REGULATORY OPERATIONS, REGION III

A. RO Inspection Report No. 050-305/73-01

Transmittal Date : February 13, 1973

Distribution:
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RO:HQ (5)
DR Central Files
Regulatory Standards (3)
Licensing (13)

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RO Chief, M&FFB
RO:HQ (4)
L:D/D for Fuel & Materials
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B. RO Inquiry Report No. _____

Transmittal Date : _____

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RO:HQ (5)
DR Central Files
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Distribution:
RO Chief, M&FFB
RO:HQ
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C. Incident Notification From: _____
(Licensee & Docket No. (or License No.)

Transmittal Date : _____

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RO:HQ (4)
Licensing (4)
DR Central Files

Distribution:
RO Chief, M&FFB
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L:D/D for Fuel & Materials
DR Central Files

LP

DR Central File

UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

February 13, 1973

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 of Messrs. Rohrbacher and Erb of this office on January 16 - 18, 1973, 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 you and Messrs. Mathews, Ramsett, and Fitzpatrick of your staff.

Areas examined during the inspection are identified in the attached report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with plant personnel, and observations by the inspectors.

No violations of AEC requirements were identified within the areas examined during the inspection.

The inspectors also examined actions you have taken with respect to the matters identified in your letter of April 12, 1972. We find that appropriate, corrective action to bring about resolution of these matters is in progress. We will continue to review the progress of this corrective action during subsequent inspections.

By way of this letter, we wish to confirm our understanding during this inspection, as follows, with regard to certain quality related activities you have initiated.

1. Complete current efforts to investigate and resolve a matter relative to cracks in disks installed in the main steam isolation valves in accordance with plans identified during this inspection.

2. Continue your implementation of previously identified plans to assure that repair, inspection, and testing of the residual heat removal pumps are accomplished in accordance with applicable quality assurance program requirements.

We will examine your action relative to these matters during subsequent inspections.

A copy of our report of this inspection is enclosed and, in accordance with Section 2.790 of the AEC'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 AEC's Public Document Room. If the enclosed inspection report contains information which you or your contractors believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. If such an application is submitted, it must identify the basis for which information is claimed to be proprietary and should be prepared so that proprietary information identified is contained in a separate part of the document, since the application, excluding this separate part, will also be placed in the Public Document Room. If we do not receive an application to withhold information, or are not otherwise contacted within the specified time period, the enclosed report will be placed in the Public Document Room with a copy of this letter.

Unless you wish to make application to withhold information, 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

Enclosure:
RO Inspection Rpt No. 050-305/73-01

bcc: RO Chief, RCB
RO Chief, RT&OB
RO:HQ (4)
Licensing (4)
DR Central Files
Regions I, II & V
PDR
Local PDR
NSIC
DTIE
OGC, Beth, P506A
R. Renfrow, GC (2)

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

REPORT OF CONSTRUCTION INSPECTION

RO Inspection Report No. 050-305/73-01

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

Kewaunee Nuclear Power Plant
Kewaunee, Wisconsin

License No. CPPR-50
Category: B

Type of Licensee: PWR (W) 560 Mwe

Type of Inspection: Routine, Unannounced

Dates of Inspection: January 16 - 18, 1973

Dates of Previous Inspection: December 18 - 20, 1972

Principal Inspector: R. A. Rohrbacher — 2-12-73 (Date)

Accompanying Inspector: C. M. Erb — 2/13/73 (Date)

Other Accompanying Personnel: None

Reviewed By: D. W. Hayes, Senior Project Inspector (Acting)
Reactor Construction Branch — 2-12-73 (Date)

SUMMARY OF FINDINGS

Enforcement Action

A. Violations

No violations were identified.

B. Safety Matters

No safety items were identified.

Licensee Action on Previously Identified Enforcement Matters

A. Absence of Procedures and Records Relative to the Storage of Reactor Vessel Internals Inside Containment (RO Inspection Report No. 050-305/72-18)

Wisconsin Public Service Corporation (WPS) stated that they intend to reply to the RO:III letter dated January 17, 1973, in regard to this matter. A temporary procedure is in use and a final procedure is being developed. (Paragraph 1)

B. Balance-of-Plant Wiring Found Common with Wiring for Both Safeguard Systems (RO Inspection Report No. 050-305/72-03)

The Pioneer Service and Engineering Company (PS&E) has finished a review of the wiring installed within the control room consoles and panels. Corrective work, resulting from this review, is about 99% complete. This matter remains open pending completion of the corrective work.

C. Lack of Separation of Wiring for the Reactor Trip Channels (RO Inspection Report No. 050-305/72-03)

Work to assure proper separation of the subject wiring is in progress, and revised drawings have been prepared. These drawings are presently being reviewed for design adequacy. This matter remains open.

D. Solitary Manual Scram Switch Does Not Meet Single Failure Criterion (RO Inspection Report No. 050-305/72-03)

The second manual reactor scram switch has been installed and wiring has started. This matter remains open pending completion and review of the wiring.

Design Changes

No new design changes were identified.

Unusual Occurrences

No unusual occurrences were identified.

Other Significant Findings

A. Current Findings

Construction Status

Activity	% Completion
Major Piping installations	99
Electrical cables pulled	90
Instrumentation installed and wired	75
Overall plant	96

The above estimates of percent completion do not include possible future additions or modifications.

B. Unresolved Matters

1. Main Steam Isolation Check Valve Disk Cracks (RO Inquiry Report No. 050-305/73-01Q (CDR), attached)

During liquid penetrant testing, two 30" main steam line isolation check valve disks were found to have significant crack indications. WPS properly informed RO:III of this matter on January 2, 1973, and have issued a report pursuant to 10 CFR Part 50.55(e). (Paragraph 2)

2. Limitorque Valve Operator Failures

In response to an RO:III letter on this subject, dated December 6, 1972, WPS (in a letter to RO:III dated January 2, 1973) stated that 72 valves of a type identified as subject to failure would be modified according to instructions and with technical assistance from the Limitorque Corporation. Completion of this corrective action is expected to take about three months. This matter remains open.

C. Status of Previously Reported Unresolved Matters

1. Reactor Pressure Vessel Installation Records (RO Inspection Report No. 050-305/72-18)

During the previous inspection, a review of the subject records indicated that, for some installation activities, it was not clear who actually performed the work, and for some signatures, the organizational affiliation could not be established. The inspector reviewed an attachment which was added to these records (CP.RC.01). This attachment clearly identifies the personnel and organizations involved with this work. This matter is considered to be resolved.

2. QA Documentation for the Containment Dome Fans (RO Inspection Report No. 050-305/72-16)

Prior to this inspection, some of the required QA documentation for the two containment dome fan assemblies, relative to serviceability of the fan motors, was not available at the site. During the current inspection, additional QA documentation was available for review, including a letter from Joy Manufacturing Company (the fan vendor) to PS&E, dated December 7, 1972. The letter stated that the dome fan motors in question are the same (identical design, materials, fabrication, etc.) as fan motors that previously met all applicable requirements including serviceability tests for accident conditions. This matter is considered to be resolved.

3. Casting Quality of the Residual Heat Removal Pumps (RO Inquiry Report No. 050-305/72-01 and RO Inspection Report No. 050-305/72-14)

WPS notified RO:III on August 31, 1972, pursuant to 10 CFR Part 50.55(e), of potential quality shortcomings relative to the RHR pumps. Later, but prior to the current inspection, WPS notified RO:III that both RHR pump casings were found to have rejectable defects and were returned to the vendor for repair. During the current inspection, the quality of one pump casing was still not considered to be acceptable by the licensee. Inspection follow-up is planned.

4. Identification of Reactor Protection System Equipment (RO Inspection Report No. 050-305/72-11)

During a previous inspection, reactor protective system instrument components within the containment structure were

not distinctively identified. Installation of identification tags has started. The tags are colored to match channel colors.

This matter remains open pending completion of the tag installations.

5. Separation of Redundant System Control Switches and Associated Wiring Within Panels (RO Inspection Report No. 050-305/72-03)

Wiring to redundant system switches and other electrical components is being rerouted to obtain maximum possible separation within the control room consoles and panels and is presently about 95% complete. Metal barriers are being installed between redundant wiring or components not separated by at least six inches of air. This matter remains open pending completion of the work.

6. Lack of Fire Barriers and Seals (RO Inspection Report No. 050-305/72-03)

Support brackets and framing for fire barriers between the control and relay rooms have been installed. The barriers will be installed later, since access in this area is needed at the present time. Mounts for a fire barrier, designed to separate the controls for the redundant emergency diesel generator trains located on the control room console, have also been installed. A follow-up inspection covering both of these matters will be performed.

7. Identification of Safeguard and Reactor Protection System Wiring (RO Inspection Report No. 050-305/72-03)

Identification of the subject wiring is about 90% complete and is being accomplished in conjunction with wire rerouting. Work is temporarily held up until revised wiring diagrams become available. This matter remains open pending completion of the corrective action.

8. Lack of Adequate Electrical Cable Support (RO Inspection Report No. 050-305/72-03)

The licensee stated that corrective action in the form of tray edge protectors is planned, and these protectors will be installed after cable pulling is completed. This matter will receive follow-up attention.

9. Safety Valve to Steam Header Attachments (RO Inspection Report No. 050-305/72-07)

PS&E has completed a re-evaluation of methods to attach the safety valves to the main steam line headers. The licensee stated that approved drawings for the new installation method have been issued, and Barco joints in the safety valve outlet piping will now be used on both the east and west headers. This matter remains open pending completion of the corrective action.

10. Potential Flooding of Both Diesel Generators and Associated 4160 Volt Switch Gear (RO Inspection Reports No. 050-305/72-04 and No. 050-305/72-07)

Corrective action has been completed on this matter. Doors to the diesel generator rooms have been hung to open outward, thresholds have been modified to make them more leak resistent and a concrete barrier has been installed in the pipe trench adjacent to a diesel generator room wall. This corrective action appears to meet the requirements of the Kewaunee FSAR, and this matter is considered closed.

11. Reactor Trip Switch Gear Protection (RO Inspection Report No. 050-305/72-04)

A 16-inch, high pressure, feedwater line is located in the same room as the reactor trip switch gear. Operability of the reactor trip breakers, following a postulated failure of this line, is being reviewed, and a design study on this matter is in progress. This matter remains open.

12. Steam Generator Stress Analysis Report (RO Inspection Reports No. 050-305/72-03 and No. 050-305/72-07)

The stress analysis report for the subject equipment and the ASME Code Manufacturer's Data Report for design and shop fabrication were previously reviewed by the inspector and found to be satisfactory. However, the Code Manufacturer's Data Report cannot be completed until the hydrostatic test has been completed. This matter remains open.

13. Valve Body Wall Thickness Verification (RO Inspection Report No. 050-305/72-14 - Reopened)

In response to the RO:III letter, dated September 13, 1972, relative to Class I valve wall thickness measurements, the

licensee (in a letter dated October 10, 1972) provided details of a program they are instituting to meet the verification requirements contained in the RO:III letter of June 29, 1972. This valve body measuring program, utilizing ultrasonic techniques, is now in progress. Initial measurements have been completed on 73 valves by Magnaflux Corporation personnel. This matter remains open.

Management Interview

A. The following persons attended the management interview at the conclusion of the inspection.

Wisconsin Public Service Corporation

E. W. James, Vice President - Power Generation and Engineering
E. R. Mathews, Manager - Power Engineering
L. O. Ramsett, QA Supervisor
G. V. Fitzpatrick, QC Supervisor

B. Matters discussed and comments on the part of management personnel were as follows:

1. An apparent violation, identified during the previous inspection, concerning procedures and records relative to storage, preservation and protection of the reactor vessel internals was discussed. WPS stated that they plan to respond to the RO:III letter on this subject dated January 17, 1973. A representative of the licensee also stated that a temporary or interim procedure is in use at the site. (Paragraph 1)

2. Cracks found in the disks of two main steam isolation valves were discussed. The inspector stated that RO:III had received a copy of a letter (dated January 5, 1973) on this subject from WPS in compliance with 10 CFR 50.55(e). WPS stated that these two disks were returned to the vendor for examination and resolution. The inspector stated that he would be interested in what remedial action is planned. (Paragraph 2)

3. The licensee stated that they had already investigated the use of Limitorque Valve Operators identified in the RO:III letter of December 6, 1972, and added that the response to this letter indicated that replacement of defective parts for 72 Limitorque valve operators would be accomplished in the near future. The inspector stated that he would review the results that verify that all such valve operators function properly after repair.

4. The inspector stated that he had reviewed the cleaning procedure recently written for the reactor studs, nuts and washers and that although the procedure was somewhat brief and informal, it appeared to be adequate. The inspector further stated that the head fastening hardware which he observed was found to be properly cleaned, protected and stored.

5. The present status of the RPV installation records was discussed. The inspector stated that the recent attachment to the subject records was reviewed and appeared to be satisfactory and that he had no further questions on this matter.

6. The current status of the RHR pumps was discussed. WPS summarized the recent activities on this subject and gave the current status of pump repair and associated quality records. The inspector stated that he would like to be informed of future activities in regard to this matter. The licensee agreed to keep the inspector informed.

REPORT DETAILS

Persons Contacted

The following persons, in addition to individuals listed under the Management Interview Section of this report, were contacted during the inspection.

Wisconsin Public Service Corporation (WPS)

E. E. Mitchell, Quality Control Engineer
P. T. Trondsan, Quality Control Engineer

Phillips Getschow Company

V. J. Le Greve, Assistant Quality Control Supervisor

Results of Inspection

1. Reactor Pressure Vessel Internals

A temporary procedure which includes activities related to storage, protection and surveillance of RPV components was available for use while a final procedure is being developed. This temporary procedure appeared to be adequate for interim use.

