

U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Reports No. 50-266/86002(DRS); 50-301/86002(DRS)

Docket Nos. 50-266; 50-301

Licenses No. DPR-24; DPR-27

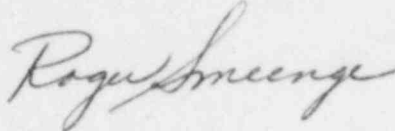
Licensee: Wisconsin Electric Power Company
231 West Michigan
Milwaukee, WI 53203

Facility Name: Point Beach, Units 1 and 2

Inspection At: Two Creeks, WI

Inspection Conducted: February 3-4, 1986

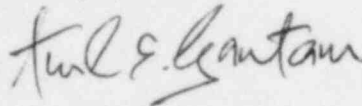
Inspectors: R. Smeenge



3/3/86

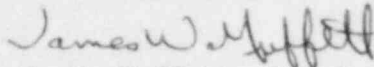
Date

A. Gautam



3/4/86

Date



Approved By: J. W. Muffett, Chief
Plant Systems Section

3/4/86

Date

Inspection Summary

Inspection on February 3-4, 1986 (Reports No. 50-266/86002(DRS);
50-301/86002(DRS))

Areas Inspected: Reactive, announced inspection relative to potential deficiencies regarding environmental qualification of Limitorque Motor Valve Operators internal wiring. This inspection involved a total of 18 inspector-hours onsite by two NRC inspectors.

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

DETAILS

1. Persons Contacted

Wisconsin Electric Power Company

- *W. J. Herrman, Superintendent, Maintenance and Construction
- *R. K. Hanneman, Senior Nuclear Engineer
- *D. R. Blakely, Nuclear Safety Engineer
- *J. C. Reisenbuechler, Superintendent, Engineering Quality and Regulation
- *G. J. Maxfield, Superintendent, Operations
- *J. E. Knorr, Regulatory Engineer
- *R. S. Bredvad, Health Physics
- *F. A. Flentji, Administrative Specialist, EQRS

*Denotes those present at the onsite exit interview on February 4, 1986.

2. Inspection Details

Potential deficiencies in Environmental Qualification (EQ) of Limitorque Motor Valve Operator (LMVO) internal wires was identified in IE Information Notice No. 86-03. During this inspection the NRC inspectors visually examined four LMVO's to identify types of wires used for internal jumpers. LMVO's selected had been identified by the licensee as environmentally qualified and required to remain functional during and following design basis events. Qualification documentation for the different types of wires used in the LMVO's was reviewed for adequacy.

The NRC inspectors reviewed plant LMVO's control circuit schematic diagrams for postulated failures due to degradation of wire insulation in a harsh environment. The NRC inspectors also reviewed the application of all LMVO's, identified by the licensee as EQ, and the plants backup emergency procedure for stroking the valves in the event of LMVO control circuit failure during a DBA.

3. Visual Examination

The NRC inspectors visually examined the following LMVO's:

- 1 SI-851A, Unit 1 Sump B Recirculation Isolation Valve
- 2 SI-851A, Unit 2 Sump B Recirculation Isolation Valve
- 1 SI-860A, Unit 1 Containment Spray Pump Discharge
- 1 MS-2019, Unit 1 Mainsteam to Auxiliary Feed Pump Valve

The NRC inspectors found three different types of wires being used. Two types of wires, identified by original markings, were Raychem Flametrol and Vulkene X-link, CLR, 125 C. The Raychem Flametrol wires were jumper wires and the Vulkene wires were used for the motor lead wires. The inspectors also found short lengths of black insulated wires with machined crimped uninsulated terminal lugs used for jumpers on the terminal boards. The NRC inspectors did not find any marking on these wires; however, the lugs, areas of use and wire appearance are identical to what the NRC inspectors have found in other plants using LMVO's manufactured during the same time

period. In the other facilities, marking identified this wire as type TEW. The vendor (Limitorque) believes that TEW wire was used in the original manufacture of these items.

In December 1985, after NRC Region III alerted all plants in the region of a possible inadequacy in the environmental qualification of the internal wiring used in LMVO's, the licensee conducted a sampling inspection of the 20 EQ LMVO's identified for each unit. During this license inspection, 11 LMVO's outside containment were inspected and the type of wires employed was recorded. The NRC inspectors reviewed these inspection records which identified three types of wires. In addition to the Raychem Flametrol and Vulkene X-link, identified in the four units examined by the NRC inspectors, the licensee found wires marked TW (E14656). Four additional LMVO's (two inside and two outside containment) have subsequently been examined by the licensee and reported to have Raychem Flametrol or type TW (E14656) wires. The two LMVO's inside containment were reported to have the TW wire and, because all LMVO's inside containment are of the same vintage the licensee has concluded that all operators inside containment have TW jumper wires.

