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NP-33-03-004-00

Docket No. 50-346

License No. NPF-3

June 15, 2003

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Ladies and Gentlemen:

LER 2003-004
Davis-Besse Nuclear Power Station, Unit No. 1
Date of Occurrence – November 15, 2002

Enclosed please find Licensee Event Report (LER) 2003-004, which is being submitted to provide written notification of an issue with the calibration of Reactor Coolant System temperature instruments as required by the Davis-Besse Nuclear Power Station Technical Specifications. This issue was identified as part of the Davis-Besse Return to Service Plan inspections. This LER is being submitted in accordance with 10CFR50.73(a)(2)(i)(B).

Very truly yours,

Lew W. Myers

GMW/s

Attachments

cc: Mr. J. E. Dyer, Regional Administrator, USNRC Region III
Mr. C. S. Thomas, DB-1 NRC Senior Resident Inspector
Utility Radiological Safety Board

JE22

COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station in this document. Any other actions discussed in the submittal represent intended or planned actions by Davis-Besse. They are described only as information and are not regulatory commitments. Please notify the Manager - Regulatory Affairs (419-321-8450) at Davis-Besse of any questions regarding this document or associated regulatory commitments.

COMMITMENTS	DUE DATE
Modify procedure used to determine the calibration accuracy and stability of the Reactor Coolant System temperature instrumentation to include all required equipment.	Completed May 22, 2003, by approval of procedure DB-SC-03159.

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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 Unit Number 1	05000346	1 OF 4

4. TITLE

Inadequate Calibration of Reactor Coolant System Temperature Instrumentation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	15	02	2003	-- 004 --	00	06	15	2003		05000
									FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	D
10. POWER LEVEL	000

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

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

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Gerald M. Wolf, Staff Engineer - Licensing	(419) 321-8001

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			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	No				

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

On November 15, 2002, with the reactor defueled, a deficiency was identified with the calibration of Reactor Coolant System (RCS) Resistance Temperature Detectors (RTDs). Two of the four Post Accident Monitoring hot leg temperature sensors were not included in the channel calibration required to be performed per the Technical Specifications every refueling interval. The calibration of one sensor was subsequently checked satisfactorily, but the other sensor was damaged upon removal from its thermowell, and therefore could not be checked. Because the testing could not be completed as required by the Technical Specifications, the reporting exemption of 10CFR50.73(a)(2)(i)(B)(2) is not applicable. Therefore, this issue involving a late surveillance test is being reported in accordance with 10CFR50.73(a)(2)(i)(B) as operation prohibited by the Technical Specifications. The four temperature sensors were verified to have been functioning properly while the plant was in operation based upon historical computer point data and from monthly surveillance test data, therefore this issue had no safety significance. The inadequate channel calibration procedure has been altered to include all equipment required to be checked per the Technical Specifications.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit Number 1	05000346	2003	-- 004 --	00	2 OF 4

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

DESCRIPTION OF OCCURRENCE:

As part of detailed system health reviews being conducted at the Davis-Besse Nuclear Power Station (DBNPS) to assure that plant systems can perform their safety functions, the Reactor Coolant System (RCS) [AB] was reviewed. On September 19, 2002, with the reactor defueled, a deficiency was identified with the calibration of RCS Resistance Temperature Detectors (RTDs) [AB-TE] and documented in Condition Report 02-06250.

Removal of an RTD from its thermowell for calibration is difficult, and can result in damage to either the RTD or the thermowell. In order to prevent this damage, a process known as cross calibration is used to verify the calibration of the RTDs in the RCS. When performing a cross calibration, the resistance of each RTD is measured sequentially and converted to equivalent temperatures using the most recent calibration tables available for the RTDs. The temperatures are then averaged and the deviation of each RTD from the average is calculated. Any RTD that exceeds a specified deviation is identified and removed from the average, and the process is repeated to identify any outliers. The cross calibration can be performed at one or more temperature plateaus at isothermal conditions, i.e., when the RCS hot leg and cold leg temperatures are approximately the same. It can also be performed when the temperature is increasing or decreasing monotonically at a reasonably constant and sufficiently slow rate.

The "B" Loop RCS hot leg temperature sensors (TE-RC3B5 and 3B6) have been periodically checked for accuracy and stability each refueling outage by performing a cross-calibration in accordance with site procedures while in Mode 3 (Hot Standby). However, on September 19, 2002, it was identified that a cross calibration check was not being performed for the "A" Loop RCS hot leg temperature sensors (TE-RC3A5 and 3A6). These temperature instruments, along with TE-RC3B5 and 3B6, provide input to the saturation temperature monitors, hot leg level monitoring, and to the hot leg temperature indicators on the post-accident panels.

DBNPS Technical Specification 3.3.3.6, "Post-Accident Monitoring Instrumentation," requires the post-accident monitoring instrumentation channels to be operable in Modes 1, 2, and 3, which includes the RCS Loop Outlet Temperature, RCS Subcooling Margin Monitor, and RCS Hot Leg Level (Wide Range) instruments. Surveillance Requirement 4.3.3.6 requires these specific instrumentation channels be demonstrated as operable by performance of a Channel Calibration on a refueling frequency. The DBNPS Technical Specifications define a Channel Calibration as "the adjustment, as necessary, of the channel output such that it responds with necessary range and accuracy to known values of the parameter which the channel monitors." This Channel Calibration shall encompass "the entire channel including the sensor and alarm and/or trip functions..." Based upon these Technical Specification requirements, the four Post Accident Monitoring System (PAMS) RCS hot leg temperature sensors are required to be calibrated each refueling interval. Accordingly, on November 15, 2002, during evaluation of this condition, a Condition Report (02-09387) was initiated to identify that temperature sensors TE-RC3A5 and 3A6 have not been adequately calibrated in accordance with the DBNPS Technical Specifications.

DESCRIPTION OF OCCURRENCE (continued):

10CFR50.73(a)(2)(i)(B) requires reporting of any operation or condition which was prohibited by the plant's Technical Specifications. Because the loop "A" RCS temperature sensors were not calibrated in accordance with the Technical Specification Surveillance Requirements, and the plant operated when these sensors were required to be operable, this issue represents a condition prohibited by the Technical Specifications.

10CFR50.73(a)(2)(i)(B)(2) excludes reporting of events that consist solely of a case of a late surveillance test where the oversight is corrected, the test performed, and the equipment is found to be capable of performing its specified safety function. In order to verify the temperature sensors remained capable of performing their specified safety function, a calibration check of the individual RTDs was necessary. TE-RC3A5 was removed from its associated thermowell and the calibration was checked successfully, verifying that it remained capable of performing its specified safety function. However, prior to recognizing that the calibration of TE-RC3A6 needed to be checked to determine whether it remained capable of performing its specified safety function, the RTD was damaged while being removed for replacement. TE-RC3A6 is replaced periodically in order to maintain the environmental qualification of the element. Since TE-RC3A6 could not be verified to have remained capable of performing its specified safety function, the exclusion allowed by 10CFR50.73(a)(2)(i)(B)(2) is not applicable, and therefore this event requires reporting as a condition prohibited by the plant's Technical Specifications.

APPARENT CAUSE OF OCCURRENCE:

The previous procedures used to calibrate the PAMS RCS hot leg temperature elements did not contain sufficient details to ensure the temperature elements were checked in accordance with the Technical Specifications. In 1991 the test methodology was changed to use cross calibration to check the RCS hot and cold leg temperature elements. However, the accuracy of the change was not verified or validated properly, and the check of the PAMS RCS hot leg temperature elements was not included in the new procedure. Since the previous procedure did not identify these temperature elements were required to be checked per the Technical Specifications, they were excluded from the procedure so that wide range temperature indication would be available during the cross calibration of the other RCS temperature elements.

ANALYSIS OF OCCURRENCE:

The 4 RCS RTDs were verified to be functioning properly prior to plant shutdown for the current outage by checking historical computer point data for the RTDs and data from performance of the monthly Technical Specification channel checks. Because the calibration of TE-RC3A5 was checked successfully, and since the output of all four RCS RTDs compared favorably to each other based upon historical data, it is logical that the calibration of TE-RC3A6 would have been checked satisfactorily had it not been damaged upon

ANALYSIS OF OCCURRENCE: (continued):

removal from its thermowell. Since this evidence supports that TE-RC3A6 remained capable of performing its specified safety function, this issue had no safety significance.

CORRECTIVE ACTIONS:

Calibration of TE-RC3A5 was satisfactorily verified under Work Order (WO) 03-000160-000 on January 22, 2003. TE-RC3A6 was replaced with a new RTD that was verified to be in calibration under WO 01-000350-000.

On May 22, 2003, procedure DB-SC-03159, "RTD Cross Calibration," became effective, which replaced the previous procedure (DB-SC-04111) used to determine the calibration accuracy and stability of the RCS narrow and wide range RTDs. This new procedure includes TE-RC3A5 and TE-RC3A6 as part of the cross calibration process for the RCS RTDs.

The current procedure change process requires verification that the necessary Technical Specification requirements are incorporated and all instrumentation used to verify Technical Specification compliance is included in a periodic calibration program. The current program has sufficient barriers to prevent problems similar to this from occurring, therefore no further corrective actions are necessary with respect to the procedure change process.

PREVIOUS SIMILAR EVENTS:

There have been no LERs identified in the previous two years involving similar deficiencies where the calibration of RTDs was not performed as required by the Technical Specifications.

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

NP-33-03-004-00 CRs 02-06250, 02-09387