UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-321, 50-366
License Nos.:	DPR-57, NPF-7
Report Nos.:	50-321/97-300, 50-366/97-300
Licensee:	Southern Nuclear Operating Company
Facility:	Edwin I. Hatch Nuclear Plant, Units 1 & 2
Location:	11030 Hatch Parkway Road Baxley, GA
Dates:	March 14 through March 20, 1997
Examiners:	D. Charles Payne, Chief License Examiner Jonathan H. Bartley, License Examiner James H. Moorman, III, License Examiner
Approved by:	Thomas A. Peebles, Chief, Operator Licensing and Human Performance Branch Division of Reactor Safety

Enclosure 1

EXECUTIVE SUMMARY

Edwin I. Hatch Nuclear Plant, Units 1 & 2
NRC Examination Report Nos. 50-321/97-300, 50-366/97-300

During the period March 14-20, 1997, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examiner Standards, NUREG-1021, Revision 7, Supplement 1, and as modified by the pilot program guidance of NRC Generic Letter 95-06, "Changes in the Operator Licensing Program". This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Operations

- Control room activities were observed during the examination validation week and examination administration week. The operators were found to be attentive and professional in their duties (Section O1.1).

- The examiners identified a positive finding in the prompt response of the licensee's Fix-It-Now (FIN) Program to a problem identified in the Reactor Building during the conduct of examinations (Section O1.2).

- Three Senior Reactor Operator (SRO) candidates received written examinations and operating tests. The licensee administered the written examination on March 14, and the NRC administered the operating tests March 18-19, 1997 (Section O5.1).

- The examiners identified a positive finding with the licensee's incorporation of graphs, charts and tables into the body of the written examination (Section O5.2).

- All of the candidates passed the examination. Two candidates were graded as a marginal pass on the written examination and all candidates were graded as a marginal pass on the administrative topics portion of the operating test (Section O5.3).

- Candidate Pass/Fail

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

- The examiners identified a generic performance weakness in the area of evaluating plant and equipment conditions for placing the Mode Switch to Run (Section O5.3).

- The examiners identified the use of a stand-in Shift Technical Advisor (STA) during the simulator scenarios as an impairment to clear and accurate candidate evaluation (Section O5.3).

- No violations or deviations were identified.

Report Details

Summary of Plant Status

During the period of the examinations the Unit 1 was at 100 percent power and Unit 2 was shutdown for refueling.

I. Operations

O1 Conduct of Operations

O1.1 Control Room Observation

During validation and administration of the examination, the examiners observed the conduct of operations by currently licensed operators in the control room. The Reactor Operators (ROs) were attentive to the evolutions in progress. The Senior Reactor Operators (SROs) limited personnel access for official business only, which contributed to a quiet, professional atmosphere.

O1.2 Fix-It-Now (FIN) Program

During conduct of the plant walkthrough portion of the operating test, one candidate identified that the airlock between the Unit 1 and 2 Reactor Buildings was not functioning properly (a door interlock prevents two doors from being open simultaneously). The candidate telephoned the problem to plant operators and then continued with his examination task. About 15 minutes later, the examiner and candidate passed by the airlock again and noted that members of the FIN team had already responded to and corrected the problem. The examiners considered the licensee's prompt response to the above problem as a positive finding regarding the FIN program.

O5 Operator Training and Qualifications

O5.1 General Comments

NRC examiners conducted regular, announced operator licensing initial examinations during the period March 14-20, 1997. NRC examiners administered examinations developed by two members of the Hatch training staff, under the requirements of an NRC security agreement, in accordance with the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7, Supplement 1 as modified by the pilot program guidance of NRC Generic Letter 95-06, "Changes in the Operator Licensing Program". Three SRO instant license applicants received written examinations and operating tests.

O5.2 Pre-Examination Activities

This examination represented the licensee's first attempt at developing written examinations and operating tests for the operator licensing process. In general, the examiners found that the as-submitted examination was good. The majority of

comments on the draft written exam concerned format and style changes. Of the 100 questions developed, the examiners found five to have either 1) incorrect information in the stem to support the intended correct answer or 2) had more than one correct answer. Additionally, ten other questions were found to be either 1) too easy or 2) the fourth distractor was not plausible enough to be considered a possible correct answer by the candidates. Given the general high quality of all the written questions, the examiners attributed the above weaknesses as part of the learning curve for developing NRC-style examinations. Also, the examiners positively noted that the licensee's incorporation of graphs, charts, and tables into the body of their respective questions enhanced the quality of the test.

The examiners considered the operating tests to be adequate. Originally, two Job Performance Measure (JPM) sets were developed by the licensee's exam team in anticipation of a larger number of candidates taking the tests. Each set met the guidelines of the ES, but were not found to be particularly challenging. When the number of candidates dropped to three, an enhanced JPM set was developed from the two as-submitted JPM sets. Similarly, five simulator scenarios were developed originally but only three were actually validated and used (with one other backup scenario) during the examination. These scenarios met the guidelines of the ES, but did not possess the flexibility of additional equipment and instrument malfunctions to cover contingencies for unanticipated candidate actions. These malfunctions were added to the scenarios and validated during the on-site exam review week March 3-4, 1997. Also, the examiners found that most of the equipment and instrument malfunctions were sequenced in the scenario after the major transient occurred. Consequently, it would have been difficult for the examiners to provide a fair evaluation of the candidates' skills and abilities for these manipulations and responses. For future examination development, the licensee should ensure the ES minimum equipment and instrument malfunctions are planned to occur prior to the major transient. Other malfunctions may also be implemented after the major transient to enhance or direct the course of the scenario to the desired end point.

O5.3 Examination Results and Related Findings, Observations, and Conclusions

All three SRO candidates passed the examination; however, two candidates were graded as a marginal pass on the written examination and all candidates were graded as a marginal pass on the administrative topics portion of the operating examination. Detailed candidate performance comments have been transmitted under separate cover for management review and to allow appropriate candidate remediation.

During NRC review of the written examination, question #13 was modified to test the candidates' knowledge of electrical bus 2R24-S012 loads vice bus 2R24-S011 loads as originally submitted. While conducting a post-examination analysis for generic training or knowledge deficiencies, the licensee exam developers identified that the above change had been made to the master examination and answer key but had not been changed on the candidates' version of the test. The candidates were thus tested on question #13 as it was originally submitted to the NRC. This question was valid either way it was written and therefore did not need to be deleted from the test. However, the master examination and answer key had to be corrected to reflect the as-given question and associated correct answer. This correction was recommended

by the licensee and concurred with by the NRC Chief Examiner. The examiners noted that this question did not impact the pass/fail decision on any of the candidates.

All three candidates were given administrative JPM 25025, "Shift the Mode Switch From Startup/Hot Standby to Run" to perform on the simulator. Each was given the initial condition of a plant startup in progress with the operators at Step 7.4.1 of 34GO-OPS-001-2S, "Plant Startup" and an opportunity to familiarize themselves with plant conditions on the simulator (i.e., walkdown the control panels). As part of the simulator setup, one Plant Service Water (PSW) pump and one Residual Heat Removal (RHR) pump were danger tagged out of service. Since these pumps were pieces of Technical Specification (TS) equipment, the candidates were expected to recognize this fact and apply the applicable Limiting Condition for Operation (LCO) in their determination of whether the Mode Switch could be placed in Run. Technical Specifications allow a mode change with one PSW pump out of service; however, TS do not allow a mode change with one RHR pump out of service. All candidates properly followed the startup procedure but none of the candidates properly performed this task by determining that the Mode Switch should not be placed in Run (due to the RHR pump being out of service). The examiners noted that the procedural steps for placing the Mode Switch to Run (steps 7.4.1 through 7.4.12) did not specifically address the need for compliance with TS requirements as a condition for that action. This area was considered a generic candidate performance weakness.

Based on the candidates' simulator training program, a qualified instructor was permitted to stand-in as the Shift Technical Advisor (STA) during the simulator evaluations. Despite pre-exam coaching by the Chief Examiner, the substitute STA inappropriately assisted the candidates on several occasions which biased and complicated the evaluation process. Consequently, future use of an STA during NRC exams will not be permitted without prior approval by the Region II Operator Licensing Branch Chief. This approval should be obtained prior to commencing candidate simulator training in order to avoid confusion and negative training.

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. The licensee's management representatives dissented with NRC's intention to prohibit use of a stand-in STA during future NRC examination simulator scenarios. They indicated that the logical sequence of operator licensing training would be disrupted and that possible negative training could occur. Hatch management representatives indicated that other options would be explored that addressed the NRC's concerns and would communicate these to Region II operator licensing management before initiating simulator training for licensing additional operators. The Chief Examiner stated that the licensee's proposals would be reviewed when submitted and evaluated objectively to determined if the concerns discussed in this report were adequately addressed.

The examiners asked the licensee whether any materials examined should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. A. Betsill, Assistant General Manager Plant Operations
S. M. Crosby, Operations Training Supervisor
T. L. Elton, PRB Support Coordinator
D. R. Madison, Operations Manager
C. T. Moore, Assistant General Manager Plant Support
R. S. Grantham, Acting Training and Emergency Preparedness Manager
P. H. Wells, General Manager

NRC

B. L. Holbrook, Senior Resident Inspector
E. F. Christnot, Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

NONE

Discussed

NONE

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
ES	Examiner Standards (NUREG-1021)
FIN	Fix-It-Now
JPM	Job Performance Measure
LCO	Limiting Condition for Operation
NRC	Nuclear Regulatory Commission
PSW	Plant Service Water
RHR	Residual Heat Removal
RO	Reactor Operator
SRO	Senior Reactor Operator
STA	Shift Technical Advisor
TS	Technical Specifications

SIMULATION FACILITY REPORT

Facility Licensee: E. I. Hatch Nuclear Plant

Facility Docket Nos.: 50-321 and 50-366

Operating Tests Administered on: March 18 & 19, 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
NONE	

WRITTEN EXAMINATION(S) AND ANSWER KEY(S) (SRO/RO)

Enclosure 3

EXAM TITLE: Initial License Candidate NRC Exam

EXAM NUMBER: 1

CLASS TITLE: SRO Initial License (Instant)

CLASS NUMBER: SR 95-01

AUTHOR: Beck

STUDENT NAME: ***MASTER AND KEY***

EXAM DATE: 3/14/97

START: N/A *STOP:* N/A

EXAM SCORE: N/A *PTS* N/A %

POINT VALUE: 100 points

APPROVED: RF Crandall *DATE:* 3/10/97

GRADED: N/A *DATE:* N/A

REVIEWED: N/A *DATE:* N/A

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

CANDIDATE: N/A *DATE* N/A

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given any assistance in completing the examination.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is 1.0 point.

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Ensure that your name is printed in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

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

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in you examination, leave the examination area as defined by the examiner.

1. Unit Two is operating at 100% RTP with the "A" EHC Pressure Regulator in service, when the # 4 Turbine Control Valve goes closed. SELECT the expected plant response:

a. the reactor scrams due to a turbine trip signal from the TCV closure
b. the turbine bypass valves open to control pressure
c. the EHC pressure regulator shifts to "B" controlling
d. the reactor scrams on high reactor pressure.

ANS: *b*
a is incorrect because you only get a half scram
c is incorrect because the bypass valves control pressure
d is incorrect because the bypass valve open to control pressure
NEW

KA# 241000 A2.04	***OBJ#*** 019.003.a.04	***REF*** LT-LP-01901	***COGNITIVE LVL*** 2

2. Unit One is performing a normal shutdown per 34GO-OPS-013-1S. The following parameters and values were recorded at the times listed:

	0600	0700
Reactor Pressure	485 psig	265 psig
Recirc Loop A/B temp	435°F	407°F
Rx Vessel metal temp	463°F	437°F
Bottom Head drain temp	402°F	338°F

CALCULATE the RPV cooldown rate:

a. 28°F/hr
b. 56°F/hr
c. 60°F/hr
d. 64°F/hr

ANS: *b* (convert press to psia, use steam tables to find temp, 467°F - 411°F = 56°F in 1 hour)
a incorrect because it uses recirc loop temps
c incorrect because it didn't convert to press to psia.
d incorrect because it uses bottom head drain temp.
NEW: modified from a question on the Brunswick 1995 exam.

KA# 241000 A1.22	***OBJ#*** 014.017.a.01	***REF*** LR-LP-20318	***COGNITIVE LVL*** 3

3. The 2A Emergency Diesel Generator (EDG) is in TEST and the operator has just closed the diesel output breaker to parallel the EDG to the bus, when he notices the following:

EDG Frequency	60 Hz
EDG Kilowatts	5 Kw
EDG Kilovars	4500 Kvar

Attempting to lower the Kvars on the EDG, the operator takes the SPEED ADJUST switch to lower. SELECT the EDG response to this action:

a. Frequency will decrease rapidly.
b. Kilovars will decrease rapidly.
c. The EDG will slip a pole.
d. The EDG will trip on reverse power.

ANS: d

a incorrect because frequency will be locked into the grid's frequency when in parallel
b incorrect because the speed adjust does not adjust reactive load (volt adjust does)
c incorrect because a low generator field strength is what causes a pole to slip.
NEW

KA# 264000 A4.01	***OBJ#*** 028.023.a.02	***REF*** LT-LP-02801	***COGNITIVE LVL*** 3

4. Unit Two is at 100% RTP with the following conditions:

Both Reactor Recirc Pumps are in Master-Manual Control
A fuse for the power supply to the Master Controller fails
The Master Controller ***de-energizes***.

SELECT the Reactor Recirculation System response:

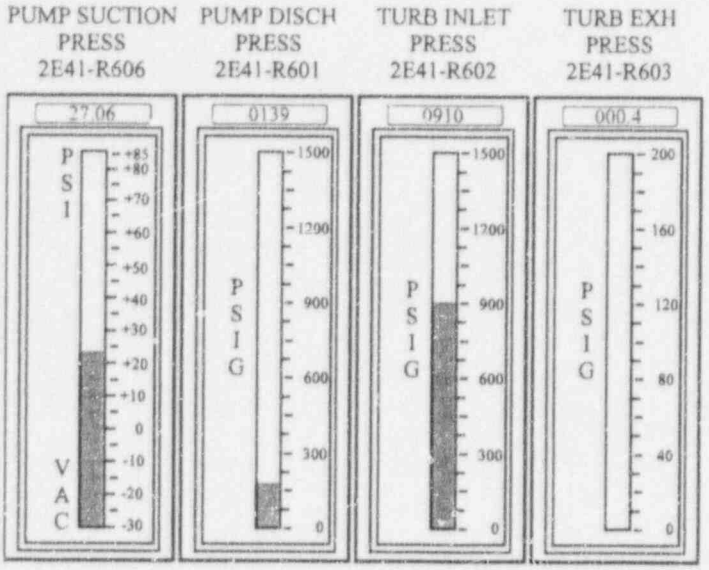
a. the controller will lock in its previous signal and maintain pump speed constant.
b. both recirc pumps will run back to approximately 45% speed.
c. both recirc pumps will run back to approximately 20% speed.
d. speed will remain constant because both scoop tubes lock up.

