



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

Docket No. 50-305

MAR 28 1977

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

Gentlemen:

This refers to the inspection conducted by Messrs. J. E. Kohler and J. C. Pulsipher of this office on March 15-17, 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 and other members of your staff at the conclusion of the inspection.

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.

MAR 28 1977

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

Sincerely,

Gaston Fiorelli, Chief
Reactor Operations and
Nuclear Support Branch

Enclosure: IE Inspection
Rpt No. 050-305/77-07

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

OFFICE	RIII <i>WDR</i>	RIII <i>WDR</i>	RIII <i>WDR</i>	RIII <i>CS</i>	RIII
SURNAME	Kohler/jb	Pulsipher	Little	Fiorelli	Hunter
DATE	3/28/77				

UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-305/77-07

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: March 15-17, 1977

Principal Inspector: *[Signature]*
J. E. Kohler

[Signature]
3/28/77
(Date)

Accompanying Personnel: *[Signature]*
J. Pulsipher

[Signature]
3/28/77
(Date)

Other Accompanying Personnel: None

Reviewed By: *[Signature]*
W. S. Little, Chief
Nuclear Support Branch

[Signature]
3/28/77
(Date)

SUMMARY OF FINDINGS

Inspection Summary

An inspection was conducted on March 15-17, 1977, (77-07) regarding: post CILRT inspection, calibration of plant instrumentation.

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)

None.

C. Managerial Items

None.

D. Deviations

None.

E. Status of Previously Reported Unresolved Items

None.

Management Interview

A management interview was conducted by Messrs. Kohler and Pulsipher with Mr. Luoma and the plant staff at the conclusion of the inspection. The following items were discussed:

- A. Calibration of CILRT instrumentation. (Paragraph 3, Report Details)
- B. Calibration of plant instrumentation. (Paragraph 4, Report Details)
- C. Content of three month CILRT report to Commission. (Paragraph 2, Report Details)

REPORT DETAILS

1. Persons Contacted

C. Luoma, Plant Superintendent
J. Richmond, Technical Superintendent
D. McSwain, I&C Supervisor
L. Arno, Assistant I&C Supervisor
R. Hirst, Maintenance Supervisor
S. Lehman, NUS Consultant
T. Kaiser, I&C Clerk

2. CILRT Report Details

The inspector discussed the requirement for the submission of a three month CILRT report to the Commission describing the results of the February 1977 test. The inspector stated that the report is a reference document used by the station for future tests and should include discussions in the following areas.

Chronological events log
Method, equations, statistics
Instrument error analysis and references
Instrumentation performance
Acceptance criteria
Results
Supplemental test
As found leakage rate
Procedure changes
Description of pump-up and pump-up equipment
Post CILRT containment inspection

3. Calibration of CILRT

The inspector reviewed the following procedures in detail relating to calibration of CILRT instrumentation:

ICP86.1 RTD
ICP86.2 Dewcell Calibration
ICP86.3 Pressure Guage Calibration

During the review it was discovered that the acceptance criteria for calibrating the CILRT pressure gauge was not met (Steps 4.3, 4.5, in ICP86.3) for one of four pressure gauges. There was no indication in the completed calibration procedure as to followup action, however, the gauge in question was not used in the CILRT to calculate the leak rate.

The inspector stated that the procedure would be more complete if it contained a section which included the following statement: "Are the acceptance criteria met?" This would force the individual to verify whether acceptance criteria were met and noted in the procedure so that the appropriate followup action could be taken. The licensee stated this would be considered.

In addition, the inspector stated that the procedures for calibration of the CILRT instrumentation were deficient in referencing where acceptance criteria used to calibrate the instrumentation could be found. The licensee stated references would be added.

4. Plant Operations Review Committee (PORC)

The inspector questioned the licensee to determine how the PORC performs its review of proposed technical specification changes and temporary changes to procedures. It was determined that the PORC review may occur after a temporary procedure change is implemented and may also occur after a proposed technical specification change is sent to NRR for consideration. The inspector stated that PORC review of a proposed technical specification change must be made prior to its submittal to NRR in order to meet the technical specification requirements.

5. LER Review

The inspector reviewed the licensee's draft modification to RO 77-02 regarding failure of containment isolation valve local leak rate tests in the Containment Purge and Relief lines.

Initially the inspector disagreed with the licensee's statement that 100% of the purge line leakage would be filtered by the shield building filter zone. However, the P&ID shows a leak off penetration down stream of the second isolation valve inside the shield building zone which would allow filtration of any purge line leakage.

