

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

February 5, 1987

IE INFORMATION NOTICE NO. 87-09: EMERGENCY DIESEL GENERATOR ROOM COOLING
DESIGN DEFICIENCY

Addressees:

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

Purpose:

This notice is to alert recipients of a potentially significant problem involving degradation of emergency diesel generators (EDGs) following and caused by a loss of offsite power (LOOP). It is expected that recipients will review this information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem 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:

On December 24, 1986, the Carolina Power and Light Company determined that a reportable condition existed at the two Brunswick Steam Electric Plants in which a loss of offsite power could cause a common-mode loss of all four EDGs. Using probabilistic risk assessment methodology during a review of the EDGs in November 1986, the licensee discovered that the EDG room cooling air supply would isolate during a LOOP.

At Brunswick, the outside air for EDG room cooling is drawn through two intakes with a duct from each intake plenum to each of the four EDG rooms. This air is for room ventilation only; the combustion air for the diesel engine is supplied separately. Each of the eight ducts has a pneumatically operated damper and two fusible link fire dampers. The fire dampers were retrofit items. The original air-operated damper was designed by United Engineers and Contractors Inc. to fail close upon loss of non-safety instrument air pressure. This air supply is provided by an air compressor that is powered by the non-safety balance of plant electrical supply and is not provided with standby ac or dc power. Should a LOOP occur, the non-safety instrument air pressure would decrease and allow the air-operated dampers to close. The temperature of the EDG room would increase, depending on the ambient temperature and heat from the diesel engine. The qualified EDG control panel temperature of 104°F could be exceeded, which might cause degradation and failure of the electrical and electronic components in the control panels. This in turn might disable the EDG when it is needed to mitigate the LOOP.

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Discussion:

The licensee has locked the air-operated damper open to permit EDG room cooling regardless of the non-safety instrument air status. After a review of the EDG room HVAC requirements is completed, the licensee will either remove the air-operated dampers or modify them to eliminate the potential for common mode failure resulting from interaction with a non-safety system.

The potential for this type of design problem may not be limited to the diesel room HVAC. Previous pneumatic problems have been discussed in IE Information Notices 86-50, "Inadequate Testing to Detect Failures of Safety-Related Pneumatic Components or Systems," June 18, 1986 and 86-51, "Excessive Pneumatic Leakage in the Automatic Depressurization System," June 18, 1986. Some effects of loss of HVAC on electronics was discussed in IE Information Notice 85-89, "Potential Loss of Solid-State Instrumentation Following Failure of Control Room Cooling," November 19, 1985.

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: Jim Stewart, IE
(301) 492-9061

Attachment: List of Recently Issued IE Information Notices

*See Previous Concurrences

*DEPER:IE
JCStewart
01/14/87

*DEPER:IE
AWDromerick
01/15/87

*PSB:IE
DGable
01/15/87

RLB
DEPER:IE
RLBaer
01/20/87

JER
DEPER:IE
JERosenthal
01/23/87

ELJ
DEPER:IE
ELJordan
01/20/87
SAS
DD:DEPER:IE
SASchwartz
01/20/87
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LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
87-08	Degraded Motor Leads in Limatorque CD Motor Operators	2/4/87	All power reactor facilities holding an OL or CP
87-07	Quality Control of Onsite Dewatering/Solidification Operations by Outside Contractors	2/3/87	All power reactor facilities holding an OL or CP
87-06	Loss of Suction to Low-Pressure Service Water System Pumps Resulting From Loss of Siphon	1/30/87	All power reactor facilities holding an OL or CP
87-05	Miswiring in a Westinghouse Rod Control System	2/2/87	All Westinghouse power reactor facilities holding an OL or CP
87-04	Diesel Generator Fails Test Because of Degraded Fuel	1/16/87	All power reactor facilities holding an OL or CP
87-03	Segregation of Hazardous	1/15/87	All NRC licensees
87-02	Inadequate Seismic Qualification of Diaphragm Valves by Mathematical Modeling and Analysis	1/15/87	All power reactor facilities holding an OL or CP
87-01	RHR Valve Misalignment Causes Degradation of ECCS in PWRs	1/6/87	All PWR facilities holding an OL or CP
86-110	Anomalous Behavior of Recirculation Loop Flow in Jet Pump BWR Plants	12/31/86	All BWR facilities holding an OL or CP
86-109	Diaphragm Failure In Scram Outlet Valve Causing Rod Insertion	12/29/86	All BWR facilities holding an OL or CP

OL = Operating License
CP = Construction Permit

Discussion:

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