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March 11, 2011

10 CFR 50.73

L-11-062

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 2011-001

Enclosed is Licensee Event Report (LER) 2011-001, "Pressurizer Code Safety Valve Setpoint Test Failures." This LER is being submitted to provide written notification in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation in a condition prohibited by the Technical Specifications.

There are no regulatory commitments contained in this letter or its enclosure. The actions described represent intended or planned actions, are captured in the DBNPS Corrective Action Program, and are described for information only. If there are any questions or if additional information is required, please contact Mr. Patrick J. McCloskey, Manager – Site Regulatory Compliance, at (419) 321-7274.

Sincerely,

KWByrne for B.S. Allen

Barry S. Allen

Enclosure: LER 2011-001-00

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

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Davis-Besse Nuclear Power Station	05000346	1 OF 4

4. TITLE

Pressurizer Code Safety Valve Setpoint Test Failures

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
										05000
08	06	2010	2011	- 001 -	00	03	15	2011	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Vicki A. Wadsworth, Advanced Nuclear Specialist, Regulatory Compliance	(419) 321-7690

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete EXPECTED SUBMISSION DATE). ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

The two pressurizer safety valves (PSVs) at the Davis-Besse Nuclear Power Station (DBNPS) were replaced during an outage in Spring, 2010 with tested spares. The removed PSVs were sent to an offsite vendor for testing and refurbishment. In December, 2010 the test results were received showing both PSVs lifted higher than the allowed one percent tolerance above the 2500 psig set point (2525 psig) for As-Found testing. Because both valves had As-Found setpoints above the Technical Specifications (TS) allowed value, a past operability evaluation was performed, which concluded on January 12, 2011, that both valves were inoperable during their time in service.

Based on the as-found lift setting pressures (2531 psig and 2535 psig), there was no adverse effect on transients described in the Updated Safety Analysis Report (USAR) that can produce a Reactor Coolant System (RCS) overpressurization. The cause of this event, which was due to setpoint drift, is the small allowable setpoint range. Procedures will be revised to establish an as-left setpoint as low in the band as possible, and the feasibility of increasing the TS limit from 2525 to 2575 psig will be evaluated. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation in a condition prohibited by the TS.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit Number 1	05000346	2011	-- 001 --	00	2 OF 4

NARRATIVE

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

DESCRIPTION OF EVENT:

System Description

The Reactor Coolant System (RCS) [AB] at the Davis-Besse Nuclear Power Station (DBNPS) has two identical safety valves [AB-RV] (RC13A and RC13B) each located on a flanged nozzle on the Pressurizer [AB-PZR] top head.

The Pressurizer Safety Valves (PSVs) were manufactured by Crosby Valve & Gage Company, Model Number HB-86-BP Type E series valves designed for nuclear service and certified under Section III of the ASME code for application in nuclear power systems. The valves are designed to be self-actuating, spring loaded, with balancing bellows and a balancing piston. The function of the PSVs is to ensure the RCS pressure does not exceed the Technical Specification (TS) 2.1.2 safety limit of 2750 pounds per square inch gauge (psig).

Technical Specification(s):

Technical Specification (TS) 3.4.10, "Pressurizer Safety Valves", Limiting Condition for Operation (LCO) 3.4.10 requires two pressurizer safety valves be OPERABLE with lift settings less than or equal to 2525 psig in Modes 1, 2 and 3. With one PSV inoperable, TS 3.4.10 Action A requires the valve be restored to operable status within 15 minutes. If this required action cannot be met, or if two PSVs are inoperable, TS 3.4.10 Action B requires the plant to be placed in Mode 3 within 6 hours and in Mode 4 within 12 hours.

Event Description:

The Pressurizer Code Safety Valves RC13A and RC13B were replaced during the mid cycle outage of Cycle 16 in April 2009.

On February 28, 2010, the DBNPS shutdown for the Sixteenth Refueling Outage activities. As part of this outage, the PSVs were removed, and sent to an off site vendor for testing and refurbishment at the conclusion of the outage. This testing was performed on August 6, 2010 (event date).

