



Wisconsin Electric POWER COMPANY

231 W. MICHIGAN, P.O. BOX 2046, MILWAUKEE, WI 53201

April 11, 1983

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Attention: Mr. D. G. Eisenhut, Director
Division of Licensing

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
RESPONSE TO GENERIC LETTER NO. 83-10d
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

In response to Generic Letter No. 83-10d, "Resolution of TMI Action Item II.K.3.5, Automatic Trip of Reactor Coolant Pumps", dated February 8, 1983, attached is Wisconsin Electric's plan for resolution of action item II.K.3.5 for Point Beach Nuclear Plant, Units 1 and 2. The attached responds to each section of the attachment to Generic Letter 83-10d and discusses how the plan considers each of the NRC criterion. Please contact us if you have any questions concerning our proposed actions in this regard.

Very truly yours,

Vice President-Nuclear Power

C. W. Fay

Attachment

Copy to NRC Resident Inspector

AOAL

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PDR ADOCK 05000266
P PDR

PLAN FOR RESOLUTION OF TMI ACTION ITEM II.K.3.5,
"AUTOMATIC TRIP OF REACTOR COOLANT PUMPS"
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

INTRODUCTION

The criteria for resolution of TMI Action Plan Item II.K.3.5, "Automatic Trip of Reactor Coolant Pumps" were stated in letters from Mr. Darrel G. Eisenhut of the Nuclear Regulatory Commission to all Applicants and Licensees with Westinghouse designed Nuclear Steam Supply Systems (Generic Letter Nos. 83-10c or 10d) dated February 8, 1983. The following represents the plan for demonstrating compliance with those criteria. In order to avoid confusion, the overall philosophy and plan will first be stated. Then, each section of the attachment to NRC letters 83-10c or 10d will be addressed as to how the overall plan responds to each NRC criterion.

OVERALL PLAN

In the four years that have passed since the event at Three Mile Island, Westinghouse and the Westinghouse Owners Group have held steadfastly to several positions relative to post accident reactor coolant pump (RCP) operation. First, there are small break LOCA's for which delayed RCP trip can result in higher fuel cladding temperatures and a greater extent of zircalloy-water reaction. Using the conservative evaluation model, analyses for these LOCA's result in a violation of the Emergency Core Cooling System (ECCS) Acceptance Criteria as stated in 10 CFR 50.46. The currently approved Westinghouse Evaluation Model for small break LOCA's was used to perform these analyses and was found acceptable for use by the NRC in letters 83-10c or 10d. Therefore, to be consistent with the conservative analyses performed, the RCP's should be tripped if indications of a small break LOCA exist.

Secondly, Westinghouse and the Westinghouse Owners Group have always felt that the RCP's should remain operational for non-LOCA transients and accidents where their operation is beneficial to accident mitigation and recovery. This position was taken even though a design basis for the plant is a loss of off-site power. Plant safety is demonstrated in the Final Safety Analysis Reports for all plants for all transients and accidents using the most conservative assumption for reactor coolant pump operation.

In keeping with these two positions, a low RCS pressure (symptom based) RCP trip criterion was developed that provided an indication to the operator to trip the RCP's for small break LOCA but would not indicate a need to trip the RCP for the more likely non-LOCA transients and accidents where continued RCP operation is desirable. The basis for this criterion is included in the generic Emergency

Response Guideline (ERG) Background Document (E-0 Basic Revision, Appendix A). Relevant information regarding the expected results of using this RCP trip criterion can be derived from the transients which resulted from the stuck open steam dump valve at North Anna in 1979, the steam generator tube rupture at Prairie Island in 1980, and the steam generator tube rupture at Ginna in 1982. The RCP's were tripped in all three cases. However, a study of the North Anna and Prairie Island transients indicated that RCP trip would not have been needed based on the application of the ERG trip criterion. The Ginna event, however, indicated a need to review the basis for the RCP trip criterion to allow continued RCP operation for a steam generator tube rupture for low head SI plants.

Thirdly, it has always been the position of Westinghouse and the Westinghouse Owners Group that if there is doubt as to what type of transient or accident is in progress, the RCP's should be tripped. Again, the plants are designed to mitigate the effects of all transients and accidents even without RCP operation while maintaining a large margin of safety to the public. The existing emergency operating procedures reflect this design approach.

Lastly, it remains the position of Westinghouse and the Westinghouse Owners Group that RCP trip can be achieved safely and reliably by the operator when required. An adequate amount of time exists for operator action for the small break LOCA's of interest. The operators have been trained on the need for RCP trip and the emergency operating procedures give clear instructions on this matter. In fact, one of the initial operator activities is to check if indications exist that warrant RCP trip.

Westinghouse and the Westinghouse Owners Group will undertake a two part program to address the requirements of NRC letters 83-10c or 10d based on the aforementioned positions for the purpose of providing more uniform RCP trip criteria and methods of determining those criteria. In the first part of the program, revised RCP trip criteria will be developed which provides an indication to the operator to trip the RCP's for small break LOCA's requiring such action but will allow continued RCP operation for steam generator tube ruptures, less than or equal to a double-ended tube rupture. The revised RCP trip criteria will also be evaluated against other non-LOCA transients and accidents where continued RCP operation is desirable in order to demonstrate that a need to trip the RCP's will not be indicated to the operator for the more likely cases. Since this study is to be utilized for emergency response guideline development, better estimate assumptions will be applied in the consideration of the more likely scenarios. The first part of the program will be completed and incorporated into Revision 1 of the Emergency Response Guidelines developed by Westinghouse for the Westinghouse Owners Group. The scheduled date for completion of Revision 1 is July 31, 1983.

The second part of the program is intended to provide the required justification for manual RCP trip. This part of the program must necessarily be done after the completion of the first part of the program. The schedule for completion of the second part of the program is the end of 1983.

The preferred and safest method of pump operation following a small break LOCA is to manually trip the RCP's before significant system voiding occurs.

No attempt will be made in this program to demonstrate the acceptability of continued RCP operation during a small break LOCA. Further, no request for an exemption to 10 CFR 50.46 will be made to allow continued RCP operation during a small break LOCA.

DETAILED RESPONSE TO NRC LETTERS 83-10c OR 10d

Each of the requirements stated in the attachment to NRC letters 83-10c or 10d will now be discussed indicating clearly how they will be addressed. The organization of this section of the report parallels the attachment to NRC letters 83-10c or 10d.

I. Pump Operation Criteria Which Can Result in RCP Trip During Transients and Accidents

1. Setpoints for RCP Trip

The Westinghouse Owners Group response to this section of requirements will be contained in Revision 1 to the Emergency Response Guidelines scheduled for July 31, 1983. Wisconsin Electric Power Company plans to use Revision 1 as the reference guidelines for upgrading the Emergency Operating Procedures for its Point Beach Nuclear Plant. The present implementation schedule will have the upgraded procedures in use in the control room during June 1984.

a) As stated above, Westinghouse and the Westinghouse Owners Group are developing revised RCP trip criteria which will assure that the need to trip the RCP's will be indicated to the operator for LOCA's where RCP trip is considered necessary. The criteria will also ensure continued forced RCS flow for:

- 1) steam generator tube rupture (up to the design bases, double-ended tube rupture)
- 2) the other more likely non-LOCA transients where forced circulation is desirable (e.g., steam line breaks equal to or smaller than 1 stuck open PORV)

NOTE: Event diagnosis will not be used. The criteria developed will be symptom based.

The criteria being considered for RCP trip are:

- 1) RCS wide range pressure < constant
- 2) RCS subcooling < constant
- 3) Wide range RCS pressure < function of secondary pressure

Instrument uncertainties will be accounted for. Environmental uncertainty will be included if appropriate. No partial or staggered RCP trip schemes will be considered. Such schemes are unnecessary and increase the requirements for training, procedures, and decision making by the operator during transients and accidents.

