SSINS No.: 6835
IN 86-73

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

August 20, 1986

IE INFORMATION NOTICE NO. 86-73: RECENT EMERGENCY DIESEL GENERATOR PROBLEMS

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit.

Purpose:

This notice is to alert addressees to vibration-induced fuel line wear and of a deficiency in the design of the field flash circuitry on nuclear plant emergency diesel generators. Recipients are expected to review the information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems occurring at their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Nine Mile Point Unit 2

While conducting diesel generator testing in early May 1986, it was discovered that diesel fuel lines had experienced extensive wear and fuel leaks in the area of the clamps that mount the fuel lines to the diesel engine. The diesels are Cooper-Bessemer model KSV-16-T, 600 rpm, 4 stroke, 16 cylinder units with low total operating hours.

Fuel line damage was caused by vibration from the diesel engine and fuel system pulsation induced by rapid, repeated cycling of a fuel system relief valve. This valve relieves from the low pressure fuel system via a cooler to the fuel day tank to control low pressure fuel system pressure. The manufacturer proposes to correct the problem by inserting plastic sleeves between the fuel line and its hold down clamps and installing a dashpot on the relief valve to dampen its operation.

Watts Bar Units 1 and 2

In April 1986 a deficiency was identified which affects all five standby diesel generators (DGs) at Watts Bar Nuclear Plant and could prevent the DGs from developing a voltage output when required in an emergency. The affected DGs are tandem 16-645 E4 units supplied by Morrison-Knudson Co. The normal shutdown cycle of the DG includes a 10-minute cooldown run at about 450 rpm. If during

this idle period an emergency start signal were received, the DG would accelerate to the normal 900 rpm operating speed, but the generator field would not be flashed and an output voltage therefore would not be developed.

This problem has also been determined to exist on the HPCS DG at Grand Gulf Nuclear Station. This unit was supplied by General Motors Corporation.

The root cause of this deficiency has been found to be a design error by the manufacturer. During a normal or emergency start, as the DG accelerates past 475 rpm, logic is completed to flash the generator field. When output voltage has built up, the field flash circuitry is automatically disabled. The logic design is such that engine speed must go below 200 rpm to re-enable the field flash circuitry, thus no field flash will occur if an emergency start signal is received during the 450 rpm cooldown period. Field flash would be needed under these circumstances because the self-excitation path is interrupted early in the shutdown sequence.

The corrective action proposed by the DG manufacturer is to modify the control circuitry to eliminate the speed dependence of field flash reset.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Kevin Wolley, IE
(301) 492-8373

Attachment: List of Recently Issued IE Information Notices

Attachment 1
IN 86-73
August 20, 1986

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-72	Failure 17-7 PH Stainless Steel Springs In Valcor Valves Due to Hydrogen Embrittlement	8/19/86	All power reactor facilities holding an OL or CP
86-71	Recent Identified Problems With Limitorque Motor Operators	8/19/86	All power reactor facilities holding an OL or CP
86-70	Spurious System Isolation Caused By The Panalarm Model 86 Thermocouple Monitor	8/18/86	All GE BWR facilities holding an OL or CP
86-69	Scram Solenoid Pilot Valve (SSPV) Rebuild Kit Problems	8/18/86	All BWR facilities holding an OL or CP
86-68	Stuck Control Rod	8/15/86	All BWR facilities holding an OL or CP
86-67	Portable Moisture/Density Gauges: Recent Incidents And Common Violations Of Requirements For Use, Transportation, And Storage	8/15/86	All NRC licensees authorized to possess, use, transport, and store sealed sources
86-66	Potential For Failure Of Replacement AC Coils Supplied By The Westinghouse Electric Corporation For Use In Class 1E Motor Starters And Contractors	8/15/86	All power reactor facilities holding an OL or CP
86-65	Malfunctions Of ITT Barton Model 580 Series Switches During Requalification Testing	8/14/86	All power reactor facilities holding an OL or CP
86-64	Deficiencies In Upgrade Programs For Plant Emergency Operating Procedures	8/14/86	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit