

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-397
License No.: NPF-21
Report No.: 50-397/96-09
Licensee: Washington Public Power Supply System
Facility: Washington Nuclear Project-2
Location: 3000 George Washington Way
Richland, Washington
Dates: October 7-11, 1996
Inspectors: H. Bundy, Chief Examiner
R. Baldwin, Examiner (Region II)
R. Lantz, Examiner
T. Meadows, Examiner
Approved By: T. O. McKernon, Acting Chief, Operations Branch
Division of Reactor Safety

ATTACHMENTS:

Attachment 1: Partial List of Persons Contacted
Attachment 2: Simulation Facility Report
Attachment 3: Final Written Examination and Answer Key

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EXECUTIVE SUMMARY

Washington Nuclear Project-2 NRC Inspection Report 50-397/96-09

This inspection evaluated the competency of six senior operator and five reactor operator license applicants for issuance of operating licenses at the WNP-2 facility. The initial license examinations were developed by the facility using the pilot process program guidance and approved and administered by NRC examiners. Guidance for conduct of the pilot examinations was contained in Generic Letter 95-06 and Attachment 1 to Regional Office Interaction Memorandum 9525.

The initial written examinations were administered to all 11 applicants on October 7, 1996. The operating tests were administered October 8-10, 1996. In general, all applicants displayed the requisite knowledge and skills to satisfy the requirements of 10 CFR 55 and were issued the appropriate licenses. No significant generic performance weaknesses were identified during the examinations. Minor performance weaknesses identified by the examiners were discussed with the licensee for its consideration in providing future operator training.

Operations

- All applicants passed all portions of the initial license examinations and satisfied the requirements of 10 CFR 55.33(a)(2) and were issued the appropriate licenses in accordance with 10 CFR 55.51 (Sections O4.1, O4.2).
- No significant generic knowledge or training deficiencies were exhibited by the applicants. Minor deficiencies observed by the examiners were referred to the licensee for appropriate actions (Sections O4.1, O4.2).
- All applicants, as well as licensed operators in the main control room, exhibited excellent communications skills and teamwork in responding to abnormal operating conditions (Sections O1.1, O4.2).
- A potential procedural deficiency involving flow control during single loop operation was referred to the licensee for resolution (Sections O3, O4.2).
- The licensee's actions to resolve an issue concerning incorrect modeling of feedwater flow control in the simulation facility were considered adequate (Section O5.1).

Engineering

- The Updated Final Safety Analysis Report wording was consistent with the observed plant practices, procedures, and/or parameters (Section E2.1).

Plant Support

- Plant housekeeping was excellent (Section F8.1).

Report Details

I. Operations

O1 Conduct of Operations

O1.1 General Observations

a. Inspection Scope

During the in-plant main control room section of the operating test walkthroughs, the examiners observed the on-shift operators during routine and abnormal operations of the facility. The facility was at 100 percent power during most of the inspection, and all observations were conducted during the day shift, coincident with conduct of the walkthrough examinations.

b. Observations and Findings

Crew communication was clear, unambiguous, consistently three legged, and consistent with communication observed in the simulator during conduct of the initial operator license examinations. Excellent response to control board annunciators and a power reduction, resulting from a partial runback of the reactor recirculation pumps, was observed. Actions taken in response to annunciators were prompt and appropriate to the conditions observed or reported. Command and control during the reactor power reduction event was excellent. Professional demeanor was exhibited by both the reactor operators and senior operators.

c. Conclusions

The control room staff exhibited professionalism and excellent communications and command and control.

O3 Operations Procedures and Documentation

A potential weakness in Procedure 2.2.1, "Reactor Recirculation," Revision 27, is discussed in Section 04.2b.

O4 Operator Knowledge and Performance

O4.1 Initial Written Examination

a. Inspection Scope

The initial written examination was developed by the facility in accordance with guidance provided in Generic Letter 95-06, "Changes in the Operator Licensing Program," and submitted to the chief examiner for review and approval for use as

an NRC license examination. The written examination was administered by the licensee onsite on October 7, 1996, in accordance with guidance provided by the chief examiner.

b. Observations and Findings

The written examination was transmitted by the licensee to the NRC in a letter dated September 6, 1996. The draft written examination was considered technically valid and discriminating. It was responsive to a knowledge and abilities sample plan submitted by a letter dated July 26, 1996, which was approved by the staff. The staff approved the draft as submitted, subject to the licensee modifying a distractor in one question and replacing a second question which did not comply with the outline previously submitted. The licensee subsequently obtained approval to replace two additional questions which had been inadvertently used in a practice examination. The post examination review did not identify a need for further modifications. The licensee did not provide any post examination comments. The staff independently graded the examinations. The minimum passing score was 80 percent. The scores for senior operator applicants ranged from 82 to 92 percent, with an average score of 87.8 percent. The scores for reactor operator applicants ranged from 86 to 89 percent with an average score of 88.2 percent. More than half of the reactor operator applicants missed the same six questions (6, 27, 44, 57, 68, 79). More than half of the senior operator applicants missed the same seven questions (18, 31, 49, 50, 51, 53, 63). The majority of the questions with high miss percentages were common to both exams. However, only two questions (reactor operator 57 and 68 and senior operator 53 and 63, respectively) were missed by the majority of both applicant categories. No generic deficiencies were identified as a result of the question analysis.

c. Conclusions

All 11 applicants passed the written examination portion of the license examination. Evaluation of the graded examinations did not identify any generic knowledge or training weaknesses.

O4.2 Initial Operating Test

a. Inspection Scope

The operating test was developed in accordance with Generic Letter 95-06 by the facility under a security agreement and reviewed and approved by the staff. NRC examiners administered the operating test from October 8-10, 1996. The examiners evaluated the applicants in three areas to assess their ability to safely operate the facility. The first area, integrated plant operations, evaluated the applicants functioning in shift crews and responding to component and instrument failures, and a major plant transient or accident, and utilized the dynamic plant

referenced simulator in two or more scenarios. The second area, control room and plant systems, required each applicant to respond to simulated tasks or plant conditions, using the appropriate facility procedures as a guide to complete the tasks. The third area, administrative topics, consisted of an oral examination of the applicants' administrative knowledge of facility operations.

b. Observations and Findings

After initiation of a security agreement, the licensee submitted an operating test outline with a letter dated July 26, 1996, which was generally responsive to the examiner standards referenced in Generic Letter 95-06. However, there were deficiencies in the dynamic simulator part of the examination outline which were discussed with the licensee. The operating test outline was approved, subject to licensee incorporation of staff comments, and the draft operating test was submitted by a letter dated September 6, 1996.

NRC examiners validated the operating test onsite during the week of September 23, 1996, using the plant simulation facility and plant tours. Further deficiencies relating to satisfaction of NRC examiner standards were identified in the dynamic scenarios. Further changes were made to the scenarios and validated using an actual operating crew signed under the security agreement. Several minor deficiencies were identified by the examiners in the job performance measures to be used in the control room and plant systems part of the examination. Appropriate corrections were reflected by the licensee in the final examination. The staff approved the final draft and considered it to be technically valid and discriminating. The licensee devoted a high level of effort to examination validation during the week of September 23, 1996, and was very responsive to making the required changes.

All 11 applicants passed the operating test portion of the examination. During the integrated plant operations simulator examinations, the examiners observed that the applicants consistently used formal, three legged communication with one exception. When the senior operator applicant, serving in the command position, announced entry to an emergency operating procedure, there was typically no verbal response. However, the other applicants responded by proceeding with actions required by the applicable emergency operating procedure. The examiners observed that applicants serving in the reactor operator positions routinely monitored plant indications and promptly flagged entry conditions to emergency operating procedures to the senior operator applicant in the command position. The senior operator applicants in the command position promoted good crew synergism by routinely providing comprehensive briefings and asking if anyone had any questions.

Operating deficiencies observed during the operating test which applied to more than one applicant are as follows:

- When simulating startup of the high pressure core spray diesel generator, several applicants pushed the start push button on Panel E-CP-DG/RP3 instead of the push button on Panel E-CP-DG/EP1, as required by the procedure. With the unit mode selector switch in MAINT, as required by the cited procedure, the unit would not respond to the push button on Panel E-CP-DG/RP3.
- When referring to power to flow maps in accordance with Procedure 2.2.1, "Reactor Recirculation," following trip of one reactor recirculation pump to determine the potential for core power oscillations, several applicants attempted to use two loop instead of single loop power-to-flow maps. Also, several applicants attempted to use total core flow instead of loop drive flow in determining the operating point on the power-to-flow map. In each instance, other applicants on the involved crews corrected the potential errors. There was also some confusion on the part of the senior operator applicants regarding the requirement in Step 5.4.5 of the procedure which stated, "As soon as possible, increase operating loop flow to GT 34,000 gpm to maintain adequate reverse flow through the idle loop." One applicant felt this only applied if the trip occurred with the plant at 100 percent power. The training and operations representatives stated a flow increase was required whenever a reactor recirculation pump trip occurred to maintain adequate reverse flow through the idle loop.

The licensee stated at the exit meeting that appropriate actions would be taken to address the apparent operating weaknesses. The licensee also stated it would determine if there is a weakness in Procedure 2.2.1, or if the confusion on Step 5.4.5 is only a training weakness, and would take appropriate actions.

c. Conclusions

All applicants passed the operating test portion of the examination. Communications, command and control, and crew synergism were noted strengths. Applicants were knowledgeable and sensitive to entry conditions for emergency operating procedures. Applicant deficiencies involving use of power to flow maps in single loop operation and starting the high pressure core spray diesel generator at local panels were observed. A training or procedural deficiency involving maintenance of adequate reverse flow in an idle recirculation loop following a trip of the reactor recirculation pump was identified for licensee resolution.

O5 Operator Training and Qualification

O5.1 Simulation Facility Performance

a. Inspection Scope

During the examination period, the inspectors also reviewed recent simulator fidelity issues related to the modeling of the digital feedwater control system and that installed in the plant.

b. Observations and Findings

The inspectors were told that after the digital feedwater modification installed in the plant during the past outage the operators identified difficulty on the plant-specific simulator in controlling feedwater in the manual fast speed mode. Because of this feedback, the setpoint in the plant's comparable controller was set at a lower multiple of the normal range manual controller. The facility received the design data upgrade for the simulator during the last week of September 1996, but made the decision to postpone installation until the initial license operator class had finished their training and exams. While the facility is committed to ANS 3.5 - 1985, "Nuclear Power Plant Simulators for Use in Operator Training," which allows one year for upgrading the simulator after a design change is installed in the actual plant, the training of operators on a simulator which does not accurately model the actual plant could pose a potential negative training impact. The licensee acknowledged this potential and was in the process of installing the simulator upgrade on October 11, 1996. Further, the licensee's licensed operator requalification training was scheduled to begin training on the new system during the week of October 14, 1996. This requalification training included training of any new operator licenses on the upgraded digital feedwater control system prior to placing the individuals on shift. Other minor simulation facility performance problems observed during examination preparation and administration are described in Attachment 2.

c. Conclusions

The inspectors concluded that the licensee had known of the condition and had taken the appropriate corrective actions to resolve the fidelity condition in the simulator and to train the operators. The licensee also initiated appropriate actions to resolve other simulator fidelity issues identified by the examiners.

III. Engineering

E2 Engineering Support of Facilities & Equipment

E2.1 Review of the Updated Final Safety Analysis Report Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the Updated Final Safety Analysis Report descriptions. While performing the inspection discussed in this report, the inspector reviewed the applicable portions of the Updated Final Safety Analysis Report that related to the areas inspected. The inspector verified that the Updated Final Safety Analysis Report wording was consistent with the observed plant practices, procedures, and/or parameters.

IV. Plant Support

F8 Miscellaneous Fire Protection Issues

F8.1 General Comments

The examiners observed general plant housekeeping incident to administration of the in-plant control room and systems walkthrough section of the operating test. The examiners observed that housekeeping was excellent. The work areas were clean and well lighted and no abandoned or uncontrolled materials or tools were identified.

V. Management Meetings

X1 Exit Meeting Summary

The examiners presented the inspection results to members of the licensee management at the conclusion of the inspection on October 11, 1996. The licensee acknowledge the findings presented.

The licensee did not identify as proprietary any information or materials examined during the inspection.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Swank, Manager, Regulatory Affairs
C. Callahan, Instructor, Initial License Training
J. Albers, Manager, Nuclear Training
D. Kaopuiki, Initial License Class Coordinator
W. Shaeffer, Operations Training Superintendent
A. Langdon, Acting Operations Manager
O. Brooks, Operations Liaison to Training
J. Grumme, Operations Training Secretary

NRC

R. Barr, Senior Resident Inspector
J. Munro, HOLB Auditor

ATTACHMENT 2

SIMULATION FACILITY REPORT

Facility Licensee: WNP-2

Facility Docket: 50-397

Operating Examinations Administered at: WNP-2 Training Center, Richland, WA

Operating Examinations Administered on: October 8-10, 1996

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 which may be used in future evaluations. No licensee action is required in response to these observations.

During examination validation the inspectors were told that the digital feedwater controller in the simulator responds faster than the actual one installed in the plant. This potential negative training issue is discussed in Report Section O5.1. The licensee planned on installing a simulator modification to resolve this issue before further simulator training is conducted.

The following simulator deficiencies were identified during examination validation and did not impact the examination:

- A generator lockout was received when attempting to synchronize the main generator to the South bus. The generator was successfully synchronized to the North bus. A Simulator Deficiency Report was initiated by the simulator instructor.
- It was observed that the RRC control station readout was slow to actual RRC speed changes made by the operator. The training representatives stated that this was a known problem for which correction required a simulator computer replacement. This was being considered in the long range planning, but no completion date had been established. This issue did not affect examination validity.

During examination administration, CRD Pump 2 failed to trip as designed when Malfunction EPS6D was entered. A Simulator Deficiency Report was issued by the instructor. This malfunction had no effect on examination validity because the instructors in the control booth were able to report a CRD pump failure by local observation to confirm loss of flow indications on the main control board.

ATTACHMENT 3

FINAL WRITTEN EXAMINATION AND ANSWER KEY



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

APPLICANT INFORMATION

Name:		Region:	IV
Date:	October 7 1996	Facility/Unit:	WNP-2
License Level	SRO	Reactor Type:	GE
Start Time:		Finish Time:	

INSTRUCTIONS

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

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

Applicant's Signature

RESULTS

Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Points

SENIOR REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: _____

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

- | | | | | | |
|-----|---------------|-----|---------------|-----|---------------|
| 1. | a b c d _____ | 21. | a b c d _____ | 41. | a b c d _____ |
| 2. | a b c d _____ | 22. | a b c d _____ | 42. | a b c d _____ |
| 3. | a b c d _____ | 23. | a b c d _____ | 43. | a b c d _____ |
| 4. | a b c d _____ | 24. | a b c d _____ | 44. | a b c d _____ |
| 5. | a b c d _____ | 25. | a b c d _____ | 45. | a b c d _____ |
| 6. | a b c d _____ | 26. | a b c d _____ | 46. | a b c d _____ |
| 7. | a b c d _____ | 27. | a b c d _____ | 47. | a b c d _____ |
| 8. | a b c d _____ | 28. | a b c d _____ | 48. | a b c d _____ |
| 9. | a b c d _____ | 29. | a b c d _____ | 49. | a b c d _____ |
| 10. | a b c d _____ | 30. | a b c d _____ | 50. | a b c d _____ |
| 11. | a b c d _____ | 31. | a b c d _____ | 51. | a b c d _____ |
| 12. | a b c d _____ | 32. | a b c d _____ | 52. | a b c d _____ |
| 13. | a b c d _____ | 33. | a b c d _____ | 53. | a b c d _____ |
| 14. | a b c d _____ | 34. | a b c d _____ | 54. | a b c d _____ |
| 15. | a b c d _____ | 35. | a b c d _____ | 55. | a b c d _____ |
| 16. | a b c d _____ | 36. | a b c d _____ | 56. | a b c d _____ |
| 17. | a b c d _____ | 37. | a b c d _____ | 57. | a b c d _____ |
| 18. | a b c d _____ | 38. | a b c d _____ | 58. | a b c d _____ |
| 19. | a b c d _____ | 39. | a b c d _____ | 59. | a b c d _____ |
| 20. | a b c d _____ | 40. | a b c d _____ | 60. | a b c d _____ |

SENIOR REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: _____

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

- | | |
|-------------------|--------------------|
| 61. a b c d _____ | 81. a b c d _____ |
| 62. a b c d _____ | 82. a b c d _____ |
| 63. a b c d _____ | 83. a b c d _____ |
| 64. a b c d _____ | 84. a b c d _____ |
| 65. a b c d _____ | 85. a b c d _____ |
| 66. a b c d _____ | 86. a b c d _____ |
| 67. a b c d _____ | 87. a b c d _____ |
| 68. a b c d _____ | 88. a b c d _____ |
| 69. a b c d _____ | 89. a b c d _____ |
| 70. a b c d _____ | 90. a b c d _____ |
| 71. a b c d _____ | 91. a b c d _____ |
| 72. a b c d _____ | 92. a b c d _____ |
| 73. a b c d _____ | 93. a b c d _____ |
| 74. a b c d _____ | 94. a b c d _____ |
| 75. a b c d _____ | 95. a b c d _____ |
| 76. a b c d _____ | 96. a b c d _____ |
| 77. a b c d _____ | 97. a b c d _____ |
| 78. a b c d _____ | 98. a b c d _____ |
| 79. a b c d _____ | 99. a b c d _____ |
| 80. a b c d _____ | 100. a b c d _____ |

SENIOR REACTOR OPERATOR

NRC POLICIES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on any part of the examination will result in a denial of your application.
 2. If you have any questions concerning the administration of the examination, do not hesitate asking them before starting that part of the test.
 3. SRO applicants will be tested at the level of the responsibility of the senior licensed shift position (i.e. Shift Manager).
 4. You must pass every part of the examination to receive a license. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.
 5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.
 6. 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 assistance in completing the examination.
 7. To pass the examination, you must achieve a grade of 80 percent or greater. Every question is worth one point.
 8. The time limit for completing the examination is four hours.
- You may bring pens and calculators into the examination room. Use only black ink to ensure legible copies.
10. Print your name in the blank provided on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.
 11. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.
 12. 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.
 13. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.
 14. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied.

SENIOR REACTOR OPERATOR

QUESTION: 1 (1.00)

Following maintenance on Hydraulic Control Unit (HCU) 26-35, the HCU is to be returned to service. Independent verification of valve position is required.

Select the one (1) statement below that correctly describes how independent verification of these valves is accomplished.

- a. The first operator opens the valves and seals them open using appropriate seals. The second operator verifies valve position from the control room by observing the "Accumulator Trouble" light on the full core display extinguishes.
- b. The first operator opens the valves and seals them open using appropriate seals. The second operator confirms the valves are sealed open.
- c. The first operator opens the valves. The second operator observes the valves being opened. No sealing devices are required for these valves.
- d. The first operator opens the valves. The second operator confirms the valves are open and seals them using appropriate seals.

QUESTION: 2 (1.00)

Which one (1) of the following individuals is responsible for the initial review of plant clearance orders and work packages received from the Clearance Order Review Committee (CORC)?

- a. Control Room Operator (CRO)
- b. Shift Technical Advisor (STA)
- c. Production SRO
- d. Control Room Supervisor (CRS)

SENIOR REACTOR OPERATOR

QUESTION: 3 (1.00)

Which one (1) of the following statements would describe "Simultaneous Verification" as it applies to a danger tag clearance order?

- a. Two qualified individuals, independently and separately checking the required status of the component or device.
- b. A Control Room Operator (CRO) verifying the required status of the component or device using Control Room indications.
- c. A second qualified individual, via local panel indications showing the required status of the component or device.
- d. Two qualified operators, accompanying each other, check required status, correct identification and location prior to changing component status.

QUESTION: 4 (1.00)

Under normal conditions, keys to locked "High Radiation" areas are issued from which one (1) of the following?

- a. Control room.
- b. Secondary alarm station.
- c. Work control center.
- d. Health physics access control.

SENIOR REACTOR OPERATOR

QUESTION: 5 (1.00)

A task must be performed at a location with a general area radiation level of 60 mr/hr. Previous performance of the task indicates that:

One (1) worker can perform the task in 1 hr and 20 min.

Two (2) workers can complete the task in 50 min.

Three (3) workers can complete the task in 30 min.

Four (4) workers can complete the task in 25 min.

Based on the above information, how many workers should be assigned to perform this task?

- a. One (1) worker
- b. Two (2) workers
- c. Three (3) workers
- d. Four (4) workers

QUESTION: 6 (1.00)

What is the maximum number of visitors that may accompany one (1) escort into the Main Control Room?

- a. Three (3)
- b. Five (5)
- c. Ten (10)
- d. Fifteen (15)

SENIOR REACTOR OPERATOR

QUESTION: 7 (1.00)

While inspecting work inside a confined space, the Designated Safety Representative (DSR) reports that combustible gas levels are above 1%. The DSR has ordered you to immediately evacuate the confined space.

Which one (1) of the following actions is required prior to reentry into the confined space?

- a. Self Contained Breathing Apparatus (SCBA) and DSR authorization.
- b. Hazardous atmosphere has been eliminated and DSR has authorized reentry.
- c. Self Contained Breathing Apparatus (SCBA) and standby worker at the entrance to the confined space.
- d. "Stay Time" calculated by the DSR in order to reenter the confined space and complete the job.

QUESTION: 8 (1.00)

Due to an injury sustained on shift, the Fire Brigade Leader has to leave work.

Which one (1) of the following individuals can take the place of the Fire Brigade Leader?

- a. Qualified security officer
- b. Shift support supervisor
- c. Qualified equipment operator
- d. Qualified health physics technician

QUESTION: 9 (1.00)

While reviewing a procedure, you notice a step with a star (★) in the left margin.

Which one (1) of the following is represented by this symbol?

- a. Critical to plant/personnel safety step.
- b. FSAR Appendix F (Fire Protection Program) commitment step.
- c. Technical Specification related step.
- d. "For Information Only" step.

SENIOR REACTOR OPERATOR

QUESTION: 10 (1.00)

D When may a task be performed without an approved procedure present?

- a. When the task has no safety significance.
- b. When the task procedure number on the cover sheet is proceeded by an asterisk (*).
- c. When the task has been previously performed during the shift by the individual and the required steps have been memorized.
- d. When the task consists of simple routine actions frequently performed that don't require step sign-off's, recorded data, or specific sequence.

QUESTION: 11 (1.00)

During the performance of a surveillance procedure the Control Room Operator (CRO) informs the Control Room Supervisor (CRS) of a potential problem associated with the next step. After discussion and with concurrence from the Shift Manager it is decided to use a Verbal Temporary Change. At what point in time does this Verbal Temporary Change have to be translated into a Temporary Change Notice (TCN)?

- a. Prior to the end of that working shift.
- b. Prior to the start of the next calendar day.
- c. Within seven (7) working days.
- d. Within fourteen (14) working days.

SENIOR REACTOR OPERATOR

QUESTION: 12 (1.00)

An evolution is being performed in accordance with the Reactor Water Cleanup System (RWCU) operating procedure when an error in the procedure is noted. The procedure already has a Temporary Change Notice (TCN) cover sheet attached to the procedure. The Shift Manager (SM) has determined that completion of the work is not essential to plant operations.

Select the one (1) statement below that describes the administrative requirements necessary to continue with this evolution.

- a. Develop a temporary procedure to address the problem until the existing procedure can be revised to correct the error.
- b. Implement and receive approval for a separate additional TCN to correct this error before continuing with the evolution.
- c. Implement a new TCN which corrects the new error and incorporates and cancels the outstanding TCN.
- d. Receive verbal authorization to complete the task and record in the Operations Logging System.

QUESTION: 13 (1.00)

The plant is operating in Operational Condition 1.

Which one (1) of the following lists the minimum shift crew composition administrative limit as specified in plant procedures?

- a. SM, CRS, SSS, three (3) CROs, five (5) EO, ENS communicator, two (2) HP Techs, two (2) Chem Techs, two (2) I & C Techs, Duty Officer.
- b. SM, CRS, two (2) CROs, two (2) EOs, STA, HP Tech, Chem Tech.
- c. SM, CRS, SSS, three (3) CROs, four (4) EOs, STA, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech.
- d. SM, CRS, SSS, two (2) CROs, two (2) EOs, STA, ENS communicator, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech, Elect/I&C Tech, Mechanic, Duty Officer.

SENIOR REACTOR OPERATOR

QUESTION: 14 (1.00)

On a case-by-case basis, line supervisors/managers can approve the use of signals for communications, if:

- 1) the signals are not easily confused and are understood by all involved,
- 2) the concept of three-way communication is applied to the maximum extent possible,
- 3) a thorough pre-job brief is conducted AND
- 4) signals are ONLY used...
 - a. in the Control Room.
 - b. in severe environments (high noise, heat, or radiation)
 - c. when physical directions are the "key" elements of the task.
 - d. when the message originator and message recipient are not readily identifiable to each other by sight and voice.

QUESTION: 15 (1.00)

Who has the responsibility for initiating Emergency Core Cooling Systems (ECCS), if required, during a plant transient?

- a. Only the operator responsible for panel H13-P601.
- b. The on-shift crew member in closest proximity to panel H13-P601.
- c. Only the operator designated by the Control Room Supervisor (CRS) to respond.
- d. Any licensed operator at the control console.

QUESTION: 16 (1.00)

During a plant startup with power at $\approx 62\%$, feedwater dissolved oxygen concentration exceeds the fuel warranty requirements.

Which one (1) of the following statements describes actions that should be taken.

- a. Initiate an immediate plant shutdown.
- b. Initiate immediate corrective actions, increase sampling frequency, and initiate a PER.
- c. Increase sampling frequency, initiate a PER, and continue with the startup.
- d. Immediately scram the reactor.

SENIOR REACTOR OPERATOR

QUESTION: 17 (1.00)

Which one (1) of the following is the LOWEST Emergency Action Level (EAL) at which the WNP-2 Administrative exposure hold points are automatically waived?

- a. Site Area Emergency (SAE).
- b. Unusual Event (UE).
- c. General Emergency (GE).
- d. Alert.

