Duke Power Company
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

(704)875-4000

DUKE POWER

August 1, 1991

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station Unit 1
Docket No. 50-369
Diesel Generator Special Report

Gentlemen:

Pursuant to McGuire Technical Specifications 4.8.1.1.3.C and 6.9.2, find a special report concerning a valid failure of Diesel Generator 1A.

Should there be any questions, please contact William Reeside at (704)875-4869.

Very truly yours,

Tony L. McConnell

T. L. McConnell

ADJ/cbl

Attachment

xc: Mr. S. D. Ebneter
Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta St., NW, Suite 2900
Atlanta, GA 30323

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

Mr. Tim Reed
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Mr. P. K. Van Doorn
NRC Resident Inspector
McGuire Nuclear Station

IE22
1/1

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION

Diesel Generator Special Report
PIR 1-M91-0113

July 29, 1991

On June 16, 1991 at 0930, a diesel engine cooling water leak was discovered on diesel generator (DG) 1A during routine rounds by Operations personnel. The leak was at the discharge flange on the intercooler end bell cover. Coolant was noticed dripping (70 drops per minute) from a 2.5 inch vertical crack on the left side of the water outlet flange. Based on a crack growth calculation by Design Engineering personnel, a failure was considered likely if the DG had been required to operate for 2 days at full load. This assumed that the leak would increase to the point that it surpassed the makeup capacity of the cooling water system. The leak is conservatively classified as a VALID FAILURE of DG 1A because of discovery of a condition that would have caused failure. Start attempt #844 was assigned for record keeping purposes. DG 1A was declared Inoperable at 1730 on 6/16/91 to replace the intercooler tube bundle (Work Request 145095).

This was the first Valid Failure in the last 20 Valid Tests and the fifth Valid Failure in the last 100 Valid Tests for DG 1A. On a unit basis, this is the fourth Valid Failure in the last 100 Valid Tests of DGs 1A and 1B combined. Accelerated surveillance test frequency (weekly) has begun per Technical Specification Table 4.8-1 (Diesel Generator Test Schedule).

Operations personnel visually verified that none of the other three DG intercoolers were leaking and QA department personnel performed a dye penetrant check (no cracks indicated). Maintenance personnel removed and replaced the intercooler tube bundle. DG 1A was functionally operable for testing on 6/19/91 at 0139. Start attempt 845 was performed on 6/19/91 at 0707. The DG started and was shutdown by Operations due to a turbocharger oil pump priming problem (Invalid Test). Start attempt 846 was made at 0822 to run the surveillance test (PT/1/A/4350/02A, Diesel Generator 1A Operability Test). The DG was successfully run at full load for an hour with no indication of water leaks (Valid Success). DG 1A was declared operable on 6/19/91 at 1155.

The intercooler end bell cover was taken to the Applied Science Center for failure analysis. In summary, the Metallurgical Analysis Report (Sample #1155, 6/26/91) indicated a brittle fracture mode for the crack. There was no evidence of fatigue such as a vibration problem would indicate. The casting quality of the cover was not good and appears to be the root of the problem. The replacement intercooler end bell cover was fabricated from sheet

metal. The sheet metal has greater ductility than the original grey cast iron and should experience no brittle cracking. Efforts are underway to have new end bell covers fabricated for the 1B and 2B DGs which still have the cast iron covers. The new covers will be installed as soon as possible.

Rodney M. Roberts

R.M. Roberts
System Engineering

cc: M.D. Rains R.L. Browder R.E. Hunning W.W. Gallman
G.L. Dorest S.D. Hart R.J. Deese B.T. Harkey
S. Anderson J.D. Motes