

U. S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No: 50-412

Report No: 50-412/99-301

License No: NPF-73

Licensee: Duquesne Light Company

Facility: Beaver Valley Unit 2 Nuclear Power Plant

Location: Shippingport, Pennsylvania

Dates: March 22-25, 1999 (Written and Operating Tests)
March 29-April 2, 1999 (Grading)

Chief Examiner: L. Briggs, Senior Operations Engineer/Examiner

Examiners: J. Caruso, Operations Engineer/Examiner (Chief Examiner under instruction)

Approved By: Richard J. Conte, Chief
Human Performance and Emergency Preparedness Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Beaver Valley Unit 2 Nuclear Power Plant
Inspection Report No. 50-412/99-301

Operations

Three reactor operators were administered initial licensing exams. All applicants successfully passed all portions of the examinations. The candidates were well prepared for the examination, indicating that the facility had thoroughly prepared and evaluated the knowledge and ability of each applicant.

The applicants, with few exceptions, performed well on the operating portions of the exam. A number of positive observations were made in the following areas during the dynamic simulator portion of the exam: communication skills and teamwork; crew briefings were conducted well and included the participation of all crew members which ensured that all crew members knew the plant (simulator) status; peer checking and self-checking practices as well as control board awareness.

Overall, the quality of the initial exam submittal was acceptable. However, the initial written exam submittal was determined not to meet NRC guidelines in certain instances. For example, 57 of 100 questions were determined by the NRC examiners to be at the memory cognitive level (i.e., up to 50 allowed by NUREG 1021). Changes to the written exam were made to: increase the overall cognitive level of the written test; increase question discriminatory validity; enhance question clarity; and to ensure distractors were plausible, but incorrect.

The proposed simulator scenarios were well developed, ran smoothly and were good test instruments. Very few changes were made to the scenarios as a result of the NRC review.

BVPS had agreed to provide the submittal earlier than required (45 days prior to administration). This allowed ample time to review and make several revisions to the exam without impacting the exam schedule.

As a result of this exam review, a system operating procedure for the Emergency Diesel Generator is being corrected.

Report Details

I. Operations

03 Operations Procedures and Documentation

As a result of the examiners' review of material developed or used in the administration of the initial examination process, the examiners observed implementation and related adequacy of facility procedures.

During the performance of JPM No. 2PL-506, "Locally Start the No. 1 Emergency Diesel Generator (EDG)," the applicant and the examiner discussed step 7 of procedure 2OM-53A.1.A-1.5, Local Action to Restore AC Power, Revision 2. Step 7 directed local adjustment of the EDG speed. However, in the previous alternate path step, the applicant had placed the EDG to AUTO and started it by manually actuating the emergency start relays. Both the applicant and the examiner thought that placing the EDG in AUTO would eliminate the ability to locally control the EDG speed. This procedural deficiency was discussed with the licensee and resulted in the initiation of a Operating Manual Change Request to correct the operating procedure.

05 Operator Training and Qualifications

05.1 Reactor Operator Initial Exams

a. Scope

The NRC examiners reviewed the drafts of the written and operating initial examinations submitted by Beaver Valley Power Station (BVPS) to ensure that all exam materials were prepared in accordance with the guidelines of the "Examination Standards for Power Reactors" (NUREG 1021, Interim Revision 8). The review was conducted both in the Region 1 office and at the BVPS. Final resolution of comments and test revisions were performed during the on site preparation week. On March 23-25, 1999, the NRC examiners administered the operating portion of the exams to all applicants. On March 22, 1999, the written exams were administered by the facility's training organization.

b. Observations and Findings

Grading and Results

The results of the exams are summarized below:

	<u>RO PASS</u>	<u>FAIL</u>
Written	3	0
Operating	3	0
Overall	3	0

The facility had no post-examination comments concerning quality or technical accuracy.

Examination Preparation and Quality

The exam development and validation team was comprised of Beaver Valley Unit 2 training and operations representatives. Each individual signed onto a security agreement before they became involved in the development of the exam. The NRC subsequently reviewed and validated all portions of the proposed exams. Some changes and/or additions to the proposed exams were requested by the NRC prior to and during the onsite NRC review. Beaver Valley personnel incorporated the agreed-to comments and finalized the exams.

Two NRC examiners in Region I reviewed independently the same 30 question sample set from the 100 written exam question submitted and they determined that the exam was acceptable for further NRC review. As a result of further review, the initial submittal was determined not to meet NRC guidelines in certain instances. A set of 57 of 100 questions were determined by the NRC examiners to be at the "memory" cognitive level (i.e., up to 50 allowed by NUREG 1021). In addition, 15 of 100 questions were replaced, six questions were significantly revised and twenty eight questions were revised based on minor enhancement or editorial changes.

Specifically, the NRC examiners noted that the initial exam submittal had open reference questions with the references provided. Seven of the questions that were replaced were open reference questions that had very low discriminatory value with the reference provided. The BVPS exam team determined that these seven questions could not be revised by designating closed book or by modifying, so they opted to replace them. The remaining questions replaced had low discriminatory value and were considered non-license level or general fundamental exam (GFE) level questions. Changes, overall, were made to increase question discriminatory validity, to enhance question clarification or to ensure distractors were plausible, but incorrect.

Overall, the quality of the initial submittal for JPMs and follow-up questions was good. Changes were made to four JPM follow up questions. Three of these questions had the stems modified (the questions as originally proposed contained cues in the stem that made the questions too leading/direct lookup) and one question stem was refocused (editorial comments) for the benefit of the applicants. In addition, five questions out of twenty were redesignated from open reference to closed reference since the NRC review had concluded these were memory level questions. Two JPMs had to have steps redesignated as "critical." One JPM was replaced as a result of the operation's department validation. The examiners agreed to accept the exam after training department validation but prior to Operations department validation to start the NRC review early.

The proposed simulator scenarios were of high quality. They were well developed, ran smoothly and were good test instruments. Very few changes were made to the scenarios as a result of the NRC review.

Written Test Administration and Performance

The BVPS training staff performed an analysis of questions missed on the written exam for generic and individual weaknesses. There were eight questions that were missed by at least two of the three applicants. BVPS concluded that four of the questions were missed because the students misread the questions. In addition, topics identified as possibly needing corrective actions from the facility exam analysis included:

- Loop stagnation, to be addressed in the EOP Generic Issues training
- Design basis of Iodine Removal Fans in Containment Ventilation
- Procedure 20M-39.4.F may need clarification
- Question #24 will be revised to indicate OPPS is NOT in service

These questions were discussed between licensee representatives and the applicants during the post-exam review process. The licensee is using their corrective action program to evaluate appropriate corrective actions. The licensee's actions in this area were determined to be acceptable.

Operating Test Administration and Performance

The operating test consisted of ten JPMs for all RO applicants. Two follow-up questions were associated with each JPM. Each applicant was also tested on administrative subjects as part of the operating test. All applicants performed two simulator scenario exercises in crew positions appropriate to their examination level. A licensed SRO surrogate was assigned to act in the SRO position for all three of the scenario exercises.

The JPMs selected for the walkthrough examination were good test instruments. Two JPMs involved alternate path actions. Notebooks were prepared for each applicant with each day's exam material separated out.

During the walkthrough exam, there was one potential incident for exam compromise in that one of the candidates after finishing the operating test decided to head back to the training center with exams still in-progress. The individual was unescorted and not sequestered from another applicant that had not yet finished his exam. At no time were the applicants in contact without an NRC examiner present, but the potential had existed for exam compromise. This incident was discussed with BVPS and actions will be taken by the licensee to avoid this problem for future exams. Completion of the assigned corrective actions will be tracked in the plant's corrective action system.

One other minor problem was experienced during the in-plant performance of JPM 2PL-018, "Service Water Supply to Auxiliary Feedwater Pump Suction". This JPM was a last minute substitute for another JPM task, resetting the auxiliary feedwater pump terry turbine trip and throttle valve. Portions of the terry turbine trip and throttle valve were removed during outage activities making it unrealistic to perform that JPM. The substitute JPM had been previously validated, but not since the procedure (20M-53A.1.A-1.8, Makeup to PDWST) had been revised. This resulted in some examiner confusion when the JPM valve sequence did not follow the OM valve operating sequence. The licensee's training representative noted that the JPM would be corrected prior to being used for a subsequent exam.

Simulator and JPM performances by the applicants were good. The applicants demonstrated good communications and teamwork during the dynamic simulator exercises in both the routine and emergency portions of the scenario. The examiners noted that crew briefings were conducted well and included the participation of all crew members which ensured that all crew members knew the plant (simulator) status. The applicants demonstrated self-checking and peer checking practices. Control board awareness by all of the candidates was evident throughout each of the three scenarios.

c. Conclusions

Three reactor operator (RO) were administered initial licensing exams. All applicants successfully passed all portions of the examinations. The candidates were well prepared for the examination, indicating that the facility had thoroughly prepared and evaluated the knowledge and ability of each candidate.

The applicants, with few exceptions, performed well on the operating portions of the exam. A number of positive observations were made in the following areas during the dynamic simulator portion of the exam: communication skills and teamwork; crew briefings were conducted well and included the participation of all crew members which ensured that all crew members knew the plant (simulator) status; peer checking and self-checking practices as well as control board awareness.

Overall, the quality of the initial exam submittal was acceptable. However, the initial written exam submittal was determined not to meet NRC guidelines in certain instances. For example, 57 of 100 questions were determined by the NRC examiners to be at the memory cognitive level (i.e., up to 50 allowed by NUREG 1021). Changes to the written exam were made to: increase the overall cognitive level of the written test; increase question discriminatory validity; enhance question clarity; and to ensure distractors were plausible, but incorrect.

The proposed simulator scenarios were well developed, ran smoothly and were good test instruments. Very few changes were made to the scenarios as a result of the NRC review.

BVPS had agreed to provide the submittal earlier than required (45 days prior to administration). This allowed ample time to review and make several revisions to the exam without impacting the exam schedule.

The as-administered exam was acceptable and reflected adequate resolution of examiner comments. The as-administered exam had 45 memory level questions and, therefore, met NRC guidelines.

O8 Miscellaneous Operations Issues

During a review of the candidates' applications, the examiners determined: 1) One of the three candidates had not completed one of the required five significant reactivity control manipulations (based on a review of the preliminary applications). This problem was quickly resolved by the licensee prior to submittal of the final applications. All concerns were resolved on the final applications; 2) The candidates met eligibility requirements of NUREG 1021 and REG Guide 1.8 as applicable.

V. Management Meetings

X1 Exit Meeting Summary

On April 6, 1999 the NRC examiners discussed the observations along with findings and performance conclusions identified during the examination with Beaver Valley operations and training management representatives via telephone.

The examiners also expressed their appreciation for the cooperation and assistance that was provided during both the preparation and examination week by licensed operator training personnel and operations personnel.

There were no observed discrepancies between the simulator and plant. Therefore, simulator fidelity was not discussed at the exit meeting or in this report.

PARTIAL LIST OF PERSONS CONTACTED

BEAVER VALLEY

K. Beatty, General Manager, Nuclear Support
R. Brooks, Supervisor of Licensed Operator Training
R. Lindsey, Director, Operator Training
R. Hart, Senior Licensing Supervisor

NRC

L. Briggs, Senior Operations Engineer, Chief Examiner
J. Caruso, Operations Engineer/Examiner
R. Conte, Chief Human Performance and Emergency Preparedness Branch

Attachment:

1. Beaver Valley 2 RO Written Exam w/Answer Key

Attachment 1

BV-2 RO WRITTEN EXAMINATION W/ANSWER KEY

WRITTEN EXAMINATION COVER SHEET

PROGRAM: Initial NRC Reactor Operator's Exam

CLASS NUMBER: 2LOT2B

SUBJECT: NRC Initial Written Exam

By this signature, I state that all of the work done on this examination is my own. I have neither given nor received aid.

SIGNATURE _____ DATE _____

NAME _____
(Please Print)

DLC EMP. # _____

COMPANY _____
(if other than DLC)

POSSIBLE POINTS 100 SCORE _____

Instructor
Initials

PREPARED BY _____ TRAINING DIRECTOR/SUPERVISOR

SIGNATURE _____ APPROVAL _____
Date

2LOT 2B NRC RO -As Given

1. The NCO is recovering a rod misaligned from its group in accordance with 2OM-1.4.P "RCCA or RCCA Group Misalignment." Reactor Engineering has specified that the rod should be withdrawn at no greater than 20 steps per hour. If the NCO were to withdraw rods at a higher rate than specified which of the following is a consequence of that action?
- A. Low Xenon concentration causes neutron flux peaks in the affected quadrant.
 - B. Low Xenon concentration causes axial flux peaks in the bottom half of the core.
 - C. Intermediate Range Start Up Rate will exceed 0.5 dpm in the affected quadrant.
 - D. Heat Up Rate will exceed 100°F per hour across the affected quadrant.

Answer: A

K/A 00005 K1.03:

Importance:3.2

Cognitive Level: Knowledge

Reference: Basis for Tech Specs 3/4.1.3, page B3/4 1-5, 2OM-52.2.A, Issue 4, Rev. 2, P&L 24 and 25.

LP # : 2LP-SQS-1.3

Obj: 18

Objective: Discuss the Technical Specification LCO's and their bases of all limits involving the Rod Control System. Recognize when a limit has been violated.

History: N/A

Source: NEW

Type: CLOSED BOOK

JTA: 0000080401

2LOT 2B NRC RO -As Given

2. Unit 2 is operating at 100% power with all systems NSA. Reactor Coolant Pump 21C Upper Motor Bearing High Temperature computer alarm is received. The Alarm Response Procedure requires that the RCP be tripped. Choose from the list below the correct sequence of actions and the reason for those actions?
- A. Trip the Reactor Coolant pump and allow Doppler Power Coefficient to lower reactor power before tripping the reactor.
 - B. Trip the reactor to prevent violation of DNB parameters before tripping the reactor coolant pump.
 - C. Trip the Reactor Coolant Pump to minimize flow oscillations in the core region from a pump coast down before tripping the Rx.
 - D. Trip the reactor to limit backflow into the affected loop before tripping the Reactor Coolant Pump.

ANSWER: B

K/A: 000015/17 K3.03:

Importance:3.7

Cognitive Level: Knowledge

Reference: Tech Spec. Basis/ 3/4.1.1, 2 and 3 page 4-1 First sentence

Lesson Plan #: 2LP-SQS-6.3

Obj. #: 10

Objective: Given a set of conditions determine Tech Spec action required and the basis for these requirements. a. 3.4.1 Reactor Coolant Loops and Circulation 1) normal operation.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 003AAA0401

2LOT 2B NRC RO -As Given

3. A natural circulation cooldown has been in progress using ES-0.2 " Natural Circulation Cooldown."

- RCP's are off
- The RHS system is in service.
- Letdown and RCP seal leakoff flow are matched by charging flow.
- Loop Thot temperatures are 320 degrees.
- Both pressurizer spray valves are full open.
- RCS pressure has been dropped to 55 psig using auxiliary spray.
- The operator stops auxiliary Spray.
- Pressurizer level is rising rapidly

Why is pressurizer level rising?

- A. Normal spray is injecting water into the pressurizer.
- B. Seal Injection flow is injecting water into the RCS.
- C. RHS flow is forcing coolant into the loops.
- D. Voiding is occurring in the Reactor Coolant System.

ANSWER:D

K/A: W/E09/E10 K2.2:

Importance:3.6

Cognitive Level: Comprehension

References: 2OM-53B.4.ES-0.2 Background for Natural Circulation, Issue 1B, Rev. 4, Step 23

Lesson Plan #:2LP-SQS-53.3

Obj. #:3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume.

History: NEW

Source:

Type: CLOSED BOOK

JTA:

2LOT 2B NRC RO -As Given

4. The unit is conducting a natural circulation cooldown in accordance with ES-0.2 "Natural Circulation Cooldown." Cooldown rates are limited, by procedure, to less than 25°F per hour for which of the following reasons?
- A. Limit steam generator pressure drops to less than 25psig/min.
 - B. Limit subcooling rate of rise to less than 25°F/hr.
 - C. Maintain RCS subcooling greater than 200 degrees during reactor coolant system depressurization.
 - D. Prevent formation of a void in the reactor vessel head region during reactor coolant system depressurization.

ANSWER:D

K/A:W/E09/10 K3.1

Importance:3.3

Cognitive Level: Knowledge

References: 2OM-53B.1.ES-0.2 Background for Natural Circulation Cooldown, Issue 1B, Rev. 4, Steps 6, 13 and 15

Lesson Plan #:2LP-SQS-53.3

Obj. #:3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume.

History: NEW

Source:

Type: CLOSED BOOK

JTA:301AAA0601

2LOT 2B NRC RO -As Given

<p>5. The unit is at 100% with all systems NSA. RCS boron concentration is 600 ppm. The core age is MOL at 8000 MWD/MTU burnup. A malfunction requires turbine load to be lowered to 70%. What is the final RCS boron concentration that will maintain control rods at their current position? (Exclude the effects of Xenon)</p> <p>A. 510 to 520 ppm</p> <p>B. 550 to 560 ppm.</p> <p>C. 630 to 640 ppm.</p> <p>D. 680 to 690 ppm.</p>	
ANSWER: D	
K/A: 000024 K1.02	Importance: 3.6
Cognitive Level: Application	
<p>References: Curve CB-21 will give total of +645 pcm inserted. Curve gives boron worth 8000MWD/MTU as -7.35 pcm/ppm divide 645 pcm/-7.35 pcm/ppm = + 88 ppm. Alternate reading from 100 to 70% on Curve CB-28 will give 620 pcm. Alternate average on Curve CB-5C will give 618 pcm. Range should cover 680 to 690 ppm</p>	
Lesson Plan #: 2LP-SQS-7.1	Obj. #: 8
<p>Objective: Given a set of conditions, be able to locate and apply the proper procedure and applicable P&L's for the following procedures: Q: EMERGENCY BORATION</p>	
History: NEW	
Source:	Type: OPEN BOOK
JTA: 004EEE0101	Give curves CB-21 and CB-28

2LOT 2B NRC RO -As Given

6. Which of the following Primary Component Cooling system loads in the letdown path is isolated by automatic valve closure on a Low Level in Primary Component Cooling Surge Tanks [2CCP*TK21A, 21B]?
- A. Non Regenerative Heat [2CHS*E23]
 - B. Excess Letdown Heat Exchanger [2CHS*E24]
 - C. Degasifier Vent Chillers [2BRS*E23A,23B]
 - D. Seal Water Heat Exchanger [2CHS*E21]

ANSWER: C

K/A:000026 AK2.03

Importance:3.6

Cognitive Level: Knowledge

References 2OM-15.5, Figure 15-1, Figure 15-6, 2OM -15.3.B, Iss. 4, Rev. 10

Lesson Plan #:: 2LP-SQS-15.1

Obj. #: 6

Objective: Explain the effects the following malfunctions will have on this system and the components cooled by this system: a. Loss of Primary Component Cooling Water

Flow/Inventory

History: NEW

Source:

Type: OPEN Book

JTA:: 0000060121

Give Figure 15-6

2LOT 2B NRC RO -As Given

7. The unit is at 75% power and preparing to escalate power to 100%. The Pressurizer Pressure Control Station [2RCS*PK444A] is in Automatic and the output is at 50%. All systems are NSA with PZR Control Heater Control Group [2RCS*H2C] and [2RCS*H2D] selected to "ON."
 Which of the following is the expected status of PZR pressure control equipment at this point?

- A. Heater Groups B, D and E ON, Pressurizer Spray [2RCS*PCV455A] OPEN.
- B. Heater Groups B, D and E OFF, Pressurizer Spray [2RCS*PCV455A] CLOSED.
- C. Heater Groups C and D ON, Pressurizer Spray [2RCS*PCV455A] OPEN.
- D. All Heater Groups OFF, Pressurizer Spray [2RCS*PCV455A] OPEN.

ANSWER: C

K/A: 000027 A2.03	Importance:2.6
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Cognitive Level: Application

References: Curve Book CB-18, Rev. 0

Lesson Plan #: 2LP-SQS-6.4	Obj. #: 11
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Objective: From memory discuss the operation of the pressurizer master controller. Include as a minimum, the following: b. All automatic functions of the pressure control system including setpoints.

History: NEW

Source:	Type: CLOSED BOOK
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JTA: 0020090101	
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8. The crew is responding to a Secondary Side Steam Break Accident using ECA-2.1, "Uncontrolled Depressurization of All Steam Generators." All steam generators are depressurized to containment pressure and all steam generator levels are OFF-SCALE low on the narrow range. The ANSS orders the NCO to throttle AFW flow to all three steam generators to a minimum 50 gpm to each steam generator.

Maintaining AFW flow is designed to accomplish which of the following functions?

- A. Provide minimum flow through the operating Auxiliary Feedwater pumps.
- B. Prevent exceeding pump runout on the operating Auxiliary Feedwater pumps.
- C. Provide thermal stress relief by maintaining wetted surfaces on the interior of the steam generators.
- D. Prevent overflow of the steam generators during restoration of narrow range level.

ANSWER: C

K/A:000040 (W/E12) K3.2

Importance:3.3

Cognitive Level: Knowledge

References: 2OM-53.B.4.ECA-2.1, Iss. 1B, Rev. 6, Background for CAUTION before step 6

Lesson Plan #: 2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010030601

2LOT 2B NRC RO -As Given

9. Following an overcooling transient, the crew is responding to an Integrity Red Path using FR-P.1, " Response to Imminent Pressurized Thermal Shock Condition." The RCS is saturated at 400 psig. SI can NOT be terminated.

Why should a Reactor Coolant Pump be started even if support conditions are missing?

- A. To establish loop flow, to stabilize Tavg, and stop the cooldown.
- B. To mix heated loop water and SI flow to limit temperature stresses.
- C. To use forced flow to collapse voids in the reactor vessel head.
- D. To equalize RCS pressures, allowing uniform SI flow to the vessel.

ANSWER:B

K/A:W/EO8 K3.2

Importance:3.6

Cognitive Level: Knowledge

References: 2OM-53B.4.FR-P.1, Background for Step 6, Issue 1B, Rev. 1, page 21

Lesson Plan #:2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3110140601

2LOT 2B NRC RO -As Given

10. The unit is operating at 100% power with all systems NSA when the Section A1 Main Condenser Water Box Outlet Valve [2CWS*MOV100A] malfunctions and closes. Unit power remains constant.

As a result, the temperatures of CWS to the cooling tower will (1) and condenser vacuum will (2).

- A. (1) rise, (2) improve
- B. (1) fall, (2) degrade
- C. (1) rise, (2) degrade
- D. (1) fall, (2) improve

ANSWER:C

K/A:000051 K1.01

Importance:2.4

Cognitive Level: Comprehension

References: Component Fundamentals, Topic 1, Section B, Heat Exchangers and Condensers, Page 16 (See Westinghouse HTFF Book page 9-33 & 34

Value of K/A below 2.5. Use based on recent Unit 1 trip on loss of vacuum and circwater flow.

Lesson Plan #: 2LP-SQS-26.2

Obj. #: 6

Objective: Explain the effects of the following malfunctions: condenser vacuum loss

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0550110101

2LOT 2B NRC RO -As Given

11. The unit has tripped from 100% power coincident with a complete loss of the switchyard.

- All RCP pumps are off.
- RVLIS is available.
- RCS temperature and pressure are trending toward no-load values.
- 4Kv Emergency Bus 2AE and 2DF failed to load on the EDG's.

Based on these symptoms, which of the following procedures could be entered directly without entering E-0 "Reactor Trip and Safety Injection"?

- A. FR-C.1 "Response to Inadequate Core Cooling."
- B. ECA-0.1 "Loss of All AC Power Recovery Without SI Required."
- C. ES-0.2 "Natural Circulation Cooldown"
- D. ECA-0.0 "Loss of All AC Power"

ANSWER:D

K/A: 000055 G 2.4.1

Importance:4.3

Cognitive Level: Comprehension

References: 2OM-53B.2 Section IV, Issue 1B, Rev 4, Page 13

Lesson Plan #: 2LP-SQS-53.1

Obj. #: 1

Objective: State from memory and apply "ALL" of the Emergency Operating Procedures User's Guide rules of usage as defined in OM53B.2

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010060601

2LOT 2B NRC RO -As Given

12. The unit is at 75% power with all systems NSA for this power. Due to performing a maintenance work order, the 21B Steam Generator level control inputs are selected as follows:

- S/G B Feedwater Flow [2FWS-FI486] is on Channel IV
- S/G B Steam Flow [2MSS-FI485] is on Channel IV
- Turbine First Stage Pressure is selected to Position PT446 (Channel III)

What will be the initial response of SG Main Feedwater Control Valve [2FWS*FCV488] on Steam Generator 21B to the loss of 120 Vital Bus 3?

- A. The valve opens as S/G B Feedwater Flow 2FWS*FT486 fails low.
- B. The valve closes as S/G B Steam Flow 2MSS*FT485 fails low.
- C. The valve closes as Turbine First Stage Pressure 2MSS*PT446 fails low.
- D. The valve opens as S/G B Steam Flow 2MSS*PT485 fails low.

ANSWER:C

K/A: 000057 A2.19

Importance:4.0/4.3

Cognitive Level: Application

References: 2OM-38.4.V, Issue 1, Rev. 6, 2OM-24.4,IF, Issue 4,Rev. 5, USFSAR Fig. 7-3.18

Lesson Plan #: 2SQS-24.1

Obj. #: 5

Objective: Be able to discuss component, function, controls, capacities, cooling and seal water supplies, normal operating flows and pressures, for all components in ELO-2: All remote operated or automatic valves.

History: NEW

Source:

Type: OPEN Book

JTA: 059BBB0401

Give UFSAR Figure 7-3.18

2LOT 2B NRC RO -As Given

13. A fire has started in the Cable Spreading Room [CB-2]. The fire is now out of control and the fire brigade has not been able to enter the area. Smoke is entering the control room and the NSS has implemented 2OM-56C "Alternate Safe Shutdown From Outside Control Room."

Which of the following methods is to be used to bring the unit to Cold Shutdown?

- A. Conduct a natural circulation cooldown using only the Train B (Purple) equipment from the control room.
- B. Conduct a forced circulation cooldown using only Train A (Orange) equipment from the Alternate Shutdown Panel.
- C. Transfer all Train B (Purple) equipment to the Emergency Shutdown Panel and conduct a natural circulation cooldown.
- D. Transfer all Train A (Orange) equipment to the Alternate Shutdown Panel and conduct a natural circulation cooldown.

ANSWER: D

K/A: 000067 K3.02

Importance: 2.5

Cognitive Level: Knowledge

References: 2OM-53B.4. 2OM-56C.4.B, Issue 1, Rev. 14

Lesson Plan #: 2LP-SQS-56C.1

Obj. #:

Objective: Describe from memory, the overall purpose of each Abnormal Operating Procedure

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0000020401

2LOT 2B NRC RO -As Given

14. The control room was evacuated due to a fire. Procedure 2OM-56C.4.A" Alternate Safe Shutdown from Outside the Control Room" is in progress. Control has been established at the Alternate Shutdown Panel.

Which of the following steam release paths is available to cooldown the unit from the ASP?

- A. Atmospheric Dump Valve [2SVS*PCV101A] and Residual Heat Release [2SVS*HCV104].
- B. Atmospheric Dump Valve [2SVS*PCV101B] and the Residual Heat Release valve [2SVS*HCV104].
- C. Atmospheric Dump Valves [2SVS*PCV101A, 101C].
- D. Atmospheric Dump Valves [2SVS*PCV101A, 101B].

ANSWER: D

K/A: ,000068 K3.06

Importance: 3.9

Cognitive Level: Knowledge

References: 2OM-56C.4.A, Issue 1, Rev. 8, Page A 3

Lesson Plan #: 2LP-SQS-56C.1

Obj. #: 6

Objective: State what equipment/flowpaths are to be used for: c. RCS Temperature Control.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0000020401

2LOT 2B NRC RO -As Given

15. A channel II Containment High-1 pressure signal is in test with a trip signal when a second channel Containment High-1 is generated by electrical noise. Which of the following will be the status of containment isolation?
- A. All inside and outside containment penetrations will go to their Phase A configuration.
 - B. All inside and outside containment penetrations will remain in their current configuration.
 - C. Only the outside containment penetrations will go to their Phase A configuration.
 - D. Only the inside containment penetrations will go to their Phase A configuration.

ANSWER: A

K/A: 069(W/E 14) A1.01

Importance: 3.5/3.7

Cognitive Level: Comprehension

Ref.: 2OM-1.1.D "Reactor Control and Protection" Issue 4, Rev. 0

FSAR Table 6.2-60

LP#: 2LP-SQS-1.2

OBJ: 9

History: Used in 2LOT 2A SRO exam.

