



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

October 9, 1998

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

FROM: Laura Hurley, Licensing Assistant
Operations Branch, Region IV

SUBJECT: OPERATOR LICENSING EXAMINATIONS ADMINISTERED ON
JUNE 2-4, 1998, AT SOUTH TEXAS PROJECT

DOCKETS #50-498/499

On June 2-4, 1998, 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 the initial exam submittal 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.

If you have any questions, please contact Laura Hurley, Licensing Assistant, Operations Branch, Region IV at (817) 860-8253.

7810190282 981009
PDR ADOCK 05000498
V PDR



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

JUL 14 1998

William T. Cottle, President and
Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, Texas 77483

SUBJECT: NRC INSPECTION REPORT 50-498/98-301; 50-499/98-301

Dear Mr. Cottle:

From June 1-4, 1998, an operator licensing certification inspection was conducted at your South Texas Project Electric Generating Station, Units 1 and 2 reactor facilities. The enclosed report presents the scope and results of that inspection

This inspection included an evaluation of six applicants for senior operator licenses. We determined that five of the six applicants satisfied the requirements of 10 CFR Part 55 and the licenses have been issued.

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 (PDR).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

John L. Prillet, Chief
Operations Branch
Division of Reactor Safety

Docket Nos.: 50-498; 50-499
License Nos.: NPF-76; NPF-80

9807170114-4P1

IE42

Enclosure:

NRC Inspection Report

50-498/98-301; 50-499/98-301

cc w/enclosure and Attachments 1-4:
Ken Coates, Manager, Nuclear Training
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, Texas 77483

cc w/enclosure and Attachments 1-3:
Lawrence E. Martin, Vice President
Nuclear Assurance & Licensing
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, Texas 77483

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, Texas 78704

Mr. M. T. Hardt/Mr. W. C. Gunst
City Public Service Board
P.O. Box 1771
San Antonio, Texas 78296

D. G. Tees/R. L. Balcom
Houston Lighting & Power Company
P.O. Box 1700
Houston, Texas 77251

Jon C. Wood
Matthews & Branscomb
One Alamo Center
106 S. St. Mary's Street, Suite 700
San Antonio, Texas 78205-3692

Jack R. Newman, Esq.
Morgan, Lewis & Bockius
1800 M. Street, N.W.
Washington, D.C. 20036-5869

Mr. G. E. Vaughn/Mr. C. A. Johnson
Central Power & Light Company
P.O. Box 289
Mail Code: N5012
Wadsworth, Texas 77483

INPO
Records Center
700 Galleria Parkway
Atlanta, Georgia 30339-5957

Bureau of Radiation Control
State of Texas
1100 West 49th Street
Austin, Texas 78756

Mr. Jim Calloway
Texas Public Utility Commission
William B. Travis Building
1701 North Congress Avenue
P.O. Box 13326
Austin, Texas 78701-3326

John Howard, Director
Environmental and Natural Resources Policy
Office of the Governor
P.O. Box 12428
Austin, Texas 78711

Judge, Matagorda County
Matagorda County Courthouse
1700 Seventh Street
Bay City, Texas 77414

E-Mail report to T. Frye (TJF)
E-Mail report to D. Lange (DJL)
E-Mail report to NRR Event Tracking System (IPAS)
E-Mail report to Document Control Desk (DOCDESK)

bcc to DCD (IE01)(IE42)

bcc distrib. by RIV w/enclosure and Attachments 1-3:

- | | |
|--------------------------|--------------------------------|
| Regional Administrator | Resident Inspector |
| DRS Director | DRS Deputy Director |
| DRP Director | DRS-PSB |
| Branch Chief (DRP/A) | MIS System |
| Project Engineer (DRP/A) | RIV File |
| Branch Chief (DRP/TSS) | R. Bachmann, OGC (MS: 15-B-18) |

bcc w/enclosure and Attachments 1-4:
R. Gallo (HOLB/NRR) (MS: 9D4)
L. Hurley

DOCUMENT NAME: R:_stp\st8301rp.hfb

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:SRÉ:OB	RE:OB	N	C:OB	N	C:PBA	N	C:OB	N
HFBundy/mb	RELantz		JLPellet		JITapia		JLPellet	
07/19/98	07/19/98		07/19/98		07/19/98		07/13/98	

OFFICIAL RECORD COPY

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-498; 50-499
License Nos.: NPF-76; NPF-80
Report No.: 50-498/98-301; 50-499/98-301
Licensee: STP Nuclear Operating Company
Facility: South Texas Project Electric Generating Station, Units 1 and 2
Location: FM 521 - 8 miles west of Wadsworth
Wadsworth, Texas
Dates: June 1-4, 1998
Inspectors: Howard F. Bundy, Chief Examiner
Ryan E. Lantz, Reactor Engineer, Examiner/Inspector
Approved By: John L. Pellet, Chief, Operations Branch
Division of Reactor Safety

ATTACHMENTS:

Attachment 1: Supplemental Information
Attachment 2: Simulation Facility Report
Attachment 3: Post-Examination Comments
Attachment 4: Final Written Examination and Answer Key

9807170133 11 pp

EXECUTIVE SUMMARY

South Texas Project Electric Generating Station, Units 1 and 2
NRC Inspection Report 50-498/98-301; 50-499/98-301

NRC examiners evaluated the competency of six senior operator applicants for issuance of operating licenses at the South Texas Project Electric Generating Station, Units 1 and 2. The licensee developed the initial license examinations using the guidance in NUREG-1021, Interim Revision 8, January 1997. NRC examiners reviewed and approved the examinations. The initial written examinations were administered to all six applicants on June 30, 1998, by facility proctors in accordance with the guidance in NUREG-1021, Interim Revision 8. The NRC examiners administered the operating tests June 2-4, 1998.

Operations

- Five of the six applicants for senior operator licenses passed their examinations. Applicants demonstrated effective oversight and good communication techniques during the dynamic scenarios. A common applicant performance weakness involving clearance order review was identified in that the majority of the applicants failed to or were slow in identifying that component cooling water had not been designated for isolation for overhaul of a residual heat removal pump (Sections O4.1 and O4.2).
- The examination submitted was adequate for administration and required only limited enhancement and editorial corrections. The senior operators assigned for examination validation provided valuable enhancement suggestions. The licensee staff was highly responsive to incorporating enhancement suggestions developed during the review process (Section O5.1).

Report Details

Summary of Plant Status

Both units operated at 100 percent power for the duration of this inspection.

I. Operations

04 Operator Knowledge and Performance

04.1 Initial Written Examination

a. Inspection Scope

On June 30, 1998, the facility licensee proctored the administration of the written examination, approved by the chief examiner and NRC Region IV supervision, to six individuals who had applied for upgrading their reactor operator licenses to senior operator licenses. The licensee proposed grading for the written examinations and evaluated the results for question validity and generic weaknesses. The examiners reviewed the licensee's results.

b. Observations and Findings

Five of the six applicants passed the written examination. Written examination scores ranged from a low of 73 to a high of 91 percent with an average of 84 percent overall and a lowest passing score of percent. Greater than 50 percent of the applicants missed 16 questions. Post-examination review by the licensee indicated that the questions missed were primarily due to isolated knowledge and training weaknesses. However, no broad scoped commonalities were determined from the missed question analysis. The licensee's post-examination review resulted in the recommendation that the answer for Question 57 be changed to accept both choices 'A' and 'D' as correct. The proposed change was accepted based on the technical merits and the examinations were evaluated incorporating this change. The licensee's post examination comments are included in Attachment 3.

c. Conclusions

Five of the six license applicants passed the written examinations. No broad knowledge or training weaknesses were identified as a result of evaluation of the graded examinations.

04.2 Initial Operating Test

a. Inspection Scope

The examination team administered the various parts of the operating examination to the six applicants on June 2-4, 1998. Each applicant participated in three scenarios. However, each applicant was formally evaluated for senior operator license only for the scenario in which he participated as the control room senior operator in charge. Each applicant also received a control room and facilities walkthrough test, which consisted of five tasks with followup questions, and an administrative test, which consisted of five tasks in four administrative areas.

b. Observations and Findings

All applicants passed all sections of the operating test. The examiners noted appropriate use of peer and self-checking practices in all areas of the examinations. When evaluated in the senior operator in charge position for the dynamic scenarios, all applicants demonstrated effective oversight and good communication techniques. The applicants displayed effective application of technical specifications and emergency and abnormal procedures.

The applicants generally performed well on the systems and facility walkthrough and administrative tasks. However, on one administrative task the majority of the applicants failed to or were slow in identifying that component cooling water had not been designated for isolation as reviewed during review of a clearance order for overhaul of a residual heat removal pump.

c. Conclusions

All six applicants passed all parts of the operating test. Applicants demonstrated effective oversight and good communication techniques during the dynamic scenarios. The examiners identified a common applicant performance weakness involving clearance order review in that the majority of the applicants failed to or were slow in identifying that component cooling water had not been designated for isolation for overhaul of a residual heat removal pump.

05 Operator Training and Qualification

05.1 Initial Licensing Examination Development

The facility licensee developed the initial licensing examination in accordance with NUREG-1021, Interim Revision 8, "Operator Licensing Examination Standards for Power Reactors."

05.1.1 Examination Outline

a. Inspection Scope

The facility licensee submitted the initial examination outline on December 17, 1997. The chief examiner reviewed the submittal against the requirements of NUREG-1021, Interim Revision 8.

b. Observations and Findings

Region IV approved the initial examination outline with minor comments for enhancement, which were promptly resolved, and advised the licensee to proceed with examination development.

c. Conclusions

The licensee submitted an examination outline in a timely manner, which required only minor revisions for enhancement.

05.1.2 Examination Package

a. Inspection Scope

The facility licensee submitted the completed draft examination package on February 27, 1998. Prior to formal submittal of the examination package, meetings were held in the Region IV office on January 27 and February 12, 1998, to discuss examination development issues. These meetings were attended by licensee representatives J. Calvert, Operations Training Manager, and M. DeFrees, Licensed Operator Training Supervisor, and the chief examiner and operations branch chief. The chief examiner reviewed the submittal against the requirements of NUREG-1021, Interim Revision 8. An onsite review of the revised examination was conducted during the period March 20-23, 1998.

b. Observations and Findings

The draft written examination contained 100 questions. The questions were predominantly new for this examination. The draft examination was considered technically valid, to discriminate at the proper level, and responsive to the sample plan submitted by the licensee on December 17, 1997. The chief examiner provided enhancement suggestions on 11 questions, which were appropriately incorporated by the licensee. The suggested enhancements generally related to clarity of the question stem and distractor plausibility. The chief examiner also identified an error in the answer for original Question 73, which related to the definition of core alterations. The licensee replaced this question and initiated a station condition report to investigate a potential discrepancy in fuel handling procedures. In addition, the licensee changed the wording

on several other questions in response to a generic chief examiner comment regarding minor grammatical errors. Finally, prior to administration, the licensee modified Question 37 to reflect deletion of the original reference and enhanced the distractors on Question 48. Minor editorial changes were made to 4 other questions.

The operating test consisted of dynamic scenarios, administrative tasks, and system tasks with followup questions. The licensee submitted four dynamic scenarios, including one backup scenario, which was not used during the examination. The submitted scenarios conformed to NUREG-1021. The licensee subsequently incorporated several minor enhancement suggestions provided by the chief examiner and the licensee validation crew during the week of March 20, 1998.

To support the administrative section of the operating test the licensee submitted five administrative tasks. Although the submitted tasks were satisfactory test items, enhancements, and clarifications were necessary for each task in response to chief examiner questions and comments. Also, during the onsite review it was discovered the answer for Job Performance Measure A3, "Review a Tagout," was not complete and further changes were necessary. In addition, the onsite validation time for Job Performance Measure A3 was in excess of one hour, which required a reduction in task scope. Enhancements were made to other job performance measures during the onsite review.

To support the systems walkthrough section of the operating test, the licensee submitted five system job performance measures with two followup questions associated with each. The chief examiner provided only one editorial comment on the job performance measures. However, several enhancements were made to the job performance measures during the onsite review. Also, it was necessary to modify the cues to clarify the scope of the task for Job Performance Measure 3, "Place a Class 1E 125V DC Battery Charger in Service."

Many of the enhancements made to the operating test during the onsite review were directly attributable to comments and suggestions by the validation crew, which was comprised of senior operator members of an off-duty shift crew.

c. Conclusions

The examination submitted was adequate for administration and required only limited enhancement and editorial corrections. The meetings with licensee training representatives in the Region IV office were instrumental in achieving a satisfactory examination submittal. The senior operators assigned for examination validation provided valuable enhancement suggestions. The licensee staff was highly responsive to incorporating enhancement suggestions developed during the review process.

05.2 Simulation Facility Performance

a. Inspection Scope

The examiners observed simulator performance with regard to fidelity during the examination validation and administration.

b. Observations and Findings

The simulation facility supported the validation and administration of the examination well. However, as discussed in Attachment 2, there were general failures on two occasions for one scenario during the onsite review and an identical failure during examination administration. The failures had minimal impact on the review effort. However, the failure during examination administration required use of the backup scenario for one crew. No other fidelity problems were observed.

c. Conclusions

The simulator and simulator staff supported the examinations well. General simulator failures had minimal impact on examination review and slight impact on examination administration.

05.3 Examination Security

a. Scope

The examiners reviewed examination security both during on site preparation week and examination administration week for compliance with NUREG-1021 requirements.

b. Observations and Findings

Members of the licensee's operations and training staff signed onto the NUREG-1021 approved examination security agreement acknowledging their responsibilities for examination security. The licensee maintained secure areas for examination development, review, validation, and administration. Signs were conspicuously posted to avoid inadvertent unauthorized access, and doors were maintained locked with good key control to ensure proper access to sensitive areas. Applicants were maintained under constant supervision and were always escorted to and from examination points. Simulator security was strictly complied with.

c. Conclusions

Effective examination security was maintained.

V. Management Meetings

X1 Exit Meeting Summary

The chief examiner presented the preliminary inspection results to members of the licensee management at the conclusion of the operating test administration on June 4, 1998. Final results of the inspection were presented by Mr. John Pellet during a telephone conference with Mr. Mike DeFrees on July 8, 1998. The licensee acknowledged the findings presented.

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

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Calvert, Manager, Operations Training
G. Chitwood, Examination Lead
K. Coates, Manager, Nuclear Training
M. DeFrees, Lead Instructor, Licensed Operator Training
W. Dowdy, Unit 2 Operations Manager
J. Lovell, Manager, Generation Support
K. Struble, Instructor, Licensed Operator Training

NRC

G. Guerra, Resident Inspector

INSPECTION PROCEDURE USED

NUREG-1021 "Operator Licensing Examination Standards for Power Reactors,"
Interim Revision 8

ATTACHMENT 2

SIMULATION FACILITY REPORT

Facility Licensee: STP Nuclear Operating Company

Facility Docket: 50-498, 50-499

Operating Examinations Administered at: STP Electric Generating Station, Units 1 and 2

Operating Examinations Administered on: June 2-4, 1998

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

Deficiency identified During Examination Preparation

- During scenario validation, RCFC 11A outlet air temperature indicator was reading 150° F when actual temperature was 62° F. Replaced sticking meter to correct erroneous reading.
- The F.B. exhaust filter train isolation dampers took an unrealistically long time to close during realignment of F.B. VAC while performing POP05-EO-EO00, i.e., 13 to 17 seconds versus 7 seconds expected in the plant. The stroke time was adjusted in the simulator.
- During a LOCA the simulator stopped responding and the audible simulator trouble alarm actuated on two occasions. On the third attempt, the simulator performed as expected.

Deficiency Identified During Examination Administration

- Despite the simulator staff's unsuccessful attempts to reproduce the simulator failure several times prior to examination administration, it recurred at the identical point in the LOCA scenario during applicant evaluation.

ATTACHMENT 3

SOUTH TEXAS PROJECT
WRITTEN EXAM (6/30/98)

POST-EXAM APPLICANT COMMENTS

QUESTION 57, ANSWER 'D'

REFERENCES: 0POP05-EO-F002, Core Cooling Critical Safety Function Status Tree
0POP05-EO-FRC3, Response to Saturated Core Cooling, Step 2

COMMENT: Use of High Head Injection (Answer 'S') is also an 'appropriate method' to use under the specified circumstances.

RESOLUTION: Comment accepted. Accept choices 'A' and 'D'. Choice 'A' was originally thought to be incorrect based on not being applicable unless RCS pressure was below 1745 psig. The question stem specified an RCS pressure of 1785 psig. However, 0POP05-EO-FRC3, Response to Saturated Core Cooling, Step 2b, has the operators establish HHSI flow regardless of whether pressure is above or below 1745 psig. The importance of being above or below 1745 psig is related to whether charging flow should be established, not HHSI flow.

ATTACHMENT 4

FINAL WRITTEN EXAMINATION AND ANSWER KEY

STP SRO EXAM KEY

- | | | |
|-------|----------------------------|--------|
| 1) A | 35) D | 69) B |
| 2) C | 36) A | 70) B |
| 3) D | 37) A | 71) A |
| 4) B | 38) A | 72) B |
| 5) D | 39) C | 73) D |
| 6) A | 40) D | 74) B |
| 7) B | 41) A | 75) C |
| 8) C | 42) B | 76) A |
| 9) D | 43) C | 77) C |
| 10) C | 44) D | 78) C |
| 11) A | 45) C | 79) B |
| 12) D | 46) C | 80) A |
| 13) B | 47) B | 81) B |
| 14) C | 48) B | 82) D |
| 15) B | 49) D | 83) C |
| 16) A | 50) C | 84) B |
| 17) D | 51) B | 85) C |
| 18) D | 52) D | 86) B |
| 19) A | 53) C | 87) C |
| 20) A | 54) C | 88) C |
| 21) A | 55) B | 89) C |
| 22) D | 56) B | 90) D |
| 23) A | 57) D or A <i>W 2-1-98</i> | 91) A |
| 24) D | 58) B | 92) C |
| 25) B | 59) A | 93) A |
| 26) D | 60) D | 94) B |
| 27) A | 61) B | 95) A |
| 28) A | 62) B | 96) D |
| 29) B | 63) D | 97) B |
| 30) C | 64) C | 98) D |
| 31) B | 65) A | 99) A |
| 32) A | 66) D | 100) C |
| 33) A | 67) D | |
| 34) C | 68) D | |

ANSWER USAGE BY LETTER: A) 25
B) 26
C) 24
D) 25

U.S. Nuclear Regulatory Commission Site-Specific Written Examination

Applicant Information

Name:	Region: IV
Date: 6/30/98	Facility/Unit: South Texas Project
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. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

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

QUESTION 1:

A fire has been detected in the Post Accident Sampling System (PASS) Room. The security card reader controlling access to the Fuel Handling Building is inoperable, preventing entry.

Which ONE of the following individuals may be issued a Vital Area Security Key from the Controlled Key Locker to access this area in accordance with OPOP01-ZA-0019, Operation Key Control?

- A. Fire Brigade Leader
- B. Fire Protection Coordinator
- C. Health Physics Supervisor
- D. Chemical Analysis Supervisor

QUESTION 2:

Consider the following plant conditions:

- Plant was initially at 100% power
- RCS leak through a weld crack on a pressurizer level detector lower tap occurred
- A plant shutdown has been initiated

Based on this information, the NRC must be notified within _____ followed by a 30 day report (LER).

- A. 15 minutes
- B. 30 minutes
- C. 1 hour
- D. 4 hours

QUESTION 3:

Given the following:

- Both Units are at full power with one hour left until shift turnover.
- Current shift manning is as follows:

	UNIT 1	UNIT 2
SS	1	1
US	2 (1 is Field Sup.)	2 (1 is Field Sup. and STA)
RO	2	2 (Extra RO left due to emergency)
PO	4	6

- The Unit 1 Unit Supervisor, Field Supervisor and Reactor Operator are injured during a midshift plant tour and are taken to first aid for treatment and observation

Per Technical Specifications, which ONE of the following actions must be taken if this condition exists until shift turnover?

- Unit 1 minimum shift crew composition is met and no further action is needed.
- Unit 1 minimum shift crew composition is met provided the Unit 2 STA assumes the Unit 1 Unit Supervisor position.
- Unit 1 minimum shift crew composition is NOT met and the unit must enter T.S. 3.0.3 if the proper crew composition is not met within 2 hours.
- Unit 1 minimum shift crew composition is NOT met and no further action is required other than the continual efforts to restore crew composition.

QUESTION 4:

Unit 1 is operating at 100% power when a valid High Alarm is received on RT-8013, RCB Purge Exhaust Monitor.

Which ONE of the following radiation monitors is now inoperable?

- A. RCB High Range Radiation Monitor (RT-8051)
- B. RCB Atmosphere Radiation Monitor (RT-8011)
- C. Unit Vent Stack Monitor (RT-8010A)
- D. GWPS Outlet Radiation Monitor (RT-8032)

QUESTION 5:

The unit is at 2% power during a plant startup following a refueling outage.

Which ONE of the following conditions requires entry into a Technical Specification action statement?

- A. Core Physics testing has determined that the Axial Flux Difference is outside the target band specified in the COLR.
- B. Primary containment internal pressure is at -0.05 psig during Supplementary Purge operation.
- C. "A" Safety Injection Accumulator nitrogen pressure is 660 psig.
- D. Intermediate Range Nuclear Instrument Channel N35 has experienced a loss of instrument power.

