



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

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

April 16, 1997

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

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

SUBJECT: OPERATOR LICENSING EXAMINATIONS ADMINISTERED ON FEBRUARY 24-28,  
1997, AT CALLAWAY PLANT, UNIT 1

DOCKET #50-483

On February 24-28, 1997, 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.

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

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PDR ADOCK 05000483  
V PDR





UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

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

MAR 26 1997

Donald F. Schnell, Senior Vice  
President - Nuclear  
Union Electric Company  
P.O. Box 66149  
St. Louis, Missouri 63166-6149

SUBJECT: NRC INSPECTION REPORT 50-483/97-01

Dear Mr. Schnell:

An NRC inspection was conducted February 24-28, 1997, at your Callaway Plant reactor facility. The enclosed report presents the scope and results of that inspection.

The inspection included an evaluation of five applicants for reactor operator licenses and six applicants for senior reactor operator licenses. We determined that three of the five applicants for reactor operator licenses and all six applicants for senior reactor operator licenses satisfied the requirements and the appropriate licenses are in the process of being issued. One of the applicant's written examination performance was marginal. As a result and in accordance with NRC policy, his license is being held pending any additional information that might be developed if a proposed denial were to be challenged.

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,

Arthur T. Howell, III, Director  
Division of Reactor Safety

Docket No.: 50-483  
License No.: NPF-30

Enclosure:  
NRC Inspection Report  
50-483/97-01

9704010326 11

IE42 11



cc w/enclosure and Attachments 1-2:  
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E-Mail report to T. Boyce (THB)  
 E-Mail report to NRR Event Tracking System (IPAS)  
 E-Mail report to Document Control Desk (DOCDESK)

bcc to DCD (IE01)(IE42)

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S. Richards (HOLB/NRR)  
 L. Hurley

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OFFICIAL RECORD COPY

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-483  
License No.: NPF-30  
Report No.: 50-483/97-01  
Licensee: Union Electric Company  
Facility: Callaway Plant  
Location: Junction Hwy. CC and Hwy. O  
Fulton, Missouri  
Dates: February 24-28, 1997  
Inspectors: H. Bundy, Chief Examiner  
R. Lantz, Examiner  
T. McKernon, Examiner  
M. Murphy, Examiner  
Approved By: J. L. Pellet, Chief, Operations Branch  
Division of Reactor Safety

ATTACHMENTS:

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

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## EXECUTIVE SUMMARY

### Callaway Plant NRC Inspection Report 50-483/97-01

NRC examiners evaluated the competency of six senior reactor operator and five reactor operator license applicants for issuance of operating licenses at the Callaway Plant facility. The licensee developed the initial license examinations using the pilot process program guidance contained in Generic Letter 95-06 and NUREG-1021, Supplement 1, "Operating Licensing Examiners Standards." NRC examiners reviewed, approved, and administered the examinations. The initial written examinations were administered to all 11 applicants on February 24, 1997, by facility proctors in accordance with instructions provided by the chief examiner. The NRC examiners administered the operating tests on February 25-27, 1997. All of the senior reactor operator applicants and two of the five reactor operator applicants displayed the requisite knowledge and skills to satisfy the requirements of 10 CFR 55 and were issued the appropriate licenses. One reactor operator applicant displayed marginal knowledge and skills, and the licensing decision is undergoing further review. Two of the reactor operator applicants failed the written examination and were denied licenses.

#### Operations

- The control room operators exhibited professional demeanor and the shift turnover briefing observed was effective and comprehensive (Section O1).
- All six applicants passed the senior reactor operator written examination. Two of five applicants passed the reactor operator written examination. Another reactor operator applicant demonstrated marginal knowledge on the written examination and the final licensing decision on his application was delayed pending further review. Overall, the reactor operator applicants demonstrated a marginal knowledge level on the written examination. No generic broad knowledge or training weaknesses were identified as a result of evaluation of the graded examinations (Section O4.1).
- All 11 applicants passed the operating test. Minor performance and procedure deficiencies were identified for licensee and applicant consideration and corrective action as appropriate (Section O4.2).
- The licensee submitted an acceptable examination outline (Section O5.1.1).
- The licensee submitted examination package was of high quality and adequate for administration. The licensee staff was responsive in providing enhancements identified during the review process (Section O5.1.2).
- The simulator supported the examinations well. One minor malfunction impacted examination administration, but did not affect examination validity (Section O5.2).

Engineering

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

## Report Details

### Summary of Plant Status

The plant operated at essentially 100 percent power for the duration of this inspection.

## I. Operations

### **01 Conduct of Operations**

#### **a. Inspection Scope**

During the in-plant main control room portion of the operating test walkthroughs, the examiners observed the on-shift operators during routine operations of the facility.

#### **b. Observations and Findings**

The demeanor of the operators was professional and crew communications were effective. One shift turnover briefing observed was effective and comprehensive and consistent with briefings given by applicants for senior reactor operator licenses during the dynamic simulator section of the operating test.

#### **c. Conclusions**

The control room operators exhibited professional demeanor and the shift turnover briefing observed was effective and comprehensive.

### **03 Operations Procedures and Documentation**

An apparent weakness in Procedure OTC-ZZ-00001, "Plant Control from ASP with Control Room Fire," Revision 14, is discussed in Section 04.2.

### **04 Operator Knowledge and Performance**

#### **04.1 Initial Written Examination**

##### **a. Inspection Scope**

On February 24, 1997, the facility licensee proctored the administration of the written examination approved by the chief examiner and NRC Region IV supervision to five individuals who had applied for initial reactor operator licenses, three individuals who had applied for initial instant senior reactor operator licenses, and

three individuals who had applied for initial upgrade senior reactor operator licenses. The licensee graded the written examinations and the staff reviewed its results. The licensee also performed a post-examination question analysis which was reviewed by the examiners.

b. Observations and Findings

The minimum passing score was 80 percent. The scores for senior reactor operator applicants ranged from 83 to 93 percent, with an average score of 89 percent. The scores for reactor operator applicants ranged from 73 to 92 percent, with an average score of 81.2 percent. Two reactor operator applicants failed the written examination with scores of 73 and 77 percent. A third reactor operator applicant passed the written examination with a marginal score of 80 percent. Overall, the reactor operator applicants demonstrated a marginal level of knowledge on the written examination. More than half of all applicants missed the following questions which had the same number on both examinations: 3, 4, 55, 64, 84, and 90. Also, more than half the applicants missed Question 33 on the senior reactor operator examination. All of the above questions were determined by the licensee to be valid and the chief examiner concurred with this determination. No broad training or knowledge weaknesses were identified. Reasons for missing these questions appeared to be related to question difficulty and isolated training weaknesses. The licensee initiated appropriate actions to upgrade candidate specific knowledge and correct specific training weaknesses.

c. Conclusions

All six applicants passed the senior reactor operator written examination. Two of five applicants passed the reactor operator written examination. Another reactor operator applicant demonstrated marginal knowledge on the written examination and the final licensing decision on his application was delayed pending additional review in response to challenges of the proposed license denials. Overall, the reactor operator applicants demonstrated a marginal knowledge level on the written examination. However, no broad knowledge or training weaknesses were identified as a result of evaluation of the graded examinations.

O4.2 Initial Operating Test

a. Inspection Scope

The examination team administered the various portions of the operating examination to the 11 applicants on February 25-27, 1997. Each applicant participated in two dynamic simulator scenarios. Each also received a walkthrough test which consisted of ten system tasks and four administrative areas, except the upgrade senior reactor operator licenses were tested on only five system tasks with four administrative areas.



b. Observations and Findings

All applicants passed all portions of the operating test. The applicants performed well in the dynamic simulator scenarios.

However, during Scenario 2 following a large break loss-of-coolant accident with a subsequent failure of the emergency diesel generator loss-of-coolant accident electrical load controller (sequencer), all of the crews experienced difficulty in realigning Train B control room ventilation isolation system components in accordance with Procedure E-O, "Reactor Trip or Safety Injection," Revision 1B2, Step 15b. The "response not obtained" column required performing Attachment 11 to the procedure. To perform Attachment 11 successfully, resetting the safety injection actuation system and containment spray actuation system was required. None of the crews reset both signals before performing Attachment 11. This failure was of minimal safety significance because the Train A ventilation components adequately accomplished the safety function. The licensee issued a training field report dated February 26, 1997, to upgrade training materials.

In the same scenario an automatic swap of the residual heat removal pump suction from the refueling water storage tank to the recirculation sump failed to occur. In attempting to perform a manual swap, the applicant in the control room supervisor position on one crew misread the procedure and gave orders which would have resulted in both residual heat removal pump suction valves being open. Valve interlocks prevented this from occurring. Eventually, he discovered his error and properly read the procedure to accomplish the manual swap. The applicant in the reactor operator position attempted to accomplish the swap incorrectly twice without challenging the validity of the initial directions. These actions delayed placing the plant in a stable condition.

Most of the applicants performed well on the walkthrough portion of the test. However, a few generic minor performance weaknesses were observed. Several of the applicants experienced difficulty in controlling steam generator water levels from the auxiliary shutdown panel in accordance with Procedure OTO-ZZ-00001, "Plant Control From ASP With Control Room Fire," Revision 14. The procedure lacked some specific instructions, such as how to control auxiliary feedwater flow to Steam Generator A. Also, the applicants displayed unfamiliarity with this specific task. The licensee issued a training field report to include this procedure in Regualification Training Cycle 97-3 to accomplish additional procedure and operator training validation.

When adding blended water to the refueling water storage tank in accordance to Procedure OTN-BG-00002, Reactor Makeup Control and Boron Thermal Regeneration System," Revision 13, several applicants failed to perform Step 4.5.10 correctly, in that they did not immediately turn the reactor coolant makeup water control switch to OFF after insertion of the designated amount of blended water in accordance with Step 4.5.10. The examiners perceived that the applicants thought

that flow would stop when the designated amount of blended water had been pumped into the refueling water storage tank. However, the flow of concentrated boric acid continued until the switch was placed in OFF. The safety consequences of this delayed action were minimal in that it resulted in a slight over boration of the refueling water storage tank. However, it indicated an applicant system operation weakness.

Although it did not result in any test failures, several of the applicants exhibited weakness in answering the job performance measure system questions. In many instances, they were able to correctly answer only one of the two system followup questions. This resulted in a marginally satisfactory grade for applicants on several systems.

c. Conclusions

All 11 applicants passed the operating test. Performance and procedure deficiencies not sufficient for license denial were identified for licensee and applicant consideration and corrective action as appropriate.

**O5 Operator Training and Qualification**

**O5.1 Initial Licensing Examination Development**

The facility licensee developed the initial licensing examination in accordance with guidance provided in Generic Letter 95-06, "Changes in the Operator Licensing Program."

**O5.1.1 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, "Licensed Operator Examiner Standards" Revision 7, Supplement 1, and NUREG/BR-0122, "Examiner's Handbook for Developing Operator Licensing Written Examinations," Revision 5.

b. Observations and Findings

The staff determined that the initial examination outline satisfied all requirements and the chief examiner advised the licensee to proceed with examination development. The licensee authors of the outline had communicated informally with the chief examiner concerning the contents of the outline on several occasions prior to the formal submittal.

c. Conclusions

The licensee submitted an high quality examination outline on December 17, 1997.

O5.1.2 Examination Package

a. Inspection Scope

The facility licensee submitted the completed examination package on January 24, 1997. The chief examiner reviewed the submittal against the requirements of NUREG-1021, "Licensed Operator Examiner Standards" Revision 7, Supplement 1, and NUREG/BR-0122, "Examiner's Handbook for Developing Operator Licensing Written Examinations," Revision 5.

b. Observations and Findings

The draft examination was transmitted by the licensee to the NRC by a letter dated January 24, 1997. The draft written examination contained 127 questions, 73 were designated to be included on both reactor operator and senior reactor operator examinations. Most of the questions were developed for this examination. Only four questions from the facility examination question bank were used on both examinations and an additional question from the examination bank was used on the senior reactor operator examination only. The draft examination was considered technically valid, to discriminate at the proper level, and responsive to the knowledge and abilities sample plan submitted by the licensee on December 17, 1996. However, the chief examiner provided enhancement suggestions for 14 questions which appeared on both the reactor operator and senior reactor operator examinations, 4 questions which appeared only on the reactor operator examination, and 4 questions which appeared only on the senior reactor operator examination. The suggestions generally related to specific questions with regard to clarity of wording in the stem, use of inadvertent cues, plausibility of distractors, or level of knowledge required. After extensive discussion of the chief examiner's suggestions, the licensee modified or rewrote 11 questions appearing on both examinations, 2 questions appearing only on the reactor operator examination, and 2 questions appearing only on the senior reactor operator examination. The chief examiner concurred with the resolution of his suggestions and the final product. The licensee performed a postexamination analysis and recommended that no further changes be made to the written examinations. The examiners concurred with this analysis and recommendation.

The licensee submitted three dynamic scenarios, including one backup scenario which was not used during the examination. The chief examiner noted several errors on Examiner Standards Form 301-5, "Transient and Event Checklist," which were corrected by the licensee. These evolution assignment errors did not invalidate any of the dynamic scenarios. The chief examiner made a generic

comment that the expected operator/plant response forms were a compilation of expected actions, which did not indicate which applicant was expected to perform. The licensee revised the forms for all three scenarios to indicate specific expected applicant response. Other comments, which the licensee incorporated, included editorial and enhancements to facilitate administration. The licensee initiated a few minor editorial enhancements to the scenarios to facilitate administration during the chief examiner's preparation week onsite.

To support the systems walkthrough section of the operating test, the facility licensee provided job performance measures developed to evaluate selected operator tasks that contained well written task elements, performance standards, and comprehensive evaluator cues. Eleven job performance measure tasks with two followup questions each were submitted. One job performance measure was for backup and was not used. The chief examiner provided comments concerning enhancement of the walkthrough test outline, which were incorporated. The chief examiner questioned the critical step assignments for three job performance measures and the licensee made additional critical step assignments for these job performance measures. Also, the licensee rewrote three job performance measure questions in response to the chief examiner's enhancement suggestions. Other chief examiner comments, which the licensee incorporated, concerned use of references on specific job performance measure questions. A minor editorial change was made to one job performance measure to correct a typographical error, which the chief examiner discovered when examining the first applicant.

The licensee submitted both job performance measures and questions to cover the administrative section of the walkthrough test. One set was submitted for reactor operator applicants and another set was submitted for senior reactor operator applicants. The job performance measures submitted were acceptable. However, to facilitate administration some minor changes were made to one job performance measure during preparation week. Also, the expected accuracy requirement for this job performance measure was upgraded in response to a chief examiner comment. After reviewing the chief examiner's comments, the licensee made minor changes to the administrative questions as follows. The chief examiner evaluated Question 1 in Section 3 of the reactor operator test as discriminating at too low a level and the licensee replaced it. Also, the chief examiner evaluated both questions in Section 4 to be beyond the scope of reactor operator responsibilities and the licensee revised them to be more appropriate to operator level required knowledge. On the senior reactor operator set, the licensee removed what the chief examiner considered a cue for Question 1 in Section 3.



c. Conclusions

Overall, the written examination and operating test materials submitted were of high quality, discriminated at the appropriate license level, and were adequate for administration. Further, licensee staff were highly responsive in responding to enhancement suggestions developed during the review process. No significant changes to examination materials were required as a result of administration.

O5.2 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

Only one simulator performance problem affected examination administration. During performance of job performance measures, the annunciator reset switch at the primary console failed to function. This caused a slight delay in administration while the simulator support personnel corrected the problem.

A few simulator performance problems were observed by the chief examiner during examination validation and are listed in Attachment 2. All of these problems had been previously identified by the licensee, and none affected examination validity.

c. Conclusions

The simulator supported the examinations well. One minor malfunction impacted examination administration, but did not affect examination validity.

III. Engineering

E2 Engineering Support of Facilities & Equipment

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

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

V. Management Meetings

X1 Exit Meeting Summary

The examiners presented the inspection results to members of the licensee management at the conclusion of the inspection on February 28, 1997. 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

R. Affolter, Plant Manager  
R. Barton, Operating Supervisor, Training  
F. Biermann, Operating Supervisor, Training  
G. Czeschin, Superintendent, Training  
J. Dampf, Shift Supervisor Operations, Training  
J. Davis, Engineer, Quality Assurance  
S. Halverson, Senior Training Supervisor, Simulator  
S. Henderson II, Operating Supervisor, Training  
R. Lamb, Superintendent, Operations  
J. Neher, Engineer, Quality Assurance  
R. Nelson, Operating Supervisor, Training  
D. Neterer, Assistant Superintendent, Operations  
G. Randolph, Vice President, Nuclear

NRC

F. Brush, Resident Inspector  
D. Passehl, Senior Resident Inspector

## ATTACHMENT 2

### SIMULATION FACILITY REPORT

Facility Licensee: Union Electric Company

Facility Docket: 50-483

Operating Examinations Administered at: Callaway Plant

Operating Examinations Administered on: February 24-28, 1997

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

Only one simulator performance problem affected examination administration. During performance of job performance measures, the annunciator reset switch at the primary console failed to function. This caused a slight delay in administration while the simulator support personnel corrected the problem.

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

- Two computer points were available to monitor the ultimate heat sink level in the plant. Although the computer points were available in the simulator, they were not driven by the simulation system. The instructor had to insert a high level alarm to cause the applicant to bring down the ultimate heat sink level. The applicant had to request local monitoring of level.
- A modification had been installed in the plant to monitor N-16 detectors on the plant computer. The modification had not been completed on the simulator and was scheduled for completion in April 1997. The examiners had to cue the applicants that the N-16 monitors were out of service and alternate radiation monitoring instruments were used for performance of the dynamic scenarios and simulator job performance measures.



ATTACHMENT 3

FINAL WRITTEN EXAMINATION AND ANSWER KEY

**U. S. NUCLEAR REGULATORY COMMISSION  
WRITTEN EXAMINATION****APPLICANT INFORMATION**

Name:

Region:

IV

Date:

February 24, 1997

Facility/Unit:

Callaway

License Level:

RO

Reactor Type:

Westinghouse

**INSTRUCTIONS:**

Use the answer sheet provided to document your answers. Staple this cover sheet on top of the answer sheet. Each question is worth one point. The passing grade requires a final grade of at least 80 percent. Examination papers will be picked up 4 hours after the examination starts.

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

---

Applicant's Signature**RESULTS**

Examination Value

100 Points

Applicant's Score

\_\_\_\_\_ Points

Applicant's Grade

\_\_\_\_\_ Percent

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.
2. 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.
3. To pass the examination, you must achieve a grade of 80 percent or greater.
4. Each question is worth 1 point.
5. There is a time limit of 4 hours for completing the examination.
6. Use only black ink or dark pencil to ensure legible copies.
7. Print your name in the blank provided on the examination cover sheet and the answer sheet.
8. Mark your answers on the answer sheet provided and do not leave any question blank.
9. If the intent of a question is unclear, ask questions of the examiner only.
10. 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.
11. When you complete the examination, staple the examination cover sheet on top of the answer sheet and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.
12. After you have turned in your examination, leave the examination area as defined by the examiner.

RO Test

QUESTION #001

When performing a boration to the reactor coolant system for a down power transient, the PZR heaters should be turned on in manual to:

- A. Maintain PZR pressure in the normal operating range during the down power.
- B. Allow an increased ramp rate for the down power.
- C. Equalize the reactor coolant system and PZR boron concentrations.
- D. Ensure positive PZR control is established prior to starting the down power.

ANSWER:

- C. Equalize the reactor coolant system and PZR boron concentrations.

RO #19

SRO #21

K/A #004000K601

OBJECTIVE #003AA4B1

REFERENCES: OTN-BG-00002, "Reactor Makeup Control and Boron Thermal Regeneration System"

RO Test

QUESTION #002

The plant experiences a sustained loss of all AC power.

Which ONE of the below would be used to makeup to the spent fuel pool due to low spent fuel pool level?

- A. Pressurize VCT and use Reactor Makeup
- B. Diesel Fire Pump and fire hose
- C. Gravity drain condensate storage tank
- D. Essential service water emergency makeup

ANSWER:

- B. Diesel Fire Pump and fire hose

RO #41

SRO #44

K/A #033000G11

OBJECTIVE #003D220Z

REFERENCES: ECA-0.0, Step 23



RO Test

QUESTION #003

Which ONE of the below computer data quality codes indicates that the alarm function is still operable?

A. DALM

B. DEL

C. SUB

D. LRL

ANSWER:

D. LRL

RO #12

SRO #11

K/A #194001A115

OBJECTIVE #003A02D4

REFERENCES: OOA-RJ-00001

RO Test

QUESTION #004

Preventive Maintenance is scheduled on the 'A' Condensate Pump Motor and its supply breaker PB0304. Which ONE of the following locations MUST be tagged in accordance with the Workman's Protection Assurance Program?

- A. Breaker PB0304 local handswitch
- B. Condensate Pump Discharge Valve
- C. Racking Mechanism for Breaker PB0304
- D. Main Control Board Switch AD-HIS-1

ANSWER:

- C. Racking Mechanism for Breaker PB0304

RO #4

SRO #4

K/A #194001K107

OBJECTIVE #003A330F

REFERENCES: APA-ZZ-00310 Page 20

RO Test

QUESTION #005

A Reactor Startup is in progress with Control Bank B at 50 steps and Reactor Power at  $10^2$  CPS.

Which ONE of the following is required if Source Range Nuclear Channel N32 fails high?

- A. Place N32 in the tripped condition within 6 hours.
- B. Verify all Rod Bottom Lights lit.
- C. Verify Shutdown Margin within one hour.
- D. Insert all Control Banks and repair channel N32.

ANSWER:

- B. Verify all Rod Bottom Lights lit.

RO #96

SRO #88

K/A #000032G11

OBJECTIVE #0110280E

REFERENCES: OTO-SE-00001  
E-0  
Tech Spec 3.3.1

RO Test

QUESTION #006

The reactor tripped 5 minutes ago.

Which one of the following completes the statement concerning the heat transfer relationship between the RCS and Steam Generators?

The heat transfer rate between the RCS and the S/Gs will:

- A. decrease as RCS temperature increases and AFW flow increases.
- B. decrease as AFW temperature decreases and AFW flow increases.
- C. increase as AFW temperature increases and RCS flow decreases.
- D. increase as RCS temperature increases and AFW flow increases.

ANSWER:

- D. increase as RCS temperature increases and AFW flow increases.

RO #33

SRO #33

K/A #061000K501

OBJECTIVE #003D260R

REFERENCES: T61.003D.6

RO Test

QUESTION #007

Which of the following are allowable relaxations for Independent Verification when restoring a system requiring IV?

