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Ref. # 10CFR50.90

January 29, 2008

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION
DOCKET NOS. 50-445 AND 50-446
SUPPLEMENT TO LICENSE AMENDMENT REQUEST (LAR) 07-003
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO
LICENSE AMENDMENT REQUEST ASSOCIATED WITH METHODOLOGY
USED TO ESTABLISH CORE OPERATING LIMITS AND
LAR 07-004 REVISION TO THE OPERATING LICENSE AND TECHNICAL
SPECIFICATION 1.0, "USE AND APPLICATION" TO REVISE RATED THERMAL
POWER FROM 3458 MWT TO 3612 MWT
(TAC NOS. MD5243 AND MD5244) AND (TAC NOS. MD6615 AND MD6616)

REFERENCES:
1. Letter logged TXX-07063 dated April 10, 2007 submitting License Amendment Request (LAR) 07-003 revision to Technical Specification 3.1, "REACTIVITY CONTROL SYSTEMS," 3.2, "POWER DISTRIBUTION LIMITS," 3.3, "INSTRUMENTATION," and 5.6.5b, "CORE OPERATING LIMITS REPORT (COLR)," from Mike Blevins to the NRC.
2. Letter logged TXX-07126 dated August 16, 2007 supplementing License Amendment Request (LAR) 07-003, from Mike Blevins to the NRC.
3. Letter logged TXX-07106 dated August 28, 2007 from Mike Blevins to the NRC submitting License Amendment Request (LAR) 07-004, proposing revisions to the Operating Licenses and to Technical Specifications 1.0, "USE AND APPLICATION" to revise rated thermal power from 3458 MWT to 3612 MWT.

Dear Sir or Madam:

Per Reference 1 as supplemented by Reference 2, Luminant Generation Company LLC (Luminant Power) submitted proposed changes to the Comanche Peak Steam Electric Station, herein referred to as Comanche Peak Nuclear Power Plant (CPNPP), Unit 1 and Unit 2 Technical Specifications to allow the use of several Nuclear Regulatory Commission (NRC) approved accident analysis methodologies to be used to establish core operating limits. In addition, per Reference 3, Luminant Power submitted proposed changed to the Units 1 and 2 Operating Licenses and Technical Specifications to revise the rated thermal power from 3458 MWT to 3612 MWT.

In December 2007, Westinghouse identified an error in the calculation supporting the Anticipated Transients Without Scram (ATWS) analysis while performing the reload core verification process.

A001
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The error was corrected and on January 18, 2008, Luminant Power discussed updates to the ATWS response included in Reference 2 and Reference 3 with the NRC regarding the use of the reload core verification process to verify that Anticipated Transients Without Scram (ATWS) criteria are met on a cycle specific basis. The additional information regarding the methodology used to verify ATWS requirements are met is provided in Attachment 1 (LAR 07-003, Methodology) and Attachment 2 (LAR 07-004, Uprate).

Based on our reviews and discussions, we have made several changes, highlighted by change bars in the attachments, to the ATWS sections. The changes address the corrected text due to the remediation of the error in the calculation, and also to address comments received during our discussions - the latter set of changes generally provide clarification and additional explanation of the method of analysis used.

Further, Luminant Power would like to provide the following clarification of information relative to References 1 and 3: Luminant Power and its Large Break (LB) and Small Break (SB) LOCA analyses vendor have ongoing processes that assure that LB and SB LOCA analyses input values bound their as-operated plant values for the Comanche Peak, Units 1 and 2.

In accordance with 10CFR50.91(b), Luminant Power is providing the State of Texas with a copy of this proposed amendment.

This communication contains no new licensing basis commitments regarding Comanche Peak Units 1 and 2.

Should you have any questions, please contact Mr. J. D. Seawright at (254) 897-0140.

I state under penalty of perjury that the foregoing is true and correct.

Executed on January 29, 2008.

