CENTRAL FILES

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

MAR 8 1977

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

Docket No. 50-305

Gentlemen:

This refers to the inspection conducted by Messrs. D. R. Hunter and K. Connaughton of this office on January 26 and 27, 1977, and Mr. D. R. Hunter on February 15-18, 1977, of activities at Kewaunee Nuclear Power Plant authorized by NRC Operating License No. DPR-43 and to the discussion of our findings with Mr. Luoma at the conclusion of the inspection.

This also refers to the management meeting held by Messrs. Fiorelli and Warnick of this office on February 24, 1977, with Messrs. James and Giesler at the Wisconsin Public Power Service Corporation office.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

No items of noncompliance with NRC requirements were identified during the course 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, except as follows. If this report contains information that you or your contractors believe to be proprietary, you must apply in writing to this office, within twenty days of your receipt of this letter, to withhold such information from public disclosure. The application must include a full statement of the reasons for which the information is considered proprietary, and should be prepared so that proprietary

information identified in the application is contained in an enclosure to the application.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Gaston Fiorelli, Chief
Reactor Operations and
Nuclear Support Branch

Enclosure: IE Inspection
Report No. 050-305/77-04

cc w/encl:
Mr. C. Luoma, Plant
Superintendent
Central Files
Reproduction Unit NRC 20b
PDR
Local PDR
NSIC
TIC

OFFICE ➔	RIII	RIII				
SURNAME ➔	Hunter/ls	Fiorelli				
DATE ➔	3/7/77					

UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-305/77-04

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

Kewaunee Nuclear Power Plant
Kewaunee, WI

License No. DPR-43
Category: C

Type of Licensee: PWR W 1650 MWt

Type of Inspection: Routine, Announced

Dates of Inspection: January 26, 27, February 15-18, and 24, 1977

Principal Inspector: D. R. Hunter for G Fiorelli — 3/8/77 (Date)

Accompanying Inspectors: None

Other Accompanying Personnel: K. Connaughton

Reviewed By: G Fiorelli — Gaston Fiorelli, Acting Chief, Reactor Projects Section 2 — 3/8/77 (Date)

SUMMARY OF FINDINGS

Inspection Summary

Inspection on January 26-27 and February 15-18, 1977, and management meeting on February 24, 1977, (77-04): Review of operations; procedures; plant cleanliness; maintenance; safety limits; limiting system setpoints and limiting conditions for operation; reportable occurrences; IE bulletins; outstanding inspection items; and Headquarters requested items. No items of noncompliance were identified during the inspection.

Enforcement Items

None.

Licensee Action on Previously Identified Enforcement Items

None.

Other Significant Items

A. Systems and Components

None.

B. Facility Items (Plans and Procedures)

1. The licensee has completed fuel movements and the turbine repairs are continuing.

2. The plant outage completion date continues to be the middle of March 1977.

C. Managerial Items

None.

D. Deviations

None.

E. Status of Previously Reported Unresolved Items

The licensee's corrective actions concerning the "B" safety injection accumulator level channels difference appears

adequate and no further questions are required on this matter at this time. (Paragraph 6, Report Details)

Management Interview

The management interview was conducted on February 18, 1977, by Mr. Hunter with the following persons present:

C. R. Luoma, Plant Superintendent
R. W. Lange, Assistant Superintendent, Maintenance
J. S. Richmond, Technical Supervisor
C. R. Steinhardt, Assistant Superintendent, Operations
M. E. Stern, Nuclear Licensing and Systems Supervisor
M. L. Marchi, Nuclear Licensing and Systems Engineer

A. The inspector stated that a review of operations, including a plant tour, revealed no discrepancies.

The licensee acknowledged the inspector's statement. (Paragraph 2, Report Details)

B. The inspector stated that a review of plant procedures revealed minor procedural inadequacies which were reviewed with the appropriate department heads.

The licensee acknowledged the inspector's statement and indicated that the procedures would be reviewed and revised as necessary. (Paragraph 3, Report Details)

C. The inspector stated that the review of two reportable occurrences and corrective actions taken by the licensee, concerning the tripping of the boric acid pump and the violation of containment integrity revealed no discrepancies. The inspector stated that the violation of containment was an item of noncompliance, and the corrective actions taken by the licensee appeared adequate and no further questions are required on this matter at this time.

The licensee acknowledged the inspector's statement. (Paragraph 4, Report Details)

D. The inspector stated that the review of plant cleanliness and housekeeping items revealed no discrepancies.

The licensee acknowledged the inspector's statement. (Paragraph 5, Report Details)

E. The inspector stated that the corrective actions taken concerning the safety injection accumulator level difference which had occurred in November and December 1976 appeared adequate and no further questions were required on this matter at this time.

The licensee acknowledged the inspector's statement. (Paragraph 6, Report Details)

F. The inspector stated that the review of the additional actions taken by the licensee concerning the Westinghouse BFD relay testing appeared adequate and no further questions were required on this matter at this time.

The licensee acknowledged the inspector's statement. (Paragraphs 7.a and 7.b, Report Details)

G. The inspector stated that a review of the licensee response concerning the stress corrosion of low pressure stainless steel piping appeared adequate in the areas of low pressure safety injection and residual heat removal system, high head safety injection system, and chemical and volume control system; but the testing of the containment spray subsystems had not pressurized the individual redundant systems downstream of the normally closed (parallel header) discharge valves through the test line provided for that purpose, and up to the manual containment isolation valves. The inspector requested that the licensee individually test and inspect each of the containment spray subsystems up to the manual containment isolation valves.

The licensee acknowledged the inspector's request and indicated that the containment spray subsystems would be tested and inspected. (Paragraph 7.c, Report Details)

H. The inspector stated that a review of plant maintenance activities revealed no discrepancies.

The licensee acknowledged the inspector's statement. (Paragraph 8, Report Details)

I. The inspector stated that the review of the emergency core cooling and loss of power load sequencing program, following a LOCA prior to reset of the safety injection signal and subsequent to reset of the safety injection signal revealed a number of discrepancies which were reviewed with the appropriate department head. These inadequacies included:

1. Procedural steps to direct operator actions following a loss of power after a SIS reset in each phase of emergency core cooling from injection through full recirculation operation.

2. Reset of the containment isolation signal (SIS reset) and reopening of the instrument air containment isolation valve to provide air to essential valves in the containment if necessary (spray valves and power operated relief valves).

3. Providing the appropriate surveillance for the emergency diesel generators during long-term operation, considering an extended power system blackout.

The licensee acknowledged the inspector's statement and stated that the appropriate procedure reviews and revisions would be performed. (Paragraph 9, Report Details)

J. The inspector stated that a significant item had been revealed during the review of the steam generator tube rupture incident. The review included the plant emergency procedure (E-0-09) and the FSAR (Section 14.2.4). The inspector noted that the primary plant pressurizer power operated relief valves and the secondary plant power operated relief valves were utilized during the safety analysis following a steam generator tube rupture coincident with a loss of offsite power. The power operated relief valves on the primary (pressurizer) and the secondary plant (main steam) are not safety related. The inspector asked the plant to consider, carefully, the relief valves from the operability stand-point during plant operations to assure availability during the analyzed incident.

The licensee acknowledged the inspector's statements and request, and stated that the area would be reviewed. (Paragraph 10, Report Details)

K. The management meeting was conducted on February 24, 1977, by Messrs. Fiorelli and Warnick with Messrs. James and Giesler at the Wisconsin Public Service Corporation Office.

Matters discussed included the need for corporate attention to timely resolution of audit findings, timely resolution and permanent closeout of temporary changes and plant modifications, and the need for more comprehensive technical audits of plant activities.

The WPSC representatives acknowledged the comments by the RIII representatives.

The RIII representatives were informed by the WPSC representatives that it would be extremely helpful if the licensees were given advanced notification of press releases issued by the NRC so that proper responses could be given to the inquiring news media.

The RIII representatives acknowledged the comments by the WPSC representatives.

REPORT DETAILS

1. Persons Contacted

C. R. Luoma, Plant Superintendent
R. W. Lange, Assistant Superintendent, Maintenance
C. R. Steinhardt, Assistant Superintendent, Operations
J. S. Richmond, Technical Supervisor
A. J. Ruege, Plant Performance Engineer
D. MacSwain, Instrument and Control Supervisor
W. J. Truttman, Operations Supervisor
J. J. Wallace, Operations Engineer
J. W. Tills, Cadet Engineer
R. F. Zube, Shift Supervisor
D. T. Braun, Shift Supervisor
D. Dow, Plant Electrician
D. Berg, Quality Assurance Technician

2. Review of Operations

The inspector reviewed selected operation records and activities, and interviewed selected personnel to determine that the plant was being operated in conformance with the approved procedures and Technical Specifications. The review included:

a. Shift Supervisor Log (January 14, 1977 through February 7, 1977)

b. Control Room Operator Log (January 14, 1977 through February 6, 1977)

c. Auxiliary Log Sheets (January, 1977)

d. Night Order Book

e. Temporary Change Request Log

f. System Status Boards

g. Primary and Secondary Chemistry (January, 1977)

h. Temporary Operating Procedure Log (January through February, 1977)

i. System Tagout Log

j. Plant Incident Reports Log

k. Plant System Status

The review of the plant status and off normal condition with the shift supervisor and the operators verified the plant to be in the cold shutdown condition on residual heat removal with the reactor vessel water level below the head flange.

l. Shift Relief and Turnovers

m. Emergency Diesel Generator System

The inspector reviewed the EDG system including:

(1) Diesel Generator Manual Operation (N-DGM-10)

(2) Diesel Generator Manual Test (SP-109)

(3) Diesel Generator Automatic Test (SP-110)

(4) Automatic Load Sequence Test (SP-152)

(5) EDG Valve Positions and Equipment Lineup

n. Plant Prestartup Checklists[1/]

The inspector verified that the licensee was involved in reviewing, revising, and performing prestartup checklists on all safety related systems. The checklists are being performed on the systems in the operable status, as appropriate. No further questions are required on this matter at this time and the item is considered closed.

o. Control Room Tour

The inspector toured the control room, including inspection of selected panel, console, and penetration areas for damage, fire hazards, and misuse.

p. Facility Tour

The inspector toured the facility including the containment building, auxiliary building penetration area, emergency diesel generator room, and turbine building.

No discrepancies were noted.

1/ IE Inspection Rpt No. 050-305/76-16.

3. Review of Procedures

The inspector reviewed selected procedures to verify that the procedures review and approval and procedure changes were accomplished in accordance with the Technical Specifications.

a. Emergency Diesel Generator System

b. Containment Spray System

c. Auxiliary Feedwater System

d. Spent Fuel Pit System

e. Component Cooling System

f. Residual Heat Removal System

g. Plant Sampling System

h. Radiation Monitoring System

i. Nuclear Instrumentation System

j. Station Blackout

k. Safety Injection Actuation

l. Loss of Coolant

m. Steam Line Rupture

n. Turbine and Reactor Trip

o. Control Room Inaccessibility

p. Steam Generator Tube Rupture

q. Selected Administrative Procedures

Apparent procedure inadequacies were reviewed with the licensee and resolved.

4. Nonroutine Event Reports

The inspector reviewed the following reportable occurrences to assure adequate review, evaluation, corrective actions, and reporting.

a. RO 76-22, Basic Acid Pump 1A tripped.

The licensee reported[2/] that the boric acid pump overload device tripped pump motor breaker during routine recirculation of the boric acid tanks with the 1A boric acid pump. The inspector reviewed the event with the licensee representative and reviewed the completed maintenance order indicating an operational check had been performed and the motor breaker reset.

The corrective actions appear adequate and no further questions are required on this matter at this time.

b. RO 77-01, Violation of Containment Integrity

The licensee reported[3/] that the containment integrity was violated when both service water and station air system valves to the containment were left open outside of administrative control with the plant at the hot shutdown operating condition.

The inspector reviewed the incident with the licensee and the methods utilized to prevent a recurrence. The inspector reviewed the standing order issued on September 13, 1976, which addresses opening and closing of manual containment isolation valves and the management controls utilized.

The violation of containment integrity is an item of noncompliance pursuant to Technical Specification 3.6.a. The licensee's corrective actions appear adequate and no further questions are required at this time.

5. Plant Cleanliness

The inspector reviewed the plant cleanliness and administrative controls to assure adequate housekeeping and cleanliness.

No discrepancies were noted.

2/ Ltr, WPS to RIII, dtd 1/21/77.
3/ Ltr, WPS to RIII, dtd 2/3/77.

6. Unresolved Item[4]

The inspector reviewed the "B" accumulator level difference with the licensee representative. During the latter part of December the licensee entered the containment and vented/drained the "B" SI accumulator levels and the channels returned to within the 6% allowable tolerance.

Subsequently on February 4, 1977, the "B" SI accumulator levels were recalibrated with only a minor discrepancy noted which was within the channel check requirements.

The licensee has obtained a limited number of new strain gauges for the level detectors on the boric acid tanks to perform an installed test. The results of this installed test will determine the final licensee corrective actions for that specific type of level detector.

No further questions are required on this matter at this time and the item is considered resolved.

7. IE Bulletin/Circulars

The inspector reviewed the completed corrective action for the bulletins and circulars concerning Westinghouse BFD[5] relays, Westinghouse BF[6] relays, and stress corrosion cracks in stagnant, low pressure, stainless piping.[7]

a. The inspector reviewed the completed BFD relay drop time tests[8/9] performed on the normally energized relays in the reactor protection and engineer safeguard systems. The drop times were all below 30 milliseconds.

No discrepancies were noted and no further questions are required on this matter at this time.

b. The inspector reviewed the surveillance testing program concerning the BF and BFD relays[10/11] with the licensee representative. The licensee had completed the review of all BF and BFD relays tested during routine surveillance and operating procedures at least once each refueling outage.

No discrepancies were noted and no further questions are required on this matter at this time.

4/ IE Inspection Rpt No. 050-305/76-16.
5/ IE Bulletin No. 76-05.
6/ IE Circular No. 76-02.
7/ IE Circular No. 76-06.
8/ Ltr, WPS to RIII, dtd 2/8/77.
9/ Ltr, WPS to RIII, dtd 5/6/76.
10/ Ltr, WPS to RIII, dtd 10/18/76.
11/ IE Inspection Rpt No. 050-305/76-16.

c. The inspector reviewed the licensee response[12] to the IE Circular concerning stress corrosion cracks in stagnant, low pressure stainless piping. During the outage which commenced on January 17, 1977, the licensee has operated the residual heat removal system and performed an inspection for leaks (SP-091). The safety injection systems have been flow tested (SP-110) during the outage.

The licensee has written an administrative control directive identifying a routine weekly inspection program by the plant administrative staff.[13]

The inspector review of the testing of the containment spray subsystems routinely at monthly and refueling intervals revealed stagnant discharge piping in the systems[14] due to an apparent testing technique inadequacy. The containment spray systems had been tested in accordance with Technical Specification 4.5.a and 4.5.b; but the operational test of the pumps via the pump mini-flow lines does not flow the system discharge piping through the installed test lines nor pressurize the piping up to the manual containment isolation valves as indicated in the FSAR, Section 6.4.

The response[15] from the licensee indicating service hydros and inspection of safety related stainless steel piping required to operate post-accident, the increased inservice inspection requirements commencing in October 1977, and the specified auxiliary building tours by the operating staff appear adequate.

The licensee will flow test the individual containment spray subsystems through the test flow path and inspect the piping for leakage during the present plant outage to verify system operability and integrity.

No further questions are required on this matter at this time.

8. Maintenance

The inspector reviewed selected maintenance activities to assure completion in accordance with applicable procedures and within the Technical Specifications. The following activities were reviewed:

a. MWR-3102, Steam Generator Snubber Bolts, March 17, 1976.

12/ Ltr, WPS to RIII, dtd 12/30/76.
13/ Ibid.
14/ IE Inspection Rpt No. 050-305/76-16.
15/ Ltr, WPS to RIII, dtd 12/30/76.

b. MWR-3158, Emergency Diesel Generator "A", March 20, 1976.

c. MWR-3778, Emergency Diesel Generator Lube Oil Warm-up Pump, May 15, 1976.

d. MWR-2251, Chemical and Volume Control System, December 19, 1975.

e. MWR-2737, Reactor Coolant System, Valve Wall Thickness, February 17, 1976.

f. MWR-1582, Safety Injection System, March 2, 1976.

g. MWR-359, Containment Spray System-Various, February 19, 1976.

No discrepancies were noted.

9. Emergency Core Cooling and Loss of Power Load Sequencing

The inspector reviewed the present plant design, from the equipment and procedural standpoint, to verify the capability to sustain operation of the emergency diesel generator after a loss of offsite power following a LOCA, prior to reset of the safety injection signal and subsequent to a safety injection system (SIS) reset by the operator.

a. The review of the plant logic and electrical schematic diagrams revealed that the plant SIS reset function can be performed from the control room console after the following steps and verifications have been performed as indicated in emergency procedures E-0-08, Steam Line Rupture, and E-0-10, Loss of Coolant.

(1) Expiration of the 90-second time delay.

(2) The SIS sequence has completed its program, as indicated by four service water pumps in operation.

b. The basis for the SIS reset action after 90-seconds is to allow to the operator to perform subsequent actions following an initiation of SIS without placing equipment in "PULLOUT" or holding certain equipment switches in the "OPEN" or CLOSED" position equipment which the licensee allows necessary to utilize includes:

(1) Certain containment isolation valves, including containment instrument air.

(2) Certain equipment, including the charging pumps, boric acid pumps, and other equipment.

c. The inspector reviewed the plant logic and electrical schematic diagrams and verified that the emergency diesel operator and support equipment will be started in the event of a LOP or a LOP concurrent with a LOCA.

d. The review of the applicable surveillance procedures verified that the load sequencing actuation signals associated with the LOP and LOCA are routinely tested.

(1) SP-152, Automatic Load Sequence Test, performed monthly. This test verifies the SIS and BOS logic.

(2) SP-110, Diesel Generator Automatic Test, performed at refueling outages. This test verifies the logic output relays by actually starting the appropriate equipment.

e. The review of the LOP sequence following a SIS reset action by the operator revealed that certain safety injection equipment does not restart automatically.

(1) The blackout sequence only restarts the auxiliary feedwater pumps, component cooling water pumps, service water pumps, and selected auxiliary equipment.

(2) The equipment which does not start includes the safety injection pumps, the residual heat removal pumps (low head safety injection pumps), containment spray pumps (if required), and the containment vessel fan coil units.

The licensee is in the process of reviewing the appropriate emergency procedures to assure detailed instructions for manual operator actions to recover the required safety injection equipment.

The procedural control will address the different modes/ stages of safety injection following a LOCA, SIS reset, and subsequent LOP.

This item will remain open pending completion of the appropriate procedure changes.

f. The review revealed that the instrument air to the containment is isolated by the SIS isolation signal and removes the control air to essential services within the containment. The instrument air isolation valve must be manually opened following the SIS reset action.

This item will remain open pending completion of the appropriate procedure changes.

g. The review of the operation of the emergency diesel generator for extended periods of time revealed a lack of adequate procedural controls to insure the commencement of necessary surveillance requirements.

The licensee is reviewing the procedures and making appropriate revisions.

This item will remain open pending the completion of the procedure revisions.

10. Primary and Secondary Plant Power Operator Relief Valves

The inspector's review of the steam generator tube rupture incident revealed an apparent design inadequacy.

The Steam Generator Tube Rupture incident described in the FSAR (14.2.4) indicates the use of the primary pressurizer power operated relief valves to reduce the primary system pressure to approximately 1000 psig following cooldown of the plant to less than the saturation temperature for the secondary safety valves. The cooldown method utilizes the secondary plant power operated relief valves.

During the incident in coincidence with a loss of power (assumed) the pressurizer and the main steam PRV's are assumed to be available. The use of the relief valves to terminate the offsite release appears to require that the valves be considered safety related.

This item will be considered open pending completion of review and resolution.

11. Safety Limits, Limiting Safety System Settings, and Limiting Conditions for Operation

The inspector reviewed selected plant activities and records and verified selected safety related equipment conditions to insure compliance with the Technical Specifications.

No discrepancies were noted.

12. Outstanding Items

The inspector reviewed selected outstanding inspection items verify adequate corrective actions.

a. The plant tours[16/][17/] by department heads had been included in an administrative control directive. The inspector verified the procedure to be in draft and to be issued presently.

No more questions are required on this matter at this time and the item is considered closed.

b. The plant prestartup checklists[18/][19/] are being performed on all safety related systems by the licensee during the present outage. The checklists are being reviewed and updated to the actual plant conditions.

No further questions are required on this matter at this time and the item is considered closed.

c. The containment spray system procedural inadequacies[20/] have been reviewed by the licensee and procedures revised accordingly.

No further questions are required on this matter at this time and the item is considered closed.

16/ IE Inspection Rpt No. 050-305/76-26.
17/ Ltr, WPS to RIII, dtd 12/30/76.
18/ IE Inspection Rpt No. 050-306/76-16.
19/ IE Inspection Rpt No. 050-305/77-02.
20/ IE Inspection Rpt No. 050-305/76-16.