QUESTION: 18 (1.00)

The plant is operating at rated conditions with RRC-IN-ASD/1A (1A ASD UPS inverter) in service and supplying panel E-PP-ASD1/4.

Pushing the red EMER POWER OFF pushbutton on the front of the inverter panel will result in which one (1) of the following?

- a. RRC-P-1A ("A" reactor recirculation pump) will immediately trip, RRC-P-1B ("B" reactor recirculation pump) will continue to operate.
- b. Both reactor recirculation pumps will immediately trip.
- c. Both reactor recirculation pumps will trip after approximately 20 minutes.
- d. Both reactor recirculation pumps will continue to operate indefinitely.

QUESTION: 19 (1.00)

The plant is operating in Mode 1. Both Reactor Recirculation pumps are operating at 45 Hz. Adjustable Speed Drive (ASD) Channel A2 is not running and its white READY light is illuminated.

Which one (1) of the following describes the response of the Recirculation Pumps if the START Pushbutton for RRC-P-1A is pressed?

- a. The A2 ASD Channel will start. RRC-P-1A frequency will ramp to 52.2 Hz.
- b. The A2 ASD Channel will start. RRC-P-1A will continue to operate at 45 Hz.
- c. RRC-P-1A frequency will ramp to 15 Hz, the A2 ASD Channel will start, and RRC-P-1A frequency will ramp back to 45 Hz.
- d. RRC-P-1A frequency will ramp to 52.2 Hz and the A2 ASD Channel will start.

SENIOR REACTOR OPERATOR

QUESTION: 20 (1.00)

Given the following indications:

- Reactor scrammed
- Reactor water level at -95" and down slow
- Drywell pressure at 1.67 psig and up fast.

Which one (1) of the following statements describes the response of the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) system to the indications listed above.

- a. LPCI will initiate when reactor water level decreases to LE -129".
- b. LPCI initiated when reactor water level reached -50".
- c. LPCI will initiate when drywell pressure increases to GE 1.68 psig.
- d. LPCI initiated when drywell pressure reached 1.65 psig.

QUESTION: 21 (1.00)

HPCS-V-1 (CST suction) is full closed and HPCS-V-15 (suppression pool suction) is full open during the performance of a High Pressure Core Spray (HPCS) valve operability surveillance when a valid HPCS initiation signal is received.

Which one (1) of the following statements correctly identifies the response of the HPCS system to these conditions.

- a. HPCS-V-1 will remain closed.
HPCS-V-15 will remain open.
HPCS-P-1 starts immediately.
- b. HPCS-V-15 will start to close.
When HPCS-V-15 is full closed, HPCS-P-1 will start and HPCS-V-1 will open.
- c. HPCS-V-1 will remain closed.
HPCS-V-15 will remain open.
HPCS-P-1 must be manually started.
- d. HPCS-V-15 will remain open.
When HPCS-V-1 starts to open, HPCS-P-1 will start after a 5 second time delay.

SENIOR REACTOR OPERATOR

QUESTION: 22 (1.00)

Following a valid High Pressure Core Spray (HPCS) initiation on high drywell pressure., the HPCS LEVEL 8 LEAKED IN light and alarm are received and HPCS-V-4 (RPV injection valve) closes.

Which one (1) of the following conditions will cause HPCS-V-4 to automatically re-open?

- a. Drywell high pressure logic reset.
- b. RPV level lowering to +12".
- c. RPV level lowering to -51".
- d. Drywell high pressure alarm clears.

QUESTION: 23 (1.00)

An Anticipated Transient Without Scram (ATWS) is in progress concurrent with a loss of MC-8B, suppression pool temperature is 118°F and up slow. Assume all required actions have been completed correctly and no other failures have occurred at this time.

Which one (1) of the following describes the Standby Liquid Control (SLC) system status?

- | | | | |
|----|--|--|---|
| a. | SLC-P-1A - running
SLC-V-1A - open
SLC-V-4A - actuated | SLC-P-1B - running
SLC-V-1B - open
SLC-V-4B - actuated. | (SLC pumps)
(SLC storage tank outlets)
(Squib valves) |
| b. | SLC-P-1A - loss of power
SLC-V-1A - loss of power
SLC-V-4A - loss of power | SLC-P-1B - running
SLC-V-1B - open
SLC-V-4B - actuated | (SLC pumps)
(SLC storage tank outlets)
(Squib valves) |
| c. | SLC-P-1A - off
SLC-V-1A - closed
SLC-V-4A - closed | SLC-P-1B - off
SLC-V-1B - closed
SLC-V-4B - closed | (SLC pumps)
(SLC storage tank outlets)
(Squib valves) |
| d. | SLC-P-1A - running
SLC-V-1A - open
SLC-V-4A - actuated | SLC-P-1B - loss of power
SLC-V-1B - loss of power
SLC-V-4B - loss of power | (SLC pumps)
(SLC storage tank outlets)
(Squib valves) |

SENIOR REACTOR OPERATOR

QUESTION: 24 (1.00)

D With the plant in a hydraulic Anticipated Transient Without Scram (ATWS) condition, the Control Room Operator (CRO) carries out the actions of PPM 5.5.11 and resets the scram. Annunciator P603-A8 6-4, SCRAM VALVE PILOT AIR HDR PRESS LOW, fails to clear.

Which one (1) of the following could cause this condition?

- a. At least one (1) backup scram valve has failed to ENERGIZE following the scram reset.
- b. Alternate Rod Insertion (ARI) logic has not been reset.
- c. Both backup scram valves have failed to ENERGIZE following the scram reset.
- d. One (1) of the Reactor Protection System (RPS) trip signals has not been bypassed.

QUESTION: 25 (1.00)

Which one (1) of the following statements describes all of the conditions that will cause a trip of an Reactor Protection System (RPS) Electric Power Monitoring Assembly (EPA) breaker?

- B**
- a. Underfrequency, overcurrent, and undervoltage.
 - b. Overfrequency, undervoltage, and overvoltage.
 - c. Undervoltage, overvoltage, and underfrequency.
 - d. Overfrequency, underfrequency, and overcurrent.

QUESTION: 26 (1.00)

With the plant at rated conditions, a GROUP 1 scram solenoid light for Reactor Protection System (RPS) "A" is noted to be deenergized on H13-P603 and H13-P609. During your investigation a loss of RPS B occurs followed almost immediately by a full reactor scram.

What caused the full reactor scram?

- C**
- a. APRM INOP.
 - b. Turbine trip.
 - c. MSIV isolation.
 - d. Scram discharge volume high level

SENIOR REACTOR OPERATOR

QUESTION: 27 (1.00)

During a reactor startup, the reactor is subcritical with control rod withdrawal in progress. Source Range Monitor (SRM) count rate has stabilized at 1×10^3 Counts Per Second (CPS) following the last control rod withdrawal.

During withdrawal of the next control rod in the sequence, the first control rod in the next Rod Worth Minimizer (RWM) group, reactor period meters deflect from infinity to ≈ 20 seconds before turning. Reactor period is now ≈ 60 seconds increasing (approaching infinity).

Which one (1) of the following actions should be taken for this condition?

- Verify that the withdrawn control rod did not "double notch" and stop control rod withdrawal to allow stabilization of neutron level.
- Monitor SRMs and retract SRMs as necessary to maintain count rate LT 1×10^4 CPS.
- Insert control rods until the reactor is subcritical and notify the Control Room Supervisor (CRS)/Shift Manager (SM) and the Station Nuclear Engineer (SNE).
- Immediately manually scram the reactor.

QUESTION: 28 (1.00)

Given the following:

- RPV water level -10" and steady
- Reactor pressure 200 psig and down slow
- Drywell temperature 350°F and down very slow
- No Secondary Containment Control entry conditions exist.
- Emergency depressurization is planned.

Which one (1) of the following is correct concerning the instrument(s) which can be used to determine RPV water level for the given conditions?

- Wide range only.
- Narrow range only.
- None.
- Fuel zone range only.

SENIOR REACTOR OPERATOR

QUESTION: 29 (1.00)

Reactor Core Isolation Cooling (RCIC) initiated as expected on a valid low level signal raising RPV level to the Level 8 setpoint.

Which one (1) of the following describes the automatic restart capability of RCIC?

RCIC will...

- a. automatically restart when RPV level drops below the Level 8 setpoint.
- b. NOT automatically restart unless a high drywell pressure signal is received.
- c. automatically restart when RPV level drops below the Level 2 setpoint.
- d. automatically restart when RPV level drops below the Level 3 setpoint.

QUESTION: 30 (1.00)

A transient has resulted in RPV level dropping to -140". The level has remained stable for GT seven (7) minutes. SM-8 has deenergized and Division 1 Automatic Depressurization System (ADS) has been inhibited. After verifying the cause of the loss of SM-8, permission is granted to reenergize the bus.

Assuming no operator actions, which one (1) of the following describes the response of the ADS Logic to the reenergization of SM-8.

- a. ADS will initiate 105 seconds after the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.
- b. ADS will not initiate if the operator resets the division "2" ADS timer within 105 seconds.
- c. ADS will initiate immediately when the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.
- d. ADS will not initiate until the operator resets the division "1" ADS inhibit switch.

SENIOR REACTOR OPERATOR

QUESTION: 31 (1.00)

What effect does manually decreasing the output on CAC-FC-67A ("A" recycle flow controller) have on the Containment Atmosphere Control (CAC) system?

- a. Reduces flow through the scrubber and reduces oxygen concentration entering the recombiner.
- b. Increases flow through the scrubber and increases oxygen concentration entering the recombiner.
- c. Reduces flow through the scrubber and increases oxygen concentration entering the recombiner.
- d. Increases flow through the scrubber and reduces oxygen concentration entering the recombiner.

QUESTION: 32 (1.00)

Which one (1) of the following is designed to prevent the differential pressure across the primary containment boundary from exceeding the design limit?

- a. Reactor building to wetwell vacuum breakers.
- b. Wetwell to drywell vacuum breakers.
- c. Standby Gas Treatment (SGT) system.
- d. Suppression pool "T" quenchers.



SENIOR REACTOR OPERATOR

QUESTION: 33 (1.00)

D A Loss of Coolant Accident (LOCA) has occurred, all Emergency Core Cooling Systems (ECCS) equipment has functioned as designed. Present plant conditions are as follows:

- RPV level -135" and up slow
- RPV pressure 200 psig and down slow
- Wetwell pressure 9 psig and up very slow
- RHR-V-42A (RPV injection valve) is open

RHR-V-17A (Upper drywell spray inboard isolation valve) is opened in preparation for drywell spray. When the Control Room Operator (CRO) takes the control switch for RHR-V-16A (upper drywell spray outboard isolation) to OPEN, RHR-V-16A will...

- a. remain closed until RPV pressure drops below 135 psig.
- b. open when RPV water level is GE -129".
- c. open immediately.
- d. remain closed.

D QUESTION: 34 (1.00)

Loss of DP-S1-2 power will render Safety Relief Valve (SRV) control switches INOPERABLE at the location(s) specified in which one (1) of the following?

- a. H13-P601 only
- b. H13-P601 and H13-P631 (ADS division 2 logic panel)
- c. H13-P628 (ADS division 1 logic panel) and E-CP-ARS (Alternate remote shutdown panel)
- d. H13-P631 (ADS division 2 logic panel) and C61-P001 (Remote shutdown panel)

SENIOR REACTOR OPERATOR

QUESTION: 35 (1.00)

The plant is operating at 100% power when the Control Room Operator (CRO) reports that RPV pressure is trending down. Shortly after this report the reactor scrams and the Main Steam Isolation Valves (MSIVs) close.

Which one (1) of the following describes the cause of this transient?

- a. The selected Digital Electrohydraulic (DEH) pressure controller has slowly failed high.
- b. The backup Digital Electrohydraulic (DEH) pressure controller has instantly failed low.
- c. The selected Digital Electrohydraulic (DEH) pressure controller has instantly failed low.
- d. The backup Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

QUESTION: 36 (1.00)

With a plant startup in progress and reactor power at 20%, #3 Turbine Bypass Valve (BPV) is declared INOP.

Which one (1) of the statements below describes the action(s) which must be taken under the above conditions?

- a. Restore the inoperable BPV to OPERABLE status within 1 hour or reduce power to less than 5% of rated within the next 4 hours.
- b. Continue the startup but do not exceed 90% of rated power until the BPV has been restored to OPERABLE status.
- c. Restore the inoperable BPV to OPERABLE status prior to reaching 25% of rated power.
- d. Restore the BPV to OPERABLE within 12 hours, or suspend the startup and be in COLD SHUTDOWN within the next 12 hours.

SENIOR REACTOR OPERATOR

QUESTION: 37 (1.00)

With the Reactor at 100% power, a trip of COND-P-2B (Condensate Booster Pump 2B) occurred.

With no operator actions, following a time interval the following conditions exist:

- The reactor is scrammed
- RPV water level is at 60" and up very slow
- RPV pressure being maintained using Safety Relief Valves (SRVs)

Which of the following describes the response of Reactor Building Ventilation (RBHVAC) and Standby Gas Treatment (SGT) systems to this transient?

- a. RBHVAC will NOT isolate
RBHVAC fans will NOT trip
SGT will auto start
- b. RBHVAC will isolate
RBHVAC fans will trip
SGT will auto start.
- c. RBHVAC will NOT isolate
RBHVAC fans will NOT trip
SGT will NOT start
- d. RBHVAC will isolate
RBHVAC fans trip
SGT will NOT start.

SENIOR REACTOR OPERATOR

QUESTION: 38 (1.00)

B Following full load operation for a routine surveillance, diesel generator #1 is being cooled down at idle speed. During this time a loss of off-site power occurs.

Which one (1) of the following statements describes the actions necessary to ensure proper operation of the diesel for reenergizing SM-7?

- a. Place the excitation mode selector switch in PARALLEL. Ensure that SW-P-1A ("A" service water pump) continues to run or manually trip the diesel.
- b. Place the engine speed selector switch in RATED and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.
- c. Place the excitation mode selector switch in PARALLEL and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.
- d. Place the engine speed selector switch in RATED. Ensure that SW-P-1A starts as soon as it's discharge valve cycles full closed to full open.

QUESTION: 39 (1.00)

D SM-8 is deenergized, which one (1) of the following is a permissive that **MUST** be satisfied in order for DG-2 to re-energize SM-8?

- a. Relay 86DG2 (Engine lockout) must be reset.
- b. Breaker 3-8 (feed from SM-3) and 8-3 (feed to SM-8) must both be open.
- c. Engine control switch must be in the REMOTE position.
- d. Excitation mode selector switch must be in the UNIT position.

SENIOR REACTOR OPERATOR

QUESTION: 40 (1.00)

Steam tunnel cooling fans "A" and "B" are in service. A main steam line break results in steam tunnel pressure in excess of 0.8 psi.

What actions will occur as a result of this transient?

- a. Standby gas treatment initiates.
- b. Reactor building ventilation isolates.
- c. Steam tunnel cooling fan "C" auto starts.
- d. Steam tunnel blowout panels relieve.

QUESTION: 41 (1.00)

Following a reactor scram, the Control Room Operator (CRO) notes that CRD-FIC-600 (CRD system flow controller) output signal is going down

Which one (1) of the following could cause this condition?

- a. High charging header flow.
- b. High cooling header demand.
- c. Low drive header flow.
- d. Low scram header flow.

QUESTION: 42 (1.00)

Select the power supply and logic configuration for the Alternate Rod Insertion (ARI) solenoid valves.

- a. 125 VDC (DP-S1-1A/2A) - must be ENERGIZED to vent the scram air header.
- b. 120 VAC (RPS A) - must be DE-ENERGIZED to vent the scram air header.
- c. 125 VDC (DP-S1-1D/2D) - must be DE-ENERGIZED to vent the scram air header.
- d. 120 VAC (IN-2) - must be ENERGIZED to vent the scram air header.

SENIOR REACTOR OPERATOR

QUESTION: 43 (1.00)

After completing the Immediate Actions for a reactor scram, the Control Room Operator (CRO) notices a WITHDRAW rod block has been applied

Which one (1) of the following is true concerning this condition?

This rod block...

- a. will automatically be bypassed when the scram is reset.
- b. can be manually bypassed by bypassing the RWM.
- c. will automatically be bypassed 10 seconds after placing the reactor mode switch in SHUTDOWN.
- d. CANNOT be bypassed.

QUESTION: 44 (1.00)

The reactor is in Operational Condition 5, the Control Room Supervisor (CRS) has directed the Control Room Operator (CRO) to select control rod 30-55 to verify its position. The CRO reports that control rod 30-55 cannot be selected.

Which one (1) of the following could cause this condition?

- a. The refuel bridge is near or over the core.
- b. The fuel grapple is not full up.
- c. Another control rod is withdrawn past "00".
- d. The fuel grapple is loaded.

SENIOR REACTOR OPERATOR

QUESTION: 45 (1.00)

With the plant at rated conditions a Group 1 isolation occurred with RPV pressure peaking at 1145 psig during the transient.

Which one (1) of the following describes the direct effect on the reactor recirculation pump breakers?

- a. No breakers are effected
- b. Only breakers CB-RPT-3A and CB-RPT-3B trip.
- c. Breakers CB-RPT-3A, CB-RPT-3B, CB-RPT-4A, CB-RPT-4B trip.
- d. Only breakers CB-RPT-4A and CB-RPT-4B trip.

QUESTION: 46 (1.00)

The plant is operating at 100% power when the "A" reactor recirculation pump trips. After referring to the Power/Flow map, the CRS directs the CRO to increase flow on the "B" reactor recirculation pump.

Of the following, which one (1) is the MAXIMUM allowable single loop recirculation flow?

- a. 31,600 GPM
- b. 37,500 GPM
- c. 41,500 GPM
- d. 45,000 GPM

QUESTION: 47 (1.00)

Following a loss of SM-7 and an Anticipated Transient Without Scram (ATWS) condition, boron injection is required.

What effect will Standby Liquid Control (SLC) initiation have on Reactor Water Cleanup (RWCU) system valves?

- a. RWCU-V-104 (RWCU system bypass) opens.
- b. RWCU-V-1 (RWCU inboard isolation) closes.
- c. RWCU-V-4 (RWCU outboard isolation) closes.
- d. RWCU-V-40 (RPV/RWCU return isolation) closes.

SENIOR REACTOR OPERATOR

QUESTION: 48 (1.00)

With the plant at 30% power, which one (1) of the following describes the effect that a loss of rod position information for a single control rod will have on the Reactor Manual Control System (RMCS)?

- a. A rod insert and withdraw block will be generated via the Rod Worth Minimizer (RWM).
- b. A rod withdraw block will be generated via the Rod Sequence Control System (RSCS).
- c. A rod insert block will be generated via the Rod Position Indication System (RPIS).
- d. No rod blocks are generated, a loss of rod position indication only.

QUESTION: 49 (1.00)

The plant is operating at 100% power when both 500 KV generator output breakers trip.

If the main turbine fails to trip, which one (1) of the following describes the short term response of the main turbine Overspeed Protection Controller (OPC) for this condition?

- a. OPC initially actuates and then resets. Thereafter main turbine speed is controlled at 100% of rated by the Digital Electrohydraulic (DEH) control system.
- b. OPC initially actuates and does NOT reset. Main turbine speed coasts down to 0 rpm.
- c. OPC repeatedly actuates and resets to control main turbine speed LT 103% of rated.
- d. OPC repeatedly actuates and resets to control pressure at Pressure Setpoint.

QUESTION: 50 (1.00)

The plant is operating at 50% power with both Reactor Feed Pump Turbines (RFPTs) operating in automatic control when RFPT "A" governor valves become stuck in the present position.

Assuming NO OPERATOR ACTIONS (other than raising power), how will RFPT "A" speed and RPV level respond if reactor power is raised to 100%?

- | | <u>RFPT "A" SPEED</u> | <u>RPV Level</u> |
|----|-------------------------------|------------------|
| a. | Decrease | Remain the same |
| b. | Decrease | Lower |
| c. | Increase | Remain the same |
| d. | Remain approximately the same | Lower |

SENIOR REACTOR OPERATOR

QUESTION: 51 (1.00)

Which one (1) of the following will automatically transfer IN-2 to the alternate AC power supply?

- a. Inverter overvoltage
Low frequency
Missed commutation pulse
Low DC voltage.
- b. Low DC voltage
Inverter overvoltage
Low load
Blown DC fuse.
- c. Inverter undervoltage
Low frequency
Missed commutation pulse
Blown DC fuse.
- d. Inverter undervoltage
Inverter overvoltage
High load
Low DC voltage.

QUESTION: 52 (1.00)

A loss of 250 VDC Motor Control Center MC-S2-1A has occurred.

Which one (1) of the following describes the direct effect this condition will have on the Reactor Core Isolation Cooling (RCIC) System?

- a. RCIC initiation logic power is lost, but RCIC can still be manually initiated.
- b. RCIC-V-1 (RCIC turbine trip valve) indication and control will be lost rendering RCIC INOPERABLE.
- c. RCIC flow control will not function in automatic, but can still be used in manual.
- d. RCIC valve indications are lost, however, all system functions still work.

SENIOR REACTOR OPERATOR

QUESTION: 53 (1.00)

During reactor startup from cold conditions is in progress, a vacuum is being drawn in the main condenser using both AR-P-1A and AR-P-1B (mechanical vacuum pumps). MS-RIS-610B (main steam line radiation monitor) has generated an INOP trip.

Which one (1) of the following describes the effect of the above conditions?

- a. Both AR-P-1A and AR-P-1B will trip.
- b. Neither AR-P-1A or AR-P-1B will trip.
- c. Only AR-P-1B will trip.
- d. Only AR-P-1A will trip.

QUESTION: 54 (1.00)

The plant is operating at 100% power when an EO, investigating an Accumulator Trouble alarm, reports that an HCU Nitrogen Accumulator has completely de-pressurized.

Which one (1) of the following describes the scram capability of the affected control rod?

- a. The rod can be scrammed because CRD Drive Header pressure is greater than Scram Discharge Volume pressure.
- b. The rod can be scrammed because RPV pressure is greater than Scram Discharge Volume pressure.
- c. The rod can NOT be scrammed because Nitrogen Accumulator pressure is less than RPV pressure.
- d. The rod can NOT be scrammed because Scram Inlet and Scram Outlet valves have lost their pneumatic supply.

SENIOR REACTOR OPERATOR

QUESTION: 55 (1.00)

While withdrawing control rods during a plant startup, the control room operator (CRO) reports that a control rod will not move and appears to be stuck.

Which one (1) of the following describes an option that could be used to attempt to move this control rod?

- a. Adjust cooling water flow to GT 80 gpm and allow the rod to be forced in.
- b. Use the Single Rod Insert (SRI) switches to scram the rod and then recover it.
- c. Apply continuous withdrawal signals in two minute increments.
- d. Apply a continuous insert signal, release, then apply a continuous withdrawal signal.

QUESTION: 56 (1.00)

Initial Conditions:

- Reactor startup in progress.
- RPV pressure \approx 450 psig and going up
- Main condenser vacuum \approx 23"
- SM-1, SM-2, and SM-3 being powered from the startup transformer (TR-S)
- COND-P-2A ("A" condensate booster pump) running
- CW-P-1C ("C" circulating water pump) running
- COND-P-1A and COND-P-1B ("A" & "B" condensate pumps) running

Maintenance has requested that Operations start the CW-P-1A & CW-P-1B ("B" & "C" circulating water pumps) for post maintenance testing.

Using the above information, determine which one (1) of the following statements is correct.

- a. Starting the third circulating water pump will cause an undervoltage trip of TR-S.
- b. Operation of more than one (1) circulating water pump at this point in the startup is not recommended due to tube erosion concerns.
- c. Starting two (2) additional circulating water pumps should not cause any significant problems for plant operations.
- d. If CW-P-1A is started last, the transient on SM-1 will cause a trip of COND-P-1A and COND-P-2A on over current.

SENIOR REACTOR OPERATOR

QUESTION: 57 (1.00)

D RFW-V-14 (condensate cleanup flow valve) is full closed and RFW-V-65A & RFW-V-65B (RPV inlet isolation valves) are full open.

Which one (1) of the following describes the response of these valves if the control switch for RFW-V-14 is taken to OPEN?

- a. RFW-V-65A & RFW-V-65B will remain open. RFW-V-14 will remain closed.
- b. RFW-V-65A & RFW-V-65B will remain open. RFW-V-14 will open.
- c. RFW-V-65A & RFW-V-65B will close. RFW-V-14 will open when both RFW-V-65A & RFW-V-65B are full closed.
- d. RFW-V-65A & RFW-V-65B will close. RFW-V-14 will immediately open.

QUESTION: 58 (1.00)

The Plant is operating at $\approx 100\%$ power when the following annunciators are received on panel H13-P800:

- D**
- BUS 2 OC LOCKOUT
 - BUS 2 UNDERVOLTAGE
 - BKR N1-2 TRIP

Which one (1) of the following automatic actions is expected under the above conditions?

- a. Reactor scram due to loss of COND-P-1A ("A" condensate pump).
- b. Auto start of the High Pressure Core Spray (HPCS) diesel generator.
- c. Reactor scram due to a main turbine trip.
- d. Auto start of diesel generator #1.

SENIOR REACTOR OPERATOR

QUESTION: 59 (1.00)

D During a "Station Blackout" plant parameters are as follows:

- RPV water level -52" and up slow
- RPV pressure 850 psig and down slow
- Wetwell pressure 19 psig and up slow
- Drywell temperature 243°F and up slow
- Wetwell temperature 112°F
- Wetwell level + 3"

Which one (1) of the following interlocks must be defeated to allow continued Reactor Core Isolation Cooling (RCIC) system operation under these conditions?

- a. High exhaust pressure turbine trip.
- b. RCIC exhaust diaphragm rupture isolation.
- c. Level 2 RCIC turbine trip.
- d. Drywell high temperature RCIC system isolation.

D QUESTION: 60 (1.00)

A reactor scram has just occurred. The Rod Sequence Control System (RSCS) and Rod Worth Minimizer (RWM) have not functioned to give the ALL RODS IN information.

Which one (1) of the following H13-P603 indications may be used to verify rods full in?