QUESTION 6:

On a loss of all main feedwater at power, an AFW actuation may be initiated by the AMSAC system.

During a power decrease, which ONE of the following signals causes the C20 AMSAC BLOCKED permissive status light to illuminate?

- A. < 30% Turbine Power
- B. < 30% Reactor Power
- C. < 40% Turbine Power
- D. < 40% Reactor Power

QUESTION 7:

Unit 1 is operating at 100% power with all systems in their normal lineup. A small RCS leak develops in the Chemical Volume and Control System (CVCS) with the following Control Room indications:

- Pressurizer level indicates 50% and is decreasing
- RCS pressure indicates 2220 psig and is stable
- Containment pressure is normal
- OUTLET PRESSURE PI-0135 indicates 0 psig
- PRT PRESS HI alarm is illuminated
- LETDN HX OUTL FLOW HI/LO alarm is illuminated
- ERFDAL'S Points (2) CVCS LTDN AREA TEMP TRN HI are in alarm

Based on these indications, which ONE of the following AUTOMATIC actions has taken place?

- A. TCV-0143, Letdown Temperature Divert Valve, positioned to the VCT
- B. MOV-0023/0024, Letdown Line Containment Isolation Valves, closed
- C. FV-0011, Letdown Header Orifice Isolation Valve, closed
- D. PCV-0135, Letdown Pressure Control Valve, opened

QUESTION 8:

Given the following:

- Pressurizer variable heaters are energized
- Pressurizer backup heaters are in AUTO control
- RCS pressure is at 2000 psig

Assuming no operator action, if pressurizer level decreases to 14%, then is restored to 25%, which ONE of the following describes the condition of the pressurizer heaters?

- A. Backup and variable heaters will be off.
- B. Backup and variable heaters will be on.
- C. Backup heaters will be on and variable heaters will be off.
- D. Backup heaters will be off and variable heaters will be on.

QUESTION 9:

Unit 2 is preparing to fill the reactor cavity for refueling. A few minutes after LHSI pump 2A is started, RHR PUMP 2A DISCH FLOW LO and RHR PUMP 2A TRIP alarms are received.

Which ONE of the following is the reason for the trip of the operating RHR pump?

- A. RHR relief valve has opened causing discharge flow to decrease to < 925 gpm for > 5 seconds.
- B. Start of LHSI pump 2A has caused RHR pump 2A mini flow recirc valve to close and discharge flow has decreased to < 925 gpm for > 10 seconds.
- C. RHR inlet pressure has increased to > 350 psig causing the inlet isolation valves to close reducing discharge flow to < 925 gpm for > 10 seconds.
- D. Start of LHSI pump 2A has caused RHR pump 2A to become dead headed and discharge flow has decreased to < 925 gpm for > 5 seconds.

QUESTION 10:

When in Mid-Loop Operations, which ONE of the following set of conditions indicate that an RHR Pump is AIR BOUND?

- A. Pump Current - HIGH
Pump Flow - LOW
- B. Pump Current - HIGH
Pump Flow - HIGH
- C. Pump Current - LOW
Pump Flow - LOW
- D. Pump Current - FLUCTUATING
Pump Flow - FLUCTUATING

QUESTION 11:

Unit 1 refueling is in progress. The refueling machine operator is inserting a fuel assembly into the In-Containment storage area.

Which ONE of the following cautions should be observed while lowering the fuel assembly into the In-Containment storage racks?

- A. Use a slow speed while entering the storage racks until the bottom of the fuel assembly has entered.
- B. Monitor the weight indicator continuously for an unexpected decrease of 50 pounds which would require operators to stop lowering the fuel assembly.
- C. Use the Gripper Mast Down (red) light to determine the assembly is fully lowered and can be disengaged.
- D. Monitor the Z-axis tape continuously to ensure the mast is not lowered below the mast disengagement position.

QUESTION 12:

Given the following:

- Unit 1 is in Mode 6.
- 50 fuel assemblies have been reloaded after a complete core off-load.
- RHR Train A is in service maintaining RCS temperature 90°F.
- RHR Train A loop boron concentration at last sample: 2950 ppm.
- Source Range NI channel 31 indicates 10 cps and is selected for audible count rate indication.
- Source Range NI channel 32 indicates 5 cps.
- Both Extended Range NI detectors are operable

In accordance with OPOP08-FH-0009, Core Refueling, which ONE of the following conditions requires suspension of Core Alterations and an investigation by the Core Loading Supervisor prior to resuming Core Alterations?

- A. Source Range NI channel 31 increases to 40 cps.
- B. Updated log reading on RHR Train A inlet temperature indicates 98°F.
- C. Source Range NI channel 32 suffers a loss of instrument power.
- D. Updated RHR Train A boron concentrations on two consecutive samples indicate 2920 ppm.

QUESTION 13:

Given the following:

- Unit 1 has just experienced a Loss of All AC Power
- OPOP05-EO-EC00 is in progress
- An RCS leak inside containment causes RCB pressure to rise to 11.0 psig.
- Efforts are underway to restore power to at least one 4160 VAC ESF bus.
- The STA reports that an ORANGE Path condition exists on Containment Integrity Critical Safety Function (CSF) Status Tree.

Which ONE of the following describes the action(s) that should be taken?

- A. OPOP05-EO-FRZ1 should be entered to address the loss of containment integrity safety function.
- B. OPOP05-EO-FRZ1 should NOT be entered because it is assumed that at least one ESF bus will be energized during any Functional Restoration Procedure.
- C. OPOP05-EO-FRZ1 should be entered only when containment pressure rises to indicate a RED path on the Containment Integrity CSF.
- D. OPOP05-EO-FRZ1 should NOT be entered because the loss of power makes the critical safety function status monitoring inaccurate.

QUESTION 14:

OPOP05-EO-EC00, Loss of All AC Power contains the immediate action step:
"Verify Turbine Trip."

Which ONE of the following statements describes the BASIS for this step?

- A. Prevent an inadvertent Safety Injection
- B. Prevent an inadvertent Main Steam Line Isolation
- C. Prevent an uncontrolled cooldown of the RCS
- D. Prevent steam generator inventory depletion

QUESTION 15:

Given the following:

- The reactor has tripped from 100% power operation
- Three (3) Control Rods did not fully insert
- Reactor power is at 1E-6% and decreasing
- Boration is in progress at 25 gpm
- Reactor Trip Response (OPOP05-EO-ES01) is in progress

The Subcriticality Critical Safety Function (CSF):

- A. is satisfied and boration can be secured.
- B. is satisfied, but boration must continue until shutdown margin is established.
- C. is NOT satisfied because boration must be greater than 30 gpm per Tech Specs.
- D. is NOT satisfied because more than one (1) control rod is not fully inserted.

QUESTION 16:

OPOP05-EO-FRS1, Response to Nuclear Power Generation - ATWS, Step 4.g. directs the operator to check pressurizer pressure less than 2335 psig.

Which ONE of the following is the basis for this step?

- A. Verify RCS pressure is not high enough to reduce charging injection into the RCS.
- B. Verify RCS pressure will not challenge a pressurizer PORV.
- C. Verify RCS pressure has stabilized following the initial heatup and insurge into the pressurizer.
- D. Verify pressurizer PORVs are functioning to limit the RCS pressure increase.

QUESTION 17:

A condition has occurred which warrants entry into OPOP04-CV-0003, Emergency Boration. While attempting to borate using the Normal Emergency Boration flowpath, both boric acid pumps fail to start.

Which ONE of the following PAIRS of Emergency Boration flowpaths are used in this condition?

- A. Through Alternate Boration Isolation MOV-0218A OR
Emergency Boration via Gravity Feed
- B. Through Alternate Boration Isolation MOV-0218A OR
Through Manual Alternate Immediate Borate 1(2)-CV-0221
- C. Through Manual Alternate Immediate Borate 1(2)-CV-0221 OR
Emergency Borate from the RWST
- D. Emergency Boration via Gravity Feed OR
Emergency Borate from the RWST

QUESTION 18:

Given the following:

- Unit 1 is operating at 90% power, steady-state, following a power increase
- Chemical Analysis reports that RCS samples indicate increasing RCS activity
- RT-8039, CVCS Letdown Failed Fuel Monitor is NOT in alarm
- Decontamination Factor (DF) across the inservice mixed bed demineralizer is adequate
- CVCS letdown flow is 140 gpm

Which of the following actions, directed by Chemical Analysis, are in accordance with OPO04-RC-0001, High Reactor Coolant System Activity?

- A. Maintain present letdown flowrate and place the alternate mixed bed demineralizer in service.
- B. Maintain present letdown flowrate and place the cation demineralizers in service.
- C. Maximize letdown flow and place the alternate mixed bed demineralizer in service.
- D. Maximize letdown flow and place the cation demineralizers in service.

QUESTION 19:

Given the following:

- Unit 2 is in Mode 4
- Gaseous Waste discharge from the VCT is in progress
- GWPS Inlet Header valve (FV-4657) and Discharge flow valve (FV-4671) handswitches are in the NORMAL position at the control panel
- A high alarm condition exists on RT-8032, GWPS Outlet

Which ONE of the following is the final position of the GWPS Inlet Header (FV-4657) and Discharge Flow (FV-4671) valves?

	Inlet Header Valve (FV-4657)	Discharge Flow Valve (FV-4671)
A.	CLOSED	CLOSED
B.	CLOSED	OPEN
C.	OPEN	CLOSED
D.	OPEN	OPEN

QUESTION 20:

A Small Break LOCA has occurred, primary plant conditions have been stabilized and SI has been terminated in accordance with OPOP05-EO-ES11, SI Termination. Operators have just restored MINIMUM charging flow and continue performing ES11 when the following conditions are identified:

- RCS subcooling - 45°F and stable
- Pressurizer level - 5% and stable
- Adverse Containment Conditions do NOT exist

Which ONE of the following actions will the operators perform?

- A. Increase charging flow to restore pressurizer level and continue with OPOP05-EO-ES11, SI Termination.
- B. Operate SI pumps and continue with OPOP05-EO-ES11, SI Termination.
- C. Operate SI pumps and transition to OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant.
- D. Manually initiate SI and transition to OPOP05-EO-EO00, Reactor Trip or Safety Injection.

QUESTION 21:

Given the following:

- Unit 1 was operating at steady-state 100% power
- Reactor Trip and Safety Injection actuated from low pressurizer pressure
- RCS pressure decreased rapidly to 1150 psig and is now increasing very slowly
- Pressurizer level decreased to 8% initially and then increased rapidly to stabilize at 100%
- Reactor Containment Building process radiation monitors are alarming

Which ONE of the following Loss of Primary Coolant events is the cause for these indications?

- A. Pressurizer spray line rupture
- B. Pressurizer surge line rupture
- C. Reactor head vent line rupture
- D. Incore lower guide tube rupture

QUESTION 22:

A Large Break LOCA occurred 3 hours ago and the following plant conditions presently exist:

- RCS pressure is 350 psig
- Containment pressure is 8 psig
- Containment Hydrogen concentration is 0.4%
- SG NR levels are: 1A - 32%; 1B - 40%; 1C - 28%; 1D - 12%
- Total Auxiliary Feedwater flow is 200 gpm
- Spent Fuel Pool temperature is 145°F

Which ONE of the following actions is REQUIRED to be performed in accordance with OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant?

- A. Stop LHSI pumps and place them in auto
- B. Place Hydrogen Recombiner(s) in service
- C. Increase total AFW flow to greater than 576 gpm
- D. Place Spent Fuel Pool Cooling in service

QUESTION 23:

Given the following:

- Unit 2 is at 50% power
- Rod control is in manual
- T REF/AUCT T AVG DEV annunciator is in alarm
- Rod control Temperature error meter (TI-0612) indicates + 10 degrees
- P-13 Channel 1 bistable light is extinguished
- P-13 Channel 2 bistable light is illuminated

Which ONE of the following instrument failures has occurred?

- A. Pressure Transmitter 505 has failed low
- B. T-hot instrument 413 has failed high
- C. Pressure Transmitter 506 has failed low
- D. T-cold instrument 412 has failed high

QUESTION 24:

Given the following:

- Unit 1 is at 100% power
- VCT LEVEL HI/LO alarm is received
- VCT LEVEL LO-LO alarm is received
- VCT level (on CP-004) is indicating 85%
- VCT pressure (on CP-004) is indicating 20 psig
- LCV 112A, Divert valve to RHT is indicating intermediate

Which ONE of the following instrument failures is the cause of the plant conditions?

- A. VCT Level Transmitter 112 has failed high
- B. VCT Level Transmitter 113 has failed high
- C. VCT Level Transmitter 112 has failed low
- D. VCT Level Transmitter 113 has failed low

QUESTION 25:

In OPOP05-EO-FRC1, Response to Inadequate Core Cooling which ONE of the following methods is attempted FIRST, based on it being the most effective approach to recover the core and restore core cooling?

- A. Restart of a Reactor Coolant Pump
- B. Reinitiation of High Head Safety Injection
- C. Rapid depressurization of intact Steam Generators
- D. Opening Pressurizer PORVs and Reactor Head Vent Valves

QUESTION 26:

Step 1 of OPOP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition, has the operator check that LHSI flow is greater than 500 gpm if RCS pressure is less than 415 psig.

This step is based on:

- A. ensuring adequate mixing in the cold leg downcomer region during natural circulation conditions.
- B. preventing core exit temperatures from exceeding the required temperature to place RHR in service.
- C. ensuring adequate Low Head Safety Injection cooling prior to Accumulator isolation.
- D. preventing implementation of Pressurized Thermal Shock (PTS) actions if a Large Break LOCA has occurred.

QUESTION 27:

A reactor trip with a loss of ALL feedwater has occurred. The crew has entered OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink and RCS Bleed and Feed Criteria have been met. Attempts to establish RCS Bleed and Feed produce the following conditions:

- One (1) HHSI Pump - RUNNING
- One (1) Pressurizer PORV - OPEN
- Two (2) Reactor Vessel Head Vent paths - OPEN

Based on these conditions, determine the adequacy of the RCS Bleed and Feed.

- A. Only the RCS Bleed path is NOT adequate
- B. Only the RCS Feed path is NOT adequate
- C. Both RCS Bleed and Feed paths are NOT adequate
- D. Both RCS Bleed and Feed paths are adequate

QUESTION 28:

Unit 1 has experienced a reactor trip due to an RCS leak inside containment.

- OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, is in progress.
- Containment pressure is 12 psig decreasing at 0.25 psig per minute.
- RCS temperature is 570°F
- SG pressures are: 1A - 1230 psig; 1B - 1225 psig; 1C - 1350 psig; 1D - 1150 psig
- SG NR levels are: 1A - 45%; 1B - 28%; 1C - 75%; 1D - 34%.
- OPOP05-EO-FRH2, Response to Steam Generator Overpressure, has been entered.
- An operator has been dispatched to the 1C IVC to investigate.

For the existing plant conditions, the Unit Supervisor should:

- A. NOT direct the operator to locally open the 1C SG PORV due to the potential of water hammer in the steam piping.
- B. NOT direct the operator to locally open the 1C SG PORV due to the excessive differential pressure across the valve.
- C. Direct the operator to open the 1C SG PORV to decrease pressure below the SG PORV setpoint.
- D. Direct the operator to assist maintenance in manually lifting a 1C steam safety valve to decrease pressure.

QUESTION 29:

In OPOP05-EO-ES12, Post LOCA Cooldown and Depressurization, an SI flow reduction sequence is performed to minimize leakage from the RCS while still maintaining adequate coolant inventory. An RCS Subcooling Table, which takes into account current pump status, is used to determine when the HHSI pumps are stopped.

Which of the following pump's status are accounted for in this RCS Subcooling Table?

- A. RCPs, HHSI Pumps and LHSI Pumps
- B. CCPs, HHSI Pumps and RCPs
- C. CCPs, HHSI Pumps and LHSI Pumps
- D. CCPs, LHSI Pumps and RCPs

QUESTION 30:

The following plant conditions exist:

- Small Break LOCA has occurred
- Adverse Containment conditions exist
- OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, is in progress
- Operators are checking whether RCS cooldown and depressurization is required

Which ONE of the following criteria warrants transition to OPOP05-EO-ES12, Post LOCA Cooldown and Depressurization?

- A. Pressurizer Level less than 8%
- B. RCS Subcooling less than 35°F
- C. RCS Pressure greater than 415 psig
- D. Two Hot Leg Temperatures greater than 420°F

QUESTION 31:

Given the following:

- Unit 1 is at 25% power and stable
- SG 1A level is indicating 83% NR
- SG 1B level is indicating 78% NR
- SG 1C level is indicating 89% NR
- SG 1D level is indicating 80% NR
- All systems are in their normal alignment for the current power level

Which ONE of the following lists the automatic actions that should directly result from the above conditions?

- A. Reactor trip, turbine trip, feedwater isolation bypass valves close and low power feed regulating valves close
- B. Turbine trip, operating feed pumps trip, feedwater isolation valves close and feedwater regulating valves close
- C. Reactor trip, operating feed pumps trip, feedwater isolation valves close and low power feed regulating valves close
- D. Turbine trip, operating feed pumps trip, feedwater isolation bypass valves close and feedwater regulating valves close

QUESTION 32:

During a unit shutdown, all 4 pressurizer pressure channels slowly decrease and stabilize at approximately 1960 psig activating P-11. The operator manually blocks the low pressure SI signal. Over the next 15 minutes, the pressure channels have the following trends:

- PT-455 - Slowly increases to 1984 psig, then lowers to 1860 psig
- PT-456 - Slowly increases to 1987 psig, then lowers to 1856 psig
- PT-457 - Slowly increases to 1986 psig, then lowers to 1858 psig
- PT-458 - Slowly increases to 1983 psig, then lowers to 1855 psig

Assuming all bistables trip EXACTLY on their setpoint, which ONE of the following describes what will happen during the pressure transient?

- A. P-11 will reset and a safety injection will occur
- B. P-11 will NOT reset and a safety injection will NOT occur
- C. P-11 will reset but a safety injection will NOT occur
- D. P-11 will NOT reset but a safety injection will occur

QUESTION 33:

Which ONE of the following alarm conditions is indicative of a simultaneous Digital Rod Position Indication (DRPI) Data A AND Data B failure?

LEGEND: General Warning (GW), Rod Bottom (RB), Urgent (Urg), Trouble (Troub), Rod Supervisory Monitor Rod Position Trouble Alarm (Rod Supv Mntr Rod Pos Troub), Flashing (FLASH) and Illuminated (LIT)

	DRPI GW Light	DRPI RB Light	DRPI Urgent Alarm	RPI (05M3) Trouble Alarm	DRPI Non-Urg Alarm	Rod Supv Mntr Rod Pos Troub Alarm
A.	FLASH	LIT	LIT	LIT	OFF	LIT
B.	FLASH	FLASH	LIT	OFF	LIT	LIT
C.	LIT	FLASH	LIT	LIT	LIT	OFF
D.	LIT	LIT	OFF	LIT	LIT	LIT

QUESTION 34:

Given the following conditions:

- Unit 1 is at 75% power
- Rod Control is in MANUAL
- Turbine Feedback Control is in IMP IN
- PR NI Channel 41 indicates 5% less than other PR NI Channels
- "D" Control Bank Rod D-12 DRPI Rod Bottom Light Lit
- The following Control Room Annunciators are illuminated:
 - * 5M03/F-4, ROD BOTTOM
 - * 5M03/D-5, ROD SUPV MNTR ROD POSITION TRBL
 - * 5M02/A-6, TREF/AUCT T AVG DEV
 - * 5M03/C-3, PR CHANNEL DEV

Assuming no operator actions, which ONE of the following correctly shows how the final steady state plant conditions will compare to the steady state plant conditions that existed prior to the event?

	Average Core Power	Generator MW	RCS Tavg
A.	Lower	Same	Lower
B.	Higher	Lower	Same
C.	Same	Same	Lower
D.	Same	Lower	Same

QUESTION 35:

The following plant conditions exist:

- Unit 1 is operating at 90% power
- I&C has determined that TWO control rods are untrippable

Which ONE of the following operator actions is required per OPOP04-RS-0001, Control Rod Malfunction?

- A. Maintain affected banks within 12 steps of the untrippable rods
- B. Borate the RCS until Cold Shutdown boron concentration is achieved
- C. Shutdown the reactor to Mode 3 within six hours
- D. Trip the reactor and initiate emergency boration

QUESTION 36:

Given the following:

- Unit 1 is in Mode 1 at 75% power
- Rod control is in AUTO
- Control Bank D at 235 steps
- Main turbine control in IMP OUT
- Control rods continuously withdraw for no apparent reason
- Operators place rod control in MANUAL and rod motion stops
- Operators determine that Control Bank "D" rods have withdrawn a total of 10 steps

Which ONE of the following conditions would exist?

- A. Axial Flux Difference (AFD) would become more positive/less negative.
- B. Overpower Delta Temperature trip (OPDT) setpoint would increase.
- C. Nuclear Enthalpy Rise Hot Channel Factor (HCF) would decrease.
- D. Quadrant Power Tilt Ratio (QPTR) would increase.

QUESTION 37:

Unit 1 unidentified leakage has increased to 0.5 gpm and containment entry is being planned to identify the source of the increased leakage.

