DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

October 30, 1980

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Re: McGuire Nuclear Station
Units 1 and 2
Docket Nos. 50-369 and 50-370

Dear Mr. O'Reilly:

Pursuant to 10CFR 50.55e please find attached Significant Deficiency Report SD 369/80-18, 370/80-13.

Very truly yours,

William O. Parker, Jr. by GS

William O. Parker, Jr.

GAC:scs
Attachment

cc: Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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MCGUIRE NUCLEAR STATION
UNITS 1 AND 2

Report Number: SD 369/80-18, 370/80-18

Report Date: October 30, 1980

Facility: McGuire Nuclear Station, Units 1 & 2

Identification of Deficiency: Defective Coils - Valcor Solenoid Valves

Description of Deficiency:

On September 30, 1980, Mr. J. R. Wells and Mr. R. M. Sandifer reported the failure of several Valcor solenoid valves model number V70900-21-3. This report was made to J. Rausche of the NRC, Region II, Atlanta.

Investigation has revealed that valve failure is due to failure of the coil. Testing conducted by Valcor has established that coil failure is due to the incompatibility between the polyimide magnet wire insulation and the polyvinyl butyral binding agent applied by the wire manufacturer. These materials react as a function of time and temperature to cause breakdown of the polyimide insulation and subsequent turn to turn short of coil wire.

Valves identified as having this deficiency are Valcor solenoid valves model numbers V70900-21-3, V70900-21-1, furnished under Mill Power Order Numbers C-97733 and E-97822-11. Approximately 168 valves of these model numbers are utilized in various applications at McGuire Unit 1 and 197 are used in McGuire Unit 2.

Analysis of Safety Implication:

Short circuiting of the solenoid valve coil will cause excessive current and eventual tripping of the applicable circuit breaker or fuse. This would de-energize the solenoid valve and result in the control valve going to the safe position.

Primary and secondary circuit protection is train related. A solenoid valve failure in one safety train will have no impact on the electrical circuit of any solenoid valve serving the redundant function in the opposite safety train. Failure of a single solenoid valve will not affect safe operation of the plant. However, premature failure of solenoids does constitute a significant deviation from performance specifications of the valve and circuit.

Corrective Action:

The following corrective action shall be taken for valves identified as having this deficiency.

All coils shall be replaced by June, 1981. The new coils shall be clearly identified and controlled. The identification shall be marked on each coil and shall be listed in certification documents.

A new coil design utilizing ML - polyimide wire insulation and 997 silicone varnish coating will be furnished as replacements. Sample coils will undergo qualification testing by Valcor with the first phase estimated for completion by November 15, 1980. The second phase will consist of ongoing aging. Duke Power Company shall review this qualification testing to assure that the new coil design is adequate. Based on this evaluation Duke Power Company will conduct additional testing if necessary.

A new magnet wire supplier has been selected and procurement from the old supplier discontinued. Valcor Quality Assurance will closely monitor the wire supplier to insure conformance with specifications.