



NUCLEAR ENERGY INSTITUTE  
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February 6, 2006

Chief, Rules and Directives Branch  
Division of Administrative Services  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Mail Stop T6-D59  
Washington, DC 20555-0001

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70FR 60859  
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**SUBJECT:** "Proposed Generic Communication; Post-Fire Safe-Shutdown Circuits Analysis Spurious Actuation,"(70 Fed. Reg. 76083, December 22, 2005)

**PROJECT: 689**

The Nuclear Energy Institute (NEI)<sup>1</sup> submits the following comments on the Nuclear Regulatory Commission's proposed generic communication that is intended to request licensees to review their post-fire safe-shutdown circuit analyses. We offer the following comments:

1. Most plant licensing bases include a "one-at-a-time" consideration of spurious actuations, consistent with guidance in Generic Letter 86-10. This consideration has been a point of disagreement between industry and NRC for several years, and remains so today. It is further complicated by the fact that NRC generally approved safe-shutdown programs that included this assumption in Safety Evaluation Reports (SERs) related to plant safe-shutdown programs, but did not specifically approve or identify this assumption in the SER. The lack of specific approval leads to the expressed NRC view that plants using this "one-at-a-time" spurious actuation assumption are in violation of the regulations. This evolution of NRC staff expectations, new terminology, and "implicit" requirements promulgated via the generic communications process presents a continuing challenge to a coherent, stable, and predictable regulatory process.

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<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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2. Under the concept of "any-and-all, one-at-a-time," the industry methodology traditionally evaluated fire damage to all cables in a particular fire area that may affect the ability to achieve safe-shutdown, but (in keeping with consistent interpretations of existing regulatory guidance) only "one-at-a-time" of two redundant unprotected circuits is considered to be damaged. Each conductor of cables impacting safe-shutdown not protected from fire damage is evaluated for failures involving hot shorts, open circuits, and shorts-to-ground. According to the guidance of NEI 00-01, potential combinations of spurious actuations due to these failure modes that affect the safe-shutdown capability should now be further evaluated for risk significance. The NRC staff position on "any-and-all" is a new regulatory position that has significant impacts on the comprehensive safe-shutdown analyses that licensees have credited in the plant licensing bases.
3. This proposed generic communication states that "*All plants must review their circuits analysis, assuming multiple spurious actuations occurring simultaneously from a fire.*"

In effect, the NRC is using a generic communication to change the plant licensing basis. The NRC has determined that the information requested is a compliance exemption in accordance with the provisions of 10 CFR 50.109(a)(4)(i). The NRC has not provided a documented evaluation that is required by this regulation. Simply stating that the recent cable fire tests demonstrated that assumptions previously used licensees and accepted by NRC are not valid does not satisfy this provision of the regulation. The practical impacts of this new regulatory position suggest that a comprehensive evaluation by the NRC is necessary to clearly demonstrate an improvement in plant safety by invoking a new regulatory position. We recommend the generic letter not be issued until a "documented evaluation" is developed to substantiate the proposed change in NRC past acceptance of circuit analyses. The burden rests with the NRC to develop a sound basis for changing a long standing methodology for circuit analyses.

4. The position taken by the NRC does not take into account the inherent conservatism associated with the circuit analyses conducted to-date:
  - a. Full area burnout
  - b. 20 foot physical separation requirement
  - c. Combustible loading or ignition source limitations
  - d. Fire brigade response
  - e. Consideration due to fire dynamics

Moreover, the proposed generic letter fails to recognize the integrated and comprehensive defense-in-depth elements inherent to fire protection that includes actions to prevent fires from occurring, detection and suppression, mitigating the effects of a fire, and plant recovery.

February 6, 2006

Page 3

5. This recent fire tests noted in the proposed generic letter represented a worst case configuration which may not be representative of actual plant conditions. The tests were structured to create conditions such that cable failure would occur. The proposed generic letter does not take any of this into account. For example, the average time to failure for Thermoplastic insulate cable was 15.5 minutes and the average time to failure for Thermoset cables was 34.2 minutes. Mitigative measures would be implemented prior to achieving such failures in actual plant applications.
6. The industry developed NEI 00-01, Revision 1, "Guidance for Post-Fire Safe-Shutdown Circuit Analysis," to provide utility licensees deterministic and risk-informed methods for resolution of circuit failure issues. In keeping with the principles of the Reactor Oversight Process, the NRC staff and industry should focus on those plant inspection issues that are clearly risk significant. We continue to believe that the two methods described in NEI 00-01 will need to be used by licensees to evaluate the overall safety significance of inspection findings. The risk significance analysis method in Section 4 of NEI 00-01 is based on NRC significance evaluation methods in the current fire protection SDP. Therefore, we request NRC acknowledgement that NEI 00-01 provides an acceptable approach of deterministic and risk-informed methods.
7. We believe that a large majority of circuit failure inspection findings will not be risk significant. This has been confirmed by the self assessments that were conducted at three plants using the guidance provided in NEI 04-06.

In conclusion, we believe the generic communication contains new NRC interpretations that take the form of new regulatory positions. We recommend this communication not be issued until the NRC staff completes the appropriate regulatory analysis required by 10 CFR 50.109, Backfitting.

We would appreciate the opportunity to discuss these comments, specifically these new interpretations and positions, with the NRC at a public meeting. If you have any questions, please contact me at 202.739.8080, [am@nei.org](mailto:am@nei.org) or Brandon Jamar at 202.739.8043, [btj@nei.org](mailto:btj@nei.org).

Sincerely,

*Alexander Marion*

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c: Mr. James E. Lyons  
Mr. Sunil Weerakkody

February 6, 2006

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