In accordance with OPSP03-XC-0002A, Partial Containment Inspection, which ONE of the following is a requirement associated with the containment entry and close-out inspection?

- A. The Shift Supervisor shall resolve any question that arises concerning what constitutes loose debris and/or material.
- B. A Reactor Operator shall be the Test Coordinator for the containment entry and close-out inspection.
- C. A Health Physics Technician shall perform Form 1, Containment Pre-Entry Briefing.
- D. The Health Physics Supervisor shall be the only point of contact for determining what tools may be left in the RCB.

QUESTION 38:

Given the following:

- During a midcycle reactor startup the Reactor Containment Building (RCB) CNTMT PRESS HI/LO alarm annunciates with RCB pressure at +0.3 psig.
- T.S. 3.6.1.4 for Containment Systems Internal Pressure is entered.
- It is determined that a Supplementary Containment Purge will be performed to lower the RCB pressure.
- Four RCFC Units are in operation
- The US notes that the Reactor Containment Purge Release Permit has expired.

Which ONE of the following describes the action(s) to be taken to lower RCB pressure?

- A. The purge may be started provided Chemical Analysis concurs and a new purge request is initiated.
- B. The purge may be started provided Chemical Analysis concurs and a continuous sample is performed during the purge.
- C. The purge may NOT be started until a valid purge permit is completed and delivered to the control room.
- D. The purge may NOT be started until a valid purge permit is completed and additional RCFCs are started.

QUESTION 39:

The following plant conditions exist:

- Small break LOCA occurred 12 hours ago
- Containment pressure is 3.7 psig
- Containment temperature is 215°F
- OPOP05-EO-FRZ3, Response to High Containment Radiation Level, is entered

Which ONE of the following actions is required in accordance with FRZ3?

- A. Place the Containment Carbon Filter Units in service.
- B. Ensure all Reactor Containment Fan Coolers are running.
- C. Ensure Containment Ventilation Isolation has occurred.
- D. Sample containment atmosphere activity using the PASS.

QUESTION 40:

Given the following:

- Unit 1 is at 100% power
- ECW and CCW pumps 1A are running
- ECW and CCW pump 1B control switch is in AUTO and their ECW/CCW selector switch is in standby
- ECW and CCW pump 1C are not running and their ECW/CCW selector switch is in OFF

A ground on 4.16 KV bus E1A causes a bus lockout. The standby ECW/CCW train will start when the:

- A. 1A ECW and CCW pump breakers open
- B. CCW common header discharge pressure decreases to 80 psig
- C. 1A ECW pump discharge valve begins closing
- D. ECW trains 1A and 1C discharge pressure decreases to 20 psig

QUESTION 41:

Given the following:

- Unit 1 is in Mode 5
- RHR train 1A is in service maintaining RCS temperature 130°F
- CCP 1A is in service
- CCW trains 1A and 1C are in service
- Low pressure letdown supplied from RHR train 1A

The control room receives the CCW SURGE TK LVL LO and CCW SRG TK COMPART A LVL LO alarms. Surge tank level in the train A compartment is currently 48% and decreasing.

Which ONE of the following describes the Control Room response to existing plant conditions?

- A. Trip CCW pump 1A, place RHR train 1C in service, and secure RHR train 1A.
- B. Ensure the CCW Surge Tank Reactor Makeup Water Storage Tank makeup valve is open, monitor CCW surge tank level and trip CCW pump 1A if level decreases to < 38%.
- C. Trip CCW pump 1A, place CCP 1B in service and secure CCP 1A.
- D. Ensure the train 1A CCW to RHR heat exchanger inlet valve is open, place RHR train 1C in service, and align low pressure letdown to RHR train 1C.

QUESTION 42:

A plant shutdown to Hot Standby is in progress with reactor power well below the POAH. As control bank rods are being inserted, the following conditions occur:

- Permissive P-6 clears at the expected setpoint
- Both Source Range NIs fail to automatically re-energize
- Reactor power is decreased to 5.0 E-11 amps on the Intermediate Range and the Primary RO is directed to manually energize the Source Range NIs.

Which ONE of the following Source Range NI readings is expected at this reactor power level?

- A. $> 5.0 \text{ E}4$ and $\leq 5.0 \text{ E}5$
- B. $> 5.0 \text{ E}3$ and $\leq 5.0 \text{ E}4$
- C. $> 5.0 \text{ E}2$ and $\leq 5.0 \text{ E}3$
- D. $> 5.0 \text{ E}1$ and $\leq 5.0 \text{ E}2$

QUESTION 43:

Unit 1 is performing a reactor startup after a refueling outage of 25 days. The ICRR has continuously predicted criticality within the + or - 500 pcm band. During the last 50 step pull the reactor was determined to be critical at 60 steps on control bank C (Below LO-LO Insertion Limit).

One of the required actions is to _____ to ensure that _____.

- A. commence emergency boration; acceptable temperature limits are maintained.
- B. trip the reactor; reactivity transients associated with accidents are within acceptable limits.
- C. commence emergency boration; shutdown margin limits are maintained.
- D. trip the reactor; heat flux hot channel factor remains within limits.

QUESTION 44:

A major steam line break inside containment has caused a reactor trip, safety injection and containment spray actuation. The Control Room operators have just completed the immediate actions of OPOP05-EO-EO00, Reactor Trip or Safety Injection, when the secondary operator notes that 1D steam generator level is increasing in an uncontrolled manner.

In regards to the AFW pumps, which ONE of the following statements describes the correct operator response to this event?

- A. Verify all Motor Driven AFW pumps are running then secure #14 AFW pump.
- B. Continue to feed steam generator 1D to a level of > 14% then secure #14 AFW pump.
- C. Verify at least two Motor Driven AFW pumps are running then secure #14 AFW pump.
- D. Continue to feed steam generator 1D to a level of > 34% then secure #14 AFW pump.

QUESTION 45:

Assuming all plant systems function as designed, which ONE of the following Critical Safety Functions would have the HIGHEST priority condition during a postulated "Uncontrolled Depressurization of ALL Steam Generators?"

- A. Core Cooling (C)
- B. Heat Sink (H)
- C. Integrity (P)
- D. Inventory (I)

QUESTION 46:

Given the following:

- A Reactor Startup is being performed following a midcycle outage.
- Reactor Power has been stabilized at 1E-8 amps
- RCS temperature is at the no-load value
- Critical data has been taken.
- Prior to any additional control rod movement, a single SG Safety Valve on SG 1D fails opens and remains open.
- RCS Tav_g decreases 9°F and reactor power starts to increase.

Which ONE of the following states the correct action, required to satisfy Technical Specification LCO(s)?

- A. Reduce power range high flux high trip setpoint to 87% rated thermal power.
- B. Restore SG safety valve to operable status prior to entering Mode 1.
- C. Restore RCS Tav_g within 15 minutes or be in Mode 3 within the next 15 minutes.
- D. Immediately initiate boration to restore Shutdown Margin.

QUESTION 47:

Unit 1 is operating at 85% power when the Plant Computer AFD monitor alarm actuates. Which ONE of the following actions will comply with Technical Specification requirements?

- A. Within 30 minutes restore AFD to within limits.
- B. Within 30 minutes reduce power to $\leq 50\%$ and reduce Power Range neutron setpoint to $\leq 55\%$ within 4 hours.
- C. Within 15 minutes restore AFD to within limits.
- D. Within 15 minutes reduce power at least 3% from rated thermal power for every 1% that AFD exceeds the limit and similarly reduce Power Range neutron setpoint within 4 hours.

QUESTION 48:

While performing a control rod operability surveillance at 100% power, one control bank "D" rod is found to be immovable due to mechanical interference.

Which ONE of the following actions shall be taken within one hour?

- A. Determine the position of the immovable rod using the movable incore detectors.
- B. Determine that the shutdown margin requirement is satisfied.
- C. Reduce power to less than 90% of rated thermal power.
- D. Reposition all Control Bank "D" rods to within 12 steps of the misaligned rod.

QUESTION 49:

Which ONE of the following is an interlock associated with supplying power to a 4.16 KV ESF bus?

- A. Diesel Generator output breaker cannot be closed manually unless the emergency bus 1L (2L) feeder breaker supplying the respective ESF transformer is open.
- B. Diesel Generator output breaker will not close automatically unless diesel generator speed is ≥ 500 rpm and diesel generator voltage is ≥ 3744 volts.
- C. Standby bus 13.8 KV ESF transformer feeder breaker is interlocked with its disconnect switch such that the disconnect must be open before the feeder breaker can be opened.
- D. Standby bus 13.8 KV ESF transformer feeder breaker is interlocked with the 13.8 KV Emergency bus ESF transformer feeder breaker to prevent both of them being closed at the same time.

QUESTION 50:

On a loss of 125 VDC Class 1E power to the Emergency Diesel Generator, which ONE of the following components loses power?

- A. Control Power for Test Mode
- B. Local Control Panel Indicating Lights
- C. Voltage Regulator Field Flash Circuit
- D. Standby Fuel Oil Booster Pump

QUESTION 51:

Unit 1 is operating at full power, steady-state conditions. A periodic load test is being performed on ESF Diesel Generator #13 in accordance with OPSP03-DG-0003. ESF Diesel Generator #13 has been paralleled with 4.16 KV Bus E1C and is carrying 2,000 KW of real load. A Feedwater line break inside containment occurs and containment pressure increases to 15 psig.

Which ONE of the following describes the response of the "C" ESF load sequencer and ESF Diesel Generator #13?

- A. The Diesel Generator remains paralleled to the 4.16 KV bus and the Mode I timer sequences equipment onto the 4.16 KV bus.
- B. The Diesel Generator output breaker is tripped open and the Mode I timer sequences equipment onto the 4.16 KV bus.
- C. The normal feeder breaker AND the Diesel Generator output breaker to 4.16 KV bus E1C are tripped open and the Mode III timer sequences equipment onto the Diesel Generator.
- D. The normal feeder breaker to 4.16 KV bus E1C is tripped open and the Mode II timer sequences equipment onto the Diesel Generator.

QUESTION 52:

A steam generator tube rupture has occurred on Steam Generator (SG) 1B. The ruptured SG has been isolated in accordance with OPOP05-EO-EO30, Steam Generator Tube Rupture, and RCS cooldown and depressurization are in progress. SG 1B pressure is currently 910 psig and normal containment parameters exist.

Which ONE of the following conditions warrant stopping the RCS depressurization?

- A. RCS Pressure is 900 psig
PRZR Level is 4%
Subcooling is 70°F
- B. RCS Pressure is 915 psig
PRZR Level is 32%
Subcooling is 55°F
- C. RCS Pressure is 935 psig
PRZR Level is 55%
Subcooling is 40°F
- D. RCS Pressure is 950 psig
PRZR Level is 78%
Subcooling is 85°F

QUESTION 53:

A tube leak has occurred in 1D Steam Generator. The Unit is currently performing a rapid plant shutdown for repair.