1. Comparing the tagout control sheet to current plant reference material (flow diagrams, procedures, etc.) to ensure adequacy of the tagout.
2. Verifying status lights, annunciators, meter indications, etc. on the main control board that unequivocally depicts the equipment status.
3. Performing a functional test that verifies that the component is in the specified configuration.
4. When the concept of ALARA would be violated.

A. 2, 3, 4

B. 1, 2, 4

C. 1, 2, 3

D. 1, 3, 4

ANSWER:

A. 2, 3, 4

RO #1

SRO #1

K/A #194001K101

OBJECTIVE #003A33A6

REFERENCES: APA-ZZ-00310



RO Test

QUESTION #008

Which statement describes loss of CCW flow to a RCP in the emergency procedures?

- A. CCW flow is low for >10 minutes or RCP motor bearing temperature is >195°F
- B. CCW flow is low for >10 minutes or RCP motor bearing temperature is <195°F.
- C. CCW flow is interrupted for >10 minutes or RCP motor bearing temperature is >195°F.
- D. CCW flow is interrupted for >10 minutes or RCP motor bearing temperature is <195°F.

ANSWER:

- C. CCW flow is interrupted for >10 minutes or RCP motor bearing temperature is >195°F.

RO #75

K/A #000015A210

OBJECTIVE #003D040H

REFERENCES: E-0, Foldout

RO Test

QUESTION #009

OTO-ZZ-00001, Control Room Inaccessibility, requires operation of three 'Control Room Isolation Transfer' switches on the Auxiliary Shutdown Panel, which isolate control and indication of the associated devices from the control room.

Which ONE of the following describes the reason for operating these switches?

- A. Prevent inadvertent actuation of components which are necessary to safely shutdown the plant.
- B. Initiates a reactor trip and transfer control of the plant to the auxiliary shutdown panel.
- C. Required by Technical Specifications action to ensure that auxiliary shutdown Operability is satisfied.
- D. Transfers alarm and control of pressurizer heaters from the Control Room.

ANSWER:

- A. Prevent inadvertent actuation of components which are necessary to safely shutdown the plant.

RO #71

SRO #69

K/A #000067K304

OBJECTIVE #0110480D

REFERENCES: T61.0110.6 LP-#48

QUESTION #010

Containment Spray actuates, and is still required, following a large break LOCA in containment. Cold Leg Recirculation alignment per ES-1.3 has been completed earlier for the ECCS pumps. The "RWST LO/LO 2" annunciator alarms with RWST level at 9% and decreasing.

Which ONE of the following actions should be performed on the Containment Spray System?

- A. Stop the Containment Spray Pumps at 5% RWST level if the pump suctions do not automatically swap from the RWST to the containment recirc sumps at 9% level.
- B. Open containment spray suctions from the containment sumps, reset the CSAS actuation, close pump suctions from the RWST while allowing the Containment Spray Pumps to continue to run.
- C. Stop the Containment Spray Pumps, open containment spray suctions from the containment sumps, reset the CSAS actuation, close pump suctions from the RWST, and then restart the Containment Spray Pumps.
- D. Immediately reset the CSAS actuation and stop one Containment Spray Pump, verify all containment coolers in service, then stop the other Containment Spray Pump at 5% RWST level.

ANSWER:

- B. Open containment spray suctions from the containment sumps, reset the CSAS actuation, close pump suctions from the RWST while allowing the Containment Spray Pumps to continue to run.

RO #44

K/A #026000K401

OBJECTIVE #0110180F

REFERENCES: ES-1.3

## RO Test

### QUESTION #011

The following conditions exist:

- Containment pressure transmitter PT-937 declared inoperable
- Required Technical Specification Actions have been taken for channel 937

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. 2/3 coincidence after the channel is placed in the TRIP condition, by placing bistable (PB-937A) in the TEST position.
- B. 2/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.
- C. 1/3 coincidence after the channel is placed in the TRIP condition, by placing bistable (PB-937A) in the TEST position.
- D. 1/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.

ANSWER:

- B. 2/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.

RO #23

SRO #24

K/A #013000K502

OBJECTIVE #003A0212

REFERENCES: T/S 3.3.2 ACTION c, Table 3.3-3 FU 2.c ACTION 15  
PRINT 7250D64 S008

RO Test

QUESTION #012

Following a LOCA, hydrogen concentration in the containment has increased slowly over several days, reaching 1.0 volume per cent.

Which ONE of the following actions should be taken?

- A. One train of the electric hydrogen recombiner system should be placed in service.
- B. Electric hydrogen recombiners should be placed in service when hydrogen concentration reaches 4.0 volume per cent.
- C. Electric hydrogen recombiners cannot be placed in service. Heater operating temperature on the recombiner exceeds ignition temperature for hydrogen at this concentration.
- D. Both trains of electric hydrogen recombiners should be placed in service in conjunction with a containment purge.

ANSWER:

- A. One train of the electric hydrogen recombiner system should be placed in service.

RO #63

SRO #42

K/A #028000K501

OBJECTIVE #0110400J

REFERENCES: OTN-GS-00001

E-1



RO Test

QUESTION #013

Which ONE of the below is designed to protect the reactor from an uncontrolled RCCA bank withdrawal from a subcritical condition?

- A. C-5 Low Power Interlock
- B. Boron Dilution Flux Doubling Actuation
- C. Source Range High Flux Trip
- D. High Positive Flux Rate Trip

ANSWER:

- C. Source Range High Flux Trip

RO #87

K/A #000001K103

OBJECTIVE #0110270D

REFERENCES: T61.0110.6 LP-#27

RO Test

QUESTION #014

With the plant in MODE 1 the Shift Supervisor is notified by security that a confined penetration has occurred by unauthorized personnel into the NB01 switchgear room. The Plant Emergency Alarm is sounded and the CODE RED is announced over the Gai-tronics.

Which ONE of the below may be included in the initial response by Control Room personnel?

- A. Trip the reactor, perform Control Room evacuation, and commence RCS cooldown from the Aux Shutdown Panel.
- B. Shut the Control Room missile door, trip the reactor, and commence RCS cooldown from the Control Room.
- C. Shut the Control Room missile door, increase monitoring of MCB indications, and have all Equipment Operators report to the Field Office.
- D. Trip the reactor, commence RCS cooldown from the Control Room, and evacuate all non-essential personnel.

ANSWER:

- B. Shut the Control Room missile door, trip the reactor, and commence RCS cooldown from the Control Room.

RO #13

K/A #194001A116

OBJECTIVE #003B280B

REFERENCES: EIP-ZZ-00102, Att. 1  
OTO-SK-00001

RO Test

QUESTION #015

Which ONE of the following Area Radiation Monitors is required by Technical Specifications?

- A. Containment Area Radiation Monitor SDRE0041
- B. New Fuel Storage Area Radiation Monitor SDRE0035
- C. Control Room Area Radiation Monitor SDRE0033
- D. Cask Handling Area Radiation Monitor SDRE0034

ANSWER:

- B. New Fuel Storage Area Radiation Monitor SDRE0035.

RO #36

SRO #34

K/A #072000K302

OBJECTIVE #0110360G

REFERENCES: T/S 3.3.3.1, Table 3.3-6 FU 2.b.(2)  
Callaway Bank

RO Test

QUESTION #016

Which of the following flow paths correctly describes how power is normally supplied to a typical reactor protection instrument bus?

- A. 480V AC from the safeguard bus, rectified to 125V DC, inverted to 120V AC, and supplied to the instrument bus.
- B. 480V AC from the safeguard bus, transformed to 120V AC, and supplied to the instrument bus.
- C. 125V DC from the battery, supplied to the battery bus, and supplied to the instrument bus.
- D. 480V AC from the safeguards bus, rectified to 120V DC, and supplied to the instrument bus.

ANSWER:

- A. 480V AC from the safeguard bus, rectified to 125V DC, inverted to 120V AC, and supplied to the instrument bus.

RO #48

K/A #062000K201

OBJECTIVE #0110060A

REFERENCES: T61.0110.6 LP-#6

RO Test

QUESTION #017

The crew implemented FR-C.1, Response to Inadequate Core Cooling.

Which one of the following combinations of core exit thermocouples and indicated temperatures would require starting RCP's, even if the normally required support conditions could not be met?

|    | # of TC's | Indicated Temp |
|----|-----------|----------------|
| A. | 2         | 2450°F         |
| B. | 4         | 1750°F         |
| C. | 6         | 1350°F         |
| D. | 8         | 750°F          |

ANSWER:

C. 6 1350°F

RO #27

SRO #27

K/A #017020A402

OBJECTIVE #003D250E

REFERENCES: FR-C.1 Background



RO Test

QUESTION #018

Callaway Plant is preparing for Reactor Core Offload with Refueling Pool Level at 391 inches (2046 ft. level). The polar crane operator inadvertently lifts the Reactor Vessel Upper Internals out of the water and causes a Hi Hi alarm on Containment Building Area Radiation Monitor SDRE0040.

Which ONE of the following is a required Immediate Action?

- A. Close ECV0995, Fuel Transfer Tube Isolation Valve.
- B. Initiate a Containment Purge Isolation Signal (CPIS).
- C. Transfer the Charging Pump suction to the RWST and increase flow.
- D. Evacuate personnel from containment.

ANSWER:

- D. Evacuate personnel from containment.

RO #94

SRO #91

K/A #000061G09

OBJECTIVE #003E0514

REFERENCES: OTO-KE-00001  
OTA-RL-RK062, Att. A

RO Test

QUESTION #019

FR-S.1 "Response to Nuclear Power Generation/ATWS" Step 2 requires a turbine trip. Why would it be desirable to trip the turbine if a reactor trip had not been achieved? (Choose ONE)

- A. The reactor will be subcritical due to manual rod insertion before the turbine is tripped.
- B. Tripping the turbine will conserve SG inventory and limit the pressure transient that would result from a loss of all feedwater.
- C. Tripping the turbine will insert negative reactivity from moderator temperature coefficient, thus assisting in reactor shutdown.
- D. Tripping the turbine will generate an additional reactor trip signal and suppress core void formation by increasing RCS pressure.

ANSWER:

- B. Tripping the turbine will conserve SG inventory and limit the pressure transient that would result from a loss of all feedwater.

RO #86

SRO #61

K/A #000029K312

OBJECTIVE #003D290C

REFERENCES: T61.003D. < LP-#29

RO Test

QUESTION #020

Which ONE (1) of the following is the HIGHEST RCS pressure at which the Safety Injection Pumps will deliver water to the RCS?

- A. 1050 psig
- B. 1250 psig
- C. 1450 psig
- D. 1650 psig

ANSWER:

- C. 1450 psig

RO #43

SRO #38

K/A #006000K603

OBJECTIVE #0110170A

REFERENCES: E-0

T61.0110.6 LP-#17

QUESTION #021

While performing actions in E-3, "Steam Generator Tube Rupture" the Control Room Supervisor asks the Balance of Plant Operator to check intact Steam Generator narrow range levels greater than 4%. Which ONE of the following BOP responses would satisfy Callaway Plant Communication Guidelines?

- A. Yes, intact Steam Generator narrow range levels are greater than 4%.
- B. Yes, intact Steam Generator narrow range levels are 50% and stable.
- C. Yes, intact Steam Generator narrow range levels are increasing.
- D. Yes, intact Steam Generator narrow range levels are 10%.

ANSWER:

- B. Yes, intact Steam Generator narrow range levels are 50% and stable.

RO #8

SRO #7

K/A #194001A105

OBJECTIVE #003A060H

REFERENCES: UEND-COMMUNICATIONS-01 Page 4 of 5

RO Test

QUESTION #022

Given the following:

- The Main Turbine tripped from 95% power.
- All systems responded normally to the trip.

Which ONE (1) of the following is the expected position of the steam dump valves with Tavg at 575°F?

|    | Full Open | Modulating | Full Closed |
|----|-----------|------------|-------------|
| A. | 12        | 0          | 0           |
| B. | 9         | 3          | 0           |
| C. | 6         | 3          | 3           |
| D. | 3         | 3          | 6           |

ANSWER:

|    |   |   |   |
|----|---|---|---|
| C. | 6 | 3 | 3 |
|----|---|---|---|

RO #57

SRO #55

K/A #041020K418

OBJECTIVE #0110200J

REFERENCES: T61.0110.6 LP-#20

RO Test

QUESTION #023

A plant startup is in progress with power indicating  $1E-6\%$  on both IR channels. Which one of the following will occur if IR channel N36 fails to 21%?

- A. IR high flux reactor trip
- B. Manual and automatic rod stop
- C. PZR low pressure reactor trip is unblocked
- D. PR low flux reactor trip

ANSWER:

- B. Manual and automatic rod stop

RO #95

SRO #87

K/A #000033A202

OBJECTIVE #0110260J

REFERENCES: OTO-SE-00002



RO Test

QUESTION #024

Given the following conditions:

- RCS WR Pressure = 1635 psig
- Pressurizer Pressure = 1710 psig
- RCS C.L. Temperature = 560°F
- Core Exit TC = 568°F

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

- A. 38
- B. 41
- C. 47
- D. 49

ANSWER:

- B. 41

RO #39

SRO #37

K/A #002000K509

OBJECTIVE #003D070S

REFERENCES: Steam Table

RO Test

QUESTION #025

The Callaway Plant is performing a Plant Startup following a Refueling Outage. While transferring Feedwater Control to the Main Feedwater Reg Valves, a Reactor Trip occurs on Low S/G Level. The resulting Aux Feedwater Actuation has caused RCS Tavg to decrease to 475°F. All systems operate as designed.

Which one of the following components would be cooled by the Service Water System?

- A. 'A' Class 1E Air Conditioner
- B. 'B' Containment Spray Pump Room Cooler
- C. 'A' Component Cooling Water Heat Exchanger
- D. 'B' Closed Cooling Water Heat Exchanger

ANSWER:

- D. 'B' Closed Cooling Water Heat Exchanger

RO #60

K/A #076000K119

OBJECTIVE #0110040G

0110040H

REFERENCES: T61.0110.6 LP-#4

RO Test

QUESTION #026

With the plant in MODE 1, AND one safety related CCP INOPERABLE, RCP Seal Injection should be provided by the \_\_\_\_\_ which will maintain seal cooling in the event of a \_\_\_\_\_.

- A. Non-safety related charging pump, CCW thermal barrier leak.
- B. Non-safety related charging pump, loss of a single electrical bus.
- C. Opposite train safety related CCP, CCW thermal barrier leak.
- D. Opposite train safety related CCP, loss of a single electrical bus.

ANSWER:

- B. Non-safety related charging pump, loss of a single electrical bus.

RO #20

SRO #22

K/A #004000K202

OBJECTIVE #003A04A1

REFERENCES: OTN-BG-00001

RO Test

QUESTION #027

Which ONE of the following describes the tagout control used for the temporary operation of equipment that is protected under a Hold Off.

- A. The tags shall be cleared prior to operation then a new tagout written and new tags hung.
- B. The tags may be lifted and reused after operation providing a briefing is held and the individual signed on the WPA is present at the component to be checked.
- C. With Shift Supervisor and Requester approval, equipment may be operated without clearing the tags, if the requester is in the equipment area and operation completed in the same shift.
- D. The tags which must be cleared to allow for the operation can be temporarily cleared, replaced with Caution Tags until the operation is complete, then the Caution Tags replaced with new Hold Off Tags.

ANSWER:

- B. The tags may be lifted and reused after operation providing a briefing is held and the individual signed on the WPA is present at the component to be checked.

RO #2

SRO #2

K/A #194001K102

OBJECTIVE #003A330L

REFERENCES: ODP-ZZ-00310 Page 10

RO Test

QUESTION #028

During operations at 95% power and pressurizer level at 48%, the Tave input to the pressurizer level controller fails low. What INDICATIONS does the operator have that the Tave input failed low?

- A. Backup heaters are energized, charging flow control valve slowly closes, high level deviation alarm actuates.
- B. Backup heaters are deenergized, charging flow control valve slowly opens, low level deviation alarm actuates.
- C. Backup heaters are energized, charging flow control valve slowly opens, low level deviation alarm actuates.
- D. Backup heaters are deenergized, charging flow control valve slowly closes, high level deviation alarm actuates.

ANSWER:

- A. Backup heaters are energized, charging flow control valve slowly closes, high level deviation alarm actuates.

RO #40

SRO #39

K/A #011000A203

OBJECTIVE #0110090C

REFERENCES: OTO-BB-00004

RO Test

QUESTION #029

Plant conditions:

- Operating in MODE 1, at 100% power.
- SJ-RE-01, CVCS Letdown Monitor, Alarming Hi/Hi
- SD-RE-20, AB 2000 Area, Alarming Hi/Hi

Which ONE of the following operator actions is required per OTO-BB-00005, RCS High Activity?

- A. Reduce power
- B. Isolate letdown
- C. Increase letdown to 120 gpm
- D. Initiate hourly sampling of the RCS

ANSWER:

- C. Increase letdown to 120 gpm

RO #76

SRO #73

K/A #000076G008

OBJECTIVE #003B180A

REFERENCES: OTO-BB-00005



RO Test

QUESTION #030

Given the following conditions:

- Tavg is 576°F
- Pressurizer Pressure is 2240 psig
- Charging Flow is being controlled in MANUAL
- The BACKUP HEATERS have just ENERGIZED

Which ONE of the following is the actual pressurizer level?

- A. 37%
- B. 42%
- C. 47%
- D. 52%

ANSWER:

- D. 52%

RO #98

SRO #98

K/A #000028A201

OBJECTIVE #0110300K

REFERENCES: T61.0110.6 LP-#30

RO Test

QUESTION #031

A Ruptured Steam Generator has been cooled down and depressurized. ECCS pumps have been secured and Normal Charging and Letdown have been established.

Plant Conditions:

- PZR Level 30% and DECREASING
- Ruptured S/G NR Level INCREASING

Which ONE of the following is required to balance inventory?

- A. Depressurize the RCS
- B. Increase RCS Makeup Flow
- C. Turn on Pressurizer Heaters
- D. Decrease RCS Makeup Flow

ANSWER:

- A. Depressurize the RCS

RO #85

SRO #90

K/A #000038K306

OBJECTIVE #003D17JJ

REFERENCES: T61.003D.6 LP-#17  
E-3, SGTR

RO Test

QUESTION #032

I&C Technicians are troubleshooting a Rod Control Urgent Failure alarm that was received during Physics testing. When the technicians pull a Stationary Gripper Firing Card in Power Cabinet 1BD, the Control Bank D, Group 1 Control Rods drop to the bottom of the core.

Which ONE of the following describes the required action of the Control Room Operators?

- A. Adjust Turbine Load to maintain TAVG and TREF  $\Delta T$  less than 3°F.
- B. Trip the Reactor and proceed to E-0, Reactor Trip or Safety Injection.
- C. Recover the dropped Control Rods within one hour or be in HOT STANDBY within the next 6 hours.
- D. Initiate boration to restore SHUTDOWN MARGIN to greater than or equal to 1.3%  $\Delta K/K$ .

ANSWER:

- B. Trip the Reactor and proceed to E-0, Reactor Trip or Safety Injection.

RO #55

K/A #014000A203

OBJECTIVE #003B260D

REFERENCES: LER 95-01  
OTO-SF-00003

RO Test

QUESTION #033

A complete loss of all circulating water pumps occurs from 100% steady state power.

Assuming no operator actions and all systems function as designed, which ONE of the following corresponds to plant conditions 10 minutes after the loss of all circulating water pumps?

|    | RCS TAVG | S/G Pressures |
|----|----------|---------------|
| A. | 557°F    | 1092 psig     |
| B. | 557°F    | 1125 psig     |
| C. | 561°F    | 1092 psig     |
| D. | 561°F    | 1125 psig     |

ANSWER:

D. 561°F 1125 psig

RO #37

K/A #035010K301

OBJECTIVE #0110200E

REFERENCES: Steam Table  
ES-0.1

RO Test

QUESTION #034

A normal plant heatup is in progress per OTG-ZZ-00001 with the following plant conditions:

- RCS pressure 1835 psig
- RCS pressurization rate 15 psig/min
- RCS temperature 485°F
- RCS heat up rate 10°F/hr
- S/G pressure 575 psig

If the current trend continues, which ONE of the following occur FIRST?

- A. Main Steam Isolation Valves close.
- B. Pressurizer PORV's open.
- C. Low Pressurizer Pressure Safety Injection.
- D. First group of steam dumps throttle open.

ANSWER:

- A. Main Steam Isolation Valves close.

RO #21

SRO #25

K/A #013000K403

OBJECTIVE #0110520B

REFERENCES: OTG-7Z-00001, "Plant Heatup Cold Shutdown to Hot Standby"

Page 25

RO Test

QUESTION #035

Which ONE of the following will occur upon a decreasing Instrument Air System pressure due to a break at the condensate polishers?

- A. The Lag air compressor loads at 117 psig; and all compressors "Fail-Safe" start at 115 psig.
- B. The Standby compressor loads at 117 psig; the Service Air Header Isolation valve KA-PV-11 "Fail-Safe" close at 110 psig.
- C. The Standby air compressor loads at 117 psig; and all compressors will be running at 110 psig.
- D. Service Air header isolation valve KA-PV-11 will close at 117 psig; the Lag air compressor loads at 115 psig.

ANSWER:

- A. The Lag air compressor loads at 117 psig; and all compressors "Fail-Safe" start at 115 psig.

RO #100

K/A #000065G10

OBJECTIVE #0110140D

REFERENCES: OTO-KA-00001  
Callaway Bank



RO Test

QUESTION #036

A surveillance to be performed on a piece of equipment having a contact reading of 50 R/hr in a room with a general area radiation reading of 125 mR/hr, would require entry into a:

- A. Danger High Radiation Area
- B. Caution High Radiation Area
- C. Danger High Radiation Area Radiological Exclusion Area
- D. Very High Radiation Area

ANSWER:

- B. Caution High Radiation Area

RO #3

SRO #3

K/A #194001K103

OBJECTIVE #003A31F3

REFERENCES: APA-ZZ-01000 Page 6

RO Test

QUESTION #037

Which ONE of the following statements describes the effect of a loss of DC control power to 4160 VAC breaker NB0112, NB01 MN FDR BKR FROM XNB01? (Assume that the breaker is the only component affected by the loss of DC power.)

- A. The breaker will fail in its current position and cannot be tripped or closed from the MCB.
- B. The breaker will fail in its current position and can be tripped but not closed from the MCB.
- C. The breaker will trip and can be closed but not tripped from the MCB.
- D. The breaker will trip and cannot be tripped or closed from the MCB.