- a. White Reactor Protection System (RPS) group lights deenergized.
- b. Amber backup scram lights deenergized.
- c. Green full in lights energized
- d. Blue scram lights energized.

SENIOR REACTOR OPERATOR

QUESTION: 61 (1.00)

Initial plant conditions are as follows:

- Reactor power 100%
- RPV pressure 1020 psig
- RPV water level 36"

A reactor scram occurs and the scram inlet valve (126) of a single control rod mechanically binds and fails to open.

Which one (1) of the following describe the control rod's response to this failure?

- a. Fully inserts and its blue scram light is energized.
- b. Fails to insert and its blue scram light is energized.
- c. Fully inserts and its blue scram light is deenergized.
- d. Fails to insert and its blue scram light is deenergized.

QUESTION: 62 (1.00)

The reactor is operating at $\approx 98\%$ power. An equipment operator reports a lube oil leak in the "B" feedwater pump room. Immediately after acknowledging the report, RFW-P-1B ("B" reactor feedwater pump) trips on low lube oil pressure.

Which one (1) of the following describes the effect this condition has on the reactor recirculation system?

- a. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 15Hz.
- b. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 27Hz.
- c. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 15 Hz.
- d. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 52.2 Hz.

SENIOR REACTOR OPERATOR

QUESTION: 63 (1.00)

Which one (1) of the following protective features is designed to actuate to ensure net positive suction head for the Reactor Recirculation pumps?

- a. Level 1 trip
- b. Level 2 trip
- c. Level 3 runback
- d. Level 4 runback

QUESTION: 64 (1.00)

The plant has experienced a transient, Emergency Operating Procedures (EOPs) have been entered and conditions are as follows:

RPV water level -150" and down slow
RPV pressure 180 psig and down slow
Wetwell temperature 110°F and up slow
RHR loop "A" injecting to the RPV
RHR loop "B" in suppression pool cooling
All other injection sources are unavailable

Which one (1) of the following statements best describes actions that need to be taken given the above information?

- a. Open seven (7) Automatic Depressurization System (ADS) Safety Relief Valves (SRVs) to emergency depressurize.
- b. RHR loop "B" should be removed from suppression pool cooling and injected into the RPV.
- c. RHR loop "A" should be removed from injection and placed into suppression pool cooling.
- d. No actions are required until RPV level lowers to LE -192".



SENIOR REACTOR OPERATOR

QUESTION: 65 (1.00)

The control room operator (CRO) is withdrawing control rods with the reactor critical and power indicating on the IRMs just prior to the point of adding heat. The CRO observes an unexpected rapid increase in power and a period indication of ≈ 30 seconds.

Assuming NO OPERATOR ACTION, which one (1) of the following scram signals will terminate this transient?

- a. Reactor short period.
- b. Average Power Range Monitor (APRM) neutron flux high.
- c. Source Range Monitor (SRM) upscale
- d. Intermediate Range Monitor (IRM) neutron flux high

QUESTION: 66 (1.00)

The plant is operating at $\approx 98\%$ power when the following indications are noted:

Reactor power down slow.
Megawatts down slow.
Control air pressure down slow.
Three (3) control rods indicate FULL-IN with scram lights energized on the full core display.

Which one (1) of the following statements describes the actions required to be taken given the above indications.

- a. NO actions are required until the first Main Steam Isolation Valve (MSIV) is showing dual position indication.
- b. Close or verify closed CN-V-65 (containment instrument air crosstie shut-off valve).
- c. Initiate a manual reactor scram and refer to PPM 3.3.1.
- d. Lower core flow to reduce reactor power to LT 90% of rated core thermal power.

SENIOR REACTOR OPERATOR

QUESTION: 67 (1.00)

D Which one (1) of the following systems was specifically designed to ensure reactor power could be monitored under DBA/LOCA conditions?

- a. Source Range Monitoring (SRM) system.
- b. Local Power Range Monitoring (LPRM) system.
- c. Wide Range Monitoring (WRM) system.
- d. Intermediate Range Monitoring (IRM) system

QUESTION: 68 (1.00)

The control room evacuation procedure directs isolating certain control room current meters using the Current Transformer (CT) shorting switches.

Which one (1) of the following lists the locations of these CT shorting switches?

- a. "B" residual heat removal pump, "B" service water pump, SL-71 feeder, and SL-73 feeder breaker cubicles.
- B** b. "A" residual heat removal pump, "A" service water pump, SL-81 feeder, and SL-83 feeder breaker cubicles.
- c. "A" residual heat removal pump, "A" service water pump, Startup Transformer (TR-S) feeder, SL-71 feeder, and SL-73 feeder breaker cubicles.
- d. "B" residual heat removal pump, "B" service water pump, Backup Transformer (TR-B) feeder, SL-81 feeder, and SL-83 feeder breaker cubicles.

SENIOR REACTOR OPERATOR

QUESTION: 69 (1.00)

A "Most Immediate" control room evacuation is required due to heavy smoke intrusion.

Which one (1) of the following statements lists only IMMEDIATE ACTIONS that should be taken prior to exiting the control room?

- a. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and close the Main Steam Isolation Valves (MSIVs).
- b. Manually scram the reactor, initiate Reactor Core Isolation Cooling (RCIC) and make a plant announcement.
- c. Manually scram the reactor, close the MSIVs and transfer RPV level control to RFW-FCV-10A and RFW-FCV-10B (feedwater startup valve to the reactor).
- d. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and start diesel generator #2

QUESTION: 70 (1.00)

The plant has experienced a transient, PPM 5.1.2 has been entered, plant parameters are as follows:

- RPV water level -145" and steady
- Drywell pressure 10 psig and down slow
- Wetwell temperature 110°F and up very slow
- Main Steam Isolation Valves (MSIVs) are closed
- Both Standby Liquid Control (SLC) pumps are injecting

Which one (1) of the following identifies a valid annunciator that would preclude/prevent reopening the MSIVs?

- a. LPCS/RHR A INIT RPV LEVEL LOW -129".
- b. DRYWELL PRESS HIGH TRIP.
- c. NSSSS ISOL MSL FLOW HIGH.
- d. RC-1 HALF TRIP.

SENIOR REACTOR OPERATOR

QUESTION: 71 (1.00)

A spent fuel assembly is dropped during transport in the spent fuel pool. The bridge operator observes bubbles rising from the dropped assembly.

Which one (1) of the following is an IMMEDIATE ACTION for this situation?

- a. Place all assemblies in a safe location, leave the area, and call the control room.
- b. Immediately evacuate the refuel floor of all personnel.
- c. Contact Health Physics and ask for an area survey, then inform the Control Room Supervisor (CRS).
- d. Contact the refuel floor supervisor and the system engineer, then attempt to recover the dropped assembly.

QUESTION: 72 (1.00)

PPM 5.2.1 "Primary Containment Control" directs that when drywell pressure exceeds 39 psig the primary containment is to be vented to reduce and maintain wetwell pressure below the Primary Containment Pressure Limit (PCPL).

Which one (1) of the following statements describes the preferred vent path and the reason that this path is preferred?

- a. Drywell, this is the vent path with the highest flowrate capacity.
- b. Wetwell, to take advantage of suppression pool scrubbing for minimizing the amount of radioactivity released.
- c. Drywell, in order to minimize the moisture saturation and breakdown of the Standby Gas Treatment (SGT) system charcoal adsorbers.
- d. Wetwell, in order to minimize cycling, and potential failure of the wetwell to drywell vacuum breakers.

SENIOR REACTOR OPERATOR

QUESTION: 73 (1.00)

The plant was operating at $\approx 98\%$ power when a leak in the discharge of a condensate booster pump caused a low suction pressure trip of the reactor feedwater pumps. RPV level dropped to $-25''$ initially and is now going down very slow, the Control Room Supervisor (CRS) has entered PPM 5.1.1, RPV Control, and is executing all legs concurrently. Wetwell temperature has just been reported at 92°F and up slow.

Which one (1) of the following describes the Emergency Operating Procedure (EOP) implementation to be used under these conditions?

- a. Continue PPM 5.1.1, RPV Control, RPV level steps, AND enter PPM 5.3.1, Secondary Containment Control.
- b. Continue PPM 5.1.1, RPV Control, AND concurrently enter PPM 5.2.1, Primary Containment Control.
- c. Complete PPM 5.1.1, RPV Control, RPV level steps, THEN enter PPM 5.2.1, Primary Containment Control.
- d. Reenter PPM 5.1.1, RPV Control, AND concurrently enter PPM 4.12.4.1A High Energy Line Break.

QUESTION: 74 (1.00)

A plant transient has occurred which has caused an isolated Anticipated Transient Without Scram (ATWS) condition with Average Power Range Monitors (APRMs) indicating $\approx 15\%$ power and RPV Pressure ≈ 1080 psig. The Control Room Supervisor (CRS) directs the Control Room Operator (CRO) to restore and maintain RPV pressure 800 to 1000 psig using Safety Relief Valves (SRVs).

Which one (1) of the following describes why pressure is being lowered and maintained below its initial value?

This pressure band...

- a. avoids Safety Relief Valve (SRV) lifting due to high pressure.
- b. ensures that the shutoff head of the Standby Liquid Control (SLC) pumps is not exceeded.
- c. prevents the Heat Capacity Temperature Limit (HCTL) from being exceeded.
- d. Ensures that any potential break leak rate will be lower than the design basis for Emergency Core Cooling Systems (ECCS).

SENIOR REACTOR OPERATOR

QUESTION: 75 (1.00)

The plant is in a condition requiring the Control Room Supervisor (CRS) to execute PPM 5.1.1, RPV Level Control, and PPM 5.2.1, Primary Containment Control, concurrently. The CRS has directed a pressure reduction which exceeds the normal, allowable RPV cooldown rate of 100°F/Hr.

Which one (1) of the following describes a condition that would allow the CRS to take this action?

- a. Prevent RPV level from going LT Top of Active Fuel (TAF).
- b. Prevent exceeding Drywell Spray Initiation Limit (DSIL).
- c. Prevent exceeding Heat Capacity Temperature Limit (HCTL).
- d. Prevent exceeding Maximum Primary Containment Water Level Limit (MPCWLL).

QUESTION: 76 (1.00)

A plant transient has caused a reactor scram. The following conditions exist:

- APRM indication	10%
- RPV level	-30"
- RPV pressure	1000 psig
- Drywell pressure	0.25 psig
- Drywell temperature	125°F
- Wetwell level	-1.5"
- Wetwell temperature	95°F

Which one (1) of the following identifies the Emergency Operating Procedures (EOPs) that should have been entered given the above conditions?

- a. PPM 5.1.3, Emergency RPV Depressurization
PPM 5.3.1, Secondary Containment Control
PPM 5.1.2, RPV Control - ATWS
- b. PPM 5.1.1, RPV Control
PPM 5.2.,1 Primary Containment Control
PPM 5.3.1, Secondary Containment Control
- c. PPM 5.1.1, RPV Control
PPM 5.2.1, Primary Containment Control
PPM 5.1.5, Emergency RPV Depressurization - ATWS
- d. PPM 5.1.1, RPV Control
PPM 5.1.2, RPV Control - ATWS
PPM 5.2.1, Primary Containment Control

SENIOR REACTOR OPERATOR

QUESTION: 77 (1.00)

A plant transient has caused a reactor scram. Plant conditions are as follows:

- Reactor power $\approx 15\%$
- RPV pressure 1000 psig and steady
- RPV level -125" and down
- Wetwell temperature 165 °F and up slow
- Wetwell level 32.5' and up very slow

Which one (1) of the following describes the operation of the Safety Relief Valves (SRVs) with the above conditions?

- a. Heat Capacity Level Limit (HCLL) has been exceeded, emergency depressurization is required.
- b. Safety Relief Valve Tailpipe Level Limit (SRVTPLL) has been exceeded, emergency depressurization is required.
- c. Heat Capacity Temperature Limit (HCTL) has been exceeded, emergency depressurization is required.
- d. No limits have been exceeded, cycle SRVs to maintain RPV pressure between 800 and 1000 psig.

QUESTION: 78 (1.00)

Which one (1) of the following is a consequence of exceeding the Heat Capacity Level Limit (HCLL)?

- a. The Safety Relief Valve (SRV) tailpipe "T" quenchers become uncovered.
- b. RPV depressurization may challenge the pressure suppression function.
- c. Safety Relief Valve (SRV) tailpipe chugging may occur.
- d. Emergency Core Cooling System (ECCS) pumps will cavitate due to the loss of available Net Positive Suction Head (NPSH).

SENIOR REACTOR OPERATOR

QUESTION: 79 (1.00)

Which one (1) of the following defines the minimum level for the Heat Capacity Level Limit (HCLL)?

- a. The SRV tailpipe quenchers.
- b. The RCIC Turbine Exhaust line.
- c. The Drywell-Wetwell Downcomers.
- d. The RHR/LPCS suction Strainer.

QUESTION: 80 (1.00)

During an Anticipated Transient without Scram (ATWS) condition with the reactor not shutdown, reactor water level is intentionally lowered to...

- a. the point where reactor power is LT 5% and maintained at LE that level until Cold Shutdown Boron Weight (CSBW) has been injected.
- b. -65" and maintained regardless of reactor power to ensure adequate core cooling.
- c. -50", the combination of the reduced level and Reactor Core Isolation Cooling (RCIC) injection will help reduce reactor power.
- d. -65" to -192" to suppress reactor power while maintaining adequate core cooling.

QUESTION: 81 (1.00)

In PPM 5.1.4, RPV Flooding, achieving FLOODING COMPLETION TIME ensures that RPV level is GE to...

- a. the Top of Active Fuel (TAF).
- b. the Main Steam Line (MSL) openings.
- c. 2/3 core height.
- d. the reactor head vents..

SENIOR REACTOR OPERATOR

QUESTION: 82 (1.00)

When using the Reactor Core Isolation Cooling (RCIC) system for alternate boron injection, the contents of the Standby Liquid Control (SLC) storage tank are gravity fed to the RCIC pump suction by a temporary hose connection originating at...

- any drain off the SLC suction piping.
- the drain off of the SLC storage tank.
- a drain on the common SLC discharge header, downstream of SLC-V-4A & SLC-V-4B (squib valves).
- the tank side of either the "A" or "B" SLC system relief valve piping.

QUESTION: 83 (1.00)

Which one (1) of the following describes two (2) methods that can be used for positive confirmation that all rods are fully inserted?

- Average Power Range Monitors (APRMs) LT 5% power and Reactor Engineering calculation showing adequate shutdown margin.
- Graphic Display System (GDS) and Plant Process Computer Replacement System (PPCRS).
- Plant Process Computer Replacement System (PPCRS) and Quick Emergency Dose Projection System (QEDPS).
- Graphic Display System (GDS) and Average Power Range Monitors (APRM)s LT 5% power.

QUESTION: 84 (1.00)

The plant is operating at 75% power and 70% core flow when an electrical malfunction in the main turbine trip circuitry causes both reactor recirculation pumps to trip off.

Which one (1) of the following IMMEDIATE ACTIONS should be taken?

- The recirculation pump trips will cause a RPV high pressure scram. Perform the immediate scram actions per PPM 3.3.1..
- Refer to the single loop operating procedure in PPM 2.2.1 to restart one of the reactor recirculation pumps.
- Confirm the loss of both reactor recirculation pumps and then manually scram the reactor.
- Use the fast shutdown sequence control rods to exit Region "C" within 15 minutes.

SENIOR REACTOR OPERATOR

QUESTION: 85 (1.00)

The reactor is operating at 93% power when a loss of all circulating water pumps occurs. Assuming NO OPERATOR ACTION, as vacuum degrades to 14" Hg, what will be the effect on RPV water level?

RPV water level will...

- a. increase to +54" and then cycle between -50" and +54".
- b. decrease to LT 0" and then stabilize at +18".
- c. be maintained at setpoint.
- d. decrease to +13" and then stabilize at +36".

QUESTION: 86 (1.00)

Due to a fault, MC-7A has been deenergized and will be out of service for a minimum of eight (8) hours.

Which one (1) of the following will be affected by this condition?

- a. Uninterruptable Power Supply (UPS) static inverter IN-1.
- b. Critical instrument inverter IN-2.
- c. ATWS/ARI Division 2 logic power.
- d. DG-1 control circuit power

SENIOR REACTOR OPERATOR

QUESTION: 87 (1.00)

The turbine throttle valve closure and governor valve fast closure Reactor Protection System (RPS) scrams are bypassed with reactor power LT 30%.

Which one (1) of the following statements correctly describes the bases for allowing these trips to be bypassed?

- a. A smaller void coefficient at lower power levels adequately reduces the severity of the turbine trip or load reject.
- b. At low power levels, adequate margin to the Minimum Critical Power Ratio (MCPR) safety limit is provided by the RPV steam dome pressure high scram.
- c. Load reject transients, which are most severe, cannot occur because the Digital Electrohydraulic (DEH) overspeed protection controller is bypassed.
- d. Below 30 % power, normal plant steam loads and bypass valve operation are sufficient to prevent Safety Relief Valve (SRV) operation.

QUESTION: 88 (1.00)

A plant startup is in progress with reactor pressure ≈ 500 psig. RFW-FCV-10A and RFW-FCV-10B (feedwater startup valves to the reactor) both fail full open. RPV level is 55" and rising.

What IMMEDIATE ACTIONS should be taken to preclude flooding the main steam lines?

- a. Prior to reaching an RPV level of +80", scram the reactor, and close the Main Steam Isolation Valves (MSIVs).
- b. Stop the condensate booster pumps before RPV water level exceeds +80".
- c. Prior to reaching an RPV level of +108", close RFW-V-118 (feedwater startup valve isolation) and leave it closed until RPV level is LT +54".
- d. Stop all condensate and condensate booster pumps before RPV water level exceeds +60".

SENIOR REACTOR OPERATOR

QUESTION: 89 (1.00)

With reactor power at 68% and TSW-P-1B ("B" plant service water pump) Out Of Service (OOS) and danger tagged for maintenance, an electrical fault causes TSW-V-53A ("A" plant service water pump discharge valve) to close and TSW-P-1A ("A" plant service water pump) to trip. Attempts to restart the pump and open the valve have failed.

Which one (1) of the following IMMEDIATE ACTIONS is required?

- a. Monitor main generator temperatures and reduce load as necessary.
- b. Monitor control air compressors for high temperature alarms and transfer to alternate cooling as required.
- c. Trip RRC-P-1A ("A" reactor recirculation pump) and refer to the single loop operating procedure.
- d. Manually scram the reactor and refer to PPM 3.3.1.

QUESTION: 90 (1.00)

Which one (1) of the following is expected to occur at a control air header pressure of 80 psig?

- a. SA-PCV-2 (control/service air crosstie valve) closes.
- b. Standby control air compressor(s) automatically start.
- c. CAS-PCV-1 (desiccant dryer bypass valve) opens.
- d. Control air header low pressure alarm is received.

SENIOR REACTOR OPERATOR

QUESTION: 91 (1.00)

CAS-C-1A ("A" control air compressor) tripped due to high HP cylinder discharge air temperature following loss of Plant Service Water (TSW). Fire water has been aligned to Cooling Jack Water (CJW) heat exchanger. The control switch for CAS-C-1A is still in RUN.

Which one (1) of the following describes the conditions that will restart CAS-C-1A?

CAS-C-1A will restart...

- a. automatically if system pressure is LE 110 psig.
- b. when the high temperature alarm is cleared and the control switch is taken to STOP and then back to RUN.
- c. when the high temperature alarm is cleared and the RESET pushbutton at the local control cabinet is depressed.
- d. when the high temperature alarm is cleared.

QUESTION: 92 (1.00)

The inadvertent trip of a Reactor Protection System (RPS) Electric Power Monitoring Assembly (EPA) breaker supplying RPS "B" would cause which one (1) of the following?

- a. Closure of the outboard Main Steam Isolation Valves (MSIVs).
- b. Closure of RWCU-V-1 and RWCU-V-4 (Reactor Water Cleanup System inboard and outboard isolation valves).
- c. Trip of RPS-MG-2 (Reactor Protection System "B" Motor Generator).
- d. Loss of power to MC-6B.

SENIOR REACTOR OPERATOR

QUESTION: 93 (1.00)

A reactor shutdown to cold conditions is in progress. Plant conditions are as follows:

- Reactor mode switch positioned in SHUTDOWN
- RPV pressure is 45 psig
- Residual Heat Removal (RHR) "B" is being warmed up for shutdown cooling mode
- Residual Heat Removal (RHR) "A" has been removed from service for ten (10) days

Which one (1) of the following statements describes action(s) which must be taken for these conditions?

- a. Immediately place RHR Loop "B" in shutdown cooling and be in at least cold shutdown within one (1) hour.
- b. Perform a physical walkdown of the Reactor Water Cleanup (RWCU) system and then place the system in service to maintain reactor coolant temperature as low as possible.
- c. Demonstrate operability of at least one (1) alternate method of decay heat removal.
- d. Maintain both reactor recirculation pumps in operation until RHR-P-2A ("A" residual heat removal pump) is repaired and returned to service.

QUESTION: 94 (1.00)

The plant is operating at $\approx 97\%$ when the following annunciators are received:

H13-P603.A7-6.7 ROD ACCUMULATOR TROUBLE
- *(The full core display indicates this alarm is for a fully withdrawn rod)*
H13-P603.A7-3.8 CRD CHARGE WATER PRESS LOW

The control room operator (CRO) observes that CRD-P-1A ("A" control rod drive pump) motor current indicates zero (0) amps with the red light on.

Which one (1) of the following describes the IMMEDIATE ACTIONS required for this situation?

- a. Place the reactor mode switch to SHUTDOWN and carry out the scram recovery per PPM 3.3.1, Reactor Scram.
- b. Place the Control Rod Drive (CRD) flow controller in MANUAL and raise controller output while monitoring CRD-P-1A motor current.
- c. Place the standby CRD suction filter in service locally and start CRD-P-1B.
- d. Place the CRD flow controller in MANUAL, set the controller output at zero (0) and start CRD-P-1B.

SENIOR REACTOR OPERATOR

QUESTION: 95 (1.00)

Following a small steam line break inside primary containment, average drywell temperature has increased by about 100 °F.

Assuming that actual RPV water level remains constant, indicated vessel level could be...

- a. higher, as heating of the reference leg decreases differential pressure.
- b. lower, as heating of the reference leg increases differential pressure.
- c. higher, as heating of the reference leg increases differential pressure.
- d. lower, as heating of the reference leg decreases differential pressure.

QUESTION: 96 (1.00)

Given plant conditions as follows:

- Wetwell level 36'
- Wetwell pressure 10 psig
- RPV pressure 1000 psig

Using the attached curves, identify the possible results of Safety Relief Valve (SRV) actuation.

Actuation of an SRV...

- a. is allowed and desired given the above conditions.
- b. at this elevated wetwell level could result in damage to SRV internals.
- c. will result in exceeding the suppression pool boundary design load.
- d. could result in damage to the SRV tail pipe, quenchers, or supports.

SENIOR REACTOR OPERATOR

QUESTION: 97 (1.00)

PPM 5.3.1, Secondary Containment Control, was entered due to confirmed high temperatures and steam in the 1A Reactor Water Cleanup (RWCU) pump room. RWCU-V-1 & RWCU-V-4 (RWCU suction isolation valves) cannot be isolated from the control room. Maximum Safe Operating Values for the RWCU system have NOT been exceeded.

Which one (1) of the following describes the actions to be taken for this situation?

- a. Emergency depressurize.
- b. Shutdown the reactor per PPM 3.2.1.
- c. Continue efforts to isolate RWCU and enter PPM 5.1.1, RPV Level Control.
- d. Isolate Reactor Building Ventilation (RBHVAC) and initiate the Standby Gas Treatment (SGT) system.

QUESTION: 98 (1.00)

Which one of the following lists actions that can be used to mitigate off-site doses for an accident which releases radioactivity inside secondary containment?

- a. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Isolate the Standby Gas Treatment (SGT) system
- b. Isolate the Standby Gas Treatment (SGT) system
Shut down the reactor
Emergency depressurize the reactor
- c. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Shut down the reactor
- d. Isolate primary systems leaking into the area
Shut down the reactor
Emergency depressurize the reactor

SENIOR REACTOR OPERATOR

QUESTION: 99 (1.00)

D A transport cask filled with Control Rod Drive (CRD) "spud end" filters has tipped over on the 501' elevation of the Reactor Building (RB). ARM-RIS-33 (RB 501' area radiation monitor) is alarming on control room panel H13-P614. Reactor building exhaust plenum radiation levels are at ≈ 15 mr/hr and up fast.

Which one (1) of the following is an "expected" response to the above conditions?

