

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-305/85019(DRS)

Docket No. 50-305

License No. DPR-43

Licensee: Wisconsin Public Service Corporation
P. O. Box 1200
Green Bay, WI 54304

Facility Name: Kewaunee

Inspection At: Kewaunee, WI

Inspection Conducted: December 16-17 and 20, 1985

Inspectors: A. Gautam

Roger Smeenge for

1/27/86
Date

R. Smeenge

Roger Smeenge

1/27/86
Date

Approved By: C. C. Williams, Chief
Plant Systems Section

C. C. Williams

1/27/86
Date

Inspection Summary

Inspection on December 16, 17, and 20, 1985 (Report No. 50-305/85019(DRS))

Areas Inspected: Reactive, announced inspection relative to use of non-qualified wire in 10 CFR 50.49 designated environmentally qualified (EQ) Limatorque valve operators. The inspection involved a total of 36 inspector-hours onsite and nine inspector-hours offsite by two NRC inspectors.

Results: No violations or deviations were identified, however some unresolved and open items require further evaluation by the NRC.

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DETAILS

1. Persons Contacted

Wisconsin Public Service Corporation

- +*C. Steinhardt, Plant Manager
- +*D. Hintz, Manager, Nuclear Power
- +*J. Thorgersen, Nuclear Engineer
- +*D. Ropson, Superintendent Nuclear Licensing and Systems
- +*C. Schrock, Technical Services
- +*G. Youngwirth, Electrical Maintenance Supervisor
- *R. Pulec, Plant Technical Supervisor
- *D. Berg, Superintendent, Plant Quality Control
- *P. Vandenhuever, Quality Control Technician
- *S. Bergnhof, Technical Support Engineer
- +*R. Hoffman, Electrical Maintenance Engineer

In addition, a number of other plant personnel were contacted.

Westec Services Incorporated

- +C. L. Schwarz, Consultant
- +K. E. Weise, Consultant

Wisconsin Electric Power Company

- +D. R. Blakely, Nuclear Safety Engineer

Nuclear Regulatory Commission

- +J. G. Keppler, Regional Administrator, RIII
- +A. B. Davis, Deputy Regional Administrator, RIII
- +C. J. Paperiello, Director, DRS, RIII
- +J. J. Harrison, Chief, Engineering Branch, RIII
- +C. C. Williams, Chief, Plant Systems Section, RIII
- +I. N. Jackiw, Chief, Section 2B Projects, RIII
- +R. J. Nelson, Senior Resident Kewaunee, RIII
- +U. Potapovs, Chief, EQ Section, IE
- +H. Walker, Engineer, IE
- +M. Fairtile, Project Manager, NRR
- +D. Wheeler, RIII Coordinator, IE
- +W. Jensen, Nuclear Engineer, NRR

*Denotes those present at the onsite exit interview on December 17, 1985.

+Denotes those present at the NRC regional office on December 20, 1985.

2. Inspection Results

On December 12, 1985, the licensee's corporate staff notified the NRC of a potential problem with qualification records for jumper wires in various Limitorque valve operators at the Kewaunee Nuclear Station. This notification occurred after the licensee had been advised by the Senior Resident Inspector of a Part 21 filed by Commonwealth Edison Company at the Zion station regarding unqualified jumper wires identified in Limitorque valve operators. On the two days prior to the beginning of this inspection, the licensee inspected 11 Limitorque valve operators. Of these, 10 were found to have unqualified jumper wires installed, which were subsequently replaced. During this inspection the NRC inspectors examined two additional Limitorque valve operators and found unqualified jumper wires in both operators. The NRC inspectors reviewed the impact of postulated wire insulation failure on the safe shutdown of the plant, and the licensee's compliance to 10 CFR 50.49. The following areas were reviewed:

a. Review of Impact on the Safe Shutdown of the Plant

The inspectors reviewed schematic diagrams, including schematic drawing 237127A-E1374B, Revision B, 1-430 Containment Spray Pump 1A, Motor Actuator RHR400A, for postulated failures due to degradation of wire insulation in a harsh environment. It was evident from the schematics reviewed that short circuits due to wire insulation degradation could cause a 0.8A fuse in the control circuit to fail, thereby causing the valve to remain in its current position.

