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MAR 20 1979

Docket No. 50-440  
Docket No. 50-441

The Cleveland Electric Illuminating  
Company  
ATTN: Mr. Dalwyn R. Davidson  
Vice President - Engineering  
P. O. Box 5000  
Cleveland, OH 44101

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  
U. Young Park, Power  
Siting Commission  
Mr. Daniel D. Wilt,  
Attorney

7904030022

OFFICE ▶	RIII	RIII			
SURNAME ▶	Fiorelli/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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