

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346  
License No: NPF-3

Report No: 50-346/98301(OL)

Licensee: First Energy

Facility: Davis-Besse Nuclear Power Station

Location: 5501 North State Route 2  
Oak Harbor, OH 43449

Dates: August 3 - 7, 1998

Examiners: M. Bielby, Chief Examiner, RIII  
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Approved by: Melvyn N. Leach, Chief, Operator Licensing Branch  
Division of Reactor Safety

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## EXECUTIVE SUMMARY

### Davis-Besse Nuclear Power Station NRC Examination Report 50-346/98301

A licensee developed and NRC approved initial operator licensing examination was administered to six Senior Reactor Operator (SRO) license applicants. In addition, the examiners observed a period of routine operations in the control room.

#### Results:

All six license applicants passed all portions of their respective examinations and were issued SRO licenses.

#### Operations:

Shift turnover was concise and informative; operators consistently used a three part communication format; control room evolutions were well supervised and procedurally driven; control room operators observed instrumentation at acceptable time intervals. (Section O1.1)

The protective action recommendation procedure, RA-EP-02245, Attachment 2, Table 1, lacked an adequate human factors review; however, the licensee appeared to implement a satisfactory procedure revision to address the issue. (Section O3.1)

Operators were knowledgeable of management expectations, plant procedures, and system operation as demonstrated by their decisive actions and consistently correct decision-making during validation of the operating examination. (Section O4.1)

#### Examination Summary:

The examination author did not submit a written examination that was ready to administer, and failed to follow the guidelines provided in NUREG 1021 concerning question development. Additionally, the JPM questions were not in an open reference format as described by the guidelines provided in NUREG 1021. (Section O5.2)

Facility trainers properly staged all portions of the examination and examination security was well controlled; however, validation of the JPMs was inadequate based on the number of discrepancies identified during the examination administration. (Section O5.3)

The number of post written examination changes exceeded criteria in section ES-501 of NUREG 1021, Interim Revision 8 and required a 30 day response of why so many changes were necessary and what actions will be taken to improve future operator license written examinations. Applicants were well prepared for the operating examination. They displayed good communications, self-checking, and command and control. (Section O5.4)

## Report Details

### **I. Operations**

#### **O1 Conduct of Operations**

##### **O1.1 General Comments**

###### **a. Scope (71707)**

Using Inspection Procedure 71707, Plant Operations, examiners observed routine control room activities during full power operations.

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

The examiners observed routine control room activities during a 2-hour period which included observation of a shift turnover, face-to-face communications between operators, and operator attentiveness to control panels. The shift supervisor led the crew in a shift briefing of plant and equipment status, work planned, and Limiting Condition for Operations concerns with individual operators participating in the shift turnover. Panel operators responded to an unexpected panel alarm by acknowledging the alarm, referring to the alarm response procedure, and informing the shift supervisor. Panel operators were observed performing shift log entries of selected panel instrument readings. Crew members engaged in routine face-to-face communications during discussions of plant equipment status and work to be performed.

###### **c. Conclusions**

Shift turnover was concise and informative; operators consistently used a three part communication format; control room evolutions were well supervised and procedurally driven; control room operators observed instrumentation at acceptable time intervals.

#### **O3 Operations Procedures and Documentation**

##### **O3.1 General Comments**

###### **a. Scope (71707)**

Using Inspection Procedure 71707, the examiners reviewed selected administrative and operations procedures during the initial license examination validation and during examination administration.

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

The examiners identified one significant procedural concern during administration of the operating examination. Procedure RA-EP-02245, "Protective Action Guidelines," Revision 00; Attachment 2: "Protective Action Recommendations By Affected Subarea"; Table 1: "Protective Actions and Affected Subareas," required the operators to perform

dose rate calculations for offsite station vent radiation releases and compare the numerical results with a limit in the table. If the results were equal to or greater than the limit, the table required a "Yes: Evacuate" response which applied to an associated subarea near the plant. If the results were less than the limit, the table generally required a "No: No Action" response, except in cases when a General Emergency had been identified, which appeared as a statement in parentheses after the "No: No Action" response. Based on the examiner's observation of a number of applicants that failed to apply the General Emergency statement in parentheses, the examiners concluded that the table format was not adequate from a human factors perspective to ensure that evacuation of all required subareas would be accomplished during an actual station radiation release event.

Prior to the management exit meeting, the licensee had revised the procedure steps in the attachment and highlighted the specific condition for recommending evacuation of a subarea during a General Emergency when the radiation release dose rate did not exceed the limit.

c. Conclusions

The protective action recommendation procedure, RA-EP-02245, Attachment 2, Table 1, lacked an adequate human factors review; however, the licensee appeared to implement a satisfactory procedure revision to address the issue.

**O4 Operator Knowledge and Performance**

O4.1 General Comments

a. Scope

During the preparation phase of the examination, licensed operators from the facility were observed while they demonstrated the job performance measures (JPMs) and the dynamic simulator scenario section of the examination.

b. Observations and Findings

The examiner observed that operators were decisive in their actions and consistently used procedures and made the correct decisions during validation of the JPMs and dynamic scenarios. They also provided several good suggestions to enhance the believability or challenge of the JPMs and scenario events.

c. Conclusions

Operators were knowledgeable of management expectations, plant procedures, and system operation as demonstrated by their decisive actions and consistently correct decision-making during validation of the operating examination.

## O5 Operator Training and Qualification

### O5.1 General Comments

Operator initial license examinations were administered at the Davis-Besse Nuclear Power Station to six SRO applicants during the week of August 3, 1998. This examination was the Davis-Besse training department's second opportunity to prepare an operator license examination under the NRC's initial license examination process. All applicants successfully passed all sections of the initial license examination.

Training department personnel developed the initial examination material and submitted it to the NRC for approval in accordance with guidance prescribed by NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Interim Revision 8, January 1997. In accordance with the guidelines provided in NUREG 1021, NRC examiners administered the operating test and members of the training staff administered the written examination.

### O5.2 Pre-Examination Activities

#### a. Scope

Examination material submitted by the training department was reviewed using the guidance prescribed by NUREG 1021.

#### b. Observations and Findings

The outline and initial examination material was prepared and submitted by the licensee to the NRC examiners prior to the due date. The overall quality of the outline material was satisfactory with some discrepancies. The overall initial examination quality was satisfactory with the exception of the excessive number of memory knowledge level questions, the poor quality review of the written examination questions for grammatical and format errors, and the lack of open reference JPM questions.

#### 1. Examination Outline:

The licensee's initial outline submittal was timely and generally in accordance with the quantitative and qualitative requirements of NUREG 1021, ES-201-2, "Examination Outline Quality Assurance Checklist," with the following exceptions:

- There was no list of Tier 3 Generic Knowledge and Abilities included with the written examination outline.
- A majority of the JPM questions appeared to be direct lookup or memory type questions.
- JPMs were not identified for the previously licensed (SRO upgrade) applicants.

- None of the three scenarios listed any equipment out of service in the turnover.

2. Written Examination:

The examiners reviewed all 100 written examination questions submitted by the licensee. The examiners identified a significant percentage (approximately 65%) of simple memory knowledge level questions which are limited to 50% of the total number of written examination questions in accordance with NUREG 1021, Section ES-401, Parts D.2.b. and c. The following deficiencies also contributed to the decreased written examination quality and consistency:

- Some questions had more than one correct answer, or no correct answer (8 questions).
- Some questions were not discriminating or contained an answer that was always correct (4 questions).
- Questions were not submitted in a "ready to administer" format. There were a significant amount of grammar, spelling, capitalization, word usage, and punctuation errors.
- Acronyms were used inconsistently: sometimes the word was spelled out; sometimes the acronym was used; and sometimes a different acronym for the same item was used.
- Some question stems and/or distractors required reformatting to make them more readable or understandable. Some contained extraneous information (16 questions).
- Some questions did not have references (6 questions), and some references did not support the answers (7 questions), and some references did not have revision numbers.

The examination author submitted replacement questions, rewrote and reformatted questions, and incorporated examiner comments as appropriate. Significant changes were made to approximately 50% of the total written examination questions. During the on-site validation week, the examiners reviewed the changes and enhancements. Additional deficiencies were identified during the post examination review.

3. Job Performance Measures:

The licensee submitted ten system JPMs, and four administrative JPMs plus two administrative questions. The JPM tasks were discriminatory and challenging. However, during the examiner review and validation, the following deficiencies were identified:

- The identification of critical steps was inconsistent. Some steps were misidentified as critical, and other critical steps were not identified.
- More than 80% of the system JPM questions originally submitted were either direct lookup or memory level knowledge.

Overall, the JPM tasks were satisfactory, but the JPM questions required a significant amount of rework to meet the requirements of an open reference examination.

#### 4. Dynamic Simulator Scenarios:

The quality of the set of three dynamic simulator scenarios submitted by the licensee was satisfactory. The following assessments were made by the examiners:

- Each scenario contained a sufficient number of diverse normal, abnormal and emergency events to fully evaluate the individual competencies of each applicant.
- The scenarios did not always contain sufficient procedural detail to adequately describe the expected required applicant action(s) to address the events.
- The events were not always well integrated and sometimes appeared as a series of unrelated events.

The scenarios required minor changes and shuffling of events based on the proposed rotation of applicants during the examination.

#### c. Conclusions

The examination author did not submit a written examination that was ready to administer, and failed to follow the guidelines provided in NUREG 1021 concerning question development. The JPM questions were not in an open reference format as described by the guidelines provided in NUREG 1021.

### O5.3 Examination Activities

#### a. Scope

The operating (JPMs and dynamic scenarios) and written examinations were administered during the week of August 3, 1998, using the guidance prescribed in sections ES-302 and ES-402 of NUREG 1021.

b. Observations and Findings

The examiners administered the following operating examination during the first four days of the examination week: four administrative JPMs and two administrative questions to all six SRO applicants; five system JPMs to each of two previously licensed SRO applicants; ten system JPMs to each of four previously non-licensed SRO applicants; and the same set of three dynamic scenarios to each of two applicant crews that consisted of three applicants. The licensee administered the written examination concurrent with the management exit meeting on the last day of the examination week.

The licensee training staff did a good job of staging the applicants and maintaining examination security. The licensee's simulator staff was timely and accurate in their daily setup and execution of the dynamic scenarios and JPMs during the examination week. The simulator performed well; however, there were three fidelity issues that were observed by the examiners (see Enclosure 2). Examiners and facility instructors successfully provided appropriate cues to the applicants to disregard the erroneous indications and none of the applicants were distracted by the simulator performance. Coordination and expedition of the JPMs was enhanced by the licensee's suggestions of areas in the plant that provided adequate reference material and low noise levels in which to ask questions. The examiners encountered no difficulties during the administration of the dynamic scenarios. The following problems concerning the examination material had to be addressed during the JPM administration which indicated inadequate validation of the JPMs:

- JPM 33B, Swap Low Pressure Injection (LPI) Pumps for Post Accident Recirc:
  - Question 2 (005-K4.08) required an additional cue to clarify whether or not the LPI or High Pressure Injection (HPI) pump was running in order to answer the question.
- JPM 39C, Energize Bus D2 from Bus C1 and Start Motor Driven Feed Pump (MDFP) (alternate path):
  - Steps 1 and 3 lacked a complete listing of all breakers that were to be checked;
  - Step 1 should have been noted as critical because breaker ABDD2 needed to be tripped;
  - Step 3 should not have been critical because breaker AC110 did not need to be tripped;
  - Step 6 required Bus 7 to be energized by the applicants, but breakers AD2DF7 and BDF7 were closed and Bus 7 was already energized.



- JPM 141B, Operate Hydrogen Purge/Dilution System:
  - Question 2 (028-A4.01) should have specified Hydrogen Dilution Blower and Recombiner #2 to elicit the expected answer.
- JPM 53B, Remove/Restore Smart Analog Selector Switch (SASS) Instrument String:
  - Question 2 (016-K3.07) required an additional cue that Bus YBU was de-energized to elicit the required answer.
- JPM, Align Decay Heat Pump for Recirc to Boron Water Storage Tank (BWST):
  - Question 1 (103-A1.01) answer was incorrect, should have been 8 vice 6 vacuum breakers. Also, the stem should have stated "Daily" vice "Shiftly."
- Administrative JPM A.2, Perform a Review of a Maintenance Work Order (MWO):
  - A critical step should have been included for identifying an incorrect restoration sequence.
- Administrative Question # 2 (2.3-2.3.10):
  - The answer was incorrect. It should have stated "locked high radiation area."

c. Conclusions

Facility trainers properly staged all portions of the examination and examination security was well controlled; however, validation of the JPMs was inadequate based on the number of discrepancies identified during the examination administration.

O5.4 Post Examination Activities

a. Examination Scope

The NRC examiners evaluated individual applicant performance on the operating examination and reviewed the licensee's grading of the written examination. The examiners also reviewed post written examination comments submitted by the licensee. Examiners followed the guidelines contained in sections ES-303, ES-403, and ES-501, of NUREG 1021.

b. Observations and Findings

1. Written Examination

All six SRO applicants passed the written examination. There were nine questions that were answered incorrectly by a significant number (more than 50%) of applicants. These questions were considered potential generic knowledge weaknesses and were provided to the Davis-Besse training staff for consideration and implementation into their Systematic Approach to Training (SAT) based program.

<u>Question #</u>	<u>Knowledge Weakness</u>
SRO #12	Understanding actions taken for conducting a forced circulation cooldown.
SRO #24	Understanding which indications are used to verify Inadequate Core Cooling.
SRO #28	Prioritization of turning off makeup pumps during a reactor coolant system leak.
SRO #32	Restoration of nuclear instrumentation during plant startup.
SRO #42	Knowledge of Emergency Ventilation alignment after a Fuel Handling Area exhaust high radiation trip.
SRO #67	Knowledge of pressurizer level during plant startup conditions.
SRO #88	Conduct of operations knowledge for restart after plant trip.
SRO #91	Equipment control knowledge for starting fuel movement.
SRO #93	Knowledge of Davis-Besse administrative radiation exposure limit for shallow dose equivalent to the skin.

The licensee submitted a comprehensive analysis of the written examination results that summarized the incorrectly answered questions (including the selected distractors) and a written evaluation of the applicants' examination and post examination comments. Additionally, the licensee submitted seven post examination comments which were reviewed by the examiners. The licensee's comments and NRC resolution of the comments are detailed in Enclosure 2, "Facility Post Written Examination Comments and NRC Resolution." Two questions were determined to have two correct answers and the answer key was determined to be incorrect for one question. Three questions were deleted because two had no correct answer, and one had more than two correct

answers. The number of questions deleted and answers changed by the licensee's post written examination comments (6%) was less than the ten percent criteria in section ES-501 C.2.c. that requires evaluation of the overall examination validity. The licensee wrote a Potential Condition Adverse To Quality Report (PCAQR) 1998-1529 to address the issue.

## 2. Dynamic Simulator Scenarios

The examiners observed performance of two crews, each of which consisted of three applicants in the various fabricated operator positions of shift supervisor (SS), RO, and balance of plant (BOP). The dynamic simulator examination required each crew to participate in three scenarios consisting of routine, abnormal, and emergency situations conducted on the plant specific simulator. All applicants passed the dynamic scenario examination although some individual and generic communication weaknesses were identified.

The overall performance of both crews was satisfactory. Communications were generally in a three part format although there were instances when the third leg (acknowledgment of the order) was absent. All applicants generally demonstrated good familiarity with location of procedures, good diagnosis of events, and understanding of system characteristics. Applicants in the SS position demonstrated good command and control during the abnormal and emergency situations. The applicants conducted concise and informative pre-evolution briefings prior to the start of major surveillances and reactivity changes. They conducted periodic, concise, and informative plant status briefs during mitigation of abnormal and emergency conditions. The consistency of the pre-evolution and plant status briefings was aided by the use of laminated cue cards which outlined the elements of a good brief. However, during plant status briefings there were occasional instances of applicants failing to use an opening or closing statement, and starting the briefings before all crew members were ready.

Applicants in the RO and BOP positions consistently demonstrated good self-checking techniques when performing evolutions. They also performed informative turnovers with their counterparts whenever leaving their normal watch position to traverse the back panels. During shift briefings, there were instances when all operators did not acknowledge the start or end of the brief; however, examiners did not observe any misunderstanding of plant status in these instances.

## 3. Job Performance Measures

All applicants passed the JPM examination (system and administrative) although some individual and generic weaknesses were identified. The examiners identified good self-checking techniques as a generic strength. The following items represented generic weaknesses based on unsatisfactory performance by at least one half of the applicants on the following JPM items:

- Three applicants demonstrated unsatisfactory performance on one of two questions asked in the Radiation Control administrative JPM section. The question required the applicants to determine the correct posting of an area based on a survey instrument reading of 550 rem per hour at one foot from a Refueling Canal drain pipe. The applicants determined the area should have been posted as "(Grave Danger) Very High Radiation Area"; however, the correct answer was a "locked high radiation area."
- Three applicants demonstrated unsatisfactory performance in the Emergency Plan administrative JPM section (A.4). The JPM required the applicants to perform a dose assessment using nomographs, classify the event, and make protective action recommendations (PARs) based on an offsite station vent radiation release. All six applicants correctly completed the nomograph, recommended evacuation of sub areas 1 and 12, and classified the event as a General Emergency. However, three applicants failed to subsequently recommend evacuation of sub area 2 which was based on a note in the PARs section that required evacuation of the area if a General Emergency had been declared.
- During the in plant performance of a JPM to line up and recirculate the BWST, all applicants demonstrated difficulty locating valve DH 35, Suction from the NAOH Mix Tank. The valve was located in the overhead and was required to be remotely operated by using a pull chain. The valve bonnet was labeled but difficult to see from the floor. All applicants eventually located the valve by various methods such as using a locator list or tracing the flowpath using a drawing.

c. Conclusions

Overall, applicants were well prepared for the operating examination. They displayed overall good communications, self-checking, and command and control techniques.

O5.5 Simulator Fidelity

Examiners observed several simulator modeling deficiencies during the examination administration. Examiners and facility instructors were able to provide appropriate cues to the applicants to disregard the erroneous indications where applicable. The deficiencies were previously identified by the licensee. The licensee noted that the computer was scheduled to be replaced after the initial examination and the discrepancies would be addressed at that time. The examiners concluded the identified deficiencies did not preclude completion of valid evaluations of license applicant performance. Simulator deficiencies are documented in Enclosure 2, Simulation Facility Report.

## V. Management Meetings

### X1 Exit Meeting Summary

The chief examiner presented the examination team's observations and findings to members of the licensee's management on August 7, 1998. The licensee acknowledged the findings presented and indicated that no proprietary information had been identified during the examination or at the exit meeting.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

M. Beier, Manager, Quality Assurance  
D. Bondy, Sr. Training Advisor  
T. Chambers, Supervisor, Quality Assurance  
R. Coad, Superintendent, Radiation Protection  
J. Freels, Manager, Regulatory Affairs  
M. Hoffman, Supervisor, Technical Skills  
J. House, Supervisor, Nuclear Operations Training  
D. Lange, Sr. Training Advisor  
J. Lash, Plant Manager  
A. McAllister, Supervisor, Test/Performance  
J. Michaelis, Manager, Maintenance  
C. Price, Manager, Business Services  
D. Ricci, Supervisor, Operations  
G. Wolf, Engineer, Licensing, Regulatory Affairs  
J. Wood, Vice President

### NRC

S. J. Campbell, Senior Resident Inspector, Davis-Besse

## INSPECTION PROCEDURES USED

IP 71707, "Plant Operations"

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

None

### Discussed

None

## LIST OF ACRONYMS USED

BOP	Balance Of Plant operator
BWST	Boron Water Storage Tank
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CFT	Core Flood Tank
CV	Control Valve
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
ES	Examination Standards
EVS	Emergency Ventilation System
HPI	High Pressure Injection
IFI	Inspection Follow up Item
IP	Inspection Procedure
JPM	Job Performance Measure
LPI	Low Pressure Injection
MDFP	Motor Driven Feed Pump
MPR	Mechanical Penetration Room
MWO	Maintenance Work Order
NRC	Nuclear Regulator Commission
NRR	NRC Office of Nuclear Reactor Regulation
PAR	Protective Action Recommendation
PDR	Public Document Room
RE	Radiation Element
SASS	Smart Analog Selector Switch
SAT	Systematic Approach to Training
SRO	Senior Reactor Operator

Facility Post Written Examination Comments and NRC Resolution1. EXAMINATION QUESTION SRO # 009LICENSEE COMMENT

Delete question, no correct answer. Intent was to have choice "d" be "...25 gpm from BAAT." During comment incorporation and reformatting of the question, "BWST" was inadvertently substituted for "BAAT" making "d" [also] incorrect.

NRC RESOLUTION

Comment accepted, no correct answer, question deleted.

Question History: The examiners requested reformatting the question stem and distractors to remove excessive verbiage and improve overall readability.

2. EXAMINATION QUESTION SRO # 042LICENSEE COMMENT

Accept distractor "b" also. [Question] stem asks for alignment. When answered in the context of alignment, "b" is also correct. When radiation element (RE) 8447 trips, emergency ventilation system (EVS) Train 2 is aligned to the Fuel Handling Area as designed. The Train 2 suction from the Fuel Handling Area, control valve (CV) 5025, is open and the Train 2 suction from #4 mechanical penetration room (MPR) is closed. EVS Fan 2 starts. The Train 1 suction from the Fuel Handling Area, CV 5024, is closed. This prevent EVS Fan 2 flow from the Spent Fuel Area even though Train 2 is aligned to take a suction from the Spent Fuel Area. Actual flow for both trains is from #4 MPR as stated in "c."

NRC RESOLUTION

Comment rejected, distractor "b" remains incorrect and "c" remains as the only correct answer. The licensee argued the semantics of "alignment" and "flowpath," but did not provide any type of administrative definition to distinguish between the two words and clarify their argument. The dictionary describes alignment as action taken to adjust part of a mechanism to produce a proper condition or relationship. Even though EVS Fan 2 started after the RE 8447 trip, CV 5024 remained closed, and the system did not align, or establish a flowpath, to the Fuel Handling Area. However, both Fan 1 and 2 were running, and aligned (ie, flowpath established) to #4 MPR as stated in "c."

3. EXAMINATION QUESTION SRO # 054LICENSEE COMMENT

Accept "b" also. At 22 inches hotwell level the condensate pumps should have automatically tripped, causing a loss of condenser vacuum due to loss of condensate flow through the steam jet air ejector condensers. The turbine should be tripped when condenser pressure rises to 5 inches mercury (Hg) absolute.



NRC RESOLUTION

Comment accepted, two correct answers, "a" or "b." Tripping the condensate pumps is an immediate action for this condition in accordance with DB-OP-06221, Revision 01; however, recognizing that absolute pressure was already at 4 inches Hg, and that it would increase after a loss of condensate to the main turbine trip setpoint also makes distractor "b" correct in accordance with the supplementary actions of DB-OP-02518, High Condenser Pressure, Revision 00 C-2, Steps 4.1.1.b.2.a.

4. EXAMINATION QUESTION SRO # 056

LICENSEE COMMENT

Delete question - no correct answer. CD 420 automatically resets when the high Deaerator Storage Tank level signal clears; therefore, CD 420 will modulate to control level at 8 ft. This is CD 420's expected position. All listed valves are in their expected positions.

NRC RESOLUTION:

Comment accepted, no correct answer, question deleted.

Question History: The correctness of "a" was originally questioned by examiners after their review. The licensee subsequently verified the answer was technically correct so the question was not modified.

5. EXAMINATION QUESTION SRO # 071

LICENSEE COMMENT

Change the correct answer to "a" - typographical error on [answer] key.

During comment incorporation [and] reformatting of the question, the correct response was changed from "c" to "a" as reflected in the justification section; however, the [answer] key was not properly updated.

NRC RESOLUTION

Comment accepted, answer key was not updated to reflect correct answer.

6. EXAMINATION QUESTION SRO # 081

LICENSEE COMMENT

Delete question - multiple correct answers. If the applicant took action at the time of the event, then "a," "c," and "d" would all be correct. If the applicant took action after the SFAS Level 2 actuation had occurred, then "b" would be correct. The stem lacked the plant parameters and/or time since the event information that would [have led] the applicant to determine whether or not the SFAS Level 2 actuation had occurred.

NRC RESOLUTION

Comment accepted, more than two correct answers, question deleted.

Question History: The original question contained a lot of verbiage in the distractors and was rewritten to improve readability. However, some of the "time aspects" were inadvertently deleted.

7. EXAMINATION QUESTION SRO # 082

LICENSEE COMMENT

Accept "d" also. [Question] stem gives no indication of whether or not the emergency diesel generator (EDG) breakers closed. D1 bus is the power supply for component cooling water (CCW) Pump 2 and for HPI Pump 2. Since HPI Pump 2 also failed to start, the applicant can infer that the #2 EDG breaker did not close, resulting in a bus D1 undervoltage condition. Without bus voltage, the CCW pump won't start regardless of the position of its breaker.

NRC RESOLUTION

Comment accepted, two correct answers, "a" or "d."

SIMULATION FACILITY REPORT

Facility Licensee: Davis-Besse

Facility Licensee Docket No: 50-346

Operating Tests Administered: August 3-6, 1998

The following documents observations made by the NRC examination team during the initial license examination. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

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

ITEM	DESCRIPTION
1. Disparity in Core Flood Tank (CFT) Level Indications.	During administration of a JPM to fill CFT 1-1 to 13 feet using High Pressure Injection (HPI) pump 1-1, examiners observed a difference in level indications between "Core Flood Tank 1" level/pressure indicators, LI CF3B01 "x" and LI CF 3B02 "y." (Previously noted on licensee's discrepancy list)
2. Disparity in one rod display indication.	During administration of scenarios, examiners observed that one rod display consistently indicated the rod had not fully inserted after a scram. (Previously noted on licensee's discrepancy list)
3. HPI pump flow oscillations.	During administration of a JPM to start the HPI pump, examiners observed erratic flow oscillations similar to pump cavitation. (Previously noted on licensee's discrepancy list)

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

**Applicant Information**

Name: MASTER EXAMINATION	Region: III
Date: August 7, 1998	Facility/Unit: Davis-Besse
License Level: SRO	Reactor Type: BW
Start Time:	Finish Time:

**Instructions**

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

**Applicant Certification**

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

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

**Results**

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

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## WRITTEN EXAMINATION GUIDELINES

1. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
2. To pass the examination, you must achieve a grade of 80.00 percent or greater. Each question is worth one point.
3. The time limit for completing the examination is four hours.
4. You may bring calculators into the examination room. Use only dark pencil to ensure legible copies.
5. Print your name in the blank provided on the examination cover sheet and your answer sheet. You may be asked to provide the examiner with some form of positive identification.
6. Mark your answers on the answer sheet provided. Use only the sheet provided. If you decide to change your original answer, erase thoroughly, then enter the desired answer. Make no stray marks as this may affect the grading.
7. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.
8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.
9. When you complete the examination, bring the examination coversheet and your scantron answer sheet to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. Leave all other materials at your desk. Any scrap paper will be disposed of immediately after the examination.
10. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
11. Do you have any questions?

QUESTION: 001 (1.00)

The following plant conditions exist:

- $T_{ave}$  is 584°F and increasing
- Main Feedwater flow is increasing
- Reactor power is 92% and increasing
- Neutron error is 2% in the "IN" direction
- Rod Index is 293% and increasing
- RCS pressure is 2155 psig and increasing
- Diamond panel OUT COMMAND red light lit
- Turbine header pressure is 870 psig and stable

The operator should....

- a. put the turbine in manual.
- b. push the ROD STOP button and hold.
- c. place the SG/RX HAND/AUTO station in HAND and reduce the demand.
- d. put feedwater Demand HAND/AUTO station in hand and reduce feedwater.

QUESTION: 002 (1.00)

Reducing reactor power to less than the Reactor Power Limit for the estimated time of recovery following a control rod drop event will:

- a. prevent a reactor trip on high flux from the resulting quadrant power tilt.
- b. prevent xenon oscillations from expected excessive quadrant power tilts.
- c. minimize potential fuel damage from adverse flux distributions during rod recovery.
- d. minimize uneven fuel burnout from the distorted flux distribution during rod recovery.

QUESTION: 003 (1.00)

The following plant conditions exist:

- RCP 1-2 was turned off because of high vibration.
- Reactor power is 70%.
- Safety rod 1-2 has dropped into the core and cannot be retrieved for two hours.

Which ONE of the following is the maximum reactor power permitted for these conditions?

- a. 45%
- b. 50%
- c. 60%
- d. 70%

QUESTION: 004 (1.00)

Which of the following plant conditions require immediate boration?

- a. Three regulating rods are moving out with no command present .
- b. Two regulating rods have been verified to be dropped with the reactor at power.
- c. Two regulating rods have not moved with the remainder of the group and have been verified to be stuck.
- d. Three regulating rods are moving slower than the remainder of the group and have been verified to be misaligned.



QUESTION: 005 (1.00)

The following plant conditions exist:

- The BWST is at 5 ft.
- Both CTMT spray pumps are running
- Both LPI pumps are running
- Both HPI pumps are NOT running
- CTMT pressure is 18 psig and slowly increasing

Why is pressure in the CTMT increasing?

- a. CTMT spray pump discharge valves have throttled to prevent pump runout. HPI pumps were shut off to prevent pump damage due to low suction pressure with suction from the BWST.
- b. LPI pump discharge valves have throttled back to prevent pump runout. CTMT spray pump discharge valves have throttled back to prevent pump runout with suction from the BWST.
- c. CTMT Spray pump discharge valves have throttled back to prevent pump runout. CTMT spray pump suction is being supplied from the emergency sump.
- d. LPI pump discharge valves have throttled back to prevent pump runout. HPI pumps were shut off to prevent pump damage due to low suction pressure with suction from the emergency sump.

QUESTION: 006 (1.00)

Which one of the following is an indication of stable single phase Natural Circulation Flow?

- a. RCS T-cold and SG T-sat are 30°F apart.
- b. RCS  $\Delta T$  has stabilized at 60°F.
- c. The RCS is 18°F subcooled.
- d. Incore thermocouple and RCS T-Hot indications are both 548°F and decreasing.

QUESTION: 007 (1.00)

Which ONE of the following conditions require tripping all running RCPs following a loss of CCW flow?

- a. Seal outlet temperature at 150°F.
- b. RCP Motor Stator temperature at 250°F.
- c. RCP Motor UPR/Upthrust/Downthrust/LWR BRG MT at 200°F.
- d. Seal injection flow at 5 gpm.

QUESTION: 008 (1.00)

The following plant conditions exist:

- RCS pressure is 255 psig
- PZR level is 200 inches
- RCS temperature is 260°F
- DH pump 2 is running for shutdown cooling
- DH Aux Spray Valve DH 2735 is open

The operator throttles DH Aux Spray Throttle Valve DH 2736 open and it fails wide open. This causes a rapid outsurge from the PZR which causes....

- a. RCS pressure to become too low and the DH pump to start to cavitate.
- b. the RCS to cool down at a rate of greater than 150°F/hr.
- c. a steam bubble to form in the Reactor Coolant System.
- d. the shutdown margin to be less than 1%  $\delta K/K$ .

~~QUESTION: 009 (1.00) *Delete, no correct answers. MEB*~~

~~Nuclear Engineering has determined that shutdown margin is 0.9%  $\delta k/k$  with the plant in MODE 2. Which one of the following immediate actions are required to be performed?~~

~~The operator should begin boration at \_\_\_\_ 1 \_\_\_\_ gpm from the \_\_\_\_ 2 \_\_\_\_ with the makeup system.~~

- ~~a. (1) 25; (2) CWRT~~
- ~~b. (1) 25; (2) CWRT and 10 gpm from the BAAT~~
- ~~c. (1) 90; (2) BWST~~
- ~~d. (1) 25; (2) BWST~~

QUESTION: 010 (1.00)

The following plant conditions exist:

- The reactor has been manually tripped.
- All four RCPs have been manually tripped.
- #2 CCW pump is running .
- CCW Surge tank level Side I is at 34" and steady.
- CCW Surge tank level Side II is 30" and decreasing.

You should:

- a. Align and start #3 CCW pump as #2. Trip and lockout #2 CCW pump. Shut down affected loads.
- b. Open CC1471 (#1 EDG CCW outlet), start #1 CCW pump, trip and lockout #2 CCW pump.
- c. Close #1 EDG air start valves. Take #1 CCW pump control switch to lockout, then release and verify #1 CCW pump starts. Open #1 EDG air start valves.
- d. Leave #2 CCW pump run until 10" in Side II surge tank, then trip it. Start #1 CCW pump, open CC1471 (#1 EDG CCW outlet).

QUESTION: 011 (1.00)

Which ONE of the following CCW System parameters would require entry into DB-OP-02523, CCW System Malfunctions?

- a. CCW Heat Exchanger 1 outlet temperature of 123°F and increasing.
- b. CCW surge tank level of 52" and decreasing.
- c. CCW Pump 1 flow of 3500 gpm. and steady.
- d. CCW booster pump flow of 165 gpm and steady.

QUESTION: 012 (1.00)

Which one of the following actions is NOT consistent with DB-OP-02000 actions for an overcooling event?

- a. Maximize MU/HPI flow into the RCS until PZR level is above 100 inches.
- b. Maintain RCS pressure close to the minimum subcooling margin curve.
- c. Cool down the RCS at 35°F/hr to the shell temperature of the faulted SG.
- d. Cool down the RCS at the same rate as the shell temperature of the faulted SG.

QUESTION: 013 (1.00)

Reactor power is 35%. Per DB-OP-02518, High Condenser Pressure, which ONE of the following condenser pressures (increasing ) would require a reactor trip?

- a. 4.5 inches HgA
- b. 6.0 inches HgA
- c. 7.5 inches HgA
- d. 10.0 inches HgA

QUESTION: 014 (1.00)

The following plant conditions exist:

- The reactor has tripped from 100% power.
- A and B Bus did not transfer to Startup Transformer O1 and O2.
- C1 and D1 voltage reads Zero.
- C1 bus lockout alarm is IN.
- EDG #1 is running.
- EDG #2 is NOT running.

Which one of the following actions should be performed?

- a. Stop EDG #1, verify both makeup pump breakers open, and press Control Room start pushbutton for EDG #2.
- b. Stop EDG #2, verify both makeup pump breakers open, and press Control Room start pushbutton for EDG #1.
- c. Verify open the breaker on the previously running makeup pump, shut the EDG 1 output breaker, and dispatch an operator to start EDG #2 locally.
- d. Verify open both makeup pump breakers, and dispatch an operator to start both EDGs locally.

QUESTION: 015 (1.00)

YAU has lost power when the RCS was being borated to cold shutdown. What effect does this have on the addition of boron to the RCS? Three-way letdown valve MU 11 is failed to the....

- a. CWRT. Boric acid can be added from BAAT #1 using the emergency boration flowpath.
- b. MU tank. Boric acid can NOT be added from BAAT #1 using the emergency boration flow path.
- c. MU tank. Boric acid can be added from BAAT #2 using the emergency boration flow path.
- d. CWRT. Boric acid can NOT be added from BAAT #2 using the emergency boration flow path.

QUESTION: 016 (1.00)

The following alarms have occurred while operating in Mode 1 at 95% RTP:

Annunciator Alarms

- (11-3-C) SW PMP 3 STRNR DISCH PRESS LO
- (11-6-C) SW PMP 3 STRNR DP HI
- (11-1-B) CCW HX 1 OUTLET TEMP HI

Computer Alarms

- (X002) SW PMP MTR TRBL
- (T068) CC HX 1 OUT TEMP

Which ONE of the following sections of DB-OP-02511, Loss of Service Water Pumps/ Systems, would you enter based on the above conditions?

- a. Loss of all Service Water Pumps
- b. Service Water non-seismic line rupture
- c. Loss of SW Loop 2
- d. Loss of SW Loop 1

QUESTION: 017 (1.00)

A large fire was reported in Room 314, No. 4 Mechanical Penetration Room. DB-OP-02529, Fire Procedure, has been implemented and fire fighting operations are in progress. Which ONE of the following procedures is required for guidance on maintaining plant control?

- a. DB-OP-02501, Serious Str .ion Fire
- b. DB-OP-02519, Serious Control Room Fire
- c. DB-OP- 02504, Rapid Shutdown
- d. DB-OP-02000, RPS, SFAS, SFRCS Trip or SG Tube Rupture

QUESTION: 018 (1.00)

The following plant conditions exist:

- The plant is at 100% power.
- The CTRM operators are complaining of a burning sensation in their throats and that it is hard to breath.
- Maintenance is working on the CTRM air conditioning.

Which one of the following describes the response of the control room operators?

- a. Don SCBAs then begin a rapid shutdown to place the unit in hot standby. When the unit is in hot standby the Control Room will be evacuated.
- b. Don SCBAs then trip the reactor, trip the turbine, isolate letdown, and evacuate the Control Room. Start a cooldown to cold shutdown from outside Control Room.
- c. Trip the reactor, trip the turbine, isolate letdown, start the standby makeup pump, initiate AFW flow and then evacuate the Control Room. Control the unit in hot standby from outside the Control Room.
- d. Trip the reactor, trip the reactor coolant pumps, isolate letdown, and evacuate the Control Room. Start a cooldown to cold shutdown from outside Control Room.

