

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

March 7, 1972

J. B. Henderson, Chief, Reactor Construction Branch
Division of Compliance, Headquarters

WISCONSIN PUBLIC SERVICE CORPORATION (KEWAUNEE)
DOCKET NO. 50-305

The attached report of a special electrical inspection at the subject facility construction site is transmitted for information. No items of noncompliance, nonconformance, or immediate safety problems were encountered during the inspection. As a result of this inspection, however, we were able to confirm our position with respect to areas of nonconformance identified during the previous inspection and to establish parameters with respect to acceptable corrective action. We will pursue this matter to conclusion during subsequent inspections.

A handwritten signature in cursive script that reads "W. E. Vetter".

W. E. Vetter
Senior Reactor Inspector

Attachment:
CO Rpt No. 050-305/72-04 by
C. E. Jones

cc: J. G. Keppler, CO
E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
L. Kornblith, CO
R. H. Engelken, CO
CO Files
DR Central Files

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

REGION III

CO Inspection Report No. 050-305/72-04

Subject: Wisconsin Public Service Corporation
Kewaunee
Kewaunee, Wisconsin

License No. CPPR-50
Priority: N/A
Category: B

Type of Licensee: PWR (W) - 560 Mwe

Type of Inspection: Special

Date of Inspection: February 11, 1972

Dates of Previous Inspection: January 25 - 27, 1972

Principal Inspector: *C. E. Jones*
C. E. Jones

3-9-72
(Date)

Accompanying Inspector: *D. W. Hayes*
D. W. Hayes

3-9-72
(Date)

Other Accompanying Personnel: *W. E. Vetter*
W. E. Vetter

3-10-72
(Date)

C. D. Feierabend

D. Tondi (DRS)

T. A. Ippolito (DRS)

Reviewed By: *W. E. Vetter*
W. E. Vetter, Senior Reactor Inspector

3-10-72
(Date)

Proprietary Information: None

SECTION I

Enforcement Action

- A. Noncompliance: None
- B. Nonconformance: None
- C. Safety Items: None

Licensee Action on Previously Identified Enforcement Matters

- A. Balance-of-Plant Wiring Found Routed Common With Wiring for Both Safeguard Systems (CO Report No. 305/72-03)

Design engineers from Pioneer Service and Engineering Company (PS&E) are in the process of reviewing the wiring installed in the control room consoles and panels. The review is by system and, where balance-of-plant (BOP) wiring is found routed in common with wiring for more than one safeguard system, the necessary corrections are made.

The two locations identified during the referenced inspection, where BOP wiring was bundled with wiring for one safeguard system at one point and with wiring for the opposite safeguard system at a later point, have apparently been corrected. This item remains open, however, pending completion of PS&E's wiring review.

- B. Lack of Separation of Wiring for the Reactor Trip Channels (CO Report No. 305/72-03)

Engineers for PS&E are also reviewing this wiring and, following consultation with the Westinghouse Corporation, plan to make the necessary electrical cable routing changes to accomplish the required separation between the redundant reactor trip channels. Further review of this item is planned, following corrective wiring changes.

- C. Solitary Manual Scram Switch Does Not Meet Single Failure Criteria (CO Report No. 305/72-03)

This item is still under review by the licensee and PS&E engineers.

Unresolved Items

- A. Provisions to prevent flooding of both diesel generators and associated 4160 volt switch gear were questioned in the event that one of the two 24-inch service water lines should break in the tunnel area between the two diesel generator rooms. (Paragraph 1)

B. A 16-inch high pressure boiler feedwater line is located in the same room with the reactor trip switch gear. Design considerations were questioned in regard to the affect of a postulated failure of the feedwater line on the operability of the reactor trip breakers. (Paragraph 2)

Status of Previously Reported Unresolved Items

A. Separation of Redundant System Control Switches and Associated Wiring (CO Report No. 305/72-03)

B. Lack of Fire Barriers and Seals (CO Report No. 305/72-03)

The licensee has not taken a position on Items A and B, above, pending his further review and consultation with PS&E.

C. Identification of Safeguard and Reactor Protective System Wiring (CO Report No. 305/72-03)

D. Lack of Proper Electrical Cable Support (CO Report No. 305/72-03)

E. Inadequate Documentation to Establish Resolution of Noted Deficiencies (CO Report No. 305/72-03)

The status of Items C, D, and E, above, has not changed since the referenced report date; however, commitments by the licensee identified during the current inspection appear to provide for timely corrective action.

All of the above items (A through E) remain on our list for follow-up attention.

