

~~GENERAL FILES~~

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MAR 20 1979

Docket No. 50-367

Northern Indiana Public Service
Company
ATTN: Mr. Eugene M. Shorb
Senior Vice President
5265 Hohman Avenue
Hammond, IN 46325

Gentlemen:

The enclosed IE Circular No. 79-05 is forwarded to you for information. If there are any questions related to your understanding of the suggested actions, please contact this office.

Sincerely,

James G. Keppler
Director

Enclosure: IE Circular
No. 79-05

cc w/encl:
Central Files
Director, NRR/DPM
Director, NRR/DOR
PDR
Local PDR
NSIC
TIC
Mr. Dean Hansell, Office of
Assistant Attorney General

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OFFICE ▶	RIII <i>CH</i>	RIII <i>JK</i>				
SURNAME ▶	Fiorella/bk	Keppler				
DATE ▶	3/19/79					

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

March 20, 1979

IE Circular No. 79-05

MOISTURE LEAKAGE IN STRANDED WIRE CONDUCTORS

Description of Circumstances:

During a staff review of the results of environmental qualification test of certain electrical equipment, the phenomenon of water penetration between an electrical conductor and its loosely fitting insulation sleeve was identified. The staff determined it to be prudent to investigate this phenomenon and initiated an equipment checkout test at Sandia Laboratories using a few typical conductors used in nuclear plants.

The equipment checkout test for cable leaks performed at Sandia Laboratories in August 1978, has shown that most stranded wire conductors, when subjected to a differential pressure across the conductor ends, will leak steam or moisture through the interstices of the strands of wire. The test has also shown that solid conductors, under similar conditions, do not leak.

Steam/moisture leakage through stranded conductors can occur during a Loss of Coolant Accident/Main Steam Line Break (LOCA/MSLB), if a differential pressure were to develop across the conductor ends; e.g., one end of the conductor is exposed to the accident environment (typically, in an unsealed junction box) and the other end is isolated from the environment (typically, inside a sealed component such as a sensor/transmitter).

In order to determine whether as-installed configurations exist in nuclear power plants which may result in degradation of safety-related functions due to moisture leakage in stranded wire conductors, inspection visits by NRC personnel were made in October to two nuclear plants, (one under construction, and the other operating). During the inspections the detailed configuration of stranded conductor cables, and their terminations at splices, penetrations, junction boxes, transmitters, motors, motor

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