QUESTION: 019 (1.00)

The following plant conditions exist:

- The RCS level is at 18 inches.
- Decay heat pump #1 is on cooling the RCS
- Secondary and primary manways are open on both OTSGs.

Maintenance has a MWO to remove a Main Steam Safety valve on the #1 OTSG for testing. Why should this work NOT be performed?

- a. OTSG # 1 cannot be used for heat removal if Decay Heat Pump #1 trips.
- b. CTMT integrity/closure is lost.
- c. Station EVS cannot draw down the CTMT in the required time, per the USAR.
- d. #1 SG is on the same protected train as the operating Decay Heat Pump.

QUESTION: 020 (1.00)

The following plant conditions exist:

- All RCPs are off
- RCS pressure is 500 psig
- Incore thermocouple temperature is 950°F

With the above plant conditions, which ONE of the following will begin to occur first throughout the core?

- a. Melting of the clad.
- b. Structural failure of the core supports.
- c. Fuel melting.
- d. Excessive hydrogen generation



QUESTION: 021 (1.00)

Which ONE of the following describes how the incore thermocouples input to the pressure-temperature (P-T) plot of the Safety Parameter Display System (SPDS)?

- a. All incore thermocouples are averaged to produce a temperature input.
- b. The operator, by rotating the incore thermocouple selector switch, can select any incore thermocouple for input to the P-T plot display.
- c. SPDS automatically selects the highest reading incore thermocouple for input to the P-T plot display.
- d. The five highest thermocouples are averaged to produce a temperature input.

QUESTION: 022 (1.00)

Which ONE of the following describes how letdown flow will be controlled following a loss of NNI-Y AC Power? Isolate letdown with MU 2B, then....

- a. open MU 85 (inlet isolation to MU 6), open MU 2B, and use MU 6 to control letdown.
- b. close MU 85 (inlet isolation to MU 6), open MU 2B, and use MU4 to control letdown.
- c. close MU 87 (outlet isolation to MU 4), open MU 2B, and use MU 6 to control letdown.
- d. close MU 87 (outlet isolation to MU 4), close the air supply to MU 4, open MU 2B, and use MU 4 locally to control letdown.

## QUESTION: 023 (1.00)

Upon receipt of annunciator alarm LETDOWN RAD HI (2-1-A), the Control Room operator will \_\_\_\_\_.

- a. isolate letdown by closing MU 2B.
- b. verify the response of the letdown line radiation monitor with a check source.
- c. divert letdown flow to the Clean Waste Holdup Tanks.
- d. reduce power until the annunciator alarm clears.

## QUESTION: 024 (1.00)

Why is T-hot NOT used to verify Inadequate Core Cooling (ICC) when a lack of subcooling margin is indicated?

- a. Rapid RCS pressure drops and the slow instrument response time of the T-hot instrumentation may cause superheated conditions to be displayed on the T-sat meters.
- b. Rapid RCS pressure drops and the fast instrument response time of the T-hot instrumentation may cause superheated conditions to be displayed on the T-sat meters.
- c. Low natural circulation flow and the slow instrument response time of the T-hot instrumentation may cause superheated conditions to be displayed on the T-sat meters.
- d. High natural circulation flow and the fast instrument response time of the T-hot instrumentation may cause superheated conditions to be displayed on the T-sat meters.

QUESTION: 025 (1.00)

The following plant conditions exist:

- 90% power
- Deaerator level 9.5 FT
- Feedwater temperature 430°F
- $\Delta p$  across the feedwater valves 25 psig

Which one of the following explains why a unit load demand subsystem runback is required?  
Reactor power is greater than the....

- a. one pump limit for the main feedwater pump.
- b. low main feedwater pump discharge pressure limit.
- c. feedwater temperature limit.
- d. high deaerator level limit.

QUESTION: 026 (1.00)

The following plant conditions exist:

- Reactor power is 100%.
- RCS pressure is 2100 psig and decreasing.
- Control rods are at 290% and slowing pull out of the core.
- Pressurizer level is 220" and stable.
- Pressurizer temperature is 644°F and decreasing.
- Makeup tank level is 75" and stable.

Which one of the following is the cause of these indications?

- a. The PORV is leaking on the pressurizer.
- b. A slow failure of the controlling pressurizer level instrument.
- c. A slow failure of the controlling RCS pressure instrument.
- d. The pressurizer spray valve is stuck open.

QUESTION: 027 (1.00)

The following plant conditions exist:

- The reactor has tripped and there is an RCS leak.
- Only one HPI pump started and both MU pumps have tripped.
- Boiler condenser cooling is occurring

What are the effects on boiler condenser cooling of the RCS, if the PORV is opened? Core cooling will....

- a. increase, SG heat transfer will increase.
- b. increase, SG heat transfer will decrease.
- c. decrease, SG heat transfer will increase.
- d. decrease, SG heat transfer will decrease.

QUESTION: 028 (1.00)

The crew has entered DB OP-02522, Small RCS Leaks. The following plant conditions exist:

- Both makeup pumps are running.
- Makeup pump discharge header pressure is 2300 psig.
- Pressurizer level is being maintained.
- RCS pressure is 2154 psig and steady.
- Containment normal sump level is rising.

Based on these plant conditions, which of the following has the highest priority?

- a. Stop both makeup pumps.
- b. Isolate letdown using MU 2B.
- c. Isolate makeup using MU 32.
- d. Isolate seal injection using MU 19.

QUESTION: 029 (1.00)

Which of the following is the maximum RCS pressure at which the LPI system will BEGIN injecting water into the reactor vessel following a LOCA event?

- a. 100 psig
- b. 200 psig
- c. 325 psig
- d. 450 psig

QUESTION: 030 (1.00)

Which one of the following is the reason for invoking PTS (Pressurized Thermal Shock) limits on the RCS? High thermal stress on the....

- a. OTSG tubes at the lower tube sheet.
- b. fuel pins in the RCS.
- c. Pressurizer Surge line connection to the RCS.
- d. reactor vessel wall at the area of the HPI injection water.

QUESTION: 031 (1.00)

The following plant conditions exist:

- The plant is in Mode 5.
- DH Train 1 is in service.
- A loss of offsite power occurs.
- Both EDGs start and load onto their respective bus.
- Train 1 service water pump fails to start, and all attempts to start it fail.

Which ONE of the following operator actions should be performed for these conditions?

- a. Line up and start DH Train 2.
- b. Leave DH Train 1 in service.
- c. Start HPI Pump 2.
- d. Unload and stop EDG 2.

QUESTION: 032 (1.00)

A plant startup is in progress.

- Power Range NI-5 failed to 25% one hour ago.
- Source Ranges NI-1 and NI-2 are both reading 20 cps.
- Power Range NI-8 has just failed to 30 %.

Which one of following is correct concerning this event?

- a. Hold power at 20 cps until NI-8 and NI-5 have been restored to operable status.
- b. Restore NI-1 or NI-2 to operable status within one hour, or shutdown the plant and open the CRD Trip Breakers.
- c. Plant startup may continue with power being limited to less than  $10^{-10}$  amps.
- d. Restore NI-8 or NI-5 to operable status in 50 hours or shutdown the plant in one hour and open the CRD Trip Breakers.

QUESTION: 033 (1.00)

According to DB-OP-02531, Steam Generator Tube Leak, after the reactor is shutdown, the RCS pressure is reduced close to the minimum. Which ONE of the following is the reason for this pressure reduction?

- a. Prevent reactor head bubble formation.
- b. Maintain pressurizer level.
- c. Allow HPI flow into the core.
- d. Reduce driving head of the leak.

QUESTION: 034 (1.00)

Which ONE of the following equipment combinations would NOT ensure sufficient decay heat removal if all other feedwater is lost with T-hot at 600°F?

- a. 1 MU pump piggybacked from LPI discharge and the pressurizer PORV.
- b. 2 MU pumps piggybacked from LPI discharge and the pressurizer code safety valves.
- c. 2 HPI pumps piggybacked from LPI discharge and the pressurizer code safety valves.
- d. 2 MU pumps from the BWST and the pressurizer code safety valves.

QUESTION: 035 (1.00)

All feedwater has been lost to the steam generators. A local operator has been sent to take local speed control of the #1 auxiliary feedwater pump. Which of the following sequences would the control room operator see as local control was established?

- a. AFPT 1 OVRSPD TRIP (10-2-G) clears, AFP-1 Flow is indicated on FI 6426, Steam Generator level is increasing, and OTSG pressure is increasing.
- b. AFP-1 Flow is indicated on FI 6426, AFPT 1 OVRSPD TRIP (10-2-G) clears, Steam Generator level is increasing, and OTSG pressure is increasing.
- c. Steam Generator level is increasing, AFP-1 Flow indicated on FI 6426, AFPT 1 OVRSPD TRIP (10-2-G) clears, and OTSG pressure is increasing.
- d. OTSG pressure is increasing, Steam Generator level is increasing, AFP-1 Flow indicated on FI 6426, and AFPT 1 OVRSPD TRIP (10-2-G) clears.

QUESTION: 036 (1.00)

The following plant conditions exist:

- The Reactor is tripped.
- Loop 1 TH is 600°F.
- Loop 2 TH is 602°F.
- SG1 pressure is 980 psig.
- SG2 pressure is 1010 psig.
- Subcooling Margin is 25°F.

Which ONE of the following sections of DB-OP-02000 would you enter upon exiting Section 4, Supplementary Actions?

- a. Section 5, Loss of Subcooling Margin
- b. Section 6, Lack of Heat Transfer
- c. Section 7, Overcooling
- d. Section 9, ICC



QUESTION: 037 (1.00)

The following plant conditions exist:

- Reactor power is at 35%
- D2P and DBP have tripped (power was lost)

How will the plant respond to the loss of D2P and DBP, and what will the Shift Supervisor use as an aid in the recovery of D2P and DBP loads ?

- a. Turbine trip, E-2013,125 VDC Failure Analysis Manual.
- b. Reactor and turbine trip, E-2013,125 VDC Failure Analysis Manual.
- c. Reactor and turbine stays at 35% power, individual plan based on the research of the E-7, 125/250 VDC one line drawing.
- d. Reactor and Turbine must be manually tripped , USAR, Chapter 8.0, Electrical Power.

QUESTION: 038 (1.00)

RE 5403 (fuel handling area exhaust fan inlet radiation monitor) A, B and C have tripped on high radiation. What is the response of the plant?

- a. Fuel handling supply and exhaust fan trip, Station EVS starts automatically and CV 5025 and CV 5024 EVS damper from fuel handling open.
- b. Fuel handling supply and exhaust fan stays running, Station EVS starts automatically and CV 5025 and CV 5024 EVS damper from fuel handling close.
- c. Fuel handling supply and exhaust fan stays running, Station EVS stays shutdown and CV 5025 and CV 5024 EVS damper from fuel handling remain open.
- d. Fuel handling supply and exhaust fan shutdown, Station EVS stays shutdown and CV 5025 and CV 5024 EVS damper from fuel handling remains closed.

QUESTION: 039 (1.00)

In the event of a Severe Loss of Instrument Air, The operator is directed to compile a listing of certain items to enable controlled restoration upon recovery of the Instrument Air header. Which ONE of the following combinations correctly identifies the items to be included in the list?

- a. Running compressors, SG levels, and isolated air valves.
- b. Abnormal lineups, isolated air valves, and overridden AOVs.
- c. Abnormal lineups, isolated drain valves, and overridden AOVs.
- d. Tech. Spec. action statements, isolated piping vents and drains and overridden AOVs.

QUESTION: 040 (1.00)

The following conditions develop while operating at 100%.

Annunciators:

- 9-3-E, STA AIR HDR PRESS LO
- 9-1-F, INSTR AIR HDR PRESS LO
- 9-4-F, INSTR AIR DRYER TRBL
- PI 810, IA Header Pressure reads 88 psig and decreasing.
- PI 811, SA Header Pressure reads 93 psig and decreasing.

The plant is reported as stable by the secondary RO. Which ONE of the following identifies correct actions given the above conditions?

- a. Immediately trip the Reactor, initiate AFW flow and isolate both OTSGs, go to DB-OP-02000.
- b. Enter DB-OP-02528, Loss of Instrument Air, and perform actions for IA Dryer Switching Failure.
- c. Enter DB-OP-02504, Rapid Shutdown, and begin a shutdown at 25 - 50 MWe/min. to place the plant in a known condition.
- d. Enter DB-OP-02528, Loss of Instrument Air, and perform actions for Stable Low IA Header Pressure .

QUESTION: 041 (1.00)

Pressurizer level has decreased to 35 inches. Which ONE of the following describes the pressurizer response to this level change with no operator action?