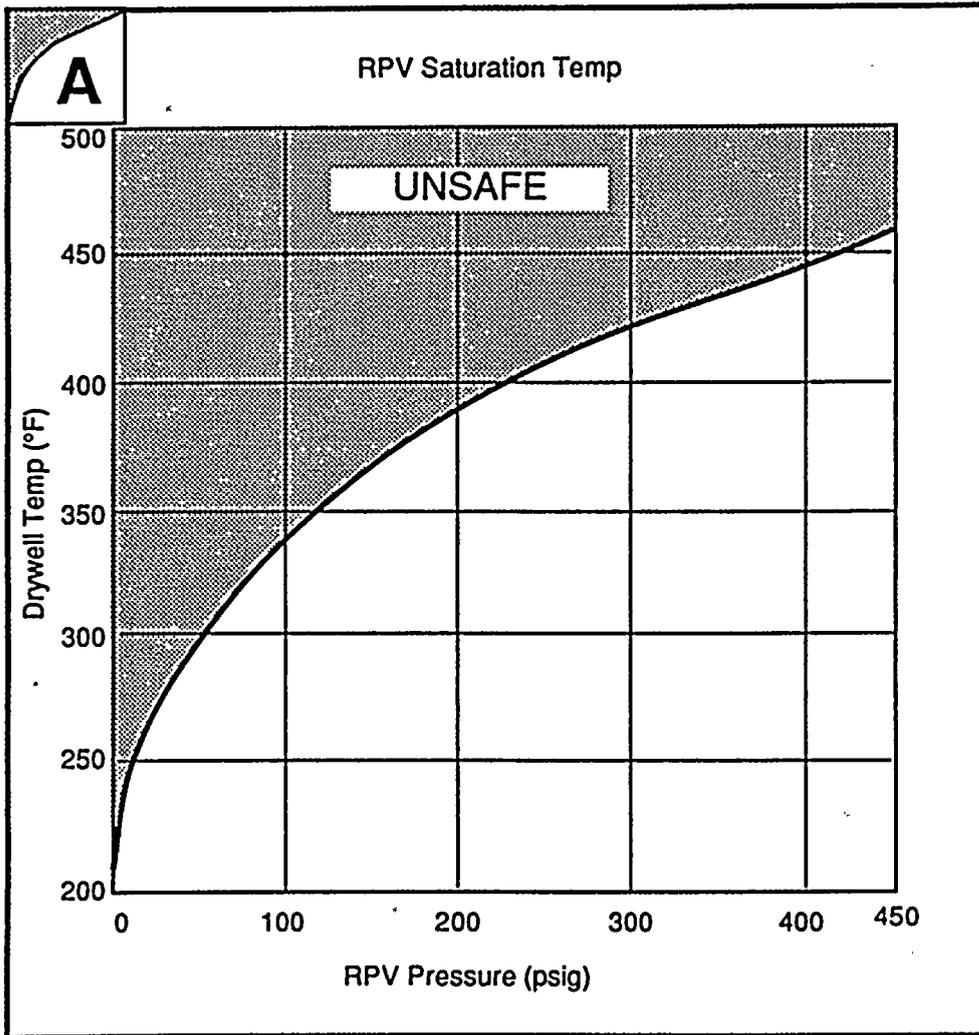
- a. CW-P-1B & CW-P-1C ("B" & "C" circulating water pumps) trip.
- b. Any traversing in-core probe (TIP) inserted into the core will automatically withdraw and isolate.
- c. Drywell Equipment Drain (EDR) and Floor Drain (FDR) sumps isolate.
- d. Containment Nitrogen (CN) makeup isolates.

QUESTION: 100 (1.00)

A controller failure causes reactor building pressure to increase to GT +4.0" Wg.

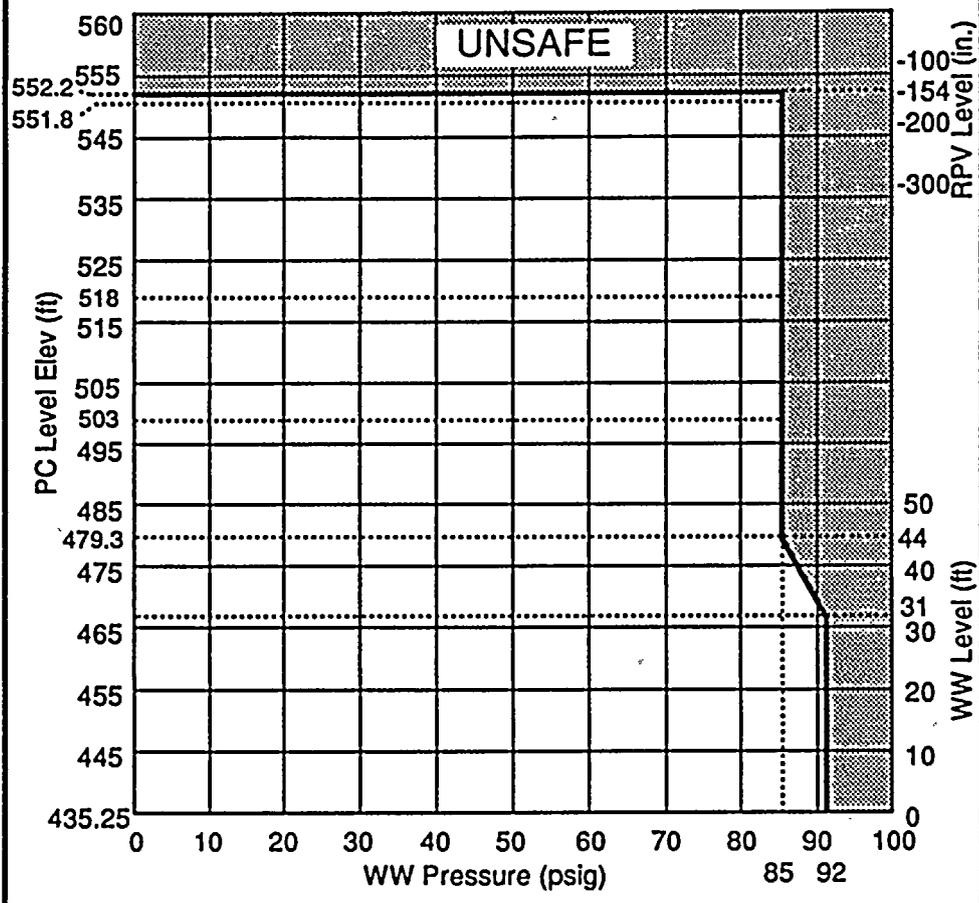
Which one (1) of the following describes the expected AUTOMATIC action(s) for this condition?

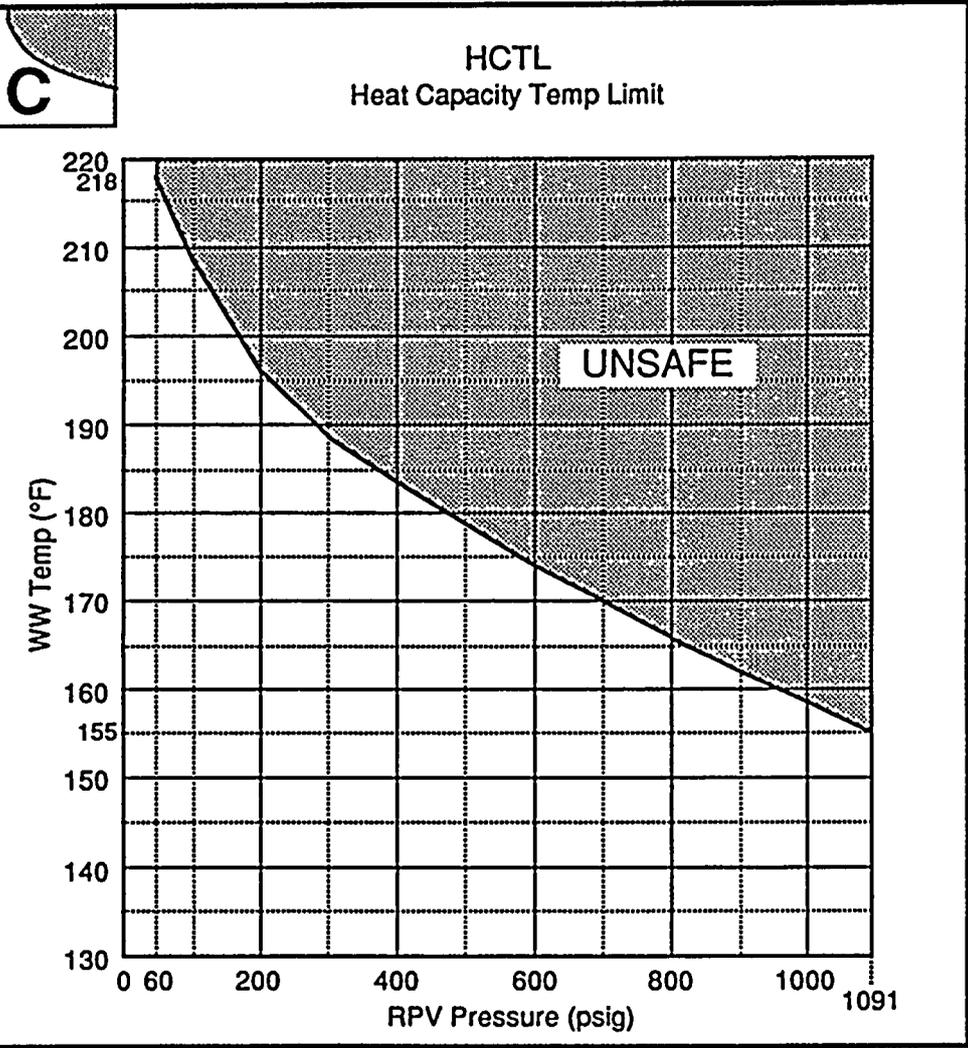
- D**
- a. Both the supply and exhaust fans will trip. The standby fans will NOT start.
 - b. The supply and exhaust fans will be unaffected. The supply plenum relief damper will open to reduce pressure.
 - c. Only the operating exhaust fan will trip. The standby exhaust fan will NOT start. Supply fans will be unaffected.
 - d. Only the operating supply fan will trip. The standby supply fan will NOT start. Exhaust fans will be unaffected.



B

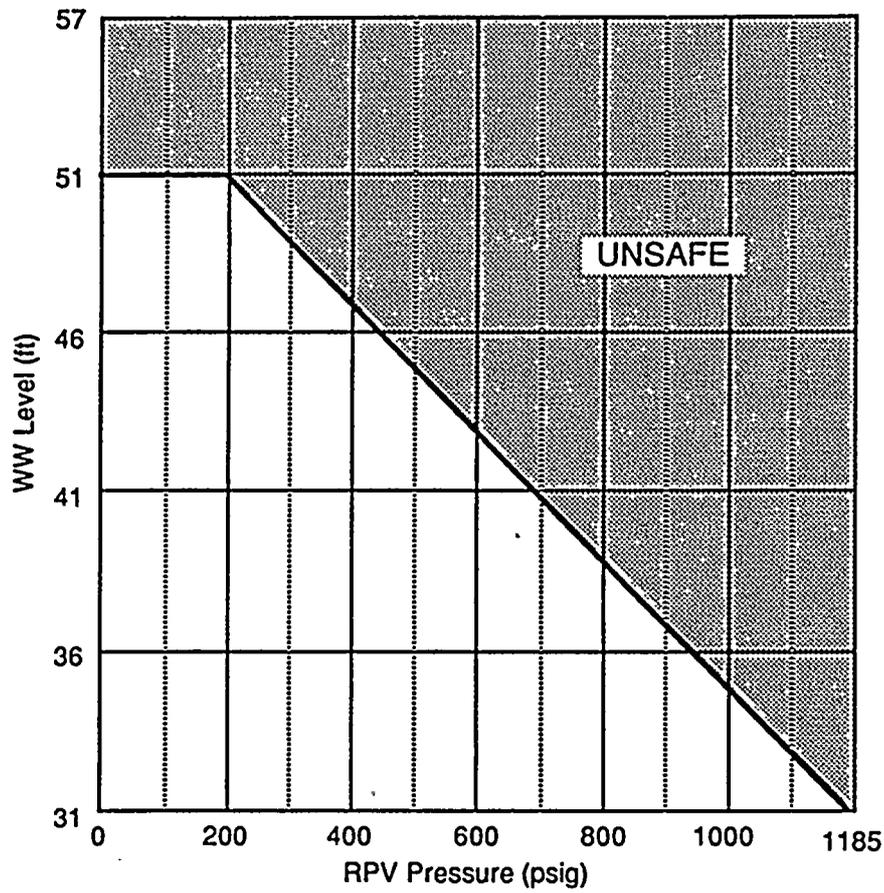
MPCWLL Maximum Primary Containment Water Level Limit





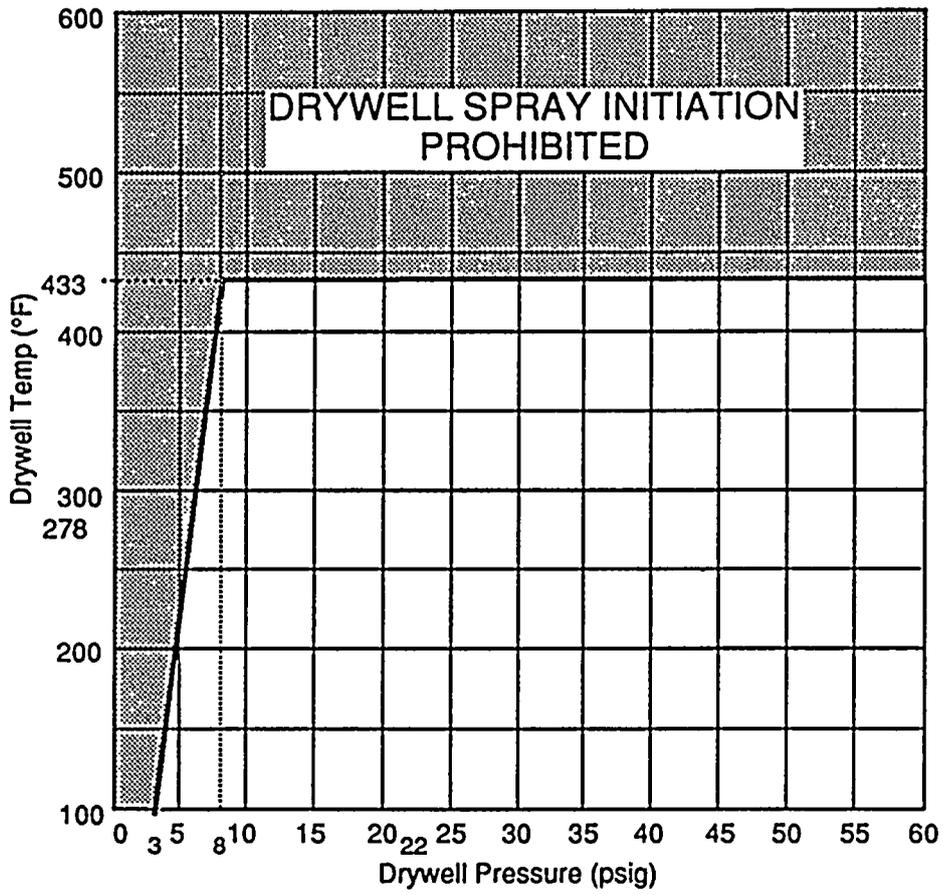
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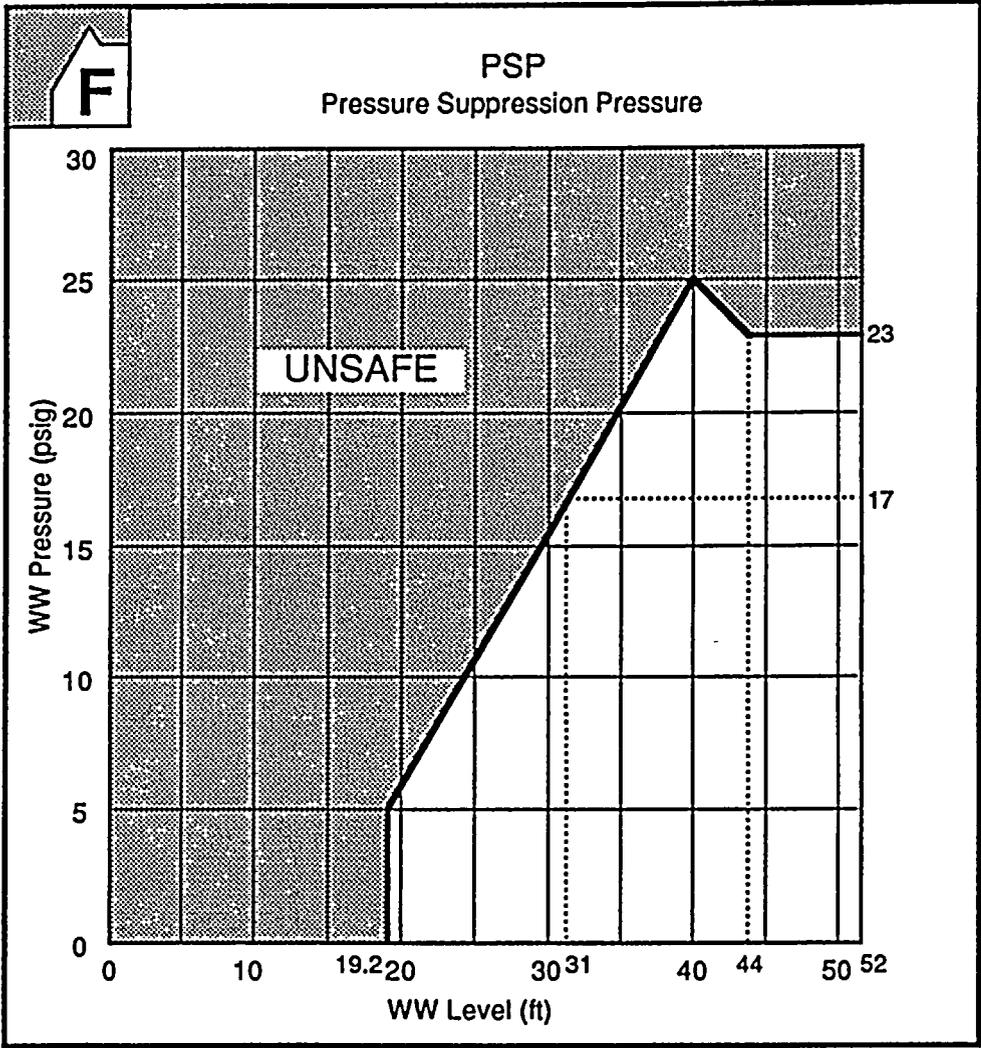
SRVTPLL SRV Tail Pipe Level Limit

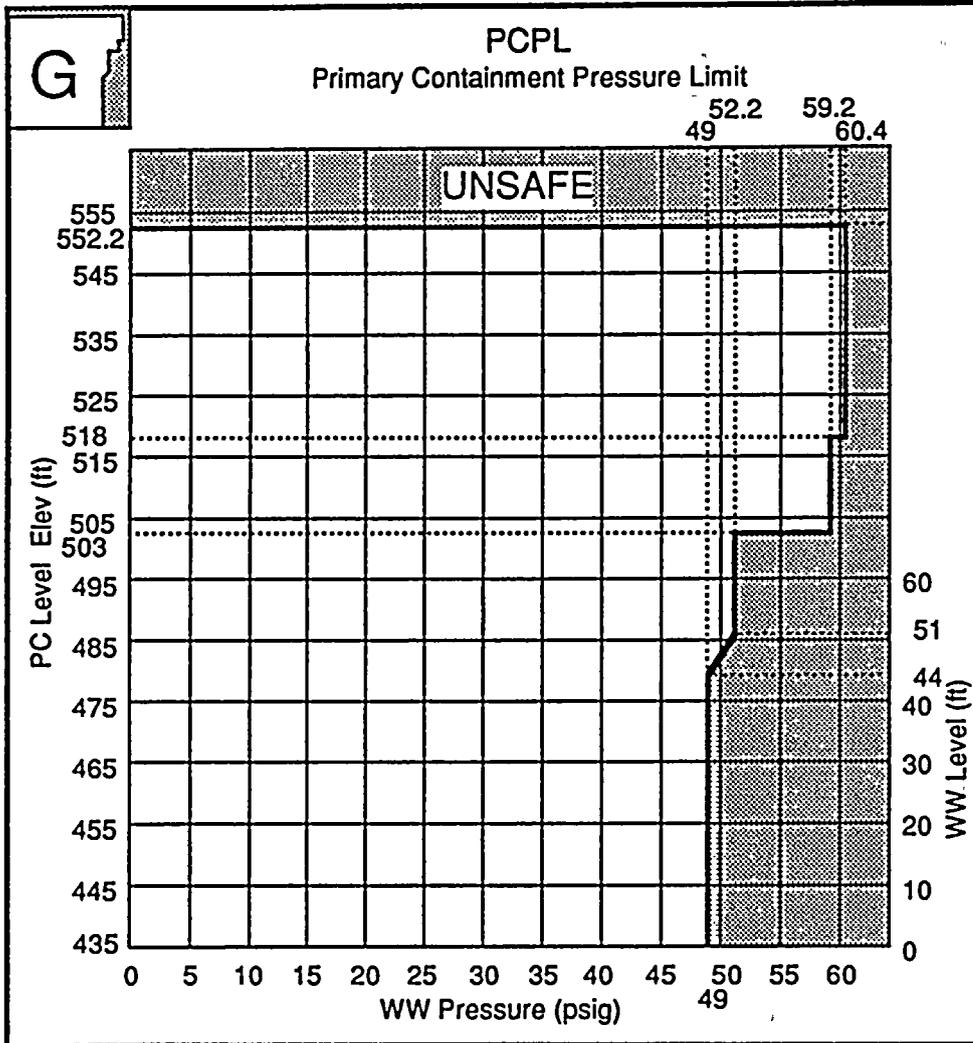


E

DSIL
Drywell Spray Initiation Limit

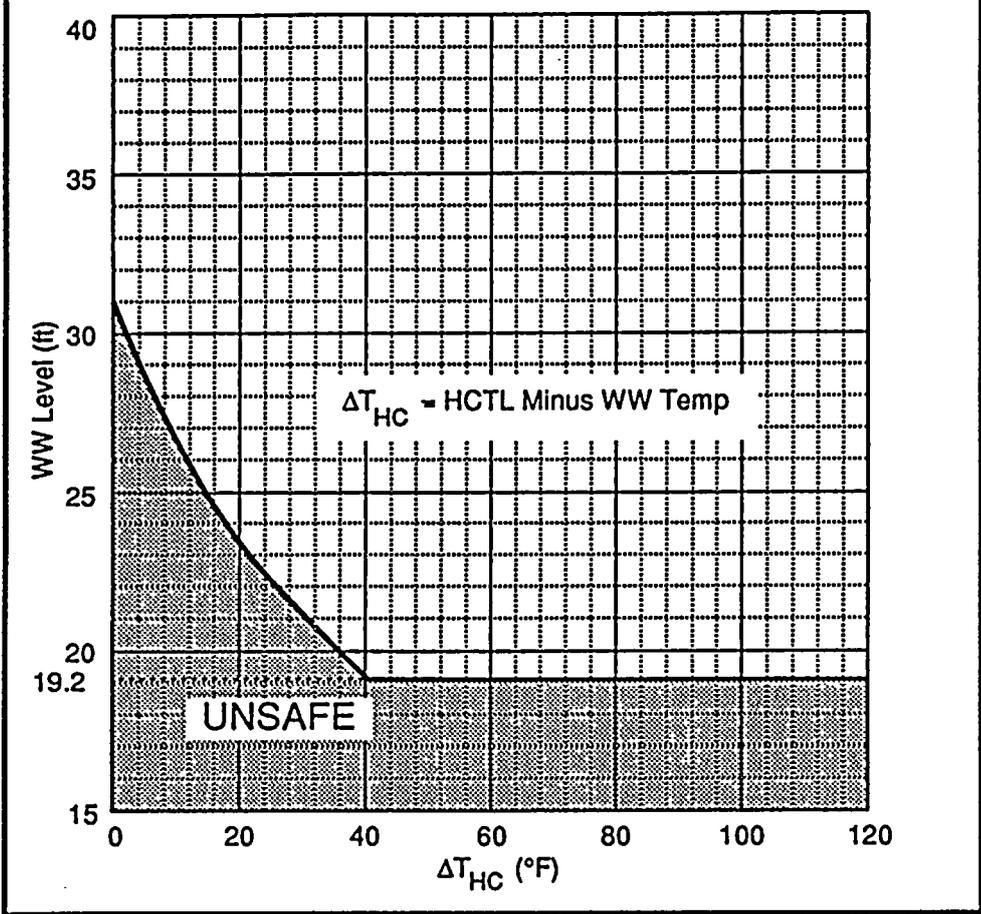


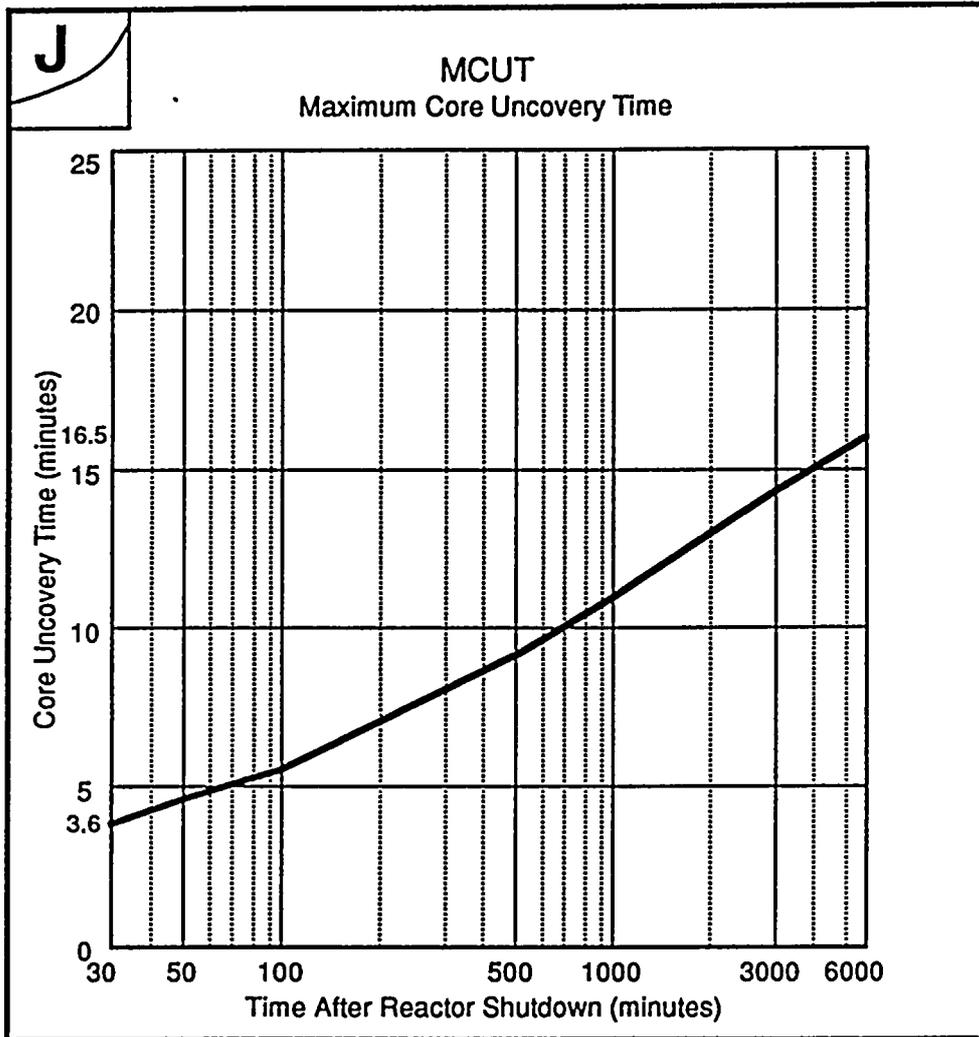




H

HCLL Heat Capacity Level Limit





SENIOR REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: SRO KEY

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

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| 1. a <input checked="" type="radio"/> b c d _____ | 21. <input checked="" type="radio"/> a b c d _____ | 41. <input checked="" type="radio"/> a b c d _____ |
| 2. <input checked="" type="radio"/> a b c d _____ | 22. a b <input checked="" type="radio"/> c d _____ | 42. <input checked="" type="radio"/> a b c d _____ |
| 3. a b c <input checked="" type="radio"/> d _____ | 23. a b c <input checked="" type="radio"/> d _____ | 43. a b c <input checked="" type="radio"/> d _____ |
| 4. a b c <input checked="" type="radio"/> d _____ | 24. a <input checked="" type="radio"/> b c d _____ | 44. a b <input checked="" type="radio"/> c d _____ |
| 5. <input checked="" type="radio"/> a b c d _____ | 25. a b <input checked="" type="radio"/> c d _____ | 45. a <input checked="" type="radio"/> b c d _____ |
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| 8. a b <input checked="" type="radio"/> c d _____ | 28. <input checked="" type="radio"/> a b c d _____ | 48. a b c <input checked="" type="radio"/> d _____ |
| 9. a <input checked="" type="radio"/> b c d _____ | 29. a b <input checked="" type="radio"/> c d _____ | 49. a b <input checked="" type="radio"/> c d _____ |
| 10. a b c <input checked="" type="radio"/> d _____ | 30. a b <input checked="" type="radio"/> c d _____ | 50. a b <input checked="" type="radio"/> c d _____ |
| 11. <input checked="" type="radio"/> a b c d _____ | 31. a <input checked="" type="radio"/> b c d _____ | 51. a b c <input checked="" type="radio"/> d _____ |
| 12. a b <input checked="" type="radio"/> c d _____ | 32. <input checked="" type="radio"/> a b c d _____ | 52. a <input checked="" type="radio"/> b c d _____ |
| 13. a b <input checked="" type="radio"/> c d _____ | 33. a b c <input checked="" type="radio"/> d _____ | 53. a <input checked="" type="radio"/> b c d _____ |
| 14. a <input checked="" type="radio"/> b c d _____ | 34. a b c <input checked="" type="radio"/> d _____ | 54. a <input checked="" type="radio"/> b c d _____ |
| 15. a b c <input checked="" type="radio"/> d _____ | 35. <input checked="" type="radio"/> a b c d _____ | 55. a b c <input checked="" type="radio"/> d _____ |
| 16. a <input checked="" type="radio"/> b c d _____ | 36. a b <input checked="" type="radio"/> c d _____ | 56. <input checked="" type="radio"/> a b c d _____ |
| 17. a b c <input checked="" type="radio"/> d _____ | 37. a <input checked="" type="radio"/> b c d _____ | 57. <input checked="" type="radio"/> a b c d _____ |
| 18. a <input checked="" type="radio"/> b c d _____ | 38. a b c <input checked="" type="radio"/> d _____ | 58. a <input checked="" type="radio"/> b c d _____ |
| 19. a <input checked="" type="radio"/> b c d _____ | 39. <input checked="" type="radio"/> a b c d _____ | 59. <input checked="" type="radio"/> a b c d _____ |
| 20. a b c <input checked="" type="radio"/> d _____ | 40. a b c <input checked="" type="radio"/> d _____ | 60. a b <input checked="" type="radio"/> c d _____ |