Which ONE of the following Process and Effluent radiation monitors performs an automatic function that will prevent a potential release to the environment during this event?

- A. Condenser Air Removal System Monitor (RT-8027)
- B. Steam Generator 1D Blowdown Monitor (RT-8025)
- C. Turbine Generator Building Drain Monitor (RT-8041)
- D. Main Steam Line "D" Monitor (RT-8049)

QUESTION 54:

Following a LOCA, hydrogen concentration in containment has increased slowly over five days reaching 3.5% by volume.

Which ONE of the following actions will be taken?

- A. Both electric hydrogen recombiners will be placed in service immediately.
- B. Both electric hydrogen recombiners will be placed in service when hydrogen concentration reaches 4.0% by volume.
- C. One electric hydrogen recombiner will be placed in service immediately.
- D. One electric hydrogen recombiner will be placed in service when hydrogen concentration exceeds 4.0% by volume.

QUESTION 55:

Given the following:

- A Large Break LOCA has occurred
- OPOP05-EO-E000, Reactor Trip/Safety Injection, has been completed and the operators are transitioning to OPOP05-EO-E010, Loss of Reactor or Secondary Coolant.
- The STA reports a Red path on Integrity and the operators transition to OPOP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition.
- While the crew is performing OPOP05-EO-FRP1, the STA reports that the cold leg recirculation switchover criteria are satisfied per OPOP05-EO-ES13, Transfer to Cold Leg Recirculation.

Which ONE of the following describes the actions required to be taken by the crew at this time?

- A. Stop FRP1, perform all steps of ES13 and then return to FRP1.
- B. Stop FRP1, perform the first 5 steps of ES13 and then return to FRP1.
- C. Continue with FRP1 until completion, then perform all steps of ES13 and then return to EO10.
- D. Continue with FRP1 until completion, then perform the first 5 steps of ES13 and then return to EO10.

QUESTION 56:

The plant has experienced a LOCA outside Containment and is currently on Cold Leg Recirculation. The crew has transitioned to OPOP05-EO-EC11, Loss of Emergency Coolant Recirculation as the LOCA could NOT be isolated in OPOP05-EO-EC12, LOCA Outside Containment.

In an attempt to conserve RWST inventory, the crew must stop backflow from the RWST to the containment sump in accordance with EC11.

Which ONE of the following is the correct sequence to perform this task?

- A. 1. Stop the LHSI, HHSI and CS Pumps
2. Open the SI Pump Mini Flow Valves
3. Open the RWST to SI Suction Header Valves
4. Close the Containment Sump Suction Valves
5. Start the LHSI, HHSI and CS Pumps as necessary
- B. 1. Stop the LHSI, HHSI and CS Pumps
2. Close the Containment Sump Suction Valves
3. Open the RWST to SI Suction Header Valves
4. Open the SI Pump Mini Flow Valves
5. Start the LHSI, HHSI and CS Pumps as necessary
- C. 1. Stop the LHSI, HHSI and CS Pumps
2. Open the RWST to SI Suction Header Valves
3. Close the Containment Sump Suction Valves
4. Open the SI Pump Mini Flow Valves
5. Start the LHSI, HHSI and CS Pumps as necessary
- D. 1. Stop the LHSI, HHSI and CS Pumps
2. Open the SI Pump Mini Flow Valves
3. Close the Containment Sump Suction Valves
4. Open the RWST to SI Suction Header Valves
5. Start the LHSI, HHSI and CS Pumps as necessary

QUESTION 57:

Given the following:

- Unit 1 has experienced a small break LOCA
- RCS pressure is stable at 1785 psig
- RVWL plenum is indicating 15%
- CETs are indicating 621 °F

In accordance with OPOP05-EO-FRC3, Response to Saturated Core Cooling, which ONE of the following is the appropriate method for reestablishing desired subcooling?

- A. Establish conditions for HHSI flow
- B. Establish conditions for LHSI flow
- C. Establish conditions for Accumulator injection
- D. Establish conditions for maximum charging flow

QUESTION 58:

Given the following:

- Unit 1 is at 100% power
- All systems in normal operation
- Primary RO reports an increase in the Number 2 Seal Leakoff on all RCPs

Considering each condition separately, which ONE of the following conditions is the cause for the increased leakoff flow?

- A. Decrease in charging flow
- B. Increase in VCT pressure
- C. Decrease in level of the Number 3 Seal Standpipe
- D. Increase in Seal Injection flowrate

QUESTION 59:

In accordance with OPOP02-RC-0004, Operation of Reactor Coolant Pumps, which ONE of the following conditions requires tripping the reactor and the affected reactor coolant pump? (Consider each condition separately)

- A. #1 seal water inlet temperature - 250°F
- B. Motor stator winding temperature - 300°F
- C. #1 Seal Delta-Pressure - 350 psid
- D. Shaft Vibration - 10 mils

QUESTION 60:

Unit 2 is operating at 50% power when a RCP 2A NO 2 SEAL LKF FLOW HI alarm is received. After investigation it has been determined that RCP 2A # 3 seal has NOT failed. In accordance with OPOPO4-RC-0002, RCP Off Normal, the control room operators are directed to monitor:

- A. RCP 2A vibration and if it starts increasing perform a plant shutdown then secure RCP 2A.
- B. RCP 2A standpipe fill rate and if it starts increasing perform a plant shutdown then secure RCP 2A.
- C. RCP 2A for 48 hours to determine if # 2 seal has not fully seated.
- D. RCP 2A vibration and if limits are exceeded trip the reactor, trip the turbine, and secure RCP 2A.

QUESTION 61:

Given the following:

- Unit 1 is at 25% power
- CCP 1B is out of service for maintenance
- CCP 1A has tripped and the field supervisor is investigating
- PDP will NOT start
- RCP 1C has experienced an RCP 1C UPPR OIL RSVR LVL HI/LO annunciator
- RCP 1D CCW to thermal barrier temperature sensor (TS-4638) fails high

Which ONE of the following is the proper control room operators' response to the above plant conditions?

- A. Commence a power reduction to $< 10\%$ for performance of a containment entry to investigate problem with RCP 1C.
- B. Within one minute trip the reactor and trip RCP 1D.
- C. Commence a power reduction to $< 10\%$ and trip RCP 1D.
- D. Within one minute trip the reactor and trip RCP 1C.

QUESTION 62:

During operations at 95% power with pressurizer level at 53%, the Tave input (Auctioneered High) to the pressurizer level controller fails low.

Which ONE of the following is an indication that this failure has occurred?

- A. Backup heaters deenergize, charging flow control valve opens, low level deviation alarm actuates.
- B. Backup heaters energize, charging flow control valve closes, high level deviation alarm actuates.
- C. Backup heaters energize, charging flow control valve opens, low level deviation alarm actuates.
- D. Backup heaters deenergize, charging flow control valve closes, high level deviation alarm actuates.

QUESTION 63:

Given the following:

- Containment pressure transmitter PT-937 has been declared inoperable.
- The required Technical Specification actions have been taken to remove PT-937 from service.

Under these conditions, which ONE of the following statements describes the coincidence for a Containment Spray Actuation to occur and the actions that will result in this coincidence?

- A. 1/3 coincidence after the channel is placed in the TRIP condition.
- B. 1/3 coincidence after the channel is placed in the TEST BYPASS condition.
- C. 2/3 coincidence after the channel is placed in the TRIP condition.
- D. 2/3 coincidence after the channel is placed in the TEST BYPASS condition.

QUESTION 64:

Per OPGP03-ZF-0018, Fire Protection Operability Requirements, which ONE of the following identifies the minimum operability requirements for the Fire Protection Water Supply System?

	Storage Tank Volume gallons - each	Number of Pumps	Pump Capacity in gpm
A.	200,000	1	2500
B.	250,000	2	2000
C.	300,000	2	2500
D.	350,000	1	2000

QUESTION 65:

Which ONE of the following STPEGS Fire Protection Sprinkler Systems provides defense against Class "C" Fires?

- A. Cable Tray sprinklers
- B. Carbon Filter sprinklers
- C. DG FOST sprinklers
- D. Turbine Bearing sprinklers

QUESTION 66:

Given the following:

- Unit 1 is at 100% power and Unit 2 is in Mode 6 during a refueling outage.
- Fire Hydrant (FH) #13 serving the Essential Cooling Water (ECW) Intake Structure area is declared inoperable.

Which ONE of the following actions must be taken due to this inoperable Fire Hydrant?

- A. Restore FH-13 to operable status within 7 days or take the actions of T.S. 3.0.3 due to ECW system inoperability.
- B. Establish a continuous fire watch within 1 hour for the Unit 1 ECW intake structure and components.
- C. Establish an hourly fire watch for the Unit 1 ECW intake structure and components.
- D. Provide additional lengths of 2 1/2 inch fire hose from an operable Fire Hydrant within 1 hour to service the ECW intake Structure.

QUESTION 67:

A Unit 1 Reactor Trip from 100% power has occurred due to a loss of off-site power caused by severe weather and tornado damage to the switchyard and the 138KV Blessing Line. A Tornado Warning is still in effect.

Given the following:

- Train B 4.16 KV Bus is energized from SDG #12.
- Train C 4.16 KV Bus is deenergized due to a bus overcurrent lockout.
- SDG#11 was secured due to a failed turbocharger thrust bearing and turbocharger damage.
- Restoration of any off-site power source is NOT expected for at least 6 to 8 hours.
- Restoration of SDG #11 is NOT expected for at least 10 hours.
- Restoration of Train C 4.16 KV Bus is NOT expected for at least 6 hours.

Based on these indications, which ONE of the following statements is recommended per OPOP04-AE-0001, Loss of Any 13.8 KV or 4.16 KV Bus?

- A. Cross-connect Train A OR C 4.16 KV Bus to Train B 4.16 KV Bus to restore power to a CCP for RCS inventory control.
- B. Cross-connect Train A OR C 4.16 KV Bus to Train B 4.16 KV Bus to restore power to Pressurizer Heaters for RCS pressure control.
- C. Do NOT Cross-connect Train A OR C 4.16 KV Bus to Train B 4.16 KV Bus because the only SDG would be put at risk of overloading.
- D. Do NOT Cross-connect Train A OR C 4.16 KV Bus to Train B 4.16 KV Bus because severe weather conditions exist.

QUESTION 68:

Given the following:

- Unit 1 is in Mode 5
- RCS temperature is 180°F
- RCS pressure is 225 psig
- RHR Train 1A is in service maintaining RCS temperature (with both RHR HX BYPASS FLOW CONTROL and OUTLET TEMPERATURE CONTROL valves in a throttled position)
- 125 VDC system E1A11 TROUBLE annunciator is received
- E1A11 bus voltage indicates 0 volts

Which ONE of the following describes how the operating RHR train will respond?

