

December 4, 1990

MEMORANDUM FOR: Dennis Crutchfield, Director  
Division of Reactor Projects  
and Special Projects

FROM: Gary Holahan, Deputy Director  
Division of Systems Technology

SUBJECT: REQUEST FOR ASSISTANCE: DETERMINE WHETHER TWO  
HOT SHORTS IN A MULTICONDUCTOR CABLE ASSOCIATED  
WITH A NON-HI/LOW PRESSURE INTERFACE SHOULD BE  
ANALYZED FOR FIRE INDUCED SPURIOUS ACTUATION  
(GENERIC LETTER 86-10, SECTION 5.3.1., NON-HI/  
LOW PRESSURE INTERFACES IN UNDERGROUNDED AC AND DC  
CIRCUITS) (AITS 205-89)

In a memorandum (H. Miller to G. Holahan) dated May 17, 1989, Region III requested technical assistance in determining whether two hot shorts in a multi-conductor cable associated with a non-high/low pressure interface should be analyzed for fire induced spurious actuation. The request referenced Generic Letter (GL) 86-10, Implementation of Fire Protection Requirements, Section 5.3.1, which provides some discussion on the staff position regarding circuit failure modes. We have reviewed this issue and concluded that two hot shorts in a multi-conductor cable associated with a non-high/low pressure interface should be analyzed. This conclusion is consistent with the intent of GL 86-10, Section 5.3.1. Section 5.3.1 states that for undergrounded DC circuits, if it can be shown that only two hot shorts of the proper polarity without grounding could cause spurious operations, no further evaluation was necessary except in cases involving high/low pressure interfaces.

Exempting undergrounded DC circuits (the type circuit in question at D.C. Cook) from analysis of the consequences of two shorts of the proper polarity was based on the assumed low probability of occurrence. The staff was considering single conductor cables in this position, where it clearly would not be probable to get multiple shorts of two conductors (of the proper polarity) without shorting to ground. The probability of such an event occurring is clearly greater in the case of a multi-conductor cable with the conductors in close proximity to each other and potentially affected simultaneously by the postulated fire. This position is consistent with the position outlined in a notice of violation to the Dresden plant dated January 3, 1989 (Item f, page 21) wherein a potential for spurious opening of a target rock relief valve could result from two hot shorts in a multiple conductor cable.

151  
Gary Holahan, Deputy Director  
Division of Systems Technology

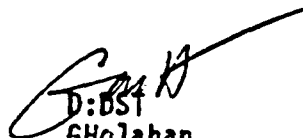
DISTRIBUTION

SPLB file  
GHolahan  
CMcCracken  
HWalker  
RArchitzel

SPLB:DST  
\*HWalker  
11/30 /90

\*SEE PREVIOUS CONCURRENCE  
SPLB:DST  
\*RArchitzel  
11/30 /90

SPLB:DST  
\*CMcCracken  
12/ 3/90

  
D:DST  
GHolahan  
12/4 /90