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 --	01	09	02	98	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)

This LER documents four deficiencies identified during our ongoing review of the facility Electrical Equipment Qualification (EEQ) program. These deficiencies include unqualified motor lead tape splices for numerous plant components including a containment air recirculation fan motor, incorrect installation of motor T-drains on a motor operated valve in containment, an unqualified control cable for a solenoid valve outside containment and unqualified terminal blocks in the inboard and outboard containment penetrations.

The cause of these conditions was an inadequate implementation of the EEQ program.

To correct these deficiencies, components have been or will be replaced with qualified components and a review shall be performed to validate the accuracy of the MP2 EQ Master List. This LER Supplement is a complete rewrite of the original LER.

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I. Description of Event

This LER documents four deficiencies identified during our ongoing review of the facility Electrical Equipment Qualification (EEQ) program. These deficiencies include unqualified motor lead tape splices for numerous plant components including a containment air recirculation fan motor, incorrect installation of motor T-drains on a motor operated valve in containment, an unqualified control cable for a solenoid valve outside containment and unqualified terminal blocks in the inboard and outboard containment penetrations. At the time of discovery of these conditions the plant was defueled.

1. On August 22, 1997, 3M Scotch tape splices were found on Containment Air Recirculation (CAR) fan motor [MO] (F14D) [BK] which is located in containment. These tape splices, which were found during the EEQ project upgrade, were identified as having no basis for demonstrating qualification to the requirements of 10 CFR 50.49 due to a lack of full sequential testing. The applicable test report lacks the pre-aging sequence and cannot support radiation qualification of the tape for use inside containment. The tape was installed in various locations after February 23, 1983 without addressing "sound reasons to the contrary" as required by Regulatory Guide (R.G.) 1.89. In addition, there was no evidence that the existing tape splices were installed in accordance with the EQ test configuration.

   Additional walkdowns have identified numerous EEQ motors, solenoids [SOL], and limit switches whose circuits were also spliced with unqualified tape. Systems affected by this deficiency include the Reactor Coolant System [AB], Chemical Volume and Control System [CB], High Pressure Safety Injection System [BQ], Containment Air Recirculation and Cooling System, Containment Post-Incident Hydrogen Control System [BB], Engineered Safety Features Room Recirculation System, Vital Switchgear Emergency Cooling [VJ], Main Steam System [SB], Instrument Air System [LD], Nitrogen System [LK], Clear Liquid Radwaste System [WD], Primary Water Source, DC (125V) Power [EI], Feedwater System [SJ], and the Reactor Building Closed Cooling Water System [CC].

2. On September 17, 1997, as part of the continuing walkdowns performed for the EEQ project upgrade, it was discovered that a motor T-drain deficiency existed on the motor operator for the shutdown cooling suction isolation valve (2-SI-651) [ISV], which is located inside the reactor containment. The two required motor T-drains were installed on opposite sides of the motor instead of at the bottom of the motor as required. This configuration could allow moisture to accumulate inside the motor housing during accident conditions and render the valve inoperable. In addition, this condition prevents the establishment of full EEQ valve qualification. A review of past work orders indicates that the T-drains were incorrectly installed in October 1986, as part of the corrective actions for a self identified T-drain deficiency for EEQ qualified motor-operated valves located inside containment.

3. On February 23, 1998, an investigation of the qualifiability of the solenoid and limit switches for the Shutdown Cooling Heat Exchanger Outlet Stop Valve (2-RB-13.1B) determined that operability of the valve could not be demonstrated for a harsh environment. An unknown control cable [CBL3] was identified in the solenoid circuit, which resulted in the operability of the solenoid being inoperable. The cable markings showed that it was manufactured by Phelps Habidure. Documentation relating to the EEQ qualification of this cable could not be found. The valve, which is located outside the reactor containment, was originally determined to perform its required safety function prior to being exposed to a harsh radiation environment. Therefore, it was not included in the original and subsequent revisions of the Environmental Qualification (EQ) Master List. A recent calculation has shown that high room temperatures would result in a harsh environment during and following a Loss of Coolant Accident (LOCA) prior to the valve performing its safety function. Therefore, EEQ qualification of the solenoid for the Shutdown Cooling Heat Exchanger Outlet Stop Valve is required.

