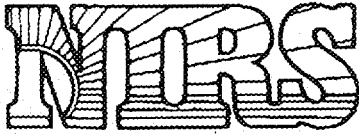


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## Nuclear Information and Resource Service

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November 1, 1999

Ms. Annette Vietti-Cook  
The Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

DOCKET NUMBER  
PROPOSED RULE **PR 50**  
(64FR44860)

BY FAX: 301-415-1672

Dear Ms. Vietti-Cook:

### NUCLEAR INFORMATION AND RESOURCE SERVICE COMMENTS PERTAINING TO NRC PROPOSED RULE TO ELIMINATE THE NON- COMBUSTIBILITY REQUIREMENT FOR FIRE BARRIER PENETRATION SEAL MATERIALS

As provided in the Federal Register Volume 64, Number 159, Pages 44860 – 44865 on August 18, 1999, Nuclear Information and Resource Services submits comments on the U.S. Nuclear Regulatory Commission (NRC) proposal to amend its fire protection regulations (10 CFR 50, Appendix R, Section III.M, "Fire Barrier Cable Penetration Seal Qualification," to eliminate the requirement that fire barrier penetration seals installed throughout the nation's nuclear power stations be constructed of non-combustible materials. NRC has stated the non-combustibility criterion for penetration seal materials as specified in regulation and review guidance documents does not contribute significantly to safety.

NIRS is adamantly opposed to this proposed amendment.

NIRS recognizes the agency's initiative to remove the non-combustibility standard from regulations for nuclear power station fire protection as nothing more than an effort to save the industry the significant cost associated with replacing the problematic Dow Corning RTV silicone foam fire seals without enhancing public safety. Similarly, the regulation change provides for decreasing the agency's regulatory burden associated with processing industry exemptions for combustible Dow Corning fire barrier material from the non-combustibility standard without enhancing public safety.

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Rather than replace a combustible and problematic fire seal material that does not meet the promulgated fire protection standard NRC is abandoning the regulatory standard to leave the faulty material in place.

NIRS believes this regulatory relaxation to be an abrogation of the agency's regulatory responsibility.

#### I. NRC PROPOSED ACTION INCREASES THE RISK OF A NUCLEAR ACCIDENT RESULTING FROM THE REDUCTION OF DEFENSE-IN-DEPTH OF FIRE PROTECTION SYSTEMS AT NUCLEAR POWER STATIONS

NRC recognizes that operable fire penetration seals are an important to safety as they represent a vital element of the defense-in-depth philosophy at nuclear power stations.

The word "operable" as it pertains to fire barrier penetration seals is key in understanding the importance of the non-combustible materials requirement and the agency's defense-in-depth philosophy.

NRC argues that combustible materials are utilized throughout nuclear power stations. NRC argues that despite the recognized fact that silicone-based fire seals are combustible, the combustible seal material's contribution to overall fire severity is negligible.

While NIRS does not dispute the NRC's overall evaluation of caloric contribution of silicone foam seals to a severe fire in a nuclear power station, we view these arguments as a particularly specious, given that the material in question is designated as a fire barrier seal.

NIRS contends that the non-combustibility requirement for fire seals is key in providing the a high level of confidence in the operability determination for a fire seal.

NIRS contends that the NRC has not analyzed the risk associated with the use of combustible fire seal material as it provides a fuel supported pathway or "wick" for flame and hot gas to burn through wall penetrations into adjacent fire zones that contain vital safety systems, structures or components.

The fire barrier penetration seal material is designed to surround combustible cable jacketing in standard applications for power, instrumentation, and control cables which penetrate walls dividing established fire zones. A fire initiated in one fire zone can follow combustible cable jacketing into a penetration and find a combustible fire seal material to further fuel and sustain combustion through the entire depth of the seal penetration into the adjacent established fire zone. A noncombustible penetration sealant material would not contribute fuel and support combustion through the depth of the seal along the path of combustible cable jacketing.

The NRC's technical assessment does not offer any evaluation or analysis regarding the contribution to severe accident risk evolving from a quick burn-through of fire seals resulting from the use of combustible cable jacketing, combustible penetration sealant material and other generic problems widely experienced with the Dow Corning product.

Given the combustibility of the silicone material, the industry has also widely documented improperly installed seals (less than sufficient sealant material, varying size voids created by problematic installation procedures, and cracks). By providing for the acceptance of combustible penetration seals, the NRC is reducing the level of defense-in-depth without fully analyzing the risks associated with accelerated burn-through of seals from the combination of these widely documented factors.

NRC does not offer any analysis and evaluation of how a combustible penetration sealant could also harbor a fire as it moves through a penetration seal the fire could leave a protective barrier of insulating ash in its trail making it difficult to identify, locate and extinguish.

Therefore, NIRS contends that the removal and non-enforcement of a non-combustible standard reduces the level of defense-in-depth. It is inappropriate to move forward with this rule change without analysis on the quick burn-through of seals under the above stated conditions.

## II. NRC DOES NOT OFFER ANY NON-DESTRUCTIVE METHOD FOR DETERMINING A CONFIDENCE LEVEL FOR THE RELIABILITY OF INSTALLED AND OPERABLE FIRE BARRIER PENETRATION SEALS GIVEN WIDESPREAD INDUSTRY EVIDENCE OF PARTIALLY FILLED, CRACKED OR MATERIAL VOIDS RESULTING IN INOPERABLE SILICONE FOAM SEALS.

The NRC argues that a properly tested, configured, installed and maintained silicone-based penetration seal is not a credible fire hazard.

However, the NRC proposed rule change provides no technical basis for how it achieves confidence levels and ignores the wide range of ongoing industry experience to the contrary documented in agency records.

The basic premise of the NRC rule change fails to address industry experience in properly bounding fire tests for the myriad of fire seal configurations deployed throughout nuclear power stations. In one case, the licensee improperly used a single test to bound 2000 fire barrier penetration seals in many different fire seal configurations. This omission does not lend to the credibility of the agency's argument. Such evidence documents improperly tested seal configurations.

The basic premise of the NRC rule change fails to take into account ongoing industry wide discovery of insufficient material fill, large voids and cracking in seals as the result of the problematic installation of the silicone foam penetration seal material in the field. In numerous cases, licensees have reported universal fire seal installation problems

involving the silicone foam material. Such evidence documents improperly installed silicone-based penetration seals.

The basic premise of the NRC rule change also fails to take into account that in maintaining problematic silicone foam fire penetration seals randomly discovered to contain insufficient fill material, large voids created by the hydrogen gas snap process during installation and material cracking, that licensees are using the same problematic material to replace inoperable fire seals. Such evidence documents improperly maintained penetration seals.

Given these recurring and what appears to be ongoing failures, NRC does not offer any method for determining exactly how the agency and the industry intend to achieve any degree of confidence in determining how it is achieving properly tested, configured, installed and maintained silicone-based penetration seals.

NRC has argued in other venues in which NIRS has participated that periodic visual walk-downs provide for confidence in installed seals. NIRS contends that industry reliance upon walk-downs of fire barrier penetration seal installed in walls, ceilings and floors, in many cases behind a series of obstacles, is not sufficient in determining the reliability and operability of a silicone foam fire barrier penetration seal. While a visual walk down might reveal missing penetration seals or missing damming boards, it will not reveal deficiencies that render seals inoperable from problems widely experienced in the industry. Problematic silicone foam seals have been discovered during random destruction of seals largely through unrelated maintenance activities. These documented problems include insufficient fill material and voiding of the sealant material by an installation process unique to the widely deployed Dow Corning silicone foam product.

In arguments before the NRC Advisory Committee on Reactor Safeguards, it was suggested that NRC move to require non-destructive analysis of fire seal installations for operability, such as through the employment of ultra-sound testing of each fire seal to examine for insufficient fill, voids and cracks. Non-Destructive examination of installed seals can provide a greater measure of confidence in determining if a seal has been properly installed.

Given the apparent lack of reasonable assurance that fire barrier seals are adequately inspected to determine that they have been properly tested, configured, installed and maintained, NIRS believes that it is inappropriate to reduce the fire protection standard by removing the non-combustibility standard. Similarly, it is inappropriate to maintain a policy of enforcement discretion for the same noncombustible standard.

NIRS contends that because of the evidence of recurring non-compliance with testing, configuration, installation and maintenance, retaining and enforcing the non-combustibility standard is an essential component in establishing confidence in fire barrier penetration seal operability at nuclear power stations.

### III. NRC ACTIONS TO REMOVE THE NON-COMBUSTIBILITY REQUIREMENT FOR FIRE BARRIER PENETRATION SEALS IS ARBITRARY AND CAPRIOUS

The NRC makes use of specious arguments to eliminate the non-combustible requirement for fire barrier penetration seal material. In making the claim that combustible materials are already used in nuclear power stations, NRC attempts to circumlocate the significant safety issue on how combustible cable jacketing installed through a penetration surrounded in a combustible fire barrier material with additional documented problems can contribute to an accelerated burn through thus failing as a rated fire barrier.

Without any apparent reason, NRC arbitrarily omits relevant and vital information pertaining to the Dow Corning silicone foam material's problematic installation history throughout the nuclear power industry.

NRC argues that the record of Appendix R does not disclose technical basis for including the non-combustibility criterion in Appendix R. However, NRC provides no reference to what degree staff and Commission went to arrive at the determination that no technical argument exists for the fire barrier penetration seals non-combustible materials requirement.

NIRS challenges the NRC to do more to raise the standard of fire protection at nuclear power stations rather than diminish them and protect the interests of public and environmental health and safety rather than shield the economic interests of the industry the agency is supposed to regulate.

Sincerely,



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