

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

IE Circular No. 79-05  
Date: March 20, 1979  
Page 1 of 4

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

DUPLICATE DOCUMENT

Entire document previously entered  
into system under:

ANO 7903260138

No. of pages: 6



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
631 PARK AVENUE  
KING OF PRUSSIA, PENNSYLVANIA 19406

TERA

March 16, 1979

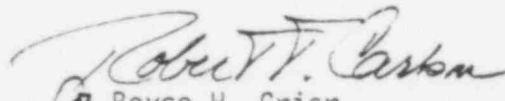
Docket Nos. 50-289  
50-320

Metropolitan Edison Company  
ATTN: Mr. J. G. Herbein  
Vice President - Generation  
P. O. Box 542  
Reading, Pennsylvania 19640

Gentlemen:

The enclosed IE Circular 79-04 is forwarded to you for information.  
If there are any questions related to your understanding of the suggested  
actions, please contact this office. A written response is not required.

Sincerely,

  
for Boyce H. Grier  
Director

Enclosures:

1. IE Circular No. 79-04
2. List of IE Circulars Issued  
in Last Twelve Months

cc w/encls:

E. G. Wallace, Licensing Manager  
J. J. Barton, Project Manager  
R. C. Arnold, Vice President - Generation  
L. L. Lawyer, Manager - Generation Operations  
G. P. Miller, Manager - Generating Station - Nuclear  
J. L. Seelinger, Unit 1 Superintendent  
W. E. Potts, Unit 1 Superintendent - Technical Support  
J. B. Logan, Unit 2 Superintendent  
G. A. Kunder, Unit 2 Superintendent - Technical Support  
I. R. Finrock, Jr.  
Mr. R. Conrad  
G. F. Trowbridge, Esquire  
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment

11 116

7904050075.