SENIOR REACTOR OPERATOR

ANSWER SHEET

NAME: SRO KEY

Multiple Choice (Circle or X your choice)

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

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| 61. a b <input checked="" type="radio"/> c d _____ | 81. <input checked="" type="radio"/> a b c d _____ |
| 62. a <input checked="" type="radio"/> b c d _____ | 82. a b c <input checked="" type="radio"/> d _____ |
| 63. a <input checked="" type="radio"/> b c d _____ | 83. a <input checked="" type="radio"/> b c d _____ |
| 64. a <input checked="" type="radio"/> b c d _____ | 84. a b <input checked="" type="radio"/> c d _____ |
| 65. a b c <input checked="" type="radio"/> d _____ | 85. a <input checked="" type="radio"/> b c d _____ |
| 66. a b <input checked="" type="radio"/> c d _____ | 86. <input checked="" type="radio"/> a b c d _____ |
| 67. a b <input checked="" type="radio"/> c d _____ | 87. a <input checked="" type="radio"/> b c d _____ |
| 68. a b c <input checked="" type="radio"/> d _____ | 88. a <input checked="" type="radio"/> b c d _____ |
| 69. <input checked="" type="radio"/> a b c d _____ | 89. a b c <input checked="" type="radio"/> d _____ |
| 70. a b <input checked="" type="radio"/> c d _____ | 90. <input checked="" type="radio"/> a b c d _____ |
| 71. a <input checked="" type="radio"/> b c d _____ | 91. a b <input checked="" type="radio"/> c d _____ |
| 72. a <input checked="" type="radio"/> b c d _____ | 92. a <input checked="" type="radio"/> b c d _____ |
| 73. a <input checked="" type="radio"/> b c d _____ | 93. a b <input checked="" type="radio"/> c d _____ |
| 74. <input checked="" type="radio"/> a b c d _____ | 94. a b c <input checked="" type="radio"/> d _____ |
| 75. a b <input checked="" type="radio"/> c d _____ | 95. <input checked="" type="radio"/> a b c d _____ |
| 76. a b c <input checked="" type="radio"/> d _____ | 96. a b c <input checked="" type="radio"/> d _____ |
| 77. a b <input checked="" type="radio"/> c d _____ | 97. a b <input checked="" type="radio"/> c d _____ |
| 78. a <input checked="" type="radio"/> b c d _____ | 98. a: b c <input checked="" type="radio"/> d _____ |
| 79. a b <input checked="" type="radio"/> c d _____ | 99. a: b c <input checked="" type="radio"/> d _____ |
| 80. a b c <input checked="" type="radio"/> d _____ | 100. <input checked="" type="radio"/> a b c d _____ |

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

APPLICANT INFORMATION

Name:		Region:	IV
Date:	October 7 1996	Facility/Unit:	WNP-2
License Level	RO	Reactor Type:	GE
Start Time:		Finish Time:	

INSTRUCTIONS

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

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

Applicant's Signature

RESULTS

Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Points

REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: _____

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

- | | | | | | |
|-----|---------------|-----|---------------|-----|---------------|
| 1. | a b c d _____ | 21. | a b c d _____ | 41. | a b c d _____ |
| 2. | a b c d _____ | 22. | a b c d _____ | 42. | a b c d _____ |
| 3. | a b c d _____ | 23. | a b c d _____ | 43. | a b c d _____ |
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| 10. | a b c d _____ | 30. | a b c d _____ | 50. | a b c d _____ |
| 11. | a b c d _____ | 31. | a b c d _____ | 51. | a b c d _____ |
| 12. | a b c d _____ | 32. | a b c d _____ | 52. | a b c d _____ |
| 13. | a b c d _____ | 33. | a b c d _____ | 53. | a b c d _____ |
| 14. | a b c d _____ | 34. | a b c d _____ | 54. | a b c d _____ |
| 15. | a b c d _____ | 35. | a b c d _____ | 55. | a b c d _____ |
| 16. | a b c d _____ | 36. | a b c d _____ | 56. | a b c d _____ |
| 17. | a b c d _____ | 37. | a b c d _____ | 57. | a b c d _____ |
| 18. | a b c d _____ | 38. | a b c d _____ | 58. | a b c d _____ |
| 19. | a b c d _____ | 39. | a b c d _____ | 59. | a b c d _____ |
| 20. | a b c d _____ | 40. | a b c d _____ | 60. | a b c d _____ |

REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: _____

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

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| 61. a b c d _____ | 81. a b c d _____ |
| 62. a b c d _____ | 82. a b c d _____ |
| 63. a b c d _____ | 83. a b c d _____ |
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| 67. a b c d _____ | 87. a b c d _____ |
| 68. a b c d _____ | 88. a b c d _____ |
| 69. a b c d _____ | 89. a b c d _____ |
| 70. a b c d _____ | 90. a b c d _____ |
| 71. a b c d _____ | 91. a b c d _____ |
| 72. a b c d _____ | 92. a b c d _____ |
| 73. a b c d _____ | 93. a b c d _____ |
| 74. a b c d _____ | 94. a b c d _____ |
| 75. a b c d _____ | 95. a b c d _____ |
| 76. a b c d _____ | 96. a b c d _____ |
| 77. a b c d _____ | 97. a b c d _____ |
| 78. a b c d _____ | 98. a b c d _____ |
| 79. a b c d _____ | 99. a b c d _____ |
| 80. a b c d _____ | 100. a b c d _____ |

REACTOR OPERATOR

NRC POLICIES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on any part of the examination will result in a denial of your application.
2. If you have any questions concerning the administration of the examination, do not hesitate asking them before starting that part of the test.
3. SRO applicants will be tested at the level of the responsibility of the senior licensed shift position (i.e. Shift Manager).
4. You must pass every part of the examination to receive a license. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.
5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.
6. 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 assistance in completing the examination.
7. To pass the examination, you must achieve a grade of 80 percent or greater. Every question is worth one point.
8. The time limit for completing the examination is four hours.
9. You may bring pens and calculators into the examination room. Use only black ink to ensure legible copies.
10. Print your name in the blank provided on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.
11. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.
12. 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.
13. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.
14. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied.

REACTOR OPERATOR

QUESTION: 1 (1.00)

Which one (1) of the following statements would describe "Simultaneous Verification" as it applies to a danger tag clearance order?

- a. Two qualified individuals, independently and separately checking the required status of the component or device.
- b. A Control Room Operator (CRO) verifying the required status of the component or device using Control Room indications.
- c. A second qualified individual, via local panel indications showing the required status of the component or device.
- d. Two qualified operators, accompanying each other, check required status, correct identification and location prior to changing component status.

QUESTION: 2 (1.00)

A Control Room Operator (CRO) is getting ready to leave the control room to go to the Production Center when an equipment operator calls and requests that someone bring him a "High Radiation" key.

Select the one (1) statement below that correctly describes the location from which keys to locked "High Radiation" areas are normally (non emergency conditions) issued.

- a. The control room.
- b. Secondary alarm station.
- c. Work control center.
- d. Health physics access control.

REACTOR OPERATOR

QUESTION: 3 (1.00)

A task must be performed at a location with a general area radiation level of 60 mr/hr. Previous performance of the task indicates that:

One (1) worker can perform the task in 1 hr and 20 min.

Two (2) workers can complete the task in 50 min.

Three (3) workers can complete the task in 30 min.

Four (4) workers can complete the task in 25 min.

Based on the above information, how many workers should be assigned to perform this task?

- a. One (1) worker
- b. Two (2) workers
- c. Three (3) workers
- d. Four (4) workers

QUESTION: 4 (1.00)

What is the maximum number of visitors that may accompany one (1) escort into the Main Control Room?

- a. Three (3)
- b. Five (5)
- c. Ten (10)
- d. Fifteen (15)

REACTOR OPERATOR

QUESTION: 5 (1.00)

With the plant operating at rated power which one (1) of the following will require double valve isolation on a clearance order?

- a. COND-FCV-15B ("B" condensate booster pump minimum flow valve)
- b. CRD-FU-10A ("A" control rod drive pump suction filter)
- c. FPC-HX-1B ("B" fuel pool cooling heat exchanger)
- d. SCW-P-1A ("A" stator cooling water pump)

QUESTION: 6 (1.00)

During the middle of the last shift, maintenance completed their work in a main condenser waterbox. You have been requested to enter the waterbox and inspect it prior to closure.

Which one (1) of the following describes the requirements, if any, that must be met prior to your entry?

- a. No restrictions apply to this situation.
- b. Perform atmospheric testing.
- c. Complete the pre-entry checklist.
- d. The Designated Safety Representative (DSR) must be present.

QUESTION: 7 (1.00)

Due to an injury sustained on shift, the Fire Brigade Leader has to leave work.

Which one (1) of the following individuals can take the place of the Fire Brigade Leader?

- a. Qualified security officer
- b. Shift support supervisor
- c. Qualified equipment operator
- d. Qualified health physics technician

REACTOR OPERATOR

QUESTION: 8 (1.00)

When may a task be performed without an approved procedure present?

- a. When the task has no safety significance.
- b. When the task procedure number on the cover sheet is preceded by an asterisk (*).
- c. When the task has been previously performed during the shift by the individual and the required steps have been memorized.
- d. When the task consists of simple routine actions frequently performed that don't require step sign-offs, recorded data, or specific sequence.

QUESTION: 9 (1.00)

The plant is operating in Operational Condition 1.

Which one (1) of the following lists the minimum shift crew composition administrative limit as specified in plant procedures?

- a. SM, CRS, SSS, three (3) CROs, five (5) EO, ENS communicator, two (2) HP Techs, two (2) Chem Techs, two (2) I & C Techs, Duty Officer.
- b. SM, CRS, two (2) CROs, two (2) EOs, STA, HP Tech, Chem Tech.
- c. SM, CRS, SSS, three (3) CROs, four (4) EOs, STA, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech.
- d. SM, CRS, SSS, two (2) CROs, two (2) EOs, STA, ENS communicator, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech, Elect/I&C Tech, Mechanic, Duty Officer.

REACTOR OPERATOR

QUESTION: 10 (1.00)

D On a case-by-case basis, line supervisors/managers can approve the use of signals for communications, if:

- 1) the signals are not easily confused and are understood by all involved,
- 2) the concept of three-way communication is applied to the maximum extent possible,
- 3) a thorough pre-job brief is conducted AND
- 4) signals are ONLY used...
 - a. in the Control Room.
 - b. in severe environments (high noise, heat, or radiation)
 - c. when physical directions are the "key" elements of the task.
 - d. when the message originator and message recipient are not readily identifiable to each other by sight and voice.

QUESTION: 11 (1.00)

Who has the responsibility for initiating Emergency Core Cooling Systems (ECCS), if required, during a plant transient?

- D**
- a. Only the operator responsible for panel H13-P601.
 - b. The on-shift crew member in closest proximity to panel H13-P601.
 - c. Only the operator designated by the Control Room Supervisor (CRS) to respond.
 - d. Any licensed operator at the control console.

QUESTION: 12 (1.00)

During shift turnover and control panel walkdown, annunciator P602.A13-3.5, ASD UPS TROUBLE, is noted to be in the alarmed state.

Which one (1) of the following describes the oncoming Control Room Operators (CROs) responsibility for panel annunciators?

- C**
- a. Verify that this annunciator correctly reflects plant conditions.
 - b. Ensure that this annunciator is logged in the control room log.
 - c. Place a "Problem Sticker" adjacent to this annunciator window.
 - d. Remove the logic card for this annunciator.

REACTOR OPERATOR

QUESTION: 13 (1.00)

An Anticipated Transient Without Scram (ATWS) is in progress. Plant conditions are as follows:

- RPV level -60" and down slow
- RPV pressure 945 psig
- Reactor power 10% and down slow

The Graphic Display System (GDS) on panel H13-P602 is selected to the Group Isolation screen. Nuclear Steam Supply Shutoff System (NS4) Group 1 indicates red.

Which one (1) of the following explains the reason GDS is providing this information?

- a. An NS4 Group 1 isolation has occurred
- b. An NS4 logic failure has occurred.
- c. A GDS malfunction has occurred.
- d. PPM 5.5.6 has been performed.

QUESTION: 14 (1.00)

Following a reactor scram, the Control Room Operator (CRO) notes that CRD-FIC-600 (CRD system flow controller) output signal is going down

Which one (1) of the following could cause this condition?

- a. High charging header flow.
- b. High cooling header demand.
- c. Low drive header flow.
- d. Low scram header flow.

REACTOR OPERATOR

QUESTION: 15 (1.00)

Select the power supply and logic configuration for the Alternate Rod Insertion (ARI) solenoid valves.

- a. 125 VDC (DP-S1-1A/2A) - must be ENERGIZED to vent the scram air header.
- b. 120 VAC (RPS A) - must be DE-ENERGIZED to vent the scram air header.
- c. 125 VDC (DP-S1-1D/2D) - must be DE-ENERGIZED to vent the scram air header.
- d. 120 VAC (IN-2) - must be ENERGIZED to vent the scram air header.

QUESTION: 16 (1.00)

The reactor is in Operational Condition 5, the Control Room Supervisor (CRS) has directed the Control Room Operator (CRO) to select control rod 30-55 to verify its position. The CRO reports that control rod 30-55 cannot be selected.

Which one (1) of the following could cause this condition?

- a. The refuel bridge is near or over the core.
- b. The fuel grapple is not full up.
- c. Another control rod is withdrawn past "00".
- d. The fuel grapple is loaded.

QUESTION: 17 (1.00)

After completing the Immediate Actions for a reactor scram, the Control Room Operator (CRO) notices a WITHDRAW rod block has been applied

Which one (1) of the following is true concerning this condition?

This rod block...

- a. will automatically be bypassed when the scram is reset.
- b. can be manually bypassed by bypassing the RWM.
- c. will automatically be bypassed 10 seconds after placing the reactor mode switch in SHUTDOWN.
- d. CANNOT be bypassed.

REACTOR OPERATOR

QUESTION: 18 (1.00)

The plant is operating at rated conditions with RRC-IN-ASD/1A (1A ASD UPS inverter) in service and supplying panel E-PP-ASD1/4.

Pushing the red EMER POWER OFF pushbutton on the front of the inverter panel will result in which one (1) of the following?

- a. RRC-P-1A ("A" reactor recirculation pump) will immediately trip, RRC-P-1B ("B" reactor recirculation pump) will continue to operate.
- b. Both reactor recirculation pumps will immediately trip.
- c. Both reactor recirculation pumps will trip after approximately 20 minutes.
- d. Both reactor recirculation pumps will continue to operate indefinitely.

QUESTION: 19 (1.00)

The plant is operating in Mode 1. Both Reactor Recirculation pumps are operating at 45 Hz. Adjustable Speed Drive (ASD) Channel A2 is not running and its white READY light is illuminated.

Which one (1) of the following describes the response of the Recirculation Pumps if the START Pushbutton for RRC-P-1A is pressed?

- a. The A2 ASD Channel will start. RRC-P-1A frequency will ramp to 52.2 Hz.
- b. The A2 ASD Channel will start. RRC-P-1A will continue to operate at 45 Hz.
- c. RRC-P-1A frequency will ramp to 15 Hz, the A2 ASD Channel will start, and RRC-P-1A frequency will ramp back to 45 Hz.
- d. RRC-P-1A frequency will ramp to 52.2 Hz and the A2 ASD Channel will start.

REACTOR OPERATOR

QUESTION: 20 (1.00)

Given the following indications:

- Reactor scrammed
- Reactor water level at -95" and down slow
- Drywell pressure at 1.67 psig and up fast.

Which one (1) of the following statements describes the response of the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) system to the indications listed above..

- a. LPCI will initiate when reactor water level decreases to LE -129".
- b. LPCI initiated when reactor water level reached -50".
- c. LPCI will initiate when drywell pressure increases to GE 1.68 psig.
- d. LPCI initiated when drywell pressure reached 1.65 psig.

QUESTION: 21 (1.00)

The High Pressure Core Spray (HPCS) system is operating in the Condensate Storage Tank to Condensate Storage Tank (CST to CST) full flow test lineup, when a loss of primary containment cooling results in drywell pressure increasing to 1.8 psig.

Which one (1) of the following statements identifies the automatic response of the HPCS system under the above conditions?

- a. HPCS-V-4 (injection valve) opens immediately
HPCS-V-10 & HPCS-V-11 (full flow test valves) close immediately
HPCS-V-12 (minimum flow valve) remains closed
- b. HPCS-V-10 & HPCS-V-11 (full flow test valves) go full closed
HPCS-V-4 (injection valve) opens after HPCS-V-10 and HPCS-V-11 fully close
HPCS-V-12 (minimum flow valve) cycles open and then closed
- c. HPCS-V-10 & HPCS-V-11 (full flow test valves) go full closed
HPCS-V-4 (injection valve) opens after HPCS-V-10 or HPCS-V-11 fully close
HPCS-V-12 (minimum flow valve) cycles open and then closed
- d. HPCS-V-4 (injection valve) opens immediately
HPCS-V-10 & HPCS-V-11 (full flow test valves) remain open
HPCS-V-12 (minimum flow valve) remains closed

REACTOR OPERATOR

QUESTION: 22 (1.00)

Following a valid High Pressure Core Spray (HPCS) initiation on high drywell pressure., the HPCS LEVEL 8 SEALED IN light and alarm are received and HPCS-V-4 (RPV injection valve) closes.

Which one (1) of the following conditions will cause HPCS-V-4 to automatically re-open?

- a. Drywell high pressure logic reset.
- b. RPV level lowering to +12".
- c. RPV level lowering to -51".
- d. Drywell high pressure alarm clears.

QUESTION: 23 (1.00)

An Anticipated Transient Without Scram (ATWS) is in progress concurrent with a loss of MC-8B, suppression pool temperature is 118°F and up slow. Assume all required actions have been completed correctly and no other failures have occurred at this time.

Which one (1) of the following describes the Standby Liquid Control (SLC) system status?

- a. SLC-P-1A - running
SLC-V-1A - open
SLC-V-4A - actuated
SLC-P-1B - running
SLC-V-1B - open
SLC-V-4B - actuated. *(SLC pumps)*
(SLC storage tank outlets)
(Squib valves)
- b. SLC-P-1A - loss of power
SLC-V-1A - loss of power
SLC-V-4A - loss of power
SLC-P-1B - running
SLC-V-1B - open
SLC-V-4B - actuated *(SLC pumps)*
(SLC storage tank outlets)
(Squib valves)
- c. SLC-P-1A - off
SLC-V-1A - closed
SLC-V-4A - closed
SLC-P-1B - off
SLC-V-1B - closed
SLC-V-4B - closed *(SLC pumps)*
(SLC storage tank outlets)
(Squib valves)
- d. SLC-P-1A - running
SLC-V-1A - open
SLC-V-4A - actuated
SLC-P-1B - loss of power
SLC-V-1B - loss of power
SLC-V-4B - loss of power *(SLC pumps)*
(SLC storage tank outlets)
(Squib valves)

REACTOR OPERATOR

QUESTION: 24 (1.00)

With the plant in a hydraulic Anticipated Transient Without Scram (ATWS) condition, the Control Room Operator (CRO) carries out the actions of PPM 5.5.11 and resets the scram. Annunciator P603-A8 6-4, SCRAM VALVE PILOT AIR HDR PRESS LOW, fails to clear.

Which one (1) of the following could cause this condition?

- a. At least one (1) backup scram valve has failed to ENERGIZE following the scram reset.
- b. Alternate Rod Insertion (ARI) logic has not been reset.
- c. Both backup scram valves have failed to ENERGIZE following the scram reset.
- d. One (1) of the Reactor Protection System (RPS) trip signals has not been bypassed.

QUESTION: 25 (1.00)

The "A" Reactor Protection System (RPS) Motor Generator (MG) set has tripped. The plant is presently operating with a half scram at 100% power.

The status of the white indicating lights associated with the MG SET TRANSFER SWITCH on H13-P610 is as follows:

- GENERATOR A FEED deenergized
- ALTERNATE FEED energized
- GENERATOR B FEED energized

The MG Set Transfer switch is in NORMAL.

Based on these conditions, which one (1) of the following statements is true?

Placing the MG Set Transfer switch to...

- a. ALT B will allow resetting the Electric Power Monitoring Assembly (EPA) breakers for the "A" RPS MG
- b. ALT A will cause the GENERATOR A FEED light to energize.
- c. ALT B will cause a full scram.
- d. ALT A will allow resetting the Electric Power Monitoring Assembly (EPA) breakers for the "A" RPS MG

REACTOR OPERATOR

QUESTION: 26 (1.00)

The plant is operating at 100% power with AR-EX-1A ("A" gland steam condenser exhaust) in service when a trip of RPS-MG-2 ("B" reactor protection system motor generator) occurs. Upon checking the full core display, it is noted that control rod 30-07 has scrammed and is fully inserted.

Assuming NO OPERATOR ACTIONS, after a time interval, the reactor will fully scram due to which one (1) of the following?

- a. Main turbine trip (throttle valve closure/governor valve fast closure).
- b. Drywell high pressure.
- c. Main steam isolation valve (MSIV) closure.
- d. Scram discharge volume high level.

QUESTION: 27 (1.00)

During a reactor startup, the reactor is subcritical with control rod withdrawal in progress. Source Range Monitor (SRM) count rate has stabilized at 1×10^3 Counts Per Second (CPS) following the last control rod withdrawal.

During withdrawal of the next control rod in the sequence, the first control rod in the next Rod Worth Minimizer (RWM) group, reactor period meters deflect from infinity to ≈ 20 seconds before turning. Reactor period is now ≈ 60 seconds increasing (approaching infinity).

Which one (1) of the following actions should be taken for this condition?

- a. Verify that the withdrawn control rod did not "double notch" and stop control rod withdrawal to allow stabilization of neutron level.
- b. Monitor SRMs and retract SRMs as necessary to maintain count rate LT 1×10^4 CPS.
- c. Insert control rods until the reactor is subcritical and notify the Control Room Supervisor (CRS)/Shift Manager (SM) and the Station Nuclear Engineer (SNE).
- d. Immediately manually scram the reactor.

REACTOR OPERATOR

QUESTION: 28 (1.00)

D Given the following:

- RPV water level -10" and steady
- Reactor pressure 200 psig and down slow
- Drywell temperature 350°F and down very slow
- No Secondary Containment Control entry conditions exist.
- Emergency depressurization is planned.