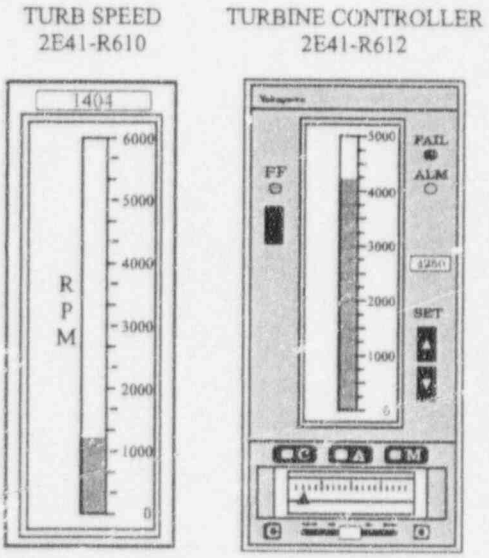
ANS: b

a incorrect because this happens on a loss of signal from controller (not power loss)
c incorrect because of clamped lower limit of 45% on master controller.
d incorrect because the speed control signal was not lost.
NEW

KA# 202002 K3.05	***OBJ#*** 004.001.a.02	***REF*** LR-LP-00401	***COGNITIVE LVL*** 3

5. HPCI has just received a valid initiation signal and the operator notices the following indications on the HPCI system (assume the ***PF*** light is ***OFF*** and the controller is in ***AUTOMATIC***):





Drawing #6

Based on the previous indications, HPCI is:

a. injecting into the RPV with all parameters normal
b. injecting into the RPV; however, turbine speed should be increased
c. *NOT* injecting into the RPV because the controller is failed
d. *NOT* injecting into the RPV and may be pumping out a broken line.

ANS: *d*

a incorrect because speed and discharge pressure are lower than normal
b incorrect because discharge pressure is lower than reactor pressure
c incorrect because the controller is maintain set flowrate.

NEW

KA# 206000 A3.01	***OBJ#*** 005.005.a.10	***REF*** LR-LP-00501	***COGNITIVE LVL*** 3

6. On Unit One, a Group 1 isolation signal and an automatic reactor scram occurred. The RCIC system automatically started and is restoring RPV level. When an operator verifies RCIC performance, the following indications are noted:

1E51-F045, Turbine Steam Supply Valve, CLOSED
1E51-F013, RCIC Injection Valve, CLOSED
RCIC turbine speed is 100 rpm and decreasing rapidly
RCIC discharge pressure is ZERO
RCIC Turbine Inlet pressure is 900 psig.
Suppression pool level is 152"

SELECT the most likely cause of these indications:

a. An isolation signal was received.
b. A turbine trip signal was received.
c. A high reactor water level signal was received.
d. A trip occurred due to suction swapping to the torus.

ANS: *c*

a incorrect because the F045 doesn't close on an isolation signal.
b incorrect because a trip signal closes the trip & throttle valve.
d the suction swap is sequenced so the suction is not lost.
NEW

KA# 217000 K4.02	***OBJ#*** 039.013.a.01	***REF*** LT-LP-03901	***COGNITIVE LVL*** 3

7. Unit Two is operating at 80% RTP with the "A" EHC Pressure Regulator in service. If the pressure input signal to the "A" pressure regulator failed ***UPSCALE***, the following would occur:

a. The "B" EHC pressure regulator light will be lit and reactor pressure will be 4 to 10 psig ***higher*** than before.
b. The "B" EHC pressure regulator light will be lit and reactor pressure will be 4 to 10 psig ***lower*** than before.
c. The main turbine bypass valves (BPVs) will open and the turbine control valves (TCVs) will close with reactor pressure remaining approximately the same.
d. The main turbine BPVs and TCVs will open and actual reactor pressure will decrease until a Group 1 isolation signal is received.

..NS: *d*

a incorrect because it only swaps to "B" if it fails downscale
b incorrect because it only swaps to "B" if it fails downscale
c incorrect because the TCVs will also open on sensed high pressure.
MODIFIED from the LRQ Bank.

KA# 241000 K6.07	***OBJ#*** 019.010.a.01	***REF*** LT-LP-01901	***COGNITIVE LVL*** 2

8. The Unit Two "A" Core Spray system has started with the following plant conditions:

Drywell pressure 22 psig
Reactor pressure 395 psig

Based on these conditions :

a. 1E21-F005A should be ***closed*** and system flow should be zero gpm.
b. 1E21-F005A should be ***open*** and system flow should be zero gpm
c. 1E21-F005A should be ***open*** and system flow should be approximately 500 gpm and increasing.
d. 1E21-F005A should be ***open*** and system flow should be 4250 gpm.

ANS: b

a incorrect because the F005A opens at ~449 psig
c incorrect because CS shutoff head is ~ 385 psig
d incorrect because CS shutoff head is ~ 385 psig
NEW

KA# 209001 A2.08	***OBJ#*** 008.002.a.05	***REF*** LT-LP-00801	***COGNITIVE LVL*** 3

9. Unit Two is shutdown with the following conditions:

Drywell Pressure 3.1 psig
All RHR pumps are RUNNING
The 2A 125 VDC Bus (2R25-S001) has ***deenergized*** after the RHR pump started.

If the operator placed the 2A RHR pump switch to ***stop***, the pump would:

a. Remain running and must be tripped locally.
b. Trip and restart once the switch is released.
c. Trip and can be restarted with the control switch.
d. Trip and must be restarted using the Start/Reset pushbutton.

ANS: d

a incorrect because the breaker receives trip signal from the B logic
b incorrect because the breaker anti-pumping logic keeps it tripped
c incorrect for pumps A and C but is correct for pumps B and D.
NEW

KA# 203000 K1.07	***OBJ#*** 006.007.a.02	***REF*** LT-LP-00701	***COGNITIVE LVL*** 3

10. A LOSP has occurred on Unit Two with the following conditions:

All 4160 V emergency buses are ***de-energized***
No EDGs are currently running
HPCI and RCIC are ***isolated***
RPV level has been steady at -145" for the past 5 minutes.
Drywell pressure is 4.2 psig.
Inhibit switches are in ***normal***.

The ADS System :

a. has initiated and 7 ADS valves should be open
b. will initiate in approximately 7 minutes when the 13 minute timer times out.
c. will initiate immediately when AC power is restored and a low pressure ECCS pump is started
d. will initiate 2 minutes after AC power is restored and a low pressure ECCS pump is started

ANS: *c*
a incorrect because no low pressure ECCS pumps are running
b incorrect because the high drywell pressure signal bypasses the 13 minute timer
d incorrect because the 2 minute timer has expired
NEW: however, similar ADS logic questions are in the exam bank.

KA# 218000 K5.01	***OBJ#*** 038.004.a.02	***REF*** LT-LP-03801	***COGNITIVE LVL*** 3

11. Unit One is operating at 100% RTP, when a spurious half scram occurs in the "A" RPS trip system with the following indications:

Illuminated Annunciators *REACTOR AUTO SCRAM SYSTEM A TRIP*
ROD DRIFT
Selected rod 22-27 has a Red drift light ***illuminated***
Its associated RPIS indication is ***blank***
The Blue scram light is ***illuminated***
No other control rods have been affected.

The status of control rod 22-27 is caused by:

a. a blown scram fuse in the "A" logic to rod 22-27
b. a blown scram fuse in the "B" logic to rod 22-27
c. a failed scram relay (deenergized) in the "A" RPS logic
d. a failed scram relay (deenergized)in the "B" RPS logic.

ANS: *b*
a incorrect because you need to deenergize the "B" side to cause the rod to scram
c incorrect because you need to deenergize the "B" side to cause the rod to scram
d incorrect because more that one rod would be affected if this occurred.
NEW

KA# 212000 K1.06	***OBJ#*** 010.016.a.02	***REF*** LT-LP-01001	***COGNITIVE LVL*** 3

12. Unit Two is operating at 100% RTP , when the "A" RPS MG Set trips. The following conditions result:

The reactor scrams
Inboard MSIVs are closed and outboard MSIVs are open
Inboard PCIVs are closed and outboard PCIVs are open
RWCU inboard isolation is closed and outboard is open
"A, C, E" APRMs all are indicating downscale.

Based on the above conditions, the plant responded:

a. as expected for a loss of RPS bus "A"
b. unexpectedly, the outboard valves should have closed instead of the inboard valves
c. unexpectedly, the RWCU inboard isolation should have remained open
d. unexpectedly, the inboard MSIVs should have remained open.

ANS: *d*
a incorrect, no scram should occur (MSIVs remain open)
b incorrect inboard gp 2&4 valves isolate
c incorrect, RWCU inboard isolation does close on loss of RPS "A".
NEW

KA# 212000 A2.01	***OBJ#*** 010.002.a.01	***REF*** LT-LP-01001	***COGNITIVE LVL*** 3

13. An ATWS condition exists on Unit Two, 2R24-S012 is ***de-energized***, and Standby Liquid Control (SLC) is required. Under these conditions, the operator may start the:

a. "A" SLC pump and fire both squib valves
b. "B" SLC pump and fire both squib valves
c. "A" SLC pump and fire only one squib valve
d. "B" SLC pump and fire only one squib valve.

ANS: *d*
a incorrect, no power to "B" pump or one squib
b incorrect, no power to one squib
d. incorrect, no power to "B" pump
NEW: similar to a Brunswick 1995 exam question.

KA# 211000 K2.01	***OBJ#*** 011.002.a.02	***REF*** LT-LP-01101	***COGNITIVE LVL*** 2

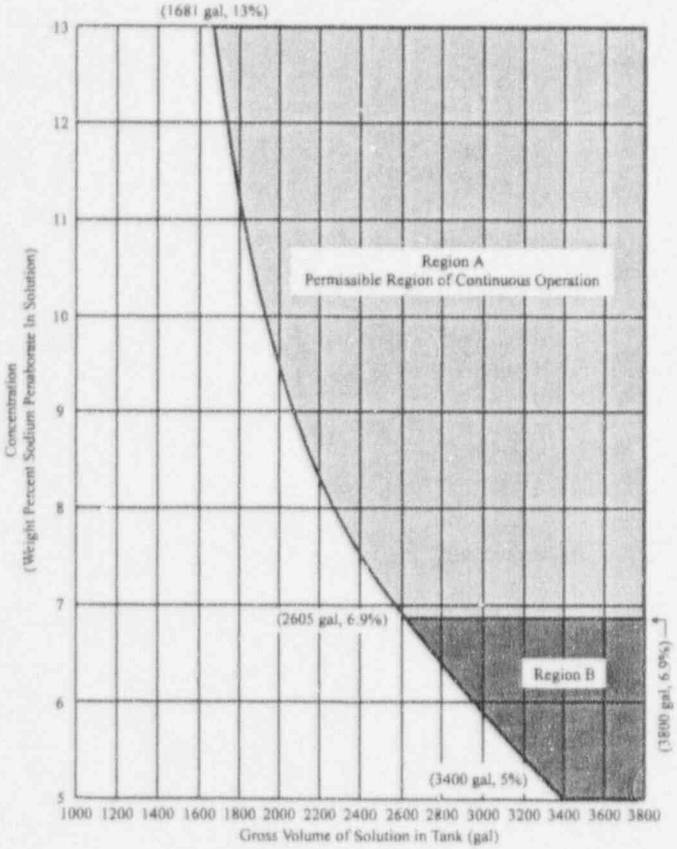
* Candidate copy of this question was not changed to reflect prep week modifications. This answer key revised to reflect as given question and corresponding correct answer.

14. Chemistry has just sampled the Unit Two SLC storage tank and the following conditions were reported to the Shift Supervisor.

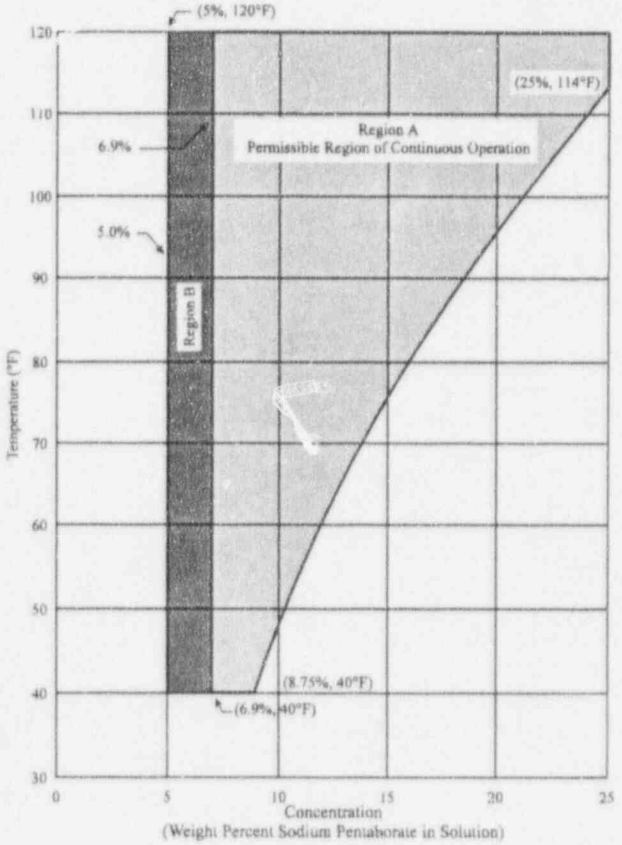
Volume	*Concentration*	*Temperature*
1800	10%	50°F

Based on these conditions the SLC system is:

a. Operable; however, only boron concentration should be increased
b. Operable; however, boron concentration and temperature should be increased
c. Inoperable and only boron concentration should be increased
d. Inoperable and boron concentration and temperature should be increased.



Sodium Penaborate Solution Volume Versus Concentration Requirements



Sodium Penaborate Solution Temperature Versus Concentration Requirements

ANS: *d*

a,b incorrect, concentration low, system INOP

c incorrect, concentration low

This question is modified from a question in the LRQ bank.

NEW

KA# 211000 Gen 2.2.23	*OBJ#* 300.006.a.25	*REF* LR-LP-01101	*COGNITIVE LVL* 3

15. A Unit 1 startup is in progress per 34GO-OPS-001-1S with IRMs and SRMs inserted. The reactor is at the point of adding heat and the IRMs are all on ***range 8***. SELECT the appropriate plant response if the "A" and "B" SRM high voltage power supply failed low:

a. a full reactor scram occurs
b. a control rod block occurs
c. no automatic actions occur
d. a half reactor scram occurs.

ANS: *c*

a incorrect because shorting links are removed during startup
b incorrect, SRMs are bypassed when IRMs are on range 8 or above
d incorrect, same reason as "a".
NEW

KA# 215004 K3.01	***OBJ#*** 012.003.a.10	***REF*** LT-LP-01201	***COGNITIVE LVL*** 2

16. Unit Two is in the process of a reactor startup with all IRMs indicating 30 on range 5 (Red scale 0-40). If the range switch for the IRM channel A is changed from position 5 to position 4, the expected IRM response would be to:

a. initiate a RPS trip signal resulting in a half scram but not a rod block
b. initiate a control rod block signal resulting in a rod block but not a scram
c. initiate both a RPS half scram and control rod block trip signal
d. change the IRM recorder indication; but, no automatic actions would occur.

ANS: *c*

a incorrect; this occurs, but so does a rod block
b incorrect; this occurs, but so does an RPS trip
d incorrect; this occurs, but so do some auto actions
NEW: similar to a previously seen question.