Design Changes: None

Unusual Occurrences: None

Persons Contacted

The following people were contacted during the inspection:

Wisconsin Public Service Corporation (WPS)

C. W. Giesler, Superintendent, Nuclear Power

L. O. Ramsett, Quality Assurance Engineer

M. F. Dreher, Quality Control Supervisor

G. V. Fitzpatrick, Quality Control Engineer
E. E. Mitchell, Quality Control Engineer
P. T. Trondsan, Quality Control Engineer

Pioneer Service and Engineering Company (PS&E)

I. E. Cooper, Electrical Project Engineer
E. Lounota, Electrical Engineer
L. K. Coleman, Electrical Field Engineer
W. K. Tarney, I&C Field Engineer

Management Interview

Personnel in Attendance

Wisconsin Public Service Corporation (WPS)

R. C. Straub, Manager, Nuclear Development (Consultant)
C. W. Giesler, Superintendent, Nuclear Power
A. W. Meinche, Electrical Engineer
L. O. Ramsett, Quality Assurance Engineer
M. F. Dreher, Quality Control Supervisor
P. T. Trondsan, Quality Control Engineer

Pioneer Service and Engineering Company (PS&E)

F. Hickey, Site Construction Manager
I. E. Cooper, Electrical Project Engineer
E. Lounota, Electrical Engineer
L. K. Coleman, Electrical Field Engineer
W. K. Tarney, I&C Field Engineer

Items Discussed

- A. In regard to the installation of fire barriers and seals between the control room and the relay room below (usually identified as a cable spreading room), Mr. Cooper stated that the plant design provided for treatment of the control room and relay room as a single room and that a common ventilation system had a single flow path from the control room downward into the relay room and out. However, following additional discussion and questioning, Mr. Cooper stated that this was out of his area of responsibility and that he would have to consult with others directly involved with the design. Messrs. Tondi and Ippolito stated that this question would be raised at the DRL technical meeting on Kewaunee electrical design and that the licensee should be prepared to justify a position at that time.

Concerning the installation of a vertical fire barrier in the electrical control console "A" between the controls for the two emergency diesel generator trains, Messrs. Tondi and Ippolito stated that they strongly recommend such a barrier but that, under certain conditions, a design lacking a vertical barrier could be accepted. They added that the conditions would include requirements that:

1. Loss of the diesel generator control console would not affect the automatic start of the diesel generators when required.
2. Manual start and control of the diesel generators from the diesel generator rooms would still be possible.

Messrs. Cooper and Giesler stated that they would analyze the situation and would advise both CO and DRS of their position.

- B. The licensee stated that the separation of the control switches and associated wiring for redundant safeguard equipment would be reviewed and that appropriate corrective action would be taken. Mr. Tondi said that the minimum acceptable separation in nonhostile areas, such as the control room, was six inches in air, or equivalent, and then only if the automatic activation of the equipment was not affected by loss of the respective control console or panel. Mr. Ippolito added that it was also DRS's position that the plastic "gutter" channels in use do not provide an adequate barrier for separation of redundant safeguard system wiring.
- C. In regard to routing BOP wiring in common with wiring for more than one safeguard system, Mr. Lounota stated that they were now in the process of reviewing all wiring within the control room control consoles and panels, system by system, and that the review should detect and correct such routing errors. The inspector stated that this area would be reviewed again following completion of the wiring review.
- D. Mr. Cooper stated that PS&E would review the control wiring to the reactor trip switch gear with Westinghouse and would make the necessary wiring routing changes to meet separation requirements. Mr. Ippolito stated that the wiring for the undervoltage coils between the "A" trip breaker and the "B" bypass breaker and between the "B" trip breaker and the "A" bypass breaker must also be considered.
- E. The licensee stated that they would analyze the manual scram switch installation from the single failure criteria standpoint. Messrs. Tondi and Ippolito said they should be prepared to discuss the matter during the DRL technical meeting on Kewaunee electrical design.

- F. The licensee stated that they felt that adequate line isolation and drainage provisions existed to prevent flooding in the diesel generator and 4160 volt switch gear rooms in the unlikely event that a service water line should fail in the adjacent tunnel area but added that they would review the matter again. Mr. Tondi stated that they should be prepared to discuss it at the DRL technical meeting.

- G. Mr. Cooper stated in regard to the feedwater line located in the room containing the reactor trip switch gear that he felt adequate piping restraints were installed to prevent damage to the trip breakers sufficient to prevent their operation should the feedwater line fail. In response to questioning he added that they would review the matter including the effects of water impingement against the breaker cabinet.

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items Were Found

Nothing to report. See statement under "Details of Subjects Discussed in Section I", below.

