February 5, 1999

NOTE TO: NRC Document Control Desk
Mail Stop 0-5-D-24

FROM: Beverly Michael, Licensing Assistant, Operator Licensing and Human Performance Branch, Division of Reactor Safety, Region II

SUBJECT: OPERATOR LICENSING EXAMINATIONS ADMINISTERED APRIL 13 - 15 1998, AT VOGTLE ELECTRIC GENERATING PLANT DOCKET NOS. 50-424 AND 50-425

During the period ** Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

Item #1 - a) Facility submitted outline and initial exam submittal, designated for distribution under RIDS Code A070.

b) As given operating examination, designated for distribution under RIDS Code A070.

Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

Attachments: As stated

May 7, 1998

Southern Nuclear Operating Company, Inc.
ATTN: Mr. C. K. McCoy, Vice President
P. O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: NRC EXAMINATION REPORT NOS. 50-424/98-301 AND 50-425/98-301

Dear Mr. McCoy:

On April 13-15, 1998, the NRC administered examinations to employees of your company who had applied for licenses to operate the Vogtle Electric Generating Plant Units 1 and 2. At the conclusion of the examination, the examiners discussed the examination questions and preliminary findings with those members of your staff identified in the enclosed report.

A Simulation Facility Report is included in this report as Enclosure 2. A copy of the written examination questions and answer key, as noted in Enclosure 3, was provided to the members of your training staff at the conclusion of the examination.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Sincerely,

Original signed by
Thomas A. Peebles

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

Docket Nos.: 50-424 and 50-425
License Nos.: NPF-68 and NPF-81

Enclosures: 1. Report Details
2. Simulation Facility Report
3. Written Examination and Answer Key (SRO)
(Document Control Desk Only)

(cc w/encls 1 & 2 - See page 2)

DISTRIBUTION CODE
IE42

9805300127

9pp.

(cc w/encls 1 & 2)
J. D. Woodard
Executive Vice President
Southern Nuclear Operating Company, Inc.
P. O. Box 1295
Birmingham, AL 35201-1295

J. B. Beasley
General Manager, Plant Vogtle
Southern Nuclear Operating Company, Inc.
P. O. Box 1600
Waynesboro, GA 30830

J. A. Bailey
Manager-Licensing
Southern Nuclear Operating Company, Inc.
P. O. Box 1295
Birmingham, AL 35201-1295

Director, Consumers' Utility Counsel Division
Governor's Office of Consumer Affairs
2 M. L. King, Jr. Drive
Plaza Level East; Suite 356
Atlanta, GA 30334-4600

Office of Planning and Budget
Room 615B
270 Washington Street, SW
Atlanta, GA 30334

Office of the County Commissioner
Burke County Commission
Waynesboro, GA 30830

Director, Department of Natural Resources
205 Butler Street, SE, Suite 1252
Atlanta, GA 30334

Manager, Radioactive Materials Program
Department of Natural Resources
4244 International Parkway
Suite 114
Atlanta, GA 30354

Attorney General
Law Department
132 Judicial Building
Atlanta, GA 30334

Program Manager
Fossil & Nuclear Operations
Oglethorpe Power Corporation
2100 E. Exchange Place
Tucker, GA 30085-1349

Charles A. Patrizia, Esq.
Paul, Hastings, Janofsky & Walker
10th Floor
1299 Pennsylvania Avenue
Washington, D. C. 20004-9500

Senior Engineer - Power Supply
Municipal Electric Authority of Georgia
1470 Riveredge Parkway NW
Atlanta, GA 30328-4684

Bob Brown, Plant Training & Emergency Preparedness Manager
Vogtle Electric Generating Plant
P. O. Box 1600
Waynesboro, GA 30830

(Distribution w/encls 1 & 2
See page 3)

Distribution w/encl 1 & 2:
L. Plisco, RII
P. Skinner, RII
M. Ernstes, RII
D. Jaffe, NRR
PUBLIC

NRC Senior Resident Inspector
U.S. Nuclear Regulatory Commission
8805 River Road
Waynesboro, GA 30830

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP	RII:DRS	
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DATE	5/ /98	5/ 7 /98	5/ 7 /98	5/ 7 /98	5/ /98	5/ /98	5/ /98
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-424, 50-425

License Nos.: NPF-68, NPF-81

Report Nos.: 50-424/98-301 and 50-425/98-301

Licensee: Southern Nuclear Operating Company

Facility: Vogtle Electric Generating Plant

Location: Waynesboro Georgia

Dates: April 13-15, 1998

Examiners: _____
George T. Hopper, Chief License Examiner

Michael E. Ernstes, License Examiner
Larry S. Mellen, License Examiner

Approved by: _____ 5/7/98
Thomas A. Peebles, Chief,
Operator Licensing and Human Performance Branch
Division of Reactor Safety

Enclosure 1

9805220172 116pp

EXECUTIVE SUMMARY

Vogtle Electric Generating Plant Units 1 & 2
NRC Examination Report No. 50-424/98-301 and 50-425/98-301

During the period April 13 - 15, 1998, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examiner Standards, NUREG-1021, Interim Revision 8. This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Operations

- Four Senior Reactor Operator (SRO) Candidates received written examinations and operating tests. All operating tests were administered by NRC operator licensing examiners. The written examination was administered on April 10, 1998, and the operating tests were administered April 13-15, 1998. Three candidates passed the examination. One candidate failed the administrative portion of the operating test (Section 05.1).

- Candidate Pass/Fail

	SRO	RO	Total	Percent
Pass	3	0	3	75%
Fail	1	0	1	25%

- The examiners concluded that candidate performance on the written examination was satisfactory. Overall performance on the operating test was satisfactory with some weaknesses noted in the areas of recognizing adverse plant parameters, and understanding system response (Section 05.3).

- The licensee's cooperation and assistance during the examination development and administration added value to the examination (Section 05.2).

Report Details

Summary of Plant Status

During the period of the examinations Unit 1 was at 100 percent power and Unit 2 was in an outage.

I. Operations

O5 Operator Training and Qualifications

O5.1 General Comments

NRC examiners conducted regular, announced operator licensing initial examinations period April 13-15, 1998. Two Senior Reactor Operator (SRO) instant and two SRO upgrade applicants received written examinations and operating tests. NRC examiners developed and administered examinations in accordance with the guidelines of the Examiner Standards (ES), NUREG-1021, Interim Revision 8. The licensee administered the written examination on April 10, 1998 in accordance with action ES-402 of NUREG-1021, "Administering Initial Written Examinations." Three candidates passed the examination. One candidate failed the overall examination by receiving an unsatisfactory grade on the administrative portion of the operating test. Detailed candidate performance comments have been transmitted under separate cover for management review and to allow appropriate candidate remediation.

O5.2 Pre-Examination Activities

The NRC developed the written examinations and operating tests. A draft copy of the written examination was forwarded to the licensee for review and comment. The licensee conducted a thorough review and provided valuable feedback to the NRC examiners which was incorporated into the examination. An examination preparation visit was conducted during the week of March 30, 1998. During this visit the examination team validated the simulator scenarios and finished the development and validation of the Job Performance Measures (JPMs) that were to be used during the operating test. The licensee's cooperation and assistance during this process added value to the examination and was helpful to the process.

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

a. Scope

The examiners reviewed the results of the written examination and evaluated the candidates' compliance with and use of plant procedures during the simulator scenarios and JPMs. The guidelines of NUREG-1021, Forms ES-303-3 and ES-303-4, "Competency Grading Worksheets for Integrated Plant Operations," were used as a basis for the operating test evaluations.

b. Observations and Findings.

The examiners reviewed the results of the written examination and found that performance of the candidates was satisfactory. The mean score on the exam was 87.5. All candidates passed the written examination but demonstrated some generic weaknesses. Five common questions were missed by three candidates (Nos.: 6, 50, 75, 80, 100) and one question (No. 6) was missed by all four candidates. This latter question involved recognizing the first immediate action in procedure AOP-18003-C, "Rod Control System Malfunction." These items as well as others that were missed on the examination should be used for review with the candidates and to provide feedback into the training program.

Overall, the candidate's performance on the operating test was satisfactory. However, examiners identified several weaknesses in candidate performance. Several candidates demonstrated a lack of awareness of plant conditions and understanding integrated plant response. On one scenario, candidates failed to recognize that the cause for decreasing plant pressure incurred from a stuck open spray valve and consequently took no compensatory measures to prevent a plant trip as a result of a low pressure condition. The malfunction was removed prior to reaching the trip setpoint. On another scenario, the crew was performing the required actions of procedure 19000-C, "Reactor Trip or safety Injection", during a feedwater line break inside containment scenario. Reactor coolant system pressure had decreased to 600 psig before the candidates took action to trip the reactor coolant pumps (RCP) as required by the RCP trip criteria of the "FOLDOUT PAGE." During the performance of a JPM where candidates were required to initiate backfill of a ruptured steam generator, two candidates were not completely aware of the effects on steam generator pressure of overfeeding the steam generator and commenced feeding it at too high a rate of flow. Details of these and other discrepancies are described in each individual's examination report, Form ES-303-1, "Operator Licensing Examination Report."

c. Conclusion

The examiners concluded that candidate performance on the written examination was satisfactory. Overall performance on the operating test was satisfactory with some weaknesses noted in the areas of recognizing adverse plant parameters and understanding system response.

V. Management Meetings

X1. Exit Meeting Summary

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

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

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Brown, Training and Emergency Preparedness Manager
S. Chestnut, Operations Manager
J. Gasser, Assistant General Manager - Operations
F. Howard, Training Instructor
C. Tippins, Nuclear Specialist
D. Vineyard, Independent Safety Evaluation Group Supervisor
D. Scukanec, Operations Training Supervisor

NRC

J. Zeiler, Senior Resident Inspector
K. O'Donohue, Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

None

SIMULATION FACILITY REPORT

Facility Licensee: Southern Nuclear Operating Company - Vogtle Plant

Facility Docket Nos.: 50-424 and 50-425

Operating Tests Administered on: April 13-15, 1998

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed:

ITEM	DESCRIPTION
NONE	

Enclosure 2

OFFICIAL USE ONLY

Vogtle
Master 98-301

Nuclear Regulatory Commission
Operator Licensing
Examination

OFFICIAL USE ONLY

This document is removed from
Official Use Only category on
date of examination.

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

APPLICANT INFORMATION

Name:	Region: II
Date: 4/10/98	Facility/Unit: Vogtle Units 1 & 2
License Level: SRO	Reactor Type: W
Start Time:	Finish Time:

INSTRUCTIONS

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80 percent. Examination papers will be picked up 5 hours after the examination starts.

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

_____
Applicant's Signature

RESULTS

Examination Value	100 Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

MULTIPLE CHOICE

001	a	b	c	d	___
002	a	b	c	d	___
003	a	b	c	d	___
004	a	b	c	d	___
005	a	b	c	d	___
006	a	b	c	d	___
007	a	b	c	d	___
008	a	b	c	d	___
009	a	b	c	d	___
010	a	b	c	d	___
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036	a	b	c	d	___
037	a	b	c	d	___
038	a	b	c	d	___
039	a	b	c	d	___
040	a	b	c	d	___
041	a	b	c	d	___
042	a	b	c	d	___
043	a	b	c	d	___
044	a	b	c	d	___
045	a	b	c	d	___

ANSWER SHEET

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	___

ANSWER SHEET

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 ___

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

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

PART A - GENERAL GUIDELINES

1. Cheating on any part of the examination will result in a denial of your application and/or action against your license.

2. If you have any questions concerning the administration of any part of the examination, do not hesitate asking them before starting that part of the test.

4. SRO applicants will be tested at the level of responsibility of the senior licensed shift position (i.e., shift supervisor, senior shift supervisor, or whatever the title of the position may be).

5. You must pass every part of the examination to receive a license or to continue performing license duties.

6. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facility licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

PART B - WRITTEN EXAMINATION GUIDELINES

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

2. To pass the examination, you must achieve a grade of 80 percent or greater. Every question is worth one point.

3. For an initial examination, the time limit for completing the examination is FIVE hours.

4. You may bring pens, calculators, or slide rules into the examination room. Use only black ink to ensure legible copies.

5. Print your name in the blank provided on the examination cover sheet and the answer sheet. You may be asked to provide the examiner with some form of positive identification.

6. Mark your answers on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

7. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.

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

9. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.

10. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

11. Do you have any questions?

QUESTION: 001 (1.00)

Given the following conditions:

- RCS Wide Range pressure 1620 psig
- Pressurizer Pressure 1725 psig
- RCS Hot Leg temperatures 566 degrees F
- RCS Cold Leg temperatures 560 degrees F
- Core Exit Thermocouple temperatures 568 degrees F

Which of the following is the correct amount of subcooling for the above listed conditions ?

a. 37 degrees F

b. 38 degrees F

c. 39 degrees F

d. 40 degrees F

QUESTION: 002 (1.00)

During power escalation, the P-10 bistable has just energized. An operator adjusts Tavg and the resulting transient slightly reduces reactor power. Concerning power range neutron flux-low reactor trip, which of the following is the correct system response ?

a. When power level falls below 10% RTP on 2 of 4 channels the nuclear instrument trips will automatically unblock.

b. When power level falls below 10% RTP on 3 of 4 channels the nuclear instrument trips will automatically unblock.

c. When power level falls below 10% RTP on 2 of 4 channels the nuclear instrument trip bistable de-energize.

d. When power level falls below 10% RTP on 3 of 4 channels the nuclear instrument trip bistables re-energize.

QUESTION: 003 (1.00)

Following a Safe Shutdown Earthquake what source of water would be available to fight a fire in the Diesel Generator building ?

a. Condensate system

b. Auxiliary Component Cooling Water system

c. Nuclear Services Cooling Water system

d. Component Cooling Water system

QUESTION: 004 (1.00)

You are assuming the SS duties after a one week absence. Procedure 10004-C provides instructions for shift relief. Which one of the following is required by 10004-C during the shift relief process ?

a. Each on-going operator shall review the narrative log, rounds sheets and checklists for all stations.

b. Immediately after shift relief, completed individual position checklists are forwarded to Document Control through the Unit Superintendent.

c. Each on-going operator shall review the narrative log, rounds sheets and checklists for his station. The review shall include narrative logs since the last shift worked.

d. Non licensed operators shall make a report to the Control Room when they have assumed shift.

QUESTION: 005 (1.00)

Procedure 00152-C provides a definition of a credible threat to Vogtle Electric Generating Plant. Which of the following is NOT DEFINED as a credible threat ?

a. Physical evidence supporting a verbal threat.

b. A written threat that is received in the mail.

c. A specific group or organization claims responsibility for a written threat.

d. A verbal threat that contains specific information about plant locations or systems.

QUESTION: 006 (1.00)

A clearance has been issued and is being installed. The unit operator reports that he has a throttle valve handswitch in the OPEN position, but the valve is frozen in the closed position. Which of the following actions would be correct in accordance with procedure 00304-C "Equipment Clearance and Tagging" ?

a. Attach a CAUTION TAG to the handswitch and to the CLEARANCE stating the conditions.

b. Attach a FUNCTIONAL RELEASE TAG to the handswitch and reposition the handswitch to the same position as the controlled component.

c. Attach an additional HOLD TAG to the handswitch and to the CLEARANCE stating the conditions.

d. Attach an additional HOLD TAG to the handswitch and reposition the handswitch to the same position as the controlled component.

QUESTION: 007 (1.00)

Which of the following is the most preferable manual method of determining temperature for calculating subcooling margin if the plant process computer is unavailable ?

a. The average of all core exit thermocouple readings.

b. The average of the five highest core exit thermocouple readings.

c. The average of all active loop wide range hot leg temperature indicators.

d. The single highest reading active loop wide range hot leg temperature indication.

QUESTION: 008 (1.00)

Unit 2 is at 300 degrees F and is in shutdown cooling. An Auxiliary Operator performing a valve lineup verification reports that 2-HV-0606 is found to be 60 percent open. Upon further investigation both 2-FV-0618 and 2-FV-0610 are found to be 10 % open. Which of the following actions is required ? (drawing attached)

a. 2-HV-0610 should be closed.

b. 2-HV-0606 should be repositioned to 55 % open.

c. 2-FV-0618 should be closed.

d. 2-HV-0606 should be repositioned to full open.

QUESTION: 009 (1.00)

Which of the following will result from an Urgent Alarm generated by a rod control power cabinet failure ?

a. "locks up" the affected power cabinet by demanding zero current to its lift coils and increased current to its stationary and movable coils.

b. "locks up" the affected power cabinet by demanding zero current to its lift coils and decreased current to its stationary and movable coils.

c. "locks up" the affected power cabinet by demanding zero current to its movable coils and increased current to its stationary and lift coils.

d. "locks up" the affected power cabinet by demanding zero current to its movable coils and decreased current to its stationary and lift coils.

QUESTION: 010 (1.00)

A plant startup is in progress on Unit 2. The RO is withdrawing control rods to keep RCS Tavg on program during the power ascension. At 90% power, the lift coil fuse for Control Rod H8 on Control Bank D blows. What effect will this have on the rod control system?

a. Automatic and Manual control rod motion will be available, but ONLY in the inward direction.

b. Control rods can ONLY be moved in Manual.

c. Control rods CANNOT be moved from their present position.

d. DRPI indication will not agree with step counter demand indication for one control rod.

QUESTION: 011 (1.00)

The RCPs are tripped during a transient that has caused the distribution of voids in the vessel to change. Immediately following the RCPs trip, which of the following will occur with respect to RVLIS indications ?

a. The Dynamic Head Range will increase with reduced flow induced pressure drop and the Full Range will come on scale.

b. The Dynamic Head Range will decay with reduced flow induced pressure drop and the Full Range will come on scale.

c. The Dynamic Head Range will increase with reduced flow induced pressure drop and the Full Range will not come on scale.

d. The Dynamic Head Range will decay with reduced flow induced pressure drop and the Full Range will not come on scale.

QUESTION: 012 (1.00)

The unit is at 220 degrees F. The secondary temperature is 225 degrees F. The RHR suction isolation valve on train A is closed. One PORV isolation valve is tagged and deenergized in the closed position. Which of the following are required to ensure COPS is operable ?

a. Both Safety Injection pumps must be incapable of injection.

b. RCS must be Depressurized and vented.

c. The accumulator isolation valves indicate closed.

d. No RCP can be restarted.

QUESTION: 013 (1.00)

Which of the following conditions will trip the Rotary Air Compressors ?

a. Low-Low oil pressure

b. High lube oil temp

c. Low TPCW pressure

d. High-High intercooler condenser level

QUESTION: 014 (1.00)

An accident is in progress and the Containment H2 monitor indicates 3.5%. Which of the following is NOT a potential source of hydrogen gas in the containment atmosphere ?

a. RCDT

b. SI Accumulators

c. Fuel Cladding

d. PZR

QUESTION: 015 (1.00)

The following plant conditions exist:

- SGTR has occurred on one SG
- 19031-C, ES 3.1 Post SGTR Cooldown Using Backfill is in progress
- Ruptured SG NR level is 25 %
- RCS is at 390 degrees F
- RCS is at 400 Psig
- Cooling using steam dumps
- RCP #4 in service

19031-C, ES 3.1 Post SGTR Cooldown Using Backfill step 13 requires a return to step 3 if the RCS WR hot leg temperature is not less than 200 F. Step 3 requires the operator reverify adequate shutdown margin. Why is it necessary to reverify shutdown margin during this procedure ?

a. The RCS temperature change during cooldown will cause significant boron concentration changes due to PZR outsurge.

b. Charging to maintain PZR level during cooldown will cause significant boron concentration changes.

c. The feed flow to the ruptured SG will cause significant boron concentration changes.

d. The auxiliary spray will cause significant boron concentration changes.

QUESTION: 016 (1.00)

The plant is presently at 60% power with a power ascension in progress. Control rods are in AUTO with control bank D at 165 steps. Shortly after you take the watch, the following alarms and indications occur:

- POWER RANGE HI NEUTRON FLUX RATE ALERT
- TAVG/TREF DEVIATION
- POWER RANGE CHANNEL DEVIATION
- Control rods stepping out

In accordance with AOP 18003-C "Rod Control System Malfunction" the first action required to be taken is: ?

a. Place rod control in manual and return T-ave to program.

b. Stop any turbine load changes.

c. Verify motion not caused by T-ave/T-ref deviation.

d. Initiate emergency boration to compensate reactivity addition.

QUESTION: 017 (1.00)

While performing 19020-C, E-2, Faulted Steam Generator Isolation, you determine that the Critical Safety Function Status is:

1.	Containment	Red	19251-C, FR-Z.1
2.	Core Cooling	Red	19221-C, FR-C.1
3.	Heat Sink	Orange	19235-C, FR-H.5
4.	Integrity	Orange	19241-C, FR-P.1
5.	Inventory	Yellow	19261-C, FR-I.1
6.	Subcriticality	Yellow	19212-C, FR-S.2

Which of the following is current order in which the Functional Restoration Procedures must be implemented ?

a. 2, 1, 4, 3, 6, 5

b. 2, 1, 3, 4, 6, 5

c. 1, 2, 4, 3, 5, 6

d. 1, 2, 3, 4, 5, 6

QUESTION: 018 (1.00)

Given the following information:

-It is April 15, 1998, @ 1400

-Unit 2 is in Mode 6.

-RCS drained to 188 feet 6 in.

-RCS temperature is 110 degrees F.

-RCS pressure ~ atmospheric.

-Reactor was shutdown March 31, 1998 @ 1800.

-1 fuel assembly remains to be reloaded.

-1/3 of core is new fuel.

-A total loss of RHR cooling has occurred.

Which of the following is correct concerning the amount of time it will take to reach core uncovery ?

Use attached figures from AOP-18019-C, "Loss of RHR"

a. 41 minutes

b. 135 minutes

c. 175 minutes

d. 215 minutes

QUESTION: 019 (1.00)

Today is March 31, 1998, your shift begins at 7:00 am.
You are the Reactor Operator. Your recent work history is as follows:

March 26 7:00 am to 3:00 pm (normal shift)
March 27 11:00 pm to 7:00 am (March 28)(normal shift)
March 28 7:00 ~~pm~~ am to 10:00 am (held over)
March 29 10:45 am to 11:00 am (relief for operator on shift to have random drug test)
March 30 10:30 am to 11:00 am (relief for operator on shift to attend required training)

Under these circumstances, which of the following describes the minimum required review for applicable log sheets, round sheets, and check lists ?

a. 20 hours

b. 44 hours

c. 69 hours

d. 72 hours

QUESTION: 020 (1.00)

Given the following:

A system operating procedure (SOP) is being performed to place a system in service following maintenance. An error is discovered in the sequence of steps in the SOP, which if performed, would result in starting a pump without the required seal water. The pump handswitch is in AUTO.
Which of the following actions should be taken ?

a. Stop performance of the procedure and implement a procedure change.

b. Stop performance of the procedure and place the pump handswitch in the PTL position.

c. Valve in the seal water prior to starting the pump; then submit a procedure change.

d. Start the pump with SS approval; then valve in seal water and submit a procedure change request.

QUESTION: 021 (1.00)

Who, by title, is the minimum authority that can authorize actions to be taken in accordance with 18015-C, SECONDARY PLANT CHEMISTRY, upon confirmation of one or more chemistry parameters outside normal operating range while in Mode 1 ?

a. General Manager

b. Unit Superintendent

c. Shift Superintendent

d. Chemistry Duty Foreman

QUESTION: 022 (1.00)

Which of the following is a NON-DELEGABLE duty of the Emergency Director ?

a. Deploying radiological emergency teams.

b. Request OSC support for emergency maintenance.

c. Deciding to request assistance from federal support groups.

d. Coordinating VEGP Emergency operations.

QUESTION: 023 (1.00)

A manual reactor trip was initiated at 5% reactor power and a feedwater isolation signal was generated. Which of the following must be performed to open the bypass feed reg valves ?

a. Momentarily close the reactor trip breakers only.

b. No action required. the FWI automatically resets.

c. Place both train A and train B FWI Reset Switches momentarily to the Reset position.

d. The Rx Trip Breakers must be closed and then the FWI Reset Switches held in the RESET position.

QUESTION: 024 (1.00)

Which of the following is correct concerning Steam Generator Water Level Control ?

a. Each steam generator's Steam Flow/Feed Flow mismatch is the only signal controlling its Main Feed Regulation Valve position.

b. Each steam generator's Steam Flow/Feed Flow mismatch and level signals are used to control its Bypass Feed Regulation Valve position.

c. Total Steam Flow/Feed Flow mismatch controls Main Feed Pump speed.

d. Total Steam Flow/Delta P Program controls Main Feed Pump delta P setpoint.

QUESTION: 025 (1.00)

Given the following conditions:

- A large break LOCA has occurred 3 hours ago on Unit 1
- Containment pressure is 3 PSIG
- Containment H2 concentration is 6.3% per the H2 monitors
- DG1A is supplying 1AA02

Which of the following is correct concerning Post Accident Hydrogen control using the attached procedure 13130-C ?

a. Dilute the containment hydrogen concentration using the Service Air System.

b. The "A" train Post LOCA Electric Hydrogen Recombiner can be placed in service if 1AA02 bus loading is monitored.

c. The "A" train Post LOCA Electric Recombiner can NOT be placed in service due to the DG1A carrying the 1AA02 bus.

d. The hydrogen monitors are unreliable at this point. Three more hours must pass and another hydrogen sample taken.

QUESTION: 026 (1.00)

Given the following data:

- A instrument tech inadvertently deenergized 120 VAC Vital Bus 1AY1A.

- An SI actuation from low PZR pressure occurs.

Which of the following describes the expected response of the Unit 1, Train A Diesel Generator (DG) and the Train A SI Loads with 1AY1A deenergized ?

a. The A Train DG will start and the Train A SI Loads will be sequenced on.

b. The A Train DG will not start nor will the Train A SI Loads be sequenced on.

c. The A Train DG will start, however the Train A SI Loads will not be sequenced on.

d. The A Train DG will not start, however the Train A SI Loads will be sequenced on.

QUESTION: 027 (1.00)

Given the following conditions:

- Reactor Power is 74%
- Pressurizer pressure is 2250 psig
- Charging flow is being controlled in MANUAL
- The BACKUP HEATERS have just ENERGIZED

Which of the following is the actual pressurizer level ?

a. 46%

b. 51%

c. 56%

d. 60%

QUESTION: 028 (1.00)

Which of the following signals will cause HV-9378, "Instrument Air to Containment Isolation Valve", to CLOSE ?

a. Containment Pressure at 4 psig.

b. Containment Radiation Monitor RE-003 in high alarm.

c. Instrument Air header pressure of 70 psig.

d. Containment Atmosphere Radiation Monitor RE-2562 in high alarm.

QUESTION: 029 (1.00)

A large break LOCA has occurred. The control room operators have transitioned from 19000-C to 19010-C, "Loss of Reactor or Secondary Coolant". The RWST Lo-Lo Level annunciator (ALB06-F4) sounds and RWST level indicates 38%. The USS directs the control room operators to initiate 19013-C, "Transfer to Cold Leg Recirculation". The extra operator, monitoring CSFST's, then reports that a valid red path condition exists on Core Cooling.

The USS should direct the operators to:

a. Perform the first six steps of 19013-C, then transfer to 19221-C, "Response to Inadequate Core Cooling".

b. Perform 19013-C to completion, then transfer to 19221-C, "Response to Inadequate Core Cooling".

c. Immediately perform the actions of 19221-C, "Response to Inadequate Core Cooling".

d. Immediately perform the actions of 19221-C, "Response to Inadequate Core Cooling", while the extra operator concurrently performs the actions of 19013-C.

QUESTION: 030 (1.00)

Which of the following conditions require an emergency boration to be started ?

a. Shutdown Margin found to be 1.3% delta k per k in Mode 1.

b. Boron concentration decreases to 2200 PPM during refueling operations.

c. One control rod fails to insert on a reactor trip.

d. Rod Bank Lo-Lo Limit alarms during rapid power decrease.

QUESTION: 031 (1.00)

Given the following conditions:

- RCS pressure = 2335 psig.
- RCS Tave = 588.3 deg. F.
- The reactor is not tripped.
- The crew is currently in 19211-C, "FR-S.1, Response to Nuclear Power Generation/ ATWT", step 5.

Which of the following describes the reason why RCS pressure should be maintained less than 2335 psig ?

a. Prevents the Pressurizer Relief Tank from going solid, due to an open PORV or PRZR Code Safety, and blowing the rupture disc causing a LOCA inside containment.

b. To prevent the Reactor from tripping on high RCS pressure.

c. To ensure a sufficient amount of boric acid is injected into the core to reduce reactor power.

d. To ensure the Pressurizer Spray valves don't short cycle when the PORV's open to lower RCS pressure.

QUESTION: 032 (1.00)

A loss of all AC has occurred. The control room operators have completed the immediate operator actions of 19100-C "Loss of All AC Power," and have attempted without success, to restore power. Per procedure 19100-C, the control switches for ESF 4160V loads are placed in the Pull-To-Lock position. The defeat of the auto start for this equipment is designed to prevent which of the following actions ?

a. The unnecessary use of RWST and CST inventory that may be needed for long term cooldown.

b. Overloading of a bus that may not be capable of handling automatic load sequencing of large electrical loads.

c. An uncontrolled overpressurization of the RCS upon restoration of vital power.

d. An uncontrolled cooldown of the RCS and possible reactor re-criticality upon restoration of vital power.

QUESTION: 033 (1.00)

Given the following conditions:

- Reactor power is 6%
- Main Feed pump "B" is in service
- Main Feed Pump "A" is still tripped
- AFW is in standby readiness
- PZR Pressure 2235
- Pressurizer Pressure Control select switch is in the 455/456 position
- 1BY1B is deenergized for 2 seconds by an inadvertent operator action

Which of the following actions will occur ? (Assume no operator action is taken and no instruments remain failed after the bus is restored.)

a. Both MDAFW pumps would start.

b. PZR Proportional heaters would deenergize and then reenergize.

c. PZR spray valve would close then open.

d. A reactor trip would occur.

QUESTION: 034 (1.00)

Given the following conditions:

- RX Power is 30% at 0126 EST
- A total loss of ACCW has occurred at 0115 EST
- Procedure 18022-C (Loss of ACCW) is being implemented
- The RCP temperatures are being monitored on the IPC
- The RCP vibration is being monitored

Which of the following would be the required operator response ?

a. Trip the reactor then trip all RCP's.

b. If #1 seal leakoff temperature exceeds 195 degrees F, trip that RCP.

c. Trip any RCP that has its thermal barrier isolation valve shut.

d. Trip any RCP with shaft vibration in excess of 5 mils.

QUESTION: 035 (1.00)

If all three expected responses for step 1 of 19000-C "Rx trip or SI" cannot be met, then the actions in the RNO must be performed. Which of the following describes the RNO actions ?

a. Immediately go to 19211-C "Response to Nuclear Power Generation/ATWT."

b. Manually trip the Rx from the redundant switch at the remote SD panel; if Rx not tripped, then manually open the supply breakers to NB08 and NB09.

c. Manually trip the Rx; if not tripped, then trip using the redundant switch on the QMCB. If still not tripped, go to 19211-C.

d. Manually trip the Rx; if not tripped, then trip using the redundant switch on the QMCB. If still not tripped, then Emergency Borate the RCS.

QUESTION: 036 (1.00)

A containment pressure relief is in progress when a containment ventilation isolation (CVI) actuation occurs. Which of the following is the cause of the CVI ?

a. Containment area high range monitor RE-005 in High alarm.

b. Containment area seal table monitor RE-011 in High alarm.

c. Plant vent effluent monitor RE-12442 in High alarm.

d. Containment area low range monitor RE-002 in High alarm.

QUESTION: 037 (1.00)

Given the following conditions:

- Unit 2 is in Mode 3
- Tave = 557 degrees F
- A loss of all instrument air has occurred
- The crew enters 18028-C, LOSS OF INSTRUMENT AIR
- The crew proceeds to Attachment A, Establishing Charging without Instrument Air
- Charging flow is observed to be 150 gpm

Which of the following is correct concerning Attachment A in this case ? (See attached Attachment A).

a. It will restore VCT level.

b. It places the Positive Displacement Pump in service to control charging flow.

c. It is designed to reduce and control charging flow.

d. It is necessary in order to re-establish RCP seal injection flow.

QUESTION: 038 (1.00)

Given the following conditions:

- Reactor was at 100% RTP
- All control rods fall into the core
- PZR pressure is now 1900 psig
- PRNIs indicate 4% and decreasing
- 19000-C is implemented
- Operators actuate both manual trip handswitches
- Both RTBs remain closed

Which of the following states what the USS should do ?

a. Go to step 2 of 19000-C.

b. Hold on step 1 of 19000-C until the RTB's are opened locally.

c. Perform 19211-C, ATWT, and complete all the steps of 19211 before transitioning back to 19000-C.

d. Perform to 19211, ATWT, and return to 19000-C, after completing step 4 of 19211, Check Rx power <5% and IR SUR not positive.

QUESTION: 039 (1.00)

The reactor has just tripped. Primary and secondary parameters are:

- RCS Tavg 532 degrees F
- RCS Pressure 1720 psig
- PZR Level 20%
- SG NR Levels 25 % each
- SG Pressure #1 875 psig
- Other SG pressures 890 psig
- BIT flow 190 gpm
- AFW flow 625 gpm

What transient is in progress ?

a. Steam generator tube rupture

b. Small break LOCA

c. Steam line break

d. Feed line break

QUESTION: 040 (1.00)

Unit 1 has experienced a LOCA. Containment conditions are as follows:

TIME FOLLOWING LOCA Hrs	CONTAINMENT PRESS psig	CONTAINMENT RAD LEVEL rad/hr
.03	38.7	1,000,000
.5	17.6	1,500,000
1.0	9.3	1,000,000
1.5	5.1	800,000
2.0	4.3	600,000
2.5	4.0	400,000
3.0	3.8	200,000
4.0	3.6	150,000
5.0	3.5	100,000
6.0	3.1	75,000
12.0	1.5	60,000

Assume linear behavior between tabular points. Which of the following describes the EOP Containment values to be used at 10 minutes after, 2.5 hours after, and 12 hours after the LOCA began ?

a. normal; adverse; normal

b. adverse; normal; adverse

c. adverse; adverse; normal

d. adverse; adverse; adverse

QUESTION: 041 (1.00)

19121-C, "ECA2.1, Uncontrolled Depressurization of All Steam Generators", cautions that a Minimum feed flow of 30 gpm must be maintained to each S/G with a narrow range level of less than 10%. The basis for this requirement is to minimize ?

a. Additional overcooling caused by feedwater addition.

b. The magnitude of SG level overshoot.

c. Thermal shock to AFW components.

d. Thermal shock to S/G components.

QUESTION: 042 (1.00)

For which of the following events would you NOT expect a process and effluent radiation monitoring system alarm ?

a. Loss-of-Coolant accident, outside of containment

b. Main steam line break

c. RCS to CCWS leak

d. Steam generator tube rupture

QUESTION: 043 (1.00)

Which of the following describes an event which the ECCS is designed to mitigate ?

a. Main Steam Line Break

b. ATWT

c. Loss of Offsite Power

d. Cable Spreading Room Fire

QUESTION: 044 (1.00)

Heatup to NOT/NOP per 12002-C is in progress and the RO is about to begin a dilution.

- RCS boron is 2200 ppm
- MTC is slightly positive
- SRNIs indicate 32 CPS

Which of the following actions is correct?

a. Stop the dilution if SR counts increase to 64 cps while heating up the RCS.

b. Stop the RCS heatup and the dilution if SR counts increase to 64 cps.

c. Stop the RCS heatup if SR counts increase to 64 cps while diluting the RCS.

d Stop the RCS heatup. Start the dilution and stop it if SR counts increase to 64 cps.

QUESTION: 045 (1.00)

Which of the following is the basis for allowing two hours to reduce the QPTR to within its limit with a tilt condition of greater than 1.02 ?

a. Allows corrective action in the event of a xenon redistribution following power changes.

b. Allows for identification and repositioning of a dropped or misaligned rod.

c. Allows boron concentration changes to restore QPTR to less than 1.02.

d. Allows for identification and correction of a failed excore detector.

QUESTION: 046 (1.00)

The following plant conditions exist:
- A valid reactor trip signal has been received.
- Rod bottom lights are NOT lit and flux is NOT decreasing.
- The main turbine is tripped.
- The AFW pumps are running.
- Emergency boration is in progress.
- RCS pressure is 2350 psig.

Which of the following represents the action to be taken and the basis for that action to reduce RCS pressure per FR-S.1, "Response to Nuclear Power Generation" ?

a. Depressurize the RCS with pressurizer sprays to allow enough borated water flow to ensure addition of negative reactivity to the core.

b. Depressurize the RCS with pressurizer sprays to prevent a rapid overpressurization transient and begin a controlled cooldown.

c. Depressurize the RCS with pressurizer PORVs to allow enough borated water flow to ensure addition of negative reactivity to the core.

d. Depressurize the RCS with pressurizer PORVs to prevent a rapid overpressurization transient and begin a controlled cooldown.

QUESTION: 047 (1.00)

The following plant conditions exists:

- A reactor trip and SI have occurred
- RCS Subcooling is 45 degrees F
- Containment pressure is 5.0 and decreasing
- Containment Rad level is 75,000 rad/hr

Which of the following represents conditions that would allow termination of Safety Injection ?

a. RCS pressure is 1710 psig and decreasing
Pressurizer level is 40%
Narrow range steam generator levels are 34%
Total AFW flow is 500 gpm

b. RCS pressure is 1710 psig and increasing
Pressurizer level is 39%
Narrow range steam generator levels are 36%
Total AFW flow is 600 gpm

c. RCS pressure is 1710 psig and increasing
Pressurizer level is 41%
Narrow range steam generator levels are 29%
Total AFW flow is 500 gpm

d. RCS pressure is 1710 psig and increasing
Pressurizer level is 9%
Narrow range steam generator levels are 11%
Total AFW flow is 600 gpm

QUESTION: 048 (1.00)

Which of the following is the basis for stopping the RCPs upon entering FR-H.1, "Response to Loss of Secondary Heat Sink" ?

a. Allows the operator time to establish a higher flow rate for high pressure SI thus increasing the RCS cooldown rate.

b. Allows for a more controlled cooldown via natural circulation when feedwater is established.

c. Allows the operator time to depressurize the intact steam generators in order to reduce RCS pressure and inject the accumulators.

d. Allows the operator to reduce heat addition to the RCS and extend the inventory in the steam generators.

