



Project Number 694

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U. S. Nuclear Regulatory Commission
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Subject: PWR Owners Group
“PWR Owners Group Program to Address NRC Issues Associated with the Installation of the New Design SSPS Boards,” PA-LSC-1170 R0

Attention: Mr. Pat Highland – Director
Division of Engineering
Office of Nuclear Reactor Regulation

On April 5, 2013, the Pressurized Water Reactor Owners Group (PWROG) met with NRC staff regarding the design, testing, and implementation of the latest generation of Westinghouse Solid State Protection System (SSPS) replacement cards. The replacement SSPS cards are digital devices, and the NRC staff has challenged a Licensee’s application of the criteria of 10 CFR 50.59 to the installation of the replacement cards, specifically with respect to the conclusion that the replacement cards can be installed without prior NRC approval. During the April 5 meeting, the PWROG stated its intention to develop a program that is applicable to the affected members that would provide two deliverables: 1) An operability evaluation (for use by those members who have the cards currently installed) showing that the replacement cards were capable of performing their safety functions with reasonable assurance; and, 2) An evaluation of the activity of installing the replacement cards pursuant to the criteria of 10 CFR 50.59, using the guidance of NEI 01-01 and NEI 96-07, Revision 1.

Since the April 5 meeting, the PWROG has developed a program to provide the deliverables discussed above, that program has been approved by the affected members, and it is now funded. The schedule for completion of this program is October 31, 2013. The deliverables will be provided to each participating member for their use as the deliverables apply to their plant specific implementation. In order to ensure that the 10 CFR 50.59 evaluation is thorough and complete, and that the correct conclusion is reached regarding whether or not prior NRC approval is required, the PWROG will request a meeting with the NRC staff in the near future so that we can understand any specific concerns that the staff has with the implementation of the replacement cards.

Specifically, the PWROG understands that the staff has concerns, in part, with the quality of the software development process, system level upgrade versus individual card replacements, and the question of whether the cards can be considered "simple devices" in the context of NEI 01-01. We welcome the opportunity to meet with the staff to provide additional information on

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these topics, plus any other concerns the staff may have. In the meantime, the PWROG respectfully requests, on behalf of the affected members, that the NRC staff allow this issue to be addressed at the industry level via the PWROG program, rather than on an individual licensee basis. The safety basis for this request is that the operability evaluation performed to date has demonstrated with reasonable assurance, that the replacement cards are capable of performing their safety function, and that the issue devolves to the proper application of the criteria of 10 CFR 50.59. This issue is common to every licensee that has installed or is considering the installation of the subject replacement SSPS cards.

The installation of the replacement SSPS cards provides a number of important safety enhancements and reliability improvements over the current SSPS cards:

The new design improves the card reliability by eliminating several single point failure vulnerabilities, uses state-of-the-art Military Specification electronic components (where available), reduces tin whisker concerns, reduces power consumption, and increases the calculated mean time between failures (MTBF). Another key improvement to the new design cards is a self-check feature, which can be configured to provide a remote trouble alarm. Installation of the new-design cards will improve the reliability of SSPS signal generation.

The failure probabilities of the new-design cards with regard to signal generation are improved over the current design. The key to the reliability improvement is the self-check feature designed into each card.

In addition, the new cards design adds the following functions and features:

- Redundant power supplies;
- Redundant series and parallel output drivers to improve reliability and fault tolerance;
- Card edge status indicators that show the input and output state of the basic logic, along with power supply and fault status;
- All logic is implemented in two devices. The main device provides the basic logic functions, and the second device provides continuous testing of the main device.
- A self-test function that continuously tests the functions of the card's basic logic and output drivers. (Protection channel reactor trip signals and engineered safety feature actuation signals received during performance of self-test processes are processed normally, and will result in the generation of a reactor trip or engineered safety feature actuation signal.) The self test failures are detectable by inspection of a card edge indicating lamp and if configured, can provide immediate annunciation to the operators in the Main Control Room.

The PWROG requests that an opportunity be provided to complete a generic 10 CFR 50.59 Evaluation that addresses any potential issues that the staff may have with respect to NEI 01-01, based on the realization of the safety enhancements provided by the new SSPS cards. Installing the new SSPS cards via a thorough and complete 10 CFR 50.59 Evaluation is the preferred option, versus a license amendment request, and provides the most efficient use of both staff and licensee resources.

The PWROG looks forward to working with the NRC staff to achieve a successful resolution of this issue.

Correspondence related to this transmittal, including requests for additional information, should be addressed to:

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If you have any questions, please do not hesitate to contact me at (205) 992-7037 or Mr. W. Anthony Nowinowski at (412) 374-6855.



Sincerely,
Jack Stringfellow, Chairman
PWR Owners Group

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cc: PWROG Management Committee
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