Details of Subjects Discussed in Section I

The purpose of this inspection was to review, first hand, with DRS personnel, the apparent electrical installation discrepancies previously observed at the Kewaunee construction site and to consult with DRS with respect to the degree of possible nonconformance to design requirements as well as acceptable corrective measures. Except for two additional items, 1 and 2, below, no additional electrical installation discrepancies were observed during the current inspection. For more details related to the electrical discrepancies discussed in this report, see CO Report No. 050-305/72-03 covering the inspection conducted January 25 - 27, 1972.

1. During the inspection, DRS personnel reviewed the diesel generator and 4160 volt switch gear installations. They were in agreement with CO:III's concerns with possible flooding of the areas should failure occur to one of the two 24-inch service water lines located in the access tunnel between the two rooms. One of the service water lines is routed in a trench in the floor of the tunnel and the other is routed overhead.

This item had been discussed with the licensee during a previous inspection but was not a subject of a report pending completion of the installation and further review.

2. DRS personnel noted during their review of the reactor trip switch gear that a main, 16-inch, boiler feedwater line was routed through the same room. The feedwater line is located in the room between column lines three and four and about five feet above and 25 feet north of the reactor breaker cabinet.

In response to questioning, the licensee stated that during reactor operation, the normal feedwater line pressure was 600 psig but added that they felt adequate provisions existed to prevent pipe whip, or other results of a postulated failure of the feedwater line, from affecting operability of the reactor trip breakers. The licensee added, however, that he would review the matter further.

Followup of this and the above item is planned for subsequent inspections.

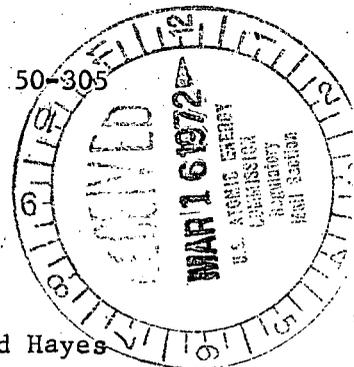
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GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

March 1, 1972

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James, 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 Messrs. Vetter and Hayes of this office on February 11, 1972, of construction activities at the Kewaunee site authorized by AEC Construction Permit No. CPPR-50 and to the discussion of our findings at the conclusion of the inspection with Messrs. Straub, Giesler, Ramsett, and Dreher of your staff.

Areas examined during the inspection included the installation of electrical systems and components, the susceptibility of the diesel generators to loss of performance of both generators as a result of a single event or occurrence, and the effect of a feedwater line rupture on electrical relay cabinets. Within these areas, the inspection consisted of interviews with plant personnel, and observations by the inspectors.

No items of noncompliance with AEC requirements were identified within the areas examined during this inspection.

With regard to questions raised during this inspection, we understand that you intend to: (1) evaluate plant design in terms of the fact that the control room and cable spreading room have a common ventilation system which compromises the installation of fire barriers in control room consoles and panels with open entry into the cable spreading room, (2) determine the need for a vertical fire barrier in the electrical control console "A" between the controls for the two emergency generator trains, (3) initiate appropriate corrective action to assure that adequate separation is provided between the control room panel control switches and associated wiring for redundant safeguard systems equipment, (4) continue reviewing all wiring within the control room control consoles and panels to assure

March 1, 1972

that balance of plant wiring is not routed in common with more than one safeguard system, (5) review the control wiring to the reactor trip switch gear and make the necessary wire routing changes to meet separation requirements, and (6) analyze the circuitry and physical aspects associated with the installation of a single manual scram switch and take appropriate corrective action. We will examine your action on these matters during subsequent inspections.

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

Sincerely yours,

Boyce H. Grier
Regional Director

cc: E. R. Mathews, Manager
Power Engineering
R. C. Straub, Manager, Nuclear
Development (Consultant)
C. W. Giesler, Superintendent
Nuclear Power
L. O. Ramsett, Quality
Assurance Supervisor
M. F. Dreher, Quality Control
Supervisor (Site)

bcc: J. B. Henderson, CO
J. G. Keppler, CO
L. Kornblith, CO
R. H. Engelken, CO
P. A. Morris, DRL
CO Files
DR Central Files
PDR
Local PDR
NSIC
R. L. Shannon, DTIE



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(312) 858-2660

March 15, 1972

J. B. Henderson, Chief, Reactor Construction Branch
Division of Compliance, Headquarters

WISCONSIN PUBLIC SERVICE CORPORATION (KEWAUNEE)
DOCKET NO. 050-305

The attached report of a routine inspection at the subject facility construction site on January 25 - 27, 1972, is transmitted for information. No items of noncompliance or safety problems were encountered during the inspection. However, two items of apparent nonconformance were discussed with the licensee at the conclusion of the inspection and will be included in the enclosure to the letter to the licensee summarizing the results of the inspection.