QUESTION: 049 (1.00)

When responding to a loss of all AC power in accordance with 19100-C, "ECA-0.0, Loss Of All AC Power", the intact Steam Generators are depressurized at the maximum rate (within the capability of the TDAFW). Which of the following is the reason for depressurizing at the maximum rate ?

a. To minimize secondary inventory loss.

b. To minimize RCS inventory loss.

c. To minimize RCP seal damage.

d. To minimize reactor vessel upper head voiding.

QUESTION: 050 (1.00)

A loss of all AC power occurs with a resulting reactor trip and transition to procedure 19100-C "ECA-0.0, Loss Of All AC Power". The following conditions exist:

- Narrow range level in all SGs --- 35% and decreasing
- Containment pressure - 0 psig
- RCS pressure is 2320 psig and decreasing
- RCS subcooling margin - 40 degrees F and decreasing
- PZR level - 19% and decreasing
- Turbine stop valves - closed
- PORV 455 - opened on high pressure
- PORV 456 - closed
- HV-8149A, Letdown 45 gpm isolation valve - open
- HV-8149B, Letdown 75 gpm isolation valve - closed
- HV-8149C, Letdown 75 gpm isolation valve - closed

You have verified a reactor trip and turbine trip, which of the following should be the next action ?

a. Go to 19231-C, FRH-1 and increase level in at least one SG to > 50%.

b. Close Valve PORV 455 and continue in ECA-0.0.

c. Manually initiate Safety Injection and go to 19000-C, E-0.

d. Close HV-8149A and continue in ECA-0.0 .

QUESTION: 051 (1.00)

Match the following with their definition in 10012-C, EOP and AOP Writers Guide.

A Check
B Ensure
C Perform
D Verify

1 To carry out an action.
2 To make arrangements for a stated condition.
3 Take necessary actions to guarantee conditions are as specified.
4 To observe an expected characteristic or condition exists. Typically the expectation comes from some previous automatic or operator action. The appropriate contingency, either stated or implied, is to establish the expected condition.
5 To perform a comparison with a procedural requirement.

Which of the following groups are correctly matched ?

a. A-1 , B-3 , C-2 , D-4

b. A-1 , B-4 , C-2 , D-3

c. A-5 , B-4 , C-1 , D-3

d. A-5 , B-3 , C-1 , D-4

QUESTION: 052 (1.00)

Given the following:

- Committed Dose Equivalent (CDE)is 2525 mr
- Deep Dose Equivalent (DDE) is 2335 mr
- Lens Dose Equivalent (LDE) is 744 mr
- Committed Effective Dose Equivalent (CEDE) 405 mr
- Total Organ Dose Equivalent (TODE) 4865 mr
- Shallow Dose Equivalent (SDE) 435 mr
- Maximum Extremity (ME) 6565 mr

What is the Total Effective Dose Equivalent (TEDE)?

a. 2740 mr

b. 5270 mr

c. 6444 mr

d. 15249 mr

QUESTION: 053 (1.00)

18 days following a design basis LOCA the following conditions exist:

- Hydrogen concentration is 4.3%
- Containment pressure is 3.1 psig
- RCS temperature is 168 degrees F
- NSCW Basin temperature is 78 degrees F

Which of the following are correct actions in accordance with SOP-13130, "Post Accident H2 Control" ?

a. Initiate the Containment Electric Hydrogen Recombiners and do not initiate Post LOCA Hydrogen purge system.

b. Initiate the Containment Electric Hydrogen Recombiners and initiate Post LOCA Hydrogen purge system.

c. Do not initiate the Containment Electric Hydrogen Recombiners and do not initiate Post LOCA Hydrogen purge system.

d. Do not initiate the Containment Electric Hydrogen Recombiners and initiate Post LOCA Hydrogen purge system.

QUESTION: 054 (1.00)

Which of these accurately describe the color coding of the sound-powered phone system loops in various plant locations ?

a. Orange jacks used for startup and maintenance testing. Red jacks used for maintaining cold shutdown condition following control room evacuation. Grey jacks used for refueling, fuel handling building, diesel generator building, and containment.

b. Orange jacks used for refueling, services control room, fuel handling building, and containment. Red jacks used for startup. Grey jacks used for maintaining cold shutdown condition following control room evacuation.

c. Orange jacks used for control room, and containment. Red jacks used for maintaining cold shutdown condition following control room evacuation. Grey Jacks used for startup and maintenance testing.

d. Orange jacks used for maintaining cold shutdown condition following control room evacuation. Red jacks used for refueling, services control room, fuel handling building, and containment. Grey Jacks used for startup and maintenance testing.

QUESTION: 055 (1.00)

The following is a partial list of unit differences ?

(1) When in local, Diesel Generator Train B Fuel Oil Transfer pumps will run in auto only.

(2) DG Day Tanks cannot be drained back to the Fuel Oil Storage Tank.

(3) RHR high-point vents (HV-10465 and HV-10466) have drain lines routed outside the cubicles.

(4) Aux Containment Cooler isolation valves are interlocked so that the outlet valves must be opened first.

(5) High point vacuum breakers are located at the ESF chillers and the CCW heat exchangers.

(6) NSCW motor coolers do not have orifices.

(7) The setpoint of the Tavg / Auctioneered Tavg alarm is 4 degrees F.

(8) ACCW pump Low pressure auto start @ 130 psig.

Which of the following are correct:

a. Applies to unit 1 only - 2, 5, and 6 AND
applies to unit 2 only - 1, 3, and 7

b. Applies to unit 1 only - 1, 3, and 6 AND
applies to unit 2 only - 2, 4, and 8

c. Applies to unit 1 only - 2, 6, and 7 AND
applies to unit 2 only - 3, 5, and 8

d. Applies to unit 1 only - 1, 4, and 7 AND
applies to unit 2 only - 3, 5, and 6

QUESTION: 056 (1.00)

Which of the following actions will occur automatically if a high level radiation alarm is actuated on the associated monitor ?

a. Fuel Handling Building Effluent (ARE-2532A or B; ARE 2533A or B) - Isolates gas discharges if a gas release is in progress.

b. Turbine Building Drain (RE-0848) - Re-align TB drains to dirty drain tank.

c. Mainsteam Line (RE-13120) - Aligns SJAE discharge from direct discharge to environment to discharge through HEPA filter.

d. Containment Low Range (RE-0002 or RE-0003) - Isolates SG blowdown.

QUESTION: 057 (1.00)

Following a loss of a string of feed water heaters, the secondary plant undergoes a transient. During trouble shooting, Unit 1 trips from 87 % power. All systems perform normally. The generator does not trip for 30 seconds. What is one of the reasons for this delay ?

a. Ensure RCPs seals flow can be isolated in 30 seconds.

b. RCPs won't overspeed on SGTR.

c. Maintains RCS flow during transients where Heat Flux Hot Channel Factor is a concern.

d. Prevents main turbine overspeed.

QUESTION: 058 (1.00)

Given the following conditions:

- Condenser vacuum is DECREASING; operators decreasing turbine load in attempt to maintain vacuum
- Condenser vacuum = 25.8 in of Hg
- Main turbine load = 43%

Which of the following would be required or occur FIRST if condenser vacuum continued to decrease ?

a. Auto main turbine trip on low vacuum.

b. Loss of steam dump capability.

c. Manual reactor trip.

d. Auto MFPT trip on low vacuum.

QUESTION: 059 (1.00)

Which of the following explains the reason for the caution in 19251-C, "FR-Z.1 Response to High Containment Pressure", giving 19111-C, "ECA-1.1 Loss of Emergency Coolant Recirculation" priority over FR-Z.1 for directing containment spray operation ?

a. The caution is a reminder that the rules of usage gives all ECA'S priority over FR's.

b. ECA-1.1 is trying to conserve RWST inventory to be utilized for core cooling.

c. FR-Z.1 could cause the spray pumps to run without adequate NPSH if ECA-1.1 was in effect before transitioning to the FR.

d. To prevent the spray pumps from being removed from service before adequate mixing of TSP has occurred.

QUESTION: 060 (1.00)

Which of the following positions do NOT have the authority to suspend refueling operations if, in their judgement, any conditions exist which threaten personnel safety or safe handling of fuel ?

a. Fuel Handling Coordinator

b. Reactor Engineer

c. Health Physics Technician

d. Chemistry Technician

QUESTION: 061 (1.00)

Which of the following is dependent on Tavg to determine it's value ?

a. overtemperature Delta T Trip Comparator

b. overtemperature Delta T Trip Setpoint Calculator

c. auctioneering Unit Delta T Deviation Alarm

d. overpower Delta T Trip Comparator

QUESTION: 062 (1.00)

One DRPI is inoperable in each of two different groups. You are required to verify the position of the rods with inoperable position indicators by using movable incore detectors. TS 3.1.7 Action Statement A.1 states that the required completion time is once per 8 hours. What is the TS basis for this requirement ?

a. The probability of simultaneously having a rod out of position and an event sensitive to that position is small.

b. Power Peaking limits cannot be violated if only one DRPI per group is inoperable for one or more groups.

c. Ejected rod worth limits cannot be violated if only one DRPI per group is inoperable for one or more groups.

d. SDM limits cannot be violated if only one DRPI per group is inoperable for one or more groups.

QUESTION: 063 (1.00)

Which of the following is the correct sequence that describes a safeguards actuation signal's progression through SSPS ?

a. Logic card, Driver Card, Master Relay, Slave Relay, Input Relay

b. Input Relay, Master Relay, Slave Relay, Logic card, Driver Card

c. Input Relay, Logic card, Master Relay, Slave Relay, Driver Card

d. Input Relay, Logic card, Driver Card, Master Relay, Slave Relay

QUESTION: 064 (1.00)

Concerning the basis for restrictions on DNBR in the core:

The average enthalpy in the hot leg should be _____ to the enthalpy of saturated liquid. This ensures that the Delta T measured by incore instrumentation is _____ to core power.

a. greater than or equal ; proportional
b. less than or equal ; inversely proportional
c. less than or equal ; proportional
d. greater than or equal ; inversely proportional

QUESTION: 065 (1.00)

Which of the following conditions can cause "AMSAC Trouble" at 45% power ?

a. C-20 timer runs causing AMSAC to be inhibited.

b. First Stage Impulse Pressure channel 505 has failed downscale.

c. It has been 260 seconds since impulse pressure exceeded the arming setpoint.

d. The operator failed to press the "AMSAC OPERABLE" push button after reaching 40 percent power.

QUESTION: 066 (1.00)

Following the initiation of the Loss of Offsite Power Sequencer, which of the following are true for the containment cooling fans ?

a. After 30.5 seconds fans 3, 4, 5 and 6 are running in high speed AND After 30.5 seconds fans 1, 2, 7 and 8 are running in high speed.

b. After 30.5 seconds fans 3, 4, 5 and 6 are running in slow speed AND After 30.5 seconds fans 1, 2, 7 and 8 are running in slow speed.

c. After 50.5 seconds fans 3, 4, 5 and 6 are running in high speed AND After 50.5 seconds fans 1, 2, 7 and 8 are running in high speed.

d. After 50.5 seconds fans 3, 4, 5 and 6 are running in slow speed AND After 50.5 seconds fans 1, 2, 7 and 8 are running in slow speed.

QUESTION: 067 (1.00)

A HIGH alarm received by which of the following radiation detectors will result in an Automatic Action ?

a. Steam Line Rad Monitor RE-13121.

b. Steam Generator Blowdown Rad Monitor RE-019.

c. Primary-to-Secondary Leakage Rad Monitor RE-0724.

d. Condenser Air Ejector and Steam Packing Exhauster Rad Monitor RE-12839C.

QUESTION: 068 (1.00)

During a surveillance, RE-0020A NSCW Effluent Line is determined to have a non-conservative alarm setpoint. Which of the following is one of the immediate actions listed in the ODCM ?

a. Verify automatic isolation has occurred

b. Bypass the affected channel

c. Change the setpoint to a conservative value

d. Notify Chemistry to immediately sample the effluent

QUESTION: 069 (1.00)

Procedure 13427-1 contains the following instructions for Diesel Generator 1A normal start. These instructions state (for paralleling the DG to it's vital bus with the synchroscope rotating slowly in the clockwise direction):

4.2.1.13 When the Sync Scope needle reaches the 11 o'clock position, DEPRESS and HOLD the Diesel Generator 1A AUTO SYNC PERMISSIVE PUSHBUTTON PB-DG1A.

4.2.1.14 VERIFY that the DG1A OUTPUT BRKR 1AA02-19 closes when the Sync Scope reaches the 12 o'clock position and RELEASE the Auto Sync Permissive Pushbutton.

What is the specific purpose of these steps ?

a. To minimize frequency and phase differences.

b. To minimize frequency and current differences.

c. To minimize current and voltage differences.

d. To minimize voltage and phase differences.

QUESTION: 070 (1.00)

Given the following conditions:

- reactor power 100%
- containment ventilation isolation actuation
- fuel handling post accident ventilation actuation
- control room emergency filtration actuation

Given there was a failure of a single 120 VAC vital instrument panel, which of the following has failed ?

a. 1AY2A

b. 1BY1B

c. 1CY1A

d. 1DY1B

QUESTION: 071 (1.00)

The source of power to the solid state protection system CHANNEL I is _____ and CHANNEL IV is _____.

a. 1AY1A, 1DY1B

b. 1BY1B, 1CY1B

c. 1CY1B, 1AY1B

d. 1DY1B, 1BY1B

QUESTION: 072 (1.00)

The unit 2 main generator has just been synchronized to the grid and power has been raised to 19% power. The BOP was preparing to swap feedwater flow from the Bypass Feed Regulation Valves to the Main Feed Regulation Valves when condenser vacuum decreased to 21.5 inches of Hg, generating a turbine trip.

Which of the following are the correct actions the crew should take in response to the turbine trip ?

a. Enter 18011-C, Turbine Trip below P-9, and reduce reactor power below 5% and control Tave using steam dumps.

b. Trip the reactor and go to 19000-C, Reactor Trip or Safety Injection.

c. Enter 18016-C, Condensate and Feedwater Malfunctions, start all available AFW pumps, and reduce reactor power to 10%.

d. Enter 18011-C, Turbine Trip below P-9, reduce reactor power below 5%, and control Tave using atmospheric relief valves.

QUESTION: 073 (1.00)

At 10:58 you received the following annunciators:

- ACCW RCP 1 LO CLR LOW FLOW
- ACCW RCP 1 CLR OUTLET HI TEMP

At 11:01 you determine the RCP 1 ACCW inlet line is leaking. You are informed that the repairs will take about 15 minutes. You enter both 18022-C "Loss of Auxiliary Cooling Water" and .3003-1 "Reactor Coolant Pump operations". Using the plant computer you determine the following RCP 1 criteria exist:

- Motor Bearing Temperature is 190 degrees increasing at 1 degree per minute
- Stator winding temperature is 305 degrees and steady
- RCP Pump lower seal bearing is 225 and decreasing at .5 degrees per minute
- Seal water outlet temperature is 255 and increasing at 1 degree per minute

Assuming that the ACCW is not returned to service, what is the earliest time you are REQUIRED to trip RCP 1 ?

a. 11:01

b. 11:06

c. 11:08

d. 11:11

QUESTION: 074 (1.00)

An operator at the Diesel Generator 1A local panel has verified that Diesel Generator 1A has lost DC control power. If the diesel is currently not running, which of the following describes how this loss of DC power would affect Diesel Generator operation ?

a. The diesel would start in response to an automatic or manual start signal.

b. The diesel cannot be started by automatic signals or manual action.

c. The diesel can only be started in manual at the local panel in response to an operator initiated local start.

d. The diesel can only be started manually from the control room and the local control panel.

QUESTION: 075 (1.00)

With the reactor at 90 percent power, how will the plant respond to a loss of two feedwater heater strings once steady state conditions are reached ? (Assume no operator actions and rods are in automatic)

a. T-ref Decreases, GENERATOR OUTPUT (MW) Increases, RCS Tavg decreases, RCS T-cold Decreases, AND RCS T-hot Increases.

b. T-ref Increases, GENERATOR OUTPUT (MW) constant, RCS Tavg is Constant, RCS T-cold Decreases, AND RCS T-hot Increases.

c. T-ref Decreases, GENERATOR OUTPUT (MW)is Constant, RCS Tavg Decreases, RCS T-cold Decreases, AND RCS T-hot Decreases.

d. T-ref is Constant, GENERATOR OUTPUT (MW)Increases, RCS Tavg is Constant, RCS T-cold Decreases, AND RCS T-hot Increases.

QUESTION: 076 (1.00)

Given the following:

- Plant in Mode 6 with vessel head installed
- Midloop operations in progress
- S/G hot and cold leg manways removed
- S/G nozzle dams installed on hot legs
- S/G nozzle dams NOT installed on cold legs
- No other vents are open in the RCS
- Loss of RHR cooling occurs

Which of the following will occur as a long term result of this event ?

a. Steam formation in upper head will increase pressure and cause the PZR to refill rapidly.

b. Steam formation in upper head will increase pressure and displace water out the S/G cold leg manways.

c. Steam formation in upper head will increase pressure enough to blow out the hot leg nozzle dams.

d. Steam formation in upper head and resultant steam bubble expansion will displace water out the hot leg manways.

QUESTION: 077 (1.00)

Which of the following is true concerning normal power supplied to a 125 VDC ESF Bus ?

a. The bus is normally supplied from 2 battery chargers. A battery bank will supply power to the bus in the event both of the battery chargers fail. The batteries are kept charged by "floating" on the bus.

b. The bus is normally supplied from 2 battery chargers. Vital A/C power will supply power to the bus through inverters in the event both of the battery chargers fail. The bus is kept charged by "floating" on the batteries.

c. The bus is normally supplied from 2 battery banks. The bus will be supplied directly from the chargers if both battery banks fail. The bus is kept charged by "floating" on the batteries.

d. The bus is normally supplied from 2 battery banks. Vital A/C power will supply power to the bus through inverters in the event both of the battery banks fail. The batteries are kept charged by "floating" on the bus.

QUESTION: 078 (1.00)

Which of the following is NOT accomplished by 19132 "ECA 3.2, SGTR with Loss of Reactor Coolant: Saturated Recovery Desired" ?

a. Depressurize RCS to minimum RCS pressure.

b. Depressurize RCS to establish pressurizer level.

c. Cooldown T-cold at maximum rate using S/G PORVs.

d. Reduce ECCS flow while maintaining pressurizer level and decrease reactor coolant core exit temperature.

QUESTION: 079 (1.00)

Procedure 19241,"FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", step 5.0, directs you to attempt to restart a RCP if the SI termination criteria cannot be satisfied. What is the basis for this step ?

a. Restores PZR spray to allow RCS depressurization in subsequent steps with ECCS still in service.

b. Equalizes SG pressures to allow simultaneous cooldown of all four loops in subsequent steps.

c. Mixes ECCS injection water and RCS water to raise the fluid temperature entering the vessel downcomer.

d. Transfers Core Cooling to forced flow allowing the operators to terminate ECCS when the criteria are NOT satisfied.

QUESTION: 080 (1.00)

While recovering from a total loss of all AC power in 19100-C, step 30 directs you to 19101-C "ECA 0.1 Loss of All AC Power Recovery Without SI Required". The first step directs the operator to close the ACCW Supply Header ORC Isolation Valve HV-1979. What is the reason for this action ?

a. To prevent exceeding the cooling capacity of the RCP thermal barrier heat exchanger.

b. To reduce ACCW heat loads prior to restarting a ACCW pump.

c. To prevent thermal shock of the RCP seals when starting a ACCW pump.

d. To reduce the possibility of steam formation and circulation within the ACCW system.

QUESTION: 081 (1.00)

Unit 1 is at 75% power with rods in Automatic conducting a power ascent in accordance with VEGP 12004-C, Power Operation. When the following indications are observed:

Tavg - 570 degrees F and slowly lowering
Pressurizer Level - 42 percent and slowly lowering
Pressurizer Pressure - 2100 psig and slowly lowering
Reactor Power - at approximately 75% and slowly lowering
Rods - stepping in slowly

Which of the IMMEDIATE ACTION(S) must be performed ?

a. Manually trip the reactor.

b. Place the bank selector switch in MANUAL.

c. Decrease turbine load to restore Tavg to Tref.

d. Switch Tavg input to alternate channel.

QUESTION: 082 (1.00)

Given the following conditions:

- reactor power 95%
- 1 control rod falls into core as indicated by DRPI
- no automatic reactor trip occurs

You enter AOP 18003-C "Rod Control Malfunction". Which of the following is a required action ?

a. Reduce reactor power to less than 70% for rod retrieval.

b. Emergency borate 115 ppm.

c. Verify adequate shutdown margin.

d. Manually trip the reactor.

QUESTION: 083 (1.00)

During a controlled shutdown from 100% rated thermal power the operators note a rod that is stuck more than 12 steps from the group step counter demand and are unable to verify that it can be tripped. Which of the following identifies the MAXIMUM time available before any Technical Specification actions are required to be taken ?

a. 15 Minutes

b. 30 Minutes

c. 60 Minutes

d. 8 hours

QUESTION: 084 (1.00)

Given the following conditions:

- Power is 100% RTP
- RCP SEAL OUTLET TEMP HI alarm actuated, then cleared
- RCP SEAL LEAKOFF FLOW HI alarm actuated, then cleared

- No. 1 RCP seal outlet temperature is 222 deg F and increasing
- No. 1 RCP seal leak-off flow is 4.9 gpm and stable

- No. 2 RCP seal outlet temperature is 218 deg F and stable
- No. 2 RCP seal leak-off flow is 1.8 gpm and stable

- Seal injection flow is 8.5 gpm and stable
- Seal injection temperature is 134 degrees and stable
- Stand pipe fill frequency is normal
- RCP vibration is 6 mils
- RCDT Level is stable and controlled
- No. 1 Seal Differential pressure is 2000 psig

You enter procedure 13003-1, "Reactor Coolant Pump Operation." Step 4.2.3 directs you to Figure 1, "RCP Seal Abnormalities Decision Tree." Based on the conditions noted, which of the following actions is required ? (Figures are attached)

a. GO TO 4.2.1.4 TO STOP RCP IF REQUIRED

b. STOP RCP BY INITIATING 4.2.1.5

c. REPAIR AT NEXT OUTAGE

d. FAILURE OF NO.3 OUTER DAM

QUESTION: 085 (1.00)

While operating at 100% power you receive a simultaneous loss of Source rangechannel N-31. Intermediate range channel N-35 and Power range channel N-41. Which of the following has happened ?

a. Vital Instrument Panel 1BY2B deenergized.

b. Vital Instrument Panel 1AY2A deenergized.

c. Vital Instrument Panel 1CY1A deenergized.

d. Vital Instrument Panel 1AY1A deenergized.

QUESTION: 086 (1.00)

Which of the following conditions does NOT support or indicate that natural circulation flow is occurring ?

a. SG pressure increasing

b. core exit thermocouples - stable

c. RCS subcooling monitor indication - greater than 38 deg F

d. RCS cold leg temperature - at saturation temperature for SG pressure

QUESTION: 087 (1.00)

There is a fire in the main control room. You are the Unit Shift Supervisor. You direct entry into 18038-1, "Operation From Remote Shutdown Panels." You determine that is safe to perform all the actions that can be performed in the main control room (steps 1 and 2). The reactor is tripped.

Which of the following actions will NOT be completed prior to leaving the main control room ?

a. Trip 1 & 4 RCP's

b. Shut Pressurizer PORV Block Valves

c. Shut MSIVs and Bypass Valves

d. Trip all Running ACCW pumps

QUESTION: 088 (1.00)

Chemistry is performing Technical Specification SR 3.4.16, "Reactor Coolant System Activity." Gross specific activity of the reactor coolant is reported as 100 picocuries/liter. Based on your current power level you have 6 hours to be within the acceptable operating band of Figure 3.4.16-1 or Tavg must be below 500 F.

The BASIS for the Technical Specification action of reducing Tavg to less than 500 degrees F (assuming a SGTR exists) is to: ?

a. prevent exceeding the release of 99% of assumed iodine gap activity.

b. minimize the iodine spiking.

c. stay within the absorption limits of the sodium hydroxide in containment spray.

d. prevent opening the main steam safety valves.

QUESTION: 089 (1.00)

Which of the following is the primary method of determining RHR leakage into the CCW system ?

a. NSCW differential flow alarms

b. Leak status light on QPCP

c. Auxiliary Building leak detection system

d. Radiation monitor

QUESTION: 090 (1.00)

A HIGH alarm on which of the following radiation monitors will result in an automatic actuation of ESFAS equipment ?

a. Outside Area monitor, RE-0069

b. Control Room Area monitor, RE-0001

c. CVCS Letdown Process monitor, RE-48000

d. Control Room Air Intake monitor, RE-12116

QUESTION: 091 (1.00)

Which of the following parameters discriminates between a steamline leak inside containment and a small break LOCA ?

a. Containment radiation level.

b. Pressurizer level.

c. Steam generator level.

d. Containment pressure.

QUESTION: 092 (1.00)

Which of the following sets of signals BOTH actuate Containment Spray ?

a. 1 of 2 Containment Spray handswitches taken to ACTUATE or 2 of 4 Containment Pressure Channels > 21.5 #.

b. 2 of 2 Containment Spray handswitches taken to ACTUATE or 2 of 4 Containment Pressure Channels > 21.5 #.

c. 1 of 2 Containment Spray handswitches taken to ACTUATE or 2 of 3 Containment Pressure Channels > 14.5 #.

d. 2 of 2 Containment Spray handswitches taken to ACTUATE or 2 of 3 Containment Pressure Channels > 14.5 #.

