

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **JAMES A. FITZPATRICK NUCLEAR POWER PLANT** DOCKET NUMBER (2) **0 5 0 0 0 3 3 3** PAGE (3) **1 OF 0 6**

TITLE (4)
Valve Operator Non-Compliance with 10CFR50.49 (Environmental Qualification)

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 NAMES		DOCKET NUMBER(S)
03	23	86	86	007	000	04	18	86			05000
											05000

OPERATING MODE (9) **N** THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.20(e)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	50.38(e)(2)	50.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 356A)
20.406(a)(1)(iii)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(A)	10CFR50.49
20.406(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

POWER LEVEL (10) **0 10 10**

LICENSEE CONTACT FOR THIS LER (12)

NAME **Victor M. Walz, Technical Services Superintendent** TELEPHONE NUMBER **3 1 5 3 4 2 - 3 8 4 0**

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

During a scheduled plant outage, inspections were performed on primary containment Limitorque valve actuators to resolve qualification issues addressed in NRC I.E. Notice 86-03. During inspection of the recirculation system discharge and discharge bypass valves (02MOV-53A, -53B, -54A, and -54B) on March 23, 1986, it was discovered that the torque and limit switch insulation types were not qualified for primary containment use. This discrepancy with the applicable plant qualification report prompted a thorough investigation of the qualification documentation for the subject actuators. This investigation revealed that full qualification basis for the subject actuators was not established due to an error in the applicable report. Upon determination that full environmental qualification could not be established, the entire actuator assembly for the subject valves was replaced with new actuators fully qualified to NUREG 0588, Cat. I requirements.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3 8 6 - 0 0 7 - 0 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
					0 2	OF	0 6

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

I. DESCRIPTION

The Reactor Recirculation System discharge and discharge bypass valves are required to isolate breaks in the Reactor Recirculation System in the event of a Loss of Coolant Accident (LOCA) inside the Primary Containment. The discovery of the subject equipment to have been in non-compliance with 10CFR50.49 necessitates the report of these findings in accordance with 10CFR50.73.

During a recent scheduled plant maintenance outage, environmental qualification inspections were performed on safety-related Limatorque valve actuators located in Primary Containment and the Steam Tunnel and within the scope of 10CFR50.49 to resolve potential control wiring deficiencies addressed in NRC I.E. Notice 86-03.

Inspection of other related design features of the recirculation system discharge and discharge bypass valve actuators (02MOV-53A, -53B, -54A, and -54B) on March 23, 1986, showed that the torque switch and limit switch insulation was not of a type qualified by Limatorque Corporation for primary containment use. This discrepancy with the applicable qualification report prompted a thorough investigation of the qualification data for the subject actuators. A review of all available qualification data showed that the Authority had an incomplete basis for establishing environmental qualification for the subject valve actuators.

The environmental qualification report for the subject actuators had been prepared by a consultant and accepted by the JAF engineering staff. The report covers in-containment actuators qualified to DOR Guidelines, and is based on information supplied by the Limatorque Corporation, and a plant walkdown by the JAF Staff.

Limatorque letter dated February 11, 1981 states that Limatorque Report B0003 can be applied to Limatorque shop order 331260D (02MOV-54A & B) and that Limatorque Report FC-3271 can be applied to shop order 331260B (02MOV-53A & B). Limatorque Report B0003 tested an actuator in steam environment of 250°F @ 25 psig and radiation to 2 x 10E7 rads gamma. Limatorque Report FC-3271 tested an actuator in a steam environment of max 212°F and 7" water gauge. Neither of these reports provide adequate bases for qualification to DOR Guidelines for a JAF containment LOCA environment.

The plant walkdown was an inspection of all primary containment valve actuators requiring environmental qualification for torque and limit switch base material. This plant walkdown had incorrectly identified the torque and limit switch material for the subject actuators to be Melamine instead of Durez.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3 8 6 - 0 0 7 - 0 0 0 3 OF 0 6	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

II. SAFETY IMPLICATION ASSESSMENT

The Reactor Recirculation System Discharge and Discharge Bypass Valves, 02MOV-53A, B and 54A, B, are normally open and are required to close at the initiation of postulated design basis accidents upon receipt of low water level signal in conjunction with a decrease in reactor pressure to 285 psig. Once the valves are closed in response to these conditions they will remain closed until the Plant has been recovered. Consequently, the required operating time is assumed to be one hour after accident initiation.

The valve operators are conservatively assumed to have been exposed to 11 years of plant life in the Primary Containment. The operating time for the valves for Environmental Qualification is assumed to be one hour after accident initiation.