The licensee informed the inspectors that the valves required to stroke during an accident would perform their safety functions with the currently installed unqualified jumper wires by stroking prior to the onset of a harsh environment. The licensee also determined that in the event of a loss of control power for the Limitorque valve operators due to short circuits, the valve could be stroked manually using valve motor operator controls in the appropriate Motor Control Center (MCC); however, no emergency procedures were in place for this method of manual stroking of valves.

During the December 20, 1985, meeting at the NRC regional office, the licensee presented an evaluation of the operability of Limitorque valve operators at the Kewaunee Nuclear Station with the unqualified jumper wires installed. The licensee identified 45 Limitorque valve operators on their Master List which had been originally classified as falling within the scope of their 10 CFR 50.49 program. Based on their subsequent operational reviews, presented in their evaluation, the licensee removed 23 of these Limitorque valve operators from their Master List, and provided justification for the operability of the 23 operators remaining on this list. Based on a preliminary review at this meeting the NRC did not identify any immediate concerns regarding the operability of the valves needed for the safe shutdown of the plant during a design basis accident. Pending further review of the licensee's evaluation by NRR, this is an unresolved item (305/85019-01).

b. Review of Impact on Licensee's 10 CFR 50.49 Program

- (1) 10 CFR 50.49, paragraph (j), requires that a record of the qualification of equipment falling within the scope of paragraph (b) of the 50.49 rule, including documentation on performance specifications, electrical characteristics, and environmental conditions during an accident, must be maintained in an auditable form by a licensee for the entire installed life of the equipment. The purpose of this documentation is to permit verification that the electric equipment important to safety is qualified for its application. Additionally, Generic Letter 85-15 addressed to all licensees of operating reactors, defines unqualified equipment as that for which there is not adequate documentation to establish that the equipment would perform its intended functions in the relevant environment.

During this review the licensee failed to provide qualification documentation for four different types of jumper wires installed in Limitorque valve operators. These wires had no qualification records onsite and were not traceable in regard to requirements of 50.49, paragraph (j).

The licensee indicated that some of the wires, discussed in paragraph 2.c of this report, had also been found and replaced in other Limitorque operators in the plant. The licensee considered the problem to be generic at Kewaunee and indicated that they had assumed that Limitorque Corporation had qualified these jumper wires based on information in the Limitorque qualification reports. At the conclusion of the December 20, 1985, meeting, the NRC informed the licensee that further discussions would be held within the NRC to determine the extent of any violations by the licensee to requirements of 10 CFR 50.49, paragraph (j). Pending completion of this review this is an unresolved item (305/85019-02).

- (2) 10 CFR 50.49, paragraph (g), requires that each holder of an operating license issued prior to February 22, 1983, shall environmentally qualify electrical equipment important to safety within the scope of 50.49 prior to the end of their second refueling outage after March 31, 1982, or by March 31, 1985, whichever is earlier. Licensees were required to identify electrical equipment already qualified and submit schedules for qualification or replacement of unqualified equipment prior to May 20, 1983.

During this review the inspectors observed that the licensee had not completed the identification and qualification of Limitorque valve operators important to safety and within the scope of 50.49, prior to the deadlines established by the 50.49 rule. This was evidenced by the licensee's removal of (23) Limitorque valve operators from their master list as no longer falling within the scope of 50.49 and the identification of

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- (2) 10 CFR 50.49, paragraph (g), requires that each holder of an operating license, prior to February 22, 1983, shall environmentally qualify electrical equipment important to safety within the scope of 50.49 prior to their second refueling outage after March 31, 1982, or by March 31, 1985, whichever is earlier. Licensees were required to identify electrical equipment already qualified and submit schedules for qualification or replacement of unqualified equipment prior to May 20, 1983.

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unqualified wires in at least 11 Limitorque Valve operators in in the plant, after being informed of a potential qualification problem by the NRC, and after the 50.49 deadline. These operators had been reviewed earlier by the NRC and accepted, based on the data submitted by the licensee, as necessary to operate during an accident within the scope of 50.49, and having operational times ranging up to 1 year. At the conclusion of the December 20, 1985, meeting the NRC informed the licensee that further discussions would be held within the NRC to determine the extent of any violation by the licensee to the requirements of 10 CFR 50.49, paragraph (g). Pending further review, this is an unresolved item (305/85019-03).

c. Review of Licensee Corrective Action

The NRC inspectors reviewed licensee corrective action to replace unqualified wires found in the Limitorque valve operators. Using Corrective Maintenance Procedure (CMP) No. 23, "EQ Verification of Wiring," dated December 14, 1985, the licensee inspected, verified, and replaced, as required, the internal wiring on 11 Limitorque valve operators. CMP No. 23 required documentation of any internal wires replaced and the retest and relineup of the valve. The corrective action that was taken was documented.

The NRC inspectors inspected one Limitorque valve operator for which the licensee had completed their corrective action, and two other EQ Limitorque valve operators which had not yet been inspected by the licensee. The Limitorque valve operator for which the licensee had completed their corrective action was found to be satisfactory. The following four different unqualified jumper wires were found in the other two Limitorque valve operators:

- (1) A red insulated wire marked "ITT, No. 16, TFF 600V"
- (2) A red insulated wire marked "No. 16, TFF, 600V, E-13489"
(wires (1) and (2) could be the same wire)
- (3) A black insulated wire with no identification marking and uninsulated termination lugs which appear to have a factory machine crimp. This wire, lug, and crimp is very similar to what has been found by the inspectors in Limitorque valve operators of the same vintage at other nuclear plants and may have been supplied with the Limitorque unit.
- (4) A grey insulated wire marked, "TW, E-14656, (UL)"

The licensee believes that the four wires in question were all installed by Limitorque or by another source such as the valve manufacturer at the factory.

The licensee has notified the NRC that they plan to inspect and replace all unqualified wires on 22 valve operators between

January 2 and February 25, 1986. The remaining 10 valves will be inspected during the refueling outage planned to begin March 1, 1985, as it would require removing these valves from service for the inspection, replacement of wires, and recycle of the valves upon completion of this work. The plant Technical Specification requirements limit these 10 valves from being removed from service or cycled during plant operations. Completion of this work is considered an open item pending further review during a subsequent inspection (305/85019-04).

d. Review of Qualification Reports

The inspectors reviewed Limatorque valve operators Qualification Report B0058, prepared by Limatorque Corporation, and dated January 11, 1980. The report stated that the purpose of the qualification program was to demonstrate that the Limatorque valve operators would perform their safety function in a Design Basis Event (DBE), and that the prime effort in qualification was directed towards type tests of complete actuators. The report also stated that qualifications were conducted to encompass the entire family of Limatorque valve operators and addressed inside and outside containment profiles. The inspectors also reviewed Limatorque Corporation Test Report No. B0003 dated May 28, 1976 for qualification of Limatorque valve operators outside the primary containment.

The inspectors observed that the reports did not specifically address qualification of jumper wires between the torque switch and limit switch and on the limit switch block, but the inspectors agreed with the licensee that verbiage used in these reports could have been misleading in terms of establishing the qualification of these jumper wires. However, the NRC inspectors informed the licensee that it was the licensee's responsibility to perform an adequate review to verify the qualification of all applicable components of equipment needed for the safe shutdown of the plant.

In addition to reviewing the Limatorque valve operator qualification reports, the inspectors reviewed the qualification reports for field installed instrument cables. During field wiring of the Limatorque units, end pieces of this cable were used to fabricate some of the internal jumper wires. Reports reviewed were for Brand-Rex Company and Okonite Company crosslinked polyethylene (XLPE) insulated wires. Acceptable records and data were available to demonstrate that these wires could meet the harsh environments associated with a steam line break and/or loss of coolant accident. The inspectors had no further concerns in this area.

3. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involves some action on the part of the NRC or licensee or both. An open item disclosed during this inspection is discussed in Paragraph 2.c. of this report.

4. Unresolved Items

An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. Unresolved items disclosed during this inspection are discussed in Paragraphs 2.a. and 2.b. of this report.

5. Exit Interview

The Region III inspector met with the licensee representatives (denoted under Paragraph 1) at the conclusion of the inspection on December 17 and 20, 1985. The inspectors summarized the purpose and findings of the inspection. The licensee acknowledged this information. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary.