

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

SUBJECT: Dockets info on design of replacement sys to be installed at Kewaunee plant.Design description of reactor protection & ESFs upgrade.

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May 17, 1999

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reactor Protection and Engineered Safety Features Project

- References:
1. Letter from W.O. Long (USNRC) to M.L. Marchi (WPSC) dated February 16, 1999, "Report of Visit to Kewaunee by NRC Project Manager (TAC No. MA2988)."
  2. Letter from W.O. Long (USNRC) to Wisconsin Public Service Corporation dated March 17, 1999, "Summary of March 4, 1999, Meeting with Kewaunee Licensee and Westinghouse Regarding "Ovation" Project."

During the meetings, as described in the referenced letters, Wisconsin Public Service Corporation (WPSC) discussed proposed changes to the Reactor Protection System (RPS) and Engineered Safety Feature (ESF) process protection and relay cabinets at the Kewaunee Nuclear Power Plant. The purpose of this letter is to docket information on the design of the replacement system to be installed at the Kewaunee plant.

The scope of replacement includes eight racks of Foxboro H-Line process protection electronics and fourteen racks of relay logic. These twenty-two racks make up four process protection channels, two trains of reactor trip signals, two trains of engineered safety feature signals, and test features.

Field devices, which provide the input signals to these cabinets, will not be replaced as part of this project. The replacement system will continue to interface with control room consoles and panels, plant computer, and annunciator system. Field sensor wiring into the process cabinets and output wiring from reactor protection and engineered safety cabinets is not anticipated to be modified, as part of this project.

Project kick-off meetings were held with Westinghouse Electric Company and the U.S. Nuclear Regulatory Commission in February/March of 1999. It is WPSC's intent to submit various project licensing reports to the NRC throughout the course of 1999. Hardware and software design, verification/validation, and equipment qualification tests are expected to be completed in 2000.

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A license amendment request for KNPP would be submitted to the NRC by the end of 2000 with NRC approval requested by mid-year 2001. Shipment of new racks and components to KNPP would occur in early 2001, with installation planned for the fall refueling outage in 2001.

WPSC plans to meet with the NRC Instrument & Control (I&C) branch staff on a regular basis in order to obtain assistance in the review of the submitted reports and keep the NRC informed of project progress.

Attached is the design description of the Reactor Protection and Engineered Safety Features Upgrade.

Please contact Mr. David A. Ozarowicz, PE (920-388-8640) or Mr. Tom Webb (920-388-8537) of my staff should you have any questions.

Sincerely,



Mark L. Marchi  
Vice President-Nuclear

DAO

Attach.

cc - US NRC Region III  
US NRC Senior Resident Inspector

ATTACHMENT 1

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

May 17, 1999

**Reactor Protection and Engineered Safety Features Upgrade**

## Reactor Protection and Engineered Safety Features Upgrade

This upgrade is intended to replace the Reactor Protection System (RPS) and Engineered Safety Feature (ESF) System process protection and relay racks at the Kewaunee Nuclear Power Plant with a state-of-the-art digital system using the Westinghouse safety system design based upon the OVATION platform. Westinghouse was chosen for this design change because; 1) Westinghouse is the original nuclear steam system supplier for the Kewaunee Nuclear Power Plant, 2) they have extensive experience with RPS/ESF upgrades, and 3) they have working experience with the NRC in the licensing of digital systems.

The scope of replacement includes eight racks of Foxboro H-Line process protection electronics and fourteen racks of relay logic. These twenty-two racks make up four process protection channels, two trains of Reactor trip signals, two trains of engineered safety feature signals, and test features. The existing RPS/ESF components are mostly original plant equipment and design. We are experiencing increased maintenance, spare parts procurement difficulties, and reduced original manufacturer technical support.

The RPS/ESF upgrade will provide for enhanced reliability, testability, fault detection, fault identification, improved information flow, and expandability. The state-of-the-art digital system provides a higher degree of reliability and availability over the existing analog system due to the age of the present components and a reduction in the number of electro-mechanical components required. The digital system upgrade will provide for a one-for-one functional replacement, while providing a much simpler hardware platform to test, maintain, and operate.

WPSC and Westinghouse have assigned experienced staff to this project who are familiar with the plant, systems, and licensing aspects of the project. Key tasks for this project are the System Architecture report; the Diversity & Defense-in-Depth Analysis; and the Design, Software, Lifecycle and Verification & Validation plan. An overview of the detailed project schedule was presented to the NRC on March 4 showing the proposed report submittals to the NRC, project review dates, design and construction dates, testing and validation dates, KNPP license amendment submittals, final NRC SER approval date, and installation date.

The RPS/ESF digital upgrade will be built and tested to applicable regulatory requirements and industry standards. Areas such as software configuration and testing, electromagnetic compatibility, Diversity and Defense-In-Depth Analysis, seismic qualification, single failure criterion, environmental qualification, and testability will be addressed during this project.

The RPS/ESF upgrade, built to current industry standards, will have boundaries with components built to the original plant licensing basis. These boundaries are shown in Figure 1.

Kewaunee Nuclear Power Plant's existing RPS and ESF systems are designed to meet the intent of IEEE Std. 279-1968. The RPS/ESF upgrade (inside the boundary, Figure 1) will be manufactured and installed in compliance with IEEE Std. 603-1991. Field devices, which provide the input signals to these cabinets, will not be replaced as part of this design change. The

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new system will continue to interface with the control room consoles and panels, plant computer, and annunciator system. Field sensor wiring into the process cabinets and output wiring from the reactor protection and engineered safety features cabinets are not anticipated to be modified, as part of this project.

Individual instrument bus power sources will be maintained per plant design. The power supplies within the new cabinets will be designed and installed in accordance with IEEE Std. 603-1991. The capabilities to input test signals to the process protection racks and control loops for testing will be maintained. The ability to read field signals, while at power, will be maintained. The scope of the testing, calibration, and channel checks shall continue to be in accordance with KNPP's Technical Specifications.

ATTACHMENT 2

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

May 17, 1999

**Figure 1 - RPS/ESF Architecture**

Figure 1  
RPS/ESF Architecture

