

**LICENSEE EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Davis-Besse Unit Number 1

DOCKET NUMBER (2)

05000346

PAGE (3)

1 OF 5

TITLE (4)

Safety Features Actuation System Sequence Logic Channels Surveillance Testing

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	31	97	97	-- 009 --	01	04	30	97	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)			20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)	
			20.2203(a)(1)			20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)	
			20.2203(a)(2)(i)			20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71	
			20.2203(a)(2)(ii)			20.2203(a)(4)		50.73(a)(2)(iv)	OTHER	
			20.2203(a)(2)(iii)			50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)			50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME

Dale L. Miller, Senior Engineer - Licensing

TELEPHONE NUMBER (Include Area Code)

(419) 321-7264

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(if yes, complete EXPECTED SUBMISSION DATE)

X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

At 1235 hours on March 31, 1997, with the Davis-Besse Nuclear Power Station (DBNPS) operating at 100 percent power, a Potential Condition Adverse to Quality Report was initiated with regard to the Technical Specification (TS) Surveillance Requirement (SR) for the Safety Features Actuation System Sequence Logic Channel undervoltage relays. Testing of the undervoltage relay is specified by SR 4.3.2.1.1, Table 4.3-2, which requires that a monthly Channel Functional Test be performed for Sequence Logic Channels. However, the setpoints specified in Table 3.3-4 were not verified on the monthly test. Calibration of the undervoltage relays for the essential bus feeder breaker trip, and the diesel generator start and essential bus load shed was performed as a preventative maintenance activity at the frequency of every four to six months. The time delay of these relays was verified by refueling surveillance tests. Since the operability requirements for TS 3.3.2.1 were not being met in the appropriate time frame, the DBNPS was operated in a condition prohibited by the TSs and is reportable in accordance with 10CFR50.73(a)(2)(i)(B). The 24 hour time period permitted by TS 4.0.3 was invoked to complete the required testing. Testing of the train 2 logic was completed at 0438 hours and testing of train 1 was completed at 1445 hours on April 1, 1997. The apparent cause for this condition was that the requirement to verify the trip setpoints during monthly surveillance testing was not comprehended. A revised monthly functional test procedure will be implemented by September 19, 1997.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Davis-Besse Unit Number 1		05000346		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
				97	-- 009 --	01	

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

Description of Occurrence:

At 1235 hours on March 31, 1997, with the Davis-Besse Nuclear Power Station (DBNPS) operating at one hundred percent power, a Potential Condition Adverse to Quality Report (PCAQR) was initiated with regard to the Technical Specification (TS) Surveillance Requirement (SR) for the Safety Features Actuation System, SFAS, (JE) Sequence Logic Channel undervoltage relays. Testing of the undervoltage relays is specified by SR 4.3.2.1.1, Table 4.3-2, which requires that a monthly Channel Functional Test be performed for Sequence Logic Channels. Channel Calibration is stated as not applicable. The Limiting Condition for Operation (LCO) 3.3.2.1 refers to Table 3.3-4 which lists Trip Setpoints and Allowable Values for the Sequence Logic Channel essential bus feeder breaker trip, and diesel generator start and load shed of the essential bus. Within the Allowable Value specification for the diesel generator start and load shed, a pound (#) sign is used to refer to a note which states, "Allowable Value for Channel Functional Test and Channel Calibration." However, these setpoints are not verified on the Monthly Channel Functional Test.

Prior to discovery of this condition, calibration of the undervoltage relays for the essential bus feeder breaker trip, and the diesel generator start and essential bus load shed was performed as a preventative maintenance activity at the frequency of every four to six months. These preventative maintenance activities were performed in accordance with procedures DB-ME-05318, "ITE/ABB 27D and 27N Relay (Device 27A) Maintenance and Calibration" and DB-ME-05319, "GE NGV/3B Voltage Relay Maintenance and Calibration." The time delay responses of these relays were verified by the refueling surveillance tests, "SFAS Sequencer (C1/D1) Bus Undervoltage Relay Time Response Test" (DB-ME-03040/DB-ME-03041) which were conducted every eighteen months. The monthly surveillance procedures, "SFAS Sequencer (C1/D1) Bus Undervoltage Relay Functional Test" (DB-ME-03042/DB-ME-03043) verified that the undervoltage relays deenergize when the half trip test switch removes voltage. The procedures also verified that the relay target actuated and the half trip test light was illuminated. However, the surveillance tests did not verify the voltage or time delay setpoints for actuation of the essential bus feeder breaker trip, or the diesel generator start and essential bus load shed.

At 1235 hours on March 31, 1997, the Action statement of LCO 3.3.2.1 was entered and all four Sequence Logic Channels were declared inoperable. Both Emergency Diesel Generators (EDGs) were declared inoperable in accordance with Action 15-b of Table 3.3-3 and Action e of LCO 3.8.1.1 was entered. At this time, TS 4.0.3 was invoked for failure to perform a Surveillance Requirement. This TS allows Action requirements to be delayed for up to 24 hours to permit completion of the surveillance when the allowable outage time limits of the Action requirements

LICENSEE EVENT REPORT (LER)  
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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Davis-Besse Unit Number 1	05000346	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 5
		97	-- 009 --	01	

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

Description of Occurrence: (Continued)

are less than 24 hours. Testing of the relays was initiated for those relays that had not been verified within the last thirty days. The maintenance and calibration procedures for the relays were conducted to verify the voltage trip setpoint. The refueling frequency surveillance test procedures (DB-ME-03040 and DB-ME-03041) were performed to verify the time response of the relays. The monthly functional surveillance test procedures (DB-ME-03042 and DB-ME-03043) were performed. At 0438 hours on April 1, 1997, testing of the relays associated with EDG 2 was completed and EDG 2 was declared operable. At this time, TS 4.0.3 was exited. At 1445 hours on April 1, 1997, testing of the relays associated with EDG 1 was completed and the DBNPS was in full compliance with LCOs 3.3.2.1 and 3.8.1.1.