	MU 32 (PZR level)	MU 19 (Seal Injection)	PRZ Heaters
a.	Open	Close	All heaters off except non-essential Bank 2 base load heater
b.	Close	Close	All heaters off except essential Bank 1 and 2
c.	Close	Throttled	All heaters off
d.	Open	Throttled	All heaters off

QUESTION: 042 (1.00)

The following conditions exist:

- The Monthly Surveillance for EVS Fan 1 is in progress.
- CV 5024, FH Area Bypass Valve is closed.
- EVS Fan 1 has been running for 10 minutes.
- Fuel Handling Area Exhaust RE 8447 (Train 2) trips.

Which ONE of the following identifies the EVS alignment for this condition?

- Both EVS Fans will be ON and aligned to the Fuel Handling Area.
- EVS Fan #1 will be ON and aligned to #4 MPR, and EVS Fan #2 will be ON and aligned to the Fuel Handling Area.
- Both EVS Fans will be ON and aligned to #4 MPR.
- EVS Fan #1 will be ON and aligned to #4 MPR, and EVS Fan #2 will be OFF.

## QUESTION: 043 (1.00)

DB-OP-02000, Specific Rule 2.4.1 states, "When LPI system flow has been 1000 gpm/line or greater for 20 minutes or more, MU/HPI may be stopped." Which ONE of the following is the basis for the 20 minute time period?

- a. Sufficient time has elapsed to verify that the subcooling margin will not be recovered and RCPs will not be needed.
- b. It provides reasonable assurance that the primary system will not repressurize and result in a loss of LPI flow.
- c. It assures that at least the MAXIMUM required LPI flow is reaching the reactor vessel in the event of an injection line break.
- d. It allows sufficient time to make a transition to the containment emergency sump on low BWST level.

## QUESTION: 044 (1.00)

What happens in the control rod drive system if both "RUN" and "JOG" commands occur at the same time?

- a. Control rods travel at 3 inches per minute.
- b. Control rods travel at 30 inches per minute.
- c. The Rod Control Panel transfers to MANUAL.
- d. Control rod travel stops.

QUESTION: 045 (1.00)

Which ONE of the following statements is the reason that any rod suspected of being mechanically bound is ONLY to be operated in RUN speed? JOG speed...

- a. may damage the torque tube
- b. may damage the spider
- c. supplies insufficient torque to free the stuck rod
- d. would overheat the motor coils

QUESTION: 046 (1.00)

The following plant conditions exist:

- 2 Reactor coolant Pumps are running in Loop 1
- 1 Reactor coolant Pump is running in Loop 2
- Reactor power is 50% by nuclear instrumentation indication.

One of the RCPs develops high vibration and must be secured immediately. When it is secured the plant trips. Which one of the reactor coolant pumps was secured and why did the plant trip?

- a. The RCP running in Loop 2. The plant trip was due to the Power/pump monitors in RPS.
- b. The RCP running in Loop 2. The plant trip was due to the flux/delta flux/flow monitors in RPS.
- c. The RCP running in Loop 1. The plant trip was due to the Power/pump monitors in RPS.
- d. The RCP running in Loop 1. The plant trip was due to the flux/delta flux/flow monitors in RPS.

QUESTION: 047 (1.00)

The following plant conditions exist:

- MU pump 1-1 is in operation.
- MU pump 1-2 is in standby.
- The Unit is at 90% power.

Which ONE of the following is the reason the operator closes the Seal flow control valve (MU 19) when MU pump 1-1 trips? This prevents....

- a. hydraulic shock to the RCP seal filter when MU 1-2 pump AUTOMATICALLY starts.
- b. hydraulic shock to the RCP seal filter when MU 1-2 pump is MANUALLY started.
- c. thermal shock to the RCP seal package when MU 1-2 pump is MANUALLY started.
- d. thermal shock to the RCP seal package when MU 1-2 pump AUTOMATICALLY starts.

QUESTION: 048 (1.00)

After performing a Rapid Shutdown from 100% to 50%, DB-OP-02504 Rapid Shutdown gives guidance on how Axial Power Imbalance (API) should be controlled. Which of the following describes this guidance?

Control rods are maintained within a desired index to prevent a \_\_\_\_1\_\_\_\_ API. Boron concentration is \_\_\_\_2\_\_\_\_ for approximately four hours as Xenon builds toward its peak. Boron Concentration is then \_\_\_\_3\_\_\_\_ to maintain the desired rod index.

- a. (1) positive; (2) increased; (3) decreased
- b. (1) negative; (2) decreased; (3) increased
- c. (1) positive; (2) decreased; (3) increased
- d. (1) negative; (2) increased; (3) decreased

QUESTION: 049 (1.00)

Maintenance has requested removal of 120 VAC bus Y2 from service. Which ONE of the following describes the response of SFAS? SFAS Channel 2.....

- a. output modules de-energize causing an actuation of the associated SFAS components.
- b. output relays de-energize without an actuation of SFAS components unless SFAS Channel 4 output relays are de-energized.
- c. Shutdown Bypass Modules de-energize causing the associated SFAS components to only respond to a manual actuation signal.
- d. Shutdown Bypass relays de-energize causing an actuation of the associated SFAS components.

QUESTION: 050 (1.00)

The following plant conditions exist:

- The plant has been operating at 100% power for 20 days.
- Reactor Engineering reports that the results of yesterday's incore flux map indicate that control rod 4-1 is misaligned into the core.
- CTRM API for Rod 4-1 indicates 100% withdrawn.
- CTRM RPI for Rod 4-1 indicates 100% withdrawn.

Which ONE of the following actions is required?

- a. Trip the reactor and go to DB-OP-02000 RPS, SFAS, SFRCS Trip or SG Tube Rupture.
- b. Declare the rod inoperable and remain at 100% power while evaluating.
- c. Declare the rod inoperable and reduce power to less than 60% while evaluating.
- d. Commence a rapid shutdown to HOT STANDBY in accordance with DB-OP-02504, Rapid Shutdown.



QUESTION: 051 (1.00)

The following plant conditions exist:

- The plant was operating at 100% power.
- An ICS runback to 55% power occurred due to low deaerator level.
- After the computer updates, heat balance power is different from NI power.

Heat balance power is:

- a. Above NI power because T-cold is decreasing.
- b. Above NI power because T-cold is increasing.
- c. Below NI power because T-cold is decreasing.
- d. Below NI power because T-cold is increasing.

QUESTION: 052 (1.00)

With Containment Air Cooler (CAC) Fans 1-1 and 1-2 running in "FAST" speed, the Emergency Control Transfer Switches for all three CACs are placed in "Local". Identify the expected CAC System response. CAC Fans 1-1 and 1-2 will....

- a. both trip.
- b. downshift to "SLOW" speed. Fan 1-3 will have to be manually started in "SLOW" speed.
- c. continue to run in "FAST" speed upon receipt of an SFAS Level 2 signal.
- d. downshift to "SLOW" speed. Fan 1-3 will automatically start in "SLOW" speed.

QUESTION: 053 (1.00)

Which one of the following sets of automatic actions will occur in the Containment Heat Removal system following receipt of SFA/S Incident Level 2 actuation? (Assume normal system lineup.)

The operating CTMT Air Cooling fans receive a shift to \_\_\_1\_\_\_ speed signal. The standby fan subsystem \_\_\_2\_\_\_. The operating CTMT Air Cooling fans' Service Water Outlet Valves receive a \_\_\_3\_\_\_ signal.

	OPERATING FAN	STANDBY FAN	SERVICE WATER OUTLET VALVE
a.	slow	is not affected	full open
b.	slow	auto starts in SLOW	75% open
c.	fast	is not affected	full open
d.	fast	auto starts in SLOW	75% open

QUESTION: 054 (1.00)

Given the following plant conditions:

- Hotwell level is 22 inches
- 1-1 RCP has tripped
- turbine load is 200 MWe
- condenser pressure is 4" Hg absolute

You should:

- a. Trip any running condensate pumps.
- b. Trip the main turbine.
- c. Verify feedwater flow has re-ratioed to maintain  $\Delta T_e$ .
- d. Manually control pressurizer heaters and spray to maintain 2155 psig.

QUESTION: 055 (1.00)

During operation at 50% power with SG/RX Demand in HAND and all other ICS stations in AUTO, feedwater heater 1-6 becomes fouled. Which of the following correctly completes the statement concerning the ICS feedwater control subsystem response?

The \_\_\_\_\_ circuit will decrease total feedwater demand to maintain heat removal from the reactor compatible with the current reactor power.

- a. total feedwater flow control circuit.
- b. feedwater temperature compensation circuit.
- c. load ratio circuit.
- d. rapid feedwater reduction circuit.

QUESTION: 056 (1.00) *Delete, no correct answers, MEB*

The plant is operating at 50% power. The Deaerator Storage Tank 2 level increased to 12 feet, and then returned to 8 feet. Assuming no operator action, which ONE of the following valves is out of its expected position for this event?

- a. Condensate inlet CD 420 is closed.
- b. Flash tank outlet AS 2076 is closed.
- c. Extraction non-return valve ES 9845 is closed.
- d. Extraction drain valve ES 415 is open.

QUESTION: 057 (1.00)

A plant trip has occurred and a natural circulation cooldown has begun utilizing AFW. During the cooldown, a transition was made from AFW to MFW. Explain what happens to core  $\Delta T$  (T-hot minus T-cold) following this transition.

- a. Increases because natural circulation flow in the RCS decreases due to a lower thermal center with MFW.
- b. Remains the same because of the hotter water and lower thermal center with MFW.
- c. Decreases because natural circulation flow in the RCS decreases due to a higher thermal center with MFW.
- d. Decreases because steam generator saturation temperature decreases.

QUESTION: 058 (1.00)

The Safety Features Actuation System (SFAS) output modules L231 and L233 were tripped to clear the anti-pump logic on CCW pump #1 and the plant was tripped due to loss of offsite power. How will SG levels be controlled in this condition?

- a. By both aux. feedwater pumps at SG levels of 124 inches.
- b. By both aux. feedwater pumps at a SG levels of 55 inches.
- c. By aux. feedwater pump 1 at SG 1 level of 124 inches, and aux. feedwater pump 2 at SG2 level of 49 inches.
- d. By aux. feedwater pump 1 at SG 1 level of 130 inches, and aux. feedwater pump 2 at SG 2 level of 124 inches.

QUESTION: 059 (1.00)

What will be the expected effect on Emergency Diesel Generator (EDG) #1 following a loss of 125 VDC, D1P and DAP power? The EDG will...

- a. NOT start automatically and CANNOT be started manually.
- b. start and run at idle speed (450 rpm) but will NOT accelerate to 900 rpm.
- c. NOT start automatically but may be started manually.
- d. start and run at 900 rpm but CANNOT be placed on its associated 4160 VAC Essential Bus.

QUESTION: 060 (1.00)

The following plant conditions exist:

- A liquid radwaste discharge is in progress from Clean Waste Monitor Tank (CWMT) #1 to the collection Box.
- The CLEAN WASTE SYSTEM OUT RAD HI annunciator is in alarm.

The operator determines that Clean Waste System Outlet Radiation Monitor, RE-1770A, is above its HIGH trip setpoint. Which ONE of the following is the expected AUTOMATIC response of the Clean Waste System (CLN WST SYS)?

- a. The operating CLN WST SYS transfer pump trips AND isolation valve WC-1771 (discharge from the CLN WST SYS) CLOSES.
- b. The operating CLN WST SYS transfer pump trips AND WC-1704 (CWMT outlet valve) CLOSES.
- c. Isolation valves WC-1701A and B (discharges to the Collection Box) will CLOSE and WC-1701C (discharge to the Primary Water Storage Tank) will OPEN.
- d. Isolation valves WC-1701A and B (discharges to the Collection Box ) will CLOSE and WC-1771 (discharge from the CLN WST SYS ) will CLOSE.

QUESTION: 061 (1.00)

Which ONE of the following describes the method(s) that the operator can use to CLOSE the valves in the gaseous radioactive waste discharge flowpath to the station vent? The operator can use the valve control switches....

- a. in the Control Room ONLY.
- b. on the Radwaste Control Panel ONLY.
- c. on the Radwaste Control Panel OR manually trip the Waste Gas Radiation Monitors from the Control Room area.
- d. in the Control Room OR manually trip the Waste Gas Radiation Monitors from the Radwaste Control area.

QUESTION: 062 (1.00)

When a HIGH alarm comes in on an AREA radiation monitor, the local alarm and indicating panel (if so equipped) will alarm and \_\_\_\_\_.