ANSWER:

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

RO #52

K/A #063000K302

OBJECTIVE #0110060E

REFERENCES: T61.0110.6 LP-#6  
E-23NB12

RO Test

QUESTION #038

The Callaway Plant is operating at 60% Reactor Power, increasing at 3% per hour. MCB Annunciator 106A, "Cond Hotwell Lvl Lo Lo" alarms. The Lo Lo level condition is verified on MCB indicator AD-LI-114.

Which one of the following is a required immediate action for this plant condition?

- A. Run the remaining feed pump speed to the Hi Speed Stop to restore S/G level.
- B. Start the Motor Driven Auxiliary Feedwater Pumps PAL01A and PAL01B.
- C. Drive Control Rods to reduce Reactor Power to less than 2%.
- D. Trip the Reactor and refer to E-0, Reactor Trip or Safety Injection.

ANSWER:

- D. Trip the Reactor and refer to E-0, Reactor Trip or Safety Injection.

RO #30

K/A #056020G10

OBJECTIVE #0110220M

REFERENCES: OTA-RL-RK106, Att. A

RO Test

QUESTION #039

During a loss of all AC while performing ECA-0.0, Loss of All A.C. NK11 battery discharge amps is at 300 amps.

Which ONE of the following is the MAXIMUM time that NK01 could be predicted to be Operable assuming the battery was fully charged initially?

- A. 2 hours
- B. 4 hours
- C. 6 hours
- D. 8 hours

ANSWER:

- B. 4 hours

RO #67

SRO #65

K/A #000055K101

OBJECTIVE #003D220V

REFERENCES: E21NK01

QUESTION #040

A Reactor Trip has just occurred. The following conditions are found while performing Step 3 of E-0, Reactor Trip or Safety Injection:

- NB01 energized from Emergency Diesel NE-01
- NB02 deenergized (no lockout)

Which ONE of the following describes the required action and basis for that action?

- A. Transition to ECA-0.0, Loss of all AC Power because E-0 assumes that Offsite Power is Available.
- B. Attempt to restore power to NB02 while continuing with E-0 because it is desirable to have power to all AC Emergency buses.
- C. Attempt to restore Off Site Power to BOTH NB buses because E-0 assumes that Off Site Power is Available.
- D. Do not make attempts to restore NB02 because it will delay the operator action and only one NB bus is assumed energized by E-0.

ANSWER:

- B. Attempt to restore power to NB02 while continuing with E-0 because it is desirable to have power to all AC Emergency buses.

RO #99

SRO #99

K/A #000056K302

OBJECTIVE #003D040E

REFERENCES: T61.003D.6 LP-#4

RO Test

QUESTION #041

A periodic load test is being performed on NE02, Standby Diesel Generator 'B' in accordance with OSP-NE-0001B. NE02 has been paralleled with 4160V Bus NB02 and is carrying 6 MW of real load. A Main Steamline break occurs and containment pressure increases to 20 (twenty) psig.

Which ONE of the following describes the response of the Load Shedding Emergency Load Sequencing System (LSELS)?

- A. The LOCA Sequencer starts the Containment Spray Pumps at Step 3 (Time 15 seconds).
- B. The Shutdown Sequencer starts the 'A' Essential Service Water Pump at Step 5 (Time 25 seconds).
- C. The LOCA Sequencer starts the Safety Injection Pumps at Step 1 (Time 5 seconds).
- D. The Shutdown Sequencer starts the Residual Heat Removal Pumps at Step 2 (Time 10 seconds).

ANSWER:

- C. The LOCA Sequencer starts the Safety Injection Pumps at Step 1 (Time 5 seconds).

RO #50

SRO #46

K/A #064000A307

OBJECTIVE #0110510F

REFERENCES: T61.0110.6 LP-#51



QUESTION #042

WHICH of the following red paths is MOST LIKELY to occur for a steam line break on a single S/G outside containment, resulting in a reactor trip and SI? (Assume that all safeguards equipment functions as designed.)

- A. Response to Inadequate Core Cooling (FR-C.1)
- B. Response to Loss of Secondary Heat Sink (FR-H.1)
- C. Response to Imminent Pressurized Thermal Shock Condition (FR-P.1)
- D. Response to High Containment Pressure (FR-Z.1)

ANSWER:

- C. Response to Imminent Pressurized Thermal Shock Condition (FR-P.1)

RO #70

SRO #63

K/A #000040K101

OBJECTIVE #003D280A

REFERENCES: T61.003D.6

RO Test

QUESTION #043

A plant cooldown is initiated following a reactor trip using the AUX FEED system and S/G PORV's. The CST level is initially at 87% (407,000 gal).

Which ONE of the following is the time available until CST level decreases to the MODE 3 Technical Specification limit with AUX feed flow at 300,000 lbm/hr. (8.345 lbm/gal)

- A. 3.5 hr.
- B. 4.0 hr.
- C. 4.5 hr.
- D. 5.0 hr.

ANSWER:

- A. 3.5 hr.

RO #34

SRO #31

K/A #061000A104

OBJECTIVE #0110250E

REFERENCES: T/S 3.7.1.3

Tank Book TDB-001

RO Test

QUESTION #044

Which ONE of the following events is required to be recorded in the RO Narrative Logs?

- A. Chemical addition to the condensate system.
- B. Security Event due to Security System (SAS) malfunction.
- C. Annunciator switchyard carrier potential/tone loss, alarms.
- D. Unexpected ESFAS alarm on ESW system.

ANSWER:

- D. Unexpected ESFAS alarm on ESW system.

RO #9

SRO #8

K/A #194001A106

OBJECTIVE #003A02B1

REFERENCES: ODP-ZZ-00006, Section 4.3

RO Test

QUESTION #045

Conditions:

- Reactor Power = 100%
- CCW Pump 'D' Running and 'B' in Standby
- A Lockout occurs on the Startup Transformer

Which one of the following describes the design response of the CCW System?

- A. 'D' CCW Pump continues to run and 'B' CCW Pump does not start.
- B. 'D' CCW Pump is shed and 'B' CCW Pump is started by the Shutdown Sequencer.
- C. 'D' CCW Pump continues to run and 'B' CCW Pump is started by the Shutdown Sequencer.
- D. 'D' CCW Pump is shed and 'B' CCW Pump does not start.

ANSWER:

- B. 'D' CCW Pump is shed and 'B' CCW Pump is started by the Shutdown Sequencer.

RO #61

K/A #008010A301

OBJECTIVE #0110100E

REFERENCES: T61.0110.6 LP-#10

QUESTION #046

The plant is at 6 % power with feed system control in automatic on the bypass feed reg valves. Main turbine chest and shell warming are in progress. Steam header pressure transmitter ABPT507 fails high.

Which ONE of the following describes the INITIAL plant response?

- A. Steam dumps CLOSE, MFW Pump Speed INCREASES, Bypass FRVs OPEN
- B. Steam dumps OPEN, MFW Pump Speed UNCHANGED, Bypass FRVs CLOSE
- C. Steam dumps CLOSE, MFW Pump Speed UNCHANGED, Bypass FRVs OPEN
- D. Steam dumps OPEN, MFW Pump Speed INCREASES, Bypass FRVs CLOSE

ANSWER:

- D. Steam dumps OPEN, MFW Pump Speed INCREASES, Bypass FRVs CLOSE

RO #31

K/A #059000K104

OBJECTIVE #0110230F

REFERENCES: OTO-AB-00004  
8756D37 S025

RO Test

QUESTION #047

The plant has experienced a large break RCS loss of coolant accident.

Which ONE of the following must be reset to allow opening KAHV0029, Instrument Air Cmt Isolation?

- A. CISA
- B. CISB
- C. SIS
- D. FBVIS

ANSWER:

- A. CISA

RO #24

SRO #23

K/A #013000A201

OBJECTIVE #003B480A

REFERENCES: E-0, Reactor Trip/Safety Injection  
M22KA01

QUESTION #048

Callaway Plant is in MODE 1, 30% Reactor Power on a Chemistry hold. Annunciator 70B, "RCP VIB/SYS ALERT" alarms. The Reactor Operator checks vibrations on RP312 and finds 'C' RCP shaft vibration indicating 15 mils and steady.

Which one of the following is the required action.

- A. Trip the Reactor, Trip 'C' RCP and go to E-0, Reactor Trip or SI.
- B. Continue to monitor vibration on the 'C' RCP.
- C. Trip the 'C' RCP and declare the Loop 3 RTD channel inoperable.
- D. Increase Component Cooling Water temperature to reduce 'C' RCP vibration.

ANSWER:

- B. Continue to monitor vibration on the 'C' RCP.

RO #18

SRO #20

K/A #003000G10

OBJECTIVE #003B150B

REFERENCES: OTO-BB-00002



RO Test

QUESTION #049

A Reactor Operator (normally working a 12-hour shift) has worked the following hours (excluding turnover) on the dates indicated:

| Date    | Hours Worked      |
|---------|-------------------|
| 2/13/94 | 0600 through 2000 |
| 2/14/94 | 0600 through 1900 |
| 2/15/94 | 0600 through 2200 |
| 2/16/94 | 0600 through 2000 |
| 2/17/94 | 0600 through 2400 |

Which one of the following lists the date on which this operator FIRST violated the overtime requirements of APA-ZZ-00905, Limitations of Callaway Plant Staff Working Hours?

- A. 2/13/94
- B. 2/14/94
- C. 2/15/94
- D. 2/17/94

ANSWER:

- B. 2/14/94

RO #7

K/A #194001A103

OBJECTIVE #003A390E

REFERENCES: APA-ZZ-00905, Page 2

RO Test

QUESTION #050

Which ONE of the following sets of conditions will permit the Standby Diesel Generators to continue to run following an Emergency Start?

- A. Lube Oil pressure 57 psig and Jacket Water temperature 192°F
- B. Crankcase pressure 8 psig and Engine speed 54 rpm
- C. Lube Oil pressure 57 psig and Crankcase pressure 8 psig
- D. Engine speed 541 rpm and Jacket Water temperature 192°F

ANSWER:

- D. Engine speed 541 rpm and Jacket Water temperature 192°F

RO #49

K/A #064050G07

OBJECTIVE #0110030J

REFERENCES: T61.0110.6 LP-#3

RO Test

QUESTION #051

A 30 gpm leak has developed on the charging line between BG-HCV-182 (CVCS CHG PMPS TO REGEN HX HCV) and the regenerative heat exchanger. When the Control Room isolates the leak and completes the applicable Off-Normal procedures, the reactor makeup flowpath will be via \_\_\_\_\_, and the reactor letdown flowpath will be via \_\_\_\_\_.

Choose ONE of the following to fill in the blanks.

- A. alternate charging; normal letdown
- B. alternate charging; excess letdown
- C. seal injection; excess letdown
- D. seal injection; normal letdown

ANSWER:

- C. seal injection; excess letdown

RO #90

SRO #84

K/A #000022A101

OBJECTIVE #003B220B

REFERENCES: OTO-EG-00002  
OTO-BB-00003

RO Test

QUESTION #052

Given the following conditions:

- RCS at NOP/NOT for 100% RTP,
- PORV 456A has seat leakage to the PRT,
- PRT pressure is 20 PSIG

Which ONE of the following is the approximate tailpipe temperature?

- A. 212°F
- B. 228°F
- C. 248°F
- D. 258°F

ANSWER:

- D. 258°F

RO #58

SRO #54

K/A #007000A201

OBJECTIVE #0070130B

REFERENCES: Steam Table

## QUESTION #053

The Callaway Plant is in MODE 3 at NOP and NOT. An earthquake ruptures the Condensate Storage Tank and causes a steam break on 'C' S/G. The following conditions exist:

|                      |          |
|----------------------|----------|
| SG A, B & D NR Level | 45%      |
| SG C NR Level        | 10%      |
| SG A, B, & D Press   | 900 psig |
| SG C Press           | 300 psig |
| AFW Suction Press    | 4 psig   |

Which one of the following describes the resulting flowpath of feedwater to the Steam Generators?

- A. 'B' ESW Pump to 'B' MDAFP to 'C' S/G
- B. 'A' ESW Pump to 'A' MDAFP to 'B' S/G
- C. 'B' ESW Pump to 'B' MDAFP to 'B' S/G
- D. 'A' ESW Pump to 'A' MDAFP to 'D' S/G

ANSWER:

- B. 'A' ESW Pump to 'A' MDAFP to 'B' S/G

RO #35

SRO #32

K/A #061000A303

OBJECTIVE #0110250D

REFERENCES: T61.0110.6

OTA-RL-RK127A

QUESTION #054

With the plant at 40% power which one of the below would be TRUE regarding operation of the ATWS Mitigation Actuation Circuitry (AMSAC)?

- A. If S/G Levels decrease to less than 5% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.
- B. If S/G Levels decrease to less than 5% on 1 of 2 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 232 seconds later.
- C. If S/G Levels decrease to less than 14.8% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.
- D. If S/G Levels decrease to less than 14.8% on 1 of 2 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 232 seconds later.

ANSWER:

- A. If S/G Levels decrease to less than 5% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.

RO #22

SRO #30

K/A #001000GK04

OBJECTIVE #0110540B

REFERENCES: OTA-RL-0083A  
E23AC11

RO Test

QUESTION #055

Liquid Radwaste Discharge Monitor (HDRE18) alarms on the RM-11 in dark blue condition.

Which ONE of the below could be the cause?

- A. Loss of Sample Flow
- B. Loss of Process Flow
- C. Monitor Purging
- D. Channel No Pulses Received

ANSWER:

- D. Channel No Pulses Received

RO #97

SRO #68

K/A #000059A201

OBJECTIVE #0110360B

REFERENCES: OTN-SP-00002  
OTA-SP-RM011



RO Test

QUESTION #056

Following a safety injection due to a RCS leak in containment, plant conditions are established that meet the SI termination criteria of E-1, Loss of Reactor or Secondary Coolant.

Which ONE of the below is true regarding these plant conditions?

- A. All safety related equipment is Operable as required by Technical Specifications.
- B. Reactor core decay heat is being removed by the steam generators.
- C. Containment pressure is below the safety injection actuation setpoint.
- D. Steam Generator pressure are approximately equal to RCS pressure.

ANSWER:

- B. Reactor core decay heat is being removed by the steam generators.

RO #82

SRO #83

K/A #000009K324

OBJECTIVE #003D090J

REFERENCES: ES-1.1 SI Termination

RO Test

QUESTION #057

Which ONE of the following valves fail open on a loss of instrument air?

- A. Steam Generator Atmospheric Relief
- B. Main Feed Regulating Bypass Valves
- C. Main Feed Pump Recirc Valve
- D. Heater Drain Pump Recirc Valve

ANSWER:

D. Heater Drain Pump Recirc Valve

RO #64

SRO #56

K/A #078000K302

OBJECTIVE #003B330A

REFERENCES: OTO-KA-00001

RO Test

QUESTION #058

An automatic preaction sprinkler system "trouble" alarm would indicate:

- A. a deluge valve actuation
- B. an alarm check valve operation
- C. a fire detector in alarm condition
- D. an open sprinkler head

ANSWER:

- D. an open sprinkler head

RO #47

SRO #50

K/A #086000A402

OBJECTIVE #0110750C

REFERENCES: 161.0110.6 LP-#35  
Callaway Bank

RO Test

QUESTION #059

The Callaway Plant is in MODE 3, NOT, NOP, performing a plant shutdown. Steam Generator levels are being maintained by the 'A' Main Feedwater Pump and the AFP ESFAS BLOCK switches are in PERMIT.

While making preparations to open the Reactor Trip Breakers, the Main Feedwater Pump Discharge pressure increases to 1980 psig.

Which one of the following describes the immediate plant response?

- A. 'A' MFP Trip, MDAFAS, SGBSIS
- B. 'A' MFP Trip, MDAFAS, TDAFAS
- C. 'A' MFP Trip, TDAFAS, SGBSIS
- D. MDAFAS, TDAFAS, SGBSIS

ANSWER:

- A. 'A' MFP Trip, MDAFAS, SGBSIS

RO #32

K/A #059000K302

OBJECTIVE #0110230D

REFERENCES: LER 96-02  
OTO-SA-00001

RO Test

QUESTION #060

Which ONE of the following should be performed by any individual discovering a fire?

- A. Notify Control Room, then use any available fire fighting equipment, then report to Fire Brigade Leader.
- B. First attempt extinguishment using closest available extinguisher, then call Control Room if unsuccessful.
- C. First attempt extinguishment using closest available extinguisher then report to Fire Brigade Staging Area.
- D. Notify Control Room, then use closest available extinguisher, if practical, then report to Fire Brigade Leader.

ANSWER:

- D. Notify Control Room, then use closest available extinguisher, if practical, then report to Fire Brigade Leader.

RO #5

SRO #5

K/A #194001K116

OBJECTIVE #003A30F3

REFERENCES: EIP-ZZ-00226, Att. 2

RO Test

QUESTION #061

Which ONE of the below shows the correct speed settings for the TD AFW pump?

|    | IDLE SPEED | NORMAL OPERATING SPEED | OVERSPEED |
|----|------------|------------------------|-----------|
| A. | 1200 rpm   | 3850 rpm               | 4235 rpm  |
| B. | 1200 rpm   | 3550 rpm               | 4435 rpm  |
| C. | 1500 rpm   | 3850 rpm               | 4235 rpm  |
| D. | 1500 rpm   | 3550 rpm               | 4435 rpm  |

ANSWER:

|    |          |          |          |
|----|----------|----------|----------|
| A. | 1200 rpm | 3850 rpm | 4235 rpm |
|----|----------|----------|----------|

RO #38

SRO #45

K/A #039000A404

OBJECTIVE #0110250C

REFERENCES: OSP-AL-P0002

QUESTION #062

The plant is in MODE 3 at Normal operating pressure and temperature, Train 'A' COPS has inadvertently been left ARMED for Cold Overpressure Protection.

The selected pressurizer pressure channel, BBPT455 subsequently fails high.

With no operator actions, which ONE of the following is TR

- A. PORV 455 initially opens, then closes when actual PZR Pressure decreases to <2185 psig.
- B. PORV 455 stays closed initially but will function as required for COPS.
- C. PORV 455 initially opens and stays open when actual PZR pressure decreases to <2185 psig.
- D. PORV 455 stays closed initially and PORV BLOCK VALVE(8000A) closes when actual PZR pressure decreases to <2185 psig.

ANSWER:

- A. PORV 455 initially opens, then closes when actual PZR Pressure decreases to <2185 psig.

RO #74

SRO #86

K/A #000027A101

OBJECTIVE #003B190A

REFERENCES: 7250D64

Sheet 17



RO Test

QUESTION #063

Which ONE of the following is the reason for depressurizing the Steam Generators at the maximum rate during ECA-0.0, "Loss of All AC Power"?

- A. To allow feeding S/G's from Diesel Driven Fire Water Pump.
- B. To minimize RCS inventory loss.
- C. To enhance restoration of SG level from TD AFW Pump.
- D. To prevent lifting PZR PORVs.

ANSWER:

- B. To minimize RCS inventory loss.

RO #68

SKO #66

K/A #000055K302

OBJECTIVE #003D220S

REFERENCES: T61.003D.6

RO Test

QUESTION #064

Given the following:

- Callaway is operating at 30% steady state reactor power.
- I&C technician receives permission to perform a calibration on Power Range Channel N-41.
- The I&C technician mistakenly pulls the control power fuses on N-42; then, realizing his mistake, he reinserts the fuses for N-42 and pulls the control power fuses for the correct channel, N-41, causing a reactor trip.

Which ONE (1) of the following describes the reason for the reactor trip?

- A. PR neutron flux low setpoint trip.
- B. Overpower Delta T trip.
- C. PR neutron flux high setpoint trip.
- D. PR positive rate trip.

ANSWER:

- D. PR positive rate trip.

RO #53

SRO #41

K/A #012000K603

OBJECTIVE #0110270D

REFERENCES. T61.0110.6 LP-#27  
T61.0110.6 LP-#28

RO Test

QUESTION #065

Which ONE of the below conditions would require containment coolers to be operated in SLOW speed?

- A. Service Water Temperature <60°F
- B. ESW Supplying Containment
- C. Emergency Diesel Supplying NB Bus
- D. Containment Temperature <80°F

ANSWER:

- A. Service Water Temperature <60°F

RO #28

SRO #29

K/A #022000A101

OBJECTIVE #003A200I

REFERENCES: OTN-GN-00001

RO Test

QUESTION #066

Prior to opening the Reactor Trip Breakers during a plant shutdown, the crew is directed to reduce the inservice MFP speed to 3650 RPM in anticipation of a Feedwater Isolation Signal.

Using the attached graph, determine which one of the following is the minimum flowrate required to provide pump protection for this speed.