The draft LER did not state that any preventative maintenance would be performed other than periodic leak testing on a twice yearly frequency. The inspector is concerned about the loss of resiliency of the rubber seat material which has a short shelf life and questioned the licensee about performing a durometer test for resiliency of the seat material before installation. The licensee stated that no such test is planned. This item will remain unresolved until the response from inspection report 77-06 is received.

6. Calibration of Plant Instrumentation (Technical Specification Required)

The inspector selected the following items required by the technical specifications to be calibrated during the refueling outage:

- Reactor Coolant Flow
- Analog Rod Position
- Steam Generator Level
- Containment Pressure
- Accumulator Pressure
- RHR Pump Flow
- 4-KV Voltage and Frequency
- Pressurizer Level

Review of the Instrumentation and Control Procedures relating to the above calibrations determined the following criteria met:

Calibration frequency

Limiting conditions for operation during calibration.

Procedure review and approval

Acceptance criteria for trip settings using applicable T/S requirements

Procedures contained detailed stepwise instructions

The technical content of the procedures were reviewed and no deficiencies were found. The inspector discussed the qualification of station personnel performing calibrations with station management and no deficiencies were found.

7. Primary Standards

The following primary standards used to calibrate station instrumentation were inspected:

91059	Keithly Pico Source
91151	pressure guage
91088	analog simulator

After review of the calibration records associated with the above instruments, the following determinations were made.

- a. Calibration frequency was met.
- b. Accuracy is traceable to NBS.
- c. Storage and control was proper.

8. Calibration of Plant Instrumentation (Not Technical Specification Related)

The inspector reviewed the records associated with calibration of plant instrumentation not required by technical specifications. The licensee uses a computerized scheduling system to call out the instruments requiring periodic calibration.

All calibrations reviewed were covered by approved procedures, and contained acceptance criteria and detailed instructions. All calibration reviewed met the frequency of calibration specified in procedures.



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799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

Docket No. 50-305

MAR 18 1977

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

Gentlemen:

This refers to the inspection conducted by Messrs. W. S. Little and J. E. Kohler of this office on February 15 and 17; and 26-28, 1977, of activities at the Kewaunee Nuclear Power Plant authorized by NRC Operating License No. DPR-43 and to the discussion of our findings with you at the conclusion of the inspection.

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.

During review of the results of the local leak testing it was noted that isolation valves found in the Reactor Containment Building Purge and Relief System were found to be leaking excessively and resulted in exceeding the maximum allowable leakage rate specified by your Technical Specifications and 10 CFR 50, Appendix J. In the reportable occurrence report, the cause was attributed to deterioration of the rubber valve seats. Corrective action stated that the rubber seats would be replaced prior to power operation.

However, in a subsequent telephone conversation with Mr. Hunter of this office on February 24, 1977, you indicated that replacement of the rubber valve seats could not be done prior to the March 16, 1977 unit startup for Fuel Cycle III as you so stated in RO-77-2 due to unavailability of the items on short notice.

GD

MAR 18 1977

In the interim period prior to replacement of the rubber valve seats, we understand that you intend to implement the following controls to assure continued containment integrity. (1) No purging during power operation; (2) Local Leak Rate Test of Reactor Containment Purge Relief Line isolation valves after each usage when containment integrity is required.

For the long term correction of the problem following replacement of the valve seats, please provide us within thirty days your preventative maintenance program to assure that the rubber seats used in the Purge Relief Line isolation valves have an acceptable resiliency as stipulated by the manufacturer prior to installation and during the service life.

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
Rpt No. 050-305/77-06

cc w/encl:

Mr. C. Luoma, Plant
Superintendent

Central Files

Reproduction Unit NRC 20b

PDR
Local PDR
NSIC
TIC

OFFICE	RILL <i>[initials]</i>	RILL <i>[initials]</i>	RILL <i>[initials]</i>	RILL <i>[initials]</i>		
SURNAME	Kohler/jb	Little	Fiorelli	Hunter		
DATE	3/16/77					

UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-305/77-06

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: February 15 and 17 and 26-28, 1977

Principal Inspector: *J. E. Kohler*
for J. E. Kohler

3/16/77
(Date)

Accompanying Inspector: W. S. Little

Other Accompanying Personnel: None

Reviewed By: *W. S. Little*
W. S. Little, Chief
Nuclear Support Branch

3/16/77
(Date)

SUMMARY OF FINDINGS

Inspection Summary

An inspection was conducted on February 15-17 and 25-28, 1977, (77-06):
Regarding plans preparation and witnessing of the 1977 containment
integrated leak rate test.

Enforcement Items

None.

Licensee Action on Previously Identified Enforcement Items

None.

Other Significant Findings

A. Systems and Components

Containment integrity did not exist for an indeterminate portion
of the last fuel cycle due to the Reactor Containment Building
Purge and Relief Line isolation valves exceeding the allowable
leakage rate. (Paragraph 4, Report Details)

B. Facility Items (Plans and Procedures)

None.

C. Managerial Items

None

D. Deviations

None.

Management Interview

A management interview was conducted by Mr. Kohler on February 17 and
Mr. Little on February 28 with Mr. Richmond and others of his staff at
the conclusion of the inspection. The following items regarding the
CILRT were discussed.

- A. CILRT valve lineup regarding venting and draining systems.
(Paragraph 2, Report Details)

- B. CILRT acceptance criteria. (Paragraph 3, Report Details)
- C. The as found leakage condition of the containment. (Paragraph 4, Report Details)
- D. Deficiencies in the CILRT instrumentation calibration and the method of calculating instrument error. (Paragraph 5, Report Details)
- E. The computer program. (Paragraph 6, Report Details)
- F. Deficiencies in the licensee's 10 CFR 50, Appendix J, exemption letter. (Paragraph 7, Report Details)
- G. Results of the 1977 integrated leak rate test.

REPORT DETAILS

1. Persons Contacted

J. Richmond, Technical Supervisor
S. Lehaman, NUS Consultant

2. CILRT Valve Lineup

The inspector reviewed the CILRT valve lineup and noted that neither the line supplying seal water to the reactor coolant pumps (RCP) nor the line supplying component cooling water to the RCP motors was drained in the CILRT valve lineup. The inspector further noted that these lines were drained for performance of the valve leak rate test.

10 CFR 50, Appendix J, Section III.A.d, requires venting and draining of closed fluid leaving systems that penetrate containment and may rupture as a result of the LOCA. The licensee stated that the normal configuration for these systems was water filled and that they were not expected to rupture during the LOCA.

The regional office has received guidance from NRR regarding venting and draining systems. In effect, systems not drained during the CILRT must either be necessary for the safe operation of the plant, filled with fluid post LOCA such as safety injection system or protected by a seal water system with a guaranteed source of water.

The licensee has not classified the two supply lines to the RCP's as being protected by a seal water system. This question is currently under review by NRR in the 10 CFR 50, Appendix J review. The inspector will await the final decision and has no further question regarding this item.

3. CILRT Acceptance Criteria

Based on the results of the Kewaunee preoperational CILRT and the Technical Specifications, the containment leakage rate limits for the Kewaunee containment are as follows:

La = .5 w/o/day @ 46 psig
Lt = .053 w/o/day @ 23 psig

The instrumentation error analysis shall have an impact on the leak rate as follows:

For half pressure:

Instrumentation error analysis $\angle .25 Lt \angle .0133$ w/o/day.

For full pressure:

Instrumentation error analysis $\angle .25 La \angle .125$ w/o/day.

Originally the licensee had planned to do a half pressure test. However, after performing the instrumentation error analysis, and giving consideration to the magnitude of the leakage that would have to be measured (75% of .0526), the decision was made to perform a full pressure CILRT and to do all subsequent periodic tests at full pressure.

4. As Found Condition of the Containment

In a recent 10 CFR 50, Appendix J exemption submittal, the licensee committed to compute the as found leakage rate of the containment by summing the leakage rates for each individual penetration according to the following convention: The leakage reduction due to repairs shall be added to the measured leakage to determine the total measured leakage.

During performance of the Local Leak Rate Tests both containment isolation valves in the Reactor Containment Building Purge Relief Line were leaking excessively and exceeded the leak rate of the testing device. The licensee stated in the LER 77-2 that the rate exceeded 684 SCFH

Consequently, the as found condition of the containment exceeded the allowable leakage rate. Had the CILRT been done prior to any local leak rate testing it would have failed because of the excessive leakage found in the Purge Relief Line.

The regional office has been following this item. The licensee had proposed to replace the seats in these valves. The licensee attributed the cause to hardening of the rubber seats resulting in a loss of resiliency to the rubber and had committed to replace the rubber seats prior to startup of Cycle III, and increase the surveillance testing from a once per year to twice per year frequency. However, in a subsequent telephone conversation with the licensee,

it was determined that the valve seat material will not be available until well after the scheduled startup for fuel cycle III.

The regional office has contacted the licensee by telephone in order to determine what measures will be taken to assure that containment integrity exists during the next cycle, prior to the replacement of the rubber seats. The licensee was asked to consider the following actions for surveillance of the isolation valves in the Purge Lines.

- a. Local leak rate testing after each cycling.
- b. Pressurizing the volume between the valves during power operation and monitoring the make-up rate to detect leaking valves.
- c. No purging during power operation.

The RIII office has not received a response yet to these items. Consequently, the licensee will be asked to provide the measures he will take during fuel cycle III and prior to replacement of the rubber seats to assure containment integrity exists. Additionally, the licensee will be asked to describe the preventative maintenance program he will follow to assure that the rubber seats have an acceptable resiliency prior to installation and during their service lifetime.

5. Deficiencies in CILRT Instrumentation

During the inspection the inspector discovered that no current calibration of the RTD sensors to be used in the CILRT existed. The inspector instructed the licensee in the necessary steps to calibrate and certify the CILRT with regard to the instrumentation error analysis acceptance criteria.

6. Computer Program

The licensee's consultant could not give the inspector any details of the computer program used to calculate the containment leak rate. Consequently, the inspector gave the licensee a test case of data with known results in order to substantiate the program.

7. 10 CFR 50, Appendix J, Letter

The inspector reviewed the licensee's request for exemption from 10 CFR 50, Appendix J, and found the following deficiencies:

<u>Penetration Number</u>	<u>Penetration</u>	<u>Type of Test</u>
6E & 6W	Main Steam Isolation Valves	A
8S & 8N	Steam Generator Blowdown Isolation Valves	A
46E & 46W	Auxiliary Feedwater Feedwater Isolation Valve Containment	A A

The isolation valves contained in the above systems were not exposed to Type A test pressure during the 1977 CILRT and some of these valves would never be exposed to Type A test pressure. The licensee was asked to correct this information contained in their proposed Technical Specification change of January 4, 1977, and forwarded these corrections to NRR, Operating Reactors Branch 1.

8. Containment Integrated Leak Rate Test (CILRT) (W. S. Little)

The inspector witnessed the CILRT which was performed on February 26-28, 1977.

a. Test Prerequisites

The test procedure dated February 23, 1977, was reviewed to determine that it was adequately approved and that the procedure steps prior to beginning the test were signed off. The pre-test checklist was reviewed, and the inspector spot checked valves in Reactor Coolant Loops A and B, feedwater and steam line penetrations to determine that their indicated positions were as specified. No problems were identified in this area.

b. Instrumentation

Calibration records for the following were reviewed by the inspector:

24 RTD's

12 Dewcells

2 Pressure Gauges (#11399 and # 11300)

2 Digital Pressure Indicators (#11401 and #11402)

Temperature Indication Loop

Pressure Indication Loop

All detectors, pressure and temperature indication loops had been recalibrated within two weeks prior to the test. No problem areas were identified.

The instrument locations and the weighted volume fractions used calculating containment conditions were the same as for the preoperational CILRT.

Throughout the stabilization period and the tests the output of each RTD was printed out every 30 minutes and during trending periods every 15 minutes. All 24 RTD's trended well and none appeared erratic. All 12 dewcells trended well except one which appeared to read high, but that one was not erratic.

c. Conduct of CILRT

The containment was allowed to stabilize for eight hours after pumping up to 46 psig at 1600 hours on February 26, 1977. Only one minor problem, with service water leaking into a containment air cooler, occurred during the stabilization. The test began at 0000 hours on February 27, 1977, and ran for 24 hours until 2400 hours. The test data was sent to Green Bay where final calculations were to be made, and the test director calculated point to point and total time leak rate measurements every 30 minutes. No problems occurred during the test. The licensee calculated the 24 hour leak rate to be .0995 w/o/day with an upper confidence level of .1 w/o/day. The inspector's independent calculations indicated a 24 hour leak rate of approximately 0.094 wt%. This was significantly below the Technical Specification maximum allowable of 0.375 wt% per 24 hours. No problem areas were identified.

d. Verification CILRT

The verification test was run by imposing a known leak rate of approximately 0.375 wt% per 24 hours on the containment and

measuring the total leakage. At 0000 hours on February 27, 1977, the imposed leak was established utilizing a rotameter. Pressure, temperature, dewpoint and rotameter readings were taken each 15 minutes for the first eight hours and each 30 minutes thereafter. The test was started at 0300 hours after three hours for stabilization. At 1400 hours the inspector was calculating a total time, total leakage of approximately 0.420 wt%/day, and the inspection was terminated as it appeared that the test was successful. The licensee continued taking data for a few more hours and later reported to the inspector by telephone that their analysis indicated a containment leak rate of 0.065 wt%/day. No problem areas were identified.