The Transfer relay for the emergency borate valve is controlled from the Aux Shutdown Panel.

c. The emergency borate valve is controlled from the Aux Shutdown Panel.

d. The emergency borate valve can ONLY be operated manually using the valve handwheel.

QUESTION: 069 (1.00)

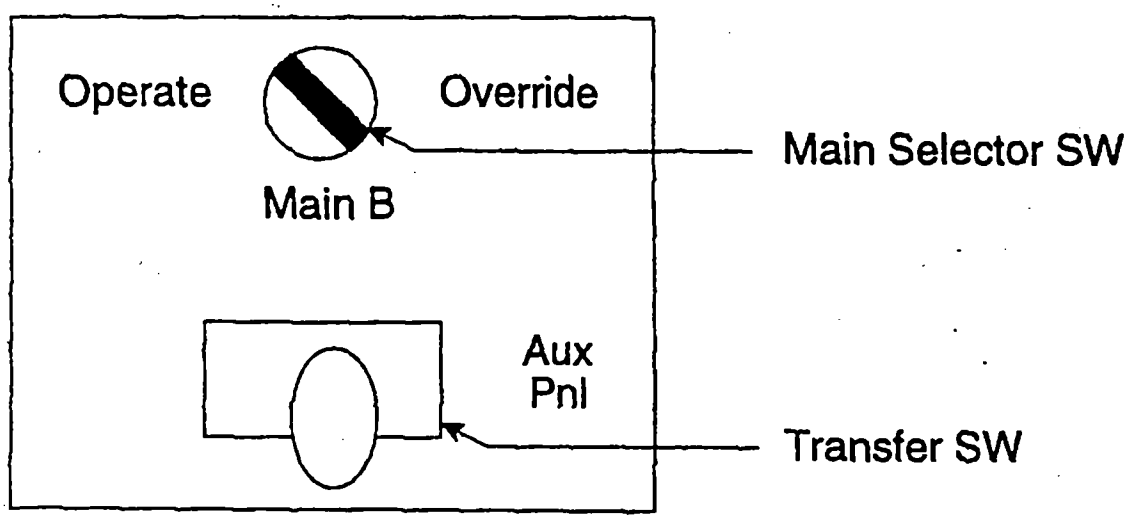
Which ONE of the following CLEARLY define two core conditions indicating INADEQUATE CORE COOLING?

a. CET greater than 1200 degrees F and RCS subcooling greater than 30 degrees F.

b. CET greater than 1200 degrees F and RCS subcooling less than 30 degrees F.

c. CET greater than 1200 degrees F and CET greater than 700 degrees F with RVLIS indication less than 46%.

d. CET greater than 1200 degrees F and CET greater than 700 degrees F with RVLIS indication greater than 46%.



Transfer Relay Panel

QUESTION: 070 (1.00)

Given the following plant conditions:

- A reactor trip and safety injection has occurred
- FR-C.1, RESPONSE TO INADEQUATE CORE COOLING has been entered
- At Step 3, CHECK RCP SUPPORT CONDITIONS - AVAILABLE, it is determined that all RCP support conditions are NOT available
- RWST level has decreased to 15%

Which ONE of the following actions must be performed IMMEDIATELY?

a. Continue in FR-C.1 at step 4.

b. Depressurize the RCS and initiate feed and bleed.

c. Transition to 1-ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

d. Restore RCP support conditions.

QUESTION: 071 (1.00)

Which ONE of the following conditions INDICATE a non-recoverable loss of instrument air?

a. Service Air Trouble (B-E-5) illuminated and instrument air pressure of 60 psig.

b. Instrument Air Compressor 1 Trouble (B-E-6) illuminated and instrument air pressure of 55 psig.

c. SOV-SA-124 AND 175 closed to isolate service air to non-valve loads.

d. MSTV in intermediate position and FRV demand increasing with feed flow less than steam flow.

QUESTION: 072 (1.00)

IF NO OPERATOR ACTION IS TAKEN, which ONE of the following plant responses occurs if the pressurizer level lower controlling channel fails LOW?

a. Letdown will isolate and charging immediately goes to and remains at maximum flow rate.

b. Letdown will isolate and charging immediately goes to and remains at minimum flow rate.

c. Reactor trips and the Pressurizer will go solid.

d. Reactor trips and the Pressurizer will empty.

QUESTION: 073 (1.00)

Given the following plant conditions:

- A reactor trip and safety injection occurred
- Containment pressure increased to 23 psig
- Containment pressure is currently 3 psig
- Containment radiation level is 10E4 R/hr and increasing slowly
- Total AFW flow is 360 GPM
- SG A narrow range level is 15%
- SG B narrow range level is 18%
- SG C narrow range level is 20%

Which ONE of the following actions must be performed at Step 14 of 1-E-0, REACTOR TRIP OR SAFETY INJECTION? (See the attached page from 1-E-0)

a. Go to Step 15.

b. Control feed flow to maintain narrow range level and go to Step 15.

c. Manually start AFW pumps AND align valves as necessary.

d. GO TO 1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

NUMBER	PROCEDURE TITLE	REVISION
1-E-0	REACTOR TRIP OR SAFETY INJECTION	26
		PAGE 9 of 22

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14.	__VERIFY TOTAL AFW FLOW - GREATER THAN 350 GPM [450 GPM]	IF SG narrow range level greater than 11% [22%] in any SG, THEN control feed flow to maintain narrow range level AND GO TO Step 15. IF SG narrow range level less than 11% [22%] in all SGs, THEN manually start pumps AND align valves as necessary. IF AFW flow greater than 350 gpm [450 gpm] can NOT be established, THEN GO TO 1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
15.	__CHECK AFW MOVs - OPEN • 1-FW-MOV-151E • 1-FW-MOV-151F • 1-FW-MOV-151C • 1-FW-MOV-151D • 1-FW-MOV-151A • 1-FW-MOV-151B	Manually align valves as necessary.

QUESTION: 074 (1.00)

1-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 5 reads:

"5. VERIFY MFW ISOLATION."

Which ONE of the following statements describes the BASES for Step 5?

a. Prevent excessive cooldown which could aggravate a small break LOCA transient.

b. Prevent excessive cooldown which could aggravate a steamline break transient.

c. Prevent excessive cooldown which could mask a steam generator tube rupture transient.

d. Prevent excessive cooldown which could mask a feedline break transient.

QUESTION: 075 (1.00)

Given the following plant conditions:

- A reactor trip has occurred
- 1-E-0, REACTOR TRIP OR SAFETY INJECTION has been entered
- A HI-HI CLS signal is received
- S/G narrow range level is 30% in all S/Gs
- A momentary undervoltage transient occurs on one AC emergency bus

Which ONE of the following describes how the plant responds after the affected MDAFW pump trips?

a. The pump can be manually started as soon as the undervoltage condition clears.

b. The pump will auto-start after a 10 second blocking signal.

c. The pump will auto-start after a 140 second blocking signal.

d. The pump can be manually started after a 180 second blocking signal.

QUESTION: 076 (1.00)

Given the following plant conditions:

- The plant is operating normally at 100% power
- A pressurizer PORV opens

Which ONE of the following temperatures would you EXPECT to see on the PORV tailpipe temperature indicator?

a. 200 - 300 degrees F.

b. 325 - 425 degrees F.

c. 470 - 550 degrees F.

d. 575 - 650 degrees F.

QUESTION: 077 (1.00)

Which ONE of the following contains actions and/or components required for adequate core cooling for a small break LOCA?

a. Safety injection pumps running and safety injection accumulators.

b. Reactor coolant pumps running and operator action.

c. Operator action and steam generators.

d. Steam generators and safety injection accumulators.

QUESTION: 078 (1.00)

During a small break LOCA, which ONE of the following CONDITIONS exists when the RCP trip criteria is satisfied?

a. Subcooling at the break is 0 degrees F.

b. Subcooling at the core exit is 0 degrees F.

c. Subcooling at the RCS hot leg RTDs is 30 degrees F.

d. Subcooling at the RCS cold leg RTDs is 30 degrees F.

QUESTION: 079 (1.00)

Which ONE of the following statements describes reflux boiling?

a. Boiling occurs at the cladding surface without the surface being wetted.

b. Radiative heat transfer and nucleate boiling are occurring simultaneously.

c. Water is boiled off in the core and steam condenses in the S/G U-tubes.

d. Hot RCS fluid forced from the break is replaced by cold SI water.

QUESTION: 080 (1.00)

Which ONE of the following transients is most likely to result in an overpower delta T (OPDT) trip?

a. Stuck rod.

b. Rod ejection.

c. Steamline rupture.

d. Continuous rod withdrawal.

QUESTION: 081 (1.00)

Which ONE of the following reasons explains WHY the 12 hour rod realignment limitation threshold is applied by 0-AP-1.01, CONTROL ROD MISALIGNMENT?

a. Local power levels BEFORE 12 hours will exceed the pre-misaligned values following realignment.

b. If the rod is recovered within about 12 hours, the local power level following realignment of the rod will not exceed the pre-misaligned values.

c. Local Xenon concentrations BEFORE 12 hours will be significantly less than the pre-misaligned values following realignment.

d. To ensure that the design nuclear enthalpy rise hot channel factor will not be exceeded.

QUESTION: 082 (1.00)

Given the following plant conditions:

- FR-I.2, RESPONSE TO PRESSURIZER LOW LEVEL, has been entered
- Charging pumps are not running
- Component cooling to the RCP seals has been lost

Which ONE of the following reasons explains WHY FR-I.2 directs the RCP seal injection flow path to be isolated before restoring charging flow?

a. The RCP seals have cooled down and charging restoration would subject the seals to unnecessary thermal stress.

b. The RCP seals have heated up and charging restoration would subject the seals to unnecessary thermal stress.

c. This will ensure adequate flow through the regenerative heat exchanger.

d. This will ensure that charging pump flow during startup is reduced to minimize starting current.

QUESTION: 083 (1.00)

Given the following plant conditions:

- A plant start up is in progress
- Source range instrument N31 indicates 3 10E4 counts per second
- Source range instrument N32 indicates 3.5 10E4 counts per second
- The rod control system is responding normally as control rods are withdrawn
- N35 intermediate range instrument fails low

Which ONE of the following actions must be performed?

a. Reduce reactor power to less than 5 10E-11 amps and manually energize source range instruments.

b. Trip the reactor and manually energize source range instruments when reactor power decreases below 5 10E-10 amps.

c. Trip the N35 bistables prior to exceeding 10E-11 amps.

d. Restore N35 to operation prior to exceeding 10E-10 amps.

QUESTION: 084 (1.00)

Which ONE of the following conditions increase the difficulty in diagnosing the affected steam generator during a small steam generator tube rupture (SGTR) event?

a. Reactor trip.

b. S/G blowdown isolation.

c. Non-uniform AFW flows.

d. Non-uniform charging flow.

QUESTION: 085 (1.00)

Which ONE of the following statements describes the MOST EFFECTIVE operator ACTION to minimize the release of iodines to the environment following a SGTR?

a. Maintaining SG level above the tubes and below the moisture separators.

b. Closing the MSTV on the affected SG.

c. Isolate recirculation from the hotwell to the CST and transferring auxiliary steam to the other unit or the auxiliary boiler.

d. Shutting the RCS loop isolation valves after the RCS and SG pressures have been equalized.

QUESTION: 086 (1.00)

Given the following conditions:

- Power level 55%
- Pressurizer level 18% steady
- Pressurizer pressure 2200 psig steady
- Condenser air ejector high radiation alarm

Which ONE of the following actions is required when RCS leak rate is determined?

a. If RCS leak rate is 25 gpm or less, letdown isolation is required.

b. If RCS leak rate is more than 25 gpm but less than 50 gpm, Containment Sump Pumps must be stopped.

c. If RCS leak rate is more than 50 gpm but less than 150 gpm, a safety injection is required.

d. If RCS leak rate is more than 150 gpm but within the capacity of the charging pumps, a "Rapid Load Reduction" per AP-23.00 is required.

QUESTION: 087 (1.00)

Given the following plant conditions:

- Reactor power is 75%
- Feed header pressure has dropped to 790 psig and annunciator (1H-G8), FW PP DISCH HDR LO PRESS is in alarm.
- Both Main Feedwater Pumps are operating.

Which ONE of the following is the required IMMEDIATE action?

a. Manually trip the reactor and go to 1-E-0, Reactor Trip or Safety Injection.

b. Reduce turbine load and reactor power to 65% or less.

c. Start a third Condensate pump.

d. Increase feed header pressure by throttling Feedwater regulating valves.

QUESTION: 088 (1.00)

A loss of power to DC bus "A" will result in which ONE of the following?

a. Reactor trip breaker "A" and bypass breaker "B" indicating lights will be extinguished.

b. Reactor trip breaker "B" and bypass breaker "B" indicating lights will be extinguished.

c. The #1 EDG auto-starts AND loads.

d. The #3 EDG auto-starts AND loads.

QUESTION: 089 (1.00)

An operating procedure contains the following step instruction:

"OTO 3 | 6.3.2 Open drain valve 1-XX-999"

The above step instruction also has a line drawn through the step.

Which ONE of the following explains the requirement for performing this step within the procedure?

a. Do NOT perform this step.

b. Perform the step one time only.

c. Perform the step repeatedly 3 times.

d. Perform as the third one time operations step.

QUESTION: 090 (1.00)

Which ONE of the following is exempt from being removed from the control room by the on-shift licensed reactor operator when the unit is at power?

a. The on-coming SRO.

b. The NRC resident inspector.

c. The Station Manager.

d. The on-shift reactor operator trainee.

QUESTION: 091 (1.00)

Which ONE of the following identifies who may place a Temporary Electrical Release Tag?

a. Qualified Operator.

b. Electrical Maintenance.

c. Electrical Maintenance personnel or Substation personnel.

d. Station or contractor personnel

QUESTION: 092 (1.00)

Plant conditions are as follows:

- Chemical addition with Unit 1 at cold shutdown has just been completed.
- The Unit SRO directs that the following valves be verified closed:

  1-CH-220, Chem Mix TK Outlet Isol
  1-CH-223, PG Sup Hdr to Blender Sup Hdr Isol
  1-CH-215, PG Sup Hdr to Chem Mix Tk Outlet Isol

Which ONE of the following persons will perform the task of "Controller" per VPAP-1405, Independent and Simultaneous Verification?

a. The Chemistry Technician.

b. The Operator at the Controls.

c. The Qualified Verifier.

d. The Operations Department person performing the valve manipulation.

QUESTION: 093 (1.00)

A completed procedure contains hand written number "2" within a circle adjacent to a conditional step in the procedure.

Which ONE of the following statements describes the reason for the number "2" in the circle?

a. The number "2" refers to a remark made on the completed operations procedure routing sheet.

b. The number "2" refers to a remark made on the bottom of the page of the completed procedure.

c. The number "2" defines the number of times the conditional step was attempted before the step was marked "N/A"

d. The number "2" defines the number of times the conditional step was attempted before the step was successfully performed.

QUESTION: 094 (1.00)

An emergency has occurred requiring entry into the EOP network, which ONE of the following is required to be the EOP reader if the affected Unit Shift Supervisor is unavailable?

a. The Station Emergency Manager.

b. The Shift Technical Advisor.

c. The Operator at the Controls.

d. Any off-shift licensed SRO.

QUESTION: 095 (1.00)

When performing EOP steps, which ONE of the following groups of steps must be performed in sequence?

a. Immediate action subtasks.

b. Subtasks designated by bullets.

c. Subtasks designated by dashes.

d. Subtasks designated by letters.

QUESTION: 096 (1.00)

An MOV is being returned to service following motor replacement of the motor operator, which ONE of the following valve positions should the MOV be in before the MOV circuit breaker is re-closed?

a. Fully closed.

b. Fully open.

c. Midstroke.

d. As tagged with motor operator disconnected.

QUESTION: 097 (1.00)

Which ONE of the following exposure limits shall NOT BE EXCEEDED for a planned special exposure (PSE)?

a. 5 rem/year total effective dose equivalent (TEDE) and 25 lifetime.

b. 15 rem/year total effective dose equivalent (TEDE) and 25 lifetime.

c. 15 rem/year total effective dose equivalent (TEDE) and 75 lifetime.

d. 75 rem/year total effective dose equivalent (TEDE) and 250 lifetime.

QUESTION: 098 (1.00)

Given the following plant conditions:

- The dose rate from a small valve is 6 R/hr at 6 inches away
- You are working at a distance of 4 feet from the valve
- Your TEDE quarterly exposure is 1.0 rem
- Your TEDE annual exposure is 3.5 rem

Which ONE of the following times describes how LONG you can work BEFORE you must obtain an extension of your total dose equivalent exposure (TEDE)?

a. 5 hours 20 minutes.

b. 10 hours 40 minutes.

c. 13 hours 36 minutes.

d. 16 hours 00 minutes.

QUESTION: 099 (1.00) Question deleted

If today's date is August 4, 1997, which ONE of the following describes the latest expiration date for a special radiation work permit (RWP) issued today?

a. August 7, 1997.

b. August 11, 1997.

c. August 18, 1997.

d. September 3, 1997.

QUESTION: 100 (1.00)

Which ONE of the following events can CAUSE CREATION of a very high radiation area?

a. Excessive RCP seal leakage.

b. Shutting the RCS loop isolation valves.

c. Pulling the in-core instrumentation thimbles at the start of reactor disassembly.

d. Dropping a new fuel assembly while it is being removed from the shipping canister.

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

EQUATIONS

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

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

$Q = UA\Delta T$

$\dot{Q} \propto \dot{m}^3_{\text{Nat Circ}}$

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

$\Delta T \propto \dot{m}^2_{\text{Nat Circ}}$

$SUR = 26.06/\tau$

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

$\rho = \frac{\ell^*}{\tau} + \frac{\overline{\beta}}{1 + \lambda_{eff}\tau}$

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

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

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

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

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

$I_1 = (D_1)^2 = I_2(D_2)^2$

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

$M = CR_2/CR_1$

$DRW \propto \phi^2_{tip}/\phi^2_{avg}$

$SDM = (1 - K_{eff})/K_{eff}$

$\dot{m} = PAV - F = PA$

$\dot{W}_{pump} = \dot{m}\Delta P\upsilon$

$$\text{Cycle Efficiency} = \frac{\text{Net Work (out)}}{\text{Energy (in)}}$$

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

CONVERSIONS

1 Curie = 3.7×10^{10} dps

1 hp = 2.54×10^3 Btu/hr

1 Btu = 778 ft-lbf

°C = 5/9(°F - 32)

1 kg = 2.21 lbm

1 Mw = 3.41×10^6 Btu/hr

°F = 9/5°C + 32

1 gal = 8.35 lbm

1 ft^3 = 7.48 gal

ANSWER: 001 (1.00)

b.

REFERENCE:

Lesson Plan ND-88.4-LP-6, Rev. 4, Pages 5 and 6
LP Objectives A and B
---RO ONLY---
Question was used on the 1992/03/16 exam
K/A 022000K201 [3.0/3.1]
022000K201 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

Lesson Plan ND-93.3-LP-3, ND-93.3-H/T-3.4
LP OBJECTIVE B.

--BOTH--

KA 001000A102 [3.1/3.4]
001000A102 ..(KA's)

ANSWER: 003 (1.00)

d.

REFERENCE:

Lesson Plan ND-93.3-LP-3, Rev. 9, Page 22 & ND-93.3-H/T-3.11
LP OBJECTIVE G.
--BOTH--
KA 001000G007 [3.2/3.3]
001000G007 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

Lesson Plan ND-93.3-LP-3, Rev. 9, Page 12
LP OBJECTIVE D.
--BOTH--

KA 001000K202 [3.6/3.7]
001000K202 ..(KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

Lesson Plan ND-88.1-LP-6, Rev. 10, ND-88.1-H/T-6.14
LP OBJECTIVE F.

--BOTH--

K/A 003000K110 [3.0/3.2]
003000K110 ..(KA's)

ANSWER: 006 (1.00)

a.

REFERENCE:

ND-88.1-LP-6, Rev. 10, ND-88.1-H/T-6.3
LP OBJECTIVE A.
--RO ONLY--

K/A 003000K103 [3.3/3.6]

003000K103 ..(KA's)

ANSWER: 007 (1.00)

c.

REFERENCE:

ND-88.3-LP-2, Rev. 8, Page 23
LP OBJECTIVE E

--BOTH--

K/A 004000K405 [3.3/3.2]
004000K405 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

ND-88.3-LP-2, Rev. 8, Page 8
LP OBJECTIVES B. & C.

--BOTH--

K/A 004000K123 [3.4/3.7]
004000K123 ..(KA's)

ANSWER: 009 (1.00)

b.

REFERENCE:

ND-88.3-LP-2. Rev. 8, Pages 15 & 16
LP OBJECTIVE C.

--BOTH--

K/A 004020A305 3.2/3.0
004020A305 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

Lesson Plan ND-91-LP-2, Rev.10, p.19
LP OBJECTIVE C
---BOTH---

K/A 013000A202 [4.3/4.5]
013000A202 ..(KA's)

ANSWER: 011 (1.00)

d.

REFERENCE:

ND-91-LP-3, Rev. 10, Page 3
LP OBJECTIVE G.

--BOTH--

K/A 013000K118 [3.7/4.1]
013000K118 ..(KA's)

ANSWER: 012 (1.00)

c.

REFERENCE:

ND-93.2-LP-2, Rev. 7, ND-93.2-AIA-2.1, Page 5
LP OBJECTIVE D.
--BOTH--
K/A 015000A403 [3.8/3.9]
015000A403 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

ND-93.2-LP-3, Rev. 7, Page 8
LP OBJECTIVE C.

-- BOTH--

K/A 015000K502 [2.7/2.9]
015000K502 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

ND-93.2-LP-4, Rev. 11, Page 33
LP OBJECTIVE G.

--BOTH--

K/A 015000K604 [3.1/3.2]
015000K604 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

ND-88.4-LP-6, Rev. 4, Page 5
LP OBJECTIVE A.

--BOTH--

K/A 022000A102 [3.6/3.7]
022000A102 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

ND-89.3-LP-4, Rev. 13, Page 15
LP OBJECTIVE E.

--BOTH--

K/A 061000K302 [4.2/4.4]
061000K302 ..(KA's)

ANSWER: 017 (1.00)

d.

REFERENCE:

ND-92.4-LP-1, Rev. 4, Page 23
LP OBJECTIVE E.

--BOTH--

K/A 071000K405 [2.7/3.0]
071000K405 ..(KA's)

ANSWER: 018 (1.00)

c.

REFERENCE:

ND-93.5-L.P-3, Rev. 5, Page 18
ND-92.4-LP-1 OBJECTIVE B.

--BOTH--

K/A 071000K106 [3.1/3.1]
071000K106 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

ND-89.3-LP-3, Rev. 11
ND-89.3-HT-3.3
LP OBJECTIVE E.

--RO ONLY--
K/A 059000G007 [3.1/3.2]
059000G007 ..(KA's)

ANSWER: 020 (1.00)

b.

REFERENCE:

ND-89.3-LP-3, Rev.11, Page 14
LP OBJECTIVE B.
--RO ONLY--

K/A 059000G010 [2.9/2.9]
059000G010 ..(KA's)

ANSWER: 021 (1.00)

a.

REFERENCE:

ND-93.2-LP-7, Rev. 3, Page 16
LP OBJECTIVE D.
--RO ONLY--

K/A 017000G005 [2.8/3.4]
017000G005 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

ND-93.2-LP-7, Rev. 3, Page 14
LP OBJECTIVE C.
--RO ONLY--

K/A 017020K401 [3.4/3.7]
017020K401 ..(KA's)

ANSWER: 023 (1.00)

b.

REFERENCE:

ND-92.4.-LP-1, Rev. 4, Page 31
LP OBJECTIVE D.
--RO ONLY--

K/A 068000A302 [3.6/3.6]
068000A302 ..(KA's)

ANSWER: 024 (1.00)

d.

REFERENCE:

LP ND-88.1-LP-7, Rev. 8, Page 7
LP OBJECTIVE A.
--BOTH--
K/A 002000K409 [3.2/3.2]
002000K409 ..(KA's)

ANSWER: 025 (1.00)

d.

REFERENCE:

ND-88.1-LP-9, Rev. 7, Page 21
Steam Tables
LP OBJECTIVE H.
--BOTH--
K/A 002000K509 [3.7/4.2]
002000K509 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

ND-88.1-LP-7, Rev. 8, Page 17
LP OBJECTIVE D.

--BOTH--

K/A 002000G010 [3.4/3.9]
002000G010 ..(KA's)

ANSWER: 027 (1.00)

a.

REFERENCE:

ND-91-LP-5, Rev. 10, Page 16
LP OBJECTIVE B.

--RO ONLY--

K/A 026000A401 [4.5/4.3]
026000A401 ..(KA's)

ANSWER: 028 (1.00)

b.

REFERENCE:

ND-91-LP-5, Rev. 10, Page 7
LP OBJECTIVE B.

--RO ONLY--

K/A 026000A301 [4.3/4.5]
026000A301 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

ND-91-LP-2, Rev. 10, Page 14
LP OBJECTIVE C.

--BOTH--

K/A 006030A102 [4.2/4.3]
006030A102 ..(KA's)

ANSWER: 030 (1.00)

a.

REFERENCE:

ND-91-LP-2, Rev. 10, Pages 19 and 20
LO OBJECTIVE D.

--BOTH--

K/A 006000G005 [3.5/4.2]
006000G005 ..(KA's)

ANSWER: 031 (1.00)

c.

REFERENCE:

ND-93.3-LP-4, Rev. 4, Page 5, Para 9. and Page 6, Para 10.
LP OBJECTIVE A.

--RO ONLY--

K/A 014000G007 [2.8/3.0]
014000G007 ..(KA's)

ANSWER: 032 (1.00)

b.

REFERENCE:

ND-93.3-LP-4, Rev. 4, Pages 5 & 6
LP OBJECTIVE D.

--RO ONLY--

K/A 014000A203 [3.6/4.1]

014000A203 ..(KA's)

ANSWER: 033 (1.00)

a.

REFERENCE:

ND-93.3-LP-5, Rev. 7, Pages 7 & 8
LP OBJECTIVE B.
10 turn potentiometer; pressure control range is 1700 - 2500 psig;
0 to 100% on controller corresponds to +/- 200 # from setpoint.
5.68/10 = X/[2500-1700]; X = [0.568][800] = 454.4 = ~ 455; 1700 +
455 = 2155 psig

--BOTH--

K/A 010000A302 [3.6/3.5]
010000A302 ..(KA's)

ANSWER: 034 (1.00)

c.

REFERENCE:

ND-93.3-LP-5, Rev. 7, Page 5
LP OBJECTIVE A.

--BOTH--

K/A 010000K201 [3.0/3.4]
010000K201 ..(KA's)

ANSWER: 035 (1.00)

b.

REFERENCE:

ND-93.3-LP-7, Rev.5, Page 4
LP OBJECTIVE A.
547 degrees F = 22.2%; 573 degrees F = 53.7%; 53.7% - 22.2% = 31.5%; 573 F - 547 F = 26 F;
563 F - 547 F = 16 F; 16 F/ 26 F = X/31.5%; X = [16][31.5%]/26 = 19.38% = 19.4%;
22.2% + 19.4% = 41.6%

--BOTH--

K/A 011000K604 [3.1/3.1]
011000K604 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

ND-93.3-LP-10, Rev. 5, Pages 9 - 11 and ND-93.3-AIA-10.1 Page 3
LP OBJECTIVE C.

--BOTH--

K/A 012000K603 [3.1/3.5]
012000K603 ..(KA's)

ANSWER: 037 (1.00)

c.

REFERENCE:

ND-93.3-L.P-2, Rev. 7, Page16
LP OBJECTIVE G.

--BOTH--

K/A 016000A203 [3.0/3.3]
016000A203 ..(KA's)

ANSWER: 038 (1.00)

d.

REFERENCE:

ND-92.5-L.P-6, Rev. 6, ND-92.5-H/T-6.4
LP OBJECTIVE B.

--BOTH--

K/A 033000K105 [2.7/2.8]
033000K105 ..(KA's)

ANSWER: 039 (1.00)

c.

REFERENCE:

ND-89.1-LP-2, Rev. 12, Pages 15 & 16
Technical Specification 3.3-1, 05-31-95, Amendment Nos. 199 and 199
LP OBJECTIVE C.
(60 / 100) (1500 psig) = 900 psig

--BOTH--

K/A 035010A102 [3.5/3.8]
035010A102 ..(KA's)

ANSWER: 040 (1.00)

c.

REFERENCE:

ND-89.1-LP-2, Rev. 12, Page 11
LP OBJECTIVES C. & F.
Setpoint is 38% at 20% power; Setpoint is 109% at 100% power.
109% - 38% = 71%; 100% - 20% = 80%;
[30%-20%]/80% = X/71%; X = 710%/80 = 8.9%; 38% + 8.9% =~ 47%.

--BOTH--

K/A 039000G012 [2.7/2.8]
039000G012 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

ND-90.3-LP-1, Rev. 8, Page 38
LP OBJECTIVE F.

--BOTH--

K/A 064000A401 [4.0/4.3]
064000A401 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

ND-90.3-LP-6, Rev. 7, Page 13
ND-90.2-LP-2, Rev. 9, Page 10
ND-90.3-LP-6 LP OBJECTIVE D.

--RO ONLY--

K/A 063000K302 [3.5/3.7]

063000K302 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

ND-90.2-LP-2, Rev. 9, Page 14
LP OBJECTIVE C.

--RO ONLY--

K/A 062000A216 [2.5/2.9]
062000A216 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

ND-88.2-LP-1, Rev. 5, Pages 4 and 5
LP OBJECTIVE B.

--BOTH--

K/A 005000K109 [3.6/3.9]
005000K109 ..(KA's)

ANSWER: 045 (1.00)

d.

REFERENCE:

ND-88.2-LP-2, Rev. 12, Page 19
LP OBJECTIVE B.

--RO ONLY--

K/A 034000K102 [2.5/3.2]
034000K102 ..(KA's)

ANSWER: 046 (1.00)

d.

REFERENCE:

ND-88.1-LP-3, Rev. 9, Page 19
LP OBJECTIVE C.

--BOTH--

K/A 007000G004 [2.9/3.1]
007000G004 ..(KA's)

ANSWER: 047 (1.00)

a.

REFERENCE:

ND-88.5-LP-1, Rev. 13, Page 6
LP OBJECTIVE B.
Question used on the 1993/09/20 exam
--BOTH--

K/A 008000K104 [3.3/3.3]
008000K104 ..(KA's)

ANSWER: 048 (1.00)

a.

REFERENCE:

ND-89.1-LP-3, Rev, 3, Pages 18 & 19
LP OBJECTIVE D.

--BOTH--

K/A 041020G007 [2.8/3.0]
041000G007 ..(KA's)

ANSWER: 049 (1.00)

d.

REFERENCE:

ND-89.5-LP-2, Rev. 16, Page 11
LP OBJECTIVE H.

--RO ONLY--

K/A 076000K406 [2.8/3.2]
076000K406 ..(KA's)

ANSWER: 050 (1.00)

a.

REFERENCE:

ND-92.1-LP-1, Rev. 8, Page 28
LP OBJECTIVE D.

--RO ONLY--

K/A 078000G008 [2.8/3.0]
078000G008 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

ND-88.4-LP-2, Rev. 6, Page 18
LP OBJECTIVE D.

--RO ONLY--

K/A 103000G010 [3.3/3.6]
103000G010 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

ND-93.3-LP-3, Rev. 9, Page 31
LP OBJECTIVE J.

--BOTH--

K/A 000005G003 [3.1/3.6]
000005G003 ..(KA's)

ANSWER: 053 (1.00)

a.

REFERENCE:

ND-93.2-LP-7, Rev. 3, Page 13
LP OBJECTIVE E.
ND-95.1-LP-5, Rev. 5, OBJECTIVE I.

--BOTH--

K/A 000005A201 [3.3/4.1]
000005A201 ..(KA's)

ANSWER: 054 (1.00)

c.

REFERENCE:

ND-95.1-LP-3, Rev. 4, Page 14
LP OBJECTIVE B.

--BOTH--

K/A 000015K101 [4.4/4.6]
000015K101 ..(KA's)

ANSWER: 055 (1.00)

a.

REFERENCE:

ND-95.1-LP-3, Rev. 4, Page 7
LP OBJECTIVE A.

--BOTH--

K/A 000015A108 [3.0/2.9]
000015A108 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

ND-88.3-LP-9, Rev. 4, Pages 27 and 28
LP OBJECTIVE D.

--BOTH--

K/A 000024K201 [2.7/2.7]
000024K201 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

ND-88.5-LP-1, Rev. 13, Pages 19 and 20
LP OBJECTIVE D.

--BOTH--

K/A 000026K303 [4.0/4.2]
000026K303 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

ND-93..3-LP-5, Rev. 7, Page 12
LP OBJECTIVE D.

--RO ONLY--

K/A 000027A211 [4.0/4.1]
000027A211 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

ND-95.3-LP-36, Rev. 7, Page 10
1-FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, Pages 2 & 3
LP OBJECTIVE D.

--RO ONLY--

K/A 000029G010 [4.5/4.5]
000029G010 ..(KA's)

ANSWER: 060 (1.00)

c.

REFERENCE:

ND-95.2-LP-3, Rev. 4, Page 5
LP OBJECTIVE A.

--BOTH--

K./A 000040G011 [4.1/4.3]
000040G011 ..(KA's)

ANSWER: 061 (1.00)

b.

REFERENCE:

ND-95.3-LP-7, Rev. 12, Page 27
LP OBJECTIVE B.
--BOTH--
K/A 000040K304 [4.5/4.7]
000040K304 ..(KA's)

ANSWER: 062 (1.00)

a.

REFERENCE:

ND-95.1-LP-6, Rev. 6, Page 7
LP OBJECTIVE B.
--BOTH--

K/A 000051K301 [2.8/3.1]
000051K301 ..(KA's)

ANSWER: 063 (1.00)

c.

REFERENCE:

ND-95.1-LP-8, Rev. 4, Page 8
LP OBJECTIVE A.

--BOTH--

K/A 000056A277 [4.1/4.4]
000056A277 ..(KA's)

ANSWER: 064 (1.00)

c.

REFERENCE:

ND-95.2-LP-8, Rev. 3, Page 8
LP OBJECTIVE B.

--BOTH--

K/A 000055A204 [3.7/4.1]
000055A204 ..(KA's)

ANSWER: 065 (1.00)

d.

REFERENCE:

ND-90.3-LP-5, Rev. 10, Page 18
LP OBJECTIVE F.

--BOTH--

K/A 000057K301 [4.1/4.4]
000057K301 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

ND-95.6-LP-3, Rev. 4, Page 21
LP OBJECTIVE G.

--BOTH--

K/A 000067A204 [3.1/4.3]
000067A204 ..(KA's)

ANSWER: 067 (1.00)

d.

REFERENCE:

ND-92.2-LP-1, Rev. 5, Page 37
LP OBJECTIVE F.
Surry examination bank (stem and distractors modified)

--BOTH--

K/A 000067G011 [3.8/4.0]
000067G011 ..(KA's)

ANSWER: 068 (1.00)

c.

REFERENCE:

ND-95.6-LP-3, ND-95.6-H/T-3.3, and 0-FCA-1.00, Para 1. of ATTACHMENT 1.
LP Objective D.

--BOTH--

K/A 000068A121 [3.9/4.1]
000068A121 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

ND-95.4-LP-3, Rev. 1, Page 4
LP OBJECTIVE A.

--BOTH--

K/A 000074A207 [4.1/4.7]
000074A207 ..(KA's)

ANSWER: 070 (1.00)

c.

REFERENCE:

ND-95.3-LP-38, Rev. 6, Pages 16 & 17
LP OBJECTIVE D.

--BOTH--

K/A 000074G011 [4.5/4.6]
000074G011 ..(KA's)

ANSWER: 071 (1.00)

d.

REFERENCE:

ND-95.1-LP-9, Rev. 4, Page 9
LP OBJECTIVE B.

--RO ONLY--

K/A 000065G011 [3.4/3.5]

000065G011 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

ND-93.3-LP-7, Rev. 5, Page 9
LP OBJECTIVE C.

--RO ONLY--

K/A 000028A202 [3.4/3.8]
000028A202 ..(KA's)

ANSWER: 073 (1.00)

a.

REFERENCE:

ND-95.3-LP-3, Rev. 12, Pages 9 and 27
LP OBJECTIVE C.

--BOTH--

K/A 000007G012 [3.8/3.9]
000007G012 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

ND-95.3-LP-3, Rev. 12, Pages 15 and 16
LP OBJECTIVE B.

--BOTH--

K/A 000007K301 [4.0/4.6]
000007K301 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

NC-95.3-LP-3, Rev. 12, Page 17
LP OBJECTIVE C.

--BOTH--

K/A 000007A108 [4.4/.4.3]
000007A108 ..(KA's)

ANSWER: 076 (1.00)

a.

REFERENCE:

ND-88.1-LP-3, Rev. 9, Page 25
LP OBJECTIVE D.

--BOTH--

K/A 000008K101 [3.2/3.7]
000008K101 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:

ND-95.2-LP-7, Rev. 4, Page 16
LP OBJECTIVE B.

--BOTH--

K/A 000009K203 [3.0/3.3]
000009K203 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

ND-95..2-LP-7, Rev. 4, Pages 38 and 39
LP OBJECTIVE E.

--BOTH--

K/A 000009K323 [4.2/4.3]
000009K323 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

ND-95.2-LP-7, Rev. 4, Page 30
LP OBJECTIVE C.

--RO ONLY--

K/A 000011K101 [4.1/4.4]
000011K101 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:

ND-95.1-LP-5, Rev. 5, Page 28
LP OBJECTIVE H.

--RO ONLY--

K/A 000001A205 [4.4/4.6]
000001A205 ..(KA's)

ANSWER: 081 (1.00)

b.

REFERENCE:

ND-95.1-LP-5, Rev. 5, Page 11
LP OBJECTIVE F.

--RO ONLY--

K/A 000003K304 [3.8/4.1]
000003K304 ..(KA's)

ANSWER: 082 (1.00)

b.

REFERENCE:

ND-95.3-LP-53, Rev. 4, Page 6
LP OBJECTIVE B.

--BOTH--

K/A 000022K302 [3.5/3.8]
000022K302 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

ND-93.2-LP-3, Rev. 7, Page 10
LP OBJECTIVE D.

--BOTH--

K/A 000033G007 [2.7/3.1]
000033G007 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

ND-95.2-LP-6, Rev. 5, Page 13
LP OBJECTIVE B.

--BOTH--

K/A 000038A203 [4.4/4.6]
000038A203 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

ND-95.2-LP-6, Rev. 5, Pages 19, 20, and 21
LP OBJECTIVE C.

--BOTH--

K/A 000038G007 [3.6/3.8]
000038G007 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

Procedures 1-AP-16.00, Rev. 5 page 2 of 11
ND-95.2-LP-6, Rev. 5, OBJECTIVE D.

--BOTH--

K/A 000038G010 [4.1/4.2]
000038G010 ..(KA's)

ANSWER: 087 (1.00)

c.

REFERENCE:

1-AP-21.00, Loss of Main Feedwater Flow, Rev. 3, page 2 of 4
ND-95.1-LP-4, Rev. 2, OBJECTIVE F.

--BOTH--

K/A 000054G010 [3.2/3.2]
000054G010 ..(KA's)

ANSWER: 088 (1.00)

a.

REFERENCE:

1-AP-10.06, Loss of DC Power, Rev. 2, page 2 of 7
ND-90.3-LP-6, Rev. 6, Page 11
LP OBJECTIVE D.

--RO ONLY--

K/A 000058A203 [3.5/3.9]
000058A203 ..(KA's)

ANSWER: 089 (1.00)

a.

REFERENCE:

VPAP-0502, Procedure Process Control, Rev. 10, section 6.4.3, page 45 of 152

--BOTH--

K/A 194001101 [3.3/3.4]
194001A101 ..(KA's)

ANSWER: 090 (1.00)

b.

REFERENCE:

VPAP-1401, Conduct of Operations, Rev. 5, section 6.4.9.7, page 25 of 42

--BOTH--

K/A 194001K105 [3.1/3.4]
194001K105 ..(KA's)

ANSWER: 091 (1.00)

a.

REFERENCE:

VPAP-1402, Control of Equipment, Tag-Outs, and Tags, Rev. 4, section 6.2.8, Page 19 of 44.

--BOTH--

K/A 194001K102 [3.7/4.1]
194001K102 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

VPAP-1405, Independent and Simultaneous Verification, Rev. 3, section 4.2, page 6 of 22

--RO ONLY--

K/A 194001K101 [3.6/3.7]
194001K101 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:

OPAP-0002, Operations Department Procedures, Rev. 4, section 6.2.9, page 15 of 41.

--BOTH--

K/A 194001A106 [3.4/3.4]
194001A106 ..(KA's)

ANSWER: 094 (1.00)

d.

REFERENCE:

OPAP-0002, Operations Department Procedures, Rev. 4, section 6.4.2, page 23 of 41

--BOTH--

K/A 194001A102 [4.1/3.9]
194001A102 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

OPAP-0002, Operations Department Procedures, Rev. 4, section 6.4.4.k, page 26 of 41.

--RO ONLY--

K/A 194001A102 [4.1/3.9]
194001A102 ..(KA's)

ANSWER: 096 (1.00)

c.

REFERENCE:

OPAP-0012, Valve Operations, Rev. 4, section 6.6, page 11 of 16

--BOTH--

K/A 194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 097 (1.00)

a.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Page 9
LP OBJECTIVE C.

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

ANSWER: 098 (1.00)

a.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Pages 10 - 12
ND-81.2-H/T-3.3, LP OBJECTIVE D.

--BOTH--

(6 R/Hr)(0.5 ft)(0.5 ft) = I(4 ft)(4ft)
I = (6 R/Hr) (0.25) / (16) = 93.7 mr/hr @ 4 ft
(4 R - 3.5 R) / 93.7 mr/hr = 5 hr 20 min

K/A 194001K103 [2.8/3.4]
194001K103 ..(KA's)

Question deleted

ANSWER: 099 (1.00)

b.

REFERENCE:

ND-81.2-LP-3, Rev 6, Page 32
LP OBJECTIVE J.

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

ANSWER: 100 (1.00)

c.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Pages 32 and 33
LP OBJECTIVE K.

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

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

A N S W E R K E Y

MULTIPLE CHOICE

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

A N S W E R K E Y

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

A N S W E R K E Y

092 b

093 a

094 d

095 d

096 c

097 a

098 a

~~099 b~~ Question deleted

100 c

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

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

O r g a n i z e d b y K A G r o u p

PLANT WIDE GENERICS

QUESTION	VALUE	KA
089	1.00	194001A101
095	1.00	194001A102
094	1.00	194001A102
093	1.00	194001A106
092	1.00	194001K101
096	1.00	194001K101
091	1.00	194001K102
098	1.00	194001K103
100	1.00	194001K104
099	1.00	194001K104
097	1.00	194001K104
090	1.00	194001K105

PWG Total	12.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
002	1.00	001000A102
003	1.00	001000G007
004	1.00	001000K202
006	1.00	003000K103
005	1.00	003000K110
008	1.00	004000K123
007	1.00	004000K405
009	1.00	004020A305
010	1.00	013000A202
011	1.00	013000K118
012	1.00	015000A403
013	1.00	015000K502
014	1.00	015000K604
021	1.00	017000G005
022	1.00	017020K401
015	1.00	022000A102
001	1.00	022000K201
019	1.00	059000G007
020	1.00	059000G010
016	1.00	061000K302
023	1.00	068000A302
018	1.00	071000K106
017	1.00	071000K405

PS-I Total	23.00	

R O Exam PWR Reactor

Organized by K A Group

PLANT SYSTEMS

Group II

QUESTION	VALUE	KA
026	1.00	002000G010
024	1.00	002000K409
025	1.00	002000K509
030	1.00	006000G005
029	1.00	006030A102
033	1.00	010000A302
034	1.00	010000K201
035	1.00	011000K604
036	1.00	012000K603
032	1.00	014000A203
031	1.00	014000G007
037	1.00	016000A203
028	1.00	026000A301
027	1.00	026000A401
038	1.00	033000K105
039	1.00	035010A102
040	1.00	039000G012
043	1.00	062000A216
042	1.00	063000K302
041	1.00	064000A401
PS-II Total	20.00	

Group III

QUESTION	VALUE	KA
044	1.00	005000K109
046	1.00	007000G004
047	1.00	008000K104
045	1.00	034000K102
048	1.00	041000G007
049	1.00	076000K406
050	1.00	078000G008
051	1.00	103000G010
PS-III Total	8.00	
PS Total	51.00	

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

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
053	1.00	000005A201
052	1.00	000005G003
055	1.00	000015A108
054	1.00	000015K101
056	1.00	000024K201
057	1.00	000026K303
058	1.00	000027A211
060	1.00	000040G011
061	1.00	000040K304
062	1.00	000051K301
064	1.00	000055A204
065	1.00	000057K301
066	1.00	000067A204
067	1.00	000067G011
068	1.00	000068A121
069	1.00	000074A207
070	1.00	000074G011

EPE-I Total	17.00	

Group II

QUESTION	VALUE	KA
080	1.00	000001A205
081	1.00	000003K304
075	1.00	000007A108
073	1.00	000007G012
074	1.00	000007K301
076	1.00	000008K101
077	1.00	000009K203
078	1.00	000009K323
079	1.00	000011K101
082	1.00	000022K302
059	1.00	000029G010
083	1.00	000033G007
084	1.00	000038A203
085	1.00	000038G007
086	1.00	000038G010
087	1.00	000054G010
088	1.00	000058A203

EPE-II Total	17.00	

RO Exam PWR Reactor

Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group III

QUESTION	VALUE	KA
072	1.00	000028A202
063	1.00	000056A277
071	1.00	000065G011
EPE-III Total	3.00	
EPE Total	37.00	
Test Total	100.00	

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 2

Master
Surry 97-300

CANDIDATE'S NAME: MASTER

FACILITY: Surry 1 & 2

REACTOR TYPE: PWR-WEC3

DATE ADMINISTERED: 97/08/04

INSTRUCTIONS TO CANDIDATE:

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

TEST VALUE	CANDIDATE'S SCORE	%	
101.00 ~~102.00~~		%	TOTALS
	FINAL GRADE		

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

Candidate's Signature

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	___
009	a	b	c	d	___
010	a	b	c	d	___
011	a	b	c	d	___
012	a	b	c	d	___
013	a	b	c	d	___
014	a	b	c	d	___
015	a	b	c	d	___
016	a	b	c	d	___
017	a	b	c	d	___
018	a	b	c	d	___
019	a	b	c	d	___
020	a	b	c	d	___
021	a	b	c	d	___
022	a	b	c	d	___
023	a	b	c	d	___
024	a	b	c	d	___
025	a	b	c	d	___
026	a	b	c	d	___
027	a	b	c	d	___
028	a	b	c	d	___
029	a	b	c	d	___
030	a	b	c	d	___
031	a	b	c	d	___
032	a	b	c	d	___
033	a	b	c	d	___
034	a	b	c	d	___
035	a	b	c	d	___
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	___
~~101~~	~~a~~	~~b~~	~~c~~	~~d~~	___ question deleted
102	a	b	c	d	___

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

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

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

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

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

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

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

7. 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)

Given the following plant conditions:

- Tavg loop A --- 575 degrees F
- Tavg loop B --- 573 degrees F
- Tavg loop C --- 571 degrees F
- Tavg Defeat switch --- B-C position
- Tref --- 569 degrees F
- Rod Control System --- Automatic

Which ONE of the following statements describes HOW the Rod Control System will respond?

a. Rods will step in at 72 steps/min to match loop A Tavg with Tref.

b. Rods will step in at 40 steps/min to match loop B Tavg with Tref.

c. Rods will step out at 40 steps/min to match loop C Tavg with Tref.

d. Rods will step out at 72 steps/min to match loop A Tavg with Tref.

QUESTION: 002 (1.00)

Which ONE of the following statements describes HOW the Rod Control System will respond when the Startup Pushbutton is depressed?

a. Internal rod control system memory circuits reset and the reactor trip breakers open if the trip breakers are closed.

b. Internal rod control system alarms reset and the reactor trip breakers open if the trip breakers are closed.

c. Individual Rod Position Indication [IRPI] circuits reset and the ROD CONTROL SYSTEM NON-URGENT FAILURE alarm illuminates.

d. Slave Cycler Counters and the Bank Overlap Counters reset.

QUESTION: 003 (1.00)

Which ONE of the following conditions will cause the ROD CONTROL MG TRIPPED alarm to actuate?

a. An AMSAC signal.

b. A Reactor trip signal.

c. A Ground on the output of either rod control MG set.

d. Depressing the reactor trip breaker reset pushbutton.

QUESTION: 004 (1.00)

Which ONE of the following statements describes WHY Technical Specifications allow operation below 50 percent power with an inoperable control rod position indicator without requiring special monitoring for a mispositioned control rod assembly?

a. Operation at up to 50 percent power with a control rod assembly completely (fully) misaligned will not result in exceeding core limits.

b. Operator monitoring of process information will allow detection of a misaligned control rod assembly.

c. Operator monitoring of nuclear information will allow detection of a misaligned control rod assembly.

d. Operation within control rod insertion limits as required by Technical Specifications will ensure that QPTR will not be exceeded.

QUESTION: 005 (1.00)

Which ONE of the following sets of conditions will cause RCP 1C breaker to OPEN?

Valve Reference:

MOV-1587, Loop C Bypass Line Isolation Valve
MOV-1594, Loop C Hot Leg Isolation Valve
MOV-1595, Loop C Cold Leg Isolation Valve

a. MOV-1587 SHUT, with MOV-1594 or MOV-1595 SHUT.

b. MOV-1587 SHUT, with MOV-1594 and MOV-1995 OPEN.

c. MOV-1587 OPEN, with MOV-1594 and MOV-1595 SHUT.

d. MOV-1587 OPEN, with MOV-1594 or MOV-1595 OPEN.

QUESTION: 006 (1.00)

Which ONE of the following statements explains why the MAXIMUM flow rate through FCV-1122, normal charging flow control valve, is limited by the automatic control system?

a. To ensure VCT makeup capacity is not exceeded.

b. To prevent charging pump overheating.

c. To prevent masking a small RCS leak.

d. To ensure charging pumps do NOT operate at runout conditions.

QUESTION: 007 (1.00)

HCV-1200A, B, and C, letdown orifice isolation valves, have quick disconnects to allow local operation of the valves to provide an alternate letdown flow path. Which ONE of the following describes the alternate flow path and reason for providing the alternate flowpath?

a. To the VCT during a station blackout scenario.

b. To the RWST during an Appendix R fire scenario.

c. To the PRT during a loss of instrument air.

d. To the VCT during solid plant operation.

QUESTION: 008 (1.00)

Which ONE of the following sets of functions are PERFORMED individually by VCT level transmitters LT-1112 and LT-1115?

	LT-1115	LT-1112
a.	Stops auto makeup at 34%	Initiates swap over to the RWST at 13%
b.	Starts auto makeup at 27%	Controls LC-1115 for diverting LCV-1115A at the setpoint on the controller
c.	Actuates the low level alarm at 24%	Controls LC-1112 for diverting LCV-1112A at the setpoint on the controller
d.	Initiates Swap over to the RWST at 13%	Initiates high level divert of LCV-1112 to PRT at 85%

QUESTION: 009 (1.00)

Which ONE of the following statements describes a condition that would cause annunciator SI VALVE OUT OF POSITION (A-D-4) to illuminate?

a. Accumulator discharge valves (1865A & B) fully open.

b. Charging pump discharge valves (1869A & B) fully closed

c. Suction valves (1862A & B) from RWST to LHSI pumps NOT fully open.

d. RWST cross-tie air operated valves (TV-SI-102A & TV-SI-102B) NOT fully closed.

QUESTION: 010 (1.00)

Which ONE of the following EXPLAINS the function of the 60 second safety injection (SI) timer?

a. To prevent an automatic SI after SI is reset.

b. To prevent a spurious SI immediately after resetting SI.

c. To prevent a spurious SI injection from charging the Pressurizer solid and undesired operation of the Pressurizer PORVs.

d. To prevent manual repositioning of SI components before automatic positioning of SI components have been completed for a valid SI signal.

QUESTION: 011 (1.00)

Given the following plant condition:

- Reactor critical below P-6

Which ONE of the following REACTOR RESPONSES will occur?

	Source Range N31 Instrument Power Fuse Blows When Not In Bypass	Source Range N31 Instrument Power Fuse Blows When In Bypass	Source Range N32 Control Power Fuse Blows When In Bypass
a.	Reactor Trips	Reactor Trips	Reactor Trips
b.	Reactor Does Not Not Trip	Reactor Trips	Reactor Does Trip
c.	Reactor Trips	Reactor Does Not Trip	Reactor Trips
d.	Reactor Does Not Trip	Reactor Does Not Trip	Reactor Does Not Trip

QUESTION: 012 (1.00)

Select the option to fill in the blanks:

An intermediate range nuclear instrument SUR during a reactor startup indicates higher than actual when it is _____ compensated and the source range nuclear instrument will re-energize at too high a power level when both intermediate range nuclear instruments are _____ compensated.

a. Over; Under.

b. Over; Over.

c. Under; Under.

d. Under; Over.

QUESTION: 013 (1.00)

Which ONE of the following Nuclear Instrumentation Drawers contains the specific circuit(s) that causes the NIS PR CHANNEL AVERAGE FLUX DEVIATION alarm to annunciate?

a. N41, N42, or N43 Drawers.

b. N44 Drawer.

c. Miscellaneous Indication and Control Drawer.

d. Comparator and Rate Drawer.

QUESTION: 014 (1.00)

If containment pressure is 9 psig, which ONE of the following DESCRIBES the Containment Air Recirculation Fans operating status?

	FAN 1A	FAN 1B	FAN 1C
a.	ON	OFF	OFF
b.	ON	ON	OFF
c.	OFF	ON	ON
d.	OFF	OFF	ON

QUESTION: 015 (1.00)

Which ONE of the following conditions will cause the CLS SYSTEM COIL FAILURE (B-A-4) to annunciate?

a. A HI CLS train A relay is energized.

b. A HI HI CLS train A relay is deenergized.

c. Train A HI-HI coil monitor light is illuminated.

d. Train A HI-HI coil monitor light is out.

QUESTION: 016 (1.00)

If S/G C experiences a major feedline break at the point where the main feedline enters S/G C, which ONE of the following AFW flow rates is FEASIBLE?