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4. On May 12, 1998, a review of EEQ walkdown documentation identified the use of inappropriate terminal blocks (GE CR151D and GE CR2960) in the majority of the containment inboard and outboard penetration termination boxes. These terminal blocks are used for instrumentation, control and power terminations. The GE CR151D and GE CR2960 terminal blocks are unqualified for the postulated accident environment. They were believed to be initially mis-identified as GE model number CR151B, resulting in the use of the wrong test report for EEQ qualification. Initial investigation has determined that test reports are not available in the nuclear industry that will support EEQ qualification of the GE CR151D and GE CR2960 terminal blocks.

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 an inadequate implementation of the EEQ program.

III. Analysis of Event

The EEQ program provides assurance that electrical equipment will function on demand when exposed to accident and post-accident conditions for the period of time required to perform the components safety function. Full qualification is established by testing, installing and maintaining equipment in accordance with 10CFR50.49 unless there are "sound reasons to the contrary" as delineated by R.G. 1.89.

1. The lack of qualified motor splices in the identified systems may result in the inability of the respective components to perform their required safety function. There is no reasonable assurance that the tape splices will maintain the integrity of the insulation system for the associated circuit during a harsh environment. Therefore, this condition is considered to be potentially safety significant.

2. The Shutdown Cooling System reduces the reactor coolant temperature to the refueling temperature and maintains that temperature during refueling. In some LOCA accident scenarios it may also be used for long term recirculation and cooling. Motor operated valve 2-SI-651, which is located inside containment, is a shutdown cooling suction isolation valve which is closed during normal operation. It is located in the coolant flow return line from the No. 2 reactor vessel outlet (hot leg) to the suction of the low-pressure safety injection pumps. Following a LOCA inside containment, the valve is opened to initiate ECCS injection with a Low Pressure Safety Injection pump.

   Two T-drains were installed improperly on the motor for the shutdown cooling suction isolation valve (2-SI-651), on opposite sides of the motor. This configuration could allow moisture to accumulate inside the motor during accident conditions, which would render the motor inoperable. Failure of this valve could jeopardize long-term core cooling. Therefore, this condition is considered to be safety significant.

3. The Shutdown Cooling Heat Exchanger Outlet Stop Valve (2-RB-13.1B), an air operated valve located outside the reactor containment, is continuously energized closed during normal operation. The solenoid valve is required to de-energize (fail open) following a LOCA upon receipt of a Sump Recirculation Actuation Signal (SRAS) to close the Shutdown Cooling Heat Exchanger Outlet Stop Valve. The valve remains closed until it receives a SRAS to ensure sufficient RBCCW flow though the CAR coolers. Two limit switches provide indication to the operator that the shutdown cooling heat exchanger is operating

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properly. Should the valve open following a LOCA, less heat would be removed from the reactor containment by the CAR coolers. Therefore, this condition is potentially safety significant.

4. The inboard and outboard terminal blocks located in the penetration terminal boxes are not qualified for the postulated accident environment. Electrical continuity through the containment structure cannot be maintained with the use of the existing terminal blocks. Therefore, this condition is safety significant.

IV. Corrective Action

As a result of this event, the following actions have been, or will be, performed.

1. The motor for motor-operated valve 2-SI-651 has been replaced to facilitate proper installation of T-drains.

2. All deficient tape terminations will be replaced with qualified terminations prior to entering Mode 4 from the current outage.

3. The penetration terminal blocks will be eliminated from the affected circuits and the circuits reterminated with qualified terminations. This activity will be completed prior to entry into Mode 4 from the current outage.

4. A review shall be performed to validate the accuracy of the MP2 EQ Master List prior to entry into Mode 4 from the current outage.

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 effected solenoids were modified to ensure qualification.

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