On December 13, 2010, with the plant operating in Mode 1 at 100 percent power, following receipt of final paperwork from the vendor test facility, it was identified that both valves had As-Found lift settings above the limits specified in TS 3.4.10. Because both valves had As-Found setpoints above the TS allowed value (2531 psig for RC13A and 2535 psig for RC13B), a past operability evaluation was performed. The past operability evaluation, completed on January 12, 2011 (discovery date), determined these valves were inoperable while they were installed in the plant.

CAUSE OF EVENT:

The cause of the as-found test setpoint of the PSVs found to be greater than the TS allowable value of 2525 psig was determined to be setpoint drift.

NARRATIVE

CAUSE OF EVENT (continued):

A contributing cause of the as-found test setpoint of the PSVs found to be greater than the TS allowable value of less than or equal to 2525 psig is the Pressurizer Code Safety Valve as-left allowable range (+/- 1 percent) does not provide a balanced margin to accommodate setpoint drift given the skewed +1 percent/-3 percent as-found acceptance requirements.

ANALYSIS OF EVENT:

While both valves had as-found setpoints that exceeded the TS allowed value, the highest out of tolerance setpoint was only 10 psig higher than the required value. The transients described by Updated Safety Analysis Report (USAR) that can produce an RCS overpressurization were reviewed with respect to the out-of-tolerance valve setpoints. The review indicated that all applicable transients were analyzed: (1) without modeling the valves, (2) with a bounding setpoint tolerance or, (3) would have resulted in an acceptable peak pressure when the out-of-tolerance setpoints are considered. Therefore this issue had very low safety significance and did not prevent the PSVs from fulfilling their safety function.

Reportability Discussion:

NUREG-1022, Event Reporting Guidelines, states that discrepancies found in TS surveillance tests are normally assumed to occur at the time of the test unless there is firm evidence, based on a review of relative information, to indicate the discrepancy occurred earlier. The NUREG provides an example that multiple safety valve testing failures is an indication that the discrepancies may well have arisen over a period of time and did not occur just at the time of discovery. Evaluation of the PSV test history and potential failure modes for the PSV did not identify any information that would allow a conclusion that the valves were operable while the plant was operating in Mode 1, 2 or 3 as required by TS LCO 3.4.10. Therefore, this condition (two pressurizer safety valves exceeding the TS allowed setpoint) is reportable as a Licensee Event Report (LER) per 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant's TS based on the above guidance from NUREG-1022.

CORRECTIVE ACTIONS:

During the Sixteenth Refueling Outage concluding June 2010, two PSVs were installed in place of the removed valves. These valves were also manufactured by Crosby Valve & Gage Company, Model Number HB-86-BP Type E series valves. These valves had As-Left set pressures of 2504 psig (RC13A) and 2496 psig (RC13B).

Procedures that govern the testing of the PSVs will be revised to establish a desired As-Left setpoint range of +0 percent to -1 percent (2500 psig to 2475 psig) of set pressure (2500 psig) with the As-Left setpoint adjusted to as close to 2475 psig as practicable. The two PSVs tested in August 2010 will be sent to a vendor facility to have the As-Left setpoint adjusted to as close to 2475 psig as practicable.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit Number 1	05000346	2011	-- 001 --	00	4 OF 4

NARRATIVE

PREVIOUS SIMILAR EVENTS:

Two previous events were found to be associated with high PSV setpoints at the DBNPS.

In 1996, a voluntary LER was submitted to the NRC which documented an occurrence where one of two Pressurizer Code Safety Valves removed during the Tenth Refueling Outage in Spring of 1996 had an initial lift setpoint of 3.08 percent greater than the setpoint value of 2525. The apparent cause of the valve test failure was determined to be setpoint drift. The two safety valves were refurbished and their setpoints adjusted to within the allowable limit.

In 1994, a voluntary LER was submitted to the NRC which documented an occurrence where one of two Pressurizer Code Safety Valves removed during the Ninth Refueling Outage had an initial lift setpoint 2.44 percent greater than the setpoint value of 2525 psig. The apparent cause of the valve test failure was determined to be setpoint drift. The two safety valves were refurbished and their setpoints adjusted to within the allowable limit.