



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

Docket Nos.: 50-259, 50-260 and 50-296

License Nos.: DPR-33, DPR-52 and DPR-68

Report Nos.: 50-259/96-300, 50-260/96-300 and 50-296/96-300

Licensee: Tennessee Valley Authority

Facility: Browns Ferry Units 1, 2 and 3

Location: Athens, Alabama

Dates: June 14-20, 1996

Examiners: James H. Moorman, III, Chief License Examiner  
Michael Ernstes, License Examiner  
Scott Willoughby, License Examiner (LITCO)

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

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PDR ADOCK 05000259  
V PDR

## EXECUTIVE SUMMARY

### Browns Ferry Nuclear Plant NRC Examination Report 50-259/96-300, 50-260/96-300 and 50-296/96-300

NRC examiners and Browns Ferry training department personnel conducted an announced operator licensing initial examination during the period June 14-20, 1996. This examination implements the requirements for licensing operators pursuant to 10 CFR §55.41, §55.43, and §55.45 in response to a request for examinations of operator candidates by the Browns Ferry Nuclear Plant.

#### Operations

- Two Senior Reactor Operator (SRO) and 6 Reactor Operator (RO) candidates received written examinations and operating tests. One RO candidate was administered a retake written examination. (Section 01)
- The facility training department administered the written examination to all candidates on June 14, 1996. Operating tests were administered by NRC examiners on June 17-20, 1996.

#### Results:

#### Candidate Pass/Fail

	SRO	RO	Total	Percent
Pass	2	7	9	100 %
Fail	0	0	0	0 %

## Report Details

### Summary of Plant Status

During the period of the examinations, units 2 and 3 were at 100 percent power, and unit 1 was in extended shutdown.

### I. Operations

#### 01 Conduct of Operations

##### 01.1 General Comments

NRC examiners conducted an announced operator licensing initial examination during the period June 14-20, 1996. Examinations were administered under the guidelines of the Examiner Standards, NUREG-1021, Revision 7, Supplement 1. Two SRO instant and six RO license candidates received written examinations and operating tests. One RO candidate was administered a retake written examination. All candidates passed the examinations. Two ROs exhibited marginal performance.

##### 01.2 Examination Development

Under terms of a security agreement, representatives of the Browns Ferry training department reviewed the written examinations in the Region II office prior to the preparation week. Post examination analysis by the licensee resulted in examination comments on two questions.

The NRC examination team visited the Browns Ferry site during the week of June 3, 1996, to validate the examination materials. During this period, four scenarios and two Job Performance Measure (JPM) sets were validated. The licensee also reviewed the follow-up questions associated with each JPM set. Validation of the written examination was completed on site.

##### 01.3 Examination Administration

The licensee administered and proctored the RO and SRO written examinations on June 14, 1996. The NRC examiners administered the operating test to all candidates during the period June 17-20, 1996.

##### 01.4 Candidate Performance and Results

Complete operator licensing examinations were administered to two SRO and six RO candidates. All candidates passed the examinations. One RO was administered a retake written examination and was evaluated as a marginal pass, having received a score of less than 82. One RO candidate marginally passed Section "B" (JPM) of the operating test since he was graded satisfactory on 8 out of 10 systems. A satisfactory grade on 8 out of 10 systems is the minimum required to pass. The licensee was provided with a copy of each candidate's examination to allow development of appropriate remedial training and to evaluate the initial operator training program for weaknesses.

The RO and SRO written examination results were analyzed to determine if generic weaknesses existed in the candidates' knowledge. The analysis indicated that there were many questions where more than 50 percent of the candidates selected an incorrect answer. This indicated a generic weakness in the subject matter tested. The questions missed are listed below together with the number of candidates that selected the wrong answer.

RO question 13/SRO question 17 - missed by four of seven ROs and one of two SROs.

Question topic: When to stop ECCS equipment after an automatic start.

SRO only, question 14 - missed by two of two SROs.

Question topic: Technical Specification requirements for shift staffing.

RO only, question 38 - missed by six of seven ROs.

Question topic: Effects of loss of both +/-24 vdc neutron monitoring electrical systems.

RO question 52/SRO question 53 - missed by four of seven ROs and two of two SROs.

Question topic: interlocks associated with RHR pump shutdown cooling suction valve.

RO question 73/SRO question 69 - missed by three of seven ROs and two of two SROs.

Question topic: emergency operating instruction definition of "subcritical."

RO question 85/SRO question 83 - answered correctly by all ROs, missed by two of two SROs.

Question topic: plant response to loss of control air.

RO question 92/SRO question 92 - missed by five of seven ROs and two of two SROs.

Question topic: Reactor scram actions with four rods at 48 inches and reactor power less than two percent.

RO Question 99/SRO question 98 - missed by five of seven ROs and two of two SROs.

Question topic: downstream temperature of failed open SRV.

#### 01.5 Examiner Observations of Control Room Operations

During validation and administration of the examination, the examiners observed the conduct of operations by currently licensed operators in the control room. The ROs were attentive to their duties. The SOS and ASOS supervising control room operations, limited personnel access for official business only, which contributed to a quiet, professional atmosphere.

V. Management Meetings

## X1. Exit Meeting Summary

The inspectors presented the examination results to members of licensee management at the conclusion of the examination on June 21, 1996. The licensee acknowledged the findings presented.

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

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Albright, Simulator Services Manager  
C. Crane, Assistant Plant Manager  
R. Greenman, Training Manager  
D. Hill, Operations Training Manager  
S. Kane, Nuclear Assurance and Licensing  
R. Machon, Browns Ferry Site Vice President  
R. Moll, Operations Training Programs Manager  
G. Preston, Plant Manager

NRC

L. Wert, Senior Resident Inspector

## LIST OF ACRONYMS USED

ASOS Assistant Shift Operations Supervisor  
ECCS Emergency Core Cooling System  
RHR Residual Heat Removal  
RO Reactor Operator  
SOS Shift Operations Supervisor  
SRO Senior Reactor Operator  
SRV Safety Relief Valve



Tennessee Valley Authority, Post Office Box 2000 Decatur Alabama 35609

June 28, 1996

Mr. Stewart D. Ebnetter  
Regional Administrator  
ATTN: Branch Chief, Operator Licensing  
U.S. Nuclear Regulatory Commission  
Region II, Suite 2900  
101 Marietta Street NW  
Atlanta, Georgia 30323

Dear Sir:

In the Matter of )  
Tennessee Valley Authority ) Docket Nos. 50-259,  
50-260  
50-296

**BROWNS FERRY NUCLEAR PLANT (BFN) - NRC WRITTEN EXAMINATION  
COMMENTS**

Pursuant to the NRC Operator Licensing Examiner Standards (NUREG-1021), TVA is submitting post examination comments to the NRC written examination that was administered to BFN personnel on June 14, 1996. This submittal documents draft comments provided by TVA (Dale E. Hill, BFN Operator Training Manager) on June 21, 1996, to James Moorman of your staff.

If you have any questions, please contact Dale E. Hill at (205) 729-3439.

Sincerely,

Pedro Salas  
Manager of Site Licensing

Enclosure  
cc: See page 2

Enclosure 3

Mr. Stewart D. Ebnetter  
Page 2  
June 28, 1996

Enclosure

cc (Enclosure):

Mr. Stewart A. Richards (w/o Enclosure)  
Chief, Operator Licensing Branch, DLPQ  
U.S. Nuclear Regulatory Commission  
MS OWFN 10D-22  
Washington, D.C. 20555

Mr. James H. Moorman  
Chief Examiner  
U.S. Nuclear Regulatory Commission  
Region II, Suite 2900  
101 Marietta Street, NW  
Atlanta, GA 30323

Mr. Mark S. Lesser, Branch Chief  
U.S. Nuclear Regulatory Commission  
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Atlanta, Georgia 30323

NRC Resident Inspector  
Browns Ferry Nuclear Plant  
10833 Shaw Road  
Athens, Alabama 35611

ENCLOSURE

TENNESSEE VALLEY AUTHORITY  
BROWNS FERRY NUCLEAR PLANT (BFN)  
UNITS 1, 2, AND 3

BFN - NRC WRITTEN EXAMINATION COMMENTS

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SEE ATTACHED



QUESTION 11 (RO) 13 (SRO)

During an emergency, a reasonable action that departs from Technical Specification plant license conditions must be taken immediately.

In accordance with BFN procedures, which ONE of the following MUST approve taking this action?

- a. Any licensed Senior Reactor Operator.
- b. Only the Shift Operations Supervisor.
- c. The Shift Operations Supervisor or the Assistant Shift Operations Supervisor.
- d. The Operations Unit Manager and Shift Operations Supervisor.

Answer key: c

The question has three correct answers with "a" being the most correct.

"A" is correct. 10 CFR 50.54(y) supports this comment by stating that licensee actions permitted by 10 CFR 50.54(x) shall as a minimum be approved by a licensed SRO. Therefore, any licensed SRO can approve taking actions that depart from Technical Specifications. Emergency Plan Implementing Procedure (EPIP)-6 states that "during Site Emergency conditions when a Site Emergency Director is in charge, he may make the decision to allow departure from any NRC or TVA requirement. In such an event, if the SED does not hold an SRO license, concurrence shall be obtained by a Senior Reactor Operator, preferably the on-duty SOS, or other SRO licensed Operations Management, prior to the action." Additionally, Site Standard Practice (SSP) 12.1, Section 3.1.10, duties of a Unit Operator, states "Following approval, as a minimum, by a licensed Senior Reactor Operator, provide reasonable action that departs from a license condition or Technical Specification in an emergency...."

"C" is also correct. Both the Shift Operations Supervisors and Assistant Shift Operations Supervisor are SRO licensed and can direct actions that depart from Technical Specifications.

"D" is also correct. The Operations Unit Manager is also a licensed SRO.

Question should be deleted from the examination.

## 3.5 Contingencies

- ✓ 3.5.1 NRC order - The NRC role onsite is to observe, advise, and concur with license decisions and actions. If a situation arises where the NRC wants an action taken regarding plant operation that TVA does not agree with, the SED shall require the NRC to sign a written order directing TVA to take the action before the SED will comply.
- 3.5.2 Using RADCON VHF radio - (See EPIP-19, Communications System and Emergency Notification List and BFEND).
- 3.5.3 Evacuation - Relocate TSC to second level of office building. (Plant Manager's Office Area)
- ✓ 3.5.4 Reasonable action which departs from any NRC or TVA requirement (e.g., Technical Specifications, License conditions, rules, regulations, or written plant procedures) may be taken in an emergency situation when this action is immediately needed to protect the public health and safety and no action consistent with license condition or Technical Specifications that can provide adequate or equivalent protection is immediately apparent. Plant emergency procedures may depart from Technical Specifications under these conditions.
- ✓ 3.5.5 During Site Emergency conditions when a Site Emergency Director is in charge, he may make the decision to allow departure from any NRC or TVA requirement (as stated above). In such an event, if the SED does not hold an SRO license, concurrence shall be obtained by a Senior Reactor Operator, preferably the on-duty SOS, or other SRO Licensed Operations Management, prior to the action. Additional requirements are contained in SSP-12.1, Section 3.16.1.

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**3.1.10 Unit Operator (Board) (Continued)**

15. Provide immediate actions in preparation for control room abandonment when it has been determined corrective measures were unable to preclude evacuation.
16. Unit 1 Licensed UO functions as initial event communicator for the Fire Brigade, Emergency Response Team, and Incident Commander.
17. Following approval, as a minimum, by a licensed Senior Reactor Operator, provide reasonable action that departs from a license condition or Technical Specification in an emergency when this action is immediately needed to protect the public health and safety where no action consistent with license conditions and Technical Specifications that can provide equivalent protection is immediately apparent.  
(10CFR50.54(x))
18. Provide directions to AUOs and support personnel as directed by the Control Room ASOS/SOS.

**3.1.11 Unit Operator (Desk)**

- A. Documents evolutions and significant events related to those systems and/or components controlled from Zones 1 and 2.
- B. Records control room log readings (for example, 2-SI-2).
- C. Maintains system status control for their affected unit.
- D. Supervises AUOs.
- E. Assists UO (Board) as needed.
- F. Perform duties specified in 3.1.10. H and 3.1.10.J.

**3.1.12 Radwaste Operator**

- A. Maintains approval authority and is accountable for all liquid effluent releases.
- B. Ensures work is performed in full compliance with all applicable Federal and State rules, regulations, and policies.
- C. Directs the assigned AUOs in the operation of radwaste systems and performance of housekeeping duties in the assigned areas.
- D. Responsible for safety and compliance with workman protection (tagging) in his assigned areas.
- E. Responsible and accountable for reviewing chemical and radiological parameters of the plant process streams and directing proper processing of the waste streams for the most effective and efficient treatment, with subsequent gains in Radwaste volume reduction.
- F. Responsible for ensuring activities are coordinated with the SOS as necessary.

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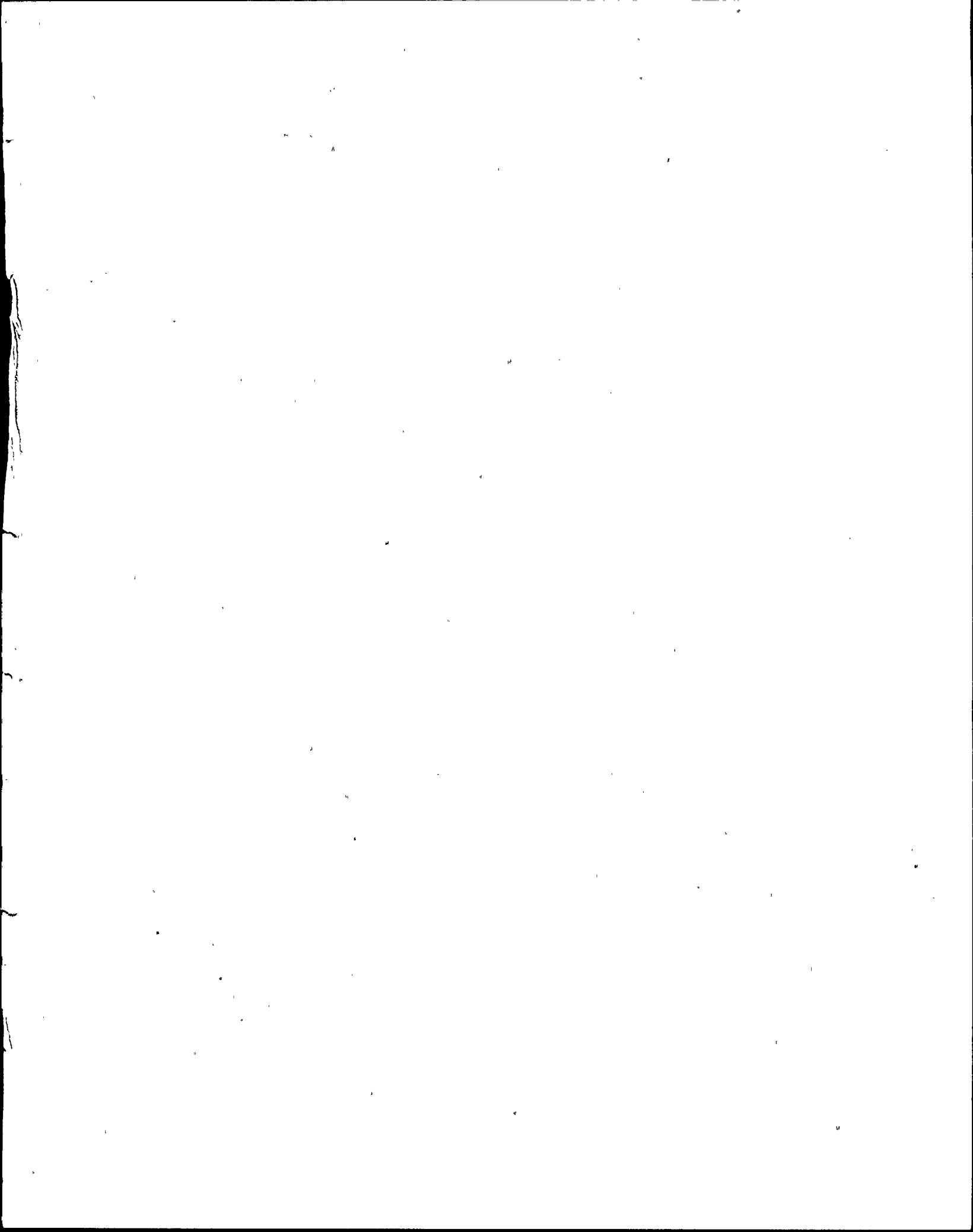
### 3.15.5 Operations Daily Instructions (Continued)

- E. The ODI program shall not be used to change operating procedures.
- F. Information and policies intended to become permanent should be incorporated into appropriate procedures. The SOS/ASOS/STA should review the instructions early in the shift and document the review by initialing the instructions.

### 3.16 Plant Operating Procedures

#### 3.16.1 Procedure Compliance

- A. Plant equipment shall be operated in accordance with approved, written procedures.
- B. If the individual performing the activity cannot or believes the procedure cannot be performed as written, the system/component shall be placed in a stable and safe condition and the responsible supervisor shall be informed.
- C. Situations such as this might occur if:
  - 1. The procedure is found to be inadequate for the intended task.
  - 2. Unexpected results occur.
  - 3. Two or more procedures governing the activity conflict.
- D. The supervisor shall resolve any discrepancy found in a procedure by one of the following:
  - 1. Determine the method by which the activity can be performed using the procedure as written and conveying this to the individual performing the activity.
  - 2. Submit a procedure change, either intent or nonintent, depending on the situation. (No further procedural steps shall be accomplished until the procedure change is approved.) Refer to SSP-2.1 for additional information as necessary.
- E. In cases of emergency when procedures, facility license, or TSs are inadequate for the situation, Plant Operations Personnel are directed to take the action(s) necessary to:
  - 1. Protect the health and safety of the general public and the personnel onsite.
  - 2. Minimize personnel injury and damage to the plant.
  - 3. Return the plant to a stable, safe condition.
- F. These actions shall be:
  - 1. Approved by a licensed SRO before taken.
  - 2. Documented.
  - 3. Incorporated into a revision of the affected procedure (if appropriate).



**QUESTION 93 (RO/SRO)**

A primary system is discharging into secondary containment causing elevated temperatures.

Which ONE of the following secondary containment area temperatures would affect the reading on the floodup level indicator?

- a. RWCU Heat Exchanger Room
- b. RWCU Pump Room
- c. Reactor Building Elevation 585'
- d. Reactor Building Elevation 593'.

Answer key: d

The answer is correct as given. The question is valid provided that Table 6 from the EOI Program Manual is provided for the students as reference material for the test. Curve 8 and Caution 1 were provided as reference material but Table 6 was inadvertently left out by the proctor.

Question should be deleted from the examination.

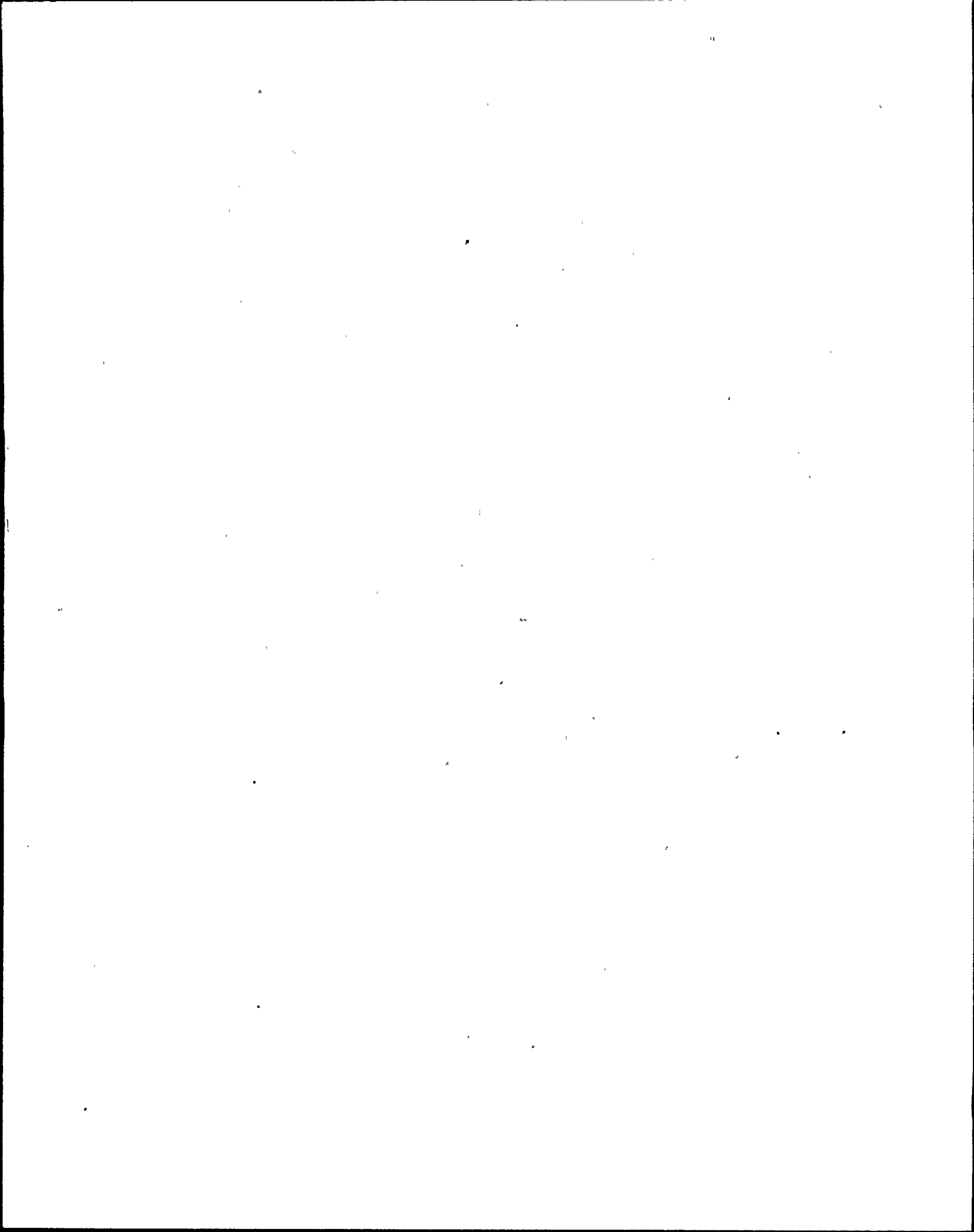


TABLE 6

**SECONDARY CONTAINMENT INSTRUMENT RUNS**

Table 6 identifies the temperature elements and general locations for the instrument runs to each RPV water level instrument. The temperature elements are also identified on Table 3 which is used on EOI-3, Secondary Containment Control. Refer to Table 3 in this section.

TABLE 6 SECONDARY CNTMT INSTRUMENT RUNS				
INSTRUMENT	SC TEMP ELEMENTS AND LOCATIONS			
	EL 621 (74-95F)	EL 593 (74-95C AND D)	EL 565 (69-835A THRU D)	RWCU HX RM (69-29F, G, H)
2-LI-3-58A	°F	°F	NA	°F
2-LI-3-58B	°F	°F	NA	NA
2-LI-3-53	°F	°F	NA	°F
2-LI-3-60	°F	°F	NA	NA
2-LI-3-206	°F	°F	NA	°F
2-LI-3-52	°F	°F	°F	NA
2-LI-3-62A	°F	°F	°F	NA
2-LI-3-55	°F	°F	NA	NA



SIMULATOR FACILITY REPORT

Facility Licensee: Browns Ferry Nuclear Plant

Facility Docket Nos.: 50-259, 50-260 and 50-296

Operating Tests Administered On: June 17-20, 1996

This form is to be used only to report observations. These observations do not constitute, in and of themselves, 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 solely in response to these observations.

During the conduct of the simulator portion of the operating tests the following items were observed:

Item

Description

No discrepancies were noted.

NRC RESOLUTION OF FACILITY COMMENTS

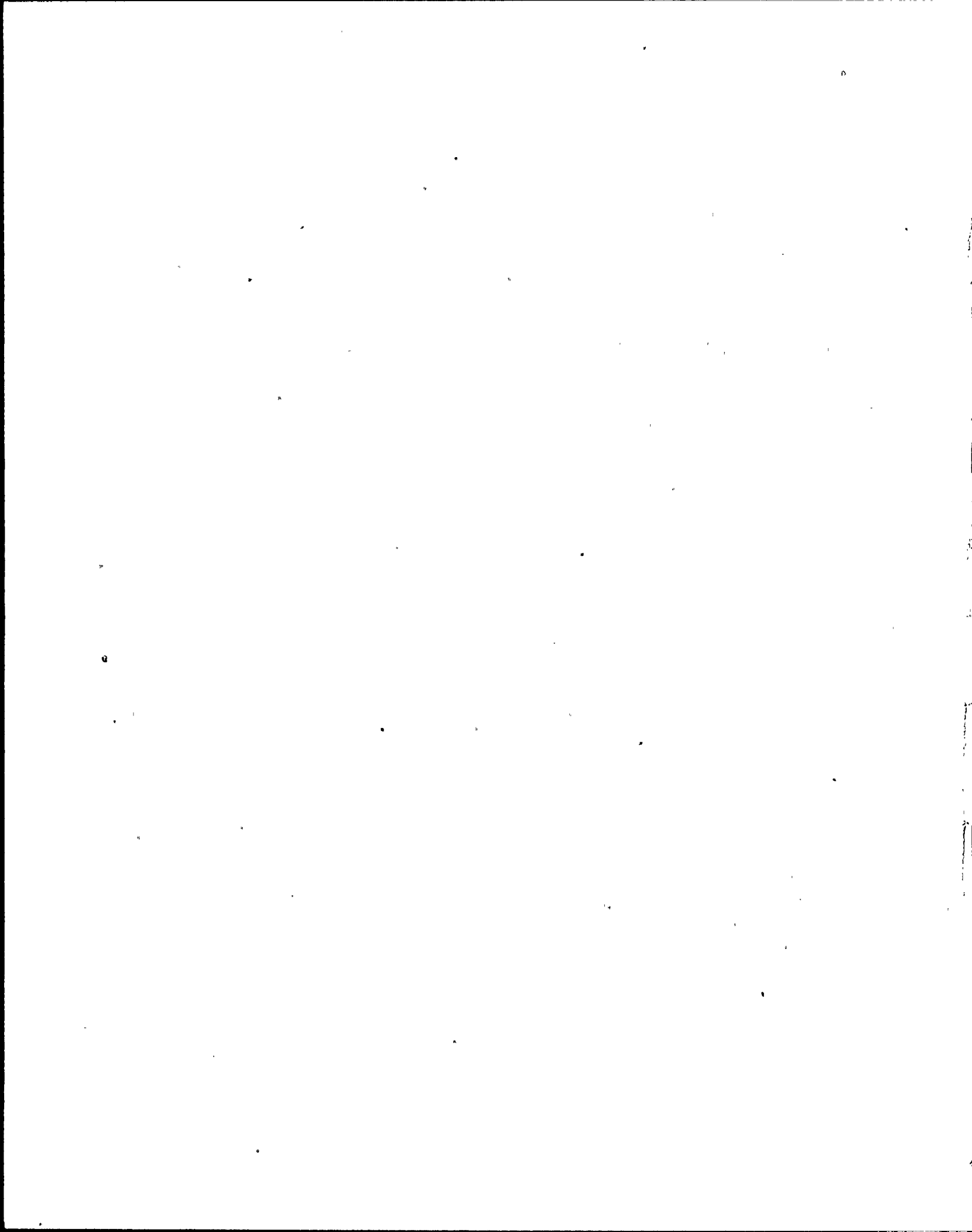
SRO Examination / (RO Examination):

Question 13 / Question 11

Facility comment accepted. The question was deleted from the examination.

Question 93 / Question 93

Facility comment accepted. The question was deleted from the examination.



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

Master  
 Browns Ferry  
 96-300

CANDIDATE'S NAME: MASTER

FACILITY: Browns Ferry 1, 2, & 3

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: June 14, 1996

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	%	
<u>100.00</u>	<u>102.00</u>	<u>102%</u>	TOTALS
	<u>FINAL GRADE</u>		

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

\_\_\_\_\_  
 Candidate's Signature

## A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

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

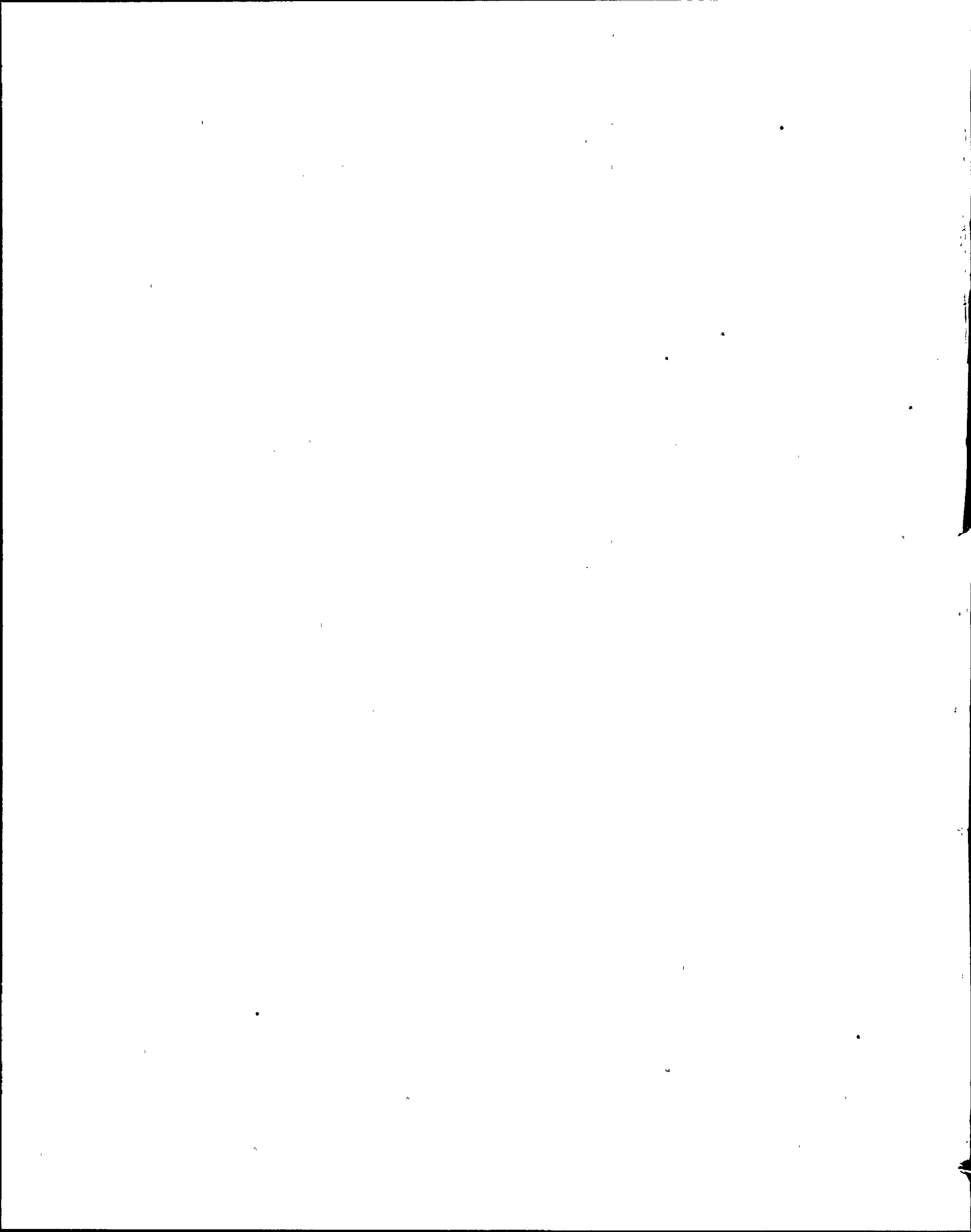
MULTIPLE CHOICE					023	a	b	c	d	___	
001	a	b	c	d	___	024	a	b	c	d	___
002	a	b	c	d	___	025	a	b	c	d	___
003	a	b	c	d	___	026	a	b	c	d	___
004	a	b	c	d	___	027	a	b	c	d	___
005	a	b	c	d	___	028	a	b	c	d	___
006	a	b	c	d	___	029	a	b	c	d	___
007	a	b	c	d	___	030	a	b	c	d	___
008	a	b	c	d	___	031	a	b	c	d	___
009	a	b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

## A N S W E R   S H E E T

Multiple Choice    (Circle or X your choice)

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

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



## A N S W E R   S H E E T

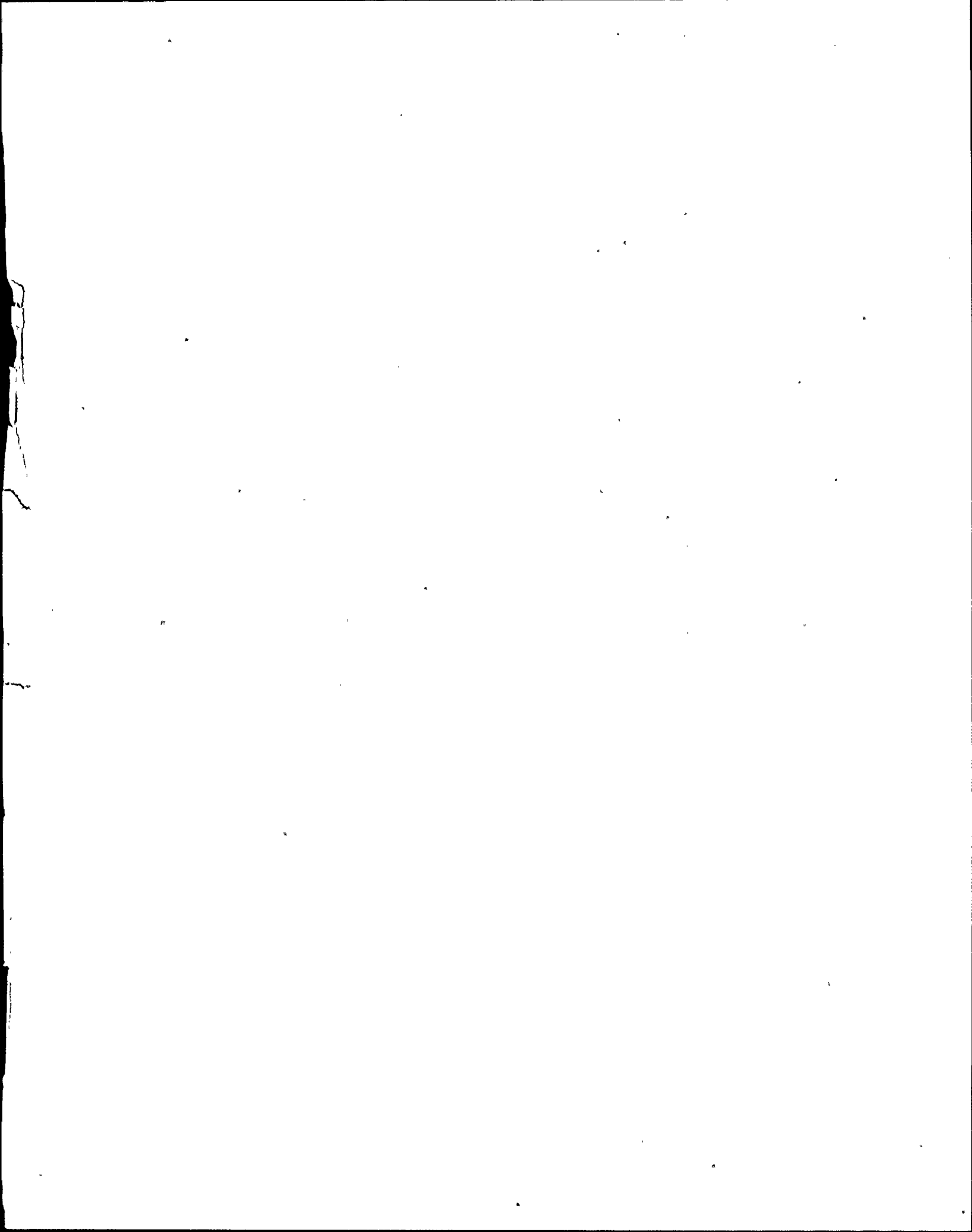
Multiple Choice    (Circle or X your choice)

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

- |     |   |   |   |   |     |
|-----|---|---|---|---|-----|
| 092 | a | b | c | d | ___ |
| 093 | a | b | c | d | ___ |
| 094 | a | b | c | d | ___ |
| 095 | a | b | c | d | ___ |
| 096 | a | b | c | d | ___ |
| 097 | a | b | c | d | ___ |
| 098 | a | b | c | d | ___ |
| 099 | a | b | c | d | ___ |
| 100 | a | b | c | d | ___ |
| 101 | a | b | c | d | ___ |
| 102 | a | b | c | d | ___ |

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





## NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.
3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
4. Use black ink or dark pencil ONLY to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.
7. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.
8. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.
9. The point value for each question is indicated in parentheses after the question.
10. Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.
11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.
13. If the intent of a question is unclear, ask questions of the examiner only.

14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
16. To pass the examination, you must achieve a grade of 80% or greater.
17. There is a time limit of four (4) hours for completion of the examination.
18. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

On Panel 9-23-7 and 9-23-8 there are back feed switches for the Shutdown Busses. When the switches are placed in BACKFEED, the normal supply breaker to the associated Unit Boards is tripped and locked out.

Which ONE of the following describes the other AUTOMATIC actions that will occur when the switches are placed in BACKFEED?

- a. Trip and lockout the alternate supply breaker.  
Transfer the 43-1(2) switch to AUTO.
- b. Close the alternate supply breaker.  
Transfer the 43-1(2) switch to MANUAL.
- c. Trip and lockout the alternate supply breaker.  
Transfer the 43-1(2) switch to MANUAL.
- d. Close the alternate supply breaker.  
Transfer the 43-1(2) switch to AUTO.

QUESTION: 002 (1.00)

The following conditions exist:

- The operator is attempting a manual fast transfer of Unit 1/2 4KV Shutdown Board A from the normal to its alternate power supply.
- The 43S switch is in MANUAL.
- The alternate breaker synchronizing selector switch is in the OFF position.
- The operator is holding the alternate power supply breaker in the closed position.
- The operator trips the normal supply breaker.

Which ONE of the following describes the effect on the transfer?

- a. A fast transfer to the alternate supply occurs.
- b. A slow transfer to the alternate supply occurs.
- c. The alternate breaker trips and Shutdown Board A is locked out.
- d. The alternate breaker trips and Diesel Generator "A" starts and ties to Shutdown Board A.

QUESTION: 003 (1.00)

The following conditions exist:

- Unit 2 was operating at 90% power when the 'B' Reactor Recirculation Pump tripped.
- Loop 'A' Jet Pump indicated flow is  $40E+6$  lbm/hr.

Which ONE of the following describes the indicated core flow?

Initial core flow will be:

- a. erratic because this is the flow setpoint for the jet pump loop addition/subtraction logic and small flow perturbations will cause multiple add/subtract logic changes.
- b. erratic because the positive/reverse flow through the idle recirculation loop is unstable at this core flow rate.
- c. inaccurate because positive flow exists in the idle recirculation loop and is being subtracted from the inservice loop jet pump flow rate.
- d. inaccurate because reverse flow exists in the idle recirculation loop and is being added to the inservice loop jet pump flow rate.

QUESTION: 004 (1.00)

Which ONE of the following defines, the term "Primary System", when used within the Emergency Operating Instructions?

Primary System refers to any system:

- a. for which the ASME "N" stamp is issued.
- b. connected to the RPV that contains radioactive water.
- c. supplied by General Electric as part of the Nuclear Steam Supply System.
- d. connected to the RPV that has a reduced leak rate if RPV pressure is lowered.

QUESTION: 005 (1.00)

The following situation exists:

- A licensed operator is at home drinking an alcoholic beverage when the Shift Operations Supervisor calls and requests that he report for unscheduled overtime.
- No one else is available.
- He feels fit for work and to drive.

Concerning alcohol consumption, which ONE of the following states his responsibility?

He is personally required to:

- a. inform the Shift Operations Supervisor that he has been drinking alcohol during the call-in telephone call.
- b. report to the control room and inform the Shift Operations Supervisor that he has been drinking alcohol.
- c. say nothing and request that Security administer a breath test for alcohol after arrival on site.
- d. say nothing unless his fitness for duty is questioned during relieving process.

QUESTION: 006 (1.00)

You have worked the following schedule:

- Thursday 1st scheduled day off
- Friday 2nd 7 am to 7 pm
- Saturday 3rd 7 am to 7 pm
- Sunday 4th 7 am to 3 pm
- Monday 5th 7 am to 3 pm
- Tuesday 6th 7 am to 9 pm
- Wednesday 7th 7 am to 3 pm
- Thursday 8th 7 am to ?

Which ONE of the following represents the LATEST you can be required to work on Thursday the 8th, without approval of an "Overtime Limitation Exception Report, form SSP-31?"

(Assume turnover time is NOT included.)

- a. 3 pm
- b. 5 pm
- c. 7 pm
- d. 9 pm

QUESTION: 007 (1.00)

During a loss of feedwater heating transient, the Reactor Engineer reports that MCPR is 1.05. Which ONE of the following is the MINIMUM action required by BFNPP procedures?

- a. Shift Management must obtain NRC approval to remain at power.
- b. Action must be taken within 15 minutes to limit power to less than 25% rated thermal power.
- c. The reactor must be placed in the HOT SHUTDOWN CONDITION.
- d. The reactor must be scrammed.

QUESTION: 008 (1.00)

The following conditions exist:

- An operator is performing a manual whole body frisk using a hand held frisker.
- The background radiation count rate in the area is at the MAXIMUM allowed for using the frisker.

Which ONE of the following is the MINIMUM count rate at which the operator is considered contaminated and is required to notify RADCON personnel for release?

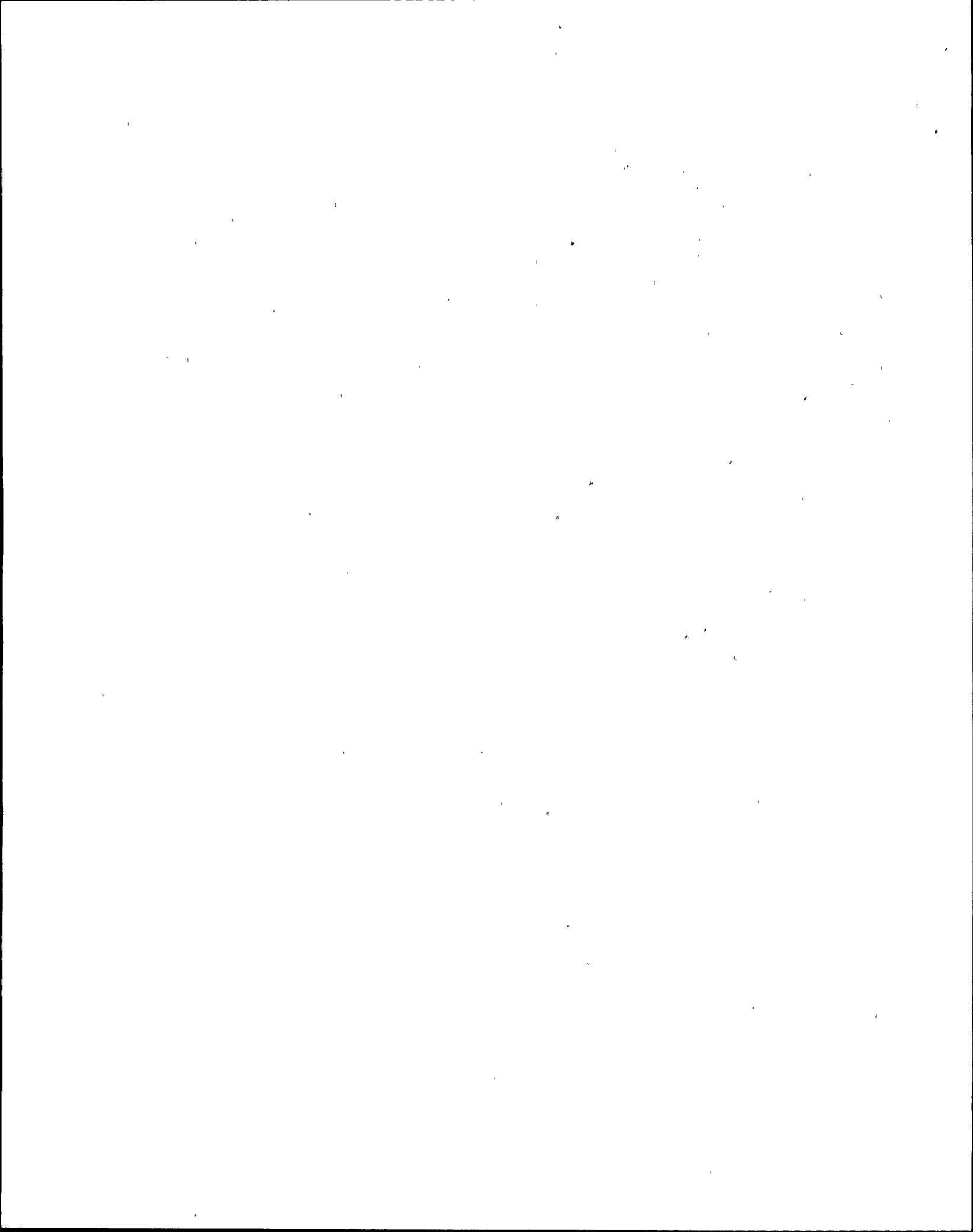
- a. 100 counts per minute
- b. 300 counts per minute
- c. 400 counts per minute
- d. 500 counts per minute

QUESTION: 009 (1.00)

Which ONE of the following does NOT REQUIRE a reactor power reduction?

- a. Power momentarily reaches 3297 Mwt.
- b. Power is 3296 Mwt for 1/2 hour.
- c. Power is 3295 Mwt for one hour.
- d. Power is 3294 Mwt for two hours.





QUESTION: 010 (1.00)

The following conditions exist:

- While at 100% power, RPS trip system "A" is in the tripped condition for a surveillance test.
- A Reactor Feed Pump trip causes reactor water level to lower to +10 inches.
- No automatic actions have occurred.

Which ONE of the following is the REQUIRED action?

- a. Conduct a controlled plant shutdown.
- b. Stop surveillance testing and immediately reset RPS "A".
- c. Initiate a reactor scram.
- d. Restore reactor water level to normal by reducing power with recirculation flow.

~~QUESTION: 011 (1.00)~~ *deleted*

During an emergency, a reasonable action that departs from Technical Specification plant license conditions must be taken immediately.

In accordance with BFNP procedures, which ONE of the following MUST approve taking this action ?

- a. Any licensed Senior Reactor Operator.
- b. only the Shift Operations Supervisor.
- c. The Shift Operations Supervisor or the Assistant Shift Operations Supervisor.
- d. The Operations Unit Manager and Shift Operations Supervisor.

QUESTION: 012 (1.00)

The following conditions exist:

- Emergency actions must be accomplished on equipment in a high radiation area.
- Briefings have been conducted and precautions reviewed.
- You are a member of the action team.

Using ALARA (As Low As Reasonably Achievable) guidelines, which ONE of the following is the PREFERRED method for performing these actions.

The maintenance should be performed by:

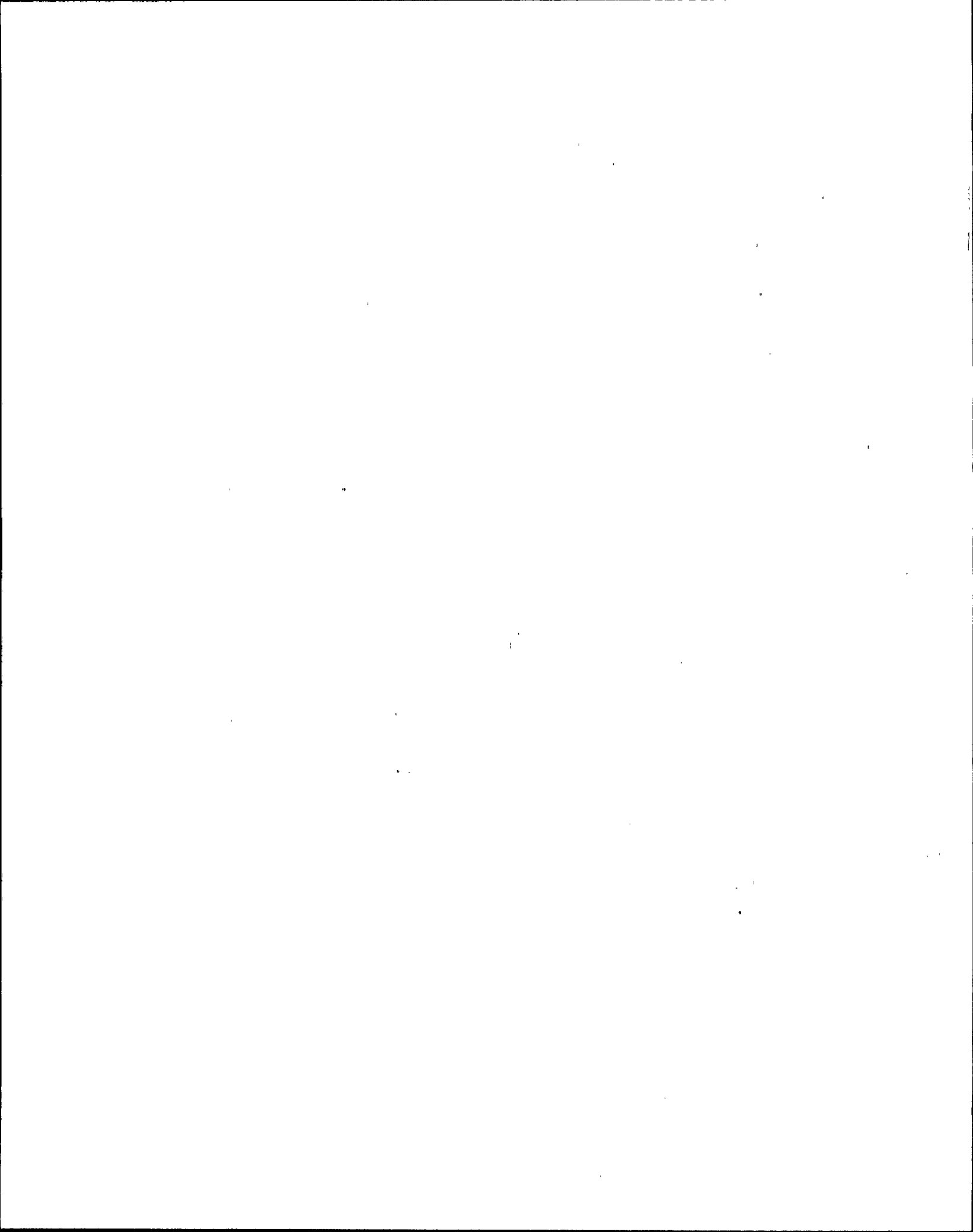
- a. one man, receiving 160 mrem.
- b. two men, each receiving 85 mrem.
- c. two men, receiving 110 mrem and 60 mrem, respectively.
- d. three men, each receiving 50 mrem.

QUESTION: 013 (1.00)

You desire to stop an automatic ECCS actuation.

Which ONE of the following is a violation of operations guidelines if used as justification for this action?

- a. Directed by the Shift Operations Supervisor while implementing an EOI.
- b. Automatic mis-operation has been confirmed by independent indications.
- c. ECCS equipment damage may result.
- d. Adequate core cooling is assured and no valid initiation signal was received..



QUESTION: 014 (1.00)

You are sent to hang a NP Hold Notice tag on a breaker. A tag of a different type is already on this breaker.

Which ONE of the following other tags MUST be released and removed from this breaker before you can hang the NP Hold Notice tag?

- a. NP Caution Order
- b. NP Operating permit
- c. TVA Hold Notice
- d. TVA Caution Order

QUESTION: 015 (1.00)

One step of a Unit 2 scheduled surveillance test calls for operating equipment on Unit 3 that would result in an ESF actuation.

Which ONE of the following is the specified action for the operator assigned to perform this surveillance?

- a. Have the ASOS correct the procedure in black pen, initial and date the correction.
- b. Obtain ASOS concurrence, mark N/A and correct the procedure, perform the surveillance on Unit 2.
- c. Place the system in a safe condition, notify Shift Supervision, conduct no further steps until a procedure change is approved.
- d. Perform the surveillance by operating the correct equipment on Unit 2 and notify the ASOS.

QUESTION: 016 (1.00)

Which ONE of the following applies if a valve is to be verified locked closed?

- a. Remove the lock, check that the valve is closed then reinstall the lock.
- b. Confirm visually or by valve handwheel movement allowed by the lock, that the valve is closed.
- c. Remove the lock, check that the valve is closed and leave the valve unlocked.
- d. The valve can NOT be independently verified closed.

QUESTION: 017 (1.00)

A red NP Hold Notice tag is attached to the outside of a closed compartment door for a GE 4160V vertical lift breaker. Which ONE of the following describes the meaning of the tag in this location?

- a. The breaker inside is in the rack-out position.
- b. Entry into the breaker compartment is denied without a tag lift.
- c. A grounding device is installed in the breaker compartment.
- d. The breaker inside is in the rack-out position but the closing springs are still charged.

QUESTION: 018 (1.00)

During a reactor startup, the reactor achieves a 25 second positive period.

Which ONE of the following is required?

- a. Insert control rods as necessary to achieve a stable negative period with no rod motion.
- b. Insert control rods as necessary to achieve a stable positive period greater than 60 seconds.
- c. Insert control rods as necessary to achieve a stable positive period greater than 30 seconds.
- d. Shutdown the reactor until a thorough assessment has been performed.

QUESTION: 019 (1.00)

During power reduction, which ONE of the following Reactor Protection System automatic scrams is bypassed by taking the mode switch from RUN to STARTUP?

- a. Turbine Stop Valve Closure.
- b. Low Scram Pilot Air Pressure.
- c. Main Steam Line Isolation Valve Closure.
- d. Turbine Control Valve Fast Closure.

QUESTION: 020 (1.00)

With fuel in the core, which ONE of the following is a core alteration?

- a. Withdrawal of one Intermediate Range Monitor (IRM).
- b. Installation of a special moveable SRM detector.
- c. Movement of a special moveable SRM detector in a quadrant containing fuel.
- d. Withdrawal of a control rod with no fuel in the associated core cell.

QUESTION: 021 (1.00)

In addition to a CONTROL ROD OVERTRAVEL alarm, which ONE of the following is indication of an uncoupled control rod when fully withdrawing a control rod?

- a. An immediate ROD DRIFT alarm.
- b. Rod position digital indication goes blank.
- c. Rod position backlighting turns red.
- d. White ROD SELECTED light goes out.



QUESTION: 022 (1.00)

Which ONE of the following describes the response of a control rod if the ball check valve in the drive mechanism is stuck closed during a scram?

(Assume normal HCU operation, accumulator pressure and reactor pressure.)

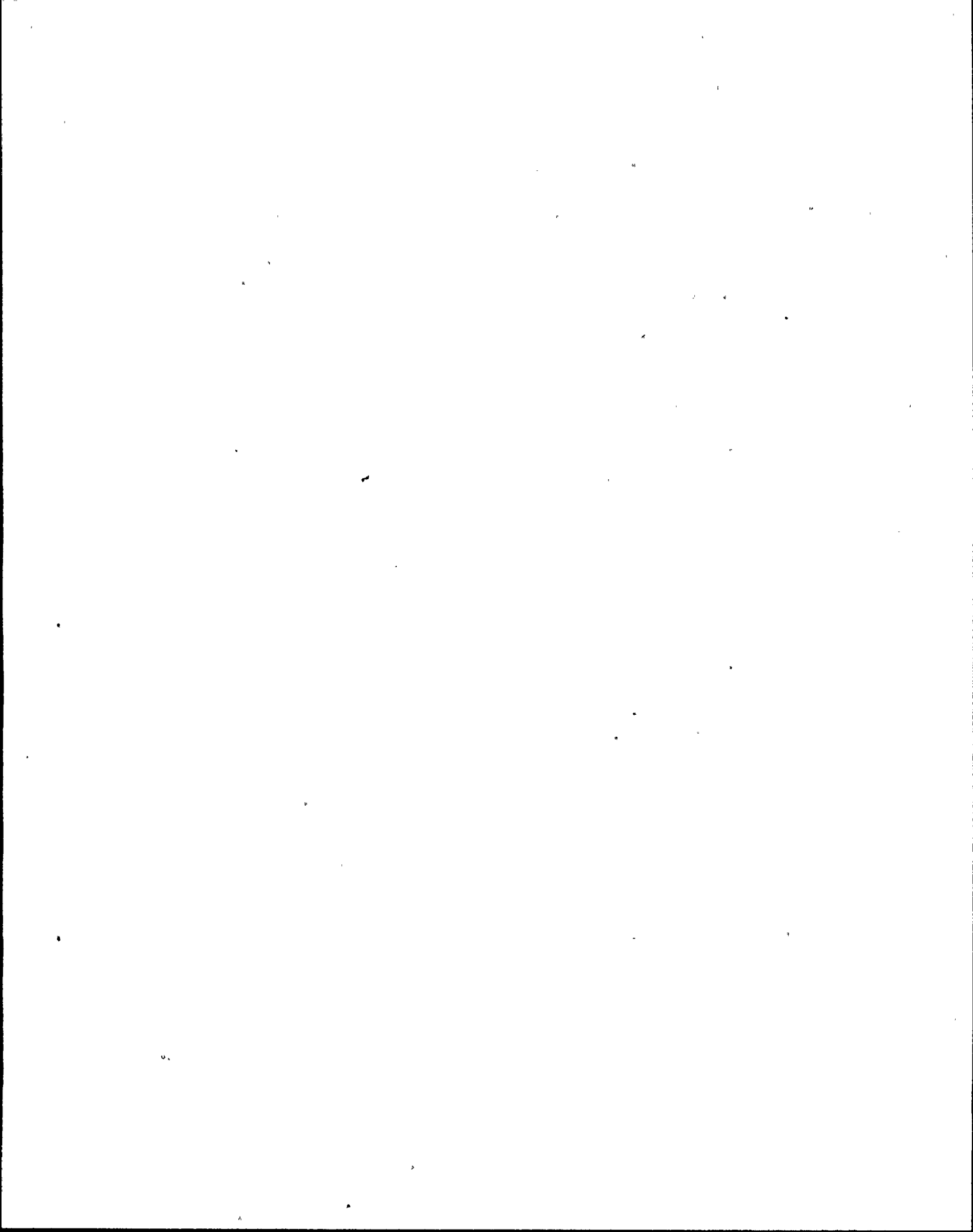
The control rod will:

- a. insert until accumulator pressure is less than reactor pressure.
- b. insert until accumulator pressure is less than 400 psig.
- c. fully scram faster than normal.
- d. fully scram slower than normal.

QUESTION: 023 (1.00)

Which ONE of the following will bypass ALL rod blocks caused by SRM "A" independent of reactor mode switch position?

- a. All IRM switches on range 8.
- b. All eight shorting links removed.
- c. SRM "A" detector fully withdrawn.
- d. SRM "A" function switch NOT in operate.



QUESTION: 024 (1.00)

While at power, the water level in the East CRD scram discharge volume (SDV) reaches the high-high level setpoint. In addition to alarms, which ONE of the following will result?

- a. Only a half reactor scram.
- b. A full reactor scram.
- c. The East SDV vent and drain valves open.
- d. Only a control rod block.

QUESTION: 025 (1.00)

The reactor is at 100% power. The mode switch is placed in SHUTDOWN.

Which ONE of the following will be the first signal to cause a reactor scram?

- a. Mode Switch in SHUTDOWN.
- b. IRM HI-HI Scram
- c. 15% APRM Scram
- d. MSIV Closure Scram

QUESTION: 026 (1.00)

Which ONE of the following is considered a Safety Limit violation?

- a. Steam dome pressure reaches 1250 psig with irradiated fuel in the vessel.
- b. MCPR reaches 1.10 during a loss of feedwater heating transient from 100% power.
- c. Reactor mode switch is placed in RUN with steam dome pressure less than 800 psig.
- d. A full load reject from 100% power causes an APRM HI-HI scram.

QUESTION: 027 (1.00)

With the reactor initially at 100% power, which ONE of the following would be a final steady state indication of an open Safety Relief Valve (SRV)?

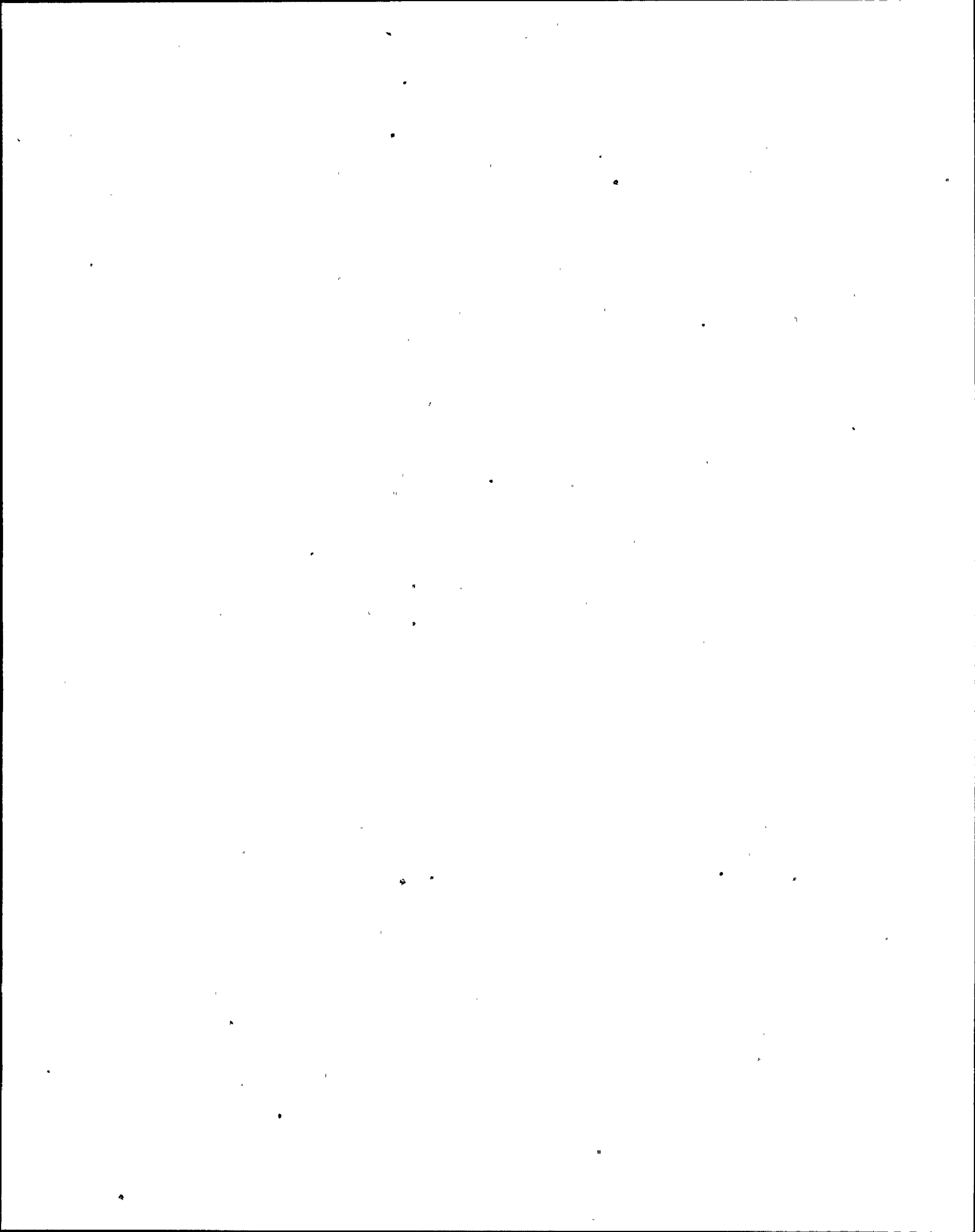
- a. Reactor pressure decrease.
- b. Total indicated steam flow increase.
- c. Generator power (MWE) decrease.
- d. Significant reactor power increase.

QUESTION: 028 (1.00)

A Safety Relief Valve (SRV) tailpipe vacuum breaker has stuck in the closed position after SRV operation.

Which ONE of the following could result with later operation of this SRV?

- a. Steam bypassing the quenchers with a direct discharge path into the suppression pool water.
- b. Direct pressurization of the drywell air space each time the SRV is opened.
- c. Overpressure damage to the SRV discharge piping.
- d. Insufficient flow through the SRV.



QUESTION: 029 (1.00)

With the APRM Channel meter function switch in the "Count" position, which ONE of the following is the MINIMUM reading for an operable APRM.

- a. 65%
- b. 70%
- c. 75%
- d. 100%

QUESTION: 030 (1.00)

Which ONE of the following describes a properly oriented fuel assembly within a four bundle fuel cell?

- a. The orientation tab on the fuel assembly bail handle points away from the control rod.
- b. Serial number on the handle is readable from the inside edge of the four bundle fuel cell.
- c. The channel spacing buttons face away from the control rod.
- d. The channel fasteners are located on the outside edge of the four bundle fuel cell.

QUESTION: 031 (1.00)

With the Rod Worth Minimizer keylock in NORMAL, a loss of all rod position signals from the RPIS system will cause:

- a. a withdraw, insert, and select rod block if power is less than the Low Power Alarm Point.
- b. only a withdraw block if power is less than the Low Power Set Point.
- c. a withdraw and insert rod block at any power.
- d. only a "System Malfunction" message.

QUESTION: 032 (1.00)

The AUTO light on the RWM operators panel just illuminated. Which ONE of the following describes the meaning of this indication?

- a. RWM operation above the LPSP and LPAP.
- b. RWM operation in the transition zone.
- c. RWM operation below the LPSP.
- d. Keylock switch in NORMAL with all system diagnostics satisfactory.

QUESTION: 033 (1.00)

The following conditions exist:

- The reactor mode switch is in REFUEL.
- All scrams are reset.
- The scram discharge volume (SDV) vent and drain switch, HS 85-36A, is in NORMAL.
- The SCRAM DISCH HI LEVEL BYPASS switch is placed in BYPASS.

Which ONE of the following will occur?

- a. SDV vent and drain valves travel open.
- b. The flow biased APRM HI-HI flux trip is bypassed.
- c. A control rod withdraw block is received.
- d. SDV vent and drain valves travel closed.

QUESTION: 034 (1.00)

One of the four red scram lights for RPS Bus "A" is out due to blown fuse #5A-F18A on panel 9-15 (the EOI appendix 1A fuses). All RPS "B" red scram lights are energized.

Which ONE of the following describes the current status of the control rods?

- a. 1/4 of control rods fed by RPS "A" are receiving alternate power.
- b. 1/4 of control rods fed by RPS "A" should have scrammed.
- c. 1/4 of all control rods have received a 1/2 scram.
- d. 1/4 of all control rods should have scrammed.

QUESTION: 035 (1.00)

Which ONE of the following describes a difference between scrambling control rods using the individual Scram Test Switch or Venting the Scram Pilot Air Header?

When using the individual Scram Test Switch the:

- a. SDV vent and drain valves do NOT close.
- b. individual rod insertion speed is slower.
- c. rods will NOT fully insert to position 00.
- d. RPIS will NOT track the rod position.



QUESTION: 036 (1.00)

The scram discharge volume vent and drain valves are verified closed by AOI-100-1, Reactor Scram.

Which ONE of the following would be the adverse consequence if they do NOT close when a scram occurs?

- a. There will be a primary leak to the reactor building.
- b. The CRD discharge path has insufficient back pressure.
- c. Excess control rod insertion speed will damage the drive mechanism.
- d. The reactor pressure will be necessary to complete rod insertion.

QUESTION: 037 (1.00)

With both recirculation pumps speeds matched at 100% power, which ONE of the following is indication of a reactor recirculation jet pump failure?

Indicated recirculation loop flow in the loop with the failed jet pump will:

- a. decrease and Core Pressure Drop 2-PDR-68-50 (panel 2-9-5) will increase.
- b. decrease and main generator output EI-57-50 (Panel 2-9-5) will decrease.
- c. increase and indicated Total Core Flow, 2-FR-68-50 (Panel 2-9-5) will increase.
- d. increase and core thermal power will increase.

QUESTION: 038 (1.00)

With the reactor initially at 100% power, which ONE of the following apply if both channels of the +/- 24VDC Neutron Monitoring electrical system are lost?

- a. All stack gas effluent monitoring will be lost.
- b. A reactor shutdown is administratively prohibited.
- c. A liquid radwaste discharge in progress will be automatically stopped.
- d. Both RPS "A" and "B" will scram due to IRM INOP.

QUESTION: 039 (1.00)

The following conditions exist:

- A reactor startup is in progress.
- The mode switch is in STARTUP.
- The main turbine is tripped.
- A valid MSIV isolation has occurred.
- The reactor did NOT automatically scram (No ATWS condition exists).

Which ONE of the following was the only signal that could have generated the MSIV isolation?

- a. Reactor vessel low low level.
- b. Main steam line high flow.
- c. Main steam line low pressure.
- d. Main steam line high radiation.

QUESTION: 040 (1.00)

Which ONE of the following are DC powered and must energize to operate in order to perform the intended function during a scram?

- a. Scram dump valves
- b. Backup Scram valves
- c. Scram pilot valve solenoids
- d. SDV vent and drain valve solenoids

QUESTION: 041 (1.00)

Which ONE of the following describes the effect on Reactor Recirculation Pump operation when the Alternate Rod Insertion (ARI) system is manually initiated instead of automatically initiated?

- a. The recirculation pumps trip immediately.
- b. The recirculation pumps remain running.
- c. Only the generator field breakers receive a direct trip.
- d. The recirculation pumps trip after a 30 second time delay.

QUESTION: 042 (1.00)

While at power, both seals on one reactor recirculation pump experience failure. Which ONE of the following is the MAXIMUM expected leak rate?

- a. 10 gpm.
- b. 20 gpm.
- c. 30 gpm.
- d. 60 gpm.

QUESTION: 043 (1.00)

A reactor scram from APRM High flux occurs at 100% power and both reactor recirculation pumps automatically run back to minimum speed (28%).

Which ONE of the following directly caused the recirculation pump circuitry to cause a run back?

- a. Fast closure of the turbine control valves.
- b. RPV level less than 27 inches.
- c. Total feedwater flow less than 20%.
- d. Trip of one reactor feed pump.

QUESTION: 044 (1.00)

Which ONE of the following will prevent RCIC discharge to the CST through the test line isolation valves FCV-71-38 and FCV-73-36?

- a. CST low level alarm (7,000 gal).
- b. RCIC minimum flow valve is open (FCV-71-34).
- c. Reactor water level is -35 inches.
- d. RCIC Injection valve is fully open (FCV-71-39).

QUESTION: 045 (1.00)

Which ONE of the following will automatically trip the Unit 2 Condenser Mechanical Vacuum Pumps?

- a. All Main Steam Line Radiation Monitors INOP.
- b. Offgas Post Treatment High-High-High radiation.
- c. Condenser suction valve (66-36 or 66-40) NOT full open.
- d. Condenser vacuum is 24 inches with reactor pressure 500 psig.

QUESTION: 046 (1.00)

Which ONE of the following will automatically isolate reactor water sample valves, FCV-43-13 and FCV-43-14?

- a. Only Hi Drywell Pressure.
- b. Hi Drywell Pressure or Reactor Water Low level.
- c. Hi Drywell Pressure and Reactor Water Low Low level.
- d. Only Reactor Water Low Low Low level.

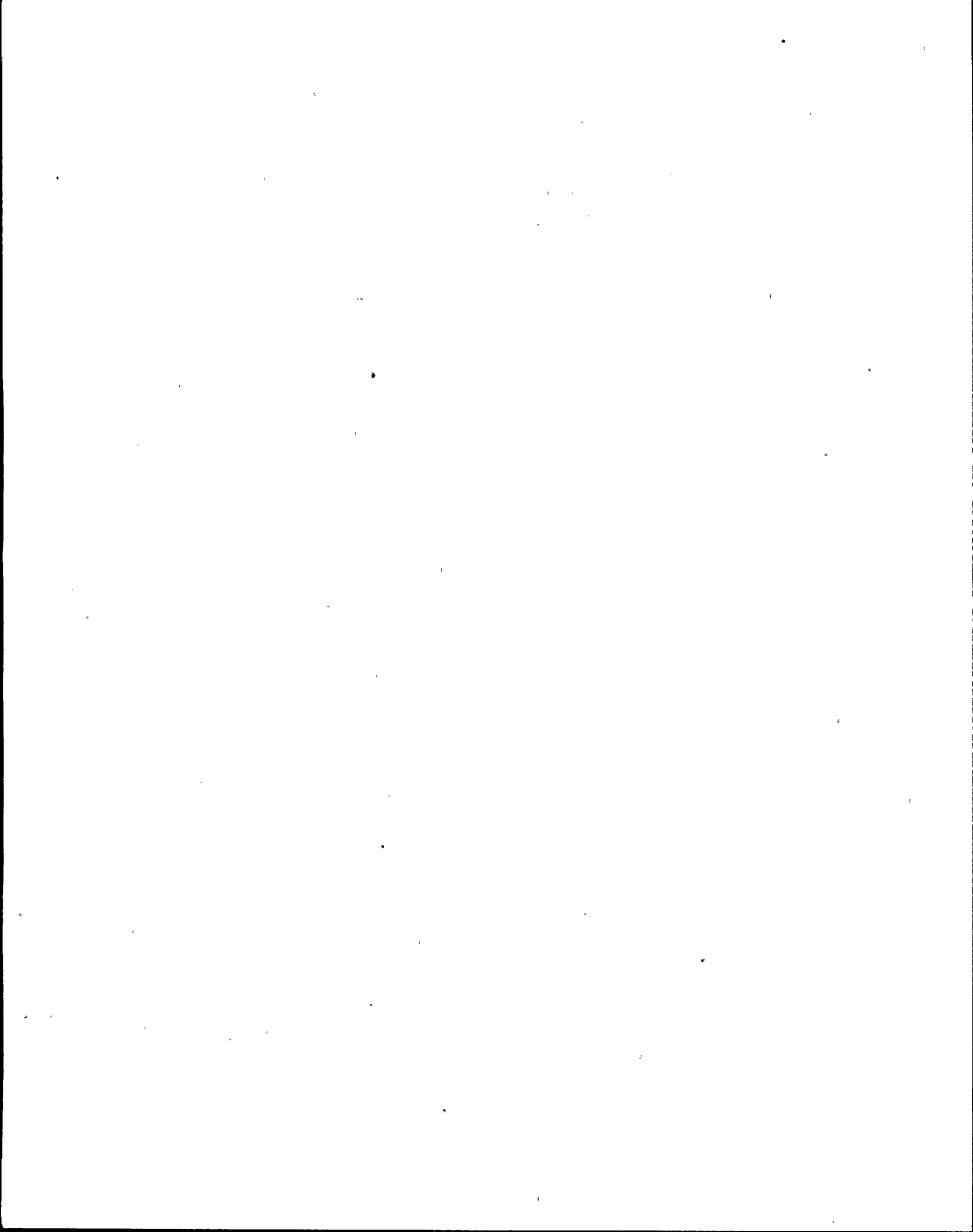
QUESTION: 047 (1.00)

The following conditions exist:

- The reactor mode switch is in RUN.
- IRM 'A' becomes INOP due to High Voltage low.
- IRM 'A' is NOT in BYPASS.

Which ONE of the following will subsequently cause a scram on RPS "A"?

- a. Placing IRM 'A' in BYPASS.
- b. Placing APRM 'A' in BYPASS.
- c. Placing the reactor mode switch in STARTUP.
- d. Placing IRM 'A' in BYPASS with APRM 'A' in BYPASS.



QUESTION: 048 (1.00)

For Unit 2, which ONE of the following identifies when the reactor vessel flange and head flange temperatures must be greater than or equal to 82 degrees F?

- a. Whenever the head bolt studs are under tension.
- b. Whenever in the Cold Shutdown Condition.
- c. Whenever there is fuel in the vessel.
- d. At all times.

QUESTION: 049 (1.00)

Which ONE of the following statements describe a condition that would stop Refuel Platform travel over the core from the SFSP?

- a. Mode Switch in REFUEL, all control rods inserted, fuel grapple loaded with a bundle.
- b. Mode Switch in REFUEL, one rod selected and withdrawn, fuel grapple full up and carrying a blade guide.
- c. Mode switch in REFUEL, no hoists loaded, fuel grapple full up, one rod selected and withdrawn.
- d. Mode switch in REFUEL, no hoists loaded, fuel grapple not full up, one rod selected and withdrawn.

QUESTION: 050 (1.00)

The following conditions exist during a LOCA:

- Reactor water level decreased to -130 inches and stabilized at -130 inches.
- All RHR and CS pumps are running.
- All ADS valves are closed and never opened.
- Drywell pressure increased to +3.0 psig, is now +2.0 psig and ADS High Drywell logic has been reset.
- Reactor pressure is 500 psig.

With no operator action, which ONE of the following describes the result on the Automatic Depressurization System?

The ADS valves will:

- a. NOT automatically open.
- b. open 95 seconds after level first reached -122 inches.
- c. open 265 seconds after level first reached -122 inches.
- d. open 360 seconds after level first reached -122 inches.

QUESTION: 051 (1.00)

Which ONE of the following will result in a total loss of ADS logic?

Power supply failure of:

- a. 250V RMOV Bd A
- b. 250V SD Batt B
- c. 250V RMOV Bd B
- d. 250V RMOV Bd C



QUESTION: 052 (1.00)

Which ONE of the following RHR valves will automatically close when 'A' RHR Pump's Shutdown Cooling Suction valve 2-74-2 is opened?

(Note: Assume no RHR pumps are running.)

- a. RHR Pump Torus Suction valve 2-74-1.
- b. RHR Pump Minimum Flow valve 2-74-7.
- c. RHR Spray/Cooling valve 2-74-57
- d. RHR Shutdown Cooling Suction supply valve 2-74-47.

QUESTION: 053 (1.00)

The following conditions exist:

- RHR Shutdown Cooling (SDC) Loop II is in operation.
- RHR Shutdown Cooling Loop I is inoperable.
- Reactor water level is -120 inches and decreasing.

In addition to restarting the RHR pumps, which ONE of the following is the MINIMUM action necessary to place RHR Loop II in the injection mode?

- a. Close the SDC supply valves 74-47 and 48, open the Torus Suction Valves 74-24 and 74-35, reset the SDC isolation.
- b. Open the Torus Suction Valves, 74-24 and 74-35, close the SDC Suction valves, 74-25 and 74-36.
- c. Close the SDC Suction valves, 74-25 and 74-36, open the Torus Suction Valves, 74-24 and 74-35, reset the SDC isolation.
- d. Close the SDC Suction valves 74-25 and 74-36, open the Torus Suction Valves 74-24 and 74-35, close the SDC supply valves, 74-47 and 48.

QUESTION: 054 (1.00)

Which ONE of the following identifies the set of conditions for which ALL reactor water level indicators should be considered invalid.

DRYWELL TEMPERATURE near INSTRUMENT RUN - RPV PRESSURE

- |                   |          |
|-------------------|----------|
| a. 200 degrees F, | 30 psig  |
| b. 320 degrees F, | 90 psig  |
| c. 350 degrees F, | 100 psig |
| d. 375 degrees F, | 250 psig |

QUESTION: 055 (1.00)

The following conditions exist:

- Initial main condenser vacuum was greater than 26" Hg.
- A loss of vacuum is in progress.

Which ONE of the following identifies the vacuum point (decreasing) that will initiate the total loss of the main condenser as a heat sink?

- a. 24.5" Hg.
- b. 21.8" Hg.
- c. 7.0" Hg.
- d. 0.0" Hg.

QUESTION: 056 (1.00)

When the individual valve Normal/Emergency switch is placed in EMERGENCY, which ONE of the following valves will lose all Group 2 isolation automatic closure circuitry?

- a. RHR Pump Torus Suction valve 2-74-1.
- b. RHR Pump Minimum Flow valve 2-74-30.
- c. RHR Discharge Cross-Tie Valve 1-74-101.
- d. RHR Shutdown Cooling Suction supply valve 2-74-47.

QUESTION: 057 (1.00)

The following conditions exist:

- The reactor was initially at power.
- A LOCA is now in progress.

Which ONE of the following is REQUIRED to automatically start all RHR pumps?

- a. Greater than +2.45 psig drywell pressure AND reactor pressure less than 450 psig.
- b. Greater than +2.45 psig drywell pressure AND less than -122 inches reactor water level.
- c. Less than +11 inches reactor water level AND greater than +2.45 psig drywell pressure
- d. Less than -122 inches reactor water level AND reactor pressure less than 450 psig.

QUESTION: 058 (1.00)

Which ONE of the following describes why Reactor Water Cleanup (RWCU) valves, Blowdown to the Condenser (69-16) and Blowdown to Rad Waste (69-17), should NOT be opened at the same time?

- a. Main condenser vacuum may be reduced.
- b. The blowdown valve (69-15), will NOT control at high flow rates.
- c. The RWCU pumps may experience high flow and trip on low suction pressure.
- d. The RWCU heat exchangers cannot remove sufficient heat to prevent system isolation.

QUESTION: 059 (1.00)

Which ONE of the following containment parameters/conditions would violate a Technical Specification limit?

- a. Suppression pool water level at -6 inches.
- b. Suppression pool temperature at 90 degrees F.
- c. Drywell oxygen (O-2) concentration at 3.5%.
- d. Drywell/torus differential pressure at 1.0 psid.

QUESTION: 060 (1.00)

Which ONE of the following will automatically close the recirculation pump discharge valves?

- a. Any automatic recirculation pump trip.
- b. Reactor level less than -122 inches.
- c. Both LPCI inboard and outboard injection valves open with one RHR pump running in that loop.
- d. Greater than +2.45 psig drywell pressure with reactor pressure less than 230 psig.

QUESTION: 061 (1.00)

Which ONE of the following requires local manual reset at the turbine?

- a. Only RCIC mechanical overspeed trip.
- b. RCIC and HPCI mechanical overspeed trip.
- c. RCIC and HPCI high reactor level trip.
- d. Only RCIC high reactor level trip.

QUESTION: 062 (1.00)

The following conditions exist during a Station Blackout (no incoming or diesel AC power):

- The High Pressure Coolant Injection (HPCI) system was started in response to a valid initiation signal.
- A valid HPCI isolation signal is subsequently generated.

Which ONE of the following is the expected result?

- a. The HPCI system will continue to operate.
- b. A full HPCI system isolation and turbine trip occurs.
- c. The Steam Supply Inboard Isolation valve 73-2 will close and turbine trip occurs.
- d. The Steam Supply Outboard Isolation valve 73-3 will close and turbine trip occurs.

QUESTION: 063 (1.00)

The following conditions exist while at power:

- The High Pressure Coolant Injection (HPCI) system was started for a surveillance test.
- A local operator reports that there is a steam leak on the HPCI turbine.
- The Control Room directs the operator performing the surveillance to isolate HPCI.

Which ONE of the following will result if the control room operator depresses the "Manual Isolation" pushbutton?

- a. The HPCI system will continue to operate.
- b. A full HPCI system isolation and turbine trip occurs.
- c. Only the Steam Supply inboard isolation valve 73-2 will close.
- d. Only the Turbine Stop valve 73-18 will close.

QUESTION: 064 (1.00)

Which ONE of the following is required in order to open the Radwaste Discharge Isolation Valve 77-61 to the discharge tunnel?

- a. One CCW pump running and discharge gate 1B fully open.
- b. Two CCW pumps running and discharge gate 1A fully open.
- c. One CCW pump running and discharge gates 1A and 3 fully open.
- d. Two CCW pumps running and discharge gates 1B and 3 fully open.

QUESTION: 065 (1.00)

Which ONE of the following Process Radiation Monitor Systems (PRM) will cause an isolation when excess radioactivity is detected, but does NOT actuate to prevent a radioactive release.

- a. RHRSW Liquid.
- b. Stack Gas High Range.
- c. Off-Gas Post Treatment.
- d. Control Room Ventilation.

QUESTION: 066 (1.00)

In order to open either the Torus Spray or Containment Spray valves, placing the RHR SYS I/II LPCI 2/3 CORE HEIGHT OVRD, 74-122/130, in BYPASS will bypass which ONE of the following interlocks?

- a. Only reactor level less than -183 inches.
- b. Reactor level less than -183 inches and drywell pressure less than +1.96 psig.
- c. Drywell pressure less than +1.96 psig and the LPCI initiation signal present.
- d. The LPCI initiation signal present and reactor level less than -183 inches.

QUESTION: 067 (1.00)

The following conditions exist:

- An ATWS is in progress.
- Reactor pressure is 1000 psig.
- The operator places the Standby Liquid Control (SBLC) handswitch to the START B position and the pump starts.
- The red flow light illuminates and then goes out.

Which ONE of the following describes the expected SBLC system operation if the operator then places the SBLC handswitch to the START A position?

- a. The A SBLC pump starts, the B SBLC pump stops.
- b. The A SBLC pump does NOT start, the B SBLC pump continues to operate.
- c. The A SBLC pump starts and the A squib valve fires.
- d. The A SBLC pump starts, the B SBLC pump continues to operate.

QUESTION: 068 (1.00)

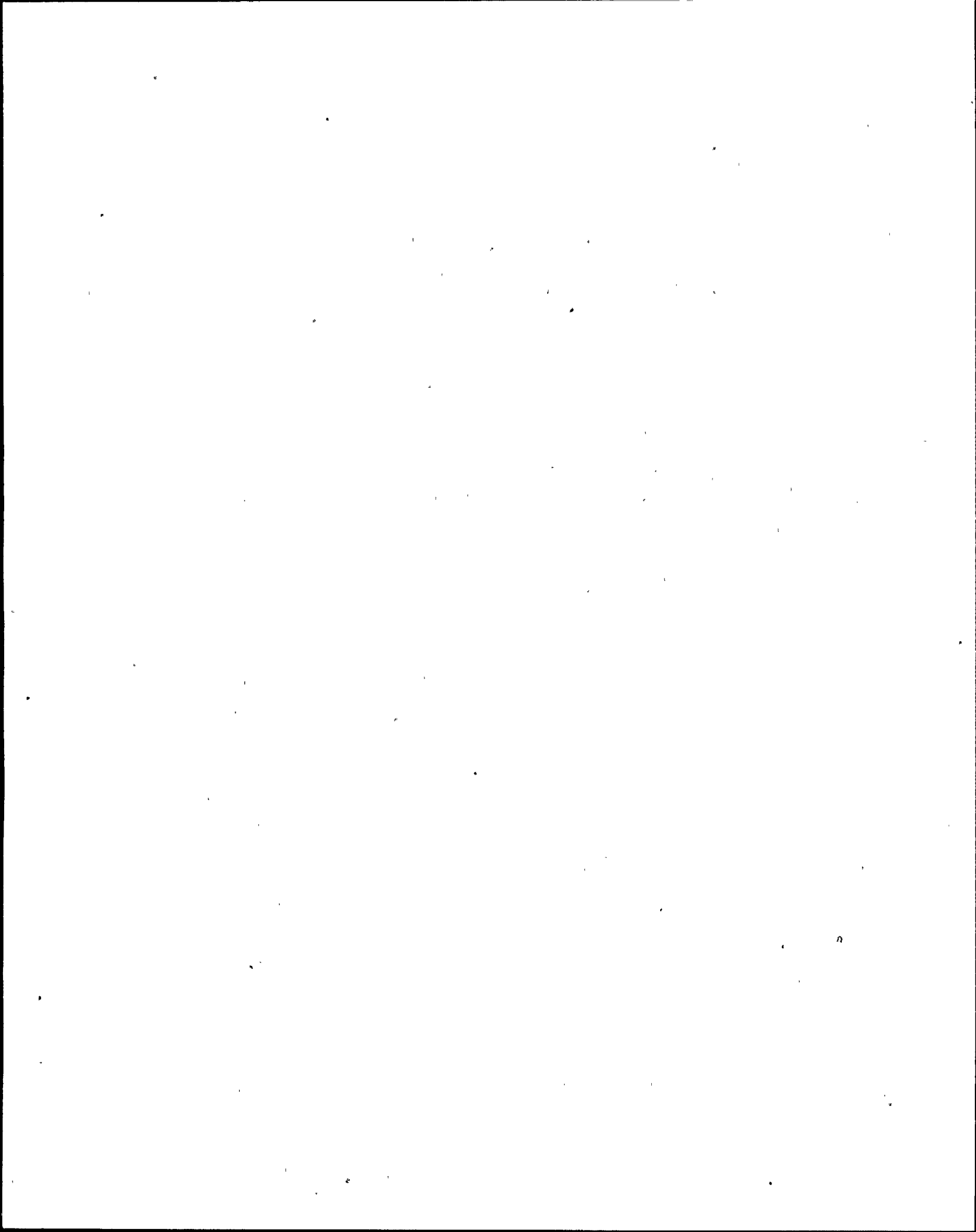
The following conditions exist:

- Unit 2 is operating at 100% power.
- The Standby Gas Treatment System (SGTS) is in the standby lineup.
- Unit 2 high drywell pressure initiates a valid SGTS system initiation signal.

Which ONE of the following states ALL locations from which the SGTS will automatically take suction.

- a. Unit 2 Reactor zone and refuel zone exhaust, all HPCI gland exhausts.
- b. U-2 drywell, reactor zone and refuel zone exhaust.
- c. U-2 drywell and U-2 HPCI gland exhaust.
- d. Unit 2 Reactor zone and refuel zone exhaust.





QUESTION: 069 (1.00)

The following conditions exist:

- A plant startup is in progress.
- Reactor power is presently 20%.
- A loss of condenser vacuum occurs.
- Condenser vacuum is presently -20 inches Hg.
- No operator action is taken.

Which ONE of the following describes the expected status of the reactor and of reactor pressure control?

- a. The reactor will NOT scram and pressure will be controlled by the main turbine.
- b. The reactor will NOT scram and pressure will be controlled by the main turbine bypass valves.
- c. The reactor will scram and pressure will be controlled by the main turbine bypass valves.
- d. The reactor will scram and pressure will be controlled by the MSRVS.

QUESTION: 070 (1.00)

The following conditions exist:

- A plant startup is in progress.
- Reactor pressure is 500 psig.
- No CRD Accumulators are in alarm.
- A trip of the 'A' CRD pump occurs.

Which ONE of the following conditions would require a manual reactor scram?

- a. Charging water pressure cannot be restored and maintained above 1410 psig.
- b. Cooling water pressure cannot be restored and maintained above 15 psid.
- c. One CRD accumulator alarm comes in for any cause.
- d. One CRD accumulator alarm comes in but only if the cause is low pressure.

QUESTION: 071 (1.00)

The following conditions exist:

- The reactor is in shutdown cooling with a reactor coolant temperature of 160 degrees F.
- A loss of shutdown cooling has occurred.
- All forced circulation has been lost.

Which ONE of the following states the required RPV level band and instrument to be used?

- a. +50 to +70 inches on the Floodup Indicator
- b. +70 to +90 inches on the Floodup Indicator
- c. +30 to +50 inches on the Emergency Range Indicator
- d. +40 to +60 inches on the Emergency Range Indicator

QUESTION: 072 (1.00)

The following conditions exist:

- The plant is operating at 100% power.
- Flow starts to decrease on the 'A' Reactor Feed Pump.

Which ONE of the following states the effect on the Reactor Recirculation System?

The Reactor Recirculation Pumps will run back to:

- a. 28% speed when 'A' RFP flow drops to 20% of rated and RPV level drops to 27".
- b. 28% speed when 'A' RFP flow drops to 27% of rated and RPV level drops to 20".
- c. 75% speed when 'A' RFP flow drops to 20% of rated and RPV level drops to 27".
- d. 75% speed when 'A' RFP flow drops to 27% of rated and RPV level drops to 20".

QUESTION: 073 (1.00)

Which ONE of the following meets the definition of "Subcritical" as used in the emergency operating procedures?

- a. Reactor power is in the source range with a positive period.
- b. Reactor power is below the APRM downscale trips with a negative period.
- c. Reactor power is reading 30 on Range 8 of the IRMs and is decreasing.
- d. Reactor power is reading 30 on Range 4 of the IRMs and is constant.

QUESTION: 074 (1.00)

The following conditions exist:

- Level/Power Control EOI is being executed.
- Reactor Power is 15%.
- Suppression pool temperature is 115 degrees F.
- Drywell pressure is 3 psig.
- All MSIVs are open.

Which ONE of the following MSIV isolation interlocks do the EOIs direct to be bypassed for these conditions?

- a. Only the Low Low Low RPV Water Level Isolation.
- b. Only the Low Low Low RPV Level and Main Steam Line Low Pressure Isolations.
- c. All MSIV Isolation Interlocks except Main Steam Line Low Pressure.
- d. All MSIV Isolation Interlocks.

QUESTION: 075 (1.00)

A loss of I&C Bus 'A' has occurred.

Which ONE of the following automatic actions will occur?

- a. Reactor Recirculation Pump 'A' runs back to minimum speed.
- b. Short cycle valves FCV-2-29A and FCV-2-29B fail closed.
- c. SJAE 'B' isolates if in service.
- d. Reactor/refuel zone ventilation isolates.

QUESTION: 076 (1.00)

A trip of a Reactor Recirculation Pump has occurred and it is determined that the plant is operating in Region II of the Power/Flow Map.

Which ONE of the following meets the procedural requirements for exiting Region II?

- a. Raise loop flow to greater than 45% with the running Reactor Recirculation Pump.
- b. Raise core flow to greater than 45% by restarting the tripped Reactor Recirculation Pump.
- c. Insert Control Rods in sequence to less than 80% rod line.
- d. Insert Control rods in sequence to enter Region III, then raise core flow to greater than 45%.

QUESTION: 077 (1.00)

While a fuel bundle is in transit from the vessel to storage racks with the bridge over the core, a fuel pool low level alarm is received and level in the fuel pool is observed to be lowering. According to O-GOI-100-3C, Fuel Movement Operations During Refueling, the correct operator actions are to . . .

- a. immediately stop all spent fuel bundle movement and evacuate the refuel floor and at least one elevation below the refuel floor.
- b. immediately lower and place the spent fuel bundle in a safe location in the core and document the final location on the FATF.
- c. immediately lower and place the spent fuel bundle in the fuel storage racks in the fuel pool, regardless of its present location, and document the final location on the FATF.
- d. immediately lower the spent fuel bundle to the core, regardless of its present location; document the final location of the bundle on the FATF; evacuate the refuel floor and drywell.

QUESTION: 078 (1.00)

The following conditions exist:

- The plant is at 100% power.
- The OG POST TRTMT RAD MONITOR HI-HI-HI/INOP alarm is in.
- The OFF-GAS POST TREATMENT RADIATION recorder reads  $7.2E+5$  cps on both channels.

Which ONE of the following states the REQUIRED action:

- a. Commence an orderly plant shutdown.
- b. Reduce core flow to between 50-60%, then manually scram the reactor.
- c. Reduce core flow to between 50-60%. If this action does NOT clear the Offgas Hi-Hi-Hi radiation, then manually scram the reactor.
- d. Reduce reactor power as necessary to clear the Offgas Hi-Hi-Hi radiation.

QUESTION: 079 (1.00)

The following conditions exist:

- A plant startup is in progress.
- The mode switch is in STARTUP/HOT STANDBY.
- Reactor power is 2%.
- Due to a massive system rupture, all RBCCW has been lost.

Which ONE of the following states the REQUIRED actions in the proper order?

- a. Trip both reactor recirculation pumps, manually scram the reactor just prior to reaching the Drywell High Pressure scram.
- b. Trip both reactor recirculation pumps, refer to 2-AOI-68-1, "Recirc Pump Trip/Core Flow Decrease" to determine if a scram is required.
- c. Trip both reactor recirculation pumps, manually scram the reactor; initiate a 90 degrees F/hr cooldown.
- d. Manually scram the reactor, trip both reactor recirculation pumps, initiate a 90 degrees F/hr cooldown.

QUESTION: 080 (1.00)

The following conditions exist:

- The Units 1/2 Control Room is evacuated due to smoke.
- All immediate operator actions were completed prior to evacuation.
- Reactor water level is +40 inches and stable.
- While operators are enroute to backup control stations, reactor pressure starts to increase.

Which ONE of the following should control the increasing reactor pressure?

- a. Turbine bypass valves.
- b. HPCI system running in CST to CST recirc.
- c. RCIC system running in CST to CST recirc.
- d. Main Steam Relief Valves.



QUESTION: 081 (1.00)

The following conditions exist:

- A high pressure scram signal was generated.
- A hydraulic lock resulted in 32 rods failing to fully insert.
- Reactor power is 4% and stable.
- 2-EOI-1, RPV Control is being executed.
- Reactor Recirculation pumps are presently at 50% pump speed and are running back to minimum speed.

Which ONE of the following describes the tripping of the Reactor Recirculation pumps?

- a. Both Reactor Recirculation pumps should be tripped immediately.
- b. Both Reactor Recirculation pumps should be tripped when minimum speed is reached.
- c. Both Reactor Recirculation pumps should be allowed to run back to minimum speed and should NOT be tripped.
- d. Both Reactor Recirculation pumps should be allowed to run back to minimum speed and should only be tripped if boron injection is subsequently required.

QUESTION: 082 (1.00)

Which ONE of the following is the MINIMUM Radiological Emergency Plan classification that requires entry to EOI-4?

- a. NOUE
- b. Alert
- c. Site Area Emergency
- d. General Emergency

QUESTION: 083 (1.00)

The following conditions exist:

- An ATWS has occurred.
- Reactor water level was deliberately lowered to -162 inches.
- Reactor power was at 15% when reactor water level reached -162 inches.
- The Main Condenser is NOT available.

Which ONE of the following states the desired water level under these conditions?

- a. above -162 inches but as close as possible to -162 inches
- b. below -162 inches but as close as possible to -162 inches
- c. above -190 inches but as close as possible to -190 inches
- d. below -190 inches but as close as possible to -190 inches

QUESTION: 084 (1.00)

The following conditions exist:

- An ATWS has occurred.
- Reactor water level is being lowered in accordance with 2-C-5, Level/Power Control.
- SBLC has been initiated.
- The SBLC tank was at normal level prior to the ATWS.

Which ONE of the following conditions would allow the operator to begin restoring RPV level to normal?

- a. SBLC Tank level lowers by 18%.
- b. SBLC Tank level drops to 34%.
- c. Reactor power drops below 5%.
- d. All MSRVS remain closed with drywell pressure below 2.4 psig.

QUESTION: 085 (1.00)

The following conditions exist:

- The plant is operating at 100% power.
- A loss of Control Air occurs.
- Control Air Header and Scram Air Header are both at 70 psig.

Which ONE of the following automatic actions should have occurred?

- a. Unit 2 and Unit 3 Reactors scram and Service Air Crosstie to Control Air Valve (0-FCV-33-1) opens:
- b. Unit 2 and Unit 3 Reactors scram and Unit 2 to Unit 3 Control Air Crosstie Valve (2-PCV-032-3901) closes.
- c. The Control Air Compressor selected as standby starts and Unit 2 to Unit 3 Control Air Crosstie Valve (2-PCV-032-3901) closes.
- d. Service Air Crosstie to Control Air Valve (0-FCV-33-1) opens and Emergency Control Bay Air Compressor starts.

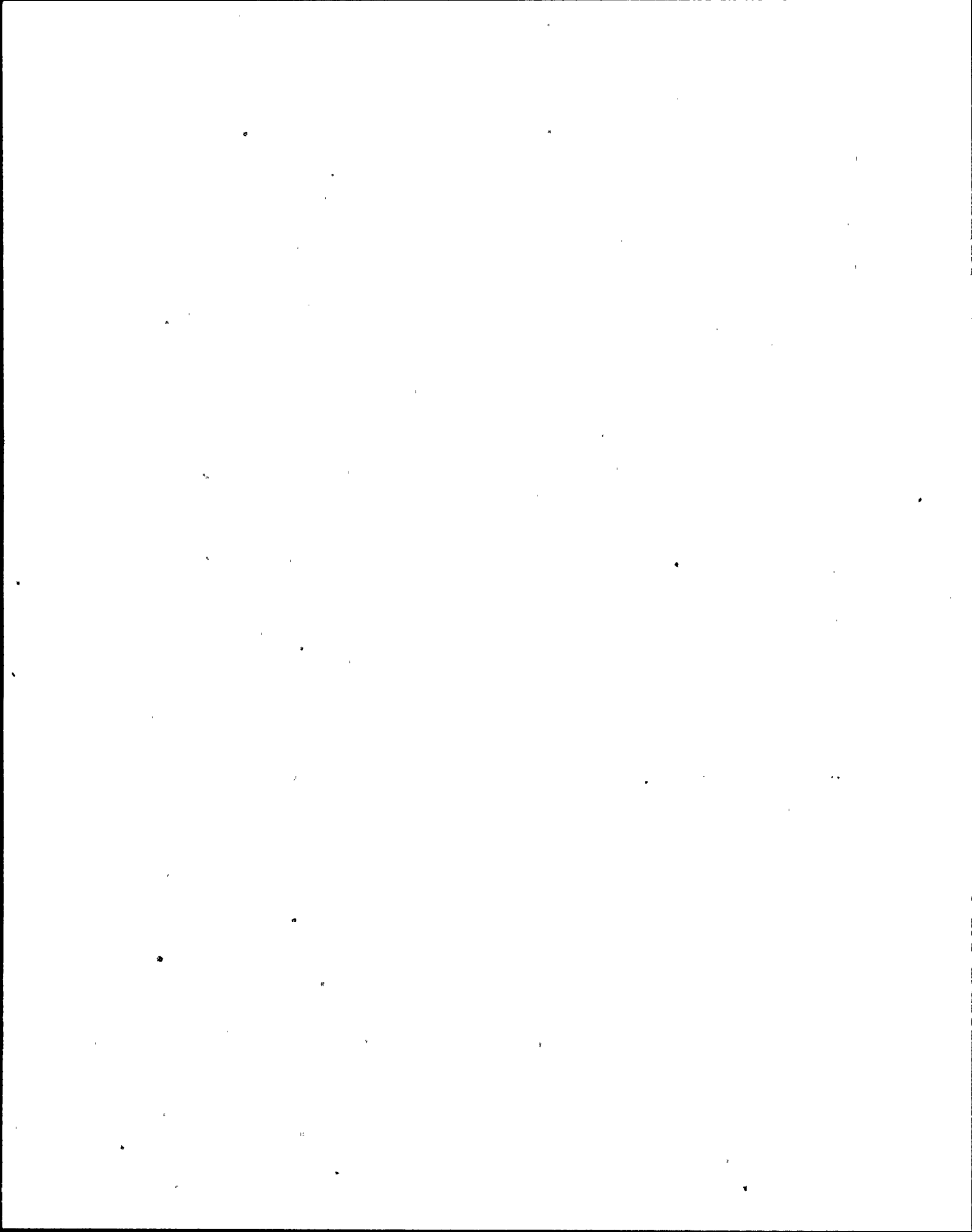
QUESTION: 086 (1.00)

The following conditions exist:

- Reactor power is 90%.
- A rod initially at position 24 starts to drift out.

Which ONE of the following is the required IMMEDIATE action?

- a. Select the drifting rod and insert to its designated position.
- b. Insert symmetrical control rods.
- c. Reduce core flow by approximately 10%.
- d. Manually scram the reactor.



QUESTION: 087 (1.00)

The following conditions exist:

- Unit 2 is operating at 100% power.
- A loss of RPS 'A' occurs.

Which one of the following isolation valves will close as a direct cause of the power loss?

- a. Group I Isolation Valves Inboard Only
- b. Group II Isolation Valves Outboard only
- c. Group II Isolation Valves Inboard and Outboard
- d. Group III Isolation Valves Inboard and Outboard

QUESTION: 088 (1.00)

Given that suppression pool level is rising, at what level (increasing) will the suppression chamber vent path be considered submerged?

- a. -1 inch
- b. +6 inches
- c. 18 feet
- d. 31 feet

QUESTION: 089 (1.00)

EOI-4 directs the operator to ensure which of the following systems is in service?

- a. Reactor Building Ventilation
- b. Turbine Building Ventilation
- c. Control Room Emergency Ventilation
- d. Standby Gas Treatment

QUESTION: 090 (1.00)

The following conditions exist:

- The reactor is operating at 100% power.
- The transmitter for the in service pressure regulator fails upscale.
- No operator action is taken.

Which ONE of the following is an expected automatic response?

- a. A reactor scram will occur on low main steam line pressure.
- b. A reactor scram will occur on MSIV closure.
- c. A reactor pressure decrease (2-5 psig) will occur.
- d. A reactor power increase (2-5%) will occur.

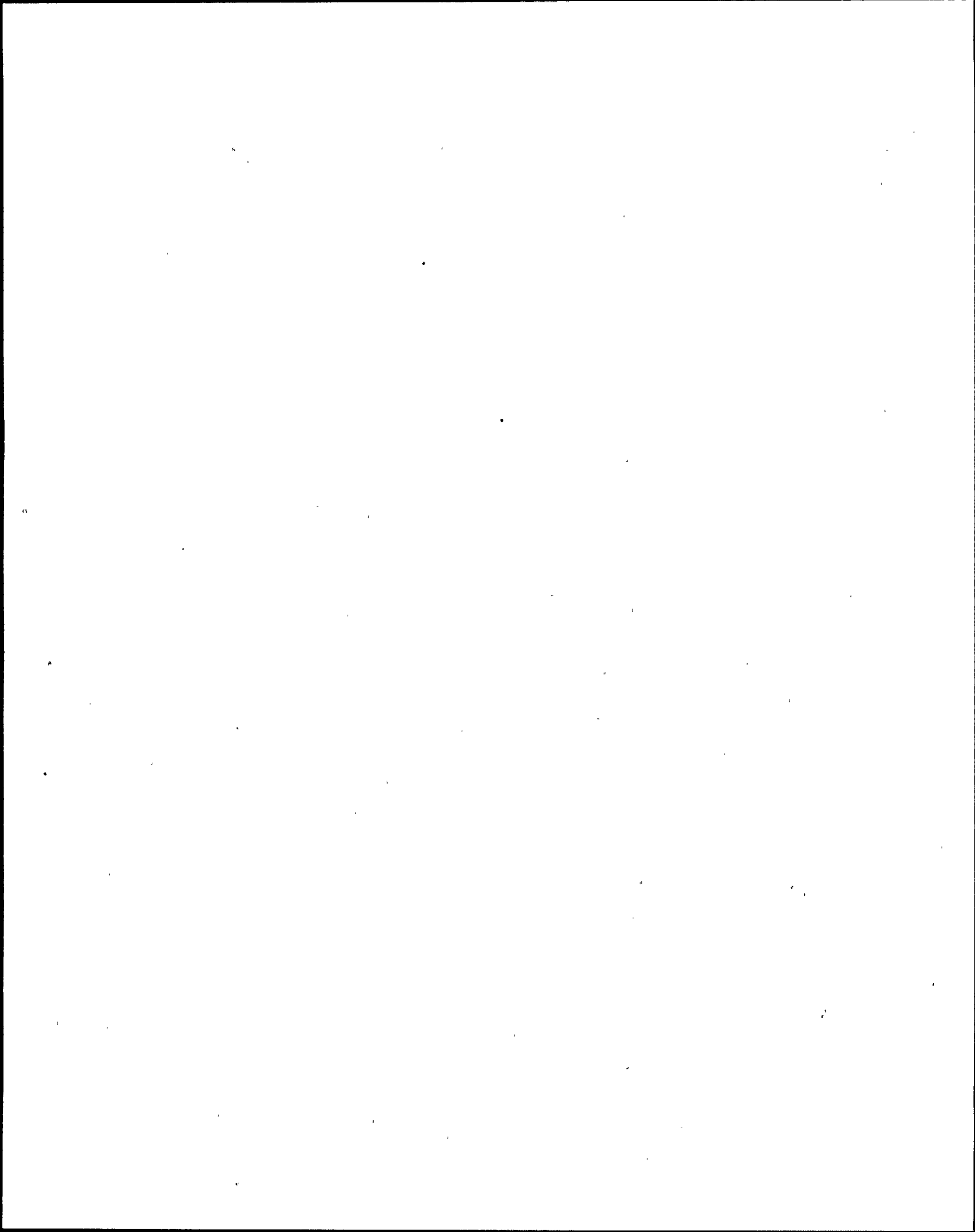
QUESTION: 091 (1.00)

The following conditions exist:

- During a plant transient HPCI is being used to control reactor water level when a Group 4 isolation occurs.
- The HPCI AUTO ISOL LOGIC A & LOGIC B lights do NOT illuminate.

Which ONE of the following signals caused the Group 4 Isolation?

- a. High HPCI Area Temperature
- b. High Steam Line Flow
- c. Low Steam Line Pressure
- d. HPCI Turbine Trip



QUESTION: 092 (1.00)

The following conditions exist:

- A spurious reactor scram has occurred. (Condition cleared immediately.)
- Reactor water level decreased to +15 inches at the time of the reactor scram and has been recovered to +30 inches.
- Reactor pressure peaked at 1028 psig and is now stable at 980 psig.
- Four control rods remained at position 48. All other control rods fully inserted.
- Reactor power is stable at 2%.

Which ONE of the following is the prescribed method for inserting the control rods that are at position 48?

- a. Initiate ARI per RC/Q.
- b. Reset the scram and manually reinsert another scram per AOI-100-1.
- c. Scram the rods using individual scram test switches per EOI Appendix 1C.
- d. Reset the scram and drive the rods into the core with normal drive water pressure per EOI Appendix 1D.

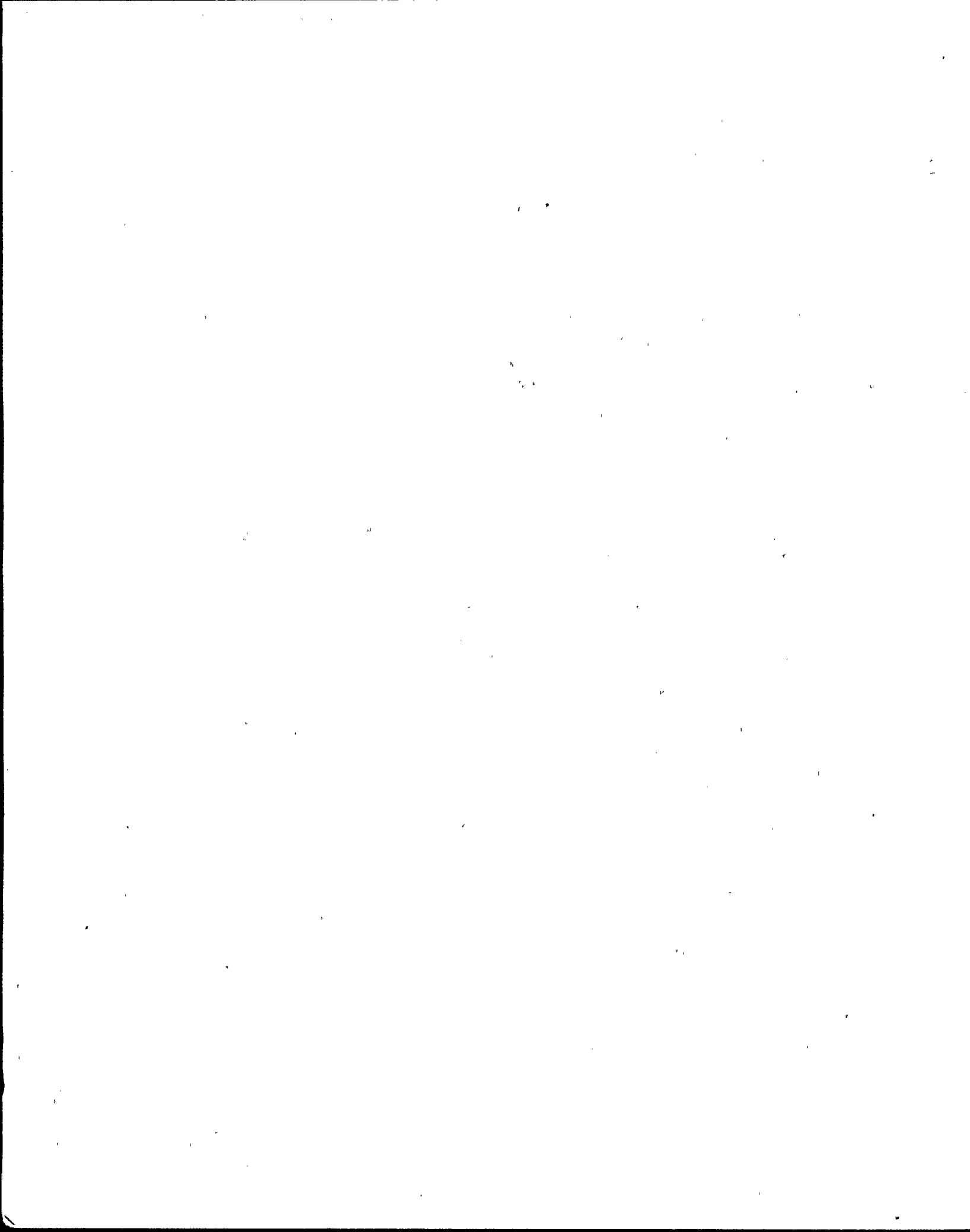
~~QUESTION: 093 (1.00)~~ *deleted*

A primary system is discharging into secondary containment causing elevated temperatures.

Which ONE of the following secondary containment area temperatures would affect the reading on the floodup level indicator?

- a. RWCU Heat Exchanger Room
- b. RWCU Pump Room
- c. Reactor Building Elevation 585'
- d. Reactor Building Elevation 593'





QUESTION: 094 (1.00)

Which ONE of the following conditions would require entry to 2-EOI-3, Secondary Containment Control?

- a. Reactor Zone Ventilation exhaust radiation level at 70 mRem/hr.
- b. Refuel Zone Ventilation exhaust radiation level at 70 mRem/hr.
- c. Reactor building floor drain sump water level at 70 inches.
- d. Secondary containment area water level at 0.17 inches.

QUESTION: 095 (1.00)

The following conditions exist:

- The plant is shutdown with the Reactor Recirculation pumps secured.
- Reactor vessel level is being raised to promote natural circulation.

With vessel level increasing, which ONE of the following is the approximate RPV level at which the Main Steam Lines will start to flood?

- a. 77 inches
- b. 97 inches
- c. 117 inches
- d. 137 inches

QUESTION: 096 (1.00)

The following conditions exist:

- The plant is at 50% power.
- EHC system malfunctions are causing turbine stop and control valves to spuriously operate.

Which ONE of the following sets of valve closures should cause a full reactor scram?

- a. Control Valves #1 and #3 fast close.
- b. Stop Valves #1 and #3 go closed.
- c. Control Valves #1 and #2 fast close.
- d. Control Valve #1 fast closes and Stop Valve #2 goes closed.

QUESTION: 097 (1.00)

Which ONE of the following sets of parameters is needed to plot position on the Drywell Spray Initiation Limit curve?

- a. Drywell temperature and drywell pressure.
- b. Drywell temperature and RPV pressure.
- c. Drywell temperature and suppression chamber pressure.
- d. Drywell pressure and suppression chamber pressure.

QUESTION: 098 (1.00)

The following conditions exist:

- The plant is operating at 100% power when an ATWS occurs.
- The operator is lowering reactor water level by terminating and preventing injection to the RPV from all sources except boron and CRD.
- The operator then notices that reactor power is oscillating from 15% to 20% on the APRMs.

Which ONE of the following is the required action?

- a. Immediately stabilize reactor water level.
- b. Immediately cease flow reduction efforts until power oscillations have ceased.
- c. Continue to lower reactor water level regardless of magnitude of power oscillations.
- d. Continue to lower reactor water level until the peak-to-peak oscillations reach 10%, then stabilize water level at that point.

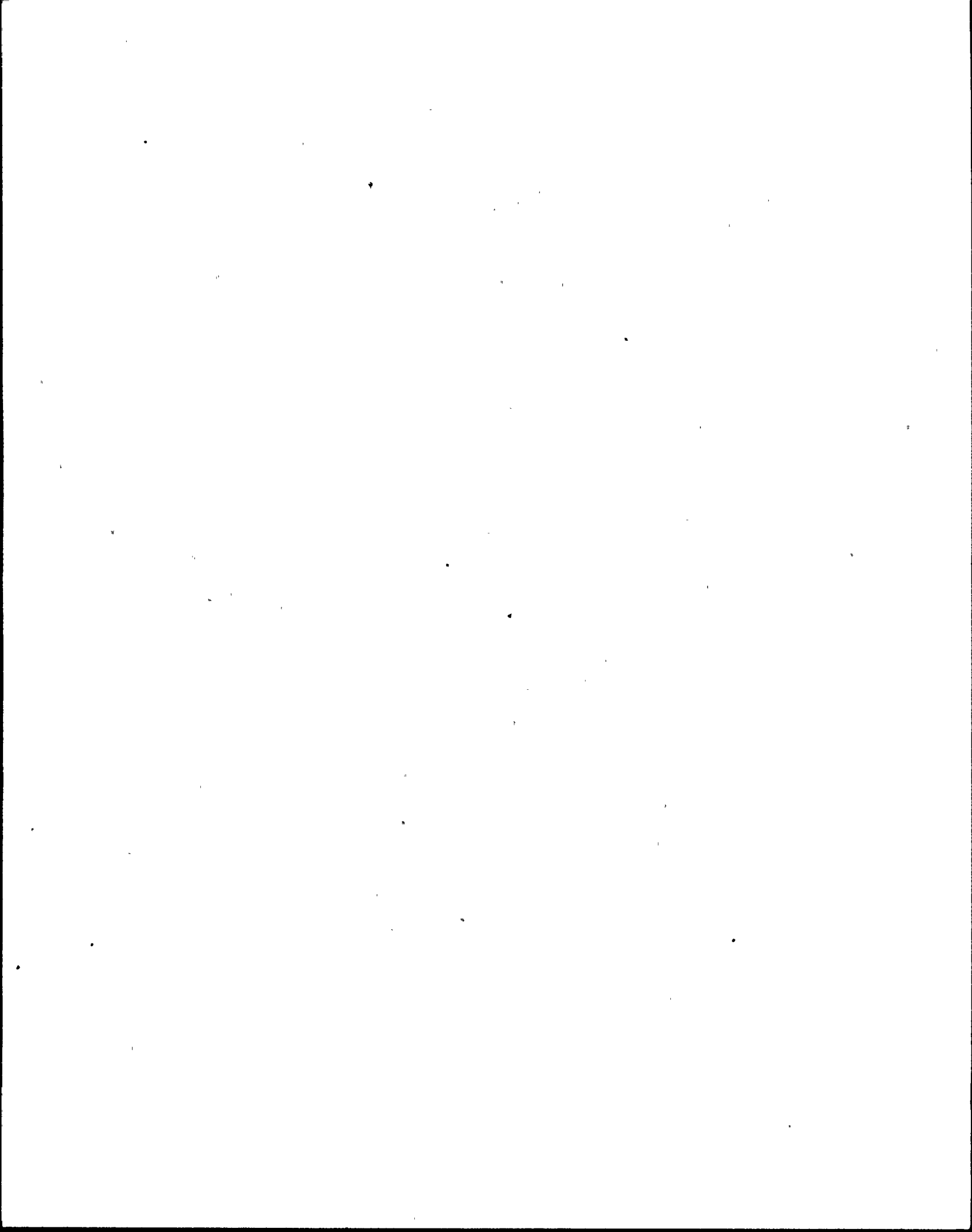
QUESTION: 099 (1.00)

The following conditions exist:

- The plant is operating at 100% power and 1000 psig.
- A reactor pressure spike causes a MSR/V to open.

Which ONE of the following tailpipe temperatures would you expect to see if the MSR/V has failed to reclose?

- a. 212 degrees F
- b. 290 degrees F
- c. 370 degrees F
- d. 545 degrees F



QUESTION: 100 (1.00)

During a plant transient, Reactor Zone and Refuel Zone Radiation levels increase to 70 mRem/hr.

Which ONE of the following describes the expected response?

- a. Reactor Zone Ventilation isolates and SGBT starts.
- b. Refuel Zone Ventilation isolates and SGBT starts.
- c. Reactor and Refuel Zone ventilation isolates but SGBT does NOT start.
- d. No Reactor Zone or Refuel Zone isolation occurs.

QUESTION: 101 (1.00)

The following conditions exist:

- Drywell spray is in service to lower drywell temperature.
- Reactor pressure is 400 psig.
- Drywell pressure is 8 psig.
- Drywell temperature is 290 degrees F.

With the RHR SYS I CTMT VLV SELECT SWITCH in SELECT and reactor water level decreasing, which ONE of the following is the water level at which the RHR SYS I DW SPRAY INBD VLV (2-FCV-74-61) will go closed?

- a. -45 inches
- b. -122 inches
- c. -150 inches
- d. -183 inches

QUESTION: 102 (1.00)

With a decreasing suppression pool level, which ONE of the following is the point at which the HPCI exhaust discharge device is assumed to become uncovered?

- a. -6 inches Narrow Range indication
- b. 12.75 feet Wide Range indication
- c. 10.75 feet Wide Range indication
- d. 10 feet Wide Range indication

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

ANSWER: 001 (1.00)

c.

REFERENCE:

OPL171.038, rev 2, pg 18, sect 4.b.1 and Obj V.B.12

E4

[3.1/3.4]

262001K403 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

OPL171.038, pgs 19-21 sect 5a,b,c, and 29 and Obj V.B.13

E5

[3.3/3.6]

262001K201 ..(KA's)

ANSWER: 003 (1.00)

c.

REFERENCE:

2-AOI-68-1, Rev 0021, Caution, pg 1 of 13  
1995 Browns Ferry Exam

[3.3/3.6]

295001G007 ..(KA's)

ANSWER: 004 (1.00)

d.



REFERENCE:

EOI-4, bases, pg 9 of 22, second paragraph.

[4.2/4.2]

294001A102 .. (KA's)

ANSWER: 005 (1.00)

a.

REFERENCE:

10 CFR Section 26.20, "require a statement to be made by a called-in-person as to whether alcohol has been consumed etc."

SSP-1.6, rev 9, sect 3.13.B.,

[3.2/3.7]

294001K105 .. (KA's)

ANSWER: 006 (1.00)

b.

REFERENCE:

SSP-1.7, rev 3, pg sect 3.0

[2.7/3.7]

294001A103 .. (KA's)

ANSWER: 007 (1.00)

d.

## REFERENCE:

SSP-12.1, rev 22, pg 25, item 3.1.10.J.1.d requires the UO to "Initiate a reactor trip if a safety limit is exceeded". This is more limiting than TS or 10 CFR 50.36.

TS definitions, 1.0 A Safety Limit and Hot Shutdown, sect 6.7 Safety Limits  
10 CFR 50.36.c.1.i

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 008 (1.00)

c.

## REFERENCE:

SSP-5.1, rev 10; pg 21, 3.9.3.A, Note 1 and pg 22, 3.9.3.B

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 009 (1.00)

a.

## REFERENCE:

TS def, Rated power, 3293 for all 3 units.

Check at facility - No Ref provided to show 102% max for 15 minutes is OK and 8 hour average not to exceed 3293 Mwt are normal BWR limits.

[3.2/3.4]

294001A115 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

SSP-12.1, rev 22, pg 25, item 3.1.10.I.1.a "Initiate a reactor trip if indications exceed reactor trip settings and the trip has not occurred."

[4.5/4.3]

294001A113 ..(KA's)

ANSWER: 011 (1.00)

c.

REFERENCE:

SSP-12.1, rev 22, pg 27, 3.1.10.17  
10 CFR 50.54(x)

[3.3/4.2]

294001A109 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

SSP-5.2, rev 6, pg 4, sect 1.0, 2.0 and 2nd sentence of 3.1, minimize personnel TEDE.

[3.3/3.4]

294001K104 ..(KA's)

ANSWER: 013 (1.00)

c.

REFERENCE:

SSP-12.1, rev 22, pg 25, NOTE at bottom.

[4,5/4.3]

294001A113 ..(KA's)

ANSWER: 014 (1.00)

b.

REFERENCE:

SSP-12.3, rev 19, pg 24, item 3.1.10.D.2

[3.9/4.5]

294001K102 ..(KA's)

ANSWER: 015 (1.00)

c.

REFERENCE:

SSP-2.1, rev 12, pg 5, item 3.2.A.5

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 016 (1.00)

d.

REFERENCE:

SSP-12.6, rev 2, pg 9, 3.3.2  
[3.7/3.7]

294001K101 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

SSP-12.3, rev 19, pg 15, items 3.1.5.J and K  
[3.3/3.6]

294001K107 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

OPL171.019, rev 4, pg 30, sect 5 and obj 12.b  
Requirement is to achieve sub-criticality, d not correct if rod motion  
causes negative period but Keff still >1.0

[3.9/3.8]

215004A401 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

OPL171.028, rev 8, table #1  
Obj V.B.8&9

[4.0/4.1]

212000A216 ..(KA's)

ANSWER: 020 (1.00)

d.

REFERENCE:

TS definitions, pg 1.0-7, CORE ALTERATION

[3.3/4.2]

290002G011 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

2-AOI-85-2, rev 0006, pg 1, sect 2.0  
OPL171.029, rev 6, pg 20, overtravel is S-50 even reed switch and OBJ  
6.e

[3.8/3.9]

201003K402 ..(KA's)

ANSWER: 022 (1.00)

d.

REFERENCE:

OPL171.006, rev 3, pgs 23, 24, 31 top para, TP-5, and Obj V.B.11  
[3.6/3.7]

201003K404 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

OPL171.019, rev 4, pg 43, and obj V.B.9  
[3.4/3.4]

215004K102 ..(KA's)

ANSWER: 024 (1.00)

b.

REFERENCE:

OPL171.005, rev 6, pgs 26, 27 and Obj C.10  
OPL171.028 rev 8, pg 34, TP-2, pg 15 item d.(3)  
[3.5/3.5]

201001A311 ..(KA's)

ANSWER: 025 (1.00)

c.

## REFERENCE:

OPL171.028, rev 8, table #1 and obj B.6  
Fac Q 13953 modified

[3.7/3.9]

212000K101 .. (KA's)

ANSWER: 026 (1.00)

d.

## REFERENCE:

TS 1.1.B, Power Transient Safety Limit, pg 2.1-5  
OPL171.028, rev 8, pg 14 & 15, and obj V.B.1

[3.3/4.1]

290002G005 .. (KA's)

ANSWER: 027 (1.00)

c.

## REFERENCE:

OPL171.026, rev 5, pg 43, item 12.b and obj V.B.7.c  
Note - less steam to the turbine causes less extraction steam thus less  
feedwater heating giving more reactor power.

[3.7/3.8]

239001K126 .. (KA's)

ANSWER: 028 (1.00)

c.



REFERENCE:

OPL171.009, rev 4, pg 13, item 2.e, Obj.V.B.5  
[3.1/3.3]

239002K403 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

OPL171.022, rev 2, pg 23, item (d) and obj V.B.9.c  
TS table 3.1.A, note #13

[3.6/3.8]

215005A406 ..(KA's)

ANSWER: 030 (1.00)

b.

REFERENCE:

OPL171.004, rev 2, TP-10, Obj V.B.6  
Fac Q 12242 modified

[3.0/3.7]

234000K505 ..(KA's)

ANSWER: 031 (1.00)

a.

## REFERENCE:

OPL171.024, rev 7, pg 14, item f.(3) and Obj V.B.3 and page 40, sect 4.d.(1)

AOI-85-4 does not state that rod blocks will occur in the transition zone but the above reference to equipment operation is clear and the learning obj implies that this is in fact the case.

[3.4/3.5]

201006A102 ..(KA's)

ANSWER: 032 (1.00)

a.

## REFERENCE:

OPL171.024, rev 8, pg 15 , item g.(4), Obj V.B.4

[3.2/3.1]

201006A301 ..(KA's)

ANSWER: 033 (1.00)

c.

## REFERENCE:

TS table 3.1.A, note # 2  
OPL171.029, rev 6, pg 37, TP-8, and Obj V.7.c

[3.2/3.1]

212000A201 ..(KA's)

ANSWER: 034 (1.00)

c.

REFERENCE:

OPL171.028, rev 8, pg 24, top of page and TP-11  
[3.8/4.1]

262001K306 ..(KA's)

ANSWER: 035 (1.00)

a.

REFERENCE:

EOI-1, program manual sect V-C, rev 2, pg 143 of 144  
OPL171.028, rev 8, sect 5.b.(1) and obj V.B.11

[3.8/3.9]

201001K406 ..(KA's)

ANSWER: 036 (1.00)

a.

REFERENCE:

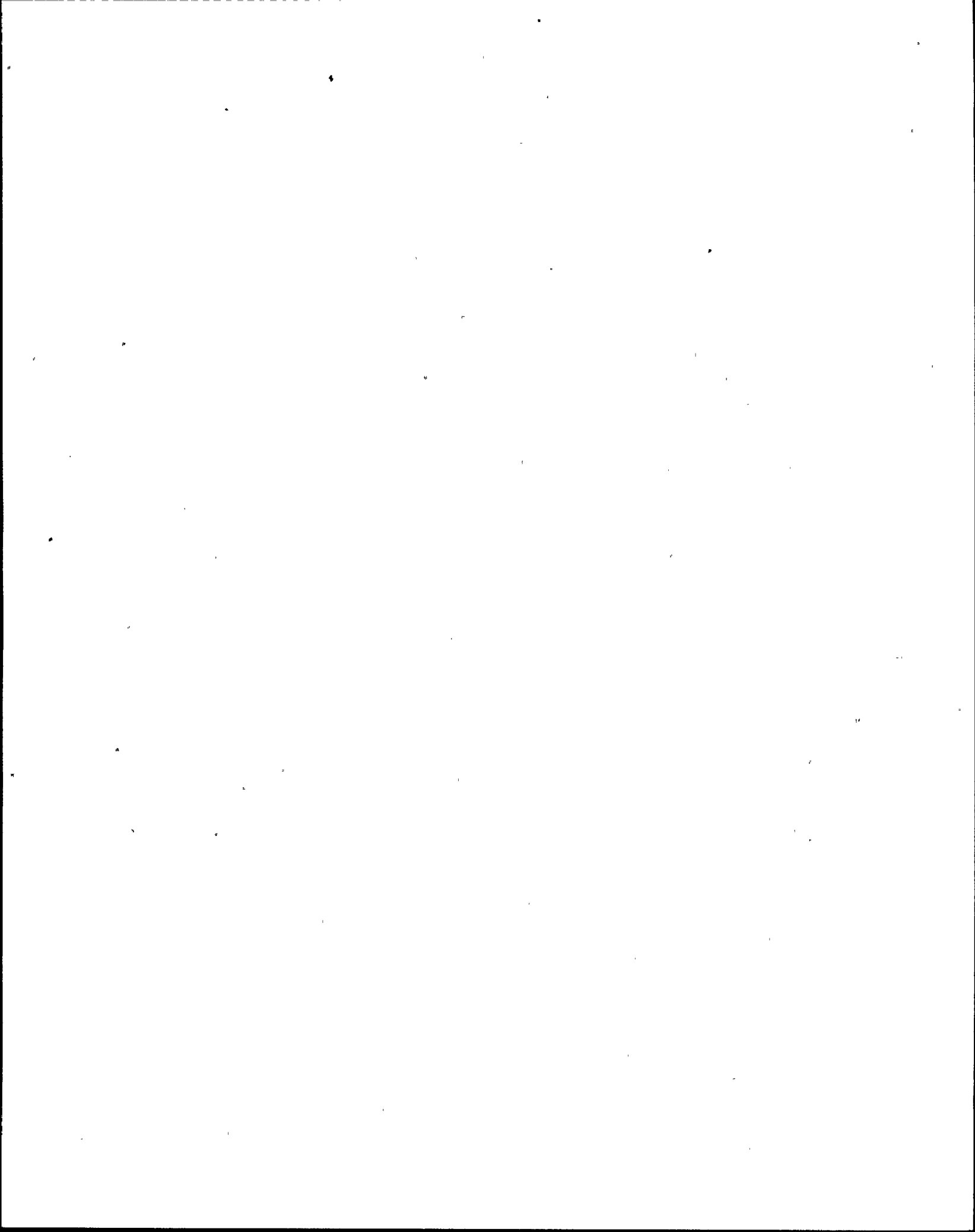
OPV171.005, rev 6, pg 25, item 9 top of page, to RBEDS which is vented  
to RB atmosphere.

[3.2/3.3]

201001G010 ..(KA's)

ANSWER: 037 (1.00)

c.



REFERENCE:

AOI-68-2, rev 9, pg 1, sect 2.0  
OPL171.007, pgs 54, 55, 56 and obj V.B.33

[3.5/3.7]

202001K601 ..(KA's)

ANSWER: 038 (1.00)

c.

REFERENCE:

OI-57D, rev 42, pg 29  
OPL171.037, Obj V.B.9  
OPL171.033, table #1, pgs 3 and 4

[3.4/3.8]

263000K303 ..(KA's)

ANSWER: 039 (1.00)

b.

REFERENCE:

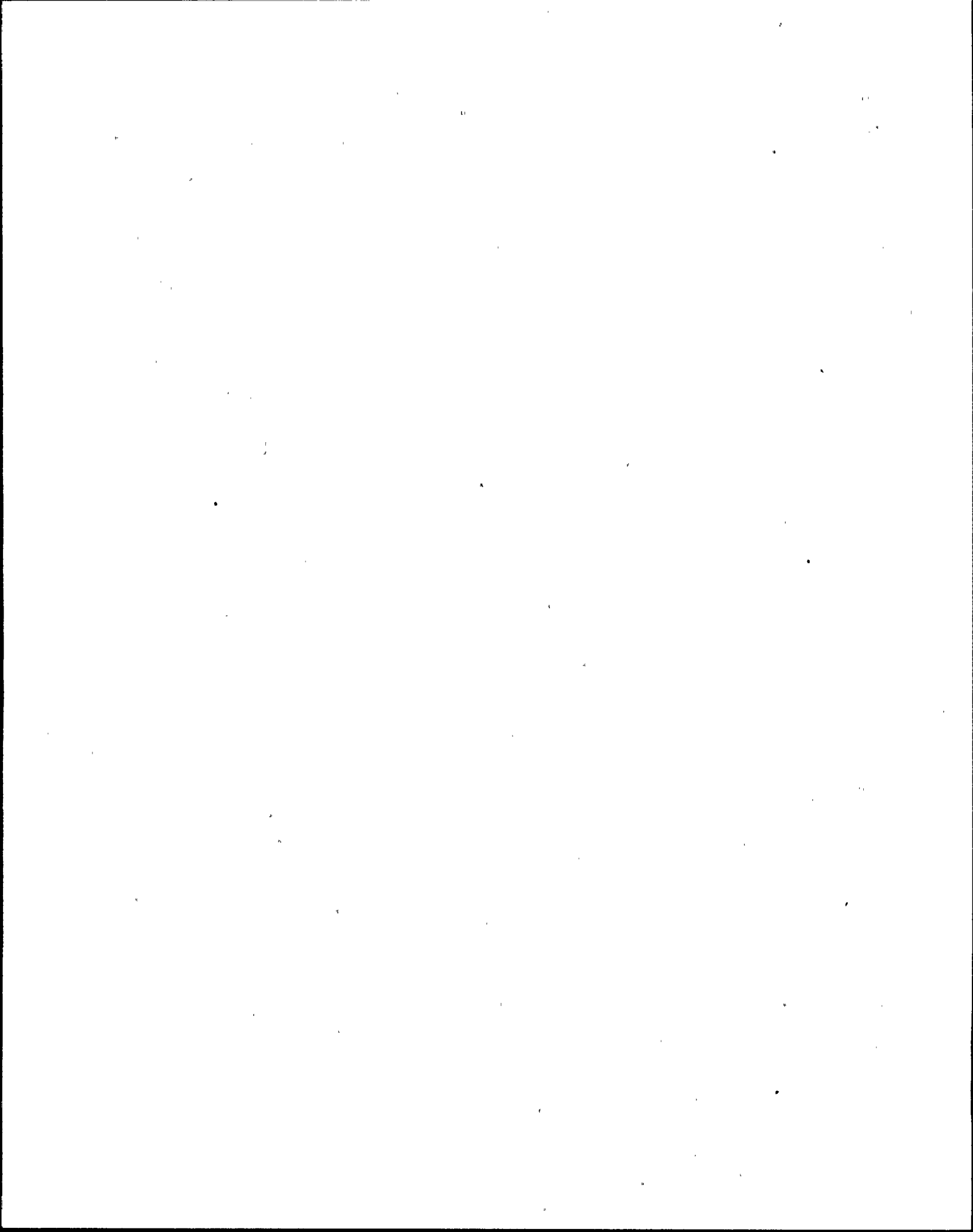
OPL171.017, rev 6, pg 15, sect 4 and Obj V.B.7  
TS table 3.1.A, pg 1-3, MSIV scram in RUN only

[3.6/3.7]

223002A209 ..(KA's)

ANSWER: 040 (1.00)

b.



REFERENCE:

OPL171.007, rev 13, pg 35, top of page and Obj V.b.17b.

[3.5/3.5]

202002K604 ..(KA's)

ANSWER: 044 (1.00)

a.

REFERENCE:

OPL171.040, rev 11, pg 30, sect c.2 and Obj V.b.6  
OPL171.042, rev 10, pg 33, sect D.b.4

[3.5/3.5]

217000A301 ..(KA's)

ANSWER: 045 (1.00)

a.

REFERENCE:

OPL171.030, rev 9, pg 34, item #10, and Obj V.B.9  
OPL171.033, rev 6, pg 43 and 51, ie trip logic functions on INOP

271000A203 [3.5/3.8]

271000A203 ..(KA's)

ANSWER: 046 (1.00)

d.

REFERENCE:

OPL171.053, rev 5, pg 26 top of page, TP-6, and Obj V.B.5

[3.3/4.1]

234000K402 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

OPL171.043, rev 6, pg 10, pg 11, 265 timer bypasses drywell press, pg 12, and Obj V.B.4

[3.8/4.0]

218000K403 ..(KA's)

ANSWER: 051 (1.00)

c.

REFERENCE:

Fac Q 10158  
OPL171.043 Obj V.B.5

[3.1/3.3]

218000K201 ..(KA's)

ANSWER: 052 (1.00)

b.



REFERENCE:

OPL171-044, rev 7, pgs,26-29, and 31 and Obj V.B.10

[3.6/3.8]

205000A209 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

OPL171.044, rev 7, pgs 24-29 and 39-41, Text does not address SDC  
Isolation reset switch  
FAC Q 13771 modified using reset switch in answer.

[4.4/4.5]

203000A216 ..(KA's)

ANSWER: 054 (1.00)

c.

REFERENCE:

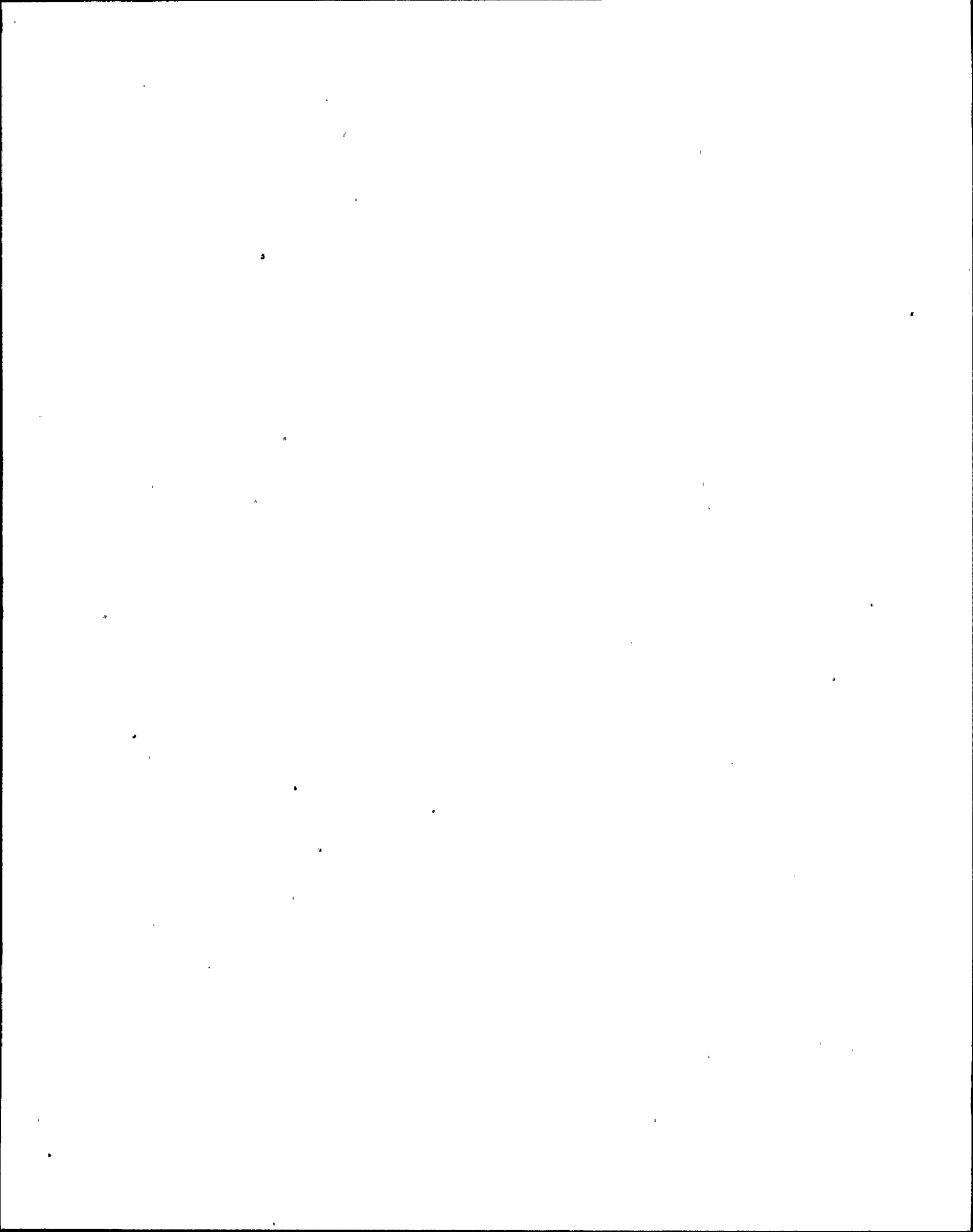
Steam tables  
OPL171.003, Obj V.B.12

[3.6/3.8]

216000K507 ..(KA's)

ANSWER: 055 (1.00)

c.



REFERENCE:

AOI-47-3, rev 9, pg 2, sect 3.2

[3.4/3.4]

241000K605 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

OPL171.044, rev 7, pg 28, item c.4 Obj 9

[3.6/3.5]

205000A402 ..(KA's)

ANSWER: 057 (1.00)

a.

REFERENCE:

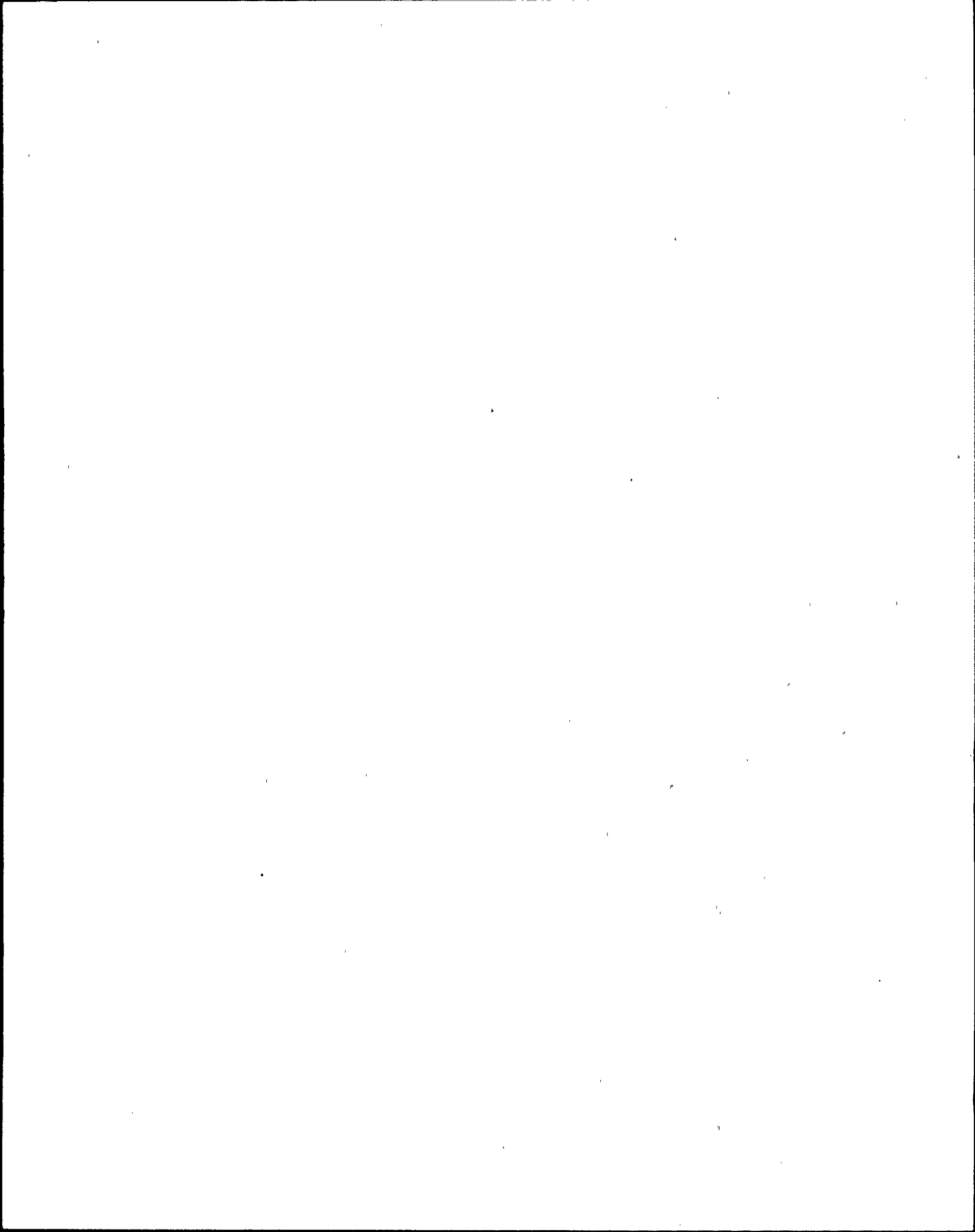
OPL171.044, rev 7, pg 42, item d.(1), d.(2) and Obj V.C.3, V.C.5

[4.2/4.2]

203000K401 ..(KA's)

ANSWER: 058 (1.00)

a.



REFERENCE:

OPL171.013, rev 7, pg 32, sect E.2 and Obj V.B.14.b similar to fac Q 10939 but significantly modified.

[3.2/3.2]

204000G010 .. (KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

TS 3.7.A.6.a

[3.3/4.2]

223001G011 .. (KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

OPL171.007, rev 13, pg 29, item (4), Obj V.B.13 and V.C.4

[3.9/3.9]

202001K116 .. (KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

OPL171.040, rev 11, pg 33 item 5.a.2.b, pg 34 d.2, obj V.B.10.a  
OPL171.042, rev 10, pg 25, item f.3, fac 10142 for HPCI level restart.

[4.0/4.0]

217000A103 ..(KA's)

ANSWER: 062 (1.00)

d.

REFERENCE:

OPL171.042, rev 10, pg 35, item b.(1) and pg 39, G.1, Obj V.B.3.b, V.B.5

[3.2/3.3]

206000K201 ..(KA's)

ANSWER: 063 (1.00)

a.

REFERENCE:

OPL171.042, rev 10, pg 34, item 2.a.5 and Obj V.B.2.c, V.C.2.c

[3.9/4.0]

206000K402 ..(KA's)

ANSWER: 064 (1.00)

b.

REFERENCE:

OPL171.050, rev 7, pg 29, item 4, and Obj V.B.13  
OPL171.085, rev 2, pg 30, item b.i

[3.5/3.6]

245000G007 ..(KA's)

ANSWER: 065 (1.00)

d.

REFERENCE:

OPL171.033, rev 6, pg 33 &34, table #1 and Obj V.B.7

[3.7/4.1]

272000K402 ..(KA's)

ANSWER: 066 (1.00)

d.

REFERENCE:

OPL171.044, rev 7, pg 35, item m.4, and pg 37, item o.4 and Obj V.C.5

[3.5/3.4]

226001A403 ..(KA's)

ANSWER: 067 (1.00)

a.

REFERENCE:

2-AOI-85-3, CRD System Failure, Rev 15, page 2 of 5, section 4.1.2

[3.7/3.5]

295022G010 .. (KA's)

ANSWER: 071 (1.00)

b.

REFERENCE:

2-AOI-74-1, Loss of Shutdown Cooling, Rev 16, page 6 of 19, section 4.2.13

[2.9/3.2]

295021G007 .. (KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low, Rev 11, page 4 of 10, section 3.3'

[3.0/3.1,

295009A103 .. (KA's)

ANSWER: 073 (1.00)

d.



## REFERENCE:

EOI Program Manual, 2-EOIPM Section III-C, EOI-1, RPV Control Cross Reference, Rev 1, page 95 of 130, top of page--subcritical definition IRM Lesson Plan, Rev 3, page 17 of 37 middle of page--point of adding heat

[4.1/4.2]

295015A202 ..(KA's)

ANSWER: 074 (1.00)

a.

## REFERENCE:

Level/Power Control EOP, step C5-9

[3.7/4.4]

295015G012 ..(KA's)

ANSWER: 075 (1.00)

d.

## REFERENCE:

2-AOI-57-5A, Loss of I&C Bus 'A' Rev 28, pages 4-5 of 40, section 3.0 and 4.1.1

[3.9/4.1]

295003G010 ..(KA's)

ANSWER: 076 (1.00)

c.

REFERENCE:

2-AOI-68-1, Recirc Pump Trip/Core Flow Decrease, Rev 21, page 4 of 13,  
section 4.2.1.1

[3.5/3.8]

295001A201 .. (KA's)

ANSWER: 077 (1.00)

b.

REFERENCE:

0-GOI-100-3C, Rev 9, section 3.2.3, page 11 of 82

[3.8/3.9]

295023G010 .. (KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

2-AOI-66-2, Offgas Post Treatment Radiation Hi-Hi-Hi, Rev 11, page 2 of  
4, section 4.1.1

[3.8/3.6]

295038G010 .. (KA's)

ANSWER: 079 (1.00)

d.

ENCE:

I-70-1, Loss of RBCCW, Rev 16, page 2 of 7, section 4.1.2

[3.4/3.3]

95018G010 ..(KA's)

R: 080 (1.00)

a.

ENCE:

I-100-2, Control Room Abandonment, Rev 37, page 6 of 79, section 4.1  
Vs are still open)

[4.0/4.0]

95016A108 ..(KA's)

R: 081 (1.00)

c.

ENCE:

1 Bases, Rev 2, pages 123-125 of 144, explanation of steps RC/Q-  
10

[3.9/4.6]

95037G012 ..(KA's)

R: 082 (1.00)

a.

REFERENCE:

0-AOI-32-1, Loss of Control and Service Air Compressors, Rev 14, page 2 of 18, section 3.0

[3.7/3.4]

295019G010 ..(KA's)

ANSWER: 086 (1.00)

a.

REFERENCE:

2-AOI-85-6, Rod Drift Out, Rev 11, page 2 of 4, section 4.2.1.1

[3.6/3.8]

295014A102 ..(KA's)

ANSWER: 087 (1.00)

d.

REFERENCE:

2-AOI-99-1, Loss of Power to One RPS Bus, Rev 14, page 2 of 6, section 3.0

[3.9/4.1]

295003G010 ..(KA's)

ANSWER: 088 (1.00)

d.

ANSWER: 092 (1.00)

b.

REFERENCE:

2-AOI-100-1, Reactor Scram, Rev 43, page 5 of 54, section 4.2.3

[3.7/4.0]

295006K103 .. (KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

EOI Program Manual Section III-B, Operator Cautions Cross Reference, Rev 1, page 9 of 26, Table 6

Reactor Vessel Process Instrumentation Lesson Plan, Rev 9, page 58 of 69  
(states that LT 3-55 is floodup range)

[3.2/3.4]

295032K205 .. (KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

EOI Program Manual, Rev 1, page 7 of 70, Discussion of step EOI-3

[3.5/3.9]

295036G012 .. (KA's)

ANSWER: 098 (1.00)

c.

REFERENCE:

EOI Program Manual, Section V-K, page 27 of 110, Rev 1, step C5-11  
[4.0/4.2]

295031A202 ..(KA's)

ANSWER: 099 (1.00)

c.

REFERENCE:

Steam Tables  
[4.2/4.3]

295025G011 ..(KA's)

ANSWER: 100 (1.00)

d.

REFERENCE:

EOI Program Manual page 10 of 70, Section V-E, Rev 1, step SCC-1  
1995 Browns Ferry Exam  
[3.7/3.9]

295033K203 ..(KA's)

ANSWER: 101 (1.00)

d.

REFERENCE:

RHR Lesson Plan, Rev 7, page 25 of 106, Section C.1.e  
Facility Exam Bank Question #10547 (modified)

[3.8/3.9]

295028A101 .. (KA's)

ANSWER: 102 (1.00)

b.

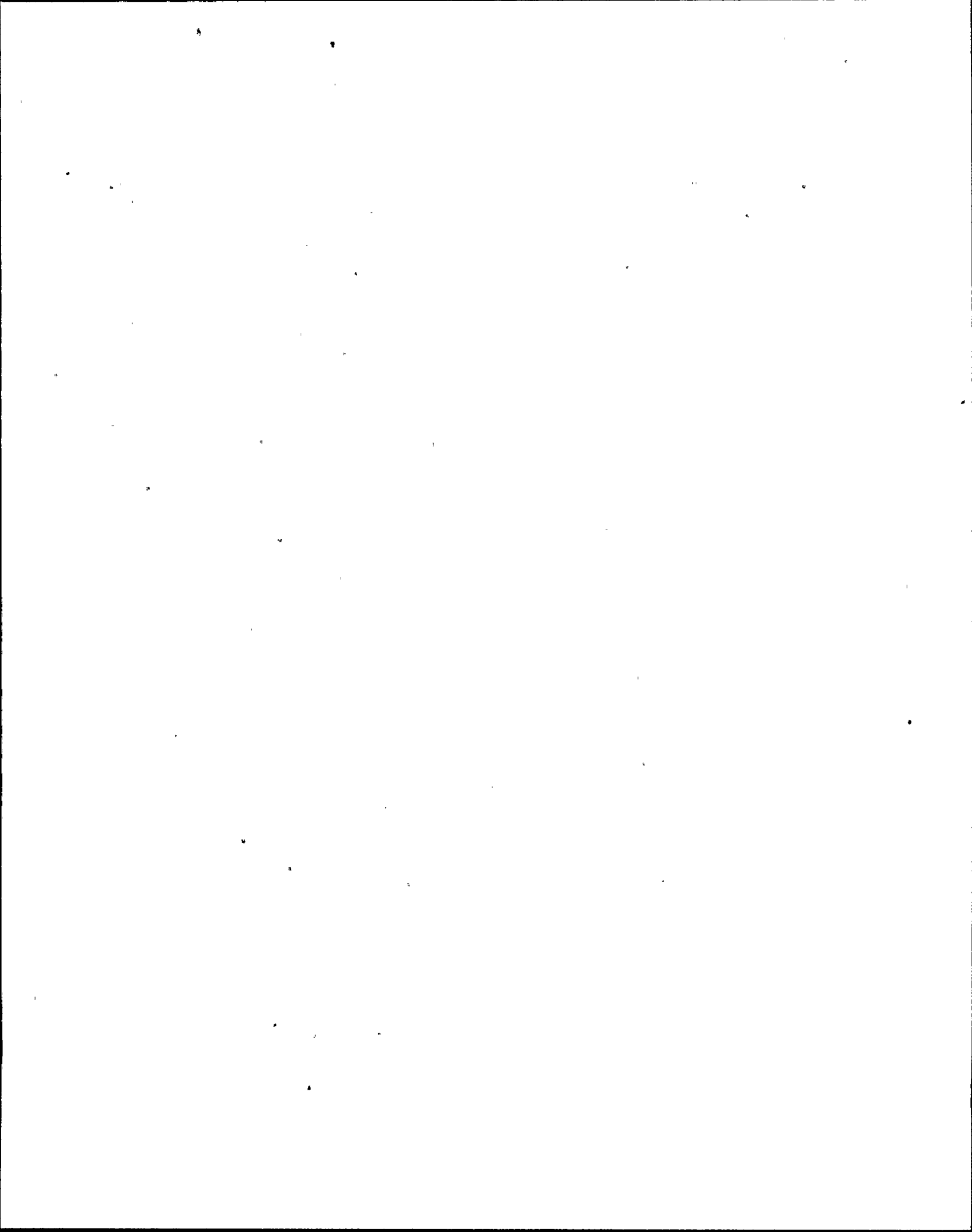
REFERENCE:

EOI Program Manual, Section V-D, page 101 of 242, Rev 1, Discussion step  
SP/L-4

[3.8/3.9]

295030K201 .. (KA's)

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





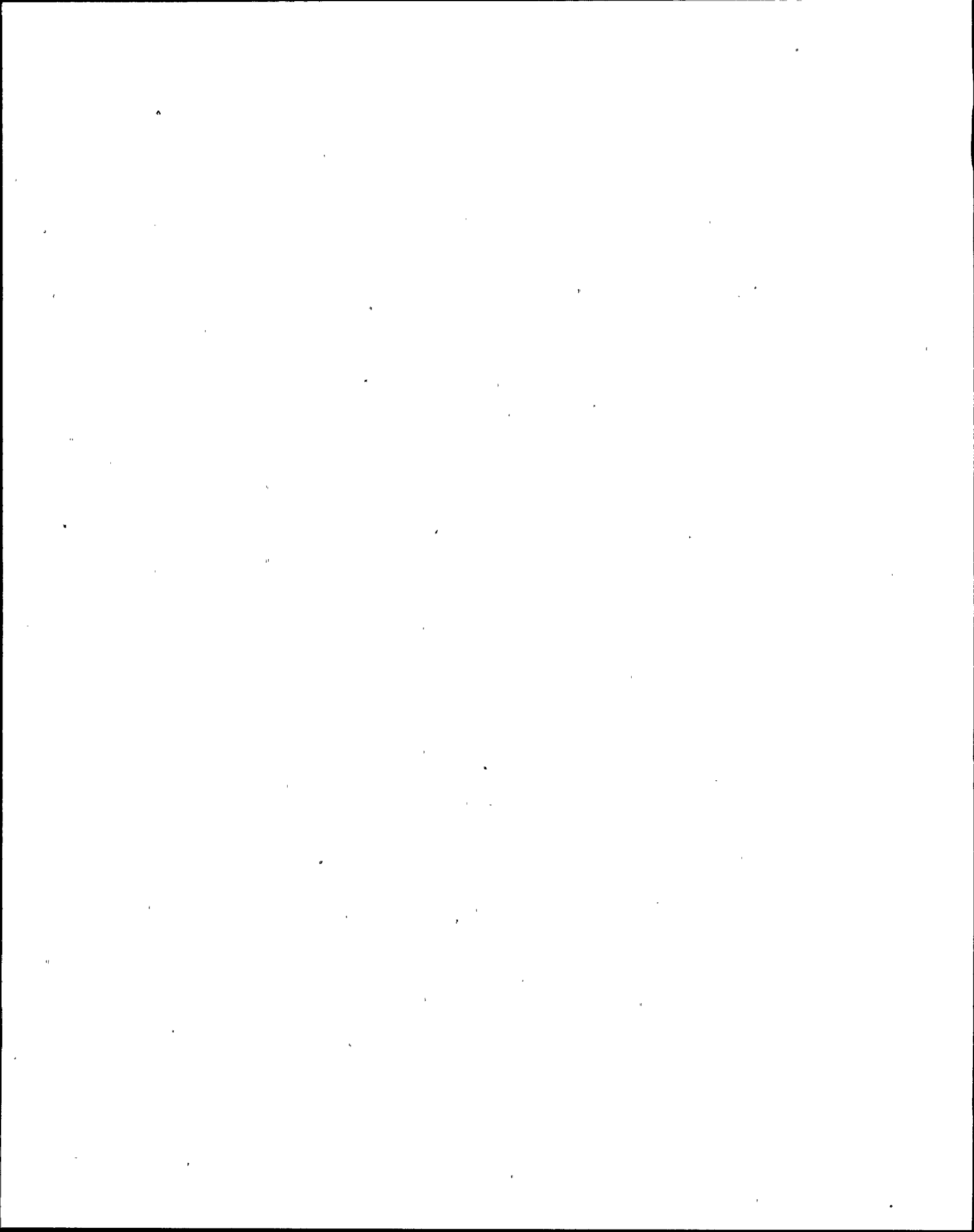
## A N S W E R   K E Y

## MULTIPLE CHOICE

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

## A N S W E R K E Y

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



A N S W E R   K E Y

- 092    b
- 093    d
- 094    c
- 095    c
- 096    c
- 097    a
- 098    c
- 099    c
- 100    d
- 101    d
- 102    b

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

R O Exam B W R Reactor  
Organized by Question Number

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<u>QUESTION</u>	<u>VALUE</u>	<u>REFERENCE</u>
050	1.00	9000075
051	1.00	9000077
052	1.00	9000078
053	1.00	9000079
054	1.00	9000080
055	1.00	9000081
056	1.00	9000082
057	1.00	9000083
058	1.00	9000084
059	1.00	9000085
060	1.00	9000086
061	1.00	9000087
062	1.00	9000088
063	1.00	9000089
064	1.00	9000090
065	1.00	9000091
066	1.00	9000092
067	1.00	9000093
068	1.00	9000095
069	1.00	9000098
070	1.00	9000099
071	1.00	9000101
072	1.00	9000102
073	1.00	9000103
074	1.00	9000106
075	1.00	9000107
076	1.00	9000108
077	1.00	9000109
078	1.00	9000110
079	1.00	9000111
080	1.00	9000112
081	1.00	9000113
082	1.00	9000115
083	1.00	9000119
084	1.00	9000120
085	1.00	9000122
086	1.00	9000123
087	1.00	9000124
088	1.00	9000126
089	1.00	9000127
090	1.00	9000128
091	1.00	9000129
092	1.00	9000131
093	1.00	9000132
094	1.00	9000133
095	1.00	9000134
096	1.00	9000135
097	1.00	9000136
098	1.00	9000137

R O Exam      B W R. R e a c t o r  
O r g a n i z e d   b y   K A   G r o u p

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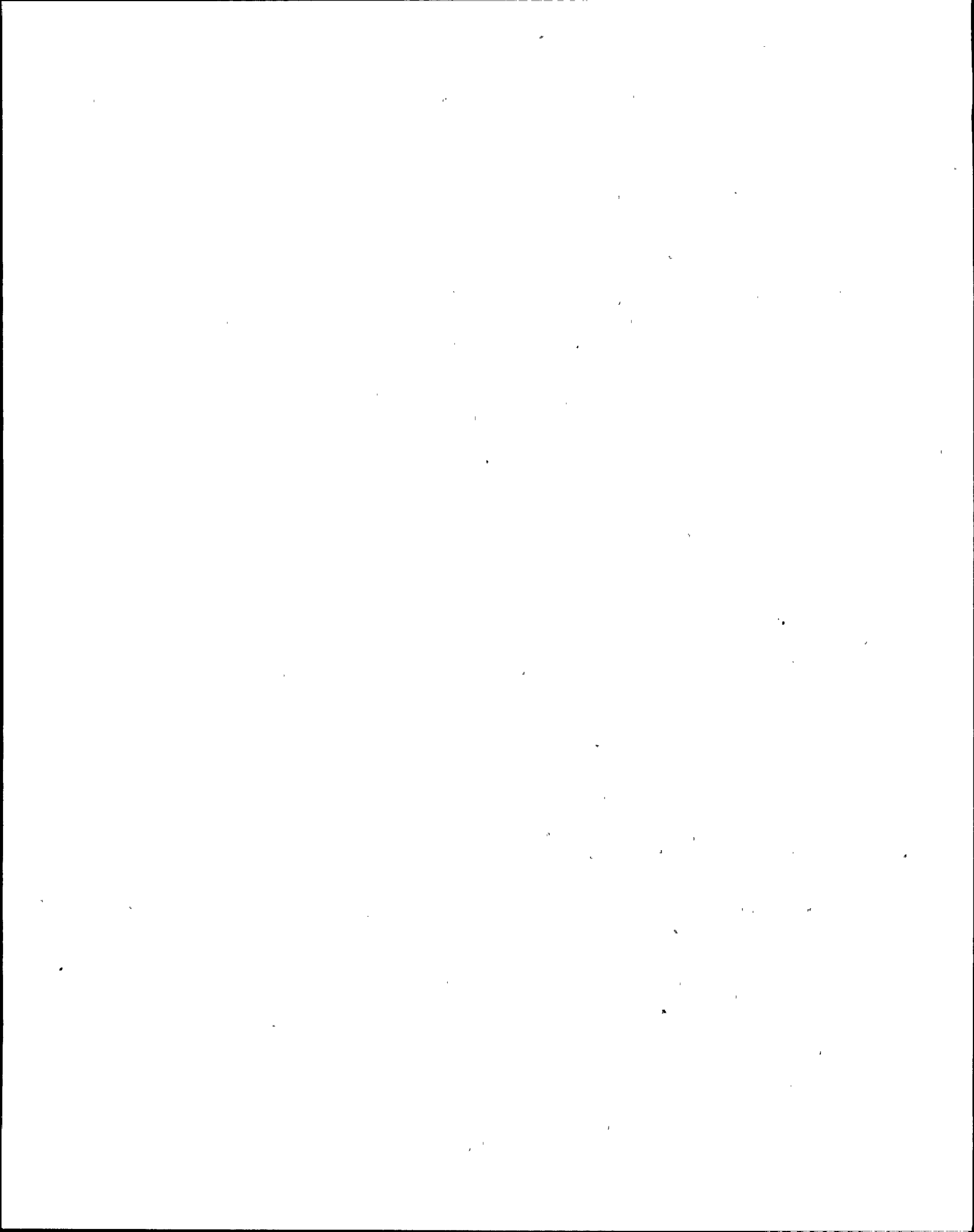
## PLANT WIDE GENERICS

QUESTION	VALUE	KA
004	1.00	294001A102
015	1.00	294001A102
007	1.00	294001A102
006	1.00	294001A103
011	1.00	294001A109
013	1.00	294001A113
010	1.00	294001A113
009	1.00	294001A115
016	1.00	294001K101
014	1.00	294001K102
008	1.00	294001K103
012	1.00	294001K104
005	1.00	294001K105
017	1.00	294001K107
	-----	
PWG Total	14.00	

## PLANT SYSTEMS

## Group I

QUESTION	VALUE	KA
024	1.00	201001A311
036	1.00	201001G010
040	1.00	201001K203
035	1.00	201001K406
043	1.00	202002K604
053	1.00	203000A216
057	1.00	203000K401
062	1.00	206000K201
063	1.00	206000K402
067	1.00	211000A308
033	1.00	212000A201
019	1.00	212000A216
025	1.00	212000K101
047	1.00	215003K106
018	1.00	215004A401
023	1.00	215004K102
029	1.00	215005A406
048	1.00	216000K503
054	1.00	216000K507
061	1.00	217000A103
044	1.00	217000A301
051	1.00	218000K201
050	1.00	218000K403



R O Exam      B W R Reactor  
Organized by KA Group

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## PLANT SYSTEMS

## Group I

QUESTION	VALUE	KA
059	1.00	223001G011
042	1.00	223001K104
039	1.00	223002A209
046	1.00	223002A302
028	1.00	239002K403
055	1.00	241000K605
068	1.00	261000K101
-----		
PS-I Total	30.00	

## Group II

QUESTION	VALUE	KA
021	1.00	201003K402
022	1.00	201003K404
031	1.00	201006A102
032	1.00	201006A301
060	1.00	202001K116
041	1.00	202001K414
037	1.00	202001K601
058	1.00	204000G010
052	1.00	205000A209
056	1.00	205000A402
066	1.00	226001A403
027	1.00	239001K126
064	1.00	245000G007
002	1.00	262001K201
034	1.00	262001K306
001	1.00	262001K403
038	1.00	263000K303
045	1.00	271000A203
065	1.00	272000K402
-----		
PS-II Total	19.00	

## Group III

QUESTION	VALUE	KA
049	1.00	234000K402
030	1.00	234000K505
026	1.00	290002G005
020	1.00	290002G011
-----		



R O Exam      B W R Reactor  
O r g a n i z e d   b y   K A   G r o u p

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## PLANT SYSTEMS

## Group III

QUESTION	VALUE	KA
PS-III Total	4.00	
	-----	
PS Total	53.00	

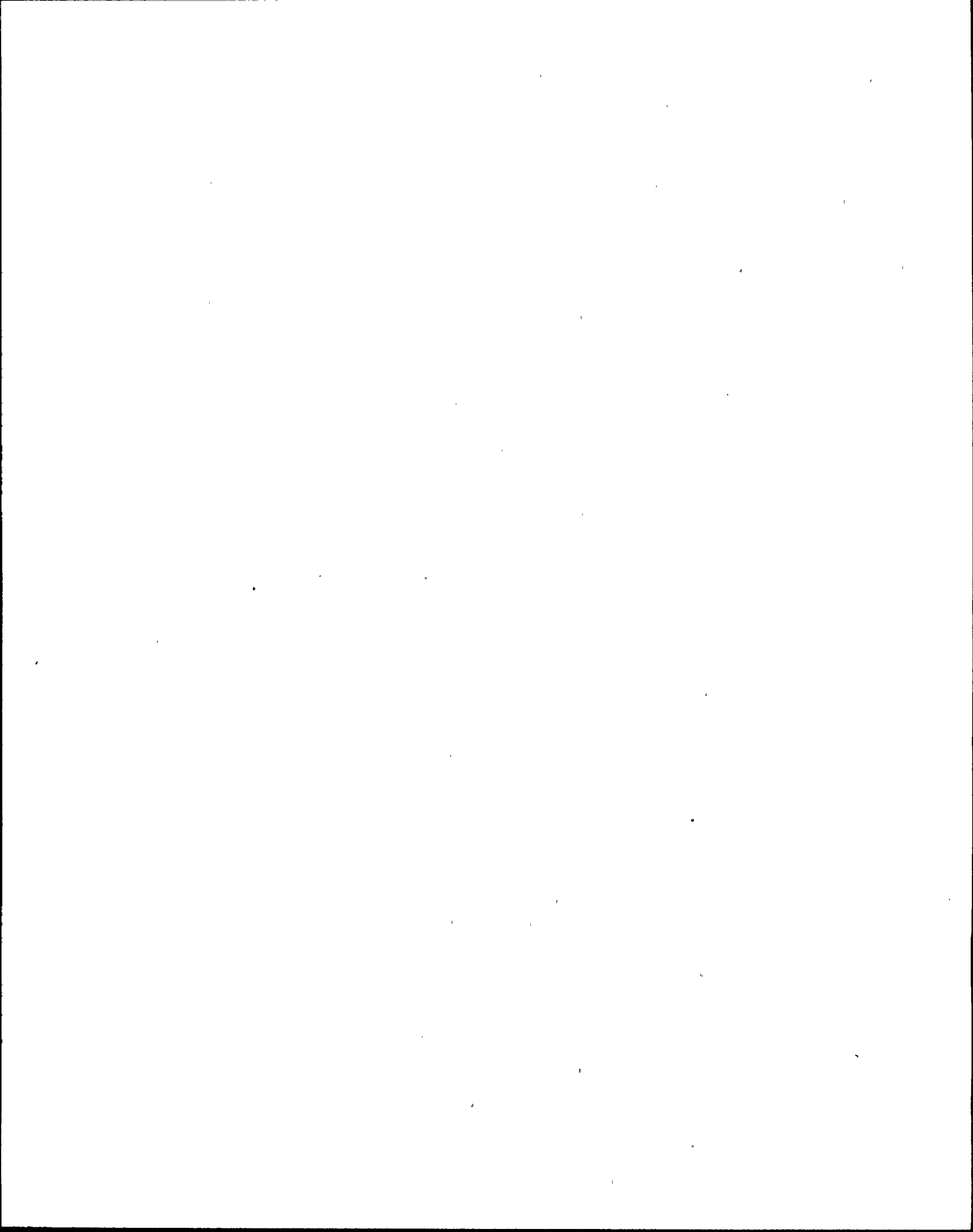
## EMERGENCY PLANT EVOLUTIONS

## Group I

QUESTION	VALUE	KA
096	1.00	295005A102
092	1.00	295006K103
072	1.00	295009A103
086	1.00	295014A102
073	1.00	295015A202
074	1.00	295015G012
097	1.00	295024K301
099	1.00	295025G011
098	1.00	295031A202
084	1.00	295037G012
081	1.00	295037G012
083	1.00	295037K102
	-----	
EPE-I Total	12.00	

## Group II

QUESTION	VALUE	KA
076	1.00	295001A201
003	1.00	295001G007
069	1.00	295002A103
087	1.00	295003G010
075	1.00	295003G010
095	1.00	295008K211
080	1.00	295016A108
082	1.00	295017G011
079	1.00	295018G010
085	1.00	295019G010
090	1.00	295020A203
091	1.00	295020K208
070	1.00	295022G010
101	1.00	295028A101



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 REGION 2

Master  
 Browns Ferry  
 96-300

CANDIDATE'S NAME: MASTER

FACILITY: Browns Ferry 1, 2, & 3

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: June 14, 1996

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	%	
<u>100.00</u>			
<u><del>102.00</del></u>			
	<u>FINAL GRADE</u>		TOTALS

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

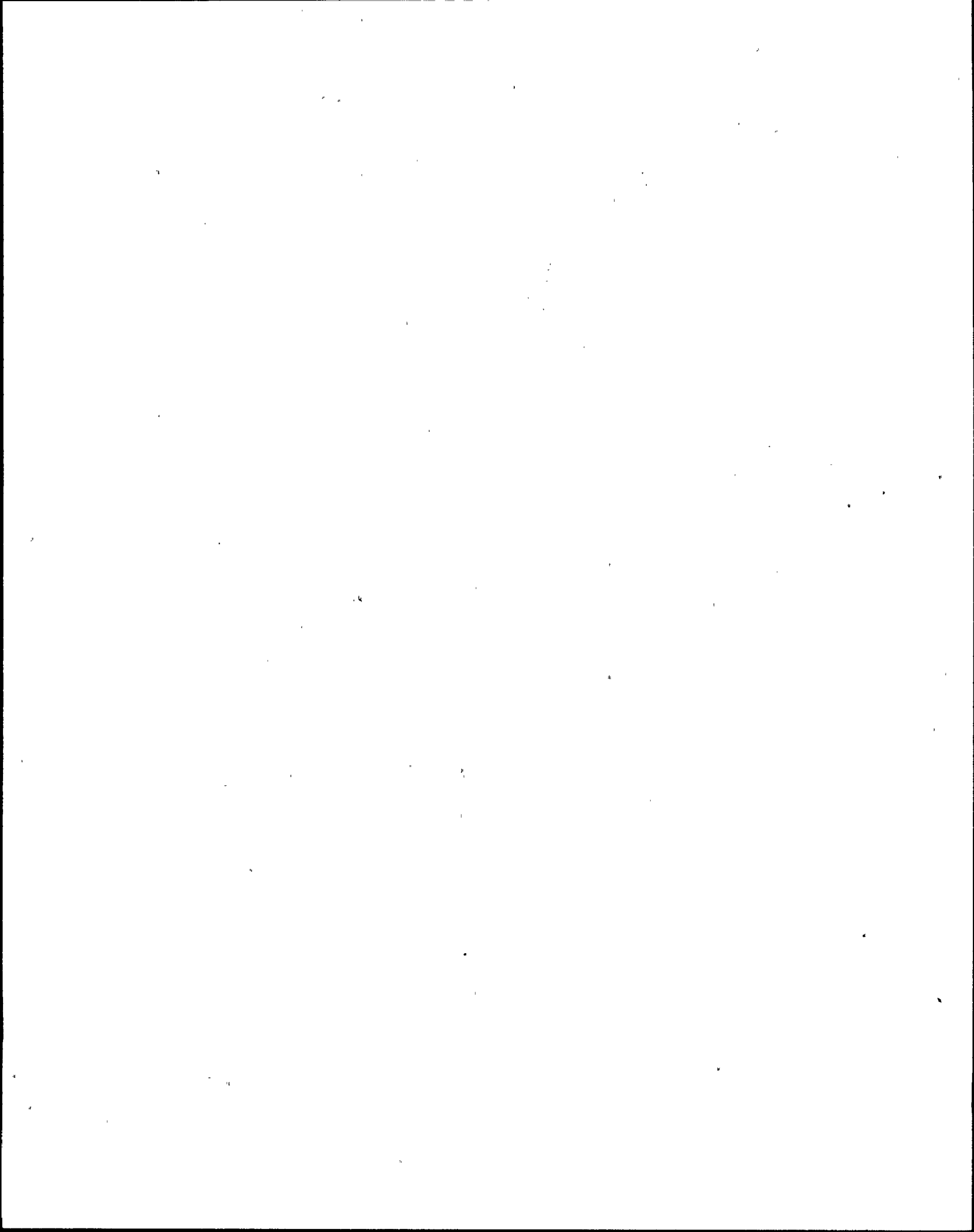
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 Candidate's Signature

## A N S W E R   S H E E T

Multiple Choice    (Circle or X your choice)

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

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001	a	b	c	d	___	024	a	b	c	d	___
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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.

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## 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.

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| 102 | a | b | c | d | ___ |

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

## NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.
3. Restroom trips are to be limited and only one applicant at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
4. Use black ink or dark pencil ONLY to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.
7. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.
8. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.
9. The point value for each question is indicated in parentheses after the question.
10. Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.
11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.
13. If the intent of a question is unclear, ask questions of the examiner only.



14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
16. To pass the examination, you must achieve a grade of 80% or greater.
17. There is a time limit of four (4) hours for completion of the examination.
18. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

## QUESTION: 001 (1.00)

On Panel 9-23-7 and 9-23-8 there are back feed switches for the Shutdown Busses. When the switches are placed in BACKFEED, the normal supply breaker to the associated Unit Boards is tripped and locked out.

Which ONE of the following describes the other AUTOMATIC actions that will occur when the switches are placed in BACKFEED?

- a. Trip and lockout the alternate supply breaker.  
Transfer the 43-1(2) switch to AUTO.
- b. Close the alternate supply breaker.  
Transfer the 43-1(2) switch to MANUAL.
- c. Trip and lockout the alternate supply breaker.  
Transfer the 43-1(2) switch to MANUAL.
- d. Close the alternate supply breaker.  
Transfer the 43-1(2) switch to AUTO.

## QUESTION: 002 (1.00)

Which ONE of the following describes why reactor recirculation pumps are verified to be at minimum speed prior to tripping them during an ATWS with reactor power at 50%?

- a. To avoid tripping the turbine due to high RPV water level.
- b. To determine if reducing speed is sufficient to reduce power to less than 5% on the APRMs.
- c. To limit the rapid power reduction transient due to tripping the pumps from high power.
- d. To avoid initiating HPCI and RCIC on low water level.

QUESTION: 003 (1.00)

The following conditions exist:

- An ATWS is in progress.
- Reactor pressure is 1000 psig.
- The operator has placed the Standby Liquid Control (SBLC) handswitch to the START B position.

Which ONE of the following is positive indication that the SBLC system is injecting?

- a. Both blue squib valve continuity lights are extinguished.
- b. The SBLC pump B red running light is illuminated.
- c. The SBLC pump discharge pressure is 1000 psig.
- d. The SBLC tank level is decreasing.

QUESTION: 004 (1.00)

Which ONE of the following plant conditions will result in a Group 6 isolation signal that has NO provision to be bypassed?

- a. Drywell pressure above 12 psig
- b. Reactor water level below -162 inches
- c. Refuel zone exhaust radiation 82 mr/hr
- d. Reactor zone area radiation 62 mr/hr

QUESTION: 005 (1.00)

Which ONE of the following defines, the term "Primary System", when used within the Emergency Operating Instructions?

Primary System refers to any system:

- a. for which the ASME "N" stamp is issued.
- b. connected to the RPV that contains radioactive water.
- c. supplied by General Electric as part of the Nuclear Steam Supply System.
- d. connected to the RPV that has a reduced leak rate if RPV pressure is lowered.

QUESTION: 006 (1.00)

The following situation exists:

- A licensed operator is at home drinking an alcoholic beverage when the Shift Operations Supervisor calls and requests that he report for unscheduled overtime.
- No one else is available.
- He feels fit for work and to drive.

Concerning alcohol consumption, which ONE of the following states his responsibility?

He is personally required to:

- a. inform the Shift Operations Supervisor that he has been drinking alcohol during the call-in telephone call.
- b. report to the control room and inform the Shift Operations Supervisor that he has been drinking alcohol.
- c. say nothing and request that Security administer a breath test for alcohol after arrival on site.
- d. say nothing unless his fitness for duty is questioned during relieving process.

QUESTION: 007 (1.00)

You have worked the following schedule:

- Thursday 1st scheduled day off
- Friday 2nd 7 am to 7 pm
- Saturday 3rd 7 am to 7 pm
- Sunday 4th 7 am to 3 pm
- Monday 5th 7 am to 3 pm
- Tuesday 6th 7 am to 9 pm
- Wednesday 7th 7 am to 3 pm
- Thursday 8th 7 am to ?

Which ONE of the following represents the LATEST you can be required to work on Thursday the 8th, without approval of an "Overtime Limitation Exception Report, form SSP-31?"

(Assume turnover time is NOT included.)

- a. 3 pm
- b. 5 pm
- c. 7 pm
- d. 9 pm

QUESTION: 008 (1.00)

During a loss of feedwater heating transient, the Reactor Engineer reports that MCPR is 1.05. Which ONE of the following is the MINIMUM action required by BFNP procedures?

- a. Shift Management must obtain NRC approval to remain at power.
- b. Action must be taken within 15 minutes to limit power to less than 25% rated thermal power.
- c. The reactor must be placed in the HOT SHUTDOWN CONDITION.
- d. The reactor must be scrammed.

QUESTION: 009 (1.00)

An ALERT has been declared, which ONE of the following describes REQUIRED emergency notifications.

- a. State, local agencies, and then the NRC, must be notified within 5 minutes after declaration of the ALERT.
- b. The NRC must be notified immediately, NOT to exceed one hour after declaration of the ALERT.
- c. State and local agencies must be notified within 15 minutes after declaration the ALERT. The NRC notification may be delayed up to one hour after state and local notifications.
- d. The NRC must be notified within one hour after declaration of the ALERT. State and local agencies must be notified immediately thereafter.

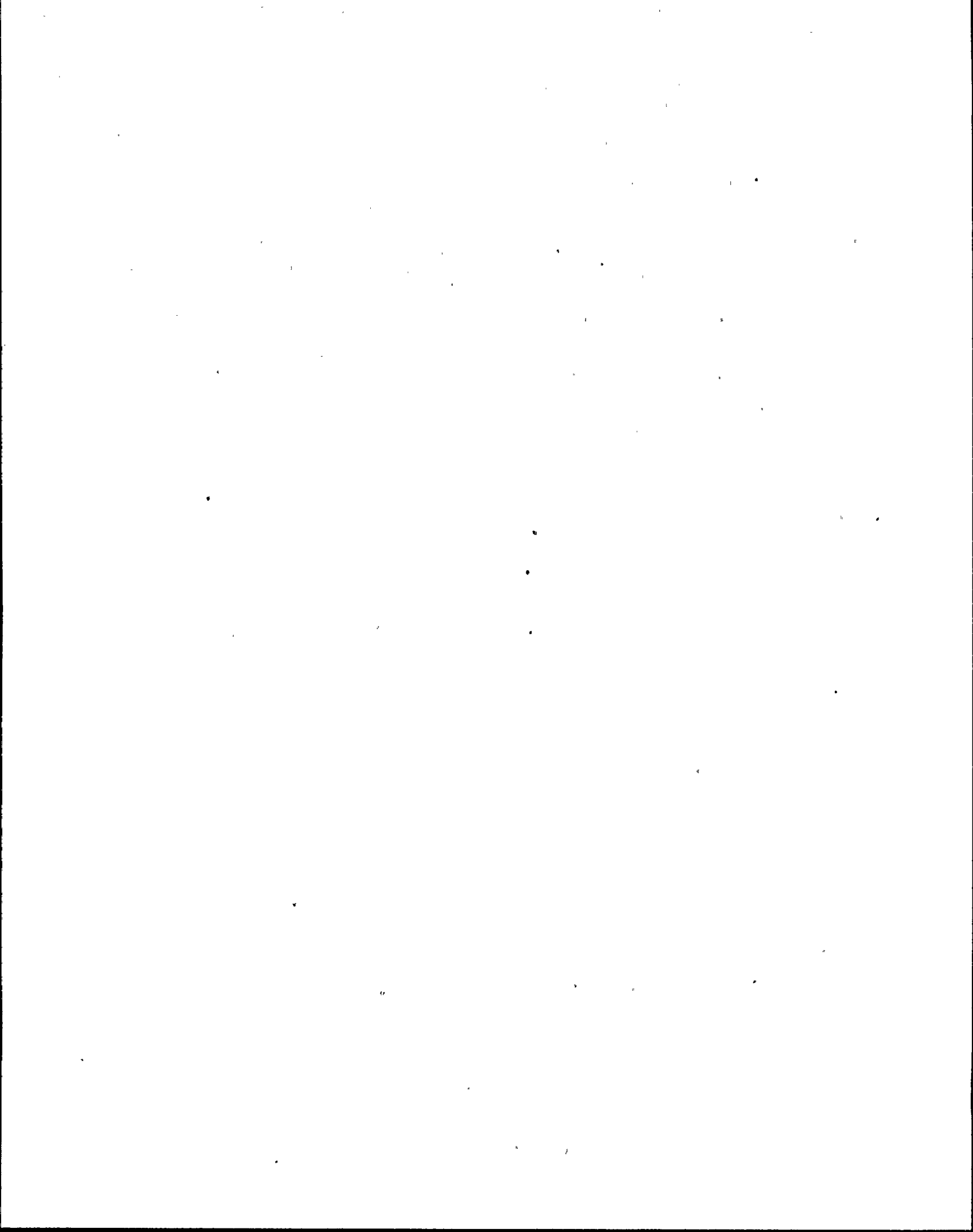
QUESTION: 010 (1.00)

The following conditions exist:

- An operator is performing a manual whole body frisk using a hand held frisker.
- The background radiation count rate in the area is at the MAXIMUM allowed for using the frisker.

Which ONE of the following is the MINIMUM count rate at which the operator is considered contaminated and is required to notify RADCON personnel for release?

- a. 100 counts per minute
- b. 300 counts per minute
- c. 400 counts per minute
- d. 500 counts per minute



QUESTION: 011 (1.00)

Which ONE of the following does NOT REQUIRE a reactor power reduction?

- a. Power momentarily reaches 3297 Mwt.
- b. Power is 3296 Mwt for 1/2 hour.
- c. Power is 3295 Mwt for one hour.
- d. Power is 3294 Mwt for two hours.

QUESTION: 012 (1.00)

The following conditions exist:

- While at 100% power, RPS trip system "A" is in the tripped condition for a surveillance test.
- A Reactor Feed Pump trip causes reactor water level to lower to +10 inches.
- No automatic actions have occurred.

Which ONE of the following is the REQUIRED action?

- a. Conduct a controlled plant shutdown.
- b. Stop surveillance testing and immediately reset RPS "A".
- c. Initiate a reactor scram.
- d. Restore reactor water level to normal by reducing power with recirculation flow.



~~QUESTION: 013~~ (1.00) *deleted*

During an emergency, a reasonable action that departs from Technical Specification plant license conditions must be taken immediately.

In accordance with BFN procedures, which ONE of the following MUST approve taking this action ?

- a. Any licensed Senior Reactor Operator.
- b. Only the Shift Operations Supervisor.
- c. The Shift Operations Supervisor or the Assistant Shift Operations Supervisor.
- d. The Operations Unit Manager and Shift Operations Supervisor.

QUESTION: 014 (1.00)

The shift crew composition may be one person less than the minimum requirements of Technical Specifications (TS) under certain conditions.

Which ONE of the following is a TS violation if you approve decreased shift coverage for that reason?

One Unit Operator (Board):

- a. is absent at shift change due to a car accident while driving to work.
- b. is notified that his spouse was injured in a car accident and he desires to leave after taking the shift.
- c. has stomach pain and requests to leave immediately after taking the shift.
- d. is thought to be intoxicated and you feel he should exit the control room.

QUESTION: 015 (1.00)

The following conditions exist:

- Emergency actions must be accomplished on equipment in a high radiation area.
- Briefings have been conducted and precautions reviewed.
- You are a member of the action team.

Using ALARA (As Low As Reasonably Achievable) guidelines, which ONE of the following is the PREFERRED method for performing these actions.

The maintenance should be performed by:

- a. one man, receiving 160 mrem.
- b. two men, each receiving 85 mrem.
- c. two men, receiving 110 mrem and 60 mrem, respectively.
- d. three men, each receiving 50 mrem.

QUESTION: 016 (1.00)

A monthly Surveillance Test (SI) was NOT performed when due and it is beyond the original 31 day due date.

The equipment may be considered operable if...

- a. ... an SI Due Date Extension Request has been approved and is not beyond 38 days since the last performance of the SI.
- b. ... the maximum allowable extension to 38 days has NOT been exceeded.
- c. ... an SI Due Date Extension Request has been submitted and the maximum allowable extension to 38 days has NOT been exceeded.
- d. ... the SI test will be completed before the end of the current shift.

QUESTION: 017 (1.00)

You desire to stop an automatic ECCS actuation.

Which ONE of the following is a violation of operations guidelines if used as justification for this action?

- a. Directed by the Shift Operations Supervisor while implementing an EOI.
- b. Automatic mis-operation has been confirmed by independent indications.
- c. ECCS equipment damage may result.
- d. Adequate core cooling is assured and no valid initiation signal was received..

QUESTION: 018 (1.00)

You are sent to hang a NP Hold Notice tag on a breaker. A tag of a different type is already on this breaker.

Which ONE of the following other tags MUST be released and removed from this breaker before you can hang the NP Hold Notice tag?

- a. NP Caution Order
- b. NP Operating permit
- c. TVA Hold Notice
- d. TVA Caution Order

QUESTION: 019 (1.00)

It is necessary to release a clearance in order to meet plant operational requirements. The person holding the clearance can NOT be contacted.

Which ONE of the following MUST approve release of the clearance.

- a. Plant Operations Manager AND Operations Support Supervisor.
- b. Plant Operations Superintendent AND Plant Operations Manager.
- c. Operations Support Supervisor AND affected organization responsible manager.
- d. Affected organization responsible manager AND Plant Operations Superintendent.

QUESTION: 020 (1.00)

One step of a Unit 2 scheduled surveillance test calls for operating equipment on Unit 3 that would result in an ESF actuation.

Which ONE of the following is the specified action for the operator assigned to perform this surveillance?

- a. Have the ASOS correct the procedure in black pen, initial and date the correction.
- b. Obtain ASOS concurrence, mark N/A and correct the procedure, perform the surveillance on Unit 2.
- c. Place the system in a safe condition, notify Shift Supervision, conduct no further steps until a procedure change is approved.
- d. Perform the surveillance by operating the correct equipment on Unit 2 and notify the ASOS.

QUESTION: 021 (1.00)

Which ONE of the following applies if a valve is to be verified locked closed?

- a. Remove the lock, check that the valve is closed then reinstall the lock.
- b. Confirm visually or by valve handwheel movement allowed by the lock, that the valve is closed.
- c. Remove the lock, check that the valve is closed and leave the valve unlocked.
- d. The valve can NOT be independently verified closed.

QUESTION: 022 (1.00)

A red NP Hold Notice tag is attached to the outside of a closed compartment door for a GE 4160V vertical lift breaker. Which ONE of the following describes the meaning of the tag in this location?

- a. The breaker inside is in the rack-out position.
- b. Entry into the breaker compartment is denied without a tag lift.
- c. A grounding device is installed in the breaker compartment.
- d. The breaker inside is in the rack-out position but the closing springs are still charged.

QUESTION: 023 (1.00)

During a reactor startup, the reactor achieves a 25 second positive period.

Which ONE of the following is required?

- a. Insert control rods as necessary to achieve a stable negative period with no rod motion.
- b. Insert control rods as necessary to achieve a stable positive period greater than 60 seconds.
- c. Insert control rods as necessary to achieve a stable positive period greater than 30 seconds.
- d. Shutdown the reactor until a thorough assessment has been performed.

QUESTION: 024 (1.00)

During power reduction, which ONE of the following Reactor Protection System automatic scrams is bypassed by taking the mode switch from RUN to STARTUP?

- a. Turbine Stop Valve Closure.
- b. Low Scram Pilot Air Pressure.
- c. Main Steam Line Isolation Valve Closure.
- d. Turbine Control Valve Fast Closure.

QUESTION: 025 (1.00)

In accordance with BFNP procedures, which ONE of the following states the requirement for control rod coupling checks?

- a. For all control rods, prior to reactor criticality after completing any outage.
- b. For any control rod that has received a rod drift alarm.
- c. Only the first time that each control rod reaches position 48 after a reactor startup.
- d. Anytime a control rod is withdrawn to position 48 during startup or power operation.

QUESTION: 026 (1.00)

Which ONE of the following describes the response of a control rod if the ball check valve in the drive mechanism is stuck closed during a scram?

(Assume normal HCU operation, accumulator pressure and reactor pressure.)

The control rod will:

- a. insert until accumulator pressure is less than reactor pressure.
- b. insert until accumulator pressure is less than 400 psig.
- c. fully scram faster than normal.
- d. fully scram slower than normal.

QUESTION: 027 (1.00)

Which ONE of the following will bypass ALL rod blocks caused by SRM "A" independent of reactor mode switch position?

- a. All IRM switches on range 8.
- b. All eight shorting links removed.
- c. SRM "A" detector fully withdrawn.
- d. SRM "A" function switch NOT in operate.

QUESTION: 028 (1.00)

While at power, the water level in the East CRD scram discharge volume (SDV) reaches the high-high level setpoint. In addition to alarms, which ONE of the following will result?

- a. Only a half reactor scram.
- b. A full reactor scram.
- c. The East SDV vent and drain valves open.
- d. Only a control rod block.

QUESTION: 029 (1.00)

The reactor is at 100% power. The mode switch is placed in SHUTDOWN.

Which ONE of the following will be the first signal to cause a reactor scram?

- a. Mode Switch in SHUTDOWN.
- b. IRM HI-HI Scram
- c. 15% APRM Scram
- d. MSIV Closure Scram



QUESTION: 030 (1.00)

Which ONE of the following is considered a Safety Limit violation?

- a. Steam dome pressure reaches 1250 psig with irradiated fuel in the vessel.
- b. MCPR reaches 1.10 during a loss of feedwater heating transient from 100% power.
- c. Reactor mode switch is placed in RUN with steam dome pressure less than 800 psig.
- d. A full load reject from 100% power causes an APRM HI-HI scram.

QUESTION: 031 (1.00)

With the reactor initially at 100% power, which ONE of the following would be a final steady state indication of an open Safety Relief Valve (SRV)?

- a. Reactor pressure decrease.
- b. Total indicated steam flow increase.
- c. Generator power (MWE) decrease.
- d. Significant reactor power increase.

QUESTION: 032 (1.00)

With the APRM Channel meter function switch in the "Count" position, which ONE of the following is the MINIMUM reading for an operable APRM.

- a. 65%
- b. 70%
- c. 75%
- d. 100%

QUESTION: 033 (1.00)

Which ONE of the following describes a properly oriented fuel assembly within a four bundle fuel cell?

- a. The orientation tab on the fuel assembly bail handle points away from the control rod.
- b. Serial number on the handle is readable from the inside edge of the four bundle fuel cell.
- c. The channel spacing buttons face away from the control rod.
- d. The channel fasteners are located on the outside edge of the four bundle fuel cell.

QUESTION: 034 (1.00)

With the Rod Worth Minimizer keylock in NORMAL, a loss of all rod position signals from the RPIS system will cause:

- a. a withdraw, insert, and select rod block if power is less than the Low Power Alarm Point.
- b. only a withdraw block if power is less than the Low Power Set Point.
- c. a withdraw and insert rod block at any power.
- d. only a "System Malfunction" message.

QUESTION: 035 (1.00)

The following conditions exist:

- The reactor mode switch is in REFUEL.
- All scrams are reset.
- The scram discharge volume (SDV) vent and drain switch, HS 85-36A, is in NORMAL.
- The SCRAM DISCH HI LEVEL BYPASS switch is placed in BYPASS.

Which ONE of the following will occur?

- a. SDV vent and drain valves travel open.
- b. The flow biased APRM HI-HI flux trip is bypassed.
- c. A control rod withdraw block is received.
- d. SDV vent and drain valves travel closed.

QUESTION: 036 (1.00)

One of the four red scram lights for RPS Bus "A" is out due to blown fuse #5A-F18A on panel 9-15 (the EOI appendix 1A fuses). All RPS "B" red scram lights are energized.

Which ONE of the following describes the current status of the control rods?

- a. 1/4 of control rods fed by RPS "A" are receiving alternate power.
- b. 1/4 of control rods fed by RPS "A" should have scrammed.
- c. 1/4 of all control rods have received a 1/2 scram.
- d. 1/4 of all control rods should have scrammed.

QUESTION: 037 (1.00)

During an ATWS, which ONE of the following methods for control rod insertion will apply the maximum differential pressure over the full travel of the control rod?

(Note: Assume the scram is or can be reset and a CRD pump is running.)

- a. Vent the scram air header.
- b. Increase CRD cooling water differential pressure.
- c. Use the Reactor Manual Control System to drive rods.
- d. Vent the overpiston area.

QUESTION: 038 (1.00)

The scram discharge volume vent and drain valves are verified closed by AOI-100-1, Reactor Scram.

Which ONE of the following would be the adverse consequence if they do NOT close when a scram occurs?

- a. There will be a primary leak to the reactor building.
- b. The CRD discharge path has insufficient back pressure.
- c. Excess control rod insertion speed will damage the drive mechanism.
- d. The reactor pressure will be necessary to complete rod insertion.

QUESTION: 039 (1.00)

With both recirculation pumps speeds matched at 100% power, which ONE of the following is indication of a reactor recirculation jet pump failure?

Indicated recirculation loop flow in the loop with the failed jet pump will:

- a. decrease and Core Pressure Drop 2-PDR-68-50 (panel 2-9-5) will increase.
- b. decrease and main generator output EI-57-50 (Panel 2-9-5) will decrease.
- c. increase and indicated Total Core Flow, 2-FR-68-50 (Panel 2-9-5) will increase.
- d. increase and core thermal power will increase.

QUESTION: 040 (1.00)

The following conditions exist:

- A reactor startup is in progress.
- The mode switch is in STARTUP.
- The main turbine is tripped.
- A valid MSIV isolation has occurred.
- The reactor did NOT automatically scram (No ATWS condition exists).

Which ONE of the following was the only signal that could have generated the MSIV isolation?

- a. Reactor vessel low low level.
- b. Main steam line high flow.
- c. Main steam line low pressure.
- d. Main steam line high radiation.

QUESTION: 041 (1.00)

Which ONE of the following are DC powered and must energize to operate in order to perform the intended function during a scram?

- a. Scram dump valves
- b. Backup Scram valves
- c. Scram pilot valve solenoids
- d. SDV vent and drain valve solenoids

QUESTION: 042 (1.00)

Which ONE of the following describes the effect on Reactor Recirculation Pump operation when the Alternate Rod Insertion (ARI) system is manually initiated instead of automatically initiated?

- a. The recirculation pumps trip immediately.
- b. The recirculation pumps remain running.
- c. Only the generator field breakers receive a direct trip.
- d. The recirculation pumps trip after a 30 second time delay.

QUESTION: 043 (1.00)

While at power, both seals on one reactor recirculation pump experience failure. Which ONE of the following is the MAXIMUM expected leak rate?

- a. 10 gpm.
- b. 20 gpm.
- c. 30 gpm.
- d. 60 gpm.

QUESTION: 044 (1.00)

Which ONE of the following will prevent RCIC discharge to the CST through the test line isolation valves FCV-71-38 and FCV-73-36?

- a. CST low level alarm (7,000 gal).
- b. RCIC minimum flow valve is open (FCV-71-34).
- c. Reactor water level is -35 inches.
- d. RCIC Injection valve is fully open (FCV-71-39).

QUESTION: 045 (1.00)

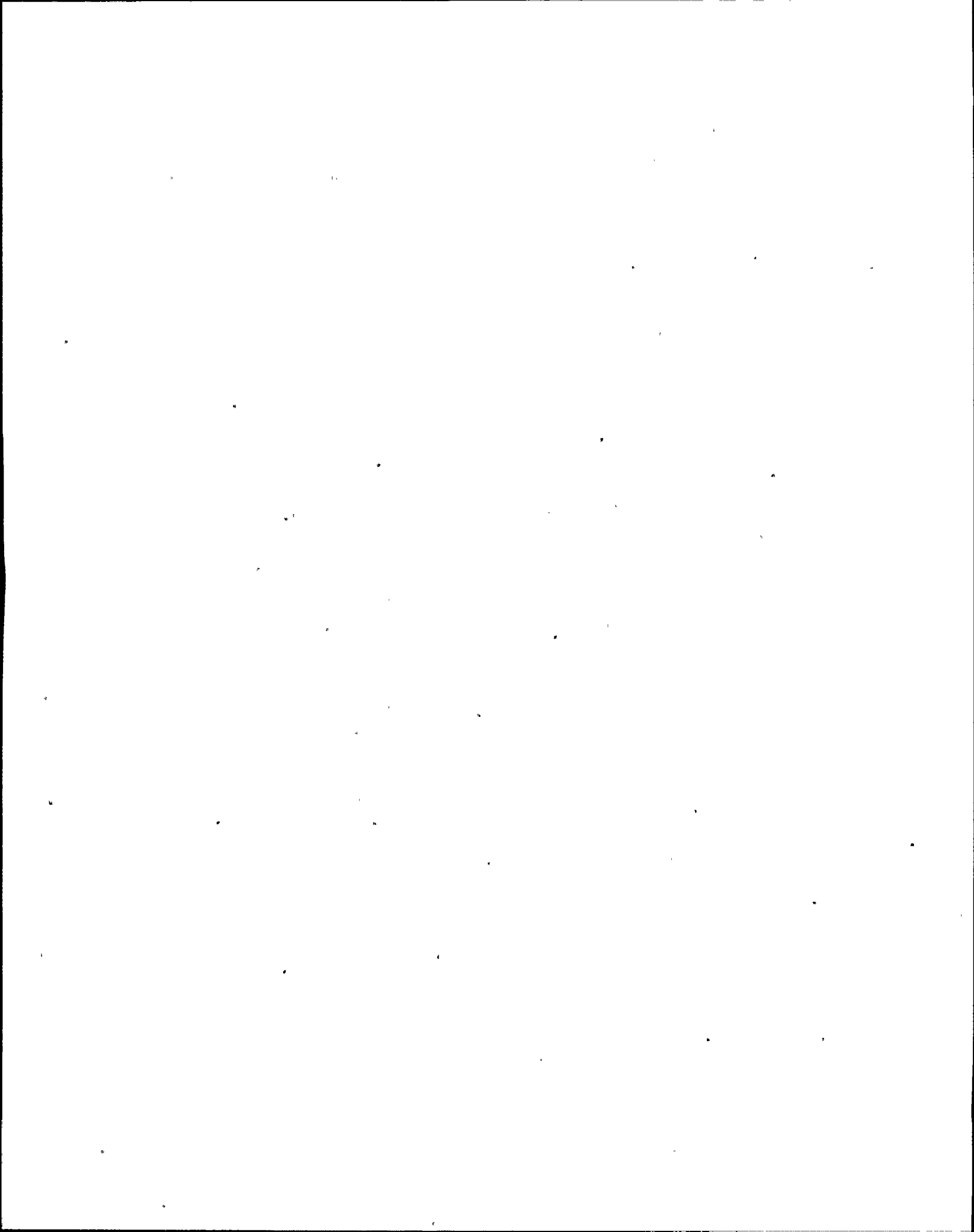
In which ONE of the following situations is use of the mechanical vacuum pumps procedurally allowed?

- a. Condenser vacuum is 24 inches with reactor pressure 500 psig.
- b. Reactor power is 5% below the RWM Low Power Set Point.
- c. Excess hydrogen in the main condenser must be purged.
- d. While in the RUN Mode, the off-gas isolation valve (66-28) closed and vacuum is 24 inches and decreasing.

QUESTION: 046 (1.00)

Which ONE of the following will automatically isolate reactor water sample valves, FCV-43-13 and FCV-43-14?

- a. Only Hi Drywell Pressure.
- b. Hi Drywell Pressure or Reactor Water Low level.
- c. Hi Drywell Pressure and Reactor Water Low Low level.
- d. Only Reactor Water Low Low Low level.





QUESTION: 047 (1.00)

The following conditions exist:

- The reactor mode switch is in RUN.
- IRM 'A' becomes INOP due to High Voltage low.
- IRM 'A' is NOT in BYPASS.

Which ONE of the following will subsequently cause a scram on RPS "A"?

- a. Placing IRM 'A' in BYPASS.
- b. Placing APRM 'A' in BYPASS.
- c. Placing the reactor mode switch in STARTUP.
- d. Placing IRM 'A' in BYPASS with APRM 'A' in BYPASS.

QUESTION: 048 (1.00)

For Unit 2, which ONE of the following identifies when the reactor vessel flange and head flange temperatures must be greater than or equal to 82 degrees F?

- a. Whenever the head bolt studs are under tension.
- b. Whenever in the Cold Shutdown Condition.
- c. Whenever there is fuel in the vessel.
- d. At all times.

QUESTION: 049 (1.00)

Which ONE of the following statements describe a condition that would stop Refuel Platform travel over the core from the SFSP?

- a. Mode Switch in REFUEL, all control rods inserted, fuel grapple loaded with a bundle.
- b. Mode Switch in REFUEL, one rod selected and withdrawn, fuel grapple full up and carrying a blade guide.
- c. Mode switch in REFUEL, no hoists loaded, fuel grapple full up, one rod selected and withdrawn.
- d. Mode switch in REFUEL, no hoists loaded, fuel grapple not full up, one rod selected and withdrawn.

QUESTION: 050 (1.00)

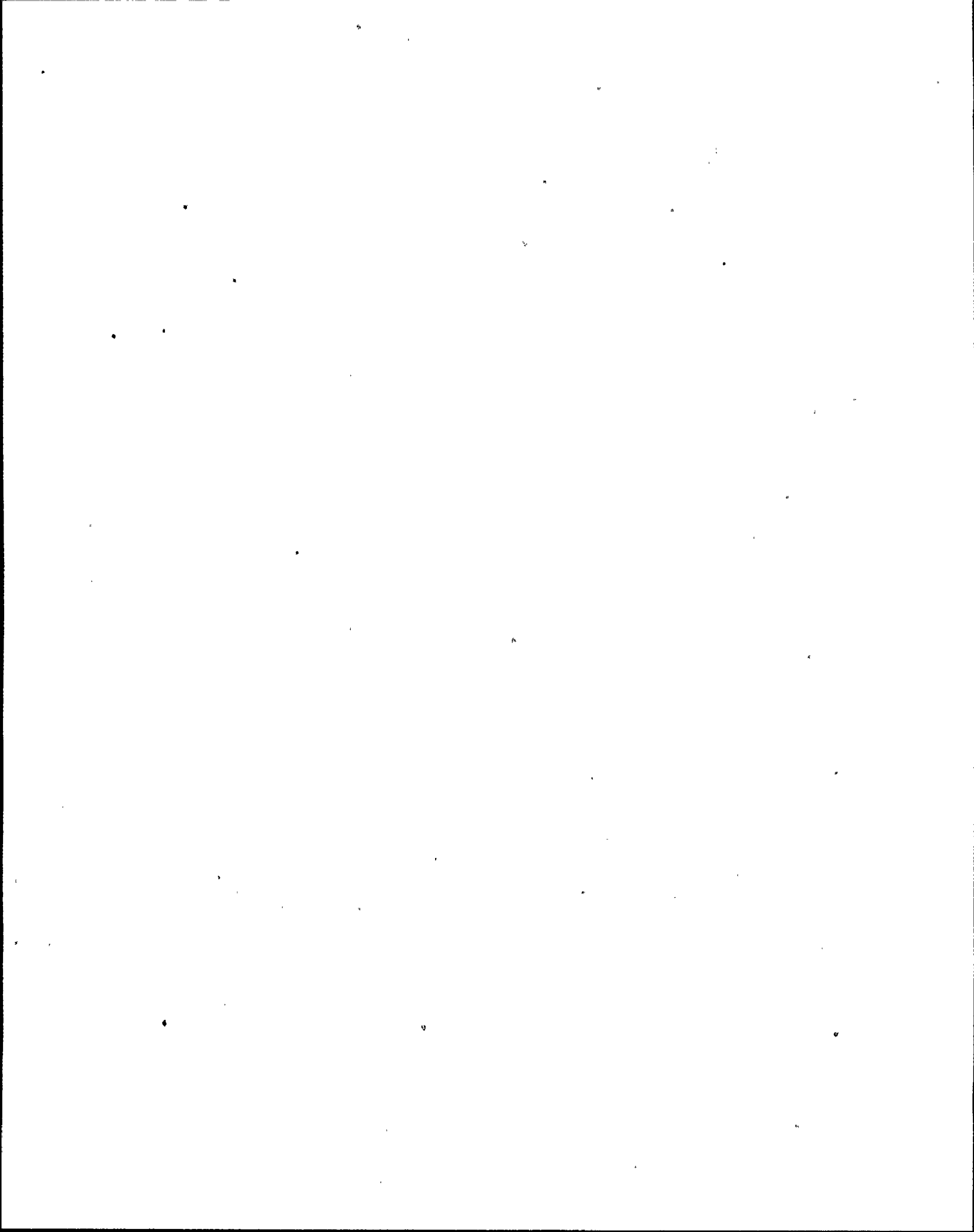
The following conditions exist during a LOCA:

- Reactor water level decreased to -130 inches and stabilized at -130 inches.
- All RHR and CS pumps are running.
- All ADS valves are closed and never opened.
- Drywell pressure increased to +3.0 psig, is now +2.0 psig and ADS High Drywell logic has been reset.
- Reactor pressure is 500 psig.

With no operator action, which ONE of the following describes the result on the Automatic Depressurization System?

The ADS valves will:

- a. NOT automatically open.
- b. open 95 seconds after level first reached -122 inches.
- c. open 265 seconds after level first reached -122 inches.
- d. open 360 seconds after level first reached -122 inches.



QUESTION: 051 (1.00)

Control Room Abandonment has been implemented and control of Reactor Pressure is established from the Backup Control Board. A valid ADS signal is subsequently generated.

Which ONE of the following will occur?

- a. Only two ADS valves will automatically open.
- b. Only four ADS valves will automatically open.
- c. None of the ADS valves will automatically open.
- d. ALL ADS valves will automatically open.

QUESTION: 052 (1.00)

Which ONE of the following will result in a total loss of ADS logic?

Power supply failure of:

- a. 250V RMOV Bd A
- b. 250V SD Batt B
- c. 250V RMOV Bd B
- d. 250V RMOV Bd C

QUESTION: 053 (1.00)

Which ONE of the following RHR valves will automatically close when 'A' RHR Pump's Shutdown Cooling Suction valve 2-74-2 is opened?

(Note: Assume no RHR pumps are running.)

- a. RHR Pump Torus Suction valve 2-74-1.
- b. RHR Pump Minimum Flow valve 2-74-7.
- c. RHR Spray/Cooling valve 2-74-57
- d. RHR Shutdown Cooling Suction supply valve 2-74-47.

QUESTION: 054 (1.00)

Which ONE of the following identifies the set of conditions for which ALL reactor water level indicators should be considered invalid.

DRYWELL TEMPERATURE near INSTRUMENT RUN - RPV PRESSURE

- a. 200 degrees F, 30 psig
- b. 320 degrees F, 90 psig
- c. 350 degrees F, 100 psig
- d. 375 degrees F, 250 psig

QUESTION: 055 (1.00)

The following conditions exist:

- Initial main condenser vacuum was greater than 26" Hg.
- A loss of vacuum is in progress.

Which ONE of the following identifies the vacuum point (decreasing) that will initiate the total loss of the main condenser as a heat sink?

- a. 24.5" Hg.
- b. 21.8" Hg.
- c. 7.0" Hg.
- d. 0.0" Hg.

QUESTION: 056 (1.00)

The following conditions exist:

- The reactor was initially at power.
- A LOCA is now in progress.

Which ONE of the following is REQUIRED to automatically start all RHR pumps?

- a. Greater than +2.45 psig drywell pressure AND reactor pressure less than 450 psig.
- b. Greater than +2.45 psig drywell pressure AND less than -122 inches reactor water level.
- c. Less than +11 inches reactor water level AND greater than +2.45 psig drywell pressure
- d. Less than -122 inches reactor water level AND reactor pressure less than 450 psig.

QUESTION: 057 (1.00)

Which ONE of the following describes why Reactor Water Cleanup (RWCU) valves, Blowdown to the Condenser (69-16) and Blowdown to Rad Waste (69-17), should NOT be opened at the same time?

- a. Main condenser vacuum may be reduced.
- b. The blowdown valve (69-15), will NOT control at high flow rates.
- c. The RWCU pumps may experience high flow and trip on low suction pressure.
- d. The RWCU heat exchangers cannot remove sufficient heat to prevent system isolation.

QUESTION: 058 (1.00)

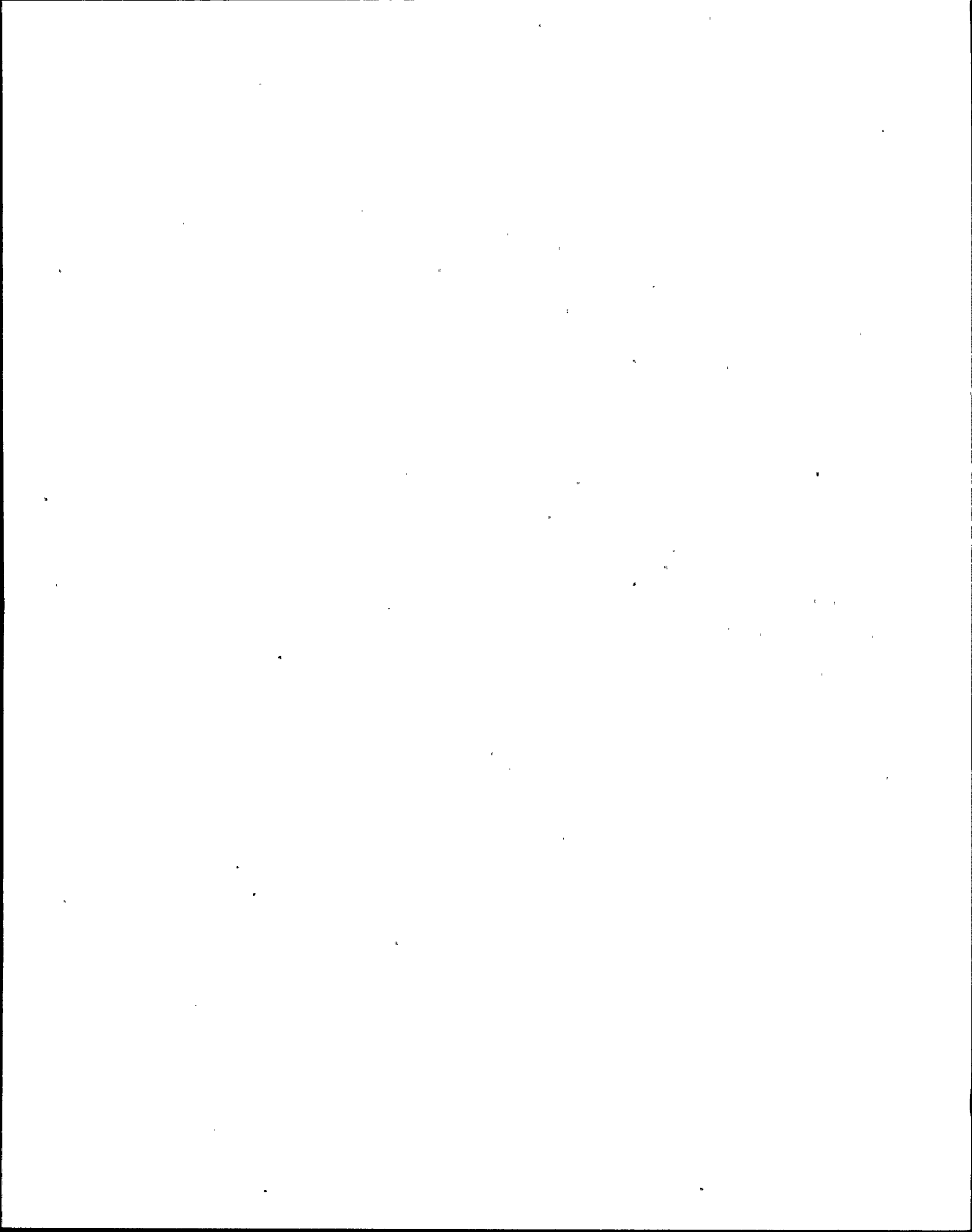
Which ONE of the following containment parameters/conditions would violate a Technical Specification limit?

- a. Suppression pool water level at -6 inches.
- b. Suppression pool temperature at 90 degrees F.
- c. Drywell oxygen (O-2) concentration at 3.5%.
- d. Drywell/torus differential pressure at 1.0 psid.

QUESTION: 059 (1.00)

Which ONE of the following requires local manual reset at the turbine?

- a. Only RCIC mechanical overspeed trip.
- b. RCIC and HPCI mechanical overspeed trip.
- c. RCIC and HPCI high reactor level trip.
- d. Only RCIC high reactor level trip.





QUESTION: 060 (1.00)

The following conditions exist during a Station Blackout (no incoming or diesel AC power):

- The High Pressure Coolant Injection (HPCI) system was started in response to a valid initiation signal.
- A valid HPCI isolation signal is subsequently generated.

Which ONE of the following is the expected result?

- a. The HPCI system will continue to operate.
- b. A full HPCI system isolation and turbine trip occurs.
- c. The Steam Supply Inboard Isolation valve 73-2 will close and turbine trip occurs.
- d. The Steam Supply Outboard Isolation valve 73-3 will close and turbine trip occurs.

QUESTION: 061 (1.00)

The following conditions exist while at power:

- The High Pressure Coolant Injection (HPCI) system was started for a surveillance test.
- A local operator reports that there is a steam leak on the HPCI turbine.
- The Control Room directs the operator performing the surveillance to isolate HPCI.

Which ONE of the following will result if the control room operator depresses the "Manual Isolation" pushbutton?

- a. The HPCI system will continue to operate.
- b. A full HPCI system isolation and turbine trip occurs.
- c. Only the Steam Supply inboard isolation valve 73-2 will close.
- d. Only the Turbine Stop valve 73-18 will close.

QUESTION: 062 (1.00)

At power, all trains of the Standby Gas Treatment System become inoperable.

Which ONE of the following identifies the affect on plant operation?

- a. Required Reactor Building pressure can no longer be maintained.
- b. Secondary Containment Integrity is no longer assured.
- c. Primary Containment Integrity is no longer assured.
- d. Required Drywell pressure will be lost if venting is attempted.

QUESTION: 063 (1.00)

The following conditions exist:

- The plant has experienced a LOCA.
- It is determined that the drywell is in the unsafe region of the drywell spray initiation limit curve.

Which ONE of the following describes the use of drywell sprays in this condition?

Drywell sprays must:

- a. be secured, if currently in use, to prevent exceeding the drywell-suppression chamber differential pressure limits.
- b. remain in service, if currently in use, until drywell suppression chamber differential pressure reaches 0.5 psig.
- c. NOT be placed in service, if NOT currently in use, to prevent operation of reactor building to torus vacuum breakers. If in use, drywell sprays may remain in use.
- d. NOT be placed in service, if NOT currently in use, to prevent exceeding the drywell suppression chamber differential pressure limits. If in use, drywell sprays may remain in use.

QUESTION: 064 (1.00)

The following conditions exist:

- RPV Flooding is in progress.
- Five MSRVS are open.
- EOPs direct the operator to raise reactor pressure to at least 190 psig.

Which ONE of the following states why reactor pressure must be raised to 190 psig?

This is the lowest RPV pressure at which steam flow through SRVs will preclude clad temperature from exceeding:

- a. 1500 degrees F even if the reactor core is NOT completely covered.
- b. 2200 degrees F even if the reactor core is NOT completely covered.
- c. 1500 degrees F provided the reactor core is completely covered.
- d. 2200 degrees F provided the reactor core is completely covered.

QUESTION: 065 (1.00)

The following conditions exist:

- A plant startup is in progress.
- Reactor power is presently 20%.
- A loss of condenser vacuum occurs.
- Condenser vacuum is presently -20 inches Hg.
- No operator action is taken.

Which ONE of the following describes the expected status of the reactor and of reactor pressure control?

- a. The reactor will NOT scram and pressure will be controlled by the main turbine.
- b. The reactor will NOT scram and pressure will be controlled by the main turbine bypass valves.
- c. The reactor will scram and pressure will be controlled by the main turbine bypass valves.
- d. The reactor will scram and pressure will be controlled by the MSRVS.

QUESTION: 066 (1.00)

The following conditions exist:

- A plant startup is in progress.
- Reactor pressure is 500 psig.
- No CRD Accumulators are in alarm.
- A trip of the 'A' CRD pump occurs.

Which ONE of the following conditions would require a manual reactor scram?

- a. Charging water pressure cannot be restored and maintained above 1410 psig.
- b. Cooling water pressure cannot be restored and maintained above 15 psid.
- c. One CRD accumulator alarm comes in for any cause.
- d. One CRD accumulator alarm comes in but only if the cause is low pressure.

QUESTION: 067 (1.00)

The following conditions exist:

- The plant is in the shutdown mode with reactor coolant temperature of 160 degrees F.
- The RPV head is in place.
- One suppression chamber manway is removed.
- Work is being performed which has the potential to drain the vessel.
- A loss of shutdown cooling occurs.
- Actions to restore shutdown cooling will take no less than 4 hours.
- The STA calculates a heatup rate of 15 degrees/hour.
- The current time is 0800.

Which ONE of the following states the required action?

- a. The work which has the potential to drain the vessel must be stopped by 1040.
- b. The work which has the potential to drain the vessel must be stopped by 1128.
- c. The suppression chamber manway must be replaced by 1128.
- d. The suppression chamber manway must be replaced by 1200.

QUESTION: 068 (1.00)

The following conditions exist:

- The plant is operating at 100% power.
- Flow starts to decrease on the 'A' Reactor Feed Pump.

Which ONE of the following states the effect on the Reactor Recirculation System?

The Reactor Recirculation Pumps will run back to:

- a. 28% speed when 'A' RFP flow drops to 20% of rated and RPV level drops to 27".
- b. 28% speed when 'A' RFP flow drops to 27% of rated and RPV level drops to 20".
- c. 75% speed when 'A' RFP flow drops to 20% of rated and RPV level drops to 27".
- d. 75% speed when 'A' RFP flow drops to 27% of rated and RPV level drops to 20".

QUESTION: 069 (1.00)

Which ONE of the following meets the definition of "Subcritical" as used in the emergency operating procedures?

- a. Reactor power is in the source range with a positive period.
- b. Reactor power is below the APRM downscale trips with a negative period.
- c. Reactor power is reading 30 on Range 8 of the IRMs and is decreasing.
- d. Reactor power is reading 30 on Range 4 of the IRMs and is constant.

QUESTION: 070 (1.00)

Which ONE of the following is prevented by observing the limits of the Heat Capacity Temperature Limit?

- a. Exceeding the Primary Containment Pressure Limit in the event of a large break LOCA.
- b. Exceeding the suppression chamber design temperature in the event of a large break LOCA.
- c. Exceeding the Pressure Suppression Pressure curve limits in the event that RPV depressurization is initiated.
- d. Exceeding the suppression chamber design temperature in the event that RPV depressurization is initiated.

QUESTION: 071 (1.00)

Which ONE of the following legs of the Primary Containment Control emergency operating procedure will allow diversion or securing of injection flow irrespective of Adequate Core Cooling?

- a. Primary Containment Pressure and Suppression Pool Level.
- b. Drywell Temperature and Suppression Pool Level.
- c. Drywell Temperature and Primary Containment Pressure.
- d. Suppression Pool Level and Suppression Pool Temperature.



QUESTION: 072 (1.00)

The following conditions exist:

- Level/Power Control EOI is being executed.
- Reactor Power is 15%.
- Suppression pool temperature is 115 degrees F.
- Drywell pressure is 3 psig.
- All MSIVs are open.

Which ONE of the following MSIV isolation interlocks do the EOIs direct to be bypassed for these conditions?

- a. Only the Low Low Low RPV Water Level Isolation.
- b. Only the Low Low Low RPV Level and Main Steam Line Low Pressure Isolations.
- c. All MSIV Isolation Interlocks except Main Steam Line Low Pressure.
- d. All MSIV Isolation Interlocks.

QUESTION: 073 (1.00)

A trip of a Reactor Recirculation Pump has occurred and it is determined that the plant is operating in Region II of the Power/Flow Map.

Which ONE of the following meets the procedural requirements for exiting Region II?

- a. Raise loop flow to greater than 45% with the running Reactor Recirculation Pump.
- b. Raise core flow to greater than 45% by restarting the tripped Reactor Recirculation Pump.
- c. Insert Control Rods in sequence to less than 80% rod line.
- d. Insert Control rods in sequence to enter Region III, then raise core flow to greater than 45%.

QUESTION: 074 (1.00)

While a fuel bundle is in transit from the vessel to storage racks with the bridge over the core, a fuel pool low level alarm is received and level in the fuel pool is observed to be lowering. According to O-GOI-100-3C, Fuel Movement Operations During Refueling, the correct operator actions are to . . . .

- a. immediately stop all spent fuel bundle movement and evacuate the refuel floor and at least one elevation below the refuel floor.
- b. immediately lower and place the spent fuel bundle in a safe location in the core and document the final location on the FATF.
- c. immediately lower and place the spent fuel bundle in the fuel storage racks in the fuel pool, regardless of its present location, and document the final location on the FATF.
- d. immediately lower the spent fuel bundle to the core, regardless of its present location; document the final location of the bundle on the FATF; evacuate the refuel floor and drywell.

QUESTION: 075 (1.00)

The following conditions exist:

- The plant is at 100% power.
- The OG POST TRMT RAD MONITOR HI-HI-HI/INOP alarm is in.
- The OFF-GAS POST TREATMENT RADIATION recorder reads  $7.2E+5$  cps on both channels.

Which ONE of the following states the REQUIRED action:

- a. Commence an orderly plant shutdown.
- b. Reduce core flow to between 50-60%, then manually scram the reactor.
- c. Reduce core flow to between 50-60%. If this action does NOT clear the Offgas Hi-Hi-Hi radiation, then manually scram the reactor.
- d. Reduce reactor power as necessary to clear the Offgas Hi-Hi-Hi radiation.

QUESTION: 076 (1.00)

The following conditions exist:

- A plant startup is in progress.
- The mode switch is in STARTUP/HOT STANDBY.
- Reactor power is 2%.
- Due to a massive system rupture, all RBCCW has been lost.

Which ONE of the following states the REQUIRED actions in the proper order?

- a. Trip both reactor recirculation pumps, manually scram the reactor just prior to reaching the Drywell High Pressure scram.
- b. Trip both reactor recirculation pumps, refer to 2-AOI-68-1, "Recirc Pump Trip/Core Flow Decrease" to determine if a scram is required.
- c. Trip both reactor recirculation pumps, manually scram the reactor, initiate a 90 degrees F/hr cooldown.
- d. Manually scram the reactor, trip both reactor recirculation pumps, initiate a 90 degrees F/hr cooldown.

QUESTION: 077 (1.00)

The following conditions exist:

- Drywell spray and suppression chamber spray are in service to lower primary containment pressure in accordance with EOI-2, Primary Containment Control.
- Suppression pool level is steadily increasing.

As suppression pool level continues to rise, which ONE of the following describes the REQUIRED action regarding containment spray?

- a. Suppression chamber spray should be secured if level cannot be maintained below 17 feet since that is the level at which the suppression chamber spray nozzles become submerged.
- b. Drywell spray should be secured if level cannot be maintained below 17 feet since that is the level at which suppression chamber to drywell vacuum breakers become submerged.
- c. Suppression chamber spray should be secured if level cannot be maintained below 18 feet since that is the level at which the suppression chamber spray nozzles become submerged.
- d. Drywell spray should be secured if level cannot be maintained below 18 feet since that is the level at which suppression chamber to drywell vacuum breakers become submerged.

QUESTION: 078 (1.00)

Which ONE of the following is the MINIMUM Radiological Emergency Plan classification that requires entry to EOI-4?

- a. NOUE
- b. Alert
- c. Site Area Emergency
- d. General Emergency

QUESTION: 079 (1.00)

The following conditions exist:

- The plant is at 100% power.
- A MSRV spuriously opens and will NOT reseal.

As suppression pool temperature increases, which ONE of the following is the point at which plant procedures REQUIRE the reactor to be scrammed?

- a. When it is determined that suppression pool temperature cannot be maintained below 95 degrees F.
- b. When suppression pool temperature exceeds 105 degrees F.
- c. When it is determined that suppression pool temperature cannot be maintained below 110 degrees F.
- d. When suppression pool temperature exceeds 120 degrees F.

QUESTION: 080 (1.00)

The following conditions exist:

- The plant is operating at 100% power when extraction steam is lost to A1 Feed Water heater.
- The operator is directed to reduce power to 68%.

Which ONE of the following is the MAXIMUM power level that the operator should maintain?

- a. 95%
- b. 90%
- c. 85%
- d. 80%

QUESTION: 081 (1.00)

The following conditions exist:

- An ATWS has occurred.
- Boron injection has commenced.

Which ONE of the following conditions would allow exiting the RC/Q leg of the RPV Control EOP and entering the Reactor Scram Procedure?

- a. Injection of hot shutdown weight of boron.
- b. Reactor power is below the heating range and is NOT increasing, and SBLC tank level is at 50%.
- c. Two control rods are at position 02. All other control rods are fully inserted.
- d. One control rod is at position 04. All other control rods are fully inserted.

QUESTION: 082 (1.00)

The following events occurred in the following order:

- During operation at 100% power all turbine bypass valves failed open.
- At 725 psig the reactor operator inserted a scram, placed the mode switch in SHUTDOWN, verified all rods inserted and closed the MSIVs.

Which ONE of the following applies?

- a. NRC approval must be obtained prior to resuming critical operation.
- b. NRC approval must be obtained prior to taking the plant out of cold shutdown.
- c. PORC may then grant approval to resume critical operation.
- d. PORC may then grant approval to take the plant out of cold shutdown.

QUESTION: 083 (1.00)

The following conditions exist:

- The plant is operating at 100% power.
- A loss of Control Air occurs.
- Control Air Header and Scram Air Header are both at 70 psig.

Which ONE of the following automatic actions should have occurred?

- a. Unit 2 and Unit 3 Reactors scram and Service Air Crosstie to Control Air Valve (0-FCV-33-1) opens.
- b. Unit 2 and Unit 3 Reactors scram and Unit 2 to Unit 3 Control Air Crosstie Valve (2-PCV-032-3901) closes.
- c. The Control Air Compressor selected as standby starts and Unit 2 to Unit 3 Control Air Crosstie Valve (2-PCV-032-3901) closes.
- d. Service Air Crosstie to Control Air Valve (0-FCV-33-1) opens and Emergency Control Bay Air Compressor starts.

QUESTION: 084 (1.00)

The following conditions exist:

- Reactor power is 90%.
- A rod initially at position 24 starts to drift out.

Which ONE of the following is the required IMMEDIATE action?

- a. Select the drifting rod and insert to its designated position.
- b. Insert symmetrical control rods.
- c. Reduce core flow by approximately 10%.
- d. Manually scram the reactor.

QUESTION: 085 (1.00)

The following conditions exist:

- Unit 2 is operating at 100% power.
- A loss of RPS 'A' occurs.

Which one of the following isolation valves will close as a direct cause of the power loss?

- a. Group I Isolation Valves Inboard Only
- b. Group II Isolation Valves Outboard only
- c. Group II Isolation Valves Inboard and Outboard
- d. Group III Isolation Valves Inboard and Outboard

QUESTION: 086 (1.00)

The following conditions exist:

- An ATWS is in progress.
- Pressure is being controlled in accordance with 2-EOI-1, RPV Control and directs that MSIVs be reopened.
- The appropriate bypasses are installed and the MSIVs are opened.

Which ONE of the following describes available automatic closure of the MSIVs?

- a. The MSIVs will have no automatic closure features.
- b. Only the main steam line high flow isolation signal is available.
- c. Only the high steam tunnel temperature isolation signal is available.
- d. Both the main steam line high flow signal and the high steam tunnel temperature signal are available.



QUESTION: 087 (1.00)

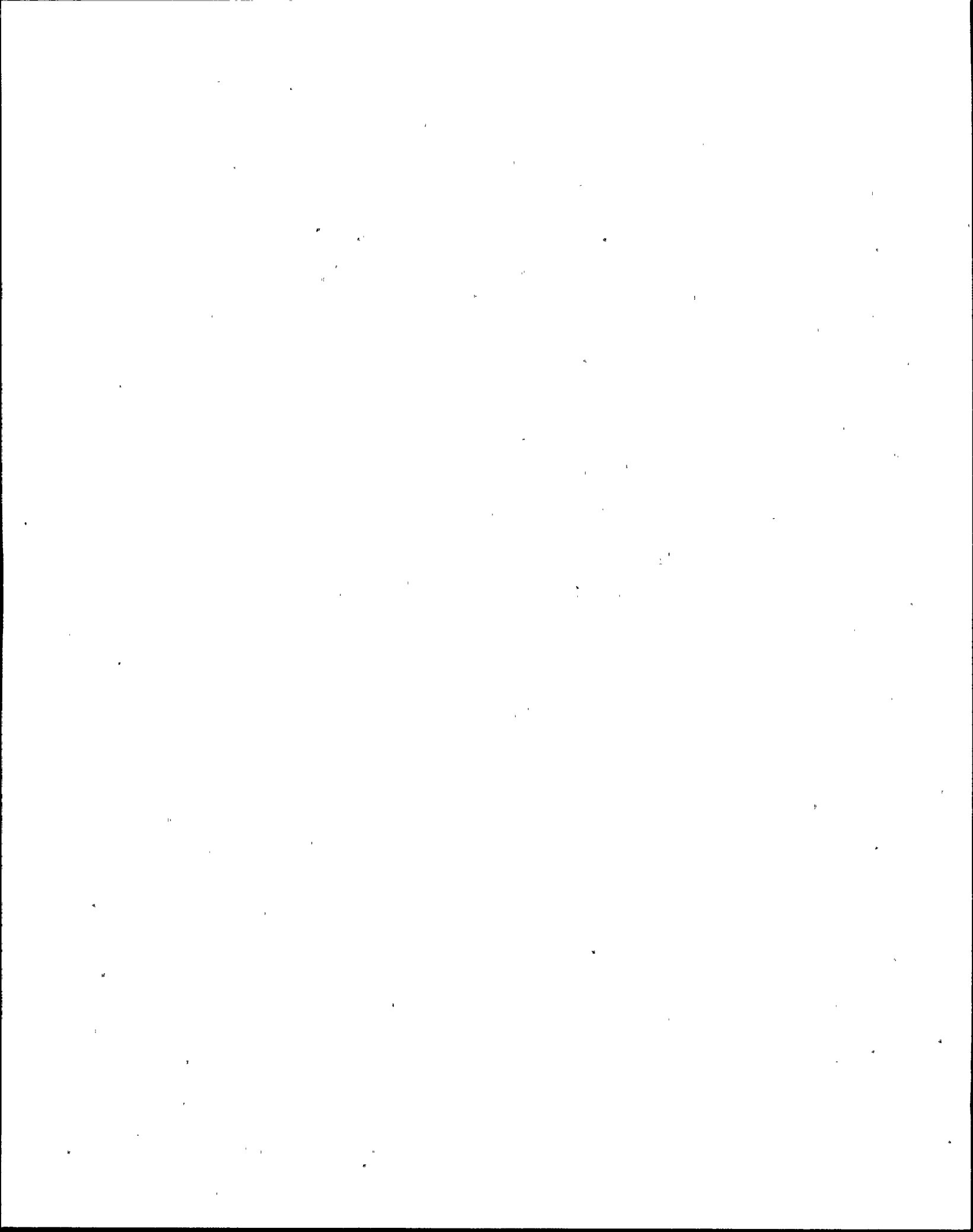
Given that suppression pool level is rising, at what level (increasing) will the suppression chamber vent path be considered submerged?

- a. -1 inch
- b. +6 inches
- c. 18 feet
- d. 31 feet

QUESTION: 088 (1.00)

EOI-4 directs the operator to ensure which of the following systems is in service?

- a. Reactor Building Ventilation
- b. Turbine Building Ventilation
- c. Control Room Emergency Ventilation
- d. Standby Gas Treatment



QUESTION: 089 (1.00)

The following conditions exist:

- The reactor is operating at 100% power.
- The transmitter for the in service pressure regulator fails upscale.
- No operator action is taken.

Which ONE of the following is an expected automatic response?

- a. A reactor scram will occur on low main steam line pressure.
- b. A reactor scram will occur on MSIV closure.
- c. A reactor pressure decrease (2-5 psig) will occur.
- d. A reactor power increase (2-5%) will occur.

QUESTION: 090 (1.00)

The following conditions exist:

- During a plant transient HPCI is being used to control reactor water level when a Group 4 isolation occurs.
- The HPCI AUTO ISOL LOGIC A & LOGIC B lights do NOT illuminate.

Which ONE of the following signals caused the Group 4 Isolation?

- a. High HPCI Area Temperature
- b. High Steam Line Flow
- c. Low Steam Line Pressure
- d. HPCI Turbine Trip

QUESTION: 091 (1.00)

The following conditions exist:

- You are the SRO responsible for fuel movements on the refuel bridge.
- Following insertions of a fuel assembly into the reactor core, the control room reports that neutron count rate is steadily increasing.
- Refuel floor radiation level took a sudden jump to 1000 mRem/hour and are steadily increasing.

Which ONE of the following is a MINIMUM REQUIRED action?

- a. Leave the fuel assembly in the reactor core and immediately evacuate the refuel floor.
- b. Remove the fuel assembly from the core and preferably place it in a fuel pool location with the fewest surrounding fuel assemblies.
- c. Remove the fuel assembly from the core and move it away from the reactor core, preferably to the area of the cattle chute.
- d. Remove the fuel assembly from the core and place it in the nearest available fuel pool location without regard to surrounding fuel assemblies.

QUESTION: 092 (1.00)

The following conditions exist:

- A spurious reactor scram has occurred. (Condition cleared immediately.)
- Reactor water level decreased to +15 inches at the time of the reactor scram and has been recovered to +30 inches.
- Reactor pressure peaked at 1028 psig and is now stable at 980 psig.
- Four control rods remained at position 48. All other control rods fully inserted.
- Reactor power is stable at 2%.

Which ONE of the following is the prescribed method for inserting the control rods that are at position 48?

- a. Initiate ARI per RC/Q.
- b. Reset the scram and manually reinsert another scram per AOI-100-1.
- c. Scram the rods using individual scram test switches per EOI Appendix 1C.
- d. Reset the scram and drive the rods into the core with normal drive water pressure per EOI Appendix 1D.

QUESTION: 093 (1.00)

*deleted*

A primary system is discharging into secondary containment causing elevated temperatures.

Which ONE of the following secondary containment area temperatures would affect the reading on the floodup level indicator?

- a. RWCU Heat Exchanger Room
- b. RWCU Pump Room
- c. Reactor Building Elevation 585'
- d. Reactor Building Elevation 593'.

QUESTION: 094 (1.00)

The following conditions exist:

- The plant is shutdown with the Reactor Recirculation pumps secured.
- Reactor vessel level is being raised to promote natural circulation.

With vessel level increasing, which ONE of the following is the approximate RPV level at which the Main Steam Lines will start to flood?

- a. 77 inches
- b. 97 inches
- c. 117 inches
- d. 137 inches

QUESTION: 095 (1.00)

The following conditions exist:

- The plant is at 50% power.
- EHC system malfunctions are causing turbine stop and control valves to spuriously operate.

Which ONE of the following sets of valve closures should cause a full reactor scram?

- a. Control Valves #1 and #3 fast close.
- b. Stop Valves #1 and #3 go closed.
- c. Control Valves #1 and #2 fast close.
- d. Control Valve #1 fast closes and Stop Valve #2 goes closed.

QUESTION: 096 (1.00)

Which ONE of the following sets of parameters is needed to plot position on the Drywell Spray Initiation Limit curve?

- a. Drywell temperature and drywell pressure.
- b. Drywell temperature and RPV pressure.
- c. Drywell temperature and suppression chamber pressure.
- d. Drywell pressure and suppression chamber pressure.

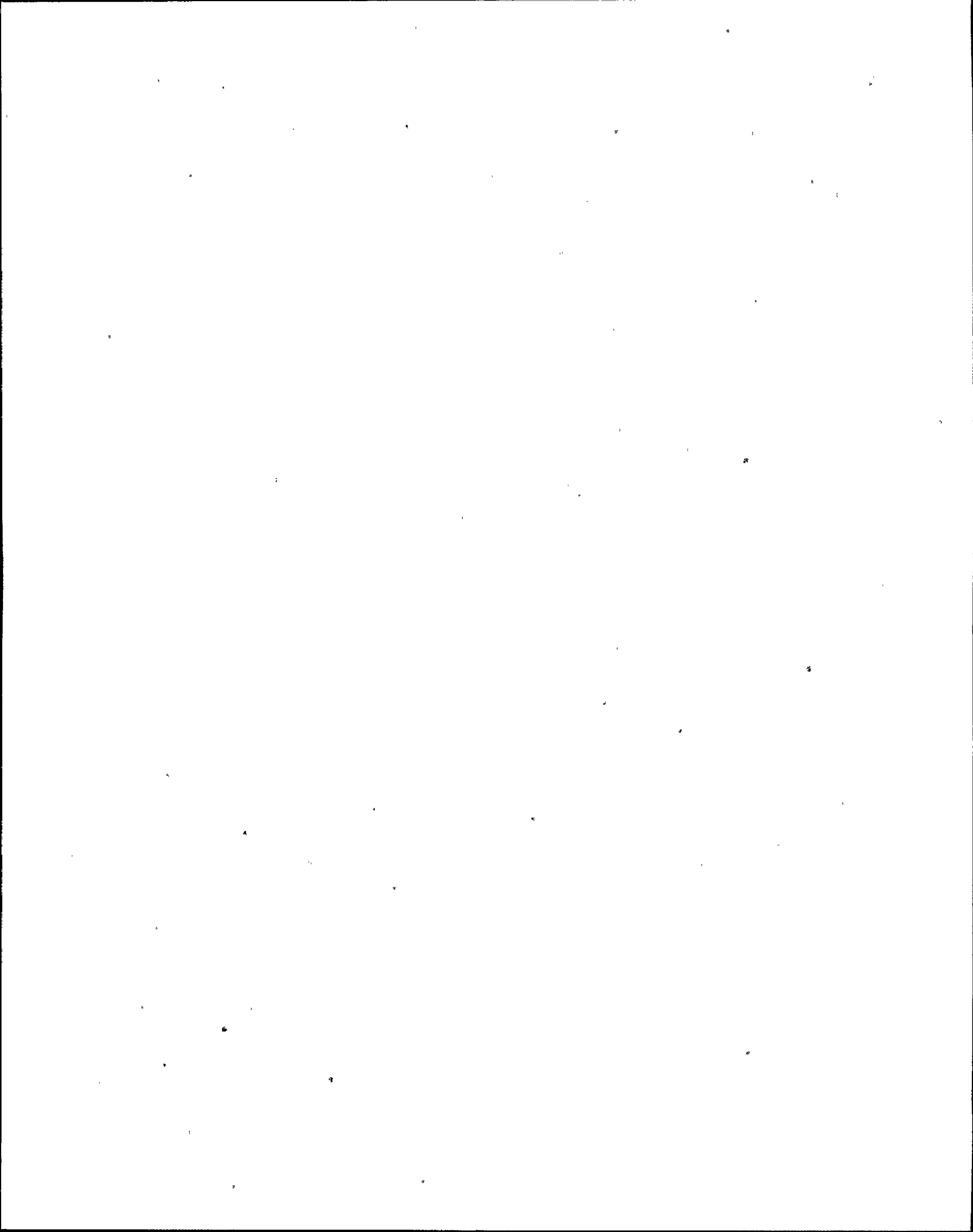
QUESTION: 097 (1.00)

The following conditions exist:

- The plant is operating at 100% power when an ATWS occurs.
- The operator is lowering reactor water level by terminating and preventing injection to the RPV from all sources except boron and CRD.
- The operator then notices that reactor power is oscillating from 15% to 20% on the APRMs.

Which ONE of the following is the required action?

- a. Immediately stabilize reactor water level.
- b. Immediately cease flow reduction efforts until power oscillations have ceased.
- c. Continue to lower reactor water level regardless of magnitude of power oscillations.
- d. Continue to lower reactor water level until the peak-to-peak oscillations reach 10%, then stabilize water level at that point.





QUESTION: 099 (1.00)

The following conditions exist:

- The plant is operating at 100% power and 1000 psig.
- A reactor pressure spike causes a MSR to open.

Which ONE of the following tailpipe temperatures would you expect to see if the MSR has failed to reclose?

- a. 212 degrees F
- b. 290 degrees F
- c. 370 degrees F
- d. 545 degrees F

QUESTION: 099 (1.00)

The following conditions exist:

- A LOCA has occurred resulting in a RPV depressurization.
- The 'A' and 'C' RHR pumps are the only injection sources available and have initiated automatically in the LPCI mode.
- Drywell pressure is 12 psig and slowly increasing.

Which ONE of the following states how the RHR pumps should be utilized?

- a. RHR pumps should only be used in the LPCI mode until the leak rate is within the capacity of one RHR pump.
- b. RHR pumps should be placed in drywell spray immediately without regard to adequate core cooling.
- c. RHR pumps must be used to raise level above +12 inches, then RHR pumps may be used for drywell spray.
- d. RHR pumps may be used for drywell spray as long as level is maintained above top of active fuel.

QUESTION: 100 (1.00)

During a plant transient, Reactor Zone and Refuel Zone Radiation levels increase to 70 mRem/hr.

Which ONE of the following describes the expected response?

- a. Reactor Zone Ventilation isolates and SBGT starts.
- b. Refuel Zone Ventilation isolates and SBGT starts.
- c. Reactor and Refuel Zone ventilation isolates but SBGT does NOT start.
- d. No Reactor Zone or Refuel Zone isolation occurs.

QUESTION: 101 (1.00)

The following conditions exist:

- Drywell spray is in service to lower drywell temperature.
- Reactor pressure is 400 psig.
- Drywell pressure is 8 psig.
- Drywell temperature is 290 degrees F.

With the RHR SYS I CTMT VLV SELECT SWITCH in SELECT and reactor water level decreasing, which ONE of the following is the water level at which the RHR SYS I DW SPRAY INBD VLV (2-FCV-74-61) will go closed?

- a. -45 inches
- b. -122 inches
- c. -150 inches
- d. -183 inches

QUESTION: 102 (1.00)

With a decreasing suppression pool level, which ONE of the following is the point at which the HPCI exhaust discharge device is assumed to become uncovered?

- a. -6 inches Narrow Range indication
- b. 12.75 feet Wide Range indication
- c. 10.75 feet Wide Range indication
- d. 10 feet Wide Range indication

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

ANSWER: 001 (1.00)

c.

REFERENCE:

OPL171.038, rev 2, pg 18, sect 4.b.1 and Obj V.B.12  
E4  
[3.1/3.4]

262001K403 ..(KA's)

ANSWER: 002 (1.00)

a.

REFERENCE:

EOI Program Manual, Revision 2, section V-C, page 121 of 144, discussion  
of step RC/Q-7

[3.2/3.3]

295005K203 ..(KA's)

ANSWER: 003 (1.00)

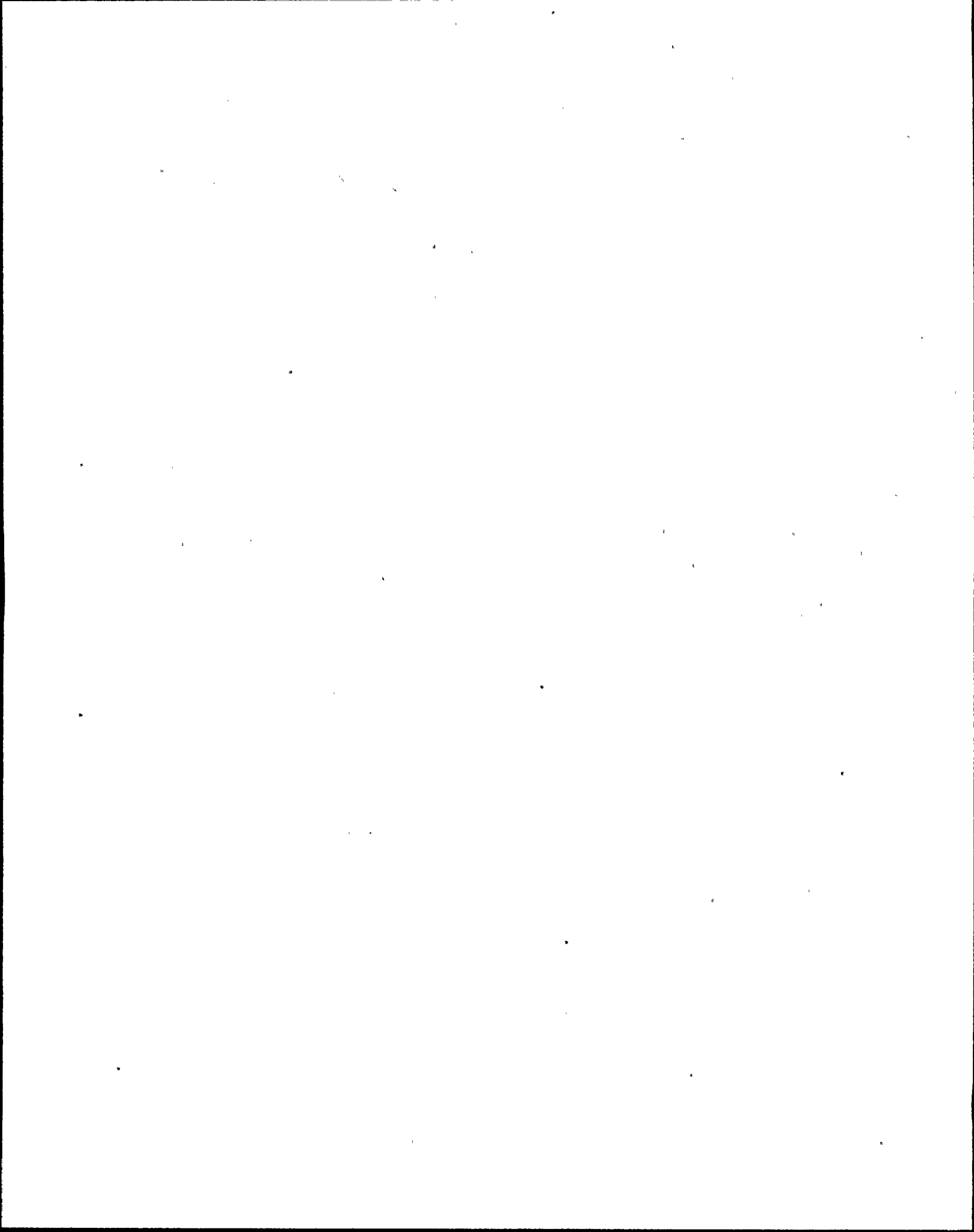
d.

REFERENCE:

OPL171.039, rev 8, p. 21, items #5 and #6 Obj V.B.6  
E5 idea only

[4.2/4.2]

211000A308 ..(KA's)



ANSWER: 004 (1.00)

c.

REFERENCE:

EOI Program Manual, page 11 of 70, section V-E, Rev 1, Discussion step  
SCC-1  
1995 Browns Ferry Exam

[3.9/3.9]

295034K204 ..(KA's)

ANSWER: 005 (1.00)

d.

REFERENCE:

EOI-4, bases, pg 9 of 22, second paragraph

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 006 (1.00)

a.

REFERENCE:

10 CFR Section 26.20, "require a statement to be made by a called-in-  
person as to whether alcohol has been consumed etc."  
SSP-1.6, rev 9, sect 3.13.B.,

[3.2/3.7]

294001K105 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

SSP-1.7, rev 3, pg sect 3.0

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 008 (1.00)

d.

REFERENCE:

SSP-12.1, rev 22, pg 25, item 3.1.10.J.1.d requires the UO to "Initiate a reactor trip if a safety limit is exceeded". This is more limiting than TS or 10 CFR 50.36.

TS definitions, 1.0 A Safety Limit and Hot Shutdown, sect 6.7 Safety Limits

10 CFR 50.36.c.1.i

[4.2/4.2]

294001A102 ..(KA's)

ANSWER: 009 (1.00)

b.

## REFERENCE:

10 CFR 50.72.a.ii.(3)

SSP-4.5, rev 15, and EPIP-3 pgs 2 and 4

Note, EPIP-3 is more restrictive than 10 CFR 50.72 but ans b is correct as written.

[2.9/4.7]

294001A116 ..(KA's)

ANSWER: 010 (1.00)

c.

## REFERENCE:

SSP-5.1, rev 10, pg 21, 3.9.3.A, Note 1 and pg 22, 3.9.3.B

[3.3/3.8]

294001K103 ..(KA's)

ANSWER: 011 (1.00)

a.

## REFERENCE:

TS def, Rated power, 3293 for all 3 units.

Check at facility - No Ref provided to show 102% max for 15 minutes is OK and 8 hour average not to exceed 3293 Mwt are normal BWR limits.

[3.2/3.4]

294001A115 ..(KA's)

ANSWER: 012 (1.00)

c.



REFERENCE:

SSP-12.1, rev 22, pg 25, item 3.1.10.I.1.a "Initiate a reactor trip if indications exceed reactor trip settings and the trip has not occurred."

[4.5/4.3]

294001A113 ..(KA's)

ANSWER: 013 (1.00)

c.

REFERENCE:

SSP-12.1, rev 22, pg 27, 3.1.10.17  
10 CFR 50.54(x)

[3.3/4.2]

294001A109 ..(KA's)

ANSWER: 014 (1.00)

a.

REFERENCE:

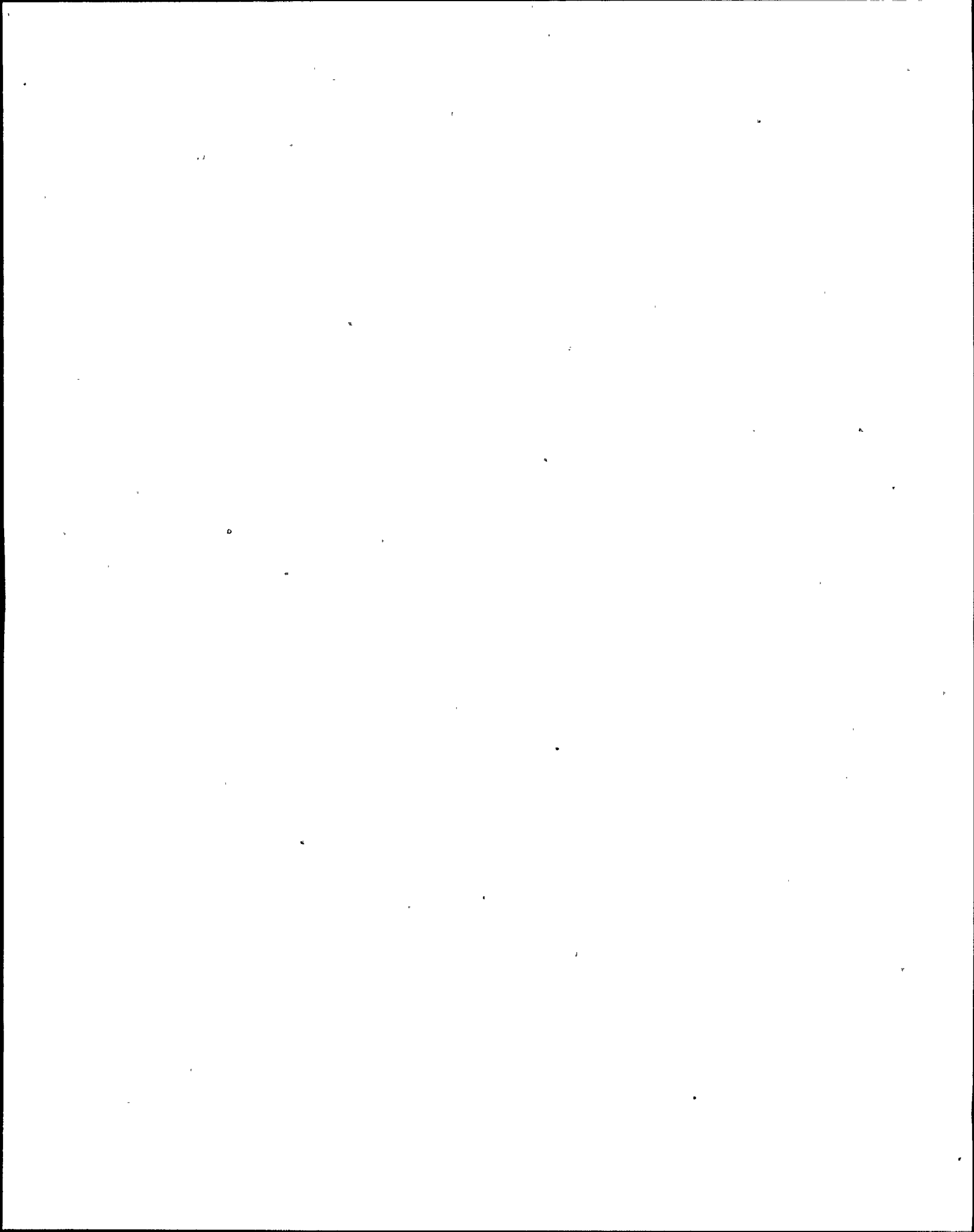
TS pg 6.0-4, NOTE b

[2.7/3.7]

294001A103 ..(KA's)

ANSWER: 015 (1.00)

d.



REFERENCE:

SSP-5.2, rev 6, pg 4, sect 1.0, 2.0 and 2nd sentence of 3.1, minimize personnel TEDE.

[3.3/3.4]

294001K104 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

SSP-8.2, rev 8, pg 13, item 3.4.4.E

[3.5/4.2]

294001A112 ..(KA's)

ANSWER: 017 (1.00)

c.

REFERENCE:

SSP-12.1, rev 22, pg 25, NOTE at bottom.

[4,5/4.3]

294001A113 ..(KA's)

ANSWER: 018 (1.00)

b.

REFERENCE:

SSP-12.3, rev 19, pg 24, item 3.1.10.D.2

[3.9/4.5]

294001K102 ..(KA's)

ANSWER: 019 (1.00)

d.

REFERENCE:

SSP-12.3, rev 19, pg 36, item 3.2.7.4

[3.9/4.5]

294001K102 ..(KA's)

ANSWER: 020 (1.00)

c.

REFERENCE:

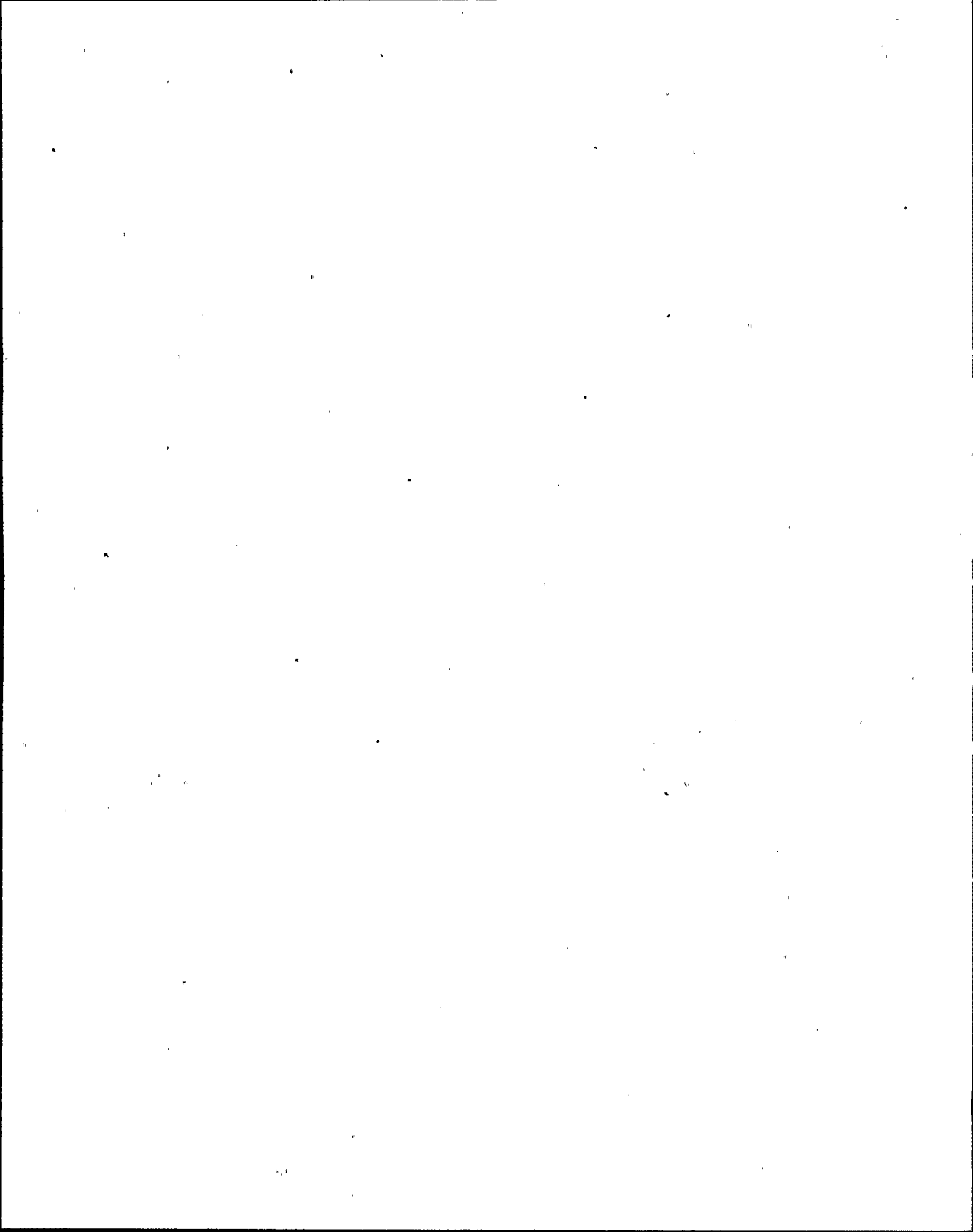
SSP-2.1, rev 12, pg 5, item 3.2.A.5

[4.2/4.2]

294001A102 ... (KA's)

ANSWER: 021 (1.00)

d.



REFERENCE:

SSP-12.6, rev 2, pg 9, 3.3.2  
[3.7/3.7]

294001K101 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

SSP-12.3, rev 19, pg 15, items 3.1.5.J and K  
[3.3/3.6]

294001K107 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

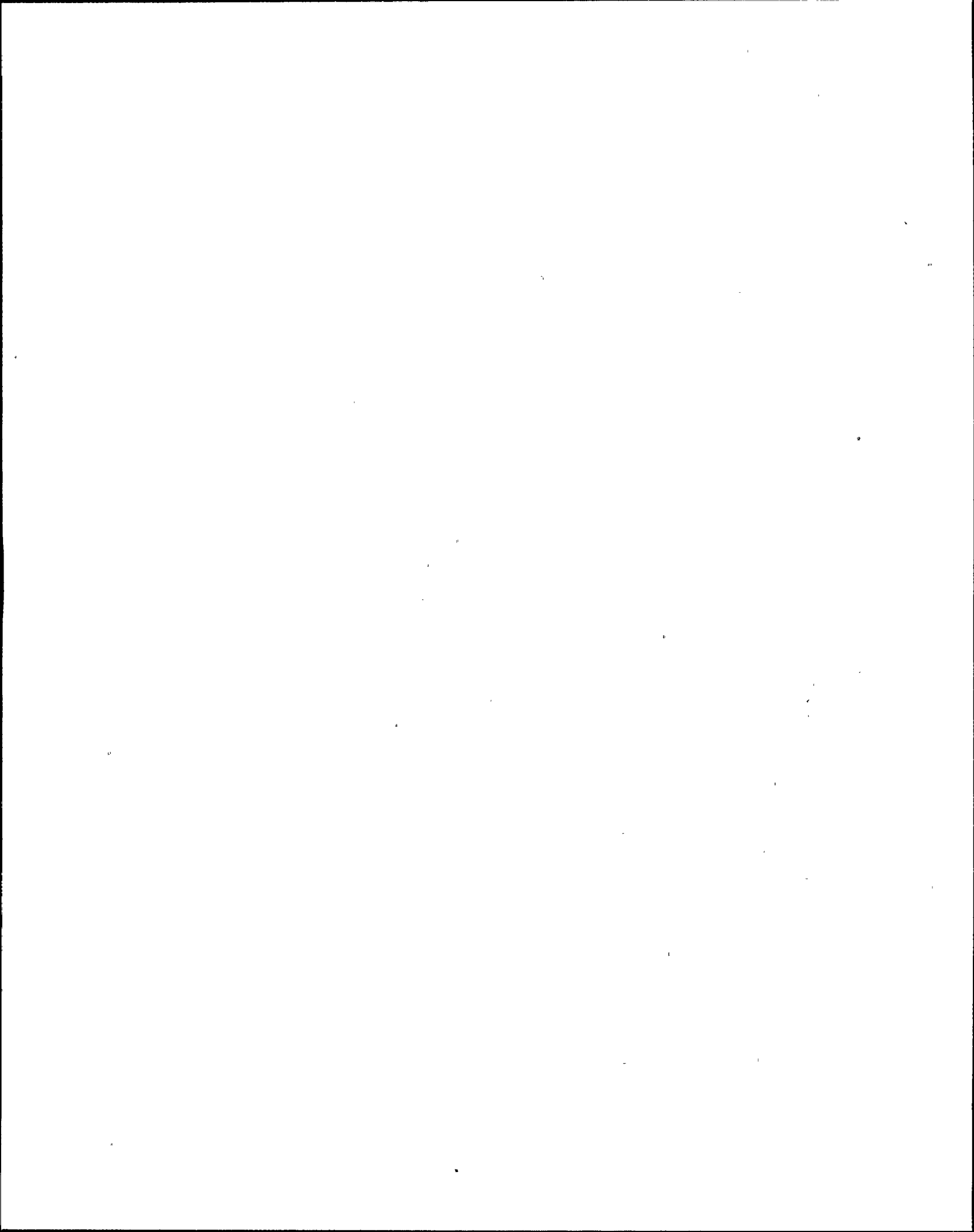
OPL171.019, rev 4, pg 30, sect 5 and obj 12.b  
Requirement is to achieve sub-criticality, d not correct if rod motion  
causes negative period but Keff still >1.0

[3.9/3.8]

215004A401 ..(KA's)

ANSWER: 024 (1.00)

c.



## REFERENCE:

OPL171.028, rev 8, table #1  
Obj V.B.8&9

[4.0/4.1]

212000A216 ..(KA's)

ANSWER: 025 (1.00)

d.

## REFERENCE:

OPL171.029, rev 6, pg 27, item 2.b  
2-SI-4.3.B.1.a, rev 0010, sect 1.2.1, requires every time at 48  
TS 4.3.4.1.b, pg 4.3-5, only requires first time after refuel outage.

[3.8/3.9]

201003K402 ..(KA's)

ANSWER: 026 (1.00)

d.

## REFERENCE:

OPL171.006, rev 3, pgs 23, 24, 31 top para, TP-5, and Obj V.B.11

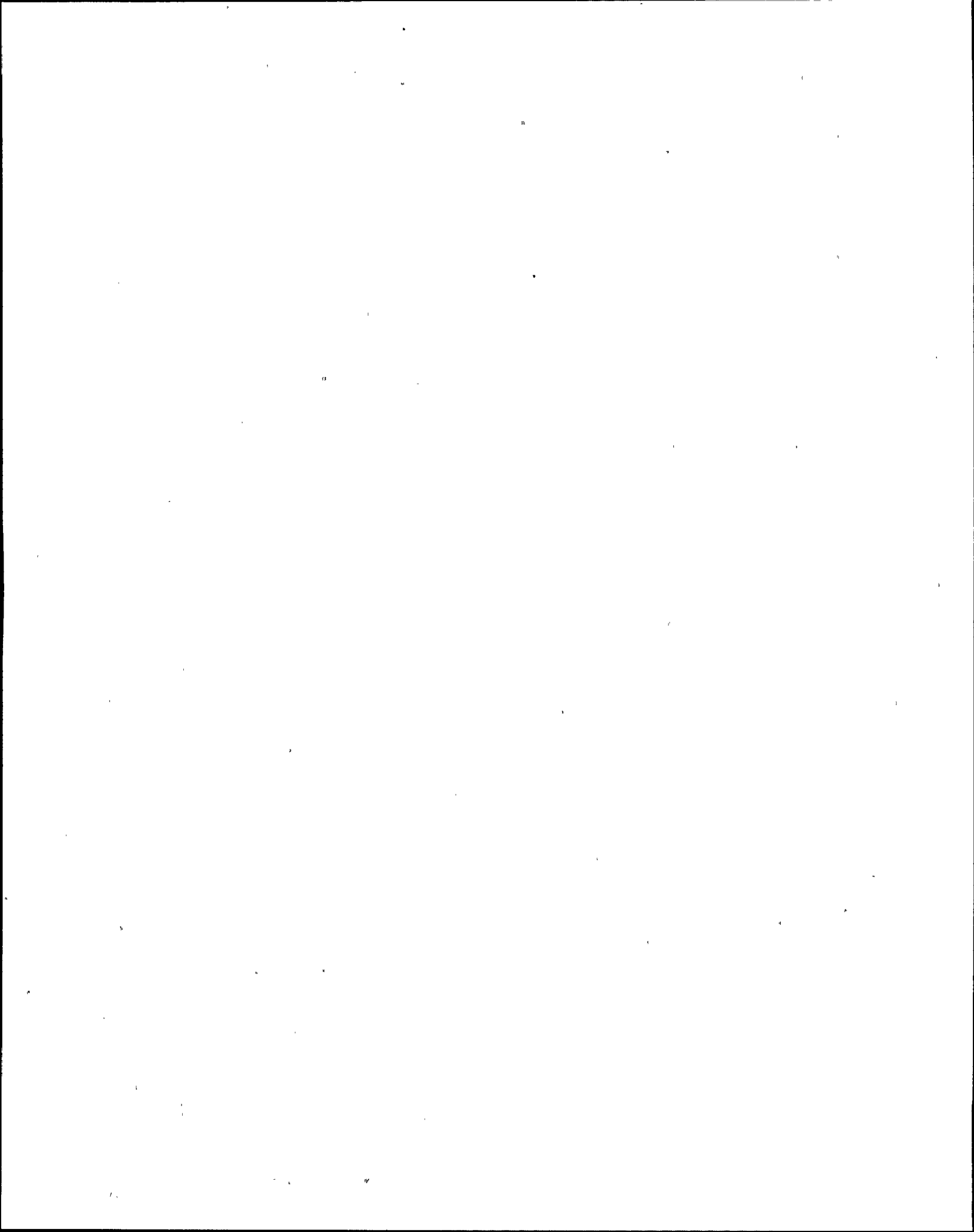
[3.6/3.7]

201003K404 ..(KA's)

ANSWER: 027 (1.00)

a.





REFERENCE:

OPL171.019, rev 4, pg 43, and obj V.B.9  
[3.4/3.4]

215004K102 ..(KA's)

ANSWER: 028 (1.00)

b.

REFERENCE:

OPL171.005, rev 6, pgs 26, 27 and Obj C.10  
OPL171.028 rev 8, pg 34, TP-2, pg 15 item d.(3)  
[3.5/3.5]

201001A311 ..(KA's)

ANSWER: 029 (1.00)

c.

REFERENCE:

OPL171.028, rev 8, table #1 and obj B.6  
Fac Q 13953 modified  
[3.7/3.9]

212000K101 ..(KA's)

ANSWER: 030 (1.00)

d.

## REFERENCE:

TS 1.1.B, Power Transient Safety Limit, pg 2.1-5  
OPL171.028, rev 8, pg 14 & 15, and obj V.B.1

[3.3/4.1]

290002G005 .. (KA's)

ANSWER: 031 (1.00)

c.

## REFERENCE:

OPL171.026, rev 5, pg 43, item 12.b and obj V.B.7.c  
Note - less steam to the turbine causes less extraction steam thus less  
feedwater heating giving more reactor power.

[3.7/3.8]

239001K126 .. (KA's)

ANSWER: 032 (1.00)

b.

## REFERENCE:

OPL171.022, rev 2, pg 23, item (d) and obj V.B.9.c  
TS table 3.1.A, note #13

[3.6/3.8]

215005A406 .. (KA's)

ANSWER: 033 (1.00)

b.



REFERENCE:

OPL171.004, rev 2, TP-10, Obj V.B.6  
Fac Q 12242 modified

[3.0/3.7]

234000K505 ..(KA's)

ANSWER: 034 (1.00)

a.

REFERENCE:

OPL171.024, rev 7, pg 14, item f.(3) and Obj V.B.3 and page 40, sect  
4.d.(1)

AOI-85-4 does not state that rod blocks will occur in the transition  
zone but the above reference to equipment operation is clear and the  
learning obj implies that this is in fact the case.

[3.4/3.5]

201006A102 ..(KA's)

ANSWER: 035 (1.00)

c.

REFERENCE:

TS table 3.1.A, note # 2  
OPL171.029, rev 6, pg 37, TP-8, and Obj V.7.c

[3.2/3.1]

212000A201 ..(KA's)

ANSWER: 036 (1.00)

c.

REFERENCE:

OPL171.028, rev 8, pg 24, top of page and TP-11

[3.8/4.1]

262001K306 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

EOI-1, program manual sect V-C, rev 2, pg 143 of 144  
OPL171.028, rev 8, sect 5.b.(1) and obj V.B.11

[3.8/3.9]

201001K406 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

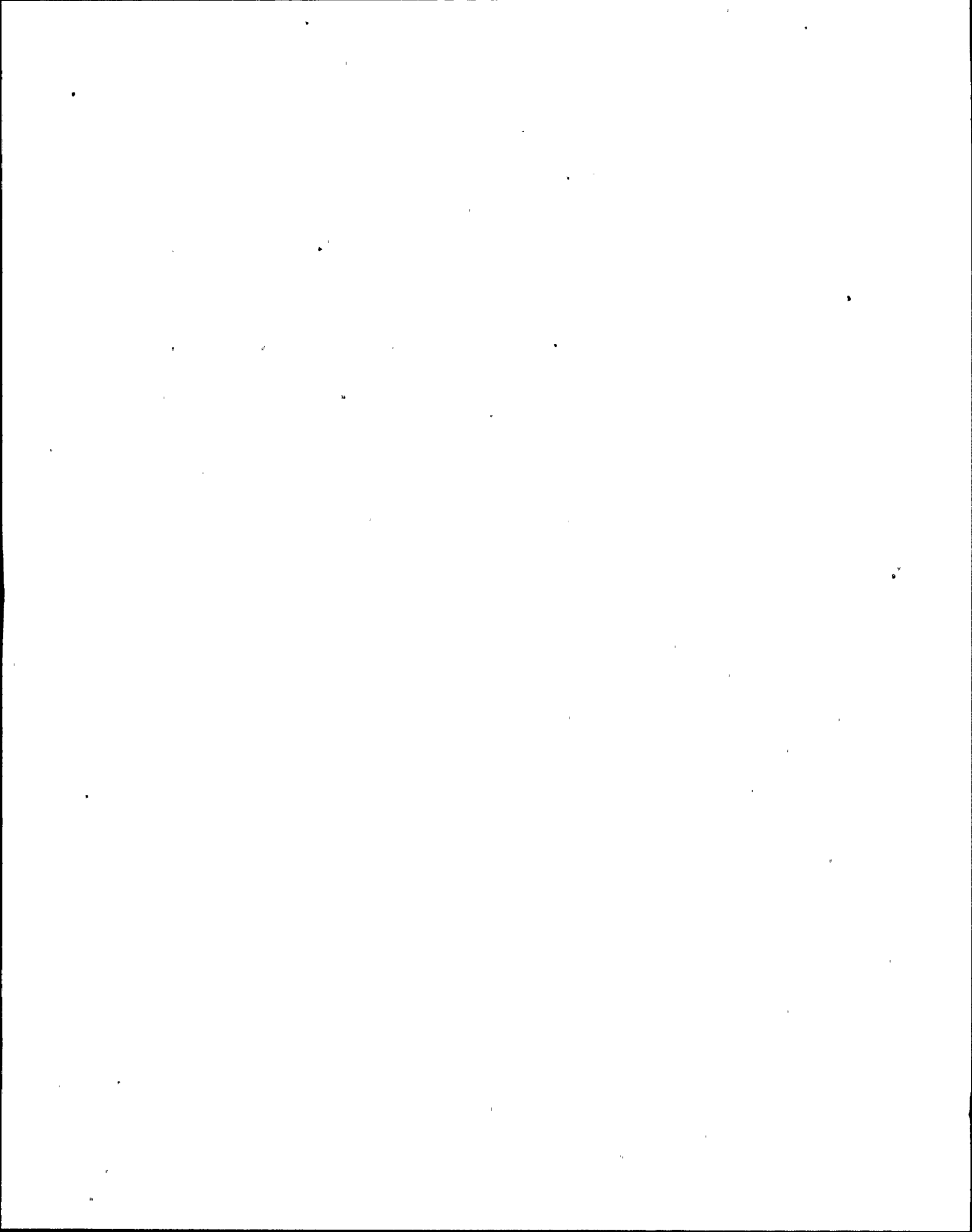
OPV171.005, rev 6, pg 25, item 9 top of page, to RBEDS which is vented  
to RB atmosphere.

[3.2/3.3]

201001G010 ..(KA's)

ANSWER: 039 (1.00)

c.



REFERENCE:

AOI-68-2, rev 9, pg 1, sect 2.0  
OPL171.007, pgs 54, 55, 56 and obj V.B.33

[3.5/3.7]

202001K601 ..(KA's)

ANSWER: 040 (1.00)

b.

REFERENCE:

OPL171.017, rev 6, pg 15, sect 4 and Obj V.B.7  
TS table 3.1.A, pg 1-3, MSIV scram in RUN only

[3.6/3.7]

223002A209 ..(KA's)

ANSWER: 041 (1.00)

b.

REFERENCE:

OPL171.005, rev 6, pgs 27-31, TP-4, and obj V.B 21, V.C.11

[3.5/3.6]

201001K203 ..(KA's)

ANSWER: 042 (1.00)

b.



REFERENCE:

OPL171.007, rev 13, pg 49, sect (4) and obj V.B.25  
EOI program manual, pg 117/118, RC/Q-4,5

[4.0/4.1]

202001K414 ..(KA's)

ANSWER: 043 (1.00)

d.

REFERENCE:

OPL171.007, rev 13, pg 26, item (d) and Obj V.B.10

[3.1/3.2]

223001K104 ..(KA's)

ANSWER: 044 (1.00)

a.

REFERENCE:

OPL171.040, rev 11, pg 30, sect c.2 and Obj V.b.6  
OPL171.042, rev 10, pg 33, sect D.b.4

[3.5/3.5]

217000A301 ..(KA's)

ANSWER: 045 (1.00)

a.

REFERENCE:

OI-66, rev 38, item 3.9, 3.10, 3.14  
OPL171.030, rev 9, Obj.V.B.9

[3.1/3.2]

271000G010 ..(KA's)

ANSWER: 046 (1.00)

d.

REFERENCE:

OPL171.017, rev 6, pg 32, table 1, and Obj V.B.7

[3.5/3.5]

223002A302 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

OPL171.020, rev 3, p pg 37, TP-11 and Obj V.B.7

[3.9/4.0]

215003K106 ..(KA's)

ANSWER: 048 (1.00)

a.

REFERENCE:

TS 3.6.A.5, pg 3.6/4.6-3  
[3.0/3.2]

216000K503 ..(KA's)

ANSWER: 049 (1.00)

d.

REFERENCE:

OPL171.053, rev 5, pg 26 top of page, TP-6, and Obj V.B.5  
[3.3/4.1]

234000K402 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

OPL171.043, rev 6, pg 10, pg 11, 265 timer bypasses drywell press, pg 12, and Obj V.B.4

[3.8/4.0]

218000K403 ..(KA's)

ANSWER: 051 (1.00)

c.

REFERENCE:

OPL171.043, rev 6, pg 10, top of page and Obj V.B.3  
AOI-100-2, rev 37, pg 7, caution [NER/C]

[3.9/3.9]

218000K105 ..(KA's)

ANSWER: 052 (1.00)

c.

REFERENCE:

Fac Q 10158  
OPL171.043 Obj V.B.5

[3.1/3.3]

218000K201 ..(KA's)

ANSWER: 053 (1.00)

b.

REFERENCE:

OPL171-044, rev 7, pgs,26-29, and 31 and Obj V.B.10

[3.6/3.8]

205000A209 ..(KA's)

ANSWER: 054 (1.00)

c.

REFERENCE:

Steam tables  
OPL171.003, Obj V.B.12

[3.6/3.8]

216000K507 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

AOI-47-3, rev 9, pg 2, sect 3.2

[3.4/3.4]

241000K605 .:(KA's)

ANSWER: 056 (1.00)

a.

REFERENCE:

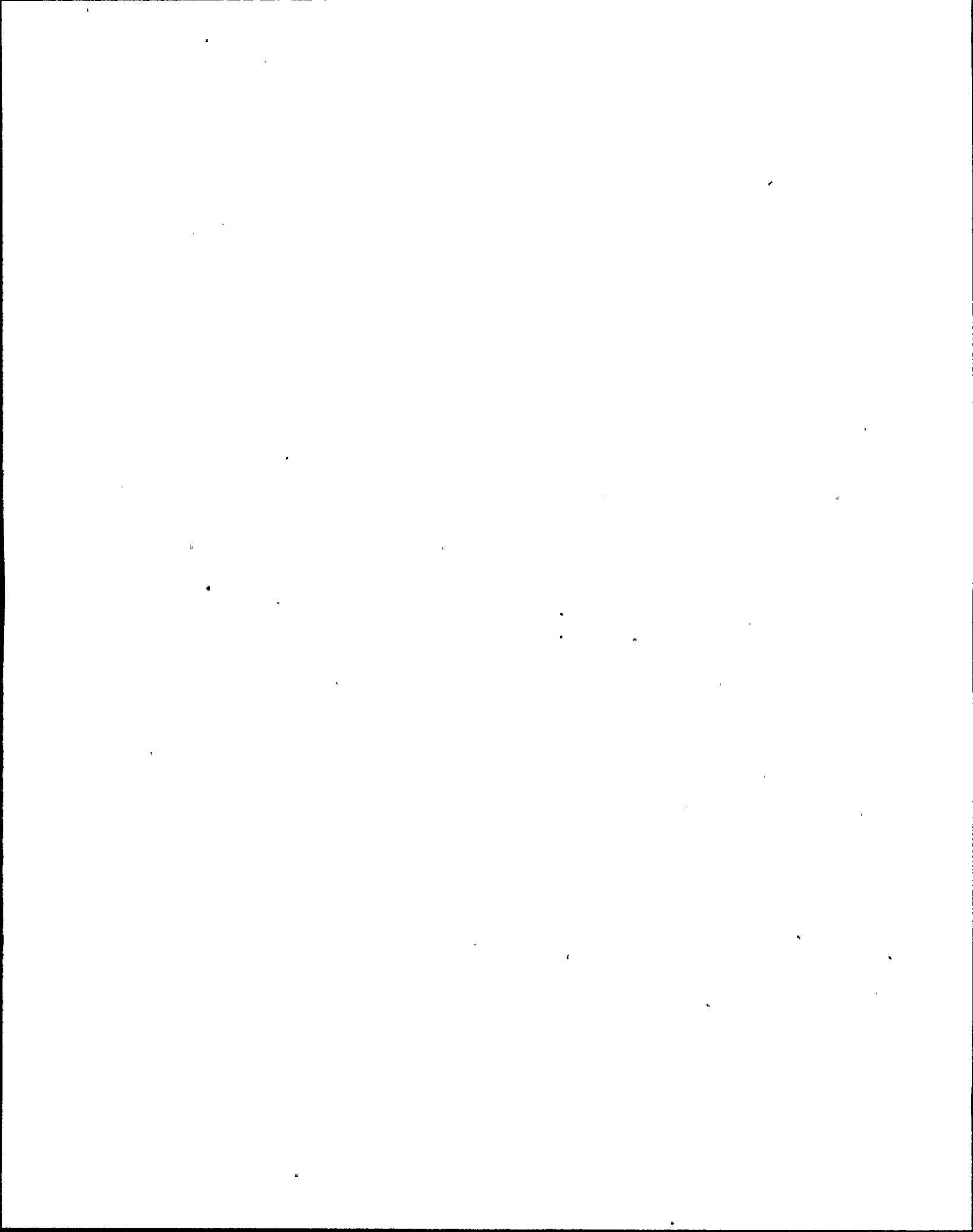
OPL171.044, rev 7, pg 42, item d.(1), d.(2) and Obj V.C.3, V.C.5

[4.2/4.2]

203000K401 ..(KA's)

ANSWER: 057 (1.00)

a.



REFERENCE:

OPL171.013, rev 7, pg 32, sect E.2 and Obj V.B.14.b similar to fac Q 10939 but significantly modified.

[3.2/3.2]

204000G010 .. (KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

TS 3.7.A.6.a

[3.3/4.2]

223001G011 .. (KA's)

ANSWER: 059 (1.00)

a.

REFERENCE:

OPL171.040, rev 11, pg 33 item 5.a.2.b, pg 34 d.2, obj V.B.10.a  
OPL171.042, rev 10, pg 25, item f.3, fac 10142 for HPCI level restart.

[4.0/4.0]

217000A103 .. (KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

OPL171.042, rev 10, pg 35, item b.(1) and pg 39, G.1, Obj V.B.3.b, V.B.5  
[3.2/3.3]

.206000K201 ..(KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

OPL171.042, rev 10, pg 34, item 2.a.5 and Obj V.B.2.c, V.C.2.c  
[3.9/4.0]

206000K402 ..(KA's)

ANSWER: 062 (1.00)

b.

REFERENCE:

TS 3.7.B.1, pg 4.7-13  
[3.3/3.6]

261000K301 ..(KA's)

ANSWER: 063 (1.00)

d.



## REFERENCE:

EOI Program Manual, 2-EOIPM Section VI-D, Rev 1, Drywell Spray Worksheet 3, page 2 of 22, section 1.1 and page 14 of 22, Figure 10.1 (DWSIL Curve)

[3.3/3.5]

295010K202 .. (KA's)

ANSWER: 064 (1.00)

a.

## REFERENCE:

EOI Program Manual, 2-EOIPM Section VI-J, RPV Variable Worksheet 10, Rev 2, page 2 of 33, section 1.1

[3.4/3.8]

295028G007 .. (KA's)

ANSWER: 065 (1.00)

b.

## REFERENCE:

2-AOI-47-3, Loss of Condenser Vacuum, Rev 9, page 2 of 4, section 3.1

[3.4/3.5]

295002A103 .. (KA's)

ANSWER: 066 (1.00)

a.

REFERENCE:

2-AOI-85-3, CRD System Failure, Rev 15, page 2 of 5, section 4.1.2

[3.7/3.5]

295022G010 .. (KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

T.S. Definition of Primary Containment, T.S. 3.7.A.2.a

(NOTE: I WOULD LIKE TO TAKE OUT THE POTENTIAL TO DRAIN VESSEL AND PUT IN A SPECIFIC EVOLUTION, POSSIBLY REPLACING A CRD MECHANISM, WHICH FITS THAT DEFINITION IF SUCH A DEFINITION EXISTS--I COULD NOT FIND IT--CHECK WITH FACILITY TO SEE IF THIS IS DEFINED.)

[3.2/3.9]

295021G008 .. (KA's)

ANSWER: 068 (1.00)

c.

REFERENCE:

2-AOI-3-1, Loss of Reactor Feedwater or Reactor Water Level High/Low, Rev 11, page 4 of 10, section 3.3

[3.0/3.1]

295009A103 .. (KA's)

ANSWER: 069 (1.00)

d.

## REFERENCE:

EOI Program Manual, 2-EOIPM Section III-C, EOI-1, RPV Control Cross Reference, Rev 1, page 95 of 130, top of page--subcritical definition IRM Lesson Plan, Rev 3, page 17 of 37, middle of page--point of adding heat

[4.1/4.2]

295015A202 ..(KA's)

ANSWER: 070 (1.00)

d.

## REFERENCE:

2-EOIPM Section V-D, EOI-2, Primary Containment Control Bases, Rev 1, page 91 of 242, Second Paragraph discussion of HCTL

[3.4/3.8]

295026G007 ..(KA's)

ANSWER: 071 (1.00)

a.

## REFERENCE:

EOI-2, Primary Containment Control steps PC/P-21 and SP/L-4

[3.7/4.4]

295030G012 ..(KA's)

ANSWER: 072 (1.00)

a.

REFERENCE:

Level/Power Control EOP, step C5-9

[3.7/4.4]

295015G012 ..(KA's)

ANSWER: 073 (1.00)

c.

REFERENCE:

2-AOI-68-1, Recirc Pump Trip/Core Flow Decrease, Rev 21, page 4 of 13,  
section 4.2.1.1

[3.5/3.8]

295001A201 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

0-GOI-100-3C, Rev 9, section 3.2.3, page 11 of 82

[3.8/3.9]

295023G010 ..(KA's)

ANSWER: 075 (1.00)

b.

REFERENCE:

2-AOI-66-2, Offgas Post Treatment Radiation Hi-Hi-Hi, Rev 11, page 2 of 4, section 4.1.1

[3.8/3.6]

295038G010 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

2-AOI-70-1, Loss of RBCCW, Rev 16, page 2 of 7, section 4.1.2

[3.4/3.3]

295018G010 ..(KA's)

ANSWER: 077 (1.00)

d.

REFERENCE:

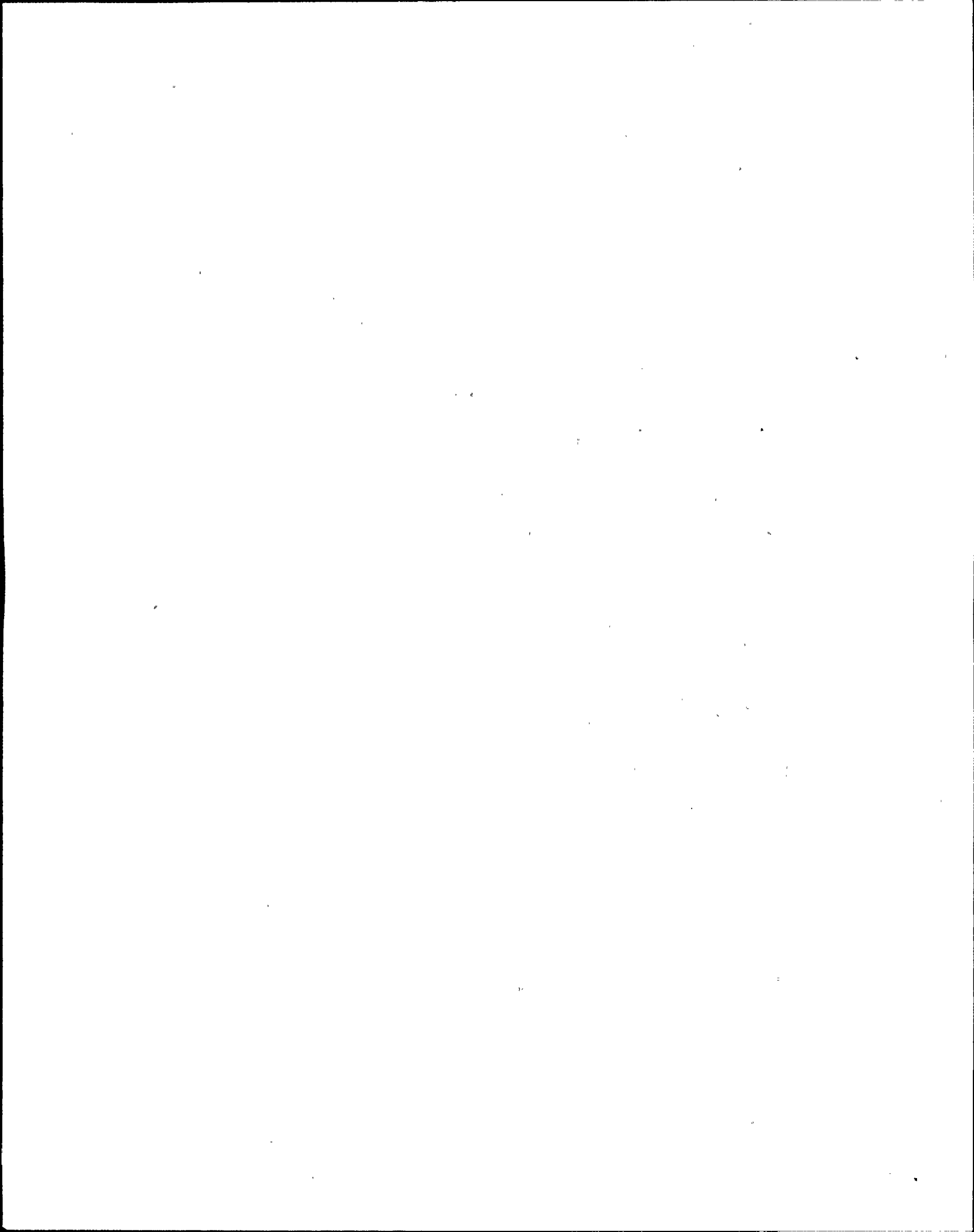
EOI-2, Primary Containment Control Bases, Rev 1, page 113 of 242, explanation of SP/L-14

[3.6/4.4]

295029G012 ..(KA's)

ANSWER: 078 (1.00)

a.



REFERENCE:

EOI-4, Radioactivity Release Control, Rev 4, Table 5, (Entry Conditions)

[4.2/4.5]

295017G011 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

EOI-2, page 1 of 2, PC Control, steps SP/T-4 and SP/T-5

[3.6/4.2]

295013G012 ..(KA's)

ANSWER: 080 (1.00)

a.

REFERENCE:

2-AOI-6-1A, High Pressure Feedwater Heater String/Extraction Steam Isolation, Rev 1, page 3 of 12, section 4.1.1

[4.0/3.9]

295014G010 ..(KA's)

ANSWER: 081 (1.00)

c.

REFERENCE:

RPV Control EOP, Rev 1, step RC/Q-2

[3.9/4.6]

295037G012 ..(KA's)

ANSWER: 082 (1.00)

a.

REFERENCE:

T.S. Definitions of Modes of Operation and Shutdown Conditions, Safety Limit 1.1.A.2, Section 6.7

[3.8/4.4]

295006G003 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

0-AOI-32-1, Loss of Control and Service Air Compressors, Rev 14, page 2 of 18, section 3.0

[3.7/3.4]

295019G010 ..(KA's)

ANSWER: 084 (1.00)

a.



REFERENCE:

2-AOI-85-6, Rod Drift Out, Rev 11, page 2 of 4, section 4.2.1.1  
[3.6/3.8]

295014A102 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

2-AOI-99-1, Loss of Power to One RPS Bus, Rev 14, page 2 of 6, section  
3.0

[3.9/4.1]

295003G010 ..(KA's)

ANSWER: 086 (1.00)

d.

REFERENCE:

EOI Program Manual, Rev 2, Step RC/P-8 discussion, page 43 of 144

[3.5/3.6]

295037A111 ..(KA's)

ANSWER: 087 (1.00)

d.

REFERENCE:

EOI Program Manual Discussion step PC/P-15, Rev 1, page 59 of 242

ANSWER: 088 (1.00)

b.

REFERENCE:

EOI-4, step RR-1

[3.9/4.5]

295038G012 ..(KA's)

ANSWER: 089 (1.00)

b.

REFERENCE:

2-AOI-47-2, Reactor Pressure Control Unit Failure, Rev 8, page 2 of 4, section 3.2.1

[3.7/3.7]

295020A203 ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

2-AOI-64-2b, Group 4 HPCI Isolation, Rev 10, page 1 of 5, section 2.3

[3.8/3.8]

295020K208 ..(KA's)

ANSWER: 091 (1.00)

c.

REFERENCE:

2-AOI-79-2, Inadvertent Criticality During Incore Fuel Movements, Rev 8,  
page 3 of 5, section 4.1

[3.7/4.0]

295023K103 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

2-AOI-100-1, Reactor Scram, Rev 43, page 5 of 54, section 4.2.3

[3.7/4.0]

295006K103 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

EOI Program Manual Section III-B, Operator Cautions Cross Reference, Rev  
1, page 9 of 26, Table 6  
Reactor Vessel Process Instrumentation Lesson Plan, Rev 9, page 58 of 69  
(states that LT 3-55 is floodup range)

[3.2/3.4]

295032K205 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

Reactor Vessel Process Instrumentation Lesson Plan, Rev 9, page 56 of 69  
(Main Steam Nozzle elevation of 658 inches minus 13 inches for MSL  
radius minus instrument zero elevation of 528 inches equals 117 inches.)

[3.1/3.3]

295008K211 ..(KA's)

ANSWER: 095 (1.00)

c.

REFERENCE:

ARPs 2-ARP-9-4A pages 16 and 24 (Stop and Control Valves Half Scram  
ARPs)

[3.6/3.6]

295005A102 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

EOI Program Manual, Rev 1, Section V-D, page 46-47 of 242

[3.6/4.0]

295024K301 ..(KA's)

ANSWER: 097 (1.00)

c.

REFERENCE:

EOI Program Manual, Section V-K, page 27 of 110, Rev 1, step C5-11

[4.0/4.2]

295031A202 ..(KA's)

ANSWER: 098 (1.00)

c.

REFERENCE:

Steam Tables

[4.2/4.3]

295025G011 ..(KA's)

ANSWER: 099 (1.00)

d.

REFERENCE:

EOI Program Manual, Rev 1, Section V-D, page 49 of 242, discussion of step PC/P-10

[3.8/4.4]

295010G012 ..(KA's)

ANSWER: 100 (1.00)

d.

REFERENCE:

EOI Program Manual page 10 of 70, Section V-E, Rev 1, step SCC-1  
1995 Browns Ferry Exam

[3.7/3.9]

295033K203 ..(KA's)

ANSWER: 101 (1.00)

d.

REFERENCE:

RHR Lesson Plan, Rev 7, page 25 of 106, Section C.1.e  
Facility Exam Bank Question #10547 (modified)

[3.8/3.9]

295028A101 ..(KA's)

ANSWER: 102 (1.00)

b.

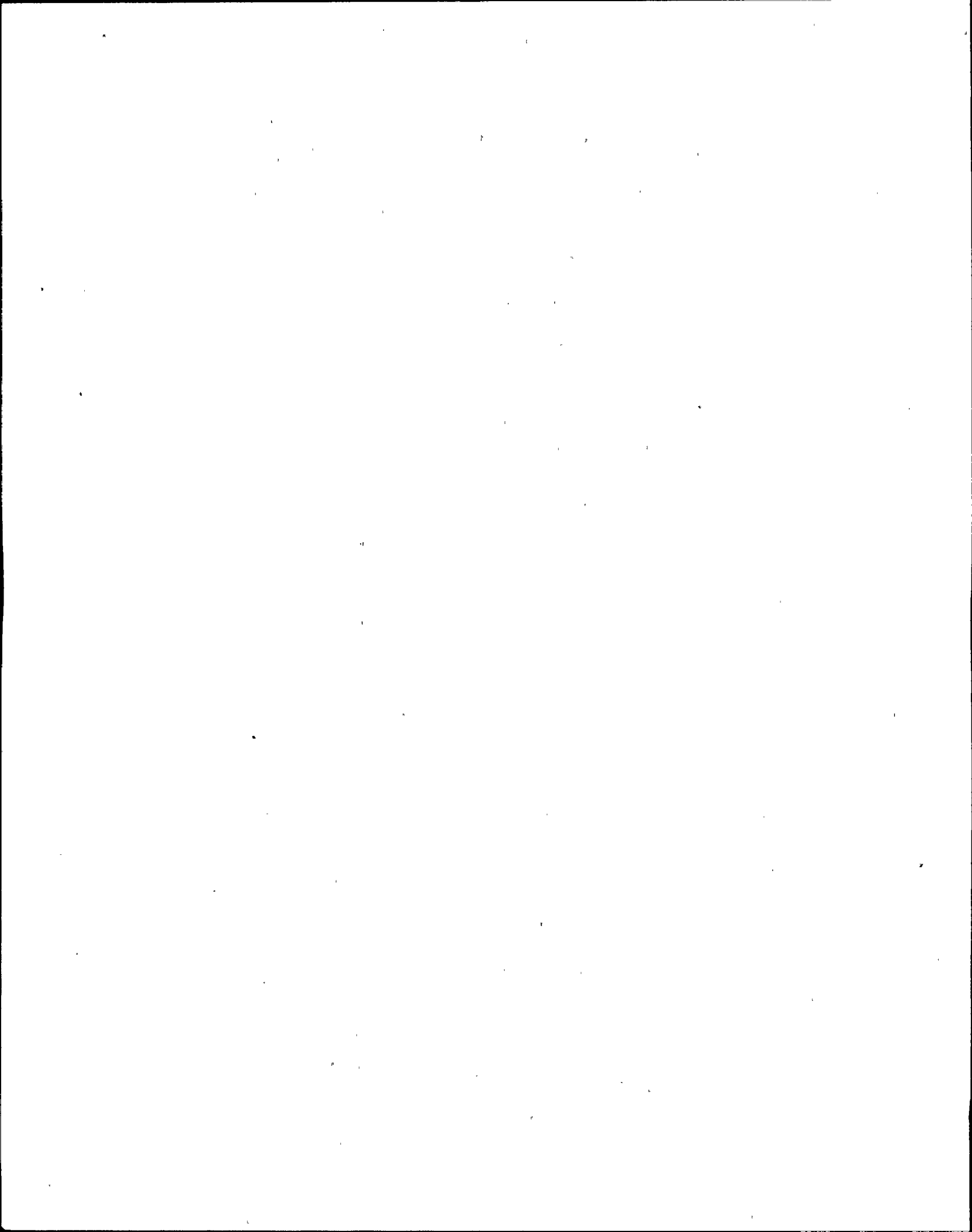
REFERENCE:

EOI Program Manual, Section V-D, page 101 of 242, Rev 1, Discussion step  
SP/L-4

[3.8/3.9]

295030K201 ..(KA's)

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



## A N S W E R   K E Y

## MULTIPLE CHOICE

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



## A N S W E R   K E Y

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

A N S W E R   K E Y

- 092    b
- 093    d
- 094    c
- 095    c
- 096    a
- 097    c
- 098    c
- 099    d
- 100    d
- 101    d
- 102    b

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

S R O Exam B W R Reactor  
Organized by Question Number

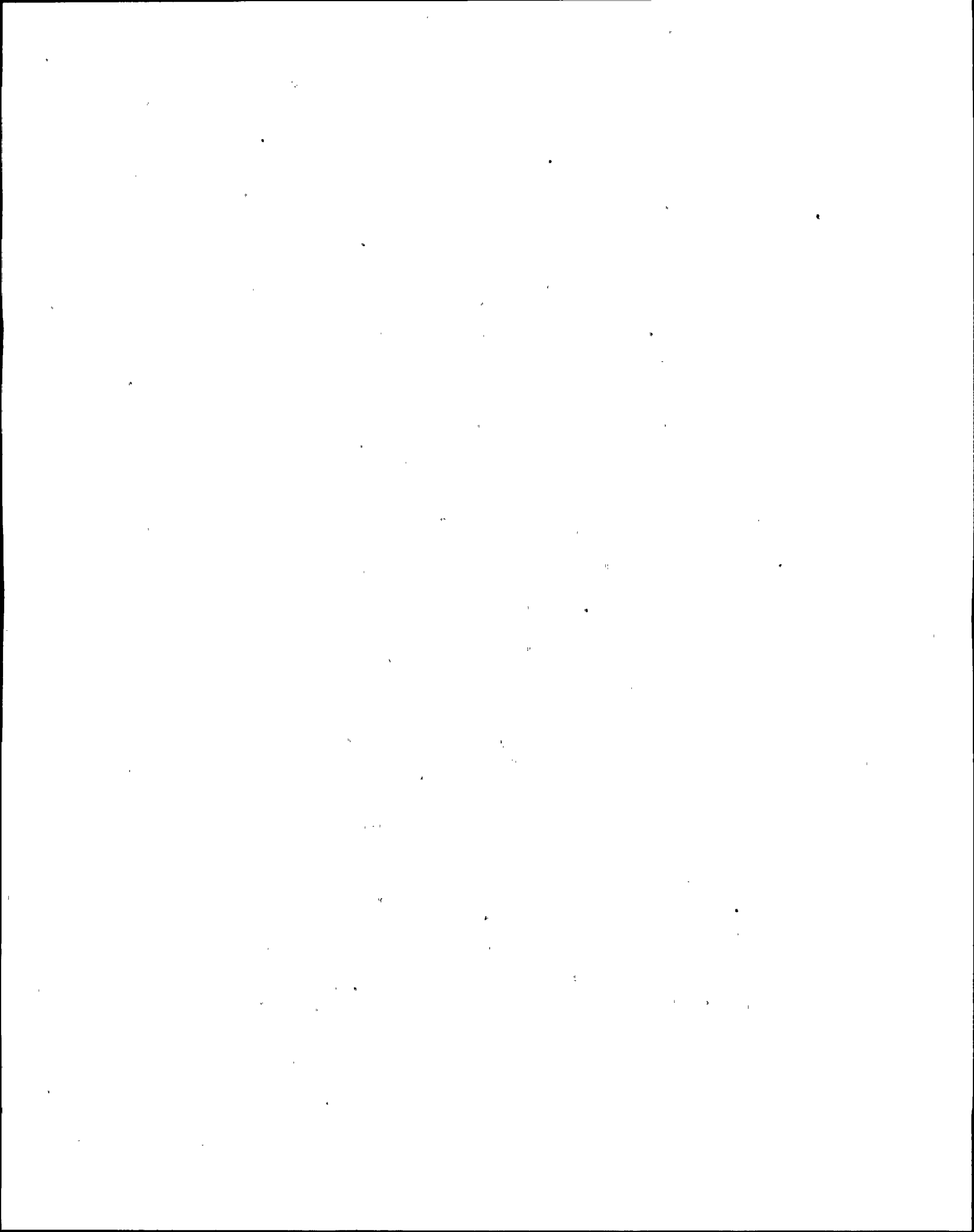
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<u>QUESTION</u>	<u>VALUE</u>	<u>REFERENCE</u>
001	1.00	26101
002	1.00	26897
003	1.00	28906
004	1.00	28970
005	1.00	900022
006	1.00	900023
007	1.00	900024
008	1.00	900025
009	1.00	900026
010	1.00	900027
011	1.00	900028
012	1.00	900029
013	1.00	900030
014	1.00	900031
015	1.00	900032
016	1.00	900033
017	1.00	900034
018	1.00	900035
019	1.00	900036
020	1.00	900037
021	1.00	900038
022	1.00	900039
023	1.00	900040
024	1.00	900041
025	1.00	900043
026	1.00	900045
027	1.00	900046
028	1.00	900047
029	1.00	900048
030	1.00	900049
031	1.00	900050
032	1.00	900052
033	1.00	900053
034	1.00	900054
035	1.00	900056
036	1.00	900057
037	1.00	900059
038	1.00	900060
039	1.00	900061
040	1.00	900063
041	1.00	900064
042	1.00	900065
043	1.00	900066
044	1.00	900068
045	1.00	900070
046	1.00	900071
047	1.00	900072
048	1.00	900073
049	1.00	900074

S R O Exam B W R Reactor  
Organized by Question Number

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<u>QUESTION</u>	<u>VALUE</u>	<u>REFERENCE</u>
050	1.00	9000075
051	1.00	9000076
052	1.00	9000077
053	1.00	9000078
054	1.00	9000080
055	1.00	9000081
056	1.00	9000083
057	1.00	9000084
058	1.00	9000085
059	1.00	9000087
060	1.00	9000088
061	1.00	9000089
062	1.00	9000094
063	1.00	9000096
064	1.00	9000097
065	1.00	9000098
066	1.00	9000099
067	1.00	9000100
068	1.00	9000102
069	1.00	9000103
070	1.00	9000104
071	1.00	9000105
072	1.00	9000106
073	1.00	9000108
074	1.00	9000109
075	1.00	9000110
076	1.00	9000111
077	1.00	9000114
078	1.00	9000115
079	1.00	9000116
080	1.00	9000117
081	1.00	9000118
082	1.00	9000121
083	1.00	9000122
084	1.00	9000123
085	1.00	9000124
086	1.00	9000125
087	1.00	9000126
088	1.00	9000127
089	1.00	9000128
090	1.00	9000129
091	1.00	9000130
092	1.00	9000131
093	1.00	9000132
094	1.00	9000134
095	1.00	9000135
096	1.00	9000136
097	1.00	9000137
098	1.00	9000138



S R O Exam B W R Reactor  
Organized by Question Number

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<u>QUESTION</u>	<u>VALUE</u>	<u>REFERENCE</u>
099	1.00	9000139
100	1.00	9000140
101	1.00	9000141
102	1.00	9000143
	-----	
	102.00	
	-----	
	-----	
	102.00	

S R O   E x a m      B W R   R e a c t o r  
O r g a n i z e d   b y   K A   G r o u p

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## PLANT WIDE GENERICS

QUESTION	VALUE	KA
005	1.00	294001A102
008	1.00	294001A102
020	1.00	294001A102
014	1.00	294001A103
007	1.00	294001A103
013	1.00	294001A109
016	1.00	294001A112
012	1.00	294001A113
017	1.00	294001A113
011	1.00	294001A115
009	1.00	294001A116
021	1.00	294001K101
019	1.00	294001K102
018	1.00	294001K102
010	1.00	294001K103
015	1.00	294001K104
006	1.00	294001K105
022	1.00	294001K107
-----		
PWG Total	18.00	

## PLANT SYSTEMS

## Group I

QUESTION	VALUE	KA
056	1.00	203000K401
060	1.00	206000K201
061	1.00	206000K402
003	1.00	211000A308
035	1.00	212000A201
024	1.00	212000A216
029	1.00	212000K101
023	1.00	215004A401
027	1.00	215004K102
032	1.00	215005A406
048	1.00	216000K503
054	1.00	216000K507
059	1.00	217000A103
044	1.00	217000A301
051	1.00	218000K105
052	1.00	218000K201
050	1.00	218000K403
058	1.00	223001G011
043	1.00	223001K104

S R O   E x a m   B W R   R e a c t o r  
O r g a n i z e d   b y   K A   G r o u p

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## PLANT SYSTEMS

## Group I

QUESTION	VALUE	KA
040	1.00	223002A209
046	1.00	223002A302
055	1.00	241000K605
062	1.00	261000K301
036	1.00	262001K306
001	1.00	262001K403
-----		
PS-I Total	25.00	

## Group II

QUESTION	VALUE	KA
028	1.00	201001A311
038	1.00	201001G010
041	1.00	201001K203
037	1.00	201001K406
034	1.00	201006A102
042	1.00	202001K414
039	1.00	202001K601
057	1.00	204000G010
053	1.00	205000A209
047	1.00	215003K106
049	1.00	234000K402
033	1.00	234000K505
045	1.00	271000G010
-----		
PS-II Total	13.00	

## Group III

QUESTION	VALUE	KA
025	1.00	201003K402
026	1.00	201003K404
031	1.00	239001K126
030	1.00	290002G005
-----		
PS-III Total	4.00	
-----		
PS Total	42.00	



S R O Exam B W R Reactor  
Organized by K A Group

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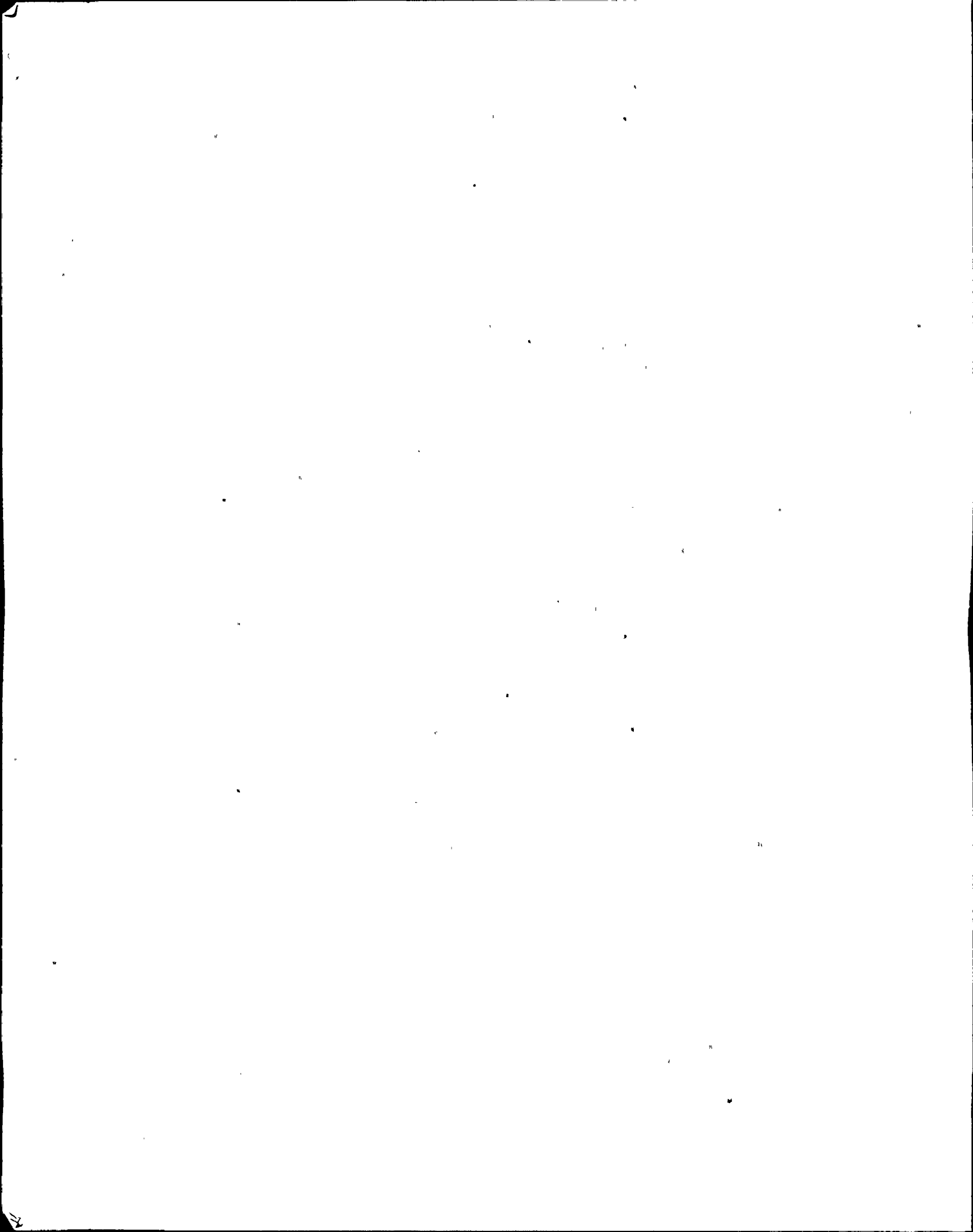
## EMERGENCY PLANT EVOLUTIONS

## Group I

QUESTION	VALUE	KA
085	1.00	295003G010
082	1.00	295006G003
092	1.00	295006K103
068	1.00	295009A103
099	1.00	295010G012
063	1.00	295010K202
079	1.00	295013G012
084	1.00	295014A102
080	1.00	295014G010
069	1.00	295015A202
072	1.00	295015G012
078	1.00	295017G011
074	1.00	295023G010
091	1.00	295023K103
096	1.00	295024K301
098	1.00	295025G011
070	1.00	295026G007
071	1.00	295030G012
102	1.00	295030K201
097	1.00	295031A202
086	1.00	295037A111
081	1.00	295037G012
075	1.00	295038G010
088	1.00	295038G012
-----		
EPE-I Total	24.00	

## Group II

QUESTION	VALUE	KA
073	1.00	295001A201
065	1.00	295002A103
095	1.00	295005A102
002	1.00	295005K203
094	1.00	295008K211
076	1.00	295018G010
083	1.00	295019G010
089	1.00	295020A203
090	1.00	295020K208
067	1.00	295021G008
066	1.00	295022G010
101	1.00	295028A101
064	1.00	295028G007
077	1.00	295029G012



S R O Exam B W R Reactor  
Organized by K A Group

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## EMERGENCY PLANT EVOLUTIONS

## Group II

<u>QUESTION</u>	<u>VALUE</u>	<u>KA</u>
093	1.00	295032K205
100	1.00	295033K203
004	1.00	295034K204
	-----	
EPE-II Total	17.00	
	-----	
EPE Total	41.00	
	-----	
	-----	
Test Total	102.00	

