

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-305/87008(DRS)

Docket No. 50-305

License No. DPR-43

Licensee: Wisconsin Public Service Corporation
Post Office Box 19002
Green Bay, WI 54307-9002

Facility Name: Kewaunee Nuclear Power Plant

Site Visit At: Kewaunee, Wisconsin

Site Visit Conducted: December 9-10, 1986 and February 26, 1987

Inspectors: *J. Ulie for*
A. Fresco

2-27-87
Date

J. Ulie for
K. Sullivan

2-27-87
Date

J. Ulie
J. Ulie
Team Leader

2-27-87
Date

Ronald N. Gardner
Approved By: Ronald N. Gardner, Chief
Plant Systems Section

2-27-87
Date

Inspection Summary

Site visit on December 9-10, 1986 and February 26, 1987 (Report No. 50-305/87008 (DRS))

Areas Inspected: Licensee requested special NRC site visit by a Region III based inspector and their consultants to review the licensee's program approach to implement the applicable Sections of Appendix R to 10 CFR 50. This site visit was conducted in accordance with Inspection Procedure 30703 and used Temporary Instruction 2515/62 as a guideline during the reviews.

Details: Since this was a special NRC site visit requested by the licensee to review the licensee's program approach to implement certain Sections of Appendix R in accordance with Generic Letter 86-10, no categorization of the site visit details was performed.

DETAILS

1. Persons Contacted

Wisconsin Public Service Corporation

- *J. Belant, Nuclear Services Engineer
- *G. Bernhoft, Nuclear Services Supervisor
- *D. Braun, Superintendent, Plant Operations
- *D. Faltynski, Nuclear Fire Protection Coordinator
- *D. Hanson, Operations Superintendent
- *D. Molzahn, Nuclear Systems Supervisor
- *M. Perrson, Nuclear Fire Protection Supervisor
- *C. Smoker, Systems/Reliability Supervisor
- C. Steinhardt, Plant Manager

Engineering Planning and Management, Inc.

- *P. Nicholson, Project Engineer - Fire Protection

Fluor

- *D. Cole, Project Manager

US NRC

R. Nelson, Senior Resident Inspector

The team members also contacted other plant personnel including engineering and operations personnel.

*Denotes those present at the exit meeting conducted on December 10, 1986.

2. Background Information

According to an NRC letter dated January 26, 1982, to the licensee, the 10 CFR 50, Appendix R Rule required that for Kewaunee Nuclear Power Plant (KNPP) to be in full conformance with the Rule, the licensee must meet Sections III.G, Fire Protection of Safe Shutdown Capability; Section III.L, Alternative and Dedicated Shutdown Capability; Section III.J, Emergency Lighting; and Section III.O, Oil Collection System for Reactor Coolant Pumps. Also the Rule further requires that implementation of these Sections be in accordance with the related scheduler requirements of 10 CFR 50.48, Fire Protection.

By NRC letter dated February 29, 1984, the Commission issued an exemption to the scheduler requirements for the alternative shutdown system as set forth in 10 CFR Part 50.48(c)(4) to the Spring 1987 refueling outage.

The team review consisted of touring the plant, participating in discussions with the licensee's staff, and performing a preliminary drawing and analyses review relative to the licensee's program approach to implementing the above mentioned Sections of Appendix R to 10 CFR Part 50. The inspectors also noted certain other general observations made while conducting inplant walkthroughs.