Which one (1) of the following is correct concerning the instrument(s) which can be used to determine RPV water level for the given conditions?

- a. Wide range only.
- b. Narrow range only.
- c. None.
- d. Fuel zone range only.

QUESTION: 29 (1.00)

D Reactor Core Isolation Cooling (RCIC) initiated as expected on a valid low level signal raising RPV level to the Level 8 setpoint.

Which one (1) of the following describes the automatic restart capability of RCIC?.

RCIC will...

- a. automatically restart when RPV level drops below the Level 8 setpoint.
- b. NOT automatically restart unless a high drywell pressure signal is received.
- c. automatically restart when RPV level drops below the Level 2 setpoint.
- d. automatically restart when RPV level drops below the Level 3 setpoint.

REACTOR OPERATOR

QUESTION: 30 (1.00)

D A transient has resulted in RPV level dropping to -140". The level has remained stable for GT seven (7) minutes. SM-8 has deenergized and Division 1 Automatic Depressurization System (ADS) has been inhibited. After verifying the cause of the loss of SM-8, permission is granted to reenergize the bus.

Assuming no operator actions, which one (1) of the following describes the response of the ADS Logic to the reenergization of SM-8.

- a. ADS will initiate 105 seconds after the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.
- b. ADS will not initiate if the operator resets the division "2" ADS timer within 105 seconds.
- c. ADS will initiate immediately when the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.
- d. ADS will not initiate until the operator resets the division "1" ADS inhibit switch.

QUESTION: 31 (1.00)

D What effect does manually decreasing the output on CAC-FC-67A ("A" recycle flow controller) have on the Containment Atmosphere Control (CAC) system?

- a. Reduces flow through the scrubber and reduces oxygen concentration entering the recombiner.
- b. Increases flow through the scrubber and increases oxygen concentration entering the recombiner.
- c. Reduces flow through the scrubber and increases oxygen concentration entering the recombiner.
- d. Increases flow through the scrubber and reduces oxygen concentration entering the recombiner.

REACTOR OPERATOR

QUESTION: 32 (1.00)

Which one (1) of the following is designed to prevent the differential pressure across the primary containment boundary from exceeding the design limit?

- a. Reactor building to wetwell vacuum breakers.
- b. Wetwell to drywell vacuum breakers.
- c. Standby Gas Treatment (SGT) system.
- d. Suppression pool "T" quenchers.

QUESTION: 33 (1.00)

The plant is in OPERATIONAL CONDITION 4, when fluctuations are observed in the output voltage of IN-2.

Assuming NO OPERATOR ACTIONS which one (1) of the following describes the expected result of continued IN-2 voltage degradation?

- a. RCIC-V-8, RCIC-V-63, & RCIC-V-76 (reactor core isolation cooling steam line isolation valves) close.
- b. Rod Worth Minimizer, (RWM), Rod Sequence Control System (RSCS) and Reactor Manual Control System (RMCS) become INOPERABLE.
- c. Nuclear Steam Supply Shutoff System (NS4) inboard isolations and loss of fire control panels 1, 2, & 3.
- d. Loss of the full core display and the ROLM telephones.

REACTOR OPERATOR

QUESTION: 34 (1.00)

The plant was operating at 100% power when a steam leak developed in the drywell. Current plant conditions are as follows:

RPV water level	+12"
RPV pressure	950 psig
Drywell pressure	2.5 psig
Drywell temperature	135 °F

Which one (1) of the following lists of Nuclear Steam Supply Shutoff System (NS4) groups SHOULD have received isolation/initiation signals?

- a. Group 1
Group 4
Group 5
- b. Group 2
Group 3
Group 6
- c. Group 3
Group 4
Group 5
- d. Group 1
Group 2
Group 7

QUESTION: 35 (1.00)

Loss of DP-S1-2 power will render Safety Relief Valve (SRV) control switches INOPERABLE at the location(s) specified in which one (1) of the following?

- a. H13-P601 only
- b. H13-P601 and H13-P631 (ADS division 2 logic panel)
- c. H13-P628 (ADS division 1 logic panel) and E-CP-ARS (Alternate remote shutdown panel)
- d. H13-P631 (ADS division 2 logic panel) and C61-P001 (Remote shutdown panel)



REACTOR OPERATOR

QUESTION: 36 (1.00)

The plant is operating at 100% power when the Control Room Operator (CRO) reports that RPV pressure is trending down. Shortly after this report the reactor scrams and the Main Steam Isolation Valves (MSIVs) close.

Which one (1) of the following describes the cause of this transient?

- a. The selected Digital Electrohydraulic (DEH) pressure controller has slowly failed high.
- b. The backup Digital Electrohydraulic (DEH) pressure controller has instantly failed low.
- c. The selected Digital Electrohydraulic (DEH) pressure controller has instantly failed low.
- d. The backup Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

QUESTION: 37 (1.00)

With a plant startup in progress and reactor power at 20%, #3 Turbine Bypass Valve (BPV) is declared INOP.

Which one (1) of the statements below describes the action(s) which must be taken under the above conditions?

- a. Restore the inoperable BPV to OPERABLE status within 1 hour or reduce power to less than 5% of rated within the next 4 hours.
- b. Continue the startup but do not exceed 90% of rated power until the BPV has been restored to OPERABLE status.
- c. Restore the inoperable BPV to OPERABLE status prior to reaching 25% of rated power.
- d. Restore the BPV to OPERABLE within 12 hours, or suspend the startup and be in COLD SHUTDOWN within the next 12 hours.

REACTOR OPERATOR

QUESTION: 38 (1.00)

The plant is operating at 50% power with both Reactor Feed Pump Turbines (RFPTs) operating in automatic control when RFPT "A" governor valves become stuck in the present position.

Assuming NO OPERATOR ACTIONS (other than raising power), how will RFPT "A" speed and RPV level respond if reactor power is raised to 100%?

	<u>RFPT "A" SPEED</u>	<u>RPV Level</u>
a.	Decrease	Remain the same
b.	Decrease	Lower
c.	Increase	Remain the same
d.	Remain approximately the same	Lower

QUESTION: 39 (1.00)

SGT-V-5B-2 (exhaust to stack) fails to open upon receipt of a valid initiation signal.

Which one (1) of the following describes the response of the Standby Gas Treatment (SGT) train "B" to this condition?

- SGT-FN-1B-2 (lead fan) starts and trips on low flow. SGT train "B" remains in this condition until the automatic start logic is reset.
- SGT-FN-1B-2 (lead fan) starts and trips on low flow. Automatic valve re-alignment and start of SGT-FN-1B-1 (lag fan) allow SGT train "B" to perform it's design function.
- SGT-FN-1B-2 (lead fan) and SGT-FN-1B-1 (lag fan) do NOT receive an automatic start signal while SGT-FN-5B-2 (exhaust to stack) is in the closed position.
- SGT-FN-1B-2 (lead fan) starts and trips on low flow. SGT-FN-1B-1 (lag fan) will then start, but will also trip on low flow.

REACTOR OPERATOR

QUESTION: 40 (1.00)

Following full load operation for a routine surveillance, diesel generator #1 is being cooled down at idle speed. During this time a loss of off-site power occurs.

Which one (1) of the following statements describes the actions necessary to ensure proper operation of the diesel for reenergizing SM-7?

- a. Place the excitation mode selector switch in PARALLEL. Ensure that SW-P-1A ("A" service water pump) continues to run or manually trip the diesel.
- b. Place the engine speed selector switch in RATED and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.
- c. Place the excitation mode selector switch in PARALLEL and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.
- d. Place the engine speed selector switch in RATED. Ensure that SW-P-1A starts as soon as it's discharge valve cycles full closed to full open.

QUESTION: 41 (1.00)

SM-8 is deenergized, which one (1) of the following is a permissive that MUST be satisfied in order for DG-2 to re-energize SM-8?

- a. Relay 86DG2 (Engine lockout) must be reset.
- b. Breaker 3-8 (feed from SM-3) and 8-3 (feed to SM-8) must both be open.
- c. Engine control switch must be in the REMOTE position.
- d. Excitation mode selector switch must be in the UNIT position.

REACTOR OPERATOR

QUESTION: 42 (1.00)

While withdrawing control rods during a plant startup, the control room operator (CRO) reports that a control rod will not move and appears to be stuck.

Which one (1) of the following describes an option that could be used to attempt to move this control rod?

- a. Adjust cooling water flow to GT 80 gpm and allow the rod to be forced in.
- b. Use the Single Rod Insert (SRI) switches to scram the rod and then recover it.
- c. Apply continuous withdrawal signals in two minute increments.
- d. Apply a continuous insert signal, release, then apply a continuous withdrawal signal.

QUESTION: 43 (1.00)

The plant is operating at 100% power when an EO, investigating an Accumulator Trouble alarm, reports that an HCU Nitrogen Accumulator has completely de-pressurized.

Which one (1) of the following describes the scram capability of the affected control rod?

- a. The rod can be scrammed because CRD Drive Header pressure is greater than Scram Discharge Volume pressure.
- b. The rod can be scrammed because RPV pressure is greater than Scram Discharge Volume pressure.
- c. The rod can NOT be scrammed because Nitrogen Accumulator pressure is less than RPV pressure.
- d. The rod can NOT be scrammed because Scram Inlet and Scram Outlet valves have lost their pneumatic supply.

REACTOR OPERATOR

QUESTION: 44 (1.00)

Which one (1) of the following identifies one of the boundaries of the region of the power to flow map where operation is PROHIBITED by PPM 4.12.4.7 and Technical Specifications?

- a. 55% flow
- b. 35% flow
- c. 25% flow
- d. 45% flow

QUESTION: 45 (1.00)

With the plant at rated conditions a Group 1 isolation occurred with RPV pressure peaking at 1145 psig during the transient.

Which one (1) of the following describes the direct effect on the reactor recirculation pump breakers?

- a. No breakers are effected
- b. Only breakers CB-RPT-3A and CB-RPT-3B trip.
- c. Breakers CB-RPT-3A, CB-RPT-3B, CB-RPT-4A, CB-RPT-4B trip.
- d. Only breakers CB-RPT-4A and CB-RPT-4B trip.

QUESTION: 46 (1.00)

Following a loss of SM-7 and an Anticipated Transient Without Scram (ATWS) condition, boron injection is required.

What effect will Standby Liquid Control (SLC) initiation have on Reactor Water Cleanup (RWCU) system valves?

- a. RWCU-V-104 (RWCU system bypass) opens.
- b. RWCU-V-1 (RWCU inboard isolation) closes.
- c. RWCU-V-4 (RWCU outboard isolation) closes.
- d. RWCU-V-40 (RPV/RWCU return isolation) closes.

REACTOR OPERATOR

QUESTION: 47 (1.00)

With the plant at 30% power, which one (1) of the following describes the effect that a loss of rod position information for a single control rod will have on the Reactor Manual Control System (RMCS)?

- a. A rod insert and withdraw block will be generated via the Rod Worth Minimizer (RWM).
- b. A rod withdraw block will be generated via the Rod Sequence Control System (RSCS).
- c. A rod insert block will be generated via the Rod Position Indication System (RPIS).
- d. No rod blocks are generated, a loss of rod position indication only.

QUESTION: 48 (1.00)

RHR-P-2C ("C" residual heat removal pump) is operating in the test line-up for a surveillance when RHR-P-3 (residual heat removal B/C water leg pump) trips.

Which one (1) of the following describes actions that should be taken for this condition?

- a. RHR-P-2C ("C" residual heat removal pump) should remain in operation, if possible, to ensure that the system piping remains filled and to maintain pressure to Residual Heat Removal (RHR) loop "B".
- b. RHR-P-2C ("C" residual heat removal pump) should remain in operation, if possible, until RHR-P-3 (residual heat removal B/C water leg pump) can be restored to service. RHR-P-2B ("B" residual heat removal pump) should be placed in wetwell cooling prior to the receipt of the DISCH PRESS HIGH/LOW annunciator.
- c. RHR-P-2C ("C" residual heat removal pump) should be shut down. The control switches for both RHR-P-2C ("C" residual heat removal pump) and RHR-P-2B ("B" residual heat removal pump) should be held in OFF until the control power fuses have been removed for both pump breakers.
- d. RHR-P-2C ("C" residual heat removal pump) should be shut down to facilitate repair of RHR-P-3 (residual heat removal B/C water leg pump). RHR-P-2B ("B" residual heat removal pump) should be placed in wetwell cooling prior to the receipt of the DISCH PRESS HIGH/LOW annunciator.

REACTOR OPERATOR

QUESTION: 49 (1.00)

RHR-V-68B (residual heat removal heat exchanger service water discharge valve) has just been stroked closed for a surveillance test.

Which one (1) of the following conditions, if any, would result in RHR-V-68B automatically opening?

- a. None, RHR-V-68B does not automatically reposition.
- b. Reactor water level at -60".
- c. Reactor building exhaust plenum high radiation.
- d. "B" residual heat removal pump room high temperature.

QUESTION: 50 (1.00)

A Loss of Coolant Accident (LOCA) has occurred, all Emergency Core Cooling Systems (ECCS) equipment has functioned as designed. Present plant conditions are as follows:

- RPV level -135" and up slow
- RPV pressure 200 psig and down slow
- Wetwell pressure 9 psig and up very slow
- RHR-V-42A (RPV injection valve) is open

RHR-V-17A (Upper drywell spray inboard isolation valve) is opened in preparation for drywell spray. When the Control Room Operator (CRO) takes the control switch for RHR-V-16A (upper drywell spray outboard isolation) to OPEN, RHR-V-16A will...

- a. remain closed until RPV pressure drops below 135 psig.
- b. open when RPV water level is GE -129".
- c. open immediately.
- d. remain closed.

REACTOR OPERATOR

QUESTION: 51 (1.00)

During Loss Of Coolant Accident (LOCA) conditions with Residual Heat Removal (RHR) "A" unavailable, RHR "B" was placed into both wetwell spray and drywell spray.

What is the expected automatic system response when the high drywell pressure initiation signal subsequently clears?

- a. Drywell spray isolates and wetwell spray continues.
- b. BOTH drywell and wetwell sprays isolate.
- c. Drywell spray continues and wetwell spray isolates.
- d. BOTH drywell and wetwell sprays continue.

QUESTION: 52 (1.00)

The plant is operating at 100% power when both 500 KV generator output breakers trip.

If the main turbine fails to trip, which one (1) of the following describes the short term response of the main turbine Overspeed Protection Controller (OPC) for this condition?

- a. OPC initially actuates and then resets. Thereafter main turbine speed is controlled at 100% of rated by the Digital Electrohydraulic (DEH) control system.
- b. OPC initially actuates and does NOT reset. Main turbine speed coasts down to 0 rpm.
- c. OPC repeatedly actuates and resets to control main turbine speed LT 103% of rated.
- d. OPC repeatedly actuates and resets to control pressure at Pressure Setpoint.

REACTOR OPERATOR

QUESTION: 53 (1.00)

Initial Conditions:

- Reactor startup in progress.
- RPV pressure \approx 450 psig and going up
- Main condenser vacuum \approx 23"
- SM-1, SM-2, and SM-3 being powered from the startup transformer (TR-S)
- COND-P-2A ("A" condensate booster pump) running
- CW-P-1C ("C" circulating water pump) running
- COND-P-1A and COND-P-1B ("A" & "B" condensate pumps) running

Maintenance has requested that Operations start the CW-P-1A & CW-P-1B ("B" & "C" circulating water pumps) for post maintenance testing.

Using the above information, determine which one (1) of the following statements is correct.

- a. Starting the third circulating water pump will cause an undervoltage trip of TR-S.
- b. Operation of more than one (1) circulating water pump at this point in the startup is not recommended due to tube erosion concerns.
- c. Starting two (2) additional circulating water pumps should not cause any significant problems for plant operations.
- d. If CW-P-1A is started last, the transient on SM-1 will cause a trip of COND-P-1A and COND-P-2A on over current.

QUESTION: 54 (1.00)

Which one (1) of the following describes why cooling is required for a mechanical vacuum pump during its operation.

- a. In addition to air being drawn into the suction, steam is used to seal the pump casing, which would overheat the pump.
- b. Cooling is required to enable a lower condenser vacuum to be attained.
- c. Cooling is required for the exhaust gases as they exit the mechanical vacuum pump.
- d. As air is compressed, heat is produced which would cause the pump to overheat.

REACTOR OPERATOR

QUESTION: 55 (1.00)

With bus MC-8A deenergized, what would be the consequence of pushing the REVERSE TRANSFER pushbutton on IN-2?

- a. Loss of power to PP-7A-A.
- b. No effect, the ABT is power seeking and no transfer will occur.
- c. No effect, IN-2 would already be in a reverse power condition.
- d. Loss of power to PP-8A-A.

QUESTION: 56 (1.00)

A loss of 250 VDC Motor Control Center MC-S2-1A has occurred.

Which one (1) of the following describes the direct effect this condition will have on the Reactor Core Isolation Cooling (RCIC) System?

- a. RCIC initiation logic power is lost, but RCIC can still be manually initiated.
- b. RCIC-V-1 (RCIC turbine trip valve) indication and control will be lost rendering RCIC INOPERABLE.
- c. RCIC flow control will not function in automatic, but can still be used in manual.
- d. RCIC valve indications are lost, however, all system functions still work.

QUESTION: 57 (1.00)

A reactor startup from cold conditions is in progress, a vacuum is being drawn in the main condenser using both AR-P-1A and AR-P-1B (mechanical vacuum pumps). MS-RIS-610B (main steam line radiation monitor) has generated an INOP trip.

Which one (1) of the following describes the effect of the above conditions?

- a. Both AR-P-1A and AR-P-1B will trip.
- b. Neither AR-P-1A or AR-P-1B will trip.
- c. Only AR-P-1B will trip.
- d. Only AR-P-1A will trip.

REACTOR OPERATOR

QUESTION: 58 (1.00)

Due to a line break in the fire protection system header, system pressure has dropped to 108 psig and has remained there for two (2) minutes.

Which one (1) of the following describes the status of the fire protection pumps after this period of time?

- a. FP-P-2A (electric pump) running
FP-P-2B (electric pump) running
FP-P-1 (diesel pump) running
FP-P-110 (diesel pump) not running
- b. FP-P-2A (electric pump) running
FP-P-2B (electric pump) not running
FP-P-1 (diesel pump) running
FP-P-110 (diesel pump) not running
- c. FP-P-2A (electric pump) not running
FP-P-2B (electric pump) not running
FP-P-1 (diesel pump) running
FP-P-110 (diesel pump) running
- d. FP-P-2A (electric pump) not running
FP-P-2B (electric pump) not running
FP-P-1 (diesel pump) running
FP-P-110 (diesel pump) not running

QUESTION: 59 (1.00)

Steam tunnel cooling fans "A" and "B" are in service. A main steam line break results in steam tunnel pressure in excess of 0.8 psi.

What actions will occur as a result of this transient?

- a. Standby gas treatment initiates.
- b. Reactor building ventilation isolates.
- c. Steam tunnel cooling fan "C" auto starts.
- d. Steam tunnel blowout panels relieve.

REACTOR OPERATOR

QUESTION: 60 (1.00)

A leak has developed in the drywell, current plant conditions are as follows:

RPV level	-40" and down slow
RPV pressure	850 psig and down slow
Drywell pressure	1.66 psig and up slow
Reactor building exhaust plenum radiation	15 mr/hr

WMA-FN-51B (recirc fan) has been observed to have automatically started.

Which one (1) of the following describes the reason WMA-FN-51B automatically started?

- High drywell pressure isolated normal control room ventilation, automatically starting WMA-FN-51B.
- Low RPV level directly caused an automatic start of WMA-FN-51B.
- Reactor building exhaust plenum high radiation automatically started WMA-FN-54B (emergency filter unit fan) which subsequently automatically started WMA-FN-51B.
- High drywell pressure tripped WEA-FN-51 (toilet/kitchen exhaust fan) which caused an automatic start of WMA-FN-51B.

QUESTION: 61 (1.00)

A Traversing In-Core Probe (TIP) trace is being taken when a high drywell pressure signal is received.

Which one (1) of the following describes the automatic response of the TIP system? -

- The TIP drive shifts to reverse withdrawing the detector to the "in-shield" position, then the shear valve fires.
- The TIP shear valve immediately fires, cutting the detector cable and sealing the guide tube.
- The TIP drive shifts to reverse withdrawing the detector to the "in-shield" position, then the ball valve closes.
- The TIP ball valve immediately closes, cutting the detector cable and sealing the guide tube.

REACTOR OPERATOR

QUESTION: 62 (1.00)

CC-V-129 (reactor closed cooling water supply to fuel pool cooling heat exchangers) has failed closed. Initial fuel pool temperature is 95 °F and going up at 10 °F/hour.

Which one (1) of the following describes the next automatic action, if any, that will occur in the fuel pool cooling system?

- a. When fuel pool temperature reaches 125 °F, service water will supply cooling to the fuel pool cooling heat exchangers.
- b. As temperature rises in the spent fuel pool, evaporative cooling causes a loss of inventory. The skimmer surge tank level will go down and COND-V-42 (condensate transfer makeup to skimmer surge tank) will open.
- c. FPC-V-175 (filter demineralizer bypass) opens at 105 °F to prevent resin breakdown and chemical intrusion.
- d. Increasing temperature in the spent fuel pool has NO effect on actions in the fuel pool cooling system.

QUESTION: 63 (1.00)

Drywell pressure is currently 2.0 psig and up slow. What effect, if any, does this have on the reactor building ventilation (RBHVAC) system?

- a. - REA-V-1, REA-V-2, ROA-V-1 & ROA-V-2 (reactor building ventilation isolation valves) receive a close signal
- REA-FN-1 & REA-FN-2 (reactor building ventilation supply fans) and ROA-FN-1 & ROA-FN-2 (reactor building exhaust fans) receive a trip signal
- Emergency Core Cooling System (ECCS) emergency cooling fans start
- b. - RBHVAC continues to operate
- The Standby Gas Treatment (SGT) system will NOT automatically start on high drywell pressure.
- c. - REA-V-1, REA-V-2, ROA-V-1 & ROA-V-2 (reactor building ventilation isolation valves) remain open
- REA-FN-1 & REA-FN-2 (reactor building ventilation supply fans) and ROA-FN-1 & ROA-FN-2 (reactor building exhaust fans) receive a trip signal
- Emergency Core Cooling System (ECCS) emergency cooling fans receive a trip signal
- d. - RBHVAC continues to operate
- The SGT system will automatically start.

REACTOR OPERATOR

QUESTION: 64 (1.00)

Thermal limits are established to maintain fuel integrity.

Which one (1) of the following statements describes the "limiting condition" and/or "failure mechanism" for one of the thermal limits?

- a. Critical Power Ratio (CPR) limits ensure that the fuel cladding will not be subjected to greater than 1% plastic strain.
- b. Average Planar Linear Heat Generation Rate (APLHGR) limits ensure that the fuel cladding temperature does not exceed 2200 °F during a Design Basis Loss Of Coolant Accident (DBA LOCA).
- c. Linear Heat Generation Rate (LHGR) limits prevent fuel clad cracking due to high stress by limiting fuel enthalpy to less than 280 calories/gram.
- d. Pre-Conditioning Interim Operating Recommendation (PCIOMR) limits prevent exceeding local power limits which could thermally fatigue the cladding.

QUESTION: 65 (1.00)

A reactor scram has just occurred. The Rod Sequence Control System (RSCS) and Rod Worth Minimizer (RWM) have not functioned to give the ALL RODS IN information.

Which one (1) of the following H13-P603 indications may be used to verify rods full in?

- a. White Reactor Protection System (RPS) group lights deenergized.
- b. Amber backup scram lights deenergized.
- c. Green full in lights energized
- d. Blue scram lights energized.

REACTOR OPERATOR

QUESTION: 66 (1.00)

Initial plant conditions are as follows:

- Reactor power 100%
- RPV pressure 1020 psig
- RPV water level 36"

A reactor scram occurs and the scram inlet valve (126) of a single control rod mechanically binds and fails to open.

Which one (1) of the following describe the control rod's response to this failure?

- a. Fully inserts and its blue scram light is energized.
- b. Fails to insert and its blue scram light is energized.
- c. Fully inserts and its blue scram light is deenergized.
- d. Fails to insert and its blue scram light is deenergized.

QUESTION: 67 (1.00)

The reactor is operating at $\approx 98\%$ power. An equipment operator reports a lube oil leak in the "B" feedwater pump room. Immediately after acknowledging the report, RFW-P-1B ("B" reactor feedwater pump) trips on low lube oil pressure.

Which one (1) of the following describes the effect this condition has on the reactor recirculation system?

- a. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 15Hz.
- b. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 27Hz.
- c. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 15 Hz.
- d. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 52.2 Hz.

REACTOR OPERATOR

QUESTION: 68 (1.00)

Which one (1) of the following protective features is designed to actuate to ensure net positive suction head for the Reactor Recirculation pumps?

- a. Level 1 trip
- b. Level 2 trip
- c. Level 3 runback
- d. Level 4 runback

QUESTION: 69 (1.00)

The control room operator (CRO) is withdrawing control rods with the reactor critical and power indicating on the IRMs just prior to the point of adding heat. The CRO observes an unexpected rapid increase in power and a period indication of ≈ 30 seconds.

Assuming NO OPERATOR ACTION, which one (1) of the following scram signals will terminate this transient?

- a. Reactor short period.
- b. Average Power Range Monitor (APRM) neutron flux high.
- c. Source Range Monitor (SRM) upscale
- d. Intermediate Range Monitor (IRM) neutron flux high

REACTOR OPERATOR

QUESTION: 70 (1.00)

The plant is operating at $\approx 98\%$ power when the following indications are noted:

- Reactor power down slow.
- Megawatts down slow.
- Control air pressure down slow.
- Three (3) control rods indicate FULL-IN with scram lights energized on the full core display.

Which one (1) of the following statements describes the actions required to be taken given the above indications.

- a. NO actions are required until the first Main Steam Isolation Valve (MSIV) is showing dual position indication.
- b. Close or verify closed CN-V-65 (containment instrument air crosstie shut-off valve).
- c. Initiate a manual reactor scram and refer to PPM 3.3.1.
- d. Lower core flow to reduce reactor power to LT 90% of rated core thermal power.

QUESTION: 71 (1.00)

Which one (1) of the following systems was specifically designed to ensure reactor power could be monitored under DBA/LOCA conditions?

- a. Source Range Monitoring (SRM) system.
- b. Local Power Range Monitoring (LPRM) system.
- c. Wide Range Monitoring (WRM) system.
- d. Intermediate Range Monitoring (IRM) system

REACTOR OPERATOR

QUESTION: 72 (1.00)

PPM 5.2.1 "Primary Containment Control" directs that when drywell pressure exceeds 39 psig the primary containment is to be vented to reduce and maintain wetwell pressure below the Primary Containment Pressure Limit (PCPL).

Which one (1) of the following statements describes the preferred vent path and the reason that this path is preferred?

- a. Drywell, this is the vent path with the highest flowrate capacity.
- b. Wetwell, to take advantage of suppression pool scrubbing for minimizing the amount of radioactivity released.
- c. Drywell, in order to minimize the moisture saturation and breakdown of the Standby Gas Treatment (SGT) system charcoal adsorbers.
- d. Wetwell, in order to minimize cycling, and potential failure of the wetwell to drywell vacuum breakers.

QUESTION: 73 (1.00)

The plant was operating at $\approx 98\%$ power when a leak in the discharge of a condensate booster pump caused a low suction pressure trip of the reactor feedwater pumps. RPV level dropped to $-25''$ initially and is now going down very slow, the Control Room Supervisor (CRS) has entered PPM 5.1.1, RPV Control, and is executing all legs concurrently. Wetwell temperature has just been reported at 92°F and up slow.

Which one (1) of the following describes the Emergency Operating Procedure (EOP) implementation to be used under these conditions?

- a. Continue PPM 5.1.1, RPV Control, RPV level steps, AND enter PPM 5.3.1, Secondary Containment Control.
- b. Continue PPM 5.1.1, RPV Control, AND concurrently enter PPM 5.2.1, Primary Containment Control.
- c. Complete PPM 5.1.1, RPV Control, RPV level steps, THEN enter PPM 5.2.1, Primary Containment Control.
- d. Reenter PPM 5.1.1, RPV Control, AND concurrently enter PPM 4.12.4.1A High Energy Line Break.

REACTOR OPERATOR

QUESTION: 74 (1.00)

The plant is in a condition requiring the Control Room Supervisor (CRS) to execute PPM 5.1.1, RPV Level Control, and PPM 5.2.1, Primary Containment Control, concurrently. The CRS has directed a pressure reduction which exceeds the normal, allowable RPV cooldown rate of 100°F/Hr.

Which one (1) of the following describes a condition that would allow the CRS to take this action?

- a. Prevent RPV level from going LT Top of Active Fuel (TAF).
- b. Prevent exceeding Drywell Spray Initiation Limit (DSIL).
- c. Prevent exceeding Heat Capacity Temperature Limit (HCTL).
- d. Prevent exceeding Maximum Primary Containment Water Level Limit (MPCWLL).

QUESTION: 75 (1.00)

In PPM 5.1.4, RPV Flooding, achieving FLOODING COMPLETION TIME ensures that RPV level is GE to...

- a. the Top of Active Fuel (TAF).
- b. the Main Steam Line (MSL) openings.
- c. 2/3 core height.
- d. the reactor head vents..

QUESTION: 76 (1.00)

When using the Reactor Core Isolation Cooling (RCIC) system for alternate boron injection, the contents of the Standby Liquid Control (SLC) storage tank are gravity fed to the RCIC pump suction by a temporary hose connection originating at...

- a. any drain off the SLC suction piping.
- b. the drain off of the SLC storage tank.
- c. a drain on the common SLC discharge header, downstream of SLC-V-4A & SLC-V-4B (squib valves).
- d. the tank side of either the "A" or "B" SLC system relief valve piping.

REACTOR OPERATOR

QUESTION: 77 (1.00)

Which one (1) of the following describes two (2) methods that can be used for positive confirmation that all rods are fully inserted?

- a. Average Power Range Monitors (APRMs) LT 5% power and Reactor Engineering calculation showing adequate shutdown margin.
- b. Graphic Display System (GDS) and Plant Process Computer Replacement System (PPCRS).
- c. Plant Process Computer Replacement System (PPCRS) and Quick Emergency Dose Projection System (QEDPS).
- d. Graphic Display System (GDS) and Average Power Range Monitors (APRM)s LT 5% power.

QUESTION: 78 (1.00)

The plant is operating at 75% power and 70% core flow when an electrical malfunction in the main turbine trip circuitry causes both reactor recirculation pumps to trip off.

Which one (1) of the following IMMEDIATE ACTIONS should be taken?

- a. The recirculation pump trips will cause a RPV high pressure scram. Perform the immediate scram actions per PPM 3.3.1..
- b. Refer to the single loop operating procedure in PPM 2.2.1 to restart one of the reactor recirculation pumps.
- c. Confirm the loss of both reactor recirculation pumps and then manually scram the reactor.
- d. Use the fast shutdown sequence control rods to exit Region "C" within 15 minutes.

QUESTION: 79 (1.00)

The reactor is operating at 93% power when a loss of all circulating water pumps occurs. Assuming NO OPERATOR ACTION, as vacuum degrades to 14" Hg, what will be the effect on RPV water level?

RPV water level will...

- a. increase to +54" and then cycle between -50" and +54".
- b. decrease to LT 0" and then stabilize at +18".
- c. be maintained at setpoint.
- d. decrease to +13" and then stabilize at +36".

REACTOR OPERATOR

QUESTION: 80 (1.00)

During a "Station Blackout" plant parameters are as follows:

- | | |
|-----------------------|------------------------|
| - RPV water level | -52" and up slow |
| - RPV pressure | 850 psig and down slow |
| - Wetwell pressure | 19 psig and up slow |
| - Drywell temperature | 243°F and up slow |
| - Wetwell temperature | 112°F |
| - Wetwell level | + 3" |

Which one (1) of the following interlocks must be defeated to allow continued Reactor Core Isolation Cooling (RCIC) system operation under these conditions?

- High exhaust pressure turbine trip.
- RCIC exhaust diaphragm rupture isolation.
- Level 2 RCIC turbine trip.
- Drywell high temperature RCIC system isolation.

QUESTION: 81 (1.00)

Due to a fault, MC-7A has been deenergized and will be out of service for a minimum of eight (8) hours.

Which one (1) of the following will be affected by this condition?

- Uninterruptable Power Supply (UPS) static inverter IN-1.
- Critical instrument inverter IN-2.
- ATWS/ARI Division 2 logic power.
- DG-1 control circuit power

REACTOR OPERATOR

QUESTION: 82 (1.00)

A plant startup is in progress with reactor pressure ≈ 500 psig. RFW-FCV-10A and RFW-FCV-10B (feedwater startup valves to the reactor) both fail full open. RPV level is 55" and rising.

What IMMEDIATE ACTIONS should be taken to preclude flooding the main steam lines?

- Prior to reaching an RPV level of +80", scram the reactor, and close the Main Steam Isolation Valves (MSIVs).
- Stop the condensate booster pumps before RPV water level exceeds +80".
- Prior to reaching an RPV level of +108", close RFW-V-118 (feedwater startup valve isolation) and leave it closed until RPV level is LT +54".
- Stop all condensate and condensate booster pumps before RPV water level exceeds +60".

QUESTION: 83 (1.00)

The plant has experienced a transient, Emergency Operating Procedures (EOPs) have been entered and conditions are as follows:

RPV water level -150" and down slow
RPV pressure 180 psig and down slow
Wetwell temperature 110°F and up slow
RHR loop "A" injecting to the RPV
RHR loop "B" in suppression pool cooling
All other injection sources are unavailable

Which one (1) of the following statements best describes actions that need to be taken given the above information?

- Open seven (7) Automatic Depressurization System (ADS) Safety Relief Valves (SRVs) to emergency depressurize.
- RHR loop "B" should be removed from suppression pool cooling and injected into the RPV.
- RHR loop "A" should be removed from injection and placed into suppression pool cooling.
- No actions are required until RPV level lowers to LE -192".

REACTOR OPERATOR

QUESTION: 84 (1.00)

"Most Immediate" control room evacuation is required due to heavy smoke intrusion.

Which one (1) of the following statements lists only IMMEDIATE ACTIONS that should be taken prior to exiting the control room?

- a. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and close the Main Steam Isolation Valves (MSIVs).
- b. Manually scram the reactor, initiate Reactor Core Isolation Cooling (RCIC) and make a plant announcement.
- c. Manually scram the reactor, close the MSIVs and transfer RPV level control to RFW-FCV-10A and RFW-FCV-10B (feedwater startup valve to the reactor).
- d. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and start diesel generator #2

QUESTION: 85 (1.00)

The plant has experienced a transient, PPM 5.1.2 has been entered, plant parameters are as follows:

- RPV water level -145" and steady
- Drywell pressure 10 psig and down slow
- Wetwell temperature 110°F and up very slow
- Main Steam Isolation Valves (MSIVs) are closed
- Both Standby Liquid Control (SLC) pumps are injecting

Which one (1) of the following identifies a valid annunciator that would preclude/prevent reopening the MSIVs?

- a. LPCS/RHR A INIT RPV LEVEL LOW -129".
- b. DRYWELL PRESS HIGH TRIP.
- c. NSSSS ISOL MSL FLOW HIGH.
- d. RC-1 HALF TRIP.

REACTOR OPERATOR

QUESTION: 86 (1.00)

D The plant is operating at rated conditions with Reactor Closed Cooling Water (RCC) loads being supplied by RCC-P-1A and RCC-P-1C ("A" & "C" reactor closed cooling water pumps) when a fuse in the 125VDC power supply to the RCC-P-1A breaker close logic blows.

Which one (1) of the following is an action that should be taken?

- a. Start CRD-P-1B ("B" control rod drive pump) and trip CRD-P-1A ("A" control rod drive pump).
- b. Monitor drywell temperature and pressure, enter PPM 5.2.1, Primary Containment Control when entry conditions are met.
- c. Scram the reactor and trip RRC-P-1A and RRC-P-1B ("A" and "B" reactor recirculation pumps).
- d. Trip RWCU-P-1A & RWCU-P-1B ("A" & "B" reactor water cleanup pumps) and close RWCU-V-4 (reactor water cleanup outboard isolation valve).

QUESTION: 87 (1.00)

D Which one (1) of the following is expected to occur at a control air header pressure of 80 psig?

- a. SA-PCV-2 (control/service air cross tie valve) closes.
- b. Standby control air compressor(s) automatically start.
- c. CAS-PCV-1 (desiccant dryer bypass valve) opens.
- d. Control air header low pressure alarm is received.

REACTOR OPERATOR

QUESTION: 88 (1.00)

Given the following control air compressor parameters:

- | | |
|-----------------------------------|-----------------------------------|
| 1. High discharge air temperature | 4. High cooling water temperature |
| 2. Low cooling water pressure | 5. High discharge air pressure |
| 3. Low oil pressure | 6. High discharge flow |

Which one (1) of the following identifies the parameters, which if exceeded, would cause a trip of the control air compressor?

- a. 2, 4 and 6
- b. 1, 2 and 3
- c. 1, 3 and 5
- d. 4, 5 and 6

QUESTION: 89 (1.00)

The inadvertent trip of a Reactor Protection System (RPS) Electric Power Monitoring Assembly (EPA) breaker supplying RPS "B" would cause which one (1) of the following?

- a. Closure of the outboard Main Steam Isolation Valves (MSIVs).
- b. Closure of RWCU-V-1 and RWCU-V-4 (Reactor Water Cleanup System inboard and outboard isolation valves).
- c. Trip of RPS-MG-2 (Reactor Protection System "B" Motor Generator).
- d. Loss of power to MC-6B.

REACTOR OPERATOR

QUESTION: 90 (1.00)

The plant is operating at $\approx 97\%$ when the following annunciators are received:

- H13-P603.A7-6.7 ROD ACCUMULATOR TROUBLE
- *(The full core display indicates this alarm is for a fully withdrawn rod)*
- H13-P603.A7-3.8 CRD CHARGE WATER PRESS LOW

The control room operator (CRO) observes that CRD-P-1A ("A" control rod drive pump) motor current indicates zero (0) amps with the red light on.

Which one (1) of the following describes the IMMEDIATE ACTIONS required for this situation?

- a. Place the reactor mode switch to SHUTDOWN and carry out the scram recovery per PPM 3.3.1, Reactor Scram.
- b. Place the Control Rod Drive (CRD) flow controller in MANUAL and raise controller output while monitoring CRD-P-1A motor current.
- c. Place the standby CRD suction filter in service locally and start CRD-P-1B.
- d. Place the CRD flow controller in MANUAL, set the controller output at zero (0) and start CRD-P-1B.

REACTOR OPERATOR

QUESTION: 91 (1.00)

A plant transient has caused a reactor scram. Plant conditions are as follows:

- Reactor power $\approx 15\%$
- RPV pressure 1000 psig and steady
- RPV level -125" and down
- Wetwell temperature 165 °F and up slow
- Wetwell level 32.5' and up very slow

Which one (1) of the following describes the operation of the Safety Relief Valves (SRVs) with the above conditions?

- a. Heat Capacity Level Limit (HCLL) has been exceeded, emergency depressurization is required.
- b. Safety Relief Valve Tailpipe Level Limit (SRVTPLL) has been exceeded, emergency depressurization is required.
- c. Heat Capacity Temperature Limit (HCTL) has been exceeded, emergency depressurization is required.
- d. No limits have been exceeded, cycle SRVs to maintain RPV pressure between 800 and 1000 psig.

QUESTION: 92 (1.00)

Following a small steam line break inside primary containment, average drywell temperature has increased by about 100 °F.

Assuming that actual RPV water level remains constant, indicated vessel level could be...

- a. higher, as heating of the reference leg decreases differential pressure.
- b. lower, as heating of the reference leg increases differential pressure.
- c. higher, as heating of the reference leg increases differential pressure.
- d. lower, as heating of the reference leg decreases differential pressure.

REACTOR OPERATOR

QUESTION: 93 (1.00)

Given plant conditions as follows:

- Wetwell level 36'
- Wetwell pressure 10 psig
- RPV pressure 1000 psig

Using the attached curves, identify the possible results of Safety Relief Valve (SRV) actuation.

Actuation of an SRV...

- a. is allowed and desired given the above conditions.
- b. at this elevated wetwell level could result in damage to SRV internals.
- c. will result in exceeding the suppression pool boundary design load.
- d. could result in damage to the SRV tail pipe, quenchers, or supports.

QUESTION: 94 (1.00)

Following a seismic event and plant transient, RPV level is stable at -155" with injection from RHR-P-2A ("A" Residual Heat Removal pump) and HPCS-P-1 (High Pressure Core Spray pump) only. Wetwell level has lowered to below the vortex limit for RHR-P-2A.

Which one (1) of the following conditions will allow continued operation of RHR-P-2A?

- a. Drywell hydrogen concentration is GE 6% and drywell oxygen concentration is LT 4%.
- b. Wetwell pressure alone is sufficient to provide net positive suction head (NPSH) for RHR-P-2A.
- c. HPCS-P-1 injection alone is NOT sufficient to maintain RPV level.
- d. Drywell temperature is GE 340 °F.

REACTOR OPERATOR

QUESTION: 95 (1.00)

Which one of the following lists actions that can be used to mitigate off-site doses for an accident which releases radioactivity inside secondary containment?

- a. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Isolate the Standby Gas Treatment (SGT) system
- b. Isolate the Standby Gas Treatment (SGT) system
Shut down the reactor
Emergency depressurize the reactor
- c. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Shut down the reactor
- d. Isolate primary systems leaking into the area
Shut down the reactor
Emergency depressurize the reactor

QUESTION: 96 (1.00)

A transport cask filled with Control Rod Drive (CRD) "spud end" filters has tipped over on the 501' elevation of the Reactor Building (RB). ARM-RIS-33 (RB 501' area radiation monitor) is alarming on control room panel H13-P614. Reactor building exhaust plenum radiation levels are at ≈ 15 mr/hr and up fast.

Which one (1) of the following is an "expected" response to the above conditions?

- a. CW-P-1B & CW-P-1C ("B" & "C" circulating water pumps) trip.
- b. Any traversing in-core probe (TIP) inserted into the core will automatically withdraw and isolate.
- c. Drywell Equipment Drain (EDR) and Floor Drain (FDR) sumps isolate.
- d. Containment Nitrogen (CN) makeup isolates.

REACTOR OPERATOR

QUESTION: 97 (1.00)

A reactor shutdown to cold conditions is in progress. Plant conditions are as follows:

- Reactor mode switch positioned in SHUTDOWN
- RPV pressure is 45 psig
- Residual Heat Removal (RHR) "B" is being warmed up for shutdown cooling mode
- Residual Heat Removal (RHR) "A" has been removed from service for ten (10) days

Which one (1) of the following statements describes action(s) which must be taken for these conditions?

- a. Immediately place RHR Loop "B" in shutdown cooling and be in at least cold shutdown within one (1) hour.
- b. Perform a physical walkdown of the Reactor Water Cleanup (RWCU) system and then place the system in service to maintain reactor coolant temperature as low as possible.
- c. Demonstrate operability of at least one (1) alternate method of decay heat removal.
- d. Maintain both reactor recirculation pumps in operation until RHR-P-2A ("A" residual heat removal pump) is repaired and returned to service.

QUESTION: 98 (1.00)

A spent fuel assembly is dropped during transport in the spent fuel pool. The bridge operator observes bubbles rising from the dropped assembly.

Which one (1) of the following is an IMMEDIATE ACTION for this situation?

- a. Place all assemblies in a safe location, leave the area, and call the control room.
- b. Immediately evacuate the refuel floor of all personnel.
- c. Contact Health Physics and ask for an area survey, then inform the Control Room Supervisor (CRS).
- d. Contact the refuel floor supervisor and the system engineer, then attempt to recover the dropped assembly.

REACTOR OPERATOR

QUESTION: 99 (1.00)

PPM 5.3.1, Secondary Containment Control, was entered due to confirmed high temperatures and steam in the 1A Reactor Water Cleanup (RWCU) pump room. RWCU-V-1 & RWCU-V-4 (RWCU suction isolation valves) cannot be isolated from the control room. Maximum Safe Operating Values for the RWCU system have NOT been exceeded.

Which one (1) of the following describes the actions to be taken for this situation?

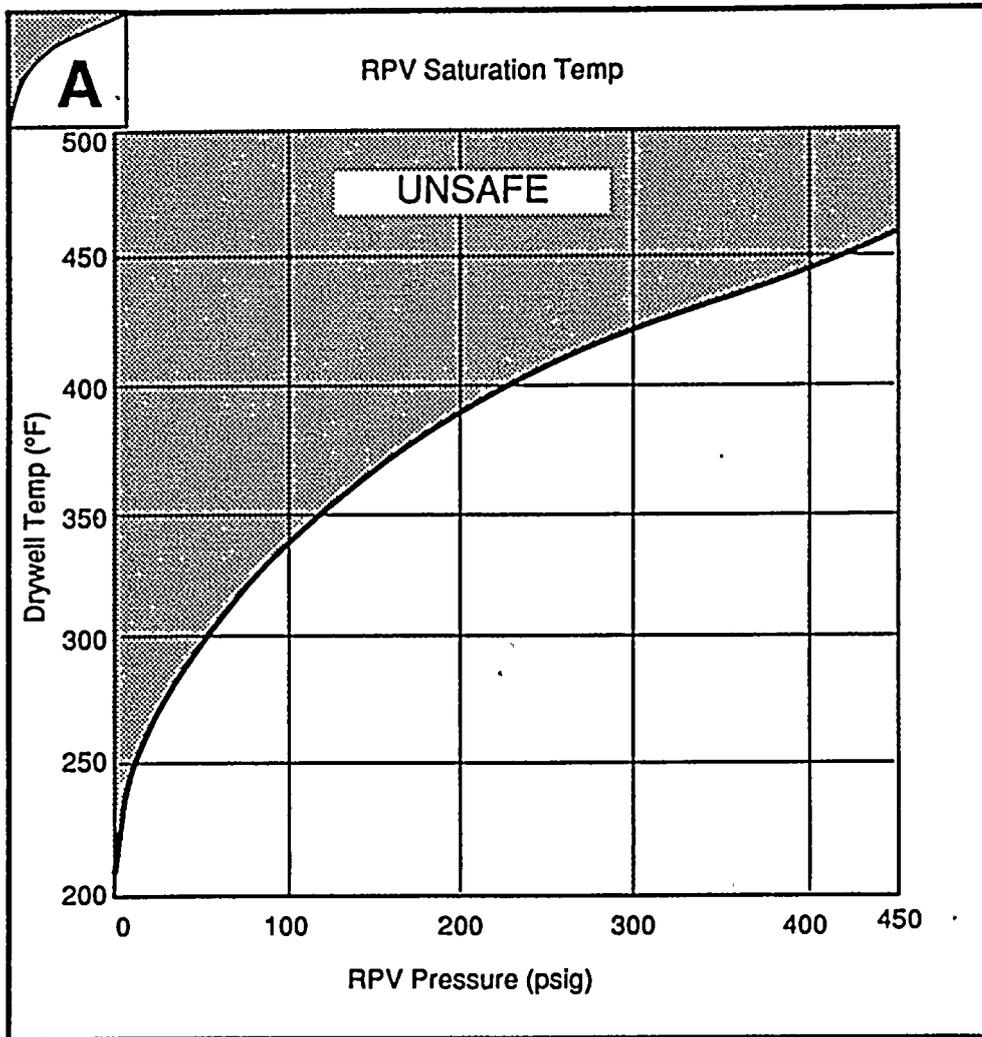
- a. Emergency depressurize.
- b. Shutdown the reactor per PPM 3.2.1.
- c. Continue efforts to isolate RWCU and enter PPM 5.1.1, RPV Level Control.
- d. Isolate Reactor Building Ventilation (RBHVAC) and initiate the Standby Gas Treatment (SGT) system.

QUESTION: 100 (1.00)

A failure of the reactor building ventilation system (RBHVAC) has occurred. The control room operator (CRO) has started Standby Gas Treatment (SGT) train "A".

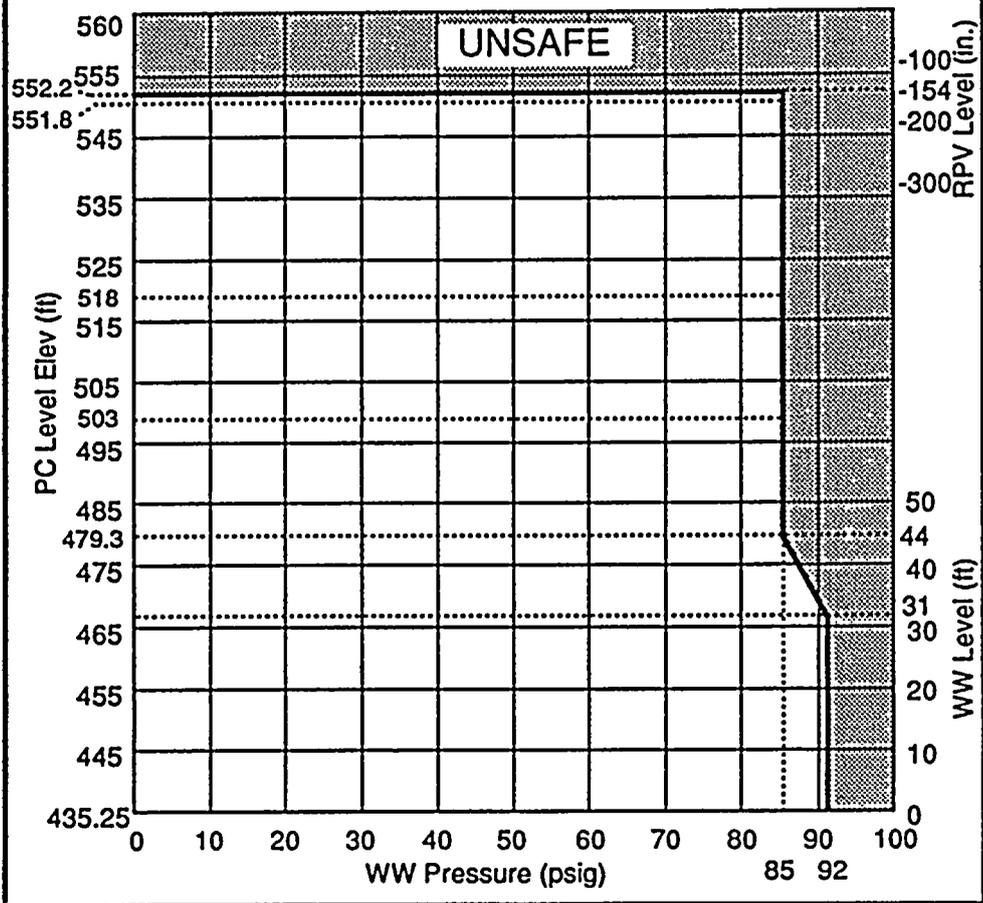
Which one (1) of the following is the SGT train "A" differential controller tape setpoint which should be set to ensure that the required negative pressure will be maintained in secondary containment?