- A. 1500 Klbm/hr
- B. 1750 Klbm/hr
- C. 2000 Klbm/hr
- D. 2250 Klbm/hr

ANSWER:

- C. 2000 Klbm/hr

RO #10

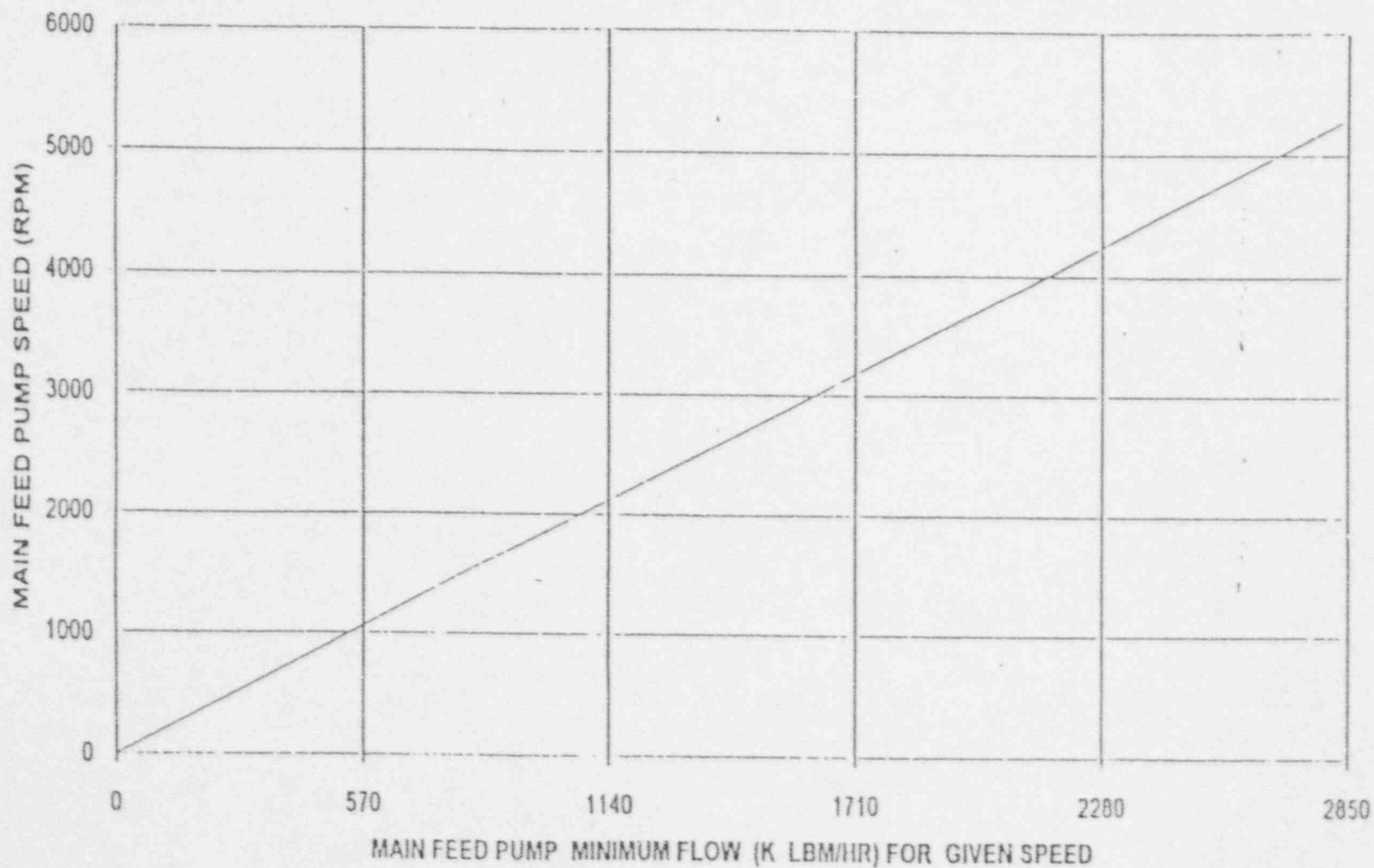
SRO #9

K/A #194001A108

OBJECTIVE #003A040E

REFERENCES: OTN-AE-00001, Att. 4

MAIN FEED PUMP MINIMUM FLOW (LBM/HR VS. RPM)--MINIMUM FLOW AT DESIGN  
SPEED OF 5300 RPM IS 6000 GPM OR APPROX. 2800 K LBM/HR.



RO Test

QUESTION #067

ES-1.1, SI Termination, Step 1 directs that the SI be reset using BOTH SI reset switches, SBHS42A and SBHS43A.

Which ONE of the following describes the effect of operating only ONE switch at this step instead of both?

- A. SI actuate light on SB069 would extinguish and automatic SI would reinitiate after 60 seconds.
- B. SI actuate light on SB069 would extinguish since either switch resets both SI trains.
- C. SI actuate light on SB069 would blink and automatic SI would reinitiate after 60 seconds.
- D. SI actuate light on SB069 would blink since reset switches are train specific.

ANSWER:

- D. SI actuate light on SB069 would blink since reset switches are train specific.

RO #93

K/A #000007K203

OBJECTIVE #0110270C

REFERENCES: E-0 Step 4

RO Test

QUESTION #068

WHICH of the following groups of parameters read out at the Auxiliary Shutdown Panel?

- A. RCS WR pressure, S/G pressure, S/G level, containment pressure
- B. RCS Tavg, S/G pressure, S/G level, containment pressure
- C. RCS hot leg temp, S/G level, TDAFWP flow, containment pressure
- D. RCS cold leg temp, RCS hot leg temp, S/G level, S/G pressure

ANSWER:

- D. RCS cold leg temp, RCS hot leg temp, S/G level, S/G pressure

RO #72

SRO #70

K/A #000068K201

OBJECTIVE #0110480B

REFERENCES: T61.0110.6



RO Test

QUESTION #069

The signal from the 'A' train SSPS to cause a reactor trip will:

- A. open the 'A' reactor trip breaker and the 'A' reactor trip bypass breaker.
- B. open the 'B' reactor trip breaker and the 'B' reactor trip bypass breaker.
- C. open the 'A' reactor trip breaker and the 'B' reactor trip bypass breaker.
- D. open the 'B' reactor trip breaker and the 'A' reactor trip bypass breaker.

ANSWER:

- C. open the 'A' reactor trip breaker and the 'B' reactor trip bypass breaker.

RO #54

SRO #40

K/A #012000A403

OBJECTIVE #0110270C

REFERENCES: T61.0110.6 LP-#27

Callaway Bank

RO Test

QUESTION #070

During a reactor startup, the Intermediate Range Rod Stop is \_\_\_\_\_ blocked when two of the four power range channels exceeds the \_\_\_\_\_ setpoint.

- A. Manually, C-5
- B. Manually, P-10
- C. Automatically, C-5
- D. Automatically, P-10

ANSWER:

- B. Manually, P-10

RO #26

K/A #015000K402

OBJECTIVE #003A23A4

REFERENCES: OTG-ZZ-00003  
OTO-SA-00001

RO Test

QUESTION #071

A spurious SI causes a plant trip and SI. Which one of the below actions is acceptable to be performed while performing E-0 steps 1 through 14?

- A. Securing NE01 due to ESW pump A tripping.
- B. Securing RHR Train 'A' due to RCS pressure at 2235.
- C. Stopping one CCP to minimize injection to RCS.
- D. Starting a SFP pump to restore Fuel Pool Cooling.

ANSWER:

- A. Securing NE01 due to ESW pump A tripping.

RO #6

SRO #6

K/A #194001A102

OBJECTIVE #003A29C4

REFERENCES: ODP-ZZ-00025

RO Test

QUESTION #072

Both trains of Essential Service Water (ESW) are placed into service to reduce containment temperature. Shortly after placing ESW into service, reactor power is noted to be slowly increasing.

Which ONE of the following is the probable cause of the power increase?

- A. Change in containment air temperature affecting operation of the power range detectors.
- B. Change in main feedwater temperature due to flow variations in the S/G Blowdown system.
- C. Change in the CVCS letdown temperature causing deboration in the letdown demineralizers.
- D. Change in main condenser vacuum causing increasing main steam flow through the main turbine.

ANSWER:

- C. Change in the CVCS letdown temperature causing deboration in the letdown demineralizers.

RO #42

SRO #48

K/A #075000A401

OBJECTIVE #003A09A1

REFERENCES: OTN-EF-00001  
OTN-EG-00001

RO Test

QUESTION #073

Given the following plant conditions:

- SAFETY INJECTION      ACTUATED
- PZR PRESSURE          1800 PSIG Slowly Decreasing
- RCS TEMPERATURE      550°F Slowly Decreasing
- S/G NR LEVELS          1% Slowly Increasing
- PRT Pressure            3 psig Stable
- S/G PRESSURE           1000 PSIG STABLE
- PZR Level                28% INCREASING
- RM-11                    GTRE31 & 32 Alarming
- CTMT Temperature      140°F Slowly Increasing
- CTMT Pressure          8 psig
- CTMT Humidity          Increasing

Which ONE of the following could be the cause of the above conditions?

- A. Steam Generator Safety Valve failed open.
- B. Pressurizer PORV failed open.
- C. RCS Leak from a cold leg.
- D. Pressurizer steam space leak.

ANSWER:

- D. Pressurizer steam space leak.

RO #81

SRO #82

K/A #000008A106

OBJECTIVE #003D030F

REFERENCES: E-0 Reactor Trip/Safety Injection

QUESTION #074

The Callaway Plant is operating at 94% power with all four containment cooling fans running in fast speed.

A simultaneous Safety Injection and loss of the normal power supply to NB01 occurs. All systems function as designed.

Which one of the following describes the response of the Containment Cooling fans?

- A. Fans A and C start in FAST speed, B & D continue to run in FAST speed.
- B. Fans A & C start in SLOW speed, fans B & D shift to SLOW speed.
- C. Fans A & C start in FAST speed, fans B & D shift to SLOW speed.
- D. Fans A & C start in SLOW speed, fans B & D continue to run in FAST speed.

ANSWER:

- B. Fans A & C start in SLOW speed, fans B & D shift to SLOW speed.

RO #29

SRO #28

K/A #022000A301

OBJECTIVE #0110400D

REFERENCES: E21005

E21001

RO Test

QUESTION #075

The plant is at 190°F and 350 psig with BOTH RHR trains in service in the cooldown mode.

With both RHR suction reliefs and Pressurizer PORVs lined up for COPS, which ONE of the following describes RCS overpressure control on increasing pressure?

- A. Pressurizer PORVs open sequentially first, then BOTH RHR suction reliefs would lift.
- B. Both RHR suction reliefs would lift first, then Pressurizer PORVs open sequentially.
- C. Pressurizer PORVs and RHR suction reliefs would lift at the same time.
- D. BOTH RHR suction reliefs would lift first, then both Pressurizer PORVs open simultaneously.

ANSWER:

- B. BOTH RHR suction reliefs would lift first, then Pressurizer PORVs open sequentially.

RO #62

K/A #005000A202

OBJECTIVE #003A210A

REFERENCES: Curve Book Fig 14.3  
OSP-BB-00003



RO Test

QUESTION #076

The plant is in the injection phase of Safety Injection due to a RCS LOCA. Containment Pressure has reached a maximum of 25 psig.

Which ONE of the following indicates ONLY loads being cooled by CCW?

- A. RHR Pumps, RHR Heat Exchangers, Sample systems
- B. Fuel Pool, Reactor Coolant Pumps, Excess Letdown Heat Exchangers
- C. Containment Spray Pumps, Charging Pumps, Reactor Coolant Pumps
- D. Reactor Coolant Pumps, Charging Pumps, RHR Pumps

ANSWER:

- D. Reactor Coolant Pumps, Charging Pumps, RHR Pumps

RO #77

SRO #60

K/A #000026K302

OBJECTIVE #0110100C

REFERENCES: M22EG01  
E210010

RO Test

QUESTION #077

The Callaway Plant is in a Reduced Inventory condition and has suffered a Loss of RHR Cooling.

Which ONE of the following would cause a reduction in T-Boil (Time to Boil)?

- A. Fewer Effective Full Power Days (EFPD)
- B. Longer Time since Shutdown
- C. Lower Steam Generator Level
- D. Lower RCS Loop Level

ANSWER:

- D. Lower RCS Loop Level

RO #91

SRO #85

K/A #000025G10

OBJECTIVE #003EE20B

REFERENCES: OTN-BB-00002  
T-Boil Calc-Theory

RO Test

QUESTION #078

Which one of the following describes the effect of an LSELS Load Shed signal on Pressurizer Pressure Control?

- A. Both Backup and Proportional Heaters are shed upon receipt of a Safety Injection.
- B. Only Backup Heaters are shed on an NB Bus undervoltage condition.
- C. Both Backup and Proportional Heaters are shed on an NB Bus undervoltage condition.
- D. Only Proportional Heaters are shed upon receipt of a Safety Injection.

ANSWER:

- B. Only Backup Heaters are shed on an NB Bus undervoltage condition.

RO #51

K/A #010000K102

OBJECTIVE #0110510A

REFERENCES: T61.0110.6 LP-#51  
E210010

RO Test

QUESTION #079

Plant startup is in progress with main turbine roll commencing and reactor power at 6%. Power range N-44 is out of service due to a failed detector.

Which one of the below is UNBLOCKED under these conditions?

- A. Intermediate Range High Flux Reactor Trip
- B. Pressurizer Low Pressure Reactor Trip
- C. Reactor Trip from Turbine Trip
- D. Pressurizer High Level Reactor Trip.

ANSWER:

- A. Intermediate Range High Flux Reactor Trip

RO #25

SRO #26

K/A #015000A303

OBJECTIVE #003A24A2

REFERENCES: OTG-ZZ-00003  
OTO-SA-00001

RO Test

QUESTION #080

Use the attached Figure 7-5 to answer the following question.

The plant is in MODE 3, 557°F, 2235 psig. Which one of the following is the amount of water needed to reduce the RCS boron concentration from 1150 ppm to 1100 ppm?

- A. 1167 gal.
- B. 1195 gal.
- C. 2688 gal.
- D. 2752 gal.

ANSWER:

- D. 2752 gal.

RO #14

SRO #19

K/A #001010K521

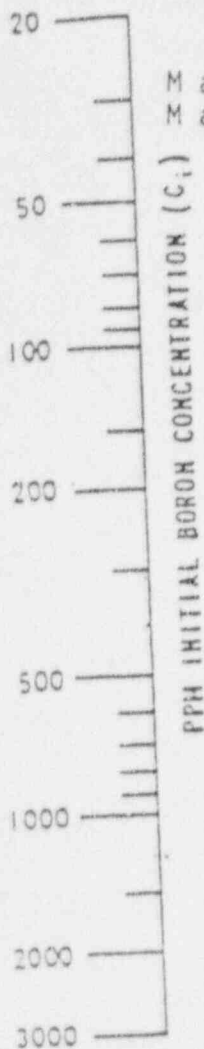
OBJECTIVE #003AA40E

REFERENCES: Plant Curve Book

## REACTOR MAKEUP CONTROL SYSTEM NOMOGRAPHS

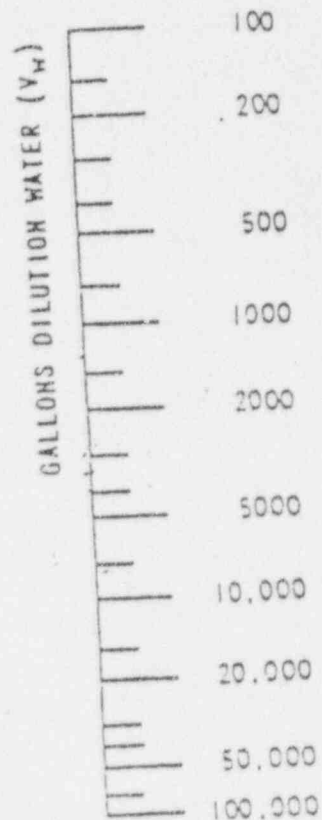
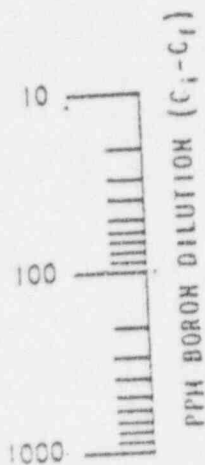
## BORON DILUTION

$$V_w = \frac{M}{8.33} \ln \left( \frac{C_i}{C_f} \right)$$



M at 0% power = 515676 lbm \* Superintendent, Engineering Date  
 M at 100% power = 503624 lbm \*

\*The values for M, mass of the KCS, are only valid while pressurizer level is in its target band.



DOCUMENT CONTROL

ISSUED

NOTE: Refer to Table 7-1 for correction factors.

JUN 14 1988

ACCOUNTABLE

4E

RO Test

QUESTION #081

The plant is in MODE 5 with the containment purge exhaust fan operating and containment purge supply off. The Containment Coordinator identifies a positive air flow condition from containment to outside atmosphere through the equipment hatch with the containment personnel hatch open.

Which ONE of the below actions should be performed for this condition?

- A. Activate a Containment Purge Isolation
- B. Start either Fuel Bldg/Aux Bldg Emergency Exhaust train
- C. Activate a Control Room Ventilation Isolation
- D. Shift the Aux Building Normal Exhaust to FAST

ANSWER:

- D. Shift the Aux Building Normal Exhaust to FAST

RO #45

SRO #43

K/A #029000K103

OBJECTIVE #003A120B

REFERENCES: OTN-GT-00001



QUESTION #082

Which one of the following will prevent outward control rod motion in both automatic and manual control?

- A. Selected Turbine Impulse Pressure channel is reading 13% equivalent power.
- B. Two  $\Delta T$  channels are within 3% of the overtemperature  $\Delta T$  trip setpoint.
- C. Control Bank D rods are positioned at 224 steps.
- D. One Power Range NI is reading 102%.

ANSWER:

- B. Two  $\Delta T$  channels are within 3% of the overtemperature  $\Delta T$  trip setpoint.

RO #16

K/A #001000K402

OBJECTIVE #0110260H

REFERENCES: OTO-SA-00001, Table II

RO Test

QUESTION #083

A Hi Hi Radiation signal from SJ-RE-02, Steam Generator Blowdown System Radiation Monitor, will automatically close which ONE of the following valves?

- A. BM-HV-21, S/G 'C' Blowdown Nuclear Sampling System Upper Isolation Valve.
- B. BM-FV-54, S/G Blowdown Discharge Pumps Discharge Flow Control Valve.
- C. BM-HV-6, S/G 'B' Blowdown Nuclear Sampling System Line Downstream Isolation Valve.
- D. BM-HV-38, S/G 'D' Blowdown Nuclear Sampling System Lower Isolation Valve.

ANSWER:

- C. BM-HV-6, S/G 'B' Blowdown Nuclear Sampling System Line Downstream Isolation Valve.

RO #56

SRO #47

K/A #073000K101

OBJECTIVE #0110120D

REFERENCES: T61.0110.6 LP-#12  
OTO-SA-00001

RO Test

QUESTION #084

Given the following plant conditions:

- Steam Break in AREA 5
- All MSIVs closed
- 'A', 'B', and 'D' Steam Generator Pressures Stable
- 'C' Steam Generator Pressure Decreasing
- Performing actions of E-2, "Faulted Steam Generator Isolation"
- TD AFW pump is the only AFW pump available

Which ONE of the following actions would be performed during completion of E-2?

- A. Close ABHV0006, 'C' Steam Supply to the TD AFW pump.
- B. Open all S/G Common Sample Isolation Valves, BMHV0065 through 68.
- C. Reduce Aux Feedwater flow to 15,000 lbm/hr to each Steam Generator.
- D. Close ABLV0007, Main Steam Low Point Drain SG 'C'.

ANSWER:

- B. Open all S/G Common Sample Isolation Valves, BMHV0065 through 68.

RO #66

SRO #62

K/A #000040E103

OBJECTIVE #003D150C

REFERENCES: E-2

RO Test

QUESTION #085

Main Turbine exhaust pressure is 4" Hga and increasing at a rate of 0.5" Hga per minute. Which of the following is the minimum amount of time that could elapse before an automatic low vacuum turbine trip occurs?

- A. 5 minutes
- B. 7 minutes
- C. 9 minutes
- D. 12 minutes

ANSWER:

- B. 7 minutes

RO #73

SRO #64

K/A #000051A202

OBJECTIVE #003BB90A

REFERENCES: OTO-AD-00001

RO Test

QUESTION #086

Which one of the following describes the operation of the Main Turbine Steam Valves during Control Valve Chest Warming?

- A. Main Stop Valve #2 Bypass is Open
- B. All Intermediate Stop Valves are Shut
- C. Control Valves #1, #2, and #3 are Open
- D. All Main Stop Valves are Open

ANSWER:

- A. Main Stop Valve #2 Bypass is Open

RO #59

K/A #045000A401

OBJECTIVE #0110380E

REFERENCES: T61.0110.6 LP-#38, Pg. 63  
OTN-AC-00001

RO Test

QUESTION #087

Which one of the following is an entry condition for OTO-ZZ-00003, Loss of Shutdown Margin?

- A. Mode 3, following Reactor Trip at 0950 and RCS Tavg 545°F at 1115.
- B. Mode 2, with Reactor Power at 5% and Control Bank C at 35 steps.
- C. Mode 3, with RCS temperature decrease of 100°F in 20 minutes with ECCS operating in the Injection phase.
- D. Mode 5, with Shutdown Margin Calculation indicating the core net reactivity at -1100 pcm

ANSWER:

- B. Mode 2, with Reactor Power at 5% and Control Bank C at 35 steps.

RO #80

SRO #59

K/A #000024G10

OBJECTIVE #003B610A

REFERENCES: T61.003B.6 LP-#B-61

OTO-ZZ-00003

Plant Curve Book

RO Test

QUESTION #088

Which one of the following containment conditions would require the use of Adverse Containment values when responding to a Large Break LOCA?

- A. Temperature had been 180°F and has decreased to 150°F.
- B. Radiation had been 2.0E5 R/HR and has decreased to 500 R/HR.
- C. Pressure had been 30 psig and has decreased to 5 psig.
- D. Recirculation Sump Level is greater than 138 inches.

ANSWER:

- B. Radiation had been 2.0E5 R/HR and has decreased to 500 R/HR.

RO #83

K/A #000011G11

OBJECTIVE #003D040R

REFERENCES: T61.003D.6 LP-#4



# RO Test

## QUESTION #089

A steam generator tube leak causes a high radiation alarm on condenser air removal. Data is taken to determine the steam generator leakrate.

|                               | Time=0 | Time=1 minute | Time=2 minute |
|-------------------------------|--------|---------------|---------------|
| Reactor Power                 | 99     | 99            | 99            |
| Tave                          | 588.3  | 588.3         | 588.3         |
| Charging Flowrate             | 100    | 100           | 100           |
| Letdown Flowrate              | 80     | 80            | 80            |
| Total Seal Injection Flowrate | 33     | 33            | 33            |
| Pressurizer Level             | 55%    | 54.8%         | 54.6%         |
| Total Seal Leakoff Flowrate   | 12     | 12            | 12            |

(Assume 1% Pressurizer Level = 60 gallons)

Which ONE of the following is the approximate steam generator leakrate?

- A. 5 gpm
- B. 10 gpm
- C. 15 gpm
- D. 20 gpm

ANSWER:

D. 20 gpm

RO #89

K/A #000037A212

OBJECTIVE #0110110P

REFERENCES: T61.0110.6 LP-#11  
OTO-BB-00001

RO Test

QUESTION #090

A void exists in the reactor vessel during natural circulation cooldown. Which ONE of the following actions is used to collapse an excessive void, according to ES-0.3, "Natural Circulation Cooldown with Steam Voids"?

- A. Decrease RCS temperature while maintaining RCS pressure constant.
- B. Fill the Pressurizer solid and vent the reactor vessel head.
- C. Increase RCS pressure using pressurizer heaters while maintaining pressurizer level.
- D. Start an SI pump to increase RCS pressure while maintaining temperature constant.

ANSWER:

- C. Increase RCS pressure using pressurizer heaters while maintaining pressurizer level.

RO #69

SRO #72

K/A #000074A101

OBJECTIVE #003D070K

REFERENCES: T61.003D.6  
ES-0.3

RO Test

QUESTION #091

The plant is in MODE 1 with all systems in normal except that I&C is performing corrective maintenance in the Rod Control Power Cabinet 1BD. Group 1 of Control Bank D is being energized from the DC Hold Bus.

