

CATEGORY 1

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ACCESSION NBR:9804200353 DOC.DATE: 98/04/13 NOTARIZED: NO DOCKET #
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 MARCHI,M.L. Wisconsin Public Service Corp.
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 Document Control Branch (Document Control Desk)

SUBJECT: Forwards response to violations noted in insp rept
 50-305/98-02.Corrective actions:importance of identifying
 comprehensive post-maintenance retests will be discussed w/
 I&C staff.

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April 13, 1998

10 CFR 2.201

U. S. Nuclear Regulatory Commission
 Attention: Document Control Desk
 Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
 Operating License DPR-43
 Kewaunee Nuclear Power Plant
Reply to Notice of Violation, Inspection Report 98-002

- References: 1) Letter from G. E. Grant (NRC) to M. L. Marchi (WPSC) dated March 13, 1998 (NRC Notice of Violation and Inspection Report No. 50-305/98002)
- 2) Letter from M. L. Marchi to NRC Document Control Desk dated March 26, 1998 (Reportable Occurrence 1998-005-00)

In reference 1, the Nuclear Regulatory Commission (NRC) provided Wisconsin Public Service Corporation (WPSC) with the results of the NRC inspection activities conducted January 21 through March 2, 1998.

During the inspection, NRC identified two Severity Level IV violations. The violations were cited due to failure to conduct required testing after an engineered safeguards relay was replaced, and failure to revise design drawings to reflect the inoperative status of three in-core thermocouples. Both were noted to be contradictory to 10 CFR 50, Appendix B and the Kewaunee Operational Quality Assurance Program.

Attached is our response to the notice. If you should have any questions with regard to this response, please contact me or a member of my staff.

Sincerely,



Mark L. Marchi
 Manager - Nuclear Business Group

GIH
 Attach.

cc: US NRC Senior Resident Inspector
 US NRC Region III

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ATTACHMENT 1

Letter from M. L. Marchi (WPSC)

to

Document Control Desk (NRC)

dated

April 13, 1998

Re: Reply to Notice of Violation, Inspection Report 98-002

NRC Notice of Violation 98-002-01

10 CFR 50, Appendix B, Criterion XI, Test Control, requires, in part, that a test program be established to assure that all testing required to demonstrate that systems and components will perform satisfactorily in service is identified and performed in accordance with written test procedures.

Wisconsin Public Service Corporation (WPSC) Operational Quality Assurance Program (OQAP), Section 8, Maintenance Planning and Control, Revision 12, requires that when post-maintenance testing is required, the tests shall demonstrate that the maintenance does not reduce safety of operations and that the equipment will perform satisfactorily in service.

Contrary to the above, on February 24, 1998, required post-maintenance testing associated with main feedwater isolation relay FB-2 did not verify that the relay would not be energized when a test lamp circuit was energized. As a result, when the test lamp circuit was energized during subsequent surveillance testing, the relay was energized and resulted in an inadvertent turbine and reactor trip.

WPSC Response

Wisconsin Public Service Corporation (WPSC) does not contest this violation. WPSC agrees that a cause of this event was a failure to conduct comprehensive testing which would have precluded the trip. In addition, we have concluded that failing to incorporate the manufacturer's post-installation testing instructions into appropriate maintenance documents was a primary cause of the trip. There were no engineered safeguards equipment demands other than those initiated by the inadvertent relay actuation and those normally expected in response to a plant trip. No radiological releases occurred as a result of the trip, and no challenges to personnel or public health and safety occurred.

Reason For Violation

This specific event was caused by personnel failing to incorporate manufacturer's instructions into applicable guidance documents for replacing Westinghouse MG-6 style relays in the engineered safeguards (ESF) system and failure to identify this inadequacy with a comprehensive post-maintenance test. Details of the trip and the causal factors were previously submitted as Licensee

Event Report (LER) 1998-005-00, dated March 26, 1998. Therefore, this response will only summarize the information previously reported.

The plant trip occurred as a result of an inadvertent feedwater isolation signal being initiated. The inadvertent signal occurred during surveillance testing on the ESF relays. During testing, relay FB-2, "ESF Feedwater Isolation Train B," actuated unexpectedly causing a turbine trip, reactor trip, a trip of both operating main feedwater pumps and closure of the main feedwater flow control and isolation valves to the B steam generator. The relay actuation was unexpected since a reduced test voltage was applied which should only have confirmed continuity through the circuit and should not have been sufficient to actuate the relay.

The investigation into the cause of the trip revealed that the relay had been replaced during a recent outage approximately 10 days prior to the event. Following replacement, it was tested as part of normal post-maintenance testing. The focus of the retest was to confirm the relay would operate as required to satisfy its safety related design functions. The retest performed was the surveillance procedure normally used to functionally test relay FB-2, surveillance procedure (SP) 05A-202, "Feedwater Regulation and Bypass Valves Timing Test." That test did not include a confirmation that the relay would not actuate when the reduced test voltage was applied.

SP 55-155B, "Engineered Safeguards Train B Monthly Logic Test," was being performed when the trip occurred. Continuity through the ESF relay circuits is confirmed following logic testing of the relay actuation circuits using this SP. The continuity check is normally performed to ensure a blocking relay and associated contacts have returned to normal after logic testing. This check ensures that the ESF circuits are operable after testing.

While investigating the cause of the event, plant staff found a letter from Westinghouse dated May 1, 1974. This letter provides specific post-installation test instructions for MG-6 style relays in design applications which use the reduced voltage continuity testing feature. The purpose of these instructions was to ensure that the pick-up voltage of the relay was set high enough to preclude inadvertent relay actuation during testing. If the instructions had been implemented this event would have been precluded.

Although the direct cause of the trip is known, WPSC does not know why the instructions provided in the letter were not incorporated into applicable guidance documents. Our investigative efforts are continuing to examine the administrative processes which may contain weaknesses that allowed this event to occur.

Corrective Actions

- 1) An I&C procedure for installing relays will be developed. This procedure will include the installation guidance of the Westinghouse letter. When the relay was replaced on February 12, there was no procedure used. The replacement of a relay was considered to be within the skill of the craft for I&C personnel.
- 2) Work Requests will be issued for testing the armature coil tension settings of the remaining MG-6 relays in the ESF relay racks during the next refueling outage. Additional relays were identified which are likely to have been replaced since original construction.
- 3) The importance of identifying comprehensive post-maintenance retests will be discussed with the I&C staff.
- 4) The appropriate vendor manuals will be updated with the Westinghouse letter instructions for MG-6 style relays in applications using a reduced voltage test circuit.

- 5) Investigation into the vendor technical information program (VETIP) processes will continue.
- 6) Resolution of information inconsistencies between vendor contacts, the instruction manual and the Westinghouse letter will be pursued. Our investigation found that between the three, there was no common guidance for implementing the letter instructions.
- 7) Surveillance procedures for ESF logic testing will be revised to add a step requiring confirmation that the DC batteries are not on equalizing charge, prior to performing the ESF tests. This is to provide additional margin to pick-up voltage settings for the remaining MG-6 relays. This corrective action may only be an interim measure until the relay pick-up voltage for the remaining MG-6 relays has been verified.

Compliance Schedule

The majority of the actions are in progress and are planned to be completed within six months. However, since the relays which require confirmation of pick-up voltage cannot be tested unless the plant is shutdown, these tests are being deferred until the next scheduled refueling outage in October, 1998.

NRC Notice of Violation 98-002-02

10 CFR Part 50, Appendix B, Criterion VI, Document Control, requires, in part, that measures be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe activities affecting quality. The measures shall assure that documents, including changes, are reviewed for adequacy and approved for release.

WPSC OQAP, Section 4, Design Control, Revision 13, requires that measures be established to prescribe the preparation and control of drawings and shall include revisions and as-built drawings. Furthermore, Section 5, Document Control, Revision 11, requires that technical documents such as design and installation drawings, be controlled per 10 CFR Part 50, Appendix B, Criterion VI.

Contrary to the above, on January 29, 1998, NRC inspectors identified that Design Drawings 237127A-E3366, Revision B, and 237172A-E3367, Original Issue, associated with the Incore Instrumentation System Core Exit Thermocouples (CET), had not been revised to reflect the current as-built configurations. Specifically, CETs 6, 11, and 32, located at reactor head locations E-4, H-9, and H-13, respectively, were broken during replacement in April 1986 and had since been considered inoperative but the subject drawings had not been revised to reflect this permanent status.

WPSC Response

WPSC does not contest this violation. WPSC agrees that the referenced drawings had not been properly revised to reflect the existing configuration of the core exit thermocouples (CET). The Inspection Report that cited the violation also expressed concerns for the administrative controls for the CETs. WPSC understands the concerns and agrees that the controls could be improved. WPSC's assessment of the significance of the violation and the administrative controls is that the identified concerns pose no challenge to safety or safe operation of the plant. The requirements of the Technical Specifications for minimum operable thermocouples was maintained at all times.

Reason for Violation

Failure to update the design drawings is attributed to personnel oversight at the time of the CETs replacement in 1986. The exact cause could not be conclusively determined due to the length of time between occurrence and discovery. However, possible contributing factors may have been that the need for CET replacement was determined just prior to the refueling outage in which the work was performed, that the actual replacement was not done as part of the design change that upgraded the rest of the system, and that the responsibilities for the project was split between several work groups, thus complicating communications.

Design Change Request (DCR) 1163 was initiated to upgrade the entire core exit thermocouple system from the connectors at the reactor vessel head through and including the control room display. The original scope of the project did not include the replacement of the CETs. Instead

an environmentally qualified connector was to be spliced onto the existing thermocouples. However, the proposed splice to the existing thermocouples failed environmental qualification tests necessitating replacement of the CETs. This change in project scope was identified approximately seven days before the start of the 1986 refueling outage.

The actual replacement of the CETs was felt to be a like for like replacement and was done under Work Request 50-33128 using procedures developed by Westinghouse. The replacement of the CETs was done under the direction of the WPSC Reactor Engineering Group. Work Request 50-33128 was not part of the design change that upgraded the rest of the CET system. No formal correspondence could be found between Reactor Engineering and the DCR Responsible Engineer communicating the fact that three CETs were broken off during the replacement process. Therefore, it is suspected that ineffective communications led to the drawing deficiency.

Since the 1986 installation of the CETs, there have been several changes to plant processes that have heightened the plant staff's awareness of configuration control. In today's environment it is likely that the loss of three CETs during the replacement process would have resulted in the initiation of a KAP (Kewaunee Assessment Process). The KAP is WPSC's method of evaluating, tracking, and trending problems and ideas. The KAP would have resulted in an evaluation of the effect of the loss of three CETs on plant operation, configuration and technical specifications.

Concerns expressed in the Inspection Report regarding the administrative controls for the CETs are not viewed as meeting the threshold warranting a detailed cause determination. The report specified that the procedures did not clearly establish guidelines for the removal of CETs from service, and it questioned which procedure is used to ensure operability of the CETs. WPSC agrees that the procedures could be clearer as to their intent. The unclear guidance on the control of CETs may be due to a lack of ownership for the CETs. The CETs are used by both Operations and Reactor Engineering for monitoring the core. Performance problems relating to the CETs

have historically been handled by Reactor Engineering, typically upon Operations' request. There is some question as to whether the proper importance has always been placed on the operation of the CETs. This may be due to the fact that the CETs are not safety related equipment and that until February 1994, the only explicit Technical Specifications (TS) on the CETs required, "the licensee to utilize his best efforts to keep at least half the system operational."

The process controls for removing CETs from service is very informal. It requires only that the status of a CET removed from service be noted on a plastic placard on the control room boards. There are no requirements for initiating corrective actions to repair or resolve the degraded CET condition as long as TS requirements are satisfied. The lack of formal controls is judged to be a carry-over from when there were less rigorous license requirements associated with the CETs.

In February 1994, WPSC amended the TS to reflect NUREG 0737, operability requirements for the CETs. This resulted in the CETs being added to the Operations Surveillance Procedure SP 87-214, "Monthly Instrument Channel Check." Prior to this, CET functionality was verified following each refueling outage by Reactor Engineering procedure RE-6, "Incore Instrumentation Operability Check Following Refueling Maintenance." The concern noted in the Inspection Report was that there is no requirement in RE-6 for retaining CET operability determination documentation. This concern was based on the presumption that RE-6 was the procedure used to determine operability of the CETs for satisfying TS requirements. As noted above, SP 87-214 is the procedure used to satisfy operability. The concern is based on the RE-6 description stating, "the intent of the procedure is to demonstrate operability of the CETs." Although the procedure specifically states its intent is for operability determination, it was incorrectly worded. The intent of RE-6 is to demonstrate functionality.

Corrective Actions

The following actions are being taken to ensure the current configuration of the thermocouples is correctly reflected and maintained in all plant documents:

- 1) Review applicable drawings, procedures, and the USAR to ensure that configuration of CETs is correctly shown and updated as appropriate.
- 2) Proceduralize the requirements and controls for removing a CET from service.
- 3) Revise Reactor Engineering procedure RE-6 to clarify it performs only a functional check of the CETs.

Compliance Schedule

- 1) The document review has been partially completed with the WPSC Regulatory Guide 1.97 Plan being identified as also needing revision to reflect the three permanently out of service CETs. The remainder of the reviews and updates (if necessary) are scheduled to be complete by October, 1998.
- 2) Reactor Engineering Procedure RE-3, "Core Exit Thermocouple Data Acquisition," will be revised to clarify the requirements and controls for removing a CET from service. This revision is scheduled to be complete by July, 1998.
- 3) Procedure RE-6 is scheduled to be revised by July, 1998.