- a. -1.7" Wg
- b. -0.6" Wg
- c. -2.5" Wg
- d. -0.25" Wg

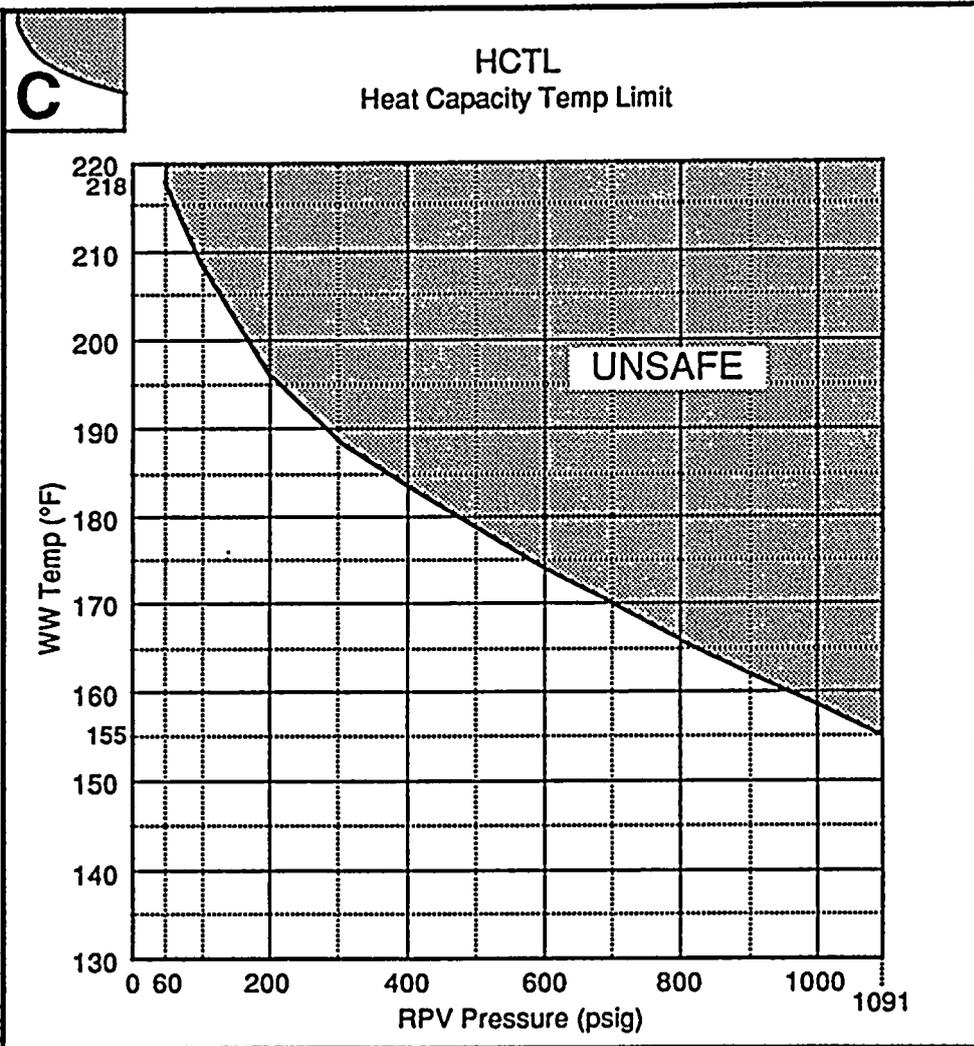


B

MPCWLL Maximum Primary Containment Water Level Limit

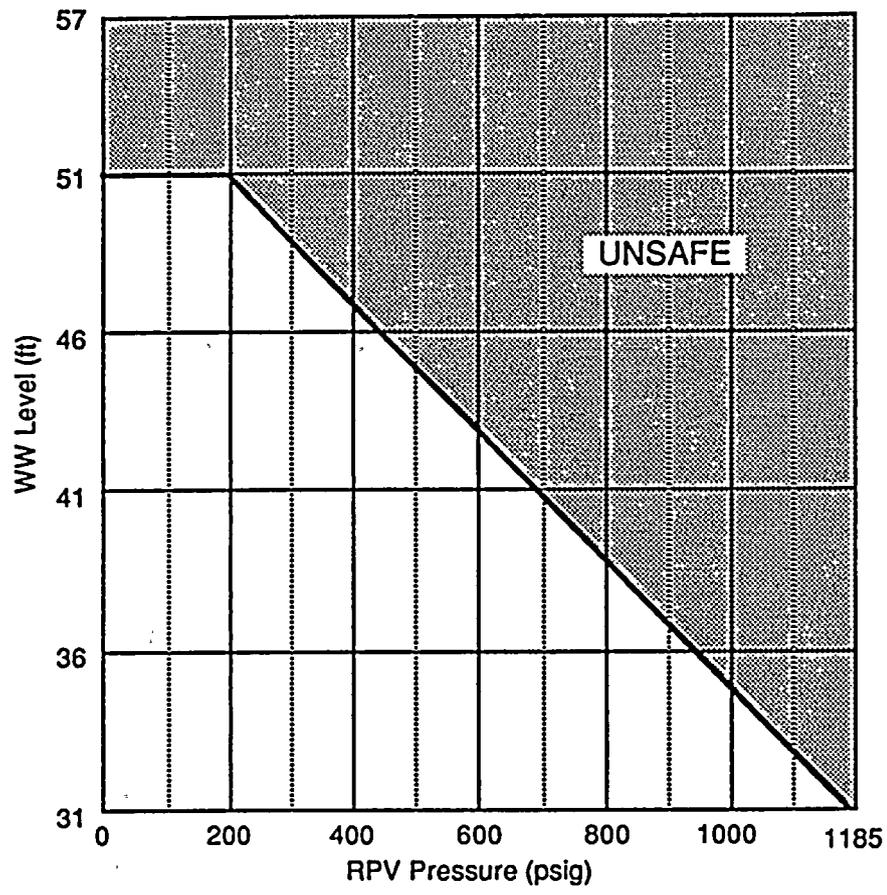






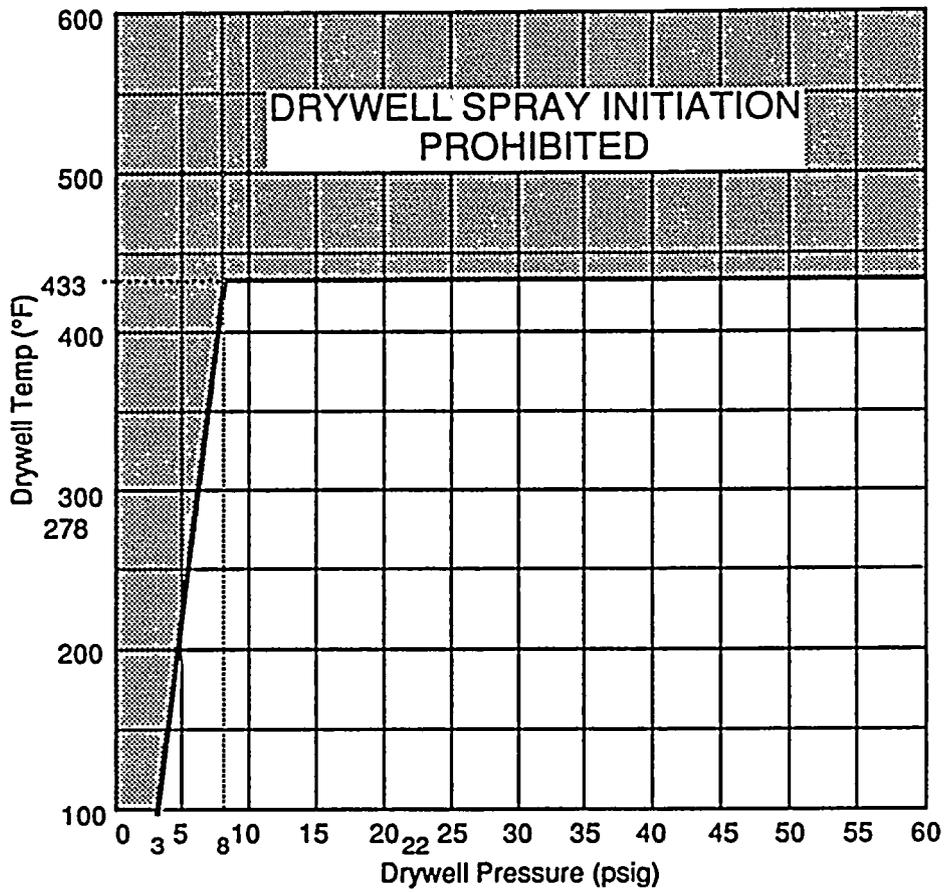
D

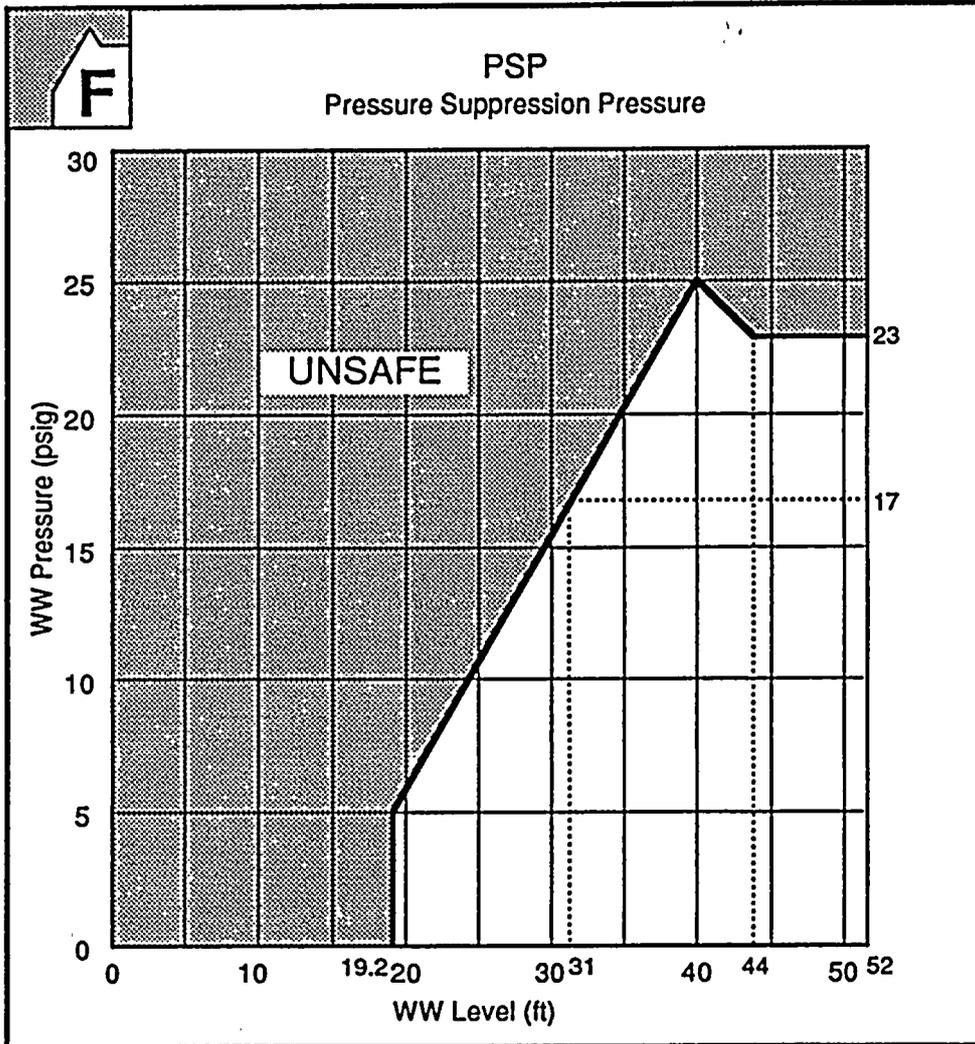
SRVTPLL SRV Tail Pipe Level Limit

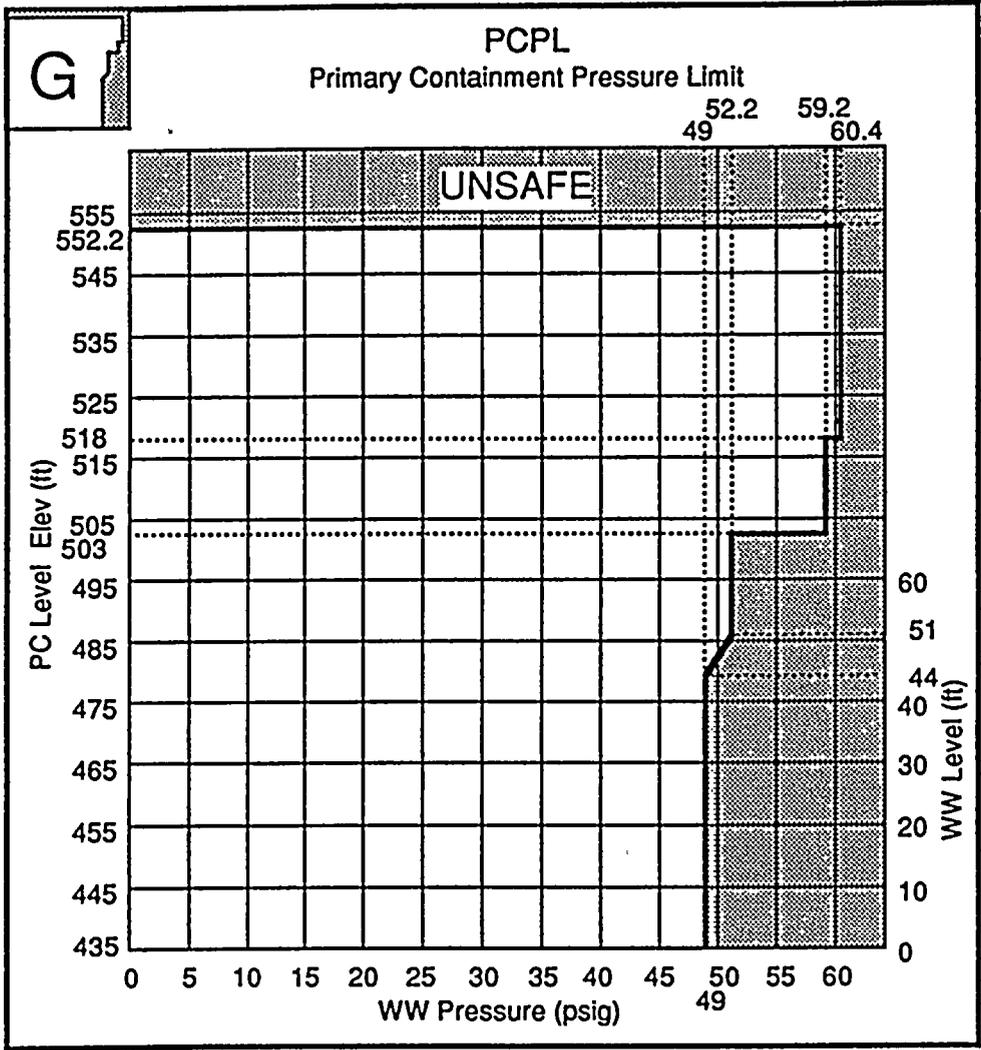


E

DSIL
Drywell Spray Initiation Limit

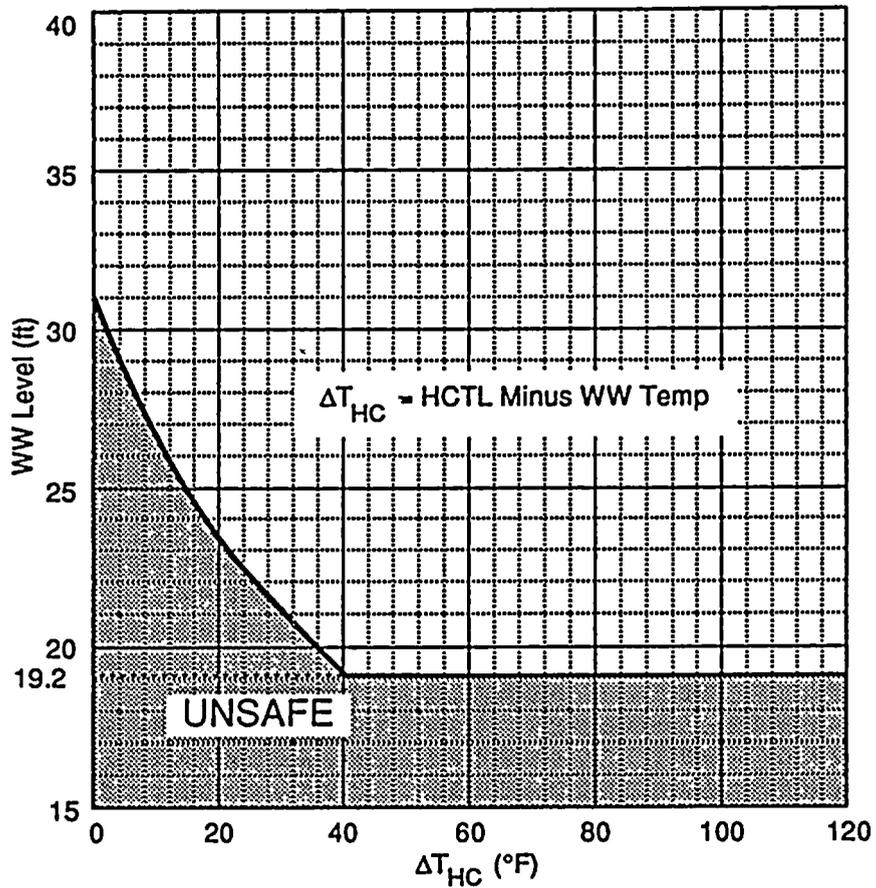


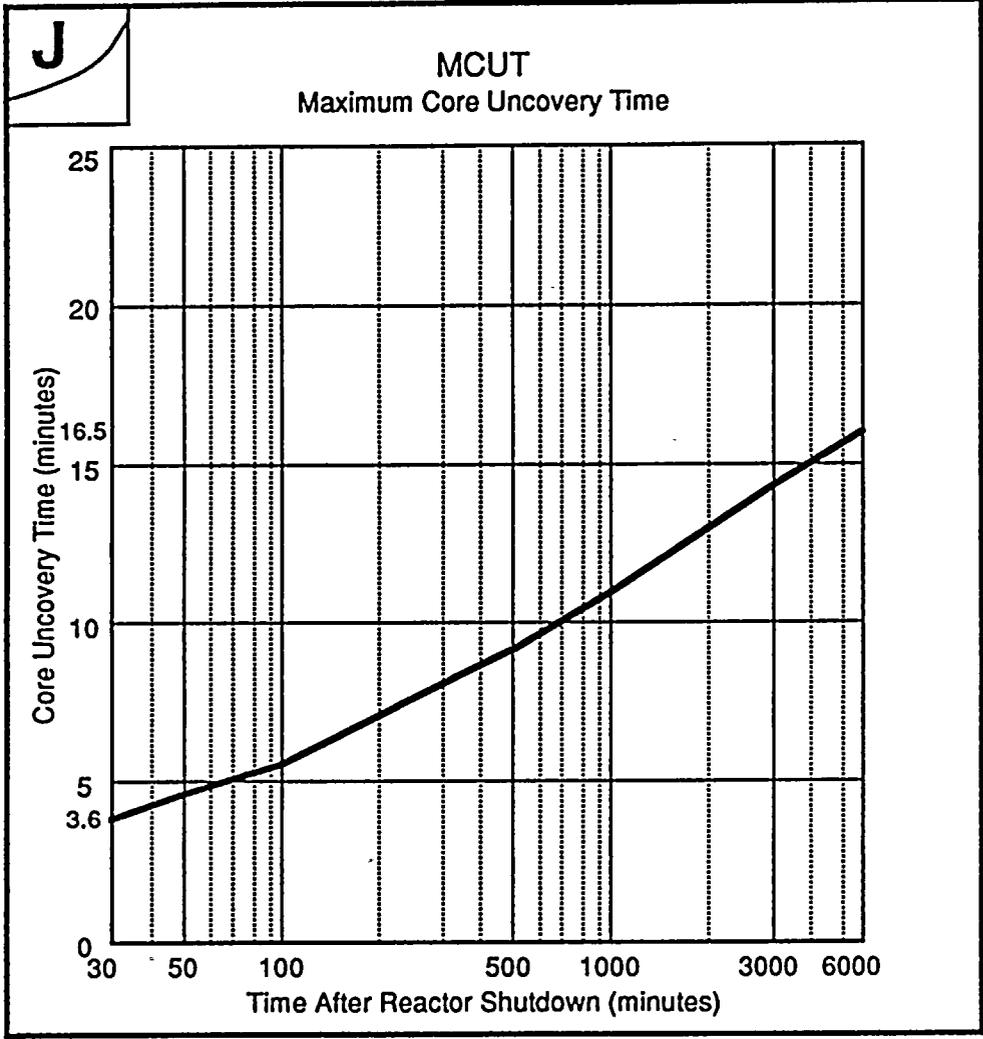




H

HCLL Heat Capacity Level Limit





REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: RO KEY

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

- | | | |
|--|--|--|
| 1. a b c <input checked="" type="radio"/> _____ | 21. <input checked="" type="radio"/> b c d _____ | 41. <input checked="" type="radio"/> b c d _____ |
| 2. a b c <input checked="" type="radio"/> _____ | 22. a b <input checked="" type="radio"/> d _____ | 42. a b c <input checked="" type="radio"/> _____ |
| 3. <input checked="" type="radio"/> b c d _____ | 23. a b c <input checked="" type="radio"/> _____ | 43. a <input checked="" type="radio"/> c d _____ |
| 4. a <input checked="" type="radio"/> c d _____ | 24. a <input checked="" type="radio"/> c d _____ | 44. a b c <input checked="" type="radio"/> _____ |
| 5. <input checked="" type="radio"/> b c d _____ | 25. a b <input checked="" type="radio"/> d _____ | 45. a <input checked="" type="radio"/> c d _____ |
| 6. a <input checked="" type="radio"/> c d _____ | 26. a b c <input checked="" type="radio"/> _____ | 46. a b c d _____ |
| 7. a b <input checked="" type="radio"/> d _____ | 27. <input checked="" type="radio"/> b c d _____ | 47. a b c <input checked="" type="radio"/> _____ |
| 8. a b c <input checked="" type="radio"/> _____ | 28. <input checked="" type="radio"/> b c d _____ | 48. a <input checked="" type="radio"/> c d _____ |
| 9. a b <input checked="" type="radio"/> d _____ | 29. a b <input checked="" type="radio"/> d _____ | 49. a <input checked="" type="radio"/> c d _____ |
| 10. a <input checked="" type="radio"/> c d _____ | 30. a b <input checked="" type="radio"/> d _____ | 50. a b c <input checked="" type="radio"/> _____ |
| 11. a b c <input checked="" type="radio"/> _____ | 31. a <input checked="" type="radio"/> c d _____ | 51. a b c <input checked="" type="radio"/> _____ |
| 12. <input checked="" type="radio"/> b c d _____ | 32. <input checked="" type="radio"/> b c d _____ | 52. a b c d _____ |
| 13. a b c <input checked="" type="radio"/> _____ | 33. a b <input checked="" type="radio"/> d _____ | 53. <input checked="" type="radio"/> b c d _____ |
| 14. <input checked="" type="radio"/> b c d _____ | 34. a b <input checked="" type="radio"/> d _____ | 54. a b c <input checked="" type="radio"/> _____ |
| 15. <input checked="" type="radio"/> b c d _____ | 35. a b c <input checked="" type="radio"/> _____ | 55. a b c <input checked="" type="radio"/> _____ |
| 16. a b <input checked="" type="radio"/> d _____ | 36. <input checked="" type="radio"/> b c d _____ | 56. a <input checked="" type="radio"/> c d _____ |
| 17. a b c <input checked="" type="radio"/> _____ | 37. a b <input checked="" type="radio"/> d _____ | 57. a <input checked="" type="radio"/> c d _____ |
| 18. a <input checked="" type="radio"/> c d _____ | 38. a b <input checked="" type="radio"/> d _____ | 58. <input checked="" type="radio"/> b c d _____ |
| 19. a <input checked="" type="radio"/> c d _____ | 39. a <input checked="" type="radio"/> c d _____ | 59. a b c <input checked="" type="radio"/> _____ |
| 20. a b c <input checked="" type="radio"/> _____ | 40. a b c <input checked="" type="radio"/> _____ | 60. a b <input checked="" type="radio"/> d _____ |

REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice)

NAME: RO KEY

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

- | | |
|--|---|
| 61. a b <input checked="" type="radio"/> d _____ | 81. <input checked="" type="radio"/> b c d _____ |
| 62. a <input checked="" type="radio"/> c d _____ | 82. a <input checked="" type="radio"/> c d _____ |
| 63. <input checked="" type="radio"/> b c d _____ | 83. a <input checked="" type="radio"/> c d _____ |
| 64. a <input checked="" type="radio"/> c d _____ | 84. <input checked="" type="radio"/> b c d _____ |
| 65. a b <input checked="" type="radio"/> d _____ | 85. a b <input checked="" type="radio"/> d _____ |
| 66. a b <input checked="" type="radio"/> d _____ | 86. a b c <input checked="" type="radio"/> _____ |
| 67. a <input checked="" type="radio"/> c d _____ | 87. <input checked="" type="radio"/> b c d _____ |
| 68. a <input checked="" type="radio"/> c d _____ | 88. a <input checked="" type="radio"/> c d _____ |
| 69. a b c <input checked="" type="radio"/> _____ | 89. a <input checked="" type="radio"/> c d _____ |
| 70. a b c <input checked="" type="radio"/> _____ | 90. a b c <input checked="" type="radio"/> _____ |
| 71. a b <input checked="" type="radio"/> d _____ | 91. a b <input checked="" type="radio"/> d _____ |
| 72. a <input checked="" type="radio"/> c d _____ | 92. <input checked="" type="radio"/> b c d _____ |
| 73. a <input checked="" type="radio"/> c d _____ | 93. a b c <input checked="" type="radio"/> _____ |
| 74. a b <input checked="" type="radio"/> d _____ | 94. a b <input checked="" type="radio"/> d _____ |
| 75. <input checked="" type="radio"/> b c d _____ | 95. a b c <input checked="" type="radio"/> _____ |
| 76. a b c <input checked="" type="radio"/> _____ | 96. a b c <input checked="" type="radio"/> _____ |
| 77. a <input checked="" type="radio"/> c d _____ | 97. a b <input checked="" type="radio"/> d _____ |
| 78. a b <input checked="" type="radio"/> d _____ | 98. a <input checked="" type="radio"/> c d _____ |
| 79. a <input checked="" type="radio"/> c d _____ | 99. a b <input checked="" type="radio"/> d _____ |
| 80. <input checked="" type="radio"/> b c d _____ | 100. <input checked="" type="radio"/> b c d _____ |