The Postulated Accident Environment is:

Temperature:	323°F max
Pressure:	59.7 psia (45 psig)
Radiation:	6.9 x 10E6 Rads Gamma (Normal & Accident Dose)

There are two components of the valve actuators which present operability issues in a postulated accident environment:

- a. Torque and Limit Switch Base Material
- b. Motor Insulation System

These items will be addressed individually to assess any potential operability deficiencies:

- a. The torque and limit switch insulation material used in the subject actuators was determined by inspection to be Durez. Although currently not qualified by Limit-torque for Primary Containment use, an expected life analysis for Durez was performed using the maximum normal operating temperature. The expected life was determined to be 658 years. This expected life greatly exceeds the 11 years of service to which the subject actuators were subjected.

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FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3 8 6	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 6	- 0 0 7	- 0 0	0 5	OF 0 6

TEXT (If more space is required, use additional NRC Form 305A's) (17)

III. CAUSE OF EVENT

The cause of this LER appears to be an inadequate review by the qualification consultant and Authority of Limitorque qualification reports. This review resulted in an incomplete environmental qualification report.

A contributing factor to this review problem may have been the number of actuators evaluated (over 100) and the number of Limitorque test reports covering these actuators.

Reviews by the Authority of other environmental qualification reports submitted by its consultants indicate that this is an isolated case. The Authority has performed detailed reviews of its consultants' work over the past 2 1/2 years. These reviews have quite often resulted in detailed direction to the consultant by the Authority in order to bring the reports to the level of quality and thoroughness expected by the Authority. The quality and thoroughness of work by the consultant who supplied the report in question, however, has always been satisfactory.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3 8 6	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
			0 0 7	0 0	0 4	OF 0 6

TEXT // If more space is required, use additional NRC Form 368A's (17)

Radiation exposure tests have been performed on the Durez switches to a level of 2×10^7 rads gamma (Limitorque Report B0003). The maximum postulated dose (normal & accident) for the subject actuators is 6.9×10^6 rads gamma. The tested radiation level demonstrates the ability of the switches to perform their intended functions at accident dose levels.

It is concluded that the use of the Durez material would not have prevented the subject actuators from performing their intended functions during a design basis event for the period in which they were installed.

- b. The motor insulation for the subject actuators was determined by nameplate inspection to be Class H. This insulation has been proven capable of providing reliable service for continuous operation at 356°F. This temperature rating exceeds the postulated post accident environment temperature. Radiation exposure tests have been performed on similar motors with Class H insulation to a level of 2×10^8 rads gamma. In Limitorque Test No. 600376A, this testing demonstrates the ability of the motor to perform its intended function at accident dose levels.

It is concluded that the motors with class H insulation would not have prevented the subject actuators from performing their intended design function during the period in which they were installed.

In summary it is concluded that even though the environmental qualification documentation for the subject actuators was incomplete, the actuators would have been able to perform their safety function in the postulated accident environment during their 11 years of installed life.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		86	007	00	06	OF 06

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

IV. CORRECTIVE ACTIONS

- A. When environmental qualification could not be fully established for the actuators, the entire actuator assembly for the subject valves was replaced. The replacement actuators, procured from Limatorque, are qualified to NUREG 0588, Category I. Complete environmental documentation for these replacement actuators has been filed in the JAF Environmental Qualification Reference File.
- B. The discovery of these qualification deficiencies prompted an investigation for the remaining Primary Containment and Steam Tunnel actuators within the scope of 10CFR50.49. This investigation revealed that the qualification documentation for the other Limatorque actuators was valid. This investigation included an additional walkdown to verify valve actuator nameplate data (including motor).
- C. NYPA has conducted a preliminary review of outside containment actuator reports to determine if a similar problem exists in applying the correct Limatorque Qualification Report. This preliminary review has confirmed that no similar problem exists because outside containment Limatorque Qualification Programs are performed on standard commercial design Limatorque actuators with Class B motor insulation which have been proven qualified for the less severe environments in these areas.
- D. NYPA is continuing inspections in response to NRC IE Notice 86-03 for outside containment (Reactor Building) valve actuators. During these inspections, traceability of the installed Limatorque actuators to the applicable qualification reports will again be verified. This action will be completed by September 1, 1986.

James A. FitzPatrick
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315 342 3840



Radford J. Converse
Resident Manager

April 18, 1986
JAFF 86-0343

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

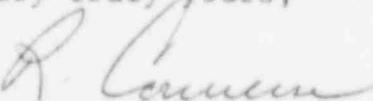
REFERENCE: DOCKET NO. 50-333
LICENSEE EVENT REPORT: 86-007-00

Dear Sir:

Enclosed please find referenced Licensee Event Report in accordance with 10CFR50.73.

If there are any questions concerning this report, please contact Mr. Victor M. Walz at 315-342-3840, extension 261.

Very truly yours,


RADFORD J. CONVERSE

RJC:VMW:lad

CC: USNRC, Region I (1)
INPO Records Center, Atlanta, Ga. (1)
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