- a. there will be no other alarms associated with the area monitor.
- b. the Radiation Monitoring Panel CTRM module's red light will be ON and the AMBER light OFF.
- c. the Radiation Monitoring Panel CTRM module's red light will be ON only if it is a Tech Spec required monitor.
- d. the Radiation Monitoring Panel CTRM module's amber and red lights will be ON and the alarming monitor will be displayed on the CTRM Fire/RMS computer.

QUESTION: 063 (1.00)

Which ONE of the following statements is correct concerning piping interconnections to the RCS?

- a. The PZR spray line taps off the discharge of RCP 1-1 while the PZR surge line taps off #2 hot leg.
- b. Under emergency conditions the Core Flood Tanks and High Pressure Injection Systems inject through common penetrations.
- c. During initial RCS draining, nitrogen cover gas is added to the RCS via the hot leg high point vent piping.
- d. The CTMT vent header taps into each cold leg pipe between the OTSG and the RCP suction.

QUESTION: 064 (1.00)

Which ONE of the following will result if PT 6365B, Loop 1 RCS Pressure Full Range Transmitter, fails low?

- a. SFAS Channel 1 will trip.
- b. The pressurizer heaters will energize.
- c. RPS Channel 1 will trip.
- d. The aux. shutdown panel pressure recorder fails as is.

QUESTION: 065 (1.00)

Which ONE of the following set of conditions when in MODE 1 requires an entry into Tech Spec 3.5.1 for a CFT?

	Pressure	Level	Boron Concentration
a.	600 psig	13.2 ft	2625 ppm
b.	620 psig	12.7 ft	2650 ppm
c.	580 psig	13.3 ft	3480 ppm
d.	590 psig	12.5 ft	3475 ppm



QUESTION: 066 (1.00)

The following plant conditions exist:

- RCS pressure is 2190 psig and rising.
- The operator takes the pressurizer spray valve control switch to OPEN.
- When the spray valve is 25% open, the operator places the spray valve control switch in AUTO.

Which ONE of the following describes the expected response of the pressurizer spray valve under these conditions?

- a. The spray valve will continue to travel to the fully open position.
- b. The spray valve will continue to travel to the 40% open position, then stops at that position.
- c. The spray valve shuts. When RCS pressure rises above 2205 psig, the spray valve will travel to the fully open position.
- d. The spray valve stops at the 25% open position. When RCS pressure rises above 2205 psig, the spray valve will travel to the 40% open position.

QUESTION: 067 (1.00)

A startup is being conducted. Reactor power is approximately 18%,  $T_{ave}$  is 563°F. Select the correct value for pressurizer level under these conditions.

- a. 165"
- b. 170"
- c. 175"
- d. 180"

QUESTION: 068 (1.00)

The following plant conditions exist:

- Small break LOCA has taken place.
- CAC 1 suction temp is 165°F.
- CAC 2 suction temp is 170°F.
- Pressurizer level is 50 inches.
- RCS pressure is 1300 psig.
- Subcooling margin is 18°F.
- SG levels are 55" and increasing.

What operator actions must be taken in accordance with DB-OP-02000, Attachment 9, Miscellaneous Post - Accident Actions?

- a. Turn off pressurizer heaters.
- b. Throttle back on HPI flow.
- c. Throttle back on AFW flow.
- d. Stop CAC 2 and replace it with CAC 3.

QUESTION: 069 (1.00)

If a reactor coolant pump was to trip from 100% power, which ONE of the following explains why the reactor trips?

- a. The turbine bypass valves and atmospheric vent valves open to relieve the steam pressure, which cools off the RCS and causes a low RCS pressure trip.
- b. The power increase due to decreasing feedwater temperature is greater than the power decrease due to the control rods inserting, which results in an RCS pressure increase above the high RCS pressure trip.
- c. The RCS flow decreases the calculated power trip setpoint faster than the plant runback can decrease reactor power, which results in a flux/delta flux/flow trip.
- d. The reactor power to flow ratio exceeds the power to pump trip setpoint.

QUESTION: 070 (1.00)

The following plant conditions exist:

- The core is off loaded into the spent fuel pool.
- #1 Decay Heat Pump is cooling the spent fuel pool.

What is the maximum temperature of the spent fuel pool, and why is temperature important for this condition?

- a. 110°F; to improve optical clarity of the water.
- b. 120°F; to minimize injury to anyone falling into the pool.
- c. 130°F; to minimize the quantity of potentially radioactive gases coming out of solution in the water.
- d. 140°F; to meet the Tech. Spec. maximum temperature limit

QUESTION: 071 (1.00)

Which ONE of the following correctly completes the statement concerning the Fuel Storage Handling Bridge (FSHB), Main Fuel Handling Bridge (MFHB), and Auxiliary Fuel Handling Bridge (AFHB)?

To prevent inadvertent drop of a fuel assembly, an electrical interlock prevents the \_\_\_\_1\_\_\_\_ on the \_\_\_\_2\_\_\_\_ from disengaging when a weight exceeding \_\_\_\_3\_\_\_\_ pounds is being lifted.

- |    | (1)     | (2)  | (3)     |
|----|---------|------|---------|
| a. | grapple | MFHB | 380 lb  |
| b. | grapple | AFHB | 900 lb  |
| c. | mast    | MFHB | 1200 lb |
| d. | mast    | FSHB | 1500 lb |

QUESTION: 072 (1.00)

During plant startup, the \_\_\_\_\_1\_\_\_\_\_ drains and \_\_\_\_\_2\_\_\_\_\_ drains are OPENED to allow for MSR system condensate removal.

- a. (1) Reheat Steam High Load valve; (2) cross around piping
- b. (1) Reheat Steam Low Load valve; (2) shell pocket
- c. (1) Reheat Steam High Load valve; (2) Reheat Steam Low Load valve
- d. (1) Cross-around piping; (2) shell pocket

QUESTION: 073 (1.00)

The following plant conditions exist:

- A complete loss of offsite power occurred approximately ten minutes ago.
- EDGs have started and loaded as required.
- The station blackout diesel generator has been started and is supplying Bus D2.

Which ONE of the following combinations lists TWO reasons why the turbine bypass valves would NOT be available for controlling secondary side steam pressure?

- 1. The MSIVs (MS 100 and MS 101) have closed.
  - 2. All four circ. water pumps are off.
  - 3. Instrument air pressure has been lost.
  - 4. ICS power has been deenergized.
- a. 1 and 2
  - b. 1 and 4
  - c. 2 and 3
  - d. 3 and 4

QUESTION: 074 (1.00)

Which ONE of the following is NOT correct concerning Instrument AC loads and their respective power supplies?

	CHANNEL	NORMAL FEED	ALTERNATE FEED
a.	SFAS channel 1	Y1 from inverter YV1	Y1 from voltage regulator XY1
b.	Post-accident channel 2	Y1 from inverter YV1	Y1 from voltage regulator XY1
c.	ARTS channel 3	Y3 from inverter YV3	Y3 from voltage regulator XY3
d.	RPS channel 4	Y4 from inverter YV4	Y4 from voltage regulator XY4

QUESTION: 075 (1.00)

If a C1 bus lockout occurred, you would see \_\_\_\_\_.

- All C1 bus load breakers open except for the transformer load breakers EDG 1 running and supplying C1 bus (AC101 closed) E1 bus voltmeter indicating 480 volts
- All C1 bus load breakers open EDG 1 running but not supplying C1 bus (AC101 open) Alternate feeder breaker ABDC1 closed
- All C1 bus load breakers open EDG 1 running but not supplying C1 bus (AC101 open) E1 bus voltmeter indicating 0 volts
- All C1 bus load breakers open except the breakers for those components actuated by SFAS EDG 1 running and supplying C1 bus (AC101 closed) E1 bus voltmeter indicating 480 volts

QUESTION: 076 (1.00)

The following pumps were initially running: CCW, HPI, LPI and SW.

The following events occur:

- A LOCA is in progress.
- A loss of offsite power occurs.
- The diesels START and power their respective buses.
- The load sequencers fail to remove ANY of the sequencer block signals.

Under these conditions, which ONE of the following pumps will be running immediately following these events?

- a. CCW Pump
- b. HPI Pump
- c. LPI Pump
- d. Service Water Pump

QUESTION: 077 (1.00)

Initiation of the containment accident range air monitor operation occurs when which ONE of the following conditions is met?

- a. High containment hydrogen concentration (2%)
- b. High-high containment pressure
- c. High containment noble gas activity
- d. High containment area radiation

QUESTION: 078 (1.00)

Which ONE of the following describes what happens to header isolation valves, SA 2008 (Station Air HDR), IA 2043 (IA to Turbine Bldg.), and IA 2044 (IA to Aux. Bldg.) on DECREASING header pressure?

	SA 2008	IA 2043	IA 2044
a.	throttles	throttles	closes
b.	throttles	throttles	throttles
c.	closes, then reopens	closes	closes
d.	closes	throttles	throttles

QUESTION: 079 (1.00)

A fire has occurred at the station. The Fire Water Storage Tank level has been steadily declining due to fire brigade usage and has reached 2.5 feet.

You should:

- stop the diesel fire pump.
- send an operator to secure the electric fire pump after verifying diesel fire pump start.
- open SW 919, SW to Fire Water Storage Tank cross-connect, prior to level going below 2.0 ft in the Fire Water Storage Tank.
- open SW 921, SW to Fire Water Header cross-connect, stop the diesel and electric fire pumps.

## QUESTION: 080 (1.00)

The plant is operating at 100% power. How is overpressure protection provided for the DHR suction isolation valves (DH 11 and DH 12)?

- a. A line taps off downstream of DH 12 with one OPEN isolation valve to the quench tank with no check valves.
- b. A line taps off downstream of DH 12 with two open isolation valves and one check valve to the RC drain tank.
- c. A line taps off between DH 12 and DH 11 with two open isolation valves and no check valves to the DH heat pump suction line.
- d. A line taps off between DH 12 and DH 11 with two open isolation valves and one check valve to the RCS .

~~QUESTION: 081 (1.00) Delete, >2 correct answers. MEB~~

~~The plant is at 100% power when the PORV and PORV block valve fail fully open. You should:~~

- ~~a. start the quench tank circulating pump.~~
- ~~b. close the quench tank return valve RC 232.~~
- ~~c. open the quench tank discharge valve RC 225A.~~
- ~~d. verify CCW flow through the quench tank cooler.~~



## QUESTION: 082 (1.00)

The plant was at 100% power. CCW pump 1 was running. CCW pump 2 was in standby. A LOCA occurred. The following plant conditions now exist:

- RCS pressure is 1500 psig
- HPI pump 1 started. HPI pump 2 has failed to start
- CCW pump 1 is running. CCW pump 2 has failed to start
- EDG 1 and 2 have started

What is preventing CCW pump 2 from starting?

- a. Breaker overcurrent
- b. Low flow
- c. High temperature
- d. Bus undervoltage

## QUESTION: 083 (1.00)

The main turbine trips from 20% RTP. Which ONE of the following combinations represents the expected normal responses of the following secondary plant parameters after five minutes?

	Feedwater Flow	S/G Level	TBVs	Turb Hdr Press
a.	decreases	decreases to low level limits	open and control pressure	at 870 psig
b.	remains constant	remains on low level limits	open and control pressure	at 995 psig
c.	remains constant	remains on low level limits	open and control pressure	at 870 psig
d.	increases	slowly increases	closed, AVVs control pressure	at 995 psig

## QUESTION: 084 (1.00)

As the on-coming Shift Supervisor, you have reviewed the Surveillance Test Alert Report before assuming your duties on shift. A surveillance test on one of the station batteries will go beyond its Technical Specification late date on your shift. What are you required to do?

- a. Notify the responsible shop and document in the Unit Log both the time and the person notified.
- b. Perform the surveillance on your shift using Operations personnel and notify the responsible shop when the surveillance is completed.
- c. Declare the station battery "inoperable", enter the Technical Specification time clock, and perform the surveillance as soon as possible.
- d. Notify the Shift Manager and inform him of the need to invoke the 25% grace period on this surveillance.

## QUESTION: 085 (1.00)

When disabling a system protective feature during an emergency the Shift Supervisor should:

- a. direct another SRO to personally supervise the disabling of the protective feature. No log entry is required.
- b. get concurrence from any licensed operator. Direct the Primary RO to enter it in the Unit Log. Direct supervision of the disabling of the feature is NOT required.
- c. get concurrence from another SRO and make the appropriate log entry. No operator supervision is required while disabling the protective feature.
- d. direct any licensed operator to supervise the disabling of the protective feature. No log entry is required.

## QUESTION: 086 (1.00)

An equipment operator has reported to the Control Room that two instruments monitoring the same parameter are reading 150 psig apart. Who has the responsibility to determine which instrument to use for control of the plant?