Breaker PG1902, Motor Circuit Breaker to Rod Drive Motor-Generator SF01, is inadvertently opened. All plant systems respond as designed.

Which ONE of the below is true regarding power to the control rods?

- A. Power continues to all control rods.
- B. Power is interrupted to all control rods.
- C. Power is interrupted to all rods except Control Bank D, Group 1.
- D. Power continues to all rods except Control Bank D, Group 1.

ANSWER:

- A. Power continues to all rods.

RO #15

SRO #18

K/A #001000K202

OBJECTIVE #0110260G

REFERENCES: T61.0110.6 LP-#26

RO Test

QUESTION #092

Which one of the following could be a direct result of a loss of Vital AC Instrument bus NN03?

- A. Charging Pump suction swaps to the RWST
- B. Source Range Hi Flux Reactor Trip
- C. Intermediate Range High Flux Reactor Trip
- D. CVCS Letdown Isolation

ANSWER:

- D. CVCS Letdown Isolation

RO #79

SRO #67

K/A #000057A219

OBJECTIVE #003B450A

REFERENCES: OTO-NN-00001

RO Test

QUESTION #093

A reactor trip has occurred and the operating crew is responding in accordance with ES-0.1, Reactor Trip Response.

- Reactor trip and bypass breakers open
- NIS power is 1% and decreasing
- Bank D, Group 2 rods indicate 188 steps withdrawn. All other rods are fully inserted

Which one of the following is TRUE for the above conditions?

- A. An emergency boration of 450 ppm must be performed to ensure the minimum shutdown margin is maintained.
- B. An emergency boration of 150 ppm must be performed to limit fission gas release and maintain fuel pellet temperature within design limits.
- C. No immediate action is required since the core is designed for these conditions, and the reactor has been verified tripped by diverse indications.
- D. A safety injection signal (SIS) must be actuated to maintain the reactor core in a safe shutdown condition.

ANSWER:

- A. An emergency boration of 450 ppm must be performed to ensure the minimum shutdown margin is maintained.

RO #65

SRO #58

K/A #000005K301

OBJECTIVE #003D060C

REFERENCES: ES-0.1

RO Test

QUESTION #094

During a Reactor Startup, the Reactor Operator verifies one decade of overlap between the source and Intermediate Range Nuclear Instruments. This verification is defined as a(n) \_\_\_\_\_.

- A. Source Check
- B. Analog Channel Operational Test
- C. Channel Calibration
- D. Channel Check

ANSWER:

- D. Channel Check

RO #11

SRO #10

K/A #194001A113

OBJECTIVE #003A02I1

REFERENCES: Tech Spec Definitions

RO Test

QUESTION #095

Which ONE of the following components is manually (or automatically) isolated and remains isolated for a Faulted 'B' Steam Generator, but NOT necessarily for a 'B' Steam Generator Tube Rupture? (NOTE: Assume all equipment actuated as required.)

- A. Main Steam Isolation Valve (AB-HV-17)
- B. Main Feedwater Isolation Valve (AE-FV-40)
- C. Auxiliary Feedwater Flow Control Valve (AL-HV-10)
- D. Main Steam Supply Valve to T/D AFW Pump (AB-V085)

ANSWER:

- C. Auxiliary Feedwater Flow Control Valve (AL-HV-10)

RO #84

SRO #89

K/A #000038A132

OBJECTIVE #003D17NN

REFERENCES: T61.003D.6 LP-#17

E-3, SGTR

E-2, Faulted S/G Isolation



RO Test

QUESTION #096

Which one of the following sets of conditions should have resulted in a LoLo S/G Level Reactor Trip?

|    | S/G NR<br>Level (%) | CTMT<br>Press (psig) | LOOP<br>$\Delta T$ (%) | TIME<br>(sec) |
|----|---------------------|----------------------|------------------------|---------------|
| A. | 12                  | 0                    | 17                     | 110           |
| B. | 18                  | 2                    | 8                      | 10            |
| C. | 17                  | 0.5                  | 23                     | 180           |
| D. | 10                  | 1                    | 2                      | 210           |

ANSWER:

|    |    |   |   |    |
|----|----|---|---|----|
| B. | 18 | 2 | 8 | 10 |
|----|----|---|---|----|

RO #88

K/A #000054G09

OBJECTIVE #0110270D

REFERENCES: T61.0110.6 LP-#27

RO Test

QUESTION #097

Which of the following should be performed if a 125VDC Vital Battery Charger fails?

- A. Place the swing battery charger in service to replace the normal battery charger's function.
- B. Declare that train 125VDC Vital system inoperable and commence plant shutdown.
- C. Align the maintenance supply to power that trains vital 120V AC instrument loads directly.
- D. Align that trains inverter rectifier to perform the required battery charger function.

ANSWER:

- A. Place the swing battery charger in service to replace the normal battery charger's function.

RO #92

K/A #000058A103

OBJECTIVE #0110060A

REFERENCES: OTN-NK-00001  
OTO-NK-00001

QUESTION #098

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

- A. A containment vent is performed with the plant operating at 100% power.
- B. The plant is in refueling mode with the refueling cavity flooded. Steam generator safeties have been removed; secondary manways are also removed. No fuel movement is in progress.
- C. The plant is in refueling mode with fuel movement in progress. Containment Shutdown purge is initiated.
- D. The plant is in hot standby. The "A" steam generator blowdown isolation valve BM-HV-1 is stuck open.

ANSWER:

- D. The plant is in hot standby. The "A" steam generator blowdown isolation valve BM-HV-1 is stuck open.

RO #78

SRO #71

K/A #000069A202

OBJECTIVE #003E014A

REFERENCES: TS 3.9.4  
TS 3.6.1.1  
TS 3.6.3

RO Test

QUESTION #099

The Callaway Plant is operating at 30% power and it is necessary to secure the 'B' Reactor Coolant Pump due to high vibration. After the RCP is tripped, the 'B' Loop  $\Delta T$  \_\_\_\_\_ and the other Loop  $\Delta T$ 's \_\_\_\_\_. (Assume unit load is held constant.)

- A. Increases; Decrease
- B. Increases; Increase
- C. Decreases; Decrease
- D. Decreases; Increase

ANSWER:

- D. Decreases; Increase

RO #17

K/A #003000A107

OBJECTIVE #01100901

REFERENCES: OTO-BB-00002

RO Test

QUESTION #100

Which ONE of the following components has its air supply AUTOMATICALLY isolated if air pressure decreases to 108 psig?

- A. Closed Cooling Water Temperature Controller
- B. First Stage RHDT Level Control Valves
- C. Main Feedwater Reg Valve Bypass Valves
- D. Auxiliary Feedwater Pump Room Sump Pumps

ANSWER:

- D. Auxiliary Feedwater Pump Room Sump Pumps

RO #46

SRO #49

K/A #079000K101

OBJECTIVE #0110140C

REFERENCES: OTO-KA-00001

**CALLAWAY PLANT**  
**EXAMINATION COVER SHEET**  
**TRAINING DEPARTMENT**

COURSE TITLE: RO INITIAL LICENSE EXAMINATION

DATE: 2/24/97

NAME (Print): \_\_\_\_\_

SCORING:

SIGNATURE: \_\_\_\_\_

Points Possible: 100

Points Missed: \_\_\_\_\_

Grade: \_\_\_\_\_

DIRECTIONS: BLACK OUT CORRECT ANSWERS

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| 24. <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 49. <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 74. <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 99. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D  |
| 25. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D | 50. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D | 75. <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 100. <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D |

## CHIEF EXAMINER WRITTEN EXAM RESULTS ANALYSIS - CALLAWAY 2/24/97

### Scores:

Each exam had 100 questions valued at one point each.

SRO: High - 93; Low - 83; Average - 89

RO: High - 92; Low - 73; Average - 81.2

### Analysis:

For the same questions, the same question numbers were used on either exam. The chief examiner concurs with the licensee's analysis attached. More than half of the applicants missed joint questions 3, 4, 55, 64, 84, and 90. More than half of the applicants also missed SRO question 33.

All of the above questions were determined to be valid. No generic training or knowledge deficiencies were identified. Reasons for missing these questions appeared to be related to question difficulty and isolated training weaknesses. The licensee initiated appropriate actions to upgrade candidate specific knowledge and correct specific training weaknesses.



Review of Initial NRC Written Examinations  
Callaway Plant - 2/24/97

The Reactor Operator and Senior Reactor Operator examinations were graded by F.X. Biermann and checked by R.A. Nelson. Both examinations were reviewed using the guidance contained in ES-403, Grading Site Specific Examinations at Power Reactors. This review is documented on the attached completed QA Checkoff Sheets, ES-403-1.

This review revealed that seven (7) questions were missed by greater than 50% of the candidates.

Below is a summary of actions taken for each specific question:

| <u>Question #</u> | <u>Topic</u>                       | <u>Action</u>  |
|-------------------|------------------------------------|--|
| 3                 | Piant Computer Alarm Operation     | Item not specifically covered by lesson plan objectives. Submitted CA-#1031 to change objectives.  |
| 4                 | WPA Tagging Requirements           | TFR written to emphasize method of tagging to be used on 4160V and above power block breakers when work is to be performed on downstream components. |
| SRO #33           | Plant Security Event               | Question beyond objective of lesson plan. TFR written to evaluate if actions should be included into lesson.   |
| 55                | Liquid Process Monitor Failure     | TFR written to include system operation of Liquid Process Monitors. Stress differences between liquid and atmosphere monitors.                       |
| 64                | PR Nuclear Instrumentation Failure | Question evaluated, valid and correct. No action required. Cover with candidate.   |
| 84                | EOP E-2 Actions                    | Question evaluated, valid and correct. No action required. Cover with candidate.   |
| 90                | EOP ES-0.3 Pressure Control        | Question evaluated, valid and correct. No action required. Cover with candidate.   |

In addition the subject questions above were examined for any common deficiencies regarding systems, types of operations involved, or safety system functions. No common deficiencies were noted.

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

**APPLICANT INFORMATION**

|                         |                            |
|-------------------------|----------------------------|
| Name:                   | Region: IV                 |
| Date: February 24, 1997 | Facility/Unit: Callaway    |
| License Level: SRO      | Reactor Type: Westinghouse |

**INSTRUCTIONS:**

Use the answer sheet provided to document your answers. Staple this cover sheet on top of the answer sheet. Each question is worth one point. The passing grade requires a final grade of at least 80 percent. Examination papers will be picked up 4 hours after the examination starts.

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

\_\_\_\_\_  
Applicant's Signature

**RESULTS**

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

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.
2. 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.
3. To pass the examination, you must achieve a grade of 80 percent or greater.
4. Each question is worth 1 point.
5. There is a time limit of 4 hours for completing the examination.
6. Use only black ink or dark pencil to ensure legible copies.
7. Print your name in the blank provided on the examination cover sheet and the answer sheet.
8. Mark your answers on the answer sheet provided and do not leave any question blank.
9. If the intent of a question is unclear, ask questions of the examiner only.
10. 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.
11. When you complete the examination, staple the examination cover sheet on top of the answer sheet and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.
12. After you have turned in your examination, leave the examination area as defined by the examiner.

SRO Test

QUESTION #001

When performing a boration to the reactor coolant system for a down power transient, the PZR heaters should be turned on in manual to:

- A. Maintain PZR pressure in the normal operating range during the down power.
- B. Allow an increased ramp rate for the down power.
- C. Equalize the reactor coolant system and PZR boron concentrations.
- D. Ensure positive PZR control is established prior to starting the down power.

ANSWER:

- C. Equalize the reactor coolant system and PZR boron concentrations.

RO #19

SRO #21

K/A #004000K601

OBJECTIVE #003AA4B1

REFERENCES: OTN-BG-00002, "Reactor Makeup Control and Boron Thermal Regeneration System"

SRO Test

QUESTION #002

The plant experiences a sustained loss of all AC power.

Which ONE of the below would be used to makeup to the spent fuel pool due to low spent fuel pool level?

- A. Pressurize VCT and use Reactor Makeup
- B. Diesel Fire Pump and fire hose
- C. Gravity drain condensate storage tank
- D. Essential service water emergency makeup

ANSWER:

- B. Diesel Fire Pump and fire hose

RO #41

SRO #44

K/A #033000G11

OBJECTIVE #003D220Z

REFERENCES: ECA-0.0, Step 23

SRO Test

QUESTION #003

Which ONE of the below computer data quality codes indicates that the alarm function is still operable?

A. DALM

B. DEL

C. SUB

D. LRL

ANSWER:

D. LRL

RO #12

SRO #11

K/A #194001A115

OBJECTIVE #003A02D4

REFERENCES: OOA-RJ-00001

SRO Test

QUESTION #004

Preventive Maintenance is scheduled on the 'A' Condensate Pump Motor and its supply breaker PB0304. Which ONE of the following locations MUST be tagged in accordance with the Workman's Protection Assurance Program?

- A. Breaker PB0304 local handswitch
- B. Condensate Pump Discharge Valve
- C. Racking Mechanism for Breaker PB0304
- D. Main Control Board Switch AD-HIS-1

ANSWER:

- C. Racking Mechanism for Breaker PB0304

RO #4

SRO #4

K/A #194001K107

OBJECTIVE #003A330F

REFERENCES: APA-ZZ-00310 Page 20



SRO Test

QUESTION #005

A Reactor Startup is in progress with Control Bank B at 50 steps and Reactor Power at  $10^2$  CPS.

Which ONE of the following is required if Source Range Nuclear Channel N32 fails high?

- A. Place N32 in the tripped condition within 6 hours.
- B. Verify all Rod Bottom Lights lit.
- C. Verify Shutdown Margin within one hour.
- D. Insert all Control Banks and repair channel N32.

ANSWER:

- B. Verify all Rod Bottom Lights lit.

RO #96

SRO #88

K/A #000032G11

OBJECTIVE #0110280E

REFERENCES: OTO-SE-00001  
E-0  
Tech Spec 3.3.1

SRO Test

QUESTION #006

The reactor tripped 5 minutes ago.

Which one of the following completes the statement concerning the heat transfer relationship between the RCS and Steam Generators?

The heat transfer rate between the RCS and the S/Gs will:

- A. decrease as RCS temperature increases and AFW flow increases.
- B. decrease as AFW temperature decreases and AFW flow increases.
- C. increase as AFW temperature increases and RCS flow decreases.
- D. increase as RCS temperature increases and AFW flow increases.

ANSWER:

- D. increase as RCS temperature increases and AFW flow increases.

RO #33

SRO #33

K/A #061000K501

OBJECTIVE #003D260R

REFERENCES: T61.003D.6

QUESTION #007

Which of the following are allowable relaxations for Independent Verification when restoring a system requiring IV?

1. Comparing the tagout control sheet to current plant reference material (flow diagrams, procedures, etc.) to ensure adequacy of the tagout.
2. Verifying status lights, annunciators, meter indications, etc. on the main control board that unequivocally depicts the equipment status.
3. Performing a functional test that verifies that the component is in the specified configuration.
4. When the concept of ALARA would be violated.

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

ANSWER:

- A. 2, 3, 4

RO #1

SRO #1

K/A #194001K101

OBJECTIVE #003A33A6

REFERENCES: APA-ZZ-00310

SRO Test

QUESTION #008

The Callaway Plant is entering MODE 4 from MODE 3 with the following conditions:

- RCS pressure is being controlled at 650 psig.
- All wide range Cold Leg temperatures are 350°F.
- Cold Overpressure Protection is in ARMED.
- Loop 1 Wide Range Cold Leg temperature sensor, TE413B, fails low.

Which ONE of the following describes the plant response to this failure?

- A. Only PORV 455A will open.
- B. Only PORV 456A will open.
- C. Both PORV 455A and 456A will open.
- D. Neither PORV 455A or 456A will open.

ANSWER:

- B. Only PORV 456A will open.

SRO #51

K/A #010000K403

OBJECTIVE #0110300C

REFERENCES: DWG 8756D37 Sheet 6

SRO Test

QUESTION #009

OTO-ZZ-00001, Control Room Inaccessibility, requires operation of three 'Control Room Isolation Transfer' switches on the Auxiliary Shutdown Panel, which isolate control and indication of the associated devices from the control room.

Which ONE of the following describes the reason for operating these switches?

- A. Prevent inadvertent actuation of components which are necessary to safely shutdown the plant.
- B. Initiates a reactor trip and transfer control of the plant to the auxiliary shutdown panel.
- C. Required by Technical Specifications action to ensure that auxiliary shutdown Operability is satisfied.
- D. Transfers alarm and control of pressurizer heaters from the Control Room.

ANSWER:

- A. Prevent inadvertent actuation of components which are necessary to safely shutdown the plant.

RO #71

SRO #69

K/A #000067K304

OBJECTIVE #0110480D

REFERENCES: T61.0110.6 LP-#48

SRO Test

QUESTION #010

The plant is in MODE 3 when a loss of PA02 occurs.

Reactor coolant system pressure will be controlled by:

- A. Steady state heaters and pressurizer spray.
- B. Backup heaters only.
- C. Steady state heater only.
- D. Backup heaters and pressurizer spray.

ANSWER:

- B. Backup heaters only.

SRO #92

K/A #000007A103

OBJECTIVE #0110090J

REFERENCES: OTN-BB-00003  
E21001

SRO Test

QUESTION #011

The following conditions exist:

- Containment pressure transmitter PT-937 declared inoperable
- Required Technical Specification Actions have been taken for channel 937

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. 2/3 coincidence after the channel is placed in the TRIP condition, by placing bistable (PB-937A) in the TEST position.
- B. 2/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.
- C. 1/3 coincidence after the channel is placed in the TRIP condition, by placing bistable (PB-937A) in the TEST position.
- D. 1/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.

ANSWER:

- B. 2/3 coincidence after the channel is placed in the BYPASS condition, by placing bistable (PB-937A) in the TEST position.

RO #23

SRO #24

K/A #013000K502

OBJECTIVE #003A02I2

REFERENCES: T/S 3.3.2 ACTION c, Table 3.3-3 FU 2.c ACTION 16  
PRINT 7250D64 S008



SRO Test

QUESTION #012

Following a LOCA, hydrogen concentration in the containment has increased slowly over several days, reaching 1.0 volume per cent.

Which ONE of the following actions should be taken?

- A. One train of the electric hydrogen recombiner system should be placed in service.
- B. Electric hydrogen recombiners should be placed in service when hydrogen concentration reaches 4.0 volume per cent.
- C. Electric hydrogen recombiners cannot be placed in service. Heater operating temperature on the recombiner exceeds ignition temperature for hydrogen at this concentration.
- D. Both trains of electric hydrogen recombiners should be placed in service in conjunction with a containment purge.

ANSWER:

- A. One train of the electric hydrogen recombiner system should be placed in service.

RO #63

SRO #42

K/A #028000K501

OBJECTIVE #0110400J

REFERENCES: OTN-GS-00001

E-1

SRO Test

QUESTION #013

Which ONE (1) of the following groups of indications has revised limits during adverse containment?

- A. S/G wide range level, RCS subcooling, S/G pressure
- B. RCS subcooling, S/G pressure, Pressurizer level
- C. S/G pressure, Pressurizer level, S/G wide range level
- D. Pressurizer level, S/G wide range level, RCS subcooling

ANSWER:

- D. Pressurizer level, S/G wide range level, RCS subcooling

SRO #77

K/A #000011A114

OBJECTIVE #003D040N

REFERENCES: E-0

SRO Test

QUESTION #014

The following plant conditions exist:

- Reactor Power at 100%.
- RCS pressure 2235 psig.
- Tavg is 584°F.
- Thermal bearing cooling water inlet temperature is 104°F.
- Seal Injection flow is lost.

Which ONE (1) of the following describes a condition which would require tripping a RCP?

- A. #1 seal leakoff rate 5.5 gpm
- B. Shaft Vibration 14 mils
- C. #2 Seal Delta P of 35 psid
- D. #1 Seal and Bearing Inlet temperature 239°F

ANSWER:

- D. #1 Seal and Bearing Inlet temperature 239°F

SRO #74

K/A #000015A210

OBJECTIVE #003B150B

REFERENCES: OTO-BB-00002

SRO Test

QUESTION #015

Which ONE of the following Area Radiation Monitors is required by Technical Specifications?

- A. Containment Area Radiation Monitor SDRE0041
- B. New Fuel Storage Area Radiation Monitor SDRE0035
- C. Control Room Area Radiation Monitor SDRE0033
- D. Cask Handling Area Radiation Monitor SDRE0034

ANSWER:

- B. New Fuel Storage Area Radiation Monitor SDRE0035.

RO #36

SRO #34

K/A #072000K302

OBJECTIVE #0110360G

REFERENCES: T/S 3.3.3.1, Table 3.3-6 FU 2.b.(2)  
Callaway Bank

SRO Test

QUESTION #016

Which ONE of the following class 1E 125VDC Electrical System Lineups can be performed to satisfy MODE 1 Technical Specification LCO?

- A. LC NG01 to Swing Charger NK25 to bus NK04
- B. LC NG04 to Swing Charger NK26 to bus NK02
- C. LC NG01 to Swing Charger NK26 to bus NK03
- D. LC NG04 to Swing Charger NK25 to bus NK01

ANSWER:

- B. LC NG04 to Swing Charger NK26 to bus NK02

SRO #36

K/A #063000K402

OBJECTIVE #0110060A

REFERENCES: OTN-NK-00001

SRO Test

QUESTION #017

The crew implemented FR-C.1, Response to Inadequate Core Cooling.

Which one of the following combinations of core exit thermocouples and indicated temperatures would require starting RCP's, even if the normally required support conditions could not be met?

|    | # of TC's | Indicated Temp |
|----|-----------|----------------|
| A. | 2         | 2450°F         |
| B. | 4         | 1750°F         |
| C. | 6         | 1350°F         |
| D. | 8         | 750°F          |

ANSWER:

C. 6 1350°F

RO #27

SRO #27

K/A #017020A402

OBJECTIVE #003D250E

REFERENCES: FR-C.1 Background

SRO Test

QUESTION #018

Callaway Plant is preparing for Reactor Core Offload with Refueling Pool Level at 391 inches (2046 ft. level). The polar crane operator inadvertently lifts the Reactor Vessel Upper Internals out of the water and causes a Hi Hi alarm on Containment Building Area Radiation Monitor SDRE0040.

Which ONE of the following is a required Immediate Action?

- A. Close ECV0995, Fuel Transfer Tube Isolation Valve.
- B. Initiate a Containment Purge Isolation Signal (CPIS).
- C. Transfer the Charging Pump suction to the RWST and increase flow.
- D. Evacuate personnel from containment.

ANSWER:

- D. Evacuate personnel from containment.