	COMBINED FLOW TO S/Gs A & B	FLOW TO S/G C
a.	350 gpm	350 gpm
b.	325 gpm	375 gpm
c.	300 gpm	400 gpm
d.	275 gpm	425 gpm

QUESTION: 017 (1.00)

Which ONE of the following statements identifies the MAXIMUM administrative release rate for a Waste Gas Decay Tank (WGDT) and the basis for the limit?

	LIMIT	BASIS
a.	2.0 cfm	The total body exposure of an individual at the nearest exclusion area boundary will not exceed 0.5 rem in an event of 2 hours duration.
b.	2.0 cfm	The concentration of oxygen in the discharge flow will be limited to less than or equal to 2 percent by volume.
c.	3.0 cfm	The concentration of hydrogen in the discharge flow will be limited to less than 4 percent by volume.
d.	3.0 cfm	The release rate of the monitoring instrumentation only reads up to 3.0 cfm.

QUESTION: 018 (1.00)

Given the following plant conditions:

- PROCESS VENT STK HI PART RAD (RMA-A4) is illuminated
- The alarm is verified to be valid
- The process vent flow device is verified operable

Which ONE of the following statements EXPLAINS the reason for stopping the CV pumps in response to the alarm?

a. To prevent an unmonitored release through a ruptured KO Drum.

b. There is a possibility of rupturing the isolated WGDTs.

c. There is a possibility of damaging the CV pump discharge hose.

d. To prevent a hydrogen explosion after FCV-GW-101, WGDT isolation valve, closes.

QUESTION: 019 (1.00)

If the U-2 Black Battery is out of service, which ONE of the following power supplies is available to supply AMSAC U-2?

a. U-1 Black Battery and 2A1-2.

b. 1A1-2 and 2A1-2.

c. 1B1-3 and 2B1-3.

d. U-1 Black Battery and 2B1-3.

QUESTION: 020 (1.00)

Given the following plant conditions:

- RCS loop A operating with Tcold at 325 degrees F and Thot at 327 degrees F
- RCS loop B operating with Tcold at 325 degrees F and Thot at 326 degrees F
- RCS loop C hot leg isolation valve was fully opened at 1325
- RCS loop C bypass valve was fully opened at 1330
- RCS loop C Tcold is 305 degrees F
- RCS loop C Thot is 307 degrees F
- RCP C was started at 1335
- Current time is 1335

Which ONE of the following times is the EARLIEST TIME that the RCS loop C cold leg stop valve can be opened?

a. 1450.

b. 1455.

c. 1500.

d. 1505.

QUESTION: 021 (1.00)

Given the following plant conditions:

- All reactor coolant pumps have been stopped for 30 minutes
- The RCS is SOLID
- S/G A pressure is 35 psig
- S/G B pressure is 45 psig
- S/G C pressure is 60 psig
- Loop A Tcold is 235 degrees F
- Loop B Tcold is 245 degrees F
- Loop C Tcold is 255 degrees F

Which ONE of the following actions must be performed BEFORE RCP A can be started?

a. The RCP can be started with the existing conditions.

b. Reduce S/G A pressure to approximately 23 psig.

c. Reduce S/G B pressure to approximately 30 psig.

d. Reduce S/G C pressure to approximately 50 psig.

QUESTION: 022 (1.00)

Given the attached Surry Operating P/T Curve, which ONE of the following statements provides the BASIS for the PZR/PZR Spray Delta-T Limit curve?

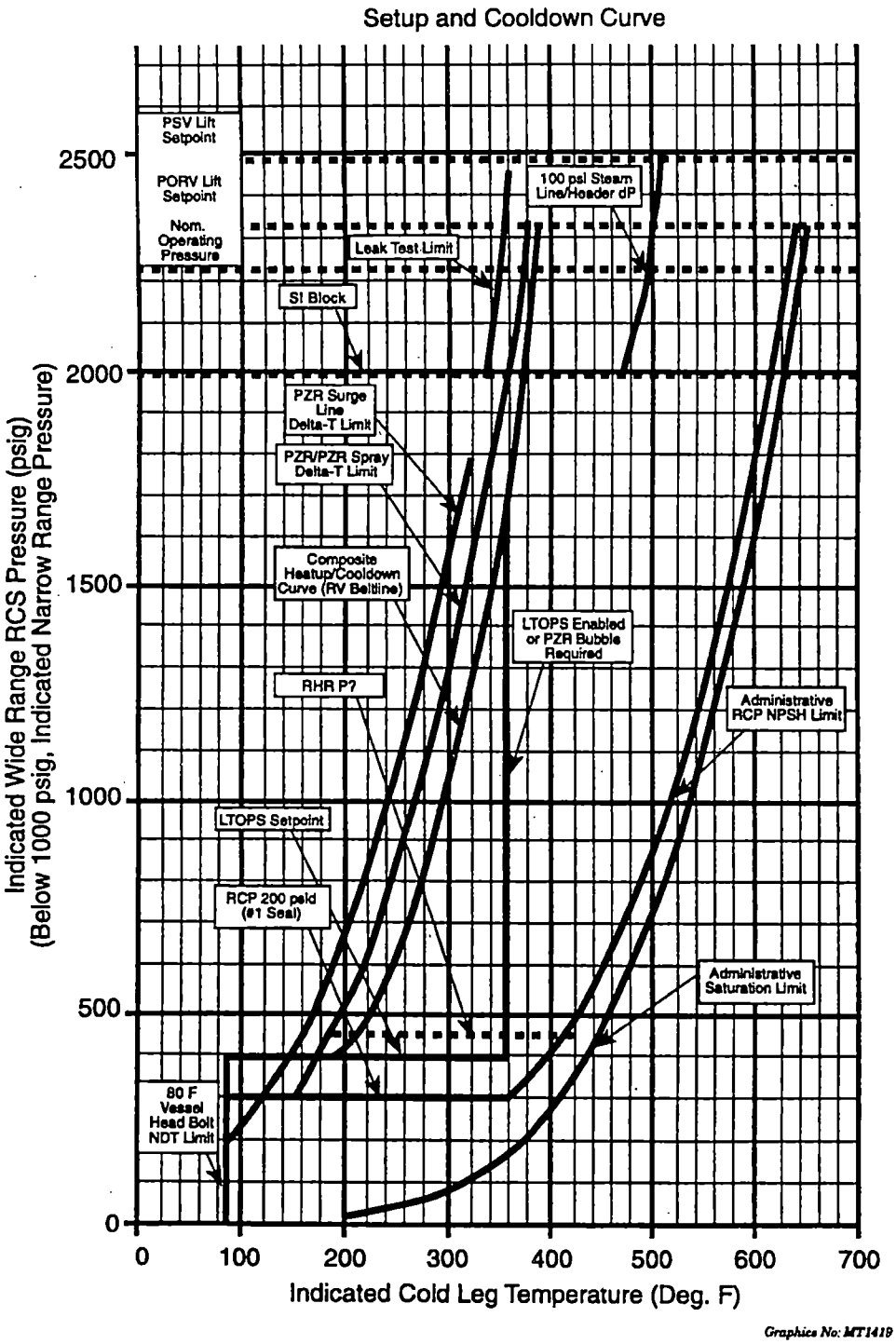
a. The curve is based on the difference in measurement location and the location of interest.

b. The curve is based on the pressurizer 50 degree F per hour cooldown limit adjusted for a 21 psi correction where temperature is sensed.

c. The curve is based on the 300 degree F administrative limit adjusted for instrument uncertainty to ensure technical specification limits are not exceeded.

d. The curve is based on the maximum temperature differential across the pressurizer surge line (303 degree F) adjusted for temperature and pressure measurement errors.

SURRY OPERATING P/T CURVE



SURRY OPERATING P/T CURVE

QUESTION: 023 (1.00)

Given the following plant conditions:

- The SI system is operating in the long-term recirc mode lineup
- The HHSI pump header flow transmitter readings are:

  FT-943 (normal header) indicates 110 gpm
  FT-943A (normal header) indicates 110 gpm
  FT-940 (alternate header) indicates 110 gpm
  FT-940A (alternate header) indicates 0 gpm

Which ONE of the following flow rates is being injected into the RCS?

a. 110 gpm.

b. 220 gpm.

c. 330 gpm.

d. 440 gpm.

QUESTION: 024 (1.00)

Given the following plant conditions:

- The plant is in HOT SHUTDOWN
- Accumulator A has 975 cubic feet of borated water with a boron concentration of 2225 ppm boron and a cover pressure of 600 psia
- Accumulator B has 985 cubic feet of borated water with a boron concentration of 2250 ppm boron and a cover pressure of 610 psia
- Accumulator C has 995 cubic feet of borated water with a boron concentration of 2275 ppm boron and a cover pressure of 600 psia
- RWST contains 389,100 gallons of borated water with a boron concentration of 2350 ppm boron concentration and a solution temperature of 44 degrees F

Which ONE of the following actions must be performed before Technical Specifications permit proceeding to POWER OPERATION?

a. Accumulator A boron concentration must be increased.

b. Accumulator B cover pressure must be reduced.

c. Accumulator C volume of borated water must be reduced.

d. RWST temperature must be increased.

QUESTION: 025 (1.00)

Given the following conditions for the pressurizer pressure master controller:

- Potentiometer is set to 5.68
- In automatic
- Output is 50 percent

Which ONE of the following statements describes HOW the pressurizer pressure is responding?

a. 2145 psig - increasing.

b. 2185 psig - decreasing.

c. 2205 psig - increasing.

d. 2235 psig - stable.

QUESTION: 026 (1.00)

Which ONE of the following pressurizer heaters will be LOST if 1B1 is deenergized?

a. Proportional heaters.

b. "A" backup heaters.

c. "B" backup heaters.

d. "D" backup heaters.

QUESTION: 027 (1.00)

Given the following plant conditions:

- Tavg is 563 degrees F
- Pressurizer level is in automatic control
- Pressurizer level is at the programmed level

Which ONE of the following approximate levels EXISTS in the pressurizer?

a. 34.3%.

b. 41.6%.

c. 46.1%.

d. 56.1%.

QUESTION: 028 (1.00)

Which ONE of the following reactor trips uses the logic circuit presented in the attached logic diagram?

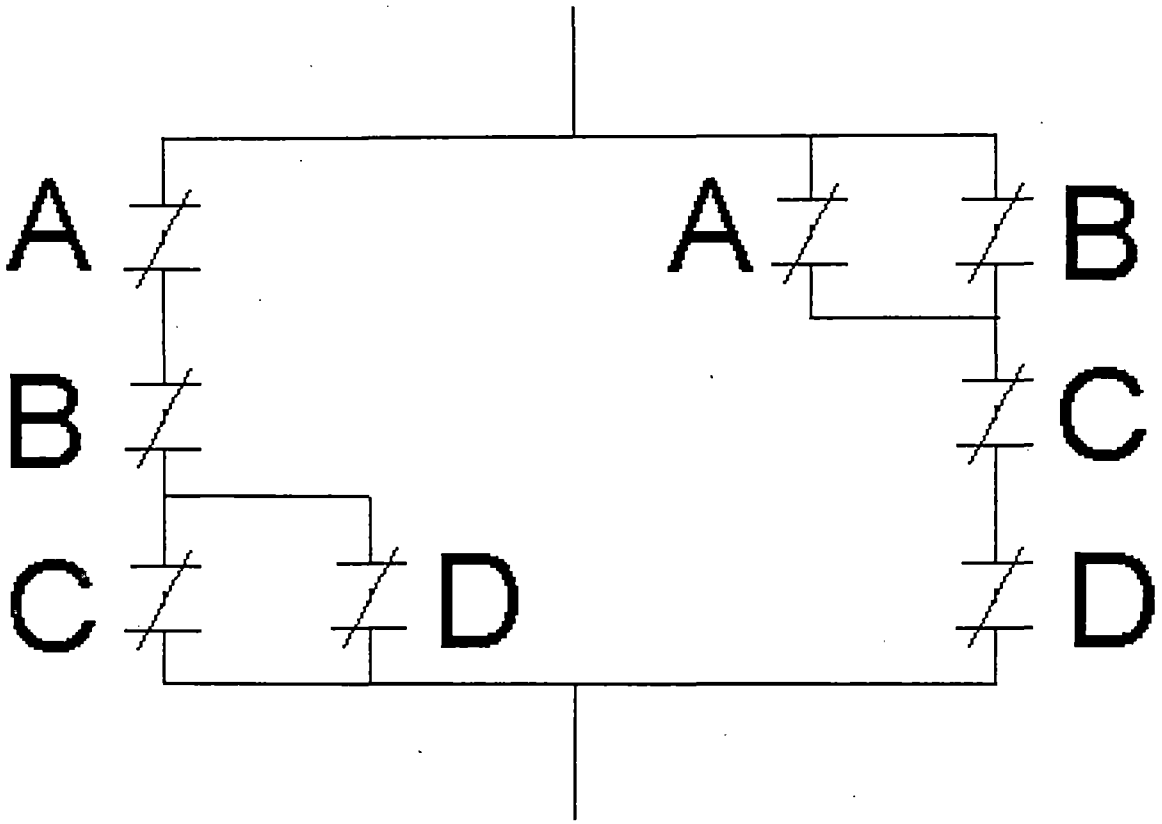
a. Power range high flux trip low.

b. Overtemperature Delta T (OTDT).

c. Pressurizer pressure high.

d. Turbine trip.

LOGIC CIRCUIT DIAGRAM



NOTE: The contacts are shown in the energized (closed) position. When a protective signal is received, the contacts open.

QUESTION: 029 (1.00)

Given the following plant conditions:

- Reactor power is 90 percent
- Control rod bank D is at 180 steps
- Rod control is in automatic
- The median delta T signal selector output fails high

Which ONE of the following statements describes the RESPONSE to the median delta T output failure?

a. The OTDT Rx TRIP alarm will be illuminated.

b. The OPDT Rx TRIP alarm will be illuminated.

c. Rod Bank D EXTRA-LOW alarm will be illuminated.

d. Delta T Dev A - B (3.5 F) or Delta T Dev A - C (3.5 F) alarms will be illuminated.

QUESTION: 030 (1.00)

Which ONE of the following statements describes HOW the chemical addition tank valves, MOV-CS-102A and B are controlled?

a. Each valve opens automatically on a HI CLS or manually using the OPEN/CLOSE switches on benchboard 1-1.

b. Each valve opens automatically on a HI HI CLS or manually using the OPEN/CLOSE switches on benchboard 1-1.

c. Each valve is normally opened using the OPEN/CLOSE switches on benchboard 2-1 and closes automatically when the HI CLS signal is reset.

d. Each valve is normally opened using the OPEN/CLOSE switches on benchboard 2-1 and closes automatically when the HI HI CLS signal is reset.

QUESTION: 031 (1.00)

Which ONE of the following statements describes the location of the spent fuel pool (SFP) cooling and purification system discharge to the RWSTs?

a. Purification suction.

b. SFP cooling pumps suction.

c. SFP heat exchanger outlet piping.

d. Outlet of the purification filter.

QUESTION: 032 (1.00)

Which ONE of the following statements describes the fuel transfer system FRAME INTERLOCK BYPASS?

a. The switch is actuated from the containment control panel to allow operation of the conveyer car when the upenders are not in the horizontal position.

b. The switch is actuated from the spent fuel pool control panel to allow operation of the conveyer car when the upenders are not in the horizontal position.

c. The switch is actuated from the spent fuel pool control panel to allow operation of the upender when the manipulator crane is in the area of the upender.

d. The switch is actuated from the containment control panel to allow operation of the upender when the manipulator crane is in the area of the upender.

QUESTION: 033 (1.00)

Given the following plant condition:

- S/G PORV controller setpoint is set to 60%

Which ONE of the following states (gives) the S/G PORV opening pressure setpoint?

a. 800 psig.

b. 850 psig.

c. 900 psig.

d. 950 psig.

QUESTION: 034 (1.00)

Given the following plant conditions:

- Unit 1 reactor power is 30 percent
- A steam leak occurs on the A S/G main steamline between the A S/G trip valve and the tap for the A S/G supply to the TDAFW pump

If the HIGH STEAM LINE FLOW STEAM GENERATOR 1A CHANNEL 3 alarm illuminates, which ONE of the following FLOW RATES describes the minimum steam flow rate from S/G A?

a. Steam flow equivalent to 34% power.

b. Steam flow equivalent to 38% power.

c. Steam flow equivalent to 47% power.

d. Steam flow equivalent to 108% power.

QUESTION: 035 (1.00)

Which ONE of the following switch positions are required for the #1 EDG to start when the #1 EDG start pushbutton on the main control room EDG control panel is depressed?

	ECC LOCAL/AUTO SWITCH	AUTO/EXERCISE SWITCH
a.	LOCAL	AUTO
b.	LOCAL	EXERCISE
c.	AUTO	AUTO
d.	AUTO	EXERCISE

QUESTION: 036 (1.00)

Which ONE of the following conditions will cause a loss of containment integrity / refueling containment integrity?

a. Air partial pressure inside containment is 9.1 psia at 50% power.

b. During refueling operations the equipment access hatch is open.

c. One containment air lock door is open during a containment entry with reactor coolant system temperature of 300 degrees F.

d. A deactivated automatic containment isolation valve is maintained under administrative controls while open for operational activities when reactor coolant system temperature is greater than 200 degrees F.

QUESTION: 037 (1.00)

Which ONE of the following statements describes HOW the residual heat removal [RHR] system is connected to the reactor coolant system [RCS]?

a. Takes suction from the top of loop A hot leg and discharges to the bottom of loops A and C cold legs.

b. Takes suction from loop A hot leg below the center line and discharges to the top of loops B and C cold legs.

c. Takes suction from the top of loop B cold leg and discharges to the bottom of loops B and C cold legs.

d. Takes suction from loop B cold leg below the centerline and discharges to the top of loops A and C cold legs.

QUESTION: 038 (1.00)

Which ONE of the following statements IDENTIFIES systems and/or components that discharge to the pressurizer relief tank (PRT).

a. Pressurizer PORVs, RHR relief valves, and VCT relief valve.

b. Pressurizer safety valves, pressurizer drain valves, and RHR relief valves.

c. Seal return heat exchanger relief valve, pressurizer PORVs, and the nitrogen system.

d. CVCS letdown piping relief valve, RCP seal return relief valve, and RHR Relief valves.

