



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

June 30, 2022

Mr. Terry Brown  
Site Vice President  
Energy Harbor Nuclear Corp.  
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 – PHASE III 71003 LICENSE  
RENEWAL REPORT 05000346/2022012

Dear Mr. Brown:

On June 13, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Davis-Besse Nuclear Power Station and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

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,

A handwritten signature in black ink, appearing to read "N. Feliz-Adorno".

Signed by Feliz-Adorno, Nestor  
on 06/30/22

Néstor J. Feliz-Adorno, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket No. 05000346  
License No. NPF-3

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV

Letter to Terry Brown from Néstor J. Feliz-Adorno dated June 30, 2022.

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION – PHASE III 71003 LICENSE  
RENEWAL REPORT 05000346/2022012

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000346

License Number: NPF-3

Report Number: 05000346/2022012

Enterprise Identifier: I-2022-012-0016

Licensee: Energy Harbor Nuclear Corporation

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Inspection Dates: June 06, 2022 to June 10, 2022

Inspectors: J. Bozga, Senior Reactor Inspector  
E. Fernandez, Reactor Inspector

Approved By: Néstor J. Feliz-Adorno, Chief  
Engineering Branch 1  
Division of Reactor Safety

Enclosure

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Phase III 71003 License Renewal at Davis-Besse Nuclear Power Station, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### **List of Findings and Violations**

No findings or violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

### 71003 - Post-Approval Site Inspection for License Renewal

#### Post-Approval Site Inspection for License Renewal (1 Sample)

(1) Post-Approval Site Inspection for License Renewal (Phase III) – Inspection Procedure 71003

a. Inspection Scope

Review of Commitment Items that Remained Open During the Phase II Inspection

As documented in the U.S. Nuclear Regulatory Commission (NRC) Post-Approval Site Inspection for License Renewal (Phase II) inspection report (IR) 05000346/2017009 (ML17083A802), Commitment Items 12, 20, 21, 37, 42, 51, and 53 remained open for various reasons. The inspectors reviewed closure documents including correspondence letters with the Office of Nuclear Reactor Regulation (NRR), 50.59 regulatory evaluations, procedures, corrective action documents, completed surveillance records, work orders, and conducted interviews to verify the licensee completed the necessary actions for the closure of these commitments.

1. Masonry Wall Program, Commitment Item 12:

The Masonry Wall Inspection Program is an existing program that, with enhancements, is comparable to the program described in NUREG-1801, Section XI.S5, Masonry Wall Program. The program is implemented as part of the Structural Monitoring Program (SMP) and consists of inspection activities to detect age-related degradation for masonry walls within the scope of license renewal.

During the Phase II inspection, inspectors noted some of the masonry wall inspections and periodic maintenance (PM) tasks were not completed as described in Commitment Item 12. During this Phase III inspection, the inspectors verified that the licensee has since completed the applicable masonry wall inspections and PM tasks. The inspectors did not identify any concern with the licensee's implementation of Commitment Item 12.

2. Structures Monitoring Program, Commitment Item 20:

The SMP is an existing program that, with enhancements, is comparable to the program described in NUREG-1801, Section XI.S6, Structures Monitoring. The program consists of periodic walkdowns of plant structures to determine any adverse aging effects on the structures or structural components within the scope of the license renewal.

During the Phase II inspection, inspectors noted some of the structures monitoring program inspections and PM tasks were not completed as described in Commitment Item 20. During this Phase III inspection, the inspectors verified that the licensee has since completed the applicable structures monitoring program inspections and PM tasks. The inspectors did not identify any concern with the licensee's implementation of Commitment Item 20.

3. Water Control Structures Inspection Program, Commitment Item 21:

The Water Control Structures Inspection Program is an existing program comparable, with exceptions and enhancements, to the program described in NUREG-1801, Section XI.S7, "RG [Regulatory Guide]1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants." The program is implemented as part of the SMP and monitors age-related degradation of the intake structure, fore bay, service water discharge structure, and structural components within the structures.

