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 systems, structures 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 nonsafety-related components, provided the utilities can establish reasonable assurance that the components will perform their design-basis function. 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. The implementation of 10 CFR 50.69 has the potential to save as much as $1 million annually per reactor unit.

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 some significant reductions in operating cost, the new rule is a safety enhancement since it permits licensee resources to become more focused on SSCs that are safety significant (RISC-1 and RISC-2).

In support of the Pressurized Water Reactor Owners Group (PWROG) 10 CFR 50.69 efforts, Westinghouse has developed a methodology (documented in WCAP-16308), that conforms to RG 1.201, ASME Code Case N-660 and NEI 00-04. Subsequently, Westinghouse completed trial applications at three pressurized water reactor (PWR) plants that successfully demonstrated the categorization process to the U.S. NRC staff. However, none of the three plants pursued the full implementation of the 10 CFR 50.69 process for the entire plant.

Utilities implementing this regulation are required to submit a License Amendment Request to the U.S. NRC that describes the robustness of the categorization process and the utility’s plans for
monitoring the performance of SSCs within the scope of this program. Following review by the U.S. NRC, the utility will receive U.S. NRC approval for implementation of the categorization process and the monitoring program. Recently, Vogtle plants Units 1 and 2 submitted an application to the U. S. NRC staff for full implementation of the 10 CFR 50.69 application, and in December 2014, received a safety evaluation report and approval from the U.S. NRC for full implementation.

The 10 CFR 50.69 regulation is performance-based, meaning that only the performance requirements are set and the actual treatment for low-safety-significant components is not specified in detail. The performance requirements state that there must be reasonable confidence in a component’s ability to perform its design-basis function. In anticipation of post-implementation regulatory oversight activities, the industry, under the auspices of the Electric Power Research Institute, developed guidance to see that a uniform and acceptable level of treatment is being applied to these safety-related low-safety-significant components. This guidance will help provide consistent and appropriate regulatory oversight of the process, thereby allowing the projected savings to be realized.

On February 16, 2011, the U.S. NRC staff issued draft Inspection Procedure 37060, “10 CFR 50.69 Risk-Informed Categorization and Treatment of Structures, Systems, and Components Inspection.” This procedure will be used by the U.S. NRC following the implementation of the 10 CFR 50.69 process at the plant.

Benefits

Given Westinghouse’s extensive experience with safety regulation, we can help utilities achieve the projected benefits of the 10 CFR 50.69 regulation which include:

- Enhanced safety by focusing utility and U.S. NRC resources on safety-significant SSCs
- Reduced procurement and operating costs on the order 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 instances of worker radiation exposure

Experience

- Westinghouse brings valuable experience in the development of the categorization methodology and in the use of the methodology in successful trial applications. As a nuclear steam supply system designer/provider, Westinghouse defined the original safety classification requirements for the majority of the world’s nuclear fleet. In addition, Westinghouse has more than 35 years of experience working with the U.S. NRC to license these plants. This experience is crucial to developing the details of the categorization process to provide consistency with previous U.S. NRC interactions for timely and efficient regulatory acceptance. For the implementation of 10 CFR 50.69, Westinghouse is in a position to assist utilities in taking advantage of this new regulation.
- Westinghouse has contributed significantly to the development of the 10 CFR 50.69 regulation and both the NEI and the ASME categorization guidance, and understands the basis for and the details behind the guidance. Westinghouse is the industry leader in testing and refining the categorization methodology that has been endorsed by the U.S. NRC as an acceptable method to implement this new regulation.
- Westinghouse has applied industry categorization guidance in practical applications through the PWROG 10 CFR 50.69 trial use efforts at three PWR plants, and understands the issues that arise during implementation. Westinghouse has performed the component categorization for the only 10 CFR 50.69 pilot plant applications completed to date.
- Westinghouse has developed an efficient and effective process for documentation of the categorization of SSCs, the value of which cannot be overestimated for a process that changes the plant design basis.
- Westinghouse has worked with utilities to understand the changes to the plant infrastructure that will be required for successful implementation of the 10 CFR 50.69 program.
- Westinghouse has been involved in the development of guidance to apply a uniform and acceptable level of treatment to safety-related components found to be low-risk significant.