QUESTION: 039 (1.00)

When operating, which ONE of the following leaking components would result in an INCREASING level in the Component Cooling Water Surge Tank?

a. Excess Letdown Heat Exchanger.

b. Bearing Cooling Water Cooler.

c. Regenerative Heat Exchanger.

d. Component Cooling Water Heat Exchanger

QUESTION: 040 (1.00)

Which ONE of the following statements describes WHY the booster relay was installed in the steam dump system?

a. To reduce excessive plant cooldown by reducing the time to vent off the air from the steam dump valve operator after the signal cleared.

b. To reduce excessive plant cooldown by increasing the time to vent off the air from the steam dump valve operator after the signal cleared.

c. To improve steam dump response time by applying instrument air (IA) directly from the IA header in the trip open mode of operation.

d. To improve steam dump response time by applying IA to the steam dump valves through the E/P converter and the valve positioner.

QUESTION: 041 (1.00)

Given the following plant conditions:

- Plant in MODE 2 during a startup
- Shutdown rod banks A and B are fully withdrawn
- Control rod banks A and B are fully withdrawn
- Control rod banks C and D are being withdrawn
- Proper overlap has been observed
- Control rod bank C group 2 rods continue stepping out after the IN-HOLD-OUT switch has been released

Which ONE of the following sets of IMMEDIATE ACTIONS must be performed?

a. Verify rod motion - STOPPED; if not, then fully insert control rods in manual.

b. Verify ROD CONT SYS URGENT FAILURE, G-A6, not illuminated; then put the rod selector switch in MANUAL.

c. Put the rod selector switch in BANK C and verify rod motion STOPPED.

d. Check for continuous rod withdrawal or insertion; and trip the reactor.

QUESTION: 042 (1.00)

Select the option to fill in the blanks.

On a reactivity addition accident, assuming all systems function as designed, peak neutron flux will be _____ for a high reactivity addition rate from a subcritical condition than a high power condition; and peak heat flux will be _____ for a low reactivity addition rate from a high power condition than from a subcritical condition

a. Higher; higher.

b. Higher; lower.

c. Lower; higher.

d. Lower; lower.

QUESTION: 043 (1.00)

0-AP-1.01, CONTROL ROD MISALIGNMENT, contains the following Caution before step 16:

"The affected withdrawal rate during realignment is limited to 2/P (P=fraction of Core Power where 100% power is equal to 1.0) steps per hour if affected rod remains misaligned for more than 12 hours or the duration of the misalignment can not be determined."

Which ONE of the following statements EXPLAINS WHY this caution is applied during recovery of a dropped control rod?

a. After 12 hours, local power density will not be significantly below the pre-drop value while realigning the rod.

b. After 12 hours, local Xenon concentrations could be significantly below the pre-drop equilibrium values prior to realigning the rod.

c. To ensure that the design nuclear enthalpy rise hot channel factor will not be exceeded.

d. To ensure that the control rod will not experience binding due to the reduced temperatures in the vicinity of the dropped control rod.

QUESTION: 044 (1.00)

In accordance with Surry procedures, before withdrawing a dropped control rod, which ONE of the following pairs of personnel must be CONTACTED by the SRO?

a. Operations Manager, and Station Manager.

b. System Engineering Supervisor, and Shift Technical Advisor (STA).

c. Reactor Engineer and Operations Manager-on Call.

d. Operations Manager and System Engineering Supervisor.

QUESTION: 045 (1.00)

Given the following plant conditions:

- At 1000 power was reduced to 73% following confirmation that a bank D group 1 control rod was stuck
- At 1115 a bank D group 2 control rod has been verified to be 15 steps above its group step counter.

Which ONE of the following ACTIONS should be PERFORMED in response to the given plant conditions?

a. Trip the reactor.

b. Determine if shutdown margin (SDM) is satisfied before 1215.

c. Reduce the high neutron flux trip setpoint to less than 75% before 1600.

d. Be in hot shutdown before 2200.

QUESTION: 046 (1.00)

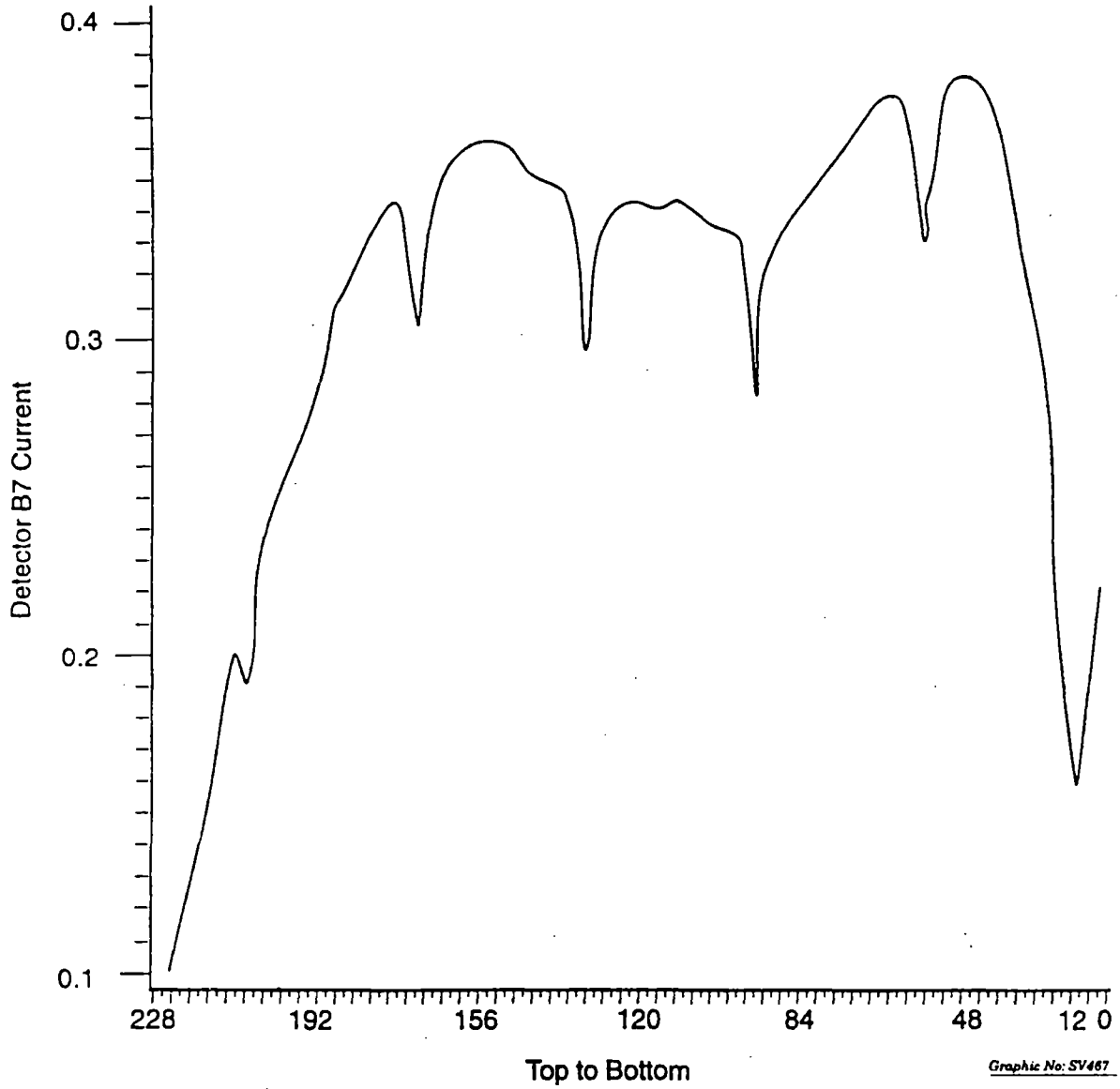
Given the following in-core flux traces for in-core locations B-5 and B-7, which ONE of the following statements DESCRIBES the ACTUAL plant conditions?

a. Control rod B-6 is stuck at 60 steps.

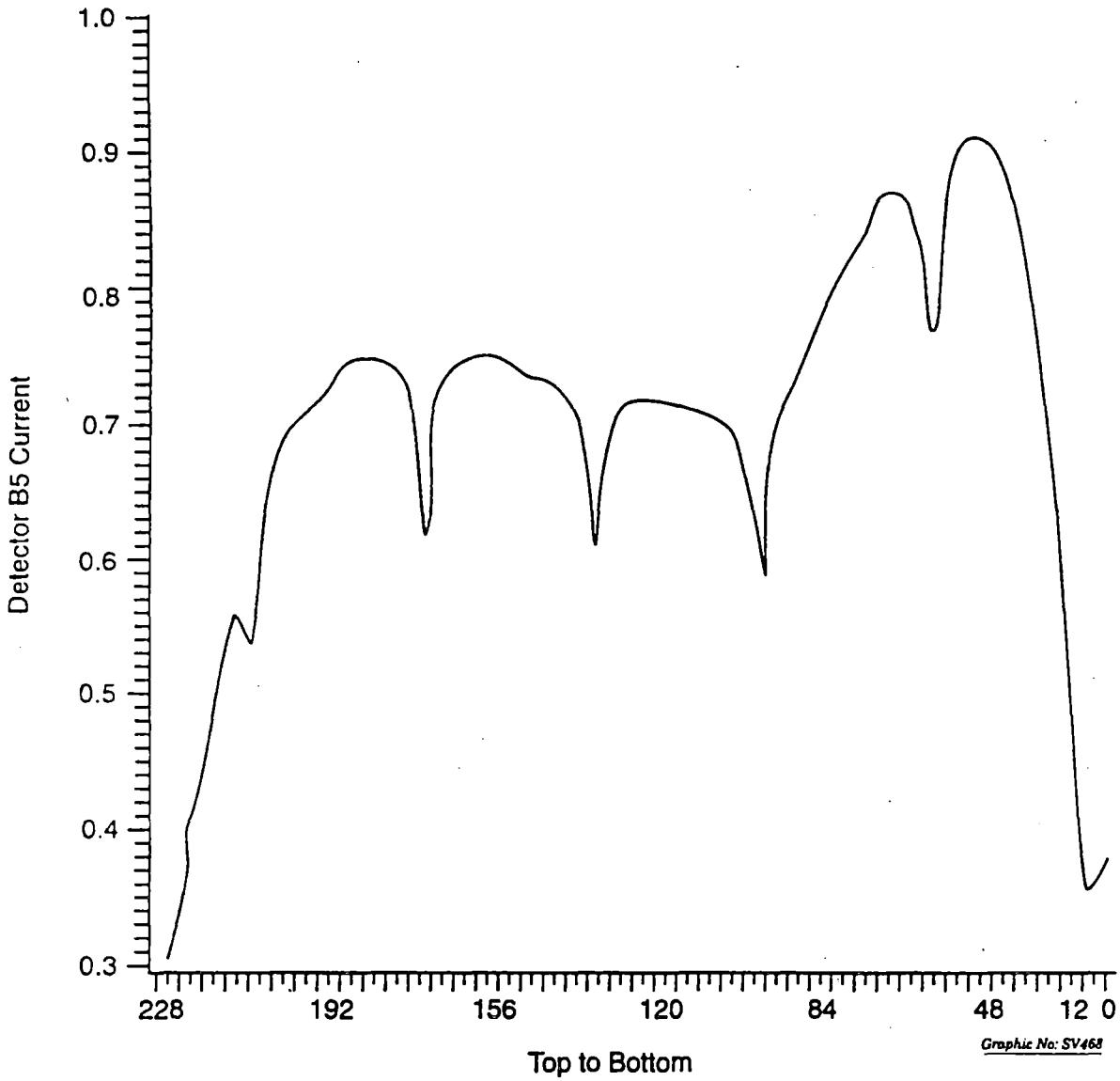
b. Control rod B-6 is stuck at 160 steps.

c. Control rod C-6 is stuck at 130 steps

d. Control rod C-6 is on the bottom.



MISALIGNED ROD TRACE, B-7



MISALIGNED ROD TRACE B5

QUESTION: 047 (1.00)

Assuming that a large break LOCA has occurred, which ONE of the following statements describes the automatic operation of the Recirc Mode Transfer (RMT) System in response to a signal of 2/4 RWST level of less than 13.5%?

a. The HHSI suction from LHSI opens while the LHSI recirc valves close.

b. The HHSI suction from LHSI closes while the LHSI recirc valves close.

c. The HHSI suction from LHSI opens while the LHSI recirc valves open.

d. The HHSI suction from LHSI closes while the LHSI recirc valves opens.

QUESTION: 048 (1.00)

Which ONE of the following statements DESCRIBES how adequate core cooling is verified during a large break LOCA?

a. By verifying that the reactor water level is above the top of the fuel.

b. By shutting the loop stop valves.

c. By observing that RWST level is decreasing.

d. By maintaining SI flow to the RCS.

QUESTION: 049 (1.00)

Step 4 of 1-AP-39.00, NATURAL CIRCULATION OF RCS, reads as follows:

"VERIFY RCS HOT LEG TEMPERATURE - LESS THAN 550 DEGREES F"

Which ONE of the following reasons describes WHY RCS hot leg temperatures are verified less than 550 degrees F during RCS natural circulation?

a. To ensure that there is NO voiding anywhere in the RCS.

b. To ensure that a steam bubble is maintained in the pressurizer and that there is NO voiding in the reactor vessel head.

c. To ensure that the secondary safety valves are NOT being used for primary temperature control.

d. To ensure that there is an adequate temperature differential between the RCS and the secondary to promote natural circulation.

QUESTION: 050 (1.00)

Given the following plant conditions:

- The plant is operating at 100% power
- The loop "A" reactor coolant pump (RCP) tripped on overcurrent (motor winding shorted)
- A reactor trip occurred
- The steam dumps actuated normally in response to the reactor trip
- 1-E-0, REACTOR TRIP OR SAFETY INJECTION, has been entered
- A safety injection (SI) occurs about 90 seconds after RCP "A" tripped

Which ONE of the following explains WHY the safety injection occurred? (Assume no equipment or instrument failures caused the SI)

a. S/G "A" feed flow was excessive and decreased the "A" S/G pressure below the header-to-line SI setpoint.

b. S/G "B" feed flow was excessive and caused RCS pressure to decrease below the RCS low pressure SI setpoint.

c. S/G "C" feed flow was excessive and decreased the "C" S/G pressure below the header-to-line SI setpoint.

d. The RCS pressure transient following the reactor and RCP "A" trip decreased RCS pressure below the RCS low pressure SI setpoint.

QUESTION: 051 (1.00)

Which ONE of the following methods will increase RCS boron concentration at the GREATER rate?

a. Borate through the blender with the boric acid pump in fast speed.

b. Maximize charging flow rate with charging pump suction lined up to the RWST.

c. Emergency borate through manual valve, CH-228, with the boric acid pump in fast speed.

d. Emergency borate through normal valve, MOV-1350, with the boric acid pump in fast speed.

QUESTION: 052 (1.00)

Which ONE of the following statements describes the REASON that 1-AP-15.00, LOSS OF COMPONENT COOLING, Step 1 directs the operators to trip the reactor?

a. To prepare to restore component cooling by minimizing heat loads on the component cooling system.

b. To prepare to initiate natural circulation of the RCS.

c. To prepare to enter containment to close TV-CC-120 to isolate the RCP thermal barriers within 4 hours.

d. To prepare to secure charging and seal injection until an alternate letdown flow path is established to control pressurizer level.

QUESTION: 053 (1.00)

Given the following plant conditions:

- Plant operating at 83% power
- All control systems are in automatic
- Pressurizer pressure is 2000 psig
- Pressurizer high pressure alarm is illuminated

Which ONE of the following statements DESCRIBES the action to be taken in accordance with 1-AP-31.00, INCREASING OR DECREASING PRESSURIZER PRESSURE?

a. Close both spray valves because PT-444 failed high.

b. Close both spray valves because PT-455 failed high.

c. Close PORV-1455C because PT-444 failed high.

d. Close PORV-1456 because PT-445 failed high.

QUESTION: 054 (1.00)

Given the following plant conditions:

- An emergency has occurred requiring entry into FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS
- You direct entry into FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS

Which ONE of the following steps is the EARLIEST step at which you may DIRECT the crew TO EXIT from FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS?

a. Upon answering yes to Step 1, VERIFY REACTOR TRIP.

b. Step 5, CHECK IF THE FOLLOWING TRIPS HAVE OCCURRED, and answering yes to reactor trip and turbine trip.

c. Step 8, CHECK FOR REACTIVITY INSERTION FROM UNCONTROLLED RCS COOLDOWN, and answering yes to any SG pressure - DECREASING IN AN UNCONTROLLED MANNER.

d. Step 13, RETURN TO PROCEDURE AND STEP IN EFFECT.

QUESTION: 055 (1.00)

The following CAUTION appears before Step 5 in 1-FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS:

> "If an SI signal exists or occurs, Steps 1 through 13 of 1-E-0, REACTOR TRIP OR SAFETY INJECTION, should be performed while continuing with this procedure."

Which ONE of the following statements describes the BASIS for this caution?

a. To ensure that operators verify adequate charging pump flow to provide emergency boration flow delivery to the RCS and carry all boron into the core.

b. If concurrent with the ATWS, a loss of AFW occurs along with an SI, the operators would be directed to FR-H.1 which would lead to E-1 without returning to E-0 to verify auto actions.

c. To eliminate the need for operators to diagnose the initiating event and eliminate the need for separate guidance for different ATWS events, preventing complications that could delay timely performance of necessary operator actions.

d. To align the most direct boration path available using the normal charging pumps because pump miniflow lines are assumed to be open to protect the pumps in the event of high RCS pressure.

QUESTION: 056 (1.00)

Given the following plant conditions:

- Plant is operating at 50% power - increasing
- S/G level in all 3 S/Gs increasing
- Feedwater flow increasing
- Control rods stepping out in automatic

Which ONE of the following events has OCCURRED?

a. Continuous rod withdrawal.

b. Feedwater break.

c. Steam break.

d. RCS dilution.

QUESTION: 057 (1.00)

Given the following plant conditions:

- A reactor trip with a safety injection occurred
- The crew has correctly transitioned from 1-E-0, REACTOR TRIP OR SAFETY INJECTION to 1-E-1, LOSS OF REACTOR OR SECONDARY COOLANT
- The crew has completed 1-E-1, Step 14, CHECK IF LHSI PUMPS SHOULD BE STOPPED
- The crew has entered 1-E-1, Step 15, CHECK SG AND RCS PRESSURES

Which ONE of the following statements EXPLAINS the CONSEQUENCE of moving past step 15 with a depressurizing SG?

a. The crew could be directed to ES-1.1, SI TERMINATION, and premature SI termination.

b. The crew could be directed to ES-1.2, POST-LOCA COOLDOWN & DEPRESSURIZATION and encounter more restrictive SI termination criteria than necessary.

c. The crew may be incorrectly directed to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRC.

d. Continued operation with a faulted steam generator will cause a loss of the AFW pumps due to the loss of makeup water.

QUESTION: 058 (1.00)

Given the following plant conditions:

- Plant operating at 85% power
- Generator MW is decreasing slowly
- Annunciator 1F-B6, Turbine Low Vacuum, illuminated about 5 minutes ago
- Annunciator 1F-C3, Turbine Low Vacuum trip illuminates

Which ONE of the following statements DESCRIBES HOW the plant will respond?

a. The steam dumps do NOT open.

b. The steam dumps trip open.

c. The steam dumps modulate open.

d. The NRVs will trip shut.

QUESTION: 059 (1.00)

Given the following plant condition:

- Unit 1 operating at 92% power
- Unit 2 operating at 100% power
- A station blackout occurs

Which ONE of the following identifies the MAXIMUM number of AFW pumps that can be running following the station blackout (consider AFW pumps for both units)?

a. 3.

b. 4.

c. 5.

d. 6.

QUESTION: 060 (1.00)

In the event of a LOSS OF ALL AC POWER, which ONE of the following statements describes HOW plant parameters respond following the initial perturbations caused by the plant trip from 100% power?

a. S/G pressure decreases due to steam dump and S/G PORV failure to operate.

b. S/G levels decrease due to steam/feed flow mismatch, and loop flow coasts down due to the RCP trip.

c. Plant average temperature and pressurizer level return to near normal full load values.

d. Plant average temperature and pressurizer level will return to normal no load values.

QUESTION: 061 (1.00)

If vital bus VB 1-III is lost, which ONE of the following statements explains WHY 1-AP-10.03, LOSS OF VITAL BUS III directs the operators to trip the reactor?

a. To prevent overfeed of S/G B.

b. Power to blender control and indication are lost.

c. Automatic RCS pressure control and letdown are lost.

d. To ensure the reactor is shutdown prior to tripping RCP "A".

QUESTION: 062 (1.00)

Which ONE of the following statements describes HOW all the station's emergency, vital, and DC power could be lost in the event of a serious fire in the turbine building?

a. The fire could disable controls and prevent access to the water box isolation MOVs, and cause an uncontrolled canal draw down concurrent with a loss of CW pumps.

b. The fire could disable controls and cause the turbine to overspeed and create missile hazards.

c. The fire could cause a loss of integrity of the CW/SW rubber expansion boots and cause flooding of the ESGRs.

d. The fire could cause a generator explosion and create missile hazards.

QUESTION: 063 (1.00)

Given the following plant conditions:

- A small fire occurs in the control room
- The fire is quickly brought under control
- Both units are stable
- The main control room is habitable
- Fire damage is limited to the PAM Panel on Unit 1

Which ONE of the following procedures will be the plant CONTROLLING PROCEDURE?

a. 0-FCA-1.00, LIMITING MCR FIRE.

b. VPAP-2802, NOTIFICATIONS AND REPORTS.

c. 0-AP-20.00, MAIN CONTROL ROOM INACCESSIBILITY.

d. 0-AP-48.00, FIRE PROTECTION - OPERATIONS RESPONSE.

QUESTION: 064 (1.00)

Given the following plant conditions:

- The control room has been evacuated
- The Transfer Relay Panel Transfer Switch for the emergency borate valve is placed in the Aux Pnl position (refer to the attached drawing)
- The Transfer Relay Panel Main Selector Switch for the emergency borate valve is placed in the Override position (refer to the attached drawing)

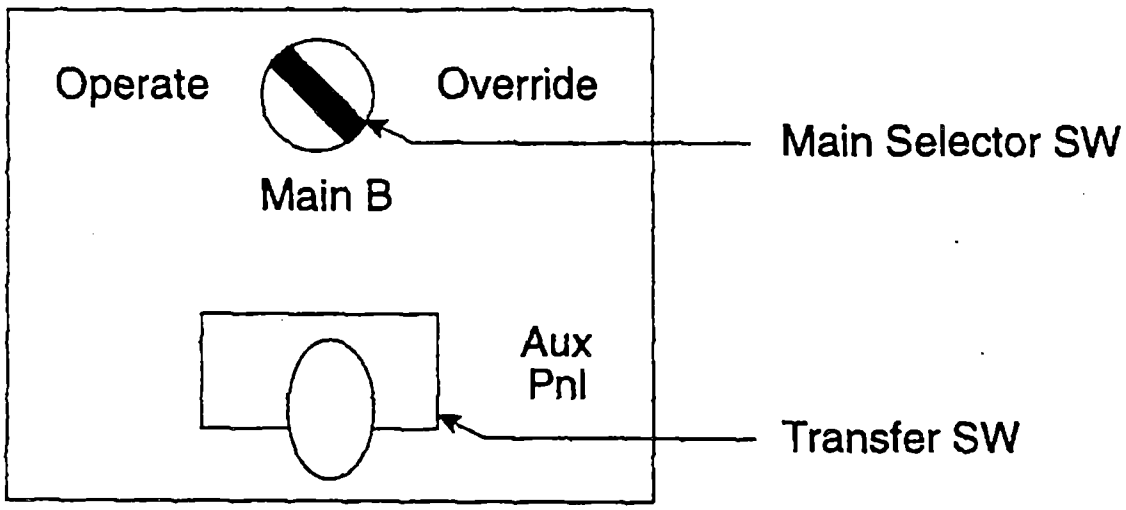
Which ONE of the following statements describes HOW operation of the emergency borate valve is AFFECTED by the given switch alignment?

a. The emergency borate valve opens when the main selector switch is placed in Override.

b. The Transfer relay for the emergency borate valve is controlled from the Aux Shutdown Panel.

c. The emergency borate valve is controlled from the Aux Shutdown Panel.

d. The emergency borate valve can ONLY be operated manually using the valve handwheel.



Transfer Relay Panel

QUESTION: 065 (1.00)

Given the following plant conditions:

- You are monitoring critical safety functions (CSF)
- You enter into FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, in response to an ORANGE containment CSF
- You return to the guideline and step in effect after the actions of FR-Z.1 have been completed
- Fifteen (15) minutes after leaving FR-Z.1, the containment CSF goes RED

Which ONE of the following actions is REQUIRED to be taken in response to the containment CSF RED condition?

a. Re-enter FR-Z.1 at step 1 and perform the actions of the guideline.

b. Re-enter FR-Z.1 at step 5: VERIFY CTMT ISOLATION VALVES-CLOSED IAW ATTACHMENT 1, and perform the actions of the guideline.

c. Transition 1-ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION.

d. Remain in the procedure in effect.

QUESTION: 066 (1.00)

Which ONE of the following CLEARLY define two core conditions indicating INADEQUATE CORE COOLING?

a. CET greater than 1200 degrees F and RCS subcooling greater than 30 degrees F.

b. CET greater than 1200 degrees F and RCS subcooling less than 30 degrees F.

c. CET greater than 1200 degrees F and CET greater than 700 degrees F with RVLIS indication less than 46%.

d. CET greater than 1200 degrees F and CET greater than 700 degrees F with RVLIS indication greater than 46%.

QUESTION: 067 (1.00)

Given the following plant conditions:

- A reactor trip and safety injection has occurred
- FR-C.1, RESPONSE TO INADEQUATE CORE COOLING has been entered
- At Step 3, CHECK RCP SUPPORT CONDITIONS - AVAILABLE, it is determined that all RCP support conditions are NOT available
- RWST level has decreased to 15%

Which ONE of the following actions must be performed IMMEDIATELY?

a. Continue in FR-C.1 at step 4.

b. Depressurize the RCS and initiate feed and bleed.

c. Transition to 1-ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

d. Restore RCP support conditions.

QUESTION: 068 (1.00)

Given the following plant conditions:

- A reactor trip and safety injection occurred
- Containment pressure increased to 23 psig
- Containment pressure is currently 3 psig
- Containment radiation level is 10E4 R/hr and increasing slowly
- Total AFW flow is 360 GPM
- SG A narrow range level is 15%
- SG B narrow range level is 18%
- SG C narrow range level is 20%

Which ONE of the following actions must be performed at Step 14 of 1-E-0, REACTOR TRIP OR SAFETY INJECTION? (See the attached page from 1-E-0)

a. Go to Step 15.

b. Control feed flow to maintain narrow range level and go to Step 15.

c. Manually start AFW pumps AND align valves as necessary.

d. GO TO 1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

NUMBER	PROCEDURE TITLE	REVISION
1-E-0	REACTOR TRIP OR SAFETY INJECTION	26
		PAGE 9 of 22

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14.	__VERIFY TOTAL AFW FLOW - GREATER THAN 350 GPM [450 GPM]	IF SG narrow range level greater than 11% [22%] in any SG, THEN control feed flow to maintain narrow range level AND GO TO Step 15. IF SG narrow range level less than 11% [22%] in all SGs, THEN manually start pumps AND align valves as necessary. IF AFW flow greater than 350 gpm [450 gpm] can NOT be established, THEN GO TO 1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
15.	__CHECK AFW MOVs - OPEN • 1-FW-MOV-151E • 1-FW-MOV-151F • 1-FW-MOV-151C • 1-FW-MOV-151D • 1-FW-MOV-151A • 1-FW-MOV-151B	Manually align valves as necessary.

QUESTION: 069 (1.00)

1-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 5 reads:

"5. VERIFY MFW ISOLATION."

Which ONE of the following statements describes the BASES for Step 5?

a. Prevent excessive cooldown which could aggravate a small break LOCA transient.

b. Prevent excessive cooldown which could aggravate a steamline break transient.

c. Prevent excessive cooldown which could mask a steam generator tube rupture transient.

d. Prevent excessive cooldown which could mask a feedline break transient.

QUESTION: 070 (1.00)

Given the following plant conditions:

- A reactor trip has occurred
- 1-E-0, REACTOR TRIP OR SAFETY INJECTION has been entered
- A HI-HI CLS signal is received
- S/G narrow range level is 30% in all S/Gs
- A momentary undervoltage transient occurs on one AC emergency bus

Which ONE of the following describes how the plant responds after the affected MDAFW pump trips?

a. The pump can be manually started as soon as the undervoltage condition clears.

b. The pump will auto-start after a 10 second blocking signal.

c. The pump will auto-start after a 140 second blocking signal.

d. The pump can be manually started after a 180 second blocking signal.

QUESTION: 071 (1.00)

Given the following plant conditions:

- The plant is operating normally at 100% power
- A pressurizer PORV opens

Which ONE of the following temperatures would you EXPECT to see on the PORV tailpipe temperature indicator?

a. 200 - 300 degrees F.

b. 325 - 425 degrees F.

c. 470 - 550 degrees F.

d. 575 - 650 degrees F.

QUESTION: 072 (1.00)

If the pressurizer level upper control channel fails high and NO OPERATOR action is taken, which ONE of the following plant responses will OCCUR?

a. RCS pressure will cycle around 2235 psig.

b. RCS pressure will cycle around 2335 psig.

c. Charging flow will immediately decrease to 25 gpm and then slowly increase to 110 gpm.

d. Charging flow will immediately increase to 110 gpm and then slowly decrease to 25 gpm.

QUESTION: 073 (1.00)

If the controlling pressurizer level channel fails low, which ONE of the following sets of OPERATOR ACTIONS is performed first?

a. Charging is placed in auto and letdown is returned to service.

b. Charging is placed in manual and letdown is returned to service.

c. Charging is placed in auto and the channel is defeated.

d. Charging is placed in manual and the channel is defeated.

QUESTION: 074 (1.00)

Under which ONE of the following conditions would you DIRECT the crew to ENTER AP-40, Non-Recoverable Loss of Instrument Air?

a. Service air compressor pressure has decreased to 30 psig with the Service Air Compressor Trouble (B-E-5) annunciator illuminated.

b. Instrument air pressure is 70 psig, decreasing slowly, and Instrument Air Compressor 1 Trouble (B-E-6) annunciator is NOT illuminated.

c. Service Air Compressor Trouble (B-E-5) and Instrument Air Compressor 1 Trouble (B-E-6) annunciators illuminated and both service air and instrument air have decreased to 60 psig.

d. Service Air Compressor Trouble (B-E-5) and Instrument Air Compressor 1 Trouble (B-E-6) annunciators are NOT illuminated and instrument air pressure has decreased to 45 psig.

QUESTION: 075 (1.00)

Which ONE of the following contains actions and/or components required for adequate core cooling for a small break LOCA?

a. Safety injection pumps running and safety injection accumulators.

b. Reactor coolant pumps running and operator action.

c. Operator action and steam generators.

d. Steam generators and safety injection accumulators.

QUESTION: 076 (1.00)

During a small break LOCA, which ONE of the following CONDITIONS exists when the RCP trip criteria is satisfied?

a. Subcooling at the break is 0 degrees F.

b. Subcooling at the core exit is 0 degrees F.

c. Subcooling at the RCS hot leg RTDs is 30 degrees F.

d. Subcooling at the RCS cold leg RTDs is 30 degrees F.

QUESTION: 077 (1.00)

Which ONE of the following transients is most likely to result in an overpower delta T (OPDT) trip?

a. Stuck rod.

b. Rod ejection.

c. Steamline rupture.

d. Continuous rod withdrawal.

QUESTION: 078 (1.00)

Given the following plant conditions:

- FR-I.2, RESPONSE TO PRESSURIZER LOW LEVEL, has been entered
- Charging pumps are not running
- Component cooling to the RCP seals has been lost

Which ONE of the following reasons explains WHY FR-I.2 directs the RCP seal injection flow path to be isolated before restoring charging flow?

a. The RCP seals have cooled down and charging restoration would subject the seals to unnecessary thermal stress.

b. The RCP seals have heated up and charging restoration would subject the seals to unnecessary thermal stress.

c. This will ensure adequate flow through the regenerative heat exchanger.

d. This will ensure that charging pump flow during startup is reduced to minimize starting current.

QUESTION: 079 (1.00)

Given the following plant conditions:

- A plant start up is in progress
- Source range instrument N31 indicates 3 10E4 counts per second
- Source range instrument N32 indicates 3.5 10E4 counts per second
- The rod control system is responding normally as control rods are withdrawn
- N35 intermediate range instrument fails low

Which ONE of the following actions must be performed?

a. Reduce reactor power to less than 5 10E-11 amps and manually energize source range instruments.

b. Trip the reactor and manually energize source range instruments when reactor power decreases below 5 10E-10 amps.

c. Trip the N35 bistables prior to exceeding 10E-11 amps.

d. Restore N35 to operation prior to exceeding 10E-10 amps.

QUESTION: 080 (1.00)

Which ONE of the following conditions increase the difficulty in diagnosing the affected steam generator during a small steam generator tube rupture (SGTR) event?

a. Reactor trip.

b. S/G blowdown isolation.

c. Non-uniform AFW flows.

d. Non-uniform charging flow.

QUESTION: 081 (1.00)

Which ONE of the following statements describes the MOST EFFECTIVE operator ACTION to minimize the release of iodines to the environment following a SGTR?

a. Maintaining SG level above the tubes and below the moisture separators.

b. Closing the MSTV on the affected SG.

c. Isolate recirculation from the hotwell to the CST and transferring auxiliary steam to the other unit or the auxiliary boiler.

d. Shutting the RCS loop isolation valves after the RCS and SG pressures have been equalized.

QUESTION: 082 (1.00)

Given the following conditions:

- Power level 55%
- Pressurizer level 18% steady
- Pressurizer pressure 2200 psig steady
- Condenser air ejector high radiation alarm

Which ONE of the following actions is required when RCS leak rate is determined?

a. If RCS leak rate is 25 gpm or less, letdown isolation is required.

b. If RCS leak rate is more than 25 gpm but less than 50 gpm, Containment Sump Pumps must be stopped.

c. If RCS leak rate is more than 50 gpm but less than 150 gpm, a safety injection is required.

d. If RCS leak rate is more than 150 gpm but within the capacity of the charging pumps, a "Rapid Load Reduction" per AP-23.00 is required.

QUESTION: 083 (1.00)

Given the following plant conditions:

- Reactor power is 75%
- Feed header pressure has dropped to 790 psig and annunciator (1H-G8), FW PP DISCH HDR LO PRESS is in alarm.
- Both Main Feedwater Pumps are operating.

Which ONE of the following is the required IMMEDIATE action?

a. Manually trip the reactor and go to 1-E-0, Reactor Trip or Safety Injection.

b. Reduce turbine load and reactor power to 65% or less.

c. Start a third Condensate pump.

d. Increase feed header pressure by throttling Feedwater regulating valves.

QUESTION: 084 (1.00)

Given the following plant conditions:

- The Reactor is shutdown, reactor trip breakers are open
- RCS pressure is 2200 psig
- Source Range Channel N-31 is out of service for repairs
- Tavg is 540 degrees F
- Source range channel N-32 fails low

Which ONE of the following ACTIONS is required?

a. Verify shutdown margin within one hour.

b. Place Channel N-32 in the tripped condition within one hour.

c. Initiate a cooldown to cold shutdown conditions within one hour.

d. Borate to cold shutdown conditions within one hour.

QUESTION: 085 (1.00)

Given the following plant conditions:

- The plant is shutdown and is on RHR cooling
- A non-recoverable loss of instrument air (IA) occurs

Which ONE of the following describes HOW the RCS temperature is affected by the loss of IA?

a. Decreases because RHR heat exchanger flow valve, RH-HCV-758, fails open.

b. Increases because RHR heat exchanger bypass valve, RH-FCV-605, fails closed.

c. Increases because RHR letdown flow valve, RH-HCV-142, fails closed.

d. Increases because RHR heat exchanger flow valve, RH-HCV-758, fails closed.

QUESTION: 086 (1.00)

Which ONE of the following positions must approve overtime for personnel performing safety related functions when the overtime exceeds the administrative limits of VPAP-0103, Working Hours and Limitations?

a. Shift Supervisor.

b. Station Manager.

c. Supervisor Station Nuclear Safety.

d. Department supervisor of the overtime personnel.