RO #94

SRO #91

K/A #000061G09

OBJECTIVE #003E05I4

REFERENCES: OTO-KE-00001

OTA-RL-RK062, Att. A



QUESTION #019

FR-S.1 "Response to Nuclear Power Generation/ATWS" Step 2 requires a turbine trip. Why would it be desirable to trip the turbine if a reactor trip had not been achieved? (Choose ONE)

- A. The reactor will be subcritical due to manual rod insertion before the turbine is tripped.
- B. Tripping the turbine will conserve SG inventory and limit the pressure transient that would result from a loss of all feedwater.
- C. Tripping the turbine will insert negative reactivity from moderator temperature coefficient, thus assisting in reactor shutdown.
- D. Tripping the turbine will generate an additional reactor trip signal and suppress core void formation by increasing RCS pressure.

ANSWER:

- B. Tripping the turbine will conserve SG inventory and limit the pressure transient that would result from a loss of all feedwater.

RO #86

SRO #61

K/A #000029K312

OBJECTIVE #003D290C

REFERENCES: T61.003D.6 LP-#29

SRO Test

QUESTION #020

Which ONE (1) of the following is the HIGHEST RCS pressure at which the Safety Injection Pumps will deliver water to the RCS?

- A. 1050 psig
- B. 1250 psig
- C. 1450 psig
- D. 1650 psig

ANSWER:

- C. 1450 psig

RO #43

SRO #38

K/A #006000K603

OBJECTIVE #0110170A

REFERENCES: E-0

T61.0110.6 LP-#17

SRO Test

QUESTION #021

While performing actions in E-3, "Steam Generator Tube Rupture" the Control Room Supervisor asks the Balance of Plant Operator to check intact Steam Generator narrow range levels greater than 4%. Which ONE of the following BOP responses would satisfy Callaway Plant Communication Guidelines?

- A. Yes, intact Steam Generator narrow range levels are greater than 4%.
- B. Yes, intact Steam Generator narrow range levels are 50% and stable.
- C. Yes, intact Steam Generator narrow range levels are increasing.
- D. Yes, intact Steam Generator narrow range levels are 10%.

ANSWER:

- B. Yes, intact Steam Generator narrow range levels are 50% and stable.

RO #8

SRO #7

K/A #194001A105

OBJECTIVE #003A060H

REFERENCES: UEND-COMMUNICATIONS-01, Page 4 of 5

SRO Test

QUESTION #022

Given the following:

- The Main Turbine tripped from 95% power.
- All systems responded normally to the trip.

Which ONE (1) of the following is the expected position of the steam dump valves with Tavg at 575°F?

|    | Full Open | Modulating | Full Closed |
|----|-----------|------------|-------------|
| A. | 12        | 0          | 0           |
| B. | 9         | 3          | 0           |
| C. | 6         | 3          | 3           |
| D. | 3         | 3          | 6           |

ANSWER:

|    |   |   |   |
|----|---|---|---|
| C. | 6 | 3 | 3 |
|----|---|---|---|

RO #57

SRC #55

K/A #041020K418

OBJECTIVE #0110200J

REFERENCES: T61.0110.6 LP-#20

SRO Test

QUESTION #023

A plant startup is in progress with power indicating  $1\text{E}-6\%$  on both IR channels. Which one of the following will occur if IR channel N36 fails to 21%?

- A. IR high flux reactor trip
- B. Manual and automatic rod stop
- C. PZR low pressure reactor trip is unblocked
- D. PR low flux reactor trip

ANSWER:

- B. Manual and automatic rod stop

RO #95

SRO #87

K/A #000033A202

OBJECTIVE #0110260J

REFERENCES: OTO-SE-00002

SRO Test

QUESTION #024

Given the following conditions:

- RCS WR Pressure = 1635 psig
- Pressurizer Pressure = 1710 psig
- RCS C.L. Temperature = 560°F
- Core Exit TC = 568°F

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

- A. 38
- B. 41
- C. 47
- D. 49

ANSWER:

- B. 41

RO #39

SRO #37

K/A #002000K509

OBJECTIVE #003D070S

REFERENCES: Steam Table

SRO Test

QUESTION #025

A permit required confined space entry is to be conducted at the Water Treatment Plant blowdown line manhole.

Which ONE of the below is true regarding this entry?

- A. The attendant may enter the space if necessary, to rescue the entrant.
- B. The work supervisor must be present whenever personnel are in the confined space.
- C. Each entrant shall use a chest or full body harness.
- D. The Medical Emergency Response Team will perform any emergency rescue if necessary.

ANSWER:

- C. Each entrant shall use a chest or full body harness.

SRO #15

K/A #194001K113

OBJECTIVE #003A30G3

REFERENCES: APA-ZZ-00802



SRO Test

QUESTION #026

With the plant in MODE 1, AND one safety related CCP INOPERABLE, RCP Seal Injection should be provided by the \_\_\_\_\_ which will maintain seal cooling in the event of a \_\_\_\_\_.

- A. Non-safety related charging pump, CCW thermal barrier leak.
- B. Non-safety related charging pump, loss of a single electrical bus.
- C. Opposite train safety related CCP, CCW thermal barrier leak.
- D. Opposite train safety related CCP, loss of a single electrical bus.

ANSWER:

- B. Non-safety related charging pump, loss of a single electrical bus.

RO #20

SRO #22

K/A #004000K202

OBJECTIVE #003A04A1

REFERENCES: OTN-BG-00001

QUESTION #027

Which ONE of the following describes the tagout control used for the temporary operation of equipment that is protected under a Hold Off.

- A. The tags shall be cleared prior to operation then a new tagout written and new tags hung.
- B. The tags may be lifted and reused after operation providing a briefing is held and the individual signed on the WPA is present at the component to be checked.
- C. With Shift Supervisor and Requester approval, equipment may be operated without clearing the tags, if the requester is in the equipment area and operation completed in the same shift.
- D. The tags which must be cleared to allow for the operation can be temporarily cleared, replaced with Caution Tags until the operation is complete, then the Caution Tags replaced with new Hold Off Tags.

ANSWER:

- B. The tags may be lifted and reused after operation providing a briefing is held and the individual signed on the WPA is present at the component to be checked.

RO #2

SRO #2

K/A #194001K102

OBJECTIVE #003A330L

REFERENCES: ODP-ZZ-00310 Page 10

QUESTION #028

During operations at 95% power and pressurizer level at 48%, the Tave input to the pressurizer level controller fails low. What INDICATIONS does the operator have that the Tave input failed low?

- A. Backup heaters are energized, charging flow control valve slowly closes, high level deviation alarm actuates.
- B. Backup heaters are deenergized, charging flow control valve slowly opens, low level deviation alarm actuates.
- C. Backup heaters are energized, charging flow control valve slowly opens, low level deviation alarm actuates.
- D. Backup heaters are deenergized, charging flow control valve slowly closes, high level deviation alarm actuates.

ANSWER:

- A. Backup heaters are energized, charging flow control valve slowly closes, high level deviation alarm actuates.

RO #40

SRO #39

K/A #011000A203

OBJECTIVE #0110090C

REFERENCES: OTO-BB-00004

SRO Test

QUESTION #029

Plant conditions:

- Operating in MODE 1, at 100% power.
- SJ-RE-01, CVCS Letdown Monitor, Alarming Hi/Hi
- SD-RE-20, AB 2000 Area, Alarming Hi/Hi

Which ONE of the following operator actions is required per OTO-BB-00005, RCS High Activity?

- A. Reduce power
- B. Isolate letdown
- C. Increase letdown to 120 gpm
- D. Initiate hourly sampling of the RCS

ANSWER:

- C. Increase letdown to 120 gpm

RO #76

SRO #73

K/A #000076G008

OBJECTIVE #003B180A

REFERENCES: OTO-BB-00005

SRO Test

QUESTION #030

Given the following conditions:

- Tavg is 576°F
- Pressurizer Pressure is 2240 psig
- Charging Flow is being controlled in MANUAL
- The BACKUP HEATERS have just ENERGIZED

Which ONE of the following is the actual pressurizer level?

- A. 37%
- B. 42%
- C. 47%
- D. 52%

ANSWER:

- D. 52%

RO #98

SRO #98

K/A #000028A201

OBJECTIVE #0110300K

REFERENCES: T61.0110.6 LP-#30

SRO Test

QUESTION #031

A Ruptured Steam Generator has been cooled down and depressurized. ECCS pumps have been secured and Normal Charging and Letdown have been established.

Plant Conditions:

- PZR Level 30% and DECREASING
- Ruptured S/G NR Level INCREASING

Which ONE of the following is required to balance inventory?

- A. Depressurize the RCS
- B. Increase RCS Makeup Flow
- C. Turn on Pressurizer Heaters
- D. Decrease RCS Makeup Flow

ANSWER:

- A. Depressurize the RCS

RO #85

SRO #90

K/A #000038K306

OBJECTIVE #003D17JJ

REFERENCES: T61.003D.6 LP-#17  
E-3, SGTR

SRO Test

QUESTION #032

Which of the following is NOT an event the MSIVs are used to protect against?

- A. Steam Line Break inside Containment
- B. Feedwater Line Break upstream of check valve
- C. Steam Line Break outside Containment
- D. Steam Generator Tube Rupture

ANSWER:

- B. Feedwater Line Break upstream of check valve

SRO #52

K/A #035010K601

OBJECTIVE #0110200A

REFERENCES: T61.0110.6 LP-#20



QUESTION #033

With the plant in MODE 1 the Shift Supervisor is notified by Security that a confirmed penetration has occurred by unauthorized personnel into the NB01 switchgear room. The Plant Emergency Alarm is sounded and a CODE RED is announced over the Gai-tronics.

Which ONE of the below may be performed during the initial response by Control Room personnel?

- A. Evacuate all unnecessary personnel, shut the Control Room Missile Door, and notify the NRC of 10CFR50.54(x) implementation within ONE hour.
- B. Trip the Reactor, commence RCS cooldown at the Technical Specification limit, and declare an Unusual Event.
- C. Shut the Control Room Missile Door, have all Equipment Operators report to the Field Office, and declare an ALERT.
- D. Declare an ALERT, trip the Reactor, and notify the NRC of 10CFR50.54(x) implementation within ONE hour.

ANSWER:

- D. Declare an ALERT, trip the Reactor, and notify the NRC of 10CFR50.54(x) implementation within ONE hour.

SRO #13

K/A #194001A116

OBJECTIVE #003B280B

REFERENCES: EIP-ZZ-00102, Att. 1  
OTO-SK-00001

SRO Test

QUESTION #034

A normal plant heatup is in progress per OTG-ZZ-00001 with the following plant conditions:

- RCS pressure 1835 psig
- RCS pressurization rate 15 psig/min
- RCS temperature 485°F
- RCS heat up rate 10°F/hr
- S/G pressure 575 psig

If the current trend continues, which ONE of the following occur FIRST?

- A. Main Steam Isolation Valves close.
- B. Pressurizer PORV's open.
- C. Low Pressurizer Pressure Safety Injection.
- D. First group of steam dumps throttle open.

ANSWER:

- A. Main Steam Isolation Valves close.

RO #21

SRO #25

K/A #013000K403

OBJECTIVE #0110520B

REFERENCES: OTG-ZZ-00001, "Plant Heatup Cold Shutdown to Hot Standby"

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SRO Test

QUESTION #035

Which ONE of the following conditions satisfies the Technical Specification 3.5.5, "Refueling Water Storage Tank", requirement for an operable RWST in MODE 1?

|    | Borated Water Volume | Boron Concentration | Solution Temperature |
|----|----------------------|---------------------|----------------------|
| A. | 375,000 gallons      | 2400 ppm            | 80°F                 |
| B. | 375,000 gallons      | 2000 ppm            | 95°F                 |
| C. | 395,000 gallons      | 2400 ppm            | 40°F                 |
| D. | 395,000 gallons      | 2500 ppm            | 105°F                |

ANSWER:

|    |                 |          |      |
|----|-----------------|----------|------|
| C. | 395,000 gallons | 2400 ppm | 40°F |
|----|-----------------|----------|------|

SRO #79

K/A #000024A204

OBJECTIVE #0110560J

REFERENCES: TS 3.5.5

SRO Test

QUESTION #036

A surveillance to be performed on a piece of equipment having a contact reading of 50 R/hr in a room with a general area radiation reading of 125 mR/hr, would require entry into a:

- A. Danger High Radiation Area
- B. Caution High Radiation Area
- C. Danger High Radiation Area Radiological Exclusion Area
- D. Very High Radiation Area.

ANSWER:

- B. Caution High Radiation Area

RO #3

SRO #3

K/A #194001K103

OBJECTIVE #003A31F3

REFERENCES: APA-ZZ-01000 Page 6

SRO Test

QUESTION #037

Technical Specification 3/4.2.4 "Quadrant Power Tilt Ratio" (QPTR) lists required actions that must be accomplished if QPTR exceeds specified limits for more than 2 hours. Which of the following is the basis for the 2 hour time limit?

- A. To allow time for identification and correction of a dropped/misaligned control rod.
- B. To allow time for identification and correction of a malfunctioning power range instrument.
- C. To allow time for testing, identification and correction of power cabinet multiplexing circuits.
- D. To allow sufficient time for control rod response time testing of the malfunctioning solid state protection circuits.

ANSWER:

- A. To allow time for identification and correction of a dropped/misaligned control rod.

SRO #76

K/A #000003G07

OBJECTIVE #003AA3A2

REFERENCES: TS 3/4.2.4 Bases

QUESTION #038

Which ONE of the following is the basis for the Technical Specification limit on total steam generator tube leakage of 600 gpd for all steam generators?

- A. A limited amount of leakage is expected and this threshold value is sufficiently low to ensure early detection of additional leakage.
- B. To ensure that the dosage contribution from the tube leakage will be acceptable in the event of either a steam generator tube rupture or steam line break.
- C. This is a known source which can be readily detected by radiation monitors on steam generator blowdown so it will not interfere with detection of leakage from other sources.
- D. To ensure that the steam generator tube integrity is maintained in the event of a main steam line rupture or under LOCA conditions.

ANSWER:

- B. To ensure that the dosage contribution from the tube leakage will be acceptable in the event of either a steam generator tube rupture or steam line break.

SRO #93

K/A #000037G05

OBJECTIVE #003AA2I3

REFERENCES: TS 3/4.4.6.2 Bases

SRO Test

QUESTION #039

During a loss of all AC while performing ECA-0.0, Loss of All A.C. NK11 battery discharge amps is at 300 amps.

Which ONE of the following is the MAXIMUM time that NK01 could be predicted to be Operable assuming the battery was fully charged initially?

- A. 2 hours
- B. 4 hours
- C. 6 hours
- D. 8 hours

ANSWER:

- B. 4 hours

RO #67

SRO #65

K/A #000055K101

OBJECTIVE #003D220V

REFERENCES: E21NK01



SRO Test

QUESTION #040

A Reactor Trip has just occurred. The following conditions are found while performing Step 3 of E-0, Reactor Trip or Safety Injection:

- NB01 energized from Emergency Diesel NE-01
- NB02 deenergized (no lockout)

Which ONE of the following describes the required action and basis for that action?

- A. Transition to ECA-0.0, Loss of all AC Power because E-0 assumes that Offsite Power is Available.
- B. Attempt to restore power to NB02 while continuing with E-0 because it is desirable to have power to all AC Emergency buses.
- C. Attempt to restore Off Site Power to BOTH NB buses because E-0 assumes that Off Site Power is Available.
- D. Do not make attempts to restore NB02 because it will delay the operator action and only one NB bus is assumed energized by E-0.

ANSWER:

- B. Attempt to restore power to NB02 while continuing with E-0 because it is desirable to have power to all AC Emergency buses.

RO #99

SRO #99

K/A #000056K302

OBJECTIVE #003D040E

REFERENCES: T61.003D.6 LP-#4

SRO Test

QUESTION #041

A periodic load test is being performed on NE02, Standby Diesel Generator 'B' in accordance with OSP-NE-0001B. NE02 has been paralleled with 4160V Bus NB02 and is carrying 6 MW of real load. A Main Steamline break occurs and containment pressure increases to 20 (twenty) psig.

Which ONE of the following describes the response of the Load Shedding Emergency Load Sequencing System (LSELS)?

- A. The LOCA Sequencer starts the Containment Spray Pumps at Step 3 (Time 15 seconds).
- B. The Shutdown Sequencer starts the 'A' Essential Service Water Pump at Step 5 (Time 25 seconds).
- C. The LOCA Sequencer starts the Safety Injection Pumps at Step 1 (Time 5 seconds).
- D. The Shutdown Sequencer starts the Residual Heat Removal Pumps at Step 2 (Time 10 seconds).

ANSWER:

- C. The LOCA Sequencer starts the Safety Injection Pumps at Step 1 (Time 5 seconds).

RO #50

SRO #46

K/A #064000A307

OBJECTIVE #0110510F

REFERENCES: T61.0110.6 LP-#51

SRO Test

QUESTION #042

WHICH of the following red paths is MOST LIKELY to occur for a steam line break on a single S/G outside containment, resulting in a reactor trip and SI? (Assume that all safeguards equipment functions as designed.)

- A. Response to Inadequate Core Cooling (FR-C.1)
- B. Response to Loss of Secondary Heat Sink (FR-H.1)
- C. Response to Imminent Pressurized Thermal Shock Condition (FR-P.1)
- D. Response to High Containment Pressure (FR-Z.1)

ANSWER:

- C. Response to Imminent Pressurized Thermal Shock Condition (FR-P.1)

RO #70

SRO #63

K/A #000040K101

OBJECTIVE #003D280A

REFERENCES: T61.003D.6

SRO Test

QUESTION #043

A plant cooldown is initiated following a reactor trip using the AUX FEED system and S/G PORV's. The CST level is initially at 87% (407,000 gal).

Which ONE of the following is the time available until CST level decreases to the MODE 3 Technical Specification limit with AUX feed flow at 300,000 lbm/hr. (8.345 lbm/gal)

- A. 3.5 hr.
- B. 4.0 hr.
- C. 4.5 hr.
- D. 5.0 hr.

ANSWER:

- A. 3.5 hr.

RO #34

SRO #31

K/A #061000A104

OBJECTIVE #0110250E

REFERENCES: T/S 3.7.1.3

Tank Book TDB-001

SRO Test

QUESTION #044

Which ONE of the following events is required to be recorded in the RO Narrative Logs?

- A. Chemical addition to the condensate system.
- B. Security Event due to Security System (SAS) malfunction.
- C. Annunciator switchyard carrier potential/tone loss, alarms.
- D. Unexpected ESFAS alarm on ESW system.

ANSWER:

- D. Unexpected ESFAS alarm on ESW system.

RO #9

SRO #8

K/A #194001A106

OBJECTIVE #003A02B1

REFERENCES: ODP-ZZ-00006, Section 4.3

QUESTION #045

Given the following information:

- Train A Emergency Diesel Generator became inoperable one hour ago.
- 92% Power Operation.

Which ONE (1) of the following statements describes the operability of the other A train equipment?

- A. All systems, equipment, components, or devices which normally receive emergency power from the train A Emergency Diesel Generator are also inoperable.
- B. All systems, equipment, components, or devices which normally receive emergency power from the train A Emergency Diesel Generator are also inoperable, except those which are powered by an operable battery.
- C. The operability of the remaining train A equipment is not impacted, but the train B equipment and the TDAFP are required to be verified operable per Technical Specification 3.8.1.1.
- D. The operability of the remaining train A equipment is not impacted, except for the ESF electrical bus that the Emergency Diesel Generator supports.

ANSWER:

- C. The operability of the remaining train A equipment is not impacted, but the train B equipment and the TDAFP are required to be verified operable per Technical Specification 3.8.1.1.

SRO #53

K/A #062000G008

OBJECTIVE #0110060G

REFERENCES: TS 3.8.1.1  
TSI 48

SRO Test

QUESTION #046

Which ONE of the following is the preferred method of injecting highly borated water into the RCS during an ATWS?

- A. Manually align Charging Pump suction to the RWST.
- B. Borate through BGV0177, Alternate Immediate Boration Valve.
- C. Manually initiate a Safety Injection from RL001.
- D. Borate through BG-HV-8104, Emergency Borate to Charging Pumps Suction Valve.

ANSWER:

- D. Borate through BG-HV-8104, Emergency Borate to Charging Pumps Suction Valve.

SRO #80

K/A #000029G11

OBJECTIVE #003D290B

REFERENCES: FR-3.1



SRO Test

QUESTION #047

The plant has experienced a large break RCS loss of coolant accident.

Which ONE of the following must be reset to allow opening KAHV0029, Instrument Air Cmtt Isolation?

- A. CISA
- B. CISB
- C. SIS
- D. FBVIS

ANSWER:

- A. CISA

RO #24

SRO #23

K/A #013000A201

OBJECTIVE #003B480A

REFERENCES: E-0, Reactor Trip/Safety Injection  
M22KA01

SRO Test

QUESTION #048

Callaway Plant is in MODE 1, 30% Reactor Power on a Chemistry hold. Annunciator 70B, "RCP VIB/SYS ALERT" alarms. The Reactor Operator checks vibrations on RP312 and finds 'C' RCP shaft vibration indicating 15 mils and steady.

Which one of the following is the required action.

- A. Trip the Reactor, Trip 'C' RCP and go to E-0, Reactor Trip or SI.
- B. Continue to monitor vibration on the 'C' RCP.
- C. Trip the 'C' RCP and declare the Loop 3 RTD channel inoperable.
- D. Increase Component Cooling Water temperature to reduce 'C' RCP vibration.

ANSWER:

- B. Continue to monitor vibration on the 'C' RCP.

RO #18

SRO #20

K/A #003000G10

OBJECTIVE #003B150B

REFERENCES: OTO-BB-00002

SRO Test

QUESTION #049

Which one of the following areas does NOT have restricted access as part of RCS Reduced Inventory Controls?

- A. Electrical Penetration Rooms on the AB 2026'
- B. Switchyard
- C. Around the MA cabinets on TB 2033' level
- D. NB Switchgear Rooms

ANSWER:

- A. Electrical Penetration Rooms on the AB 2026'

SRO #14

K/A #194001K105

OBJECTIVE #003EE20B

REFERENCES: OTN-BB-00002, Attachment 10

SRO Test

QUESTION #050

In FR-H.5, Response to Steam Generator Low Level, AFW flowrate is procedurally restricted to 50,000 lbm/hr when recovering a steam generator level if the level has fallen below 24% wide range indication?

Which ONE of the following indicates why?

- A. Minimize thermal stress conditions on steam generator components.
- B. Minimize RCS cooldown rate and prevent resultant thermal stress on RCS components.
- C. Ensure RCS inventory demand does not exceed normal charging pump capacity.
- D. Ensure pressurizer level transient does not result in pressure transient that would actuate SI.

ANSWER:

- A. Minimize thermal stress conditions on steam generator components.

SRO #94

K/A #000054K102

OBJECTIVE #003D260S

REFERENCES: T61.003D.6, LP-#26

SRO Test

QUESTION #051

A 30 gpm leak has developed on the charging line between BG-HCV-182 (CVCS CHG PMPS TO REGEN HX HCV) and the regenerative heat exchanger. When the Control Room isolates the leak and completes the applicable Off-Normal procedures, the reactor makeup flowpath will be via \_\_\_\_\_, and the reactor letdown flowpath will be via \_\_\_\_\_.

Choose ONE of the following to fill in the blanks.

- A. alternate charging; normal letdown
- B. alternate charging; excess letdown
- C. seal injection; excess letdown
- D. seal injection; normal letdown

ANSWER:

- C. seal injection; excess letdown

RO #90

SRO #84

K/A #000022A101

OBJECTIVE #003B220B

REFERENCES: OTO-BG-00002  
OTO-BB-00003

SRO Test

QUESTION #052

Given the following conditions:

- RCS at NOP/NOT for 100% RTP,
- PORV 456A has seat leakage to the PRT,
- PRT pressure is 20 PSIG

Which ONE of the following is the approximate tailpipe temperature?

- A. 212°F
- B. 228°F
- C. 248°F
- D. 258°F

ANSWER:

- D. 258°F

RO #58

SRO #54

K/A #007000A201

OBJECTIVE #0070130B

REFERENCES: Steam Table

SRO Test

QUESTION #053

The Callaway Plant is in MODE 3 at NOP and NOT. An earthquake ruptures the Condensate Storage Tank and causes a steam break on 'C' S/G. The following conditions exist:

|                      |          |
|----------------------|----------|
| SG A, B & D NR Level | 45%      |
| SG C NR Level        | 10%      |
| SG A, B, & D Press   | 900 psig |
| SG C Press           | 300 psig |
| AFW Suction Press    | 4 psig   |

Which one of the following describes the resulting flowpath of feedwater to the Steam Generators?

- A. 'B' ESW Pump to 'B' MDAFP to 'C' S/G
- B. 'A' ESW Pump to 'A' MDAFP to 'B' S/G
- C. 'B' ESW Pump to 'B' MDAFP to 'B' S/G
- D. 'A' ESW Pump to 'A' MDAFP to 'D' S/G

ANSWER:

- B. 'A' ESW Pump to 'A' MDAFP to 'B' S/G

RO #35

SRO #32

K/A #061000A303

OBJECTIVE #0110250D

REFERENCES: T61.0110.6

OTA-RL-RK127A



SRO Test

QUESTION #054

With the plant at 40% power which one of the below would be TRUE regarding operation of the ATWS Mitigation Actuation Circuitry (AMSAC)?

- A. If S/G Levels decrease to less than 5% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.
- B. If S/G Levels decrease to less than 5% on 1 of 2 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 232 seconds later.
- C. If S/G Levels decrease to less than 14.8% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.
- D. If S/G Levels decrease to less than 14.8% on 1 of 2 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 232 seconds later.

ANSWER:

- A. If S/G Levels decrease to less than 5% on 2 of 3 AMSAC logic circuits, then a Turbine Trip and MD AFAS, are actuated 25 seconds later.

RO #22

SRO #30

K/A #001000GK04

OBJECTIVE #0110540B

REFERENCES: OTA-RL-0083A  
E23AC11

SRO Test

QUESTION #055

Liquid Radwaste Discharge Monitor (HDRE18) alarms on the RM-11 in dark blue condition.

Which ONE of the below could be the cause?

- A. Loss of Sample Flow
- B. Loss of Process Flow
- C. Monitor Purging
- D. Channel No Pulses Received

ANSWER:

- D. Channel No Pulses Received

RO #97

SRO #68

K/A #000059A201

OBJECTIVE #0110360B

REFERENCES: OTN-SP-00002  
OTA-SP-RM011

SRO Test

QUESTION #056

Following a safety injection due to a RCS leak in containment, plant conditions are established that meet the SI termination criteria of E-1, Loss of Reactor or Secondary Coolant.

Which ONE of the below is true regarding these plant conditions?

- A. All safety related equipment is Operable as required by Technical Specifications.
- B. Reactor core decay heat is being removed by the steam generators.
- C. Containment pressure is below the safety injection actuation setpoint.
- D. Steam Generator pressure are approximately equal to RCS pressure.

ANSWER:

- B. Reactor core decay heat is being removed by the steam generators.

RO #82

SRO #83

K/A #000009K324

OBJECTIVE #003D090J

REFERENCES: ES-1.1 SI Termination

SRO Test

QUESTION #057

Which ONE of the following valves fail open on a loss of instrument air?

- A. Steam Generator Atmospheric Relief
- B. Main Feed Regulating Bypass Valves
- C. Main Feed Pump Recirc Valve
- D. Heater Drain Pump Recirc Valve

ANSWER:

D. Heater Drain Pump Recirc Valve

RO #64

SRO #56

K/A #078000K302

OBJECTIVE #003B330A

REFERENCES: OTO-KA-00001

SRO Test

QUESTION #058

An automatic preaction sprinkler system "trouble" alarm would indicate:

- A. a deluge valve actuation
- B. an alarm check valve operation
- C. a fire detector in alarm condition
- D. an open sprinkler head

ANSWER:

- D. an open sprinkler head

RO #47

SRO #50

K/A #086000A402

OBJECTIVE #0110350C

REFERENCES: T61.0110.6 LP-#35  
Callaway Bank

## SRO Test

### QUESTION #059

Given the following conditions:

- A low-pressure SI has occurred due to a LOCA in containment.
- Containment pressure is at 10 psig and increasing at 1 psig/minute.
- Normal Feeder breaker NB0209 was inadvertently opened causing a loss of power on ESF bus NB02.
- ESF bus NB01 has remained energized from Normal Feeder NB0112
- The original SI signal has not been reset.

AT THE SAME TIME that breaker NB0211 closed in, reenergizing bus NB02 from NE02 diesel generator, a containment spray (CS) actuation signal was generated.

Assuming all interlocks are met, WHICH ONE of the following combinations states the times at which the CS pumps will start?

- |    | A CS Pump   | B CS Pump   |
|----|-------------|-------------|
| A. | Immediately | Immediately |
| B. | Immediately | 15 seconds  |
| C. | 15 seconds  | 15 seconds  |
| D. | 15 seconds  | 40 seconds  |

ANSWER:

- B. Immediately 15 seconds

SRO #35

K/A #026000A301

OBJECTIVE #0110510F

REFERENCES: E22NF01

SRO Test

QUESTION #060

Which ONE of the following should be performed by any individual discovering a fire?

- A. Notify Control Room, then use any available fire fighting equipment, then report to Fire Brigade Leader.
- B. First attempt extinguishment using closest available extinguisher, then call Control Room if unsuccessful.
- C. First attempt extinguishment using closest available extinguisher then report to Fire Brigade Staging Area.
- D. Notify Control Room, then use closest available extinguisher, if practical, then report to Fire Brigade Leader.

ANSWER:

- D. Notify Control Room, then use closest available extinguisher, if practical, then report to Fire Brigade Leader.

RO #5

SRO #5

K/A #194001K116

OBJECTIVE #003A30F3

REFERENCES: EIP-ZZ-00226, Att. 2



SRO Test

QUESTION #061

Which ONE of the below shows the correct speed settings for the TD AFW pump?

|    | IDLE SPEED | NORMAL OPERATING SPEED | OVERSPEED |
|----|------------|------------------------|-----------|
| A. | 1200 rpm   | 3850 rpm               | 4235 rpm  |
| B. | 1200 rpm   | 3550 rpm               | 4435 rpm  |
| C. | 1500 rpm   | 3850 rpm               | 4235 rpm  |
| D. | 1500 rpm   | 3550 rpm               | 4435 rpm  |

ANSWER:

|    |          |          |          |
|----|----------|----------|----------|
| A. | 1200 rpm | 3850 rpm | 4235 rpm |
|----|----------|----------|----------|

RO #38

SRO #45

K/A #039000A404

OBJECTIVE #0110250C

REFERENCES: OSP-AL-P0002

SRO Test

QUESTION #062

The plant is in MODE 3 at Normal operating pressure and temperature, Train 'A' COPS has inadvertently been left ARMED for Cold Overpressure Protection.

The selected pressurizer pressure channel, BBPT455 subsequently fails high.

With no operator actions, which ONE of the following is TRUE?

- A. PORV 455 initially opens, then closes when actual PZR Pressure decreases to <2185 psig.
- B. PORV 455 stays closed initially but will function as required for COPS.
- C. PORV 455 initially opens and stays open when actual PZR pressure decreases to <2185 psig.
- D. PORV 455 stays closed initially and PORV BLOCK VALVE(8000A) closes when actual PZR pressure decreases to <2185 psig.

ANSWER:

- A. PORV 455 initially opens, then closes when actual PZR Pressure decreases to <2185 psig.

RO #74

SRO #86

K/A #000027A101

OBJECTIVE #003B190A

REFERENCES: 7250D64

Sheet 17

SRO Test

QUESTION #063

Which ONE of the following is the reason for depressurizing the Steam Generators at the maximum rate during ECA-0.0, "Loss of All AC Power"?

- A. To allow feeding S/G's from Diesel Driven Fire Water Pump.
- B. To minimize RCS inventory loss.
- C. To enhance restoration of SG level from TD AFW Pump.
- D. To prevent lifting PZR PORVs.

ANSWER:

- B. To minimize RCS inventory loss.

RO #68

SRO #66

K/A #000055K302

OBJECTIVE #003D220S

REFERENCES: T61.003D.6

SRO Test

QUESTION #064

Given the following:

- Callaway is operating at 30% steady state reactor power.
- I&C technician receives permission to perform a calibration on Power Range Channel N-41.
- The I&C technician mistakenly pulls the control power fuses on N-42; then, realizing his mistake, he reinserts the fuses for N-42 and pulls the control power fuses for the correct channel, N-41, causing a reactor trip.

Which ONE (1) of the following describes the reason for the reactor trip?

- A. PR neutron flux low setpoint trip.
- B. Overpower Delta T trip.
- C. PR neutron flux high setpoint trip.
- D. PR positive rate trip.

ANSWER:

- D. PR positive rate trip.

RO #53

SRO #41

K/A #012000K603

OBJECTIVE #0110270D

REFERENCES: T61.0110.6 LP-#27  
T61.0110.6 LP-#28

SRO Test

QUESTION #065

Which ONE of the below conditions would require containment coolers to be operated in SLOW speed?

- A. Service Water Temperature <60°F
- B. ESW Supplying Containment
- C. Emergency Diesel Supplying NB Bus
- D. Containment Temperature <80°F

ANSWER:

- A. Service Water Temperature <60°F

RO #28

SRO #29

K/A #022000A101

OBJECTIVE #003A200I

REFERENCES: OTN-GN-00001

SRO Test

QUESTION #066

Prior to opening the Reactor Trip Breakers during a plant shutdown, the crew is directed to reduce the inservice MFP speed to 3650 RPM in anticipation of a Feedwater Isolation Signal.

Using the attached graph, determine which one of the following is the minimum flowrate required to provide pump protection for this speed.

- A. 1500 Klbm/hr
- B. 1750 Klbm/hr
- C. 2000 Klbm/hr
- D. 2250 Klbm/hr

ANSWER:

- C. 2000 Klbm/hr

RO #10

SRO #9

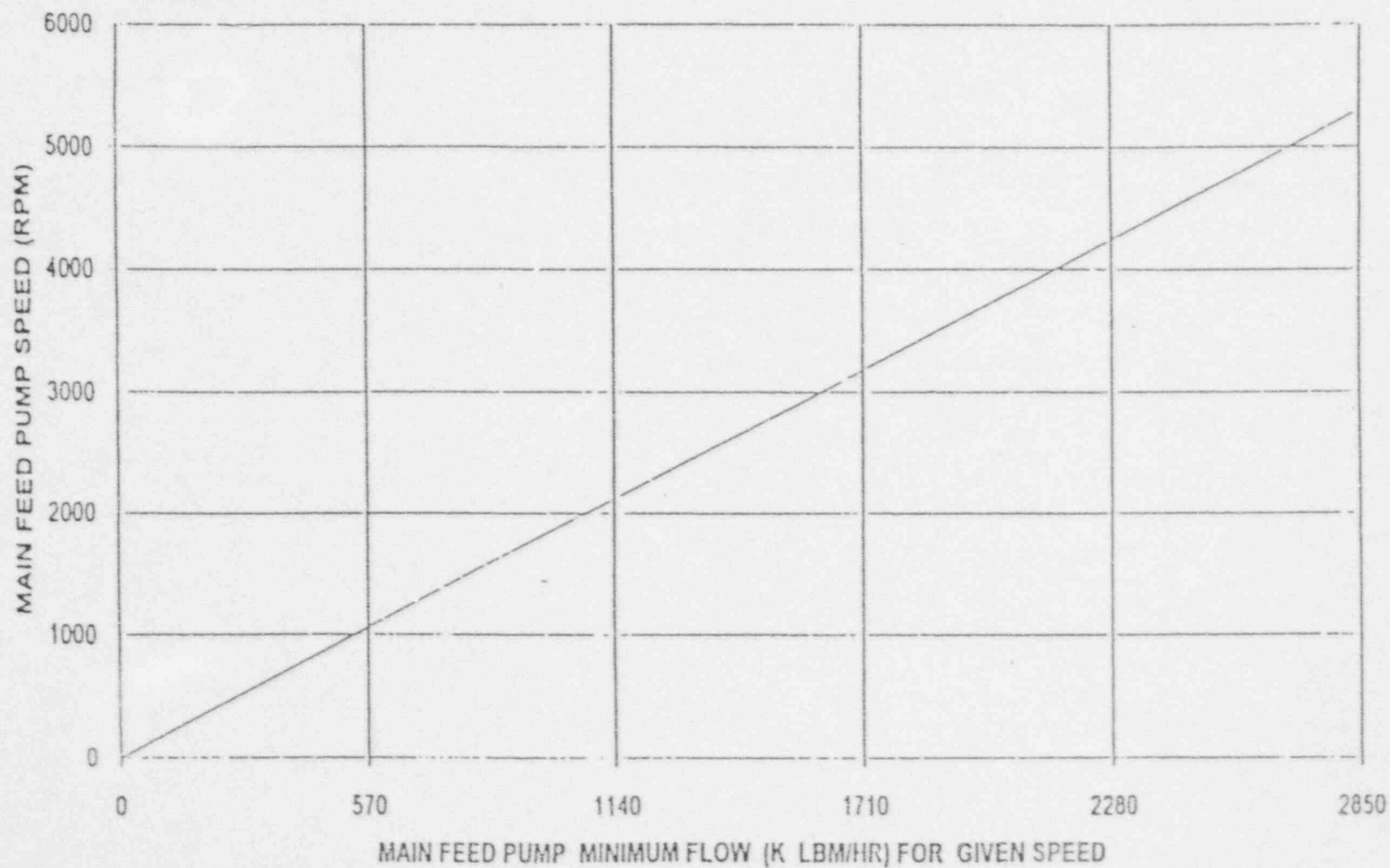
K/A #194001A108

OBJECTIVE #003A040E

REFERENCES: OTN-AE-00001, Att. 4

MAIN FEED PUMP MINIMUM FLOW (LBM/HR VS. RPM)--MINIMUM FLOW AT DESIGN  
SPEED OF 5300 RPM IS 6000 GPM OR APPROX. 2800 K LBM/HR.

OTN-AE-00001  
Rev. 16





SRO Test

QUESTION #067

The plant experienced a Primary LOCA due to an earthquake. Both the CCW and ESW systems are Inoperable. All CCP and SI pumps are in operation in response to the Safety Injection.

Which ONE of the following describes the operation of the CCP and SI pumps?

- A. Continued operation of all CCP and SI pumps is acceptable.
- B. Secure all CCP and SI pumps until CCW or ESW is restored.
- C. Alternate CCP and SI pumps so that only ONE train is injecting.
- D. Operate CCPs only while securing the SI pumps.

ANSWER:

- C. Alternate CCP and SI pumps so that only ONE train is injecting.

SRO #78

K/A #000011G007

OBJECTIVE #003A0100

REFERENCES: OTN-BG-00001, 2.21  
OTN-EM-00001

SRO Test

QUESTION #068

WHICH of the following groups of parameters read out Auxiliary Shutdown Panel?

- A. RCS WR pressure, S/G pressure, S/G level, containment pressure
- B. RCS Tavg, S/G pressure, S/G level, containment pressure
- C. RCS hot leg temp, S/G level, TDAFWP flow, containment pressure
- D. RCS cold leg temp, RCS hot leg temp, S/G level, S/G pressure

ANSWER:

- D. RCS cold leg temp, RCS hot leg temp, S/G level, S/G pressure

RO #72

SRO #70

K/A #000068K201

OBJECTIVE #0110480B

REFERENCES: T61.0110.6

SRO Test

QUESTION #069

The signal from the 'A' train SSPS to cause a reactor trip will:

- A. open the 'A' reactor trip breaker and the 'A' reactor trip bypass breaker.
- B. open the 'B' reactor trip breaker and the 'B' reactor trip bypass breaker.
- C. open the 'A' reactor trip breaker and the 'B' reactor trip bypass breaker.
- D. open the 'B' reactor trip breaker and the 'A' reactor trip bypass breaker.

ANSWER:

- C. open the 'A' reactor trip breaker and the 'B' reactor trip bypass breaker.

RO #54

SRO #40

K/A #012000A403

OBJECTIVE #0110270C

REFERENCES: T61.0110.6 LP-#27  
Callaway Bank

SRO Test

QUESTION #070

During a refueling outage welding is being performed in a high radiation area. No fire watch will be used due to ALARA considerations.

Which ONE of the below would approve the hot work permit as the designated management representative?

- A. Shift Supervisor
- B. Outage Shift Manager
- C. Maintenance Work Supervisor
- D. Health Physics Supervisor

ANSWER:

- A. Shift Supervisor

SRO #17

K/A #194001A116

OBJECTIVE #003A30A4

REFERENCES: APA-ZZ-00010, 4.3.3.6  
APA-ZZ-00742, 3.2.1

SRO Test

QUESTION #071

A spurious SI causes a plant trip and SI. Which one of the below actions is acceptable to be performed while performing E-0 steps 1 through 14?

- A. Securing NE01 due to ESW pump A tripping.
- B. Securing RHR Train 'A' due to RCS pressure at 2235.
- C. Stopping one CCP to minimize injection to RCS.
- D. Starting a SFP pump to restore Fuel Pool Cooling.

ANSWER:

- A. Securing NE01 due to ESW pump A tripping.

RO #6

SRO #5

K/A #194001A102

OBJECTIVE #003A29C4

REFERENCES: ODP-ZZ-00025

SRO Test

QUESTION #072

Both trains of Essential Service Water (ESW) are placed into service to reduce containment temperature. Shortly after placing ESW into service, reactor power is noted to be slowly increasing.

Which ONE of the following is the probable cause of the power increase?

- A. Change in containment air temperature affecting operation of the power range detectors.
- B. Change in main feedwater temperature due to flow variations in the S/G Blowdown system.
- C. Change in the CVCS letdown temperature causing deboration in the letdown demineralizers.
- D. Change in main condenser vacuum causing increasing main steam flow through the main turbine.

ANSWER:

- C. Change in the CVCS letdown temperature causing deboration in the letdown demineralizers.

RO #42

SRO #48

K/A #075000A401

OBJECTIVE #003A09A1

REFERENCES: OTN-EF-00001  
OTN-EG-00001

SRO Test

QUESTION #073

Given the following plant conditions:

- SAFETY INJECTION      ACTUATED
- PZR PRESSURE          1800 PSIG Slowly Decreasing
- RCS TEMPERATURE      550°F Slowly Decreasing
- S/G NR LEVELS          1% Slowly Increasing
- PRT Pressure            3 psig Stable
- S/G PRESSURE           1000 PSIG STABLE
- PZR Level                28% INCREASING
- RM-11                    GTRE31 & 32 Alarming
- CTMT Temperature      140°F Slowly Increasing
- CTMT Pressure          8 psig
- CTMT Humidity          Increasing

Which ONE of the following could be the cause of the above conditions?

- A. Steam Generator Safety Valve failed open.
- B. Pressurizer PORV failed open.
- C. RCS Leak from a cold leg.
- D. Pressurizer steam space leak.

ANSWER:

- D. Pressurizer steam space leak.

RO #81

SRO #82

K/A #000008A106

OBJECTIVE #003D030F

REFERENCES: E-0 Reactor Trip/Safety Injection



SRO Test

QUESTION #074

The Callaway Plant is operating at 94% power with all four containment cooling fans running in fast speed.

A simultaneous Safety Injection and loss of the normal power supply to NB01 occurs. All systems function as designed.

Which one of the following describes the response of the Containment Cooling fans?

- A. Fans A and C start in FAST speed, B & D continue to run in FAST speed.
- B. Fans A & C start in SLOW speed, fans B & D shift to SLOW speed.
- C. Fans A & C start in FAST speed, fans B & D shift to SLOW speed.
- D. Fans A & C start in SLOW speed, fans B & D continue to run in FAST speed.

ANSWER:

- B. Fans A & C start in SLOW speed, fans B & D shift to SLOW speed.

RO #29

SRO #28

K/A #022000A301

OBJECTIVE #0110400D

REFERENCES: E21005  
E21001

SRO Test

QUESTION #075

Which one of the following describes the operation of 7.5 KVA Inverter NN12 when the 125VDC supply from NK0211 is interrupted?

- A. The Static Transfer switch will AUTOMATICALLY transfer to the Bypass Transformer and will AUTOMATICALLY transfer back to the inverter when 125VDC is restored.
- B. The Static Transfer switch will AUTOMATICALLY transfer to the Bypass Transformer, but must be MANUALLY transferred back to the inverter when 125VDC is restored.
- C. The Static Transfer switch must be MANUALLY transferred to the Bypass Transformer, but will AUTOMATICALLY transfer back to the inverter when 125VDC is restored.
- D. The Static Transfer switch must be MANUALLY transferred to the Bypass Transformer and MANUALLY transferred back to the inverter when 125VDC is restored.

ANSWER:

- B. The Static Transfer switch will AUTOMATICALLY transfer to the Bypass Transformer, but must be MANUALLY transferred back to the inverter when 125VDC is restored.