3. Fire Protection Review

- a. According to the licensee's staff, the planned installation of radiant energy heat shields inside containment was scheduled to be completed during the upcoming 1987 refueling outage in accordance with 3M Product Fire Barrier Construction Details. The shields are to be installed in locations where less than twenty (20) feet of horizontal separation exists in order to meet the requirements of Section III.G of Appendix R. The team members indicated this approach appeared to be satisfactory.
- b. During tours of the Auxiliary Building, Safeguards Alley and Screenhouse areas, a team member observed several recently installed fire barrier walls which have been provided to satisfy Section III.G of Appendix R. Based on a visual inspection alone the barriers appeared acceptable.
- c. The team members observed certain designated fire boundary doors and/or their frame assemblies located in penetration openings of the recently installed three hour fire barrier walls that were missing the listing labels or the printing on the listing labels was not legible. The team members indicated a need for traceability of these fire door assemblies demonstrating their required fire resistance rating.
- d. The licensee's emergency lighting approach appeared satisfactory based on the design drawings and information provided by the licensee, however, additional lighting units appeared to be needed to satisfy Section III.J of Appendix R. The team members recommended that the licensee utilize the safe shutdown related procedures discussed during the team's visit to identify areas needing emergency lighting units.
- e. On plant tours of the facility, the team members observed various unsealed penetration openings in barriers designated as three hour fire rated boundaries for Appendix R. The licensee's staff indicated these unsealed openings would be sealed in accordance with the Fire Protection Program Analysis (FPPA).
- f. In discussions with the licensee, the inspector was informed that various representative mechanical and electrical penetration configurations were tested at Underwriters Laboratory (U.L.) including the wall materials installed in these barriers. According to the licensee, these barriers were tested to demonstrate that a three hour rated fire barrier was provided. Where specific barrier configuration differences existed, the licensee's staff showed that analyses have been written to conform to Generic Letter 86-10. The team members informed the licensee that based on the successful verification review of the U.L. test report and adequate Generic Letter 86-10 analyses, this approach appeared to be satisfactory.

- g. Based on discussions during the visit, it appeared that additional clarification to the "Kewaunee Appendix R Design Description" would more accurately reflect the planned final Appendix R modifications. Sections 2.1.3.1.1.a and 2.1.3.1.2 of the Appendix R Design Description document were discussed as potentially needing these changes. The team members concerns regarding these sections included fire barrier walls having fire resistance ratings less than three hours and the exemption granted (installation of radiant energy heat shields) for redundant trains having less than 20 feet separation inside containment.

4. Electrical Review

- a. Regarding circuit coordination, the licensee representatives indicated that circuit breaker coordination curves are available for review for the 4160, 480 volt power sources. The low voltage AC and DC (125 VDC, 120 VAC) fuses and circuit breakers are coordinated by standard industry ratios. The licensee also indicated an established program for breaker and relay testing is in place.
- b. Concerning high impedance fault analysis, no documented analysis was available for this visit, however, the licensee indicated an analysis will be provided at the time of the compliance inspection.
- c. Licensee representatives indicated that an analysis has been prepared for all high/low pressure interface concerns. The team members learned that control of interfaces is to be provided by manual operation or deenergization of power breakers as governed by procedure(s).
- d. Regarding current transformer secondary concerns, large motor current transformers are to be protected from the consequences of open secondary induced voltages by having their secondary winding manually shorted.
- An analysis is in progress to address the remaining current transformers within the plant.
- e. The licensee's approach of separation for redundant trains provided by three hour fire barriers mitigates the possibility of common enclosure concerns for this plant. Licensee representatives stated that non safety-related cables routed in common enclosures with safety-related cables are protected by coordinated breakers or fuses.
- f. Redundant circuits important to safe shutdown are separated by a three hour fire barrier outside of containment. Within containment, redundant circuits are separated by 20' with an exemption for intervening combustibles or have radiant energy heat shields installed where 20' of separation is not attainable.

5. Mechanical Review

- a. A team member requested the licensee's staff to have an analysis available for the upcoming compliance inspection to show that the Refueling Water Storage Tank boron concentration is sufficient to

achieve cold shutdown and whether use of letdown flow is required to achieve sufficient boration. Such an analysis was not available for review during this visit.

- b. A team member determined that the licensee's staff needs to consider the postulation of a fire causing the loss of both trains of pressurizer heaters. The team member indicated that pressurizer pressure could not strictly be controlled using just charging and letdown and referred the licensee's staff to Generic Letter 86-10 for further clarification. Additional review by the team during the upcoming compliance inspection of the granted exemption is planned.
- c. Regarding the communications system during post fire safe shutdown operations, the licensee's staff mentioned that no reliance on any communication system (i.e. gas-tronics, portable radios, etc.) is planned other than voice communication at this time. However, based on the procedural walkthrough a team member questioned whether this approach is feasible due to component noise levels in certain areas of the plant where communications are necessary.
- d. A team member made the licensee aware that documentation of operator training using the emergency procedures should be available for the upcoming compliance inspection.
- e. A team member requested the licensee's staff to consider clarifying the correlation of fuse numbers on SD-100/101 to actual equipment.
- f. A team member pointed out that the design basis time and related analysis to implement the dedicated shutdown procedure priorities typically include the following:
 - (1) Steam Generator dryout time and initiation of auxiliary feedwater pumps.
 - (2) Reactor Coolant System (RCS) charging pump makeup flow and seal injection flow.
 - (3) Diesel Generator starting time and also time to initiate service water to cool the diesels.
 - (4) Justification that only one SW pump is necessary for safe shutdown.
- g. Regarding the RCS/RHR interlock jumpers and RHR pump power and control cable jumpers, a team member advised the licensee's staff of the need for repair procedures to exist; for the importance of storing the material onsite; and to have permanent lugs installed versus alligator clips.
- h. A team member emphasized that the air accumulator capacities should be sufficient for the number of cycles of operation required including that required for the pressurizer PORV's, MSIV's, and any other pertinent components.

i. Comments regarding the safe shutdown procedure review included the following:

- (1) The procedure is based on stripping all loads from busses and using diesels for plant shutdown whether or not offsite power is available. Procedures must be in place to apply to the situation where offsite power is available at any time during the 72 hour period.
- (2) The distribution of keys needs further review.
- (3) The licensee's staff should consider whether or not control power knife switches are adequate for preventing spurious signals.
- (4) Each procedure is intended to possibly apply to fires in areas other than the Relay Room or Dedicated Shutdown Panel, respectively. The Introduction section of the procedure for the Relay Room fire should be revised to state whether or not it also applies to a Control Room fire. If not, some procedure must be developed to apply to a Control Room fire.
- (5) Analysis and/or test of whether the SW pump breaker can be closed prior to starting a diesel generator will be performed.
- (6) Procedure A-DGM-10 may need revision to include starting of service water pump immediately after starting the diesel.

6. General Observations and Comments

- a. During plant tours the team members noted that the plant cleanliness is being well maintained.
- b. The team members made mention of an improvement from the 1977 original Fire Hazards Analysis (FHA) in the addition of a National Fire Protection Association (NFPA) conformance section planned to be added to the proposed Revision 2 of the FPPA. The team members encouraged the licensee to docket Revision 2 of the FPPA since the original FHA is docketed but no longer accurately reflects the as-built plant.
- c. Region III team member indicated to the licensee's staff that based on the previous satisfactory review performed per Section III.0 of Appendix R, as documented in Inspection Report No. 84-15, dated November 16, 1984, no further review in this area is planned.
- d. The team members advised the licensee's staff that certain Fire Protection Post Fire Shutdown related surveillance tests may be requested to be performed during the upcoming compliance inspection.

7. Exit Interview

The team members met with the licensee representatives at the conclusion of the visit on December 10, 1986, and summarized the scope and details of the visit. The licensee acknowledged the statements made by the team

members. The team members also discussed the likely informational content of the visit details with regard to documents obtained and reviewed by the team members during the inspection. The licensee's staff identified one document as having potential proprietary information. In this site visit report, no detailed information is discussed regarding this document. The licensee did not identify any other documents as proprietary. Additional information concerning this site visit was discussed on February 26, 1987, during a telephone call between Mr. Ulie and Mr. Molzahn.

The team members requested to be provided with completed and approved copy's of the licensee's FPPA document, the Appendix R Design Description Manuals, and a copy of the U.L. Test Report performed for the three hour fire barrier wall configuration three weeks in advance of the upcoming compliance inspection.