Source: 2LOT 2A SRO Exam

JTA: 0060150101

Type: CLOSED BOOK

2LOT 2B NRC RO -As Given

16. Unit 2 is at 100% power with all systems NSA. Which of the following detectors will indicate a fuel clad leak into the RCS?	
A. Aerated Vent Transfer Line Monitor [2GWS-RQ103]	
B. Elevated Release Monitor [2HVS-RQ109A, 109B]	
C. Reactor Containment Area Low Range [2RMR-RQ201]	
D. Reactor Coolant Letdown Monitor [2CHS-RQ101A,B]	
ANSWER: D	
K/A: 000076 K2.01	Importance:2.6
Cognitive Level: Knowledge	
References: 2OM-43.1.C, Issue 4, Rev. 3, Page 8	
Lesson Plan #: 2LP-SQS-43.1	Obj. #: 2
Objective: Explain where each of the following process monitors takes a sample in the associated system: c. 2CHS-RQ101A,B RCS Letdown.	
History: NEW	
Source:	Type: CLOSED BOOK
JTA: 072BBB0221	

2LOT 2B NRC RO -As Given

17. The unit is operating at 100% Rated Thermal Power when control rods H2 and H4 simultaneously drop into the core. In order to meet power distribution limits specified in the UFSAR, which of the following actions is required from 2OM-53C.4.2.1.8 " Rod Inoperability"?
- A. Lower turbine load to less than 75% power at 5% per minute.
 - B. Trip the reactor and go to E-0 "Reactor Trip and Safety Injection" Step 1.
 - C. Restore the individual rods to group position using 2OM-2.4.P "RCCA or RCCA Group Misalignment."
 - D. Perform 2OST-49.1 "Shutdown Margin Calculation (Plant Critical)" within 1 hour.

ANSWER:B

K/A:000003 K3.04

Importance:3.8

Cognitive Level: Knowledge

References: 2OM-53C.4.2.1.8, Issue 1A, Rev. 0

Lesson Plan #: 2LP-SQS-53C.1

Obj. #: 1

Objective: State from memory all Immediate Manual Actions associated with the Abnormal Operating Procedure.

History: NEW

Source:

Type CLOSED BOOK

JTA: 0000070401

2LOT 2B NRC RO -As Given

18. The unit has tripped but a Safety Injection was NOT required. The crew has transitioned to ES-0.1 "Reactor Trip Response." The following conditions exist:

- All steam generators are below the narrow range
- All reactor coolant pumps are operating
- Steam Dumps are open to the condenser and Tave is trending to 547°F
- Auxiliary Feedwater is 200 gpm to each steam generator

Is the requirement for a secondary heat sink met?

- A. Yes, the steam dumps are open and the condenser is available.
- B. Yes, auxiliary feedwater flow is greater than 365 gpm.
- C. No, all steam generator levels are less than 5% in the narrow range.
- D. No, auxiliary feedwater must be greater than 365 gpm to each steam generator.

ANSWER: B

K/A: 000007 G.2.4.8

Importance: 3.0

Cognitive Level: Comprehension

References: 2OM-53B.4.ES-0.1' Reactor Trip Response Background" Issue 1B, Rev. 5, Step 12

Lesson Plan #: 2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010010601

2LOT 2B NRC RO -As Given

19. The unit has tripped from 100% power due to a PZR Power Operated Relief Valve that has failed full open. What conditions will develop in the RCS if the Motor Operated Isolation Valve fails to close?
- A. Breakflow will be within capacity of normal charging line flow, so RCS pressure will stabilize at or near 2235 psig.
 - B. HHSI flow will be initiated via the cold leg SI injection and RCS pressure will stabilize at or near 1800 psig.
 - C. Breakflow will be within capacity of normal charging flow, so RCS pressure stabilizes at or near 1200 psig.
 - D. HHSI flow will be initiated via the cold leg SI injection and RCS pressure stabilizes at or near 1200 psig.

ANSWER: D

K/A: 000008 AA2.25

Importance:2.8

Cognitive Level: Comprehension

References: 2OM-53B.4.FR-H1, Background, Issue 1B, Rev. 6, page 11 and 20

Lesson Plan #: 2LP-SQS-11.1

Obj. #: 5

Objective: State the operating levels, pressures, temperatures, and flows associated with the system during the following alignments: Injection Phase

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3110060601

2LOT 2B NRC RO -As Given

20. A large LOCA has occurred on Unit 2. Containment is at maximum design pressure. The RCS is at saturation with system pressure matching containment pressure. All equipment has responded as required by the SSPS. The RWST is 600 inches and dropping.

What is the expected configuration for the Low Head Safety Injection Pumps [2SIS*P21A, 21B] under these conditions?

- A. Operating at maximum rated flow of both pumps.
- B. Operating at shutoff head with recirculation flow to the RWST.
- C. Shutdown on Refueling Water Storage Tank Low Low level.
- D. Flow limited by the throttled settings for RCS Cold Leg SI Throttle valves.

ANSWER: A

K/A: 000011 K2.02

Importance: 2.6

Cognitive Level: Comprehension

References 2OM-11.1.C, Issue 4, Rev. 0 page 3, 2OM-11.1.D, Iss. 4, Rev. 0, page 3, 2OM-11.2.B, Issue 4, Rev. 2 Page 3.

Lesson Plan #: 2LP-SQS-11.1

Obj. #: 5

Objective: State the operating levels, pressures, temperatures, and flows associated with the system during following alignments: Injection Phase

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010020601

2LOT 2B NRC RO -As Given

21. A Low Pressurizer Pressure Safety Injection signal tripped the reactor. All ESFAS equipment responded as required with the following exception, Letdown Orifice Isolation [2CHS-AOV200B] failed to close. Pressurizer level is at 35% and rising. If the letdown line were to subsequently break just outside of the containment penetration, which of the following results could be expected if the operators failed to respond?

- A. Thermal shock to the charging line penetration.
- B. Rapid core uncover and fuel damage.
- C. Loss of recirculation capability from the Containment Sump.
- D. Loss of injection flow to the RCS loop 21A.

ANSWER: C

K/A: W/E04 EK2.2

Importance: 3.8

Cognitive Level: Comprehension

References: 2OM-7.5, Issue 4, Rev. 0, Figure 7-1A, Rev. 7

Lesson Plan #: 2LP-SQS-7,1

Obj. #: 1

Objective: Be able to explain the main and auxiliary functions and the design basis of the system. (Design of system is to isolate to contain fluids in the containment for rupture)

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0040150101

2LOT 2B NRC RO -As Given

22. The actions of E-1 " Loss of Primary or Secondary Coolant" are in progress. Annunciator A1-2E " RECIRCULATION MODE INITIATION is lit. All systems associated with this alarm perform as required.

If the Containment Emergency Sump is empty, which of the following pump combinations may be damaged?

- A. Quench Spray Pumps [2QSS*P21A, 21B]
- B. Low Head Safety Injection Pumps [2SIS*P21A, P21B]
- C. Residual Heat Removal Pumps [2RHS*P21A, 21B]
- D. High Head Safety Injection Pumps [2CHS*P21A and B]

ANSWER: D

K/A: W/E11 K1.3

Importance: 3.6

Cognitive Level: Knowledge

References: 2OM-11.1.D. Issue 4, Rev. 0, page 2

Lesson Plan #: 2LP-SQS-11.1

Obj. #: 5

Objective: State the operating levels, pressures, temperatures, and flows associated with the system during the following alignments: Transfer to Recirculation.

History: NEW

Source:

Type: CLOSED BOOK

JTA:0060160102

2LOT 2B NRC RO -As Given

25. The NCO manually actuates a reactor trip, but the trip breakers remain closed. The plant operator must manually trip the turbine because of the failure of which of the following actuations?

- A. Both First Stage Impulse Pressure Transmitters [2MSS*PT446, 2MSS*PT447] still indicate greater than 40% power.
- B. Both P-4 signals are missing due to both Reactor Trip Breakers [RTA and RTB] being closed.
- C. SSPS Train A and B signals for Turbine Trip on Reactor Trip above P-9 were not generated.
- D. AMSAC Timer B-3 is blocked because both Main Feedwater Pumps are still running.

ANSWER: B

K/A: 000029 A2.09

Importance:4.4

Cognitive Level: Comprehension

References: FSAR Figure 7.3-20

Lesson Plan #: 2LP-SQS-26.3

Obj. #: 4

Objective: Describe all control functions, protective functions, interlocks. State the inputs, setpoints, blocks, permissives, control stations, logics, outputs, and power supplies for the system components.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0450070101

2LOT 2B NRC RO -As Given

26. The unit is operating with a steam generator tube leak in Steam Generator 21C. Air Ejector Discharge [2ARC-RQ100] radiation monitor is in "ALERT." Over the next 60 minutes 2ARC-RQ100 rises to "HIGH" alarm setpoint. What action should be taken?
- A. Perform an emergency shutdown in accordance with AOP 2.51.1 and be in MODE 3 as quickly as possible.
 - B. Shutdown plant and be in MODE 3 within 6 hours.
 - C. Trip the Reactor and Turbine go to E-0 "Reactor Trip and Safety Injection" Step 1.
 - D. Continue to monitor the affected Steam Generator and prepare for a normal plant shutdown.

ANSWER: A

K/A: 000037 K3.02

Importance: 3.2

Cognitive Level: Application

References: 2OM-53C.4.2.6.4, Issue 1A, Rev. 9, Step 3

Lesson Plan #: 2LP-SQS-53C.1

Obj. #: 8

Objective: Given a set of conditions, be able to apply the proper Abnormal Operating Procedure.

History: NEW

Source:

Type OPEN BOOK.

JTA: 0000110401

AOP-4.2.6.4

2LOT 2B NRC RO -As Given

27. A steam generator tube has ruptured in the 21C Steam Generator. The crew is performing the actions required by E-3" Steam Generator Tube Rupture." The cooldown of the RCS has been completed and the RCS has been depressurized to match steam generator pressure. To prevent the restart of leakage into the affected steam generator the operators must complete which of the following tasks?
- A. Isolate the 21C steam generator and depressurize 21A and 21B steam generators by at least 100 psig.
 - B. Isolate the 21C steam generator and raise level in 21C steam generator to a minimum of 5% level in the narrow range.
 - C. Spray the pressurizer as needed to minimize subcooling and hold the RCS pressure equal to steam pressure in the affected steam generator.
 - D. Restore normal charging and letdown and balance RCS pressure to match 21C steam generator pressure.

ANSWER: D

K/A: 000038 K1.02

Importance: 3.2

Cognitive Level: Knowledge

References: 2OM-53B.E-3 Background Issue 1B, Rev. 7, page

Lesson Plan #: 2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010040601

2LOT 2B NRC RO -As Given

28. Unit 2 has tripped from 100% power due to a small break LOCA. All reactor coolant pump operations were terminated when the pump trip criteria were met. Which of the following is an indication that circulation has stopped and a loop has become stagnant?
- A. Tcold follows steam pressure in the affected steam generators.
 - B. Tcold falls rapidly as SI flows fills the cold leg and RCP casing.
 - C. Thot remains at saturation temperature for the affected steam generator.
 - D. Tcold falls as the affected loop stagnates during cooldown.

ANSWER: B

K/A: 000038 K1.01

Importance: 4.1

Cognitive Level: Knowledge

References: 2OM-53B.5.GI-12, Issue 1b, Rev. 1, Pages 1 and 4

Lesson Plan #: 2LP-SQS-53.2

Obj. #: 9

Objective: State from memory four (4) conditions, which could lead to loop stagnation, IAW BVPS EOP Executive Volume.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010040601

2LOT 2B NRC RO -As Given

29. Unit 2 is operating at 30% Rated Thermal Power with all systems in NSA. Which one of the following events will actuate the Motor Driven Auxiliary Feedwater Pump [2FWE*P23A]?

- A. 4Kv Emergency Bus 2AE drops to 75% of rated voltage on 1 of 3 phases.
- B. 2RCS*SG21A Narrow Range Level Transmitter [2FWS*LT474] indicates less than 5%.
- C. Low Pressurizer Pressure signal at 1845 psig occurs on 2RCS*PT455 and 456.
- D. 2RCS*SG21A Feed Flow - Steam Flow mismatch indicated on 2FWS*FT476.

ANSWER: C

K/A: 000054 A2.03

Importance: 4.1

Cognitive Level: Knowledge

References: 2OM-24.1.D, Issue 4, Rev. 2 and 2OM-24.1.E, Issue 4, Rev. 1

Lesson Plan #: 2LP-SQS-24.1

Obj. #: 10

Objective: From memory list and explain all control and protective functions of the AFW system including logics, setpoints, permissives, and blocks.

History: NEW

Source:

Type: CLOSED BOOK

JTA:0130010101

Low pressure SI signal active

Low pressurizer pressure on 455 and 456 give SI signal at 1845 and SI starts AFW all pumps. Low voltage blocks start, Need 2 of 3 SG low level. Feedflow is N/A

2LOT 2B NRC RO -As Given

30. The unit is on Natural Circulation. The operator rapidly opens the main steam dump valves. A Low Pressure Steam Line Safety Injection is actuated due to which of the following reasons?

- A. Reactor Coolant System heat transfer rate is less than steam demand.
- B. Auxiliary Feedwater Flow is less than steam demand.
- C. Steam generator level swell quenches steam generator steam space.
- D. Pressurizer pressures drop at a higher rate.

ANSWER: A

K/A: W/E05 K1.2

Importance:3.9

Cognitive Level: Knowledge

References: 2OM-53B.4.FR-H.1, Issue 1B, Rev 6, Step 5

Lesson Plan #:2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3110060601

2LOT 2B NRC RO -As Given

31. Steam Generator Blowdown Test Tank [2SGC-TK23A] discharge is planned. Tank level is 125 inches on 2SGC-LI112A. How long must the tank recirculate before sampling?
- A. 65 minutes
 - B. 155 minutes
 - C. 210 minutes
 - D. 281 minutes

ANSWER: D

K/A: 00059 AA2.02 K/A Change

Importance: 2.9

Cognitive Level: Application

References: 2OM-25.4.L, Issue 4, Rev. 9, Step 2d. Reference Table A for 17082 gals. Divide by 60.7 from note before step. Total should be 281 minutes. Two reference points.

Lesson Plan #: 2LP-SQS-25.1

Obj. #: 5

Objective: Given a set of plant conditions apply the proper procedure(s) and applicable P&Ls to the following: H Discharging The Steam Generator Blowdown Hold Tank [2SGC-TK21A, (B)] to Unit 2 or Unit 1 Cooling Tower Blowdown.

