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IN 86-71

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

August 19, 1986

IE INFORMATION NOTICE NO. 86-71: RECENT IDENTIFIED PROBLEMS WITH
LIMITORQUE MOTOR OPERATORS

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit.

Purpose:

This notice is provided to alert recipients of two potential problems discovered with Limitorque motor operators. It is expected that recipients will review this information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem from occurring at their facilities. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Past Related Documents:

IE Information Notice 86-03 "Potential Deficiencies in Environmental Qualification of Limitorque Motor Valve Operator Wiring," January 14, 1986.

Description of Circumstances - Burn Damage to Internal Wiring

On November 8, 1985 Georgia Power Company submitted a preliminary report to the NRC indicating that it had discovered burn damage to internal wiring in several Limitorque motor operators installed in their Vogtle Unit 1 Power Plant. Evidence suggested the burn damage had been caused by electric heater elements installed in the limit switch compartment for storage purposes within certain types of Limitorque motor operators.

On March 20, 1986 Georgia Power Company submitted a final report to the NRC which suggested that the burn damage was a generic problem applicable to all Limitorque motor operators. This assumption was based on a sampling inspection of 104 Limitorque motor operators installed in Vogtle Unit 1. Forty-six of the motor operators examined were Limitorque type SMB-000, and six of these were found to have burnt internal wiring. Out of the 58 operators other than type SMB-000 which were inspected, 5 were found to contain wires deemed susceptible to damage because of their close proximity to the heater elements (less than $\frac{1}{2}$ inch).

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On May 20, 1986 an NRC inspector, along with Limitorque, Georgia Power, and Bechtel personnel, performed a random inspection on four type SMB-000 operators installed in Vogtle Unit 2. Three of the four operators were found to contain burnt internal wiring. One type SMB-00 operator also was inspected and was found to contain wiring susceptible to damage.

Discussion:

The wiring in question is Limitorque installed internal wiring located in the operator limit switch compartment. The wiring is being burnt as a result of its close proximity to, or contact with, the installed limit switch compartment electric heater element or heater bracket. The wiring is not properly routed and is not restrained from contacting the heater or heater bracket. Although the heater is not a seismically or environmentally qualified part and is intended for use only during storage, its use has been shown to cause serious degradation of environmentally qualified internal wiring.

The burnt wiring has been discovered only in Limitorque type SMB-000 motor operators that contain previously energized heaters, although any Limitorque operator that contains a previously energized heater could possibly exhibit a similar problem.

Description of Circumstances - Cracked Limit Switch Rotors

Several licensees have submitted reports to the NRC concerning a problem with cracked limit switch rotors on Limitorque motor operators installed inside and outside of containment. The limit switches are used for control of the motor operator and also provide indication of valve position in the control room.

The cracks have been found on white melamine limit switch rotors. Most of these cracks were found in the area where the limit switch rotors are pinned to the pinion shafts. Some cracks have been found to extend halfway through the melamine rotors, weakening them to the extent that they are easily broken.


Discussion:

In its letter dated February 21, 1984 to the Westinghouse Electric Corporation, Electro Mechanical Division, Cheswick, Pennsylvania, Limitorque recommended that any white limit switch components which are found with cracks should be replaced with components manufactured with a later design, brown colored material.

Violations of 10 CFR Part 21 have been issued to Limitorque for failure to report and for failure to evaluate defects discovered in their motor operators. Licensees are reminded of their responsibility to ensure that procurement documents include a contractual requirement that the provisions of 10 CFR Part 21 apply (when applicable) and that Criterion VII of 10 CFR Part 50 Appendix B requires that purchased material, equipment, and services conform to the requirements of the procurement documents.

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No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate NRC regional office or this office.


Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Jeffrey Jacobson, IE
(301) 492-8845

Attachment: List of Recently Issued IE Information Notices

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-70	Spurious System Isolation Caused By The Panalarm Model 86 Thermocouple Monitor	8/18/86	All GE BWR facilities holding an OL or CP
86-69	Scram Solenoid Pilot Valve (SSPV) Rebuild Kit Problems	8/18/86	All BWR facilities holding an OL or CP
86-68	Stuck Control Rod	8/15/86	All BWR facilities holding an OL or CP
86-67	Portable Moisture/Density Gauges: Recent Incidents And Common Violations Of Requirements For Use, Transportation, And Storage	8/15/86	All NRC licensees authorized to possess, use, transport, and store sealed sources
86-66	Potential For Failure Of Replacement AC Coils Supplied By The Westinghouse Electric Corporation For Use In Class 1E Motor Starters And Contractors	8/15/86	All power reactor facilities holding an OL or CP
86-65	Malfunctions Of ITT Barton Model 580 Series Switches During Requalification Testing	8/14/86	All power reactor facilities holding an OL or CP
86-64	Deficiencies In Upgrade Programs For Plant Emergency Operating Procedures	8/14/86	All power reactor facilities holding an OL or CP
86-63	Loss Of Safety Injection Capability	8/6/86	All PWR facilities holding an OL or CP
86-62	Potential Problems In Westinghouse Molded Case Circuit Breakers Equipped With A Shunt Trip	7/31/86	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit