



UNITED STATES
NUCLEAR REGULATORY COMMISSION

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December 29, 1999

MEMORANDUM TO: Gary M. Holahan, Director
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

FROM: Thomas L. King, Director *Thomas L. King*
Division of Risk Analysis and Applications
Office of Nuclear Regulatory Research

SUBJECT: DRAFT SNL LETTER REPORT, "CIRCUIT FAILURE MODE AND
LIKELIHOOD ANALYSIS"

This memorandum is to request your comments regarding the subject report (attached), if at all possible within six weeks of the date of this memorandum, since we need to issue it in final form for use by a wide distribution of NRC and industry persons and organizations within the next couple of months.

The work documented in this report was performed to improve fire PRA methods. More specifically, since the probability of "hot shorts" is an important source of uncertainty in fire PRA, is also an implicit factor in current methods for performing circuit analysis, and is an explicit factor in NEI's proposed approach for resolving the circuit analysis issue, this work will improve our ability to perform or review fire PRAs where "hot shorts" may be a factor.

The report says that sufficient data currently exists to allow the classification and, in a number of cases, at least the order-of-magnitude quantification of electrical cable failure modes (e.g., shorts to ground, open circuits, shorts between energized wires) and their effects on the cables' associated electrical circuits (e.g., equipment unavailability, inadvertent operation). The report also discusses areas where the data are weak (e.g., aging effects on mode of cable failure).

Potential uses of the information in this report by NRR are planning fire inspections and assessing the safety significance of fire inspection findings. The results also should be useful in the development of NFPA 805, and should assist NRR in resolution of the circuit analysis issue (e.g., by providing a stronger technical basis for reviewing the NEI approach).

We are prepared to discuss this with you at your convenience.

CONTACT: H. Woods, PRAB/DRAA
301-415-6622
or
N. Siu, PRAB/DRAA
301-415-6380

Attachment:
SNL letter report "Circuit Failure Mode and Likelihood Analysis"

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Attachment:
SNL letter report "Circuit Failure Mode and Likelihood Analysis"

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*See previous concurrence

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