

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 (1-B 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)

Waterford Steam Electric Station Unit 3

DOCKET NUMBER (2)

05000 382

PAGE (3)

1 OF 7

TITLE (4)

Inadequate Surveillances Identified Pursuant to Generic Letter 96-01

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	08	97	97	014	01	05	08	97	N/A	05000
									N/A	05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
1	100	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	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)(ii)	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 388A	
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME: T.J. Gaudet, Licensing Manager
TELEPHONE NUMBER (include Area Code): (504) 739-6666

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE):	<input checked="" type="checkbox"/>	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 8, 1997, with the plant in mode 1 at 100% power, it was determined that no test procedure verified operability of sequencer relay contacts associated with Emergency Feedwater Pump breaker control circuits. It was further determined that no test procedure verified operability of Containment Spray Pump breaker logic circuit sequencer relay contacts. Subsequently it was determined that parallel under-voltage relay contacts, which provide auto start inputs for the EDG were not being individually verified operable. An NRC violation identified that surveillance tests for pressurizer heater group and other identified loads were not verifying load shed during simulated loss-of offsite power test or loss of off-site power in conjunction with a safety injection actuation signal test. The cases above were determined to be due to inadequate surveillance test procedures. The contacts were tested via updated test procedures or special test procedures / work authorizations and found to function properly. The identified condition did not compromise the health and safety of the general public.

**REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK**

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

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TEXT (If more space is required, use additional copies of NRC Form 376A) (17)

REPORTABLE OCCURRENCE

On April 8, 1997, during reviews associated with Generic Letter 96-01, "Testing of Safety-Related Logic Circuits", it was determined that there was a lack of positive verification that several contacts from relays in the EDG sequencer circuits were performing their intended function. The condition was identified by the review team performing reviews associated with Generic Letter 96-01. The failure to verify contact operability is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications (TS).

Subsequent to the above, during reviews associated with Generic Letter 96-01, additional cases were identified wherein safety-related logic circuit parallel contacts were determined to be tested together (in parallel). Either of the parallel contacts can operate the associated equipment. Therefore, it could not be determined (from the previous test results) if each of the parallel contacts were operable or if only one contact was completing the circuit. These cases are discussed in the event description section below. These cases were determined to be reportable pursuant to 10FR50.73(a)(2)(i)(B) as conditions prohibited by Technical Specifications.

Also, conditions were identified during NRC inspection 97-10 (level IV Violation No. 9710-04) that fall within the scope of Generic Letter 96-01. The conditions involved a lack of verification of the shedding of some loads during simulated loss-of-offsite power tests. See the event description section below.

INITIAL CONDITIONS

At the time the April 8, 1997 reportable condition was identified, Waterford 3 was operating in Mode 1 at approximately 100% power. No major systems, structures or components were out of service specific to this condition. In addition, no TS Limiting Conditions for Operation were in effect specific to this event. Subsequent cases were identified with the plant shutdown during the Waterford 3 Refuel 8 Outage.

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EVENT DESCRIPTION

The April 8, 1997 reportable occurrence involved:

- 1.) the failure to uniquely verify operability of contact S3X [RLY] (one in each train) in the plant Emergency Diesel Generator (EDG) load sequencer [JE] circuit associated with the Emergency Feedwater (EFW) Pumps, and
- 2.) the failure to individually verify operability of two sets (one set per train) of two parallel contacts, CSX and S2X, in the plant EDG load sequencer circuits associated with the Containment Spray (CS) Pumps.

In case 1.) above, it was determined that the contact associated with the EFW pump (in each respective train) had been tested for the safety related function of starting the EFW Pumps. However, the contact had not been verified to open to preclude premature start of the pump during the sequencing of loads. Therefore, in accordance with guidance provided in Generic Letter 96-01, this was determined to be inadequate TS surveillance testing of components that affect operability of the EDGs. Since the function of starting the EFW Pumps had been tested, the inadequate surveillance testing did not affect the operability of the motor driven EFW Pumps.

In case 2.) above, the parallel contacts associated with the CS Pumps had been tested; however, the contacts were tested together (in parallel). Therefore, it could not be determined (from the test results) if both contacts were operable or if only one contact was completing the circuit. Therefore, in accordance with guidance provided in Generic Letter 96-01, this was determined to be inadequate TS surveillance testing.

Operations declared both EDGs inoperable at 1700 on 4/8/97 due to inadequate surveillance verification of contact S3X (on both safety trains). The plant entered TS 3.8.1.1f due to both EDGs being inoperable. However, since the contact had not failed, but rather had inadequate surveillances, TS 4.0.3 was entered.

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The CS Pump sequencer circuit parallel contacts CSX and S2X perform the safety-related function of starting the pumps in the appropriate load block. The Generic Letter review team observed that, while the contacts were being procedurally surveillance tested, the test did not individually verify the contacts. Therefore, the test could pass with one of the two parallel contacts in a failed condition. The condition was handled as an inadequate surveillance. Operations declared both CS Pumps inoperable at 1700 on 4/8/97 and entered TS 3.0.3 and 4.0.3 for this condition.

On 4/9/97, at 0143 Operations and Engineering completed a briefing for the EFW/CS logic test (STP-01158800) and began the testing shortly thereafter. The testing was completed on the 'A' Train at 0431 on 4/9/97 (within the 24 hr AOT). At that time, Operations declared EDG 'A' operable and exited TS 4.0.3 and TS 3.8.1.1f. Operations then entered TS 3.8.1.1d for EDG 'B' which remained inoperable. The 'A' CS Pump was declared operable at 0431 on 4/9/97. The next morning (0247 on 4/10/97), testing was completed such that EDG 'B' was declared operable. CS Pump 'B' continued to comply with TS 3.6.2.1 in a 72 hr action statement. CS Pump 'B' was declared operable on 4/10/97 at 0632.

Subsequent to reporting Rev. 0 of LER 97-014, an additional case was identified wherein safety-related logic circuit parallel contacts were being surveillance tested in parallel. As such, it could not be determined (from the test results) if each individual contact was operable or if something less than all of the parallel contacts were completing the circuits. The condition involved under-voltage relays (27-1X, 27-2X, and 27-3X) contacts 2A-2B and 2D-2E, which provide auto start inputs for the Emergency Diesel Generators.

NRC Violation No. 9710-04 identified that surveillance procedures did not verify that pressurizer heater group circuit breakers open as required and load shed during the simulated loss-of-offsite power test or the loss-of-offsite power in conjunction with a safety injection actuation signal test. The violation further documented that surveillance procedures did not verify the following loads correctly shed and started on their corresponding load sequencer block: Shutdown Heat Exchanger A and B room coolers,

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the Component Cooling Water Heat Exchanger A and B room coolers, and Control Room Heater EHC-34 and Switchgear Room Heater EHC-36. A third example of this violation involved a cited failure to properly test emergency electrical loads supplied through contactors to ensure that they both shed on a loss of power and then come back due to an automatic restart function (i.e., temperature, pressure) or as a function of the Emergency Diesel Generator Sequencer. The response to the subject violation was submitted via W3F1-97-0178 dated August 14, 1997.

CAUSAL FACTORS

The principle cause for not testing all components and paths was inadequate surveillance procedures. The test procedures verified that the end devices actuated as required. However, the procedures failed to verify that each path of a multiple path circuit was uniquely tested and verified. For circuits with parallel contacts, the test results could not determine if each contact was operable or if something less than all of the associated parallel contacts were completing the circuits. In general, the original approach to logic testing has been focused on testing the primary logic and primary components necessary to actuate the associated safety-related end devices. Some of the circuits ancillary to the primary logic (i.e. parallel paths) had been overlooked by the surveillance procedures.

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CORRECTIVE MEASURES

- The subject contacts (identified above) were uniquely tested and verified to be operable.
- The surveillance test procedures, for the most part, have been updated to provide for ongoing, periodic surveillance testing of the subject contacts. Some tests were conducted via approved special test procedures / Work Authorization Packages. Future testing of the applicable logic circuit components will be performed via approved permanent plant procedures, special test procedures or maintenance test procedures.
- In accordance with Generic Letter 96-01, Waterford 3 has completed a comparison of applicable drawings against plant surveillance test procedures to ensure that the procedures adequately test components. This comparison review included relay contacts, control switches, and other relevant electrical components within logic circuits performing a safety function.

The above stated corrective actions were completed in accordance with the requirements of Generic Letter 96-01, prior to startup from Refuel 8, which was completed (breaker-to-breaker) on July 29, 1997.

SAFETY SIGNIFICANCE

Unverified operability of the subject contacts did not significantly impact nuclear safety since the contacts successfully passed the surveillance test. The contacts would have performed or supported the applicable safety functions if an accident had occurred. Therefore there was no impact upon the health and safety of the general public or employees at the plant.

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SIMILAR EVENTS

There are no recent similar events reported involving contacts not being adequately verified operable that could impede the safety function of TS equipment.

Note:

EIIS Identifiers are enclosed in brackets (e.g. [JE])