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JMB

August 15, 1984
EF2-69670

Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

Reference: (1) Fermi 2
NRC Docket No. 50-341

(2) Letter, W. H. Jens to J. G. Keppler, May 16, 1984, EF2-68536

(3) Letter, W. H. Jens to J. G. Keppler, June 4, 1984, EF2-68549

Subject: Final Report of 10CFR50.55(e) Item 126 "Underrated Terminal Blocks in Limitorque Valve Operators"

This is Detroit Edison's final report concerning underrated terminal blocks in motor operated valve operators manufactured by Limitorque. This item was originally reported as a potential deficiency on May 4, 1984, and was subsequently documented in Reference (3).

Description of Deficiency

Detroit Edison identified the use of Beau Products No. 76000 series terminal blocks, which were underrated for their application, as a result of an inspection program for all NUREG 0588 Appendix E, Category 2A and 2B Limitorque operators. There are eighty-eight (88) Category 2A and 2B Limitorque operators with thirteen inside containment and seventy-five outside containment. This inspection program was implemented as the corrective action for a previously reported deficiency, 10CFR50.55(e) Item 125 "Environmentally Unqualified Terminal Blocks in Limitorque Valve Operators." Item 125 was documented in a final report (Reference 2) on May 16, 1984.

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The terminal blocks, which were underrated for their application, were being used in 480V AC motor terminations, but according to the Beau Products catalogue have an Underwriters Laboratory (UL) rating of 150V AC. This lower rating is based on creepage and clearance distances for Class C General Industrial terminal block applications as delineated in UL Standard 1059.

The Limitorque Motor Operator model SMC-04 has a smaller limitswitch termination compartment than other Limitorque operators. The smaller sized Beau 76000 terminal blocks were found in model SMC-04 operators and were not found in any other model Limitorque operator inspected. Therefore, Detroit Edison has concluded that the use of Beau 76000 terminal blocks for applications for which they were not rated is limited to the SMC-04 operators.

Analysis of Safety Implications

The concern with these terminal blocks is the UL rating of 150 volts rms versus their application as motor terminal blocks which have a 480 volt phase to phase potential, and 277 volt phase to ground potential. Both of these values are greater than the UL rating. There is a potential for electrical shorting which could result in the failure of the motor to operate when required. Failure of the motor to operate could compromise the function of the safety system of which the valve is an integral part.

Corrective Action

The following actions were taken to correct this deficiency and prevent recurrence:

- An inspection of all NUREG 0588 Appendix E, category 2A and 2B Limitorque valves was performed. This inspection revealed that twelve operators contained underrated Beau 76000 series terminal blocks. The twelve underrated Beau 76000 series terminal blocks were in SMC-04 motor operators only and these terminal blocks were removed. It should be noted that all QA Level I SMC-04 Motor operators were included in the inspection which identified this deficiency. Four motor operators were corrected by hard wiring using Raychem terminations within Crouse Hinds LR form 8 conduit bodies. Eight of the affected terminal blocks will be replaced with Kulka 622-5 terminal blocks. The type of replacement was based upon the environmental conditions and ALARA considerations.

- Beau 76000 series terminal blocks are being added to the Restricted Engineering Component List and are not approved as a replacement spare part for Limitorque valve operators.

This is Detroit Edison's final report on this item. If you have questions concerning this matter, please contact Mr. Lewis P. Bregni, (313) 586-5083.

Sincerely,

Wayne H. Jens

cc: Mr. P. M. Byron
Mr. R. C. DeYoung
Mr. R. C. Knop