- b) The RCP trip criteria selected will be such that the operator will be instructed to trip the RCP's before voiding occurs at the RCP.
- c) The criteria developed in Item 1a above is not expected to lead to RCP trip for the more likely non-LOCA and SGTR transients. However, since continued RCP operation cannot be guaranteed, the emergency response guidelines provide guidance for the use of alternate methods for depressurization.
- d) The Emergency Response Guidelines contain specific guidance for detecting, managing, and removing coolant voids that result from flashing. The symptoms of such a situation are described in these guidelines and in detail in the background document for the guidelines. Additionally, explicit guidance for operating the plant with a vaporous void in the reactor vessel head is provided in certain cases where such operation is needed. The operators at Point Beach will be trained in all aspects of the Emergency Procedures, including specific steps for detecting, managing, and removing voids.
- e) The licensee has evaluated essential and non-essential systems with respect to containment isolation and the results of this evaluation were submitted to the NRC. In addition, Item II.K.3.25 was addressed to demonstrate that the integrity of the reactor coolant pump seals would be maintained during a loss of off-site power. These items have been resolved to the

satisfaction of the NRC as reported in A. Schwencer's (NRC) letter to S. Burstein (WE) dated April 9, 1980, Robert A. Clark's (NRC) letter to C. W. Fay (WE) dated October 19, 1982, and Robert A. Clark's (NRC) letter to C. W. Fay (WE) dated February 4, 1983. It should be pointed out that if these auxiliary services are not available to the reactor coolant pump, the emergency procedures and the operator training emphasizes the need to trip the RCP's.

f) Discussed 1a and 1c.

2. Guidance for Justification of Manual RCP Trip

The Westinghouse Owners Group response to this section of requirements will be reported separately at the end of 1983. It is the intention of Wisconsin Electric Power Company to reference this report as being applicable to its Point Beach Nuclear Plant as described in Sections 2a and 2b. This will justify manual trip of the RCP's for the Point Beach Nuclear Plant.

a) A significant number of analyses have been performed by Westinghouse for the Westinghouse Owners Group using the currently approved Westinghouse Appendix K Evaluation Model for small break LOCA. This Evaluation Model uses the WFLASH Code. These analyses demonstrate for small break LOCA's of concern, if the RCP's are tripped 2 minutes following the onset of reactor conditions corresponding to the RCP trip setpoint, the predicted transient is nearly identical to those presented in the Safety Analysis Reports for all Westinghouse plants. Thus, the Safety Analysis Reports for all plants demonstrate compliance with requirement 2a. The analyses performed for the Westinghouse Owners Group will be used to demonstrate the validity of this approach.

b) Better estimate analyses will be performed for a limiting Westinghouse designed plant using the WFLASH computer code with better estimate assumptions. These analyses will be used to determine the minimum time available for operator action for a range of break sizes such that the ECCS acceptance criteria of 10 CFR 50.46 are not exceeded. It is expected that the minimum time available for manual RCP trip will exceed the guidance contained in N660. This will justify manual RCP trip for all plants.

3. Other Considerations

a) It is expected that the parameter(s) employed in the RCP trip setpoint at Point Beach will utilize

instrumentation having a level of quality consistent with Regulatory Guide 1.97 requirements. For instrumentation the operator uses to make a decision concerning the initiation of a manual action, the instrumentation should be redundant, environmentally qualified, and powered from 1E power supplies.

- b) The Emergency Response Guidelines contain guidance for the timely restart of the reactor coolant pumps when conditions which will support safe pump startup and operation are established. As previously stated, the ERG's will be used as the reference guideline for writing the Emergency Operating Procedures for the Point Beach Nuclear Plant.
- c) The training program for the upgraded Emergency Operating Procedures will address all aspects of the procedures, including the operator responsibility to manually trip the RCP's when the applicable setpoints are exceeded. The choice of the setpoints and the prioritization of the actions will provide for tripping the RCP's during a small break LOCA at the proper time.

II. Pump Operation Criteria Which Will Not Result in RCP Trip During Transient and Accidents

The preferred and safest method of operation following a small break LOCA is to manually trip the RCP's. Therefore, there is no need to address the criteria contained in this section.