

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9209020204 DOC. DATE: 92/08/27 NOTARIZED: NO DOCKET #
 FACIL: 50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Service 05000305
 AUTH. NAME: SCHROCK, C. A. AUTHOR AFFILIATION: Wisconsin Public Service Corp.
 RECIP. NAME: RECIPIENT AFFILIATION: Document Control Branch (Document Control Desk)

SUBJECT: Submits updated info on reactor coolant pump trip criterion to address NUREG-0737, Item II. K. 3. 5, "Automatic Trip of Reactor Coolant Pumps." Generic applicability of trip criterion documented in Westinghouse rept & GL 85-12.

DISTRIBUTION CODE: A046D COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 3
 TITLE: OR Submittal: TMI Action Plan Rgmt NUREG-0737 & NUREG-0660

NOTES:

| | RECIPIENT ID CODE/NAME | | COPIES | | |
|-----------|------------------------|-----------------|--------|------|--|
| | | | LTR | ENCL | |
| | PD3-3 LA | | 1 | 0 | |
| | HANSEN, A. | | 2 | 2 | |
| INTERNAL: | ACRS | | 6 | 6 | |
| | NRR/DST BE2 | | 1 | 0 | |
| | OC/LFMB | | 1 | 0 | |
| | <u>REG FILE</u> 01 | | 1 | 1 | |
| | RES/DSR DEPY | | 1 | 1 | |
| EXTERNAL: | NRC PDR | | 1 | 1 | |
| | | PD3-3 PD | 1 | 1 | |
| | | NRR/DREP/PEPB9D | 1 | 1 | |
| | | NUDOCS-ABSTRACT | 1 | 1 | |
| | | OGC/HDS1 | 1 | 0 | |
| | | RES/DSIR/EIB | 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. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTR 20 ENCL 15

R
I
D
S
/
A
D
D
S
/
A
D
D
S

MA-4
ABP

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



EASYLINK 62891993

WISCONSIN PUBLIC SERVICE CORPORATION

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

August 27, 1992

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

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Update to TMI Action Item II.K.3.5; " Automatic Trip of Reactor Coolant Pumps"

- References:
- 1) Letter from Joseph G. Giitter (NRC) to C.R. Steinhardt (WPSC) dated April 6, 1989.
 - 2) "Clarification of TMI Action Plan Requirements", NUREG 0737, US NRC, November 1980.
 - 3) Letter from D.G. Eisenhut (NRC) to All Licensees with Westinghouse Designed Nuclear Steam Supply Systems dated February 8, 1983.
 - 4) Letter from C.W. Giesler (WPSC) to D.G. Eisenhut (NRC) dated June 20, 1984.
 - 5) Letter from Hugh L. Thompson, Jr. (NRC) to All Applicants and Licensees with Westinghouse Designed Nuclear Steam Supply Systems dated June 28, 1985.
 - 6) Letter from D.C. Hintz (WPSC) to H.L. Thompson (NRC) dated November 26, 1985.
 - 7) Letter from J.J. Sheppard (WOG) to R.J. Mattson (NRC) dated December 1, 1983.

010080

9209020204 920827
PDR ADOCK 05000305
P PDR

A046
110

In reference 1, the NRC informed Wisconsin Public Service Corporation (WPSC) that the proposed resolution to TMI Action Plan Item II.K.3.5 of NUREG 0737 (reference 2) was satisfactory and that the item was considered closed. However, during implementation of the proposed resolution of this item the Reactor Coolant Pump (RCP) trip criterion used at KNPP was changed from that which was originally adopted. The purpose of this letter is to update the NRC on the RCP trip criterion currently used at Kewaunee.

TMI Action Plan Item II.K.3.5 required all licensees to consider solutions pertinent to tripping the RCPs under transient and Loss-of-Coolant Accident (LOCA) conditions. The NRC identified that tripping the RCPs in case of a LOCA is not an ideal solution. However since a better solution did not exist, the NRC instructed the licensees to trip the RCPs in case of a small-break LOCA and to continue to develop a better long-term solution.

In response to the accident at TMI, WPSC had originally installed a safety grade RCP trip. The primary concern of the NRC was the continued operation of the RCPs during a small break LOCA. Continued operation would lead to additional reactor coolant system (RCS) inventory being lost out of the break which could lead to the peak clad temperature constraints of 10CFR 50.46 being exceeded if the RCPs were tripped later in the accident. In order to improve system reliability (i.e., reduce the potential for spurious RCP trips), WPSC removed the automatic RCP trip during the 1982 KNPP refueling outage. This action was based on the preliminary indication that reliance on manual tripping would be adequate. To resolve this issue, the remaining task of establishing RCP trip criteria needed to be completed.

The criteria for resolution of Item II.K.3.5 was outlined in Generic Letter (GL) 83-10d (reference 3). In reference 4, WPSC proposed that the criteria for resolution of GL 83-10d would be met by the Westinghouse Owners Group (WOG) methodology. Subsequently, GL 85-12 (reference 5) stated that the WOG method was acceptable on a generic basis, but required each licensee to submit additional plant-specific information for NRC review. A primary objective of the review was to ensure that the proposed RCP trip setpoints would result in pump trip for small break LOCAs and would not result in RCP trip during non-LOCA events where forced circulation is desirable.

The WOG evaluation considered the following criteria for RCP trip:

- 1) RCS wide range pressure less than a constant
- 2) RCS subcooling less than a constant
- 3) Wide range RCS pressure less than a function of secondary pressure

The RCP trip criterion that was originally adopted at the KNPP followed the criteria set forth in the Westinghouse emergency response guidelines and compared RCS wide range pressure to a constant. WPSC submitted the plant specific information requested by GL 85-12 in reference 6. Subsequent to additional correspondence and conversation between cognizant WPSC and NRC personnel, the NRC informed WPSC that the proposed resolution was satisfactory. Subsequently, revised instrument uncertainty calculations were performed. As a result of these

Document Control Desk
August 27, 1992
Page 3

calculations it was determined that RCS pressure no longer met the WOG criteria and therefore an alternate RCP trip parameter had to be adopted.

In response to NUREG-0737 Action Item II.F.2, WPSC installed an Inadequate Core Cooling Monitoring System (ICCMS). This additional instrumentation was installed to provide the operators with enhanced indication of core conditions. One of the parameters displayed by the ICCMS is subcooling (two redundant trains are displayed). Subcooling provides a direct indication of the need for pump trip since pump trip is not required as long as the reactor coolant remains subcooled. The RCP trip setpoint is established as zero plus the uncertainty in the subcooling monitor to assure that the pumps are tripped before subcooling is actually lost. The normal instrument uncertainties are used for normal containment conditions, whereas the instrument uncertainties associated with post-accident containment conditions are used for adverse containment conditions.

The subcooling RCP trip setpoint assures RCP trip for loss of primary coolant from which trip is considered necessary but also permits RCP operation to continue during most non-LOCA events up to and including the design basis double-ended tube rupture. The generic applicability of the RCP trip criterion selected has been documented in the WOG Report entitled, "Evaluation of Alternate RCP Trip Criteria" (reference 7) which was accepted by GL 85-12 on a generic basis. The results of this report show that the minimum subcooling values expected for the accidents analyzed are greater than the RCP trip value for normal containment conditions. This demonstrates that the RCP trip setpoint will not be reached for these non-LOCA events. During adverse containment conditions the calculated minimum subcooling value for the analyzed steam generator tube rupture (SGTR) is less than the RCP trip setpoint. However, because a SGTR will not cause adverse containment conditions, normal containment instrument uncertainties can be utilized in evaluating the effectiveness of subcooling in preventing a RCP trip for a SGTR. The other accidents analyzed demonstrated that the minimum subcooling achieved is greater than the adverse containment RCP trip value. The KNPP plant specific procedures have been revised to use subcooling as the RCP trip criterion.

If you have any questions regarding the RCP trip criteria, please contact a member of my staff.

Sincerely,



C. A. Schrock
Manager-Nuclear Engineering

SLC/jac

cc - US NRC - Region III
Mr. Patrick Castleman, US NRC

LICANRCRCPTRIP.WP