

TEXAS UTILITIES SERVICES INC.

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April 11, 1983

Director of Nuclear Reactor Regulation  
Attention: Mr. B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION  
DOCKET NOS. 50-445 AND 50-446  
RESPONSE TO GENERIC LETTER 83-10c  
PLAN FOR RESOLUTION OF TMI ACTION PLAN ITEM II.K.3.5  
"AUTOMATIC TRIP OF REACTOR COOLANT PUMPS"

Dear Mr. Youngblood:

In response to NRC Generic Letter 83-10c, we offer the following:

INTRODUCTION

The criteria for resolution of TMI Action Plan Item II.K.3.5, "Automatic Trip of Reactor Coolant Pumps" were stated in the letter from Mr. D. G. Eisenhower of the Nuclear Regulatory Commission dated February 8, 1983 (Generic Letter 83-10c). The following describes the Comanche Peak Steam Electric Station (CPSES) plans for demonstrating compliance with the criteria of NRC Generic Letter 83-10c.

The Westinghouse Owners Group will undertake a two part program to address the requirements of NRC Generic Letter 83-10c and d. In the first part of the program, revised RCP trip criteria will be developed which provides an indication to the operator to trip the RCPs for small break LOCAs 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 RCPs will not be indicated to the operator for 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.

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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. Plant specific criteria in NRC Generic Letter 83-10c that are not addressed by the above programs will be evaluated for CPSES.

The preferred and safest method of pump operation following a small break LOCA is to manually trip the RCPs 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 10CFR50.45 will be made to allow continued RCP operation during a small break LOCA.

#### DETAILED RESPONSE TO NRC GENERIC LETTER 83-10c

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

#### 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. TUGCO uses the Westinghouse Owners Group Emergency Response Guidelines as the basis for the CPSES Emergency Response Guidelines. After the revised Westinghouse Owners Group Guidelines are released, they will be reviewed and incorporated into the next revision of the CPSES Emergency Response Guidelines.

- 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 RCPs will be indicated to the operator for LOCAs 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 RCPs 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 vapor void in the reactor vessel head is provided in certain cases where such operation is needed.

TUGCO used the Westinghouse Owners Group Emergency Response Guidelines as the basis of the CPSES Emergency Response Guidelines. As part of the training program, reactor operators are trained to recognize the symptoms of the existence of a vapor void in the reactor vessel head. They then are to respond according to the procedures in the CPSES Emergency Response Guidelines.

- e) As part of the response to TMI Action Plan Item II.E.4.2, CPSES evaluated the essential and non-essential system with respect to containment isolation. For CPSES, a Phase A Containment Isolation signal does not isolate the Component Cooling Water or the Seal Injection Flow. Therefore situations that result in a Phase A signal do not have to be re-evaluated with respect to the impact of RCP support systems termination.

Phase B containment isolation is actuated by a High-3 containment pressure signal (nominal value of 20 psig). This signal isolates the Component Cooling Water to the RCPs, but not the Seal Injection. The Loss of Component Cooling Water, with continued RCP operation, will cause the RCP oil temperature to increase. To assure that the RCP's are not damaged, CPSES Guidelines call for a RCP Trip during such situations. The transients and accidents that may initiate a Phase B Containment Isolation will be reviewed to confirm if RCP Trip is acceptable. This study will be completed July 31, 1983.

f) Discussed in 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. The assumptions and findings of the Westinghouse Owners Group manual RCP trip justification program will be reviewed for CPSES. A review of the Westinghouse "2 minute delayed RCP Trip" will also be conducted. This review will be conducted to insure that the CPSES FSAR accident analyses are bounded by the Westinghouse study. The basis and findings of the best estimate minimum operator RCP trip response time study will also be reviewed. Its applicability to the CPSES specific conditions will be examined. At the conclusion of these studies, the CPSES RCP trip initiation mechanism will be justified. These analyses can not begin until the Westinghouse Owners Group study has been completed. It will take approximately two months to accomplish the above reviews. The CPSES RCP trip justification response will be completed by February 29, 1984.

- a) A significant number of analyses have been performed by 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 LOCAs of concern, if the RCPs 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 10CFR50.46 are not exceeded. It is expected that the minimum time available for manual RCP trip will exceed the guidance contained in M660. This will justify manual RCP trip for all plants.

### 3. Other Considerations

- a) To assure that warning for RCP trip occurs before the required trip conditions are passed, the accuracies of the instruments associated with the trip setpoint will be evaluated. The generic Westinghouse setpoints will be corrected to include allowances for CPSES instrument error.

The instrument accuracy study cannot begin until the generic RCP trip setpoints have been determined. Therefore the CPSES evaluation will be initiated upon completion of the Westinghouse Owners Group RCP trip setpoint study. It will take approximately two months to complete the CPSES instrument accuracy evaluation. The study will be completed by September 30, 1983.

- b) The Emergency Response Guidelines contain guidance for the timely restart of the reactor coolant pumps when conditions which will support safe pump start-up and operation are established. The Westinghouse Owners Group Emergency Response Guidelines are used as the basis for the CPSES Emergency Response Guidelines. The CPSES Emergency Response Guidelines will be revised to include the new SBLOCA RCP trip guidelines.
- c) As part of the CPSES training program, reactor operators have been trained to distinguish a SBLOCA and to respond according to the CPSES Emergency Response Guidelines. The reactor operator training program will be updated as necessary to reflect the guidelines for responding to an SBLOCA via RCP trip.

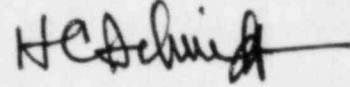
Once the CPSES Emergency Response Guidelines have been updated, it will take one week to incorporate the changes into the training program. All reactor operators will be informed of the changes by the completion of the six week training cycle.

## 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 RCPs. Therefore, there is no need to address the criteria contained in this section.

If you have any questions or comments please contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read 'H. C. Schmidt', with a long horizontal stroke extending to the right.

H. C. Schmidt

RWH:tls

cc: S. B. Burwell