KA# 215003 K5.03	***OBJ#*** 012.003.c.10	***REF*** LT-LP-01202	***COGNITIVE LVL*** 3

17. Unit One is operating at approximately 12% rated power with the reactor mode switch in ***Start and Hot Standby*** position. The following indicates the present status of LPRM inputs and indicated power:

	APRM A	*APRM B*	*APRM C*	*APRM D*	*APRM E*	*APRM F*
D Level inputs	4	3	2	4	3	4
C Level inputs	3	2	4	4	3	3
B Level inputs	4	3	3	4	4	2
A Level inputs	3	2	4	3	4	5
Power Indicated	12%	11%	14%	11%	14%	10%

SELECT the appropriate plant response to this APRM configuration:

a. no automatic actions, the "B" APRM is administratively INOP.
b. a control rod block and a half reactor scram in channel "A" will occur.
c. a control rod block and a half reactor scram in channel "B" will occur.
d. a control rod block and a full reactor scram will occur.

ANS: d

a incorrect, a full scram will occur, "B" has an INOP trip
b incorrect, a full scram occurs from "B" and "C"
c incorrect, a full scram occurs from "B" and "C".
Modified from the LRQ exam bank.

KA# 215005 A1.02	*OBJ#* 012.003.d.01	*REF* LT-LP-01203	*COGNITIVE LVL* 3

18. Unit Two is operating at 45% reactor power, when the "A" Recirculation Flow Unit fails, indicating zero flow in its respective Recirculation loop. SELECT the appropriate plant response to this event:

a. The auctioneering circuit allows the "C" flow unit to provide input.
b. A reactor scram signal is generated from the flow biased circuitry.
c. A control rod block is generated from the flow biased circuitry.
d. A control rod block is generated by the flow comparator circuitry.

ANS: d

a incorrect, the auctioneering circuit allows the low signal to pass
b incorrect, the flow biased setpoint is now 59% (.58W+59%)
c incorrect, the flow biased rod block is now 47%
Modified from LRQ bank question.

KA# 215005 A3.05	*OBJ#* 012.003.f.01	*REF* LT-LP-01203	*COGNITIVE LVL* 3

19. Unit Two was operating at 100% RTP with the "A" Drywell Cooling fans in run and the "B" drywell cooling fans in standby when a LOSP and a Reactor Scram occurred. Plant conditions are presently as follows:

EDG 2A is providing power to 4160V bus 2E
EDG 2C is providing power to 4160V bus 2G
EDG 1B is supplying power to Unit 1 and 4160V 2F is ***de-energized***

Reactor pressure :	900 psig
RPV level:	-20 inches
Drywell pressure:	1.2 psig
Drywell temperature:	165°F

The status of the drywell coolit g fans is:

a. both the "A" and "B" Drywell cooling fans are running.
b. the "A" Drywell cooling fans are running, "B" fans are still in standby
c. the "B" Drywell cooling fans are running, "A" fans have no power
d. all drywell cooling fans are tripped; but, can be overridden to allow starting.

ANS *a*
b incorrect, "B" fans start on high d/w temp > 135°F
c incorrect, "A" is powered from 4160V 2E (600 C)
d incorrect, no auto trip signal has occurred.
NEW

KA# 223001 K2.10	***OBJ#*** 013.034.a.03	***REF*** LT-LP-01304	***COGNITIVE LVL*** 3

20. Unit One is operating at 100% RTP with spent fuel being moved in the spent fuel pool. Suddenly, Unit One refueling floor exhaust ventilation radiation reaches 22 mr/hr on all radiation monitors. The appropriate ventilation response to this event is:

a. Unit 1 SGT remains in standby and all secondary containment ventilation systems remain in their normal configuration.
b. Unit 1 SGT starts, Unit 1 Reactor Building ventilation isolates, and Unit 1 & 2 Refuel Floor ventilation isolates, only.
c. Unit 1 SGT starts, Unit 1 & 2 Reactor Building ventilation isolates, and Unit 1 & 2 Refuel Floor ventilation isolates, only.
d. Unit 1 & 2 SGT start, Unit 1 & 2 Reactor Building ventilation isolates, and Unit 1 & 2 Refuel Floor ventilation isolates.

ANS: *d*
a incorrect, isolation setpoint is 20 mr/hr
b incorrect, due to recent logic change both unit's SGT start and ventilation isolates
c incorrect, due to recent logic change both unit's SGT start and ventilation isolates
NEW

KA# 290001 K6.01	***OBJ#*** 037.011.a.10	***REF*** LT-LP-01303	***COGNITIVE LVL*** 3

21. Unit Two was operating at 35% RTP when all MSIVs closed and the reactor scrammed. The following occurred after the scram:

RCIC and HPCI are running
RPV level is -5" and increasing at 10"/min.
Reactor pressure peaked at 1095 psig and is currently 855 psig and decreasing at 20 psig/min.

Regarding SRVs and LLS:

a. No SRVs lifted; RCIC and HPCI are controlling reactor pressure.
b. Four SRVs lifted; RCIC and HPCI are controlling reactor pressure.
c. Four SRVs lifted; RCIC, HPCI, and one LLS valve are controlling reactor pressure.
d. Eight SRVs lifted; RCIC, HPCI, and two LLS valves are controlling reactor pressure.

ANS: *a*
b,c,d incorrect, 4 SRVs lift at 1120 psig,therefore, no SRVs lifted to actuate LLS.
NEW

KA# 239002 K4.01	***OBJ#*** 014.003.a.01	***REF*** LT-LP-01401	***COGNITIVE LVL*** 3

22. Unit One (1) is operating at 100% RTP with the 1A EDG in TEST and paralleled to the 1E 4160VAC bus. While testing the EDG, the main turbine trips. SELECT the electrical plant response to this event.

a. The EDG comes out of TEST and all 4160 VAC station service buses transfer to alternate supply.
b. The EDG comes out of TEST and all 4160 VAC station service buses de-energize.
c. The EDG remains paralleled to 4160 VAC 1E and all 4160VAC station service buses de-energize.
d. The EDG remains paralleled to 4160 VAC 1E and all 4160 VAC station service buses transfer to alternate.

ANS: *d*
a incorrect, EDG comes out of test on a LOCA or LOSP signal
b incorrect, EDG comes out of test on a LOCA or LOSP signal, buses transfer
c incorrect, buses auto transfer (can't manually transfer when in test)
NEW

KA# 262001 A3.02	***OBJ#*** 200.017.a.03	***REF*** LT-LP-02702	***COGNITIVE LVL*** 2

23. Unit Two was operating at 100% RTP when the normal breaker to 4160 VAC bus 2G tripped and the alternate breaker tied in re-energizing the bus. Regarding the status of Vital AC immediately after the transient, the system:

a. has an ***amber*** status light and is energized from the Vital AC batteries.
b. has an ***amber*** status light and is energized from its alternate supply.
c. has a ***white*** status light and is energized from its normal supply.
d. has a ***white*** status light and is energized from the Vital AC batteries.

ANS: *a*
b vital ac goes to the batteries first, then to alt on low battery volts.
c normal supply breaker trips on low volts on swap, white light out, amber on.
d white light out, amber light on.
NEW

KA# 262001 A3.03	***OBJ#*** 027.033.b.03	***REF*** LT-LP-02703	***COGNITIVE LVL*** 2

24. Unit Two is operating at 100% power with the RWLC system in three element control and the "B" level detector (C32-R606B) selected. The diaphragm in the transmitter that feeds C32-R606B ruptures, equalizing pressure across the transmitter. SELECT the appropriate plant response to this event:

a. the reactor scrams on a main turbine trip signal due to an ***invalid*** high reactor water level signal
b. the reactor scrams on a main turbine trip signal due to a ***valid*** high reactor water level signal.
c. the reactor scrams on a low reactor water level due to both RFPTs tripping.
d. the reactor scrams on low reactor water level due to both RFPTs running back.

ANS: *d*
a incorrect, the indicator fails high; but, you need more than one for the turbine trip
b incorrect, actual level will decrease
c incorrect, the indicator fails high: but, you need more than one for the turbine trip.
NEW: however, similar questions are in the exam bank.

KA# 259002 K6.05	***OBJ#*** 002.020.a.06	***REF*** LT-LP-00202	***COGNITIVE LVL*** 2

25. Unit Two is at approximately 10% RTP during a reactor startup. The operator withdraws control rod 50-19 to position 48. The following indications are noted:

Annunciators Illuminated: *ROD OVERTRAVEL*
ROD DRIFT
Rod 50-19 Four-Rod display is blank.

SELECT the required operator action:

a. Fully insert rod 50-19 and disarm the HCU electrically.
b. Immediately insert a manual reactor scram.
c. Insert the rod no more than three notches to attempt recoupling it.
d. Verify rod position, then enter substitute rod position data on RWM.

ANS: *c*
a incorrect, this action is for an inop control rod
b incorrect, this action is for a drifting out control rod
d incorrect, this action is for a failed reed switch
NEW

KA# 201003 A2.02	***OBJ#*** 200.090.A	***REF*** LT-SG-50201	***COGNITIVE LVL*** 3

26. Unit One was operating at 100% RTP when the following conditions occurred:

1B CRD pump was initially in service
A spurious reactor scram occurred
1B EDG is supplying power to the 4160 VAC 1F bus
The main turbine tripped and the 4160 VAC station service buses ***fail*** to transfer
RWL: -20" and increasing
Drywell Press: 0.7 psig and slowly increasing.

Based on the above conditions, SELECT the status of the CRD system. The CRD system tripped:

a. and can be restarted by taking the control switch to off and back to start.
b. and can be restarted once the LOCA reset pushbutton is depressed
c. on low suction pressure and can be restarted once condensate is restored
d. on undervoltage and 1A CRD pump must be started in order to restore CRD back to normal.

ANS: *a*
d,b,c incorrect, the pump has power and no LOCA signal exists
NEW

KA# 20 001 K2.01	***OBJ#*** 200.045.a.01	***REF*** LR-LP-00101	***COGNITIVE LVL*** 3

27. An ATWS has occurred on Unit Two and reactor power is approximately 19% RTP. The operator attempts to insert control rod 22-27 with the EMERGENCY-IN switch and the rod fails to move. The operator then notes the following conditions:

Drive Water D/P:	240 psig
Rx Mode Switch:	Refuel
CRD Flow:	> 100 gpm
CRD Flow Control Valves:	Closed
CRD pump:	2A and 2B Running
RWM:	Normal

Control Rod 22-27 will not move because:

a. the RWM is enforcing an insert block.
b. drive water D/P is insufficient to move the control rod
c. the CRD flow control valves are closed shutting off CRD flow to the HCU
d. there is excessive CRD flow to the HCU accumulators

ANS: *a*

d incorrect, D/P is slightly lower than normal; but, the control rod will still move
c incorrect, the closed flow control valve will pass 5 gpm (enough to move the rod)
b incorrect, doesn't matter because D/P is adequate
NEW

KA# 201002 K1.05	***OBJ#*** 001.010.a.12	***REF*** LT-LP-05401	***COGNITIVE LVL*** 3

28. A reactor startup is in progress on Unit One with power at approximately 12% RTP. An operator moves a control rod in the currently latched group to position 14. The control rod's withdraw limit is position 12 (the control rod ***did not*** double notch). Regarding the Rod Worth Minimizer (RWM):

a. the RWM is functioning properly and should enforce a withdraw block on all control rods and an insert block on all control rods except the one mispositioned.
b. the RWM is functioning properly and should display the mispositioned rod without enforcing any blocks due to being in the transition zone.
c. the RWM is malfunctioning and startup may continue once the RWM is bypassed and a second verifier is assigned to any rod movements.
d. the RWM is malfunctioning and the reactor must be scrammed due to having a control rod mispositioned below the LPSP.

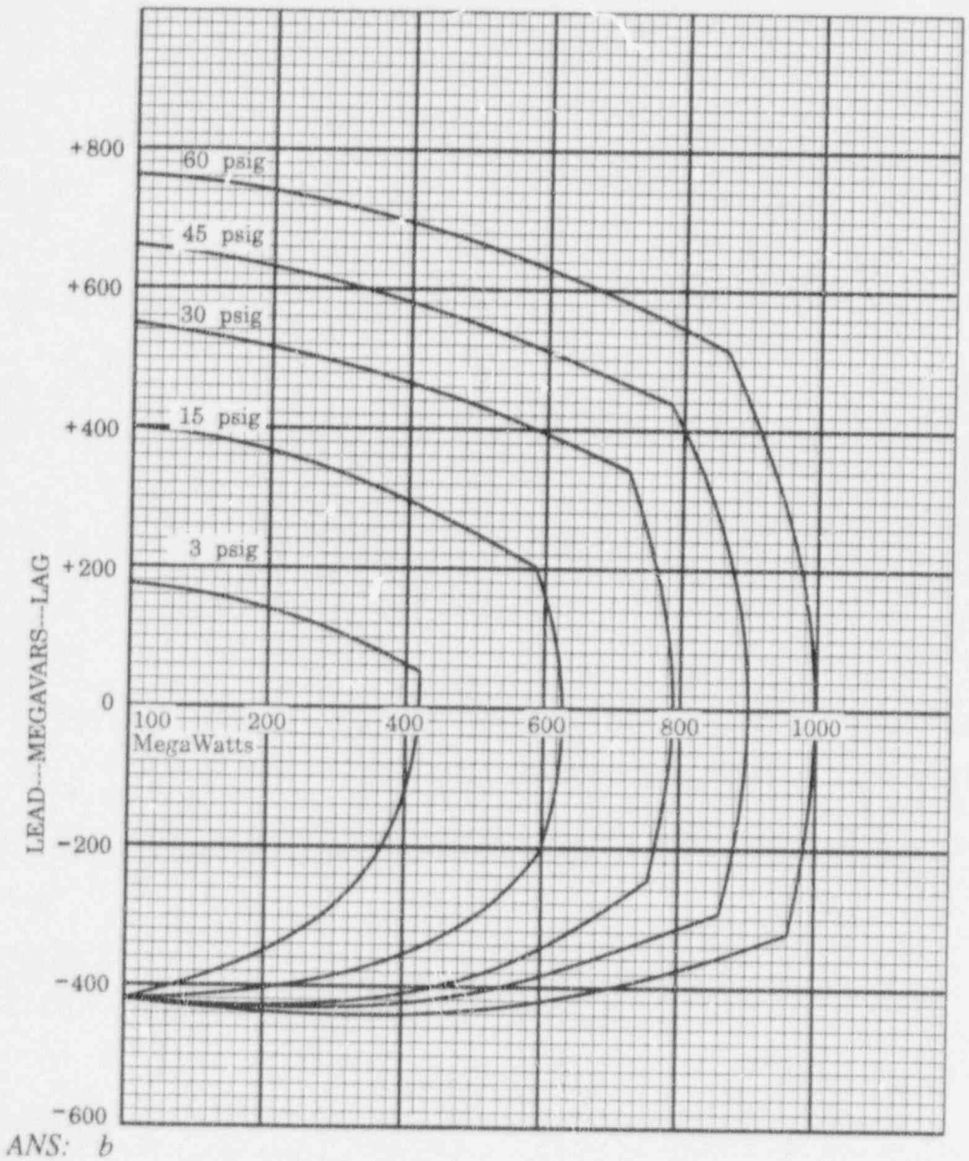
ANS: *c*

a incorrect, the RWM should not let the error be made
b incorrect, the transition zone is from 20% to 30%
d incorrect, a reactor scram is required on a drifting control rod below LPSP
NEW

KA# 201006 K5.10	***OBJ#*** 001.010.d.02	***REF*** LT-LP-05403	***COGNITIVE LVL*** 2

29. Using the Main Generator Capabilities Curve, SELECT the set of conditions that fall within the allowable limits of the curve:

	Machine Gas Pressure	*Main Generator MW*	*Main Generator MVARs*
a.	20 psig	700 MW	+300 MVARs
b.	5 psig	400 MW	+40 MVARs
c.	50 psig	850 MW	-350 MVARs
d.	10 psig	500 MW	0 MVARs



ANS: b

a,c,d incorrect (plot curve). **Note:** interpolation is not allowed on graph, e.g. if machine gas pressure is between 45 and 60 psig then the operator will drop down to the 45 psig line.

