U.S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT NO:	93-17 (OL)
DOCKET NO:	50-244
LICENSEE:	Rochester Gas and Electric Corporation 89 East Avenue Rochester, New York 14649
FACILITY:	R. E. Ginna Nuclear Power Plant
LOCATION:	Ontario, NY
DATES:	September 13-17, 1993
EXAMINERS:	William A. Maier, DRS William C. Hemming, Contract Examiner, EG&G Idaho, INEL Stephen P. Johnson, Contract Examiner, EG&G Idaho, INEL

PREPARED BY: WAMaier 11-8-93

W. A. Maier, Chief Examiner
PWR Section, Operations Branch
Division of Reactor Safety

Date

APPROVED BY: GH Bissell for 11/8/93

Glenn W. Meyer, Chief
PWR Section, Operations Branch
Division of Reactor Safety

Date

EXECUTIVE SUMMARY

Initial operator licensing examinations were administered to eleven candidates. All candidates passed all portions of the examinations and were issued licenses. Reference materials provided for the examination were complete. Lesson plan enabling objectives were not fully developed for all lesson plans. During the dynamic simulator examination, the candidates generally communicated effectively but did not use alarm response procedures consistently. Two items were identified during the examination concerning problems with Emergency Operating Procedures regarding action steps on actuation of safety injection and supplying emergency power using the diesel generators. The candidates inconsistently interpreted a technical specification limiting condition for operation that dealt with quadrant power tilt ratio. A discrepancy was identified between a procedure for establishing makeup water to the auxiliary feedwater pumps and a piping and instrument diagram for the systems used in the procedure.

DETAILS

1.0 INTRODUCTION AND SUMMARY OF EXAMINATION RESULTS

Initial license examinations were administered to five reactor operator candidates and six senior reactor operator (upgrade) candidates. The examinations were administered in accordance with Revision 7 to NUREG-1021, "Operator Licensing Examiner Standards." The operating tests were observed by representatives of nuclear regulatory agencies for four eastern European nations. The results of the written examinations and operating tests are summarized in the following table.

Category	SRO Pass/Fail	RO Pass/Fail
Written	6/0	5/0
Operating	6/0	5/0
Overall	6/0	5/0

2.0 PREEXAMINATION ACTIVITIES

2.1 Reference Materials

The examiners received facility reference materials well in advance of the expected date. The reference materials submitted were complete and up to date. The chief examiner and the RG&E training department arranged for the submittal of the Ginna written examination question bank to be sent in diskette form. This arrangement was beneficial in assisting the written examination authors in using and modifying questions from this bank for the written examination.

The enabling objectives listed for some of the lesson plans that were sent and reviewed lacked sufficient detail for constructing a closed reference examination that addressed those objectives. Objectives for lesson plans that covered emergency and abnormal operating procedures required that the procedure be provided in order to answer any questions that went beyond stating the purpose of the procedure or explaining cautions and notes in the procedure. This item was also noted during a previous examination (90-23 (OL)).

2.2 Preexamination Facility Review

RG&E representatives traveled to the NRC Region I office for a preexamination review of examination items on August 30, 1993. Three members of the training department and one licensed operator participated in the review. The written examinations were reviewed for technical accuracy and time validated. The outlines of scenario events and job performance measures (JPMs) were also reviewed.

The RG&E representatives recommended changes to some of the written examination questions. These changes were minor in nature and did not change the intent of any of the questions that were revised. One question was deleted from the examination as no longer valid for the Ginna plant. All the facility recommendations were incorporated into the examination.

The RG&E representatives did not find any validity problems with the simulator scenario events that were proposed. Several concerns were expressed about the JPMs that were proposed. One problem was that the JPMs introduced an aspect of artificiality because they were to be given to individual reactor operator candidates. The concern about this practice was that, for JPMs that involved reference to the emergency operating procedures (EOPs) and the abnormal operating procedures (APs), the reactor operator candidates would be reading the procedures while performing the task. The referral to EOPs and APs at Ginna is normally done in a crew situation with the Control Room Foreman (CRF), a senior reactor operator licensed individual, reading the procedures. The resolution to this concern was to include an item in the briefing given prior to the walkthrough to inform the reactor operator candidates that they would be required to make procedural referrals for some evolutions conducted during the walkthrough.

The RG&E reviewers were also concerned about the way the initiating cue was provided for some of the JPMs that were to be performed on the simulator. They informed the chief examiner that the way the candidates had been given JPMs during their training was by the evaluator giving a detailed description of the initial conditions and to give an explicit verbal cue stating what task was expected to be performed. Some of the simulator JPMs proposed simply stated the general plant conditions and informed the operator that he was expected to respond to whatever alarms or transients occurred after the JPM commenced. The chief examiner decided to resolve this concern by again informing the candidates during the pre-walkthrough briefing that some of the JPMs would rely on the simulator to provide the initiating cue and that this format may be different from that with which the candidates were familiar.

The most significant concern expressed by the RG&E representatives was the complexity of some of the JPMs. The reviewers felt that some JPMs resembled "mini-scenarios" in that they relied on the use of multiple procedures and procedural transitions. The JPMs that were of this nature were primarily immediate actions that involved alternate paths that referenced procedures. RG&E training personnel informed the chief examiner that JPMs that the candidates were trained on used generally one procedure that outlined a specific task to be accomplished. The examiners modified most of the JPMs that were of this nature.

2.3 On-site Examination Validation

The chief examiner and one other member of the examination team conducted an on-site validation of the operating test items (simulator scenarios and JPMs). This validation was performed the week prior to the examination. The Ginna training department provided technical and logistical assistance to the examiners to enhance the validity of the items on the operating test. Further modification was made to the JPMs with which the training department reviewers were concerned.

The reviewers were satisfied with all but one of the JPMs after the modifications were made. The remaining JPM that was a subject of concern involved the actions required for a reactor trip with two rods failing to insert. The task was further complicated by a failure of the normal makeup system, so that an emergency boration of the RCS was required. The training department representatives were concerned that some operators may expect the JPM to be completed prior to reaching the end since they were unfamiliar with JPMs that involved multiple procedural transitions. The chief examiner decided to retain the JPM as originally written and stated that the examiners would ensure that appropriate cues, similar to what the candidates would receive from supervisory personnel, would be provided for cases where candidates were unsure of whether they had reached the termination point of the JPM.

3.0 EXAMINATION-RELATED ISSUES

3.1 Written Examination

The written examinations were administered on the morning of September 13, 1993. The examinations (reactor operator and senior reactor operator) were developed in accordance with the guidelines of 10 CFR Parts 55.41 and 55.43 and NUREG-0122 (Examiners Handbook for Developing Operator Licensing Written Examinations). Each examination consisted of ninety-eight (98) questions in multiple-choice format and two questions in matching format. Sixty-eight (68) of the questions were common to both examinations. The examinations and the answer keys are enclosed as Attachment 1 to this report.

All of the operators passed the written examinations, but some generic weaknesses were identified after the examinations were graded. Of the eleven operators examined, seven were unfamiliar with the use of the containment antenna plug for establishing radio communications with the scene for a fire in the containment building. Seven operators were unfamiliar with the effects of a loss of the condenser air ejector loop seal. Seven operators did not know that a stuck open steam generator blowdown valve with the plant in a hot standby mode constituted a loss of containment integrity. Of the five reactor operator candidates examined, four were unfamiliar with the normal status lamp indications for the intermediate range nuclear instruments at power. Of the six senior reactor operator candidates examined, none knew the time duration capacity of the batteries for maintaining DC voltage in the event of a loss of all AC power.

The training department was provided a copy of the as-administered written examinations immediately after its administration to provide comments for any validity issues with the questions. No comments, deletions, or corrections were necessary.

3.2 Operating Test

The operating tests were administered from the afternoon of Monday, September 13th to the afternoon of Thursday, September 16th. The operating tests for reactor operator candidates consisted of two dynamic simulator scenarios and ten JPMs. Two oral questions were asked with each JPM. The operating tests for the senior reactor operator candidates consisted of one simulator scenario and five JPMs with associated questions. Two senior reactor operator candidates were evaluated in a second simulator scenario due to the mix of candidates on the crews assigned to simulator examinations. All candidates were examined concerning administrative requirements of the Ginna station in addition to the scenarios and JPMs.

3.2.1 Job Performance Measures

The candidates exhibited good performance on the JPMs as they were ultimately performed. No generic weaknesses were noted. All of the candidates demonstrated a good working knowledge of the plant and the equipment in the field. All candidates demonstrated thorough personal and radiological safety practices. Most of the candidates were familiar with the references that could be used for answering the questions associated with the JPMs. These strengths were independent of the license level of the candidates.

The examiners noted that candidates did not consistently respond to one JPM that involved a condition that required an automatic safety injection (SI) actuation with a failure of the automatic SI function. This issue is further discussed in section 4.1 below.

3.2.2 Dynamic Simulator Examination

The candidates were divided into three crews for the dynamic simulator examination. All crews were successful in completing the scenarios they were given. The simulator functioned well during the dynamic examination. A modeling limitation for Diesel Generator (D/G) output breaker failure caused one problem in one scenario that was administered to two crews. Details of this problem are given in Attachment 2 to this report. One problem was identified with one of the emergency operating procedures that was used for one simulator scenario. This issue is further discussed in section 4.2 below.

3.2.2.1 Communications

The candidates, as a group, communicated effectively throughout the simulator examination. The examiners noted variations in the level of effectiveness, but these variations were determined to be due to personal variations of the candidates. They were not considered to be indicative of any training deficiencies. Inhibited communication between reactor operator and senior reactor operator license levels was noted in one crew. Isolated instances of substandard performance to the Operations Communication Standard were noted, but these did not adversely affect the crew's ability to perform.

One crew did not communicate adequately with personnel outside the control room for the two scenarios they received. The Shift Technical Advisor (STA) was not called promptly to the control room to assist the crew until the EOP that was being used by the crew prompted them to call for the STA. This was not until twenty-four minutes after the time of the reactor trip in the first scenario. This same crew did not announce the status of the events in progress on the plant page system in a timely manner.

3.2.2.2 Alarm Response Procedure Usage

The three crews examined were not consistent in their use of the alarm response procedures (ARPs). The first crew examined did not refer to the ARPs at all during the two scenarios they received. This deficiency was significant in the second scenario, because failure to refer to an ARP for a diesel generator (D/G) breaker overcurrent trip annunciator led the crew to assume that the D/G was unavailable and delayed the efforts to restore power to the safeguards' busses. The second crew examined did not refer to the ARPs at all during the first scenario of their dynamic simulator examination. There was, however, a dramatic change in their behavior for the second scenario, wherein they referred frequently to the ARPs. The examiners could not explain the reason for the sudden change in performance by the crew. The third crew went so far as to retrieve the binders containing the ARPs from the bookshelf and deposit them on the control operators' desks at the beginning of each scenario. Their actual use of these binders in referring to the various annunciator alarms received during the scenarios was infrequent.

4.0 ADDITIONAL FINDINGS

4.1 Reactor Trip or Safety Injection Procedure (E-0) (IFI 93-17-01)

Five candidates were administered JPMs that involved a failure of automatic safety injection (SI) actuation. The examiners expected the candidates to manually actuate SI to accomplish the safety function. Two of the five candidates did <u>not</u> manually actuate SI but, rather, manually operated the various components that are started or repositioned from a SI signal.

The examiners discovered that these two individuals had in fact complied with the procedure for Reactor Trip or Safety Injection (E-0). Step 4 of E-0 directs the operator to verify if SI is <u>required</u> by the alarm of any annunciator that indicates a condition requiring SI to actuate. This step does not have the operator verify if a SI has <u>actuated</u>. Training and operations department representatives informed the examiners that there is no single confirmatory signal to indicate that a SI has actuated. E-0 then proceeds to subsequent steps that verify the accomplishment of the individual equipment starts and valve repositioning that occur for SI. The only direction for manual SI given in step 4 of E-0 is in the Response Not Obtained (RNO) column; wherein, the procedure directs the operator to manually actuate SI if a condition exists that warrants a SI with no annunciator in alarm.

This procedural arrangement relies on the operator to manually actuate the individual components for SI and ensure that none are missed. The possibility for one or more components to be improperly manipulated increases as the number of component manipulations increases. The examiners and NRC management concluded that it would be more reliable and expeditious to attempt a manual actuation of SI and depend on the SI sequencer to start the required equipment than to depend on individual component manipulations.

This arrangement is also at variance with the Westinghouse Owners' Group Emergency Response Guidelines (ERGs). Step 4 of the ERG for E-0 directs the operator to check if SI is actuated and the RNO directs the operator to check if it is required. No explanation of this difference between the ERG and Ginna's E-0 is given in Ginna station's EOP step differences document.

The chief examiner discussed this issue with the Operations Manager and mentioned it at the exit interview. The Operations Manager agreed that the procedure step warranted review and agreed to pursue a resolution. A preliminary solution was presented during a management meeting held between RG&E and the NRC in the NRC regional office on October 26, 1993. After discussion and feedback from the NRC, the Operations Manager decided to continue efforts to resolve the issue and validate the procedure as it is finally revised.

This issue is identified and being tracked by the NRC as inspector followup item number **IFI 93-17-01.**

4.2 Loss of All AC Power Procedure (ECA-0.0) (IFI 93-17-02)

The examiners administered a scenario that involved a loss of off-site power with a failure of both D/Gs to automatically start and supply loads on their associated safeguards busses. The examiners expected to see the candidates manually start the D/Gs and manually start the equipment needed. The candidates manually started the D/Gs but did not attempt to close the D/G output breakers due to the presence of an annunciator in alarm indicating a D/G breaker overcurrent trip condition.

The D/Gs were tripped as directed by substep 5.c of the Loss of All AC Power procedure (ECA-0.0). This substep directs the operator to check for at least one service water (SW) pump running for each D/G. The RNO column for this step directs the operator to manually start the required SW pumps. If adequate cooling cannot be supplied, then the procedure directs the operator to trip the affected D/G. The candidates did this and continued on in ECA-0.0 without making any attempt to investigate or correct the cause of the failure of the D/Gs to load.

The examiners reviewed ECA-0.0 after the scenario and noted that it does not contain any guidance for operators to attempt to restore the D/Gs to operable status in order to reenergize a safeguards bus. They also noted that, because of the existence and location of substep 5.c, strict adherence to ECA-0.0 could result in the operators tripping the D/Gs in the event they failed to energize their respective busses due to sequencer or breaker failure. This action removes the most reliable and readily obtainable source of power in a loss of off-site power situation due to procedural direction. The substep to verify cooling to the D/Gs is not found in the generic ERG for ECA-0.0.

The chief examiner also discussed this issue with the Operations Manager and mentioned it at the exit interview. RG&E representatives presented a preliminary resolution at the management meeting held on October 26, 1993, at the NRC regional office. NRC management provided feedback that the proposed revision to ECA-0.0 still did not give proper direction to the operator to attempt to restore D/Gs to operability by field investigation. RG&E representatives agreed to pursue resolution of the issue further and validate the revised procedure.

This issue is identified and being tracked as inspector followup item number **IFI 93-17-02.**

4.3 Quadrant Power Tilt Ratio Technical Specification 3.10.2.5

The examiners tested the candidates' knowledge of quadrant power tilt ratio (QPTR) during the operating test. One question concerned a hypothetical case where the QPTR was determined to be greater than 1.12, causing the unit to be taken to a hot shutdown condition in accordance with technical specification limiting condition for operation (LCO) number 3.10.2.5. The examiners asked the candidates to what value the nuclear overpower trip setpoint would have to be reduced to comply with 3.10.2.5.

There was inconsistency in the answers given by the candidates. Some candidates stated that the setpoint would have to be lowered by 50% of rated thermal power to a value of 59% of rated thermal power. Other candidates stated that the setpoint would have to be lowered by 50% (i.e., one half) of the setpoint value of 109% (or 54.5% of rated thermal power).

The chief examiner discussed the discrepancy in the interpretation of the LCO at the exit interview. He also discussed it with members of the staff at NRC headquarters. NRC headquarters engineers stated that the setpoint reduction intended by LCO 3.10.2.5 was to 59% of rated thermal power. The chief examiner asked the RG&E representatives who attended the October 26, 1993, meeting how the resolution to this issue had been progressing. RG&E representatives stated that preliminary evaluations by their engineers indicated that 59% of rated thermal power was the setpoint to which the overpower trip should be set. RG&E representatives stated that guidance concerning this issue would be generated for the operators' reference.

4.4 Condensate Transfer Pump Operation (Procedure ER-AFW.1 and P&ID 33013-1908)

The examiners asked some of the candidates to perform a task that involved the transfer of condensate from the hotwell to the condensate storage tanks using the condensate transfer pump. This task was accomplished using procedure ER-AFW.1, "Alternate Water Supply to the AFW Pumps." The candidates performed this task in accordance with Section 4.1 of the procedure. One candidate was asked to show the flow path established from the hotwell to the condensate storage tanks on the associated Piping and Instrument Diagrams (P&IDs). The candidate could not establish a flow path due to two valves that were shown as normally closed on P&ID 33013-1908, Sheets 2 and 3. Valves 4833 and 4859 are listed on these sheets as normally closed. Section 4.1 of ER-AFW.1 does not direct them to be repositioned to establish the flow path. There appears to be a conflict between the procedure and the P&ID in being able to establish a flow path for this task.

The examiner who administered the task brought the discrepancy to the attention of the training department, and the chief examiner mentioned the issue at the exit interview. Training department personnel stated at the exit interview that they were aware of the problem and were going to investigate it. This issue has safety significance since it can affect the ability to replenish the water supply of the auxiliary feedwater pumps. Inability to perform this function could, in some situations, affect the ability of the plant to achieve cooldown to within the heat removal capacity of the Residual Heat Removal System.

5.0 EXIT MEETING

An exit meeting was held at the Simulator Training Building on September 17, 1993. A briefing with the Supervisor-Licensed Training was held immediately prior to the exit interview to discuss the preliminary findings listed in this report. The chief examiner summarized the events of the examination week and the preexamination reviews and validations, listed the candidates' strengths and weaknesses that were observed during the operating tests, and provided details about the open items that were identified during the examination. The chief examiner expressed gratitude for the assistance provided by the Training and Operations Departments to ensure that a valid examination was given. Thanks were also given for the cooperation and courtesy extended to the foreign observers of the examination process. A list of the key RG&E personnel who attended the exit interview is provided below.

Name	Title
Robert A. Carroll	Manager-Operations and Technical Training
Daniel Hudnut	Supervisor-Simulator Training
Frank L. Maciuska	Supervisor-Licensed Training
Richard A. Marchionda	Superintendent-Ginna Production
Gary D. Meier	Department Manager-Production Division Training
Terry A. White	Operations Manager
Joe Widay	Plant Manager-Ginna

ATTACHMENT 1

WRITTEN EXAMINATIONS AND ANSWER KEYS (RO/SRO)

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

CANDIDATE'S NAME: ______________________

FACILITY: Ginna

REACTOR TYPE: PWR-WEC2

DATE ADMINISTERED: 93/09/13

INSTRUCTIONS TO CANDIDATE:

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

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

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

____
Candidate's Signature

ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

001 MATCHING

a ____

b ____

c ____

d ____

MULTIPLE CHOICE

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

ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

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

A N S W E R   S H E E T

Multiple Choice (Circle or X your choice)

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

088	a	b	c	d	___
089	a	b	c	d	___
090	a	b	c	d	___
091	a	b	c	d	___
092	a	b	c	d	___
093	a	b	c	d	___
094	a	b	c	d	___
095	a	b	c	d	___
096	a	b	c	d	___
097	a	b	c	d	___

098 MATCHING

a ___

b ___

c ___

d ___

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

QUESTION: 001 (2.00)

For the case of a control room evacuation without a MCB fire, match the operator, Column A to their respective initial duty stations, Column B. Each response in Column B may be used once, more than once or not at all and only a single answer may occupy one answer space.

Column A (Operator)	Column B (Duty Station)
___ a. Shift Supervisor	1. Aux Feedpump Area
___ b. Control Room Foreman	2. Boric Acid Tank Room
___ c. Head Control Operator	3. Rx Trip Breaker Area
___ d. Control Operator	4. Charging Pump Room
	5. No Assigned Area
	6. A D/G Room

QUESTION: 002 (1.00)

A work party is scheduled to enter the containment vessel at power to investigate erratic operation of a containment recirc fan. Which ONE of the following conditions would require the control room to sound the containment evacuation alarm?

a. Pressurizer heaters energize, causing an increase in RCS pressure to the spray valve setpoint.

b. The suspect containment recirc fan trips.

c. Radiation monitors R-11 and R-12 begin trending up rapidly, and both channels are at their alarm setpoints.

d. The containment dewpoint recorder starts to unexplainably trend downward.

QUESTION: 003 (1.00)

Which ONE of the following is controlled under the temporary modification program?

a. Portable power tools with extension cords.

b. Temporary power cables (not extension cords)

c. Portable air movers

d. Welding machine feeder cables

QUESTION: 004 (1.00)

Which ONE of the following activities requires documentation in the Control Room Official Record?

a. The completion of Auxiliary Operator rounds.

b. The hanging of a hold tag for the repacking of a MSR reheat drain valve.

c. The completion of a power range NI calibration following failure of the functional test.

d. The completion of the control room housekeeping routine for the shift.

QUESTION: 005 (1.00)

You have been called at home by the plant communicator due to an emergency condition at Ginna. The communicator informed you that a hydrogen fire in the Auxiliary Building has been burning for four hours and some radiation has been released to the Auxiliary building atmosphere. The plant is in a Site Area Emergency. You have been called in because you are fire brigade qualified and may be needed to continue fighting the fire. The communicator did not tell you to what location you should report. You called back to get this information, but the line was busy. Which ONE of the following actions should you take?

a. Wait at home. Keep the phone line open until the plant calls again with the information as to where you should report.

b. Proceed to the Survey Center for further instructions and information.

c. Proceed to the Control Room for further instructions and information.

d. Proceed to the scene of the fire to render any assistance that may be needed.

QUESTION: 006 (1.00)

Which ONE of the following statements describes the effect of a loss of DC control power to 4160 VAC breaker 52/12AY (12A Station Aux Transformer feed to bus 12A)? (Assume that the breaker is the only component affected by the loss of DC power.)

a. The breaker will fail in its current position and cannot be tripped or closed from the MCB.

b. The breaker will fail in its current position and can be tripped but not closed from the MCB.

c. The breaker will trip and can be closed but not tripped from the MCB.

d. The breaker will trip and cannot be tripped or closed from the MCB.

QUESTION: 007 (1.00)

Why are some reactor trip or safety injection signals generated from 2/3 logic, and others from 2/4 logic?

a. 2/4 logic is required to assure adequate redundancy for those process parameters which generate safety injection signals.

b. 2/4 logic is based on plant specific PRA analysis of the probability of instrument failure under accident conditions.

c. 2/4 logic is provided for those instruments most likely to generate spurious actuations.

d. 2/4 logic is required to assure adequate redundancy when a channel has control as well as protection functions.

QUESTION: 008 (1.00)

Which ONE of the following is the COMBINED capacity of the Main Steam Atmospheric Relief valves in percentage of rated steam flow?

a. 5%

b. 10%

c. 20%

d. 40%

QUESTION: 009 (1.00)

Which ONE of the following actions will occur as a result of an ALARM condition on Steamline Radiation Monitor R31?

a. Both MSIVs go closed.

b. The steam-driven Aux Feed Pump will trip.

c. Rk 47A Steamline Radiation recorder will automatically start recording.

d. The Main Steam supply to the Heating Steam system will isolate.

QUESTION: 010 (1.00)

Given the following information:

- The plant is in cold shutdown for a maintenance outage
- 480 VAC bus 15 is de-energized for bus cleaning
- Annunciator H-8 INSTRUMENT AIR LO PRESSU 100 PSI is in ALARM
- Control air pressure on the MCB is reading 98 psig and slowly decreasing

Which ONE of the following describes how the pressure in the Instrument Air System will respond?

a. The standby instrument air compressor will auto start at 95 psig and raise pressure back up to >105 psig.

b. The instrument air dryers will automatically bypass at 90 psig to allow more flow of air from the 1A compressor to the system. Pressure will remain at 90 psig until the cause of the low pressure is identified and corrected.

c. The pressure in the instrument air system will decrease to 60 psig, at which time the Main Feed Regulating Valves will start to close.

d. The station air cross-connect regulator will automatically open at 90 psig to maintain pressure above 90 psig.

QUESTION: 011 (1.00)

Given the following information:

- A large break LOCA has occurred, resulting in automatic actuation of containment spray
- Containment pressure has decreased, and the operators are at the point in the EOPs where containment spray can be reset
- The HCO resets BOTH trains of containment spray

Which ONE of the following will occur?

a. CNMT Spray pumps stop.

b. MOV-860 A, B, C, and D, CNMT Spray Discharge Valves, close.

c. HCV-836 A and B, CNMT Spray NaOH Addition Valves, close.

d. MOV-876 A, B and 875A, B, CNMT Spray Charcoal Filter Douse Valves, close.

QUESTION: 012 (1.00)

Given the following information:

- Reactor power is 45%
- The main turbine is on-line supplying 215 MWe
- A severe ice storm has caused the trip of both Circ Water pumps within 30 seconds of each other

Which ONE of the following actions should the Control Operator take?

a. Trip the reactor and go to E-0.

b. Reduce turbine load to maintain condenser vacuum.

c. Place the priming set of air ejectors on-line.

d. Place steam dump control to manual to maintain condenser vacuum.

QUESTION: 013 (1.00)

Given the following information:

- A large break LOCA has occurred
- Containment spray has automatically actuated
- Instrument air is lost to the Auxiliary and Service buildings

Which ONE of the following statements describes the effect of the loss of Instrument Air on the Containment Spray and NaOH Addition Systems?

a. The spray pumps will continue to operate, NaOH addition will stop as tank outlet valves go closed on loss of air.

b. The spray pumps will continue to operate, NaOH addition will continue as tank outlet valves go open on loss of air.

c. The spray pumps will have to be restarted after the NaOH addition tank outlet valves are reopened.

d. The spray pumps will have to be restarted after the NaOH addition tank outlet bypass valves are opened.

QUESTION: 014 (1.00)

Given the following information:

- The plant is in a hot shutdown condition with T hot=385 degrees F
- An AO has just completed a tour of the Intermediate Building and reported that V-7222 (Service Air to Containment) has a cracked valve body. The CRF tells you that this valve is a Tech Spec-listed containment isolation valve.

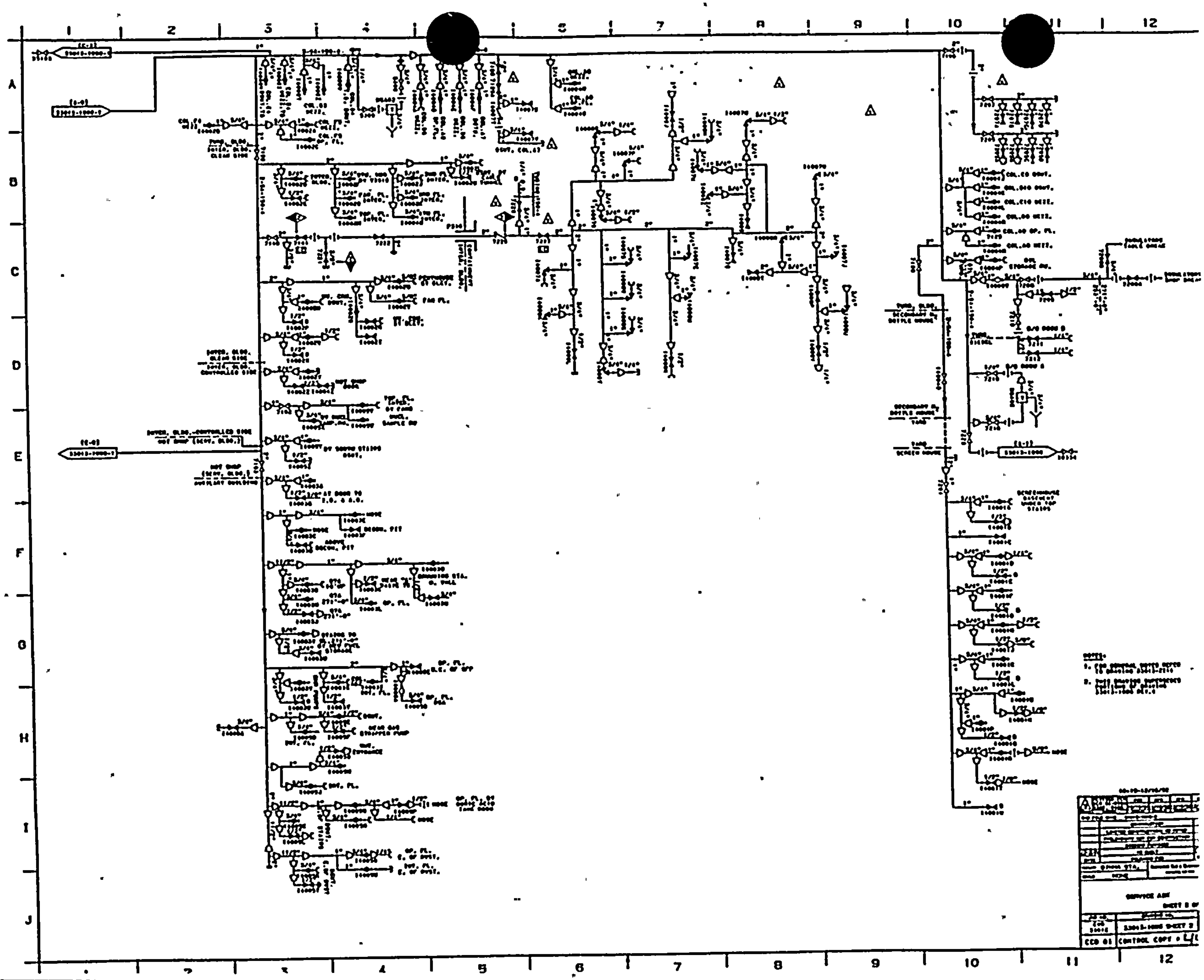
Which ONE of the following actions will restore containment integrity to the Service Air supply line? (Drawing attached)

a. Verify at least once every four hours by containment entry and observation that check valve V-7226 is closed .

b. Install a blank flange on the discharge side of valve V-7222.

c. Open valve V-7141 and establish Service Air flow INTO the containment.

d. No action is required since the reactor is shut down and containment integrity is not required at this temperature.



QUESTION: 015 (1.00)

Which ONE of the following will cause a Service Water Isolation to occur?

a. SI signal and Emergency Diesel Generator Start

b. SI signal with a normal supply breaker open on Bus 14 or 16

c. DG auto start and undervoltage on Busses 14 or 16

d. Undervoltage on Busses 14 or 16 only

QUESTION: 016 (1.00)

Which ONE of the following explains the reason that a dropped rod should be restored to its bank position within one hour?

a. Extended operation with a dropped rod may result in excessive localized power peaking when the rod is retrieved.

b. Extended operation with a dropped rod may invalidate the calculated rod insertion limit and require that the Technical Specification limit be raised.

c. Extended operation with a dropped rod may require revision of the rod worth curves used in the shutdown margin calculation.

d. Xenon oscillations are directly proportional to the length of time that the rod was dropped and localized power peaking is inversely proportional to the magnitude of the xenon oscillations.

QUESTION: 017 (1.00)

A spurious turbine trip has occurred while operating at 100% power.

Given the following indications:

- All control rods out
- T avg increasing rapidly
- RCS pressure 2350 psig increasing
- Pressurizer PORVs open
- Turbine stop valves closed
- Both MSIVs open
- No charging pumps running
- MDAFW pumps running
- TDAFW pump not running

What IMMEDIATE ACTION should be taken?

a. Start the TDAFW pump.

b. Start a charging pump.

c. Close the MSIVs.

d. Close the PORVs.

QUESTION: 018 (1.00)

A large break LOCA has occurred and the operators have transitioned to E-1, Loss of Reactor or Secondary Coolant. The following indications are noted on the MCB:

- RCS pressure = 80 psig
- Loop "A" T cold = 320 degrees F
- Loop "B" T cold = 325 degrees F
- RCPs "A" and "B" - Both Running
- S/G "A" Level = 10% Narrow Range
- S/G "B" Level = 20% Narrow Range
- S/G "A" Pressure = 600 psig
- S/G "B" Pressure = 590 psig
- Charging pumps "A", "B", "C" - All Running
- SI Pumps "A" and "C" - Both Running
- SI Pump "B" - Tripped
- MDAFW Pumps "A" and "B" - Both Running
- TDAFW Pump - Not Running
- Total AFW Flow = 400 gpm

Which ONE of the following actions should be performed FIRST?

a. Start the TDAFW Pump.

b. Trip Charging Pump "C".

c. Transition to FR-P.1

d. Trip RCPs "A" and "B".

QUESTION: 019 (1.00)

Which ONE of the following conditions would require transition to E-3 Steam Generator Tube Rupture from E-1 Loss of Reactor or Secondary Coolant?

a. Any S/G pressure greater than 1085 psig.

b. Any S/G level decreasing in an uncontrolled manner

c. Any S/G pressure decreasing in an uncontrolled manner

d. Any S/G level increasing in an uncontrolled manner

QUESTION: 020 (1.00)

In AP-RCC.1 (Continuous Control Rod Withdrawal/Insertion) the following CAUTION is listed at the beginning of the procedure:

- IF ROD INSERTION IS OCCURRING, VERIFY THAT IN MOTION IS NOT REQUIRED BEFORE CONTINUING WITH THIS PROCEDURE

Which ONE of the following would indicate a requirement for in motion?

a. A rod indicating > 12 steps below its bank demand position

b. A rod indicating on the bottom

c. The controlling bank indicating > 12 steps above its insertion limit

d. T avg - T ref deviation > 1.5 degrees F

QUESTION: 021 (1.00)

The plant is performing a natural circulation cooldown during a small break LOCA. Which ONE of the following is an indication of adequate natural circulation cooling?

a. Pressurizer level - GREATER THAN 5% (30% adverse containment).

b. S/G levels - STABLE OR INCREASING.

c. S/G pressure - GREATER THAN 500 psig.

d. RCS hot leg temperatures - STABLE OR DECREASING.

QUESTION: 022 (1.00)

Given the following information:

- A liquid waste release from the "B" waste monitor tank is in progress with the plant in a hot shutdown condition.
- The liquid release was calculated for dilution flow of one circulating water pump.
- Both "A" and "B" circulating water pumps are in service.
- R-18 effluent monitor reading prior to the release = 1.7 E3 cpm.

Which ONE of the following conditions requires termination of the release? (Procedure attached):

a. R-18 reading during the release increases to 2.4 E4 cpm.

b. Circulating water pump "B" trips.

c. Circulating water inlet temperature increases to 80 degrees F.

d. The monitor tank pump is stopped for four hours to repair a leaking seal.

RD-7.1

LIQUID WASTE RELEASE

1.0 PURPOSE:

1.1 These instructions explain the procedure for analysis of liquid waste and the preparation of a Liquid Release Permit for the controlled, monitored release of liquid waste to the plant discharge canal.

2.0 APPLICABILITY/PRINCIPLE:

2.1 Liquid waste is analyzed and released through a radioactivity monitor at a controlled, predetermined rate so as not to exceed limits established by the Plant Technical Specifications and the State Pollution Discharge Elimination System (SPDES) Permit. This instruction will list information to be processed in a sequence such that an allowable release rate can be determined based on the measured concentration of radioactivity in the liquid waste and the dilution flow available.

3.0 REFERENCES:

3.1 Ginna Technical Specifications, Section-3.9.1, Section-4.12

3.2 SPDES Permit No. NY 0000493

3.3 S-3.4K, Releasing Monitor Tank to Discharge Canal

3.4 S-4.1E, Waste Condensate Release

3.5 S-4.1G, "A" or "B" Laundry and Hot Shower Tank Release to the Discharge Canal

3.6 S-4.1Y, Laundry Tank Release using Chemical Drain Pump

3.7 P-9, Radiation Monitoring System

3.8 RD-8, Liquid Radwaste Compositing and Analysis

3.9 RD-15.0, Offsite Dose Calculation Manual

3.10 WC-10.0, Solution pH Determination by Glass Electrode Method

3.11 WC-10.1, Specific Conductance

3.12 WC-35, SPDES Permit Monitoring Requirements

3.13 T-7C, Regeneration of Cation - Anion Unit

3.14 PC-9.2, Operation of the ND-66B Multichannel Analyzer in the Count Room

3.15 Nuclear Data Effluent Management System Operator's Manual

3.16 PC-14, Potentiometric Determination of Boron

3.17 PC-14.2, Boron Titration Using Mettler DL-25 Automatic Titrator

3.18 A-25.5, Identification of Tech Spec. Violations To Be Reported In The Semi-Annual Radioactive Effluent Report Or The Annual Radiological Environmental Operating Report.

4.0 EQUIPMENT DESCRIPTION:

4.1 pH Meter

4.2 Conductivity Meter

4.3 Aluminum Ringed Planchets

4.4 Pipets, Pipetor

4.5 Infra-red drying lamp

4.6 Chemistry Log Book

4.7 Water Activity Counting Book

4.8 Liquid Waste Release Forms

4.9 Multichannel Gamma Spectroscopy System with applicable computer programs

4.10 Gross Beta Counter calibrated with a Sr90-Y90 standard

4.11 Liquid Waste Release Book

4.12 Concentrated Sulfuric Acid

4.13 Concentrated Hydrochloric Acid

4.14 Ultrex Concentrated Nitric Acid or equivalent.

5.0 PREREQUISITES:

5.1 At least one circulating water pump must be operating during a release. The Health Physicist or Radiochemist may approve releases without circulating water flow providing the total MPC fraction is less than one.

5.2 Prior releases from the same release point must be closed before a new permit may be generated for that release point.

6.0 PRECAUTIONS:

6.1 Samples which are sent to a non-licensed lab for analysis (RG&E Main Chem Lab) must have concentrations below the limits as described in 10CFR30.70 (see Appendix I) and below the maximums as described in 10CFR30.71 (see Appendix II). Where there is a combination of isotopes in a mixture, the sum of the fractions of the isotopes must not exceed "1" for the concentrations.

Example:

The Cs-134 value is 9×10^{-5} uCi/gm in a liquid or solid; assume a concentration of 5×10^{-5} uCi/gm in a sample.

The Co-60 value is 5×10^{-4} uCi/gm in a liquid or solid; assume a concentration of 3×10^{-4} uCi/gm in a sample.

$$\frac{5 \times 10^{-5}}{9 \times 10^{-5}} + \frac{3 \times 10^{-4}}{5 \times 10^{-4}} < 1$$

Therefore this concentration is too high to be sent to an unlicensed facility.

There is no sum-of-the-fractions calculation necessary for Appendix II total quantities.

6.2 If the applicable gross activity monitor (R-18 or R-22) is inoperable, effluent releases from the respective tanks may continue for up to 14 days provided that, prior to initiating a release, at least two independent samples are analyzed and at least two independent verifications of the release rate calculations and discharge line valving are made. The two independent samples must be taken at least one hour apart.

6.2.1 If the total activity minus the noble gas contribution is less than 8E-6 uCi/ml on both samples, the release may be made with the agreement of the Health Physicist or Radiochemist.

6.2.2 If the total activity minus the noble gas contribution exceeds 8E-6 uCi/ml, but is less than 6E-5, the two samples should agree within ±20% of each other. The release may be made with the agreement of the Health Physicist or Radiochemist.

6.2.3 If the total activity minus the noble gas contribution exceeds 6E-5 uCi/ml, the two samples should agree within ±10% of each other. The release may be made with the agreement of the Health Physicist or Radiochemist.

6.3 If the Steam Generator monitor (R-19) is inoperable, effluent releases may continue provided grab samples are analyzed for gross beta radioactivity at an LLD of 1E-7 uCi/ml or gamma isotopic at an LLD of 5E-7 uCi/ml for principle gamma emitters listed in step 6.8 at the following frequency:

6.3.1 At least once per 8 hours when the concentration of the secondary coolant is greater than 0.01 uCi/gm dose equivalent I-131.

6.3.2 At least once per 24 hours when the concentration of the secondary coolant is less than 0.01 uCi/gm dose equivalent I-131.

6.4 If the Retention Tank monitor (R-21) is inoperable, effluent releases may continue provided that at least once per 24 hours grab samples are analyzed for gross radioactivity at a limit of detection of at most 1E-7 uCi/ml or gamma isotopic at a limit of 5E-7 uCi/ml for principle gamma emitters listed in step 6.8.

6.5 For all tanks or voids which are not listed, the release may be made without an effluent monitor providing the total maximum permissible concentration (MPC) fraction is less than 0.1. This includes, but is not limited to House Heating Boiler, Upper Rad Waste Storage Building pit, Auxiliary Building Annex, Condensate Storage Tanks, and sludge lance trailer.

6.6 The release must be initiated within 12 hours after sampling time.

6.7 If a release is interrupted for greater than 2 hours, the release should be terminated and the permit completed. The stopped release may be restarted at the discretion of the Health Physicist or Radiochemist.

6.8 The principle gamma emitters for which the LLD specifications will apply, are the following: Mn-54, Fe-59, Co-60, Zn-65, Cs-134, Cs-137, and Ce-141 - 5.0E-07 uCi/cc; I-131 - 1.0E-06 uCi/cc. If these are not met, an A-25.5 report listing the isotope and LLD value must be submitted to the Radiochemist.

7.0 INSTRUCTIONS:

7.1 Radioactive Liquid Releases

7.1.1 After proper recirculation, obtain a 1-liter or 1-gallon sample of the tank to be released.

****

NOTE:

Use clean labware and normal laboratory techniques to prevent contamination of the sample with radioactivity.

****

****

NOTE:

SPDES requires pH to be analyzed within 15 minutes of sample time.

****

7.1.2 Measure the pH and insure it is within the limits below:

System Sampled		pH Limit
o	Monitor, Waste Condensate Laundry and Hot Shower conductivity less than 10	5.5 to 9.0 Tanks with
o	Steam Generators	No limit
o	All other samples	6.0 to 9.0

7.1.3 Measure the specific conductivity of Waste Condensate and Monitor tanks if the pH is less than 6.0.

****

NOTE:

The NY State SPDES permit limits the daily average boron release to 40 pounds per day and the maximum net boron concentration in the circulating water discharge to 2 ppm B.

****

7.1.4 For Waste Condensate, Monitor, and Laundry and Hot Shower Tanks, measure the boron concentration per reference 3.15 or 3.16.

7.1.4.1 Calculate the maximum release rate for the administrative limit of 1.8 per ppm boron in the discharge canal as follows:

$$\text{Maximum Release Rate (gpm)} = \frac{\text{Dilution Flow Rate (gpm)}}{\text{Boron Concentration (ppm)}} \times 1.8$$

7.1.4.2 Calculate the maximum volume releasable for the administrative limit of 30 pounds per day as follows:

$$\text{Maximum Tank Volume (gallons)} = \frac{30 - \text{Boron released for day (lbs.)}}{\text{Boron Concentration (ppm)}} \times 1.20E5$$

****

NOTE:

If the release will be split between two days, include an Attachment VIII for each day.

****

7.1.4.3 Complete Attachment VIII and include with the release sent to the Control Room.

7.1.5 Analyze the sample for radioactivity and prepare the release permit according to the following guidelines:

7.1.5.1 Unidentified Radioactive Release - Go to 7.2.

****

NOTE:

Attempt to identify all energy lines with less than 30% error found by the peak search routine for identified radioactive releases. Note any not identified for the Radiochemist to resolve.

****

7.1.5.2 Identified Radioactive Release - Go to 7.3.

7.1.5.3 Computer Generated Identified Radioactive Release - Go to 7.4.

7.1.6 Prepare samples for shipment to Main Chemistry Lab.

****

NOTE:

If the boron limit of 20 ppm for High Conductivity Waste Tank releases is exceeded the Environmental Sciences Group must be notified.

****

7.1.6.1 Send one gallon of each HCWT release for arsenic and iron analysis. Preserve sample with nitric acid as per WC-35.

7.1.6.2 Send one liter of the High Conductivity Waste tank for oil and grease twice per year. This must be acidified with 1 ml of sulfuric acid or hydrochloric acid and refrigerated in a freon rinsed glass bottle.

Send one liter for suspended solids once per quarter.

Send one gallon for metal analysis once per month. Preserve sample with nitric acid as per WC-35

Send 100 ml for boron analysis once per month.

7.1.6.3 Send 100 ml of each Laundry and Hot Shower release for surfactants analysis.

7.1.6.4 On a weekly basis send a 100 ml grab sample of Monitor, Waste Condensate, or Laundry and Hot Shower tank sample for boron analysis if any are released.

7.1.6.5 Send 1 liter of Monitor, Waste Condensate, or Laundry and Hot Shower release for suspended solids once per quarter.

7.1.6.6 Send 1 liter of Monitor, Waste Condensate, or Laundry and Hot Shower release for oil and grease twice per year. This must be acidified with 1 ml of sulfuric acid or hydrochloric acid and refrigerated in a freon rinsed glass bottle.

7.1.6.7 For each release of the House Heating Boiler send 1 liter for suspended solids, 1 gallon for metal analysis and 1 liter for oil and grease. Acidify the metal sample with nitric acid as per WC-35. The oil and grease sample must be acidified with 1 ml of sulfuric acid or hydrochloric acid and refrigerated in a freon rinsed glass bottle.

7.1.7 Log the date, time of sample, permit number, tank pH and total activity in the Liquid Waste Release section of the Chemistry Log Book.

7.1.8 Forward the release to the Shift Supervisor.

7.1.8.1 Monitor readings are required prior to, and midway during the release. If the monitor reading after the release is greater than 10% above the reading prior to the release a monitor flush is required. If the monitor reading cannot be reduced to less than 10% above the reading prior to the release detector decontamination may be needed.

****

NOTE:

See Attachment II for steam generator volume vs. inches.

****

7.1.9 When the release is completed, enter the gallons released, total curies released, if greater than LLD, dilution flow rate, and duration of the release in minutes. Also enter the pounds of boron released for Waste Condensate, Monitor, and Laundry and Hot Shower Tanks.

****

NOTE:

Calculate the boron released for each day separately if the release was split between two days.

****

Calculate curies released and boron released as follows:

$$\text{Curies Released} = \text{Gallons Released} \times \underset{(\mu Ci/cc)}{\text{Total Activity}} \times 3.785E\text{-}3$$

$$\text{Boron Released} = \text{Gallons Released} \times \underset{(ppm)}{\text{Boron Concentration}} \times 8.33E\text{-}6$$

7.1.10 For Identified Liquid Releases - Go to 7.5 for computer generated calculations.

7.1.11 To delete computer generated releases, go to 7.6.

7.1.12 Composite samples per RD-8. Indicate completion by checking MONTHLY COMP. column in the Liquid Waste Release section of the Chemistry Log Book.

7.1.13 Bind release permits numerically by month. These are lifetime records and should be submitted to Central Records at least quarterly.

7.2 Unidentified Liquid Release

7.2.1 Pipet 10 ml of sample into a ringed aluminum planchet. Dry under a lamp taking care to prevent splattering or cross- contamination.

7.2.2 Count the sample in a gross beta counter using the efficiency for a Sr-90/Y-90 standard. Count time will be at least 50 minutes.

7.2.3 Insure that an LLD of at least 5.0E-7 uCi/cc can be obtained. Increase sample size or count time to accomplish this if necessary.

7.2.4 Log count data in the Water Activity counting book in the TANK section.

7.2.5 Initiate a Liquid Waste Release Form Attachment VI.

7.2.6 Call the Control Room to obtain the number of condenser circulating water pumps running and the % opening of the recirculating gate, and verify the status of the liquid effluent monitor associated with the tank to be released.

7.2.7 Determine the corrected circulating water flow rate from Attachment I. If only one pump is operating, divide the gpm obtained from the graph by two.

7.2.8 Calculate the release rate as follows:

****

NOTE:

MPC for unidentified liquid releases is 1E-7 uCi/cc.

****

Release Rate at 1/10 Limit(gpm) =

$$\frac{\text{(MPC in uCi/cc)(Dilution Flow Rate in gpm)(0.1)}}{\text{(Gross Activity in uCi/cc)}}$$

7.2.9 If the release rate is greater than the maximum discharge rate of the pump as listed below, use the maximum rate preceded by the '< or =' symbols.

WASTE CONDENSATE TANK	40 gpm
MONITOR TANK	90 gpm
LAUNDRY AND HOT SHOWER TANK	20 gpm
HIGH CONDUCTIVITY WASTE TANK	300 gpm
RETENTION TANK	500 gpm
NEUTRALIZING TANK	400 gpm
STEAM GENERATOR (R-19)	100 gpm/ Steam Generator
MISCELLANEOUS (R-21)	500 gpm

****

CAUTION:

If the calculated release rate is less than 1/2 the maximum discharge rate of the pump, the dose calculation by ODCM method may be required.

****

7.2.10 The RP Technician on shift may authorize releases where the release rate is greater than the maximum discharge rate of the pump. If the release rate is less than the maximum discharge rate of the pump, isotopic analysis should be performed. If isotopic analysis cannot be performed, the permit must be approved by a Health Physicist or Radiochemist prior to release.

7.2.11 If the liquid effluent monitor associated with the tank to be released is inoperable, use Liquid Waste Release Form, Attachment V and ensure requirements of steps 6.2-6.4 are met. Mark verification requirements not applicable (N/A) for releases identified in steps 6.3-6.5.

7.2.12 Go to 7.1.6.

7.3 Identified Liquid Release

7.3.1 Prepare 1 liter of sample for isotopic analysis using a plastic bottle.

7.3.2 Count sample as per PC-9.2. Normally a 3600-second count will insure that an LLD of at least 5E-7 uCi/cc can be obtained.

7.3.3 If the computer results are not obtainable, use the Waste Water Composite Sample Hand Calculation Sheet (Attachment II) from RD-8 to calculate isotopic activities.

7.3.4 Calculate the monitor reading above background as follows:

$$\frac{2 \times \text{Co-60 (uCi/ml)}}{\text{Monitor Calibration Factor}}$$

$$+ \frac{[\text{Total Activity (uCi/ml)} - \text{Co-60 (uCi/ml)} - \text{Xe-133 (uCi/ml)}]}{\text{Monitor Calibration Factor}}$$

If the P-9 setpoint for the monitor is less than or equal to the calculated value, initiate a Liquid Waste Release Form Attachment VII. The new alarm setpoint will be determined by the Health Physicist or Radiochemist and a temporary PCN must be submitted to P-9. Otherwise initiate a Liquid Waste Release Form Attachment III.

7.3.5 Call the Control Room to obtain the number of condenser circulating water pumps running and the % recirculating gate opening, and verify the status of the liquid effluent monitor associated with the tank to be released.

7.3.6 If the computer results are not obtainable, calculate the FRACTION OF MPC of each identified isotope by dividing the specific activity by its MPC. Do not calculate FRACTIONS for LLD values. Sum the MPC FRACTIONS. See Attachment IV of RD-8.

7.3.7 Determine the corrected circulating water flow rate from Attachment I. If only one pump is operating, divide the gpm obtained from the graph by two.

****

NOTE:

The computer prints the MPC in percent. Divide this value by 100 to obtain the MPC fraction.

****

7.3.8 Calculate the release rate as follows:

$$\text{Release Rate at 1/10 Limit} = \frac{\text{(Dilution Flow Rate-gpm)(0.1)}}{\text{(MPC Fraction)}}$$

7.3.9 If the release rate is greater than the maximum discharge rate of the pump as listed below, use the maximum rate preceded by the '< OR =' symbols (MAX PUMP RATE). The RP Technician on shift may authorize the release.

WASTE CONDENSATE TANK	40 gpm
MONITOR TANK	90 gpm
LAUNDRY AND HOT SHOWER TANK	20 gpm
HIGH CONDUCTIVITY WASTE TANK	300 gpm
RETENTION TANK	500 gpm
NEUTRALIZING TANK	400 gpm
STEAM GENERATOR (R-19)	100 gpm/ Steam Generator
MISCELLANEOUS (R-21)	500 gpm

7.3.10 If the release rate is less than the maximum discharge rate of the pump, Liquid Waste Release Form Attachment IV must be used. A Health Physicist or Radiochemist must authorize the release.

7.3.11 If the liquid effluent monitor associated with the tank to be released is inoperable, use Liquid Waste Release Form Attachment V and insure requirements of steps 6.2-6.4 are met. Mark verification requirements not applicable (N/A) for releases identified in steps 6.3-6.5.

7.3.12 Go to 7.1.6.

7.4 <u>Computer Generated Identified Radioactive Release</u>

7.4.1 Prepare 1 liter of sample for isotopic analysis using plastic bottle.

7.4.2 Count the sample as per PC-9.2. Normally a 3600-second count will insure that an LLD of at least 5E-7 uCi/cc can be obtained.

7.4.3 Review the sample printout for accuracy. If the sample information is correct, a Liquid Waste Release Form can be generated.

7.4.4 To generate a Liquid Waste Release, enter option 3 from the RGE Ginna Health Physics Master Menu then select option 1 of the EMS Menu.

7.4.4.1 Special sampling requirements are displayed. Press <RETURN>.

7.4.5 A directory of effluent sample configurations for the past 12 hours will be displayed. Enter the configuration name for the sample analyzed in step 7.4.2.

7.4.6 The computer displays the isotopic analysis results then the Effluent Sample File Setup Form will appear on the CRT.

7.4.6.1 Enter 'L' for sample type.

7.4.6.2 Enter the release point (1-18). Press <RETURN> if the release point is < 10 to bring up the release point title. If the release point number is not known, press return to view the Release Point Selection Table. Move the cursor to the release point desired and press the 'Menu Key' (PF1).

7.4.6.3 Review the sample information ensuring the release point title is displayed. If correct, select 'SAVE (0); acknowledge the data was saved by pressing <RETURN>, then 'QUIT (PF4)'. If not correct, select 'QUIT (PF4)'.

7.4.6.4 "Was sample information saved" is displayed. Enter 'Y' or 'N'. If the sample information was not saved, go to step 7.4.4.

****

NOTE:

The 'Menu Key' (PF1) moves the cursor to the command line and toggles display for further commands. The <RETURN> key moves the cursor to the form from the command line. The <TAB> key advances the cursor in the form. The <CTRL> P key backs up the cursor in the form. Tab through any field which is not addressed in the procedure.

****

7.4.7 Liquid Effluent Permit Definition Form is displayed.

7.4.7.1 Enter Release Point (1-18). If the release point number is not known, press return to view the Release Point Selection Table. Move the cursor to the release point desired and press the 'Menu Key' (PF1).

7.4.7.2 Enter release start in the format DD-MMM-YY HH:MM or MM/DD/YY HH:MM. If the approximate start time is not known 'NOW' may be entered.

7.4.7.3 Enter an 'X' preceding NORMAL or UNPLANNED.

7.4.7.4 Enter an 'X' preceding BATCH or CONTINUOUS.

7.4.7.5 Enter 'Y' or 'N' for Monitor Operable.

7.4.7.6 Enter % Recirc Gate Open (0-52).

7.4.7.7 Enter # Circ Pumps (1 or 2).

****

NOTE:

For steam generator releases enter the pH as 9.0 if the pH is greater than 9.0, then correct the pH on the release permit.

****

7.4.7.8 Enter pH.

7.4.7.9 Enter Conductivity if the Release Point is 1-6 and pH is less than 6.0.

7.4.7.10 Enter Release Volume as 5E4 if Release Point is 8 or 9.

7.4.7.11 Select 'Fill (4)'.

7.4.7.12 Calculations are made for Release End, Dilution Flow Rate, and Dilution Flow based on entered data and default data.

7.4.7.13 If any data is not correct enter proper information.

7.4.7.14 Select 'Save (0)' then 'Process (ENTR)'.

7.4.8 Concentrations Table is displayed.

7.4.8.1 Select 'VMS_GSP (4)'

7.4.8.2 The file name entered in step 7.4.5 is displayed at the bottom. Then the isotopic concentrations and LLD values, indicated by a minus (-) sign before the value, are added to the table.

7.4.8.3 Press <CTRL> F, then enter the isotope desired and press <RETURN> to locate any isotope for review.

7.4.8.4 Select 'Go (ENTR)'.

7.4.8.5 If the total activity of the sample is zero (0) and no LLD values were transferred, "No concentrations found for sample #XXXX. Continue? (Y/N" is displayed. Enter Y to continue.

7.4.9 Liquid Effluent Permit Results is displayed.

****

NOTE:

If limits are exceeded, the permit must be approved by a Health Physicist or Radiochemist.

****

7.4.9.1 Review data.

****

NOTE:

If the permit is deleted, the permit number must still be sequenced in the Chemistry Log Book.

****

7.4.9.2 If any information is not correct or activity limits are exceeded such that the tank will not be released, select 'Delete (5)' then enter 'Y' to delete the permit. Select 'Quit (PF4)', then go to step 7.4.9.15. If information is correct, go to step 7.4.9.3.

7.4.9.3 Select 'Open (2)'. If limits are exceeded the release must be authorized and an authorization password entered. Enter 'Y' to open the permit.

7.4.9.4 Select 'Report (6)'.

7.4.9.5 Enter '2' for the number of copies of the special report.

7.4.9.6 Enter '1' for the number of copies of the standard report.

7.4.9.7 The line printer will generate 2 copies of the special report and one copy of the standard report.

7.4.9.8 An A-25.5 will be generated if limits of step 6.8 are not met or if any limit is exceeded in step 7.4.9. Document any LLD exceeded and submit to the Radiochemist for review.

7.4.9.9 If the liquid effluent monitor is operable and the release rate is greater than the discharge of the maximum discharge rate of the pump, a permit in the form of Attachment III will be generated.

7.4.9.10 If the liquid effluent monitor is operable but the release rate is equal to or less than the maximum discharge rate of the pump a permit in the form of Attachment IV will be generated. It will require Health Physicist or Radiochemist verification of release rate and authorization of release.

7.4.9.11 If the liquid effluent monitor is inoperable, a permit in the form of Attachment V will be generated. The requirements of steps 6.2-6.5 must be met prior to release. Mark verification requirements not applicable (N/A) for releases identified in steps 6.3-6.5.

7.4.9.12 If the liquid effluent monitor setting has to be changed, a permit in the form of Attachment VII will be generated. The new alarm setpoint will be determined by the Health Physicist or Radiochemist and a temporary PCN to P-9 must be submitted.

7.4.9.13 The second copy of the special report and the standard report is retained in the Liquid Waste Release book until the completed release is returned from the Control Room. Discard these when the completed release is returned.

7.4.9.14 Select 'Quit (PF4)' to exit the Effluent Management System.

7.4.9.15 "Was permit generated for XXXXXX.CNF;X Y or N" is displayed. Enter Y if the permit was generated. Enter N if the permit was not generated.

7.4.9.16 Go to 7.1.6.

7.5 Computer Generated Liquid Permit Completion

7.5.1 To complete and close a Liquid Waste Release, enter option 3 from the RGE Ginna Health Physics Master Menu then select option 2 of the EMS Menu.

7.5.2 Liquid Effluent Permit Definition Form is displayed.

7.5.2.1 Enter release point (1-16). If the release point number is not known, press return to view the Release Point Selection Table. Move the cursor to the release point desired and press the 'Menu Key' (PF1).

7.5.2.2 Enter release start in the format DD-MMM-YY HH:MM or MM/DD/YY HH:MM.

7.5.2.3 Enter release end in the format DD-MMM-YY HH:MM or MM/DD/YY HH:MM.

7.5.2.4 Enter % Recirc if it has changed.

7.5.2.5 Enter # Circ Pumps if it has changed.

7.5.2.6 Clear release flow rate by entering '0'. Then press <RETURN>.

7.5.2.7 Enter release volume in gallons. Then press <RETURN>.

7.5.2.8 Clear dilution volume by entering '0'. Then press <RETURN>.

7.5.2.9 Select 'Fill (4)'.

7.5.2.10 Calculations are made for release flow rate and dilution volume based on entered data.

7.5.2.11 If any data is not correct enter proper information.

7.5.2.12 Select 'Save (0)' then 'Process (ENTR)'.

7.5.3 Concentrations Table is displayed.

7.5.3.1 Select 'Go (ENTR)'.

7.5.3.2 If total activity of the sample is 0 and LLD values were not transferred, "No concentrations found for sample # XX. Continue? (Y/N)" is displayed. Enter Y to continue.

7.5.4 Liquid Effluent Permit Results is displayed.

7.5.4.1 Review data.

7.5.4.2 If data is incorrect, select 'END (PF3)' and go to step 7.5.2.1. If data is correct, go to step 7.5.4.3.

7.5.4.3 If data is correct, select 'CLOSE (4)'. Enter 'Y' to close permit.

7.5.4.4 Select 'Report (6)'.

7.5.4.5 Enter '1' for the number of standard reports.

7.5.4.6 The line printer will generate one copy of the standard report.

7.5.4.7 An A-25.5 will be generated if the 12 hour rule for starting a release is not met. Submit to the Radiochemist for review.

7.5.4.8 Select 'Quit (PF4)' to exit session.

7.5.4.9 Go to step 7.1.12.

7.6 <u>Computer Generated Liquid Permit Deletion</u>

7.6.1 To delete a Liquid Waste Release which was not used, enter option 3 from the RGE Ginna Health Physics Master Menu then select option 2 of the EMS Menu.

7.6.2 Liquid Effluent Permit Definition Form is displayed.

7.6.2.1 Enter release point (1-16). If the release point is not known, press return to view the Release Point Selection Table. Move the cursor to the release point desired and press the 'Menu Key' (PF1).

7.6.2.2 Enter Permit Entry number if incorrect.

7.6.2.3 Select 'Save (0)'. The default data for the permit number is displayed.

7.6.2.4 Select 'Process (ENTR)'.

7.6.3 Concentrations Table is displayed.

7.6.3.1 Select 'Go (ENTR)'.

7.6.3.2 If the total activity of the sample is zero (0) and no LLD values were transferred, "No concentrations found for sample #XXXX. Continue? (Y/N)" is displayed. Enter Y to continue.

7.6.4 Liquid Effluent Permit Results is displayed.

7.6.4.1 Select 'Close (4)' if the permit is open.

7.6.4.2 Select 'Report (6)'. Mark "Not Used" on the release permit normally sent to the Control Room and the permit completion report. Save these in the Liquid Waste

Release Book as with a normally completed release for Central Records.

7.6.4.3 Select 'Delete (5)'. Enter Y to delete the permit.

7.6.4.4 Select 'Quit (PF4)'.

7.6.4.5 Choose option desired from the EMS Menu.

8.0 <u>ATTACHMENTS</u>:

8.1 Attachment I, Circulating Water Discharge Flow Curve

8.2 Attachment II, Levels and Volumes of Ginna Steam Generators

8.3 Attachment III, LIQUID WASTE RELEASE FORM

8.4 Attachment IV, LIQUID WASTE RELEASE FORM - release rate less than design rate

8.5 Attachment V, LIQUID WASTE RELEASE FORM - radiation monitor out of service

8.6 Attachment VI, LIQUID WASTE RELEASE FORM - gross activity analysis

8.7 Attachment VII, LIQUID WASTE RELEASE FORM - calculated monitor reading exceeds normal P-9 setpoint

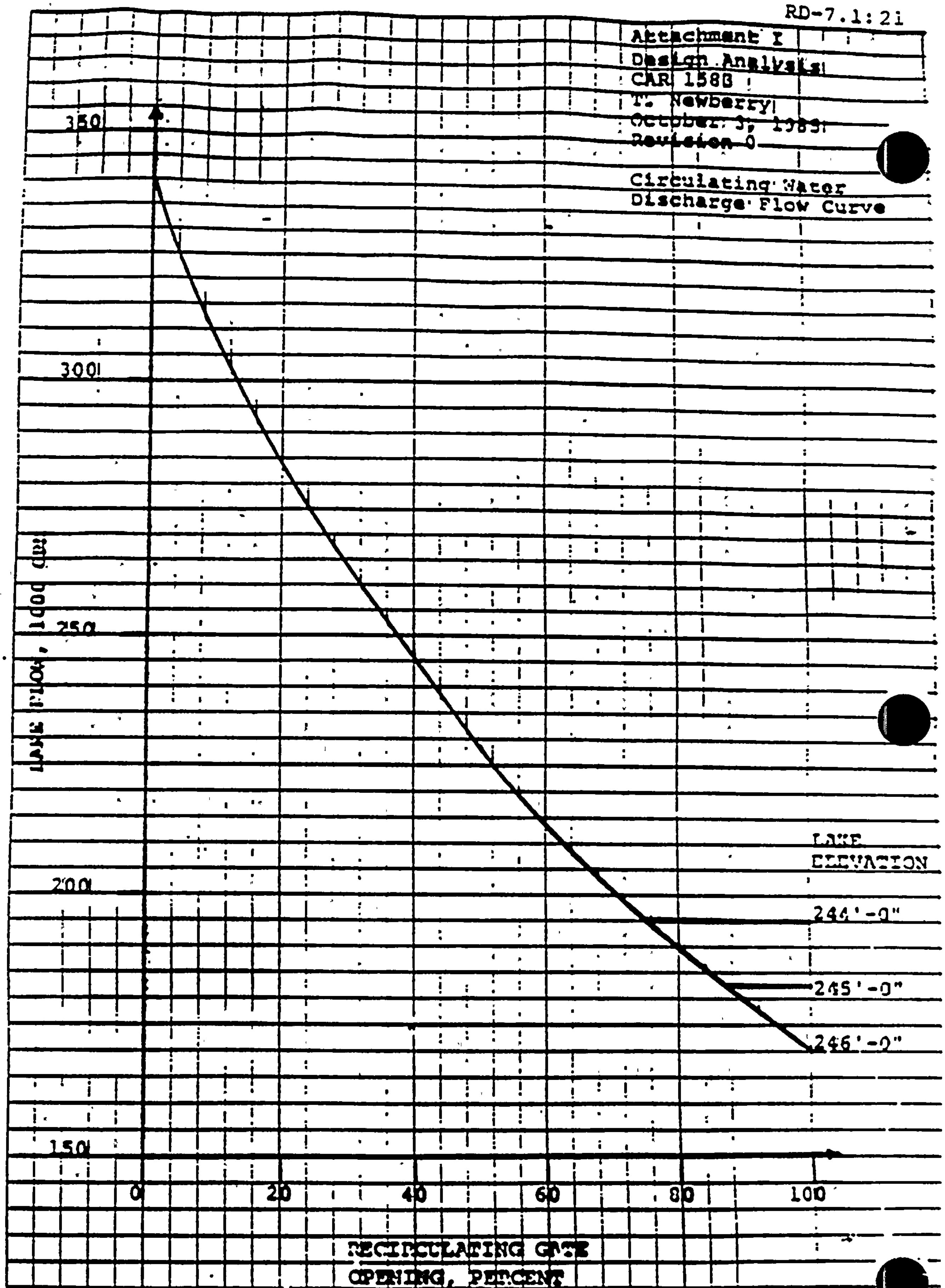
8.8 Appendix I, Schedule A-exempt concentrations

8.9 Appendix II, Schedule B

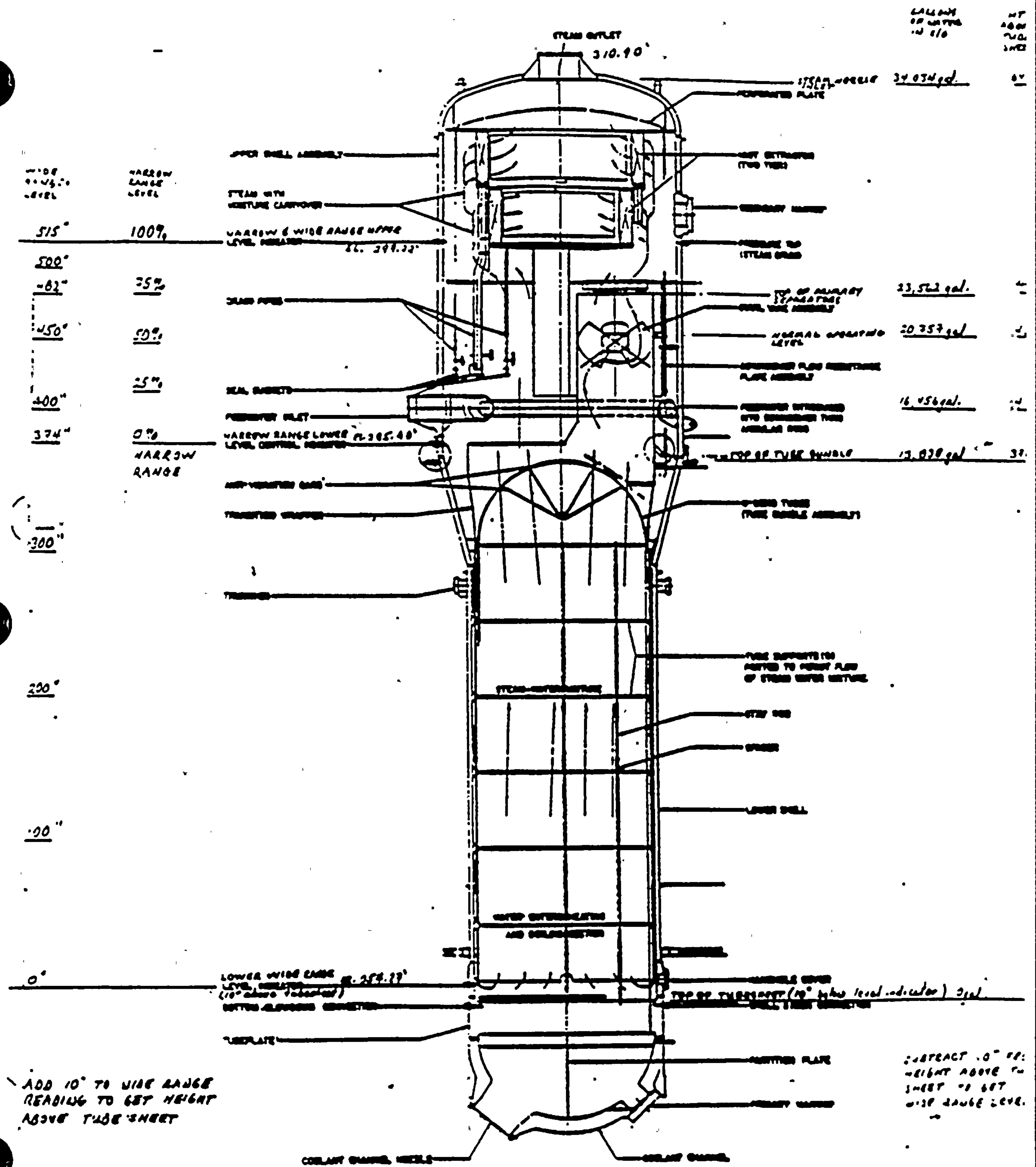
8.10 Attachment VIII, BORON RELEASE CALCULATIONS FOR THE R-18 MONITOR PATHWAY

Attachment I
Design Analysis
CAR 1588
T. Newberry
October 3, 1983
Revision 0

Circulating Water
Discharge Flow Curve



LEVELS & VOLUMES OF GINNA STEAM GENERATORS



Level Indicator Elevations from: Gilbert 4155 8-308-683/684

S/G volumes and heights above tube sheet. take from W series 44 S/G diagram.

ATTACHMENT II
REFER TO RD-7

Rochester Gas and Electric
- R. E. Ginna -
LIQUID WASTE RELEASE FORM

DATE: ___________ PERMIT NO.: ______

TANK: ___________ SAMPLE DATE/TIME: _______________ BY: ______

PH: _______ CONDUCTIVITY: _______

TOTAL SPEC. ACT. ____________ UCI/CC FRAC. OF MPC ________

NO. CIRC. PUMPS OPER. ___ RECIRC GATE OPEN _____ % CIRC WATER FLOW ________ G

RECOMMENDED RELEASE RATE ___________ GPM AT 1/10 LIMIT

____
ANALYST

TANK ISOLATION PROCEDURE NO. ____________ RADIATION MONITOR (R- ____) C

ALARM SET __________ CPM ALARM POINT (CPM) ______

____
AUTHORIZED BY SHIFT SUPR.

DISCHARGE: ** MUST BE STARTED BEFORE __________________________ **

** TERMINATE RELEASE IF INTERRUPTED FOR > 2 HOURS - TANK MUST BE RESAMPLED **

	DATE	TIME	DILUTION RATE(GPM)	TANK LEVEL (GALLONS)	OPERATOR INITIALS
START	----------	----------	----------	----------	----------
STOP	----------	----------	----------	----------	----------

MONITOR READINGS:
BEFORE RELEASE ________ CPM DURING RELEASE ________ CPM *AFTER FLUSH ________ CP!

*FLUSH REQUIRED AFTER RELEASE IF MONITOR READS > 'BEFORE'+ 10%

DISCHARGE PUMP RATE __________ GPM

________________________________ ____________________
SHIFT SUPR. COMPLETING RELEASE DATE/TIME

ATTACHMENT IV
REFER TO RD-7.1

Rochester Gas and Electric
- R. E. Ginna -
LIQUID WASTE RELEASE FORM

DATE: ____________

PERMIT NO.: ________

TANK: ____________ SAMPLE DATE/TIME: ________________ BY: ________

PH: ________ CONDUCTIVITY: ________

TOTAL SPEC. ACT. ____________ UCI/CC FRAC. OF MPC ________

NO. CIRC. PUMPS OPER. ___ RECIRC GATE OPEN ____ % CIRC WATER FLOW ________

RECOMMENDED RELEASE RATE ______________ GPM AT 1/10 LIMIT

________________________ @ ________________________

ANALYST AUTHORIZED BY H.P./RC

@ - MUST BE SIGNED BY HEALTH PHYSICIST OR RADIOCHEMIST

TANK ISOLATION PROCEDURE NO. RADIATION MONITOR (R-)

ALARM SET __________ CPM ALARM POINT (CPM) __________

____

AUTHORIZED BY SHIFT SUPR.

DISCHARGE: ** MUST BE STARTED BEFORE ______________________________ **

** TERMINATE RELEASE IF INTERRUPTED FOR > 2 HOURS - TANK MUST BE RESAMPLED **

	DATE	TIME	DILUTION RATE (GPM)	TANK LEVEL (GALLONS)	OPERATOR INITIALS
START	__________	__________	__________	__________	__________
STOP	__________	__________	__________	__________	__________

MONITOR READINGS:
BEFORE RELEASE ________ CPM DURING RELEASE ________ CPM *AFTER FLUSH ________ CPM

*FLUSH REQUIRED AFTER RELEASE IF MONITOR READS > 'BEFORE'+ 10%

DISCHARGE PUMP RATE __________ GPM

______________________________ ____________________

SHIFT SUPR. COMPLETING RELEASE DATE/TIME

Rochester Gas and Electric
- R. E. Ginna -
LIQUID WASTE RELEASE FORM

DATE: ___________ PERMIT NO.: ___

TANK: ___________ SAMPLE DATE/TIME: _______________ BY: _______

PH: _______ CONDUCTIVITY: _______

TOTAL SPEC. ACT. ____________ UCI/CC FRAC. OF MPC ________

NO. CIRC. PUMPS OPER. ___ RECIRC GATE OPEN _____ % CIRC WATER FLOW ________ GP

RECOMMENDED RELEASE RATE ___________ GPM AT 1/10 LIMIT

____________________ @ _____________________

ANALYST VERIFIED BY H.P./RC

@ - MUST BE SIGNED BY HEALTH PHYSICIST OR RADIOCHEMIST

TANK ISOLATION PROCEDURE NO. ____________ RADIATION MONITOR (R- ____) CC

ALARM SET N/A CPM ALARM POINT (CPM) N/A

__________________________ __________________________

VERIFIED BY AUTHORIZED BY SHIFT SUPR.

DISCHARGE: ** MUST BE STARTED BEFORE ___________________________ **

** TERMINATE RELEASE IF INTERRUPTED FOR > 2 HOURS - TANK MUST BE RESAMPLED **

	DATE	TIME	DILUTION RATE(GPM)	TANK LEVEL (GALLONS)	OPERATOR INITIALS
START	__________	__________	__________	__________	__________
STOP	__________	__________	__________	__________	__________

MONITOR READINGS:
BEFORE RELEASE ________ CPM DURING RELEASE ________ CPM *AFTER FLUSH ________ CPM

*FLUSH REQUIRED AFTER RELEASE IF MONITOR READS > 'BEFORE'+ 10%

DISCHARGE PUMP RATE __________ GPM

_______________________________ ____________________

SHIFT SUPR. COMPLETING RELEASE DATE/TIME

Rochester Gas and Electric
- R. E. Ginna -
LIQUID WASTE RELEASE FORM

DATE: ___________ PERMIT NO.: _______

TANK: ___________ SAMPLE DATE/TIME: _______________ BY: _______

PH: _______ CONDUCTIVITY: _______

GROSS ACTIVITY ____________ UCI/CC MPC (UCI/CC) 1E-07

NO. CIRC. PUMPS OPER. ___ RECIRC GATE OPEN _____ % CIRC WATER FLOW ________ GP

RECOMMENDED RELEASE RATE ___________ GPM AT 1/10 LIMIT

____

ANALYST

TANK ISOLATION PROCEDURE NO. ____________ RADIATION MONITOR (R- ____) CH

ALARM SET __________ CPM ALARM POINT (CPM) __________

____

AUTHORIZED BY SHIFT SUPR.

DISCHARGE: ** MUST BE STARTED BEFORE __________________________ **

** TERMINATE RELEASE IF INTERRUPTED FOR > 2 HOURS - TANK MUST BE RESAMPLED **

	DATE	TIME	DILUTION RATE(GPM)	TANK LEVEL (GALLONS)	OPERATOR INITIALS
START					
STOP					

MONITOR READINGS:
BEFORE RELEASE ________ CPM DURING RELEASE ________ CPM *AFTER FLUSH ________ CPM

*FLUSH REQUIRED AFTER RELEASE IF MONITOR READS > 'BEFORE'+ 10%

DISCHARGE PUMP RATE __________ GPM

______________________________ ____________________

SHIFT SUPR. COMPLETING RELEASE DATE/TIME

Rochester Gas and Electric
- R. E. Ginna -
LIQUID WASTE RELEASE FORM

DATE: -----------

PERMIT NO.: --------

TANK: ----------- SAMPLE DATE/TIME: --------------- BY: -------

PH: ------- CONDUCTIVITY: -------

TOTAL SPEC. ACT. ----------- UCI/CC FRAC. OF MPC --------

NO. CIRC. PUMPS OPER. --- RECIRC GATE OPEN ----- % CIRC WATER FLOW -------- G:

RECOMMENDED RELEASE RATE ----------- GPM AT 1/10 LIMIT

-------------------- @ ---------------------

ANALYST AUTHORIZED BY H.P./RC

@ - MUST BE SIGNED BY HEALTH PHYSICIST OR RADIOCHEMIST

TANK ISOLATION PROCEDURE NO. RADIATION MONITOR (R-) C

@ ALARM SET ---------- CPM ALARM POINT (CPM) ---------

AUTHORIZED BY SHIFT SUPR. @ - NOTE: P-9 SETPOINT MUST BE CHAN

DISCHARGE: ** MUST BE STARTED BEFORE ---------------------------- **

** TERMINATE RELEASE IF INTERRUPTED FOR > 2 HOURS - TANK MUST BE RESAMPLED **

	DATE	TIME	DILUTION RATE(GPM)	TANK LEVEL (GALLONS)	OPERATOR INITIALS
START	----------	----------	----------	----------	----------
STOP	----------	----------	----------	----------	----------

MONITOR READINGS:
BEFORE RELEASE -------- CPM DURING RELEASE -------- CPM *AFTER FLUSH -------- CP

*FLUSH REQUIRED AFTER RELEASE IF MONITOR READS > 'BEFORE'+ 10%

DISCHARGE PUMP RATE ---------- GPM

------------------------------- --------------------

SHIFT SUPR. COMPLETING RELEASE DATE/TIME

APPENDIX I

§ 30.70 Schedule A—exempt concentrations.

[See footnotes at end of this table]

Element (atomic number)	Isotope	Col. I Gas concentration μCi/ml[1]	Col. II Liquid and solid concentration μCi/ml[2]
Antimony (51)	Sb 122		3×10^{-4}
	Sb 124		2×10^{-4}
	Sb 125		1×10^{-3}
Argon (18)	A 37	1×10^{-3}	
	A 41	4×10^{-7}	
Arsenic (33)	As 73		5×10^{-3}
	As 74		5×10^{-4}
	As 76		2×10^{-4}
	As 77		8×10^{-4}
Barium (56)	Ba 131		2×10^{-3}
	Ba 140		3×10^{-4}
Beryllium (4)	Be 7		2×10^{-2}
Bismuth (83)	Bi 206		4×10^{-4}
Bromine (35)	Br 82	4×10^{-7}	3×10^{-3}
Cadmium (48)	Cd 109		2×10^{-3}
	Cd 115m		3×10^{-4}
	Cd 115		3×10^{-4}
Calcium (20)	Ca 45		9×10^{-5}
	Ca 47		5×10^{-4}
Carbon (6)	C 14	1×10^{-6}	8×10^{-3}
Cerium (58)	Ce 141		9×10^{-4}
	Ce 143		4×10^{-4}
	Ce 144		1×10^{-4}
Cesium (55)	Cs 131		2×10^{-2}
	Cs 134m		6×10^{-2}
	Cs 134		9×10^{-5}
Chlorine (17)	Cl 38	9×10^{-7}	4×10^{-3}
Chromium (24)	Cr 51		2×10^{-2}
Cobalt (27)	Co 57		5×10^{-3}
	Co 58		1×10^{-3}
	Co 60		5×10^{-4}
Copper (29)	Cu 64		3×10^{-3}
Dysprosium (66)	Dy 165		4×10^{-3}
	Dy 166		4×10^{-4}
Erbium (68)	Er 169		9×10^{-4}
	Er 171		1×10^{-3}
Europium (63)	Eu 152 (T/2=9.2 Hrs)		6×10^{-4}
	Eu 155		2×10^{-3}
Fluorine (9)	F 18	2×10^{-6}	8×10^{-3}
Gadolinium (64)	Gd 153		2×10^{-3}
	Gd 159		8×10^{-4}
Gallium (31)	Ga 72		4×10^{-4}
Germanium (32)	Ge 71		2×10^{-2}
Gold (79)	Au 196		2×10^{-3}
	Au 198		5×10^{-4}
	Au 199		2×10^{-3}
Hafnium (72)	Hf 181		7×10^{-4}
Hydrogen (1)	H 3	5×10^{-6}	3×10^{-2}
Indium (49)	In 113m		1×10^{-2}
	In 114m		2×10^{-4}
Iodine (53)	I 126	3×10^{-9}	2×10^{-5}
	I 131	3×10^{-9}	2×10^{-5}
	I 132	8×10^{-8}	6×10^{-4}
	I 133	1×10^{-8}	7×10^{-5}
	I 134	2×10^{-7}	1×10^{-3}
Iridium (77)	Ir 190		2×10^{-3}

§ 30.70

(See footnotes at end of this table)

Element (atomic number)	Isotope	Col. I Gas concentration µCi/ml[1]	Col. II Liquid and solid concentration µCi/ml[2]
	Ir 192		4×10^{-4}
	Ir 194		3×10^{-4}
Iron (26)	Fe 55		8×10^{-3}
	Fe 59		6×10^{-4}
Krypton (36)	Kr 85m	1×10^{-6}	
	Kr 85	3×10^{-6}	
Lanthanum (57)	La 140		2×10^{-4}
Lead (82)	Pb 203		4×10^{-3}
Lutetium (71)	Lu 177		1×10^{-3}
Manganese (25)	Mn 52		3×10^{-4}
	Mn 54		1×10^{-3}
	Mn 56		1×10^{-3}
Mercury (80)	Hg 197m		2×10^{-3}
	Hg 197		3×10^{-3}
	Hg 203		2×10^{-4}
Molybdenum (42)	Mo 99		2×10^{-3}
Neodymium (60)	Nd 147		6×10^{-4}
	Nd 149		3×10^{-3}
Nickel (28)	Ni 65		1×10^{-3}
Niobium (Columbium) (41)	Nb 95		1×10^{-3}
	Nb 97		9×10^{-3}
Osmium (76)	Os 185		7×10^{-4}
	Os 191m		3×10^{-2}
	Os 191		2×10^{-3}
	Os 193		6×10^{-4}
Palladium (46)	Pd 103		3×10^{-3}
	Pd 109		9×10^{-4}
Phosphorus (15)	P 32		2×10^{-4}
Platinum (78)	Pt 191		1×10^{-3}
	Pt 193m		1×10^{-2}
	Pt 197m		1×10^{-2}
	Pt 197		1×10^{-3}
Potassium (19)	K 42		3×10^{-3}
Praseodymium (59)	Pr 142		3×10^{-4}
	Pr 143		5×10^{-4}
Promethium (61)	Pm 147		2×10^{-3}
	Pm 149		4×10^{-4}
Rhenium (75)	Re 183		6×10^{-3}
	Re 186		9×10^{-4}
	Re 188		6×10^{-4}
Rhodium (45)	Rh 103m		1×10^{-1}
	Rh 105		1×10^{-3}
Rubidium (37)	Rb 86		7×10^{-4}
Ruthenium (44)	Ru 97		4×10^{-4}
	Ru 103		8×10^{-4}
	Ru 105		1×10^{-3}
	Ru 106		1×10^{-4}
Samarium (62)	Sm 153		8×10^{-4}
Scandium (21)	Sc 46		4×10^{-4}
	Sc 47		9×10^{-4}
	Sc 48		3×10^{-4}
Selenium (34)	Se 75		3×10^{-3}
Silicon (14)	Si 31		9×10^{-3}
Silver (47)	Ag 105		1×10^{-3}
	Ag 110m		3×10^{-4}
	Ag 111		4×10^{-4}
Sodium (11)	Na 24		2×10^{-3}
Strontium (38)	Sr 85		1×10^{-3}
	Sr 89		1×10^{-4}
	Sr 91		7×10^{-4}
	Sr 92		7×10^{-4}
Sulfur (16)	S 35	9×10^{-8}	6×10^{-4}
Tantalum (73)	Ta 182		4×10^{-4}
Technetium (43)	Tc 96m		1×10^{-1}
	Tc 96		1×10^{-3}
Tellurium (52)	Te 125m		2×10^{-3}
	Te 127m		6×10^{-4}

APPENDIX I (Cont'd)

§ 30.71

(See footnotes at end of this table)

Element (atomic number)	Isotope	Col. I Gas concentration µCi/ml [1]	Col. II Liquid and solid concentration µCi/ml [2]
	Te 127		3×10^{-3}
	Te 129m		3×10^{-4}
	Te 131m		6×10^{-4}
	Te 132		3×10^{-4}
Terbium (65)	Tb 160		4×10^{-4}
Thallium (81)	Tl 200		4×10^{-3}
	Tl 201		3×10^{-3}
	Tl 202		1×10^{-3}
	Tl 204		1×10^{-3}
Thulium (69)	Tm 170		5×10^{-4}
	Tm 171		5×10^{-3}
Tin (50)	Sn 113		9×10^{-4}
	Sn 125		2×10^{-4}
Tungsten (Wolfram) (74)	W 181		4×10^{-3}
	W 187		7×10^{-4}
Vanadium (23)	V 48		3×10^{-4}
Xenon (54)	Xe 131m	4×10^{-6}	
	Xe 133	3×10^{-6}	
	Xe 135	1×10^{-6}	
Ytterbium (70)	Yb 175		1×10^{-3}
Yttrium (39)	Y 90		2×10^{-4}
	Y 91m		3×10^{-2}
	Y 91		3×10^{-4}
	Y 92		6×10^{-4}
	Y 93		3×10^{-4}
Zinc (30)	Zn 65		1×10^{-3}
	Zn 69m		7×10^{-4}
	Zn 69		2×10^{-2}
Zirconium (40)	Zr 95		6×10^{-4}
	Zr 97		2×10^{-4}
Beta and/or gamma emitting byproduct material not listed above with half-life less than 3 years.		1×10^{-10}	1×10^{-6}

Footnotes to Schedule A:
[1] Values are given only for those materials normally used as gases.
[2] µCi/gm for solids.

Byproduct material	Microcuries
Antimony 122 (Sb 122)	100
Antimony 124 (Sb 124)	10
Antimony 125 (Sb 125)	10
Arsenic 73 (As 73)	100
Arsenic 74 (As 74)	10
Arsenic 76 (As 76)	10
Arsenic 77 (As 77)	100
Barium 131 (Ba 131)	10
Barium 133 (Ba 133)	10
Barium 140 (Ba 140)	10
Bismuth 210 (Bi 210)	1
Bromine 82 (Br 82)	10
Cadmium 109 (Cd 109)	10
Cadmium 115m (Cd 115m)	10
Cadmium 115 (Cd 115)	100
Calcium 45 (Ca 45)	10
Calcium 47 (Ca 47)	10
Carbon 14 (C 14)	100
Cerium 141 (Ce 141)	100
Cerium 143 (Ce 143)	100
Cerium 144 (Ce 144)	1
Cesium 131 (Cs 131)	1,000
Cesium 134m (Cs 134m)	100
Cesium 134 (Cs 134)	1
Cesium 135 (Cs 135)	10
Cesium 136 (Cs 136)	10
Cesium 137 (Cs 137)	10
Chlorine 36 (Cl 36)	10
Chlorine 38 (Cl 38)	10
Chromium 51 (Cr 51)	1,000
Cobalt 58m (Co 58m)	10
Cobalt 58 (Co 58)	10
Cobalt 60 (Co 60)	1
Copper 64 (Cu 64)	100
Dysprosium 165 (Dy 165)	10
Dysprosium 166 (Dy 166)	100
Erbium 169 (Er 169)	100
Erbium 171 (Er 171)	100
Europium 152 9.2 h (Eu 152 9.2 h)	100
Europium 152 13 yr (Eu 152 13 yr)	1
Europium 154 (Eu 154)	1
Europium 155 (Eu 155)	10
Fluorine 18 (F 18)	1,000
Gadolinium 153 (Gd 153)	10
Gadolinium 159 (Gd 159)	100
Gallium 72 (Ga 72)	10
Germanium 71 (Ge 71)	100
Gold 198 (Au 198)	100
Gold 199 (Au 199)	100
Hafnium 181 (Hf 181)	10
Holmium 166 (Ho 166)	100
Hydrogen 3 (H 3)	1,000
Indium 113m (In 113m)	100
Indium 114m (In 114m)	10
Indium 115m (In 115m)	100
Indium 115 (In 115)	10
Iodine 125 (I 125)	1
Iodine 126 (I 126)	1
Iodine 129 (I 129)	0.1
Iodine 131 (I 131)	1
Iodine 132 (I 132)	10
Iodine 133 (I 133)	1
Iodine 134 (I 134)	10
Iodine 135 (I 135)	10
Iridium 192 (Ir 192)	10
Iridium 194 (Ir 194)	100
Iron 55 (Fe 55)	100
Iron 59 (Fe 59)	10
Krypton 85 (Kr 85)	100
Krypton 87 (Kr 87)	10
Lanthanum 140 (La 140)	10
Lutetium 177 (Lu 177)	100
Manganese 52 (Mn 52)	10
Manganese 54 (Mn 54)	10
Manganese 56 (Mn 56)	10
Mercury 197m (Hg 197m)	100
Mercury 197 (Hg 197)	100
Mercury 203 (Hg 203)	10
Molybdenum 99 (Mo 99)	100
Neodymium 147 (Nd 147)	100
Neodymium 149 (Nd 149)	100
Nickel 59 (Ni 59)	100
Nickel 63 (Ni 63)	10
Nickel 65 (Ni 65)	100
Niobium 93m (Nb 93m)	10
Niobium 95 (Nb 95)	10
Niobium 97 (Nb 97)	10
Osmium 185 (Os 185)	10
Osmium 191m (Os 191m)	100
Osmium 191 (Os 191)	100
Osmium 193 (Os 193)	100
Palladium 103 (Pd 103)	100
Palladium 109 (Pd 109)	100
Phosphorus 32 (P 32)	10
Platinum 191 (Pt 191)	100
Platinum 193m (Pt 193m)	100
Platinum 193 (Pt 193)	100
Platinum 197m (Pt 197m)	100
Platinum 197 (Pt 197)	100
Polonium 210 (Po 210)	0.1
Potassium 42 (K 42)	10
Praseodymium 142 (Pr 142)	100
Praseodymium 143 (Pr 143)	100
Promethium 147 (Pm 147)	10
Promethium 149 (Pm 149)	10
Rhenium 186 (Re 186)	100
Rhenium 188 (Re 188)	100
Rhodium 103m (Rh 103m)	100
Rhodium 105 (Rh 105)	100
Rubidium 86 (Rb 86)	10
Rubidium 87 (Rb 87)	10
Ruthenium 97 (Ru 97)	100
Ruthenium 103 (Ru 103)	10
Ruthenium 105 (Ru 105)	10
Ruthenium 106 (Ru 106)	1
Samarium 151 (Sm 151)	10
Samarium 153 (Sm 153)	100
Scandium 46 (Sc 46)	10
Scandium 47 (Sc 47)	100
Scandium 48 (Sc 48)	10
Selenium 75 (Se 75)	10
Silicon 31 (Si 31)	100
Silver 105 (Ag 105)	10
Silver 110m (Ag 110m)	1
Silver 111 (Ag 111)	100
Sodium 24 (Na 24)	10
Strontium 85 (Sr 85)	10
Strontium 89 (Sr 89)	1
Strontium 90 (Sr 90)	0.1
Strontium 91 (Sr 91)	10
Strontium 92 (Sr 92)	10
Sulphur 35 (S 35)	100
Tantalum 182 (Ta 182)	10
Technetium 96 (Tc 96)	10
Technetium 97m (Tc 97m)	100
Technetium 97 (Tc 97)	100
Technetium 99m (Tc 99m)	100
Technetium 99 (Tc 99)	10
Tellurium 125m (Te 125m)	10
Tellurium 127m (Te 127m)	10
Tellurium 127 (Te 127)	100
Tellurium 129m (Te 129m)	10
Tellurium 129 (Te 129)	100
Tellurium 131m (Te 131m)	10
Tellurium 132 (Te 132)	10
Terbium 160 (Tb 160)	10
Thallium 200 (Tl 200)	100
Thallium 201 (Tl 201)	100
Thallium 202 (Tl 202)	100
Thallium 204 (Tl 204)	10
Thulium 170 (Tm 170)	10
Thulium 171 (Tm 171)	10
Tin 113 (Sn 113)	10
Tin 125 (Sn 125)	10
Tungsten 181 (W 181)	10
Tungsten 185 (W 185)	10
Tungsten 187 (W 187)	100
Vanadium 48 (V 48)	10
Xenon 131m (Xe 131m)	1,000
Xenon 133 (Xe 133)	100
Xenon 135 (Xe 135)	100
Ytterbium 175 (Yb 175)	100
Yttrium 90 (Y 90)	10
Yttrium 91 (Y 91)	10
Yttrium 92 (Y 92)	100
Yttrium 93 (Y 93)	100
Zinc 65 (Zn 65)	10
Zinc 69m (Zn 69m)	100
Zinc 69 (Zn 69)	1,000
Zirconium 93 (Zr 93)	10
Zirconium 95 (Zr 95)	10
Zirconium 97 (Zr 97)	10
Any byproduct material not listed above other than alpha emitting byproduct material	0.1

ATTACHMENT VIII

Refer to RD-7.1

BORON RELEASE CALCULATIONS FOR
THE R-18 MONITOR PATHWAY

$$\text{Maximum Release Rate (gpm)} = \frac{\_\_\_\_\_\_\_\_ \text{ Dilution Flow Rate (gpm)}}{\_\_\_\_\_\_\_\_ \text{ Boron Concentration (ppm)}} \times 1.8$$

Maximum Release Rate (gpm) = ________ gpm

$$\text{Maximum Tank Volume (gallons)} = \frac{30 - \_\_\_\_\_\_\_\_ \text{ Boron released for day (lbs)}}{\_\_\_\_\_\_\_\_ \text{ Boron Concentration (ppm)}} \times 1.20E5$$

Maximum Tank Volume (gallons) = ________ gallons   Date: ________

____
Analyst

Actual Boron Released (lbs.) = ________ Gallons Released x ________ ppm Boron x 8.33E-6

Actual Born Released (lbs.) = ________ lbs.   Date: ________

____
Analyst

QUESTION: 023 (1.00)

Given the following information:

- Both Main Feedwater Pumps have tripped.
- The TDAFW pump is tagged under a hold for maintenance.
- Both MDAFW pumps are running at maximum allowable flow.

Which ONE of the following represents the MAXIMUM value of reactor power that the MDAFW pumps can maintain level in the S/Gs?

a. 2%

b. 4%

c. 6%

d. 8%

QUESTION: 024 (1.00)

Which ONE of the following is a difference between a main feedline break and a main steam line break, assuming same diameter pipe breaks?

a. Feed break will result in a faster loss of inventory due to expulsion of liquid vs steam.

b. Feed break will cause faster cooldown due to greater heat content of a given volume of water vs the same volume of steam.

c. Steam break will cause faster cooldown due to greater energy removal out of break.

d. Steam break and feed break result in approximately equal cooldown rates; steam break in containment will cause a higher pressure due to compression of containment atmosphere.

QUESTION: 025 (1.00)

Why is there a minimum allowed VCT pressure?

a. To maintain adequate pressure in the vent header.

b. To ensure flow through RCP #2 seals.

c. To prevent flashing in letdown piping.

d. To reduce the amount of air dissolved in the makeup water.

QUESTION: 026 (1.00)

The plant is operating at 100% power. A 5 gpm steam leak develops on a steam generator secondary manway. Where does the condensed water end up?

a. Reactor Coolant Drain Tank

b. CVCS Holdup Tank

c. Waste Holdup Tank

d. Fan Coil Drain Collecting Tank

QUESTION: 027 (1.00)

Which ONE of the following is a MINIMIUM combination of equipment adequate to control CONTAINMENT PRESSURE in response to a design basis LOCA?

a. One containment spray pump and two fan cooler units.

b. One containment spray pump, one fan cooler unit, and the mini-purge system.

c. Three fan cooler units and the mini-purge system.

d. Two fan cooler units and the aux charcoal filter system.

QUESTION: 028 (1.00)

Which ONE of the following explains why SG blowdowns are secured during switchover from AFW to MFW?

a. The blowdown defeat switches must be in normal to start the MFPs. With these switches in normal, blowdowns isolate due to both MFP breakers being open.

b. Both the blowdown defeat switches and the auxiliary feedwater defeat switches must be in normal to start the MFPs. With these switches in normal, blowdowns isolate due to both MFP breakers being open.

c. Both the blowdown defeat switches and the auxiliary feedwater defeat switches must be in normal to start the MFPs. With these switches in normal, blowdowns isolate due to the motor driven auxiliary feedwater pump breaker(s) being closed.

d. The auxiliary feedwater defeat switches must be in normal to start the MFPs. With these switches in normal, blowdowns isolate due to the motor driven auxiliary feedwater pump breaker(s) being closed.

QUESTION: 029 (1.00)

The plant is being operated at Hot shutdown with the S/Gs being fed on the AFW bypass valves 4480 and 4481 with the AFW bypass switches in defeat.

Which ONE of the following describes the response of AOV 4480 and 4481 under these conditions?

a. Will close on any auto start signal to MDAFW pumps.

b. All automatic close signals are defeated.

c. All automatic close signals are defeated except for SI.

d. All automatic close signals are operable except MFW pump breakers open.

QUESTION: 030 (1.00)

Assume a release of radioactive liquid has just been automatically terminated by an R-18 alarm. The R-18 monitor is reading 7 X 10E4 cpm above background and is steady.

Health Physics has resampled the Waste Condensate Tank (WCT) and has determined that it is releasable.

Which ONE of the following would be sufficient in order to resume the release?

a. Manually override open the liquid waste release valve (RCV-018).

b. Increase circulating water flow to dilute WCT effluent down below the setpoint for the R-18 alarm.

c. Increase the release rate from the WCT to flush the R-18 detector.

d. Perform a flush of the R-18 detector with deionized (DI) water.

QUESTION: 031 (1.00)

Maintenance is scheduled to be performed on Boric Acid Transfer Pump 1A due to a leaking seal. Which ONE of the following actions should be performed FIRST to ensure the work area is properly isolated in accordance with station hold rules?

a. Place a BLOCK tag on the control board switch for the pump.

b. Place a HOLD tag on the breaker for the pump casing heaters.

c. Place a HOLD tag on the pump suction valve.

d. Place a HOLD tag on the control power switch for the pump breaker.

QUESTION: 032 (1.00)

Which ONE of the following statements describes the policy at Ginna regarding Emergency Radiation Exposure?

a. The Plant Superintendent must give prior authorization for each Emergency Exposure.

b. After individuals have received an Emergency exposure they shall be removed from work involving radiation exposure for the remainder of their lifetime.

c. Exposures up to 100 Rem to save human life are authorized.

d. Only one emergency exposure is permitted in an individual's lifetime.

QUESTION: 033 (1.00)

Under which ONE of the following sets of conditions may an operator vary the sequence of steps in a procedure?

a. Performance in numerical sequence is mandatory unless a SRO authorizes deviation from the numerical sequence.

b. Performance in numerical sequence is mandatory at all times for operational procedures but optional for non-safety related procedures.

c. Performance in numerical sequence is mandatory at all times for operational procedures but optional for maintenance and administrative procedures.

d. Performance in numerical sequence is mandatory unless a procedure statement indicates otherwise.

QUESTION: 034 (1.00)

Which ONE of the following statements describes the practice recommended for removal of fuses under an electrical hold?

a. Fuse ferrules should be taped, and the fuse inserted into one clip only of the fuse holder to ensure the proper fuse is installed when the hold is released.

b. Fuses should be kept in an envelope and attached to either the hold card or the fuse clip from which they were removed to ensure they are not lost or mixed with fuses of different ratings.

c. Fuses shall be kept in the possession of the person removing them until release of the hold.

d. Fuses should be physically removed from the breaker, cubicle, or cabinet in which they were previously installed and taken to the Control Room for the duration of the hold.

QUESTION: 035 (1.00)

Which ONE of the following activities is permitted in the control board area under A-52.11 Conduct of Activities in the Control Room?

a. A member of the technical department questioning the Control Operator, while the Control Operator is synchronizing the main generator, about details for a Licensee Event Report (LER) that is being written.

b. A Ginna station employee distributing, on the midnight shift, a petition for signatures and publication in the local newspaper protesting the size of the Federal deficit.

c. An engineer taking measurements of the control board, during a shift of Component Cooling Water pumps, for a digital meter that the engineer is thinking about adding under a Design Change Request.

d. A Head Control Operator, during a holiday day shift, checking various mortgage rates on the control room computer display.

QUESTION: 036 (1.00)

Which ONE of the following statements is the proper format in accordance with the Operations Communications Standard?

a. "Ted, start the good RHR Pump and establish two thousand gallons per minute flow."

b. "Start the A Residual Heat Removal Pump and establish two thousand gallons per minute flow."

c. "Ted, start the A Residual Heat Removal Pump and establish a flow rate of two thousand gallons per minute."

d. "Start the Alpha Residual Heat Removal Pump and establish a flow rate of two-zero-zero-zero gallons per minute.

QUESTION: 037 (1.00)

For a fire in the containment, which ONE of the following methods is the preferred method for establishing and maintaining communications with the Fire Brigade Captain at the scene. Assume the plant is in the cold shutdown condition and the containment is accessed.

a. The dedicated refueling channel for the plant page system, using sound-powered headphones.

b. The control room base station radio, using the dedicated Fire channel 3.

c. A portable radio from the Shift Supervisor's office, using the containment antenna plug.

d. The normal plant page system, using the public address function.

QUESTION: 038 (1.00)

Which ONE of the following maintains the pressure in the Fire Service Water System when the system is in a standby condition?

a. The standing head of the water in the tank provides the required fire system header pressure until the fire pump starts.

b. An air supply regulator maintains the air blanket above the tank when the pressure drops below 100 psig.

c. The electric motor fire pump starts when pressure drops below 95 psig to maintain pressure in the tank.

d. The diesel fire pump starts when pressure drops below 90 psig to maintain pressure in the tank.

QUESTION: 039 (1.00)

Any person who discovers a fire shall announce twice on the plant page the type and location of the fire and the equipment involved. That person shall then (CHOOSE ONE):

a. Remain on the plant page and give public address updates of the status of the fire.

b. Assume the duties of the Fire Brigade Chief until the arrival of the designated Fire Brigade Chief.

c. Call the control room and verify that they heard the announcement.

d. Obtain the nearest portable extinguishing equipment and begin to fight the fire until properly relieved by designated Fire Brigade personnel.

QUESTION: 040 (1.00)

Which ONE of the following control board indications is NOT normal for steady state plant operation at full power?

a. Motor-driven auxiliary feedwater pump 1A discharge valve MOV-4007 indicates OPEN.

b. Component cooling water supply to reactor support coolers isolation valve MOV-813 indicates OPEN.

c. Residual Heat Removal pump A suction valve MOV-850A indicates CLOSED.

d. Feedwater Pump A recirc valve MOV-4147 indicates OPEN.

QUESTION: 041 (1.00)

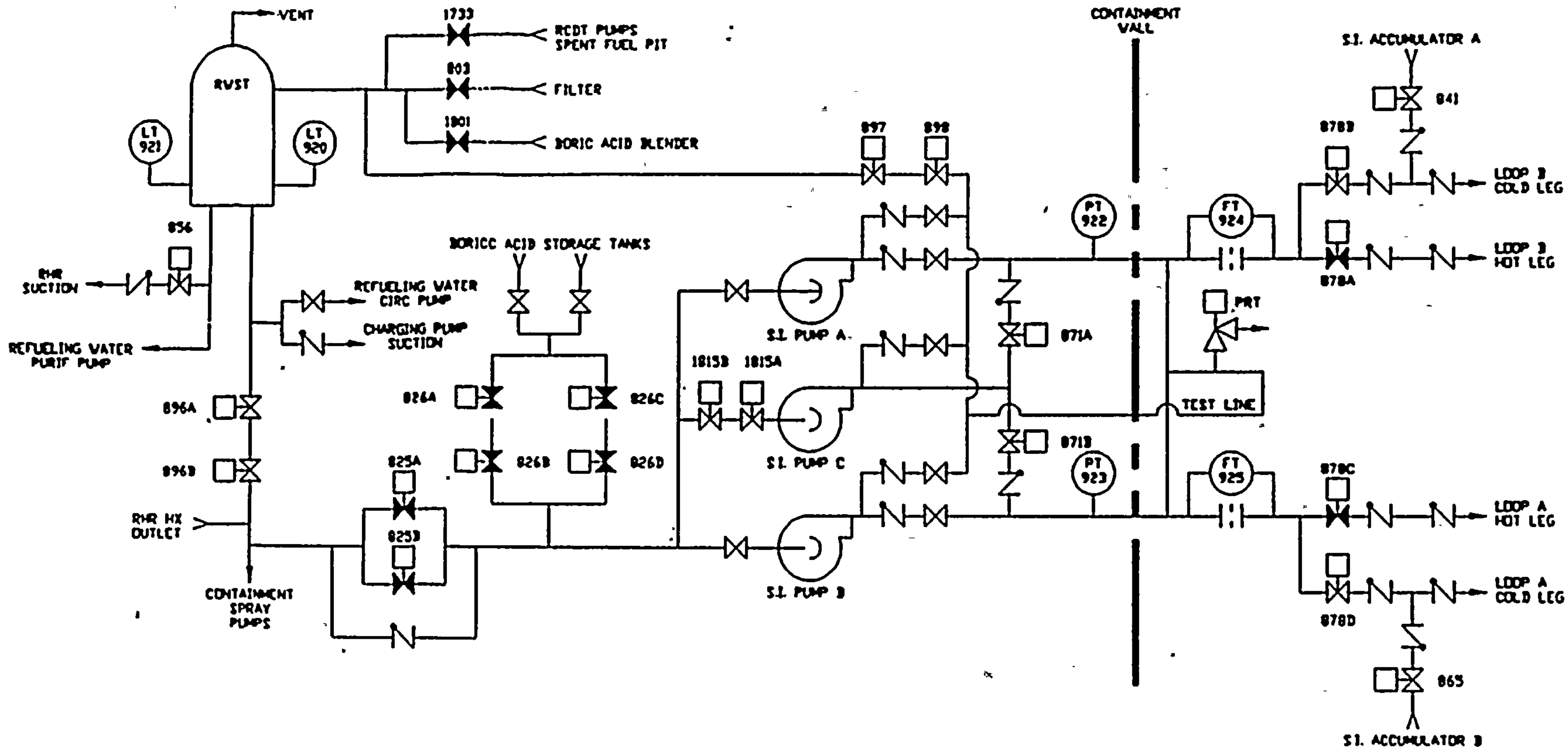
Which ONE of the following lineups represents the normal flow path for high head injection one (1) minute after the initiation of a Safety Injection? (Drawing attached)

a. BAST suction valves, MOV-826 B & C open; loop discharge valves MOV-878 A, B, C & D open; SI pump 1C suction valves, MOV-1815 A & B remain as is.

b. BAST suction valves, MOV-826 A, B, C & D open; loop discharge valves, MOV-878 A & C open; SI pump 1C suction valves, MOV-1815 A & B open.

c. BAST suction valves, MOV-826 A, B, C & D open; loop discharge valves, MOV-878 B & D remain as is; SI pump 1C suction valves, MOV-1815 A & B remain as is.

d. BAST suction valves, MOV-826 A & C open; loop discharge valves, MOV-878 A & C remain as is; SI pump 1C suction valves, MOV-1815 A & B close.



VENT
RWST
LT 921
LT 920
1733
RCDT PUMPS
SPENT FUEL PIT
803
FILTER
1801
BORIC ACID BLENDER
856
RHR SUCTION
REFUELING WATER PURIF PUMP
REFUELING WATER CIRC PUMP
CHARGING PUMP SUCTION
BORIC ACID STORAGE TANKS
896A
896B
826A
826B
826C
826D
825A
825B
RHR HX OUTLET
CONTAINMENT SPRAY PUMPS
897
898
1815B
1815A
S.I. PUMP A
S.I. PUMP C
S.I. PUMP B
PT 922
PT 923
871A
871B
CONTAINMENT WALL
FT 924
FT 925
PRT
TEST LINE
S.I. ACCUMULATOR A
841
878B
878A
878C
878D
LOOP B COLD LEG
LOOP B HOT LEG
LOOP A HOT LEG
LOOP A COLD LEG
865
S.I. ACCUMULATOR B

QUESTION: 042 (1.00)

During operation at 77% power, the following indications appear on the Microprocessor Rod Position Indication (MRPI) System CRT, System Status Page:

- Check System Status Pages	ACTUATED
- HDLC Protocol Status	NORMAL
- Data Reception Status	FAILED
- Fixed Field Reception Status	NORMAL

All other information appears valid on this and other screens. Which ONE of the following actions should be taken?

a. Since all other information appears valid, continue operation and notify I&C of the failed indication.

b. Notify I&C of the failed indication and monitor the Plant Process Computer System (PPCS) for reliable information.

c. Notify I&C of the failed indication and effect repairs within one hour or commence shutdown.

d. Step rods in the controlling bank IN for two steps then OUT for two steps to verify positive control, and notify I&C.

QUESTION: 043 (1.00)

Which ONE of the following is NOT a feature of the Spent Fuel Pool (SFP) design to prevent uncovering the stored fuel assemblies?

a. Automatic makeup to the SFP on a decreasing level.

b. The weir gate access to the refueling canal has a sill that is above the top of the stored fuel assemblies.

c. All penetrations to the SFP are above the top of the stored fuel assemblies.

d. There is a siphon breaker in the SFP pump return line.

QUESTION: 044 (1.00)

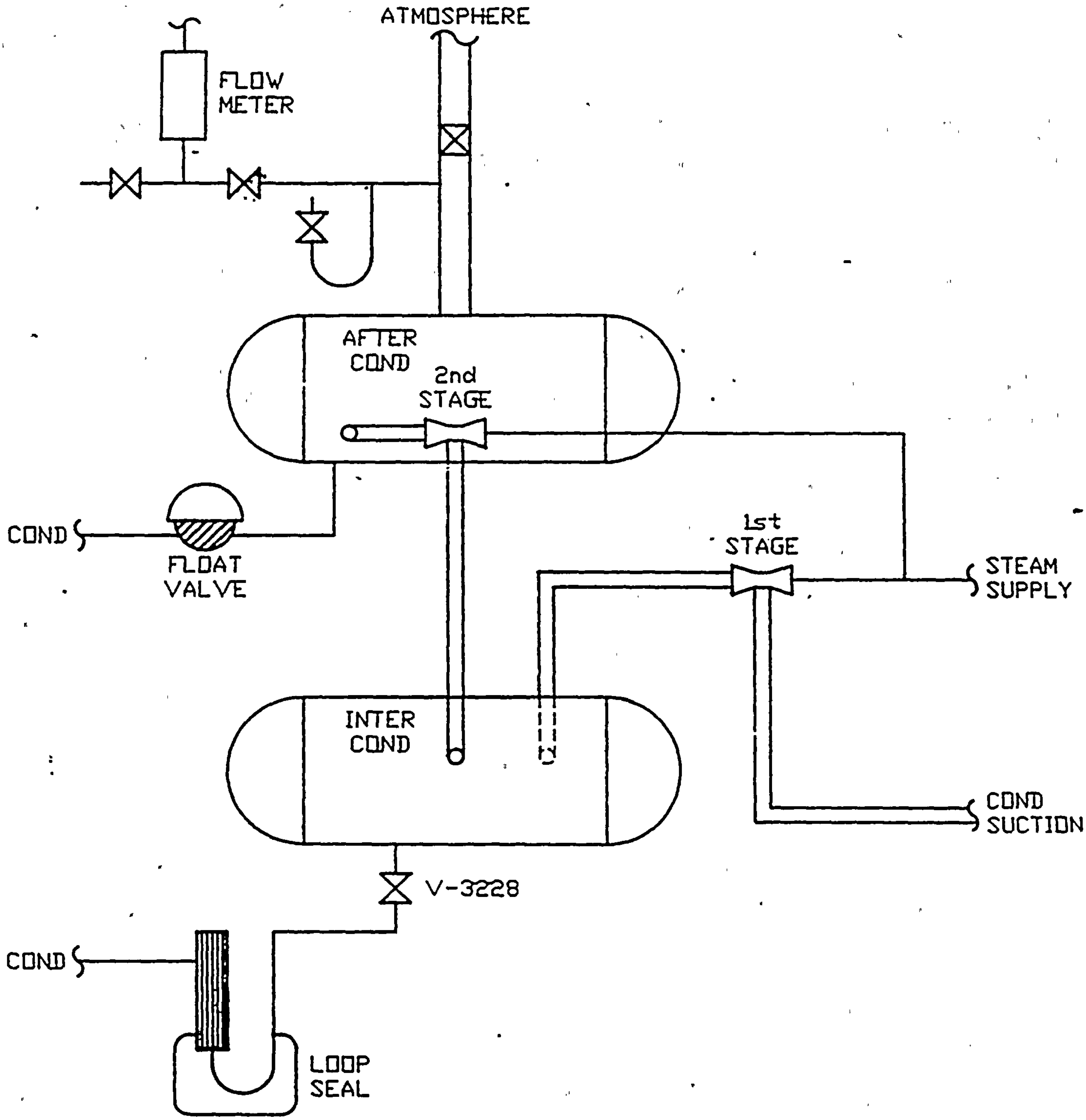
The plant is operating steady-state at 55% power. Which ONE of the following will NOT be an effect on the plant for a loss of the Main Condenser Air Ejector Intercooler loop seal? (Drawing attached)

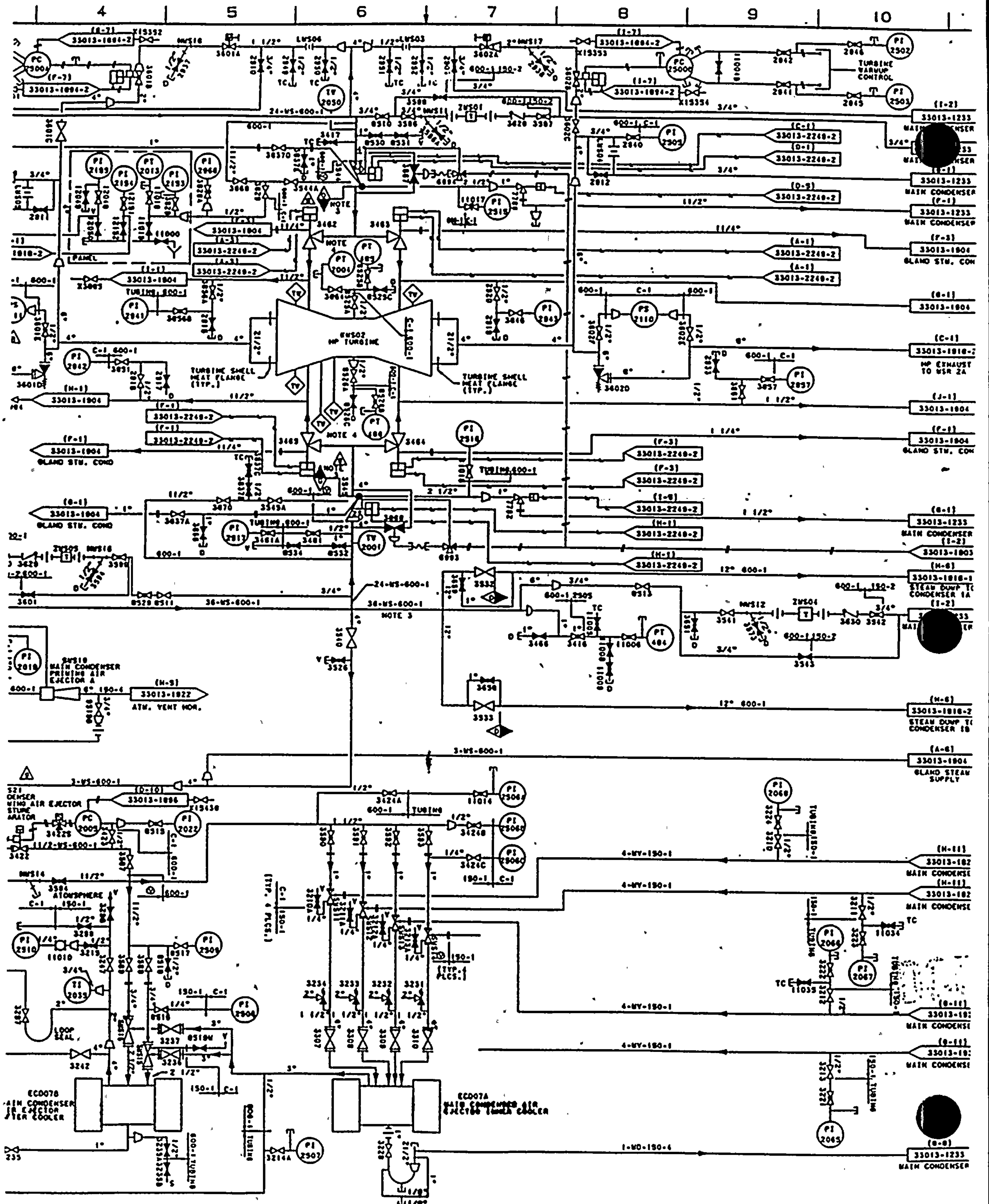
a. There will be a large mismatch between reactor power and plant electrical load.

b. Condenser vacuum will decrease to cause a turbine trip.

c. The ability to detect primary-secondary leakage will be degraded.

d. Gland seal steam will issue from the turbine seals to the turbine building.