The item of nonconformance involves electrical cable installation which is apparently inconsistent with statements in the Final Safety Analysis Report. In addition to the apparent nonconformance, the attached report identifies a number of questionable aspects of electrical cable and component installation which we consider to be matters requiring resolution during future inspections.

W. E. Vetter
Senior Reactor Inspector

Attachment:

CO Rpt No. 050-305/72-03 by
C. E. Jones, D. W. Hayes and C. M. Erb

cc: J. G. Keppler, CO
E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
L. Kornblith, CO
R. H. Engelken, CO
CO Files
DR Central Files

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

REGION III

CO Inspection Report No. 050-305/72-03

Subject: Wisconsin Public Service Corporation
Kewaunee
Kewaunee, Wisconsin

License No. CPPR-50
Priority: N/A
Category: B

Type of Licensee: PWR (W) - 560 Mwe

Type of Inspection: Routine

Dates of Inspection: January 25 - 27, 1972

Dates of Previous Inspection: January 11 - 12, 1972 (QA Audit PS&E)

Principal Inspector:

C. E. Jones
C. E. Jones

3-15-72
(Date)

Accompanying Inspectors:

C. E. Jones for
D. W. Hayes

3-15-72
(Date)

C. M. Erb
C. M. Erb

3/14/72
(Date)

Other Accompanying Personnel: None

W. E. Vetter

Reviewed By: W. E. Vetter, Senior Reactor Inspector

3-15-72
(Date)

Proprietary Information: None

SECTION I

Enforcement Action

A. Noncompliance: None

B. Nonconformance

1. Contrary to statements in the FSAR:
 - a. Balance-of-plant (BOP) wiring was bundled with wiring identified as safeguard train A at one point and with wiring identified as safeguard train B at a later point. (Paragraph 9a)
 - b. Separation of the electrical wiring was not maintained between each trip logic channel to the final electrical activating devices for the reactor trip breakers. (Paragraph 9c)
2. Contrary to the IEEE design criteria referenced in the FSAR, the solitary manual scram switch does not appear to meet the single failure criteria. (Paragraph 9b)

C. Safety Items: None

Licensee Action on Previously Identified Enforcement Matters: None

Unresolved Items

A. Separation of Redundant System Control Switches and Associated Wiring

Redundant system control switches and associated wiring located on control room control consoles and panels did not appear to be adequately separated. (Paragraph 10)

B. Lack of Fire Barriers and Seals

1. No fire barriers or seals are installed or planned for the electrical penetrations between the control room and the cable spreading room below.
2. No fire barrier is installed or planned to separate the controls for the redundant emergency diesel generator trains. (Paragraph 10)

C. Identification of Safeguard and Reactor Protective System Wiring

Safeguard and reactor protective system wiring located within the control room control consoles and panels has not been fully identified as required by the FSAR. (Paragraph 12)

D. Lack of Proper Cable Support

Electrical cables leaving cable trays located in station battery room 1B were not properly supported or protected. (Paragraph 13)

E. Inadequate Documentation to Establish Resolution of Noted Deficiencies

Records were not adequate to establish that deficiencies found during L. K. Comstock electrical inspections and Wisconsin Public Service Company audits were corrected. (Paragraph 14)

F. Primary Coolant Piping

A misalignment exists in the final closure preparation for welding in the 10-inch surge line from the pressurizer to the primary coolant piping. (Paragraph 15)

G. Process Piping Penetrations

A mismatch exists where the closure welds are to be made joining each of four process piping penetration assemblies to its respective containment sleeve. The welds are located in the annulus between the reactor containment vessel and the shield building. (Paragraph 16)

H. Flux Monitor Tubing

The tubing for the movable in-core flux monitors shows linear indications to liquid penetrant test. (Paragraph 17)

I. Electrical Penetrations

Electrical penetrations have been delivered to the site without proper quality documentation. (Paragraph 18)

Status of Previously Reported Unresolved Items

- A. The final analytical report regarding the stress analysis for the reactor pressure vessel and closure head have been received onsite, and one copy has been provided the Hartford Inspection and Insurance Company for review. The code stamp has not been issued for either component. This matter will continue as an open item.
- B. Final analytical or stress analysis reports have not been received for the steam generators and the pressurizer. This item continues to be carried as an open item.
- C. Documentation for the annealing process used on the core support and upper barrel flange forgings was audited by R. E. Hawes, PS&E, at the Westinghouse, Pensacola, Florida, record center. This item is considered resolved.
- D. One of the two reactor coolant circulating pumps, returned to the fabricator for rework, had been returned to the construction site. The pump was placed in "hold status" and a nonconformance report issued, since no documentation had been returned with the pump. This item remains open.