Modified from the LRQ Bank.

KA# 245000 Gen2.1.25	*OBJ#* 017.032.a.02	*REF* LR-LP-10002	*COGNITIVE LVL* 3

30. While touring the plant during an outage, an operator notices that a local Area Radiation Monitor (ARM) meter on the 130' elevation in the Reactor Building indicates zero . This ARM is:

a. indicating low due to low gamma and neutron radiation levels
b. indicating low due to low neutron radiation levels, only
c. indicating low due to low gamma radiation levels, only
d. indicating low and appears to be inoperable.

ANS: d

a,b,c incorrect, a thorium bug on the inside wall of the detector ensures that it will always indicate at least 20% 0f the first decade.

NEW

KA# 272000 A1.01	***OBJ#*** 200.030.a.11	***REF*** LT-LP-10007	***COGNITIVE LVL*** 2

31. During a low RPV level condition, ***Increasing CRD Flow During An Emergency*** has been directed per 34SO-C11-005-2S. A caution in the procedure reminds the operator to maintain CRD pump discharge pressure greater than 1180 psig.

Observing this caution will prevent pump:

a. trip due to low suction pressure
b. operation under runout conditions
c. trip due to overcurrent protection
d. discharge pressure being less than reactor pressure.

ANS: b

a,b,c incorrect, although all these things could occur, they are not the reason for this particular caution.

NEW similar to a question on the Brunswick 1995 exam.

KA# 201001 K4.12	***OBJ#*** 001.032.a.02	***REF*** LT-LP-00101	***COGNITIVE LVL*** 2

32. Unit Two is in Mode 3 and the 2A RHR pump has just been placed in ***shutdown cooling***. Suddenly, drywell pressure increases to 2.5 psig and stabilizes. SELECT the response of the 2A RHR loop to this event:

a. 2E11-F015A isolates and the 2A RHR pump runs on minimum flow
b. 2E11-F015A isolates and the 2A RHR pump runs with no flowpath
c. 2E11-F008 and 2E11-F009 isolate and the 2A RHR pump trips
d. 2E11-F008 , 2E11-F009, and 2E11-F015A isolate and the 2A RHR pump trips.

ANS: *b*
a incorrect, min flow is tagged out in SDC
c incorrect, F008&9 isolate on high Rx press.
d incorrect, F008&9 isolate on high Rx press.
NEW

KA# 205000 A3.01	***OBJ#*** 006.008.a.04	***REF*** LT-LP-00701	***COGNITIVE LVL*** 2

33. Unit Two was operating at 100% RTP when the following occurs:

The Main Turbine trips and the reactor scrams
The generator PCB's are ***CLOSED***
Position indication is ***OUT*** for DC powered RCIC valves
2E11-F015A light indication is ***OUT***.

The likely cause of this event is a loss of:

a. 125/250 VDC Switchgear "A", 2R22-S016
b. 125/250 VDC Switchgear "B", 2R22-S017
c. 125 VDC Cabinet "B", 2R25-S002
d. 125 VDC Cabinet "C", 2R25-S003.

ANS: *a*
b incorrect, the bus powers different equipment
c incorrect, cabinet is powered from "B" switchgear
d incorrect, similar conditions except the turbine doesn't trip
Modified from LRQ Bank Question.

KA# 263000 K3.03	***OBJ#*** 200.018.a.01	***REF*** LT-LP-02704	***COGNITIVE LVL*** 3

34. Unit One is in Mode 5 with the reactor mode switch in ***REFUEL*** and all control rods inserted. The refueling bridge operator grappled a fuel bundle, raised the grapple, and commenced moving the bundle to the core. As the refueling bridge started moving towards the core, it:

a. continued until it was over the core and initiated a control rod block.
b. stopped before it got to the core with no other protective actions
c. continued until it was over the core with no protective actions
d. stopped before it got to the core and initiated a control rod block

ANS: *a*
d incorrect, bridge movement is not stopped because all rods are in
b incorrect, the answer is incomplete
c incorrect, bridge movement is not stopped because all rods are in
NEW

KA# 234000 K4.02	***OBJ#*** 045.018.a.01	***REF*** LT-LP-04502	***COGNITIVE LVL*** 3

35. A LOSP has occurred on Unit One and Unit Two resulting in ***all*** 4160 VAC buses being ***de-energized*** on each unit. A fuel pool low level alarm is actuated on Unit 2 and it is reported by maintenance personnel that significant amounts of water is flowing out of the expansion gap between Unit 1 and Unit 2 Reactor Buildings. Based on these indications the crew should:

a. align N_2 from drywell pneumatics to the transfer canal seals and fill the fuel pool with condensate transfer water.
b. align N_2 from drywell pneumatics to the transfer canal seals and fill the fuel pool with fire water.
c. align N_2 from nitrogen storage bottles to the transfer canal seals and fill the fuel pool with condensate transfer.
d. align N_2 from nitrogen storage bottles to the transfer canal seals and fill the fuel pool with fire water.

ANS: *d*
a incorrect, no power to cond xfer pumps, no drywell pneumatic backup
b incorrect, no drywell pneumatic backup
c incorrect, no power to cond xfer pumps
NEW

KA# 233000 K3.02	***OBJ#*** 045.032.a.04	***REF*** LT-LP-04501	***COGNITIVE LVL*** 3

36. Unit One is operating at 100 % RTP (840 MWe) when the 8th stage feedwater heater ***low level*** alarm actuates. Initial feedwater temperature was 440°F. The following conditions are noted after the alarm comes on:

Reactor Power	102%
GMWe	825 MWe
Feedwater Temp	419°F

The most probable cause of these indications is:

a. extraction steam to the heater isolated
b. the high level dump valve has failed open
c. a heater tube has ruptured
d. the heater bypass valve is open

ANS: *b*
a incorrect, would cause GMWe to increase
c incorrect, level should be controlled by the level control system
d incorrect, GMWe would not change
NEW

KA# 239001 A1.10	***OBJ#*** 200.050.c.02	***REF*** LT-LP-01501	***COGNITIVE LVL*** 3

37. Unit Two is at 90% RTP. Condensate Pumps 2B and 2C are running and pump 2A is in standby, with its control switch in AUTO.

A loss of 4160 VAC bus 2C occurs. How will the condensate system respond?

a. Condensate pump 2B trips. Condensate pump 2A auto starts immediately when condensate booster pump suction pressure reaches 38 psig.
b. Condensate pump 2B trips. Condensate pump 2A auto starts ten (10) seconds after condensate booster pump suction pressure reaches 38 psig.
c. Condensate pump 2C trips. Condensate pump 2A auto starts immediately when condensate booster pump suction pressure reaches 38 psig.
d. Condensate pump 2C trips. Condensate pump 2A auto starts ten (10) seconds after condensate booster pump suction pressure reaches 38 psig.

ANS: *d*
b incorrect, due to ten second time delay
c incorrect, the 2B pump still has power/ten sec. time delay
a incorrect, the 2B pump still has power
NEW

KA# 256000 A3.02	***OBJ#*** 026.003.a.04	***REF*** LT-LP-00201	***COGNITIVE LVL*** 2

38. Unit Two is in the process of a reactor startup following a scram. Reactor power is at 32% RTP. The operator selects a control rod and moves it one out notch when a rod block occurs. The following indications were noted when the rod block occurred: (Assume the RWM is ***not*** in sequence control)

RWM:	indicated select error
RBM:	indicated 116%
APRM:	indicated 41%
Core Flow:	indicated 30%

The most probable cause of the control rod block is:

a. RBM upscale block
b. RWM withdraw block
c. APRM flow biased rod block
d. APRM fixed rod block.

ANS: *a*
b incorrect, RWM above LPAP
c incorrect, power below setpt (.58W+47%)
d incorrect, power above setpt; however, bypassed when the mode switch is in RUN
NEW

KA# 215002 K1.03	***OBJ#*** 012.003.e.01	***REF*** LT-LP-01203	***COGNITIVE LVL*** 3

39. During a startup on Unit Two with the mechanical vacuum pump in service and the Offgas mode switch in BYPASS, a simultaneous downscale failure of BOTH Posttreatment Radiation Monitors occurs. A few minutes later the crew notices that main condenser vacuum is slowly decreasing. The cause of this loss of vacuum is:

a. The mechanical vacuum pump tripped and isolated
b. The steam packing exhausters tripped and isolated
c. The main stack isolation valve is closed (F057)
d. The charcoal bed bypass valve closes (F043).

ANS: *c*
a incorrect, trips and isolates from different monitors
b incorrect, trips and isolates from different monitors
d incorrect, this occurs when the mode switch is in auto.
NEW

KA# 271000 K6.02	***OBJ#*** 031.001.a.06	***REF*** LT-LP-03101	***COGNITIVE LVL*** 3

40. A loss of air to the lube oil storage area deluge system causes it to actuate. Fire main pressure subsequently drops to 92 psig. SELECT the appropriate response of the fire system:

	Jockey Pump	*Electric Pump*	*Diesel A Pump*	*Diesel B Pump*
a.	on	off	off	off
b.	on	on	off	off
c.	on	on	on	off
d.	on	on	on	on

ANS: *c*

a,b,d incorrect, starting setpoints JP 120psig EP 110 psig, DA 100 psig, DB 90 psig

NEW

KA# 286000 A 4.06	***OBJ#*** 036.020.b.01	***REF*** LT-LP-03601	***COGNITIVE LVL*** 1

41. A LOSP has occurred on Unit One. Upon verification of proper 1A Emergency Diesel Generator operation, the operator notices the following:

Blue 4160 VAC bus pot lights ***extinguished***
White EDG pot lights ***illuminated***
EDG frequency 60 HZ
EDG output breaker ***open***
LOSP lockout ***tripped***
Normal and alternate supply breakers ***open***
LOSP annunciator actuated, ***no other annunciators have activated***.

The 1A EDG is:

a. Running; but, can not be tied to the bus because a fault exists on the bus.
b. Running; but can not power the bus due to the 86 lockout being tripped.
c. Running and not tied; but, can be tied by turning on the sync. switch and closing the EDG output breaker.
d. Running and not tied; but can be auto tied by reducing EDG frequency to below 57.5 HZ and brought back to 60HZ.

ANS: *d*

a incorrect, no indications of a bus fault exists
b incorrect, EDG is not tied to the bus
c incorrect, sync acceptor relay not satisfied for the breaker manual switch

NEW

KA# 295003 A2.03	***OBJ#*** 028.025.a.01	***REF*** LR-LP-02801	***COGNITIVE LVL*** 3

42. A transient has occurred with the following indications on both units:

Unit 1		***Unit 2***	
SAT 1C & 1D deenergized		SAT 2C & 2D deenergized	
RWL:	-110"	RWL:	-45"
DW press:	1.4 psig	DW press:	2.7 psig

Regarding the 1B Emergency Diesel Generator, it is: (Assume Unit 1 has control of the 1B EDG)

a. Running and tied to 4160 VAC bus 1F
b. Running and tied to 4160 VAC bus 2F
c. Running, but ***not*** tied to any 4160 VAC buses
d. ***Not*** running and 4160 VAC bus 1F is deenergized.

ANS: *c*

a,b incorrect, the logic doesn't know which unit to go to if you have a LOSP/LOCA signal on both units

d incorrect, the EDG should have started on low bus voltage.

NEW

KA# 295003AA2.04	***OBJ#*** 028.025.a.04	***REF*** LT-LP-02801	***COGNITIVE LVL*** 3

43. Unit Two was operating at 100% RTP when the reactor scrammed. The operator notices the following indications:

Reactor Pressure: 900 psig
SPDS has a red *SCRAM* indication
The rod select power light is ***extinguished***

RWM:	All Rods In:	NO
	Shutdown:	YES
	Rods Not Full In:	040

The reactor is:

a. in a cold shutdown rod configuration with forty control rods at position 02.
b. in a cold shutdown rod configuration with forty control rods out further than 02.
c. only subcritical at the present reactor temperature with forty rods at position 02
d. only subcritical at the present reactor temperature with forty rods out further than 02.

ANS: *a*

b incorrect, the forty control rods are at position 02 or less

c incorrect, cold shutdown configuration with 40 rods at 02 or less

d incorrect, cold shutdown config. and rods at 02 or less.

NEW

KA# 295015 AK1.01,	***OBJ#*** 001.013.b.02	***REF*** LT-LP-05403	***COGNITIVE LVL*** 3

44. Unit One is operating at 100% RTP with the HPCI System in full flow test. The operator reports the suppression pool temperature is 106°F. Based on this temperature, the Shift Supervisor should direct the operator to:

a. Place either the "A" or "B" loop of RHR in suppression pool cooling.
b. Place all available loops of RHR in the suppression pool cooling mode, only.
c. Place all available loops of RHR in suppression pool cooling and shutdown HPCI.
d. Place all available loops of RHR in suppression pool cooling and scram the reactor.

ANS: *c*
a,b,c incorrect, >100°F and <110°F requires all RHR in cooling and all testing stopped.
NEW

KA# 295013 AK3.02	***OBJ#*** LT-20201.011	***REF*** LT-LP-20201	***COGNITIVE LVL*** 2

45. During a reactor startup on Unit Two with reactor power at 7% RTP, an operator starts to withdraw a control rod to its withdraw limit of 12. The following conditions are then noted:

Rod Drift Annunciator ***actuates***
Rod Drift Light ***illuminated***
RPIS indication shows the rod moving towards position 48.

Based on the above conditions, the operator should:

a. Immediately insert a manual reactor scram
b. Drive the control rod in using EMERGENCY IN.
c. Scram the control rod with the SCRAM TEST toggle switch
d. Enter the Fast Reactor Shutdown procedure, 34GO-OPS-014-2S.

ANS: *a*
b incorrect, the scram should insert the rod per procedure
c incorrect, only done if scram not req'd
d incorrect, done if power is above LPSP.
NEW

KA# 295014 AA1.04	***OBJ#*** LT-20201.015	***REF*** LT-LP-20201	***COGNITIVE LVL*** 3

46. Unit One is operating at 23% RTP with the main turbine rolling at rated speed, but not tied to the grid. Suddenly, the reactor scrams and the operator notices the following:

The Main Turbine is tripped
Main condenser vacuum is 20" Hg and decreasing
Reactor water level is 0 inches and decreasing
Reactor pressure peaked at 1005 psig and is now being controlled at 920 psig.