Since the operability requirements for LCO 3.3.2.1 were not being met in the appropriate time frame, the DBNPS was operated in a condition prohibited by the plants TSS and is reportable in accordance with 10CFR50.73(a)(2)(i)(B).

Apparent Cause of Occurrence:

The requirement to verify the setpoints specified in Table 3.3-4 during the monthly Channel Functional surveillance was not comprehended. The monthly surveillance test procedure written in 1978 to satisfy SR 4.3.2.1.1 did not verify that the undervoltage relays for essential bus feeder breaker trip, and diesel generator start and load shed of the essential bus, complied with the Allowable Values specified in Table 3.3-4. This interpretation of the requirements continued through subsequent alterations of the surveillance test procedure.

Analysis of Occurrence:

There was minimal safety significance as a result of not performing a verification of the SFAS Sequence Logic Channel on a monthly frequency. Undervoltage relay setpoint verifications for the essential bus feeder breaker trip, and the diesel generator start and load shed of the essential bus were performed on a four to six month frequency. The time delay setpoints of these relays were verified at a refueling frequency to function properly to sense a loss of voltage. This testing provided assurance that the undervoltage relays would perform their safety functions. Testing performed as a result of this event identified no equipment deficiencies.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Davis-Besse Unit Number 1	05000346	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 5
		97	-- 009 --	01	

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

Corrective Actions:

Testing of the Sequence Logic Channels was initiated upon discovery of this condition and was completed at 1445 hours on April 1, 1997. Development of a new functional test surveillance procedure has been initiated to accomplish verification of relay voltage setpoints, time delays and function on a monthly frequency. The new monthly functional test procedure will be approved and implemented by September 19, 1997. Until the new functional test procedure is implemented, the setpoint and the time delay of the undervoltage relay will be verified on a monthly basis in conjunction with performance of the existing monthly functional test procedures DB-ME-03042 and DB-ME-03043. Relay setpoints will be verified monthly by performance of DB-ME-05318 and DB-ME-05319. Relay time delays will be verified monthly by performance of DB-ME-03040 and DB-ME-03041.

Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits" was issued by the Nuclear Regulatory Commission on January 10, 1996, (Log Number 4676). The GL requested licensees to take the following actions:

1. Compare electrical schematic drawings and logic diagrams for the reactor protection system, emergency diesel generator load shedding and sequencing, and actuation logic for the engineered safety features systems against plant surveillance test procedures to ensure that all portions of the logic circuitry, including the parallel logic, interlocks, bypasses and inhibit circuits are adequately covered in the surveillance procedures to fulfill the Technical Specification requirements. This review should also include relay contacts, control switches, and other relevant electrical components within these systems, utilized in the logic circuits performing a safety function.
2. Modify the surveillance procedures as necessary for complete testing to comply with TS. Additionally, the licensee may request an amendment to the TS if relief from certain testing requirements can be justified.

Completion of these actions was requested to be accomplished prior to startup from the first refueling outage commencing one year after the issuance of this Generic Letter.

In the Toledo Edison response to GL 96-01 (Serial Number 2370) dated April 16, 1996, the DNBPS committed to complete this review prior to startup from the eleventh refueling outage which is currently scheduled to start in April, 1998. This action is within the recommended GL review time frame. To facilitate this review, a detailed review methodology has been developed to identify issues for



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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Davis-Besse Unit Number 1	05000346	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 5
		97	-- 009 --	01	

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

Corrective Actions: (Continued)

testing of safety-related logic circuits. Testing issues that can not be justified will be identified on a PCAQR. Initiation of the PCAQR will ensure prompt evaluation of operability and reportability. As a result, the extent of condition relative to testing of safety-related logic circuits will be evaluated and corrective actions taken will be documented.

Failure Data:

Licensee Event Report 97-008, including Supplement 1, identified a condition where the monthly testing of the SFAS and Anticipatory Reactor Trip System two-out-of-four logic was not completely checked. Previous reports involving inadequate safety system logic testing were identified in LER 97-008, LER 91-001, LER 88-020 and LER 85-021. LER 91-001 involved a procedural deficiency that was caused by an inadequate procedure revision. LER 88-020 reported a procedure deficiency that was caused by the field wiring of test switches not being per drawings in SFAS and the Anticipatory Reactor Trip System. LER 85-021 reported that some logic gates in SFAS were not covered by testing, which was caused by the Surveillance Test review process not being technically detailed enough to ensure that all functions of all components were being addressed. There have been no LERS within the last three years involving the undervoltage relays for the SFAS Sequence Logic Channels.

NP-33-97-009-1

PCAQR 97-0412