E. Containment Spray Pumps

These pumps were previously reported as being held for lack of documentation. During the current inspection, documentation for the two pump-motor units was reviewed and found to be complete. The documentations included information certifying that grease, motor wiring, etc., would withstand specified integrated radiation exposures and that seismic requirements had been satisfied. This matter is considered to have been resolved.

Design Changes

1. The inspector was informed that modifications to the safety injection system (SIS) were planned in accordance with a proposal being prepared by Westinghouse. Details of the modifications were not available during the site visit. Details and documentation concerning this change will be reviewed during a subsequent inspection.
2. As a result of a high iron content in the well water, a design change was initiated and piping modification performed to make the service water system a source of water for Class 2 systems. Double valves have been provided in the discharge line from the

service water line. This item will be reviewed in more detail during a subsequent inspection.

Persons Contacted

The following people were contacted during the inspection:

Wisconsin Public Service Corporation (WPS)

L. O. Ramsett, Quality Assurance Engineer
N. E. Knutzen, Construction Superintendent
M. F. Dreher, Quality Control Supervisor
G. V. Fitzpatrick, QC Engineer (Mechanical)
E. E. Mitchell, QC Engineer (I&C)
P. T. Trondsan, QC Engineer (Electrical)
W. J. Proper, QC Engineer (Receiving and Storage)
D. E. Weinberg, Construction Engineer (Mechanical)
A. W. Meinche, Electrical Engineer
R. R. Hitchcock, Manager, Systems Design
R. E. Carlson, Systems Design Electrical Engineer

Pioneer Service and Engineering Company (PS&E)

L. K. Coleman, Electrical Field Engineer
W. K. Tarney, Instrument and Control Field Engineer
J. P. Engelbrecht, QC Engineer
J. M. Nagl, Electrical Startup Engineer

L. K. Comstock Company (LKC)

J. B. Kiernan, QA Manager
J. J. Pyle, Assistant QA Manager
F. T. Hansen, Cable Record Clerk
D. G. Sedenquist, Cable Pulling Engineer

Multiamp Company

J. F. Griffin, Test Engineer
L. D. Hyde, Test Engineer

Westinghouse Corporation

E. W. Musgrave, Nuclear Controls Engineer

Management Interview

Personnel in Attendance

Wisconsin Public Service Corporation (WPS)

L. O. Ramsett, Quality Assurance Engineer
E. R. Mathews, Manager Power Engineering
M. F. Dreher, Quality Control Supervisor
N. E. Knutzen, Construction Superintendent
C. W. Giesler, Superintendent Nuclear Power

Pioneer Service and Engineering Company (PS&E)

I. Nelson, Project Manager
J. J. Poer, Manager Quality Assurance

U. S. General Accounting Office (GAO)

D. L. Knutson, Auditor

Items Discussed

- A. Electrical items involving the isolation or separation of redundant safeguard system components and wiring and the installation of fire barriers and seals were discussed. The inspector stated that a portion of these items did not appear to meet commitments made in the FSAR. As a result of the inspectors observations, the licensee was told that he could expect to receive written communication regarding one or two of these items. Also, the inspector stated that further review of the isolation and separation criteria was planned with DRS/DRL. Mr. Mathews stated that copies of the electrical drawings had just been transmitted to DRL at their request. The inspector commented that since the matter was of concern to CO that the licensee might wish to add this item to their agenda for their next meeting with DRL.
- B. Concerning the identification of safeguard and reactor protection system wiring within the control room consoles and panels, Mr. Ramsett stated that it was their intention to identify all such wiring with colored plastic ties and that this work was now in progress.

- C. The inspector stated that, during his review of the LKC electrical installation and installation inspection reports and the WPS electrical audit reports, the status of many of the deficiencies and exceptions noted in the reports could not be established. Messrs. Ramsett and Poer stated that they were aware of this situation and that corrective action had been taken. They went on to explain that part of the problem was due to the changes in LKC QA personnel.

The inspector added that he also noted that construction "proof" test data were contained in the installation files but that, in those cases where installations were incomplete or where deficiencies were found, exceptions and omissions to the construction "proof" check out and test procedures were necessary. The inspectors cautioned the licensee that, if they planned to reference the construction test data as part of prerequisites for their pre-operational program, they should assure themselves that the procedures and records meet requirements.