The most probable cause of the reactor scram is:

a. a low reactor water level signal
b. a main turbine trip signal
c. a high reactor pressure signal
d. a MSIV closure signal

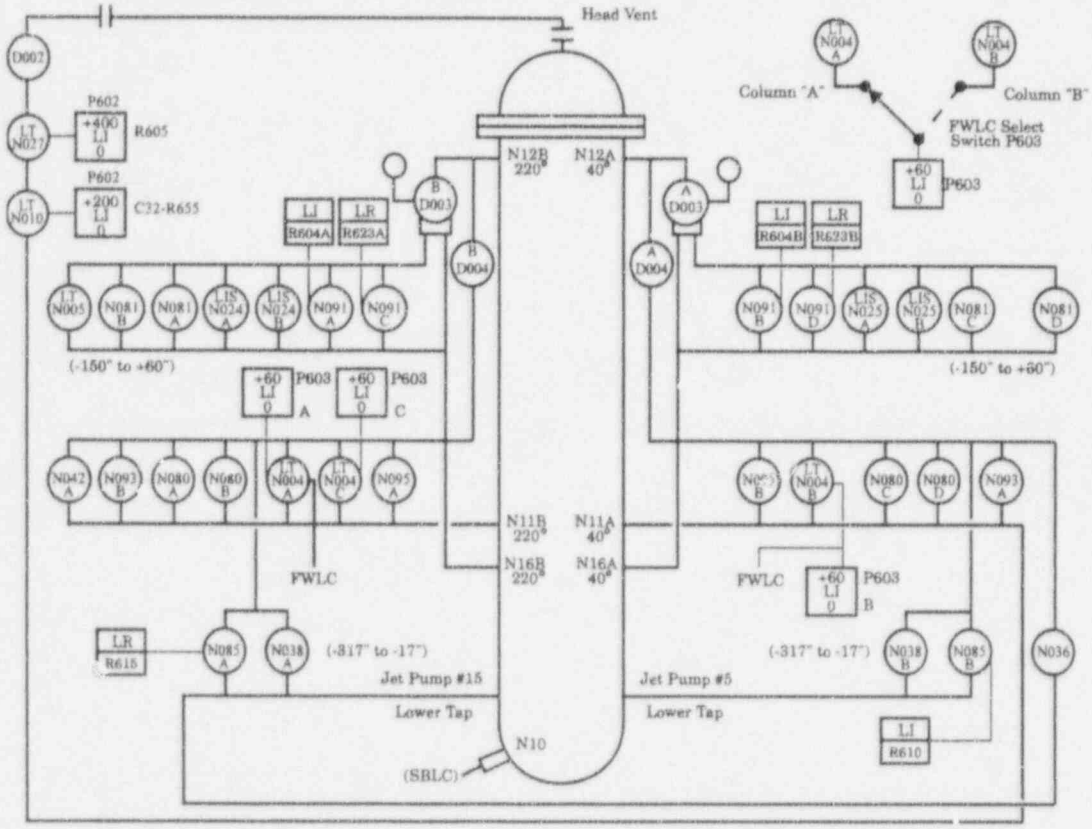
ANS: *a*
b incorrect, power is less than 30%
c incorrect, pressure <1080psig
d incorrect, MSIVs close at 10" hg vacuum
NEW

KA# 295006 AA2.06	***OBJ#*** 300.008.a.02	***REF*** LR-LP-01001	***COGNITIVE LVL*** 3

(intentionally blank question # 47 on next page)

47. Using the schematic below, the instrument leg off of instrument tap N12B ruptures. ***SELECT*** the effect on ***indicated*** reactor water level and the expected plant response. Indicated RWL will: (Assume RWLC is selected to "B")

a. Decrease on the affected instruments; however, no protective actions would occur.
b. Decrease on the affected instruments and a low level scram signal would occur causing a full reactor scram.
c. Increase on the affected instruments; however, no protective actions would occur.
d. Increase on the affected instruments and a main turbine and RFPT high level trip signal would occur.



REACTOR VESSEL LEVEL INSTRUMENTATION

ANS: *b*

a incorrect, N080A & N080B generate a scram signal in both RPS channels

c incorrect, variable leg break

d incorrect, variable leg break

NEW

KA# 295009 AK2.01	***OBJ#*** 200.002.a.014	***REF*** LT-LP-00201	***COGNITIVE LVL*** 3

48. Control room evacuation has required Unit Two systems to be controlled from the Remote Shutdown Panel. The 2B CRD pump has been placed in service at the Remote Shutdown Panel. The following conditions occur after 2B CRD is started:

Drywell pressure: 4.5 psig
Reactor Water Level: -65 inches
DC control power is lost to the 2B CRD pump breaker.

SELECT the response of the 2B CRD pump:

a. the pump trips on a high drywell pressure signal
b. the pump trips on a low reactor water level signal
c. the pump continues to run due to loss of control power
d. the pump trips when control power is lost.

ANS: *d*
a incorrect, high d/w press. trip is disabled at the RSDP
b incorrect, low level signal disabled
c incorrect, all pumps on the 2F 4160 VAC bus have a mech. loss of control power trip.
NEW

KA# 295016 AK3.03	***OBJ#*** 001.023.a.05	***REF*** LT-LP-05201	***COGNITIVE LVL*** 3

49. Unit One is operating at 100% RTP when a chemical intrusion occurs. The lab samples the reactor water and determines that some fuel elements have failed. Subsequent to the sample, the following alarms actuate: (Assume the alarms have been confirmed to be valid)

O/G ANNUAL RELEASE RATE LIMIT EXCEEDED
MAIN STEAM LINE RADIATION HIGH
MAIN STEAM LINE RADIATION HIGH-HIGH/INOP

Based on these indications, the crew should:

a. manually scram the reactor and close all Group 1 isolation valves.
b. reduce reactor power with recirc to clear the alarms
c. commence a fast reactor shutdown per 34GO-OPS-014-2S
d. manually scram the reactor and commence an aggressive cooldown

ANS: *a*
b incorrect, req'd action for the high alarm only
c incorrect, may be req'd for the last two alarms
d incorrect, incomplete answer
NEW

KA# 295017 AK2.14	***OBJ#*** 200.098.a.01	***REF*** LR-LP-01401	***COGNITIVE LVL*** 3

50. The unit has just scrammed and the following conditions exist:

MSIVs are closed due to a ***leak detection*** isolation signal.
No SRVs will open due to electrical failure
RWL: -50" and increasing at 5"/min with CRD pumps
DW pressure: 1.2 psig

To control reactor pressure, the crew may:

a. start HPCI in the full flow test mode
b. start RCIC in full flow test mode
c. re-open MSIVs and use turbine bypass valves
d. use RWCU in the Recirculation mode.

ANS: d

a incorrect, HPCI has an initiation signal
b incorrect, RCIC test flowpath via HPCI test line is isolated due to HPCI initiation signal
c incorrect, can't reopen MSIVs due to leak detection
NEW

KA# 295007 AA1.03	***OBJ#*** 201.066.a.11	***REF*** LR-LP-20308	***COGNITIVE LVL*** 3

51. The intent of the following EOP override is to:

IF drywell pressure is above 1.85 psig	THEN prevent injection from CS and LPCI pumps per 31EO-EOP-114-2S EXCEPT when required for adequate core cooling.

a. force the crew to lower RPV level in an attempt to reduce reactor power
b. allow the crew to initiate containment sprays during a LOSP
c. to prevent a power excursion due to cold water injection
d. to prevent uncontrolled injection as reactor pressure decreases.

ANS: d

a,c incorrect, these reflect reason to terminate and prevent injection
b incorrect, containment sprays would be prevented by this override if pumps req'd for ACC
NEW

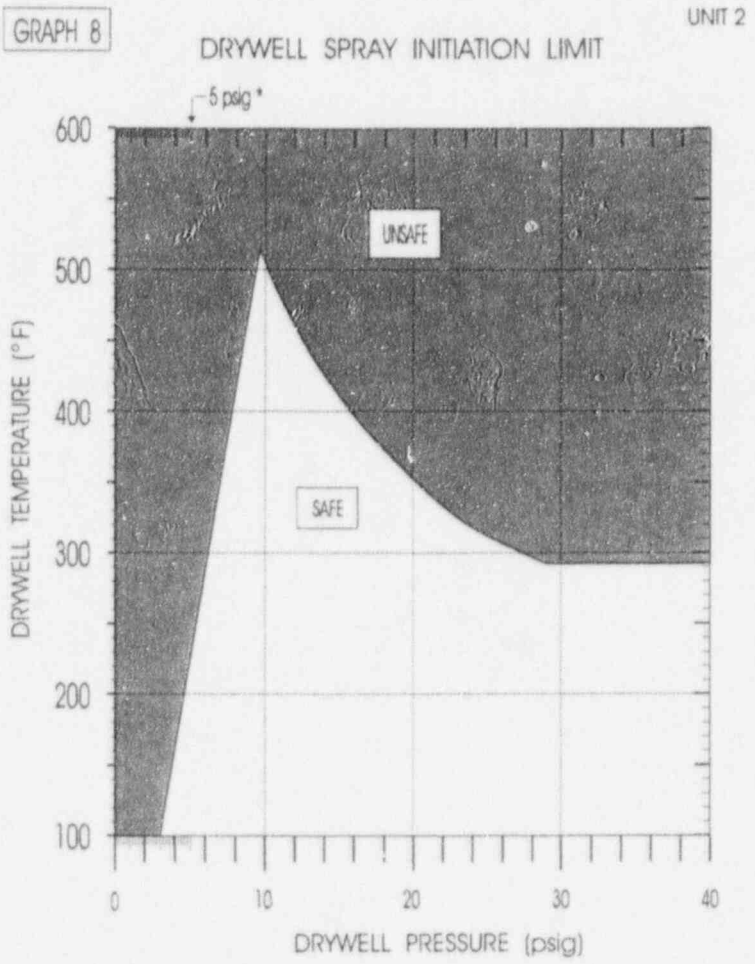
KA# 295024 EA1.03	***OBJ#*** 201.066.a.03	***REF*** LR-LP-20308	***COGNITIVE LVL*** 2

52. Unit Two has scrammed with the following conditions:

Drywell Pressure:	15 psig
Suppression Chamber Press.:	13.9 psig
Drywell Temperature:	225°F
Torus Water Level:	220 inches

If Drywell Sprays were initiated under these conditions:

a. the drywell may de-inert due to rapid pressure decrease
b. drywell design differential pressure may be exceeded
c. chugging may occur on the downcomer piping
d. it would have no negative effect and drywell pressure would decrease.



ANS: *b*

a incorrect, safe on DSIL curve
c incorrect, you spray to prevent chugging
d incorrect, the drywell to torus vacuum breakers are covered
NEW

KA# 295024 EK3.01	*OBJ#* 201.072.a.27	*REF* LR-LP-20310	*COGNITIVE LVL* 3

53. A LOCA has occurred on Unit One. The 1A RHR pump is maintaining RPV level at -145" and steady. The 1A RHRSW pump is available. No other low pressure pumps are available for injection. If Drywell pressure increased to ***65 psig***, the crew should:

a. Use the 1A RHR pump to spray the Drywell even if RPV level drops below TAF
b. Use the 1A RHR pump to spray the Drywell ***only if*** RPV level stays above TAF
c. Use the 1A RHRSW pump to spray the drywell and the 1A RHR pump to inject
d. Use the 1A RHR pump and 1A RHRSW pump to restore RPV level to the normal band.

ANS: *a*
b incorrect, > 54 psig spray d/w irrespective of adequate core cooling
c incorrect, procedure does not allow spraying with RHRSW
d incorrect, primary containment take priority over core at this pressure.
NEW

KA# 295024 EA2.01	***OBJ#*** 201.072.a.02	***REF*** LR-LP-20310	***COGNITIVE LVL*** 3

54. A small break LOCA occurred on Unit One and the following conditions were noted:

Torus pressure:	3.2 psig
Torus level:	153 inches
Drywell H_2:	5%
Drywell O_2:	4%

Based on the above conditions and the Primary Containment Control flowcharts, PC-1 & PC-2, which of the following actions is ***prohibited:***

a. Vent the suppression chamber within offsite release rate limits
b. Initiate supression chamber sprays
c. Override the HPCI and RCIC suction transfer logic
d. Vent the drywell irrespective of offsite release rate limits.

ANS: *d*
a incorrect, allowed because of high hydrogen and oxygen concentration.
b incorrect, allowed because Torus pressure is > 1.85 psig
c incorrect, allowed because torus level is > 150".
NEW

KA# 295010 AA1.05	***OBJ#*** 201.072.a.13	***REF*** LR-LP-20310	***COGNITIVE LVL*** 3

55. An ATWS has occurred on Unit Two and the main turbine is tripped. The Shift Supervisor directs an operator to stabilize RPV pressure below 845 psig using the main turbine bypass valves. This action is done to:

a. cause reactor power oscillations to subside
b. allow for condensate booster pump injection
c. minimize heat up of the primary containment
d. close a failed open SRV.

ANS: *c*
a,b,c incorrect, <845 psig will ensure the lowest setpt LLS SRV will close in order to minimize containment heatup.
NEW

KA# 295037 EK1.01	***OBJ#*** 201.069.a.12	***REF*** LR-LP-20328	***COGNITIVE LVL*** 2

56. A reactor scram has occurred on Unit Two and the following conditions exist after the scram:

Reactor Power:	24% RTP
RWL:	-45"
Torus Water Temp:	95°F
Drywell pressure:	1.2 psig
MSIVs:	Open
BPVs:	Controlling RPV pressure

Based on these conditions and CP-3, the operating crew should:

a. terminate and prevent injection into the RPV from all systems except boron and CRD
b. terminate and prevent injection into the RPV from all systems except boron, CRD, and RCIC
c. establish an RPV level band between +50 inches and -100 inches
d. establish an RPV level band between +50 inches and -155 inches.

ANS: *c*
a,b incorrect, have not met the conditions to terminate and prevent
d incorrect, this is the level band for MSIVs being closed.
NEW

KA# 295037 EK3.03	***OBJ#*** 201.089.a.01	***REF*** LR-LP-20327	***COGNITIVE LVL*** 3

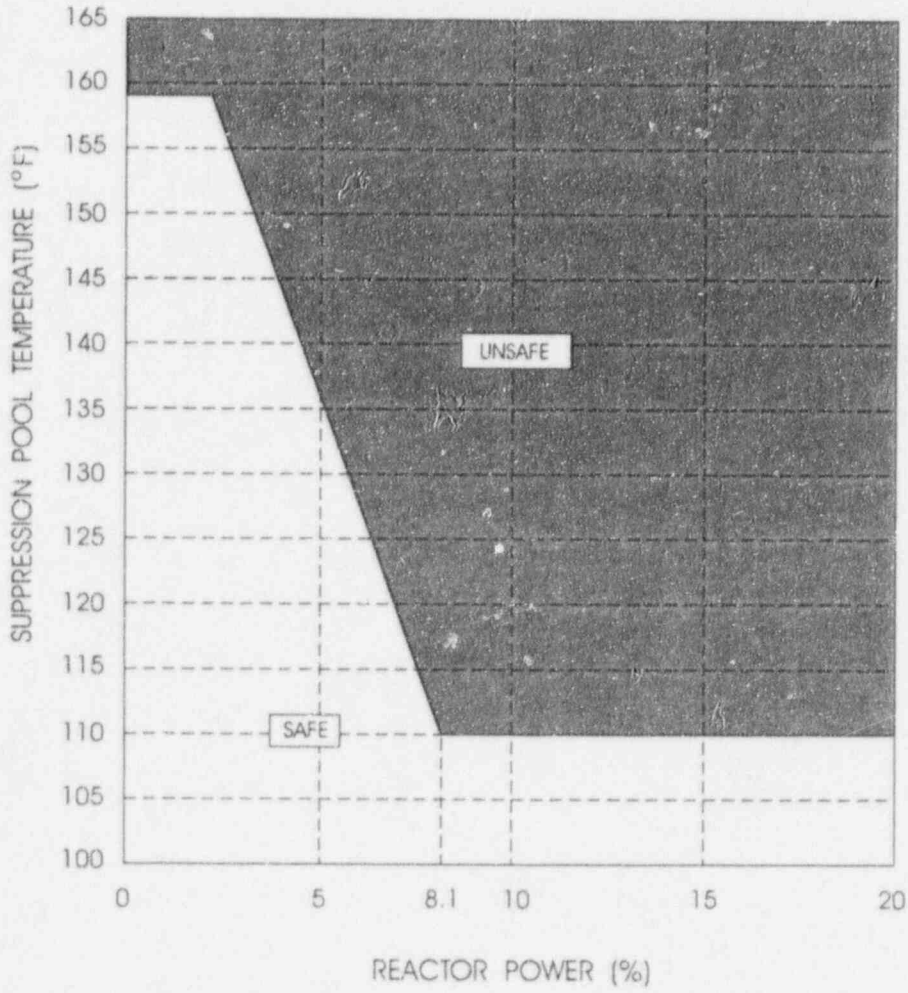
57. Using the Boron Injection Initiation Temperature Curve (Graph 5), SELECT the conditions which would place the plant in the ***UNSAFE*** region of the curve:

	Reactor Power	*Torus Temperature*
a.	3%	145°F
b.	6%	140°F
c.	8%	109°F
d.	12%	105°F

UNIT 2

GRAPH 5

BORON INJECTION INITIATION TEMPERATURE



NOTE: May use SPDS Emergency Displays in place of this Graph.