History: NEW

Source:

Type: OPEN Book

JTA: 072BBB0221

Copy of Release Procedure

2LOT 2B NRC RO -As Given

32. A fuel assembly had been in the spent fuel pool for a year. While being moved to a new location, the assembly is snagged and damaged. Bubbles are observed rising from the fuel assembly. Which monitor would warn the operators of the rising radiation levels due to the gas release in the spent fuel pool?

- A. Auxiliary Building - 755B Airborne Monitor [2RMP-RQI312]
- B. Fuel Handling Building Vent Airborne Monitor [2RMF-RQI301B]
- C. Ventilation Vent Off-line Gas and Particulate Monitor [2HVS-RQI101]
- D. Fuel Pit Bridge Area Radiation Monitor [2RMF-RQ202]

ANSWER: B

K/A: 000061 AK1.01

Importance: 2.5

Cognitive Level: Knowledge

References: 2OM-43.1.C, Issue 4, Rev. 3, page 22 and 23

Lesson Plan #: 2LP-SQS-43.1

Obj. #: 1

Objective: Explain where each of the following process monitors takes a sample in the associated system. q. 2RMF-RQ301A,(B)

History: NEW

Source:

Type: CLOSED BOOK

JTA: 072BBB0221

2LOT 2B NRC RO -As Given

33. A LOCA has occurred that resulted in damage to fuel. Radiation levels in the containment reached 200,000 Rem/hr and now, 24 hours later, are 50,000 Rem/hr. Containment pressure peaked at 15 psig and has now returned to 0.5 psig.

Which of the following describes the correct use of "adverse containment" values?

- A. Discontinue use of "adverse containment" values due to containment pressure dropping below 1.5 psig.
- B. Discontinue use of "adverse containment" values due to containment radiation levels below 10^5 Rads/hr.
- C. Continue use of "adverse containment" values until integrated radiation dose is confirmed to be below 10^6 Rads.
- D. Continue use of "adverse containment values until containment pressure is restored to subatmospheric pressure.

ANSWER: C

K/A: W/E16 A1.2

Importance: 2.9

Cognitive Level: Application

References: 2OM53B.5.GI-2, Issue 1B, Revision 1, page 13

Lesson Plan #: 2LP-SQS-53.3

Obj. #:6

Objective: Given a set of conditions, be able to locate and apply the proper Emergency Operating Procedures, IAW the BVPS-EOP Executive Volume User's Guide.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 301AAA0601

2LOT 2B NRC RO -As Given

<p>34. Pressurizer Level Control Selector Switch is in Position I & II. Pressurizer Level Transmitter [2RCS*LT461] fails high. Which of the following control actions should be confirmed as having occurred?</p> <p>A. PZR High Level RX Trip Channel III Bistable light lit.</p> <p>B. Charging Flow Control Valve [2CHS*FCV122] closed to minimum flow.</p> <p>C. Pressurizer Back up Heater Groups A, B, D and E come on.</p> <p>D. Letdown Orifice Isolation Valves [2CHS*AOV200A, B, C] open.</p>	
<p>ANSWER: A</p>	
<p>K/A:: 000028 G 2.4.4</p>	<p>Importance: 4.0</p>
<p>Cognitive Level: Knowledge</p>	
<p>References: 2OM-6.4.IF, Issue 4, Revision 5, page 13</p>	
<p>Lesson Plan #: 2LP-SQS-6.4</p>	<p>Obj. #: 13</p>
<p>Objective: From memory discuss the operation of the pressurizer level control system. Include as a minimum the following: c. All of the automatic functions of the level control system including setpoints, inputs, and outputs.</p>	
<p>History: NEW</p>	
<p>Source:</p>	<p>Type: CLOSED BOOK</p>
<p>JTA:0110030101</p>	

2LOT 2B NRC RO -As Given

35. Technical Specification 3.9.11 "Refueling Operation - Storage Pool Water Level" requires a minimum of 23 feet of water over irradiated fuel assemblies in the Spent Fuel Storage Pool. This level is required to limit what hazard during fuel handling?
- A. Potential for criticality involving two spent fuel assemblies.
 - B. Exposure to Iodine release from a damaged fuel assembly.
 - C. Overheating damage to a fuel assembly from a loss of cooling.
 - D. Damage to fuel handling equipment from radiation exposure.

ANSWER: B

K/A: 00036 AK1.01

Importance: 3.5

Cognitive Level: Knowledge

References: Bases for Tech Spec. 3/4.9.11 page B 3/4 9-3

Lesson Plan #: 2LP-SQS-20.1

Obj. #:10

Objective: Given a set of conditions, recognize when a L.C.O. has been exceeded. Identify any actions and explain the bases for the following Tech Specs. b. Technical Specification 3.9.11 Storage Pool Water Level.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0330150101

2LOT 2B NRC RO -As Given

36. The crew is performing step 25 of ECA-0.0 " Loss of All AC Power" and depressurizing all three steam generators to 300 psig. The cooldown is stopped at 300 psig in order to accomplish which one of the following functions?

- A. Block of Steam Line Isolation signal and Low Steam Line Pressure SI.
- B. Allow Auxiliary Feedwater Flow to fill all steam generators to above 5% Narrow Range Level.
- C. Maintain RCS subcooling greater than 50°F and PRZR level on scale.
- D. Maximize injection of SI accumulator water and limit nitrogen injection into RCS.

ANSWER: D

K/A: 000056 K3.02

Importance: 4.4

Cognitive Level: Knowledge

References: 2OM-53B.4.ECA-0.0 Issue 1B, Rev. 4, page 114

Lesson Plan #: 2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume.

History: 2LOT 2A Question 17 NRC

Source: Modified from Q17 on 2LOT2A

Type: CLOSED BOOK

JTA: 3010060601

2LOT 2B NRC RO -As Given

37. The unit is at 100% power with all systems NSA. "A" Train SSPS testing is in progress. The "A" Train Reactor Trip Bypass breaker [BYA] is racked in and closed. The Train "A" SSPS Input Error Inhibit Switch is in "INHIBIT." A 2 out of 3 Reactor Trip signal is generated on low pressurizer pressure.

Which of the following actions will produce the actual reactor trip?

- A. Train A Reactor Trip Breaker [RTA] opens on loss of voltage to the UV coil.
- B. Train A Reactor Trip Bypass Breaker [BYA] opens when the shunt trip coil energizes.
- C. Train B Reactor Trip Breaker [RTB] opens on loss of voltage to the UV coil.
- D. Train B Reactor Trip Bypass Breaker [BYB] opens when the shunt trip coil energizes.

ANSWER: C

K/A: 001 K1.05

Importance: 4.5

Cognitive Level: Application

References: 2OM-1.1.D, Issue 4, Rev. 0, page 5, page 8,

Lesson Plan #: 2LP-SQS-1.2

Obj. #: 8

Objective: Using components listed in objective 2 as applicable from memory explain how a signal is automatically generated to cause the reactor trip breakers to open.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0120080101

2LOT 2B NRC RO -As Given

38. The unit is in Mode 5 in preparation for heating up. A dilution is in progress when annunciator A2-5D "NIS SOURCE RANGE HIGH FLUX AT SHUTDOWN" comes into alarm. This is to alert the operator to perform which of the following actions?
- A. Block the source range high flux trips in preparation for reactor startup.
 - B. Emergency borate the RCS to restore core shutdown margin.
 - C. Turn off the source range high voltages for protection of the instrumentation.
 - D. Verify all control rods fully inserted and the reactor trip breakers open.

ANSWER: B

K/A: 001 K6.08

Importance: 2.9

Cognitive Level: Comprehension

References: 2OM-2.4.AAQ, Issue 1, Rev. 4

Lesson Plan #:: 2LP-SQS-2.1

Obj. #: 10

Objective: Explain how the following can effect Excore Nuclear Instrumentation indication: b. reactor coolant system boron concentration.

History: NEW

Source:

Type: CLOSED BOOK

JTA:0150050101

39. The Unit is critical and stabilized at 1E-8 amps in the Intermediate Range. The operator records the following data in the Daily Journal:

- Control Bank C is at 100 steps
- Control Bank D is at 0 steps.
- Reactor Coolant system boron is 575 ppm
- Reactor Coolant system temperature is 547°F.

Exhibiting a questioning attitude the Plant Operator states that the rod configuration seems improper and consults Plant Curve CB-15. Which of the following actions is required?

- A. Manually trip the reactor and commence emergency boration.
- B. Insert Control Banks A, B, C and D and re-calculate the Estimated Critical Position.
- C. Request permission from General Manager Operations to enter Mode 1.
- D. Request Nuclear Engineering validation of the current rod configuration.

ANSWER: A

K/A: 001 K5.04 K/A CHANGE

Importance: 4.3

Cognitive Level: Application

References: CB-15 Issue 7, Rev. 0, 2OM-50.4.D, Issue 1, Rev. 31, Step 19

Lesson Plan #: 2LP-SQS-50.1

Obj. #: 7

Objective: Given a set of conditions, be able to locate and apply the proper procedure(s) and applicable P&Ls for all the procedures contained in OM Chapter 50.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0010100101

Give CB-15

2LOT 2B NRC RO -As Given

40. At low RCS pressure and with procedural restrictions the RCP Seal Water Bypass Isolation Valve [2CHS*MOV307] may be opened. Opening this valve will produce which of the following?	
A. Number 2 Seal leakoff flow will rise above 1 gpm.	
B. Number 1 Seal leakoff flow will rise above 0.2 gpm.	
C. Elevated cooling flow through RCP Lower Radial Bearing.	
D. Elevated cooling flow through RCP Thermal Barrier.	
ANSWER: C	
K/A: 003 K1.03	Importance: 3.3
Cognitive Level: Comprehension	
References: 2OM-6.4.AAB, Issue 4, Rev. 2, Page 7, 2OM-6.1.C, Issue 4, Rev.0, page 20	
Lesson Plan #: 2LP-SQS-6.3	Obj. #: 4.c
Objective: Describe the function and design features of the RCP seal system. Include in your discussion the following for each seal: c. Purpose of number 1 seal leakoff isolation and bypass.	
History: NEW	
Source:	Type: CLOSED BOOK
JTA: 0030020101	

2LOT 2B NRC RO -As Given

41. Given the following conditions:

- Make-up to the RCS has increased and the following alarms are received:
 - Reactor Coolant Pump Seal Leak-off Temp High.
 - Reactor Coolant Pump Seal Leak-off Flow High.
 - Reactor Coolant Pump 21A Seal Vent Pot Level High.
 - Reactor Coolant Pump No. 1 Seal Differential Pressure Low.

Which of the following has occurred to the 21A RCP?

- A. #1 seal has failed.
- B. #1 and #2 seals have failed.
- C. All the seals have failed.
- D. Seal injection has failed.

ANSWER: A

K/A: 003A2.01

Importance: 3.5/3.9

Cognitive Level: Analysis

Ref.: 2OM-6.4.AAB Iss 4 Rev 1; 2OM-7.4.AAH Iss 1 Rev 16.

LP#: 2LP-SQS-6.3

OBJ: 4e

History: Similar question used in 2LOT1 NRC exam (Q-2-97-53), 1LOT 3B exam

Source: NRC Bank

JTA: 0030020101

CLOSED BOOK

2LOT 2B NRC RO -As Given

42. The unit is at 100% power with all systems NSA. Core burnup is 4000 MWD/MTU. RCS boron concentration is 1150 ppm. Control Rods are in MANUAL. Due to an erroneous chemistry sample, the mixed bed demineralizer DEMIN 21B is placed in service with a fresh resin charge. Reactor Coolant System boron changes by 50 ppm as the resin saturates.

With no operator or SSPS actions, what would be the approximate change in Tavg to compensate for the boron change?

A. 72 degrees.
 B. 26 degrees.
 C. 12 degrees.
 D. 5 degrees.

ANSWER: B

K/A: 004 A2.32

Importance: 3.4

Cognitive Level: Application

References: Generic Fundamentals: Reactor Theory Fundamentals, Topic 3: Control Reactivity Effects. A: Soluble Boron 192004, K1.11, page 9, 2OM-7.2.A, Issue 4, Rev. 7 page 2, precaution 6. Curve CB-28 indicates

Lesson Plan #: 2LP-SQS-7.1

Obj. #: 8

Objective: Given a set of conditions, be able to locate and apply the proper procedures and applicable P&Ls for the following procedures: AL Mixed Bed/Deborating Demineralizer Operation.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0040100101

CB-4C , CB-13 and CB-28

CB-11 says critical boron is 1150 ppm. Down 50 ppm Curve CB-28 indicates boron worth as -7.1 pcm/ppm. Change is 355 pcm. CB-4C indicates MTC Coefficient as -13.5 pcm/F therefore need approx. 26 degree temperature change.

2LOT 2B NRC RO -As Given

43. The unit is at 75% power with all systems NSA. Control Bank D is at 125 steps withdrawn. Which of the following actions is the correct response to this rod configuration?

- A. 2CHS*MOV350 Emergency Boration Isol. Valve open and greater than 30 gpm boron flow indicated on 2CHS*FI110.
- B. 2CHS*113A Boric Acid to Boric Acid Blender open and greater than 120 gpm flow indicated on 2CHS-FR113.
- C. 2CHS*MOV115B and D Charging Pump Suction from RWST open and greater than 30 gpm indicated on 2CHS*FI122.
- D. 2CHS*FCV122 full open in manual and greater than 120 gpm indicated on 2CHS*FI122.

ANSWER: A

K/A: 004 A2.14 K/A CHANGE

Importance: 3.8

Cognitive Level: Comprehension

References: 2OM-1.4.AAM, Issue 4, Rev. 0, 2OM-7.4.Q, , Issue 4, Rev. 3, Page 1, Curve Book CB-15

Lesson Plan #: 2LP-SQS-6.5

Obj. #: 4

Objective: Given a set of conditions, be able to locate and apply the proper procedure(s) and applicable P&L's for the following procedures Q. Emergency Boration.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0040080101

Copy of CB-15

2LOT 2B NRC RO -As Given

44. The unit is operating in Mode 3 at normal temperature and pressure with Charging Flow Control Valve [2CHS*FCV122] controlling at 60 gpm. Letdown Orifice 23 Isolation Valve [2CHS*AOV200B] is open and letdown flow is at 60 gpm. The ANSS wants to close Charging Flow Control Valve [2CHS*FCV122] for troubleshooting. Failure to close 2CHS*AOV200B before closing 2CHS*FCV122 will result in which of the following?
- A. Overcooling of the Regenerative Heat Exchanger [2CHS*E23].
 - B. Thermal shock to the reactor vessel in loop 21A.
 - C. Flashing of letdown flow downstream of the letdown orifice.
 - D. Thermal shock to the Mixed Bed Demineralizers.

ANSWER: C

K/A: 004 K5.09

Importance: 3.7

Cognitive Level: Comprehension

References: 2OM-7.2A, Issue 4, Rev. 5, Page 2 of 7

Lesson Plan #: 2LP-SQS-7.1

Obj. #: 3

Objective: Be able to explain the normal system arrangement of the system and all components within the system.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0040150101

2LOT 2B NRC RO -As Given

45. 120 VAC Vital AC Bus II [UPS*VITBS2-2] is completely lost and all attached AC panels are deenergized. Which of the following describes how the "A" and "B" Trains of SSPS will react to a signal requiring Safety Injection to be actuated?

- A. "A" Train Equipment actuates; "B" Train slave relays are deenergized.
- B. "A" and "B" Train require manual actuation, slave relays are deenergized.
- C. "A" and "B" Train equipment will actuate as required.
- D. "A" Train equipment actuates; "B" Train slave relays remain energized.

ANSWER: A

K/A: 013 K2.01

Importance:3.6

Cognitive Level: Comprehension

References: 2OM-1.5 Issue 4, Rev. 3, Figure 1-41

Lesson Plan #: 2LP-SQS-1.2

Obj. #: 7

Objective: From memory, explain the effect of a loss of power to the components listed in objective 6. (6.b.slave relays)

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0130010101

2LOT 2B NRC RO -As Given

46. The unit has experienced a Design Basis Accident. The ANSS desires to stop the Recirc Spray Pumps [2RSS*P21A, P21B]. Which of the following must be true for the pumps to stop?
- A. The SI (Safety Injection) signal must be reset.
 - B. The Reactor Trip Breakers (RTA and RTB) must be closed.
 - C. The CIA (Phase A) signal must be reset.
 - D. The CIB (Phase B) signal must be reset.

ANSWER: D

K/A: 013 A 3.02

Importance: 4.1

Cognitive Level: Comprehension

References: FSAR Figure 7.3-13,

Lesson Plan #: 2LP-SQS-1.2

Obj. #: 10

Objective: Given a particular process parameter, from memory explain how the generation of a reactor trip and/or ESF signal is automatically or manually enabled/disabled.

History: NEW

Source:

Type CLOSED BOOK

JTA: 0130010101

2LOT 2B NRC RO -As Given

47. The RCS pressure drops below 1800 psig and a reactor trip and safety injection signal are generated. All ESF equipment responds as required. RCS pressure stabilizes at 1500 psig with flow indicated on High Head Safety Injection Flow [2SIS*FI943].
- With the Safety Injection system in this condition, which of the following failures is most likely to result in fuel damage in this condition?
- A. Reactor Coolant pumps trip on loss of power.
 - B. HHSI Pumps [2CHS*P21A and 21B] trip after starting.
 - C. Motor Driven Auxiliary Feedwater Pumps [2FWE*P23A and 23B] trip after starting.
 - D. Recirculation Spray Pumps [2RSS*P21C and 21D] fail to start.

ANSWER: B

K/A: 013 K3.01

Importance: 4.4

Cognitive Level: Comprehension

References: 2OM-53B.E-1, Issue 1B, Rev 6, pages 1 to 25

Lesson Plan #: 2LP-SQS-11.1

Obj. #: 2

Objective: Explain functions and describe the operation of the system components listed in Objective 2 - HHSI pumps.

History: NEW

Source:

Type: CLOSED BOOK

JTA:3010020601

48. The unit is critical at 1E-8 amps. The Plant Operator informs the Reactor Operator that N-35 "LOSS OF COMP VOLT" light is lit on the NI cabinet. Which of the following describes the impact of the loss of voltage?

- A. N-35 will indicate higher amps than N-36.
- B. N-36 will indicate higher amps than N-35.
- C. P-10 would actuate at a higher indicated power level.
- D. P-6 would actuate at a lower indicated power level.

ANSWER: A

K/A: 015 A 2.02

Importance: 3.1

Cognitive Level: Comprehension

References:

2OM-2.4.AAC "NIS DETECTOR/COMPENSATOR TROUBLE", Issue 1, Rev. 3 Page 3

2OM-53C.4.2.2.18 "Intermediate Range Channel Malfunction" Issue 1A, Rev. 1, Step 4

LP#: 2LP-SQS-2.1

OBJ: 2

Objective: Explain the principles of operation of the source range, intermediate range and power range detectors. Include detector types and effects of voltage changes on detector performance.

History: NEW

Source:

Type :CLOSED BOOK

JTA: 0000100401

2LOT 2B NRC RO -As Given

49. The unit is operating at 100% power with all systems NSA. Which of the following interlocks prevents energizing the Source Range High Voltage [N31, N32] while operating in the power range?

- A. P-6
- B. P-8
- C. P-9
- D. P-10

ANSWER: D

K/A:: 015 K4.01

Importance: 3.1

Cognitive Level: Knowledge

References: 2OM-2.1.C, Issue 4, Revision 1, Page 13, 14, and 15

Lesson Plan #: 2SQS-LP-2.1

Obj. #: 6

Objective: State the reactor protection signals generated by the Excore Nuclear Instrumentation System. Include trip setpoints, coincidences, permissives, blocks, rod motion inhibit signals and bases for each protection action.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0150050101

2LOT 2B NRC RO -As Given

50. The highest reading Core Exit Thermocouple tri-sector average temperature provides which one of the following temperature inputs?

- A. Subcooled RVLIS level correction calculations.
- B. RCS Wide Range Temperature Indicator [2RCS*TI413].
- C. Saturated RCS temperature RVLIS level correction calculations.
- D. Vertical board Subcooling Monitor [2RCS*YI001].

ANSWER: D

K/A: 017 K4.01

Importance: 3.4

Cognitive Level: Knowledge

References: 2OM-5D.1.C, Issue 4, Revision 0, page 18 and 19

Lesson Plan #: 2LP-SQS-5.2

Obj. #: 4

Objective: List all interfaces PSMS has with the Main Control Board and the Alternate Shutdown Panel.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0830040101

2LOT 2B NRC RO -As Given

51. Containment Recirculation Fan 2HVR*FN201C is aligned to 480V Emergency Bus 2-9 and is running. Under this alignment, which of the following signals will STOP the fan?
- A. Safety Injection Signal.
 - B. Containment Isolation Signal (CIA).
 - C. Containment Spray Actuation Signal (CIB).
 - D. High Containment Pressure Reactor Trip.

ANSWER: A

K/A: 022 A3.01 K/A CHANGE

Importance: 4.1

Cognitive Level: Knowledge

References: 2OM-44C.1.D, Issue 4, Rev. 0, Pages 2 and 3

Lesson Plan #: 2LP-SQS-44C.1

Obj. #: 7

Objective: Describe all control functions of the system including inputs, setpoints, blocks, permissives, control stations, logic and outputs. a. Effects of SIS, CIA and CIB.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0880040101

2LOT 2B NRC RO -As Given

52. The plant is preparing for a start-up. The Shutdown Bank rods are fully withdrawn and all Control Banks are fully inserted. In preparation for the start-up, the Control Room operators are performing an Operations Surveillance Test (OST) on Source Range detector N31. Which of the following is correct regarding the performance of this test?
- A. The Shutdown Banks must be inserted and the Reactor trip breakers opened. The OST will generate a Reactor trip signal.
 - B. The Shutdown Banks must be inserted and the Reactor trip breakers opened. This will provide a lower baseline Source Range count to allow all setpoints to be tested.
 - C. The Shutdown Banks can be left withdrawn. No Reactor trip signal is generated during the performance of the OST.
 - D. The Shutdown Banks can be left withdrawn. Placing the Level Trip switch to Bypass will prevent the OST from causing a Reactor trip.

ANSWER: D

K/A: 015A3.03

Importance: 3.9

Cognitive Level: Comprehension/Application

Ref: 2OST-2.3 Iss1 Rev 12, Page 10 step 6

LP#:2 LP-SQS-2.2

OBJ: 9

Explain the interrelationships between the Excore Nuclear Instrumentation System and the following systems/components. Include the effects a loss either one will have on the other. b. Rod Control

History: Modified from 1LOT 3B Question 17

Source: Exam Bank

JTA: 0150090201

Type: CLOSED BOOK

2LOT 2B NRC RO -As Given

53. Total steam flow out of all steam generators at current reactor power is 2 million pounds-mass per hour. Which of the following is the minimum required main feed/condensate pump combination required by 2OM-24.2.A "Main Feedwater Precautions and Limitations" for maintaining steam generator levels on program?

- A. One Main Feedwater Pump and One condensate Pump.
- B. One Main Feedwater Pump and Two Condensate Pumps.
- C. Two Main Feedwater Pumps and One Condensate Pump.
- D. Two Main Feedwater Pumps and Two Condensate Pumps.

ANSWER: B

K/A: 059 A1.03

Importance: 2.7

Cognitive Level: Application

References: 2OM-24.2.A, Issue 4, Rev. 4 Precautions 2, 10, 16 and 17

Lesson Plan #: 2LP-SQS-SC

Obj. #: 7

Objective: Given a set of conditions, be able to locate and apply the proper procedures(s) and applicable P&Ls for the following: OM-24.4.D and F.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0590030101

Give 2OM-24.2.A

2LOT 2B NRC RO -As Given

54. The unit is operating at 25% power with all systems NSA for this power level. The operating Main Feedwater Pump trips.

Which of the following would be the first automatic action?

- A. All three auxiliary feedwater pumps start after 150 seconds on the AMSAC timer.
- B. Both Motor Driven Auxiliary Feedwater Pumps [2FWE*P23A, 23B] start on low S/G level.
- C. Turbine Driven Auxiliary Feedwater Pump [2FWE*P22] starts on low S/G levels.
- D. Both Motor Driven Auxiliary Feedwater Pumps [2FWE*P23A, 23B] start on trip of the Main Feedwater Pump.

ANSWER: D

K/A: 059 K3.02

Importance: 3.6

Cognitive Level: Knowledge

References: 2OM-24.1.D, Issue 4, Rev. 2

Lesson Plan #:: 2LP-SQS-24.1

Obj. #: 10

Objective: From memory list and explain all control and protective functions of the AFW system including logics, setpoints, permissives and blocks.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0610030101

2LOT 2B NRC RO -As Given

55. The unit is holding at HOT SHUTDOWN following a unit trip. Over the next hour, which of the following adjustments should the operator expect to make to maintain steam generator levels at no load values?

- A. Raise feedwater flow to match decay heat load steam flow.
- B. Drop feedwater flow to match decay heat load steam flow.
- C. Reset and restart one Main Feedwater pump to match steam flow.
- D. Maintain 365 gpm minimum feedwater flow to each steam generator.

ANSWER: B

K/A: 061 K1.01

Importance: 4.1

Cognitive Level: Comprehension

References: 2OM-53B.5.GI-4, issue 1B, Rev. 1, page 4 and 5

Lesson Plan #:2LP-SQS-24.1

Obj. #:8

Objective: Be able to discuss component type, function, controls, capacities, cooling supplies, normal operating flows and pressures for all components in ELO-7. 7. b. 2FWS-22 and c. 2FWS-P23A and P23B.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0610040101

2LOT 2B NRC RO -As Given

56. Both Motor Driven Auxiliary Feedwater Pumps [2FWE*P23A,23B] are in service and taking suction from the Primary Plant Demineralized Water Storage Tank [2FWE*TK210].

Which of the following Motor Driven Auxiliary Feedwater Pump indications would alert the operator to the loss of suction to the operating pumps?

	<u>Pump Amps</u>	<u>Discharge Pressure</u>	<u>Flow</u>
A.	LOW	HIGH	LOW
B.	HIGH	LOW	HIGH
C.	ZERO	Equal to Suction	ZERO
D.	LOW	LOW	LOW

ANSWER: D

K/A: 061 A1.05

Importance: 3.6

Cognitive Level: Application

References: Generic Fundamentals. Pump Performance with loss of suction

Lesson Plan #: 2LP-SQS-24.1

Obj. #: 8

Objective: Be able to discuss component type, function, controls, capacities, cooling supplies, normal operating flows and pressures for all components in ELO-7 (ELO-7 b. 2FWS-P23A and P23B)

History: NEW

Source:

Type: CLOSED BOOK

JTA:0610050101

2LOT 2B NRC RO -As Given

57. A change in setpoint for Process Effluent Radiation Monitor [2SGC-RQI100] is needed to release a Steam Generator Blowdown Evaporator Test Tank [2SGC-TK23A(B)]. This setpoint change can only be implemented under which of the following conditions?
- A. In "Normal Mode" at the Health Physics RM-23A console.
 - B. In "Primary Mode" at the Control Room RM-23A console.
 - C. At 2SGC-DAU100 (RM-80) on the monitor skid.
 - D. In "Supervisor Mode" at the RM-11 Control Room console.

ANSWER: D

K/A: 068 2.3.11K/A CHANGE

Importance: 2.7

Cognitive Level: Knowledge

References: 2OM-43.1.C, Issue 4, Rev. 3, page 2

Lesson Plan #: 2LP-SQS-43.1

Obj. #: 7

Objective: Explain the function and purpose of the following components: e RM-23A.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0720030101

NOTE the rules require that all setpoint changes occur in the control room. Changes are not done at HP console.

2LOT 2B NRC RO -As Given

58. Annunciator A1-5A " GASEOUS WASTE SYSTEM TROUBLE" is in alarm. Computer points Y6557D and Y6558D " GWS OXY ANALYZER GWS-OA100A (B) WARN" are in alarm. Failure to respond to this alarm could result in which of the following?
- A. Increased corrosion to the inner surface of Waste Gas Tanks.
 - B. Loss of water seal to the operating Waste Gas Compressors.
 - C. Buildup to flammable concentrations of gasses in the Waste Gas Surge Tanks.
 - D. Corrosion damage to the Waste Gas System Charcoal Delay Beds.

ANSWER: C

K/A: 071 A4.29

Importance: 3.0

Cognitive Level: Knowledge

References: 2OM-19.1.B, Issue 4, Rev 5, Page 2, 2OM-19.2, Issue 4, Rev. 1, Precaution 9

Lesson Plan #:2LP-SQS-19.1

Obj. #: 3

Objective: State the purpose of the components listed in Objective 2 above. (2.i Oxygen Analyzers)

History: NEW

Source:

Type CLOSED BOOK

JTA: 0710070101

2LOT 2B NRC RO -As Given

59. If Control Room Area Radiation Monitors [2RMC*RQ201, 202] go into ALERT what impact can be expected on Control Building Ventilation?

- A. Control Building Ventilation remains in the current configuration.
- B. CREBAPS is actuated.
- C. Control Building Normal Exhaust and Supply Fans trip.
- D. One Emergency Supply Fan starts.

ANSWER: A

K/A: 072 K2.04

Importance: 3.3

Cognitive Level: Comprehension

References: 2OM-43.1.B, Issue 4, Rev. 1, page 4

Lesson Plan #: 2LP-SQS-43.1

Obj. #: 3

Objective: State the automatic functions associated with the detectors listed in Objective 2 and 3 2a. 2RMC*RQ201 b. 2RMC*RQ202

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0720030101

2LOT 2B NRC RO -As Given

60. The Unit is heating up with the following parameter noted:

- 1000 Tavg = 362 degrees
- 1030 Tavg = 383 degrees
- 1100 Tavg = 413 degrees
- 1130 Tavg = 440 degrees
- 1200 Tavg = 459 degrees.

Under this condition, which of the following is true concerning heatup limits?

- A. No administrative or Technical Specifications limit has been exceeded.
- B. The Administrative limit was exceeded but the Tech Spec limit was not.
- C. Both the Administrative and the Tech Spec limits were exceeded.
- D. Not enough data has been gathered to determine if any limits were exceeded.

ANSWER: B

K/A: 002 A1.02

Importance: 3.7

Cognitive Level: Comprehension

References: 2OM-50.2A, P&L 6, page 1, Issue 4, Rev. 3

Lesson Plan #: 2LP-SQS-6.6

Obj. #: 6

Objective: From memory state the T.S. maximum allowable heat up rate for the RCS and PRZR.

History: 1LOT3B NRC Exam

Source: NRC Exam Bank

Type: CLOSED BOOK

JTA: 002AAA0101

2LOT 2B NRC RO -As Given

61. A natural circulation cooldown is in progress in accordance with ES-0.2 "Natural Circulation Cooldown." The following information is available to the operator from PSMS.

- Core Exit Thermocouples (PSMS)
 - Trisector 1 = 495
 - Trisector 2 = 490
 - Trisector 3 = 488
- RCS Wide Range Pressure Indicator [2RCS*PT440] = 1135 psig
- RCS Wide Range Pressure Indicator [2RCS*PT441] = 1185 psig.
- RCS Wide Range Pressure Indicator [2RCS*PT442] = 1235 psig

Using the listed information, which of the following would be the expected indication that should appear on the Subcooling Monitor [2RCS*YI001] on VB-B subcooling?

- A. 84 degrees
- B. 77 degrees
- C. 72 degrees
- D. 66 degrees

ANSWER: C

K/A: 006 A1.16

Importance: 4.1

Cognitive Level: Application

References: Steam Tables 2OM-53.3B ES-0.2, Foldout page.

Lesson Plan #: 2LP-SQS-6.7

Obj. #: 7

Objective: Given a set of conditions, be able to use the PSMS to determine Reactor Vessel Water Level and RCS Subcooling.

History: NEW

Source:

Type: OPEN REFERENCE

JTA: 3010060601

Give steam tables

2LOT 2B NRC RO -As Given

63. Pressurizer Control Level Switch is selected to position I & III. Which of the following instruments will turn off all of the operating heater groups on low level?

- A. 2RCS*LT459 OR 2RCS*LT461.
- B. 2RCS* LT460 OR 2RCS*LT462.
- C. 2RCS*LT459 OR 2RCS*LT460.
- D. 2RCS*LT461 OR 2RCS*LT462.

ANSWER: A

K/A: 011 K4.01

Importance: 3.3

Cognitive Level: Knowledge

References: 2OM-6.4.IF, Issue 4, Revision 5, Page 13

Lesson Plan #: 2LP-SQS-6.4

Obj. #: 13

Objective: From memory discuss the operation of the pressurizer level control system. Include as a minimum the following: b. All automatic functions of the level control system including setpoints inputs and outputs.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0020090101

2LOT 2B NRC RO -As Given

64. The unit is at 100% with all systems NSA. The following readings are observed:

- Pressurizer Pressure is 2235 psig
- Delta I is + 4 percent
- Loop Delta Temperatures are 60 degrees.
- Tavg is 576 degrees.

Which of the following will cause the setpoint for OTΔT to LOWER?

- A. Delta I drops to -2 percent
- B. Pressurizer pressure rises to 2260 psig
- C. Tavg rises to 578 degrees.
- D. Loop Delta Temperatures drop to 58 degrees.

ANSWER: C

K/A: 012 K6.11

Importance: 2.9

Cognitive Level: Comprehension

References: T.S. 2.2.1 Note 3

Lesson Plan #: 2LP-SQS-1.1

Obj. #: 6

Objective: Explain how a change in each of the input parameters to the OPDT and OTDT setpoint calculation will affect the Reactor Trip Setpoint.

History: 1LOT 3B NRC Exam

Source: NRC Exam Bank

Type: CLOSED BOOK

JTA: 0120050101

2LOT 2B NRC RO -As Given

65. The annunciator A4-8G " ROD POSITION DEVIATION ALARM" informs the operator of which of the following deviations in the Rod Position Indication System?

- A. At least one DRPI signal deviates 12 steps from the Group Demand for that group.
- B. At least one Group Demand signal deviates 12 steps from the Bank Demand signal.
- C. There is a one bit difference between Data Cabinet A and Data Cabinet B.
- D. Group demand signal is within 10 step of the calculated Rod Insertion Limit.

ANSWER: A

K/A: 014 A1.02

Importance: 3.2

Cognitive Level: Knowledge

References: 2OM-1.1.B, Issue 4, Rev. 1 page 20, 2OM-1.4.ACF, Issue 4, Rev. 1

Lesson Plan #:2LP-SQS-1.1

Obj. #: 8

Objective: From memory, state the possible cause(s) and explain the effect(s) on system operation of the following alarm conditions: c. Rod Deviation Alarm

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0140030101

2LOT 2B NRC RO -As Given

66. The unit is at 100% power with all systems NSA. Main Condenser Vacuum [2CNM-CND21A] Section A Condenser Vacuum Transmitter [2CNM-PT103A] is damaged and reads 0" vacuum. Section B Condenser Vacuum Transmitter [2CNM-PT103B] is intact and reading 29 inches vacuum. The unit suffers a 50% load rejection. Which of the following steam release pathways would open first?
- A. 1st and 2nd Bank Steam Bypass Valves.
 - B. 3rd and 4th Bank Steam Bypass Valves.
 - C. Residual Heat Release Valve [2SVS*HCV104].
 - D. Atmospheric Steam Dumps [2SVS*PCV101A, 101B, 101C].

ANSWER: D

K/A: 016 K1.03

Importance: 3.2

Cognitive Level: Comprehension

References: 2OM-22A.5, Issue 4, Rev. 0, Figure 22A-1, 2OM-21.5, Issue 4, Rev. 2, Figure 21-9B (12241-LSK-11-14B)

Lesson Plan #: 2LP-SQS-21.1

Obj. #: 3

Objective: Explain the control and protective functions of the system including permissives setpoints, blocks, logics and control stations for the various system components, including the steam dump system.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0410030101

2LOT 2B NRC RO -As Given

67. Which of the following describes the impact from a failure of Quench Spray Pumps [2QSS*P21A,21B] to start as required by a CIB signal during a Design Basis LOCA?
- A. Immediate implementation of ECA-1.1 "Loss of Emergency Coolant Recirculation" will be required.
 - B. Recirculation Mode Initiation Signal is delayed by the slower RWST depletion rate.
 - C. Containment pressure would exceed the shutoff head of Recirculation Spray Pumps A and B [2RSS*P21A, 21B].
 - D. Start up of Recirculation Spray Pumps C and D [2RSS*P21C, 21D] is delayed by slower RWST depletion.

ANSWER: B

K/A: 026 K3.02

Importance: 4.2

Cognitive Level: Comprehension

References: 2OM-13.1.D, Issue 4, Rev. 0

Lesson Plan #:: 2LP-SQS-13.1

Obj. #: 4

Objective: Explain the function and purpose of the components listed in Objective 2 Refueling Water Storage Tank [2QSS-TK21] and Quench Spray Pumps [2QSS*P21A, 21B].

History: NEW

Source:

Type: CLOSED BOOK

JTA:0060150101

By inspection. QSS flow is approx. 6000 gpm
 loss of QSS start will slow rate of depletion of RWST.
 DBA so sump level will be present.
 RSS pump capability is above design basis pressure.
 CIB starts all RSS pumps after time delay.

2LOT 2B NRC RO -As Given

68. Prior to heating the RCS above 350°F, which of the following must be completed to comply with Technical Specifications concerning Containment Vacuum?

- A. Containment Vacuum Air Ejector [2CVS-J22] must be manually isolated.
- B. Containment Vacuum Pumps [2CVS-P21A,P21B] must be OPERABLE.
- C. A Containment Vacuum Pump [2CVS-P21A or P21B] must be in operation.
- D. A Containment Air Compressor [2IAC-C21A or C21B] must be aligned to take suction on Containment.

ANSWER: A

K/A: 029 K. 4.02

Importance: 2.9

Cognitive Level: Knowledge

References: Technical Specification 3.6.5.1. 1 HOUR Tech Spec.

Lesson Plan #: 2LP-SQS-12.1

Obj. #: 10

Objective: Given a set of conditions, recognize when an LCO has been exceeded --.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0260060101

2LOT 2B NRC RO -As Given

69. New fuel with an enrichment of 4.2% is being placed in the spent fuel pool. Which of the following actions is correct?

- A. Storage is allowed in Region 2 of the Spent Fuel Pool with no restrictions.
- B. Storage is allowed in Region 1 of the Spent Fuel Pool with no restrictions.
- C. Fuel with this enrichment must be stored in a 3 out of 4 Checkerboard pattern in Region 1.
- D. Fuel with this enrichment may be stored in a 3 out of 4 Checkerboard pattern in Region 2.

ANSWER: C

K/A: 033 G 2.2.30

Importance: 2.6

Cognitive Level: Comprehension

References: BVPS Technical Specifications 3/4.9.14

Lesson Plan #: 2LP-SQS-20.1

Obj. #: 10

Objective: Given a set of conditions, recognize when a LCO has been exceeded. Identify any required actions and explain the bases for the following Tech. Specs. c. Technical Specification 3.9.14 Fuel Storage - Spent Fuel Storage Pool.

History: NEW

Source:

Type: OPEN BOOK

JTA: 033--A0101

Tech Spec Reference for Student

2LOT 2B NRC RO -As Given

70. The unit is stable at 8% power with the Main Turbine off-line. The Main Feedwater Regulating Bypass Valves are in automatic and controlling at program level. Inadvertently, loop 21A Main Steam Atmospheric Vent Valve [2SVS*PCV101A] fails full open. Which of the following would be the result of the valve opening?

- A. Intermediate Range High Reactor Power Trip is generated.
- B. Reactor Trip due to Steam Generator 21A Low-Low level.
- C. Steam Generator 21A level swells on increased steam demand.
- D. Steam Generator 21 A level swells to new program level.

ANSWER: C

K/A: 035 K6.02

Importance: 3.1

Cognitive Level: Comprehension

References: Generic Fundamentals, 2OM-21.1.D, Issue 4, Rev. 2, page 1

Lesson Plan #: 2LP-SQS-24.1

Obj. #: 8

Objective: Be able to discuss component type, function, controls, capacities, cooling supplies, normal operating flows, and pressures for all components in ELO-7 (ELO-7.g. S/G

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0350060101

Relief valve is below 10% load. Well within feedflow and below 25%.

2LOT 2B NRC RO -As Given

71. The unit is in Mode 3 after shutdown from extended full power operations. Stm Dump Control Mode Selector is in STM PRESSURE mode. The operator adjusts the setpoint on the Main Stm Manifold Press Control [2MSS*PK464] from 8.8 turns to 8.5 turns. When steam pressure and RCS temperatures return to steady state, the operator should observe _____Tavg and _____Loop Delta T.

- A. Lower and lower.
- B. Lower and identical.
- C. Higher and higher.
- D. Higher and lower.

ANSWER: B

K/A: 039 A1.05

Importance: 3.2

Cognitive Level: Comprehension

References: See heat exchanger behavior GF. 2OM-21.1.C

Lesson Plan #: 2LP-SQS-21

Obj. #: 3.

Objective: Explain the control protective functions of the system including permissives, setpoints, blocks, logics and control stations for the various system components including the steam dump system.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0410050101

2LOT 2B NRC RO -As Given

72. With the unit at 100% power and a 400 gpd tube leak, a HIGH alarm is received on Condenser Air Ejector Discharge Radiation Monitor [2ARC-RQ100]. Based on this alarm which of the following actions occur?
- A. Discharge continues to the Air Ejector Discharge Delay Beds.
 - B. Discharge is routed to the Gaseous Waste Charcoal Delay Beds.
 - C. Air ejector flow is diverted to Containment.
 - D. Air ejector flow is diverted to the Gaseous Waste Surge Tank.

ANSWER: A

K/A: 055 K1.06

Importance: 2.6

Cognitive Level: Knowledge

References: 2OM-43.1, Issue 4, Rev. 3, page 6, 2OM-43.4.ACN, Issue 4, Rev. 0

Lesson Plan #: 2LP-SQS-26.2

Obj. #: 4

Objective: Describe all control functions, protective functions and interlocks. State the inputs, setpoints, blocks, permissives, control stations, logics, outputs and power for the system components.

History: Based on 1LOT3B question number 36

Source:

Type: CLOSED BOOK

JTA: 0550040101

2LOT 2B NRC RO -As Given

62. The unit is in mode 3 with the RCS at no load operating temperature and pressure. Which of the following configurations would provide the operator with the most effective pressurizer spray?
- A. Reactor Coolant Pump 2A [2RCS*P21A] ON and Pressurizer Spray Valves [2RCS*PCV455A] OPEN, [2RCS*PCV455B] CLOSED.
 - B. Reactor Coolant Pump 2C [2RCS*P21C] ON and Pressurizer Spray Valves [2RCS*PCV455B] OPEN, [2RCS*PCV455A] CLOSED.
 - C. Reactor Coolant Pump 2A [2RCS*P21A] ON and Pressurizer Spray Valves [2RCS*PCV455B] OPEN, [2RCS*PCV455A] CLOSED.
 - D. Reactor Coolant Pump 2B [2RCS*P21B] ON and Pressurizer Spray Valves [2RCS*PCV455A] OPEN, [2RCS*PCV455B] CLOSED.

