NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104

EXPIRES 04/30/99

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.

LICENSEE EVENT REPORT (LER)

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

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TITLE (4)

Electrical Equipment Qualification Program Deficiencies

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
08	22	97	97	-- 028 --	02	03	19	99	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	000	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	X 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	TELEPHONE NUMBER (Include Area Code)
R. G. Joshi, MP2 Regulatory Compliance Manager	(860) 440-2080

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

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

In November 1996 and again in June 1997, Engineering Self Assessments were conducted to examine the Electrical Equipment Qualification (EEQ) program for Millstone Unit No. 2. Both assessments found similar deficiencies in the implementation of the EEQ program requirements. Based on these assessments, a major effort was initiated to review and upgrade the EEQ documentation. Walkdowns were conducted for inspection of the field installation of EEQ components, and confirmation of the postulated accident environments to which they may be exposed. As a result of this EEQ upgrade effort, numerous deficiencies have been identified in both the equipment qualification and the program documentation. These deficiencies are reported in this LER.

The cause of these conditions was inadequate management oversight resulting in the unsatisfactory implementation of the EEQ program.

Corrective actions have been implemented to address the specific EEQ conditions reported. In addition, enhancements to the Design Change Program and the Automated Work Order Process have provided added assurance of the proper maintenance of, and adherence to, EEQ Program requirements. These enhancements have also served to strengthen the interface(s) between EEQ and other engineering programs. This supplement is a complete rewrite.

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

I. Description of Event

In November 1996 and again in June 1997, Engineering Self Assessments were conducted to examine the Electrical Equipment Qualification (EEQ) program for Millstone Unit No. 2 (MP2). Both assessments found similar deficiencies in the implementation of the EEQ program requirements. Based on these assessments, a major effort was initiated to review and upgrade the EEQ documentation. Walk downs were conducted for inspection of the field installation of EEQ components, and confirmation of the postulated accident environments to which they may be exposed. As a result of this EEQ upgrade effort, numerous deficiencies have been identified in both the equipment qualification and the program documentation. These deficiencies are reported in this LER. At the times of discovery the unit was either defueled or in MODE 6. This supplement is a complete rewrite.

The upgrade effort includes validation of the accuracy of the MP2 Environmental Qualification Master List (EQML), and review of program documentation to determine adequacy of the existing component evaluations, Test Report Assessments (TRA), and Equipment Qualification Records (EQR). The deficiencies identified are characterized as; components (e.g. fuse holders, terminal blocks, solenoid valves) which are not EEQ qualified to assure operability in the accident or post-accident environment, omissions from the EQML, environmental conditions not properly characterized, or inadequate component evaluation in TRA or EQR. (See Table 1)

A contributing factor was the failure to integrate the EEQ program requirements into other programs and processes. These programs include the Design Change Program and the Automated Work Order planning process, which lacked rigor for EEQ reviews of proposed changes.

These conditions are being reported pursuant to 10 CFR 50.73(a)(2)(ii)(B), as conditions that are outside the design basis of the plant.

II. Cause of Event

The cause of these conditions was inadequate management oversight resulting in the unsatisfactory implementation of the EEQ program.

III. Analysis of Event

The EEQ program provides assurance that safety-related and certain other electrical equipment will function on demand when exposed to accident and post-accident conditions for the period of time required to perform the required function. Environmental qualification of electric equipment important to safety is governed by 10CFR50.49. Because MP2 was licensed in 1975, certain equipment is qualified in accordance with the DOR Guidelines or NUREG-0588 Category II requirements.

The deficiencies which have been identified during the ongoing review of the facility EEQ program include components in the Containment Air Recirculation System [BK], Main Steam Safety Valve [SB] Indication System, Shutdown Cooling System [BP] and Reactor Building Closed Cooling Water System [CC]. No specific component level testing has been conducted to determine which components would have functioned under worse case accident conditions, but based on the types of issues identified, engineering judgment would dictate that most components would have fulfilled their accident functions. Therefore, this condition is of low to medium safety significance.

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IV. Corrective Action

An evaluation of existing EEQ program documentation and configurations verses facility design requirements is ongoing. It is possible however, that additional EEQ related deficiencies may be found. Any additional findings will be addressed and dispositioned in accordance with the Millstone Corrective Action Program.

As a result of these conditions, the following actions have been performed:

1. Corrective actions have been implemented to address the specific EEQ conditions contained within Table 1.

2. The Design Change Program and the Automated Work Order Process have been enhanced to provide added assurance of the proper maintenance of, and adherence to, EEQ Program requirements. These enhancements have also served to strengthen the interface(s) between EEQ and other engineering programs.

V. Additional Information

Similar Events

LER 96-019: During review of the safety functional requirements it was discovered that the EEQ qualification of certain containment isolation valve solenoids could not be demonstrated due to the lack of a qualified environmental seal and pigtail. The affected solenoids were modified to ensure qualification.

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

Table 1

EEQ Program Deficiencies

Discovery Date	Reportable Condition	System
August 22, 1997	During the EEQ program upgrade, Scotch tape splices were found on the CAR fan motor leads. Qualification of these splices for this application was not demonstrated in the EEQ program.	Containment Air Recirculation System
September 17, 1997	During EEQ system walkdowns it was discovered that a T-drain was installed on the side of the motor instead of the bottom of the motor on motor operated valve 2-SI-651, Shutdown Cooling Isolation Valve	Shutdown Cooling System
February 23, 1998	During the investigation of the qualification records for the Shutdown Cooling Heat Exchanger Outlet Stop Valve 2-RB-13.1B, an unidentified cable was found in the solenoid circuit. EEQ qualification documentation for the cable could not be found.	Shutdown Cooling System
May 12, 1998	During a review of the walkdown documentation, it was discovered that the majority of the terminal blocks used in the inboard and outboard containment penetration terminal boxes were not qualified for the postulated accident environments.	Instrumentation, control, and power terminations for several systems
August 18, 1998	During EEQ system walkdowns, it was discovered that system fuses and fuse holders were located in a post accident harsh environment but were not on the EQML.	Main Steam Safety Valve position indication
August 18, 1998	During EEQ system walkdowns, it was discovered that system EEQ loads and non-EEQ loads were powered from the same power source without adequate separation.	Main Steam Safety Valve position indication
August 20, 1998	During the development of the Equipment Qualification Record for the qualification of certain General Electric EB-5 and EB-25 terminal blocks, it was discovered that the Test Report Assessment for the tested terminal blocks does not demonstrate that they are suitable for operation in the post accident environment for the EEQ zones in which they are located. The affected terminal blocks are used in two systems.	Reactor Building Closed Cooling Water inlet and outlet valves to the Containment Air Recirculation System; Service Water supply valves to the Turbine Building Closed Cooling Water System

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Table 1

EEQ Program Deficiencies

Discovery Date	Reportable Condition	System
December 30, 1998	During the investigation for reportability on another Condition Report, it was determined that the solenoid for the Degasifier Effluent Cooler Return Isolation Valve, 2-RB-210, was not on the EQML. The solenoid could have failed in a harsh environment and prevented the valve from closing when required by a Safety Injection A tuation Signal.	Reactor Building Closed Cooling Water System
February 16, 1999	During review of EEQ program open items, it was discovered that Belden Cable used in the position indication circuitry for the Containment Hydrogen Purge Isolation Valve is not qualified. This condition could lead to the loss of Regulatory Guide 1.97 valve position indication under harsh post accident conditions.	Containment Hydrogen Purge Isolation Valve position indication