ANS: *b*

a,c,d incorrect, plot graph

Modified from a LRQ Bank question.

KA# 295026 Gen2.1.25	*OBJ#* 201.071.a.10	*REF* LR-LP-20328	*COGNITIVE LVL* 3

58. A dual seal failure on a Reactor Recirculation Pump has caused drywell pressure to rise above the reactor scram setpoint. The Recirculation Pump was tripped and isolated and drywell pressure has stabilized.

SELECT the action that should be performed to reduce drywell pressure:

a. Enter EOP PC-1 & PC-2; commence drywell venting.
b. Enter EOP PC-1 & PC-2; operate all available drywell coolers.
c. Enter 34AB-T23-002-1S; commence drywell venting
d. Enter 34AB-T23-002-1S; operate all available drywell cooling.

ANS: *b*
a incorrect, venting prevented by isolation signal
c,d incorrect, entry into the EOPs is req'd.
NEW

KA# 295010 Gen 2.4.1	***OBJ#*** 201.093.a.01	***REF*** LR-LP-20310	***COGNITIVE LVL*** 2

59. A Loss of High Pressure Feedwater has occurred on Unit One and the Shift Supervisor has transitioned to CP-1, Alternate Level Control. At TAF, the crew emergency depressurizes the RPV. Adequate core cooling is available when:

a. at least one Core Spray pump commences injecting into the RPV
b. all available low pressure pumps are injecting into the RPV
c. all available low pressure pumps are injecting and RPV level is increasing
d. all available low pressure pumps have restored RPV level above TAF.

ANS: *d*
a,b,c incorrect, the core is not submerged.
NEW

KA# 295031 EA2.04	***OBJ#*** 201.093.a.08	***REF*** LP-LP-20304	***COGNITIVE LVL*** 2

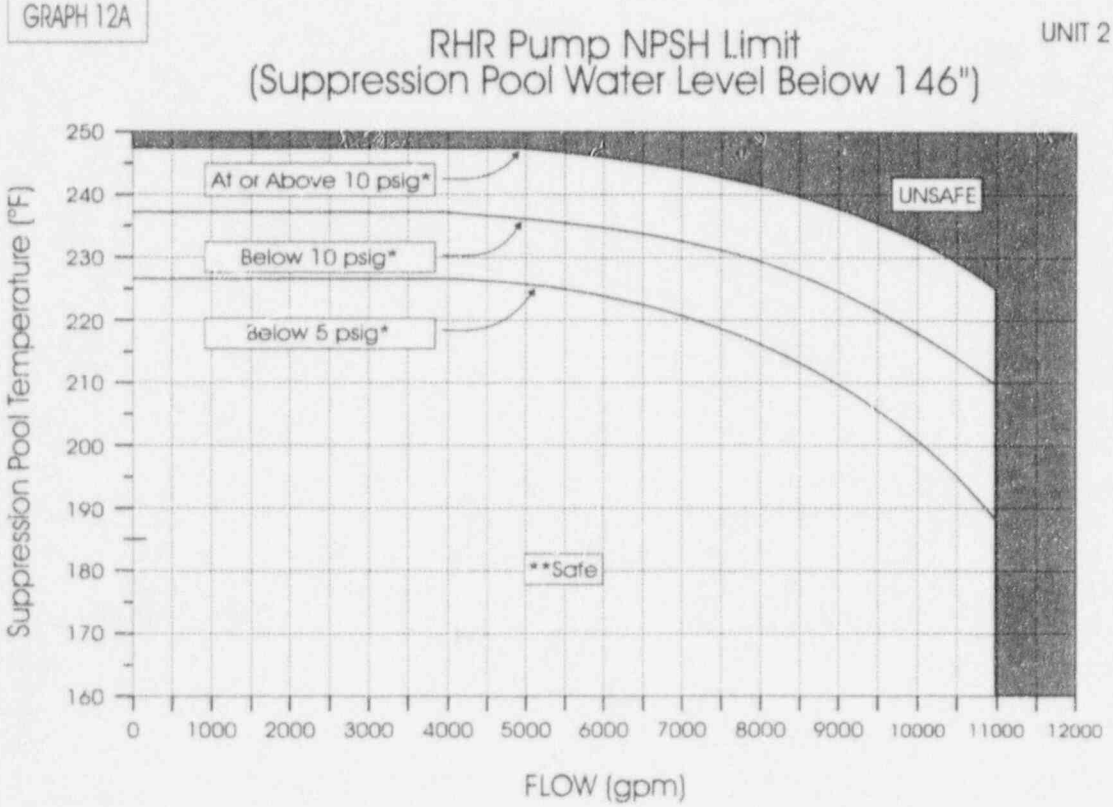
60. A Loss of High Pressure Feed and large LOCA have occurred on Unit Two. The following indications currently exist:

RWL:	-225" and steady
Reactor Pressure:	53 psig and 7 ADS valves are OPEN
RHR Status:	2A RHR pump is injecting at 11,500 gpm
CS status:	2A Core Spray tagged out. 2B Core Spray indicates zero flow and its discharge pressure is oscillating between 50 psig and 320 psig.
Torus Water Level:	142 inches
Torus Water Temp:	165°F

Based on these conditions , the crew should:

a. reduce 2A RHR flow to within the NPSH limit
b. throttle closed 2E21-F005B to increase Core Spray discharge pressure
c. align the suction of the 2B Core Spray pump to the CST
d. maintain current status until RPV level is above TAF.

GRAPH 12A



Note: May use SPDS Emergency Displays in place of the Graph.
* Suppression Chamber Pressure
** Safe operating region is below the applicable pressure line.

ANS: *c*

a incorrect, NPSH limit is ignored when pumps are req'd for ACC.
b incorrect, suction strainer clogging has occurred, pump should be realigned
d incorrect, 2B Core Spray needs to be addressed
NEW

KA# 295031 EA1.01	***OBJ#*** 201.083.a.12	***REF*** LR-LP-20309	***COGNITIVE LVL*** 3

61. The Unit One Primary Containment Control flowchart, PC-1, has the crew perform the following action if suppression pool water level can ***not*** be maintained above 115 inches:

Trip and prevent operation of HPCI irrespective of adequate core cooling

This action is required to prevent:

a. unstable HPCI operation
b. HPCI exhaust check valve chatter
c. loss of backpressure on the exhaust line
d. overpressurization of the primary containment.

ANS: d

a,b incorrect, these are the reasons for the low speed limit

c incorrect, backpressure is lost, the action prevents an uncovered HPCI exhaust from overpressurizing the suppression chamber.

NEW

KA# 295030 Gen 2.4.18	***OBJ#*** 201.075.a.11	***REF*** LR-LP-20310	***COGNITIVE LVL*** 2

62. An ATWS has occurred on Unit Two . Injection was terminated and prevented for power/level control and eventually re-established. The following conditions now exist:

RPV level band:	-155 inches to -185 inches
SLC tank level:	15%
Reactor Power:	3%

Based on the above conditions, the crew may:

a. commence a controlled cooldown of the reactor vessel
b. restore and maintain RPV level in the normal band
c. exit the CP-3 flowchart and control level per the RC flowchart
d. exit the RCA and CP-3 flowcharts to control level, power, and pressure.

ANS: b

a incorrect, this would be correct if SLC tank level was 12%

c incorrect, can not exit CP-3 until RCA is exited

d incorrect, can not exit RCA until cold shutdown rod configuration is achieved.

NEW

KA# 295037 EK1.04,	***OBJ#*** 201.092.a.02	***REF*** LR-LP-20327	***COGNITIVE LVL*** 3

63. An unisolable steam leak in the turbine building on Unit Two has caused an offsite release rate of 5 mr/hr. Per the Radioactivity Release (RR) EOP, the crew should isolate ALL systems discharging into areas outside the primary and secondary containments, EXCEPT systems required to:

a. assure adequate core cooling, shutdown the reactor, and suppress a fire
b. shutdown the reactor, suppress a fire, and vent primary containment irrespective of offsite release rates
c. assure adequate core cooling, suppress a fire, and vent the primary containment irrespective of offsite release rates
d. assure adequate cooling, shutdown the reactor, and vent the suppression chamber irrespective of offsite release rates.

ANS: *d*
a,b,c incorrect, fire suppression only applies to the SC flowchart
NEW

KA# 295038 EK3.02	***OBJ#*** 201.082.a.05	***REF*** LR-LP-20325	***COGNITIVE LVL*** 1

64. Unit One is operating at 75% RTP when the "B" SRV fails open. The fuses are pulled to the "B" SRV and the following conditions are noted:

SAFETY/BLOWDOWN VALVE LEAKING is actuated
SAFETY BLOWDOWN PRESSURE HIGH is green
SPDS indication for the "B" SRV is green
Suppression Pool Temperature is 111°F

Based on these indications, the "B" SRV is:

a. OPEN and the reactor should be manually scrammed
b. OPEN and one loop of RHR should be placed in suppression pool cooling
c. CLOSED and the reactor should be manually scrammed
d. CLOSED and one loop of RHR should be placed in suppression pool cooling.

ANS: *c*
a,b incorrect, the SRV indicates closed
d incorrect, high torus temp requires a scram.
NEW

KA# 295026 EA2.01	***OBJ#*** 201.074.a.09	***REF*** LR-LP-20310	***COGNITIVE LVL*** 3

65. Unit Two was operating at 100% RTP when the main turbine inadvertently tripped. The following conditions were noted on 2H11-P603 two minutes after the scram:

All 4 Scram Group A lights are ***illuminated***
All 4 Scram Group B lights are ***extinguished***
Reactor pressure peaked at 1190 psig and is now 920 psig
RWM shows all control rods are inserted.

The control rods inserted due to:

a. Main Turbine trip > 30% scram signal
b. High reactor pressure scram signal
c. Backup scram valves actuated and depressurized the scram air header
d. ARI actuated and depressurized the scram air header.

ANS: *d*
a,b,c incorrect, indications show a half scram signal was received
NEW

KA# 295025 EK2.04	***OBJ#*** 010.024.a.02	***REF*** LT-LP-00101	***COGNITIVE LVL*** 3

66. The Unit Two Fuel Handling SRO contacts the control room to report that the fuel bundle being moved dropped approximately 3 ft into its storage location and visible bubbles were noted. The following control room alarms actuate:

REFUELING FLOOR VENT EXHAUST RAD HIGH
REFUELING FLOOR VENT EXHAUST RAD HI-HI
REFUELING FLOOR AREA RADIATION HIGH

Based on these indications, the ***immediate*** action for the operating crew should be:

a. evacuate personnel from the refuel floor
b. dispatch health physics and operations personnel to investigate
c. evacuate personnel from the refuel floor and the reactor building
d. obtain an activity sample of the fuel pool.

ANS: *a*
b incorrect, HP provides assistance after evacuation occurs
c incorrect, required on a lowering fuel pool level
d incorrect, subsequent action
NEW

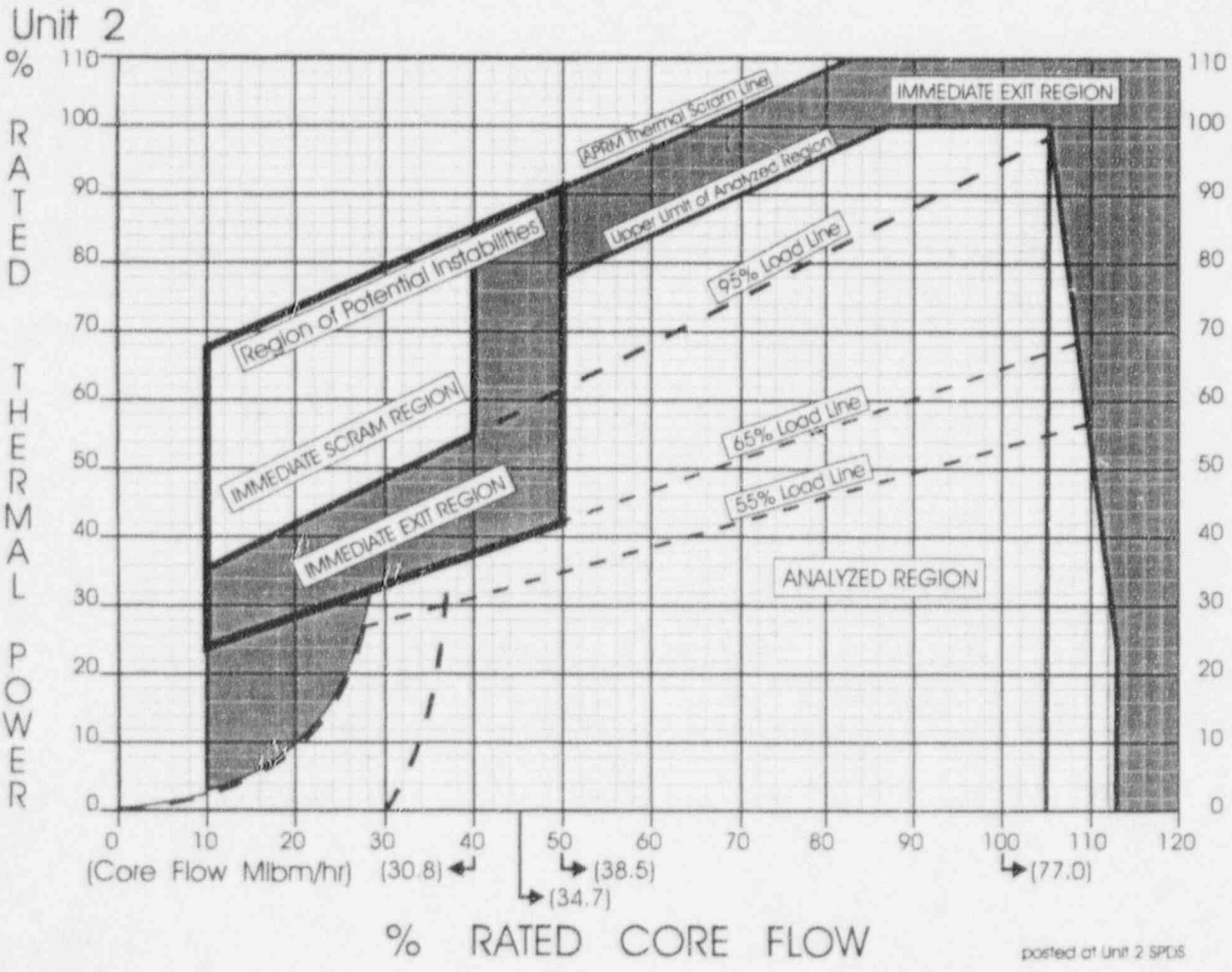
KA# 295023 AK1.01	***OBJ#*** LT-20201.003	***REF*** LT-LP-20201	***COGNITIVE LVL*** 3

67. Unit Two is operating at 55% RTP when the 2A Reactor Recirc Pump trips. The following conditions are noted after the pump trip:

Reactor Power:	45%
Core Flow:	39%
2B Recirc pump speed:	101%
APRMs:	***oscillating*** between 43% and 49% with the amplitude increasing.

