energy harbor

Davis-Besse Nuclear Power Station
5501 N. State Route 2
Oak Harbor, Ohio 43449

Terry J. Brown
Site Vice President, Davis-Besse Nuclear

419-321-7676

February 20, 2023

L-23-047

10 CFR 50.73

ATTN: Document Control Desk
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject:
Davis-Besse Nuclear Power Station, Unit 1
Docket Number 50-346, License Number NPF-3
Licensee Event Report 2022-002-00

Enclosed is Licensee Event Report (LER) 2022-002-00, "*Strong Winds Result in Ultimate Heat Sink Low Water Level.*" This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B).

There are no regulatory commitments contained in this letter or its enclosure. The actions described represent intended or planned actions and are described for information only. If there are any questions or if additional information is required, please contact Mr. Robert W. Oesterle, Manager, Site Regulatory Compliance and Emergency Response, at (419) 321-7462.

Sincerely,

Terry J. Brown

GMW

Enclosure: LER 2022-002-00

cc: NRC Region III Administrator
NRC Resident Inspector
NRR Project Manager
Utility Radiological Safety Board

NRC FORM 366 (01-10-2023) — U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/

1. Facility Name		2. Docket Number	3. Page
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4. Title:
Strong Winds Result in Ultimate Heat Sink Low Water Level

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved		
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	☐ 050	Docket Number
12	23	2022	2022	- 002 -	00	02	20	2023	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
1	100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

☐ **OTHER** (Specify here, in abstract, or in NRC Form 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Gerald M. Wolf, Supervisor – Regulatory Compliance	(419) 321-8001

13. Complete One Line for Each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☒ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On December 23, 2022, a low-pressure system caused sustained strong eastward winds over Lake Erie, resulting in record low water levels in the lake's Western Basin. This caused the Davis-Besse Nuclear Power Station Intake Forebay levels to lower below the Technical Specification (TS) 3.7.9 Limiting Condition for Operation (LCO) requirements for the Ultimate Heat Sink (UHS). The UHS was declared inoperable at 1412 hours and a plant shutdown initiated. The plant shutdown was terminated at 1642 hours at approximately 87 percent power upon receipt of verbal enforcement discretion from the Nuclear Regulatory Commission. Intake Forebay levels slowly recovered at approximately the same time, returning above the limits within the six hours allowed by TS LCO 3.7.9. However, due to uncertainty surrounding the meteorological conditions that could affect Lake Erie levels, TS LCO 3.7.9 remained as not met as a conservative action, and the actions agreed to for the Notice of Enforcement Discretion remained in effect until December 24, 2022, at 1158 hours.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) as operation of the plant in a condition prohibited by the Technical Specifications.

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NARRATIVE

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

System Description:

The Davis-Besse Nuclear Power Station (DBNPS) Ultimate Heat Sink [BS] is the source of cooling water for the Service Water System [BI] to enable it to remove process and operating heat from safety-related equipment during a Design Basis Accident. The Service Water System also provides for various equipment cooling during normal operation and normal shutdown conditions. At the DBNPS the Ultimate Heat Sink is Lake Erie. The station intake of water from the lake is via a submerged intake crib located approximately 3100 feet offshore. Water is conveyed from the intake crib to the intake canal by a 96-inch diameter intake pipe (conduit) with an earthen dike separating the intake canal and Lake Erie. The intake canal has an open forebay area ahead of the intake structure that houses the Service Water Pumps [BI-P] as well as other non-safety related pumps; this forebay area serves as a reservoir for an ensured source of water in case of an extreme lowering of the lake due to meteorological conditions or collapse of the intake canal or submerged pipes. The water stored in the Intake Forebay provides sufficient surface to continue cooling the station by evaporation for at least 30 days.

Technical Specifications:

DBNPS Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.9, "Ultimate Heat Sink (UHS)" requires the Ultimate Heat Sink be Operable while the plant is operating in Modes 1, 2, 3, and 4. With the Ultimate Heat Sink inoperable, TS LCO 3.7.9 Action A requires the plant be placed in Mode 3 within 6 hours and Mode 5 within 36 hours. Surveillance Requirement (SR) 3.7.9.1 requires the water level of the Ultimate Heat Sink to be verified at greater than equal to 562 feet International Great Lakes Datum (IGLD) in accordance with the Surveillance Frequency Control Program.

DESCRIPTION OF EVENT:

On December 22, 2022, with the DBNPS operating in Mode 1 and approximately 100 percent power, a low-pressure system resulted in sustained strong eastward winds over Lake Erie. These strong winds transferred the water from the Western Basin of Lake Erie to the eastern end in a phenomenon known as a seiche. The DBNPS Intake Forebay level, as measured on the plant computer, began lowering from approximately 570 feet IGLD as observed on December 22 at 2253 hours. Levels continued to lower throughout the day on December 23, and at 1412 hours reached an indicated level of 562.6 feet IGLD. The Ultimate Heat Sink was declared inoperable in accordance with site procedures at this level, and TS LCO 3.7.9 Action A entered. At 1513 hours a plant shutdown was initiated from 100 percent power to comply with the requirements of LCO 3.7.9 actions. At 1640 hours the NRC verbally granted enforcement discretion from the shutdown requirements of LCO 3.7.9 for up to 48 hours, and at 1642 hours the unit shutdown was terminated at approximately 87 percent power. The unit was returned to approximately 100 percent power by 2050 hours on December 23, 2022.

The lowest observed Intake Forebay level was 561.9 feet IGLD on December 23 at 1626 hours before level began to gradually recover. At 1843 hours, Intake Forebay level indicated 562.6 feet on a rising trend, but due to uncertainty surrounding the meteorological conditions that could affect Lake Erie levels, TS LCO 3.7.9 remained as not met as a conservative action, and the actions agreed to for the Notice of Enforcement Discretion remained in effect. On December 24, 2022, at 1158 hours Intake Forebay level had risen to 566.1 feet, and the Ultimate Heat Sink was declared Operable and TS LCO 3.7.9 Condition A exited.

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CAUSE OF EVENT:

The low Intake Forebay level was caused by record low levels in the Western Basin of Lake Erie, which were caused by the sustained strong eastward winds from the winter storm. There were no measures the plant staff could take to arrest the reducing level before the Ultimate Heat Sink level fell below the TS LCO 3.7.9 Condition A required level of 562 feet IGLD.

ANALYSIS OF EVENT:

Per the design of the Intake Canal, lake surges cannot reduce the Intake Forebay level below 560 feet IGLD, which is above the net positive suction head requirements of 554 feet IGLD for the Service Water Pumps. Therefore, the Service Water Pumps remained available throughout the event. As a condition of the Enforcement Discretion, a plant shutdown would have been performed per TS 3.7.9 Condition A.1 Required Actions to protect the Service Water Pumps if the Intake Forebay level dropped below 558 feet. As a compensatory action, temporary diesel-driven pumps with direct suction from Lake Erie were placed in service in accordance with site procedures with discharge into the Intake Canal to mitigate any evaporative losses. Additionally, FLEX pumps were available if necessary to pump water into the Ultimate Heat Sink from other onsite sources, ensuring the Ultimate Heat Sink remained available. Since all affected equipment remained available, the plant risk associated with this event was of very low safety significance.

Reportability Discussion:

The initiation of any nuclear plant shutdown required by the plant's Technical Specifications is reportable within four hours of the event in accordance with 10 CFR 50.72(b)(2)(i). Because a shutdown was commenced on December 23, 2022, at 1513 hours per TS LCO 3.7.9, this event was reported to the NRC Operations Center at 1702 hours as Event Number 56284. Since the shutdown was terminated at 1642 hours at 87 percent power upon receiving verbal enforcement discretion from the NRC, the plant did not complete the shutdown by entering Mode 3, so this event is not reportable per 10 CFR 50.73(a)(2)(i)(A).

This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition that was prohibited by the Technical Specifications. While Intake Forebay level rose above the TS SR 3.7.9.1 minimum level of 562 feet IGLD within the six-hour Completion Time of LCO 3.7.9 Condition A, the operating crew elected to consider LCO 3.7.9 as remaining not met as a conservative action due to uncertainty surrounding meteorological conditions that could affect Lake Erie levels. The Ultimate Heat Sink was declared Operable per LCO 3.7.9 approximately 22 hours after the initial inoperability declaration. The Intake Forebay Level remained above the net positive suction head requirements for the Service Water Pumps, so no loss of safety function occurred.

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CORRECTIVE ACTIONS:

Completed Actions:

On December 23, 2023, at 1640 hours, Energy Harbor received verbal notification of enforcement discretion from the NRC regarding TS LCO 3.7.9 Action A. Enforcement discretion was granted for up to 48 hours from the initial entry into LCO 3.7.9 Action A at 1412 hours. At 1843 hours Intake Forebay level indicated 562.6 feet on a rising trend, and on December 24, 2022, at 1158 hours with Intake Forebay level at 566.1 feet the Ultimate Heat Sink was declared Operable and TS LCO 3.7.9 Condition A was exited.

Scheduled Actions:

Due to the one-time nature of this strong winter storm causing record low lake levels in the vicinity of the DBNPS, no additional actions are required.

PREVIOUS SIMILAR EVENTS:

There have been no Licensee Event Reports at the DBNPS in the past three years related to the Ultimate Heat Sink.