SRO #81

K/A #000057A101

OBJECTIVE #0110060E

REFERENCES: OTN-NN-00001

SRO Test

QUESTION #076

The plant is in the injection phase of Safety Injection due to a RCS LOCA. Containment Pressure has reached a maximum of 25 psig.

Which ONE of the following indicates ONLY loads being cooled by CCW?

- A. RHR Pumps, RHR Heat Exchangers, Sample systems
- B. Fuel Pool, Reactor Coolant Pumps, Excess Letdown Heat Exchangers
- C. Containment Spray Pumps, Charging Pumps, Reactor Coolant Pumps
- D. Reactor Coolant Pumps, Charging Pumps, RHR Pumps

ANSWER:

- D. Reactor Coolant Pumps, Charging Pumps, RHR Pumps

RO #77

SRO #60

K/A #000026K302

OBJECTIVE #0110100C

REFERENCES: M22EG01  
E210010

SRO Test

QUESTION #077

The Callaway Plant is in a Reduced Inventory condition and has suffered a Loss of RHR Cooling.

Which ONE of the following would cause a reduction in T-Boil (Time to Boil)?

- A. Fewer Effective Full Power Days (EFPD)
- B. Longer Time since Shutdown
- C. Lower Steam Generator Level
- D. Lower RCS Loop Level

ANSWER:

- D. Lower RCS Loop Level

RO #91

SRO #85

K/A #000025G10

OBJECTIVE #003EE20B

REFERENCES: OTN-BB-00002  
T-Boil Calc-Theory

SRO Test

QUESTION #078

The plant is in MODE 6, performing CRDM drag testing when Source Range Channel N-31 fails.

CRDM drag testing may continue:

- A. For 12 hours with only Source Range Channel N-32 Operable.
- B. Using Gamma Metrics Flux Monitor and Source Range N-32.
- C. After determining the Reactor Coolant System boron concentration.
- D. Only for those CRDMs that are adjacent to Source Range N-32.

ANSWER:

- B. Using Gamma Metrics Flux Monitor and Source Range N-32.

SRO #100

K/A #000036K101

OBJECTIVE #003E040A

REFERENCES: TS 3.9.2 Int. #42

SRO Test

QUESTION #079

Plant startup is in progress with main turbine roll commencing and reactor power at 6%. Power range N-44 is out of service due to a failed detector.

Which one of the below is UNBLOCKED under these conditions?

- A. Intermediate Range High Flux Reactor Trip
- B. Pressurizer Low Pressure Reactor Trip
- C. Reactor Trip from Turbine Trip
- D. Pressurizer High Lev Reactor Trip.

ANSWER:

- A. Intermediate Range High Flux Reactor Trip

RO #25

SRO #26

K/A #015000A303

OBJECTIVE #003A24A2

REFERENCES: OTG-ZZ-00003  
OTO-SA-00001

SRO Test

QUESTION #080

Use the attached Figure 7-5 to answer the following question.

The plant is in MODE 3, 557°F, 2235 psig. Which one of the following is the amount of water needed to reduce the RCS boron concentration from 1150 ppm to 1100 ppm?

- A. 1167 gal.
- B. 1195 gal.
- C. 2688 gal.
- D. 2752 gal.

ANSWER:

- D. 2752 gal.

RO #14

SRO #19

K/A #001010K521

OBJECTIVE #003AA40E

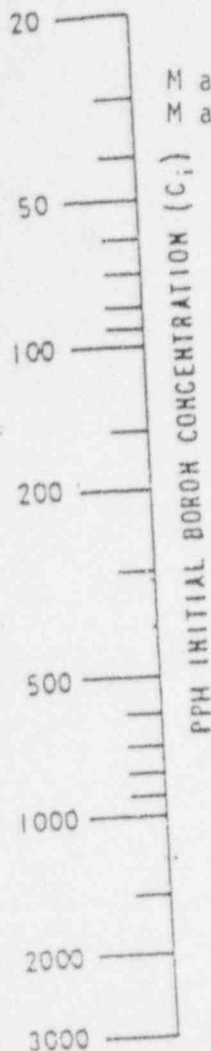
REFERENCES: Plant Curve Book



REACTOR MAKEUP CONTROL SYSTEM NOMOGRAPHS

BORON DILUTION

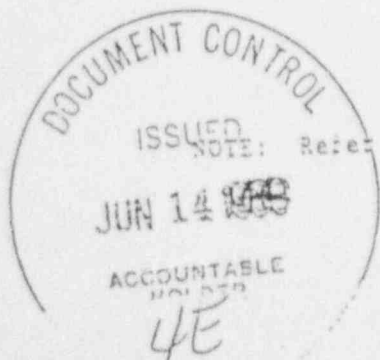
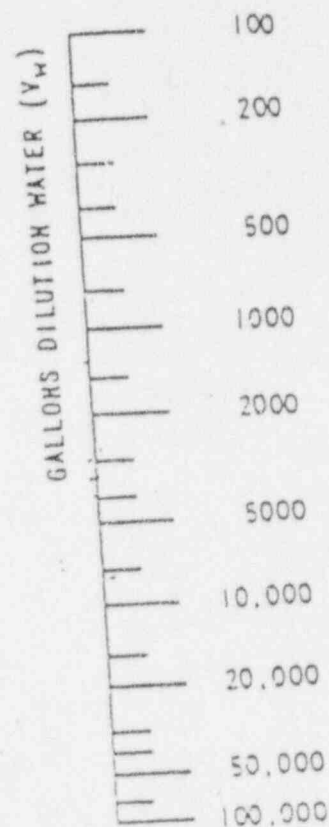
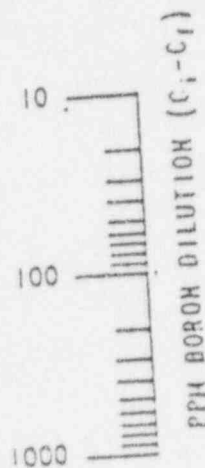
$$V_w = \frac{M}{8.33} \ln \left( \frac{C_i}{C_f} \right)$$



M at 0% power = 515676 lbm \*  
 M at 100% power = 503624 lbm \*

*Rajula* 2-5-87  
 Superintendent, Engineering Date

\*The values for M, mass of the RCS, are only valid while pressurizer level is in its target band.



NOTE: Refer to Table 7-1 for correction factors.

SRO Test

QUESTION #081

The plant is in MODE 5 with the containment purge exhaust fan operating and containment purge supply off. The Containment Coordinator identifies a positive air flow condition from containment to outside atmosphere through the equipment hatch with the containment personnel hatch open.

Which ONE of the below actions should be performed for this condition?

- A. Activate a Containment Purge Isolation
- B. Start either Fuel Bldg/Aux Bldg Emergency Exhaust train
- C. Activate a Control Room Ventilation Isolation
- D. Shift the Aux Building Normal Exhaust to FAST

ANSWER:

- D. Shift the Aux Building Normal Exhaust to FAST

RO #45

SRO #43

K/A #029000K103

OBJECTIVE #003A120B

REFERENCES: OTN-GT-00001

SRO Test

QUESTION #082

Given the following plant conditions:

- Operating at 100% power at MOL.
- All systems are operable.
- While in AUTO rod control, Control Bank "D" starts stepping in slowly, but at a noticeable rate.

Which ONE of the following events will cause this response?

- A. A tube leak in the Regenerative Heat Exchanger.
- B. A tube leak in the Seal Water Heat Exchanger.
- C. A tube leak in the Letdown Heat Exchanger.
- D. A tube leak in the Excess Letdown Heat Exchanger.

ANSWER:

- B. A tube leak in the Seal Water Heat Exchanger.

SRO #57

K/A #008010A303

OBJECTIVE #0110100H

REFERENCES: T61.0110.6, LP-#10

SRO Test

QUESTION #083

A Hi Hi Radiation signal from SJ-RE-02, Steam Generator Blowdown System Radiation Monitor, will automatically close which ONE of the following valves?

- A. BM-HV-21, S/G 'C' Blowdown Nuclear Sampling System Upper Isolation Valve.
- B. BM-FV-54, S/G Blowdown Discharge Pumps Discharge Flow Control Valve.
- C. BM-HV-6, S/G 'B' Blowdown Nuclear Sampling System Line Downstream Isolation Valve.
- D. BM-HV-38, S/G 'D' Blowdown Nuclear Sampling System Lower Isolation Valve.

ANSWER:

- C. BM-HV-6, S/G 'B' Blowdown Nuclear Sampling System Line Downstream Isolation Valve.

RO #56

SRO #47

K/A #073000K101

OBJECTIVE #0110120D

REFERENCES: T61.0110.6 LP-#12  
OTO-SA-00001

SRO Test

QUESTION #084

Given the following plant conditions:

- Steam Break in AREA 5
- All MSIVs closed
- 'A', 'B', and 'D' Steam Generator Pressures Stable
- 'C' Steam Generator Pressure Decreasing
- Performing actions of E-2, "Faulted Steam Generator Isolation"
- TD AFW pump is the only AFW pump available

Which ONE of the following actions would be performed during completion of E-2?

- A. Close ABHV0006, 'C' Steam Supply to the TD AFW pump.
- B. Open all S/G Common Sample Isolation Valves, BMHV0065 through 68.
- C. Reduce Aux Feedwater flow to 15,000 lbm/hr to each Steam Generator.
- D. Close ABLV0007, Main Steam Low Point Drain SG 'C'.

ANSWER:

- B. Open all S/G Common Sample Isolation Valves, BMHV0065 through 68.

RO #66

SRO #62

K/A #0000401103 *A 7/20/67*

OBJECTIVE #003D150C

REFERENCES: E-2

SRO Test

QUESTION #085

Main Turbine exhaust pressure is 4" Hga and increasing at a rate of 0.5" Hga per minute. Which of the following is the minimum amount of time that could elapse before an automatic low vacuum turbine trip occurs?

- A. 5 minutes
- B. 7 minutes
- C. 9 minutes
- D. 12 minutes

ANSWER:

- B. 7 minutes

RO #73

SRO #64

K/A #000051A202

OBJECTIVE #003BB90A

REFERENCES: OTO-AD-00001

SRO Test

QUESTION #086

Which one of the following situations will require completing a "Request to Exceed NRC Overtime Restrictions" form?

- A. An I&C Computer Technician is called out to work the OWL shift immediately preceding his scheduled AM shift.
- B. An Operating Supervisor works 7 a.m. to 3 p.m. in Training, then starts the Night Shift at 6 p.m. the same day and works until 6 a.m. the following morning.
- C. An Equipment Operator works 25 hours in a 48 hour period due to a change from Daylight Savings Time.
- D. A Rad-Chem Technician works 7 a.m. to 7 p.m. for six continuous days.

ANSWER:

- B. An Operating Supervisor works 7 a.m. to 3 p.m. in Training, then starts the Night Shift at 6 p.m. the same day and works until 6 a.m. the following morning.

SRO #12

K/A #194001A103

OBJECTIVE #003A290E

REFERENCES: APA-ZZ-00905



SRO Test

QUESTION #087

Which one of the following is an entry condition for OTO-ZZ-00003, I of Shutdown Margin?

- A. Mode 3, following Reactor Trip at 0950 and RCS Tavg 545°F at 1115.
- B. Mode 2, with Reactor Power at 5% and Control Bank C at 35 steps.
- C. Mode 3, with RCS temperature decrease of 100°F in 20 minutes with ECCS operating in the Injection phase.
- D. Mode 5, with Shutdown Margin Calculation indicating the core net reactivity at -1100 pcm

ANSWER:

- B. Mode 2, with Reactor Power at 5% and Control Bank C at 35 steps.

RO #80

SRO #59

K/A #000024G10

OBJECTIVE #003B610A

REFERENCES: T61.003B.6 LP-#B-61  
OTO-ZZ-00003  
Plant Curve Book

SRO Test

QUESTION #088

A working copy of a procedure is taken from the "Working File" in the Field Office on 9/21/96 at 0900. Which one of the following would allow this procedure to be used in the plant on 9/25/96 at 1700?

- A. The procedure copy was verified to be the correct revision and signed by the Operating Supervisor on 9/21/96.
- B. The procedure is marked "Controlled Copy" and was signed and dated by the Shift Supervisor on 9/23/96.
- C. The procedure is marked "Working File" and has been initialed and dated on each shift since issue.
- D. The procedure is marked "Working Copy" and was signed by the Shift Clerk on 9/24/96 at 2359.

ANSWER:

- D. The procedure is marked "Working Copy" and was signed by the Shift Clerk on 9/24/96 at 2359.

SRO #16

K/A #194001A101

OBJECTIVE #003AA6B2

REFERENCES: ODP-ZZ-00009

Modified from 1994 NRC Exam.

SRO Test

QUESTION #089

The secondary equipment operator notes that Annunciator 6E, D.C. Control Power Failure Alarm" is on for diesel NE01 local alarm panel. On Panel KJ121 IL1 and IL2 lights are OFF, IL3 and IL4 lights are ON.

Which ONE of the following describes the effect on the diesel generator?

- A. NE01 is OPERABLE if starting air pressure is maintained 610 to 640 psig.
- B. NE01 is INOPERABLE since diesel start circuits are disabled.
- C. NE01 is OPERABLE as long as outside air temp is less than or equal to 65°F.
- D. NE01 is INOPERABLE since the fuel oil transfer pump is disabled.

ANSWER:

- B. NE01 is INOPERABLE since diesel start circuits are disabled.

SRO #95

K/A #000058A201

OBJECTIVE #011003DD

REFERENCES: OTA-KJ-00121

SRO Test

QUESTION #090

A void exists in the reactor vessel during natural circulation cooldown. Which ONE of the following actions is used to collapse an excessive void, according to ES-0.3, "Natural Circulation Cooldown with Steam Voids"?

- A. Decrease RCS temperature while maintaining RCS pressure constant.
- B. Fill the Pressurizer solid and vent the reactor vessel head.
- C. Increase RCS pressure using pressurizer heaters while maintaining pressurizer level.
- D. Start an SI pump to increase RCS pressure while maintaining temperature constant.

ANSWER:

- C. Increase RCS pressure using pressurizer heaters while maintaining pressurizer level.

RO #69

SRO #72

K/A #000074A101

OBJECTIVE #003D070K

REFERENCES: T61.003D.6  
ES-0.3

SRO Test

QUESTION #091

The plant is in MODE 1 with all systems in normal except that I&C is performing corrective maintenance in the Rod Control Power Cabinet 1BD. Group 1 of Control Bank D is being energized from the DC Hold Bus.

Breaker PG1902, Motor Circuit Breaker to Rod Drive Motor-Generator SF01, is inadvertently opened. All plant systems respond as designed.

Which ONE of the below is true regarding power to the control rods?

- A. Power continues to all control rods.
- B. Power is interrupted to all control rods.
- C. Power is interrupted to all rods except Control Bank D, Group 1.
- D. Power continues to all rods except Control Bank D, Group 1.

ANSWER:

- A. Power continues to all rods.

RO #15

SRO #18

K/A #001000K202

OBJECTIVE #0110260G

REFERENCES: T61.0110.6 LP-#26

SRO Test

QUESTION #092

Which one of the following could be a direct result of a loss of Vital AC Instrument bus NN03?

- A. Charging Pump suction swaps to the RWST
- B. Source Range Hi Flux Reactor Trip
- C. Intermediate Range High Flux Reactor Trip
- D. CVCS Letdown Isolation

ANSWER:

- D. CVCS Letdown Isolation

RO #79

SRO #67

K/A #000057A219

OBJECTIVE #003B450A

REFERENCES: OTO-NN-00001

## SRO Test

### QUESTION #093

A reactor trip has occurred and the operating crew is responding in accordance with ES-0.1, Reactor Trip Response.

- Reactor trip and bypass breakers open
- NIS power is 1% and decreasing
- Bank D, Group 2 rods indicate 188 steps withdrawn. All other rods are fully inserted

Which one of the following is TRUE for the above conditions?

- A. An emergency boration of 450 ppm must be performed to ensure the minimum shutdown margin is maintained.
- B. An emergency boration of 150 ppm must be performed to limit fission gas release and maintain fuel pellet temperature within design limits.
- C. No immediate action is required since the core is designed for these conditions, and the reactor has been verified tripped by diverse indications.
- D. A safety injection signal (SIS) must be actuated to maintain the reactor core in a safe shutdown condition.

ANSWER:

- A. An emergency boration of 450 ppm must be performed to ensure the minimum shutdown margin is maintained.

RO #65

SRO #58

K/A #000005K301

OBJECTIVE #003D060C

REFERENCES: ES-0.1



SRO Test

QUESTION #094

During a Reactor Startup, the Reactor Operator verifies one decade of overlap between the source and Intermediate Range Nuclear Instruments. This verification is defined as a(n) \_\_\_\_\_

- A. Source Check
- B. Analog Channel Operational Test
- C. Channel Calibration
- D. Channel Check

ANSWER:

- D. Channel Check

RO #11

SRO #10

K/A #194001A113

OBJECTIVE #003A02I1

REFERENCES: Tech Spec Definitions

SRO Test

QUESTION #095

Which ONE of the following components is manually (or automatically) isolated and remains isolated for a Faulted 'B' Steam Generator, but NOT necessarily for a 'B' Steam Generator Tube Rupture? (NOTE: Assume all equipment actuated as required.)

- A. Main Steam Isolation Valve (AB-HV-17)
- B. Main Feedwater Isolation Valve (AE-FV-40)
- C. Auxiliary Feedwater Flow Control Valve (AL-HV-10)
- D. Main Steam Supply Valve to T/D AFW Pump (AB-V085)

ANSWER:

- C. Auxiliary Feedwater Flow Control Valve (AL-HV-10)

RO #84

SRO #89

K/A #000038A132

OBJECTIVE #003D17NN

REFERENCES: T61.003D.6 LP-#17

E-3, SGTR

E-2, Faulted S/G Isolation

SRO Test

QUESTION #096

Given the following:

- Unit 1 is operating at 100% power.
- All controls are in the normal power operation lineup.
- Pressurizer level is DECREASING.
- VCT level is INCREASING.
- SEAL INJECTION TO RCP FLOW LO alarm is lit.
- REGEN HX HI TEMP alarm is lit.
- LETDN HX DISCHARGE HI TEMP alarm is lit.
- CHARGING LINE FLOW HI/LO alarm is lit.

Which ONE of the following procedures should be implemented?

- A. OTO-BG-00001, Loss of Letdown
- B. OTO-BG-00002, Loss of Charging
- C. OTO-BB-00003, RCS Excessive Leakage
- D. OTO-BB-00001, Steam Generator Tube Leak

ANSWER:

- B. OTO-BG-00002, Loss of Charging

SRO #97

K/A #000022A201

OBJECTIVE #003B220A

REFERENCES: OTA-RL-RK042, Att. A

SRO Test

QUESTION #097

The Technical Specification bases for observing that the RCCAs are positioned above their respective insertion limits during normal operation include which one of the following?

- A. Ensures that the moderator temperature coefficient is within its analyzed range.
- B. Ensures that the trip instrumentation is within its normal operating range.
- C. Ensures that the pressurizer is capable of being Operable with a steam bubble.
- D. Ensures that acceptable power distribution limits are maintained.

ANSWER:

- D. Ensures that acceptable power distribution limits are maintained.

SRO #75

K/A #000001K302

OBJECTIVE #003AA3E2

REFERENCES: TS 3/4.1 3 Bases

SRO Test

QUESTION #098

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

- A. A containment vent is performed with the plant operating at 100% power.
- B. The plant is in refueling mode with the refueling cavity flooded. Steam generator safeties have been removed; secondary manways are also removed. No fuel movement is in progress.
- C. The plant is in refueling mode with fuel movement in progress. Containment Shutdown purge is initiated.
- D. The plant is in hot standby. The "A" steam generator blowdown isolation valve BM-HV-1 is stuck open.

ANSWER:

- D. The plant is in hot standby. The "A" steam generator blowdown isolation valve BM-HV-1 is stuck open.

RO #78

SRO #71

K/A #000069A202

OBJECTIVE #003E014A

REFERENCES: TS 3.9.4  
TS 3.6.1.1  
TS 3.6.3

SRO Test

QUESTION #099

The Callaway Plant is operating at 100% power, with 'B' CCP in service. Assuming no operator action, which ONE of the following components could suffer a sustained loss of Instrument Air and NOT cause an AUTOMATIC Reactor Trip? Consider each component individually.

- A. BGLCV0459, RCS Loop 3 letdown to regen hx level control valve
- B. BGHV8141B, RCP B #1 seal water outlet isolation valve
- C. BGFCV121, CVCS CCP A & B discharge to regen heat exchanger flow control valve
- D. KAFV0029 Reactor Building instrument air supply flow control valve

ANSWER:

- B. BGHV8141B, RCP B #1 seal water outlet isolation valve

SRO #96

K/A #000065A206

OBJECTIVE #003B330A

REFERENCES: OTO-KA-00001

SRO Test

QUESTION #100

Which ONE of the following components has its air supply AUTOMATICALLY isolated if air pressure decreases to 108 psig?

- A. Closed Cooling Water Temperature Controller
- B. First Stage RHDT Level Control Valves
- C. Main Feedwater Reg Valve Bypass Valves
- D. Auxiliary Feedwater Pump Room Sump Pumps

ANSWER:

- D. Auxiliary Feedwater Pump Room Sump Pumps

RO #46

SRO #49

K/A #079000K101

OBJECTIVE #0110140C

REFERENCES: OTO-KA-00001



**CALLAWAY PLANT**  
**EXAMINATION COVER SHEET**  
**TRAINING DEPARTMENT**

COURSE TITLE: SRO INITIAL LICENSE EXAMINATION

DATE: 2/24/97

NAME (Print): \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

SCORING:

Points Possible: 100

Points Missed: \_\_\_\_\_

Grade: \_\_\_\_\_

DIRECTIONS: BLACK OUT CORRECT ANSWERS

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

CHIEF EXAMINER WRITTEN EXAM RESULTS ANALYSIS - CALLAWAY 2/24/97

Scores:

Each exam had 100 questions valued at one point each.

SRO: High - 93; Low - 83; Average - 89

RO: High - 92; Low - 73; Average - 81.2

Analysis:

For the same questions, the same question numbers were used on either exam. The chief examiner concurs with the licensee's analysis attached. More than half of the applicants missed joint questions 3, 4, 55, 64, 84, and 90. More than half of the applicants also missed SRO question 33.

All of the above questions were determined to be valid. No generic training or knowledge deficiencies were identified. Reasons for missing these questions appeared to be related to question difficulty and isolated training weaknesses. The licensee initiated appropriate actions to upgrade candidate specific knowledge and correct specific training weaknesses.