	BYP FLOW CONT (FCV-0851)	OUTL TEMP CONT (FCV-0864)	RCS TEMPERATURE
A.	OPENS	CLOSES	INCREASES
B.	OPENS	NO CHANGE	INCREASES
C.	NO CHANGE	OPENS	DECREASES
D.	CLOSES	OPENS	DECREASES

QUESTION 69:

Unit 2 was at 100% power, steady state conditions, when an electrical disturbance occurred that produced the following Control Room indications:

- 2A Steam Generator PORV controller is NOT illuminated and cannot be operated from the Control Room.
- Ventilation Monitors RT-8012, RT-8033, and RT-8035 are indicating Magenta color on the RM-11.
- All three trains of the Control Room Envelope, Fuel Handling Building, and Containment HVAC are in the ACTUATED condition.
- Charging Flow Control valve FCV-205 is in Automatic and closed.
- Several QDPS Plasma displays in the Control Room are blank.

Which ONE of the following power distribution panels has lost power?

- A. 120 Volt AC Class 1E Panel DP1201
- B. 120 Volt AC Class 1E Panel DP001
- C. 120 Volt AC Class 1E Panel DP1202
- D. 120 Volt AC Class 1E Panel DP002

QUESTION 70:

Considering the following time line:

- 1200 - Large Break LOCA occurs
- 1214 - Alert is declared, based on leakrate greater than makeup capability
- 1232 - Loss of all HHSI and LHSI pumps is reported
- 1251 - Containment hydrogen concentration $> 0.5 \%$
- 1300 - Slight Area Emergency is declared, based on high RCB radiation
- 1343 - Core Damage confirmed by failed fuel monitor and RCS sample results
- 1420 - General Emergency is declared, based on rapid decrease in RCB pressure

Which ONE of the following is the EARLIEST time at which a Protective Action Recommendation (PAR) is REQUIRED to be issued?

- A. 1315
- B. 1358
- C. 1403
- D. 1435

QUESTION 71:

Maintenance requests an Equipment Clearance Order to perform adjustment and testing of limit and torque switches for a motor operated valve (MOV).

In order to perform the required testing, the MOV:

- A. can only be operated under a Test Tag by the Operational Authority when requested by the individual or classification performing the maintenance.
- B. can only be operated under a Caution Tag by the Acceptor to whom the Caution Tag is issued and only after Operational Authority approval.
- C. shall be tagged with both a Caution Tag and a Test Tag with the Caution Tag stating that removal of the Test Tag permits operational testing.
- D. shall be tagged with both a Danger Tag and a Test Tag, with the Danger Tag removed prior to any MOV operation during the testing.

QUESTION 72:

Which of the following situations require Independent Verification?

1. Initial system valve lineup of TGB Fire Protection System following an outage.
2. Removing electrical grounding device from the 13.8 KV switchgear following breaker maintenance.
3. Functional test has verified the resetting of overcurrent trip relay setpoint on RCB Chiller 11B breaker, 1D2/6, following electrical troubleshooting.
4. Throttling and locking CV-0198 prior to Mode 4 entry per Technical Specifications.

A. 1, 2, 3

B. 1, 2, 4

C. 1, 3, 4

D. 2, 3, 4

QUESTION 73:

Given the following plant conditions:

- Unit 1 was operating at 100% power when a loss of offsite power occurred.
- The following indications are observed while performing the immediate actions of OPOP05-EO-E000, Reactor Trip or Safety Injection:
 - * All Rod Bottom Lights are NOT LIT
 - * Reactor Trip Breaker R is OPEN
 - * Reactor Trip Breaker S is CLOSED
 - * Bypass Breakers R and S are OPEN
 - * N35 and N36 IR Channels indicate decreasing neutron power
- The previously observed indications do NOT change after attempting a manual trip from both reactor trip switches

Which ONE of the following actions should be taken by the crew?

- A. Go to OPOP05-EO-FRS1, Response to Nuclear Power Generation - ATWS.
- B. Dispatch an operator to shift DRPI to the alternate power source, verify all Rod Bottom Lights are lit, then continue on with E000.
- C. Open 480V Load Center 1K1 and 1L1 feeder breakers, then continue on with E000.
- D. Continue on with the immediate actions of E000.

QUESTION 74:

Given the following:

- A Reactor Trip occurs due to a Loss of Offsite Power.
- The ESF diesel generators have all started and restored power to their ESF buses.
- The Control Room crew has just completed the Immediate Actions of OPOP05-EO-E000, Reactor Trip or Safety Injection.

Which ONE of the following correctly identifies the status of containment cooling?

- A. The RCFCs are NOT running and CCW is flowing through the cooling coils.
- B. The RCFCs are running and there is NO flow through the cooling coils.
- C. The RCFCs are running and CCW is flowing through the cooling coils.
- D. The RCFCs are NOT running and there is NO flow through the cooling coils.

QUESTION 75:

Unit 1 is in Mode 4, coming out of a refueling outage, when a loss of instrument air occurs.

Given the following:

- RCS temperature is 300°F
- Narrow Range SG levels; 1A = 40%, 1B = 35%, 1C = 55%, 1D = 20%
- SG PORVs are all operable
- All Motor-driven AFW Pumps are operable
- RHR Train status; 1A and 1C - available, 1B inservice and supplying Low Pressure Letdown
- SI Pumps are in the normal Mode 4 alignment
- Both Pressurizer PORVs are operable
- Vacuum has been established in the Main Condenser
- Three Circulating Water pumps are running

Which ONE of the following RHR valve alignment methods are Control Room operators directed to use for RCS temperature control in accordance with OPOP04-IA-0001, Loss of Instrument Air, Addendum 6?

- A. LOOP B TC INJ MOV-0031B - open, cycle RHR B Heat Exchanger OUTL TEMP CONT HCV-0865 as needed for temperature control.
- B. MINI FLOW MOV-0067B - open, cycle RHR B Heat Exchanger BYP FLOW CONT FCV-0852 as needed for temperature control.
- C. MINI FLOW MOV-0067B - open, cycle LOOP B TC INJ MOV-0031B as needed for temperature control.
- D. LOOP B TC INJ MOV-0031B - open, cycle RHR B Heat Exchanger CCW OUTL FV-4548 as needed for temperature control.

QUESTION 76:

Given the following:

- Unit 2 is at 100% power, steady-state conditions
- CCP 2B is operating, CCP 2A is available
- CHG FLOW HI/LO alarm is received on Lampbox 04M8
- Operators determine that CCP 2B has tripped
- The Unit Supervisor directs the Primary RO to start CCP 2A

Which ONE of the following valve alignments should be performed prior to starting CCP 2A in accordance with the alarm response instructions?

	MOV-8377A, 2A CCP Discharge Isolation	FCV-201, 2A CCP Miniflow Valve	FCV-205, Charging Flow Control Valve
A.	OPEN	OPEN	CLOSED
B.	CLOSED	OPEN	OPEN
C.	OPEN	CLOSED	OPEN
D.	CLOSED	OPEN	CLOSED

QUESTION 77:

Given the following:

- Unit 1 is in Mode 5
- RCS boron concentration is 2800 ppm
- Rods are locked in the Rapid Refueling position
- Preparations are being made for refueling operations

A fire has been reported in the Train C ESF Switchgear room and it appears to be spreading toward the Rod Drive MG Set Room.

In accordance with OPOP04-ZO-0008, Fire/Explosion, which ONE of the following describes the operator actions to be taken?

- A. Open the reactor trip breakers and ensure all rods are fully inserted
- B. Place Rod Holdout Power Supply to OFF and ensure all rods are fully inserted
- C. Direct I&C to restore rod control, then fully insert all control rods
- D. Initiate emergency boration until RCS boron concentration is ≥ 3000 ppm

QUESTION 78:

While responding to an Inadequate Core Cooling situation the operators are directed to reestablish some form of core cooling.

Which ONE of the following statements describes the INITIAL response of the CETs, and the reason for this response, if the operators restarted the safety injection pumps?

- A. Increase due to saturated steam being forced out of the core.
- B. Decrease due to saturated steam forming a frothy two phase mixture.
- C. Increase due to superheated steam being forced out of the core.
- D. Decrease due to superheated steam causing injected water to boil forming a frothy two phase mixture.

QUESTION 79:

The following plant conditions exist:

- Loss of seal cooling (CCW AND seal injection) to all RCPs
- Manual reactor trip and trip of all RCPs
- Performed OPOP05-EO-E000, Reactor Trip and Safety Injection and OPOP05-EO-ES02, Natural Circulation Cooldown
- Transitioned to OPOP05-EO-ES03, Natural Circulation Cooldown with Steam Void in Vessel due to limited inventory in the AFWST
- RVWL - Upper Head is 80%
- Pressurizer level is 30%
- RCS Subcooling is 90°F

While performing ES03, seal cooling is restored to RCP D.

Which ONE of the following actions must be performed prior to starting RCP D?

- A. Decrease pressurizer level to accommodate void growth
- B. Increase pressurizer level to accommodate void collapse
- C. Decrease subcooling to accommodate void growth
- D. Increase subcooling to accommodate void collapse

QUESTION 80:

A plant startup is in progress with main turbine roll commencing and reactor power at 15%. All procedural requirements of OPOP03-ZG-0005, Plant Startup to 100% have been met for the current power level. Power range channel N-44 is out of service due to a failed detector.

Which ONE of the following reactor trip signals will cause the reactor to trip under these conditions?

- A. Pressurizer low pressure
- B. Single loop loss of flow
- C. Intermediate Range high flux
- D. Turbine trip

QUESTION 81:

Given the following:

- Unit 1 is at 100% power
- Reactor power is slowly increasing
- RCS Tave is 588°F and slowly decreasing
- Turbine control is in IMP OUT

Which ONE of the following conditions is causing the above plant transient?

- A. Main Turbine Governor valve # 3 has failed closed.
- B. Extraction steam to a feedwater heater string has been isolated.
- C. Main Steam to Deaerator valve has failed closed.
- D. Circulating Water pump #14 has tripped.

QUESTION 82:

Given the following:

- Unit 1 has tripped from 100%
- All steam generator levels indicate approximately 50% WR
- A fault has left Vital DC bus E1D11 deenergized

Which ONE of the following describes the effect this event has on the status of #14 AFW pump, its associated AFW REG valve and AFW OCIV?

- A. Pump will start, REG valve will remain closed and OCIV will remain open
- B. Pump will NOT start, REG valve will remain closed and OCIV will remain open
- C. Pump will start, REG valve will remain open and OCIV will remain closed
- D. Pump will NOT start, REG valve will remain open and OCIV will remain closed

QUESTION 83:

Given the following:

- Unit 1 is in MODE 5 with RCS cooldown to refueling conditions in progress.
- The MEAB watch enters the FHB and discovers the Spent Fuel Pool (SFP) Area Radiation Monitors RT-8090 and RT-8091 in the HIGH ALARM condition.
- SFP level is 66 feet 6 1/2 inches and has decreased 1/4 inch in the last 24 hours.
- SFP temperature is 90°F and steady.
- No other abnormal plant or alarm conditions exist.

Which ONE of the following actions must be taken?

- A. Notify Control Room of SFP level and commence makeup to restore level.
- B. Verify FHB HVAC is operating in the Emergency Mode.
- C. Notify personnel in the affected area of the High Radiation alarm.
- D. Verify SFP Gate Seal Air Pressure is in the normal band (30-34 psig).

QUESTION 84:

It has been determined that Spent Fuel Pool level needs to be raised to account for losses due to evaporation.

Per OPOP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, which ONE of the following source combinations is used to makeup to the SFP to compensate for normal EVAPORATION?

- A. Reactor Makeup Water System or Refueling Water Storage Tank
- B. Reactor Makeup Water System or Demineralized Water System
- C. Boron Recycle System or Refueling Water Storage Tank
- D. Boron Recycle System or Demineralized Water System

QUESTION 85:

Upon loading a spent fuel assembly into the reactor core the Core Loading Supervisor notifies the Control Room that an excessive amount of gas bubbles are emerging from an adjacent fuel assembly and that RCB 68' Area Monitor RT-8099 just went into High alarm. The Control Room performs the actions of OPOPO4-FH-0001, Fuel Handling Accident, and directs the operation of the Containment Carbon Filter Units.

Which one of the following statements is correct?

- A. The Containment Carbon Filter Units are NOT required to be in operation until RT-8099 is determined to have a VALID High alarm.
- B. The Containment Carbon Filter Units are NOT required to be in operation until MORE than one RCB Area Monitor is determined to have a valid High alarm.
- C. The Containment Carbon Filter Units are required to be in operation if radiation levels or sampling indicates fuel cladding damage has occurred.
- D. The Containment Carbon Filter Units are required to be in operation anytime OPOPO4-FH-0001 is entered.

QUESTION 86:

OPSP03-ZQ-0028, Operator Logs, requires that RCFC outlet temperatures be maintained less than or equal to 75°F and greater than or equal to 50°F.

Which ONE of the following statements is the reason for these temperature limits?

- | | <u>High Temperature Basis</u> | <u>Low Temperature Basis</u> |
|----|-------------------------------|------------------------------------|
| A. | CRDM Cooling | SI Accumulator Nil Ductility Temp. |
| B. | LB LOCA Peak Clad Temp. | SI Accumulator Nil Ductility Temp. |
| C. | CRDM Cooling | SI Accumulator Boron Solubility |
| D. | LB LOCA Peak Clad Temp. | SI Accumulator Boron Solubility |

QUESTION 87:

A point source in the RCA is reading 500 mrem/hr at 1 foot. There are two options being considered to perform a job in the area.

Option #1: Two operators working together are capable of completing the job in 20 minutes at 4 feet from the source.

Option #2: One operator can complete the job in 80 minutes at 8 feet from the source.

Which ONE of the following is the preferred option AND consistent with the goals of the ALARA program?

- A. Option #1 - each operator's exposure is 10.0-10.5 mrem
- B. Option #2 - the operator's exposure is 5.8-6.2 mrem
- C. Option #2 - the operator's exposure is 10.0-10.5 mrem
- D. Option #1 - each operator's exposure is 5.8-6.2 mrem

QUESTION 88:

The maximum dose rate in a room is 1200 mrem/hr one foot from a certain valve. According to the STPEGS Radiological Access and Work Controls procedure, this room should be classified as which ONE of the following?

- A. High Radiation Area
- B. High Radiation Exclusion Area
- C. Locked High Radiation Area
- D. Very High Radiation Area

QUESTION 89:

Given the following:

- Unit 1 is operating at 100% power
- CCW surge tank level is 58% and decreasing at 1% per minute
- Crew enters OPOP04-CC-0001, Loss of Component Cooling Water
- Operators trip the reactor and all RCPs
- CCW pump 1A is out-of-service for maintenance
- CCW pump 1B trips on thermal overload
- CCW pump 1C is running

Which ONE of the following describes the charging pump(s) which may be operated under the current plant configuration?

- A. 1A Centrifugal Charging Pump ONLY
- B. 1B Centrifugal Charging Pump ONLY
- C. 1A Centrifugal Charging Pump OR Positive Displacement Charging Pump
- D. 1B Centrifugal Charging Pump OR Positive Displacement Charging Pump

QUESTION 90:

Which ONE of the following conditions will warrant entry into OPOP04-CC-0001, Loss of Component Cooling Water?

- A. Trip of running CCW pump(s) and standby CCW pump fails to start.
- B. Loss of ECW flow to all CCW Heat Exchangers.
- C. Vital CCW Header Supply valves automatically close.
- D. Leak in CCW system greater than makeup capacity.

QUESTION 91:

A modification to the Containment Spray System is to be made and a 10CFR50.59 Evaluation is to be performed.

Which ONE of the following describes the 10CFR50.59 process?

- A. The modification undergoes a Preliminary Screening followed by a Final Screening then a Unreviewed Safety Question Evaluation before it is reviewed by the PORC.
- B. The modification undergoes a Unreviewed Safety Question Evaluation followed by a Preliminary Screening then a Final Screening before it is reviewed by the PORC.
- C. The modification undergoes a Final Screening followed by a Unreviewed Safety Question Evaluation then it is reviewed by PORC prior to approval by the Plant Manager.
- D. The modification undergoes a Unreviewed Safety Question Evaluation followed by a Preliminary Screening then it is reviewed by PORC prior to approval by the Plant Manager.

QUESTION 92:

Unit 1 is in Mode 1 at 100% power when the following occurs:

- 1300 hours - Fire reported in the Unit 1 Relay Room and fire brigade dispatched
- 1307 hours - Fire out of control and smoke infiltrating control room atmosphere
- 1308 hours - OPOP04-ZO-0001, Control Room Evacuation procedure is entered
- 1310 hours - Control Room actions of OPOP04-ZO-0001 are complete
- 1311 hours - All personnel have evacuated the Unit 1 Control Room
- 1318 hours - ASP and all Remote Shutdown Stations are manned
- 1325 hours - Communications established between ASP and Remote Stations
- 1330 hours - Control of SG 1D PORV and #14 AFW Pump are transferred to ASP
- 1338 hours - All Switchgear Room Alignment Addenda complete

Based on the above timeline, which ONE of the following Emergency Classifications is appropriate for this event?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

QUESTION 93:

As the Shift Supervisor acting as the Emergency Director, which ONE of the following Emergency Director responsibilities and authorities may you delegate?

- A. Approving required communications with the NRC.
- B. Approving required notifications to the State and County.
- C. Approving radiological exposures in excess of 10CFR20 limits.
- D. Approving departure from license conditions per 10CFR50.54(x).

QUESTION 94:

Given the following:

- Unit 1 is at 100% power
- Containment pressure is indicating +0.4 psig
- Preparations for performing a containment supplementary purge are in progress.
- Noble gas concentration inside containment is $5.5 \text{ E-04 } \mu\text{ci/cc}$

Which ONE of the following actions will be taken to prevent actuation of CVI?

- A. Ensure all RCFCs are in operation to provide mixing of the containment atmosphere.
- B. Increase the High alarm setpoint on the RCB Purge Exhaust radiation monitors (RT-8012 and RT-8013).
- C. Ensure that containment carbon units are in operation to reduce noble gas concentration.
- D. Increase the High alarm setpoint on Containment Atmosphere radiation monitor (RT-8011).

QUESTION 95:

The following plant conditions exist:

- Reactor Power is 55%
- Main condenser vacuum is 26 inches Hg and decreasing

Which ONE of the following describes the appropriate operator action per OPOP04-CR-0001, Loss of Condenser Vacuum?

- A. Ensure the reactor and main turbine are tripped at 22 inches Hg.
- B. Ensure the reactor and main turbine are tripped at 25 inches Hg.
- C. Ensure the main turbine is tripped at 22 inches Hg.
- D. Ensure the main turbine is tripped at 25 inches Hg.

QUESTION 96:

Unit 2 is operating at 100% power when all circulating water pumps trip.

Assuming no operator action, except for AFW flow control, and all systems function as designed, which ONE of the following corresponds to plant conditions after the plant has stabilized?

	<u>RCS TAVG</u>	<u>SG Pressures</u>
A.	567°F	1185 psig
B.	567°F	1225 psig
C.	571°F	1185 psig
D.	571°F	1225 psig

QUESTION 97:

A pressurizer PORV has failed open causing a manual reactor trip and safety injection. The control room operators are responding per OPOP05-EO-EO00, Reactor Trip or Safety Injection.

Which ONE of the following is an indication that the PRT rupture disk has ruptured?

- A. Containment pressure is increasing at 5 psi per minute.
- B. PRT temperature is decreasing.
- C. PRT level spikes to 100% then decreases to 0%.
- D. RCB dew point is decreasing.

QUESTION 98:

A High alarm is received on RT-8032, GWPS Outlet Radiation Monitor, and the following actions are performed by the crew:

- OPOPO4-RA-0001, Radiation Monitoring System Alarm Response is entered
- Alarm is verified to be VALID
- Health Physics and Chemical Analysis are notified

Which ONE of the following radiation monitors should be checked for increasing readings in accordance with OPOPO4-RA-0001?

- A. RT-8031, GWPS Inlet
- B. RT-8058, MAB 10' Area Monitor
- C. RT-8029, MAB Ventilation
- D. RT-8010A, Unit Vent Stack

QUESTION 99:

Plant Operators are performing a transfer of the Floor Drain Tank to the Waste Monitor Tank per OPOP02-WL-0003, Floor Drain Tank Operation.

Which ONE of the following is a condition that the procedure cautions could occur if procedural steps are performed improperly?

- A. Contamination of non-contaminated systems
- B. Exceeding STP airborne limits
- C. Contamination of personnel
- D. Exceeding STP personnel dose limits

QUESTION 100:

OPOP02-CD-0001, Condensate System, requires that the "Condensate pump discharge common vent line isolation valve and the Condensate pump 13 vent at the miniflow check valve" be open prior to starting Condensate pump 13.

Which ONE of the following statements is the reason for opening these two valves prior to starting the pump?

- A. To flush out corrosion particles that collect in the low flow areas of recirculation line check valve CD-0740.
- B. To extend the life of recirculation valve CD-FV-7016 by eliminating air pockets that promote erosion.
- C. To minimize the occurrence of hydraulic transients in the Condensate pump #13 recirculation line.
- D. To ensure that no steam binding will occur in the Condensate pump (low pressure, low temperature impeller boiling).