During the Phase II inspection, inspectors noted some of the water control structures inspection program inspections and PM tasks were not completed as described in Commitment Item 21. During this Phase III inspection, the inspectors verified that the licensee has since completed the applicable water structures inspection program inspections and PM tasks. The inspectors did not identify any concern with the licensee's implementation of Commitment Item 21.

4. Core Bores for Impact of Spent Fuel Pool Leakage, Commitment Item 37:

Commitment Item 37, associated with the SMP, involved performing and evaluating core bores of Emergency Core Cooling System Pump Room 1 wall and Room 109 ceiling. The commitment also involved a visual examination of the reinforcing core bore steel and a petrographic examination of the core bore concrete. The first set of core bores was performed in 2014 and the second set of core bores was performed in 2021.

The second set of core bores had not been performed by the time the Phase II inspection was completed. The licensee has since performed the visual and petrographic examination of the second set of core bores. During this Phase III inspection, the inspectors reviewed the information and noted that the licensee did not identify degradation of the concrete or reinforcing steel that affected structural integrity. The inspectors did not identify any concern with the licensee's implementation of Commitment Item 37.

5. Fatigue Monitoring Program, Commitment Item 42:

The Fatigue Monitoring Program manages fatigue of primary and secondary components, including the reactor vessel, reactor internals, pressurizer, and steam generators by tracking thermal cycles as required by Technical Specifications 5.5.5, "Component Cyclic or Transient Limit." The licensee committed to enhance the Fatigue Monitoring Program by evaluating additional plant-specific component locations in the reactor coolant pressure boundary that may be more limiting than those considered in NUREG/CR-6260. This evaluation included identification of the most limiting fatigue location exposed to reactor coolant for each material type. It also intended to evaluate nickel-based alloy items using NUREG/CR-6909 and the effects of the reactor coolant environment on fatigue usage for each bounding material/location.

During the Phase II inspection, the inspectors noted the licensee had submitted to NRR an evaluation to meet Commitment Item 42 prior to the period of extended operation. However, the NRR review was still ongoing at the time of the Phase II inspection. On August 8, 2017, in letter from NRR to FirstEnergy Nuclear Operating Company (FENOC) (ML17219A018), the NRC staff stated it completed its review and did not identify any issues. The NRC staff determined the actions required by Commitment Item 42 have been completed. The inspectors did not identify any concern with the licensee's implementation of Commitment Item 42.

6. Service Level III Coatings and Linings Monitoring Program, Commitment Item 51:

The Service Level III Coatings and Linings Monitoring Program is a new plant-specific Condition Monitoring Program. It consists of periodic visual inspections of all Service Level III coatings and linings on the internal surfaces of piping, piping components, and tanks in mechanical fluid systems that are within the scope of license renewal.

During the Phase II inspection, the inspectors identified the licensee had improperly excluded a population of in-scope valves from inspection. Since then, the licensee completed additional inspections of in-scope valves except for two service water valves. The licensee performed a 50.59 regulatory evaluation to address the baseline inspection of these service water valves which were not completed prior to the period of extended operation. The inspectors, in consultation with NRR, reviewed the 50.59 regulatory evaluation and did not identify any concerns with implementing the change without prior NRC approval.

The inspectors did not identify any concern with the licensee's implementation of Commitment Item 51.

7. Pressurized Water Reactor Vessel Internals Program, Commitment Item 53:

The pressurized water reactor (PWR) Reactor Vessel Internals (RVIs) Program manages the effects of age-related degradation mechanisms that are

applicable in general to the PWR RVI components at Davis-Besse, a Babcock and Wilcox (B & W) designed plant. These aging effects include: (a) various forms of cracking, including stress corrosion cracking (SCC), which also encompasses primary water SCC, irradiation-assisted SCC or cracking due to fatigue/cyclical loading; (b) loss of material induced by wear; (c) loss of fracture toughness due to either thermal aging or neutron irradiation embrittlement; and (d) loss of preload due to thermal and irradiation-enhanced stress relaxation or creep.

During the Phase II inspection, the inspectors noted the licensee needed to submit a plant-specific analysis of applicable RVI component items to the NRC for review and approval. The analysis was to be submitted 1 year prior to the inspection of Materials Reliability Program MRP-227-A, "Pressurized Water Reactor Internals Inspection and Evaluation Guidelines," of the applicable component items. The licensee submitted the analysis to the NRC for review and approval after the period of extended operation. On December 9, 2021, in letter from NRR to Energy Harbor Nuclear Corporation (ML21322A289), the NRC staff completed its review and concluded that the analysis was approved and Commitment Item 53 was fulfilled.

During the Phase III inspection, the inspectors did not identify any concern with the licensee's implementation of Commitment Item 53.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

On June 13, 2022, the inspectors presented the Phase III 71003 License Renewal results to Terry Brown, Site Vice President and other members of the licensee staff.



## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71003	Calculations	32-9140671-000	Environmentally Assisted Fatigue Cumulative Usage Factor for the Reactor Vessel IMS Nozzles	04/13/2009
	Corrective Action Documents	2017-01485	NRC LR PH2: Implementation of Commitment 51 - Service Level III Coatings and Linings Monitoring Program	02/09/2017
		2022-01281	2022 License Renew Phase III-IV Inspection Self Assessment: Structures Monitoring Tracking Updates Needed	02/18/2022
		2022-01420	Incomplete Service Level 3 Coating Inspections - 2022 LR Phase II Open Items	02/23/2022
		2022-02445	1R22 - Baffle to Former Bolt (ID 1258) - Recordable Indication	04/16/2022
		ATA-2021-15032	Self Assessment for Post-Approval Site Inspection for License Renewal (Phase 3 & 4)	10/20/2021
	Engineering Evaluations	L-17-158	Commitment 42 – Regarding the Limiting Components for Nickel-Base Alloys and Low Alloy Steels for Environmentally Assisted Fatigue	05/12/2017
		32-9119659-001	Final Reports DB-1 Hot Leg Surge Nozzle and Pressurizer Surge Nozzle EAF Analysis for License Renewal	08/30/2013
		ANP-3438NP	ANP-3438NPMRP-227-A Applicant Item 7 Analysis for Davis Besse Power Station Unit No. 1, Technical Report	1
		L-17-070	Commitment 42 - Regarding Component Locations that May Be More Limiting and Replacements ( or Non-Replacement) of the Elbows for HPI Nozzles	02/22/2017
	Miscellaneous	50.59 Screening No. 18-00014	USAR Section 18.1.44	01/11/2018
		50.59 Screening No. 20-01647	License Renewal Commitment Due Date Extension	12/11/2020
		50.59 Screening No. 22-00690	Service Level III Coating Baseline Inspection	06/01/2022
		Letter from Brian D. Boles (FENOC) to U.S.	Reply to Request for Additional Information Related to License Renewal Commitment No. 42	05/12/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Nuclear Regulatory Commission		
		Letter from Brian D. Boles (FENOC) to U.S. Nuclear Regulatory Commission	Reply to Request for Additional Information Related to License Renewal Commitment No. 42	02/22/2017
		Letter from Terry J. Brown (Site Vice President, Davis-Besse Nuclear) to U.S. Nuclear Regulatory Commission	Submittal of MRP-227-A Applicant/Licensee Action Item 7 Analysis for Davis-Besse Nuclear Power Station Unit No. 1	03/10/2021
		Report No. 000110	Petrographic Examination of Concrete Cores from Davis-Besse Nuclear Power Plant, Oak Harbor, Ohio	03/26/2021
	Procedures	EN-DP-00355	Determination of Allowable Operating Transient Cycles	10
		EN-DP-01511	Structures Monitoring	13
		NOP-CC-5004	Pressurized Water Reactor Vessel Internals Program	6