Based on these conditions, the crew should:

a. reduce 2B Recirc. Pump speed less than 100%
b. insert control rods to exit the region of potential instabilities
c. continue monitoring APRM and LPRM power oscillations
d. immediately manually scram the reactor.



ANS: *d*

a,,b,c incorrect, these are options possibly if the power oscillations were not as severe.
Modified from a LRQ Bank question.

KA# 295001 Gen 2.1.25	*OBJ#* LT-20201.016	*REF* LT-LP-20201	*COGNITIVE LVL* 3

68. Unit Two is operating at 100% RTP with all three Condensate Pumps Running and the 2A and 2C Condensate Booster pumps running. Suddenly the 2C Condensate Pump trips and when conditions stabilize, the crew notices the following conditions: (Assume no operator action)

COND PUMPS DISCH PRESS LOW annunciator is actuated
Condensate Discharge Pressure indicator reads 120 psig
The "A" SJAE is in service
Main Condenser Vacuum is slowly ***decreasing***

The Main Condenser Vacuum decrease is due to:

a. closure of First Stage Steam Supply Valve, 2N11-F008A
b. closure of Condenser Outer Suction Valve, 2N22-F005A
c. closure of Condenser Inner Suction Valve, 2N22-F004A
d. closure of Main Steam Supply to SJAE, 2N11-F001.

ANS: *a*
b incorrect, closes on low flow
c incorrect, closes on low steam pressure
d incorrect, no auto closure function
NEW

KA# 295002 AK2.06	***OBJ#*** 025.004.a.01	***REF*** LT-LP-02501	***COGNITIVE LVL*** 3

69. The Unit Two reactor has just received a spurious scram signal. During recovery actions the crew notices that reactor water level is 105 inches. Based on this indication the crew should ***immediately***:

a. reduce reactor water level using RWCU
b. close the MSIVs
c. isolate HPCI and RCIC
d. trip operating RFPTs.

ANS: *b*
a incorrect, this should be done after closing the MSIVs
c,d incorrect, even though water in the HPCI/RCIC steam lines, there is no guidance to isolate the system.
NEW

KA# 295008 AA1.03	***OBJ#*** LR-20301.006	***REF*** LR-LP-20301	***COGNITIVE LVL*** 3

70. During a startup on Unit Two, both CRD pumps trip. The following conditions exist:

Reactor Pressure: 700 psig
Charging Water Pressure: 0 psig
Two control rod accumulators have low pressure alarms

SELECT the appropriate crew action:

a. Place the Reactor Mode Switch in Shutdown
b. If a CRD pump can ***not*** be restored in 20 minutes, then place the Reactor Mode Switch in Shutdown.
c. Attempt to start a CRD pump and monitor CRD temperatures locally on 2C11-R018
d. If any CRD temperature exceeds 400°F, then place the Reactor Mode Switch in Shutdown.

ANS: *a*
b,c incorrect, this would be true if reactor pressure was >900 psig
d incorrect, requires engineering evaluation
NEW

KA# 295022 AA2.01	***OBJ#*** LT-20201.013	***REF*** LT-LP-20201	***COGNITIVE LVL*** 3

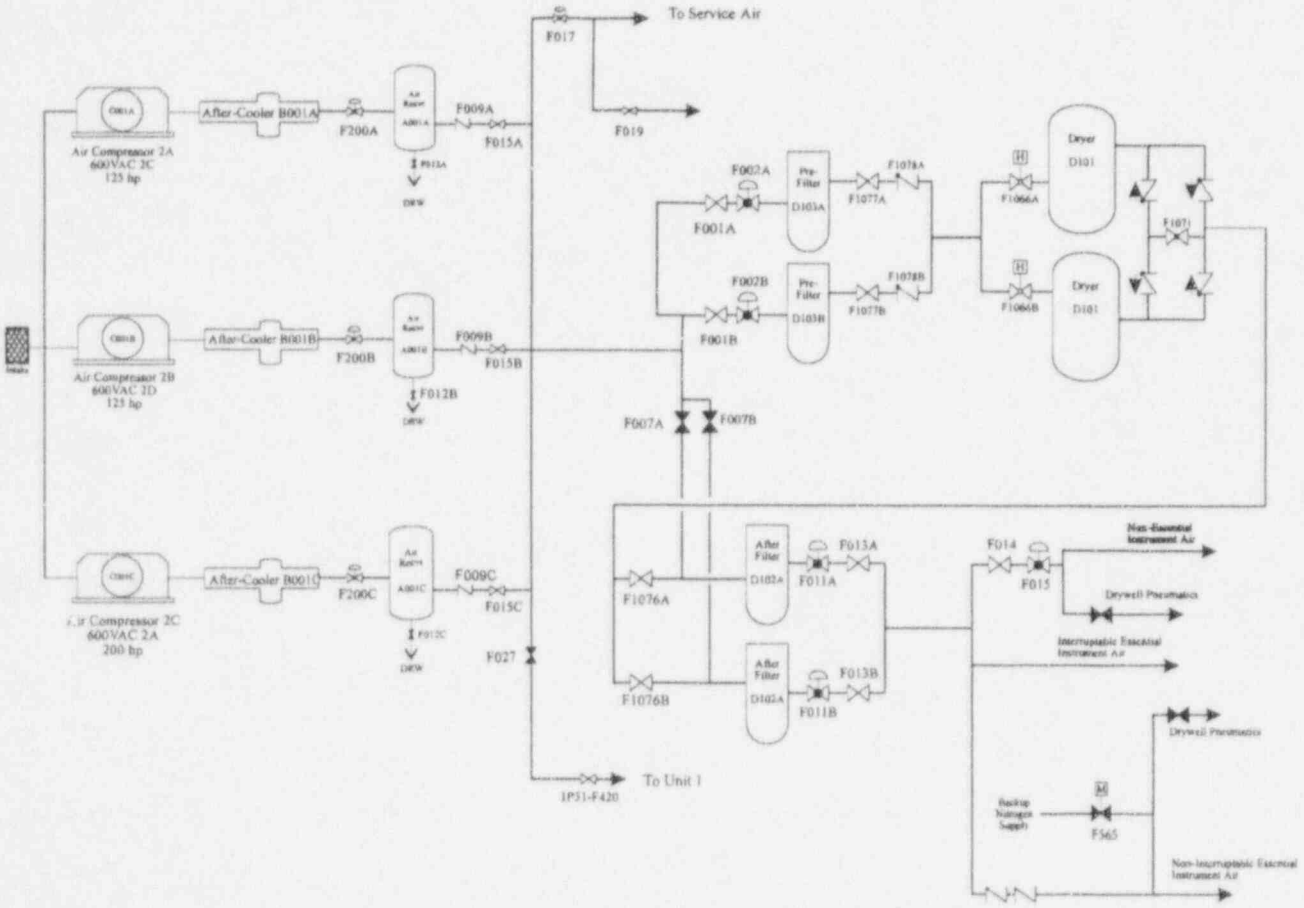
(intentionally left blank question # 71 on next page)

71. Unit Two is operating at 100% RTP when an plant air system break occurs. Upon investigation the crew notices the following indications:

Service Air Press	*Non-Essential Air Press*	*Interruptible Essential Air Press*	*Non-Interrupt Essential Air Press.*
0 psig	0 psig	50 psig	105 psig

Based on these conditions, the break is most likely a(n):

a. service air header rupture
b. non-essential air pressure rupture
c. interruptible essential air pressure rupture
d. non-interruptible essential air pressure rupture.



Service and Instrument Air Flowpath (Unit 2)

ANS: *b*

a incorrect, pressure is low because the F017 isolated at 70 psig
c incorrect, pressure is low because the F015 is cycling
d incorrect, N_2 backup pressure
NEW

KA# 295019 AK3.01	*OBJ#* 200.025.a.04	*REF* LT-LP-03501	*COGNITIVE LVL* 3

72. Unit Two is in Mode 3 with the 2A RHR pump in Shutdown Cooling. Suddenly, 2E11-F008 inadvertantly closes and will not re-open. SELECT the appropriate crew response:

a. throttle open the 2E11-F017A, RHR Outboard Injection Valve, to increase cooling
b. place the 2C RHR pump in the Shutdown Cooling mode of operation
c. place the 2B loop of RHR in the Shutdown Cooling mode of operation
d. increase reactor water level greater than 53 inches to promote natural circulation.

ANS: *d*
a,b,c incorrect because the F008,F009 isolate and the pumps trip
NEW

KA# 295021 AK1.04	***OBJ#*** LT-20201.014	***REF*** LT-LP-20201	***COGNITIVE LVL*** 3

73. The Unit One Primary Containment Control flowcahrt, PC-1, directs the following action be done if suppression chamber water level is above 150 inches:

> Maintain suppression pool water level below 197.5 in per 34SO-E11-010-1S or 34GO-OPS-087-1S.

The significance of this step is to ensure suppression pool water level stays below the:

a. suppression pool spray header
b. torus to reactor building vacuum breakers
c. suppression chamber vent pipe
d. torus to drywell vacuum breakers.

ANS: *d*
a,b,c incorrect, these connections are not at 197.5 inches
NEW

KA# 295029 EA2.01	***OBJ#*** 201.073.a.06	***REF*** LR-LP-20310	***COGNITIVE LVL*** 2

74. Unit Two is operating at 100% RTP when the following occurs:

TURB BLG PSW FLOW HIGH annunciator actuates
Division 1 PSW pressure is 45 psig
Division 2 PSW pressure is 45 psig
All four PSW pumps are running

SELECT the appropriate crew response:

a. reduce reactor power as necessary to maintain equipment temperatures within limits
b. reduce power to maintain equipment temperatures and close 2P41-F316A, B, C, and D
c. manually scram the reactor and close 2P41-F316A, B, C, and D
d. throttle closed 2P41-F316A and B until division pressures are > 80 psig.

ANS: *c*
a incorrect, scram required due to major break
b incorrect, scram required due to major break
c incorrect, would be allowed if reopening F316s and no break existed.
NEW

KA# 295018 AK3.02	***OBJ#*** LT-20201.018	***REF*** LT-LP-20201	***COGNITIVE LVL*** 3

75. While placing the 2A RHRSW pump in service to suppon suppression pool cooling, the operator places the ***Interlock Override VLV 2E11-F068A*** switch to the override position and leaves it there. Subsequently, a leak in the drywell causes drywell pressure to increase to 5 psig. SELECT the adverse consequence, if any, to the RHRSW system:

a. the discharge piping may rupture when restarting the 2A RHRSW pump
b. RHR heat exchanger relief valves will lift when restarting the 2A RHRSW pump
c. if a leak developed in the RHR heat exchanger, a release path to the flume would exist
d. the 2A RHRSW pump will trip and the 2E11-F068A will isolate.

ANS: *c*
a incorrect, some water hammer by design but not excessive
b incorrect, the interlock switch prevents lifting relief valves
d incorrect, 2E11-F068A will not isolate
NEW

KA# 295018 AK1.01	***OBJ#*** 034.002.a.12&13	***REF*** LT-LP-03401	***COGNITIVE LVL*** 2

76. The Unit Two reactor has scrammed and the following conditions are noted:

Reactor Level:	-5" and increasing
Reactor pressure:	920 psig controlled with the bypass valves
Drywell Temperature:	342°F
All PSW pumps are tripped and cannot be restarted	

Based on drywell conditions, the crew should :

a. emergency depressurize the RPV
b. anticipate emergency depressurization and open the bypass valves
c. start all available drywell cooling, overriding any automatic trips
d. commence a controlled cooldown within the cooldown rate limit.

ANS: *a*

b incorrect, this would be correct if < 340
c incorrect, no psw available to the drywell coolers
d incorrect, not required immediately
NEW

KA# 295028 EA2.01	***OBJ#*** 201.073.a.15	***REF*** LT-LP-20310	***COGNITIVE LVL*** 3

77. Secondary containment conditions are as follows on Unit Two:

No Reactor Building Sump alarms exist	
Reactor Building Pressure:	+0.25 inches of water
Main Steam Chase Temperature:	120°F
Reactor Building Vent Exh Radiation:	2 mr/hr

DETERMINE if entry into the Secondary Containment Control flowchart, SC, is required:

a. NO entry is required at this time
b. Entry is required due to Main Steam Chase High temperature
c. Entry is required due to Rx Blg Vent Exh High radiation
d. Entry is required due to high differential pressure in the Reactor Building.

ANS: *d*

a,b,c incorrect, see flowchart entry conditions
NEW: similar to a question on the Brunswick 1995 exam.

KA# 295035 Gen 2.4.1	***OBJ#*** 201.093.a.01	***REF*** LR-LP-20325	***COGNITIVE LVL*** 3

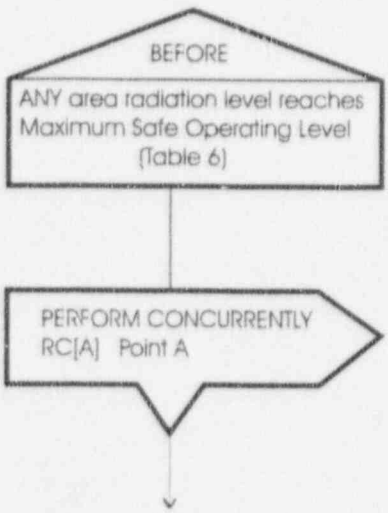
78. The Maximum Normal Operating Radiation Level in the Secondary Containment is defined as the highest radiation level:

a. expected to occur during normal plant operation with all equipment operating properly
b. at which safe shutdown equipment continue to operate properly
c. at which personnel access necessary for safe shutdown of the plant will be precluded
d. at which releases from the reactor building will remain below the Alert limit.

ANS: *a*
b,c incorrect, these are part of the definition for max SAFE levels
d incorrect, Alert limit is considered on the RR chart
NEW

KA# 295034 EA2.01	***OBJ#*** 201.077.a.01	***REF*** LR-LP-20306	***COGNITIVE LVL*** 1

79. If a primary system is discharging into the secondary containment, the Secondary Containment Control flowchart, SC, directs the following action:



The purpose of this step is to:

a. initiate a reactor scram and reduce to decay heat levels the energy being discharged
b. initiate a reactor scram and reduce the amount of radiation released to the environment
c. commence a fast reactor shutdown before a maximum safe operating limit is exceeded
d. fast shutdown the reactor and reduce reactor pressure in order to minimize the leak rate.

ANS: *a*
b,c,d incorrect, see lesson plan
NEW

KA# 295033, EK3.02	***OBJ#*** 201.079.a.11	***REF*** LR-LP-20325	***COGNITIVE LVL*** 2

80. While verifying a valid PCIS Group 5 isolation signal, the Shift Technical Advisor notices that the 2G31-F004, RWCU Outboard Isolation Valve, has a ***Yellow*** color code on the SPDS Diagnostic screen. Based on this indication, the valve has:

a. closed and the RWCU system is isolated
b. remained open and should be closed by the operating crew
c. started closing and the STA should verify that it goes fully closed
d. possibly lost power and valve position should be verified by other means.

ANS: d

a,b,c incorrect, yellow on a valve means that valve position data is not available, which usually occurs when power is lost to the valve.

NEW

KA# 295020, AK2.04	***OBJ#*** 056.002.c.03	***REF*** LT-LP-05601	***COGNITIVE LVL*** 2

81. Unit Two is operating at 100% RTP when both stator cooling water pumps trip. The following conditions were noted:

GENERATOR PROTECTION CIRCUIT ENERGIZED annunciator is actuated
Initial Stator Amps: 20,000 amps
Stator Amps at 2 min.: 14,500 amps
Final Stator Amps at 4 min: 7,500 amps
Main Turbine Generator is currently operating.
Main Turbine Bypass Valves are controlling reactor pressure.

Based on these conditions, the operating crew should:

a. maintain current conditions and attempt to restore a stator cooling water pump
b. reduce reactor power with recirc or control rods to close the main turbine bypass valves
c. enter 34GO-OPS-014-2S and commence a fast reactor shutdown
d. manually scram the reactor and trip the main turbine due to failure to trip.

ANS: d

a,b,c incorrect, the auto trip on the stator cooling runback circuitry has failed.

NEW

KA# 295005, AK2.04	***OBJ#*** 023.001.b.05	***REF*** LT-LP-02301	***COGNITIVE LVL*** 3

82. Unit Two is operating at 100% RTP when it is determined that the 2B 125/250 VDC STATION SERVICE BUS, 2R22-S017, is ***inoperable***. SELECT the appropriate Technical Specification action:

a. Restore the bus to operable status within 7 days
b. Restore the bus to operable status within 12 hours
c. Restore the bus to operable status within 2 hours
d. Enter LCO 3.0.3 immediately.

ANS: *c*
a,b,d incorrect, see Tech Spec section 3.8.7
Tech Spec section required as reference.
NEW

KA# 295004 Gen 2.2.22	***OBJ#*** 300.006.a.08	***REF*** LR-LP-02704	***COGNITIVE LVL*** 2

83. Unit Two is operating at 100% RTP, when the following annunciators actuate:

RBCCW SYS HEAT EXCH OUTLET TEMP HIGH
RBCCW SYS SURGE TANK LEVEL HIGH
RBCCW RADIATION ALARM
(Alarms have been verified to be valid.)

Based on these conditions:

a. Plant Service Water is leaking into the RBCCW system
b. RBCCW is leaking into the Plant Service Water system
c. RWCU is leaking into RBCCW through the NRHX
d. One RBCCW pump has tripped and the standby failed to start.

ANS: *c*
a,b,d incorrect, these indications are received for a RWCU leak
NEW

KA# 295018, AK1.01	***OBJ#*** 200.014.a.04	***REF*** LR-LP-00901	***COGNITIVE LVL*** 3

84. Preparations are presently being made to startup the Unit One reactor. The following conditions exist:

Reactor Mode Switch: Shutdown
Reactor Pressure: 125 psig
All reactor vessel head closure bolts are fully tensioned
All rods are IN.

The reactor is in:

a. Mode 2
b. Mode 3
c. Mode 4
d. Mode 5

ANS: *b*
a,c,d incorrect, see table 1.1-1 (pg 1.1-8) in Unit 1 Tech Specs.
NEW

KA# Generic 2.1.22	***OBJ#*** 400.067.a.05	***REF*** LR-LP-30005	***COGNITIVE LVL*** 3

85. During a valve lineup, an operator needs to check a valve open. It is noted that the valve has a locking device on it. To check the valve position the operator should:

a. unlock the valve, turn it in the closed direction no more than 1/4 turn, place it full open, and replace the locking device
b. unlock the valve, turn it in the open direction, verify that the hand wheel moves less than 1/4 turn, and replace the locking device
c. leave the locking device installed, try to move the hand wheel to ensure locking device integrity, and verify stem position
d. leave the locking device installed, verify stem position, and verify administratively that the valve has not been repositioned.

ANS: *a*
b incorrect, check it in the closed direction
c,d incorrect, the locking device needs to be remove to check actual valve position.
NEW

KA# Generic 2.1.29	***OBJ#*** 300.022.a.06	***REF*** LT-LP-30004	***COGNITIVE LVL*** 1

86. The Unit Two reactor is shutdown. An operator is directed to start the 2B Condensate Booster Pump.

Which of the following classifies the level of use of this procedure?

a. Memory Use
b. Reference Use
c. Continuous Use
d. Information Use

ANS: *c*
a,b,d incorrect, see 10AC-MGR-019
NEW

KA# Generic 2.1.20	***OBJ#*** LT-30004.001	***REF*** LT-LP-30004	***COGNITIVE LVL*** 1

87. Unit Two is operating at 75% RTP with the 2C Condensate Pump tagged out for maintenance. Maintenance requests tagging out RCIC for preventive maintenance. This activity is: (references provided)

a. Low Risk and only requires Shift Supervisor approval
b. Medium Risk and requires Ops Manager approval
c. High Risk and requires Ops Manager approval
d. Very High Risk and requires a risk evaluation and Ops Manager approval.

ANS: *d*
a,b,c incorrect, see 90AC-OAP-002-0S
NEW

KA# Generic 2.2.9	***OBJ#*** 300.011.b.02	***REF*** LT-LP-30004	***COGNITIVE LVL*** 3

88. Unit Two is operating at 100% RTP. The operating crew is placing the 2B RHR loop in service to support a HPCI surveillance next shift (last day for HPCI to be run) and the following conditions are noted:

Torus Water Temp: 85°F and steady.
The 2A loop of RHR is ***not*** available.
The breaker to 2E11-F024B is tripped and will ***not*** reset.

In order to place the 2B loop of RHR in torus cooling, the Shift Supervisor should:

a. direct the operator to manually open 2E11-F024B
b. with the SOS concurrence direct manually opening 2E11-F024B
c. initiate a temporary change to the procedure to allow manually opening 2E11-F024B
d. initiate a permanent change to the procedure to allow manually opening 2E11-F024B.

ANS: *c*
a,b incorrect, can only authorize not following procedure in an emergency
d incorrect, this is a temporary condition
NEW

KA# Generic 2.2.11	***OBJ#*** 300.002.a.02	***REF*** LT-LP-30004	***COGNITIVE LVL*** 3

89. During an outage on Unit One, the 1A Core Spray pump motor has been replaced. The maintenance department has asked to momentarily start the pump to check for proper rotation. In order to support this, the Shift Supervisor should:

a. ensure that the maintenance department is using personalized danger tags
b. release the applicable subclearance that applies to the MWO being worked
c. release all subclearances that require the 1A Core Spray pump be tagged
d. issue a temporary release after verifying all subclearance holders concur.

ANS: *d*
a incorrect, personalized danger tags are allowed but still need temp release if other subclearances are on the pump.
b incorrect, can't release the subclearance until work is done
c incorrect, can't release all subclearances until the work is done
NEW

KA# Generic 2.2.13	***OBJ#*** 300.016.a.01	***REF*** LT-LP-30004	***COGNITIVE LVL*** 2

90. A pneumatic valve that is equipped with a manual operator (handwheel) will be used as an isolation point for a clearance. The valve is a ***fail closed*** valve.

SELECT the conditions that must be satisfied to use this valve as a clearance boundary once the valve is closed:

a. Only the handwheel is tagged
b. Only the air supply is isolated, depressurized, and tagged
c. Both the air supply is isolated, depressurized, and tagged and the handwheel is tagged
d. The air supply is isolated, depressurized, and tagged and a gagging device is installed.

ANS: *c*
a,b,d incorrect, see 30AC-OPS-001-0S page 13 of 65
NEW: similar to a Brunswick 1995 exam question.

KA# Generic 2.2.13	***OBJ#*** 300.016.a.01	***REF*** LT-LP-30004	***COGNITIVE LVL*** 1

91. Unit Two was operating at 100% RTP, when the Main Turbine tripped and the reactor scrammed. Conditions after the scram are as follows:

Reactor Pressure peaked at 1275 psig and is now being controlled at 700 psig with EHC Pressure Set.
Reactor Power is 35% RTP.
137 Control Rods are still withdrawn
RPV Level Band is -100" to -155" and is being maintained in the band.

Based on the above conditions:

a. a MCPR safety limit violation has occurred
b. a Reactor Water Level safety limit violation has occurred
c. a Reactor Pressure safety limit violation has occurred
d. no safety limits have been violated.

ANS: *a*
b,c,d incorrect, RPV level > TAF, RPV pressure < 1325 psig.
NEW

KA# Generic 2.2.22	***OBJ#*** 300.003.a.01	***REF*** LT-LP-30005	***COGNITIVE LVL*** 3

92. The Plant Hatch initial administrative dose limit to the lens of the eye (LDE) is:

a. 2 rem/year
b. 5 rem/year
c. 6 rem/year
d. 15 rem/year

ANS: *c*
a,b,d incorrect, see 60AC-HPX-001
NEW

KA# Generic 2.3.1	***OBJ#*** LT-30008.001	***REF*** LT-LP-30008	***COGNITIVE LVL*** 1

93. Health Physics technicians have surveyed the main steam chase during an outage and obtained the following results:

Area Dose Rates one foot from the source:	83 mr/hr
Airborne Concentration:	.25 DAC
Smear Results:	750 dpm/100 cm^2

Based on these results the area should be posted as a:

a. Radiation Area
b. High Radiation Area
c. Airborne Radioactivity Area
d. Contaminated Area

ANS: *a*
b incorrect, < 100 mr/hr
c incorrect, < .3 DAC
d incorrect, < 1000 dpm/100 cm^2
NEW

KA# Generic 2.3.2	***OBJ#*** LT-30008.002	***REF*** LT-LP-30008	***COGNITIVE LVL*** 3

94. The Emergency Director decides that it is necessary to send someone into the Reactor Building (with Health Physics) to isolate a leak before Core Spray and RHR pumps are flooded. (No releases are underway and RPV level is being maintained at 60 inches with the Condensate System)

SELECT the ***maximum*** allowable dose limit that the Emergency Director may authorize:

a. 5 REM
b. 10 REM
c. 25 REM
d. > 25 REM

ANS: *b*
a,c,d incorrect, see 73EP-EIP-017-0S pg 6 of 13
NEW

KA# Generic 2.3.4	***OBJ#*** LT-30008.002	***REF*** LT-LP-30008	***COGNITIVE LVL*** 1

95. An ***Alert Emergency*** has been declared and the OSC has been manned. A fire in the Service Building breakroom kitchen requires that the OSC be evacuated due to excessive smoke. When the evacuation is ordered, the OSC ***workers*** should go to the:

a. East Wing of the Simulator Building
b. Classroom 172 in the Simulator Building
c. Simulator Building Cafeteria
d. Technical Support Center conference room.

ANS: *c*
a incorrect, normal for EOF
b incorrect, OSC supervision goes here
d incorrect, TSC is not an alternate
NEW

KA# Generic 2.4.42	***OBJ#*** 200.052.h.01	***REF*** EP-LP-30200	***COGNITIVE LVL*** 1

96. The ***lowest*** level emergency classification at which any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels is:

a. NUE
b. Alert
c. Site Area Emergency
d. General Emergency

ANS: *b*
a,c,d incorrect, see definitions in 73EP-EIP-001-0S
NEW

KA# Generic 2.4.41	***OBJ#*** 001.017.1(2)	***REF*** EP-SS-20101	***COGNITIVE LVL*** 1

97. A ***General Emergency*** has been declared and all required facilities are manned. The Emergency Director is in the EOF having a conference with NRC representatives. The EOF Manager recognizes that the following actions are needed:

1 Exceeding 10CFR20 limits to rescue an injured worker
2 Potassium Iodine must be distributed due to radiation levels
3 Protective Action Recommendations need to made
4 The EOF needs to be evacuated due to high radiation levels

SELECT the action(s) that the EOF Manager may authorize:

a. 2, 3
b. 1
c. 1, 4
d. 4

ANS: *d*
a,b,c incorrect, these are non-delegable emergency director duties.
NEW

KA# Generic 2.4.29	***OBJ#*** 200.107.a.05	***REF*** EP-LP-30300	***COGNITIVE LVL*** 3

98. Unit Two is operating at 100% RTP with the following conditions:

HPCI TURBINE EXH PRESS HIGH annunciator had been repeatedly actuating and has been acknowledged for 2 shifts.
HPCI is secured and has not been run in the past 2 shifts.
HPCI turbine exhaust pressure indicates zero psig.

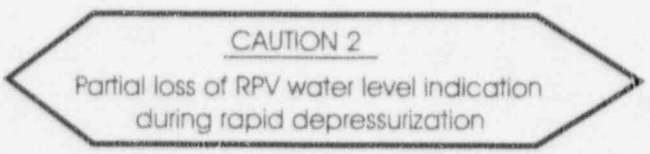
Based on these indications , the annunciator is a:

a. problem annunciator and should be deactivated immediately
b. problem annunciator and the Shift Supervisor should determine compensatory actions
c. nuisance annunciator and should be deactivated immediately
d. nuisance annunciator and the Shift Supervisor should determine compensatory actions.

ANS: *b*
a,c,d incorrect, it is a problem annunciator but shouldn't be considered for deactivation until after 2 days.
NEW

KA# Generic 2.4.33	***OBJ#*** 300.030.a.01	***REF*** LR-LP-30004	***COGNITIVE LVL*** 3

99. The RC RPV Control EOP, RC/L Path, has the following caution:



This caution is reminding the operator that:

a. ***during*** a rapid RPV depressurization below 500 psig, most level instruments may experience erratic behavior and should be monitored closely
b. ***during*** a rapid RPV depressurization below 500 psig, EOP graph 1 may be exceeded and RPV flooding may be required
c. ***during*** a rapid RPV depressurization below 500 psig, B21-R604A(B) and B21-R623A(B) may be used if erratic behavior fails to occur
d. ***during*** a rapid RPV depressurization below 500 psig, B21-R604A(B) and B21-R623A(B) cannot be used to determine RPV water level.

ANS: *d*
a,b,c incorrect, see caution 2 on the chart.
NEW

KA# Generic 2.4.20	***OBJ#*** 201.065.a.09	***REF*** LR-LP-20305	***COGNITIVE LVL*** 2

100. Unit Two is operating at 100% RTP when the in-service CRD System flow control valve fails closed. SELECT the adverse consequence from extended operation in this condition:

a. Control Rod Drive Mechanism temperature will rise and system differential pressure may decrease
b. Control Rods may drift into the core due to the abnormally high charging water header pressure
c. The running CRD Pump will be operating under low flow conditions and may overheat and trip
d. Recirculation Pump seal temperatures will rise due to low seal flow and may need to be tripped.

ANS: *a*
b,c,d: incorrect, see lesson plan
NEW

KA# Generic 2.1.7	*OBJ#* 200.045.a.01	*REF* LR-LP-00101	*COGNITIVE LVL* 2