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JOHN S. KEMPER
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JUL 8 1983

Mr. Thomas E. Murley, Director
United States Nuclear Regulatory Commission
Office of Inspection and Enforcement, Region I
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: Significant Deficiency Report #84
Final Report on Valve Motor Operator Tandem
Torque Switch Deficiency
Limerick Generating Station, Units 1 and 2
NRC Construction Permits Nos. CPPR-106 & 107

FILE: QUAL 2-10-2 (SDR #84)

Dear Mr. Murley:

In compliance with 10CFR50.55(e), enclosed is the final report on the subject deficiency.

Sincerely,

John S. Kemper

DCD/smd
Copy to: Director of Inspection and Enforcement
United States Nuclear Regulatory Commission
Washington, D.C. 20555

S. K. Chaudhary, Resident NRC Inspector (Limerick)

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Limerick Generating Station Units 1 & 2
Final Significant Deficiency Report #84
Defect in Motor Operated Valve Tandem Torque Switches

July 5, 1983

1.0 Introduction

This is the final report regarding a significant deficiency on motor operated valves with tandem torque switches supplied to Limerick Generating Station (LGS) by Limitorque Corporation.

2.0 Description of Problem

Approximately 250 safety-related motor operated valves (MOV) have tandem torque switches to control the MOV's in each direction of valve travel. Preoperational testing has shown that the tandem switch assembly contains mechanical "play" in the linkage shaft couplings allowing angular rotation of one switch assembly with reduced movement transferred to the other switch assembly. This "play" causes one of the electrically paralleled torque switch contacts to remain closed after the other torque switch has opened at the prescribed setting. This will allow the motor to continue to operate, thereby causing valve stem damage and/or motor burnout.

3.0 Analysis of Problem

A materials test lab examination and testing of a tandem torque switch analyzed that the coupling play allowed approximately 10 degrees of shaft rotation between the inner and outer torque switches. This results in 1) late operation of the outer torque switch as if the torque setting is higher than indicated, or 2) non-operation of the outer torque switch resulting in motor burn out or damage to the valve stem.

4.0 Safety Implications

A torque switch misoperation could result in operator motor failure and mechanical damage causing a safety related valve to become inoperable. This situation exists for all safety related valve motor operators size SMB-0 and larger.

The loss of one motor operated valve would not adversely affect the capability to achieve a safe shutdown of the plant. However, the safe operation of Limerick could have been compromised if multiple failures were to occur simultaneously and this condition had gone uncorrected.

5.0 Corrective Action

The above deficiency is being corrected by removing one of the torque switches in each tandem assembly. This modification will reconfigure the torque switches to the Limitorque standard configuration.

All modifications to the Unit One valve motor operators will be completed by December 31, 1983. The modifications to the Unit Two operators will be completed prior to Unit Two Fuel Load.