energy harbor

Davis-Besse Nuclear Power Station
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Terry J. Brown
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419-321-7676

June 10, 2020

L-20-148

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 2020-001-01

Enclosed is Revision 01 to Licensee Event Report (LER) 2020-001, "Three Main Steam Safety Valves Failed Inservice Test Program As-Found Lift Acceptance Criteria," which is being submitted to document the cause of the event and corrective actions being taken. The changes to the report are marked with a revision bar in the margin. 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. James M. Vetter, Manager – Regulatory Compliance and Emergency Response, at (419) 321-7393.

Sincerely,

Terry J. Brown

GMW

Enclosure: LER 2020-001-01

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

IE22
NRR

NRC FORM 366
(04-2020)

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/

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 4/30/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name	2. Docket Number	3. Page
Davis-Besse Nuclear Power Station, Unit 1	05000 346	1 OF 3

4. Title:
Three Main Steam Safety Valves Failed Inservice Test Program As-Found Lift Acceptance Criteria

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	Docket Number
02	26	2020	2020 -	001 -	01	06	10	2020		05000
									Facility Name	Docket Number
										05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
74	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact	Telephone 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 ICES	Cause	System	Component	Manufacturer	Reportable to ICES

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

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

On February 26 and 27, 2020, with the Davis-Besse Nuclear Power Station operating at approximately 74 percent power, setpoint testing determined three of the Main Steam Safety Valves (MSSVs) had a setpoint more than three percent below the desired setpoint. These setpoints exceeded the Inservice Test Program allowable value, rendering the valves inoperable in accordance with the Technical Specifications. The setpoint of each MSSV was adjusted as necessary to within one percent of the desired setpoint upon discovery. Based on the low as-found lift setting pressures, the ability of the MSSVs to provide overpressure protection for the secondary system was not adversely impacted.

The most probable cause of the low lift setting was determined to be setpoint drift, possibly due to spring aging. The two MSSVs with the largest setpoint variance will be removed during the next refueling outage and replaced with qualified spares, and the removed valves will be then be inspected, rebuilt, and tested, including performance of spring rate testing to determine if spring replacement is warranted. This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the Technical Specifications.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Davis-Besse Nuclear Power Station Unit 1	05000 - 346	2020	- 001	- 01

NARRATIVE

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

System Description:

The Main Steam System [SB] at the Davis-Besse Nuclear Power Station (DBNPS) contains nine Main Steam Safety Valves (MSSVs) [SB-RV] on each of the two Main Steam headers. The MSSV rated capacity is approximately 115 percent of the total secondary system design flow to meet the requirements of Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code. This ensures the secondary system pressure is limited to less than or equal to 110 percent of design pressure when passing 100 percent of design steam flow.

Technical Specifications:

Technical Specification (TS) Limiting Condition for Operation (LCO) requires the MSSVs be Operable while in Modes 1, 2, and 3. With one or more MSSVs inoperable, Condition A requires reactor power be reduced within 4 hours and the High Flux Trip setpoint be reduced within 36 hours based on the operable MSSV relieving capacity. If the required action of Condition A and associated Completion Time are not met, or one or more Steam Generators [AB-SG] have less than two MSSVs operable, or one or more Steam Generators have no MSSV with a lift setting of 1050 psig operable, then Condition B requires the unit to be in Mode 3 in 6 hours and Mode 4 within 12 hours. TS Surveillance Requirement 3.7.1.1 requires verification of each MSSV lift setpoint per TS Table 3.7.1-1 in accordance with the Inservice Testing Program, and following testing, lift settings shall be within +/- 1 percent of the setpoint. Table 3.7.1-1 specifies 2 MSSVs per Steam Generator have a lift setting of 1050 psig +/- 3 percent, and 7 MSSVs per Steam Generator valves have a lift setting of 1100 psig +/- 3 percent.

DESCRIPTION OF EVENT:

On February 26, 2020, with the DBNPS operating at approximately 74 percent power for the end of fuel cycle coast down, scheduled MSSV setpoint testing was conducted in accordance with the Inservice Test Program. The initial testing scope was to in-place test eight of the 18 installed MSSVs. During testing that completed February 27, 2020, the following three valves lifted outside their required as-found setpoint by more than three percent:

Valve Number	Desired Setpoint (psig)	As-Found Setpoint	Offset (percent)
SP17B9	1100	1066.6	-3.04
SP17A5	1100	1060.4	-3.60
SP17A2	1100	1049.6	-4.58

Each valve lifting outside the required as-found setpoint was adjusted and retested to within the as-left acceptance criteria of two consecutive lifts within +/- one percent of the setpoint, or between 1089 and 1111 psig. In accordance with the Inservice Test Program, two additional valves with the same setpoint (1100 psig) were tested for each valve failure; all six of the additional valves in the expanded scope lifted within the required as-found range.

CAUSE OF EVENT:

The most probable cause of the low lift setting for the three Main Steam Safety Valves was determined to be setpoint drift, possibly due to spring aging.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Davis-Besse Nuclear Power Station Unit 1	05000 - 346	2020	- 001	- 01

NARRATIVE

ANALYSIS OF EVENT:

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary by providing a heat sink for removal of energy from the Reactor Coolant System [AB] if the preferred heat sink, provided by the Condenser [SG-COND] and Circulating Water System [KE], is not available. With the MSSVs lifting prior to their established lift settings, the ability of the MSSVs to provide overpressure protection was not adversely impacted. Therefore, there was no loss of safety function for the MSSVs, and this issue is considered to be of very low safety significance.

Reportability Discussion:

The existence of similar discrepancies in multiple valves is an indication that the discrepancies arose over a period of time. Therefore, it is assumed the plant operated with these three MSSVs inoperable without taking the actions specified in Technical Specification 3.7.1. In accordance with the guidance contained in NUREG-1022, Event Reporting Guidelines for 10 CFR 50.72 and 50.73, Revision 3, this condition represents operation of the plant in a condition that is prohibited by the plant's Technical Specifications, and is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B).

CORRECTIVE ACTIONS:

Completed Actions:

Upon discovery of an individual valve's setpoint being outside of the allowable value, the valve was declared inoperable until the setpoint was adjusted to be within the allowable value. Reactor Power had been reduced in accordance with Technical Specification 3.7.1 Action A for one MSSV per Steam Generator to be inoperable prior to the start of testing.

Scheduled Actions:

The MSSVs currently installed as SP17A2 and SP17A5 will be removed during the next refueling outage scheduled in Spring 2022 and replaced with qualified spare valves as part of MSSV replacement preventive maintenance activities. The removed valves will be then be inspected, rebuilt, and tested. The rebuild and testing will also include performance of spring rate testing to determine if spring replacement is warranted.

No further actions are planned for the MSSV currently installed as SP17B9 beyond regularly scheduled maintenance and testing as it was recently rebuilt in 2015 and had minimal deviation from the desired lift setpoint.

PREVIOUS SIMILAR EVENTS:

There have been no Licensee Event Reports (LERs) at the DBNPS in the past three years related to the MSSVs.