

DUKE POWER COMPANY

P.O. BOX 33189  
CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

July 26, 1985

Dr. J. Nelson Grace, Regional Administrator  
U.S. Nuclear Regulatory Commission - Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

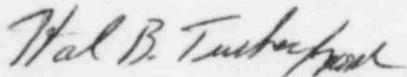
Subject: McGuire Nuclear Station - Unit 2  
Docket Number 50-370  
Diesel Generator Failure

Gentlemen:

In accordance with McGuire Nuclear Station's Technical Specifications 4.8.1.1.3 and 6.9.1 attached is a report of a Valid Diesel Generator (D/G) failure which occurred at McGuire on June 26, 1985.

The event had no impact on the health and safety of the public.

Very truly yours,



Hal B. Tucker

JBD:smh

Attachment

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

Mr. W. T. Orders  
NRC Resident Inspector  
McGuire Nuclear Station

Records Center  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

8508120112 850726  
PDR ADOCK 05000370  
S PDR

85 AUG 2 AID: 43

11  
IE 19

#### INTRODUCTION:

On June 26, 1985, at 0916, the Diesel Generator (D/G) 2A operability test was being performed. Eight minutes into the operability test, the D/G 2A governor/actuator (Woodward Company Model EG-B35) failed, causing the D/G to become unable to maintain a constant engine load. As the D/G was being shutdown, it tripped on overspeed. The governor/actuator failed as the result of metal filings that were binding the piston movement. The source of the metal filings in the governor/actuator case has not been determined at this time. The governor/actuator was replaced and the D/G operated properly in subsequent runs. The D/G was declared operable at 0700 on June 27, 1985.

This valid failure is being classified as a Component Failure, due to the governor/actuator failing.

The Unit was in Mode 3, Hot Standby, at the time of this incident.

#### EVALUATION:

The governor/actuator (Woodward Company Model EG-B35) consists of three interconnected sections: 1) an electric actuator, 2) a mechanical governor, and 3) a hydraulic amplifier.

The three sections are interconnected through the loading piston. The positioning of the loading piston is normally controlled by the electric actuator. The function of the actuator is to control engine speed by throttling fuel flow. If, for any reason, the electric actuator does not receive an electrical signal, then the mechanical governor will control speed. The loading piston moves upward or downward to positions corresponding to the fuel required for engine load. The loading piston as well as other moving parts within the governor/actuator are continually lubricated by the oil from the lower section of the case. The hydraulic amplifier provides a source of oil pressure for the actuator.

When the governor/actuator failed on June 26, the D/G was unable to maintain constant engine load. The load was swinging erratically in excess of 500 KW. As the D/G was being shutdown, it tripped on overspeed. Additional D/G starts were attempted to observe the operation of the governor/actuator, but the D/G tripped immediately on an overspeed condition each time.

Preliminary findings indicate that the loading piston movement was binding due to the presence of metal filings around the shaft. A considerable quantity of metal filings were located in the upper section of the case below the oil fill cap. It is not evident if something failed inside the governor/actuator to create these filings or if the filings originated from a source external to the governor/actuator. The governor/actuator has been returned to the Woodward Governor Company for a determination of the source of the filings.

The governor/actuator was last worked on March 3, 1985 to change the oil in the hydraulic amplifier. The oil is changed every eighteen months as required

by the procedure "Diesel Generator Periodic Maintenance." New oil is added through the oil fill port located on the upper section. The small size of the oil fill port prevents visual observation of the upper case.

A review of the Nuclear Plant Reliability Data Systems (NPRDS) past history of D/G governor/actuators showed that this was an isolated occurrence and that there have been no problems of this type.

CORRECTIVE ACTIONS:

Immediate: D/G 2A was declared inoperable when it was unable to maintain a constant load.

Subsequent: The governor/actuator was replaced with a new one.

The failed governor/actuator was returned to the manufacturer for a specific determination of the cause of the failure.

SAFETY ANALYSIS:

D/G 2B was operable and capable of performing its design function throughout the time D/G 2A was out of service. Had the failure occurred during a black-out, D/G 2B could have provided all of the power necessary to protect the plant.

The health and safety of the public were not affected by this incident.