Protection and surveillance activities of reactor vessel components will be included in new cleanliness and other related procedures. WPS plans to implement this new procedure within a few weeks. Personnel access, tools, materials and work activities in the containment structure will be restricted. Moreover, activities such as housekeeping, tool usage, type of cleaning and cleaning equipment allowed, and other types of equipment to be used within containment will be more closely regulated.

2. Main Steam Isolation Check Valve Disk Cracks

Two main steam isolation check valves (Dwg. 69C133-Z, P.O. No. K205) were found to have significant cracks in their disks. The disks (also called disk rings) are made of ASTM 538, Grade B, material. The outer edge of one side of the disk has an inlay (facing) of type 316 stainless steel. The disk material was originally specified as carbon steel with a minimum tensile strength of 70,000 psi. However, the valve manufacturer (Schutte and Koerting Company), by Change Order No. 5, substituted a maraging steel for the disks.

The disks (from Republic Steel Corporation heat No. 3831397) had been checked by UT and found satisfactory before machining and shipment to the valve manufacturer. This appears to indicate that the cracks developed during or after processing by the valve manufacturer. The type 316 SS inlay material was applied by a plasma arc welding process over the solution treated base metal. The disks were then reheated for precipitation hardening to 900°F for three hours. After this aging treatment, the base metal develops a hardness between 47 and 51 Rockwell C. The type 316 inlay (surfacing) material will have a hardness between 86 and 94 Rockwell B, and this hardness will not be affected by the subsequent treatment of the base material.

The two defective disks have been sent to the valve manufacturer for further examination and resolution.

3. Other Class I Components - Main Steam Isolation and Safety Valves

a. Review of QC System

Copies of purchase orders, specifications and receiving procedures for the subject components were in the site files and available for use. Moreover, special handling and storage precautions were included.

The procedures for identification and quarantine of nonconforming components is included in the WPS QA Procedures Manual (QCIP-560). This procedure is acceptable for the above components.

Installation procedures, including welding, installation inspection, and nondestructive testing were reviewed and found to meet applicable requirements. Provisions have been made to provide experienced technical support personnel when required.

b. Record Review

A review of inspection check sheets maintained by the piping contractor indicated that the subject components were adequately inspected during storage and after installation.

Material certifications for the subject valve components had been sent to the licensee by the vendors (Schutte and Koerting Company and Dresser Industries, Incorporated).

4. Cleanliness of Class I Components

Review of QC System

Quality control procedures, work procedures and record keeping requirements for post construction cleaning of steam safety valves, main steam isolation valves, steam generators and accumulators were reviewed and appeared adequate to assure that cleanliness requirements will be met.

The procedures reviewed included the following:

a. WPS QCIP-571 - Construction Test Procedure

b. WPS QCIP-572 - Procedure for Surveillance of NSSS Cleaning and Flushing Operations

c. CPK-204 - Contractors procedure for general cleaning specifications concerning components

The procedures specified cleaning methods, cleaning material requirements, methods of evaluating results and acceptance criteria.

Verification of cleanliness will be made and recorded by PS&E and the contractor's QC personnel. WPS rad-chem personnel will analyze flush effluents. Procedures for maintenance of cleanliness after flushing are also provided.

Attachment:
RO Inquiry Rpt No. 050-305/73-01Q

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

RO Inquiry Report No. 050-305/73-01Q (CDR)

Subject: Wisconsin Public Service Corporation
P. O. Box 1200
Green Bay, Wisconsin 54305
License No. CPPR-50
Kewaunee Nuclear Power Plant
Two Main Steam Isolation Check Valve Disks Were
Found to Have Crack Indications

Prepared by: R. A. Rohrbacher R A Rohrbacher 1-10-73
(Date)

Reviewed by: D. W. Hayes D W Hayes 1-10-73
Senior Project Inspector (Acting) (Date)

A. Date and Manner AEC was Informed:

RO:III received a telephone call from a representative of the licensee on January 2, 1973.

B. Description of Particular Event or Circumstance:

Two 30" main steam isolation check valve disks were found to have significant crack indications during nondestructive testing performed at the site.

The material (ASTM 538, Grade B) was ultrasonically tested at the mill prior to machining, and the disk overlay was liquid penetrant tested prior to shipment to the site. These two tests did not reveal unacceptable defects. However, the final liquid penetrant test of the entire disk area was not performed prior to shipment, and it was this test, which was performed at the site, that indicated the defects.

C. Action by Licensee:

The licensee stated that these two disks have been removed from the valves and will be shipped to the vendor (Schutte and Koerting Company) for further examination and resolution. The licensee stated that he will keep RO:III informed of activities relative to this matter and will submit a written report pursuant with 10 CFR Part 50.55(e).