QUESTION: 093 (1.00)

Pressure control is selected to the 455/456 position with all pressure control devices in the auto position when PT-456 fails high. Assuming No Operator Actions, which of the following describes the plant response ?

a. Both spray valves open, one PORV opens, all heaters deenergize. Pressure decreases until a reactor trip and safety injection occur. Pressure will stabilize when the pressurizer goes solid at about 2300 psig.

b. Both spray valves shut, one PORV opens, all heaters energize. Pressure decreases until the heaters can provide sufficient heat to overcome energy lost out of the PORV. Pressure will stabilize at about 2210 psig.

c. Both spray valves shut, one PORV opens, all heaters energize. Pressure decreases until a reactor trip and safety injection occur. Pressure will stabilize when the pressurizer goes solid at about 2300 psig.

d. Both spray valves shut, one PORV opens, all heaters energize. Pressure decreases until the open PORV receives a shut signal. Pressure will fluctuate around 2185 psig with no reactor trip or safety injection occurring.

QUESTION: 094 (1.00)

Unit 1 is on RHR cooling when there is a sudden loss of instrument air. Assuming no operator actions, what are the initial effects on the RCS and RHR systems ?

a. RCS Pressure decreases quickly. The RHR Heat Exchanger outlet valve opens and the RHR Heat exchanger bypass valve closes.

b. RCS Pressure decreases quickly. The RHR Heat Exchanger outlet valve closes and the RHR Heat exchanger bypass valve opens.

c. RCS Pressure increases quickly. The RHR Heat Exchanger outlet valve closes and the RHR Heat exchanger bypass valve opens.

d. RCS Pressure increases quickly. The RHR Heat Exchanger outlet valve opens and the RHR Heat exchanger bypass valve closes.

QUESTION: 095 (1.00)

With the Unit initially operating at 100% power with all control systems in automatic, which of the following is NOT an indication of a 50 gpm Steam Generator Tube Leak ?

a. VCT level decrease

b. Condenser vacuum exhaust radiation monitor increase

c. Steam generator level increase

d. Increase in CVCS charging flow

QUESTION: 096 (1.00)

Which of the following will cause an isolation of the containment ventilation system ?

a. Loss of NSCW while at 8% power.

b. Pressurizer low pressure (2/4 channels below 1870 psig)

c. Instrument Air header low pressure (75 psig)

d. Containment Atmosphere Radiation Monitor RE-2562 in HIGH alarm.

QUESTION: 097 (1.00)

You Receive the PRZR HI PRESSURE Annunciator. No other alarms are present. What are the Immediate Operator Actions required for a pressurizer pressure instrument failure ?

a. Verify RCS pressure stable: if lowering, close spray valves, close affected PRZR PORV, and operate PRZR heaters as necessary

b. Verify RCS pressure stable: if increasing, open spray valves, close affected PRZR PORV, and operate PRZR spray as necessary

c. Verify RCS pressure stable: if lowering, open spray valves, close affected PRZR PORV, and operate PRZR spray as necessary

d. Verify RCS pressure stable: if increasing, close spray valves, close affected PRZR PORV, and operate PRZR heaters as necessary

QUESTION: 098 (1.00)

Given the following conditions:

- normal 100% power plant lineup
- decreasing pressurizer level
- increasing VCT level
- "RCP SEAL WATER INJECTION LO FLOW" annunciator
- "REGEN HX LTDN HI TEMP" annunciator

Which of the following would be the most likely cause of the given conditions ?

a. pressurizer PORV open

b. small break LOCA

c. letdown isolation

d. loss of charging

QUESTION: 099 (1.00)

Step 2 of E-0, "Reactor Trip or Safety Injection", requires plant operators to "Verify Turbine Trip."

Which of the following is the BASIS for performing this action?

a. Prevent return to criticality in the event of a steam line break.

b. Prevent loss of shutdown margin due to overcooling.

c. Prevent unnecessary safety injection due to low RCS pressure.

d. Prevent unnecessary depletion of S/G heat removal capacity.

ANSWER KEY

MULTIPLE CHOICE

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

ANSWER KEY

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

ANSWER KEY

092 b

093 d

094 d

095 c

096 b

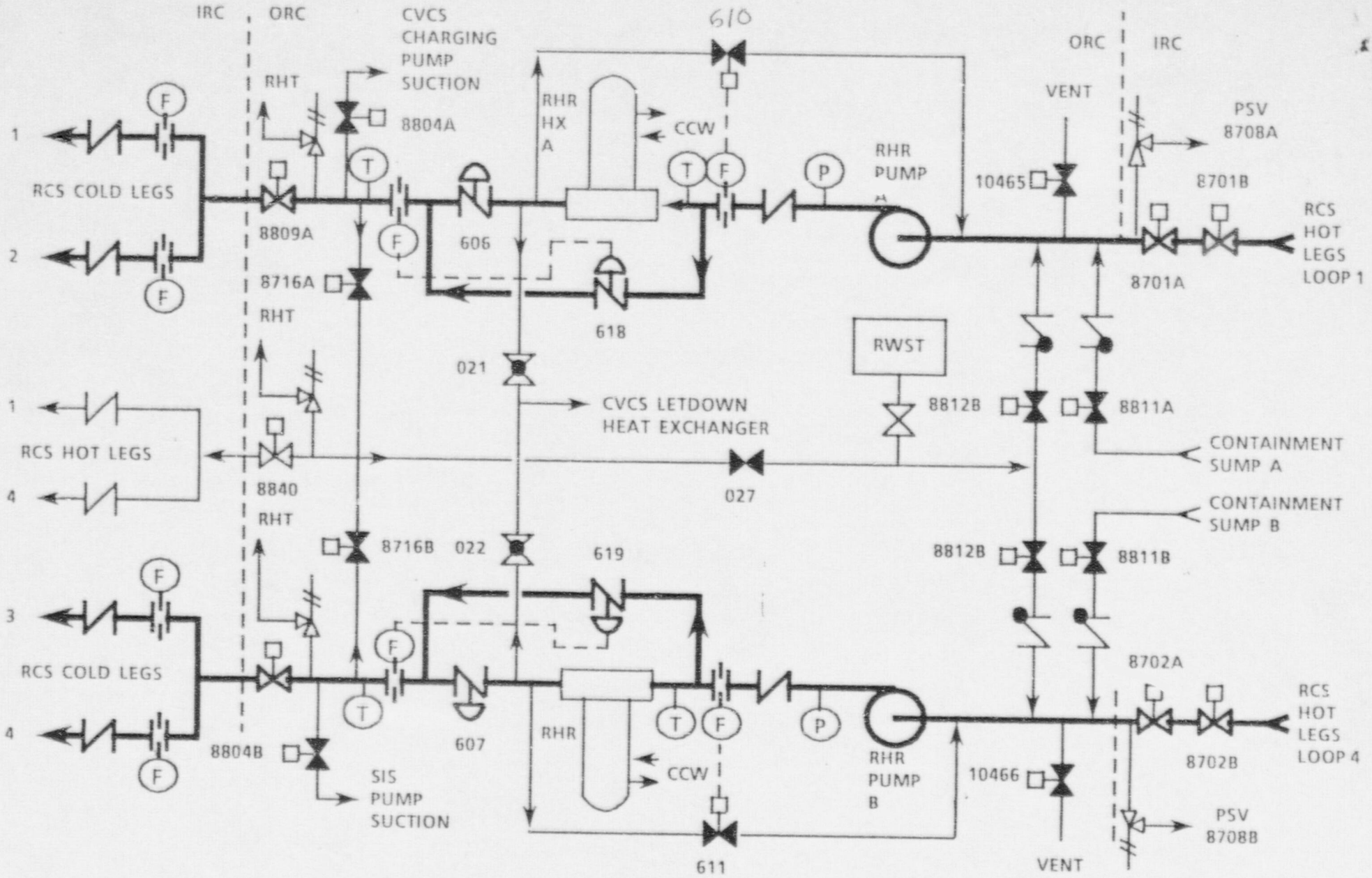
097 a

098 d

099 b

100 a

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



NORMAL RCS COOLDOWN

FIGURE 10a-2

LO-DR-12119-00

FIGURE 1 - RCP SEAL ABNORMALITIES DECISION TREE

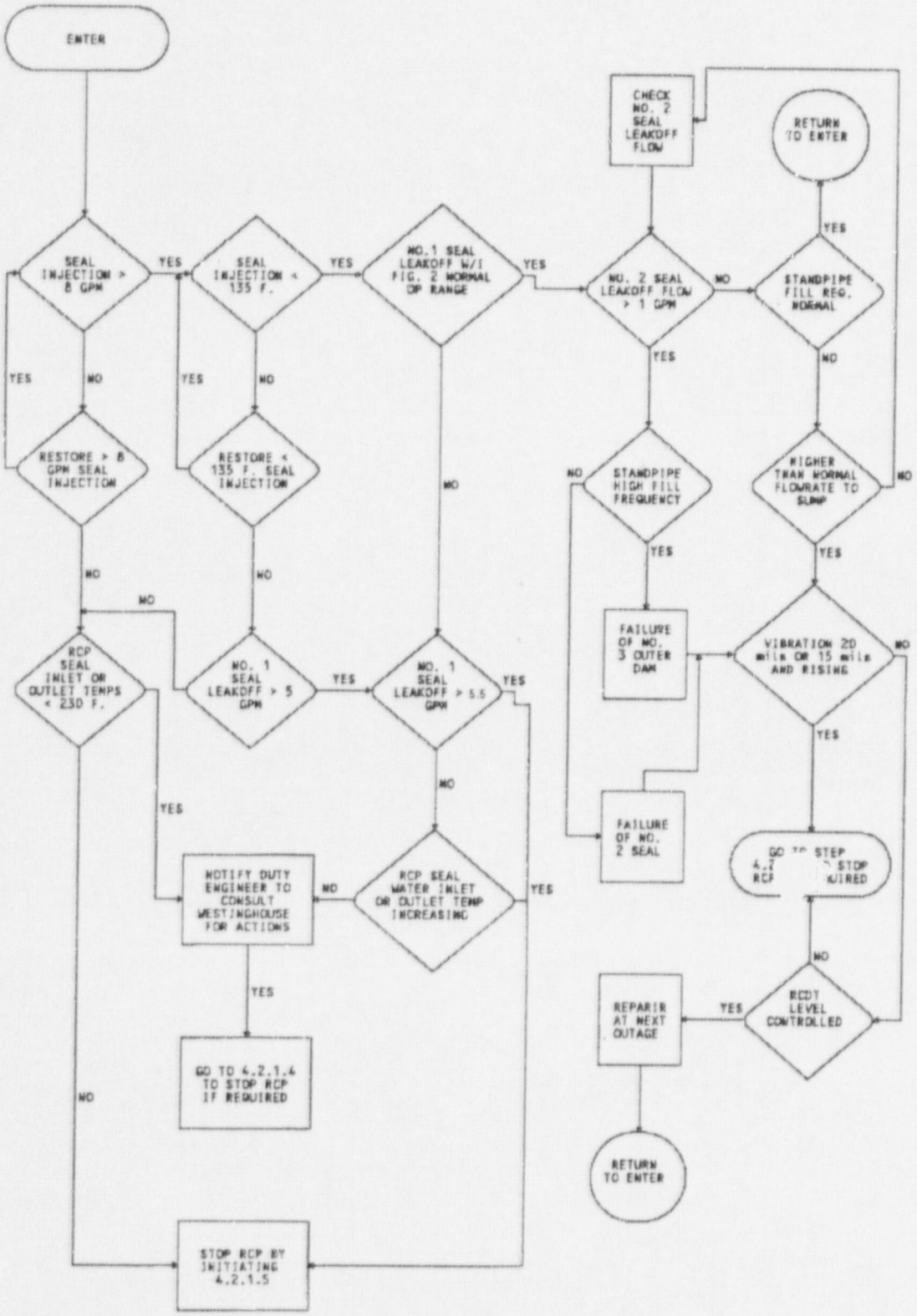
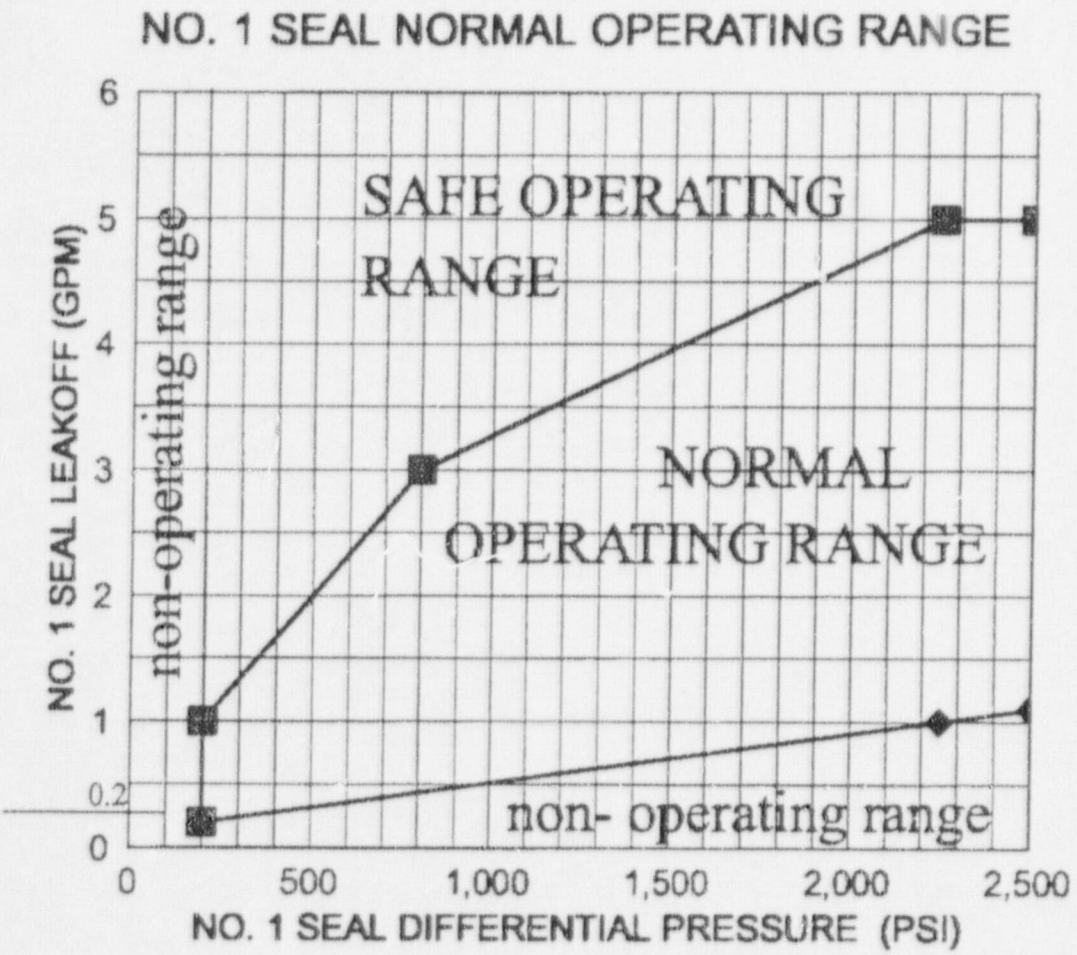


FIGURE 2


NO. 1 SEAL NORMAL OPERATING RANGE
NO. 1 SEAL LEAKOFF (GPM)
6
5
4
3
2
1
0.2
0
SAFE OPERATING RANGE
non-operating range
NORMAL OPERATING RANGE
non- operating range
0
500
1,000
1,500
2,000
2,500
NO. 1 SEAL DIFFERENTIAL PRESSURE (PSI)

ATTACHMENT A

ESTABLISHING CHARGING WITHOUT INSTRUMENT AIR

A. Establish Charging With Train A Emergency Bus Energized:

1. Verify at least one RWST TO CCP SUCTION - OPEN:

   - LV-0112D
   - LV-0112E

2. Verify at least one VCT OUTLET ISOLATION - SHUT:

   - LV-0112B
   - LV-0112C

3. Verify CCP-A RV TO RWST ISOLATION:

   - HV-8508A - ENABLE PTL
   - HV-8509B - OPEN

4. Verify - SHUT:

   - HV-8110 CCP A&B COMMON MINIFLOW

5. Verify Train A CCP - RUNNING.

6. Ensure Train A charging isolation valves - OPEN:

   - HV-8116 SAFETY GRADE CHARGING TO REGEN HX
   - HV-0190A CCP-A SAFETY GRADE CHG
   - HV-8105 CHARGING TO RCS ISOLATION (locally verify if Train B emergency bus de-energized)

   UNIT 1 AB-A09
   UNIT 2 AB-A103

7. Dispatch operators to maintain 8 to 13 gpm seal injection flow by throttling OPEN:

UNIT 1	UNIT 2
1-1208-U6-152 (AB-C114)	2-1208-U6-152 (AB-C10)

ATTACHMENT A

ESTABLISHING CHARGING WITHOUT INSTRUMENT AIR

8. Shut the following charging isolation valves:

   - HV-8485A CCP-A DISCHARGE ISOLATION
   - HV-8106 CHARGING TO RCS ISOLATION

9. Maintain desired charging flow as shown on FI-0138A using HV-0190A CCP-A SAFETY GRADE CHG.

ATTACHMENT A

ESTABLISHING CHARGING WITHOUT INSTRUMENT AIR

B. Establish Charging With Train B Emergency Bus Energized:

1. Verify at least one RWST TO CCP SUCTION - OPEN:

   - LV-0112D
   - LV-0112E

2. Verify at least one VCT OUTLET ISOLATION - SHUT:

   - LV-0112B
   - LV-0112C

3. Verify CCP-B RV TO RWST ISOLATION:

   - HV-8508B - ENABLE PTL
   - HV-8509A - OPEN

4. Verify - SHUT:

   - HV-8111A CCP-A MINIFLOW
   - HV-8111B CCP-B MINIFLOW

5. Verify Train B CCP - RUNNING.

6. Ensure Train B charging isolation valve HV-0190B CCP-B SAFETY GRADE CHG - OPEN.

7. Dispatch operators to maintain 8 to 13 gpm seal injection flow by throttling OPEN:

UNIT 1	UNIT 2
1-1208-U6-151 (AB-C119)	2-1208-U6-151 (AB-C19)

8. Shut HV-8485B CCP-B DISCHARGE ISOLATION.

ATTACHMENT A

ESTABLISHING CHARGING WITHOUT INSTRUMENT AIR

9. Shut the following charging isolation valves:

   - HV-8105 CHARGING TO RCS ISOLATION
   - Dispatch operator to shut CVCS CHG PMPS DISCH FV-0121 OUT ISO:

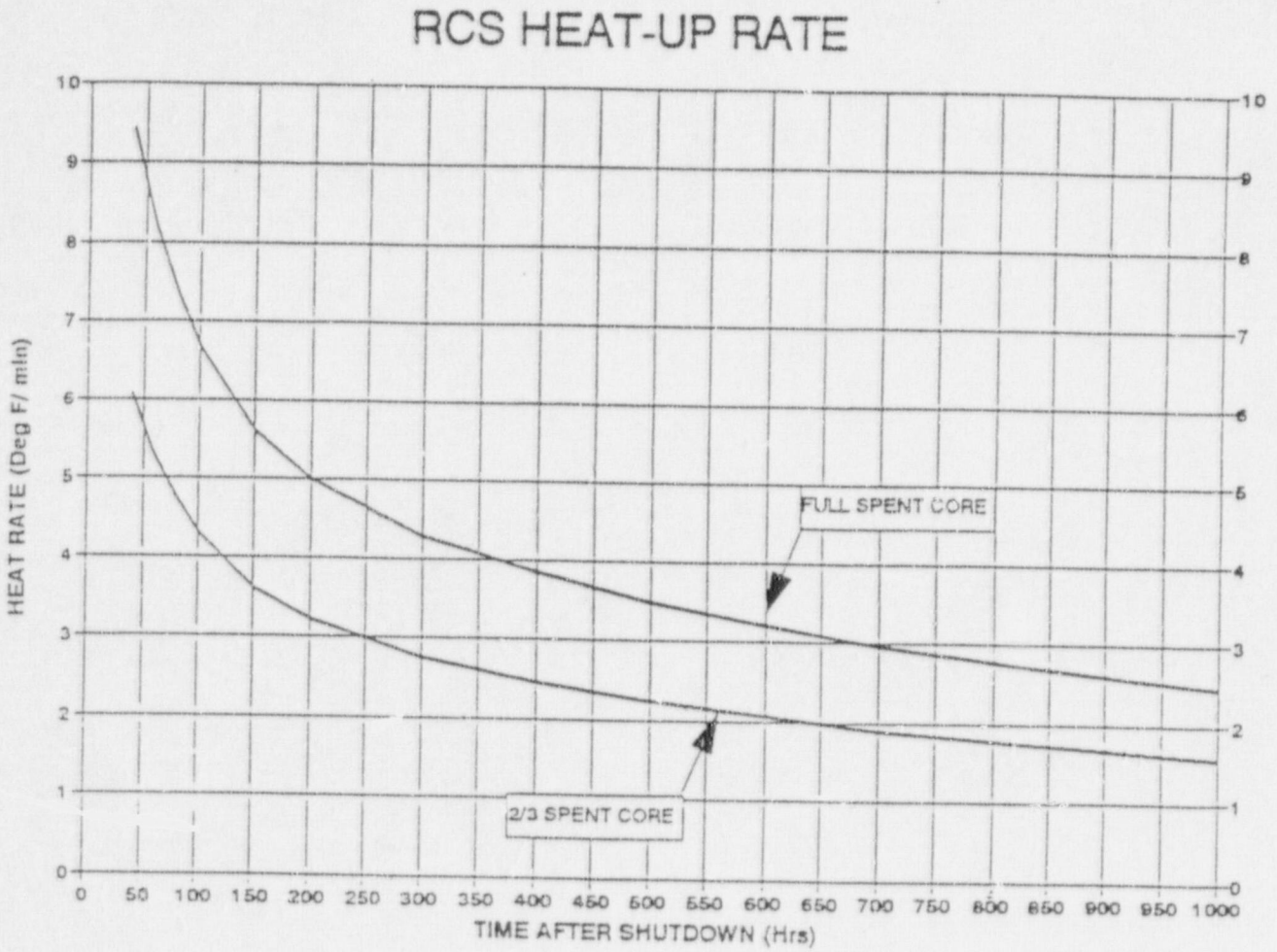
UNIT 1	UNIT 2
1-1208-U6-153 (AB-C112)	2-1208-U6-153 (AB-C09)

10. Verify Train B BIT outlet isolation valve HV-8801B BIT DISCH ISOLATION - OPEN.

11. Maintain desired charging flow as shown on FI-0917A using HV-0190B CCP-B SAFETY GRADE CHARGING.

END OF ATTACHMENT A

Sheet 1 of 1



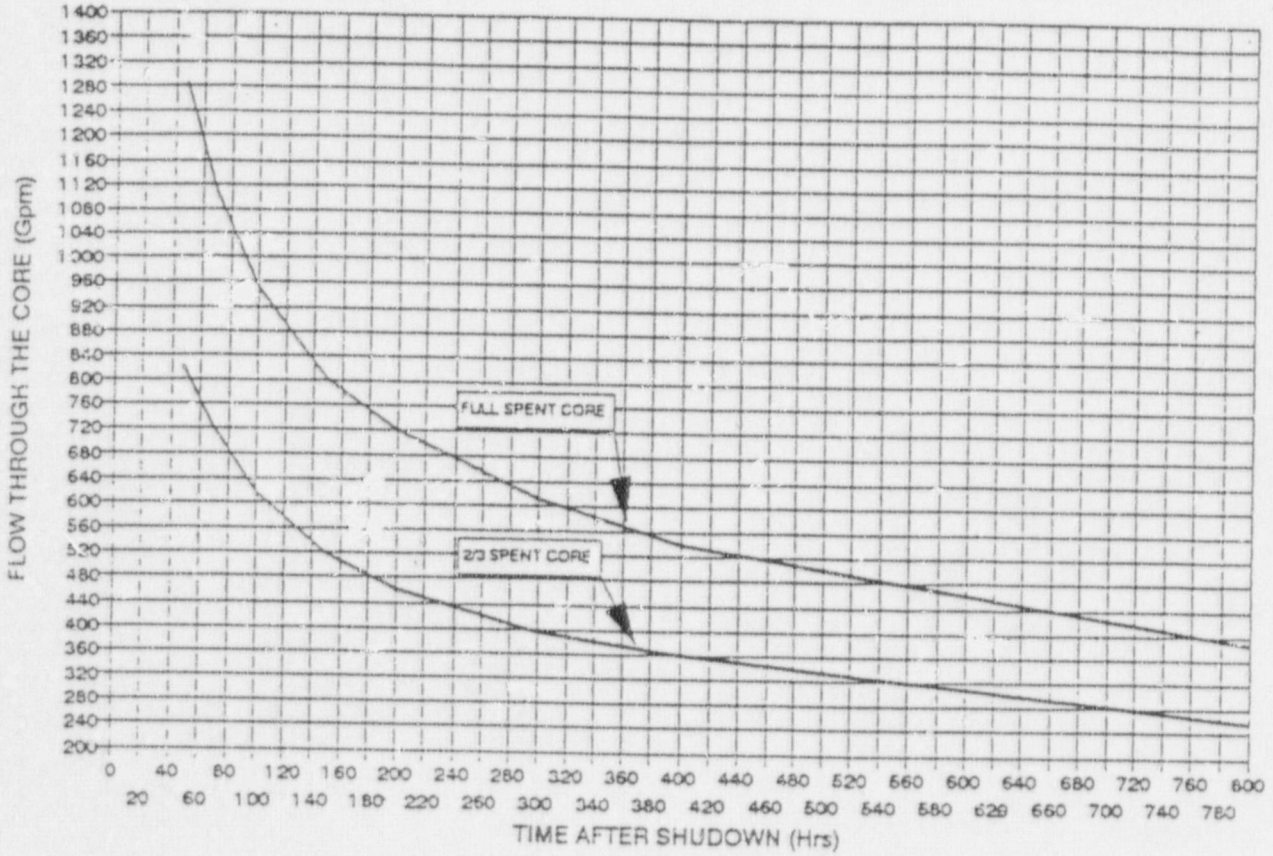
Assumptions:

1) Mid Loop Conditions
2) RCS Vented To Atmosphere With or Without Loop Dams

FIGURE 1 - HEATUP RATE

Sheet 1 of 1

CORE FLOW TO MAINTAIN 195 Deg F vs. TIME AFTER REACTOR SHUTDOWN



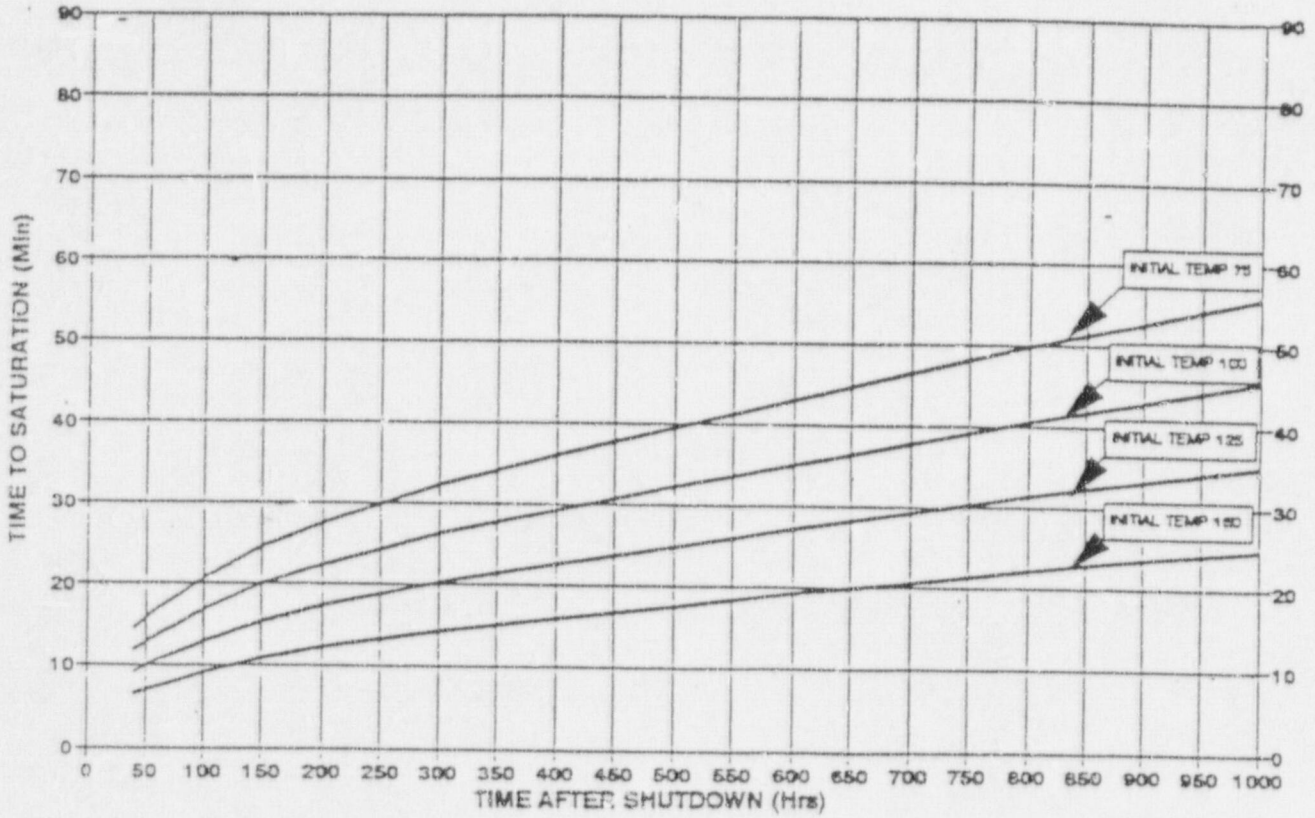
Assumptions:

1) Mid Loop Conditions
2) RCS Vented To Atmosphere
3) Injection Flow Assumed a 100 Degrees F From RWST

FIGURE 2 - CORE FLOW TO MAINTAIN 195 DEGREES F VERSUS TIME AFTER REACTOR SHUTDOWN

Sheet 1 of 1

RCS TIME TO SATURATION (FULL SPENT CORE)



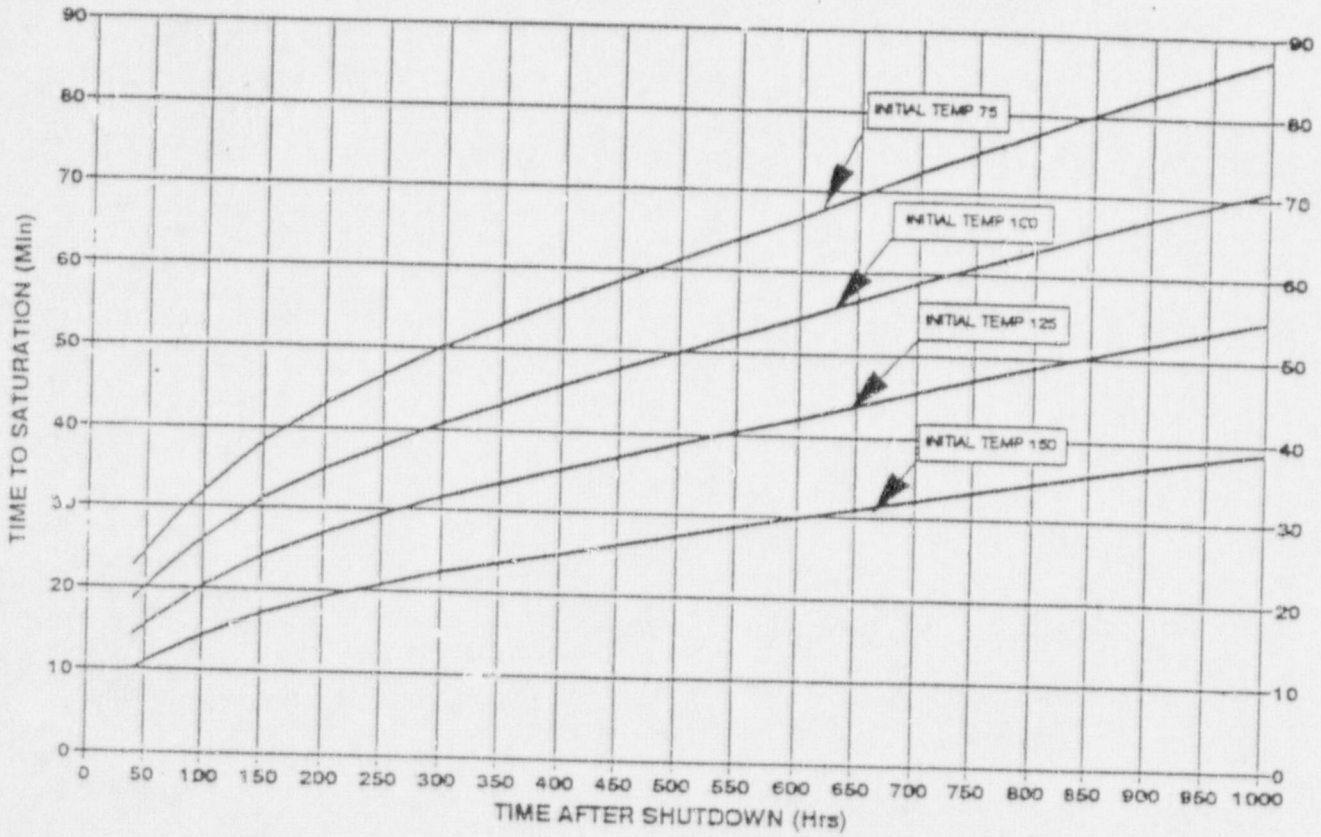
Assumptions:

1) Full Spent Core Heat Load Assumes 193 Assemblies at 40,000 MWD/MTU are Residing in the Core
2) Mid Loop Conditions
3) RCS Vented To Atmosphere With or Without Loop Dams

FIGURE 3 - TIME TO BOILING

Sheet 1 of 1

RCS TIME TO SATURATION (2/3 SPENT CORE)



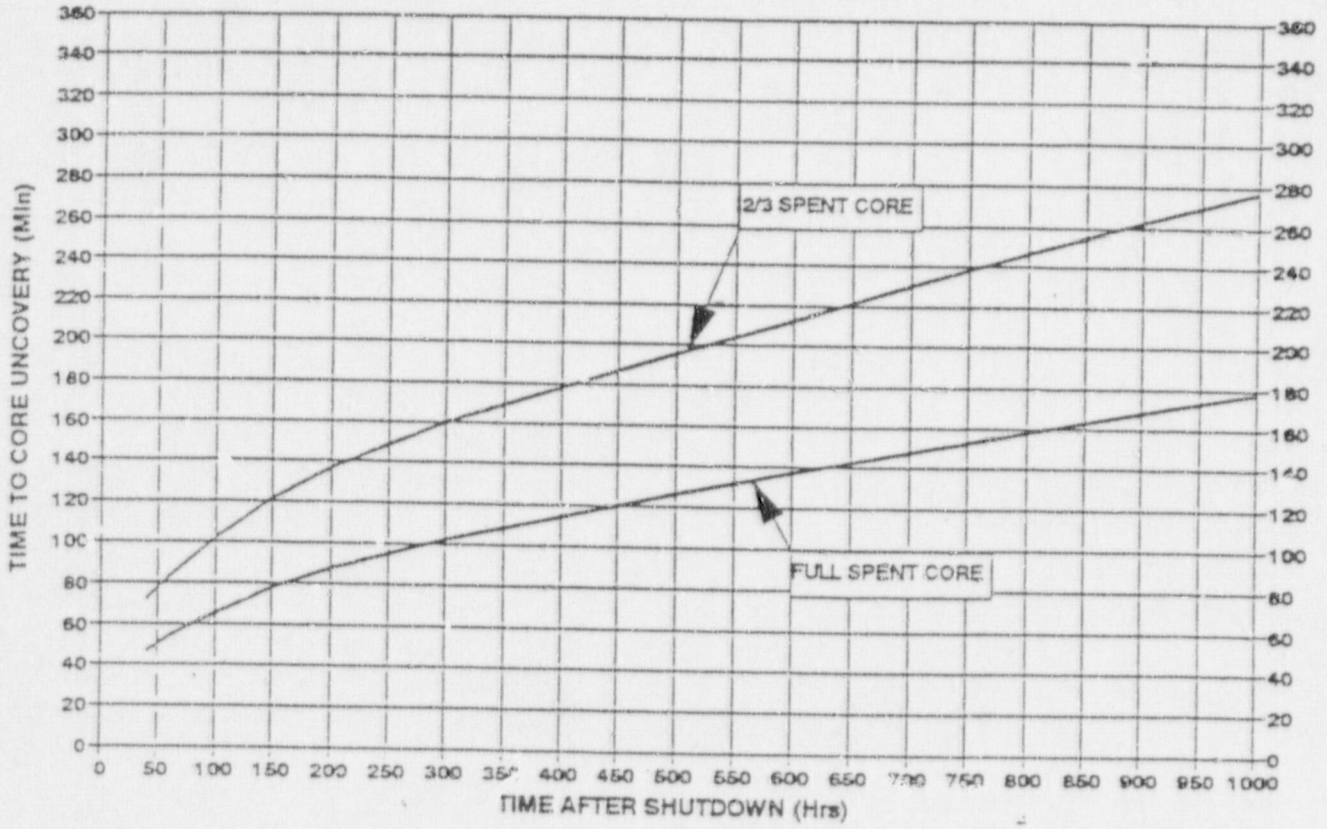
Assumptions:

1) 2/3 Spent Core Heat Load Assumes 125 Assemblies at 35,000 MWD/MTU are Residing in the Core
2) Mid Loop Conditions
3) RCS Vented To Atmosphere With or Without Loop Dams

FIGURE 4 - TIME TO BOILING

Sheet 1 of 1

TIME TO CORE UNCOVERY
(RCS TEMPERATURE AT SATURATION)



Assumptions:

1) Initial RCS Temperature is 212 Degrees F
2) Initial RCS Level at Mid-Loop
3) RCS Vented to Atmosphere With or Without Loop Dams

FIGURE 5 - TIME FOR CORE UNCOVERY