ANSWER: B

K/A: 010 K1.03

Importance: 3.6

Cognitive Level: Comprehension

References: 2OM-6.1.C, Issue 4, Rev. 0, Page 28

Lesson Plan #: 2LP-SQS-6.4

Obj. #: 8

Objective: Discuss the effect on pressurizer spray when running various combinations of RCP's

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0020090101

2LOT 2B NRC RO -As Given

73. The unit is in Mode 4 and heating up. All reactor coolant pumps are running. The 4KV Normal Electrical System is in NSA for Mode 4. Which of the following is the source of power to Reactor Coolant Pump 21A [2RCS*P21A]?

- A. 138 kV Bus # 2 via System Station Service Transformer 2A.
- B. 138 kV Bus # 1 via System Station Service Transformer 2B.
- C. 345 kV Bus 3 via Unit Station Service Transformer 2C.
- D. Unit 1 4KV Bus 2A via Unit 1 to 2A Cross-Tie [ACB-2A2].

ANSWER: A

K/A:: 062 K2.01

Importance: 3.3

Cognitive Level: Comprehension

References: 2OM-36.1.B, Issue 4, Rev. 0, Page 1

Lesson Plan #: 2LP-SQS-36.1

Obj. #: 4

Objective: Explain the system arrangement when the plant is below 20% power and when the plant is above 20% power.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0620040101

2OM-36.5 Figure 36-19

2LOT 2B NRC RO -As Given

74. Annunciator A8-10A "125 VDC BUS 2-1 GROUND" is lit. NO. 2-1 DC Bus Ground Detector indicates a (-75) VDC ground. Under these conditions, which of the following is a concern?

- A. The 2-1 Battery may be inoperable due to low voltage.
- B. The 2-1 Battery Charger Output Breaker may trip on overcurrent.
- C. A 125 VDC Bus 2-1 load could actuate inadvertently if a positive ground occurs.
- D. 125 VDC Bus 2-1 Distribution Switchboard may trip on voltage differential.

ANSWER: C

K/A: 063 A2.01

Importance: 2.5

Cognitive Level: Comprehension

References: 2OM--39.1.C, Issue 4, Rev. 0, 2OM-39.4.F, Issue 4, Rev. 1 Section II.

Lesson Plan #: 2LP-SQS-39.1

Obj. #: 7. b

Objective: Explain the effect the following malfunctions will have on loss of system.

History: NEW

Source:

Type CLOSED BOOK

JTA: 063AAA0101

2LOT 2B NRC RO -As Given

75. Unit 2 is at 100% power with all systems NSA. 2OST-36.1 "Emergency Diesel Generator [2EGS*EG2-1] Monthly Test" is in progress with the diesel paralleled to 2AE and at 4450 kW for the last 30 minutes. Without warning the unit trips and a Safety Injection signal is actuated. A "Fast Transfer" from USST to SSST occurs with no problems. What is the status of Emergency Diesel Generator [2EGS*EG2-1] at the completion of the transfer?

- A. Paralleled with Emergency Bus 2AE with Emergency Diesel Generator Breaker [ACB2E10] closed.
- B. At rated speed and voltage with Emergency Diesel Generator Breaker [ACB2E10] open.
- C. In "Cooldown" cycle with Emergency Diesel Generator Breaker [ACB2E10] open.
- D. Tripped with Emergency Diesel Generator Breaker [ACB2E10] locked out.

ANSWER: B

K/A: 064 A2.16

Importance: 3.3

Cognitive Level: Comprehension

References: 2OST-36.1, Issue 4, Rev. 24 page 7, 2OM-36.1.D, Issue 4, Rev. 3, page 31

Lesson Plan #: 2LP-SQS-36.2

Obj. #: 5

Objective: List and explain all emergency starts and test start for the diesel and explain generator output breaker action and interlocks.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0640040101

2LOT 2B NRC RO -As Given

76. The Unit is in MODE 5. Containment Purge to the Auxiliary Building Ventilation Vent is in progress when Containment Purge Monitor [2HVR*RQ104A, 104B] HIGH Alarm is activated. Which of the following fans does the closing of the Containment Isolation Valve [2HVR-MOD23A] trip?

- A. Containment Air Recirculation Fan [2HVR-FN201B].
- B. Containment Iodine Filtration Fan [2HVR-FN203B].
- C. Leak Collection Filter Exhaust Fan [2HVS-FN204B].
- D. Leak Collection Normal Exhaust Fan [2HVS-FN263B].

ANSWER: D

K/A: 073 K4.01

Importance: 4.0

Cognitive Level: Comprehension

References: 2OM-43.1.C, Issue 4, Rev. 3, page 43, 2OM-16.5 Figure 16-7

Lesson Plan #: 2LP-SQS-43.1

Obj. #: 7

Objective: Explain the effects a loss of the area/process monitors will have on the following evolutions: c Containment Purge.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 072BBB0221

2LOT 2B NRC RO -As Given

77. The Unit is at 100% power. The operator is preparing to start Service Water pump [2SWS-P21A]. Which of the following conditions will prevent a pump start from the control board?

- A. Service Water Pump [2SWS-P21C] in AFTER START.
- B. Standby Service Water Pump [2SWE-P21A] in AFTER START.
- C. Secondary Component Cooling Water Heat Exchanger Service Water Supply Isolation Valve [2SWS*MOV107A] OPEN.
- D. Service Water Pump Discharge Valve [2SWS*MOV102A] OPEN.

ANSWER: D

K/A: 076 A4.02

Importance:2.9

Cognitive Level: Knowledge

References: 2OM-30.1.D, Issue 4, Rev. 4, pages 4,5 and 14

Lesson Plan #: 2LP-SQS-30.1

Obj. #: 5.b

Objective: Describe all control functions protective functions and interlocks associated with the system and its component including inputs, setpoints, blocks, permissive, control stations, logics and outputs.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 076CCC0121

2LOT 2B NRC RO -As Given

78. Containment Instrument Air Compressors [2IAC-C21A, 21B] are out of service. Station Air Compressor [2SAS-C21A] is supplying containment instrument air with Containment Instrument Air Isolation Valve [2IAC-MOV130] and Containment Instrument Air Backup Supply Valve open [2IAC*MOV131]. A CIA signal was actuated. Which of the following configurations is expected?

- A. 2IAC*MOV130 open, 2IAC-MOV131 open.
- B. 2IAC*MOV130 closed 2IAC-MOV131 open.
- C. 2IAC*MOV130 closed, 2IAC-MOV131 closed.
- D. 2IAC*MOV130 open, 2IAC-MOV131 closed.

ANSWER: B

K/A: 079 K4.01

Importance: 2.9

Cognitive Level: Knowledge

References: 2OM-34.1.D, Issue 4, Rev. 1, page 6

Lesson Plan #: 2LP-SQS-34.1

Obj. #: 5.a

Objective: Describe all control functions, protective functions and interlocks associated with the system and its components including inputs, setpoints, blocks, permissives, control stations, logics and outputs. a. crossover to other air systems, 2IAC-MOV131

History: NEW

Source:

Type: OPEN BOOK

JTA: 078AAA0101

Figure 34-3

2LOT 2B NRC RO -As Given

79 Unit 2 is at 100% with all systems NSA. With no actuations in progress, which of the following operations pressurizes the Unit 2 Fire Main to 125 psig?	
<p>A. Intermittent operation of Motor Driven Fire Pump on low-pressure setpoint.</p> <p>B. Continuous operation of Pressure Maintenance Pump [FP-P-3] on the Hydropneumatic Tank.</p> <p>C. Continuous Injection from Service Water System Train A (B) via Secondary Component Cooling Water Heat Exchange Service Water Supply Valve [2SWS*MOV107A(B)]</p> <p>D. Intermittent operation of Service Water Booster Pump 2FPW-36.</p>	
ANSWER: B	
K/A: 086 K4.02	Importance: 3.0
Cognitive Level: Knowledge	
Ref.: 2OM-33.1.B , Issue 4, Rev. 2, Page 3	
LP#: 2LP-SQS-33.1	OBJ: 4
Objective: Be able to explain the normal system arrangement for the components listed in Objective 2. Unit 2 Yard Loop	
History: NEW	Type: CLOSED BOOK
Source:	
JTA: 0860070101	

2LOT 2B NRC RO -As Given

80. Unit 2 has been shutdown for 5 days. The following conditions exist:

Reactor coolant temperature is 125 degrees °F

Pressurizer level is 40%

RCS pressure is 95 psig using nitrogen in the PRZR

The operating RHS pump has become gas bound and is shutdown by the crew. How long would the crew have to vent the pump before reaching saturation in the RCS?

- A. 270 minutes
- B. 175 minutes
- C. 166 minutes
- D. 125 minutes

ANSWER: B

K/A: 005 K3.01

Importance: 3.9/

Cognitive Level: Analysis

OPEN BOOK

Ref.: 2OM53.C.4.2.10.1 "Residual Heat Removal Loss", Issue 1A, Rev. 4, Attachments 1,2,3 and 4

LP#: 2LP-SQS-10.1

OBJ: 10

History Used in 2LOT 2A

Source: 2LOT 2A SRO Exam

OPEN BOOK

JTA: 0000180401

Assumptions:

Saturation for 110 psia is 335 degrees

Current RCS Temp is 125 degree

Heat rate at 120 hours after shutdown is
1.2°F/hr

Student gets Attachments and steam tables

2LOT 2B NRC RO -As Given

81. The plant is in Mode 4 on RHR with a cooldown to Mode 5 in progress. The "A" Train of RHR is in service. During the construction of scaffolding on the RHR platform, the instrument air line to [2RHS*HCV758A] is broken, resulting in the loss of air to the valve. Which of the following describes the impact on RHR Heat Exchanger Outlet Flow Control Valve 2RHS*HCV758A and RHS system flow?

- A. The valve fails open. [2RHS*FCV605A] automatically closes to control flow.
- B. The valve fails open. The RHR pump will run out at maximum system flow.
- C. The valve fails closed. [2RHS*FCV605A] automatically opens to maintain flow.
- D. The valve fails closed. [2RHS*FCV605A] must be manually opened to maintain flow.

ANSWER: A

K/A: 005A2.04

Importance: 2.9/2.9

Cognitive Level: Comprehension

Ref.: 2OM10.5"Residual Heat Removal Systems Figures and Tables" Figure10.1

LP#: 2LP-SQS-10.1

OBJ: 8

History: From memory describe the operation of 2RHS*FCV605A/B 2RHS*HCV758A/B

Source: New

JTA: 0050080101

Type: CLOSED BOOK

2LOT 2B NRC RO -As Given

82. Which of the following describes the function of the sparger installed in the Pressurizer Relief Tank [2RCS*TK22]?
- A. Allows drainage of the Pressurizer Relief Tank via Primary Drains Transfer Pumps [2DGS*P21A, 21B].
 - B. Reduces pressure by spray from Pressurizer Relief Tank Spray Valve [2RCS-MOV516].
 - C. Directs steam discharge from Pressurizer PORV's [2RCS*455C,D, 2RCS*456] to bottom of tank.
 - D. Mixes nitrogen cover gas into tank volume via Nitrogen Supply Valve [2RCS*AOV101].

ANSWER: C

K/A: 007 K4.01 K/A CHANGE

Importance: 2.6

Cognitive Level: Knowledge

References: 2OM-6.1.C, Issue 4, Rev. 0, page 33

Lesson Plan #: 2LP-SQS-6.4

Obj. #: 7

Objective: Explain the operation of the PRT. Include as a minimum, its function, control room indications, capacity, and all controls available on the control board.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0070030101

2LOT 2B NRC RO -As Given

83. The Containment Iodine Filtration Charcoal adsorbers [2HVR-FLTA211A(B)] are designed for iodine removal from containment during which of the following scenarios?
- A. Normal subatmospheric and shutdown plant operations for normal containment access.
 - B. Post Design Basis LOCA atmospheric clean up of containment prior to any release to the Uncontrolled Area.
 - C. Scrubbing of Containment Purge Exhaust during Containment RWDA-G releases.
 - D. Filtering exhaust during the initial lift of the vessel head prior to refueling canal flooding.

ANSWER: A

K/A: 027 K5.01

Importance: 3.1

Cognitive Level: Knowledge

References: 2OM-44C.1.B

Lesson Plan #: 2LP-SQS-44C.1

Obj. #: 1

Objective: Write the function of the Containment Ventilation System.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0270010101

2LOT 2B NRC RO -As Given

84. Step 29 of E-1 " Loss of Reactor or Secondary Coolant" checks H2 concentration in preparation for startup of the Hydrogen Recombiners. If H2 concentration is 4.5%, why must the TSC be consulted prior to startup of the Hydrogen Recombiners?
- A. The hydrogen recombiner could ignite a hydrogen burn.
 - B. Hydrogen concentration is above the design capacity of the hydrogen recombiner.
 - C. Core damage is indicated and dose rates will be higher than projected while aligning containment penetrations.
 - D. Containment depressurization to subatmospheric conditions must be completed prior to recombiner startup.

ANSWER: A

K/A: 028 A2.02

Importance: 3.5

Cognitive Level: Knowledge

References: 2OM-53B.4.E-1 Background, Issue 1B, Rev. 6, step 29

Lesson Plan #: 2LP-SQS-53.3

Obj. #: 3

Objective: State from memory the basis and sequence for the major action steps of each EOP procedure, IAW the BVPS-EOP Executive Volume

History: NEW

Source:

Type: CLOSED BOOK

JTA: 3010020601

2LOT 2B NRC RO -As Given

85. Unit 2 is at 100% with all systems NSA with control rods in MANUAL. Without warning, a large load rejection occurs and A4-8A " ROD CONTROL SYSTEM URGENT ALARM" annunciates. Which of the following actions occur due to this alarm?
- A. Rods step in at the fixed speed rate of 48 steps per minute.
 - B. Control Rod Bank Selector Switch must be placed in AUTO to restore Tavg - Tref mismatch.
 - C. Operator must insert rods in MANUAL to restore Tavg-Tref.
 - D. Steam Dumps are forced to control a higher Tave-Tref mismatch.

ANSWER:D

K/A: 041 K6.03

Importance: 2.7

Cognitive Level: Comprehension

References: 2OM-1.1.C, Issue 4, Rev. 0

Lesson Plan #: 2LP-SQS-21.1

Obj. #: 5.c

Objective: Explain the effects of the following malfunction on the steam dump operations: c.

Tavg - Hi & Low

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0410030101

2LOT 2B NRC RO -As Given

86. The Unit is at 100 % with all systems NSA. The unit experiences an Overtemperature Delta T runback. At 70% turbine load, the runback signal clears. Which one of the following indicates the expected response of the main turbine?

- A. Main Turbine Governor valves will hold at the runback position.
- B. Main Turbine Throttle valves shift to Operator Manual.
- C. Turbine Load Control drops output to zero load at the selected loading rate.
- D. Main Turbine Throttle Valves shift to full arc admission.

ANSWER: A

K/A: 045 K4.12

Importance: 3.3

Cognitive Level: Knowledge

References: 2OM-26.1.D, Issue 4, Rev. 2, page 31 and 32

Lesson Plan #: 2LP-SQS-26.3

Obj. #: 4

Objective: Describe all control functions, protective functions and interlocks. State the inputs, setpoints, blocks, permissives, control stations, logics outputs and power supplies for the system components.

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0450070101

2LOT 2B NRC RO -As Given

87. The unit is at 100% power with all systems NSA. Service Water is 75°F. Average Containment Dewpoint Temperature is 90°F. Average Containment Air Pressure is 9.9 psia. Is this pressure in compliance with the L-5 log?

- A. Yes, containment pressure is greater than 10.6 psia
- B. No, containment pressure is lower than 10.25 psia.
- C. Yes, containment pressure is lower than 9.65 psia
- D. No containment pressure is lower than 9.0 psia.

ANSWER: C

K/A: 103 A1.01

Importance: 3.7

Cognitive Level: Application

References 2OM-12.5 Figure 12-1, Technical Specification 3.6.1.4 2OM-53.4 - L-5, page 25.

Lesson Plan #: 2LP-SQS-12.1

Obj. #: 9.d

Objective: Given a set of conditions, be able to locate and apply the proper procedure and applicable P& Ls for the following: d. Determination of the Maximum Allowable Operation Air Pressure.

History: NEW

Source:

Type: OPEN BOOK

JTA: 103DDD0101

Steam Tables, Log L-5, page 25 Curve CB-19

2LOT 2B NRC RO -As Given

88. Unit 2 is in Mode 1 with all systems NSA. You are assigned as the on-duty Reactor Operator "at the controls." Which of the following actions is authorized?
- A. Pick up a procedure from the Unit 1 NCO at the Unit 1/Unit 2 Control Room separation doors.
 - B. Obtain a key from the key locker inside the Unit 2 Nuclear Shift Supervisor's Office.
 - C. Acknowledge an alarm at the Unit 2 Digital Radiation Monitor Console (RM-11A).
 - D. Open a Rod Lift Coil Disconnect Switch inside the Unit 2 Vertical Board [VB-B].

ANSWER: C

K/A: 2.1.1

Importance: 3.7

Cognitive Level: Comprehension

References: 1/2OM-48.1.A, Issue 3, Rev. 15, page 5 and 8

Lesson Plan #: 1/2LP-SQS-48.1

Obj. #: 4

Objective: From memory, explain the Control Room Area Rules

History: NEW

Source:

Type: CLOSED BOOK

JTA:119CCC0301

A. Transfer of Waste Gas Release??

B. Pick up keys or documents???

C. Operate lift coil disconnect switches??

2LOT 2B NRC RO -As Given

<p>90. The unit is at 1% power with all systems NSA for the current power level. The 21A Steam Generator is overfed and Tav_g drops from 548°F to 543°F. The operator has stabilized the temperatures and feed flow with the steam generator level above program. Which of the following actions is an authorized response to restore Tav_g in this situation?</p> <p>A. Lower feedwater flow to restore level.</p> <p>B. Lower the RCS boron concentration.</p> <p>C. Raise control rods in 5 step increments or less.</p> <p>D. Raise turbine load to restore level.</p>	
ANSWER: A	
K/A: 2.1.11	Importance: 3.0
Cognitive Level: Knowledge	
References: Ops Standards Page 3	
Lesson Plan #: 2LP-SQS-50.1	Obj. #: 9
Objective: Using incident reports/SOERs be able to discuss causes, consequences and proper response. (March 16, 1996, Unit 1 Reactor Trip)	
History: NEW	
Source:	Type: CLOSED BOOK
JTA:	

2LOT 2B NRC RO -As Given

92. A RWDA-G is in progress from Unit 2 Gaseous Waste Tanks in accordance with 1/2OM-19.4A.B "Unit 2 GW Storage Tk Disch to Unit 1 Atmos. Vent." The release starts at 60 psig with seven tanks discharging. Two hours after the release has begun, the operator has observed tank pressures at 53 psig. Which of the following actions must be completed?

- A. Contact the shift chemist and verify tritium samples are complete for each tank contained in the RWDA-G.
- B. Hand carry the procedure to Unit 1 and have Unit 1 NCO throttle Decay Tank Bleed Control Valve [FCV-1GW-105] to reduce flow rate.
- C. Notify the ANSS to review the RWDA-G and confirm data entered is complete and all steps taken in procedure are correct.
- D. Hand carry the procedure to Unit 1 and have Unit 1 NCO close Decay Tank Bleed Control Valve [FCV-1GW-105].

ANSWER: D

K/A: 2.2.4

Importance: 2.8

Cognitive Level: Application

References: 1/2OM-19.4A.B, Issue 3, Rev. 6, page 1 and page B.7.a and 8.

Lesson Plan #: 2LP-SQS-19.1

Obj. #: 9 h

Objective: Given a set of conditions, locate and apply the proper procedure and P and Ls for the following: h. Unit 2 Gaseous Waste Storage Tank Discharge to the Unit 1 Atmospheric Vent 1/2OM-19.4A.B.

History: NEW

Source:

Type: OPEN BOOK

JTA: 0710060101

Give copy of procedure

2LOT 2B NRC RO -As Given

93. The Low Head SI Pump [2SIS*P21A] must be put on clearance to repair the pump casing vent [2SIS-899].

Which of the following is required to properly place the pump on clearance?

- A. [2SIS*MOV8809A] must be declutched and closed manually.
- B. [2SIS*MOV8809A] must be closed first to prevent pressure buildup in the suction line.
- C. [2SIS*3] must be closed prior to seating the suction valve.
- D. [2SIS*899] must be tagged shut to prevent pressure buildup in the suction line.

ANSWER: C

K/A: 2.2.13

Importance: 3.6

Cognitive Level: Comprehension

References: NPDAP 3.4, Revision 10, page 22, VOND 11.5 Figure 11-1

Lesson Plan #: 1/2LP-SQS-AP.2

Obj. #: 6.

Objective: For given conditions, determine and apply the appropriate Clearance Procedure practices and precautions.

History: NEW

Source:

Type: OPEN BOOK

JTA: 119--A0301

Give NPDAP 3.4 and VOND 11.5 Figure 11-1

2LOT 2B NRC RO -As Given

94. A clearance is needed involving an ESF system. Which of the following is the responsibility of the NCO in preparation of the ESF Checklist? A. Authorize the performance of a checklist. B. Determine the requirements of the checklist. C. Authorize the entry into the Limiting Condition for Operation. D. Determine the OPERABILITY of the standby equipment.	
ANSWER: D	
K/A: 2.2.13	Importance: 3.6/3.8
Cognitive Level: Knowledge	
Ref.: NPDAP 3.4 Rev 10 Attachment 4, Pg. 43, Section IV I page 33 and 34	
LP#: 1/2LP-SQS-AP.2	OBJ: 24
Describe the use of the Emergency Safety Features (ESF) Checklist	
History: Used 1/31/97 1LOT3B NRC Exam MODIFIED	
Source: SQS Bank Q. # 0102	Type: CLOSED BOOK
JTA: 3420050302	

2LOT 2B NRC RO -As Given

95. The Technical Specification limit for RCS activity ensures that the dose at the site boundary will not exceed a small fraction of the Part 100 limits in the event that a _____ occurs.

- A. Steam Generator Tube Rupture.
- B. Small Break LOCA with a stuck open Atmospheric Steam Dump Valve.
- C. Rod Ejection accident.
- D. Locked RCP rotor accident.

ANSWER: A

K/A:2.2.25

Importance: 2.5

Cognitive Level: Knowledge

References: Technical Specification Basis 3.4.8

Lesson Plan #: 2LP-SQS-TS

Obj. #5

Objective: Explain the bases for any given Technical Specification.

History: Modified from 1LOT 3B.

Source:

Type: CLOSED BOOK

JTA:3410040302

2LOT 2B NRC RO -As Given

96. Unit 2 is in Mode 3 with the following conditions:

Tavg is at 450°F and stable

RCS Pressure is at 1500 psig and rising

Steam Generator Pressures are at 430 psig and stable

Pressurizer Heater Banks C and A are ON. The operator places the Pressurizer Master Pressure Controller in MANUAL. As RCS pressure rises, which of the following actuations should occur first?

- A. Safety Injection Signal on low steam line pressure.
- B. Power Operated Relief Valve [2RCS*PCV455C] opens.
- C. AMSAC actuation on low steam generator pressure.
- D. Reactor Trip signal generated on High RCS pressure.

ANSWER: A

K/A: 2.4.2 K/A CHANGE

Importance: 3.9

Cognitive Level: A: Comprehension

Ref.: 2OM-1.2.B "Reactor Protection Setpoints", Issue 4, Rev. 3, pages 4 and 5

LP#: 2LP-SQS-1.1

OBJ: 5. b

Objective: State from memory the setpoints, coincidences, permissives and protection afforded by/bases of each of the following: b. safety injection signals.

History LRT 1997 Module IV Written exam, Modified from Question 49, 2LOT 2A

Source:

JTA: 0120050101

CLOSED BOOK

2LOT 2B NRC RO -As Given

97. The unit is critical at 5E-8 amps. Intermediate Range Channel N-35 Instrument Power is lost. Which of the following is an appropriate response?

- A. Restore the channel prior to raising thermal power above P-6.
- B. Restore the channel prior to raising thermal power above 5%.
- C. Place the unit in Mode 3 with the Reactor Trip Breaker Open until the channel is restored.
- D. Perform the immediate actions of E-0 "Reactor Trip and Safety Injection."

ANSWER: D

K/A: 2.4.4

Importance: 4.0

Cognitive Level: Application

References: 2OM-53C.4.2.2.1B, Issue 1A, Rev. 1

Lesson Plan #: 2LP-SQS-2.1

Obj. #: 16

Objective: Given a set of conditions, recognize when an L.C.O has been exceeded. Identify any required actions and explain the bases for the following Tech Specs. c. Reactor Trip System Instrumentation T.S. 3/4.3.1

History: NEW

Source:

Type: OPEN BOOK

JTA: 0000100401

Give AOP in references.

2LOT 2B NRC RO -As Given

98. The unit has undergone a Loss of Coolant Accident. Both trains of Safety Injection are in service and High Head SI Flow [2SIS*FI943] indicates 500 gpm. Coolant system pressure is 50 psig above the highest steam generator pressure.

Tripping the Reactor Coolant Pumps is required at this time to accomplish which of the following strategies?

- A. Prevent damage to Reactor Coolant Pumps operating in a highly voided system.
- B. Prevent Reactor Coolant Pump overspeed and generation of missile fragments.
- C. Limit heat input to the RCS during an inadequate core-cooling situation.
- D. Limit the loss of reactor coolant after system drainage to the break location.

ANSWER: D

K/A: 2.4.6

Importance: 3.1

Cognitive Level: Knowledge

References: 2OM-53B.5.GI-6, Issue 1B, Rev. 1, page 9

Lesson Plan #:2LP-SQS-53.2

Obj. #: 11

Objective: State from memory the basis for RCP trip criteria, IAW BVPS EOP Executive Volume

History: NEW

Source:

Type: CLOSED BOOK

JTA:301AAA0601

2LOT 2B NRC RO -As Given

99. The unit is in Mode 4 at 325 psig and 322 degrees. All systems are NSA for the current plant condition. Pressurizer level suddenly drops rapidly and subcooling in the RCS falls to 0 degrees. The operator has entered AOP 2.6.5 "Shutdown LOCA." Under these conditions, which of the following mitigation strategies is designed to restore subcooling, but limit overpressure conditions in the RCS?

- A. Manually initiate both trains of High Head Safety Injection.
- B. Stop all but one operating Reactor Coolant Pump.
- C. Isolate all letdown pathways and open Charging Flow Control Valve [2CHS*FCV122].
- D. Depressurize the RCS to refill the Pressurizer.

ANSWER: C

K/A: 2.4.9

Importance: 3.3

Cognitive Level: Knowledge

References: 2OM-53C.4.2.6.5, Issue 1A, Rev. 9, Caution before step 1, Steps 2 and 3

Lesson Plan #:2LP-SQS-53C.1

Obj. #:4

Objective: Explain from memory, the basis for CAUTIONS, NOTES and major actions in accordance with 2OM-53C

History: NEW

Source:

Type: CLOSED BOOK

JTA: 0000560401

2LOT 2B NRC RO -As Given

100. A fire is in progress in the Cable Tunnel and a CO₂ discharge has occurred. Which of the following actions limits dispersal of CO₂?

- A. Actuation of Control Room Emergency Bottled Air Pressurization System [CREBAPS].
- B. Trip of Control Building Supply Fans [2HVC*FN265A, B] and Exhaust Fans [2HVC*FN263A, B].
- C. Closure of Control Room Air Intake [2HVC*MOD201A, B] and Exhaust [2HVC*MOD201C, D] Dampers.
- D. Startup of Control Room Emergency Supply Fans [2HVC*FN241A, 241B].

ANSWER: B

K/A:2.4.25

Importance: 2.9

Cognitive Level: Knowledge

References: 2OM53.3.B.1, Issue 1, Rev. 8 Tab 1, page 44.B

Lesson Plan #: 1/2LP-SQS-44A1

Obj. #:8

Objective: Explain all the control functions of the Control Area Ventilation and the CL2 detectors including inputs, blocks, permissives, control stations, outputs, control stations.

History: NEW

Source:

Type: CLOSED BOOK

JTA:0860040101

2LOT 2B NRC RO -As Given

NAME: KEY
 DLC EMP. # _____
 DATE: _____

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

#46 Key error. Correct ans. was D. J. E. Briggs