QUESTION: 087 (1.00)

Given the following plant conditions:

- Plant is operating at 100% power
- The operator at the board (OATB) assumed his duties at 2400

At which ONE of the following times will the OATB exceed the maximum allowed time for CONTINUOUSLY performing his primary duties?

a. 0800.

b. 1000.

c. 1200.

d. 1400.

QUESTION: 088 (1.00)

An operating procedure contains the following step instruction:

"OTO 3 | 6.3.2 Open drain valve 1-XX-999"

The above step instruction also has a line drawn through the step.

Which ONE of the following explains the requirement for performing this step within the procedure?

a. Do NOT perform this step.

b. Perform the step one time only.

c. Perform the step repeatedly 3 times.

d. Perform as the third one time operations step.

QUESTION: 089 (1.00)

The unit has entered Technical Specification 3.0.1, which ONE of the following is required to be IMMEDIATELY notified of this entry?

a. NRC.

b. Assistant Station Manager (O&M).

c. Assistant Station Manager (NS&L).

d. Shift Technical Advisor.

QUESTION: 090 (1.00)

Which ONE of the following is exempt from being removed from the control room by the on-shift licensed reactor operator when the unit is at power?

a. The on-coming SRO.

b. The NRC resident inspector.

c. The Station Manager.

d. The on-shift reactor operator trainee.

QUESTION: 091 (1.00)

Which ONE of the following identifies who may place a Temporary Electrical Release Tag?

a. Qualified Operator.

b. Electrical Maintenance.

c. Electrical Maintenance personnel or Substation personnel.

d. Station or contractor personnel

QUESTION: 092 (1.00)

When clearing a tag-out that was issued to a Site Services Foreman, which ONE of the following is required/responsible to authorize clearing of the tag-out in addition to the Shift Supervisor?

a. Operations Manager On Call.

b. A Test Engineering Representative.

c. The worker performing maintenance.

d. Maintenance Superintendent.

QUESTION: 093 (1.00)

Which ONE of the following conditions requires the SRO to direct the performance of an Indirect Verification or Simultaneous Verification?

a. Replacement of blown fuses during an emergency.

b. Isolating letdown during a small break LOCA condition.

c. Valve manipulation in an area where a dose equivalent of 14 rem/hour could be received.

d. Valve manipulation in an area where a dose equivalent of 150 mrem/hour could be received and a Health Physics Technician is NOT available for escort.

QUESTION: 094 (1.00)

A completed procedure contains hand written number "2" within a circle adjacent to a conditional step in the procedure.

Which ONE of the following statements describes the reason for the number "2" in the circle?

a. The number "2" refers to a remark made on the completed operations procedure routing sheet.

b. The number "2" refers to a remark made on the bottom of the page of the completed procedure.

c. The number "2" defines the number of times the conditional step was attempted before the step was marked "N/A"

d. The number "2" defines the number of times the conditional step was attempted before the step was successfully performed.

QUESTION: 095 (1.00)

An emergency has occurred requiring entry into the EOP network, which ONE of the following is required to be the EOP reader if the affected Unit Shift Supervisor is unavailable?

a. The Station Emergency Manager.

b. The Shift Technical Advisor.

c. The Operator at the Controls.

d. Any off-shift licensed SRO.

QUESTION: 096 (1.00)

Given the following plant conditions:

- Unit 2 is in a refueling shutdown, and shuffling fuel assemblies in the spent fuel pit.
- The Unit 2 source range protection channel N-31 is out of service and being worked by the I&C Department.
- Unit 1 is in Hot Shutdown Condition.
- Unit 1 is scheduled to be in Cold Shutdown by the end of the next shift.

The I&C department has presented a work request to work on a Unit 1 power range protection channel.

Which ONE of the following statements describes the earliest start time for working the Unit 1 power range protection channel?

a. Upon completion of the fuel shuffle.

b. Upon completion of the work on the Unit 2 source range channel.

c. After Unit 1 has been placed in Intermediate Shutdown.

d. Immediately, upon SRO approval.

QUESTION: 097 (1.00)

An MOV is being returned to service following motor replacement of the motor operator, which ONE of the following valve positions should the MOV be in before the MOV circuit breaker is re-closed?

a. Fully closed.

b. Fully open.

c. Midstroke.

d. As tagged with motor operator disconnected.

QUESTION: 098 (1.00)

If you live at the outer boundary of the low population zone, which ONE of the following lists your maximum permissible radiation exposures to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage)?

a. 5 rem whole body or 100 rem to the thyroid from iodine exposure.

b. 15 rem whole body or 200 rem to the thyroid from iodine exposure.

c. 25 rem whole body or 300 rem to the thyroid from iodine exposure.

d. 75 rem whole body or 500 rem to the thyroid from iodine exposure.

QUESTION: 099 (1.00)

Which ONE of the following exposure limits shall NOT BE EXCEEDED for a planned special exposure (PSE)?

a. 5 rem/year total effective dose equivalent (TEDE) and 25 lifetime.

b. 15 rem/year total effective dose equivalent (TEDE) and 25 lifetime.

c. 15 rem/year total effective dose equivalent (TEDE) and 75 lifetime.

d. 75 rem/year total effective dose equivalent (TEDE) and 250 lifetime.

QUESTION: 100 (1.00)

Given the following plant conditions:

- The dose rate from a small valve is 6 R/hr at 6 inches away
- You are working at a distance of 4 feet from the valve
- Your TEDE quarterly exposure is 1.0 rem
- Your TEDE annual exposure is 3.5 rem

Which ONE of the following times describes how LONG you can work BEFORE you must obtain an extension of your total dose equivalent exposure (TEDE)?

a. 5 hours 20 minutes.

b. 10 hours 40 minutes.

c. 13 hours 36 minutes.

d. 16 hours 00 minutes.

QUESTION: 101 (1.00) Question deleted

If today's date is August 4, 1997, which ONE of the following describes the latest expiration date for a special radiation work permit (RWP) issued today?

a. August 7, 1997.

b. August 11, 1997.

c. August 18, 1997.

d. September 3, 1997.

QUESTION: 102 (1.00)

Which ONE of the following events can CAUSE CREATION of a very high radiation area?

a. Excessive RCP seal leakage.

b. Shutting the RCS loop isolation valves.

c. Pulling the in-core instrumentation thimbles at the start of reactor disassembly.

d. Dropping a new fuel assembly while it is being removed from the shipping canister.

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

EQUATIONS

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

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

$Q = UA\Delta T$

$\dot{Q} \propto \dot{m}^3_{\text{Nat Circ}}$

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

$\Delta T \propto \dot{m}^2_{\text{Nat Circ}}$

$SUR = 26.06/\tau$

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

$\rho = \frac{\ell^*}{\tau} + \frac{\overline{\beta}}{1 + \lambda_{eff}\tau}$

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

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

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

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

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

$I_1 = (D_1)^2 = I_2(D_2)^2$

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

$M = CR_2/CR_1$

$DRW \propto \phi^2_{tip}/\phi^2_{avg}$

$SDM = (1 - K_{eff})/K_{eff}$

$\dot{m} = PAV - F = PA$

$W_{pump} = \dot{m}\Delta P\upsilon$

$$\text{Cycle Efficiency} = \frac{\text{Net Work (out)}}{\text{Energy (in)}}$$

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

CONVERSIONS

1 Curie = 3.7×10^{10} dps

1 hp = 2.54×10^3 Btu/hr

1 Btu = 778 ft-lbf

°C = 5/9(°F - 32)

1 kg = 2.21 lbm

1 Mw = 3.41×10^6 Btu/hr

°F = 9/5°C + 32

1 gal = 8.35 lbm

1 ft^3 = 7.48 gal

ANSWER: 001 (1.00)

b.

REFERENCE:

Lesson Plan ND-93.3-LP-3, ND-93.3-H/T-3.4
LP OBJECTIVE B.

--BOTH--

KA 001000A102 [3.1/3.4]
001000A102 ..(KA's)

ANSWER: 002 (1.00)

d.

REFERENCE:

Lesson Plan ND-93.3-LP-3, Rev. 9, Page 22 & ND-93.3-H/T-3.11
LP OBJECTIVE G.
--BOTH--
KA 001000G007 [3.2/3.3]
001000G007 ..(KA's)

ANSWER: 003 (1.00)

a.

REFERENCE:

Lesson Plan ND-93.3-LP-3, Rev. 9, Page 12
LP OBJECTIVE D.
--BOTH--

KA 001000K202 [3.6/3.7]
001000K202 ..(KA's)

ANSWER: 004 (1.00)

a.

REFERENCE:

Technical Specification BASIS TS 3.12-14
ND-93.3-LP-3 OBJECTIVE J.
--SRO ONLY--

K/A 014000G006 [2.3/3.7]
014000G006 ..(KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

Lesson Plan ND-88.1-LP-6, Rev. 10, ND-88.1-H/T-6.14
LP OBJECTIVE F.

--BOTH--

K/A 003000K110 [3.0/3.2]
003000K110 ..(KA's)

ANSWER: 006 (1.00)

c.

REFERENCE:

ND-88.3-LP-2, Rev. 8, Page 23
LP OBJECTIVE E

--BOTH--

K/A 004000K405 [3.3/3.2]
004000K405 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

ND-88.3-LP-2, Rev. 8, Page 8
LP OBJECTIVES B. & C.

--BOTH--

K/A 004000K123 [3.4/3.7]
004000K123 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

ND-88.3-LP-2. Rev. 8, Pages 15 & 16
LP OBJECTIVE C.

--BOTH--

K/A 004020A305 3.2/3.0
004020A305 ..(KA's)

ANSWER: 009 (1.00)

c.

REFERENCE:

Lesson Plan ND-91-LP-2, Rev.10, p.19
LP OBJECTIVE C
---BOTH---

K/A 013000A202 [4.3/4.5]
013000A202 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

ND-91-LP-3, Rev. 10, Page 3
LP OBJECTIVE G.

--BOTH--

K/A 013000K118 [3.7/4.1]
013000K118 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

ND-93.2-LP-2, Rev. 7, ND-93.2-AIA-2.1, Page 5
LP OBJECTIVE D.
--BOTH--
K/A 015000A403 [3.8/3.9]
015000A403 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

ND-93.2-LP-3, Rev. 7, Page 8
LP OBJECTIVE C.

-- BOTH--

K/A 015000K502 [2.7/2.9]
015000K502 ..(KA's)

ANSWER: 013 (1.00)

d.

REFERENCE:

ND-93.2-LP-4, Rev. 11, Page 33
LP OBJECTIVE G.

--BOTH--

K/A 015000K604 [3.1/3.2]
015000K604 ..(KA's)

ANSWER: 014 (1.00)

d.

REFERENCE:

ND-88.4-LP-6, Rev. 4, Page 5
LP OBJECTIVE A.

--BOTH--

K/A 022000A102 [3.6/3.7]
022000A102 ..(KA's)

ANSWER: 015 (1.00)

d.

REFERENCE:

ND-91-LP-5, Rev. 10, Page 6
LP OBJECTIVE B.

--SRO ONLY--

K/A 026000G008 [3.6/3.7]
026000G008 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

ND-89.3-LP-4, Rev. 13, Page 15
LP OBJECTIVE E.

--BOTH--

K/A 061000K302 [4.2/4.4]
061000K302 ..(KA's)

ANSWER: 017 (1.00)

d.

REFERENCE:

ND-92.4-LP-1, Rev. 4, Page 23
LP OBJECTIVE E.

--BOTH--

K/A 071000K405 [2.7/3.0]
071000K405 ..(KA's)

ANSWER: 018 (1.00)

c.

REFERENCE:

ND-93.5-L.P-3, Rev. 5, Page 18
ND-92.4-LP-1 OBJECTIVE B.

--BOTH--

K/A 071000K106 [3.1/3.1]
071000K106 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

ND-90.3-LP-6, Rev. 7, ND-90.3-H/T-6.3
LP OBJECTIVE B.
--SRO ONLY--
K/A 063000K201 [2.9/3.1]
063000K201 ..(KA's)

ANSWER: 020 (1.00)

d.

REFERENCE:

LP ND-88.1-LP-7, Rev. 8, Page 7
LP OBJECTIVE A.
--BOTH--
K/A 002000K409 [3.2/3.2]
002000K409 ..(KA's)

ANSWER: 021 (1.00)

d.

REFERENCE:

ND-88.1-LP-9, Rev. 7, Page 21
Steam Tables
LP OBJECTIVE H.
--BOTH--
K/A 002000K509 [3.7/4.2]
002000K509 ..(KA's)

ANSWER: 022 (1.00)

c.

REFERENCE:

ND-88.1-LP-7, Rev. 8, Page 17
LP OBJECTIVE D.

--BOTH--

K/A 002000G010 [3.4/3.9]
002000G010 ..(KA's)

ANSWER: 023 (1.00)

b.

REFERENCE:

ND-91-LP-2, Rev. 10, Page 14
LP OBJECTIVE C.

--BOTH--

K/A 006030A102 [4.2/4.3]
006030A102 ..(KA's)

ANSWER: 024 (1.00)

a.

REFERENCE:

ND-91-LP-2, Rev. 10, Pages 19 and 20
LO OBJECTIVE D.

--BOTH--

K/A 006000G005 [3.5/4.2]
006000G005 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

ND-93.3-LP-5, Rev. 7, Pages 7 & 8
LP OBJECTIVE B.
10 turn potentiometer; pressure control range is 1700 - 2500 psig;
0 to 100% on controller corresponds to +/- 200 # from setpoint.
5.68/10 = X/[2500-1700]; X = [0.568][800] = 454.4 = ~ 455; 1700 +
455 = 2155 psig

--BOTH--

K/A 010000A302 [3.6/3.5]
010000A302 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

ND-93.3-LP-5, Rev. 7, Page 5
LP OBJECTIVE A.

--BOTH--

K/A 010000K201 [3.0/3.4]
010000K201 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

ND-93.3-LP-7, Rev.5, Page 4
LP OBJECTIVE A.
547 degrees F = 22.2%; 573 degrees F = 53.7%; 53.7% - 22.2% =
31.5%; 573 F - 547 F = 26 F;
563 F - 547 F = 16 F; 16 F/ 26 F = X/31.5%; X = [16][31.5%]/26 =
19.38% = 19.4%;
22.2% + 19.4% = 41.6%

--BOTH--

K/A 011000K604 [3.1/3.1]
011000K604 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

ND-93.3-LP-10, Rev. 5, Pages 9 - 11 and ND-93.3-AIA-10.1 Page 3
LP OBJECTIVE C.

--BOTH--

K/A 012000K603 [3.1/3.5]
012000K603 ..(KA's)

ANSWER: 029 (1.00)

c.

REFERENCE:

ND-93.3-L.P-2, Rev. 7, Page16
LP OBJECTIVE G.

--BOTH--

K/A 016000A203 [3.0/3.3]
016000A203 ..(KA's)

ANSWER: 030 (1.00)

b.

REFERENCE:

ND-91-LP-5, Rev.10, Page 20
LP OBJECTIVE B.

--SRO ONLY--

K/A 027000A401 [3.3/3.3]
027000A401 ..(KA's)

ANSWER: 031 (1.00)

d.

REFERENCE:

ND-92.5-L.P-6, Rev. 6, ND-92.5-H/T-6.4
LP OBJECTIVE B.

--BOTH--

K/A 033000K105 [2.7/2.8]
033000K105 ..(KA's)

ANSWER: 032 (1.00)

a.

REFERENCE:

ND-92.5-LP-4, Rev. 5, Page 8
LP OBJECTIVE B.

--SRO ONLY--

K/A 034000G009 [3.0/3.0]
034000G009 ..(KA's)

ANSWER: 033 (1.00)

c.

REFERENCE:

ND-89.1-LP-2, Rev. 12, Pages 15 & 16
Technical Specification 3.3-1, 05-31-95, Amendment Nos. 199 and 199
LP OBJECTIVE C.
(60 / 100) (1500 psig) = 900 psig

--BOTH--

K/A 035010A102 [3.5/3.8]
035010A102 ..(KA's)

ANSWER: 034 (1.00)

c.

REFERENCE:

ND-89.1-LP-2, Rev. 12, Page 11
LP OBJECTIVES C. & F.
Setpoint is 38% at 20% power; Setpoint is 109% at 100% power.
109% - 38% = 71%; 100% - 20% = 80%;
[30%-20%]/80% = X/71%; X = 710%/80 = 8.9%; 38% + 8.9% =~ 47%.

--BOTH--

K/A 039000G012 [2.7/2.8]
039000G012 ..(KA's)

ANSWER: 035 (1.00)

d.

REFERENCE:

ND-90.3-LP-1, Rev. 8, Page 38
LP OBJECTIVE F.

--BOTH--

K/A 064000A401 [4.0/4.3]
064000A401 ..(KA's)

ANSWER: 036 (1.00)

b.

REFERENCE:

ND-88..4-LP-2, Rev. 6, Pages 25 through 28
LP OBJECTIVE E.

--SRO ONLY--

K/A 103000K303 [3.7/4.1]
103000K303 ..(KA's)

ANSWER: 037 (1.00)

b.

REFERENCE:

ND-88.2-LP-1, Rev. 5, Pages 4 and 5
LP OBJECTIVE B.

--BOTH--

K/A 005000K109 [3.6/3.9]
005000K109 ..(KA's)

ANSWER: 038 (1.00)

d.

REFERENCE:

ND-88.1-LP-3, Rev. 9, Page 19
LP OBJECTIVE C.

--BOTH--

K/A 007000G004 [2.9/3.1]
007000G004 ..(KA's)

ANSWER: 039 (1.00)

a.

REFERENCE:

ND-88.5-LP-1, Rev. 13, Page 6
LP OBJECTIVE B.
Question used on the 1993/09/20 exam
--BOTH--

K/A 008000K104 [3.3/3.3]
008000K104 ..(KA's)

ANSWER: 040 (1.00)

a.

REFERENCE:

ND-89.1-LP-3, Rev, 3, Pages 18 & 19
LP OBJECTIVE D.

--BOTH--

K/A 041020G007 [2.8/3.0]
041000G007 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

0-AP-1.00, ROD CONTROL SYSTEM MALFUNCTION, Rev. 5, Page 2 of 5
ND-93.3-LP-3, Rev. 9, LP OBJECTIVE I.

--SRO ONLY--

K/A 000001G010 [3.9/4.0]
000001G010 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

ND-95.1-LP-5, Rev 5, Pages 23, 24
ND-95.1-H/T-5.9, ND-95.1-H/T-5.17
LP OBJECTIVE H.

--SRO ONLY--

K/A 000001K103 [3.9/4.0]
000001K103 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

ND-95.1-LP-5, Rev. 5, Pages 10 & 11
LP OBJECTIVE F.

--SRO ONLY--

K/A 000003K304 [3.8/4.1]
000003K304 ..(KA's)

ANSWER: 044 (1.00)

c.

REFERENCE:

ND-95.1-LP-5, Rev. 5, Page 4
LP OBJECTIVE F.

--SRO ONLY--

K/A 000003G001 [3.1/3.6]
000003G001 ..(KA's)

ANSWER: 045 (1.00)

b.

REFERENCE:

ND-93.3-LP-3, Rev. 9, Page 31
LP OBJECTIVE J.

--BOTH--

K/A 000005G003 [3.1/3.6]
000005G003 ..(KA's)

ANSWER: 046 (1.00)

a.

REFERENCE:

ND-93.2-LP-7, Rev. 3, Page 13
LP OBJECTIVE E.
ND-95.1-LP-5, Rev. 5, OBJECTIVE I.

--BOTH--

K/A 000005A201 [3.3/4.1]
000005A201 ..(KA's)

ANSWER: 047 (1.00)

a.

REFERENCE:

ND-95.3-LP-10, Rev. 8, Page 8
LP OBJECTIVES C.

--SRO ONLY--

K/A 000011A105 [4.3/3.9]
000011A105 ..(KA's)

ANSWER: 048 (1.00)

d.

REFERENCE:

ND-95.2-LP-7, Rev. 4, Page 17
LP OBJECTIVE D.

--SRO ONLY--

K/A 000011A210 [4.5/4.7]
000011A210 ..(KA's)

ANSWER: 049 (1.00)

c.

REFERENCE:

ND-95.1-LP-3, Rev. 4, Page 14
LP OBJECTIVE B.

--BOTH--

K/A 000015K101 [4.4/4.6]
000015K101 ..(KA's)

ANSWER: 050 (1.00)

a.

REFERENCE:

ND-95.1-LP-3, Rev. 4, Page 7
LP OBJECTIVE A.

--BOTH--

K/A 000015A108 [3.0/2.9]
000015A108 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

ND-88.3-LP-9, Rev. 4, Pages 27 and 28
LP OBJECTIVE D.

--BOTH--

K/A 000024K201 [2.7/2.7]
000024K201 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

ND-88.5-LP-1, Rev. 13, Pages 19 and 20
LP OBJECTIVE D.

--BOTH--

K/A 000026K303 [4.0/4.2]
000026K303 ..(KA's)

ANSWER: 053 (1.00)

d.

REFERENCE:

ND-93.3-LP-5, Rev. 7, Page 12
LP OBJECTIVE C.

--SRO ONLY--

K/A 000027A215 [3.7/4.0]
000027A215 ..(KA's)

ANSWER: 054 (1.00)

d.

REFERENCE:

ND-95.3-LP-36, Rev. 7, Page 8
LP OBJECTIVE B.
--SRO ONLY--
K/A 000029G012 [4.1/4.2]
000029G012 ..(KA's)

ANSWER: 055 (1.00)

b.

REFERENCE:

ND-95.3-LP-36, Rev. 7, Page 14
LP OBJECTIVE C
--SRO ONLY--
K/A 000029K312 [4.4/4.7]
000029K312 ..(KA's)

ANSWER: 056 (1.00)

c.

REFERENCE:

ND-95.2-LP-3, Rev. 4, Page 5
LP OBJECTIVE A.

--BOTH--

K./A 000040G011 [4.1/4.3]
000040G011 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

ND-95.3-LP-7, Rev. 12, Page 27
LP OBJECTIVE B.
--BOTH--
K/A 000040K304 [4.5/4.7]
000040K304 ..(KA's)

ANSWER: 058 (1.00)

a.

REFERENCE:

ND-95.1-LP-6, Rev. 6, Page 7
LP OBJECTIVE B.
--BOTH--

K/A 000051K301 [2.8/3.1]
000051K301 ..(KA's)

ANSWER: 059 (1.00)

c.

REFERENCE:

ND-95.1-LP-8, Rev. 4, Page 8
LP OBJECTIVE A.

--BOTH--

K/A 000056A277 [4.1/4.4]
000056A277 ..(KA's)

ANSWER: 060 (1.00)

c.

REFERENCE:

ND-95.2-LP-8, Rev. 3, Page 8
LP OBJECTIVE B.

--BOTH--

K/A 000055A204 [3.7/4.1]
000055A204 ..(KA's)

ANSWER: 061 (1.00)

d.

REFERENCE:

ND-90.3-LP-5, Rev. 10, Page 18
LP OBJECTIVE F.

--BOTH--

K/A 000057K301 [4.1/4.4]
000057K301 ..(KA's)

ANSWER: 062 (1.00)

c.

REFERENCE:

ND-95.6-LP-3, Rev. 4, Page 21
LP OBJECTIVE G.

--BOTH--

K/A 000067A204 [3.1/4.3]
000067A204 ..(KA's)

ANSWER: 063 (1.00)

d.

REFERENCE:

ND-92.2-LP-1, Rev. 5, Page 37
LP OBJECTIVE F.
Surry examination bank (stem and distractors modified)

--BOTH--

K/A 000067G011 [3.8/4.0]
000067G011 ..(KA's)

ANSWER: 064 (1.00)

c.

REFERENCE:

ND-95.6-LP-3, ND-95.6-H/T-3.3, and 0-FCA-1.00, Para 1. of ATTACHMENT 1.
LP Objective D.

--BOTH--

K/A 000068A121 [3.9/4.1]
000068A121 ..(KA's)

ANSWER: 065 (1.00)

d.

REFERENCE:

ND-95.3-LP-48, Rev. 1, Page 6
LP OBJECTIVE B.

--SRO ONLY--

K/A 000069G011 [4.0/4.2]
000069G011 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

ND-95.4-LP-3, Rev. 1, Page 4
LP OBJECTIVE A.

--BOTH--

K/A 000074A207 [4.1/4.7]
000074A207 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

ND-95.3-LP-38, Rev. 6, Pages 16 & 17
LP OBJECTIVE D.

--BOTH--

K/A 000074G011 [4.5/4.6]
000074G011 ..(KA's)

ANSWER: 068 (1.00)

a.

REFERENCE:

ND-95.3-LP-3, Rev. 12, Pages 9 and 27
LP OBJECTIVE C.

--BOTH--

K/A 000007G012 [3.8/3.9]
000007G012 ..(KA's)

ANSWER: 069 (1.00)

b.

REFERENCE:

ND-95.3-LP-3, Rev. 12, Pages 15 and 16
LP OBJECTIVE B.

--BOTH--

K/A 000007K301 [4.0/4.6]
000007K301 ..(KA's)

ANSWER: 070 (1.00)

c.

REFERENCE:

NC-95.3-LP-3, Rev. 12, Page 17
LP OBJECTIVE C.

--BOTH--

K/A 000007A108 [4.4/.4.3]
000007A108 ..(KA's)

ANSWER: 071 (1.00)

a.

REFERENCE:

ND-88.1-LP-3, Rev. 9, Page 25
LP OBJECTIVE D.

--BOTH--

K/A 000008K101 [3.2/3.7]
000008K101 ..(KA's)

ANSWER: 072 (1.00)

b.

REFERENCE:

ND-93.3-LP-7, Rev 5, Page 9
LP OBJECTIVE C.

--SRO ONLY--

K/A 000028A202 [3.4/3.8]
000028A202 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

ND-93.3-LP-7, Rev. 5, Page 8
LP OBJECTIVE C.

--SRO ONLY--

K/A 000028A102 [3.4/3.4]
000028A102 ..(KA's)

ANSWER: 074 (1.00)

d.

REFERENCE:

ND-95.1-LP-9, Rev. 4, Page 9
LP OBJECTIVE B.

--SRO ONLY--

K/A 000065G011 [3.4/3.5]
000065G011 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

ND-95.2-LP-7, Rev. 4, Page 16
LP OBJECTIVE B.

--BOTH--

K/A 000009K203 [3.0/3.3]
000009K203 ..(KA's)

ANSWER: 076 (1.00)

b.

REFERENCE:

ND-95..2-LP-7, Rev. 4, Pages 38 and 39
LP OBJECTIVE E.

--BOTH--

K/A 000009K323 [4.2/4.3]
000009K323 ..(KA's)

ANSWER: 077 (1.00)

d.

REFERENCE:

ND-95.1-LP-5, Rev. 5, Page 28
LP OBJECTIVE H.

--RO ONLY--

K/A 000001A205 [4.4/4.6]
000001A205 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

ND-95.3-LP-53, Rev. 4, Page 6
LP OBJECTIVE B.

--BOTH--

K/A 000022K302 [3.5/3.8]
000022K302 ..(KA's)

ANSWER: 079 (1.00)

d.

REFERENCE:

ND-93.2-LP-3, Rev. 7, Page 10
LP OBJECTIVE D.

--BOTH--

K/A 000033G007 [2.7/3.1]
000033G007 ..(KA's)

ANSWER: 080 (1.00)

c.

REFERENCE:

ND-95.2-LP-6, Rev. 5, Page 13
LP OBJECTIVE B.

--BOTH--

K/A 000038A203 [4.4/4.6]
000038A203 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

ND-95.2-LP-6, Rev. 5, Pages 19, 20, and 21
LP OBJECTIVE C.

--BOTH--

K/A 000038G007 [3.6/3.8]
000038G007 ..(KA's)

ANSWER: 082 (1.00)

b.

REFERENCE:

Procedures 1-AP-16.00, Rev. 5 page 2 of 11
ND-95.2-LP-6, Rev. 5, OBJECTIVE D.

--BOTH--

K/A 000038G010 [4.1/4.2]
000038G010 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

1-AP-21.00, Loss of Main Feedwater Flow, Rev. 3, page 2 of 4
ND-95.1-LP-4, Rev. 2, OBJECTIVE F.

--BOTH--

K/A 000054G010 [3.2/3.2]
000054G010 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:

Technical Specifications, Table 3.7-1, page TS 3.7-10; and Action 5, page TS 3.7-15 (07-08-93)

--SRO ONLY--

K/A 000032G008 [2.8/3.3]
000032G008 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

0-AP-40.00, Non-Recoverable Loss of Instrument Air, Rev. 8, Attachment 1, Loss of Air - System Response, page 7 of 7.
ND-95.2-LP-12, Rev. 7, OBJECTIVE B.

--SRO ONLY--

K/A 000025K101 [3.9/4.3]
000025K101 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

VPAP-0103, Working Hours and Limitations, Rev. 3, section 6.4.2, page 11 of 15.

--SRO ONLY--

K/A 194001A103 [2.5/3.4]
194001A103 ..(KA's)

ANSWER: 087 (1.00)

c.

REFERENCE:

VPAP-0103, Working Hours and Limitations, Rev. 3, section 6.4.6, page 12 of 15

--SRO ONLY--

K/A 194001A109 [2.7/3.9]
194001A109 ..(KA's)

ANSWER: 088 (1.00)

a.

REFERENCE:

VPAP-0502, Procedure Process Control, Rev. 10, section 6.4.3, page 45 of 152

--BOTH--

K/A 194001101 [3.3/3.4]
194001A101 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

VPAP-1401, Conduct of Operations, Rev. 5, section 6.4.2.c, page 23 of 42

--SRO ONLY--

K/A 194001A105 [3.6/3.8]
194001A105 ..(KA's)

ANSWER: 090 (1.00)

b.

REFERENCE:

VPAP-1401, Conduct of Operations, Rev. 5, section 6.4.9.7, page 25 of 42

--BOTH--

K/A 194001K105 [3.1/3.4]
194001K105 ..(KA's)

ANSWER: 091 (1.00)

a.

REFERENCE:

VPAP-1402, Control of Equipment, Tag-Outs, and Tags, Rev. 4, section 6.2.8, Page 19 of 44.

--BOTH--

K/A 194001K102 [3.7/4.1]
194001K102 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

VPAP-1402, Control of Equipment, Tag-Outs, and Tags, Rev. 4, section 6.5.8, page 28 of 44

--SRO ONLY--

K/A 194001K102 [3.7/4.1]
194001K102 ..(KA's)

ANSWER: 093 (1.00)

c.

REFERENCE:

VPAP-1405, Independent and Simultaneous Verification, Rev. 3, section 6.17 and section 6.2.3, pages 12 of 22 and 14 of 22

--SRO ONLY--

K/A 194001K101 [3.6/3.7]
194001K101 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

OPAP-0002, Operations Department Procedures, Rev. 4, section 6.2.9, page 15 of 41.

--BOTH--

K/A 194001A106 [3.4/3.4]
194001A106 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

OPAP-0002, Operations Department Procedures, Rev. 4, section 6.4.2, page 23 of 41

--BOTH--

K/A 194001A102 [4.1/3.9]
194001A102 ..(KA's)

ANSWER: 096 (1.00)

b.

REFERENCE:

OPAP-0006, Shift Operating Practices, Rev. 2, section 6.11, page 15 of 16.

--SRO ONLY--

K/A 194001A112 [3.1/4.1]
194001A112 ..(KA's)

ANSWER: 097 (1.00)

c.

REFERENCE:

OPAP-0012, Valve Operations, Rev. 4, section 6.6, page 11 of 16

--BOTH--

K/A 194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 098 (1.00)

c.

REFERENCE:

ND-81.2-LP-5, Rev. 4, Page 6
LP OBJECTIVE E.

--SRO ONLY--

K/A 194001K103 [2.8/3.4]
194001K103 ..(KA's)

ANSWER: 099 (1.00)

a.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Page 9
LP OBJECTIVE C.

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

ANSWER: 100 (1.00)

a.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Pages 10 - 12
ND-81.2-H/T-3.3, LP OBJECTIVE D.

--BOTH--

(6 R/Hr)(0.5 ft)(0.5 ft) = I(4 ft)(4ft)
I = (6 R/Hr) (0.25) / (16) = 93.7 mr/hr @ 4 ft
(4 R - 3.5 R) / 93.7 mr/hr = 5 hr 20 min

K/A 194001K103 [2.8/3.4]
194001K103 ..(KA's)

ANSWER: 101 (1.00)

b.

Question deleted

REFERENCE:

ND-81.2-LP-3, Rev 6, Page 32
LP OBJECTIVE J

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

ANSWER: 102 (1.00)

c.

REFERENCE:

ND-81.2-LP-3, Rev. 6, Pages 32 and 33
LP OBJECTIVE K.

--BOTH--

K/A 194001K104 [3.3/3.5]
194001K104 ..(KA's)

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

A N S W E R K E Y

MULTIPLE CHOICE

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

A N S W E R K E Y

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

A N S W E R K E Y

092 b

093 c

094 a

095 d

096 b

097 c

098 c

099 a

100 a

~~101 b~~ Question deleted

102 c

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

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

O r g a n i z e d b y K A G r o u p

PLANT WIDE GENERICS

QUESTION	VALUE	KA
088	1.00	194001A101
095	1.00	194001A102
086	1.00	194001A103
089	1.00	194001A105
094	1.00	194001A106
087	1.00	194001A109
096	1.00	194001A112
093	1.00	194001K101
097	1.00	194001K101
092	1.00	194001K102
091	1.00	194001K102
100	1.00	194001K103
098	1.00	194001K103
101	1.00	194001K104
099	1.00	194001K104
102	1.00	194001K104
090	1.00	194001K105

PWG Total	17.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
001	1.00	001000A102
002	1.00	001000G007
003	1.00	001000K202
005	1.00	003000K110
007	1.00	004000K123
006	1.00	004000K405
008	1.00	004020A305
009	1.00	013000A202
010	1.00	013000K118
004	1.00	014000G006
011	1.00	015000A403
012	1.00	015000K502
013	1.00	015000K604
014	1.00	022000A102
015	1.00	026000G008
016	1.00	061000K302
019	1.00	063000K201
018	1.00	071000K106

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

O r g a n i z e d b y K A G r o u p

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
017	1.00	071000K405
PS-I Total	19.00	

Group II

QUESTION	VALUE	KA
022	1.00	002000G010
020	1.00	002000K409
021	1.00	002000K509
024	1.00	006000G005
023	1.00	006030A102
025	1.00	010000A302
026	1.00	010000K201
027	1.00	011000K604
028	1.00	012000K603
029	1.00	016000A203
030	1.00	027000A401
031	1.00	033000K105
032	1.00	034000G009
033	1.00	035010A102
034	1.00	039000G012
035	1.00	064000A401
036	1.00	103000K303
PS-II Total	17.00	

Group III

QUESTION	VALUE	KA
037	1.00	005000K109
038	1.00	007000G004
039	1.00	008000K104
040	1.00	041000G007
PS-III Total	4.00	
PS Total	40.00	

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

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
077	1.00	000001A205
041	1.00	000001G010
042	1.00	000001K103
044	1.00	000003G001
043	1.00	000003K304
046	1.00	000005A201
045	1.00	000005G003
047	1.00	000011A105
048	1.00	000011A210
050	1.00	000015A108
049	1.00	000015K101
051	1.00	000024K201
052	1.00	000026K303
054	1.00	000029G012
055	1.00	000029K312
056	1.00	000040G011
057	1.00	000040K304
058	1.00	000051K301
060	1.00	000055A204
061	1.00	000057K301
062	1.00	000067A204
063	1.00	000067G011
064	1.00	000068A121
065	1.00	000069G011
066	1.00	000074A207
067	1.00	000074G011
EPE-I Total	26.00	

Group II

QUESTION	VALUE	KA
070	1.00	000007A108
068	1.00	000007G012
069	1.00	000007K301
071	1.00	000008K101
075	1.00	000009K203
076	1.00	000009K323
078	1.00	000022K302
085	1.00	000025K101
053	1.00	000027A215
084	1.00	000032G008

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

O r g a n i z e d b y K A G r o u p

EMERGENCY PLANT EVOLUTIONS

Group II

QUESTION	VALUE	KA
079	1.00	000033G007
080	1.00	000038A203
081	1.00	000038G007
082	1.00	000038G010
083	1.00	000054G010
074	1.00	000065G011
EPE-II Total	16.00	

Group III

QUESTION	VALUE	KA
073	1.00	000028A102
072	1.00	000028A202
059	1.00	000056A277
EPE-III Total	3.00	
EPE Total	45.00	
Test Total	102.00	