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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

Wisconsin Public Service Corporation  
ATTN: Mr. E. W. James, Senior Vice President  
Power Generation and Engineering  
P. O. Box 1200  
Green Bay, Wisconsin 54305

Docket No. 50-305

Gentlemen:

This refers to the inspection conducted by Mr. Boyd of this office on April 23 and 25, 1975, of activities at Kewaunee Nuclear Power Plant authorized by NRC Operating License No. DPR-43 and to the discussion of our findings with Messrs. Louma, Lange and others of your staff at the conclusion of the inspection.

A copy of our report of this inspection is enclosed and identifies the area examined during the inspection. Within this area, the inspection consisted of a selective examination of procedures and representative records, interviews with plant personnel, and observations by the inspector.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you or your contractors believe to be proprietary, it is necessary that you make a written application to this office, within twenty days of your receipt of this letter, to withhold such information from public disclosure. Any such application must include a full statement of the reasons for which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. Unless we receive an application to withhold information or are otherwise contacted within the specified time period, the written material identified in this paragraph will be placed in the Public Document Room.



RM

Wisconsin Public Service  
Corporation

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No reply to this letter is necessary; however, should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely yours,

Gaston Fiorelli, Chief  
Reactor Operation, Branch

Enclosure:  
IE Inspection Rpt No. 050-305/75-07

bcc: PDR  
Local PDR  
NSIC  
TIC  
OCG, BETH, P-506A

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-305/75-07

Licensee: Wisconsin Public Service Corporation  
P. O. Box 1200  
Green Bay, Wisconsin 54305

Kewaunee Nuclear Power Plant  
Kewaunee, Wisconsin

License No. DPR-43  
Category: C

Type of Licensee: PWR W

Type of Inspection: Special Announced

Dates of Inspection: April 23 and 25, 1975

Dates of Previous Inspection: April 9, 1975 (Management Meeting - Operations)

Principal Inspector:

*E. L. Jordan*  
for *D. C. Boyd*

5/21/75  
(Date)

Accompanying Inspector: None

Other Accompanying Personnel: None

Reviewed By:

*E. L. Jordan*  
E. L. Jordan  
Senior Inspector  
Reactor Operations Branch

5/21/75  
(Date)

SUMMARY OF FINDINGS

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters

None outstanding.

Unusual Occurrences

None inspected.

Other Significant Findings

A. Current Findings

The unit is currently operating essentially full power in a base load mode.

B. Unresolved Items

None

C. Status of previously Reported Unresolved Items

None.

Management Interview

The Management Interview was conducted on April 25, 1975, with Messrs. Louma, Plant Superintendent, and Lange, Assistant to the Superintendent, Maintenance.

The items discussed included the following:

- A. Construction specification for electrical penetration. (Paragraphs 3a - 3d)
- B. Results of Regulatory inspection of electrical penetration. (Paragraph 3d)
- C. Current practices at plant. (Paragraph 4)
- D. Compliance with the final safety analysis report. (Paragraph 5)

E. Plant Fire Protection System (Paragraph 5 c)

F. Licensee's Response to IE - Bulletins 75-04, 75-04A. (Paragraph 6)

## REPORT DETAILS

### 1. Persons Contacted

Wisconsin Public Service Corporation (WPS)

C. Louma, Plant Superintendent  
R. Lange, Assistant Plant Superintendent, Maintenance  
J. Ruege, Quality Assurance Supervisor  
R. Hirst, Maintenance Supervisor

### 2. General

Special Inspections were conducted on April 23, and 25, 1975 to determine the plant status in regard to the provision of acceptable fire stops and flame retardant seals for electrical penetrations.

The major inspection effort was of the electrical penetrations in the following areas:

Control Room  
Relay Room (cable spreading room)  
Auxiliary Equipment and Ventilation Room (above control room)  
Diesel Generator Rooms  
Portions of the Turbine Building  
Portions of the Auxiliary Building

The inspection included a review of a representative sampling of the completed plant work request and modification request forms, plus discussions with the plant electrical Supervisor, the Quality Assurance Supervisor, and the Assistant to the Manager, Maintenance.

Also included in this inspection was a sampling comparison of License commitments in the Final Safety Analysis Report (FSAR) against the actual conditions now existing at the plant.

### 3. Penetration Seal Materials

The following materials and specifications were utilized in providing the fire-stops, sealing and fire retardant protection for the various electrical penetrations and trays at this plant;

#### a. Fire-Stops

These fire-stops are one inch thick sheets of "Marinite Board" manufactured by the Johns-Manville Company. The basic materials are cement and asbestos.

b. Fire-Retardant Materials

1. Flamemastic 71A manufactured by the Dyna-Therm Corporation. This is a water base material which is non-flammable at all times.
2. R.T.V.124 and 511 manufactured by General Electric Company. This material is documented by U.L. Test Subject 94 to be type SE-0 or H self-extinguishing rating.

c. Sealant Materials

The sealant materials which are packed in around the electrical cables in the electrical penetrations are all of the inorganic fiber insulation type of material.

1. Thermal insulating wool (glass) Johns-Manville.
2. Cerafiber - Johns-Manville.
3. Kaowool (glass) Babcock & Wilcox Company.
4. Flamemaster - Dyna-Therm Corporation.

These materials are specified as non-flammable and identified in purchase order specification on order K-664.

Thus, in summary, none of the materials used in sealing and fire retardant coating of these electrical penetrations are at any time flammable.

d. Penetration Sealant and Flame Retardant Specifications.

Detailed penetration sealing, fire retardant application, and fire-stop specifications are provided for eight different types of penetrations. These specifications are provided by Pioneer Service and Engineering Company on drawing No. 237127A - E2639F, Revision F, 11-1-73. These specifications were reviewed by the inspector prior to the physical examination of the various electrical penetrations in the plant. Several minor deficiencies were observed as follows:

- (1) One non-safety related cable in a multi-cable penetration from the relay room to the control room was not coated with a flame-retardant material. It appeared that this cable had been installed after the penetration was originally sealed. The cable was firmly packed in fiber glass

wool to provide a seal, however, no flame retardant had been applied directly on this single cable. All other cables were coated with flame retardant material.

- (2) Three 2" conduits originating in the relay room and terminating in the control room were not sealed, that is, a draft could be felt at the Control room end of these conduits.
- (3) Two 2" spare conduit openings between the Relay room and the Auxiliary buildings were not sealed.
- (4) At several electrical penetrations fire stops, the flame-mastic 71A fire retardant material was observed to be cracked, apparently due to shrinkage upon drying. This cracking up to  $\frac{1}{4}$ " in width, did not provide a pressure/smoke seal around the fire-stop.

The licensee is currently examining all safety related electrical penetrations for conformance to the specifications identified above. The licensee has stated the intent to correct any deficiencies found, including the four identified above, as expeditiously as time and plant conditions allow.

The four deficiencies are not considered as immediately serious by the inspector since they pose no fire propagation threat, but rather a smoke control problem. This plant utilizes a multi-mode ventilation system<sup>1/</sup> which is designed to assure that smoke from any other portion of the plant can be prevented from entering the control room or can be swept out if it originates in the control room. As a backup measure the inspector observed that there are two self-supporting air breathing masks available in the control room. Also this plant is designed with the capability for a shut-down from outside of the control room. This capability was demonstrated as a part of the plant start-up and power ascension testing.<sup>2/</sup> During this inspection the inspector re-reviewed this capability. Inspections at the control cabinet verified that control center, multi communications systems, and procedures<sup>3/</sup> are current and ready for use.

#### 4. Current Practices

- a. Discussions with the Electrical Supervisor and the Plant

<sup>1/</sup> Emergency Control Room air conditioning system operation E-ACC-25.

<sup>2/</sup> Power ascension test no start-up test No. 6.3, procedure E-0-06, on May 3, 1974.

<sup>3/</sup> Emergency procedure E-0-06 control room inaccessibility.

Quality Assurance Supervisor, plus a review of plant work request and modification records indicate that none of the safety related electrical penetrations have been disturbed since final construction. Thus, there has been no need for special procedures for re-sealing an electrical penetration. General maintenance procedure - GMP No. 202, cable pull, carries a note to remind personnel of the need to return the penetration to "Original status" after each cable pull activity. However, this procedure does not reference the construction specifications referenced in item 1-D above. The licensee will consider listing this reference in a future revision of GMP 202.

The licensee does not believe that individual penetration seal testing to insure that a total pressure seal exists is necessary for penetrations other than containment boundary penetrations. This position is based on designed independence between the various plant ventilation control systems to permit sweeping of smoke from the various portions of the plant without the smoke being introduced into the control room. The separate control room ventilation system is designed with the capability to purge any smoke originating in the control room directly to atmosphere, or to operate in a total recirculation, totally filtered mode. Thus, the licensee does not intend to perform individual penetration seal tests. They do intend to adhere to the penetration specifications of item 3-d above in providing a flame stop, flame retardant fire barrier type penetration with reasonably tight smoke limiting seal. The inspector's review of FSAR and the penetration specification indicates that neither specifies that a measurable pressure seal exist, but rather that a "Fire Barrier" exist. No open flame is used in the testing of seals or penetrations in the Plant.

5. Compliance with final Safety Analysis Report

Other items inspected and compared against the commitment of the FSAR include the following: (sampling basis only)

- a. The Main Auxiliary, Reserve Auxiliary and Tertiary Auxiliary Transformers are located outdoors and are physically separated from one another by firewalls. Each transformer cell, formed by the firewalls, has an automatic water spray system to extinguish and prevent the spread of fires.
- b. Ampere ratings for the power conductors used are based on the National Electrical Code, 1968 Edition (USAS C1 - 1968)90°

rating, with a derating factor of 80% applied across the board to comply with section 318-6 of the National Electrical Code. The power conductors are three conductor, galvanized armored and installed in a single layer in ladder type cable trays, which are clamped to insure that ample ventilation spacing is maintained throughout the run.

- c. All cables, exclusive of lighting circuits, have fire and radiation resistant jackets designed to withstand the radiation, temperature and humidity conditions of the containment atmosphere following a loss-of-coolant accident.
- d. Cable separation is provided between redundant systems so that no single failure or incident can render both redundant systems inoperable or remove them from service.

Redundant circuitry for reactor protection and engineered safety systems are separated into six color coded Class 1E cable groups.

Each group is run in a separate tray, ladder, trough or conduit. These trays are identified on electrical drawings for engineered safety features and are marked and color-coded on the actual hardware. All trays for the engineered safety feature equipment are Class 1 structures.

Cable trays used for redundant reactor protection systems, engineered safeguards systems and Class 1E electrical systems have an identifying code number stencilled on them in colored paint after they are installed. The number is applied whenever there is a change in identity or when passing through floor or wall openings. This number is applied prior to the pulling of any cables, and the color established the system to which it is assigned.

For the non-Class 1E systems throughout the remainder of the plant, trays installed in stacks are spaced vertically with a minimum of 12" bottom-to-bottom in all areas. However, Class 1E trays have a minimum of 15" bottom-to-bottom between trays of the same train. Class 1E trays containing instrument, control or power cables have a minimum horizontal separation between redundant circuits of 36". Redundant circuits are not permitted in the same tray or conduit. If closer spacing than 36" cannot be avoided, an approved barrier is placed between the circuits. Cable trays are routed to avoid a fire hazard area, such as oil storage rooms, oil tanks, etc.,

whenever possible. When this cannot be done, the cable tray system is protected by fire resisting barriers. Where practical, these barriers are tray covers. Whenever possible a wall or floor has been introduced between trays carrying redundant safeguard circuits. Fire barriers are provided where mutually-redundant trays cross.

Where the wiring for redundant engineered safety features is within a single panel or panel section, this wiring is separated, one group from the other by a six-inch (6") air space or a fireproof barrier. The barriers are sheet metal or flexible metallic conduit. Special fiberglass housings have been installed around some safeguards relays inside safeguards cabinets in the control room.

e. Plant Fire Protection System

The inspector verified that applicable portions of the FSAR section 9.6.1., fire protection system, are currently functional:

(1) Control Room Protection

- (a) Observed three portable CO<sup>2</sup> and one ansul extinguishers in the control room.
- (b) Observed four portable CO<sup>2</sup> and four portable ansul extinguishers immediately available to the control room.
- (c) Observed one large ansul unit immediately available to the control room.
- (d) Observed two deluge spray nozzle and fire hoses immediately available to the control room.
- (e) Observed special fire annunciator panel for twelve separate sections of the control room with separate annunciation for each of 12 smoke detectors.
- (f) Observed zone status light panel for fire annunciation for rest of plant; 42 annunciators including electrical penetrations and cable runs.

(2) Relay Room Protection

- (a) Observed one portable CO<sup>2</sup> extinguisher in relay room.
- (b) Observed one CO<sup>2</sup> hose reel and deluge in relay room.
- (c) Observed two smoke detectors with local pyrotronics annunciator units. (Also annunciate in control room)

(3) Diesel Generator Room

- (a) Observed smoke and temperature detector units.
- (b) Observed CO<sup>2</sup> deluge spray nozzles. Each diesel generator room is provided with an automatic CO<sup>2</sup> deluge from a 300 psig CO<sup>2</sup> system.

6. Licensee's Response to 1E bulletins 75-04, 04-A

The licensee issued a response to these bulletins on April 23, 1975. The licensee has requested that responses to questions 3 and 4 of this bulletin be extended to May 12, 1975.

The licensee is actively pursuing the answers to these questions.