

# The Light company

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December 28, 1983  
ST-HL-AE-1034  
File No.: G3.8/N18.3/M11.4

Mr. Darrell G. Eisenhut, Director  
Division of Licensing  
Nuclear Regulatory Commission  
Washington, D. C. 20555

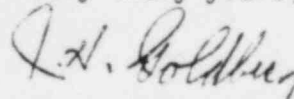
Dear Mr. Eisenhut:

South Texas Project  
Unit 1 & 2  
Docket Nos. STN 50-498, SIN 50-499  
"Automatic Trip of Reactor Coolant Pumps"  
(Generic Letter No. 83-10c)

On February 22, 1983, Houston Lighting & Power Company (HL&P) received a letter from your office dated February, 8, 1983, in which HL&P was requested to submit a schedule and plans for resolving TMI Action Item II.K.3.5, "Automatic Trip of Reactor Coolant Pumps". By our letter of August 31, 1983, we provided the requested schedule. In accordance with that schedule, attached is our response to all items except Item I.2. As indicated in our August 31, 1983 letter, Item I.2 will be provided by May 15, 1984.

If you should have questions concerning this matter, please call Mr. Michael E. Powell at (713) 993-1328.

Very truly yours,



J. H. Goldberg  
Vice President  
Nuclear Engineering & Construction

SSR/mpg  
Attachment: Generic Letter 83-10c Response

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## GENERIC LETTER 83-10c RESPONSE

### General

In response to TMI Action Item II.K.3.5 and Generic Letter (GL) 83-10c, Westinghouse and the Westinghouse Owners Group (WOG), in which HL&P is a participant, performed a study to develop reactor coolant pump (RCP) trip criteria that would provide adequate indication to the operator to trip the RCPs for small break LOCAs and allow continued operation of the RCPs for a steam generator tube rupture (SGTR) and other non-LOCA events. The results of this study have been incorporated in the WOG emergency response guidelines (ERGs), revision 1, in the form of guidance to the operator to check for the necessity to trip the RCPs.

A submittal titled, "Evaluation of Alternate RCP Trip Criteria", to partially fulfill the requirements of GL 83-10c has been transmitted to the NRC by WOG letter OG-110, dated December 1, 1983. The date by which all parts of the program are to be completed has now been revised to March 1, 1984. HL&P's final submittal is scheduled for May 15, 1984.

It is the WOG and HL&P position that the RCPs will be manually tripped for small break LOCAs. Therefore, GL 83-10c Part II, "Pump Operation Criteria Which will not Result in RCP Trip During Transients and Accidents," is not applicable to STP and need not be addressed.

### Detailed Response

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

##### 1. Setpoints for RCP Trip

The WOG response to this section of GL 83-10c is contained in Revision 1 to the ERG's, and will be incorporated in the STP emergency operating procedures. The RCP Trip Criterion which will be incorporated in the STP procedures not only assures RCP trip for all losses of primary coolant for which trip is considered necessary, but also permits RCP operation to continue during most non-LOCA events, including SGTR events up to the design basis double-ended rupture. The generic applicability of the RCP trip criterion has been documented by the WOG in "Evaluation of Alternate RCP Trip Criteria", which, as stated above, has been submitted to the NRC for review.

Several subparts in I.1 of GL 83-10c require plant specific information. These are addressed below:

1. Setpoints for RCP Trip (continued)

Subpart c: Depressurizing Actions

The WOG ERG's provide guidance for the use of auxiliary spray as an alternate method for depressurization. STP auxiliary spray is heated by a regenerative heat exchanger and is not derived from RCP discharge pressure. The STP emergency operating procedures and the operator training program will incorporate the guidance of the WOG ERGs.

Subpart d: Primary System Voids

The WOG ERGs contain specific guidance for detecting, managing and removing coolant voids that result from flashing. The symptoms of void formation are described in these guidelines and in more detail in the background document for the guidelines. Additionally, explicit guidance for operating the plant with a void in the reactor vessel head is provided in certain cases where such operation is needed.

Subpart e: RCP Water Service

The essential service systems required for continued RCP operation are the component cooling water system (CCW) and the chemical and volume control system (CVCS) seal injection. Both of these systems remain open following a containment isolation signal. The CCW supply to the RCPs is isolated only upon detection of leakage in the CCW system. The RCP seal injection is isolated upon concurrent containment isolation signal and low charging header pressure. Thus, continued RCP operation, without seal damage, can be maintained following containment isolation.

2. Guidance for Justification of Manual RCP Trip

Subsection 2a of GL 83-10c requires that compliance with 10CFR50.46 be demonstrated in Appendix K small break LOCA analysis given that the RCPs are tripped 2 minutes after the onset of reactor conditions corresponding to the RCP trip setpoint. Westinghouse has completed generic verification for the Westinghouse Owners Group that predicted LOCA transients assuming the 2 minute delayed RCP trip are nearly identical to those presented in Safety Analysis Reports utilizing the WFLASH Evaluation Model. Thus, the FSAR for STP is a valid means to demonstrate compliance with the Subsection 2a guidelines.

Westinghouse is now performing best estimate WFLASH analyses to demonstrate, generically, compliance with the guidelines presented in Subsection 2b of GL 83-10c. The analyses will identify the minimum



2. Guidance for Justification of Manual RCP Trip (continued)

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 operator action will exceed the value contained in draft ANSI Standard N660. Combined with the Subsection 2a justification, this will justify manual RCP trip for STP.

The Westinghouse Owners Group intends to submit the generic report justifying manual RCP trip by March 1, 1984. This will complete the documentation comprising a generic reply to NRC Generic Letter 83-10c. HL&P will review the WOG report and finalize the technical justification for manual RCP trip. This will be submitted to the NRC by May 15, 1984.

3. Other Considerations

- a) The instrumentation qualification and redundancy for each of the parameters considered for RCP trip criteria are provided below:
  - o RCS wide range pressure - The STP RCS wide range pressure instrumentation and displays are Class 1E and redundant. The three RCS wide range pressure transmitters are located outside the containment and are not subjected to the containment post-accident environment.
  - o RCS subcooling - The STP instrumentation, processing and displays for the RCS subcooling margin monitor are Class 1E and redundant.
  - o RCS wide range/secondary differential pressure - The STP RCS wide range pressure instrumentation is described above. The secondary pressure instrumentation and displays are Class 1E and redundant.

The above discussion indicates that the instrumentation required for the three criteria considered by WOG program are all Class 1E and redundant. Thus, STP will be able to select the specific criteria determined to be most appropriate for the emergency operating procedures.

- b) The WOG ERGs 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 guidance will be incorporated into the STP emergency operating procedures.
- c) The STP training program will include instruction to the operators in the use of procedures concerning RCP trip in the event of a small break LOCA. The operators shall be trained in the prioritization of actions following engineered safety features actuation. The STP training program will be in place to support operator training scheduled to commence in October 1985.