

Operating Plant Business

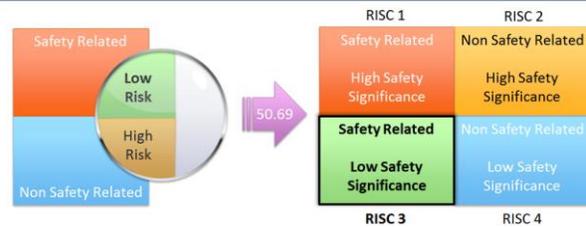
Westinghouse Delivers the Nuclear Promise through 10CFR50.69, “Risk Informed Operations”

Background

The Code of Federal Regulations (CFR) 10 CFR 50.69 contains the U.S. Nuclear Regulatory Commission (NRC) regulatory requirements for risk informing the categorization and treatment of structures, systems and components (SSCs) in nuclear power plants. The goal of this voluntary regulation is to improve overall plant safety by focusing regulatory attention on those SSCs that are important to plant risk and safety as determined by a risk-informed process while permitting low-safety-significant SSCs to be repaired and replaced using alternative treatment. Under the regulation, utilities can purchase, install and maintain safety-related, low-safety-significant components in a manner similar to those used for non-safety-related components, provided the utilities can establish reasonable confidence that the components will perform their design-basis function (through the use of alternate treatments). Thus, the regulation allows utilities and the U.S. NRC to focus efforts on issues related to high-safety and risk-significant SSCs and to reduce the regulatory burden and costs associated with low-safety-significant equipment. Industry estimates of the potential operating cost savings exceed \$1 million annually per reactor unit.

Description

10 CFR 50.69 permits licensees to remove safety-related SSCs of low-safety significance (RISC-3 in the diagram) from the scope of certain special treatment requirements, while ensuring that the design-basis capabilities are still maintained. While the licensees that implement the new rule will realize significant reductions in operating costs, the new rule is also a safety enhancement because it permits licensee resources to become more focused on SSCs that are safety significant (RISC-1 and RISC-2).



RISC=Risk Informed Safety Class

Figure 1: 10CFR50.69 Categorization Summary

The focus of the regulation is a robust categorization process that blends risk information and deterministic insights to evaluate the safety significance of components. Guidelines for the implementation of 10CFR50.69 may be found in NEI 00-04, “10 CFR 50.69 SSC Categorization Guideline”. These are being enhanced through additional guidance in NEI 16-09, “Risk Informed Engineering Programs (10 CFR 50.69) Implementation Guidance” to include new insights into the categorization of passive components (e.g., pipes and pressure vessels), guidance on alternate treatments, as well as updated guidelines for the use and interpretation of the PRA insights.

There is a significant amount of information that needs to be collected and evaluated to support the categorization of SSCs. An easy-to-use, validated and controlled database tool is essential to the efficient management of this information.



Westinghouse has developed the leading categorization database Tool for Risk Informed Operation to be used in the 10 CFR 50.69 efforts. Initially developed during pilot plant applications with the PWROG in 2008, the database interface has been updated to reflect the latest

categorization data requirements. The database tool provides a standard method for the storage and retrieval of the information used during the categorization process. Data entry error checks, including missing data or incorrect format, are included in the tool, as well as simple calculations. Finally, a standardized report is generated for use by the utility's Integrated Decision-making Panel (IDP), summarizing the data collected and the evaluations and insights obtained during the categorization effort. The database tool and the standardized reports reflect lessons learned from previous applications as well as insights from leading industry consultants in order to provide the optimal and least costly implementation of the 10CFR50.69 categorization process.

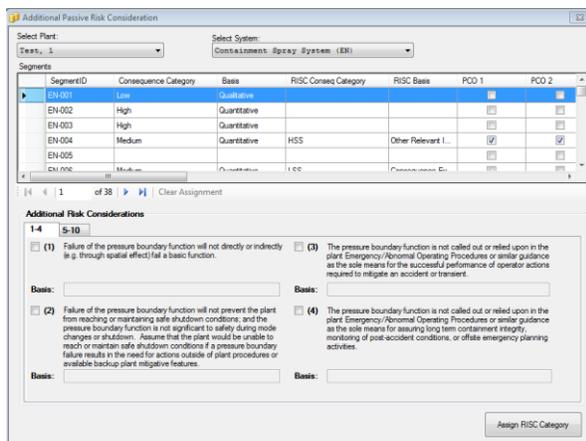


Figure 2. The Westinghouse 50.69 Database Tool Screen Shot of Passive Risk Considerations

Westinghouse has made the database tool for Risk Informed Operations available to the industry through the PWROG. The PWROG has initiated a pilot project with the intent to generically categorize several systems, and the tool will be used by Westinghouse in support of these projects.

The database tool has been tested and is very usable in its present configuration. However, as the industry gains more experience with the categorization process, it is anticipated that users will desire additional features. These features can be added through the PWROG to maintain a standardized database tool to provide consistent, cost-beneficial industry approach. Through the PWROG, the database tool supports the "Delivering the Nuclear Promise" initiative by providing a cost-beneficial, consistent industry approach to the categorization and reporting process.

Benefits

Given Westinghouse's extensive experience with PRA and safety regulation, we can help utilities achieve the projected benefits of the 10CFR50.69 regulation which include:

- Enhanced safety by focusing utility and U.S. NRC resources on safety-significant SSCs
- Reduced procurement and operating costs, estimated by the industry to be in excess of \$1 million per year based on exempted regulations:
 - Reduced quality assurance efforts
 - Reduced environmental qualification and seismic requirements for SSCs
 - Reduced surveillance and reporting requirements
 - Removal of SSCs from the scope of current ASME nuclear requirements for in-service inspection, in-service testing and repair/replacement
 - Reduced scope of check valve, motor-operated valve and containment isolation valve (10 CFR 50, Appendix J) testing programs
 - Reduced Maintenance Rule efforts
- Reduced need for spare parts and inventory
- Reduced worker radiation exposure

Experience

- **Westinghouse supports the Delivering the Nuclear Promise initiative** by working collaboratively through the PWROG and with NEI and EPRI on this initiative. Working first through the PWROG to provide generic categorization minimizes individual plant costs.
- **Westinghouse helps achieve customer success** through the application of valuable experience in the industry pilot applications at Wolf Creek and Surry and the development of the categorization database tool. Working with the PWROG, Westinghouse provides standardized categorizations and reports that are cost-beneficial, consistent with the industry, and defensible.
- **Westinghouse reduces customer burden** by providing the full scope of engineering support, including licensing, PRA reviews and model upgrades to help meet the technical adequacy standards, and systems and component design reviews, which reduces customer burden, project risk and uncertainty.