# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

CESSION NBR:9405090031 DOC.DATE: 94/05/02 NOTARIZED: NO DOCKET #
ACIL:50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Servic 05000305
AUTH.NAME AUTHOR AFFILIATION
SCHROCK,C.A. Wisconsin Public Service Corp.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Responds to violation noted in insp rept 50-305/94-03.
Corrective actions:SW flow mismatch alarm sys to be deleted
from current plant configuration due to methods currently
available to detect SW leakage in Containment.

DISTRIBUTION CODE: IE01D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 12
TITLE: General (50 Dkt)-Insp Rept/Notice of Violation Response

NOTES:

| | RECIPIENT ID CODE/NAME | COPIES LTTR | COPIES ENCL | RECIPIENT ID CODE/NAME | COPIES LTTR | COPIES ENCL |
|---|---|---|---|---|---|---|
| | PD3-3 PD | 1 | 1 | LAUFER,R | 1 | 1 |
| INTERNAL: | ACRS | 2 | 2 | AEOD/DEIB | 1 | 1 |
| | AEOD/DSP/ROAB | 1 | 1 | AEOD/DSP/TPAB | 1 | 1 |
| | AEOD/TTC | 1 | 1 | DEDRO | 1 | 1 |
| | NRR/DORS/OEAB | 1 | 1 | NRR/DRCH/HHFB | 1 | 1 |
| | NRR/DRIL/RPEB | 1 | 1 | NRR/DRSS/PEPB | 1 | 1 |
| | NRR/PMAS/ILPB1 | 1 | 1 | NRR/PMAS/ILPB2 | 1 | 1 |
| | NUDOCS-ABSTRACT | 1 | 1 | OE DIR | 1 | 1 |
| | OGC/HDS1 | 1 | 1 | REG FILE 02 | 1 | 1 |
| | RES/HFB | 1 | 1 | RGN3 FILE 01 | 1 | 1 |
| EXTERNAL: | EG&G/BRYCE,J.H. | 1 | 1 | NRC PDR | 1 | 1 |
| | NSIC | 1 | 1 | | | |

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 24 ENCL 24

R I D S / A D D S

R I D S / A D D S

WPSC (414) 433-1598
TELECOPIER (414) 433-5544

NRC-94-056
EASYLINK 62891993

WISCONSIN PUBLIC SERVICE CORPORATION
600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

May 2, 1994

10 CFR 2.201

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reply to Notice of Violation - Inspection Report 94-003

Reference: Letter to C. A. Schrock (WPSC) from G. E. Grant (NRC) dated April 1, 1994 (Inspection Report 94-003)

The reference provided Wisconsin Public Service Corporation (WPSC) with the results of the Nuclear Regulatory Commission Service Water System Operational Performance Inspection (SWSOPI).

The inspection identified 1 violation, 1 deviation, and 3 inspection followup items. The attachment to this letter provides our response to each of these findings in addition to clarifying information concerning Kewaunee's operating procedures for the service water system.

If you have any questions concerning our response, please contact me or a member of my staff.

Sincerely,

C. A. Schrock

C. A. Schrock
Manager - Nuclear Engineering

cas

Attach.



cc - US NRC, Region III
US NRC Senior Resident Inspector

JE01

lic\nrc\17.wp

Attachment 1

to the Letter

From:

C.A. Schrock (WPSC)

To:

Document Control Desk (NRC)

Dated: May 2, 1994

Re: Inspection Report 94-003

NRC Notice of Violation

10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure PMP 17-2, "Aux Bldg Ventilation Fan Coil Units, Inspection and Cleaning," requires that only one residual heat removal (RHR) pump pit cover be removed at a time while the reactor is critical.

Contrary to the above, on or about February 10, 1994, both RHR pump pit covers were removed at the same time while the reactor was critical.

This is a Severity Level IV violation (Supplement I).

**WPSC's Response**

Reason for the Violation

Wisconsin Public Service Corporation (WPSC) does not contest this violation and our own assessment of the event is described in the following paragraphs.

On February 10, 1994 various procedures including PMP 17-2 were to be performed in the RHR Pump Pits. In the past both RHR pump pit covers were removed to perform these periodic maintenance and surveillance procedures. However, since the most recent past performances of PMP 17-2, a sign stating,

"RHR PUMP PIT COVER
REMOVAL/INSTALLATION
WHEN THE REACTOR IS CRITICAL, UNCOVERY
OF ONLY ONE RHR PUMP PIT IS ALLOWED."

had been placed above the pump pit covers. The sign was placed above the pump pits by the Safety System Engineering Group to address the concerns raised by an internal safety system functional inspection which included a review of an internal flooding study.

On February 10, when the maintenance personnel were told to remove both covers in preparation for the scheduled procedures, they informed the Shift Supervisor that there was a sign on the wall by the RHR pump pits stating that both pits are not to be uncovered at the same time. The Shift Supervisor was unaware of the reason for the sign and therefore contacted the Operations Supervisor for guidance. The Operations Supervisor was also unaware of the reason for the sign. Furthermore, since PMP 17-2 was not scheduled to be performed until later that afternoon, none of the individuals involved were aware of the restriction in the procedure which allowed only 1 pump pit cover to be removed at a time. At this point the Operations Supervisor

decided to uncover both pits consistent with past practice and remove the sign. This decision was relayed to the maintenance personnel in the field and to the Plant Licensing Supervisor who immediately sent an engineer to investigate the situation.

Cause of the Event

There were two causes to this event.

1. The new requirement preventing removal of both pump pit covers was not effectively communicated to all affected groups. As a result, there was a general lack of understanding of the existence and purpose of the requirement, not all the affected procedures were changed, and training was not modified to reflect the new requirement.

2. The communications between the different plant groups when WPSC personnel raised questions about the validity of the sign were not effective in preventing the violation. As a result, information concerning the basis for the sign and the existence of the restriction in PMP 17-2 was not resolved in an expedient and efficient fashion.

Corrective Action and Scheduled Completion Dates

1. WPSC will implement an improved communication process for new requirements. It is anticipated that it will take approximately 6 months to develop and implement this system.

2. We will perform an assessment of our internal communication processes. The evaluation will use this event as well as other events involving poor communications to help determine the causes of these communication problems. This evaluation is tentatively scheduled to be completed in June 1994.

NRC Deviation

During an NRC inspection conducted from February 7 through 25, 1994, a deviation from your Updated Safety Analysis Report (USAR) was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the deviation is listed below:

> USAR section 9.6.2 states that in-flow/out-flow comparison is provided to detect leakage in containment fan coil units.
>
> Contrary to the above, on or about February 23, 1994, the team identified that such a system has essentially never been functional. Further, abnormal operating procedures were written based on the availability of these comparators.

**WPSC's Response**

Reason for the Deviation

The SW in-flow/out-flow comparison alarm identified in this concern was removed from service due to numerous spurious alarms. The removal was documented by temporary change requests (TCRs) 84-15 and 84-19. Additionally, TCR 84-16 was implemented to adjust the setpoint.

Corrective Actions Taken

In 1975 design change request (DCR) 432 was initiated to resolve the problems with spurious alarms. The DCR changed out the existing annubars with higher accuracy annubars with adjustable dampening. When DCR 432 did not correct the problem DCR 1271 was initiated in 1982. At this time it was determined that eliminating the spurious alarm required establishing a stable flow indication signal which would eliminate the spurious alarms, yet still provide adequate leak detection capabilities. The first action taken was to clean the annubar flow elements to ensure proper working condition. This resulted in no change to the number of spurious alarms. Secondly, additional piping was installed in a loop configuration to ensure the annubars were located in piping under a full flow condition with no entrained air. The alarm continued to give spurious indications. Finally the annubars were re-installed at a different angle in accordance with the manufacturers recommendations and connections were added to the SW piping to flush the annubars with demineralized water, still with no improvement in alarm operation. To date, WPSC has invested significant capital and engineering time in attempts to improve the performance of this alarm system with no significant improvement.

Corrective Actions Planned

An evaluation is currently under second level review to assess the consequences of the SW leakage into containment. The results of this evaluation conclude that the SW flow mismatch alarm system can be deleted from the current plant configuration because there are other methods currently available for operators to detect SW leakage in Containment. It is anticipated that upon final review of this evaluation a DCR will be implemented to remove this alarm and update the USAR. The evaluation and second level review are expected to be completed in August 1994.

NRC Inspection Follow-up Item

The team was concerned that the design change package for DCR No. 2467, which proposed to reduce flow to the containment FCUs, contained several weaknesses.

Flow rates to these FCUs,, measured in 1990, were substantially higher than design flow rates (approximately 1700 gpm versus 900 gpm). To avoid tube erosion, increase SWS pressure at containment penetrations, and to allow adequate flow to other SWS components, orifices were installed in the discharge headers via DCR No. 2467 during the 1991 refueling outage.

- Calculation No. 1221.M2, which appeared to be formally completed after the work on the modification had started, computed a 4.6 inch orifice for a flow of 1100 gpm. The licensee's response to this issue was that the responsible engineer was aware of preliminary calculation results and chose a conservative size (seven inch) orifice. The seven inch orifices resulted in a flow reduction to approximately 1500 gpm; however, this was still substantially higher than design. These orifices were subsequently replaced with five inch orifices during another outage which resulted in a measured flow of approximately 1300 gpm. The team considered the lack of up-front design a weakness which resulted in modifying, then reworking the SWS to achieve results that were still less than optimum (900 gpm).

- The 10 CFR 50.59 safety evaluation, although mentioning the 900 gpm should be provided to each containment FCU, did not make a reference to any formal calculation sizing the orifice.

  Based on the inspector's evaluation, the 10 CFR 50.59 safety review, which was accomplished in accordance with NSAC-125 guidelines, did not appear to support the conclusion that no unreviewed safety question existed. Pending further review by the NRC, this is considered an inspection followup item (305/94003-01(DRS)).

**WPSC's Response**

WPSC believes that the 10CFR 50.59 safety evaluation report (SER) for DCR 2467 adequately addresses each of the 7 questions that comprise a 10CFR 50.59 SER. Furthermore, the SER provides sufficient detail to conclude that the implementation of DCR 2467 did not result in an unreviewed safety question. The engineering procedures currently in place that provide guidance on preparing safety evaluations, and those that were in place during the time DCR 2467 was being implemented, are based on the NSAC-125 document. Although the NSAC-125 document has not been endorsed by the NRC, when implemented correctly, as WPSC did in this case, it provides adequate assurance that an unreviewed safety question does not exist. The inspection team followup item was based on 4 specific concerns that were identified during the inspection.

SWSOPI Team Concern 1

The narrative never mentioned the size of the orifice required. However, it stated that a minimum flow rate of 900gpm was required.

**WPSC's Response**

The purpose of DCR 2467 was not to decrease service water flow to each containment fan coil unit (CFCU) to an optimum value of 900 gpm. The purpose was to redistribute some of the excess flow going to the CFCUs to other service water loads to provide them with additional margin. This would also have the collateral advantage of decreasing the erosion rate of the CFCUs.

The primary safety issue associated with this DCR was to ensure that the containment fan coil units continued to remove adequate heat from containment post accident. The safety evaluation addressed this safety issue by ensuring that flow through each CFCU remained above 900 gpm as assumed in the USAR. The fact that the narrative of the safety evaluation report did not mention the specific details of the orifice design is not considered to be significant. The safety evaluation report ensured that service water flow to the CFCUs met the minimum design flow requirements by stating that pressure drop calculations and post modification system flow testing will be performed to ensure minimum design flow of SW to the CFCUs is maintained.

SWSOPI Team Concern 2

Question 1 was answered "no" because the system does not initiate any design basis accidents. It should have addressed the modification's effect on cooling provided by SW to other systems.

**WPSC's Response**

Question 1 was answered correctly, in accordance with our procedural guidance for preparing 10CFR 50.59 safety evaluation reports, and in accordance with NSAC-125. The following is an excerpt from our procedures:

> "The change must affect a structure, system or component that initiates an accident analyzed in the USAR, and the change must increase the probability of the accident which is initiated by the structure, system or component affected by the change.
>
> For example, a system which initiates an accident would be the Control Rod Drive System which may initiate an uncontrolled rod withdrawal accident. A system which would not initiate an accident is the Auxiliary Feedwater System. It is a system required to mitigate the consequences of an accident evaluated in the USAR and is considered under Question 3."

WPSC and NSAC-125 have interpreted question 1 such that if the system or component does not directly initiate a design basis accident, then the answer to this question is no, and if it is a system required to mitigate the consequences of an accident (such as Service Water) then this should be addressed in question 3. Therefore this question was answered correctly and provided correct basis for this answer, refer to SWSOPI concern 4.

SWSOPI Team Concern 3

Question 2 was answered "no" since the SW system does not initiate an accident, the consequences of any accident associated with the SW cannot be increased. Again, it should have looked at the integrated system response, since any modification detrimental to SW would quickly be reflected in the systems that depend upon it for cooling.

**WPSC's Response:**

WPSC and NSAC-125 interpret question 2 of the safety evaluation report as it does question 1; therefore, because question 1 was answered no, because the SW system does not initiate any design basis accident, question 2 is also answered no. The consequence for a malfunction of equipment important to safety is addressed in answer to question 4. The SER correctly addressed these concerns in question 4 of the safety evaluation report.

SWSOPI Team Concern 4

Question 3 was answered "no" based on the fact that the design criteria for safety-related piping assures system integrity. It should have addressed the impact of the particular orifice installed in terms of its ability to reduce the flow rate to the required value without affecting the system.

**WPSC's Response**

As stated previously by WPSC, questions 3 and 4 of the safety evaluation report are the questions most affected by this modification. WPSC believes that the response to these questions is adequate. The safety evaluation correctly addressed SW system integrity as one of the issues needed to be considered in this question. In addition, contrary to the statement made in concern 4, the safety evaluation did address the impact of the orifice on the overall system in response to questions 3 and 4. Specifically in question 3, the safety evaluation states "Pressure drop calculations and actual flow testing will be performed post-modification to assure that flow will not be below the minimum design," and "...design basis flow rates are maintained to assure adequate area cooling." WPSC can not think of a more effective means to assure that this DCR did not negatively impact the SW system as a whole than the method used and referenced in the Safety Evaluation, namely a full system flow test.

In summary, it is felt that this DCR and its associated safety evaluation were performed in a safe and conservative manner with extreme consideration given to the design criteria associated with the SW system. This was demonstrated by the individuals involved questioning the orifice sizing calculation. They were concerned that the calculation may not be conservative enough, which could render the containment fan coil units inoperable. Therefore, the decision was made to install larger orifices than calculated. Post modification system flow testing demonstrated the accuracy of the calculation; therefore, the orifice was replaced with a smaller one the following year. While this approach to design may not have been the most cost effective, in this case the questioning attitude of those individuals involved and their high level of system knowledge, yielded a quality product that significantly improved the design of the SW system while assuring an acceptable margin existed in the SW flow requirements to the operability of the CFCUs.

NRC Inspection Follow-up Item

The team was concerned that the methodology used by the licensee to calculate the heat transfer coefficient of heat exchangers and assess performance under limiting conditions was inadequate. The licensee acknowledged this weaknesses in methodology and data accuracy and planned to vigorously address this issue. Pending performance monitoring program revisions and subsequent review by the NRC, this is considered an inspection follow-up item (305/94003-02(DRS)).

**WPSC's Response**

As stated above, WPSC shares the team's concern regarding our development of a method to monitor performance of our SW system fan coil units and heat exchanger. Many factors have contributed to the incompleteness of our service water monitoring program. We are currently revising our data analysis techniques to include comparing the test heat transfer coefficient to the design heat transfer coefficient (i.e., UA method). Additionally, improved measuring equipment, data collection methodology and modification of our current test schedule are being pursued. These improvements are expected to be in place by December 31, 1994.

NRC Inspection Follow-up Item

No indication was available to operators to determine whether any SW is flowing to containment accident coolers and thereby, whether containment heat is being removed by them in the event of an accident. This contradicted the intent of FSAR 9.6.2 statement regarding flow metering devices being installed at various locations to provide determination of equipment performance. The containment fan coolers are the largest single load served by the SWS. This item is considered an inspection followup item pending further study by the licensee and subsequent review by the NRC (305/94003-05(DRS)).

**WPSC's Response**

The sentence in the Updated Safety Analysis Report (USAR) referred to by the NRC is located on page 9.6-4 and it states:

> "Flow metering devices are installed at various locations to provide means of determining equipment performance".

There is no reference as to which devices are installed with flow metering devices.

This sentence was not included in Kewaunee's Final Safety Analysis Report (FSAR) when the plant was licensed in 1974. The sentence was added to the FSAR in 1982 when WPSC provided the NRC with the first update to the FSAR and renamed the FSAR the USAR.

The sentence was added to the USAR as a result of extensive efforts of this first update. The FSAR was updated at this time not only to reflect new commitments but also to provide a more detailed description of system design. The sentence was taken verbatim from the system description for the SW system in existence at the time. Furthermore, there is no reference in the system description to flow indication for the containment fan coil units. The system descriptions are not design basis documents but provide a more detailed description of the system and its associated components. Therefore the original intent of the plant designers and those reviewing the design at the Atomic Energy Commission did not include providing indication of SW flow to the containment fan coil units.

Not withstanding the original intent of the FSAR, there is no significant safety concern resulting from a lack of SW flow indication. The four containment fan coil units or the two internal containment spray (ICS) pumps provide sufficient cooling to maintain containment pressure and temperature below design limits. In the event of an accident, the operators monitor the performance of the containment cooling systems by monitoring containment pressure. During non accident conditions, indication of containment temperature is available to the operators in the control room. Therefore, based on the diverse and redundant ways of removing heat from containment and the ability of the operators to monitor containment status with existing control room indications, indication of SW flow to the containment fan coil units is not required.