4. Review of Control Circuits

The NRC inspectors reviewed the control circuit schematic diagrams for the four LMVO's visually examined. From this review, it was evident to the NRC inspectors that a postulated short circuit due to degradation of wire insulation in a harsh environment could cause the power fuse in the control circuit to fail. The resulting loss of control circuit power would then prevent the LMVO's from stroking the valve from its current position.

The licensee informed the NRC inspectors that in the event of a loss of control circuit power for the LMVO's, the auxiliary operator could stroke the valve manually from the motor control center. For those valves outside containment, the Control Room could also dispatch the auxiliary operator to use the hand wheel to stroke the valve. The licensee stated that the auxiliary operators have been trained to manually stroke valves; however, emergency procedures are not in place for these methods of stroking valves. The licensee has committed to provide justification for operability of the twenty valves identified, for each unit, on their list of qualified LMVO's. Based on a preliminary review during this inspection, the NRC inspectors did not identify any immediate concerns regarding the operability of the LMVO's needed for the safe shutdown of the plant during a DBA. Pending further review of the licensee's justification for operability by NRR, this is an unresolved item (266/86002-01; 301/86002-01).

5. Review of Wire Qualification Data

Three types of jumper wires were found in the LMVO's inspected by the licensee and the NRC inspectors. The Raychem Flametrol is environmentally qualified. Documentation concerning the qualification is contained in Report No. F-C4033-1. The TW and TEW wires have polyvinyl chloride (PVC)

insulation. The licensee's environmental qualification for TW and TEW insulated wires is an analysis based on a 1971 letter from Rome Cable Company (not identified as the manufacturer of plant wires) and information extracted from "IEEE Transactions On Power Apparatus and Systems," Volume PAS-88, No. 5, dated May 1969.

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.

10 CFR 50.49, paragraph (f), identifies methods of qualifying equipment. These methods require testing of identical or similar item and supporting analysis to show the equipment to be qualified is acceptable.

During this review the licensee did not provide adequate qualification documentation for the PVC insulated TW and TEW jumper wires installed in LMVO's. The licensee's analysis to show qualification of TW and TEW (based on tests conducted on other PVC insulated wires) did not establish that the PVCs were identical or similar because compounding and combination of ingredients of the different PVCs was unknown. In addition, the Rome Cable Company letter only identified that some temperature tests had been conducted on PVC insulated wires but did not provide auditable documented evidence of the test and acceptance criteria. The IEEE transactions provided data on the effects of radiation exposure tests conducted on PVC insulated UL type THW and MT wires. The only similarity to these wires and the type TW is that they are all manufactured to the same standard, IPCEA S-61-402. This standard does not control compounding and combinations of ingredients in the insulation.

Pending additional NRC review of the data provided to support qualification of the TW or TEW insulated wires, this is an unresolved item (266/86002-02; 301/86002-02).

Discussions concerning the potential loss of operability of these items during a design basis accident have been held with NRC IE Vendor Branch, Mr. D. Wilson, and an NRC environmental qualification consultant at the Sandia National Laboratory, Mr. L. Bustard. These discussions reached a consensus that, due to the actual radiation environment in which the wire is employed, it appears that there is no immediate NRC safety concern regarding the operability of LMVO's.

6. Proposed Corrective Action

The licensee has committed to replace all TW, TEW and any other unqualified jumper wires found in their LMVO's with EQ wires. Completion of wire replacement in Unit 1 operators is scheduled for the end of the refueling outage in May 1986. Unit 2 wire replacement is scheduled for the end of the refueling outage in November 1986. NRC review of the completion of this work is considered an open item (266/86002-03; 301/86002-03).

7. 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 6 of this report.

8. 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 4 and 5 of this report.

9. Exit Interview

The Region III inspectors met with the licensee representatives (denoted under Paragraph 1) at the conclusion of the inspection on February 7, 1986. The inspectors summarized the purpose and finding 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 this inspection. The licensee did not identify any such documents/processes as proprietary.