- D. The licensee stated that they would review the support and protection of electrical cable at exit points from the cable trays and take the necessary corrective action.
- E. The stress analysis report for the reactor pressure vessel, the inspectors said, has been received by WPS from Combustion Engineering Company and a copy transmitted to the Hartford Steam Boiler Inspection and Insurance Company for review. Since the review is not complete, the code stamps have not been attached to the reactor pressure vessel or the vessel closure head and this matter, the inspectors said, remains open.
- F. Analytical reports for the two steam generators and the pressurizer have not been received by WPS and the licensee was informed that CO would ask to review these records and required approvals when they were available.
- G. The licensee was informed that previous questions regarding the annealing procedures used for vessel internals had been resolved by reviewing a vendor audit report of Westinghouse at Pensacola, Florida. This item is considered resolved.
- H. While one of the two reactor coolant pumps had been returned by the fabricator, following reported modifications to the impeller shaft, the inspector stated he would postpone review of pump documentation pending receipt of both pumps onsite.

- I. The inspector stated that he planned to review the design change performed to permit of the transfer makeup water supply for the demineralizers from a drilled well source to a service water source. The licensee stated that the system was Class 2. The inspector said he planned to review the system, specifically the methods for isolation of the service water and the effect of the modification on the service water reliability.

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items Were Found

1. General

Overall construction is estimated to be 84 percent complete. Field erection of the reactor coolant piping is nearing completion. Final assembly and cleaning of the reactor pressure vessel internals have been delayed pending placement of final portions of the concrete shielding for the steam generators. The delay was necessary as a precaution to prevent damage to the core steamline by falling debris and to allow provisions for a clean room for assembly of reactor pressure vessel internals.

2. Electrical

a. Review of QC System

- (1) Relay coordination study.
- (2) Setting and testing of protective devices.

b. Follow-up Record Review

- (1) Setting and testing of protective devices.
- (2) Installation inspection records for:
 - (a) Control rod drive power supplies.
 - (b) Reactor Trip breakers.
 - (c) Service water pump motors.
 - (d) Source breakers Nos. 15101, 15201, 16101, and 16201.
 - (e) 480 volt switch gear buses 1-52 and 1-62.
- (3) Material receipt and certification records for:
 - (a) Reactor trip switch gear.
 - (b) Service water pump motors.

- (4) Calibration records for electrical test equipment.
- (5) Electrical equipment installation audit report by WPS.

c. Follow-up Observation of Work

- (1) Reviewed the following equipment for proper installation, protection, and quarantine of nonconforming components.
 - (a) Control rod drive power supplies.
 - (b) Control rod drive mechanisms.
 - (c) Reactor trip breakers.
 - (d) Service water pump motors.
 - (e) DC distribution panels.
 - (f) Station battery rooms.

3. Cables and Terminations

a. Record Review

- (1) Vendor and site NDT records for instrument and electrical cables.
- (2) Installation inspection reports.
- (3) Cable installation audit reports by WPS.
- (4) Material nonconformance reports.
- (5) Cable tray physical loading reports.
- (6) Cable installation records.
- (7) Cable receipt and certification records.

b. Follow-up Observation of Work

- (1) Reviewed the following cables for identification, routing, separation, protection, use of specified materials, site NDT, and physical and thermal loading of the associated cable tray sections.

- (a) Power cables, 4160 volt switch gear, to the service water pump motors (4 cables).
 - (b) Control cables for source breakers 15101 and 16201.
 - (c) DC power cables for trip logic Channels A and B.
 - (2) Observed cable spreading room for cable and cable tray identification, separation, and loading.
 - (3) Reviewed electrical penetration areas for identification, protection, and segregation.
4. Flushing and Cleanliness Procedures - Primary System
- a. Procedures for flush with alkaline solution.
 - b. Water chemistry requirements.
 - c. Hydro test procedure.
 - d. Flush procedure RX building.
5. Documentation Electrical Penetrations
- a. Specification - procurement.
 - b. Specification - installation.
 - c. Test special tools.
 - d. Removal instructions with and without salvage.
6. Safety Injection System (SIS) Welds
- a. Isometrics.
 - b. Qualification welders.
 - c. Documentation of NDT tests.
 - d. Sample X-rays.
 - e. Work in progress - installation plant.

7. Steam Generator Support (1A) and Spent Fuel Pool and Transfer Canal Liners

Reviewed the implementation of the QA program and QC system. Observed qualification and identification of weld procedures, welders, NDT techniques and technicians. Also observed records for identification of MT examination, correlation of weld records to weld, receipt inspection, issue control for weld rod, disposition of unused material.

Observed records of NDT, MT, and material control. Visually observed installations in place and reviewed weld and inspection records. Reviewed the QA-QC system, records of material physical and chemical certifications, NDT, storage identification and control, installation instructions and NDT testing and inspection.

Completed a follow-up record review regarding receipt inspection, material records and installation records.

Installation of the components was complete. Records were complete, except for records to identify the leakage rate of the fuel pool and canal. This test will be performed when demineralized water is available.

8. Main Steam Piping (Outside Containment)

Records regarding the QA-QC program for welding and piping and implementation, followup of record review, and observation of work were reviewed.

Details of Subjects Discussed in Section I.

9. During the review of the control room consoles and panels for the identification, installation, and separation of safeguard and reactor protective system components and associated wiring, the following nonconformance items were identified by the inspector:

- a. BOP wiring was observed in two locations within mechanical control console "B", to have been installed common with wiring for one safeguard system at one point and with wiring for the opposite safeguard system at a later point. This is in variance with statements in the FSAR (Q7.3.6-2 and Q7.3.6-3).

- b. A single switch has been installed to provide manual scram action for both reactor trip trains. This appears in non-conformance with the IEEE Standard 279 (Paragraph 4.17) as referenced in the FSAR (7.2).
- c. Wiring for reactor trip trains "A" and "B" was routed common in two or more cable tray sections between:
 - (1) Trip logic Channel "A", rack RR134, and the reactor trip switch gear panel RD106 (cable INC06776).
 - (2) Trip logic Channel "A", rack RR134, and the reactor manual scram switch in mechanical control console "B" (cable INC0721).
 - (3) Trip logic Channel "B", rack RR121, and the reactor trip switch gear panel RD106 (cable INC0690).
 - (4) Trip logic Channel "B", rack RR121, and the reactor manual scram switch (cable INC0722).
 - (5) Reactor manual scram switch and the reactor trip switch gear panel RD106 (cables INC0677, INC0689, INC0682, INC0693, and INC0705).
 - (6) 125 volt DC distribution panels BRA104 and BRB104 and reactor trip switch gear panel RD106 (cables INC0683 and INC0684).

This appears to be in nonconformance with statements in the FSAR in regard to independence of redundant protection systems (7.2-4).

- 10. Control switches for redundant safeguard systems were observed installed in a common panel or console and less than six inches apart. Included were the safety injection and reactor heat removal system pump motor controls. The switches have open terminal contacts and are not enclosed or "canned," nor were barriers between the switches installed or planned. Wiring associated with the switches also appeared to be inadequately separated.
- 11. Wiring for opposite safeguard systems was observed routed in small plastic "gutters" installed side by side at the end boards on electrical console "A" and mechanical control consoles "B" and "C".

Separation of safeguard system wiring described under d and e, above, does not appear to meet the intent of the separation criteria as described in the FSAR. However, before a CO:III position is established with the licensee with respect to the minimum acceptable separation for these items, further review and consultation with DRS/DRL is planned.

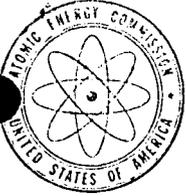
12. Wiring within the control room control consoles and panels has not been fully identified with colored wire wraps. This is inconsistent with commitments in the FSAR (Q7.3.6-2) for the Kewaunee facility. Messrs. Trondsan and Tarney stated that this work was in progress and would be completed within the next few months. Follow-up inspection of this item is planned.
13. Several control cables (14) were noted by the inspector to exit directly from cable tray sections 1TT133N and 1TT134N downward to DC panels BRA 103, 104, and 105 located in battery room 1B. No protective "bumper" was installed on the tray edge nor were the cables clamped or otherwise protected. Cables leaving other tray sections in the same area, however, were properly supported. Mr. Trodsan stated that lack of support for the cables in question apparently was an oversight and would be corrected. Follow-up review is planned for subsequent inspections.
14. During the review of LKC's electrical installation and installation inspection reports, it was difficult to establish the status of deficient or incomplete items noted in the reports and, in some cases, the status could not be determined. Mr. Kiernan stated he was in the process of reviewing the files to bring them up to date and was developing "punch lists" to schedule corrective action on all known deficiencies and exceptions. The inspector reviewed three of the files that Mr. Kiernan had corrected. They were well organized and contained summary sheets listing the outstanding items that required correction, as well as inspection items not completed.

A similar condition was noted during the review of WPS electrical audit reports. Mr. Trondsan stated he was reviewing the file and was developing a list of items requiring follow-up attention. A follow-up review of these records is planned for future inspections.

15. Misalignment of the pressurizer surge line is approximately 1" in the horizontal plane. Before this weld can be made, the mismatch must be corrected in some manner. The problem is being analyzed by Westinghouse design. Engineering instructions are to be issued for making the weld.

16. Mismatches in four process pipe penetrations exist. Two are in feedwater piping, and two are in the main steam line where the final closures are to be made just outside the containment wall and inside the shield wall. The mismatch in one feedwater line was 3/4" in the vertical plane and about the same amount in the horizontal plane with an additional problem of a varying gap between the pipe ends. A stainless bellows is about 3" from the location of the weld so that moving of the weld toward this bellows by cutting off pipe and welding in a longer piece must be done very carefully. This problem is being resolved by PS&E engineering.
17. The stainless incore nuclear instrumentation conduit - tubing is 1" OD x .400 ID. This results in a heavy wall type 304 tube with .300" wall. There are 36 of these conduits made up of three pieces welded together using socket fittings. When a PT test was made of the socket welds, numerous longitudinal indications showed up on the tubing. A 100% check of the surface showed these indications to extend from one end to the other. Grinding and subsequent depth measurements disclosed that many of the defect indications were 0.020-inches deep or greater. This tubing sees reactor pressure and water. Westinghouse has concluded that the tubing is satisfactory for use. However, their justification for such a conclusion has not been accepted by WPS or PS&E. Westinghouse is performing a metallurgical study of this tubing, and a report is to be available for review during the next routine inspection.
18. Added documentation on electrical penetrations was received from D. C. O'Brien just prior to the conclusion of the inspection and will be examined by the inspector during the next routine inspection.





UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
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March 13, 1972

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James, 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 Messrs. Jones, Hayes, and Erb of this office on January 25 - 26, 1972, of construction activities at the Kewaunee site authorized by AEC Construction Permit No. CPPR-50 and to the discussion of our findings at the conclusion of the inspection with Messrs. Mathews, Giesler, Ramsett, and Dreher of your staff.

Areas examined during the inspection included electrical cable and component installation; your receipt and review of stress analysis reports for the reactor pressure vessel, steam generators, and the pressurizer; vendor audit reports concerned with annealing procedures for the reactor pressure vessel internals; documentation associated with repairs to the reactor coolant pumps; a design change associated with makeup water for the demineralizers; quality records common to the steam generators and the spent fuel pool and transfer canal liners; quality records associated with the main steam line piping; indications of linear discontinuities associated with the in-core flux monitoring tubing; primary coolant piping installation; and receipt inspection concerned with electrical penetrations. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with plant personnel, and observations by the inspectors.

During this inspection, it was found that certain of your activities appear to be in nonconformance with statements in the Final Safety Analysis Report. The items and reference to the pertinent requirements are listed in the enclosure to this letter. Please provide us within 30 days, in writing, with your comments concerning these items, any steps which have been or will be taken to correct them, any steps that have been or will be taken to prevent recurrence, and the date all corrective action or preventive measures were or will be completed.

March 13, 1972

With regard to questions raised during this inspection, we understand that you intend to: (1) identify reactor protection system and safeguard system wiring, within the control room panels and consoles, by installing colored plastic ties, (2) continue corrective action initiated with respect to missing information common to the status of deficiencies and exceptions noted on electrical installation audit reports, and (3) review the physical support and damage protection of electrical cables at the point of exit from cable trays and take necessary corrective action. Our inspectors will examine your action on these matters during subsequent inspections.

Should you have questions concerning this inspection, we will be glad to discuss them with you.

Sincerely yours,

Boyce H. Grier
Regional Director

Enclosure:

Description of Nonconformance Items

cc: E. R. Mathews, Manager
Power Engineering
L. O. Ramsett, Quality
Assurance Supervisor

bcc: J. B. Henderson, CO
J. G. Keppler, CO
L. Kornblith, CO
R. H. Engelken, CO
P. A. Morris, DRL
CO Files
DR Central Files
PDR
Local PDR
NSIC
R. L. Shannon, DTIE

ENCLOSURE

Docket No. 50-305

Certain activities under your construction permit appear to be in nonconformance with statements in the Final Safety Analysis Report (FSAR) as indicated below:

1. The FSAR, on pages Q7.3.6-2 and Q7.3.6-3 states, in part, that: "Non-class IE wire may be bundled with either an orange bundle or a green bundle, but may not be bundled with an orange bundle at one point and with a green bundle at some later point."

Contrary to this, non-class IE wiring was observed in two locations within mechanical console B to be installed common with wiring for one safeguard system at one point and with wiring for the opposite safeguard system at a later point.

2. The FSAR on page 7.2-4 states, under criterion, that: "Redundancy and independency designed into protection systems shall be sufficient to assure that no single failure or removal from service of any component or channel of such a system will result in loss of the protection function."

Contrary to the above, wiring for reactor trip trains "A" and "B" was routed common in several cable tray sections between the trip logic channels "A" and "B" racks and the reactor switch gear panel.

3. The IEEE Standard 279 (referenced in the FSAR) states, in part, in Section 4.17, that: "No single failure, as defined by the note following Section 4.2, within the manual, automatic or common portions of the protective system shall prevent initiation of the protective action by manual or automatic means."

Contrary to the above, a single switch has been installed to provide manual scram action for both reactor trip trains.