- a. The Control Room Reactor Operator receiving the report from the equipment operator.
- b. The equipment operator responsible for operation of the equipment being monitored.
- c. The Control Room Senior Reactor Operator will determine which instrument to use.
- d. The Shift Technical Advisor will evaluate and determine which instrument to use.

## QUESTION: 087 (1.00)

An operator has been told to perform Attachment 1 (Containment Spray Train 1 Valve Checklist) of DB-OP- 06C13. CS 20 is closed. It is required to be open per the attachment. How will the operator get this valve open?

- a. The operator may reposition the valve as needed to conform with the Attachment without further consultation.
- b. The Shift Supervisor shall be consulted prior to repositioning of the valve.
- c. The operator will call the equipment operator for that Zone in the plant and have him open the valve.
- d. Two separate operators must independently determine the current condition or position and then open the valve.

QUESTION: 088 (1.00)

The plant has been operating at 100% power for 162 consecutive days when the following conditions are noted:

- 5-1-F, ARTS CH TRIP
- 8-1-A, CRD TRIP CONFIRM
- 8-1-B, T-G MASTER TURB TRIP
- 8-5-A, SWYD ACB 34560 TRIP
- 8-5-B, SWYD ACB 34561 TRIP
- 16-2-C, MN XFMR 1 SUDDEN PRESS TRIP

After plant stabilization per DB-OP-02000, the CTRM crew implemented DB-OP-06910, Trip Recovery. Which ONE of the following is correct concerning restart requirements, given the initiating symptoms? The initiating condition has been investigated and repaired and can be reset with the permission of \_\_\_\_\_.

- a. both the Shift Supervisor and the Vice President - Nuclear, and the Load Dispatcher should be consulted.
- b. the Electrical Superintendent, the Shift Supervisor, and the Manager - DB Operations, and the Load Dispatcher.
- c. the Manager - Plant Maintenance, the Duty Operations Superintendent, the Shift Supervisor, and the Load Dispatcher.
- d. the Shift Supervisor ONLY due to being an expected lockout due to Reactor/Turbine trip.

QUESTION: 089 (1.00)

Plant Electrical and Control (E&C) personnel have informed the Shift Supervisor that they need to isolate a pressure tap on the moisture separator reheater for a few minutes to replace a gauge. They will remain in the area. What is the MINIMUM tagging required for this work?

- a. Personal Red Tag.
- b. None.
- c. Operational Information Tag
- d. Corporate Red Tag.

QUESTION: 090 (1.00)

During normal Mode 1 operation, which ONE of the following conditions requires the implementation of a Temporary Modification?

- a. Changing the alarm setpoint for the "BUS YBR VOLTAGE LO" (1-6-I) annunciator.
- b. Installing a pressure gauge on the suction of a pump (to a pre-existing instrument root valve) during performance of a test procedure.
- c. An installation of an electrical jumper on the miscellaneous diesel generator control circuit to perform testing on the auto start function.
- d. A nitrogen backup supply is installed on an AOV with the associated drawings not updated prior to returning the system to operation.

QUESTION: 091 (1.00)

The following conditions exist in Mode 6:

0710 - Refueling canal water level verified >23 ft. above the top of the core.

0730 - Fuel movement, scheduled to begin at this time, is postponed.

Which ONE of the following times is the LATEST time that fuel movement can begin before this surveillance must be reperformed?

- a. 0800 the same day
- b. 0900 the same day
- c. 1900 the same day
- d. 0700 the next day

QUESTION: 092 (1.00)

A fuel assembly with a control rod in the spent fuel pool location A03 is to be moved to the core at location H05 using the east basket. According to DB-NE-06101, Fuel/Control Component Shuffle, the FH Director's Fuel Movement Sequence Sheet should show which ONE of the following?

	MOVED BY	FUEL ID	CONTROL COMP ID	INITIAL LOCATION	FINAL LOCATION
a.	FSHB	NJ02QN	BAFI	E	H05
b.	MFHB	NJ01DV	C31A	E	H05
c.	SFCC	NJ039B	C35B	W	H05
d.	AFHB	NJ02QH	BAFG	W	H05

QUESTION: 093 (1.00)

A female radiation worker:

- is 45 years old.
- has a Total Effective Dose Equivalent (TEDE) of 0.5 Rem for the current calendar year.
- has declared that she is NOT pregnant.
- has NOT received any does limit extensions

During a radiation area entry for maintenance, she received the following exposure:

- Shallow Dose Equivalent (SDE) to the skin of the hands - 6.2 Rem
- SDE to the hands - 2.5 Rem
- TEDE to the whole body - 0.3 Rem

Which ONE of the following limits has been exceeded?

- a. Davis-Besse Administrative SDE to the skin.
- b. Davis-Besse Administrative SDE to the hands.
- c. NRC 10CFR20 TEDE to the whole body.
- d. Davis-Besse Administrative TEDE to the whole body.

## QUESTION: 094 (1.00)

A traveling maintenance man has received 1995 mR this year. He is expected to receive 100 mR while performing maintenance on site. What level of approval is required for him to receive an additional 100 mR?

- a. The duty RC Tester
- b. Supervisor - Radiation Operations
- c. Plant Manager
- d. Manager - Radiation Protection

## QUESTION: 095 (1.00)

As the Shift Supervisor, you are reviewing a Radioactive Liquid Batch Release Form for the Miscellaneous Waste Monitor Tank. You note that the specified release rate on the form is 21 gpm. Which ONE of the following actions are you required to perform?

- a. Approve the release and ensure the zone operator uses the 3 inch release line flowpath.
- b. Approve the release and ensure the Zone operator uses the 1.5 inch release line flowpath.
- c. Disapprove the release and return the form to Radiation Protection.
- d. Disapprove the release, have the Zone operator reprocess the tank, and then return the form to Chemistry so that another sample can be taken.

QUESTION: 096 (1.00)

An RWP is need to enter a Very High Radiation Area at 2:00am for a seal ring leak during refueling. Who most approve the RWP?

- a. Supervisor - Radiation Operations per telephone approval
- b. Manager - Plant Radiation per telephone approval
- c. Supervisor - Radiation Operation or a designated alterrr.ate
- d. Manager - Plant Radiation

QUESTION: 097 (1.00)

Which ONE of the following requires a continuous fire watch to be established per the Fire Hazard Analysis Report?

- a. The sprinkler system in the Service Water Pump Room 52 inoperable.
- b. One diesel fire pump's 24 VDC starting battery is found to be reading 13 VDC.
- c. The FWST for the fire suppression pump is found to contain 125,000 gallons.
- d. Two fire hose stations, HR-5 (Turbine Building across from TPCW pump) and HR-12 (outside Control Room) have hoses that have welding burn holes in them.



QUESTION: 098 (1.00)

Which of the following describes the purpose of the Standby Team, as described in the "Reentry" procedure, RA-EP-02710?

- a. Serve as a second Reentry Team, awaiting the first Reentry Team's task completion so that they can enter their assigned area (i.e., only one Reentry Team actually allowed in plant areas at any one time).
- b. Provide operational assistance to the Reentry Team in case their task(s) take longer to perform than originally anticipated, or requires additional equipment.
- c. Provide rescue and first aid assistance for the Reentry Team.
- d. Provide a comprehensive radiation surveillance of any new areas that the Reentry Team desires to enter where the proper operation of installed monitoring equipment is in doubt.

QUESTION: 099 (1.00)

Which ONE of the following is an action to be taken by Control Room personnel prior to evacuating the control room per DB-OP-02519, Serious Control Room Fire?

- a. Align the makeup pumps to the BWST.
- b. Trip both main feedwater pumps.
- c. Trip Makeup Pump 2.
- d. Close the PORV block valve (RC 11).

QUESTION: 100 (1.00)

In preparation for MU/HPI cooling the operator is directed to trip all but one RCP. What is the basis for tripping RCPs under these condition?

- a. To minimize RCS heat input from RCPs.
- b. To reduce core flow and increase core  $\Delta T$  for improved natural circulation.
- c. To reduce electrical power requirements in the event of a loss of offsite power.
- d. To minimize the potential for damage to the RCPs in the event of a loss of SCM.

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

ANSWER: 001 (1.00)  
b.  
REFERENCE:  
DB-OP-02516 rev 3 pg 12  
  
001A102 ..(KA's)

ANSWER: 006 (1.00)  
d.  
REFERENCE:  
DB-OP-06903 rev 3  
  
015K1.01 ..(KA's)

ANSWER: 011 (1.00)  
a.  
REFERENCE:  
DB-OP-02523 rev 1  
OLC-3899  
  
2.4.4 ..(KA's)

ANSWER: 002 (1.00)  
c.  
REFERENCE:  
DB-OP-02516 rev 3 C-2  
OLC-3666  
  
003K104 ..(KA's)

ANSWER: 007 (1.00)  
c.  
REFERENCE:  
DB-OP-02515, rev 1 C-4  
P. 8, 24  
OLC-3620 M  
  
015A210 ..(KA's)

ANSWER: 012 (1.00)  
a.  
REFERENCE:  
DB-OP-02000.05 p 140  
OPS-0017 M  
  
005K202 ..(KA's)

ANSWER: 003 (1.00)  
a.  
REFERENCE:  
DB-OP-02516 rev 3 C-2  
OLC-3668 M  
  
2.4.11 ..(KA's)

ANSWER: 008 (1.00)  
c.  
REFERENCE:  
DB-OP-06903 rev 3  
C-4

ANSWER: 013 (1.00)  
d.  
REFERENCE:  
DB-OP-02518, rev 0 C-4  
pg 7  
OLC-3739 M  
  
051A202 ..(KA's)

ANSWER: 004 (1.00)  
c.  
REFERENCE:  
DB-OP-02516, rev 3 P.  
24  
OLC-3670 M  
  
005A203 ..(KA's)

~~ANSWER: 009 (1.00)  
d.  
REFERENCE:  
DB-OP-02516, rev 00  
C-3 pg. 7  
OLC-3489 M  
  
024A205 ..(KA's)~~  
*Delete, not correct answer. MFB*

ANSWER: 014 (1.00)  
a.  
REFERENCE:  
DB-OP-02000 rev5 p30  
  
055K302 ..(KA's)

ANSWER: 005 (1.00)  
c.  
REFERENCE:  
USAR Chapter 15  
ORQ-1706 M  
  
011A105 ..(KA's)

ANSWER: 010 (1.00)  
b  
REFERENCE:  
DB-OP-02523 rev 1 C-1  
p 21-22  
  
026K304 ..(KA's)

ANSWER: 015 (1.00)  
c.  
REFERENCE:  
DB-OP-02541 rev 0 Att. 1  
  
057A107 ..(KA's)

ANSWER: 016 (1.00)

d.

REFERENCE:

DB-OP-02511.01

OLC-3498

2.4.4 ..(KA's)

ANSWER: 021 (1.00)

a.

REFERENCE:

DB-OP-02000 rev 5

OLC-4546

074A112 ..(KA's)

ANSWER: 026 (1.00)

d.

REFERENCE:

DB-OP-02513 rev 3

OLC-3559 M

008A219 ..(KA's)

ANSWER: 017 (1.00)

a.

REFERENCE:

DB-OP-02529 rev 2 C-4

OLC-4039

067K304 ..(KA's)

ANSWER: 022 (1.00)

b.

REFERENCE:

DB-OP-02532 rev 2

C-3p25

003K202 ..(KA's)

ANSWER: 027 (1.00)

b.

REFERENCE:

Bases & Deviation

Document for

DB-OP-02000 rev 08

ORQ-1112 M

009K101 ..(KA's)

ANSWER: 018 (1.00)

c.

REFERENCE:

DB-OP-02508 rev 0

002K102 ..(KA's)

ANSWER: 023 (1.00)

d.

REFERENCE:

DB-OP-02535.03 p 6

OLC-3887

076K306 ..(KA's)

ANSWER: 028 (1.00)

a.

REFERENCE:

DB-OP-02522, rev 01, C-4

P. 9

OLC-3876 M

000009K321 ..(KA's)

ANSWER: 019 (1.00)

b.

REFERENCE:

DB-OP-06904 rev 2 p 61

2.2.22 ..(KA's)

ANSWER: 024 (1.00)

a.

REFERENCE:

DB-OP-02000 rev 5 p75

003K201 ..(KA's)

ANSWER: 029 (1.00)

b.

REFERENCE:

DB-OP-02000.05, P. 207

OLC-7015

008K201 ..(KA's)

ANSWER: 020 (1.00)

d.

