



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

April 25, 2018

Mr. Mark Bezilla
Site Vice President
FirstEnergy Nuclear Operating Co.
Davis-Besse Nuclear Power Station
5501 N. State Rte. 2, Mail Stop A-DB-3080
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION—NRC INITIAL LICENSE
EXAMINATION REPORT 05000346/2018301**

Dear Mr. Bezilla:

On March 8, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed the initial operator licensing examination process for license applicants employed at your Davis-Besse Nuclear Power Station. The enclosed report documents the results of those examinations. Preliminary observations noted during the examination process were discussed on February 13, 2018, with Mr. D. Huey, Site Performance Improvement Director, and other members of your staff. An exit meeting was conducted by telephone on March 12, 2018, between Mr. J. Cuff, Training Manager, and Mr. J. Seymour, Operator Licensing Examiner, to review the proposed final grading of the written examination for the license applicants. During the telephone conversation, the NRC resolution of the station's post-examination comments, initially received by the NRC on March 5, 2018, were discussed.

The NRC examiners administered an initial license examination operating test during the weeks of February 5 and February 12, 2018. The written examination was administered by the Davis-Besse Nuclear Power Station Training Department personnel, on February 15, 2018. Three Senior Reactor Operator and five Reactor Operator applicants were administered license examinations. The results of the examinations were finalized on March 29, 2018. All eight applicants passed all sections of their respective examinations and three applicants were issued senior operator licenses and five applicants were issued operator licenses.

The administered written examinations and operating tests, as well as documents related to the development and review of the examinations (outlines, proposed examinations, review comments, and resolutions, etc.), will be withheld from public disclosure for 24 months until March 8, 2020. However, because post-examination comments were submitted, and those examination items are discussed in this report, your staff should consider the material publicly available for examination security purposes.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Robert J. Orlikowski, Chief
Operations Branch
Division of Reactor Safety

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

Enclosures:

1. OL Examination Report 05000346/2018301
2. Post-Examination Comments, Evaluation,
and Resolutions
3. Simulation Facility Fidelity Report

cc: Distribution via LISTSERV®
J. Cuff, Training Manager, Davis-Besse
Nuclear Power Station

Letter to Mark Bezilla from Robert Orlikowski dated April 25, 2018

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION—NRC INITIAL LICENSE
EXAMINATION REPORT 05000346/2018301

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346

License No: NPF-3

Report No: 05000346/2018301

Licensee: FirstEnergy Nuclear Operating Co.

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: February 5, 2018, through March 8, 2018

Inspectors: R. Baker, Senior Operations Engineer, Chief Examiner
B. Tindell, Senior Reactor Engineer, Examiner
J. Seymour, Operations Engineer, Examiner

Approved by: R. Orlikowski, Chief
Operations Branch
Division of Reactor Safety

SUMMARY

Examination Report 05000346/2018301; 02/05/2018–03/08/2018; FirstEnergy Nuclear Operating Company; Davis-Besse Nuclear Power Station; Initial License Examination Report.

The announced initial operator licensing examination was conducted by headquarters and regional Nuclear Regulatory Commission examiners in accordance with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11.

Examination Summary

Eight of eight applicants passed all sections of their respective examinations. Three applicants were issued senior operator licenses and five applicants were issued operator licenses. (Section 40A5.1).

REPORT DETAILS

4OA5 Other Activities

.1 Initial Licensing Examinations

a. Examination Scope

The U.S. Nuclear Regulatory Commission (NRC) examiners and members of the facility licensee's staff used the guidance prescribed in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, to develop, validate, administer, and grade the written examination and operating test. NRC examiners prepared the written examination outline and members of the facility licensee's staff prepared the operating test outlines. Members of the facility licensee's staff developed the written examination and operating test. The NRC examiners validated the proposed examination, with the assistance of members of the facility licensee's staff, during the week of January 8, 2018. During the onsite validation week, the examiners audited two of the license applications for accuracy. The NRC examiners, with the assistance of members of the facility licensee's staff, administered the operating test, consisting of job performance measures and dynamic simulator scenarios, during the period of February 5 through February 12, 2018. The facility licensee administered the written examination on February 15, 2018.

b. Findings

(1) Written Examination

The NRC examiners determined that the written examination, as proposed by the licensee, was within the range of acceptability expected for a proposed examination. Less than 20 percent of the proposed examination questions were determined to be unsatisfactory and required modification or replacement. All changes made to the proposed written examination were made in accordance with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and were documented on Form ES-401-9, "Written Examination Review Worksheet." The written examination outlines and worksheets, the proposed written examination and worksheets, as well as the final Form ES-401-9, and the final as-administered examination and answer key, will be publicly available electronically in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Document Access and Management System (ADAMS) on March 8, 2020. (ADAMS Accession Numbers ML17068A445, ML17068A444, ML17068A442, and ML17068A443, respectively.)

On March 5, 2018, the licensee submitted documentation noting that there were no post-examination facility licensee comments, and 8 post-examination applicant comments for consideration by the NRC examiners when grading the written examination. The post-examination comments and the NRC resolution for the post-examination comments are documented in Enclosure 2 to this report.

The NRC examiners graded the written examination on March 16, 2018, and conducted a review of each missed question to determine the accuracy and validity of the examination questions.

(2) Operating Test

The NRC examiners determined that the operating test, as originally proposed by the licensee, was within the range of acceptability expected for a proposed examination. All changes made to the operating test were made in accordance with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and were documented on Form ES-301-7, "Operating Test Review Worksheet." The operating test outlines and worksheets, the proposed operating test and worksheets, as well as the final Form ES-301-7, and the final as-administered operating test, will be available electronically in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS, on March 8, 2020. (ADAMS Accession Numbers ML17068A445, ML17068A444, ML17068A442, and ML17068A443, respectively.)

On March 5, 2018, the licensee submitted documentation noting that there were no post-examination facility licensee comments, and no post-examination applicant comments for consideration by the NRC examiners when grading the operating test.

The NRC examiners completed operating test grading on March 29, 2018.

(3) Examination Results

Three applicants at the Senior Reactor Operator level and five applicants at the Reactor Operator level were administered written examinations and operating tests. All applicants passed all portions of their examinations and were issued their respective operating licenses on March 29, 2018.

.2 Examination Security

a. Scope

The NRC examiners reviewed and observed the licensee's implementation of examination security requirements during the examination validation and administration to assure compliance with Title 10 of the *Code of Federal Regulations*, Part 55.49, "Integrity of Examinations and Tests." The examiners used the guidelines provided in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," to determine acceptability of the licensee's examination security activities.

b. Findings

No findings were identified.

40A6 Management Meetings

.1 Debrief

The chief examiner presented the examination team's preliminary observations and findings on February 13, 2018, to Mr. D. Huey, Site Performance Improvement Director, and other members of the Davis-Besse Operations and Training Department staff.

.2 Exit Meeting

A telephone exit meeting was conducted on March 12, 2018, by Mr. J. Seymour, Operator Licensing Examiner, with Mr. J. Cuff, Site Training Manager. The NRC's final disposition of the station's post-examination comments were disclosed and discussed with Mr. Cuff during the telephone discussion. The examiner asked the licensee whether any of the material used to develop or administer the examination should be considered proprietary. No proprietary or sensitive information was identified during the examination or debrief/exit meetings.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Bezilla, Site Vice President
G. Laird, Manager, Site Operations
D. Huey, Director, Site Performance Improvement
J. Cuff, Manager, Site Training
M. Brasile, Superintendent, Operations Training
J. Phillippe, Superintendent, Operations
J. Sturdavant, Regulatory Compliance
T. Gaydosik, Lead, Fleet Examination Team

U.S. Nuclear Regulatory Commission

D. Mills, Senior Resident Inspector
J. Wojewoda, Resident Inspector
R. Baker, Chief Examiner

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened, Closed, and Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
NRC	U.S. Nuclear Regulatory Commission

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #15

Current Conditions:

- The Reactor has tripped due to a spurious Turbine Trip.
- DB-OP-02000, RPS, SFAS, SFRCS TRIP, OR SG TUBE RUPTURE, Section 4 Supplemental Actions are in progress.

The following occurs:

- NNI X AC is determined to be lost.
- The remaining NNI instrument buses are energized.

With these plant conditions which of the following actions will the Reactor Operator be directed to perform per DB-OP-02000, RPS, SFAS, SFRCS TRIP, OR SG TUBE RUPTURE, Section 4 Supplemental Actions and why?

- A. Initiate and Isolate SFRCS to prevent potential overcooling.
- B. Operate PZR Heaters and Spray manually to maintain RCS pressure.
- C. Lock both Makeup Pump Suctions on the BWST due to loss of Makeup Tank Level indications.
- D. Monitor and control letdown flow due to MU6 failure to 50% open.

Answer: A

References: DB-OP-02000, DB-OP-02532, DBOP BASES

Applicant Comment: Did not believe we would take the time to select the alternate channel; selected choice C based on this consideration.

Facility Position on Applicant Comment: Choice A is the Response Not Obtained action of DB-OP-02000 supplementals. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine which of the procedural actions listed would be required per the Supplemental Actions Section of the EOP. The only action applicable to the conditions given in the stem (Loss of NNI X AC power) is choice A. Therefore, the U.S. Nuclear Regulatory Commission (NRC) concludes that choice A, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #35

Initial plant conditions:

- Reactor power = 100%
- A Main Feedwater Pump trips

Current plant conditions:

- Plant runback complete
- RCS pressure = 2145 psig (This is the lowest that it has been during the transient)
- PZR liquid temperature = 647°F

Based on CURRENT plant conditions, complete the following statements.

1. Pressurizer Non-Essential Bank #3 Heaters are ____ (1) ____.
2. The condition of the Pressurizer fluid is _____ (2) ____.
 - A. (1) ON
(2) saturated
 - B. (1) ON
(2) subcooled
 - C. (1) OFF
(2) saturated
 - D. (1) OFF
(2) subcooled

Answer: C

References: Steam Tables, SYS104

Applicant Comment: The word “fluid” was confusing; the liquid in the pressurizer was considered the fluid which is typically subcooled.

Facility Position on Applicant Comment: Will evaluate the question and remove the word ‘fluid’ as an enhancement. No change is required to the exam.

NRC Resolution: The question asks the applicant to determine, based on plant conditions following the runback, whether the pressurizer non-essential bank #3 heaters are energized or off and is the pressurizer “fluid” saturated or subcooled? Since bank #3 heaters will not energize prior to pressure lowering to < 2120 psig, and given that the lowest RCS pressure was 2145 psig, which has a saturation temperature of ~ 646.7 °F, the conditions within the pressurizer are “saturated.” Therefore, the NRC concludes that choice C, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #40

With the reactor at 100% power, MS209, MS210 Main Steam Line Non-Return Valves (NRVs) switches will be in ____ (1) ____ and are designed to prevent both SGs from blowing down through a fault upstream of the NRV in the event that ____ (2) ____.

- A. (1) OPEN
(2) the faulted SG MSIV fails to automatically close
- B. (1) OPEN
(2) the Main Turbine fails to automatically trip
- C. (1) AUTO
(2) the faulted SG MSIV fails to automatically close
- D. (1) AUTO
(2) the Main Turbine fails to automatically trip

Answer: D

References: DB-OP-06902, SYS202

Applicant Comment: Did not recall the piping arrangement for the valves.

Facility Position on Applicant Comment: A simple drawing helps to understand the flowpath. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine the required position for the control switches associated with the Main Steam Line Non-Return Valves, based on the given plant conditions, and recognize which component failure the Main Steam Line Non-Return Valves are designed to mitigate. Although a drawing of the piping and valve arrangement may help understand the rationale for the mitigation, the drawing is not required to answer the question. Therefore, the NRC concludes that choice D, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #55

The plant is in a refueling outage with Fuel Handling in progress. As a result of increased Source Range counts, the containment evacuation alarm ____ (1) ____.

Per RA-EP-02864, Containment Evacuation, all personnel in containment are directed to evacuate containment and report to ____ (2) ____.

- A. (1) will automatically actuate
(2) radiation protection
- B. (1) will automatically actuate
(2) their supervisor
- C. (1) must be manually actuated
(2) radiation protection
- D. (1) must be manually actuated
(2) their supervisor

Answer: D

References: RA-EP-02864

Applicant Comment: Typically, when there is a radiation issue, individuals are to report to Radiation Protection. Suggest adding "Supervisor" to the Radiation Protection choices.

Facility Position on Applicant Comment: Will evaluate the question as an enhancement for future use. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine if the containment evacuation alarm will automatically actuate on rising source range counts with fuel handling in progress during a refueling outage, and then what is procedurally required upon activation of the containment evacuation alarm under the given conditions. The cited procedure requires the Control Room personnel to make a general announcement directing individuals to; "Evacuate Containment and Report to Your Supervisor." Modifying the choices A and C to read "radiation protection supervisor," would potentially make two distractors implausible and the question unsatisfactory. Therefore, the NRC concludes that choice D, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #64

In addition to 9-4-A, Vacuum System Rad Hi, which of the following Area Rad Monitors would alarm during a SGTL? ____ (1) ____.

The detector displayed below is currently reading approximately ____ (2) ____.



- A. (1) RIM-8435, CNDS Polish Demin 1&2
(2) 50 mR/h
- B. (1) RIM-8435, CNDS Polish Demin 1&2
(2) 30 mR/h
- C. (1) RIM-8425, Equipment Hatch
(2) 50 mR/h
- D. (1) RIM-8425, Equipment Hatch
(2) 30 mR/h

Answer: B

References: SYS508

Applicant Comment: The picture scale is difficult to read as to the units.

Facility Position on Applicant Comment: Will evaluate the question and the picture for future use. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine which of the given Area Radiation Monitors would be alarming during a steam generator tube leak, and the reading indicated on the pictured detector. The instrument screen numbers are distinguishable, and no clarifying questions were asked during administration of the examination. Therefore, the NRC concludes that choice B, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #74

The plant has just experienced a major transient and you, as the Control Room Operator, are performing an Emergency Operating Procedure (EOP).

You reach an **IF AT ANY TIME** step in the EOP Section.

Which of the following describes the correct implementation of this step?

- A. This step remains applicable throughout the remainder of all EOP Sections. If you GO TO another EOP Section this step still applies even if it is not listed on the Right Hand Page of the new EOP Section.
- B. This step remains applicable throughout the remainder of the EOP Section that it is contained in. However, once the action of the step is unsuccessfully attempted, the step no longer applies.
- C. This step remains applicable throughout the remainder of the EOP Section that it is contained in as listed on the Right Hand Page. If you GO TO another EOP Section, the step is no longer applicable.
- D. This step remains applicable throughout the remainder of the EOP Section that it is contained in as listed on the Right Hand Page. If you REFER TO another procedure, the step is no longer applicable.

Answer: C

References: DB-OP-01003 Rev 15 Attachment 2 Item H

Applicant Comment: I was confused by the word “an” in the stem statement; at Davis-Besse there is only one EOP; assumed that the question was related to Abnormal Operating Procedures as well. Suggest changing the stem to state DB-OP-02000 versus an EOP.

Facility Position on Applicant Comment: Will evaluate the question and modify as an enhancement for future use. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine how to implement a conditional step if encountered in an EOP section while performing an EOP. The applicants are cautioned not to make assumptions about conditions stated in the question stem, prior to starting the examination, and no clarifying questions were asked during administration of the examination. Therefore, the NRC concludes that choice C, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #93

Plant conditions:

- The plant is in Mode 5, an RCS fill and vent is in progress.
- The CTMT Vent Header is aligned to the Waste Gas Surge Tank.
- Both Waste Gas System Oxygen Monitors have been declared Nonfunctional.

Based on the above plant conditions, complete the following statements.

1. Oxygen in the waste gas system is monitored to ensure that oxygen is maintained ____ (1) ____ to prevent an explosive mixture from forming.
2. With both oxygen Monitors declared nonfunctional, the addition to the Waste Gas Surge Tank ____ (2) ____.
 - A. (1) \leq 2% by volume when the hydrogen concentration exceeds 4% by volume
(2) may continue if a grab sample is obtained
 - B. (1) \leq 2% by volume when the hydrogen concentration exceeds 4% by volume
(2) must be stopped
 - C. (1) \leq 4% by volume when the hydrogen concentration exceeds 2% by volume
(2) may continue if a grab sample is obtained
 - D. (1) \leq 4% by volume when the hydrogen concentration exceeds 2% by volume
(2) must be stopped

Answer: A

References: TRM 8.3.6, TRM 8.7.5

Applicant Comment: I assumed that the addition to the tanks must first be stopped then could continue after obtaining grab samples.

Facility Position on Applicant Comment: Will evaluate the wording of part 2 as an enhancement prior to future use. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to recall the maximum limit for oxygen concentration when hydrogen concentration is above acceptable limits, and to determine the required actions if the oxygen limit is indeterminate. In this instance, the applicant's comment simply explains why an incorrect answer was selected and does not address the adequacy of the question. The NRC concludes that choice A, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

POST-EXAMINATION COMMENT, EVALUATION, AND RESOLUTION

Question #96

Per NOBP-OP-0007, Conduct of Infrequently Performed Tests or Evolutions (IPTE), which of the following individuals, by position, is responsible for ensuring the test is terminated if termination criterion is met?

- A. Shift Manager
- B. Unit Supervisor
- C. Operations Manager
- D. Lead Test Performer

Answer: A

References: NOBP-OP-0007

Applicant Comment: Question is correct per procedure, however, typically anyone involved with the Infrequently Performed Test or Evolution can stop the test. The lead Test Performer would be closely involved with the test. Possibly add that an Operations related IPTE is in progress.

Facility Position on Applicant Comment: Will evaluate the wording of the question prior to future use. No change is required to the exam.

NRC Evaluation/Resolution: The question asks the applicant to determine which of the listed individuals, per the referenced procedure, has the responsibility to ensure that the test or evolution is terminated if termination criteria are met. Although the applicant is correct in stating that anyone involved with the test or evolution may stop the test if appropriate, the procedure specifically assigns the Shift Manager the action to ensure that tests and evolutions are terminated whenever termination criteria are reached or exceeded. Therefore, the NRC concludes that choice A, as annotated on the answer key, is the only correct answer, and the question is considered acceptable as administered.

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Davis-Besse Nuclear Power Station

Facility Docket No: 50-346

Operating Tests Administered: February 5, 2018, through February 12, 2018

The following documents observations made by the U.S. Nuclear Regulatory Commission examination team during the initial operator license examination. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with Title 10 of the *Code of Federal Regulations*, Part 55.45(b). These observations do not affect U.S. Nuclear Regulatory Commission 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
SWO 18-0005	On the Rod Control Panel, the IN LIMIT BYPASS switch is sticking in the depressed position intermittently.