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November 19, 1981



Mr. Ronald C. Haynes
U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Haynes:

LIMITORQUE VALVE OPERATORS
10CFR50.55(e), SIGNIFICANT DEFICIENCY
NO. 1 AND 2 UNITS
HOPE CREEK GENERATING STATION

On June 19, 1981, a verbal report was made to Region I, Office of Inspection and Enforcement representative, Mr. R. Gallo, advising of a potential significant deficiency concerning deficiencies found in valve operators manufactured by Limitorque of Lynchburg, Virginia. An interim report was submitted to your office on July 17, 1981, describing analysis to be performed. The following are the results of this effort.

1. Summary of the Problem:

Our original report identified three specification non-conformances in a sample of operators:

- a. Fiber shims under contact screws.
- b. Unidentified terminal blocks.
- c. Damaged terminal blocks.

The questions concerning the terminal blocks have been evaluated and are not significant. The use of fiber shims under the contact screws has been determined to be reportable.

In addition, a survey of Limitorque operators on-site for other defects detected some poor wiring practices, such as:

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- a. Conductor insulation to crimp barrel distance exceeds 1/16 inch.
- b. Lack of conductor protrusion through the crimp barrel.

2. Analysis of Safety Implications:

Our Architect/Engineer, Bechtel, advises the fiber shims problem was originally detected at the Susquehanna site and the following analysis performed at Susquehanna is applicable to Hope Creek.

Adjustments and pre-operational checks on both safety related and non-safety related motor-operated valves, made prior to post-construction startup tests of Limitorque valve operations models SMB-000, revealed that the stationary electrical contacts on the "close" side of the torque switch had loosened. The torque switches in question are of the leaf type. The electrical contacts are small machined hex-head cap screws. Locking devices for the cap screws were not installed.

One pair of cap screws on each torque switch has one or more fiber shims installed under a metal bridge plate. Limitorque stated that the fiber shims were used to make the height of both pairs of cap screws equal.

The screws have no locking device because the height of the screw is critical and lock-washers would raise the height.

These fiber shims installed at the factory under the proper torque value of six inch-lbs, (Limitorque requirements) may have a tendency to relax with time, thus relieving the preload on the screw.

The poor wiring practices could also lead to the failure of the unit to function.

Limitorque operators are used in many systems required for safe shutdown. A typical example is valves installed in the Reactor Water Cleanup (RWCU) system. The above valves are part of the containment isolation system and failure of the valves to operate would be a breach of the containment boundary.

Although none of the contact screws checked at Hope Creek had loosened, the same root cause for the loose screws identified at Susquehanna exists at Hope Creek. Therefore, our corrective action is based on the assumption that the problem eventually could occur at Hope Creek.

3. Corrective Actions:

- a. Bechtel has instructed our suppliers of motor-operated valves in safety-related systems (BIF, Anchor/Darling, Rockwell) to: (1) apply Loctite to the contact screws and torque them to 6 lb-inches on all SMB-00 and SMB-000 operators in-house, and (2) to accept, in the future, only those operators having metallic shims in lieu of fiber.

Limitorque discontinued the use of fiber shims in November, 1980.

- b. Bechtel field forces will correct delivered operators by applying Loctite or replacing the fiber shims with metal shims.
- c. Bechtel has issued a document entitled, "Guidelines for Inspection of Limitorque Operators" and directed their field forces to inspect all Limitorque operators in safety-related applications accordingly. These instructions include the wiring problems noted in the Summary section of this report. When the inspection of the valve operators is completed, Bechtel will determine the scope of the rework required to correct the problems found during the inspection. Also, a decision will be made which will identify the source of the rework; i.e., jobsite, valve supplier, or Limitorque.
- d. Bechtel has issued instructions to all Supplier Quality Representatives (SQR) with motor-operated valve assignments, requiring that Limitorque operators size SMB-00 and SMB-000 be inspected for the inclusion of fiber shims. The "Guidelines for Inspection of Limitorque Operators" was issued on October 15, 1981, to all SQRs involved with procurements that include Limitorque Operators with instructions to apply the inspection criteria during inspections performed at the valve supplier's facilities.

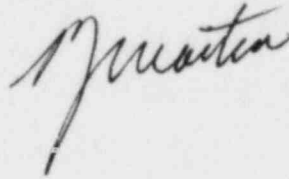
Mr. Ronald C. Haynes

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We expect to have all inspections and corrective actions completed by December 31, 1982. Complete records of all actions will be available on-site for review by your inspectors.

Very truly yours,

A handwritten signature in cursive script, appearing to read "J. M. Martin".

CC: Office of Inspection and Enforcement
Division of Reactor Construction - Inspection
Washington, D.C.

NRC Resident Inspector - Hope Creek
P. O. Box 241
Hancocks Bridge, NJ 08038

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