REFERENCE:

DB-OP-02000.05

OLC-4549 M

074K102 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

DB-OP-06401 rev 2

OLC-7850 M

001K103 ..(KA's)

ANSWER: 030 (1.00)

d

REFERENCE:

Basis and Deviation

Document rev 08 p

290,291

2.4.18 ..(KA's)

ANSWER: 031 (1.00)  
 a.  
 REFERENCE:  
 DB-OP-02527 rev 2  
 Requal Exam Bank (#12)  
 OLC-3967  
  
 025K203 ..(KA's)

ANSWER: 032 (1.00)  
 b.  
 REFERENCE:  
 DB-OP-02505 rev 1,  
 DB-OP-06403 rev 1 C-5  
  
 032K301 ..(KA's)

ANSWER: 033 (1.00)  
 d.  
 REFERENCE:  
 DB-OP-02531.01  
 OLC-4089  
  
 037A216 ..(KA's)

ANSWER: 034 (1.00)  
 c.  
 REFERENCE:  
 DB-OP-02000.05  
 B&DD Rev. 06  
 B&W TBD vol 2, III.C-62  
  
 054K305 ..(KA's)

ANSWER: 035 (1.00)  
 a.  
 REFERENCE:  
 DB-OP-06233.04  
 ORQ-1060 M  
  
 054A102 ..(KA's)

ANSWER: 036 (1.00)  
 b.  
 REFERENCE:  
 DB-OP-02000.05  
 OPS-0136  
  
 004A201 ..(KA's)

ANSWER: 037 (1.00)  
 a.  
 REFERENCE:  
 DB-OP-02538.00  
 OLC-4152 M  
  
 2.4.8 ..(KA's)

ANSWER: 038 (1.00)  
 c.  
 REFERENCE:  
 DB-OP-06412 rev 3  
 DB-OP-06504 rev 2  
 C-1 4180  
  
 061A101 ..(KA's)

ANSWER: 039 (1.00)  
 b.  
 REFERENCE:  
 DB-OP-02528.02  
 OLC-4005  
  
 000065A103 ..(KA's)

ANSWER: 040 (1.00)  
 b.  
 REFERENCE:  
 DB-OP-02528.02  
 OLC-3989  
  
 2.44 ..(KA's)

ANSWER: 041 (1.00)  
 d.  
 REFERENCE:  
 DB-OP-02513 rev 3  
 OLC-3580 M  
  
 028A103 ..(KA's)

ANSWER: 042 (1.00)  
 c.  
 REFERENCE:  
 Tech. Specs., OS 033D  
 rev 10  
 OLC-5221  
  
 036K202 ..(KA's)

ANSWER: 043 (1.00)  
 b.  
 REFERENCE:  
 Tech. Basis Document  
 Rev. 07  
  
 014K101 ..(KA's)

ANSWER: 044 (1.00)  
 d.  
 REFERENCE:  
 OPS-SYS-I501.00, Pg. 26  
  
 001K403 ..(KA's)

ANSWER: 045 (1.00)  
 b.  
 REFERENCE:  
 OPS-SYS-I102, p. 7, 16  
  
 001A203 ..(KA's)

SENIOR REACTOR OPERATOR

*Delete, no correct answer, MFB* Page 59  
~~ANSWER: 056 (1.00)  
a.  
REFERENCE:  
OPS-SYS-1206  
OLC-6170  
059A212 ..(KA's)~~

ANSWER: 046 (1.00)

a.

REFERENCE:

003K304 ..(KA's)

ANSWER: 051 (1.00)

d.

REFERENCE:

ORQ-0216 M  
DB-OP-06902 rev 3

015A103 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

DB-OP-02515 rev 1  
C-4, p. 21

003K602 ..(KA's)

ANSWER: 052 (1.00)

a.

REFERENCE:

OPS-SYS-1306 p 5  
DB-OP-06016, p. 5  
OLC-7173

022A401 ..(KA's)

ANSWER: 057 (1.00)

a

REFERENCE:

DB-OP-06903 rev 3 C-2

061K412 ..(KA's)

ANSWER: 048 (1.00)

c.

REFERENCE:

DB-OP-02504 rev 2 p. 25  
OLC-3390

004000K520 ..(KA's)

ANSWER: 053 (1.00)

a.

REFERENCE:

DB-OP-06016 rev 4 p.6

022A301 ..(KA's)

ANSWER: 058 (1.00)

c

REFERENCE:

DB-OP-02523 rev 0  
C-1, step 4.6.13  
OPS-SYS1213.01

061A101 ..(KA's)

ANSWER: 049 (1.00)

b.

REFERENCE:

DB-OP-06405.02 2.2.1  
ORQ-1570 M

013K201 ..(KA's)

ANSWER: 054 (1.00)

*a. or b. MFB*

REFERENCE:

DB-OP-06221 (2.2.5) R1

056K419 ..(KA's)

ANSWER: 059 (1.00)

a

REFERENCE:

DB-OP-C2537, "Loss of  
D1P and DAP", Rev. 01,  
Page 8, 37  
OLC-GOP-I143, "Loss of  
DC Busses", Rev. 0, E.O.  
- 03K

063K301 ..(KA's)

ANSWER: 050 (1.00)

c

REFERENCE:

DB-OP-02516 (4.2.6) R3;  
Tech Spec 3.1.3

014A204 ..(KA's)

ANSWER: 055 (1.00)

b

REFERENCE:

SD 45, Fig. 2-17;  
M-533-176-1, FW analog

059K107 ..(KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

OPS-SYS -1115, p.19,20

068A302 ..(KA's)

ANSWER: 061 (1.00)  
 c.  
 REFERENCE:  
 DB Lesson Plan  
 OLC-PWR-004.04, pg. 16.  
 Obj. OLC-PWR-004-05K.

071A427 ..(KA's)

ANSWER: 066 (1.00)  
 d.  
 REFERENCE:  
 OS-001A, SH. 4, R. 14  
 CL-1  
 OLC-6486

010000K603 ..(KA's)

ANSWER: 071 (1.00)  
~~c.~~ *a.*  
 REFERENCE:  
 OPS-FHT-1101 p 24  
 OLC-7774 M

034K401 ..(KA's)

ANSWER: 062 (1.00)  
 d.  
 REFERENCE:  
 DB-OP-06412 (4.12.2) R3

072G2.1.30 ..(KA's)

ANSWER: 067 (1.00)  
 c.  
 REFERENCE:  
 DB-PF-06703 Curve 4.3  
 rev 3

011K404 ..(KA's)

ANSWER: 072 (1.00)  
 d.  
 REFERENCE:  
 Ops-SYS-I204 p8  
 DB-OP-06203.02  
 DB-OP-06901.02  
 ORQ-1810

039K501 ..(KA's)

ANSWER: 063 (1.00)  
 c.  
 REFERENCE:  
 OS-001A, SH. 1  
 OLC-6556

002K104 ..(KA's)

ANSWER: 068 (1.00)  
 a.  
 REFERENCE:  
 DB-OP-02000.05, Att.9

011A209 ..(KA's)

ANSWER: 073 (1.00)  
 a.  
 REFERENCE:  
 DB-OP-06201.01  
 ORQ-0105

039A204 ..(KA's)

ANSWER: 064 (1.00)  
 d.  
 REFERENCE:  
 OS-001-A, SH. 1  
 ORQ-0431 M

002A303 ..(KA's)

ANSWER: 069 (1.00)  
 c.  
 REFERENCE:  
 TECH. SPEC.

012K4.02 ..(KA's)

ANSWER: 074 (1.00)  
 b.  
 REFERENCE:  
 DB-OP-06319.02  
 OLC-7575

062K201 ..(KA's)

ANSWER: 065 (1.00)  
 d.  
 REFERENCE:  
 T.S. 3.5.1  
 OLC-6939 M

006A113 ..(KA's)

ANSWER: 070 (1.00)  
 b.  
 REFERENCE:  
 DB-NE-06300, rev 0 p. 4  
 OLC-7754 M

033K303 ..(KA's)

ANSWER: 075 (1.00)  
 c.  
 REFERENCE:

DB-OP-06315.01  
 OS-058, SH. 3, R. 03  
 ORQ-0036

062A305 ..(KA's)

SENIOR REACTOR OPERATOR

*Delete, > 2 correct answers.*

ANSWER: 076 (1.00)

a.

REFERENCE:  
OPS-SYS-I506  
USAR, Chap. 8  
OLC-7493

064A307 ..(KA's)

~~ANSWER: 081 (1.00) MFB~~

~~b.~~

~~REFERENCE:  
DB-OP-06004 rev 3 pg 4  
& 35~~

~~007K301 ..(KA's)~~

ANSWER: 086 (1.00)

c.

REFERENCE:  
DB-OP-00000.03  
OLC-4964

2.1.31 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:  
DB-OP-06412.03  
OLC-7293 M

073000A101 ..(KA's)

ANSWER: 082 (1.00)

a. *or D, MFB*

REFERENCE:  
DB-OP-02523 rev 1 C-1  
OLC-5929

008A301 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:  
DB-OP-00000.03  
OLC-4958 M

2.1.29 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:  
OPS-SYS-I602  
DB-OP-06251.01  
ONL-0370

079K101 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:  
DB-OP-02500.01  
OLC-003

045A106 ..(KA's)

ANSWER: 088 (1.00)

c.

REFERENCE:  
DB-CP-00000.03  
OLC-5019

2.1.8 ..(KA's)

ANSWER: 079 (1.00)

b.

REFERENCE:  
DB-OP-02009 rev 2 C-5

086A102 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:  
DB-OP-00100, rev 4 p.6  
OLC-5077

2.13 ..(KA's)

ANSWER: 089 (1.00)

b.

REFERENCE:  
DB-OP-00015 rev 4  
OLC-5089 M

2.2.13 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:  
OS-004 SH 1  
OLC-7003 M

005K401 ..(KA's)

ANSWER: 085 (1.00)

c.

REFERENCE:  
DB-OP-00000 rev 3 C-3

2.1.1 ..(KA's)

ANSWER: 090 (1.00)

d.

REFERENCE:  
NG-EN-00313 rev 1 C-2  
ORQ-0291

2.2.11 ..(KA's)



ANSWER: 091 (1.00)

b.

REFERENCE:  
T.S. 3.9.10

2.2.26 ..(KA's)

ANSWER: 096 (1.00)

d.

REFERENCE:  
DB-HP-01901

2.3.7 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:  
DB-NE-06101 rev 2

2.2.30 ..(KA's)

ANSWER: 097 (1.00)

a.

REFERENCE:  
Fire Hazard Analysis  
Report rev 16  
OLC-5194

2.4.25 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:  
DB-HP-01201  
OLC-5241

2.3.1 ..(KA's)

ANSWER: 098 (1.00)

c.

REFERENCE:  
RA-EP-02710, 6.4.3

2.4.29 ..(KA's)

ANSWER: 094 (1.00)

d.

REFERENCE:  
DB-HP-01201  
OLC-5245 M

2.3.2 ..(KA's)

ANSWER: 099 (1.00)

d.

REFERENCE:  
DB-OP-02519.03  
OLC-3752

2.4.11 ..(KA's)

ANSWER: 095 (1.00)

c.

REFERENCE:  
DB-OP-03011  
OLC-0170 M

2.3.6 ..(KA's)

ANSWER: 100 (1.00)

a.

REFERENCE:  
Tech. Basis Document,  
Rev. 07  
DB-OP-02000 rev 5  
ORQ-0097

2.4.18 ..(KA's)

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

ANSWER KEY

001 b	021 a	041 d	061 c	<del>MEB 081 b</del> delete, > 2 correct.
002 c	022 b	042 c	062 d	MEB 082 a or d
003 a	023 b	043 b	063 c	083 c
004 c	024 a	044 d	064 d	084 a
005 c	025 a	045 b	065 d	085 c
006 d	026 d	046 a	066 d	086 c
007 c	027 b	047 c	067 c	087 b
008 c	028 a	048 c	068 a	088 c
<del>MEB 009 d</del> delete, none correct	029 b	049 b	069 c	089 b
010 b	030 d	050 c	070 b	090 d
011 a	031 a	051 d	MEB 071 -e-a.	091 b
012 a	032 b	052 a	072 d	092 b
013 d	033 d	053 a	073 a	093 a
014 a	034 c	MEB 054 a or b	074 b	094 d
015 c	035 a	055 b	075 c	095 c
016 d	036 b	<del>MEB 056 a</del> delete, none correct	076 a	096 d
017 a	037 a	057 a	077 c	097 a
018 c	038 c	058 c	078 b	098 c
019 b	039 b	059 a	079 b	099 d
020 d	040 b	060 d	080 d	100 a

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