

RIC 2012
Fire Protection-Regulatory and Industry
Perspectives on NFPA 805 and Circuit Analysis

Perspective on Fire-Induced Circuit Failures

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Perspective on Fire-Induced Circuit Failures

- **Discussion Topics:**
 - Where We Were
 - Where We Are Now
 - Where We Need to Go
 - Conclusions

Where We Were

- NRC was not convinced that Licensees had adequately addressed all of the potential affects of fire-induced circuit failures
- Licensees believed that their current approach not only met their Licensing Basis and **NRC Regulations**, but also provided for a fire safe plant design
- Much of the Interaction & Discussion revolved around the legal aspects of compliance and relied upon untested beliefs about how circuits would perform in a fire condition

Where We Are Now

- Industry through NEI & EPRI performed a series of cable fire tests – testing actual circuit designs used in US Nuclear Power Plants
- NRC Research performed subsequent cable fire tests covering additional aspects of actual plant circuit designs
- NRC Research, through their current PIRT Panel, is analyzing the results of the cable fire testing performed and is recommending additional testing where needed
- All testing is focused on circuit behavior after the cable is damaged by a fire

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Where We Are Now

- NRC & Industry have provided guidance for addressing longstanding concerns related to fire-induced circuit failures [Reference Regulatory Guide 1.189 Revision 2 and NEI 00-01 Revision 2]
- Licensees are actively re-analyzing their facilities for Multiple Spurious Operations and taking actions to address the issues that they find

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Where We Are Now

- The Interaction & Discussion between the NRC & the Industry have shifted to focusing on the technical/risk/safety aspects of Nuclear Plant Design using actual cable fire testing data and the analysis of that data as the driving force
- The Interactions & Discussions include ones involving
 - NRC Staff & Industry, through NEI, for defining requirements and providing guidance
 - NRC Research, NRC Staff, EPRI & Industry Experts, including Licensees, for addressing and closing the gaps on any uncertainties related to requirements and guidance

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Where We Need to Go

- Complete the Research
 - That is currently ongoing
 - That is recommended
- Thoroughly analyze the research results and understand if the results represent gaps in the current criteria
- Implement an approach to assess what the gaps mean in terms of plant risk and safety
- Alter the current criteria, using the regulatory process, to address the resolution of those gaps that will improve plant risk and safety
 - The regulatory process must be applied in a way that increases regulatory stability and public confidence

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Conclusions

- The focus has shifted from looking primarily at legal requirements to addressing the issues from a technical/risk/safety perspective using research data, when appropriate
- More research is recommended & the results should be analyzed for gaps
- An approach to assess what any gaps mean in terms of plant risk and safety needs to be applied
- Plant changes with demonstrated benefits for improving risk and safety should be implemented using the regulatory process

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Acronyms

- NEI – Nuclear Energy Institute
- EPRI – Electric Power Research Institute
- PIRT – Phenomena Identification and Ranking Table

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