

# The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

May 18, 1988  
ST-HL-AE-~~2626~~ 2656  
File No.: G20.02.01  
10CFR50.90

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

South Texas Project Electric Generating Station  
Unit 1  
Proposed Revision to Technical Specifications  
and Final Safety Analysis Report for  
Excessive Cooldown Protection

Pursuant to 10CFR50.90, Houston Lighting & Power (HL&P) hereby proposes to amend its Operating License NPF-76 with the attached proposed change to the Technical Specifications, NUREG-1305, for South Texas Unit 1 and the Final Safety Analysis Report for Units 1 & 2. We would appreciate your timely review of this proposed change.

This change is requested because it has been discovered that the Low-Low Compensated Tcold Excessive Cooldown Protection can cause unnecessary actuation of safety systems. Specifically, the proposed changes to the Technical Specifications 3/4.3.2 delete all references to Excessive Cooldown Protection and associated items, such as P-15. These deletions are: Table 3.3-3, Functional Units 1.g., 4.f., 5.c., 5.d., 9.d., and table notation ###; Table 3.3-4, Functional Units 1.g., 4.f., 5.c., 5.d., 9.d., and Table Notation \*\*\*; Table 3.3-5, Initiating Signal and Function 4,14, & 15; Table 4.3-2, Channel Functional Units 1.g, 4.f., 5.c., 5.d., 9.d., and Table Notations (2) and (3). In addition Technical Specification Bases 3/4.3.2 section on the P-15 interlock is deleted. These deletions are based on supporting analyses discussed in the attached Safety Evaluation for Significant Hazards Considerations.

Safety Evaluation for Significant Hazards Considerations

HL&P has reviewed the attached proposed deletion of Excessive Cooldown Protection pursuant to 10CFR50.59 and 10CFR50.92 and has determined that it does not represent an unreviewed safety question or a significant hazard as discussed in the attached Safety Evaluation for Significant Hazard Considerations.

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Based on the information contained in this submittal, and the NRC Final Environmental Assessment for South Texas Units 1 & 2, HL&P has concluded that pursuant to 10CFR51, there are no significant radiological or non-radiological impacts associated with the proposed action and that the proposed license amendment will not have a significant effect on the quality of the human environment.

The South Texas Unit 1 Nuclear Safety Review Board has reviewed and approved the attached proposed amendment and concurs with the 10CFR50.59 determination.

In accordance with 10CFR50.91(b) HL&P is providing the State of Texas with a copy of this proposed amendment.

Pursuant to the requirements of 10CFR170.12(c) enclosed with this amendment request is the application fee of \$150.00.

Request for a Waiver of Compliance

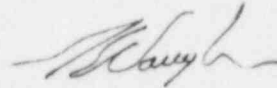
HL&P presently expects to conduct the Shutdown from Outside the Control Room and Loss of Offsite Power Tests prior to exceeding 50% power. As previously identified in letter ST-HL-AE-2625, dated April 18, 1988, the existing Low-Low Compensated Tcold Excessive Cooldown Protection circuitry will likely cause an unnecessary safety injection actuation during the conduct of these tests. While the actuation could be safely managed during the tests, it is outside the original testing scope and would substantially add to the complexity of the tests; it would also result in an additional unnecessary cycling of safety systems.

HL&P has reviewed the effects of removing the Excessive Cooldown Protection feature; it has been determined that it does not constitute an unanswered safety question or significant hazard and that there are no significant radiological or nonradiological impacts affecting the quality of the human environment.

Considering the completed safety evaluation, the attached request for a Technical Specification change and the present schedule for performing the aforementioned tests HL&P requests a waiver of compliance to Technical Specification 3/4.3.2 as it pertains to Excessive Cooldown Protection until completion of NRC action on the proposed change.

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If you should have any questions on this matter, please contact  
Mr. S. M. Head at (512) 972-8392.



G. E. Vaughn  
Vice President  
Nuclear Plant Operations

GEV/LRC/cr

- Attachment:
- 1) Safety Evaluation for Significant Hazards Considerations
  - 2) Proposed Revisions to Technical Specifications
  - 3) Proposed Revisions to the FSAR
  - 4) HL&P Check No.825

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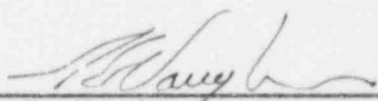
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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter )  
 )  
Houston Lighting & Power ) Docket Nos. 50-498  
Company, et al., ) 50-499  
 )  
South Texas Project )  
Units 1 and 2 )

AFFIDAVIT

G. E. Vaughn being duly sworn, hereby deposes and says that he is Vice President, Nuclear Plant Operations, of Houston Lighting & Power Company; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached proposed amendment to Technical Specification Tables 3.3-3, 3.3-4 and 4.3-2 regarding the deletion of excessive cooldown protection; is familiar with the content thereof; that the matters set forth therein are true and correct to the best of his knowledge and belief.

  
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G. E. Vaughn  
Vice President  
Nuclear Plant Operations

Subscribed and sworn to before me, a Notary Public in and for the State of Texas this 18th day of May, 1988.



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Notary Public in and for the  
State of Texas

ATTACHMENT 1

SAFETY EVALUATION

Safety Evaluation for Significant Hazards Considerations

Houston Lighting & Power Company (HL&P) has determined that the deletion of Excessive Cooldown Protection does not involve a significant hazards consideration or an Unreviewed Safety Question in accordance with 10CFR50.92(c) and 10CFR50.59, respectively.

The analyses referenced in this report have been accomplished using currently accepted codes. The results of these analyses meet the specified acceptance criteria as referenced in the FSAR.

Excessive cooldown protection, as presently installed on South Texas Project, consists of Safety Injection actuation and steamline isolation from two out of three low-low compensated Tcold signals from any loop with the reactor tripped or below 10% power, feedwater isolation and turbine trip from two out of three low compensated Tcold signals in any loop with reactor tripped or below 10% power or from two out of three high feedwater flow signals in any loop with the reactor tripped or below 10% power, interlocked with two out of four RCS low flow signals or two out of four low Tavg signals.

- (1) The proposed change does not involve an increase in the probability of occurrence of consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report.

Excessive cooldown protection was in the original design of South Texas Project to prevent the Reactor from returning critical subsequent to a steam system piping failure or inadvertent opening of steam generator relief or safety valve, or excessive main feedwater addition. South Texas Project has adopted NRC approved licensing criterion which permits return to criticality following the above mentioned events. The analyses for these events as described in Chapter 15 of the FSAR shows the possibility of return to criticality following these events. Two portions of the original excessive cooldown protection, emergency boration system and main steam isolation on any safety injection, were deleted prior to issuance of the operating license for South Texas Project, Unit 1.



The analysis for Inadvertent Opening of a Steam Generator Relief or Safety Valve Causing a Depressurization of the Main Steam System, FSAR Chapter 15.1.4, was analyzed for the impact of deletion of the excessive cooldown protection. Although safety injection will no longer actuate from two out of three low-low compensated T-cold in any loop, it will actuate from two out of three low compensated steamline pressure signals from any loop or from two out of four low pressurizer pressure signals. In addition, redundant isolation of the main feedwater flow is provided, in that normal control action will close the main feedwater valves following a reactor trip and a Safety Injection signal will rapidly close all feedwater control valves and feedwater isolation valves and trip the main feedwater pumps. Closure of the fast-acting main steam isolation valves (MSIVs) will be accomplished from either low compensated steamline pressure (two out of three in any loop) above the P-11 setpoint, or from high negative steamline pressure rate signal (two out of three in any loop) below the P-11 setpoint. The original analyses for these events were performed using the LOFTRAN code to determine RCS temperature and pressure during cooldown and the effect of safety injection; and to determine that there is no consequential damage to the core or reactor coolant system. The results show that safety injection is initiated by low pressurizer pressure. No credit is taken in the original analysis for mitigation from the excessive cooldown protection.

The analysis for Steam System Piping Failures Inside the Outside Containment, FSAR Chapter 15.1.5, was reviewed for the impact of deletion of excessive cooldown protection. Although Safety Injection will no longer actuate from two out of three low-low compensated T-cold in any loop, it will actuate from two out of three low compensated steamline pressure signals from any loop, from two out of four low pressurizer pressure signals, or from two out of three high-1 containment pressure signals. In addition, redundant isolation of the main feedwater flow is provided, in that normal control action will close the main feedwater valves following a reactor trip and a Safety Injection signal will rapidly close all feedwater control valves and feedwater isolation valves and trip the main feedwater pumps. Closure of the fast-acting main steam isolation valves (MSIVs) will be accomplished from either low compensated steamline pressure (two out of three in any loop) above the P-11 setpoint, from high negative steamline pressure rate signal (two out of three in any loop) below the P-11 setpoint, or from two out of three High-2 containment pressure signals. The original analyses for these events were performed using the LOFTRAN code to determine RCS temperature and pressure during cooldown and the effect of safety injection; and used a thermal and hydraulic behavior code, THINC, to determine if DNB exists for these events. The results show that safety injection is initiated by low steam line pressure. No credit is taken in the original analysis for mitigation from the excessive cooldown protection.



The analysis for Mass and Energy Release for Postulated Secondary System Pipe Ruptures Inside the Containment, FSAR Chapter 6.2.1.4, was reviewed for the impact of deletion of Excess Cooldown protection. No credit was taken in the original analyses for mitigation or lessening of the consequences from actuation of excess cooldown protection.

The deletion of excessive cooldown protection results in a protection system functionally equivalent to RESAR-3S Protection Systems.

The deletion of excessive cooldown protection does not have any effect upon the probability of occurrence of a malfunction of equipment important to safety in that the only physical changes on equipment important to safety is the deletion of the actuation signals from the protection system. These deletions will be made from an approved modification reviewed by the Nuclear Steam Supply System vendor, Westinghouse, and by HL&P to assure correct operability of the protection system after the modifications are complete. The reduction in unnecessary cycling of Engineered Safeguards Equipment will have a positive effect upon reducing the potential of malfunction of equipment important to safety.

In summary the deletion of excessive cooldown protection does not have any effect upon the specific safety analyses and therefore does not involve an increase in the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report.

- (2) The proposed change does not create the possibility for an accident or malfunction of a different type than any previously evaluated in the safety analysis report.

HL&P has evaluated the impact of deletion of the excessive cooldown protection and has determined that no new accidents would result from these changes. The only physical modification to the design as described in the FSAR is the deletion of actuation signals from the protection system. These deletions can not cause a different kind of accident than previously analyzed.

- (3) The change does not involve a significant reduction in margin of safety as defined in the basis for any technical specification.

As described earlier, the analyses for inadvertent opening of a steam generator relief or safety valve, a main steam system piping failure, and the mass and energy release from failure of secondary piping inside containment were analyzed. In no circumstance did the analyses take credit for mitigation or lessening of consequences from the excessive cooldown protection actuation. Additionally, since the proposed changes to the Technical Specifications are adequately addressed by the earlier analyses, there is no reduction in the margin of safety as specified in the basis of any technical specification.

In summation, it has been shown that the deletion of excessive cooldown protection does not:

1. Increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report.
2. Create the possibility for an accident or malfunction of a different type than evaluated previously in the safety analysis report.
3. Reduce the margin of safety as defined in the basis for any technical specification.

Therefore; HL&P has determined that the proposed deletion of excessive cooldown protection does not involve a significant hazards consideration or an Unreviewed Safety Question.