ATMOSPHERE
FLOW METER
AFTER COND
2nd STAGE
COND
FLOAT VALVE
1st STAGE
STEAM SUPPLY
INTER COND
COND SUCTION
V-3228
COND
LOOP SEAL



4
5
6
7
8
9
10
HP TURBINE
TURBINE SHELL HEAT FLANGE (TYP.)
TURBINE WARMUP CONTROL
MAIN CONDENSER
GLAND STM. COND
HP EXHAUST TO MSR 2A
STEAM DUMP TO CONDENSER 1A
STEAM DUMP TO CONDENSER 1B
ATM. VENT HDR.
GLAND STEAM SUPPLY
NOTE 3
NOTE 4
PANEL
LOOP SEAL
ATMOSPHERE
EC007A
MAIN CONDENSER AIR EJECTOR INNER COOLER
EC007B
36-WS-600-1
24-WS-600-1
3-WS-600-1
4-WY-150-1

QUESTION: 045 (1.00)

Which ONE of the following describes the action required to reset the loads on MCC 1C or 1D that tripped due to SI load shed (non-ESF loads)?

a. Go to after trip position on MCC supply breaker control switch at the back of the MCB after resetting the SI signal.

b. Locally (at MCC) reset the undervoltage relay after resetting the SI signal.

c. Go to after-trip position on MCC supply breaker control switch at the back of the MCB.

d. Locally (at UV aux relay panels) reset the undervoltage relays.

QUESTION: 046 (1.00)

Given the following information:

- The electrical system is in a normal at-power lineup (50-50)
- An undervoltage condition exists on 480VAC safeguards bus 16 such that load shedding logic is satisfied for bus 16
- No SI signal is present

Which ONE of the following actions will occur automatically?

a. The normal feeder breaker for bus 16 will trip.

b. The bus 15 to bus 16 tie breaker will close.

c. Component cooling pump 1A will strip and reload onto the bus.

d. Aux feed pump 1B will sequence onto the bus after 32 seconds.

QUESTION: 047 (1.00)

When performing a natural circulation cooldown in accordance with ES-0.2 the cooldown rate is limited to 25 degrees F per hour because (CHOOSE ONE):

a. that rate will ensure that the thermal stresses on the RCS will not exceed the maximum allowed by Technical Specifications.

b. it is a rate that the operator can control to ensure a recriticality will not occur with the maximum boration rate available.

c. that rate will allow adequate mixing of reactor coolant to maintain subcooling in the vessel head region and prevent void formation.

d. it is the maximum rate that can be achieved with the steam dumps, and any cooldown rate in excess of 25 degrees F per hour is indicative of a leak of secondary coolant.

QUESTION: 048 (1.00)

Given the following information:

- The reactor plant is steady-state at 100% power
- Pressurizer pressure is 2235 psig
- Pressurizer level is 49%
- All control systems are in AUTO, except the pressurizer backup heaters are manually turned ON

Which ONE of the following transients as described below will result in DE-ENERGIZING the pressurizer backup heaters? (Assume backup heater control switch is positioned to ON throughout the transient):

a. The pressurizer pressure controller has been shifted to manual and setpoint increased such that the proportional heaters have fully energized. Pressurizer pressure has increased to 2300 psig.

b. The pressurizer level controller has failed low, such that actual pressurizer level has increased to 55%. The operator has manually restored level to 49%.

c. The controlling channel of pressurizer pressure has failed high, such that the spray valves have opened. Actual plant pressure has decreased to 2185 psig. The operator has swapped control channels and restored pressure to 2235 psig.

d. The pressurizer level controller has failed high, such that actual level has decreased to 9%. The operator has taken manual control and has raised level to 11% and is maintaining level at 11%.

QUESTION: 049 (1.00)

Which ONE of the following uses individual loop T avg vice average T avg for its input?

a. Main steam isolation

b. Pressurizer level control

c. Main feedwater isolation

d. Rod control

QUESTION: 050 (1.00)

Given the following information:

- The plant is shutdown for a forced outage
- RCS T avg = 547 degrees F
- Pressurizer pressure = 2220 psig
- A containment ventilation mini-purge is in progress per procedure O-11 to improve the quality of air in the containment

Which ONE of the following conditions will cause the containment mini-purge isolation dampers (AOV-7445,7478,7970 and 7971) to automatically CLOSE?

a. A fire breaks out in the charcoal filter bank at the suction of the charcoal filter fans..

b. The containment gas monitor, R-12 goes into alarm.

c. The HCO manually starts Containment Spray pump 1A on recirc for a surveillance test.

d. Containment recirc fan 1B trips on overload.

QUESTION: 051 (1.00)

Given the following information:

- Reactor power = 45% (rapid downpower is in progress due to turbine vibrations)
- T avg = 557 degrees F and is slowly decreasing
- Both Feed Reg Valves (FRVs) are in AUTO and controlling "A" and "B" S/G levels at 52% Narrow Range level
- Both Feed Reg Bypass Valves (Bypass FRVs) are in MANUAL and CLOSED

Which ONE of the following describes the behavior of the FRVs and the Bypass FRVs?

a. FRVs MODULATE in auto - Bypass FRVs stay CLOSED

b. FRVs go fully OPEN - Bypass FRVs go fully OPEN

c. FRVs MODULATE in auto - Bypass FRVs go fully OPEN

d. FRVs go fully OPEN - Bypass FRVs stay CLOSED

QUESTION: 052 (1.00)

Which ONE of the following would NOT be stored in the reactor cavity when removed from the reactor vessel?

a. Upper internals.

b. Lower internals.

c. RCC drive shafts.

d. Irradiated fuel.

QUESTION: 053 (1.00)

Given the following information:

- Reactor is at full power at EOL
- RCS unidentified leakage is 0.25 gpm
- 0.2% fuel failure has occurred over the current cycle

Which ONE of the following radiation monitors will reach its ALARM setpoint to detect the fuel failure?

a. R-2 Containment Area Monitor

b. R-9 Letdown Line Monitor

c. R-10B Plant Vent Iodine Monitor

d. R-33 Nuclear Sample Room Wide Range Area Monitor

QUESTION: 054 (1.00)

During a station blackout, "A" D/G is carrying 1750 kW of load.

Which ONE of the following is the maximum load of proportional heaters that can be loaded onto the "A" D/G without exceeding its continuous service rating?

a. 100 kW

b. 200 kW

c. 300 kW

d. 400 kW

QUESTION: 055 (1.00)

Given the following information:

- Reactor power = 98%
- Pressurizer level = 49%
- "A" charging pump is running in AUTO
- The T avg input to pressurizer level has failed LOW

Which ONE of the following groups of actions describes the indications the Head Control Operator will see?

a. "A" charging pump slows down, backup heaters are energized, pressurizer level begins to decrease, high level deviation alarm actuates.

b. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to increase, low level deviation alarm actuates.

c. "A" charging pump trips, backup heaters are energized, pressurizer level begins to increase, low level deviation alarm actuates.

d. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to decrease, high level deviation alarm actuates.

QUESTION: 056 (1.00)

Given the following two events:

A: - Reactor power = 45%
- T avg is on program
- A spurious signal causes a turbine runback to no-load condition at 200% per minute
- The reactor does NOT trip
- ALL control systems are operating in AUTO

B: - Reactor power = 45%
- T avg is on program
- A turbine trip occurs
- The reactor does NOT trip
- All control systems are operating in AUTO

A higher maximum value of T avg will occur in (CHOOSE ONE):

a. Event A because the steam dumps will respond to a higher T ref signal.

b. Event B because the steam dumps will respond to a higher T ref signal.

c. Event A because the steam dumps will snap open at a higher delta T (T avg - T ref).

d. Event B because the steam dumps will snap open at a higher delta T (T avg - T ref).

QUESTION: 057 (1.00)

Which ONE of the following valves in the CCW system will CLOSE upon receipt of a T-signal (containment isolation)? (Assume valves are open when the T-signal is received)

a. MOV-817 CCW Supply to Containment

b. MOV-759A CCW Return from "A" RCP

c. AOV-745 CCW Return from Excess Letdown Heat Exchanger

d. MOV-813 CCW Supply to Reactor Support Cooling

QUESTION: 058 (1.00)

Which ONE of the following is a difference in design between the Instrument Air Compressors and the Service Air Compressor?

a. The instrument air compressors have an oil-lubricated cylinder, and the service air compressor cylinder is not oil-lubricated.

b. The instrument air compressors have service water cooled aftercoolers on their discharges, and the service air compressor has no aftercooler.

c. The service air compressor will shut off at 125 psig discharge if it starts in AUTO, and the instrument air compressors will run continuously if started in AUTO.

d. The service air compressor has a low lube oil pressure trip, and the instrument air compressors do not trip on low lube oil pressure.

QUESTION: 059 (1.00)

Given the following information:

- Plant cooldown from hot shutdown to cold condition is in progress
- RCS T hot = 345 degrees F
- RHR system has just been placed in operation
- A minimal cooldown rate of 20 degrees F per hour has been initiated

Which ONE of the following is the reason for establishing a 20 degree F per hour cooldown rate?

a. This rate is the maximum rate possible using the RHR system at the given temperature under design decay heat load conditions.

b. This rate is required to ensure a gradual warmup of the RHR system.

c. This rate is required to maintain the pressurizer liquid to RCS T hot delta T within its limit.

d. This rate allows for boron addition to ensure the reactor remains subcritical during the cooldown.

QUESTION: 060 (1.00)

One of the mitigating strategies for reseating a leaking pressurizer safety is to depressurize the RCS. Which ONE of the following is correct with respect to the effect of this pressure reduction on the delta T trip setpoints?

a. OT delta T setpoint will increase.

b. OT delta T setpoint will decrease.

c. OP delta T setpoint will increase.

d. OP delta T setpoint will decrease.

QUESTION: 061 (1.00)

Given the following information:

- Alarm H-8, INSTRUMENT AIR LO PRESS, 100 PSI, lit
- Instrument Air Compressor "A" is running in CONSTANT SPEED
- Instrument Air Compressor "C" is in AUTO, but is NOT running
- Instrument Air Compressor "B" is held off and tagged
- Instrument air (IA) pressure reads 75 psig and is slowly decreasing

Which ONE of the following actions should be performed IMMEDIATELY as required by AP-IA.1 (LOSS OF INSTRUMENT AIR)?

a. Trip the reactor and go to E-0.

b. Manually start Instrument Air Compressor "C".

c. Direct the AO to OPEN the manual Service Air to Instrument Air cross tie valve V-5365.

d. Shift both S/G Feedwater Regulating Valves to MANUAL.

QUESTION: 062 (1.00)

Which ONE of the following symptoms can be used to distinguish a LOCA from other types of accidents that may result in a Safety Injection?

a. Pressurizer level decreases.

b. Containment pressure increases.

c. Pressurizer pressure decreases.

d. Containment airborne activity increases.

QUESTION: 063 (1.00)

A leak has developed on the charging line between HCV-142 and the regenerative heat exchanger. The Control Room is implementing AP-CVCS.1, CVCS Leak. When the leak is isolated, the reactor makeup flowpath will be via _________, and the reactor letdown flowpath will be via ___________.

Choose ONE of the following to fill in the blanks. (Procedure attached.)

a. normal charging , normal letdown

b. normal charging , excess letdown

c. seal injection , excess letdown

d. seal injection , seal return

A. PURPOSE - This procedure provides the necessary instructions to mitigate the consequences of a CVCS leak.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from;

   a. AP-RCS.1, REACTOR COOLANT LEAK, when conditions indicate a CVCS leak.

2. SYMPTOMS - The symptoms of CVCS leak are;

   a. Annunciator B-9 (B-10), RCP A(B) LABYR SEAL LO DIFF PRESS 15" H2O, lit, or

   b. Charging line pressure low, or

   c. Annunciator F-14, CHARGING PUMP SPEED, lit, or

   d. Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F, lit, or

   e. Letdown line low pressure and/or low flow, or

   f. Charging Pump Room area monitor R-4 on alarm.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

<u>CAUTION</u>

IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.

* *

<u>NOTE</u>:

- o Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.
- o A local radiation emergency should be declared for any unexplained area radiation monitor alarm.

1	Monitor PRZR Level - STABLE AT PROGRAM LEVEL	<u>IF</u> PRZR level decreasing, <u>THEN</u> start additional charging pumps and increase speed as necessary to stabilize PRZR level. <u>IF</u> PRZR level continues to decrease, <u>THEN</u> close loop B cold leg to REGEN Hx isolation valve, AOV-427. <u>IF</u> available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is decreasing, <u>THEN</u> trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: IF VCT level decreases to 5%, charging pump suction will swap to the RWST. This may require a load reduction.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Check VCT Makeup System:**	
	a. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	a. Adjust controls as necessary.
	b. Check VCT level: o Level GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	b. Check letdown divert valve, LCV-112A, aligned to VCT. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. 2) Place RMW flow control valve, HCV-111, in MANUAL and increase RMW flow. 3) Increase boric acid flow as necessary. IF VCT level can NOT be maintained, THEN refer to ER-CVCS.2, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Check Charging Pump Suction Aligned To VCT:**	
	a. VCT level - GREATER THAN 20%	a. IF VCT level can NOT be maintained greater than 5%, THEN perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 4. WHEN VCT level greater than 20%, THEN do Step 3b.
	b. Verify charging pumps aligned to VCT o LCV-112C open o LCV-112B closed	b. Manually align valves as necessary.
4	**Check If RCS Leakage In CNMT:** o Check CNMT radiation monitors - NORMAL • R-2 • R-7 • R-10A • R-11 • R-12 o CNMT sump A pump run frequency - NORMAL (Refer to leakage surveillance sheet)	IF leakage is indicated in CNMT, THEN perform the following: a. Direct HP to sample CNMT for entry. b. Continue with Step 5. WHEN CNMT cleared for entry, THEN dispatch personnel to investigate CNMT for RCS leakage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

HEALTH PHYSICS TECHNICIAN SHOULD BE CONSULTED PRIOR TO ENTERING A HIGH AIRBORNE AREA.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check If RCS Leakage In AUX BLDG: a. Check AUX BLDG radiation monitors - NORMAL • R-4 • R-9 • R-10B • R-13 • R-14 b. AUX BLDG sump pump run frequency - NORMAL (Refer to leakage surveillance sheet) c. AUX BLDG sump tank leak rate - NORMAL (Refer to leakage surveillance sheet)	Dispatch AO To AUX BLDG To Investigate For CVCS Leak (locked area keys required)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	**Check For Leak In Charging Line To REGEN Hx:** o Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F - EXTINGUISHED o REGEN Hx letdown outlet temperature - LESS THAN 350°F AND STABLE (archive PPCS point ID T0127)	Perform the following: a. Close or verify closed loop B cold leg to REGEN Hx, AOV-427. b. Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202). c. Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches. d. Close charging flow control valve, HCV-142. e. Close charging to loop B cold leg, AOV-294. f. Go to Step 9.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

*

CAUTION

- IF LEAK EXISTS IN THE LETDOWN LINE, H2 GASES FROM THE VCT MAY DIFFUSE OUT THE LEAK AND CAUSE A HAZARDOUS CONDITION.
- WHILE ON EXCESS LETDOWN, VCT LEVEL MAY BE DECREASED BY MANUALLY DIVERTING EXCESS LETDOWN FLOW TO THE RCDT USING AOV-312.

*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Check Normal Letdown:**	
	a. Normal letdown - IN SERVICE	a. Perform the following: 1) IF excess letdown in service, THEN perform the following: a) Close excess letdown isolation valve, AOV-310. b) Close excess letdown flow control valve, HCV-123. 2) Go to Step 8.
	b. Check Letdown Indications: o Letdown flow - APPROXIMATELY 40 GPM o Low pressure LTDN pressure - APPROXIMATELY 250 PSIG o Pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN	b. Isolate Normal Letdown: 1) Close loop B cold leg to REGEN Hx, AOV-427 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) 3) Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches. 4) Close charging flow control valve, HCV-142 5) Close charging to loop B cold leg, AOV-294. 6) Establish excess letdown (Refer to Attachment EXCESS LETDOWN). 7) Go to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Check For Leakage To CCW System:** o CCW radiation monitor (R-17) - NORMAL o CCW surge tank level - APPROXIMATELY 50% AND STABLE	IF leakage to the CCW system is indicated, THEN go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP.

* *

CAUTION

RCP OPERATION WITHOUT SEAL INJECTION SHOULD BE MINIMIZED.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	**Check RCP Seal Injection Indications:** o Seal injection flows - GREATER THAN 6 GPM AND STABLE o RCP labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL o RCP seal inlet temperatures - STABLE	IF RCP seal injection leak is suspected, THEN perform the following: a. Verify charging flow control valve, HCV-142, open. IF no charging path through REGEN Hx available, THEN go to Step 15. b. Verify CCW cooling to operating RCP thermal barriers. IF NOT, THEN seal injection should be maintained. c. Attempt to locate and isolate leak. d. Go to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	**Check RCP Seal Leakoff Flows:** o RCP seal leakoff flows - GREATER THAN 0.25 GPM o RCP seal leakoff flows - STABLE	Dispatch AO with a key to the RWST gate to check seal return line for leakage. IF a seal return line leak is indicated downstream of RCP seal return isolation valve, MOV-313, THEN perform the following: a. Close RCP seal return isolation valve, MOV-313. b. Monitor RCP indications. c. Evaluate leak location. IF possible, THEN isolate the seal return line from the VCT. d. Go to Step 12. IF no seal return line leakage indicated in the AUX BLDG, THEN investigate for leakage in CNMT.
11	**Evaluate Local Leak Investigation - CVCS SYSTEM INTACT IN AUX BLDG**	Determine if leak can be isolated (Refer to CVCS piping diagrams as necessary).
12	**Evaluate Plant Status:**	
	a. Leak location identified	a. IF CVCS leak NOT indicated, THEN go to AP-RCS.1, REACTOR COOLANT LEAK.
	b. Check RCS conditions: o Leakage within limits (Refer to leakage surveillance sheet and Tech Spec section 3.1.5) o At least one charging flowpath - AVAILABLE FOR INVENTORY CONTROL	b. Perform the following: 1) Initiate plant shutdown (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN). 2) Go to Step 15.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check Normal Or Excess Letdown - IN SERVICE	<u>IF</u> normal letdown desired, <u>THEN</u> perform the following: a. Verify charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place letdown controllers in MANUAL at 35% open. • TCV-130 • PCV-135 c. Verify letdown isolation valve, AOV-371, - OPEN d. Open B loop cold to REGEN Hx, AOV-427 e. Open letdown orifice valves as necessary f. Place TCV-130 in auto at 105°F g. Place PCV-135 in AUTO at 250 psig h. Adjust charging pump and HCV-142 as necessary to control PRZR level and RCP labyrinth seal D/P <u>IF</u> normal letdown <u>NOT</u> available, <u>THEN</u> establish excess letdown if desired (Refer to Attachment EXCESS LETDOWN).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	**Establish Stable Plant Conditions:**	
	a. PRZR level - TRENDING TO PROGRAM	a. Control charging flow as necessary to restore PRZR level to program.
	b. PRZR pressure - AT OR TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K. IF pressure can NOT be controlled, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.

NOTE: Refer to 0-9.3, NRC STATE AND COUNTIES IMMEDIATE NOTIFICATION, for reporting requirements.

15 **Notify Higher Supervision**

-END-

QUESTION: 064 (1.00)

With the plant operating at reduced inventory conditions, which ONE of the following is NOT an entry condition or symptom of AP-RHR.2, (Loss of RHR while operating at RCS reduced inventory conditions)?

a. A and B Loop Level Detectors are observed to rapidly decrease from 64 inches to 50 inches.

b. No flow on FI626, RHR Loop Flow.

c. Unexpected increase in RCS Temp.

d. Annunciator J-9, Safeguard Breaker Trip Alarm.

QUESTION: 065 (1.00)

Given the following information:

- A primary to secondary leak is in progress on the "B" S/G.
- Leak rate has been determined by sample to be 0.25 gpm.
- Procedure O-6.10 (Plant Operation with S/G Tube Leak Indication is being implemented.
- Reactor power is 8% and the main turbine has been manually tripped from the MCB.

Which ONE of the following actions should be IMMEDIATELY performed? (Copy of procedure attached):

a. Place the ARV controller for "B" S/G to MANUAL.

b. Notify the NRC of a Site Area Emergency.

c. Close the MSIV for "B" S/G.

d. Manually start both MDAFW pumps.

O-6.10

PLANT OPERATION WITH STEAM GENERATOR TUBE LEAK INDICATION

1.0 **PURPOSE:**

1.1 To describe the steps to be taken in the event of a Steam Generator (SG) tube leak.

2.0 **REFERENCES:**

2.1 A-52.4 CONTROL OF LIMITING CONDITIONS FOR OPERATING EQUIPMENT

2.1.1 E-0 REACTOR TRIP OR SAFETY INJECTION

2.1.2 EPIP 1-0 GINNA STATION EVENT EVALUATION AND CLASSIFICATION

2.1.3 O-2.1 NORMAL SHUTDOWN TO HOT SHUTDOWN

2.1.4 O-2.2 PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN

2.1.5 O-9.3 NRC, STATE AND COUNTIES IMMEDIATE NOTIFICATION

2.1.6 S-3.3C H_2 OR O_2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VOLUME CONTROL TANK WITH N

2.1.7 T-35H NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGEOVER

2.2 TECHNICAL SPECIFICATIONS SECTION 3

3.0 **INITIAL CONDITIONS:**

3.1 The primary to secondary tube leakrate in ONE SG has been verified by sampling to be $\geq$ 260 cc/min OR the SS OR Operations Supervision has decided to initiate this procedure.

4.0 **PRECAUTIONS:**

4.1 IF a Reactor Trip OR Safety Injection occurs, THEN GO TO E-0, REACTOR TRIP OR SAFETY INJECTION.

4.2 WHEN burping the VCT for Hydrogen removal, DO NOT go below 15 cc/kg Hydrogen concentration WHEN > 1% Nuclear Power.

5.0 INSTRUCTIONS:

NOTE: IF primary to secondary tube leakrate in ONE SG increases to > 370 cc/min (0.1 gpm), THEN GO TO step 5.7 IMMEDIATELY AND N/A steps 5.1 through 5.6.

5.1 Dispatch an AO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGEOVER.

____

5.2 Decrease Reactor power by performing O-2.1.

O-2.1 Being Performed __________

5.3 IF desired, establish maximum letdown by performing the following:

5.3.1 Verify deborating DI is isolated.

DIVERT VLV CATION DEBOR DI AOV-244 IN BYPASS __________

5.3.2 Place PCV-135 to MANUAL AND control Letdown pressure to ~ 250 psig:

PCV-135 In MANUAL __________

Pressure ~ 250 psig __________

5.3.3 Swap orifices by performing the following in rapid sequence:

40 GPM ORIFICE Closed __________

60 GPM ORIFICE Opened __________

5.3.4 Adjust letdown pressure to ~ 250 psig.

Pressure ~ 250 psig __________

5.3.5 Place PCV-135 in AUTO IF desired.

PCV-135 In AUTO __________

5.4 Place the CNMT AUXILIARY CHARCOAL FILTER system in service.

FAN A ____________

FAN B ____________

5.5 Notify the SS to consider placing the following systems in service:

Boron Recycle ____________

Chem Nuc ____________

5.6 Notification has been received that primary to secondary leak rate in <u>ONE</u> SG > 370 cc/min (0.1 gpm) <u>OR</u> the SS <u>OR</u> Operations Supervision has decided to continue to shutdown.

____

5.7 <u>IF</u> leak rate > .1 gpm <u>THEN</u> perform the following: (otherwise N/A)

5.7.1 Commence an orderly shutdown to be in Hot Shutdown <u>WITHIN</u> 6 hours <u>AND</u> < 350°F in the RCS <u>WITHIN</u> the next 6 hours. Perform O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN, <u>AND</u> <u>THEN</u> O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITION.

O-2.1 Being Performed ____________

5.7.2 Make the following notifications (if SG Leakrate > .1 gpm):

State <u>AND</u> Counties Per EPIP 1-0 ____________

NRC Per O-9.3 ____________

<u>NOTE</u>: **<u>AFTER</u> the Turbine is off line, <u>IMMEDIATELY</u> perform step 5.18 <u>AND</u> 5.18.1, <u>THEN</u> return to any steps <u>NOT</u> performed.**

5.8 Verify VCT is being burped with N_2.

S-3.3C In Progress ____________

5.9 Notify AO to perform the following:

Bypass the AVT Condensate DIs ____________

Isolate the AVT Condensate DIs ____________

5.9.1 Notify HP/Chemistry that the AVT Condensate DIs are bypassed <u>AND</u> isolated.

____

5.10 Shift Support Heating steam trap outlet valves from the trap header to Blowdown Tank by closing V-3684 AND opening V-3683.

V-3684 Closed ____/____

V-3683 Open ____/____

5.11 Close trap drain isolation valve upstream of MSIV of the affected loop (V-3521 for SG A, V-3520 for SG B). N/A valve for non-affected loop.

V-3521 Closed ____/____

V-3520 Closed ____/____

5.12 Verify Blowdown Tank discharge valve is closed.

V-5718 Closed ____/____

5.12.1 Isolate Blowdown from the affected SG. N/A the unaffected SG.

V-5738 OR V-5701 Closed ____/____

V-5737 OR V-5702 Closed ____/____

NOTE: PRIOR to isolating the affected SG, verify its level > 5%.

5.13 PULL STOP the TDAFW Pump Steam Admission valve from the affected SG. N/A the unaffected SG.

V-3505A PULL STOP ________

V-3504A PULL STOP ________

5.13.1 Isolate the TDAFW Pump supply to the affected SG AND N/A the unaffected SG.

AOV-4297 Closed ________

AOV-4298 Closed ________

5.14 PULL STOP the AFW pump for the affected SG AND N/A the unaffected SG.

A AFW Pump PULL STOP ________

B AFW Pump PULL STOP ________

5.14.1 Close the associated discharge valve of the AFW pump that was PULL STOP in step 5.14. N/A the non-affected pump's discharge valve.

MOV-4007 Closed ________

MOV-4008 Closed ________

5.15 Submit an A-52.4 on the inoperable flow path of the TDAFW Pump.

A-52.4 Submitted ________

5.15.1 Submit an A-52.4 on the inoperable AFW Pump.

A-52.4 Submitted ________

5.15.2 Submit an A-52.4 on RCS to SG leakage.

A-52.4 Submitted ________

5.16 Notify HP to survey the following areas:

Steam Header ________

Blowdown Tank ________

Turbine Bldg Wall Fan ________

5.17 Notify HPs to verify that airborne contaminants that may be discharging from steam reliefs OR the Air Ejector are NOT being pulled into the supply air handling units. The most likely area affected are:

Aux Bldg ________

Int Bldg ________

Service Bldg ________

5.18 Place affected SG ARV controller to AUTO, set for 1050 psig, and verify ARV is closed.

Affected SG ARV in AUTO ________

Affected SG ARV Set for 1050 psig ________

Affected SG ARV Closed ________

5.18.1 Close the MSIV on the affected SG AND N/A the other.

MSIV A AOV-3517 Closed ________

MSIV B AOV-3516 Closed ________

NOTE: Ensure steps 5.9 through 5.18.1 complete prior to proceeding.

5.19 Notify the following (if SG Leakrate > .1 gpm):

Duty Engineer ________

Operations Supervision ________

SG Coordinator ________

5.20 Verify the following notifications were made IF > .1 gpm tube leakage in ONE SG as verified by sampling (N/A IF not required):

State AND Counties Per EPIP 1-0 ________

NRC Per O-9.3 ________

5.21 Continue cooldown to CSD per O-2.2.

O-2.2 Being Performed ________

5.22 When directed by O-2.1 or O-2.2, remove the RCP associated with the affected SG from service.

____

COMPLETED BY: ________________

DATE COMPLETED: ________________

CONTROL ROOM FOREMAN: ________________

SHIFT SUPERVISOR: ________________

QUESTION: 066 (1.00)

Given the following information:

- A reactor shutdown is in progress.
- The reactor trip breakers are closed.
- Intermediate range channels N-35 and N-36 both read < 1E-11 amps.
- Source range channels N-31 and N-32 both are de-energized.

Which ONE of the following actions would be performed to try to energize the source range channels?

a. De-energize two of the power range channels by pulling the instrument fuses on two of the power range channel drawers.

b. Cycle the reactor trip breakers open, then closed again.

c. Place the source range level trip switches to BYPASS and then momentarily remove the instrument power fuses to the source range channels.

d. Reset the P-6 interlock by withdrawing rods to get indication on-scale (>1E-10 amps) on both intermediate channels.

QUESTION: 067 (1.00)

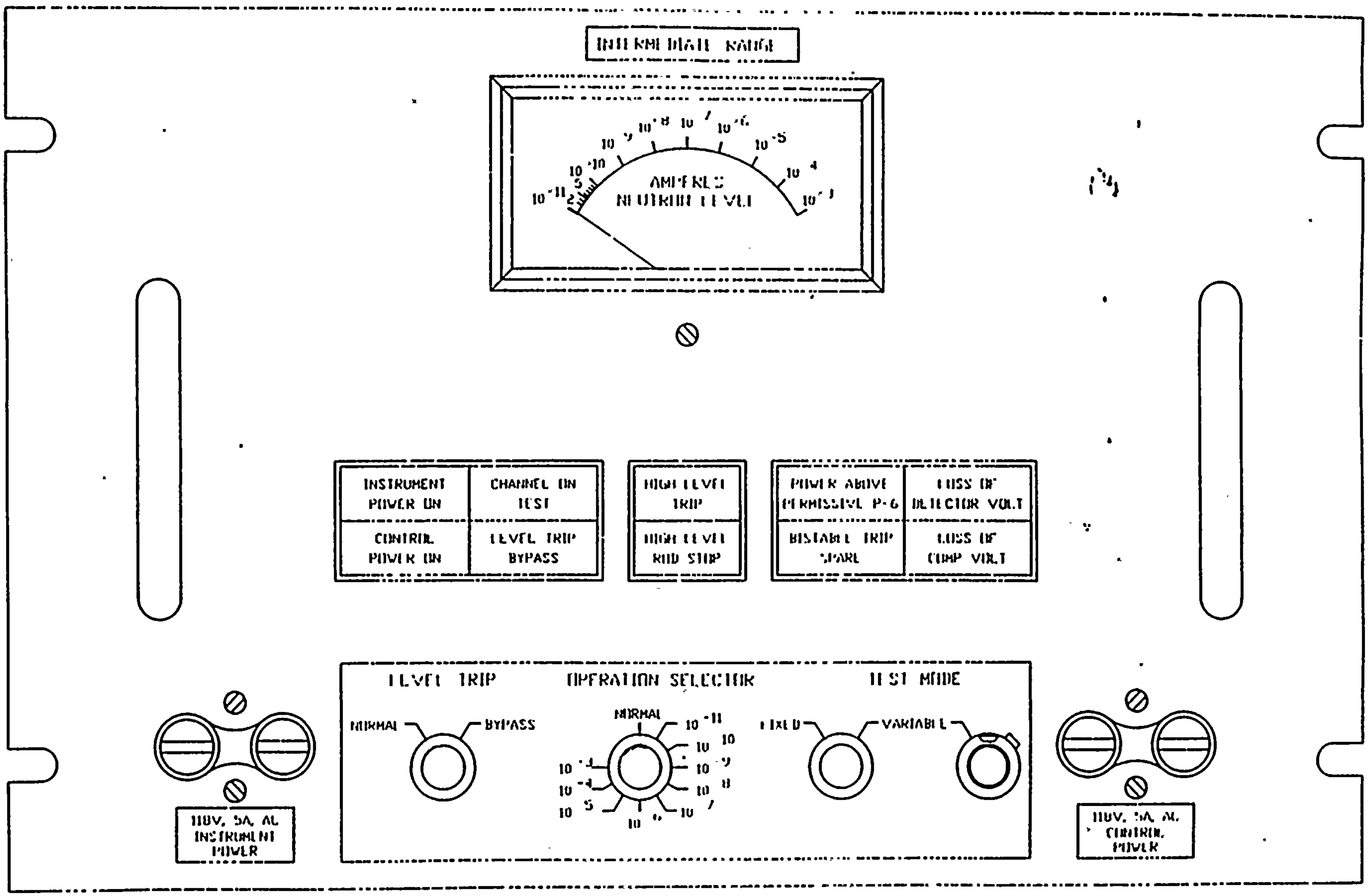
Which ONE of the following indications on the intermediate range nuclear instrument drawer is NOT normal for plant operations at 40% power? (drawing attached):

a. Level trip BYPASS light LIT

b. Loss of detector voltage light NOT LIT

c. High level trip light LIT

d. Channel on test light NOT LIT


INTERMEDIATE RANGE
AMPERES
NEUTRON LEVEL
INSTRUMENT POWER ON
CHANNEL ON TEST
CONTROL POWER ON
LEVEL TRIP BYPASS
HIGH LEVEL TRIP
HIGH LEVEL ROD STOP
POWER ABOVE PERMISSIVE P-6
LOSS OF DETECTOR VOLT
BISTABLE TRIP SPARE
LOSS OF COMP VOLT
LEVEL TRIP
NORMAL
BYPASS
OPERATION SELECTOR
NORMAL
TEST MODE
FIXED
VARIABLE
118V, 5A, AC INSTRUMENT POWER
118V, 5A, AC CONTROL POWER

QUESTION: 068 (1.00)

The RNO column for Step 4 of E-0 (Reactor Trip or Safety Injection) requires the operator to check for conditions that would require a safety injection. Which ONE of the following is a condition that would require the operator to manually actuate a safety injection and containment isolation?

a. A check of containment pressure shows a reading of 2 psig.

b. A check of the status of the safeguards sequencer for Train A shows that the 1A diesel generator and safety injection pumps 1A and 1C are running.

c. A check of main steamline pressure shows a reading of 614 psig.

d. A check of pressurizer pressure shows a reading of 1950 psig.

QUESTION: 069 (1.00)

Which ONE of the following describes the impact on the A train of safeguards due to a complete loss of DC Bus A?

a. Manual actuation of SI would be required.

b. MCB operation of pumps and valves would be required.

c. MCB operation of pumps and local valve operation would be required.

d. Local operation of pumps and valves would be required.

QUESTION: 070 (1.00)

Given the following information:

- Reactor defueling operations are in progress.
- The control room has received a report that a fuel assembly has slipped free of the manipulator crane and fallen back onto the core.
- Personnel on the refueling phone circuit report that a lot of bubbles are rising from the core area.

Which ONE of the following actions of the Control Room operators should be performed FIRST?

a. Sound the containment evacuation alarm.

b. Dispatch personnel to verify containment integrity is established.

c. Shift the auxiliary building ventilation lineup to place the charcoal filter in service.

d. Notify the NRC and the local county authorities.

QUESTION: 071 (1.00)

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

a. To ensure adequate #1 seal cooling flow at low RCS pressure.

b. To ensure adequate radial bearing cooling flow at low RCS pressure.

c. To ensure adequate seal cooling flow if the normal seal return line is isolated.

d. To ensure adequate cooling for #2 & #3 seals if #1 seal leakoff is low.

QUESTION: 072 (1.00)

The plant is operating normally at 100%. Both VCT level transmitters fail low. How high will VCT pressure go with no operator action?

a. 600 psig

b. 240 psig

c. 120 psig

d. 75 psig

QUESTION: 073 (1.00)

Which of the following actuations WILL occur for an automatic SI, but WILL NOT occur for a manual SI?

a. Containment Spray

b. Containment Isolation

c. Closure of emergency diesel generator output breakers onto safeguards busses.

d. Trip of main feedwater pumps.

QUESTION: 074 (1.00)

What engineered safeguard feature besides NaOH in containment spray will help remove iodine from a post LOCA containment atmosphere?

a. Hydrogen recombiners.

b. Containment ventilation HEPA filters.

c. Charcoal Filters.

d. Containment Pressure Relief.

QUESTION: 075 (1.00)

Which ONE of the following is the minimum coincidence that will start the turbine driven auxiliary feedwater pump?

a. 2/3 low low level coincident with 2/3 feed-steam flow mismatch in one steam generator.

b. 1/3 low low level in both steam generators.

c. 2/3 low low level in both steam generators.

d. 1/3 low low level coincident with 1/2 feed-steam flow mismatch in one steam generator.

QUESTION: 076 (1.00)

A large break LOCA has occurred. All ESF equipment has actuated properly. The STA reports that a core exit thermocouple temperature channel indicates "9999". What does this mean?

a. Thermocouple temperature > clad failure temperature.

b. The thermocouple channel is failed.

c. Thermocouple temperature > 700 deg F.

d. Temperature outside thermocouple calibration range.

QUESTION: 077 (1.00)

Which ONE of the following states a reason why the steam generator level program is reduced at low power?

a. To minimize time delays in plant response to transients due to "thermal lag".

b. To reduce the mass inventory available to boil off in the event of a steam break.

c. To prevent thermal stratification above the U-tubes.

d. To prevent low power level oscillation due to level dominant control.

QUESTION: 078 (1.00)

Which ONE of the following is used to determine the program value for steam generator level?

a. Reactor power as indicated by average of three highest PRNIs.

b. Reactor power as indicated by highest loop delta T.

c. Secondary power as indicated by main generator electrical load.

d. Secondary power as indicated by turbine first stage pressure.

QUESTION: 079 (1.00)

The plant is at approximately 25% power. A single steam generator pressure channel fails low on one steam generator. What effect will this have on steam generator level control?

a. No effect

b. Level in the affected SG will be controlled below program value.

c. Level in both S/Gs will be controlled below program value.

d. Level in the affected SG will initially drop below program value, then return to program due to the characteristics of Proportional + Integral (PI) control.

QUESTION: 080 (1.00)

The plant is operating normally at 100% power. One condensate pump trips. Which ONE of the following describes plant response?

a. LP feedwater heaters bypass valve closes due to low MFP suction pressure.

b. LP feedwater heaters bypass valve opens due to low feedwater heater levels.

c. Standby condensate pump auto starts on low discharge header pressure.

d. Standby condensate pump starts on low MFP suction pressure.

QUESTION: 081 (1.00)

The plant has just been manually tripped from 100% power due to a complete loss of component cooling flow. A few minutes later the plant vent gas monitor R-14 goes into ALERT with a reading that is still increasing. Which ONE of the following is the cause?

a. Loss of CCW to the monitor is generating an erroneous indication.

b. The in-service waste gas compressor has tripped, allowing the vent header relief to lift.

c. An RCP thermal barrier heat exchanger leak has developed, allowing an activity release through the CC surge tank vent.

d. Loss of seal water to the waste gas compressors is allowing waste gas leakage into the Auxiliary Building.

QUESTION: 082 (1.00)

You are performing a reactor startup. The P-6 permissive has just energized. You observe the following nuclear instrumentation readings:

- IR channel I indicates 1 x 10E-10 amps
- IR channel II indicates 1 x 10E-11 amps
- SR channel I indicates 3 x 10E4 CPS
- SR channel II indicates 4 x 10E4 CPS

What do these readings indicate?

a. Source Range channel I high voltage is degraded.

b. Intermediate Range channel I is undercompensated.

c. Source Range channel II compensating voltage polarity is reversed.

d. Intermediate Range channel II is overcompensated.

QUESTION: 083 (1.00)

Why is there a low power trip setting for the power range nuclear instruments?

a. The low power setting is provided for required setpoint reduction if QPTR exceeds permissible limits.

b. The low power setting provides primary protection against an at-power startup of an idle loop.

c. The low power setpoint provides a diverse and redundant backup for the intermediate range high flux trip.

d. The low power setpoint is the safety grade protection against a steam break / restart accident.

QUESTION: 084 (1.00)

The plant is in cold shutdown with T avg at 140 deg F. An RCP has just been started. Which ONE of the following conditions would require the RCP to be tripped?

a. Seal leakoff flow indicates .9 gpm.

b. #1 seal D/P indicates 205 psid.

c. Labyrinth seal D/P indicates less than 30".

d. Lower bearing water temperature indicates 160 deg F.

QUESTION: 085 (1.00)

A loss of all AC power has occurred coincident with a large break LOCA. Your crew members observe the following conditions:

- Auxiliary feed flow is zero.
- Source range NIs are behaving erratically.
- Core exit thermocouples read approximately 800 degrees F.

Which ONE of the following is the correct response?

a. Transition to FR-S.1 "Response to Nuclear Power Generation/ATWS"

b. Transition to FR-H.1 "Response to Loss of Secondary Heat Sink"

c. Transition to FR-C.1 "Response to Inadequate Core Cooling"

d. Continue with actions of ECA-0.0 "Loss of All AC Power"

QUESTION: 086 (1.00)

One of the final actions of FR-C.1 "Response to Inadequate Core Cooling" is to open the pressurizer PORVs. What is the purpose of this step?

a. To vent non condensible gasses from the reactor vessel thereby allowing maximum reflux cooling.

b. To vent superheated steam from the hot legs and preclude high temperature failure of the SG U-tubes/ containment bypass.

c. To depressurize the RCS to facilitate low head injection.

d. To depressurize the RCS to ensure backfill in the event of high temperature failure of the SG U-tubes.

QUESTION: 087 (1.00)

A loss of all AC power has occurred. Steam generator depressurization is being performed in accordance with ECA-0.0. Which ONE of the following is the lowest pressure to which SGs should be depressurized?

a. Atmospheric - maximize natural circulation core cooling.

b. 300 psig - prevent accumulator N2 injection.

c. 400 psig - prevent exceeding primary to secondary D/P limit.

d. 500 psig - prevent exceeding T.S. cooldown rate limit.

QUESTION: 088 (1.00)

In which one of the following conditions may RCPs be started even though the RCP may be damaged as a result of starting the pump?

a. When responding to a steam generator tube rupture in accordance with E-3

b. When responding to inadequate core cooling in accordance with FR-C.1

c. When responding to a loss of secondary heat sink in accordance with FR-H.1

d. When responding to voids in the reactor vessel in accordance with FR-I.3

QUESTION: 089 (1.00)

Which ONE of the following describes the CORRECT use of emergency operating procedures?

a. -The crew is in FR-H.1 "Response to Loss of Secondary Heat Sink".
-The STA reports a red path for core cooling.
-The SRO transitions to ES-0.0 "Rediagnosis"

b. -The crew is in ES-1.3 "Transfer to Cold Leg Recirculation"
-A loss of all AC power occurs.
-The SRO continues with ES-1.3.

c. -The crew is performing E-0 immediate actions.
-The STA reports an orange path for PTS.
-The SRO transitions to FR-P.2 "Response to Anticipated PTS Condition".

d. -The crew has isolated "A" SG which was determined to be faulted.
-Feed flow cannot be provided to "B" SG, resulting in loss of heat sink.
-The SRO enters FR-H.1, and orders AFW flow established to "A" SG.

QUESTION: 090 (1.00)

While performing a load reduction, the crew observes a single rod that appears to be misaligned. How can the operators determine if this is an actual misaligned rod or a malfunction of the position indication?

a. Move the affected bank and see if the indicated misalignment worsens - if not, an MRPI failure is indicated.

b. Move the affected bank and compare T avg response to what would be expected from differential bank worth - if not, an MRPI failure is indicated.

c. Check QPTR within allowable limits - if not, an actual rod misalignment is indicated.

d. Check if any other rods appear to be misaligned - if not, an actual rod misalignment is indicated.

QUESTION: 091 (1.00)

The rod control system uses the sum of two error signals to determine the desired rod speed and direction. One error signal is T avg - T ref. What is the other signal?

a. (Rate of change of PRNI power) minus (a fixed 5% per minute reference value).

b. PRNI power minus turbine power.

c. Rate of change of (PRNI power minus turbine power).

d. Integral of (T avg minus T ref) plus rate of change of T avg.

QUESTION: 092 (1.00)

The control room is being evacuated due to a control board fire. Which ONE of the following states the actions prior to leaving the control room in accordance with AP-CR.1, Control Room Inaccessibility? (Procedure attached):

a. Verify reactor trip, verify turbine stop valves closed, manually initiate containment isolation, and trip RCPs.

b. Verify reactor trip, verify turbine stop valves closed, close MSIVs, close PORVs, and trip RCPs.

c. Verify MSIVs closed, manually initiate containment isolation, and verify turbine driven AFW pump started.

d. Verify turbine driven AFW pump started and PORVs closed.

A. PURPOSE - This procedure provides the guidance necessary to place and maintain the plant in a Hot Shutdown Condition in the event that a control room evacuation is necessary.

B. ENTRY CONDITIONS/SYMPTOMS

1. SYMPTOMS - The symptoms of CONTROL ROOM INACCESSIBILITY are:

   a. Fire in the Control Room, or

   b. Smoke in the Control Room, or

   c. Noxious Fumes in the Control Room, or

   d. Intrusion

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Steps 1 and 2 are immediate action steps.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Verify Reactor Trip: o At least one train of reactor trip breakers - OPEN o Neutron flux - DECREASING o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	Manually trip reactor. IF the Rx can NOT be tripped from the Control Room, THEN dispatch personnel to locally open the reactor trip breakers.
2	Verify Turbine Stop Valves - CLOSED	Manually trip turbine. IF turbine can NOT be tripped, THEN close both MSIVs.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Evaluate Control Room Conditions:** o Verify no fire in progress o Verify no significant loss of safety related controls or indications	IF significant loss of safety related controls or indications is suspected, THEN perform the following: a. Manually close both MSIVs. b. Trip both RCPs. c. Place both PRZR PORV switches to CLOSE. • PCV-430 • PCV-431C d. Operating shift personnel proceed to Appendix R locker immediately outside the Control Room. e. One SRO and communicator proceed to TSC. f. Go to SC-3.30.1, ALTERNATIVE SHUTDOWN FOR CONTROL COMPLEX FIRE. DO NOT continue in this procedure.
4	**Establish Local Operating Stations (Refer to Attachment CR EVAC)**	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Locally Verify Emergency AC Busses 14 And 18 - ENERGIZED (A D/G room at ELCP)**	Consider restoration of emergency AC power using SC-3.30.1, ALTERNATIVE SHUTDOWN FOR CONTROL COMPLEX FIRE.
6	**Locally Establish AFW Flow To S/Gs:**	
	a. Transfer MDAFW pump control to LOCAL	
	b. Start MDAFW pumps - ANY PUMPS RUNNING	b. Locally perform the following: 1) Open TDAFW pump steam supply valves at the steam header. • MOV-3504A • MOV-3505A 2) Insert pins in valve operators for TDAFW flow control valves to allow operation of valves. • AOV-4297 • AOV-4298 3) Throttle TDAFW flow to each S/G as necessary. 4) Go to Step 7.
	c. Verify MDAFW pump flow - LESS THAN 230 GPM PER RUNNING PUMP	c. Locally throttle MDAFW flow control valves as necessary. • MOV-4007 • MOV-4008

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 Monitor RCS Temperature - TEMPERATURE STABLE

IF RCS temperature decreasing, THEN perform the following:

a. Control S/G feeding to that required to maintain level.

b. IF cooldown continues, THEN ensure MSIVs closed.

c. IF MDAFW pump available to feed S/Gs, THEN manually isolate steam supply to TDAFW pump.

- V-3504
- V-3505

IF RCS temperature increasing, THEN perform the following:

a. Locally open S/G ARVs as necessary.

b. IF ARVs NOT adequate, THEN perform the following:

1) Check open MSIVs or open MSIV bypass valves as necessary.

2) Open priming ejector steam supply root valve, V-3578

3) Throttle open selected priming ejector steam supply to 200 psig (PI-2019)

- Priming ejector A, V-3581
- Priming ejector B, V-3580

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Establish Charging Flow Control:**	
	a. Transfer charging pump control to LOCAL	
	b. Verify at least one charging pump - RUNNING	b. Locally start one charging pump.
	c. Check PRZR level - GREATER THAN 13%	c. Locally increase charging pump speed. <u>IF</u> necessary, <u>THEN</u> locally start a second charging pump.
	d. Locally control charging speed and letdown orifices as necessary to restore PRZR level to program	
9	**Monitor PRZR Pressure - PRESSURE STABLE**	<u>IF</u> pressure increasing, <u>THEN</u> ensure RCS temperature and PRZR level stable. <u>IF</u> pressure decreasing, <u>THEN</u> perform the following: a. Transfer PRZR heater backup group to local control (MDAFW pump area). b. Verify PRZR level greater than 13%. c. Energize PRZR heater backup group.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

WHEN BORATION COMPLETE, THEN HIGH CONCENTRATION BORIC ACID SHOULD BE FLUSHED FROM RCP SEAL INJECTION LINES.

* *

10 Establish CSD Xenon Free Boron Concentration:

a. Determine amount of boron required (Refer to O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN)

b. Locally open emergency borate valve, MOV-350 - VALVE OPEN

RESPONSE NOT OBTAINED:

b. Perform the following:

1) Locally open manual charging pump suction from RWST, V-358 (charging pump room between A and B pumps).

2) Go to Step 10e.

c. Transfer boric acid pump control to LOCAL

d. Start one boric acid pump

e. Borate until required amount of boric acid added

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Check SW Pumps - AT LEAST ONE RUNNING IN EACH LOOP (At local operating stations by TDAFW pump)	Transfer SW pump control to LOCAL and start pumps as necessary.
12	Check CNMT Recirc Fans - AT LEAST TWO RUNNING (At local operating stations by TDAFW pump)	Transfer CNMT RECIRC fan control to LOCAL and start fans as necessary.
13	Monitor S/G Levels: o Levels - APPROXIMATELY 350 INCHES o Levels - STABLE	Locally throttle AFW flows as necessary. • MDAFW pump A, MOV-4007 • MDAFW pump B, MOV-4008 • TDAFW pump to S/G A, AOV-4297 • TDAFW pump to S/G B, AOV-4298
14	Evaluate Control Room Conditions - CONTROL ROOM HABITABLE	Return to Step 3.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

WHEN THE CONTROL ROOM IS MANNED BY NRC LICENSED PERSONNEL, THEN EQUIPMENT CONTROL MAY BE TRANSFERRED BACK TO THE CONTROL ROOM IN AN ORDERLY MANNER. CONSULT PLANT STAFF FOR ADDITIONAL GUIDANCE.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish Normal Control Room Operation:	
	a. Restore normal control room operation of equipment	
	b. Consult Plant Staff to determine if cooldown is necessary	b. <u>IF</u> cooldown <u>NOT</u> required, <u>THEN</u> go to O-3, HOT SHUTDOWN WITH XENON PRESENT.
	c. At least one RCP - RUNNING	c. Perform the following: 1) Ensure 2 control rod shroud fans running. 2) Go to ES-0.2, NATURAL CIRCULATION COOLDOWN, Step 1.
	d. Go to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN	

-END-

QUESTION: 093 (1.00)

Which ONE of the following situations violates a requirement for containment integrity or containment closure?

a. A containment pressure relief is performed with the plant operating at 100% power.

b. The plant is in refueling mode with the refueling cavity flooded. Steam generator safeties have been removed; secondary manways are also removed. No fuel movement is in progress.

c. The plant is in refueling mode with fuel movement in progress. Containment purge is initiated.

d. The plant is in hot standby. The "A" steam generator blowdown valve is stuck open.

QUESTION: 094 (1.00)

A loss of all CCW flow occurs at 100% power. When must the RCPs be tripped?

a. If flow is not restored within two minutes.

b. If bearing temperatures exceed 180 deg F.

c. If motor winding temperature exceeds 325 deg F.

d. If seal leakoff temperature exceeds 150 deg F within 5 minutes.

QUESTION: 095 (1.00)

Given the following information:

- The plant is operating at 100% power.
- SW pumps A, B, and D are in operation
- SW header pressure = 85 psig
- CCW surge tank level is beginning to decrease.

Which ONE of the following is the likely leak location?

a. Non-regenerative heat exchanger

b. RCP oil coolers.

c. CCW heat exchanger.

d. RCP thermal barrier heat exchanger.

QUESTION: 096 (1.00)

Condenser vacuum is decreasing. When do you trip the turbine?

a. If power is reduced below P-9 and vacuum is still decreasing.

b. When vacuum decreases to 20 inches.

c. If vacuum is in the AVOID region of AP-TURB.4 fig 1 and decreasing.

d. If CONDENSER HIGH PRESSURE annunciates.

QUESTION: 097 (1.00)

The plant is operating at 100% power. A loss of an instrument bus occurs, and appropriate operator action is taken to stabilize the plant. What effect does this event have on indicated and/or actual rod insertion limits?

a. Indicated insertion limit fails to zero.

b. Actual and indicated insertion limit both increase.

c. Indicated insertion limit decreases; actual insertion limit is unchanged.

d. Actual insertion limit decreases; indicated insertion limit is lower than actual limit.

QUESTION: 098 (2.00)

MATCH the PLANT CONDITION in column A with the REQUIRED RESPONSE in column B. Each answer may be used once, more than once, or not at all; only one answer may be placed in each answer space.

Column A

a. The plant is at 90% power. AR-C-31 "Insertion Limit Bank D Low" is annunciating.

b. The plant is at 90% power. AR-C-32 "Insertion Limit Bank D Low-Low" is annunciating.

c. The turbine has tripped from 100% power. The reactor did not trip either auto or manual.

d. The plant has tripped from 100% power. Three rods have only partially inserted.

Column B

1. Normal borate
2. Emergency borate
3. Implement ER-CVCS.1 (Reactor Makeup Control Malfunction)
4. Implement ES-0.0 (Rediagnosis)
5. Initiate SI

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

ANSWER: 001 (2.00)

a.5
b.1
c.1
d.4

REFERENCE:

GINBANK 000.117

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 002 (1.00)

c

REFERENCE:

Procedure A-3:3 par. 3.2.6

[3.3/3.6]

194001K114 ..(KA's)

ANSWER: 003 (1.00)

b

REFERENCE:

A-1406
Ginna Exam Bank number C.310.010

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 004 (1.00)

c

REFERENCE:

A-20:1,2

[3.4/3.4]

194001A106 ..(KA's)

ANSWER: 005 (1.00)

b

REFERENCE:

Lesson Plan RSC01C p. 8.

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 006 (1.00)

a

REFERENCE:

Ginna: P-11:3 Attachment I

[3.5/3.7]

063000K302 ..(KA's)

ANSWER: 007 (1.00)

d

REFERENCE:

Ginna Exam Bank question # C012.022

[2.9/3.1]

012000K602 ..(KA's)

ANSWER: 008 (1.00)

b

REFERENCE:

RGE-40 p. 4

[3.3/3.3]

039000K102 ..(KA's)

ANSWER: 009 (1.00)

c

REFERENCE:

L.P. R3901S

[3.2/3.3]

073000G012 ..(KA's)

ANSWER: 010 (1.00)

d

REFERENCE:

RGE-47 and L.P. R4701C

[2.9/3.2]

079000K401 ..(KA's)

ANSWER: 011 (1.00)

c

REFERENCE:

Ginna Exam bank number C026.008

[3.5/3.5]

026020A404 ..(KA's)

ANSWER: 012 (1.00)

a

REFERENCE:

AP-CW.1

[3.0/3.2]

075000A201 ..(KA's)

ANSWER: 013 (1.00)

b

REFERENCE:

Question 60 on 10/91 exam

[3.4/3.7]

027000K101 ..(KA's)

ANSWER: 014 (1.00)

b

REFERENCE:

L.P. RTS00C E.O. 1.1.f

[3.4/4.1]

103000G008 ..(KA's)

ANSWER: 015 (1.00)

b

REFERENCE:

Ginna Exam Bank question C076.002

[3.7/3.7]

076000A302 ..(KA's)

ANSWER: 016 (1.00)

a

REFERENCE:

Question from RO exam of 10/91.

[2.5/3.5]

000003K111 ..(KA's)

ANSWER: 017 (1.00)

b

REFERENCE:

Question on RO exam of 10/91.

[3.2/3.2]

000029A203 ..(KA's)

ANSWER: 018 (1.00)

d

REFERENCE:

E-1 Step 1
L.P. REP00C E.O. 1.6.a

[4.0/4.0]

000011A103 ..(KA's)

ANSWER: 019 (1.00)

d

REFERENCE:

Ginna Exam Bank question C000.535

[4.2/4.3]

000038G011 ..(KA's)

ANSWER: 020 (1.00)

d

REFERENCE:

Question on 9/90 exam.

[3.0/3.1]

000001K206 ..(KA's)

ANSWER: 021 (1.00)

d

REFERENCE:

Question on 9/90 exam.

[4.2/4.7]

000009K101 ..(KA's)

ANSWER: 022 (1.00)

d

REFERENCE:

RD-7.1 and P-8

[2.9/3.9]

000059A202 ..(KA's)

ANSWER: 023 (1.00)

b

REFERENCE:

RGE42 and RGE43

[4.5/4.4]

000054A101 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

GINBANK 194.318

[4.2/4.7]

000040A201 ..(KA's)

ANSWER: 025 (1.00)

b.

REFERENCE:

RCP operating precautions
CVCS RGE 16 pg 12,13

[3.4/3.8]

004000K104 ..(KA's)

ANSWER: 026 (1.00)

c.

REFERENCE:

Drawing RW-011

[2.7/2.9]

068000K107 ..(KA's)

ANSWER: 027 (1.00)

a.

REFERENCE:

T.S. 3.3.2 Basis

[3.0/3.7]

022000G005 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

GINBANK 059003

[3.0/3.1]

059000G004 ..(KA's)

ANSWER: 029 (1.00)

d.

REFERENCE:

GINBANK 060001

[3.8/3.9]

061000G009 ..(KA's)

ANSWER: 030 (1.00)

d.

REFERENCE:

GINBANK 300.02

[3.6/3.6]

068000A302 ..(KA's)

ANSWER: 031 (1.00)

a

REFERENCE:

Procedure A-1401:6 par. 3.3.2.2

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 032 (1.00)

d

REFERENCE:

A-1:13
Question on NRC exam of 9/10/90.

[2.8/3.4]

194001K103 ..(KA's)

ANSWER: 033 (1.00)

d

REFERENCE:

Lesson Plan RAD55T Rev 4
Question 10 from RO exam of 10/21/91

[4.1/3.9]

194001A102 ..(KA's)

ANSWER: 034 (1.00)

b

REFERENCE:

LP-RAD08C P.23 E.O. 3.6
Question from Exam of 9/10/90

[3.6/3.7]

194001K107 ..(KA's)

ANSWER: 035 (1.00)

c

REFERENCE:

A-52.11:1

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 036 (1.00)

c

REFERENCE:

Control Room Document 02-006 Operations Communication Standard

[3.6/3.8]

194001A105 ..(KA's)

ANSWER: 037 (1.00)

c

REFERENCE:

SC-3.4.1:3 par. 3.26

[3.0/3.2]

194001A104 ..(KA's)

ANSWER: 038 (1.00)

b

REFERENCE:

SC-3:15 and RGE059 Syst descr.

[3.0/3.4]

086000K402 ..(KA's)

ANSWER: 039 (1.00)

c

REFERENCE:

SC-3:7 Par. 5.1

[3.5/4.2]

194001K116 ..(KA's)

ANSWER: 040 (1.00)

d

REFERENCE:

Various P&IDs

[4.3/4.1]

194001A113 ..(KA's)

ANSWER: 041 (1.00)

c

REFERENCE:

Ginna L.P. R2601 p. 8
Question 40 from RO exam of 10/91

[4.2/4.3]

006020A304 ..(KA's)

ANSWER: 042 (1.00)

c

REFERENCE:

L.P. R3101C Rev. 2
Question 48 on RO exam of 10/91

[3.1/3.7]

014000G005 ..(KA's)

ANSWER: 043 (1.00)

a

REFERENCE:

Ginna Exam Bank Question C033.006

[2.9/3.2]

033000K401 ..(KA's)

ANSWER: 044 (1.00)

d

REFERENCE:

P&ID 33013-1232

[2.6/2.6]

055000K105 ..(KA's)

ANSWER: 045 (1.00)

b

REFERENCE:

Ginna Exam Bank item C062.006

[3.4/3.8]

000056G006 ..(KA's)

ANSWER: 046 (1.00)

a

REFERENCE:

Syst descr. RGE-7 and L.P. R0701C

[3.5/3.9]

062000K301 ..(KA's)

ANSWER: 047 (1.00)

c

REFERENCE:

ES-0.2 and L.P. RES02C

[4.2/4.6]

002000K515 ..(KA's)

ANSWER: 048 (1.00)

d

REFERENCE:

Syst Descr. RGE-19 and L.P. R1901C

[3.0/3.4]

010000K402 ..(KA's)

ANSWER: 049 (1.00)

a

REFERENCE:

Ginna Exam Bank C016.117

[3.7/3.7]

016000K109 ..(KA's)

ANSWER: 050 (1.00)

b

REFERENCE:

RGE-22 and R2201C

[3.4/3.7]

029000K101 ..(KA's)

ANSWER: 051 (1.00)

a

REFERENCE:

LER 92-002 and Ginna Exam Bank No.C035.075

[4.2/4.4]

035010A202 ..(KA's)

NSWER: 052 (1.00)

d

REFERENCE:

Ginna Exam Bank question C034.055

[2.7/2.9]

034000G010 ..(KA's)

ANSWER: 053 (1.00)

b

REFERENCE:

P-9:2

[3.4/3.6]

072000G015 ..(KA's)

ANSWER: 054 (1.00)

b

REFERENCE:

Question on 9/90 exam

[3.1/3.2]

064000A205 ..(KA's)

ANSWER: 055 (1.00)

a

REFERENCE:

Question on 10/91 exam

[3.1/3.3]

011000A104 ..(KA's)

ANSWER: 056 (1.00)

c

REFERENCE:

Question on 9/90 exam

[3.5/3.6]

041020K105 ..(KA's)

ANSWER: 057 (1.00)

d

REFERENCE:

RGE-21 Att. 1

[3.0/3.1]

008030A301 ..(KA's)

ANSWER: 058 (1.00)

c

REFERENCE:

L.P. R4701C

[2.4/2.6]

078000K601 ..(KA's)

ANSWER: 059 (1.00)

c

REFERENCE:

Ginna exam bank question C005.003

[3.5/3.6]

005000A101 ..(KA's)

ANSWER: 060 (1.00)

b

REFERENCE:

Ginna Exam Bank question number C000.175

[3.2/3.4]

000008G007 ..(KA's)

ANSWER: 061 (1.00)

b

REFERENCE:

AP-IA.1
Question from RO exam of 9/90.

[3.2/3.3]

000065G010 ..(KA's)

ANSWER: 062 (1.00)

d

REFERENCE:

L.P. RTA04C p. 4 of 11 (E.O. 1.2)

[3.1/3.7]

000009A210 ..(KA's)

ANSWER: 063 (1.00)

c

REFERENCE:

AP-CVCS.1 and L.P. RAP05C E.O. 2.1

[3.4/3.3]

000022A101 ..(KA's)

ANSWER: 064 (1.00)

a

REFERENCE:

Ginna Exam Bank question C000.138

[3.6/3.9]

000025G011 ..(KA's)

ANSWER: 065 (1.00)

c

REFERENCE:

O-6.10

[3.8/3.8]

000037A211 ..(KA's)

ANSWER: 066 (1.00)

c

REFERENCE:

Procedure ER-NIS.1 and LER-93-001

[3.1/3.4]

000032A101 ..(KA's)

ANSWER: 067 (1.00)

a

REFERENCE:

ER-NIS.2

[3.0/3.1]

000033A102 ..(KA's)

ANSWER: 068 (1.00)

b

REFERENCE:

E-0 Step 4.

[4.2/4.1]

000007G010 ..(KA's)

ANSWER: 069 (1.00)

c

REFERENCE:

Ginna Exam Bank Question C000.264

[3.5/3.9]

000058A203 ..(KA's)

ANSWER: 070 (1.00)

a

REFERENCE:

EPIP 1-13

[2.8/4.1]

000036G001 ..(KA's)

ANSWER: 071 (1.00)

b

REFERENCE:

R1301C pg 9; EO 4.3

[3.5/3.8]

003000K403 ..(KA's)

ANSWER: 072 (1.00)

d.

REFERENCE:

R1601C p 15; EO 2.3

[2.8/2.9]

004000A304 ..(KA's)

ANSWER: 073 (1.00)

b.

REFERENCE:

R2701C pg 14,15; EO 2.4

[4.1/4.2]

013000A302 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

R2401C

[4.1/4.3]

022000A301 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

[4.5/4.6]

061000K402 ..(KA's)

ANSWER: 076 (1.00)

b

REFERENCE:

R3201S, RGE 32

[3.1/3.5]

017020A201 ..(KA's)

ANSWER: 077 (1.00)

b.

REFERENCE:

R4401C; EO 1.2

[2.9/3.1]

059000A302 ..(KA's)

ANSWER: 078 (1.00)

d.

REFERENCE:

R4401C; EO 2.1

[3.0/3.1]

059000G004 ..(KA's)

ANSWER: 079 (1.00)

a.

REFERENCE:

RIC04C, R4401C

[3.4/3.4]

059000K104 ..(KA's)

ANSWER: 080 (1.00)

c.

REFERENCE:

R4301C

[2.6/2.8]

056000A204 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

R3801C EO 3.1

[2.5/2.5]

071000K402 ..(KA's)

ANSWER: 082 (1.00)

d.

REFERENCE:

R3301C; EO 3.3C

[3.1/3.5]

015000A202 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

RGE-35, R3501C EO 3.3

[3.4/3.4]

015000G004 ..(KA's)

ANSWER: 084 (1.00)

b.

REFERENCE:

S-2.1 Reactor Coolant Pump Operation

[2.8/2.8]

003000A109 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

EOP rules of usage; ECA-0.0

[3.9/4.0]

000055G012 ..(KA's)

ANSWER: 086 (1.00)

c.

REFERENCE:

EOP background documents

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

RECOOC pg 10

[4.3/4.6]

000055K302 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

[3.6/3.9]

000074A106 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

ES-1.3

[3.9/4.0]

000055G012 . ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

AP-RCC.2

[3.3/4.1]

000005A201 ..(KA's)

ANSWER: 091 (1.00)

c.

REFERENCE:

R3001C pg 19 EO 3.4

[3.5/3.8]

001000K403 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

AP-CR.1
RAP04C.01.04

[3.3/3.7]

000067G010 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

T.S. 3.6, 3.8

[3.7/4.3]

000069A201 ..(KA's)

ANSWER: 094 (1.00)

a.

REFERENCE:

AP-CCW.2, RAP02C 1.3

[3.0/3.3]

003000K112 ..(KA's)

ANSWER: 095 (1.00)

b.

REFERENCE:

CCW sys desc, AP-CCW.2, RAP02C

[3.3/3.4]

000026K102 ..(KA's)

ANSWER: 096 (1.00)

b.

REFERENCE:

AP-TURB.4

[3.9/4.1]

000051A202 ..(KA's)

ANSWER: 097 (1.00)

d.

REFERENCE:

RIC12C 1.1, 1.2; T.S. fig 3.10-1

[4.0/4.3]

000057A219 ..(KA's)

ANSWER: 098 (2.00)

a.1
b.1
c.2
d.1

REFERENCE:

FR-S.1, E-0, ES-0.1
REP01C 1.4

[4.1/4.4]

000024A301 ..(KA's)

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

A N S W E R K E Y

001	MATCHING
	a 5
	b 1
	c 1
	d 4
	MULTIPLE CHOICE
002	c
003	b
004	c
005	b
006	a
007	d
008	b
009	c
010	d
011	c
012	a
013	b
014	b
015	b
016	a
017	b
018	d
019	d
020	d
021	d
022	d
023	b
024	c
025	b
026	c
027	a
028	a
029	d
030	d
031	a
032	d
033	d
034	b
035	c
036	c
037	c
038	b
039	c
040	d
041	c

A N S W E R   K E Y

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

A N S W E R   K E Y

088	b
089	d
090	c
091	c
092	b
093	d
094	a
095	b
096	b
097	d
098	MATCHING

a	1
b	1
c	2
d	1

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

TEST CROSS REFERENCE

RO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
001	2.00	9000370
002	1.00	9000255
003	1.00	9000258
004	1.00	9000265
005	1.00	9000266
006	1.00	9000276
007	1.00	9000285
008	1.00	9000291
009	1.00	9000292
010	1.00	9000299
011	1.00	9000300
012	1.00	9000301
013	1.00	9000303
014	1.00	9000307
015	1.00	9000308
016	1.00	9000309
017	1.00	9000310
018	1.00	9000312
019	1.00	9000313
020	1.00	9000315
021	1.00	9000316
022	1.00	9000327
023	1.00	9000329
024	1.00	9000348
025	1.00	9000363
026	1.00	9000364
027	1.00	9000365
028	1.00	9000366
029	1.00	9000367
030	1.00	9000368
031	1.00	9000256
032	1.00	9000259
033	1.00	9000260
034	1.00	9000262
035	1.00	9000263
036	1.00	9000267
037	1.00	9000268
038	1.00	9000269
039	1.00	9000270
040	1.00	9000271
041	1.00	9000277
042	1.00	9000278
043	1.00	9000279
044	1.00	9000280
045	1.00	9000281
046	1.00	9000282
047	1.00	9000283
048	1.00	9000286
049	1.00	9000287

TEST CROSS REFERENCE

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

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

QUESTION	VALUE	REFERENCE
050	1.00	9000288
051	1.00	9000289
052	1.00	9000294
053	1.00	9000296
054	1.00	9000297
055	1.00	9000298
056	1.00	9000302
057	1.00	9000304
058	1.00	9000305
059	1.00	9000306
060	1.00	9000317
061	1.00	9000318
062	1.00	9000320
063	1.00	9000321
064	1.00	9000322
065	1.00	9000323
066	1.00	9000324
067	1.00	9000325
068	1.00	9000326
069	1.00	9000330
070	1.00	9000331
071	1.00	9000333
072	1.00	9000334
073	1.00	9000335
074	1.00	9000336
075	1.00	9000338
076	1.00	9000339
077	1.00	9000340
078	1.00	9000341
079	1.00	9000342
080	1.00	9000343
081	1.00	9000344
082	1.00	9000345
083	1.00	9000346
084	1.00	9000347
085	1.00	9000349
086	1.00	9000350
087	1.00	9000351
088	1.00	9000352
089	1.00	9000357
090	1.00	9000360
091	1.00	9000362
092	1.00	9000369
093	1.00	9000371
094	1.00	9000372
095	1.00	9000373
096	1.00	9000374
097	1.00	9000375
098	2.00	9000378

R O Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE

	100.00	

	100.00	

R O Exam PWR Reactor
Organized by KA Group

PLANT WIDE GENERICS

QUESTION	VALUE	KA
033	1.00	194001A102
037	1.00	194001A104
036	1.00	194001A105
004	1.00	194001A106
035	1.00	194001A111
040	1.00	194001A113
005	1.00	194001A116
003	1.00	194001K102
031	1.00	194001K102
032	1.00	194001K103
034	1.00	194001K107
002	1.00	194001K114
039	1.00	194001K116
PWG Total	13.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
091	1.00	001000K403
084	1.00	003000A109
094	1.00	003000K112
071	1.00	003000K403
072	1.00	004000A304
025	1.00	004000K104
073	1.00	013000A302
082	1.00	015000A202
083	1.00	015000G004
076	1.00	017020A201
074	1.00	022000A301
027	1.00	022000G005
080	1.00	056000A204
077	1.00	059000A302
028	1.00	059000G004
078	1.00	059000G004
079	1.00	059000K104
029	1.00	061000G009
075	1.00	061000K402
030	1.00	068000A302
026	1.00	068000K107
081	1.00	071000K402
053	1.00	072000G015

R O Exam PWR Reactor
Organized by KA Group

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA

PS-I Total 23.00

Group II

QUESTION	VALUE	KA
047	1.00	002000K515
041	1.00	006020A304
048	1.00	010000K402
055	1.00	011000A104
007	1.00	012000K602
042	1.00	014000G005
049	1.00	016000K109
011	1.00	026020A404
050	1.00	029000K101
043	1.00	033000K401
051	1.00	035010A202
008	1.00	039000K102
044	1.00	055000K105
046	1.00	062000K301
006	1.00	063000K302
054	1.00	064000A205
009	1.00	073000G012
012	1.00	075000A201
010	1.00	079000K401
038	1.00	086000K402

PS-II Total 20.00

Group III

QUESTION	VALUE	KA
059	1.00	005000A101
057	1.00	008030A301
013	1.00	027000K101
052	1.00	034000G010
056	1.00	041020K105
015	1.00	076000A302
058	1.00	078000K601
014	1.00	103000G008

PS-III Total 8.00

R O Exam PWR Reactor
Organized by KA Group

PLANT SYSTEMS

QUESTION	VALUE	KA
PS Total	51.00	

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
090	1.00	000005A201
099	2.00	000024A301
095	1.00	000026K102
024	1.00	000040A201
096	1.00	000051A202
085	1.00	000055G012
089	1.00	000055G012
087	1.00	000055K302
097	1.00	000057A219
092	1.00	000067G010
001	2.00	000068G010
093	1.00	000069A201
088	1.00	000074A106
086	1.00	000074K311
EPE-I Total	16.00	

Group II

QUESTION	VALUE	KA
020	1.00	000001K206
016	1.00	000003K111
068	1.00	000007G010
060	1.00	000008G007
062	1.00	000009A210
021	1.00	000009K101
018	1.00	000011A103
063	1.00	000022A101
064	1.00	000025G011
017	1.00	000029A203
066	1.00	000032A101
067	1.00	000033A102
065	1.00	000037A211
019	1.00	000038G011
023	1.00	000054A101
069	1.00	000058A203

RO Exam PWR Reactor
Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group II

QUESTION	VALUE	KA
022	1.00	000059A202

EPE-II Total	17.00	

Group III

QUESTION	VALUE	KA
070	1.00	000036G001
045	1.00	000056G006
061	1.00	000065G010

EPE-III Total	3.00	

EPE Total	36.00	

Test Total	100.00	

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

CANDIDATE'S NAME: ____________________

FACILITY: Ginna

REACTOR TYPE: PWR-WEC2

DATE ADMINISTERED: 93/09/13

INSTRUCTIONS TO CANDIDATE:

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

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

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

____
Candidate's Signature

ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

MULTIPLE CHOICE

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

A N S W E R   S H E E T

Multiple Choice (Circle or X your choice)

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

046 a b c d ___

047 a b c d ___

048 a b c d ___

049 a b c d ___

050 a b c d ___

051 a b c d ___

052 a b c d ___

053 a b c d ___

054 a b c d ___

055 a b c d ___

056 a b c d ___

057 a b c d ___

058 a b c d ___

059 a b c d ___

060 a b c d ___

061 a b c d ___

062 a b c d ___

063 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

064 a b c d ___

065 a b c d ___

066 a b c d ___

067 a b c d ___

068 a b c d ___

069 a b c d ___

070 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

071 a b c d ___

072 a b c d ___

073 a b c d ___

074 a b c d ___

075 a b c d ___

076 a b c d ___

077 a b c d ___

078 a b c d ___

079 a b c d ___

080 a b c d ___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

081	a	b	c	d	____
082	a	b	c	d	____
083	a	b	c	d	____
084	a	b	c	d	____
085	a	b	c	d	____
086	a	b	c	d	____
087	a	b	c	d	____
088	a	b	c	d	____
089	a	b	c	d	____
090	a	b	c	d	____
091	a	b	c	d	____
092	a	b	c	d	____
093	a	b	c	d	____
094	a	b	c	d	____
095	a	b	c	d	____
096	a	b	c	d	____
097	a	b	c	d	____
098	a	b	c	d	____

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

QUESTION: 001 (1.00)

Maintenance is scheduled to be performed on Boric Acid Transfer Pump 1A due to a leaking seal. Which ONE of the following actions should be performed FIRST to ensure the work area is properly isolated in accordance with station hold rules?

a. Place a BLOCK tag on the control board switch for the pump.

b. Place a HOLD tag on the breaker for the pump casing heaters.

c. Place a HOLD tag on the pump suction valve.

d. Place a HOLD tag on the control power switch for the pump breaker.

QUESTION: 002 (1.00)

Which ONE of the following statements describes the policy at Ginna regarding Emergency Radiation Exposure?

a. The Plant Superintendent must give prior authorization for each Emergency Exposure.

b. After individuals have received an Emergency exposure they shall be removed from work involving radiation exposure for the remainder of their lifetime.

c. Exposures up to 100 Rem to save human life are authorized.

d. Only one emergency exposure is permitted in an individual's lifetime.

QUESTION: 003 (1.00)

Under which ONE of the following sets of conditions may an operator vary the sequence of steps in a procedure?

a. Performance in numerical sequence is mandatory unless a SRO authorizes deviation from the numerical sequence.

b. Performance in numerical sequence is mandatory at all times for operational procedures but optional for non-safety related procedures.

c. Performance in numerical sequence is mandatory at all times for operational procedures but optional for maintenance and administrative procedures.

d. Performance in numerical sequence is mandatory unless a procedure statement indicates otherwise.

QUESTION: 004 (1.00)

Which ONE of the following statements describes the practice recommended for removal of fuses under an electrical hold?

a. Fuse ferrules should be taped, and the fuse inserted into one clip only of the fuse holder to ensure the proper fuse is installed when the hold is released.

b. Fuses should be kept in an envelope and attached to either the hold card or the fuse clip from which they were removed to ensure they are not lost or mixed with fuses of different ratings.

c. Fuses shall be kept in the possession of the person removing them until release of the hold.

d. Fuses should be physically removed from the breaker, cubicle, or cabinet in which they were previously installed and taken to the Control Room for the duration of the hold.

QUESTION: 005 (1.00)

Which ONE of the following activities is permitted in the control board area under A-52.11 Conduct of Activities in the Control Room?

a. A member of the technical department questioning the Control Operator, while the Control Operator is synchronizing the main generator, about details for a Licensee Event Report (LER) that is being written.

b. A Ginna station employee distributing, on the midnight shift, a petition for signatures and publication in the local newspaper protesting the size of the Federal deficit.

c. An engineer taking measurements of the control board, during a shift of Component Cooling Water pumps, for a digital meter that the engineer is thinking about adding under a Design Change Request.

d. A Head Control Operator, during a holiday day shift, checking various mortgage rates on the control room computer display.

QUESTION: 006 (1.00)

Which ONE of the following statements is the proper format in accordance with the Operations Communications Standard?

a. "Ted, start the good RHR Pump and establish two thousand gallons per minute flow."

b. "Start the A Residual Heat Removal Pump and establish two thousand gallons per minute flow."

c. "Ted, start the A Residual Heat Removal Pump and establish a flow rate of two thousand gallons per minute."

d. "Start the Alpha Residual Heat Removal Pump and establish a flow rate of two-zero-zero-zero gallons per minute.

QUESTION: 007 (1.00)

For a fire in the containment, which ONE of the following methods is the preferred method for establishing and maintaining communications with the Fire Brigade Captain at the scene. Assume the plant is in the cold shutdown condition and the containment is accessed.

a. The dedicated refueling channel for the plant page system, using sound-powered headphones.

b. The control room base station radio, using the dedicated Fire channel 3.

c. A portable radio from the Shift Supervisor's office, using the containment antenna plug.

d. The normal plant page system, using the public address function.

QUESTION: 008 (1.00)

Which ONE of the following maintains the pressure in the Fire Service Water System when the system is in a standby condition?

a. The standing head of the water in the tank provides the required fire system header pressure until the fire pump starts.

b. An air supply regulator maintains the air blanket above the tank when the pressure drops below 100 psig.

c. The electric motor fire pump starts when pressure drops below 95 psig to maintain pressure in the tank.

d. The diesel fire pump starts when pressure drops below 90 psig to maintain pressure in the tank.

QUESTION: 009 (1.00)

Any person who discovers a fire shall announce twice on the plant page the type and location of the fire and the equipment involved. That person shall then (CHOOSE ONE):

a. Remain on the plant page and give public address updates of the status of the fire.

b. Assume the duties of the Fire Brigade Chief until the arrival of the designated Fire Brigade Chief.

c. Call the control room and verify that they heard the announcement.

d. Obtain the nearest portable extinguishing equipment and begin to fight the fire until properly relieved by designated Fire Brigade personnel.

QUESTION: 010 (1.00)

Which ONE of the following control board indications is NOT normal for steady state plant operation at full power?

a. Motor-driven auxiliary feedwater pump 1A discharge valve MOV-4007 indicates OPEN.

b. Component cooling water supply to reactor support coolers isolation valve MOV-813 indicates OPEN.

c. Residual Heat Removal pump A suction valve MOV-850A indicates CLOSED.

d. Feedwater Pump A recirc valve MOV-4147 indicates OPEN.

QUESTION: 011 (1.00)

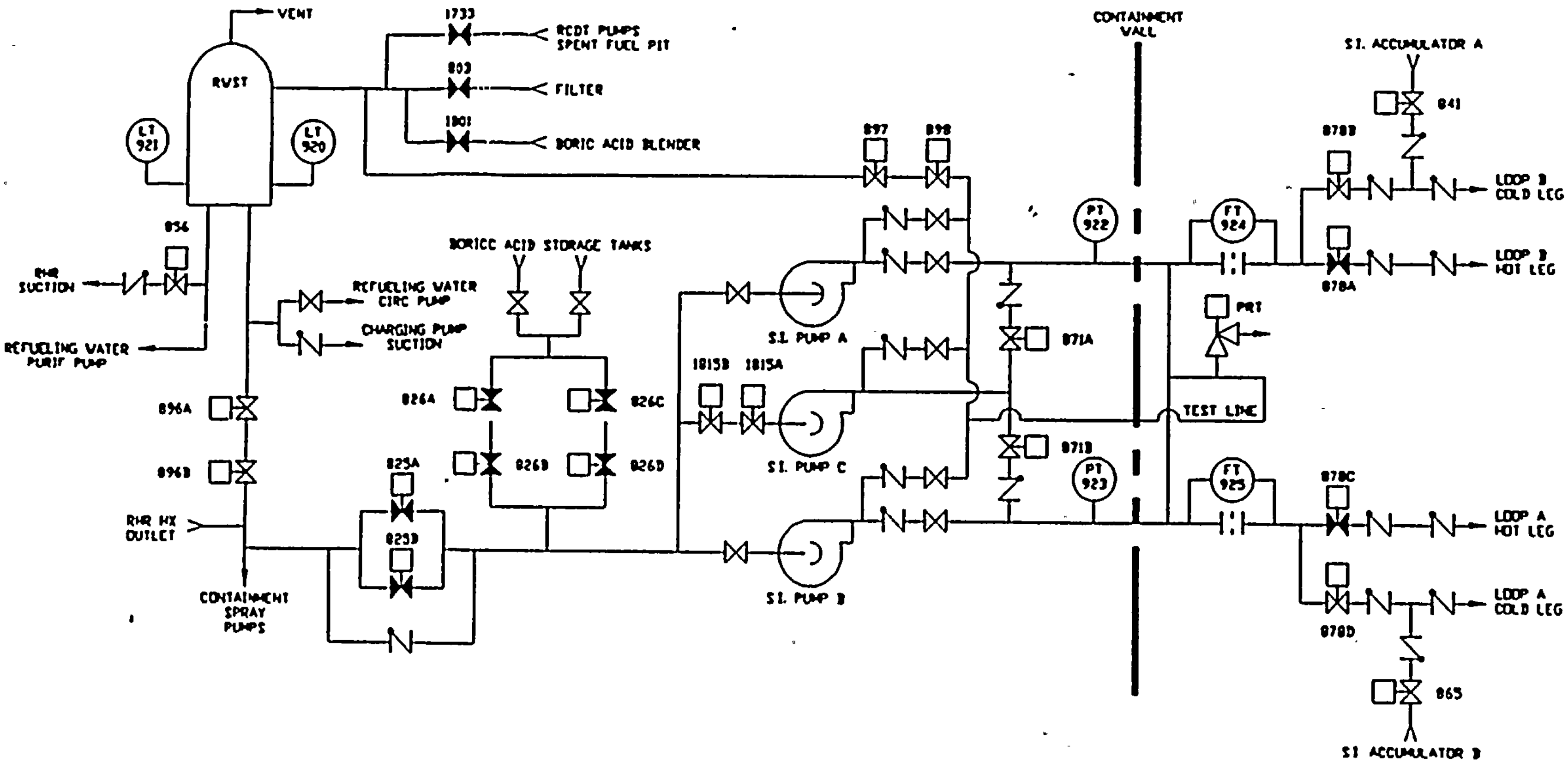
Which ONE of the following lineups represents the normal flow path for high head injection one (1) minute after the initiation of a Safety Injection? (Drawing attached)

a. BAST suction valves, MOV-826 B & C open; loop discharge valves MOV-878 A, B, C & D open; SI pump 1C suction valves, MOV-1815 A & B remain as is.

b. BAST suction valves, MOV-826 A, B, C & D open; loop discharge valves, MOV-878 A & C open; SI pump 1C suction valves, MOV-1815 A & B open.

c. BAST suction valves, MOV-826 A, B, C & D open; loop discharge valves, MOV-878 B & D remain as is; SI pump 1C suction valves, MOV-1815 A & B remain as is.

d. BAST suction valves, MOV-826 A & C open; loop discharge valves, MOV-878 A & C remain as is; SI pump 1C suction valves, MOV-1815 A & B close.


VENT
RWST
LT 921
LT 920
1733
RCDT PUMPS
SPENT FUEL PIT
803
FILTER
1801
BORIC ACID BLENDER
856
RHR SUCTION
REFUELING WATER PURIF PUMP
REFUELING WATER CIRC PUMP
CHARGING PUMP SUCTION
BORIC ACID STORAGE TANKS
826A
826C
826B
826D
825A
825B
896A
896B
RHR HX OUTLET
CONTAINMENT SPRAY PUMPS
897
898
1815B
1815A
S.I. PUMP A
S.I. PUMP C
S.I. PUMP B
871A
871B
PT 922
PT 923
CONTAINMENT WALL
FT 924
FT 925
PRT
TEST LINE
S.I. ACCUMULATOR A
841
878B
878A
LOOP B COLD LEG
LOOP B HOT LEG
878C
878D
LOOP A HOT LEG
LOOP A COLD LEG
865
S.I. ACCUMULATOR B

QUESTION: 012 (1.00)

During operation at 77% power, the following indications appear on the Microprocessor Rod Position Indication (MRPI) System CRT, System Status Page:

- Check System Status Pages	ACTUATED
- HDLC Protocol Status	NORMAL
- Data Reception Status	FAILED
- Fixed Field Reception Status	NORMAL

All other information appears valid on this and other screens. Which ONE of the following actions should be taken?

a. Since all other information appears valid, continue operation and notify I&C of the failed indication.

b. Notify I&C of the failed indication and monitor the Plant Process Computer System (PPCS) for reliable information.

c. Notify I&C of the failed indication and effect repairs within one hour or commence shutdown.

d. Step rods in the controlling bank IN for two steps then OUT for two steps to verify positive control, and notify I&C.

QUESTION: 013 (1.00)

Which ONE of the following is NOT a feature of the Spent Fuel Pool (SFP) design to prevent uncovering the stored fuel assemblies?

a. Automatic makeup to the SFP on a decreasing level.

b. The weir gate access to the refueling canal has a sill that is above the top of the stored fuel assemblies.

c. All penetrations to the SFP are above the top of the stored fuel assemblies.

d. There is a siphon breaker in the SFP pump return line.

QUESTION: 014 (1.00)

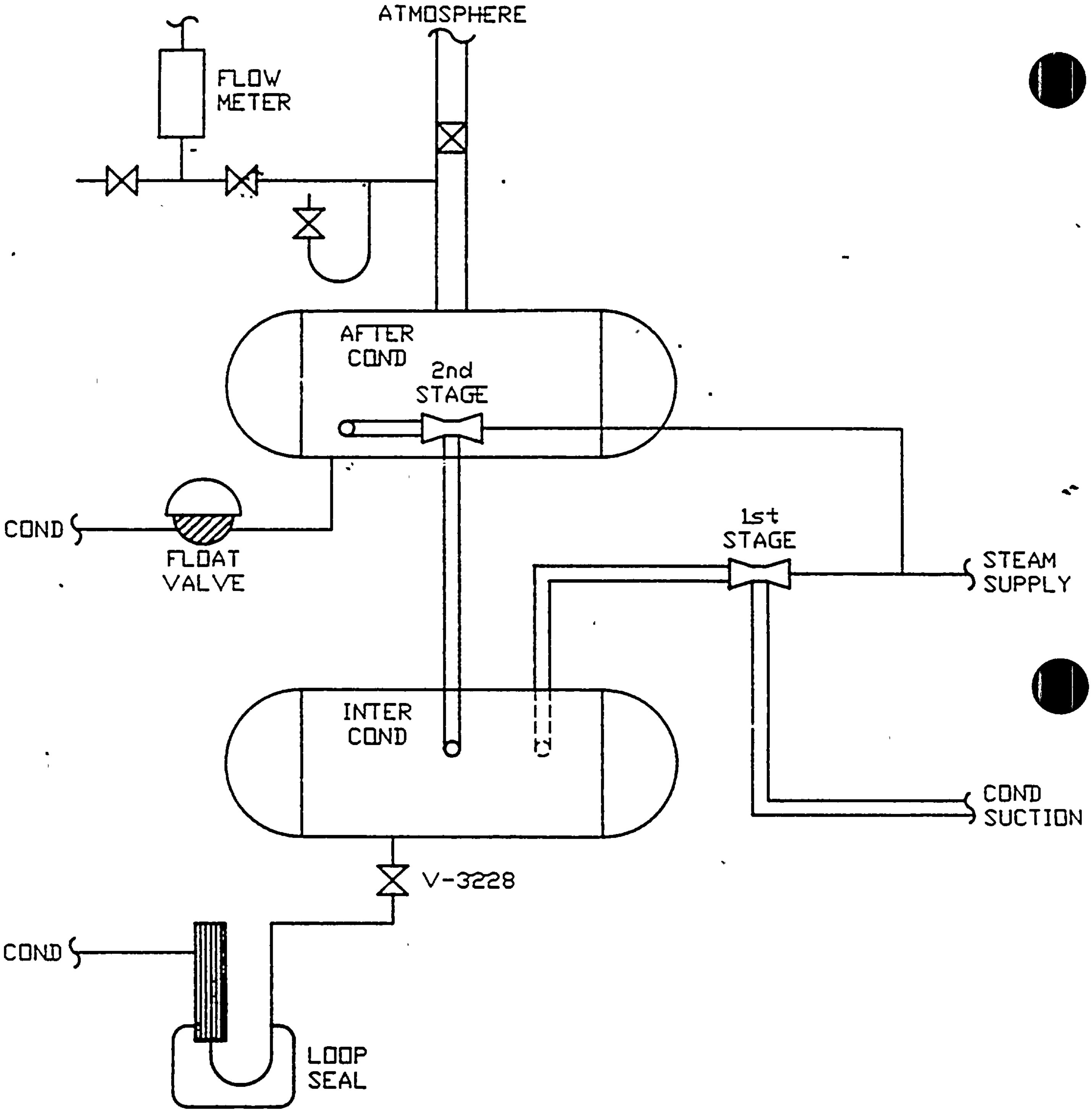
The plant is operating steady-state at 55% power. Which ONE of the following will NOT be an effect on the plant for a loss of the Main Condenser Air Ejector Intercooler loop seal? (Drawing attached)

a. There will be a large mismatch between reactor power and plant electrical load.

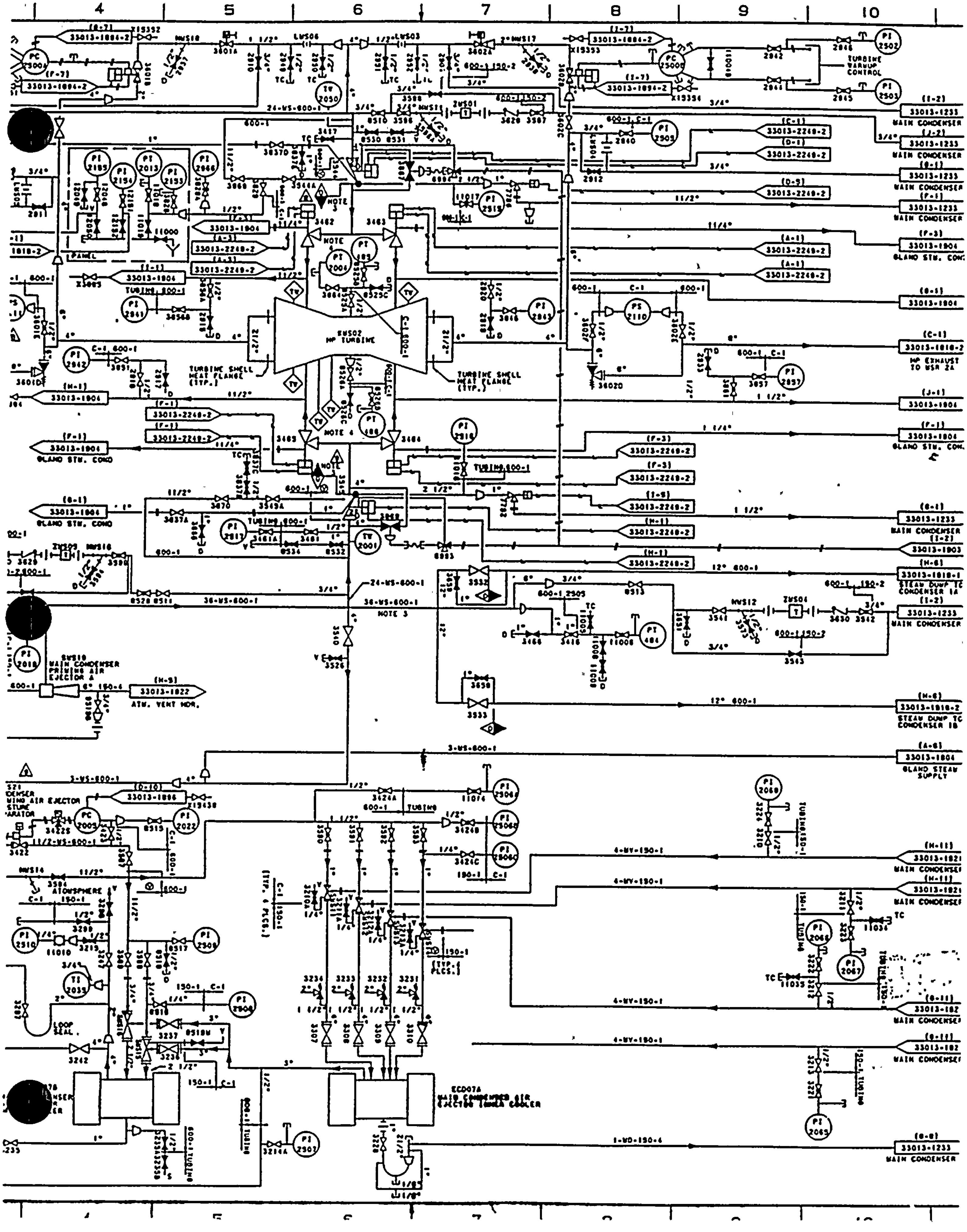
b. Condenser vacuum will decrease to cause a turbine trip.

c. The ability to detect primary-secondary leakage will be degraded.

d. Gland seal steam will issue from the turbine seals to the turbine building.



FOR RG&E TRAINING USE ONLY


4
5
6
7
8
9
10
TURBINE WARMUP CONTROL
MAIN CONDENSER
GLAND STM. COND
HP TURBINE
TURBINE SHELL HEAT FLANGE (TYP.)
HP EXHAUST TO MSR 2A
NOTE 3
NOTE 4
24-WS-600-1
36-WS-600-1
STEAM DUMP TO CONDENSER 1A
STEAM DUMP TO CONDENSER 1B
12" 600-1
MAIN CONDENSER PRIMING AIR EJECTOR A
ATM. VENT HDR.
3-WS-600-1
GLAND STEAM SUPPLY
ATMOSPHERE
LOOP SEAL
4-WV-150-1
1-WD-150-4
MAIN CONDENSER AIR EJECTOR INNER COOLER
33013-1233
33013-1904
33013-2249-2

QUESTION: 015 (1.00)

Which ONE of the following describes the action required to reset the loads on MCC 1C or 1D that tripped due to SI load shed (non-ESF loads)?

a. Go to after trip position on MCC supply breaker control switch at the back of the MCB after resetting the SI signal.

b. Locally (at MCC) reset the undervoltage relay after resetting the SI signal.

c. Go to after-trip position on MCC supply breaker control switch at the back of the MCB.

d. Locally (at UV aux relay panels) reset the undervoltage relays.

QUESTION: 016 (1.00)

Given the following information:

- The electrical system is in a normal at-power lineup (50-50)
- An undervoltage condition exists on 480VAC safeguards bus 16 such that load shedding logic is satisfied for bus 16
- No SI signal is present

Which ONE of the following actions will occur automatically?

a. The normal feeder breaker for bus 16 will trip.

b. The bus 15 to bus 16 tie breaker will close.

c. Component cooling pump 1A will strip and reload onto the bus.

d. Aux feed pump 1B will sequence onto the bus after 32 seconds.

QUESTION: 017 (1.00)

When performing a natural circulation cooldown in accordance with ES-0.2 the cooldown rate is limited to 25 degrees F per hour because (CHOOSE ONE):

a. that rate will ensure that the thermal stresses on the RCS will not exceed the maximum allowed by Technical Specifications.

b. it is a rate that the operator can control to ensure a recriticality will not occur with the maximum boration rate available.

c. that rate will allow adequate mixing of reactor coolant to maintain subcooling in the vessel head region and prevent void formation.

d. it is the maximum rate that can be achieved with the steam dumps, and any cooldown rate in excess of 25 degrees F per hour is indicative of a leak of secondary coolant.

QUESTION: 018 (1.00)

Given the following information:

- The reactor plant is steady-state at 100% power
- Pressurizer pressure is 2235 psig
- Pressurizer level is 49%
- All control systems are in AUTO, except the pressurizer backup heaters are manually turned ON

Which ONE of the following transients as described below will result in DE-ENERGIZING the pressurizer backup heaters? (Assume backup heater control switch is positioned to ON throughout the transient):

a. The pressurizer pressure controller has been shifted to manual and setpoint increased such that the proportional heaters have fully energized. Pressurizer pressure has increased to 2300 psig.

b. The pressurizer level controller has failed low, such that actual pressurizer level has increased to 55%. The operator has manually restored level to 49%.

c. The controlling channel of pressurizer pressure has failed high, such that the spray valves have opened. Actual plant pressure has decreased to 2185 psig. The operator has swapped control channels and restored pressure to 2235 psig.

d. The pressurizer level controller has failed high, such that actual level has decreased to 9%. The operator has taken manual control and has raised level to 11% and is maintaining level at 11%.

QUESTION: 019 (1.00)

Which ONE of the following uses individual loop T avg vice average T avg for its input?

a. Main steam isolation

b. Pressurizer level control

c. Main feedwater isolation

d. Rod control

QUESTION: 020 (1.00)

Given the following information:

- The plant is shutdown for a forced outage
- RCS T avg = 547 degrees F
- Pressurizer pressure = 2220 psig
- A containment ventilation mini-purge is in progress per procedure O-11 to improve the quality of air in the containment

Which ONE of the following conditions will cause the containment mini-purge isolation dampers (AOV-7445,7478,7970 and 7971) to automatically CLOSE?

a. A fire breaks out in the charcoal filter bank at the suction of the charcoal filter fans.

b. The containment gas monitor, R-12 goes into alarm.

c. The HCO manually starts Containment Spray pump 1A on recirc for a surveillance test.

d. Containment recirc fan 1B trips on overload.

QUESTION: 021 (1.00)

Given the following information:

- Reactor power = 45% (rapid downpower is in progress due to turbine vibrations)
- T avg = 557 degrees F and is slowly decreasing
- Both Feed Reg Valves (FRVs) are in AUTO and controlling "A" and "B" S/G levels at 52% Narrow Range level
- Both Feed Reg Bypass Valves (Bypass FRVs) are in MANUAL and CLOSED

Which ONE of the following describes the behavior of the FRVs and the Bypass FRVs?

a. FRVs MODULATE in auto - Bypass FRVs stay CLOSED

b. FRVs go fully OPEN - Bypass FRVs go fully OPEN

c. FRVs MODULATE in auto - Bypass FRVs go fully OPEN

d. FRVs go fully OPEN - Bypass FRVs stay CLOSED

QUESTION: 022 (1.00)

Which ONE of the following would NOT be stored in the reactor cavity when removed from the reactor vessel?

a. Upper internals.

b. Lower internals.

c. RCC drive shafts.

d. Irradiated fuel.

QUESTION: 023 (1.00)

Given the following information:

- Reactor is at full power at EOL
- RCS unidentified leakage is 0.25 gpm
- 0.2% fuel failure has occurred over the current cycle

Which ONE of the following radiation monitors will reach its ALARM setpoint to detect the fuel failure?

a. R-2 Containment Area Monitor

b. R-9 Letdown Line Monitor

c. R-10B Plant Vent Iodine Monitor

d. R-33 Nuclear Sample Room Wide Range Area Monitor

QUESTION: 024 (1.00)

During a station blackout, "A" D/G is carrying 1750 kW of load.

Which ONE of the following is the maximum load of proportional heaters that can be loaded onto the "A" D/G without exceeding its continuous service rating?

a. 100 kW

b. 200 kW

c. 300 kW

d. 400 kW

QUESTION: 025 (1.00)

Given the following information:

- Reactor power = 98%
- Pressurizer level = 49%
- "A" charging pump is running in AUTO
- The T avg input to pressurizer level has failed LOW

Which ONE of the following groups of actions describes the indications the Head Control Operator will see?

a. "A" charging pump slows down, backup heaters are energized, pressurizer level begins to decrease, high level deviation alarm actuates.

b. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to increase, low level deviation alarm actuates.

c. "A" charging pump trips, backup heaters are energized, pressurizer level begins to increase, low level deviation alarm actuates.

d. "A" charging pump speeds up, backup heaters are deenergized, pressurizer level begins to decrease, high level deviation alarm actuates.

QUESTION: 026 (1.00)

Given the following two events:

A:
- Reactor power = 45%
- T avg is on program
- A spurious signal causes a turbine runback to no-load condition at 200% per minute
- The reactor does NOT trip
- ALL control systems are operating in AUTO

B:
- Reactor power = 45%
- T avg is on program
- A turbine trip occurs
- The reactor does NOT trip
- All control systems are operating in AUTO

A higher maximum value of T avg will occur in (CHOOSE ONE):

a. Event A because the steam dumps will respond to a higher T ref signal.

b. Event B because the steam dumps will respond to a higher T ref signal.

c. Event A because the steam dumps will snap open at a higher delta T (T avg - T ref).

d. Event B because the steam dumps will snap open at a higher delta T (T avg - T ref).

QUESTION: 027 (1.00)

Which ONE of the following valves in the CCW system will CLOSE upon receipt of a T-signal (containment isolation)? (Assume valves are open when the T-signal is received)

a. MOV-817 CCW Supply to Containment

b. MOV-759A CCW Return from "A" RCP

c. AOV-745 CCW Return from Excess Letdown Heat Exchanger

d. MOV-813 CCW Supply to Reactor Support Cooling

QUESTION: 028 (1.00)

Which ONE of the following is a difference in design between the Instrument Air Compressors and the Service Air Compressor?

a. The instrument air compressors have an oil-lubricated cylinder, and the service air compressor cylinder is not oil-lubricated.

b. The instrument air compressors have service water cooled aftercoolers on their discharges, and the service air compressor has no aftercooler.

c. The service air compressor will shut off at 125 psig discharge if it starts in AUTO, and the instrument air compressors will run continuously if started in AUTO.

d. The service air compressor has a low lube oil pressure trip, and the instrument air compressors do not trip on low lube oil pressure.

QUESTION: 029 (1.00)

Given the following information:

- Plant cooldown from hot shutdown to cold condition is in progress
- RCS T hot = 345 degrees F
- RHR system has just been placed in operation
- A minimal cooldown rate of 20 degrees F per hour has been initiated

Which ONE of the following is the reason for establishing a 20 degree F per hour cooldown rate?

a. This rate is the maximum rate possible using the RHR system at the given temperature under design decay heat load conditions.

b. This rate is required to ensure a gradual warmup of the RHR system.

c. This rate is required to maintain the pressurizer liquid to RCS T hot delta T within its limit.

d. This rate allows for boron addition to ensure the reactor remains subcritical during the cooldown.

QUESTION: 030 (1.00)

One of the mitigating strategies for reseating a leaking pressurizer safety is to depressurize the RCS. Which ONE of the following is correct with respect to the effect of this pressure reduction on the delta T trip setpoints?

a. OT delta T setpoint will increase.

b. OT delta T setpoint will decrease.

c. OP delta T setpoint will increase.

d. OP delta T setpoint will decrease.

QUESTION: 031 (1.00)

Given the following information:

- Alarm H-8, INSTRUMENT AIR LO PRESS, 100 PSI, lit
- Instrument Air Compressor "A" is running in CONSTANT SPEED
- Instrument Air Compressor "C" is in AUTO, but is NOT running
- Instrument Air Compressor "B" is held off and tagged
- Instrument air (IA) pressure reads 75 psig and is slowly decreasing

Which ONE of the following actions should be performed IMMEDIATELY as required by AP-IA.1 (LOSS OF INSTRUMENT AIR)?

a. Trip the reactor and go to E-0.

b. Manually start Instrument Air Compressor "C".

c. Direct the AO to OPEN the manual Service Air to Instrument Air cross tie valve V-5365.

d. Shift both S/G Feedwater Regulating Valves to MANUAL.

QUESTION: 032 (1.00)

Which ONE of the following symptoms can be used to distinguish a LOCA from other types of accidents that may result in a Safety Injection?

a. Pressurizer level decreases.

b. Containment pressure increases.

c. Pressurizer pressure decreases.

d. Containment airborne activity increases.

QUESTION: 033 (1.00)

A leak has developed on the charging line between HCV-142 and the regenerative heat exchanger. The Control Room is implementing AP-CVCS.1, CVCS Leak. When the leak is isolated, the reactor makeup flowpath will be via __________, and the reactor letdown flowpath will be via ____________.

Choose ONE of the following to fill in the blanks. (Procedure attached.)

a. normal charging , normal letdown

b. normal charging , excess letdown

c. seal injection , excess letdown

d. seal injection , seal return

A. PURPOSE - This procedure provides the necessary instructions to mitigate the consequences of a CVCS leak.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from;

   a. AP-RCS.1, REACTOR COOLANT LEAK, when conditions indicate a CVCS leak.

2. SYMPTOMS - The symptoms of CVCS leak are;

   a. Annunciator B-9 (B-10), RCP A(B) LABYR SEAL LO DIFF PRESS 15" H2O, lit, or

   b. Charging line pressure low, or

   c. Annunciator F-14, CHARGING PUMP SPEED, lit, or

   d. Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F, lit, or

   e. Letdown line low pressure and/or low flow, or

   f. Charging Pump Room area monitor R-4 on alarm.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

<u>CAUTION</u>

IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.

* *

<u>NOTE</u>:

- o Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.
- o A local radiation emergency should be declared for any unexplained area radiation monitor alarm.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Monitor PRZR Level - STABLE AT PROGRAM LEVEL	<u>IF</u> PRZR level decreasing, <u>THEN</u> start additional charging pumps and increase speed as necessary to stabilize PRZR level. <u>IF</u> PRZR level continues to decrease, <u>THEN</u> close loop B cold leg to REGEN Hx isolation valve, AOV-427. <u>IF</u> available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is decreasing, <u>THEN</u> trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: IF VCT level decreases to 5%, charging pump suction will swap to the RWST. This may require a load reduction.

2 Check VCT Makeup System:

a. Verify the following:

1) RMW mode selector switch in AUTO

2) RMW control armed - RED LIGHT LIT

a. Adjust controls as necessary.

b. Check VCT level:

o Level GREATER THAN 20%

-OR-

o Level - STABLE OR INCREASING

b. Check letdown divert valve, LCV-112A, aligned to VCT.

Manually increase VCT makeup flow as follows:

1) Ensure BA transfer pumps and RMW pumps running.

2) Place RMW flow control valve, HCV-111, in MANUAL and increase RMW flow.

3) Increase boric acid flow as necessary.

IF VCT level can NOT be maintained, THEN refer to ER-CVCS.2, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Check Charging Pump Suction Aligned To VCT:**	
	a. VCT level - GREATER THAN 20%	a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%, <u>THEN</u> perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 4. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 3b.
	b. Verify charging pumps aligned to VCT o LCV-112C open o LCV-112B closed	b. Manually align valves as necessary.
4	**Check If RCS Leakage In CNMT:** o Check CNMT radiation monitors - NORMAL • R-2 • R-7 • R-10A • R-11 • R-12 o CNMT sump A pump run frequency - NORMAL (Refer to leakage surveillance sheet)	<u>IF</u> leakage is indicated in CNMT, <u>THEN</u> perform the following: a. Direct HP to sample CNMT for entry. b. Continue with Step 5. <u>WHEN</u> CNMT cleared for entry, <u>THEN</u> dispatch personnel to investigate CNMT for RCS leakage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

HEALTH PHYSICS TECHNICIAN SHOULD BE CONSULTED PRIOR TO ENTERING A HIGH AIRBORNE AREA.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check If RCS Leakage In AUX BLDG: a. Check AUX BLDG radiation monitors - NORMAL • R-4 • R-9 • R-10B • R-13 • R-14 b. AUX BLDG sump pump run frequency - NORMAL (Refer to leakage surveillance sheet) c. AUX BLDG sump tank leak rate - NORMAL (Refer to leakage surveillance sheet)	Dispatch AO To AUX BLDG To Investigate For CVCS Leak (locked area keys required)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	**Check For Leak In Charging Line To REGEN Hx:** o Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F - EXTINGUISHED o REGEN Hx letdown outlet temperature - LESS THAN 350°F AND STABLE (archive PPCS point ID T0127)	Perform the following: a. Close or verify closed loop B cold leg to REGEN Hx, AOV-427. b. Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202). c. Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches. d. Close charging flow control valve, HCV-142. e. Close charging to loop B cold leg, AOV-294. f. Go to Step 9.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- IF LEAK EXISTS IN THE LETDOWN LINE, H2 GASES FROM THE VCT MAY DIFFUSE OUT THE LEAK AND CAUSE A HAZARDOUS CONDITION.
- WHILE ON EXCESS LETDOWN, VCT LEVEL MAY BE DECREASED BY MANUALLY DIVERTING EXCESS LETDOWN FLOW TO THE RCDT USING AOV-312.

* *

7 Check Normal Letdown:

a. Normal letdown - IN SERVICE

RESPONSE NOT OBTAINED:

a. Perform the following:

1) IF excess letdown in service, THEN perform the following:

a) Close excess letdown isolation valve, AOV-310.

b) Close excess letdown flow control valve, HCV-123.

2) Go to Step 8.

b. Check Letdown Indications:

- Letdown flow - APPROXIMATELY 40 GPM
- Low pressure LTDN pressure - APPROXIMATELY 250 PSIG
- Pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN

RESPONSE NOT OBTAINED:

b. Isolate Normal Letdown:

1) Close loop B cold leg to REGEN Hx, AOV-427

2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)

3) Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches.

4) Close charging flow control valve, HCV-142

5) Close charging to loop B cold leg, AOV-294.

6) Establish excess letdown (Refer to Attachment EXCESS LETDOWN).

7) Go to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Check For Leakage To CCW System:** o CCW radiation monitor (R-17) - NORMAL o CCW surge tank level - APPROXIMATELY 50% AND STABLE	IF leakage to the CCW system is indicated, THEN go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP.

* *

CAUTION

RCP OPERATION WITHOUT SEAL INJECTION SHOULD BE MINIMIZED.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	**Check RCP Seal Injection Indications:** o Seal injection flows - GREATER THAN 6 GPM AND STABLE o RCP labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL o RCP seal inlet temperatures - STABLE	IF RCP seal injection leak is suspected, THEN perform the following: a. Verify charging flow control valve, HCV-142, open. IF no charging path through REGEN Hx available, THEN go to Step 15. b. Verify CCW cooling to operating RCP thermal barriers. IF NOT, THEN seal injection should be maintained. c. Attempt to locate and isolate leak. d. Go to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	**Check RCP Seal Leakoff Flows:** o RCP seal leakoff flows - GREATER THAN 0.25 GPM o RCP seal leakoff flows - STABLE	Dispatch AO with a key to the RWST gate to check seal return line for leakage. IF a seal return line leak is indicated downstream of RCP seal return isolation valve, MOV-313, THEN perform the following: a. Close RCP seal return isolation valve, MOV-313. b. Monitor RCP indications. c. Evaluate leak location. IF possible, THEN isolate the seal return line from the VCT. d. Go to Step 12. IF no seal return line leakage indicated in the AUX BLDG, THEN investigate for leakage in CNMT.
11	**Evaluate Local Leak Investigation - CVCS SYSTEM INTACT IN AUX BLDG**	Determine if leak can be isolated (Refer to CVCS piping diagrams as necessary).
12	**Evaluate Plant Status:**	
	a. Leak location identified	a. IF CVCS leak NOT indicated, THEN go to AP-RCS.1, REACTOR COOLANT LEAK.
	b. Check RCS conditions: o Leakage within limits (Refer to leakage surveillance sheet and Tech Spec section 3.1.5) o At least one charging flowpath - AVAILABLE FOR INVENTORY CONTROL	b. Perform the following: 1) Initiate plant shutdown (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN). 2) Go to Step 15.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check Normal Or Excess Letdown - IN SERVICE	<u>IF</u> normal letdown desired, <u>THEN</u> perform the following: a. Verify charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place letdown controllers in MANUAL at 35% open. • TCV-130 • PCV-135 c. Verify letdown isolation valve, AOV-371, - OPEN d. Open B loop cold to REGEN Hx, AOV-427 e. Open letdown orifice valves as necessary f. Place TCV-130 in auto at 105°F g. Place PCV-135 in AUTO at 250 psig h. Adjust charging pump and HCV-142 as necessary to control PRZR level and RCP labyrinth seal D/P <u>IF</u> normal letdown <u>NOT</u> available, <u>THEN</u> establish excess letdown if desired (Refer to Attachment EXCESS LETDOWN).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Establish Stable Plant Conditions:	
	a. PRZR level - TRENDING TO PROGRAM	a. Control charging flow as necessary to restore PRZR level to program.
	b. PRZR pressure - AT OR TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K. IF pressure can NOT be controlled, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.

NOTE: Refer to 0-9.3, NRC STATE AND COUNTIES IMMEDIATE NOTIFICATION, for reporting requirements.

15 Notify Higher Supervision

-END-

QUESTION: 034 (1.00)

With the plant operating at reduced inventory conditions, which ONE of the following is NOT an entry condition or symptom of AP-RHR.2, (Loss of RHR while operating at RCS reduced inventory conditions)?

a. A and B Loop Level Detectors are observed to rapidly decrease from 64 inches to 50 inches.

b. No flow on FI626, RHR Loop Flow.

c. Unexpected increase in RCS Temp.

d. Annunciator J-9, Safeguard Breaker Trip Alarm.

QUESTION: 035 (1.00)

Given the following information:

- A primary to secondary leak is in progress on the "B" S/G.
- Leak rate has been determined by sample to be 0.25 gpm.
- Procedure O-6.10 (Plant Operation with S/G Tube Leak Indication is being implemented.
- Reactor power is 8% and the main turbine has been manually tripped from the MCB.

Which ONE of the following actions should be IMMEDIATELY performed? (Copy of procedure attached):

a. Place the ARV controller for "B" S/G to MANUAL.

b. Notify the NRC of a Site Area Emergency.

c. Close the MSIV for "B" S/G.

d. Manually start both MDAFW pumps.

O-6.10

PLANT OPERATION WITH STEAM GENERATOR TUBE LEAK INDICATION

1.0 **PURPOSE:**

1.1 To describe the steps to be taken in the event of a Steam Generator (SG) tube leak.

2.0 **REFERENCES:**

2.1 A-52.4 CONTROL OF LIMITING CONDITIONS FOR OPERATING EQUIPMENT

2.1.1 E-0 REACTOR TRIP OR SAFETY INJECTION

2.1.2 EPIP 1-0 GINNA STATION EVENT EVALUATION AND CLASSIFICATION

2.1.3 O-2.1 NORMAL SHUTDOWN TO HOT SHUTDOWN

2.1.4 O-2.2 PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN

2.1.5 O-9.3 NRC, STATE AND COUNTIES IMMEDIATE NOTIFICATION

2.1.6 S-3.3C H_2 OR O_2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VOLUME CONTROL TANK WITH N

2.1.7 T-35H NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGEOVER

2.2 TECHNICAL SPECIFICATIONS SECTION 3

3.0 **INITIAL CONDITIONS:**

3.1 The primary to secondary tube leakrate in ONE SG has been verified by sampling to be $\geq$ 260 cc/min OR the SS OR Operations Supervision has decided to initiate this procedure.

4.0 **PRECAUTIONS:**

4.1 IF a Reactor Trip OR Safety Injection occurs, THEN GO TO E-0, REACTOR TRIP OR SAFETY INJECTION.

4.2 WHEN burping the VCT for Hydrogen removal, DO NOT go below 15 cc/kg Hydrogen concentration WHEN > 1% Nuclear Power.

5.0 INSTRUCTIONS:

NOTE: IF primary to secondary tube leakrate in ONE SG increases to > 370 cc/min (0.1 gpm), THEN GO TO step 5.7 IMMEDIATELY AND N/A steps 5.1 through 5.6.

5.1 Dispatch an AO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGEOVER.

____

5.2 Decrease Reactor power by performing O-2.1.

O-2.1 Being Performed __________

5.3 IF desired, establish maximum letdown by performing the following:

5.3.1 Verify deborating DI is isolated.

DIVERT VLV CATION DEBOR DI AOV-244 IN BYPASS __________

5.3.2 Place PCV-135 to MANUAL AND control Letdown pressure to ~ 250 psig:

PCV-135 In MANUAL __________

Pressure ~ 250 psig __________

5.3.3 Swap orifices by performing the following in rapid sequence:

40 GPM ORIFICE Closed __________

60 GPM ORIFICE Opened __________

5.3.4 Adjust letdown pressure to ~ 250 psig.

Pressure ~ 250 psig __________

5.3.5 Place PCV-135 in AUTO IF desired.

PCV-135 In AUTO __________

5.4 Place the CNMT AUXILIARY CHARCOAL FILTER system in service.

FAN A ________

FAN B ________

5.5 Notify the SS to consider placing the following systems in service:

Boron Recycle ________

Chem Nuc ________

5.6 Notification has been received that primary to secondary leak rate in ONE SG > 370 cc/min (0.1 gpm) OR the SS OR Operations Supervision has decided to continue to shutdown.

____

5.7 IF leak rate > .1 gpm THEN perform the following: (otherwise N/A)

5.7.1 Commence an orderly shutdown to be in Hot Shutdown WITHIN 6 hours AND < 350°F in the RCS WITHIN the next 6 hours. Perform O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN, AND THEN O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITION.

O-2.1 Being Performed ________

5.7.2 Make the following notifications (if SG Leakrate > .1 gpm):

State AND Counties Per EPIP 1-0 ________

NRC Per O-9.3 ________

NOTE: **AFTER the Turbine is off line, IMMEDIATELY perform step 5.18 AND 5.18.1, THEN return to any steps NOT performed.**

5.8 Verify VCT is being burped with N_2.

S-3.3C In Progress ________

5.9 Notify AO to perform the following:

Bypass the AVT Condensate DIs ________

Isolate the AVT Condensate DIs ________

5.9.1 Notify HP/Chemistry that the AVT Condensate DIs are bypassed AND isolated.

____

5.10 Shift Support Heating steam trap outlet valves from the trap header to Blowdown Tank by closing V-3684 AND opening V-3683.

V-3684 Closed ____/____

V-3683 Open ____/____

5.11 Close trap drain isolation valve upstream of MSIV of the affected loop (V-3521 for SG A, V-3520 for SG B). N/A valve for non-affected loop.

V-3521 Closed ____/____

V-3520 Closed ____/____

5.12 Verify Blowdown Tank discharge valve is closed.

V-5718 Closed ____/____

5.12.1 Isolate Blowdown from the affected SG. N/A the unaffected SG.

V-5738 OR V-5701 Closed ____/____

V-5737 OR V-5702 Closed ____/____

NOTE: **PRIOR to isolating the affected SG, verify its level > 5%.**

5.13 PULL STOP the TDAFW Pump Steam Admission valve from the affected SG. N/A the unaffected SG.

V-3505A PULL STOP ________

V-3504A PULL STOP ________

5.13.1 Isolate the TDAFW Pump supply to the affected SG AND N/A the unaffected SG.

AOV-4297 Closed ________

AOV-4298 Closed ________

5.14 PULL STOP the AFW pump for the affected SG AND N/A the unaffected SG.

A AFW Pump PULL STOP ________

B AFW Pump PULL STOP ________

5.14.1 Close the associated discharge valve of the AFW pump that was PULL STOP in step 5.14. N/A the non-affected pump's discharge valve.

MOV-4007 Closed ________

MOV-4008 Closed ________

5.15 Submit an A-52.4 on the inoperable flow path of the TDAFW Pump.

A-52.4 Submitted ________

5.15.1 Submit an A-52.4 on the inoperable AFW Pump.

A-52.4 Submitted ________

5.15.2 Submit an A-52.4 on RCS to SG leakage.

A-52.4 Submitted ________

5.16 Notify HP to survey the following areas:

Steam Header ________

Blowdown Tank ________

Turbine Bldg Wall Fan ________

5.17 Notify HPs to verify that airborne contaminants that may be discharging from steam reliefs <u>OR</u> the Air Ejector are <u>NOT</u> being pulled into the supply air handling units. The most likely area affected are:

Aux Bldg ________

Int Bldg ________

Service Bldg ________

5.18 Place affected SG ARV controller to AUTO, set for 1050 psig, and verify ARV is closed.

Affected SG ARV in AUTO ________

Affected SG ARV Set for 1050 psig ________

Affected SG ARV Closed ________

5.18.1 Close the MSIV on the affected SG <u>AND</u> N/A the other.

MSIV A AOV-3517 Closed ________

MSIV B AOV-3516 Closed ________

<u>NOTE</u>: Ensure steps 5.9 through 5.18.1 complete prior to proceeding.

5.19 Notify the following (if SG Leakrate > .1 gpm):

Duty Engineer ____________

Operations Supervision ____________

SG Coordinator ____________

5.20 Verify the following notifications were made <u>IF</u> > .1 gpm tube leakage in <u>ONE</u> SG as verified by sampling (N/A <u>IF</u> not required):

State <u>AND</u> Counties Per EPIP 1-0 ____________

NRC Per O-9.3 ____________

5.21 Continue cooldown to CSD per O-2.2.

O-2.2 Being Performed ____________

5.22 When directed by O-2.1 or O-2.2, remove the RCP associated with the affected SG from service.

____

COMPLETED BY: ________________________

DATE COMPLETED: ________________________

CONTROL ROOM FOREMAN: ________________________

SHIFT SUPERVISOR: ________________________

QUESTION: 036 (1.00)

Given the following information:

- A reactor shutdown is in progress.
- The reactor trip breakers are closed.
- Intermediate range channels N-35 and N-36 both read < 1E-11 amps.
- Source range channels N-31 and N-32 both are de-energized.

Which ONE of the following actions would be performed to try to energize the source range channels?

a. De-energize two of the power range channels by pulling the instrument fuses on two of the power range channel drawers.

b. Cycle the reactor trip breakers open, then closed again.

c. Place the source range level trip switches to BYPASS and then momentarily remove the instrument power fuses to the source range channels.

d. Reset the P-6 interlock by withdrawing rods to get indication on-scale (>1E-10 amps) on both intermediate channels.

QUESTION: 037 (1.00)

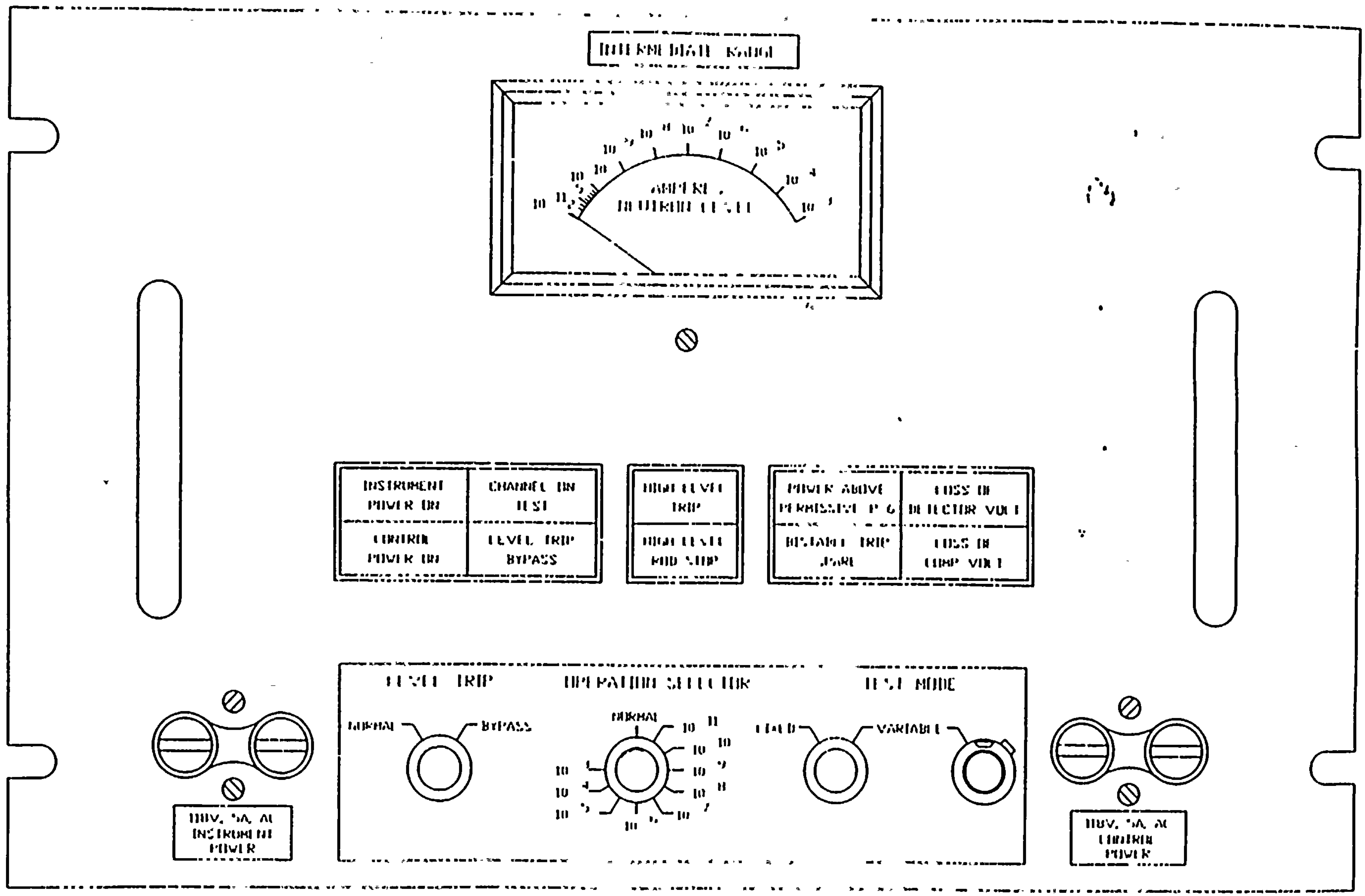
Which ONE of the following indications on the intermediate range nuclear instrument drawer is NOT normal for plant operations at 40% power? (drawing attached):

a. Level trip BYPASS light LIT

b. Loss of detector voltage light NOT LIT

c. High level trip light LIT

d. Channel on test light NOT LIT


INTERMEDIATE RANGE
AMPERES
NEUTRON LEVEL
INSTRUMENT POWER ON
CHANNEL ON TEST
CONTROL POWER ON
LEVEL TRIP BYPASS
HIGH LEVEL TRIP
HIGH LEVEL ROD STOP
POWER ABOVE PERMISSIVE P-6
LOSS OF DETECTOR VOLT
SPARE
LOSS OF COMP VOLT
LEVEL TRIP
OPERATION SELECTOR
TEST MODE
NORMAL
BYPASS
NORMAL
FIXED
VARIABLE
118V, 5A, AC INSTRUMENT POWER
118V, 5A, AC CONTROL POWER

QUESTION: 038 (1.00)

The RNO column for Step 4 of E-0 (Reactor Trip or Safety Injection) requires the operator to check for conditions that would require a safety injection. Which ONE of the following is a condition that would require the operator to manually actuate a safety injection and containment isolation?

a. A check of containment pressure shows a reading of 2 psig.

b. A check of the status of the safeguards sequencer for Train A shows that the 1A diesel generator and safety injection pumps 1A and 1C are running.

c. A check of main steamline pressure shows a reading of 614 psig.

d. A check of pressurizer pressure shows a reading of 1950 psig.

QUESTION: 039 (1.00)

Which ONE of the following describes the impact on the A train of safeguards due to a complete loss of DC Bus A?

a. Manual actuation of SI would be required.

b. MCB operation of pumps and valves would be required.

c. MCB operation of pumps and local valve operation would be required.

d. Local operation of pumps and valves would be required.

QUESTION: 040 (1.00)

Given the following information:

- Reactor defueling operations are in progress.
- The control room has received a report that a fuel assembly has slipped free of the manipulator crane and fallen back onto the core.
- Personnel on the refueling phone circuit report that a lot of bubbles are rising from the core area.

Which ONE of the following actions of the Control Room operators should be performed FIRST?

a. Sound the containment evacuation alarm.

b. Dispatch personnel to verify containment integrity is established.

c. Shift the auxiliary building ventilation lineup to place the charcoal filter in service.

d. Notify the NRC and the local county authorities.

QUESTION: 041 (1.00)

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

a. To ensure adequate #1 seal cooling flow at low RCS pressure.

b. To ensure adequate radial bearing cooling flow at low RCS pressure.

c. To ensure adequate seal cooling flow if the normal seal return line is isolated.

d. To ensure adequate cooling for #2 & #3 seals if #1 seal leakoff is low.

QUESTION: 042 (1.00)

The plant is operating normally at 100%. Both VCT level transmitters fail low. How high will VCT pressure go with no operator action?

a. 600 psig

b. 240 psig

c. 120 psig

d. 75 psig

QUESTION: 043 (1.00)

Which ONE of the following actuations WILL occur for an automatic SI, but WILL NOT occur for a manual SI?

a. Containment Spray

b. Containment Isolation

c. Closure of emergency diesel generator output breakers onto safeguards busses.

d. Trip of main feedwater pumps.

QUESTION: 044 (1.00)

What engineered safeguard feature besides NaOH in containment spray will help remove iodine from a post LOCA containment atmosphere?

a. Hydrogen recombiners.

b. Containment ventilation HEPA filters.

c. Charcoal Filters.

d. Containment Pressure Relief.

QUESTION: 045 (1.00)

Which ONE of the following is the minimum coincidence that will start the turbine driven auxiliary feedwater pump?

a. 2/3 low low level coincident with 2/3 feed-steam flow mismatch in one steam generator.

b. 1/3 low low level in both steam generators.

c. 2/3 low low level in both steam generators.

d. 1/3 low low level coincident with 1/2 feed-steam flow mismatch in one steam generator.

QUESTION: 046 (1.00)

A large break LOCA has occurred. All ESF equipment has actuated properly. The STA reports that a core exit thermocouple temperature channel indicates "9999". What does this mean?

a. Thermocouple temperature > clad failure temperature.

b. The thermocouple channel is failed.

c. Thermocouple temperature > 700 deg F.

d. Temperature outside thermocouple calibration range.

QUESTION: 047 (1.00)

Which ONE of the following states a reason why the steam generator level program is reduced at low power?

a. To minimize time delays in plant response to transients due to "thermal lag".

b. To reduce the mass inventory available to boil off in the event of a steam break.

c. To prevent thermal stratification above the U-tubes.

d. To prevent low power level oscillation due to level dominant control.

QUESTION: 048 (1.00)

Which ONE of the following is used to determine the program value for steam generator level?

a. Reactor power as indicated by average of three highest PRNIs.

b. Reactor power as indicated by highest loop delta T.

c. Secondary power as indicated by main generator electrical load.

d. Secondary power as indicated by turbine first stage pressure.

QUESTION: 049 (1.00)

The plant is at approximately 25% power. A single steam generator pressure channel fails low on one steam generator. What effect will this have on steam generator level control?

a. No effect

b. Level in the affected SG will be controlled below program value.

c. Level in both S/Gs will be controlled below program value.

d. Level in the affected SG will initially drop below program value, then return to program due to the characteristics of Proportional + Integral (PI) control.

QUESTION: 050 (1.00)

The plant is operating normally at 100% power. One condensate pump trips. Which ONE of the following describes plant response?

a. LP feedwater heaters bypass valve closes due to low MFP suction pressure.

b. LP feedwater heaters bypass valve opens due to low feedwater heater levels.

c. Standby condensate pump auto starts on low discharge header pressure.

d. Standby condensate pump starts on low MFP suction pressure.

QUESTION: 051 (1.00)

The plant has just been manually tripped from 100% power due to a complete loss of component cooling flow. A few minutes later the plant vent gas monitor R-14 goes into ALERT with a reading that is still increasing. Which ONE of the following is the cause?

a. Loss of CCW to the monitor is generating an erroneous indication.

b. The in-service waste gas compressor has tripped, allowing the vent header relief to lift.

c. An RCP thermal barrier heat exchanger leak has developed, allowing an activity release through the CC surge tank vent.

d. Loss of seal water to the waste gas compressors is allowing waste gas leakage into the Auxiliary Building.

QUESTION: 052 (1.00)

You are performing a reactor startup. The P-6 permissive has just energized. You observe the following nuclear instrumentation readings:

- IR channel I indicates 1 x 10E-10 amps
- IR channel II indicates 1 x 10E-11 amps
- SR channel I indicates 3 x 10E4 CPS
- SR channel II indicates 4 x 10E4 CPS

What do these readings indicate?

a. Source Range channel I high voltage is degraded.

b. Intermediate Range channel I is undercompensated.

c. Source Range channel II compensating voltage polarity is reversed.

d. Intermediate Range channel II is overcompensated.

QUESTION: 053 (1.00)

Why is there a low power trip setting for the power range nuclear instruments?

a. The low power setting is provided for required setpoint reduction if QPTR exceeds permissible limits.

b. The low power setting provides primary protection against an at-power startup of an idle loop.

c. The low power setpoint provides a diverse and redundant backup for the intermediate range high flux trip.

d. The low power setpoint is the safety grade protection against a steam break / restart accident.

QUESTION: 054 (1.00)

The plant is in cold shutdown with T avg at 140 deg F. An RCP has just been started. Which ONE of the following conditions would require the RCP to be tripped?

a. Seal leakoff flow indicates .9 gpm.

b. #1 seal D/P indicates 205 psid.

c. Labyrinth seal D/P indicates less than 30".

d. Lower bearing water temperature indicates 160 deg F.

QUESTION: 055 (1.00)

A loss of all AC power has occurred coincident with a large break LOCA. Your crew members observe the following conditions:

- Auxiliary feed flow is zero.
- Source range NIs are behaving erratically.
- Core exit thermocouples read approximately 800 degrees F.

Which ONE of the following is the correct response?

a. Transition to FR-S.1 "Response to Nuclear Power Generation/ATWS"

b. Transition to FR-H.1 "Response to Loss of Secondary Heat Sink"

c. Transition to FR-C.1 "Response to Inadequate Core Cooling"

d. Continue with actions of ECA-0.0 "Loss of All AC Power"

QUESTION: 056 (1.00)

One of the final actions of FR-C.1 "Response to Inadequate Core Cooling" is to open the pressurizer PORVs. What is the purpose of this step?

a. To vent non condensible gasses from the reactor vessel thereby allowing maximum reflux cooling.

b. To vent superheated steam from the hot legs and preclude high temperature failure of the SG U-tubes/ containment bypass.

c. To depressurize the RCS to facilitate low head injection.

d. To depressurize the RCS to ensure backfill in the event of high temperature failure of the SG U-tubes.

QUESTION: 057 (1.00)

A loss of all AC power has occurred. Steam generator depressurization is being performed in accordance with ECA-0.0. Which ONE of the following is the lowest pressure to which SGs should be depressurized?

a. Atmospheric - maximize natural circulation core cooling.

b. 300 psig - prevent accumulator N2 injection.

c. 400 psig - prevent exceeding primary to secondary D/P limit.

d. 500 psig - prevent exceeding T.S. cooldown rate limit.

QUESTION: 058 (1.00)

In which one of the following conditions may RCPs be started even though the RCP may be damaged as a result of starting the pump?

a. When responding to a steam generator tube rupture in accordance with E-3

b. When responding to inadequate core cooling in accordance with FR-C.1

c. When responding to a loss of secondary heat sink in accordance with FR-H.1

d. When responding to voids in the reactor vessel in accordance with FR-I.3

QUESTION: 059 (1.00)

Which ONE of the following describes the CORRECT use of emergency operating procedures?

a. -The crew is in FR-H.1 "Response to Loss of Secondary Heat Sink".
-The STA reports a red path for core cooling.
-The SRO transitions to ES-0.0 "Rediagnosis"

b. -The crew is in ES-1.3 "Transfer to Cold Leg Recirculation"
-A loss of all AC power occurs.
-The SRO continues with ES-1.3.

c. -The crew is performing E-0 immediate actions.
-The STA reports an orange path for PTS.
-The SRO transitions to FR-P.2 "Response to Anticipated PTS Condition".

d. -The crew has isolated "A" SG which was determined to be faulted.
-Feed flow cannot be provided to "B" SG, resulting in loss of heat sink.
-The SRO enters FR-H.1, and orders AFW flow established to "A" SG.

QUESTION: 060 (1.00)

While performing a load reduction, the crew observes a single rod that appears to be misaligned. How can the operators determine if this is an actual misaligned rod or a malfunction of the position indication?

a. Move the affected bank and see if the indicated misalignment worsens - if not, an MRPI failure is indicated.

b. Move the affected bank and compare T avg response to what would be expected from differential bank worth - if not, an MRPI failure is indicated.

c. Check QPTR within allowable limits - if not, an actual rod misalignment is indicated.

d. Check if any other rods appear to be misaligned - if not, an actual rod misalignment is indicated.

QUESTION: 061 (1.00)

The rod control system uses the sum of two error signals to determine the desired rod speed and direction. One error signal is T avg - T ref. What is the other signal?

a. (Rate of change of PRNI power) minus (a fixed 5% per minute reference value).

b. PRNI power minus turbine power.

c. Rate of change of (PRNI power minus turbine power).

d. Integral of (T avg minus T ref) plus rate of change of T avg.

QUESTION: 062 (1.00)

The control room is being evacuated due to a control board fire. Which ONE of the following states the actions prior to leaving the control room in accordance with AP-CR.1, Control Room Inaccessibility? (Procedure attached):

a. Verify reactor trip, verify turbine stop valves closed, manually initiate containment isolation, and trip RCPs.

b. Verify reactor trip, verify turbine stop valves closed, close MSIVs, close PORVs, and trip RCPs.

c. Verify MSIVs closed, manually initiate containment isolation, and verify turbine driven AFW pump started.

d. Verify turbine driven AFW pump started and PORVs closed.

A. PURPOSE - This procedure provides the guidance necessary to place and maintain the plant in a Hot Shutdown Condition in the event that a control room evacuation is necessary.

B. ENTRY CONDITIONS/SYMPTOMS

1. SYMPTOMS - The symptoms of CONTROL ROOM INACCESSIBILITY are:

   a. Fire in the Control Room, or

   b. Smoke in the Control Room, or

   c. Noxious Fumes in the Control Room, or

   d. Intrusion

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Steps 1 and 2 are immediate action steps.	
1	Verify Reactor Trip: o At least one train of reactor trip breakers - OPEN o Neutron flux - DECREASING o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	Manually trip reactor. IF the Rx can NOT be tripped from the Control Room, THEN dispatch personnel to locally open the reactor trip breakers.
2	Verify Turbine Stop Valves - CLOSED	Manually trip turbine. IF turbine can NOT be tripped, THEN close both MSIVs.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Evaluate Control Room Conditions:** o Verify no fire in progress o Verify no significant loss of safety related controls or indications	IF significant loss of safety related controls or indications is suspected, THEN perform the following: a. Manually close both MSIVs. b. Trip both RCPs. c. Place both PRZR PORV switches to CLOSE. • PCV-430 • PCV-431C d. Operating shift personnel proceed to Appendix R locker immediately outside the Control Room. e. One SRO and communicator proceed to TSC. f. Go to SC-3.30.1, ALTERNATIVE SHUTDOWN FOR CONTROL COMPLEX FIRE. DO NOT continue in this procedure.
4	**Establish Local Operating Stations (Refer to Attachment CR EVAC)**	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Locally Verify Emergency AC Busses 14 And 18 - ENERGIZED (A D/G room at ELCP)**	Consider restoration of emergency AC power using SC-3.30.1, ALTERNATIVE SHUTDOWN FOR CONTROL COMPLEX FIRE.
6	**Locally Establish AFW Flow To S/Gs:**	
	a. Transfer MDAFW pump control to LOCAL	
	b. Start MDAFW pumps - ANY PUMPS RUNNING	b. Locally perform the following: 1) Open TDAFW pump steam supply valves at the steam header. • MOV-3504A • MOV-3505A 2) Insert pins in valve operators for TDAFW flow control valves to allow operation of valves. • AOV-4297 • AOV-4298 3) Throttle TDAFW flow to each S/G as necessary. 4) Go to Step 7.
	c. Verify MDAFW pump flow - LESS THAN 230 GPM PER RUNNING PUMP	c. Locally throttle MDAFW flow control valves as necessary. • MOV-4007 • MOV-4008

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 Monitor RCS Temperature - TEMPERATURE STABLE

IF RCS temperature decreasing, THEN perform the following:

a. Control S/G feeding to that required to maintain level.

b. IF cooldown continues, THEN ensure MSIVs closed.

c. IF MDAFW pump available to feed S/Gs, THEN manually isolate steam supply to TDAFW pump.

- V-3504
- V-3505

IF RCS temperature increasing, THEN perform the following:

a. Locally open S/G ARVs as necessary.

b. IF ARVs NOT adequate, THEN perform the following:

1) Check open MSIVs or open MSIV bypass valves as necessary.

2) Open priming ejector steam supply root valve, V-3578

3) Throttle open selected priming ejector steam supply to 200 psig (PI-2019)

- Priming ejector A, V-3581
- Priming ejector B, V-3580

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Establish Charging Flow Control:	
	a. Transfer charging pump control to LOCAL	
	b. Verify at least one charging pump - RUNNING	b. Locally start one charging pump.
	c. Check PRZR level - GREATER THAN 13%	c. Locally increase charging pump speed. IF necessary, THEN locally start a second charging pump.
	d. Locally control charging speed and letdown orifices as necessary to restore PRZR level to program	
9	Monitor PRZR Pressure - PRESSURE STABLE	IF pressure increasing, THEN ensure RCS temperature and PRZR level stable. IF pressure decreasing, THEN perform the following: a. Transfer PRZR heater backup group to local control (MDAFW pump area). b. Verify PRZR level greater than 13%. c. Energize PRZR heater backup group.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

WHEN BORATION COMPLETE, THEN HIGH CONCENTRATION BORIC ACID SHOULD BE FLUSHED FROM RCP SEAL INJECTION LINES.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Establish CSD Xenon Free Boron Concentration:	
	a. Determine amount of boron required (Refer to O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN)	
	b. Locally open emergency borate valve, MOV-350 - VALVE OPEN	b. Perform the following: 1) Locally open manual charging pump suction from RWST, V-358 (charging pump room between A and B pumps). 2) Go to Step 10e.
	c. Transfer boric acid pump control to LOCAL	
	d. Start one boric acid pump	
	e. Borate until required amount of boric acid added	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Check SW Pumps - AT LEAST ONE RUNNING IN EACH LOOP (At local operating stations by TDAFW pump)	Transfer SW pump control to LOCAL and start pumps as necessary.
12	Check CNMT Recirc Fans - AT LEAST TWO RUNNING (At local operating stations by TDAFW pump)	Transfer CNMT RECIRC fan control to LOCAL and start fans as necessary.
13	Monitor S/G Levels: o Levels - APPROXIMATELY 350 INCHES o Levels - STABLE	Locally throttle AFW flows as necessary. • MDAFW pump A, MOV-4007 • MDAFW pump B, MOV-4008 • TDAFW pump to S/G A, AOV-4297 • TDAFW pump to S/G B, AOV-4298
14	Evaluate Control Room Conditions - CONTROL ROOM HABITABLE	Return to Step 3.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

WHEN THE CONTROL ROOM IS MANNED BY NRC LICENSED PERSONNEL, THEN EQUIPMENT CONTROL MAY BE TRANSFERRED BACK TO THE CONTROL ROOM IN AN ORDERLY MANNER. CONSULT PLANT STAFF FOR ADDITIONAL GUIDANCE.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish Normal Control Room Operation:	
	a. Restore normal control room operation of equipment	
	b. Consult Plant Staff to determine if cooldown is necessary	b. <u>IF</u> cooldown <u>NOT</u> required, <u>THEN</u> go to O-3, HOT SHUTDOWN WITH XENON PRESENT.
	c. At least one RCP - RUNNING	c. Perform the following: 1) Ensure 2 control rod shroud fans running. 2) Go to ES-0.2, NATURAL CIRCULATION COOLDOWN, Step 1.
	d. Go to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN	

-END-

QUESTION: 063 (2.00)

For the case of a control room evacuation without a MCB fire, match the operator, Column A to their respective initial duty stations, Column B. Each response in Column B may be used once, more than once or not at all and only a single answer may occupy one answer space.

Column A (Operator)	Column B (Duty Station)
___ a. Shift Supervisor	1. Aux Feedpump Area
___ b. Control Room Foreman	2. Boric Acid Tank Room
___ c. Head Control Operator	3. Rx Trip Breaker Area
___ d. Control Operator	4. Charging Pump Room
	5. No Assigned Area
	6. A D/G Room

QUESTION: 064 (1.00)

Which ONE of the following situations violates a requirement for containment integrity or containment closure?

a. A containment pressure relief is performed with the plant operating at 100% power.

b. The plant is in refueling mode with the refueling cavity flooded. Steam generator safeties have been removed; secondary manways are also removed. No fuel movement is in progress.

c. The plant is in refueling mode with fuel movement in progress. Containment purge is initiated.

d. The plant is in hot standby. The "A" steam generator blowdown valve is stuck open.

QUESTION: 065 (1.00)

A loss of all CCW flow occurs at 100% power. When must the RCPs be tripped?

a. If flow is not restored within two minutes.

b. If bearing temperatures exceed 180 deg F.

c. If motor winding temperature exceeds 325 deg F.

d. If seal leakoff temperature exceeds 150 deg F within 5 minutes.

QUESTION: 066 (1.00)

Given the following information:

- The plant is operating at 100% power.
- SW pumps A, B, and D are in operation
- SW header pressure = 85 psig
- CCW surge tank level is beginning to decrease.

Which ONE of the following is the likely leak location?

a. Non-regenerative heat exchanger

b. RCP oil coolers.

c. CCW heat exchanger.

d. RCP thermal barrier heat exchanger.

QUESTION: 067 (1.00)

Condenser vacuum is decreasing. When do you trip the turbine?

a. If power is reduced below P-9 and vacuum is still decreasing.

b. When vacuum decreases to 20 inches.

c. If vacuum is in the AVOID region of AP-TURB.4 fig 1 and decreasing.

d. If CONDENSER HIGH PRESSURE annunciates.

QUESTION: 068 (1.00)

The plant is operating at 100% power. A loss of an instrument bus occurs, and appropriate operator action is taken to stabilize the plant. What effect does this event have on indicated and/or actual rod insertion limits?

a. Indicated insertion limit fails to zero.

b. Actual and indicated insertion limit both increase.

c. Indicated insertion limit decreases; actual insertion limit is unchanged.

d. Actual insertion limit decreases; indicated insertion limit is lower than actual limit.

QUESTION: 069 (1.00)

Which ONE of the following is a difference between a main feedline break and a main steam line break, assuming same diameter pipe breaks?

a. Feed break will result in a faster loss of inventory due to expulsion of liquid vs steam.

b. Feed break will cause faster cooldown due to greater heat content of a given volume of water vs the same volume of steam.

c. Steam break will cause faster cooldown due to greater energy removal out of break.

d. Steam break and feed break result in approximately equal cooldown rates; steam break in containment will cause a higher pressure due to compression of containment atmosphere.

QUESTION: 070 (2.00)

MATCH the PLANT CONDITION in column A with the REQUIRED RESPONSE in column B. Each answer may be used once, more than once, or not at all; only one answer may be placed in each answer space.

Column A

a. The plant is at 90% power. AR-C-31 "Insertion Limit Bank D Low" is annunciating.

b. The plant is at 90% power. AR-C-32 "Insertion Limit Bank D Low-Low" is annunciating.

c. The turbine has tripped from 100% power. The reactor did not trip either auto or manual.

d. The plant has tripped from 100% power. Three rods have only partially inserted.

Column B

1. Normal borate
2. Emergency borate
3. Implement ER-CVCS.1 (Reactor Makeup Control Malfunction)
4. Implement ES-0.0 (Rediagnosis)
5. Initiate SI

QUESTION: 071 (1.00)

Given the following information:

- A large break LOCA has occurred.
- RCS pressure = 100 psig.
- "A" S/G pressure = 350 psig.
- "B" S/G pressure = 380 psig.
- "A" S/G AFW flow = 0 gpm.
- "B" S/G AFW flow = 0 gpm.

The crew has transitioned to FR-H.1 due to loss of aux feed flow. Under plant conditions resulting from the LOCA, the first step of FR-H.1 directs the operators to E-1. Why is FR-H.1 not performed?

a. S/G pressures indicate that a steam break has also occurred. Aux feed flow would not be desired.

b. With a LOCA in progress, the feed and bleed steps of FR-H.1 are already performed.

c. With RCS pressure below steam generator pressure due to the LOCA, the steam generators would no longer be an effective heat sink.

d. With the SG U-tubes empty due to the LOCA, aux feed flow could potentially fail the U-tubes due to excessive cooldown, thus bypassing containment.

QUESTION: 072 (1.00)

Which ONE of the following is NOT an immediate action of ECA-0.0 "Loss of All AC Power"?

a. Verify TDAFW pump running.

b. Reset and start any available emergency diesel generator.

c. Shut any open PORV if RCS pressure less than 2235 psig.

d. Verify letdown and excess letdown isolated.

QUESTION: 073 (1.00)

A maintenance crew is scheduled to work in the CVCS Monitor tank. Which ONE of the following is the responsibility ONLY OF THE SHIFT SUPERVISOR for entry into the confined space?

a. Ensure that all the proper safety equipment needed to safely perform the job is obtained.

b. Ensure that the confined space is properly isolated, tagged out and at atmospheric pressure.

c. Ensure that all monitoring requirements have been established.

d. Ensure that the maintenance personnel going into the confined space have been properly trained in confined space entry procedures.

QUESTION: 074 (1.00)

WHICH ONE of the following is responsible for overall control of temporary modifications, including reviewing for removal, periodic monitoring, and transmitting closed out temporary modifications to Central Records.

a. Plant Operations Review Committee (PORC)

b. Technical Manager

c. Shift Supervisor

d. Temporary Modification Coordinator

QUESTION: 075 (1.00)

Which ONE of the following is the lowest emergency classification at which the Emergency Operations Facility (EOF) must be activated?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

QUESTION: 076 (1.00)

For a reactor trip that occurred as a result of operator error, which ONE of the following evaluations will NOT be required as a follow-up analysis for the Post Trip Review Report?

a. A technical evaluation to ensure there are no unreviewed safety questions as a result of the trip.

b. A PORC evaluation to determine the need for further followup actions.

c. An instrument evaluation to determine the calibration status of the reactor protection channels that caused the trip.

d. An operational assessment evaluation to determine if any lessons learned are required to be implemented prior to restart.

QUESTION: 077 (1.00)

Which ONE of the following facilities is ALWAYS activated for a notification of an Unusual Event?

a. Engineering Support Center Response Engineering Organization

b. Operation Support Center Emergency Support Organization

c. Technical Support Center Communication Support Organization

d. Emergency Survey Center Emergency Support Organization

QUESTION: 078 (1.00)

Which ONE of the following describes the reason that hydrazine is added to the secondary coolant?

a. To scavenge oxygen to reduce the rate of oxygen pitting corrosion.

b. To act as an indicator to be used to detect the presence of condenser tube leaks.

c. To be used to form a passive oxide layer on the piping of the condensate system.

d. To establish and maintain a basic pH and reduce the rate of general corrosion.

QUESTION: 079 (1.00)

Which ONE of the following conditions would require a permanent change to a procedure and would require PORC approval prior to implementing the change?

a. Alteration of a procedure setpoint in a conservative direction due to existing plant conditions.

b. Incorporation of a plant modification for the system governed by the procedure.

c. Rearrangement of the steps of the procedure for existing plant conditions that does not violate the step sequence document.

d. The addition of clarifying information to a step in the procedure to prevent the recurrence of a personnel error that resulted in a Ginna Station Event Report.

QUESTION: 080 (1.00)

Which ONE of the following is the radiation exposure guideline limit above which the Shift Supervisor has authority to waive the independent verification requirement?

a. 2 mRem per component

b. 5 mRem per component

c. 10 mRem per component

d. 50 mRem per component

QUESTION: 081 (1.00)

Which ONE of the following reactor trips is designed to protect the core from a departure from nucleate boiling (DNB) condition?

a. Overpower Delta Temperature

b. Power Range High Flux (high setpoint)

c. Pressurizer High Level

d. Reactor Coolant Loop Low Flow

QUESTION: 082 (1.00)

A steam break has occurred on the "B" S/G inside containment coincident with a loss of DC power to both MSIVs. Which ONE of the following will occur with NO OPERATOR ACTION being taken?

a. The "B" S/G only will fully depressurize.

b. The "A" S/G and the "B" S/G will fully depressurize.

c. Neither S/G will depressurize.

d. The "B" S/G will depressurize until T avg reaches 545 degrees F and will then isolate.

QUESTION: 083 (1.00)

Which ONE of the following conditions would cause an ALARM condition on the Containment Service Water radiation monitor R-16? (Assume that a Service Water leak exists on an operating Air Handling Unit):

a. A small break LOCA at EOL, causing containment pressure to increase to 6 psig.

b. A large break LOCA at MOL, causing containment pressure to increase to 45 psig.

c. A major steam leak at BOL, causing containment pressure to increase to 45 psig.

d. Pressurizer PORV leakage at EOL, causing PRT rupture disk rupture and containment pressure to increase to 3 psig.

QUESTION: 084 (1.00)

Procedure RF-8.4 (Fuel and Core Component Movement in the Spent Fuel Pit) states that the charcoal filters must be in service when performing fuel handling operations in the Auxiliary Building with fuel that has decayed LESS THAN 60 days since irradiation. Which ONE of the following is the reason that these filters are NOT required to be in operation when fuel has decayed for GREATER THAN 60 days?

a. The neutron source level of the fuel is sufficiently low enough to prevent an accidental criticality of fuel elements in the spent fuel pool.

b. The fuel elements have cooled sufficiently that their heat load is low enough that the ventilation system using the charcoal filters is not required.

c. The iodine in the fuel elements has decayed sufficiently that the consequences of a radiological release from a fuel handling accident is much less than the guidelines of 10 CFR 100 for site boundary dose.

d. The pressure of the fission gases in the fuel elements is low enough that there is no possibility of a release of fission products from the fuel rods.

QUESTION: 085 (1.00)

Step 8.c of ES-3.1 (POST-SGTR COOLDOWN USING BACKFILL) (copy attached) ensures that the ruptured S/G level is - "GREATER THAN 5% (25% adverse CNMT)".

Which ONE of the following is the reason for this step?

a. Ensure that S/G U-tubes do not become uncovered and collapse the steam bubble in the S/G by contact with the subcooled RCS water.

b. Ensure that makeup to the S/G from the AFW system is kept submerged and does not flash to steam when entering the feed ring.

c. Ensure that a heat sink is kept available in the event of a loss of the unaffected S/G as a heat sink.

d. Maintain sufficient makeup capacity to the RCS for the backfill.

A. PURPOSE - This procedure provides actions to cool down and depressurize the plant to cold shutdown conditions following a SGTR. This recovery method depressurizes the ruptured S/G by draining it through the ruptured S/G tubes into the RCS.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

   a. E-3 STEAM GENERATOR TUBE RUPTURE, if plant staff selects backfill method.

   b. ES-3.2, POST-SGTR COOLDOWN USING BLOWDOWN, when blowdown is not available and plant staff selects backfill method.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

INADVERTANT CRITICALITY MAY OCCUR FOLLOWING NATURAL CIRCULATION COOLDOWN IF THE RCP IN THE RUPTURED LOOP IS STARTED FIRST.

* *

NOTE:
- o FOLDOUT page should be open AND monitored periodically.
- o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Energize PRZR Heaters As Necessary To Saturate PRZR Water At Ruptured S/G Pressure

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Check If SI ACCUMs Should Be Isolated:**	
	a. Check the following: o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING o PRZR level - GREATER THAN 5% [30% adverse CNMT]	a. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
	b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C	
	c. Close SI ACCUM outlet valves • ACCUM A, MOV-841 • ACCUM B, MOV-865	c. Vent any unisolated ACCUMs: 1) Open vent valves for unisolated SI ACCUMs. • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945.
	d. Locally reopen breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Leakage from ruptured S/G into RCS will dilute RCS boron concentration.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Verify Adequate Shutdown Margin	
	a. Direct HP to sample RCS and ruptured S/G for boron concentration	
	b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM	b. Borate as necessary.

*

CAUTION

IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

*

NOTE: TDAFW pump flow control valves fail open on loss of IA.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 4	Monitor Intact S/G Level:	
	a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]	a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in the intact S/G.
	b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	b. IF narrow range level in the intact S/G continues to increase in an uncontrolled manner, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

<u>NOTE</u>: Since ruptured S/G may continue to depressurize to less than the minimum RCS pressure necessary for continued RCP operation, cooldown to cold shutdown should not be delayed.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Initiate RCS Cooldown To Cold Shutdown:**	
	a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR	
	b. Use RHR system if in service	
	c. Dump steam to condenser from intact S/G	c. Manually or locally dump steam using intact S/G ARV. <u>IF</u> no intact S/G available and RHR system <u>NOT</u> in service, <u>THEN</u> perform the following: o Use faulted S/G. -OR- o Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
* 6	**Monitor Ruptured S/G Narrow Range Level - LEVEL GREATER THAN 17% [25% adverse CNMT]**	Refill ruptured S/G to 67% [55% adverse CNMT] using feed flow. <u>IF</u> either of the following conditions occurs, <u>THEN</u> stop feed flow to ruptured S/G: o Ruptured S/G pressure decreases in an uncontrolled manner. -OR- o Ruptured S/G pressure increases to 1020 psig.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 7	**Control RCS Makeup Flow And Letdown To Maintain PRZR Level:**	
	a. PRZR level - GREATER THAN 13% [40% adverse CNMT]	a. Increase RCS makeup flow as necessary and go to Step 8.
	b. PRZR level - LESS THAN 75% [65% adverse CNMT]	b. Decrease RCS makeup flow to decrease level and go to Step 10.

<u>NOTE</u>: The upper head region may void during RCS depressurization if RCPs are not running. This may result in a rapidly increasing PRZR level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 8	**Depressurize RCS To Backfill From Ruptured S/G:**	
	a. Depressurize using normal PRZR spray	a. <u>IF</u> letdown is in service, <u>THEN</u> depressurize using auxiliary spray valve (AOV-296). <u>IF NOT</u>, <u>THEN</u> use one PRZR PORV.
	b. Maintain PRZR level - BETWEEN 13% AND 75% [BETWEEN 40% AND 65% adverse CNMT]	
	c. Check ruptured S/G level - GREATER THAN 5% [25% adverse CNMT]	c. Stop RCS depressurization.
	d. Energize PRZR heaters as necessary	
	e. Maintain RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	**Establish Required RCS Hydrogen Concentration (Refer to S-3.3C, H2 Or O2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VCT)**	
10	**Check If RHR Normal Cooling Can Be Established:**	
	a. RCS cold leg temperature - LESS THAN 350°F	a. Go to Step 11.
	b. RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]	b. Go to Step 11.
	c. Place RCS overpressure protection system in service (Refer to O-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM)	c. <u>IF</u> RCS overpressure protection system can <u>NOT</u> be placed in service, <u>THEN</u> notify TSC of potential Tech Spec violation if RHR system is placed in service.
	d. Establish RHR normal cooling (Refer to Attachment RHR COOL)	
*11	**Monitor RCP Operation:**	
	a. RCPs - ANY RUNNING	a. Go to Step 12.
	b. Check the following: o RCP #1 seal D/P - LESS THAN 220 PSID -OR- o Check RCP seal leakage - LESS THAN 0.25 GPM	b. Go to Step 12.
	c. Stop affected RCP(s)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check Core Exit T/Cs - LESS THAN 200°F	Return to Step 3.
13	Evaluate Long Term Plant Status: a. Maintain cold shutdown conditions (Refer to O-2.3, PLANT AT COLD OR REFUELING SHUTDOWN) b. Consult TSC	

-END-

ES-3.1 APPENDIX LIST

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 43% [46% adverse CNMT]

c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

d. INTEGRITY - Cold leg temperatures decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 285°F

e. CONTAINMENT - CNMT pressure greater than 60 psig

EOP:	TITLE:	
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	REV: 7 PAGE 1 of 1

FIGURE MIN SUBCOOLING

NOTE: Subcooling Margin = Saturation Temperature From Figure Below [-] Core Exit T/C Indication

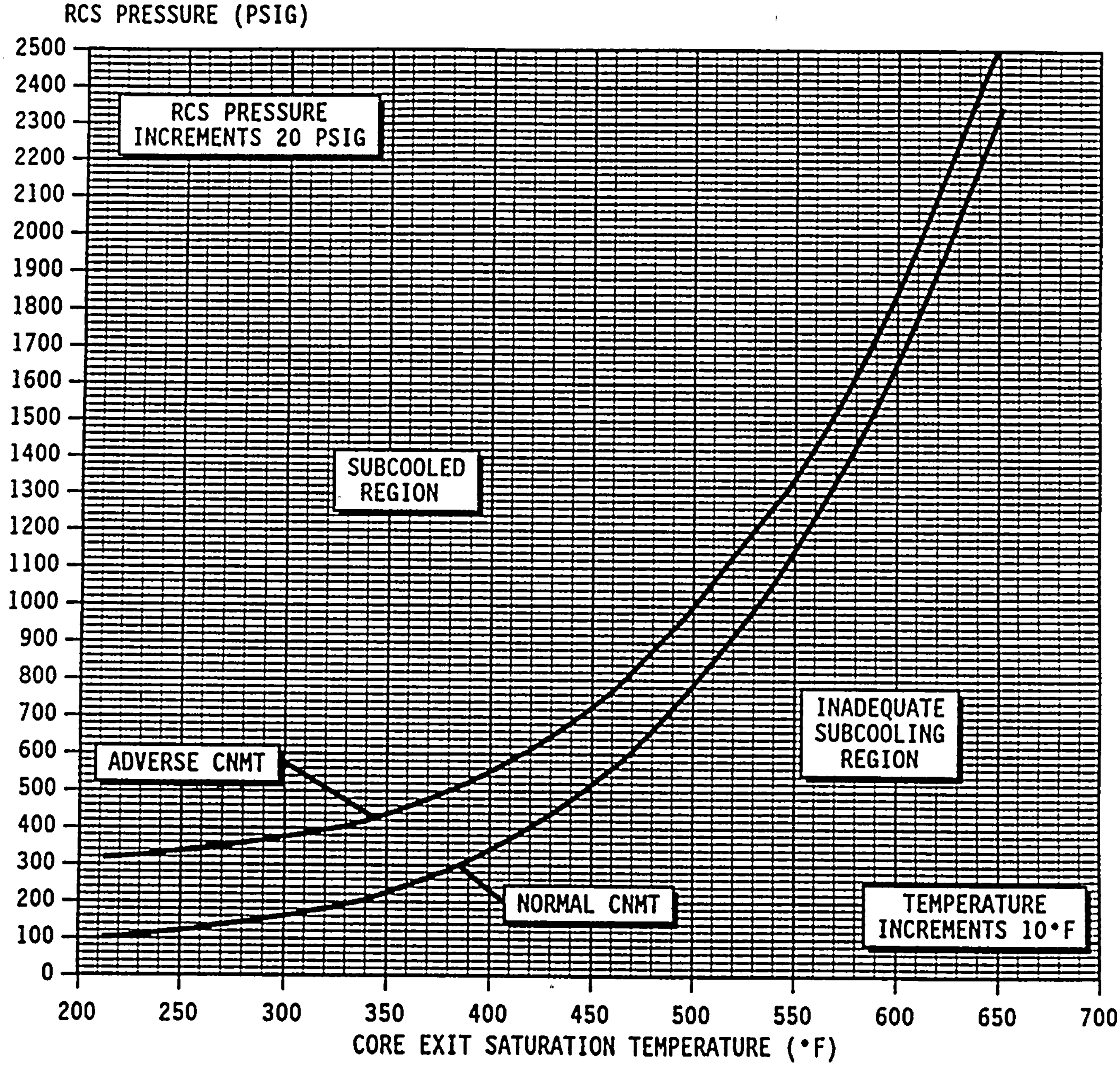
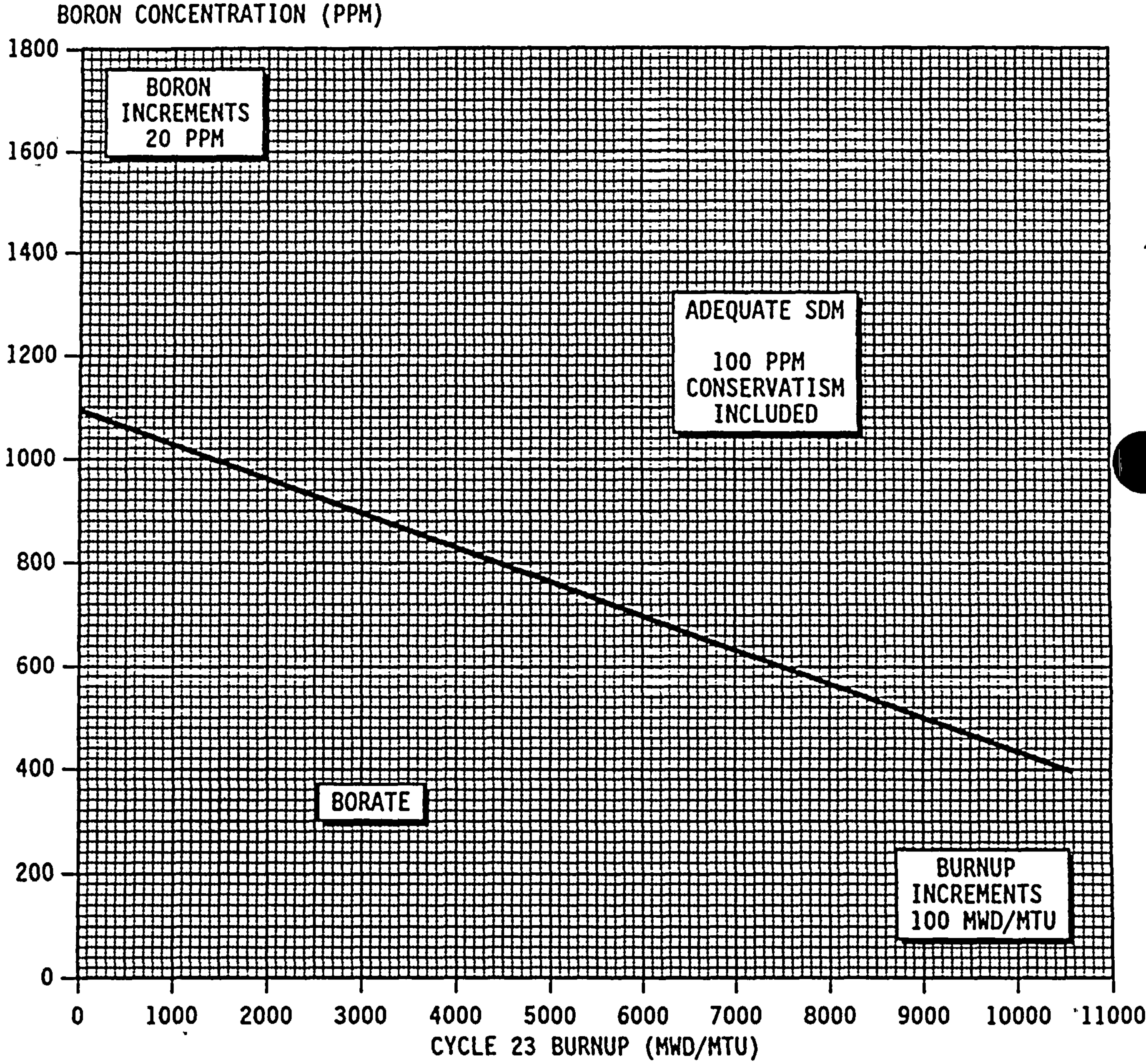


FIGURE SDM

NOTE:
- o Curve includes allowance for one stuck rod. Add 100 ppm for each additional stuck rod.
- o To obtain core burnup, use PPCS turn on code BURNUP.



FOLDOUT PAGE

1. SI REINITIATION CRITERIA

IF either condition listed below occurs, THEN operate SI pumps manually as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1:

o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING REQUIREMENTS OF FIGURE MIN SUBCOOLING.

OR

o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT].

2. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.

3. COLD LEG RECIRCULATION SWITCHOVER CRITERION

IF RWST level decreases to less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

4. AFW SUPPLY SWITCHOVER CRITERION

IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

5. MULTIPLE S/G TUBE RUPTURE CRITERIA

IF any intact S/G level increases in in an uncontrolled manner OR IF any intact S/G has abnormal radiation, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

QUESTION: 086 (1.00)

Tech Spec L.C.O. 3.9.2.6(a) limits the total Curie content of a Waste Gas Decay Tank to 100,000 Ci.

Which ONE of the following is the BASIS for this limit?

a. To limit the total body gamma exposure to < .5 Rem at the nearest exclusion boundary in the event of an uncontrolled release of the tank contents.

b. To limit the thyroid dose at the site boundary to < 10 CFR 100 limits during a planned release of the tank contents.

c. To limit radiation levels in the area of the Waste Gas Decay Tank.

d. To limit the explosive hazard to the Gaseous Waste Treatment System due to heating by gamma decay of the tank contents.

QUESTION: 087 (1.00)

Given the following information:

- Reactor power is stable at 50%
- Pressurizer pressure narrow range channel 449 is selected as the controlling channel
- Channel 449 fails LOW

Which ONE of the following actions will occur, assuming NO OPERATOR ACTION is taken?

a. Pressurizer sprays will initiate.

b. Pressurizer PORV 430 will OPEN.

c. An OP delta T rod stop and runback will occur.

d. A high pressure reactor trip will occur.

QUESTION: 088 (1.00)

Procedure FR-H.5 (Response to Steam Generator Low Level) states in Step 4:

"IF affected S/G(s) wide range level is less than 35 inches (110 inches adverse CNMT), THEN establish AFW flow to the affected S/G(s) at a rate not to exceed 100 gpm"

Which ONE of the following is the reason for this limit?

a. To minimize water hammer to the S/G feed ring.

b. To prevent Reactor restart from an excessive cooldown.

c. To minimize thermal stresses to S/G components.

d. To prevent exceeding Reactor vessel cooldown rate.

QUESTION: 089 (1.00)

Given the following information:

- The plant is in cold shutdown for an extended maintenance outage.
- Radiography is in progress in the turbine building.
- Control room rad monitor R-1 is in alarm reading 2 mR/hr (steady)

Which ONE of the following automatic actions will occur?

a. Control room ventilation will shift to post-accident mode.

b. Containment ventilation isolation will occur.

c. Auxiliary building exhaust fan 1C will trip.

d. No automatic actions will occur, since the R-1 monitor is an area monitor.

QUESTION: 090 (1.00)

What purpose, other than iodine removal, is provided by the addition of NaOH to containment spray?

a. Reduces surface tension of water to promote formation of fine spray droplets.

b. Aids in H_2 removal.

c. Inhibits corrosion.

d. Acts as a detergent to keep small debris particles from plugging spray nozzles.

QUESTION: 091 (1.00)

You have correctly entered FR-S.1, Response to Nuclear Power Generation/ATWS. Immediate actions have been completed but reactor power is still greater than 5% when SI actuates.

Which ONE of the following actions should be taken?

a. Immediately go to E-0, Reactor Trip or Safety Injection.

b. Exit FR-S.1, verify SI actuation has occurred, then return to FR-S.1.

c. Perform E-0, Reactor Trip or Safety Injection immediate actions simultaneously with FR-S.1.

d. Continue with FR-S.1 until reactor power is less than 5% and then go to E-0, Reactor Trip or Safety Injection.

QUESTION: 092 (1.00)

FR-S.1 "Response to Nuclear Power Generation/ATWS" step 2 requires a turbine trip. Why would it be desirable to trip the turbine if a reactor trip had not been achieved? (Choose ONE):

a. The reactor will be subcritical due to manual rod insertion before the turbine is tripped.

b. Tripping the turbine will conserve SG inventory and limit the pressure transient that would result from a loss of all feedwater.

c. Tripping the turbine will insert negative reactivity from moderator temperature coefficient, thus assisting in reactor shutdown.

d. Tripping the turbine will generate an additional reactor trip signal and suppress core void formation by increasing RCS pressure.

QUESTION: 093 (1.00)

The plant has tripped and the following conditions are reported by the board operators:

- Containment pressure and humidity increasing
- Pressurizer level decreasing
- Pressurizer pressure decreasing
- Subcooling margin increasing
- Containment sump level increasing

Which ONE of the following accidents has occurred?

a. A faulted SG inside containment

b. A large SG tube rupture

c. A LOCA inside containment

d. A stuck open pressurizer safety valve

QUESTION: 094 (1.00)

What is the reason for tripping RCPs during a LOCA?

a. Prevent RCP damage from loss of seal leakoff.

b. Minimize loss of RCS inventory from RCPs raising RCS liquid level to the break elevation.

c. Reduce load on the electrical distribution system.

d. Minimize backpressure on ECCS pumps for maximum injection flow.

QUESTION: 095 (1.00)

The plant is at 80% power following a rapid load reduction. The reactor operator has placed rod control in MANUAL and is maintaining T avg precisely on program. For no apparent reason, rods begin to WITHDRAW slowly. What action is required by AP-RCC.1 "Continuous Rod Insertion/Withdrawal"?

a. Cycle rod control to AUTO, then back to MANUAL.

b. Manually TRIP the reactor and implement E-0.

c. PLACE the rod lift disconnect switches in the DISCONNECT position.

d. BORATE or VARY TURBINE LOAD as necessary to maintain program T-ave.

QUESTION: 096 (1.00)

How is plant T avg controlled in response to a dropped rod?

a. Vary turbine load.

b. Borate/dilute as necessary.

c. Position rods in manual.

d. Allow rods to position themselves in auto.

QUESTION: 097 (1.00)

A plant trip from full power and loss of all AC power has just occurred. How long will the batteries be able to supply adequate voltage to expected DC loads?

a. 2 hours

b. 4 hours

c. 8 hours

d. 12 hours

QUESTION: 098 (1.00)

Technical Specification 3.1.4 places a limit on maximum RCS specific activity. If this limit is exceeded, RCS T avg must be reduced to 500 degrees F within 8 hours. What is the purpose of this temperature reduction?

a. To keep SG pressure below the setpoint of any secondary safety, thereby ensuring that any primary to secondary leakage can be contained by closing steam line isolation valves.

b. To maximize the DF of the mixed bed demineralizers by running them at their most efficient operating point.

c. To reduce the rate of fission product washout from fuel defects by lowering the temperature of water in contact with fuel below the temperature at which rapid corrosion can occur.

d. To keep the postulated post accident release due to containment leakage following a LOCA below the levels assumed in 10CFR100 siting criteria.

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

ANSWER: 001 (1.00)

a

REFERENCE:

Procedure A-1401:6 par. 3.3.2.2

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 002 (1.00)

d

REFERENCE:

A-1:13
Question on NRC exam of 9/10/90.

[2.8/3.4]

194001K103 ..(KA's)

ANSWER: 003 (1.00)

d

REFERENCE:

Lesson Plan RAD55T Rev 4
Question 10 from RO exam of 10/21/91

[4.1/3.9]

194001A102 ..(KA's)

ANSWER: 004 (1.00)

b

REFERENCE:

LP-RAD08C P.23 E.O. 3.6
Question from Exam of 9/10/90

[3.6/3.7]

194001K107 ..(KA's)

ANSWER: 005 (1.00)

c

REFERENCE:

A-52.11:1

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 006 (1.00)

c

REFERENCE:

Control Room Document 02-006 Operations Communication Standard

[3.6/3.8]

194001A105 ..(KA's)

ANSWER: 007 (1.00)

c

REFERENCE:

SC-3.4.1:3 par. 3.26

[3.0/3.2]

194001A104 ..(KA's)

ANSWER: 008 (1.00)

b

REFERENCE:

SC-3:15 and RGE059 Syst descr.

[3.0/3.4]

086000K402 ..(KA's)

ANSWER: 009 (1.00)

c

REFERENCE:

SC-3:7 Par. 5.1

[3.5/4.2]

194001K116 ..(KA's)

ANSWER: 010 (1.00)

d

REFERENCE:

Various P&IDs

[4.3/4.1]

194001A113 ..(KA's)

ANSWER: 011 (1.00)

c

REFERENCE:

Ginna L.P. R2601 p. 8
Question 40 from RO exam of 10/91

[4.2/4.3]

006020A304 ..(KA's)

ANSWER: 012 (1.00)

c

REFERENCE:

L.P. R3101C Rev. 2
Question 48 on RO exam of 10/91

[3.1/3.7]

014000G005 ..(KA's)

ANSWER: 013 (1.00)

a

REFERENCE:

Ginna Exam Bank Question C033.006

[2.9/3.2]

033000K401 ..(KA's)

ANSWER: 014 (1.00)

d

REFERENCE:

P&ID 33013-1232

[2.6/2.6]

055000K105 ..(KA's)

ANSWER: 015 (1.00)

b

REFERENCE:

Ginna Exam Bank item C062.006

[3.4/3.8]

000056G006 ..(KA's)

ANSWER: 016 (1.00)

a

REFERENCE:

Syst descr. RGE-7 and L.P. R0701C

[3.5/3.9]

062000K301 ..(KA's)

ANSWER: 017 (1.00)

c

REFERENCE:

ES-0.2 and L.P. RES02C

[4.2/4.6]

002000K515 ..(KA's)

ANSWER: 018 (1.00)

d

REFERENCE:

Syst Descr. RGE-19 and L.P. R1901C

[3.0/3.4]

010000K402 ..(KA's)

ANSWER: 019 (1.00)

a

REFERENCE:

Ginna Exam Bank C016.117

[3.7/3.7]

016000K109 ..(KA's)

ANSWER: 020 (1.00)

b

REFERENCE:

RGE-22 and R2201C

[3.4/3.7]

029000K101 ..(KA's)

ANSWER: 021 (1.00)

a

REFERENCE:

LER 92-002 and Ginna Exam Bank No.C035.075

[4.2/4.4]

035010A202 ..(KA's)

ANSWER: 022 (1.00)

d

REFERENCE:

Ginna Exam Bank question C034.055

[2.7/2.9]

034000G010 ..(KA's)

ANSWER: 023 (1.00)

b

REFERENCE:

P-9:2

[3.4/3.6]

072000G015 ..(KA's)

ANSWER: 024 (1.00)

b

REFERENCE:

Question on 9/90 exam

[3.1/3.2]

064000A205 ..(KA's)

ANSWER: 025 (1.00)

a

REFERENCE:

Question on 10/91 exam

[3.1/3.3]

011000A104 ..(KA's)

ANSWER: 026 (1.00)

c

REFERENCE:

Question on 9/90 exam

[3.5/3.6]

041020K105 ..(KA's)

ANSWER: 027 (1.00)

d

REFERENCE:

RGE-21 Att. 1

[3.0/3.1]

008030A301 ..(KA's)

ANSWER: 028 (1.00)

c

REFERENCE:

L.P. R4701C

[2.4/2.6]

078000K601 ..(KA's)

ANSWER: 029 (1.00)

c

REFERENCE:

Ginna exam bank question C005.003

[3.5/3.6]

005000A101 ..(KA's)

ANSWER: 030 (1.00)

b

REFERENCE:

Ginna Exam Bank question number C000.175

[3.2/3.4]

000008G007 ..(KA's)

ANSWER: 031 (1.00)

b

REFERENCE:

AP-IA.1
Question from RO exam of 9/90.

[3.2/3.3]

000065G010 ..(KA's)

ANSWER: 032 (1.00)

d

REFERENCE:

L.P. RTA04C p. 4 of 11 (E.O. 1.2)

[3.1/3.7]

000009A210 ..(KA's)

ANSWER: 033 (1.00)

c

REFERENCE:

AP-CVCS.1 and L.P. RAP05C E.O. 2.1

[3.4/3.3]

000022A101 ..(KA's)

ANSWER: 034 (1.00)

a

REFERENCE:

Ginna Exam Bank question C000.138

[3.6/3.9]

000025G011 ..(KA's)

ANSWER: 035 (1.00)

c

REFERENCE:

O-6.10

[3.8/3.8]

000037A211 ..(KA's)

ANSWER: 036 (1.00)

c

REFERENCE:

Procedure ER-NIS.1 and LER 93-001

[3.1/3.4]

000032A101 ..(KA's)

ANSWER: 037 (1.00)

a

REFERENCE:

ER-NIS.2

[3.0/3.1]

000033A102 ..(KA's)

ANSWER: 038 (1.00)

b

REFERENCE:

E-0 Step 4.

[4.2/4.1]

000007G010 ..(KA's)

ANSWER: 039 (1.00)

c

REFERENCE:

Ginna Exam Bank Question C000.264

[3.5/3.9]

000058A203 ..(KA's)

ANSWER: 040 (1.00)

a

REFERENCE:

EPIP 1-13

[2.8/4.1]

000036G001 ..(KA's)

ANSWER: 041 (1.00)

b

REFERENCE:

R1301C pg 9; EO 4.3

[3.5/3.8]

003000K403 ..(KA's)

ANSWER: 042 (1.00)

d.

REFERENCE:

R1601C p 15; EO 2.3

[2.8/2.9]

004000A304 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

R2701C pg 14,15; EO 2.4

[4.1/4.2]

013000A302 ..(KA's)

ANSWER: 044 (1.00)

c.

REFERENCE:

R2401C

[4.1/4.3]

022000A301 ..(KA's)

ANSWER: 045 (1.00)

c.

REFERENCE:

[4.5/4.6]

061000K402 ..(KA's)

ANSWER: 046 (1.00)

b

REFERENCE:

R3201S, RGE 32

[3.1/3.5]

017020A201 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

R4401C; EO 1.2

[2.9/3.1]

059000A302 ..(KA's)

ANSWER: 048 (1.00)

d.

REFERENCE:

R4401C; EO 2.1

[3.0/3.1]

059000G004 ..(KA's)

ANSWER: 049 (1.00)

a.

REFERENCE:

RIC04C, R4401C

[3.4/3.4]

059000K104 ..(KA's)

ANSWER: 050 (1.00)

c.

REFERENCE:

R4301C

[2.6/2.8]

056000A204 ..(KA's)

REFERENCE:

RGE-35, R3501C EO 3.3

[3.4/3.4]

015000G004 ..(KA's)

ANSWER: 054 (1.00)

b.

REFERENCE:

S-2.1 Reactor Coolant Pump Operation

[2.8/2.8]

003000A109 ..(KA's)

ANSWER: 055 (1.00)

d.

REFERENCE:

EOP rules of usage; ECA-0.0

[3.9/4.0]

000055G012 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

R3801C EO 3.1

[2.5/2.5]

071000K402 ..(KA's)

ANSWER: 052 (1.00)

d.

REFERENCE:

R3301C; EO 3.3C

[3.1/3.5]

015000A202 ..(KA's)

ANSWER: 053 (1.00)

c.

ANSWER: 056 (1.00)

c.

REFERENCE:

EOP background documents

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE:

REC00C pg 10

[4.3/4.6]

000055K302 ..(KA's)

ANSWER: 058 (1.00)

b.

REFERENCE:

[3.6/3.9]

000074A106 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

ES-1.3

[3.9/4.0]

000055G012 ..(KA's)

ANSWER: 060 (1.00)

c.

REFERENCE:

AP-RCC.2

[3.3/4.1]

000005A201 ..(KA's)

ANSWER: 061 (1.00)

c.

REFERENCE:

R3001C pg 19 EO 3.4

[3.5/3.8]

001000K403 ..(KA's)

ANSWER: 062 (1.00)

b.

REFERENCE:

AP-CR.1
RAP04C.01.04

[3.3/3.7]

000067G010 ..(KA's)

ANSWER: 063 (2.00)

a.5
b.1
c.1
d.4

REFERENCE:

GINBANK 000.117

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 064 (1.00)

d.

REFERENCE:

T.S. 3.6, 3.8

[3.7/4.3]

000069A201 ..(KA's)

ANSWER: 065 (1.00)

a.

REFERENCE:

AP-CCW.2, RAP02C 1.3

[3.0/3.3]

003000K112 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

CCW sys desc, AP-CCW.2, RAP02C

[3.3/3.4]

000026K102 ..(KA's)

ANSWER: 067 (1.00)

b.

REFERENCE:

AP-TURB.4

[3.9/4.1]

000051A202 ..(KA's)

ANSWER: 068 (1.00)

d.

REFERENCE:

RIC12C 1.1, 1.2; T.S. fig 3.10-1

[4.0/4.3]

000057A219 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

GINBANK 194.318

[4.2/4.7]

000040A201 ..(KA's)

ANSWER: 070 (2.00)

a.1
b.1
c.2
d.1

REFERENCE:

FR-S.1, E-0, ES-0.1
REP01C 1.4

[4.1/4.4]

000024A301 ..(KA's)

ANSWER: 071 (1.00)

c

REFERENCE:

FR-H.1 background document
RMCO4C, RTA04C Terminal Objectives

[4.4/4.6]

000011K312 ..(KA's)

ANSWER: 072 (1.00)

b

REFERENCE:

ECA-0.0

[3.9/4.0]

000055G012 ..(KA's)

ANSWER: 073 (1.00)

b

REFERENCE:

Procedure A-1.6.4:4 par. 3.2.1.1

[3.3/3.6]

194001K114 ..(KA's)

ANSWER: 074 (1.00)

d

REFERENCE:

A-1406
Ginna exam bank number C.310.003

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 075 (1.00)

c

REFERENCE:

EPIP 3-1:2
Question on SRO exam of 9/10/90

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 076 (1.00)

c

REFERENCE:

A-25.4:4

[3.4/3.4]

194001A106 ..(KA's)

ANSWER: 077 (1.00)

c

REFERENCE:

Ginna Exam Bank question number C000.005

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 078 (1.00)

a

REFERENCE:

L.P. RCH01C E.O. 1.7

[2.5/2.9]

194001A114 ..(KA's)

ANSWER: 079 (1.00)

b

REFERENCE:

A-601.3 and RAD55T p. 7

[2.5/3.4]

194001A103 ..(KA's)

ANSWER: 080 (1.00)

c

REFERENCE:

Trng Assignment Sheet RAD66T E.O. 6

[3.6/3.7]

194001K101 ..(KA's)

ANSWER: 081 (1.00)

d

REFERENCE:

Question on 9/90 exam.

[3.3/3.8]

012000K501 ..(KA's)

ANSWER: 082 (1.00)

a

REFERENCE:

RGE-40 p. 7

[3.3/3.6]

039000K406 ..(KA's)

ANSWER: 083 (1.00)

b

REFERENCE:

RGE-39 and P-9:6

[3.5/3.8]

073000G015 ..(KA's)

ANSWER: 084 (1.00)

c

REFERENCE:

T.S. 3.11 Bases

[2.5/3.6]

034000G006 ..(KA's)

ANSWER: 085 (1.00)

a

REFERENCE:

Question on SRO exam of 9/90

[3.6/3.7]

000038A139 ..(KA's)

ANSWER: 086 (1.00)

a

REFERENCE:

Question on SRO exam of 9/90.

[2.4/3.9]

000060G004 ..(KA's)

ANSWER: 087 (1.00)

b

REFERENCE:

L.P. RIC02C p. 4 of 9. (E:O. 1.2)

[3.3/3.4]

000027A203 ..(KA's)

ANSWER: 088 (1.00)

c

REFERENCE:

Question on SRO exam of 9/90.

[3.6/4.2]

000054K102 ..(KA's)

ANSWER: 089 (1.00)

a

REFERENCE:

RGE-39 P. 32 of 34.

[3.6/3.6]

000061A101 ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

R2041C; EO 1.1

[2.8/3.2]

026000K401 ..(KA's)

ANSWER: 091 (1.00)

c.

REFERENCE:

EOP rules of usage

[4.4/4.6]

000029G011 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

FR background document

[4.4/4.7]

000029K312 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:

E-1

[3.7/3.7]

000011A213 ..(KA's)

ANSWER: 094 (1.00)

b.

REFERENCE:

EOP background for RCP trip criteria
REP01C EO 1.2

[4.2/4.3]

000009K323 ..(KA's)

ANSWER: 095 (1.00)

b.

REFERENCE:

AP-RCC.1

[3.7/3.8]

000001G001 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

AP-RCC.3

[4.0/4.1]

000003A106 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

RGE-9 pg 1
RO901C EO 2.3

[2.5/3.3]

063000A101 ..(KA's)

ANSWER: 098 (1.00)

a.

REFERENCE:

Basis for this T.S.

[2.1/3.7]

000076G004 ..(KA's)

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

ANSWER KEY

MULTIPLE CHOICE

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

A N S W E R   K E Y

046	b
047	b
048	d
049	a
050	c
051	d
052	d
053	c
054	b
055	d
056	c
057	b
058	b
059	d
060	c
061	c
062	b
063	MATCHING
	a 5
	b 1
	c 1
	d 4

MULTIPLE CHOICE

064	d
065	a
066	b
067	b
068	d
069	c
070	MATCHING
	a 1
	b 1
	c 2
	d 1

MULTIPLE CHOICE

071	c
072	b
073	b
074	d
075	c
076	c
077	c
078	a
079	b
080	c

ANSWER KEY

081	d
082	a
083	b
084	c
085	a
086	a
087	b
088	c
089	a
090	c
091	c
092	b
093	a
094	b
095	b
096	a
097	b
098	a

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

TEST CROSS REFERENCE

S R O Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
001	1.00	9000256
002	1.00	9000259
003	1.00	9000260
004	1.00	9000262
005	1.00	9000263
006	1.00	9000267
007	1.00	9000268
008	1.00	9000269
009	1.00	9000270
010	1.00	9000271
011	1.00	9000277
012	1.00	9000278
013	1.00	9000279
014	1.00	9000280
015	1.00	9000281
016	1.00	9000282
017	1.00	9000283
018	1.00	9000286
019	1.00	9000287
020	1.00	9000288
021	1.00	9000289
022	1.00	9000294
023	1.00	9000296
024	1.00	9000297
025	1.00	9000298
026	1.00	9000302
027	1.00	9000304
028	1.00	9000305
029	1.00	9000306
030	1.00	9000317
031	1.00	9000318
032	1.00	9000320
033	1.00	9000321
034	1.00	9000322
035	1.00	9000323
036	1.00	9000324
037	1.00	9000325
038	1.00	9000326
039	1.00	9000330
040	1.00	9000331
041	1.00	9000333
042	1.00	9000334
043	1.00	9000335
044	1.00	9000336
045	1.00	9000338
046	1.00	9000339
047	1.00	9000340
048	1.00	9000341
049	1.00	9000342

SRO Exam PWR Reactor

Organized by Question Number

QUESTION	VALUE	REFERENCE
050	1.00	9000343
051	1.00	9000344
052	1.00	9000345
053	1.00	9000346
054	1.00	9000347
055	1.00	9000349
056	1.00	9000350
057	1.00	9000351
058	1.00	9000352
059	1.00	9000357
060	1.00	9000360
061	1.00	9000362
062	1.00	9000369
063	2.00	9000370
064	1.00	9000371
065	1.00	9000372
066	1.00	9000373
067	1.00	9000374
068	1.00	9000375
069	1.00	9000377
070	2.00	9000378
071	1.00	9000381
072	1.00	9000379
073	1.00	9000254
074	1.00	9000257
075	1.00	9000261
076	1.00	9000264
077	1.00	9000272
078	1.00	9000273
079	1.00	9000274
080	1.00	9000275
081	1.00	9000284
082	1.00	9000290
083	1.00	9000293
084	1.00	9000295
085	1.00	9000311
086	1.00	9000314
087	1.00	9000319
088	1.00	9000328
089	1.00	9000332
090	1.00	9000337
091	1.00	9000353
092	1.00	9000354
093	1.00	9000355
094	1.00	9000356
095	1.00	9000358
096	1.00	9000359
097	1.00	9000361
098	1.00	9000376

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

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

QUESTION	VALUE	REFERENCE

	100.00	

	100.00	

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

PLANT WIDE GENERICS

QUESTION	VALUE	KA
003	1.00	194001A102
079	1.00	194001A103
007	1.00	194001A104
006	1.00	194001A105
076	1.00	194001A106
005	1.00	194001A111
010	1.00	194001A113
078	1.00	194001A114
077	1.00	194001A116
075	1.00	194001A116
080	1.00	194001K101
001	1.00	194001K102
074	1.00	194001K102
002	1.00	194001K103
004	1.00	194001K107
073	1.00	194001K114
009	1.00	194001K116
PWG Total	17.00	

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA
061	1.00	001000K403
054	1.00	003000A109
065	1.00	003000K112
041	1.00	003000K403
042	1.00	004000A304
043	1.00	013000A302
012	1.00	014000G005
052	1.00	015000A202
053	1.00	015000G004
046	1.00	017020A201
044	1.00	022000A301
090	1.00	026000K401
050	1.00	056000A204
047	1.00	059000A302
048	1.00	059000G004
049	1.00	059000K104
045	1.00	061000K402
097	1.00	063000A101
051	1.00	071000K402
023	1.00	072000G015

S R O Exam PWR Reactor
Organized by KA Group

PLANT SYSTEMS

Group I

QUESTION	VALUE	KA

PS-I Total	20.00	

Group II

QUESTION	VALUE	KA
017	1.00	002000K515
011	1.00	006020A304
018	1.00	010000K402
025	1.00	011000A104
081	1.00	012000K501
019	1.00	016000K109
020	1.00	029000K101
013	1.00	033000K401
084	1.00	034000G006
022	1.00	034000G010
021	1.00	035010A202
082	1.00	039000K406
014	1.00	055000K105
016	1.00	062000K301
024	1.00	064000A205
083	1.00	073000G015
008	1.00	086000K402

PS-II Total	17.00	

Group III

QUESTION	VALUE	KA
029	1.00	005000A101
027	1.00	008030A301
026	1.00	041020K105
028	1.00	078000K601

PS-III Total	4.00	

PS Total	41.00	

EMERGENCY PLANT EVOLUTIONS

Group I

S R O Exam PWR Reactor
Organized by KA Group

EMERGENCY PLANT EVOLUTIONS

Group I

QUESTION	VALUE	KA
095	1.00	000001G001
096	1.00	000003A106
060	1.00	000005A201
093	1.00	000011A213
071	1.00	000011K312
070	2.00	000024A301
066	1.00	000026K102
091	1.00	000029G011
092	1.00	000029K312
069	1.00	000040A201
067	1.00	000051A202
072	1.00	000055G012
059	1.00	000055G012
055	1.00	000055G012
057	1.00	000055K302
068	1.00	000057A219
062	1.00	000067G010
063	2.00	000068G010
064	1.00	000069A201
058	1.00	000074A106
056	1.00	000074K311
098	1.00	000076G004
EPE-I Total	24.00	

Group II

QUESTION	VALUE	KA
038	1.00	000007G010
030	1.00	000008G007
032	1.00	000009A210
094	1.00	000009K323
033	1.00	000022A101
034	1.00	000025G011
087	1.00	000027A203
036	1.00	000032A101
037	1.00	000033A102
035	1.00	000037A211
085	1.00	000038A139
088	1.00	000054K102
039	1.00	000058A203
086	1.00	000060G004
089	1.00	000061A101
031	1.00	000065G010

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

EMERGENCY PLANT EVOLUTIONS

Group II

QUESTION	VALUE	KA

EPE-II Total	16.00	

Group III

QUESTION	VALUE	KA
040	1.00	000036G001
015	1.00	000056G006

EPE-III Total	2.00	

EPE Total	42.00	

Test Total	100.00	

ATTACHMENT 2

SIMULATION FACILITY REPORT

Facility Licensee: R. E. Ginna Nuclear Power Plant

Facility Docket No: 50-244

Operating Tests Administered on: September 13-16, 1993

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

While conducting the simulator portion of the operating tests, the following items were noted:

ITEM	DESCRIPTION
Annunciator L-13	The simulator was unable to simulate a Diesel Generator (D/G) output breaker failure accurately. The simulator could only simulate a failure of the output breaker by simulating an overcurrent trip of the output breaker. This situation had an adverse effect on the conduct of one of the dynamic simulator scenarios. The candidates did not attempt to recover the D/G because of the existence of annunciator L-13 in alarm, indicating an overcurrent trip condition. This discrepancy was discussed with simulator operators after the scenario. They informed the examiner that inserting the malfunction for D/G output breaker overcurrent trip was the only way to simulate the failure of the output breaker to close.