Sincerely,

Luminant Generation Company LLC

Mike Blevins

By: Fred W. Madden

Fred W. Madden
Director, Oversight & Regulatory Affairs

Attachments - 1. Methodology Update - LAR 07-003, Section 2.8 Anticipated Transients Without Scram
2. SPULR Update - LAR 07-004, Section 2.8.5.7 Anticipated Transients Without Scram

c - E. E. Collins, Region IV
B. K. Singal, NRR
Resident Inspectors, Comanche Peak

Alice Rogers
Environmental & Consumer Safety Section
Texas Department of State Health Services
1100 West 49th Street
Austin, Texas 78756-3189

Attachment 1 (LAR 07-003, Methodology)
Section 2.8, Anticipated Transients Without Scram

2.8 ANTICIPATED TRANSIENTS WITHOUT SCRAM

2.8.1 Technical Evaluation

2.8.1.1 Introduction

As noted above, the final ATWS Rule, 10 CFR 50.62(c)(1) (Reference 1), requires the incorporation of a diverse (from the reactor trip system) actuation of the AFW system and turbine trip for Westinghouse-designed plants. The installation of the NRC-approved AMSAC satisfies this final ATWS Rule. However, it must also be demonstrated that the deterministic ATWS analyses that form the basis for this rule and the AMSAC design remain valid for the plant. This is typically done by confirming that the analyses documented in NS-TMA-2182 (Reference 2) remain valid or by performing new deterministic analyses for the proposed plant state.

To address the uprate program for CPNPP, the loss of load (LOL) and loss of normal feedwater (LONF) ATWS events were re-analyzed to ensure that the analytical basis for the final ATWS rule continues to be met. The LOL and LONF ATWS events are the two most limiting RCS overpressure transients reported in NS-TMA-2182 (Reference 2). The approach taken was to demonstrate that the ATWS unfavorable exposure time (UET) is less than 5 percent of an operating cycle. UET is the duration of a given cycle for which the core reactivity feedback is insufficient to preclude the RCS pressure from exceeding the Service Level C pressure limit of 3,200 psig following an ATWS event. The objective is to show that the ATWS pressure limit of 3,200 psig is met for at least 95 percent of the cycle, and therefore the analytical basis for the final ATWS rule continues to be met.

The UET approach has been previously approved by the NRC per Reference 3. The analysis must show that the UET, given the cycle design (including moderator temperature coefficient (MTC)), will be less than 5 percent. This 5-percent requirement for the UET is equivalent to the probability level in the reference analyses for the ATWS rule analytical basis (Reference 2). In those analyses, the NRC required that all parameters be best-estimate values with the exception of the MTC initial condition, which is to be at a full-power value that is bounding for at least 95 percent of a given cycle. The UET approach provides a similar level of assurance for the effectiveness of the reactivity feedback.

To determine UET, the reactivity conditions of the core and plant conditions under consideration must be compared to the ATWS analysis conditions that lead to a peak RCS pressure of 3,200 psig (i.e., the ATWS pressure limit). The variable conditions of significance to the calculated peak RCS pressure following the LOL and LONF ATWS events are total reactivity feedback (primarily MTC), primary-side pressure relief capacity, and AFW capacity. For a given primary-side pressure relief configuration and AFW capacity, reactivity feedback (MTC) can be adjusted in the ATWS analysis until the peak RCS pressure during the specific ATWS event equals 3,200 psig. At these specific reactivity feedback conditions, the change in power with increasing temperature represents what is defined as the critical power trajectory (CPT) (or heatup/shutdown characteristics) for the specific plant configuration. The heatup/shutdown characteristics of a given core at various times in the cycle can then be compared to the CPT to establish UET for the given core at the specific plant configuration conditions.

2.8.1.2 Input Parameters, Assumptions, and Acceptance Criteria

The ATWS analyses performed for the TM and SPU programs showed that the results obtained for CPNPP Unit 1 with Westinghouse Δ76 steam generators are more limiting than those obtained for Unit 2 with D-5 steam generators and, therefore, may be conservatively applied to CPNPP Unit 2. As such, only the Unit 1 inputs, assumptions, and results are reported.

The primary input to the LOL and LONF ATWS analysis for the CPNPP Units 1 and 2 TM and SPU programs was the four-loop reference LOL and LONF ATWS models from the analyses supporting NS-TMA-2182. The following analysis assumptions were used:

- The nominal and initial conditions were updated to the nuclear steam supply system (NSSS) design parameters for 3,628 MWt.
- The steam generator data was revised to reflect the Westinghouse Δ76 steam generator for the Unit 1 analyses. The Comanche Peak Unit 1 ATWS analysis was performed using the LOFTRAN code. The LOFTRAN code uses a single node for the steam generator secondary side. LOFTRAN does not include detailed models for predicting degradation of the steam generator tube bundle heat transfer for situations where the secondary side fluid inventory is depleted. Therefore, the detailed steam generator analysis code NOTRUMP was used to calculate the steam generator heat transfer coefficient as a function of steam generator secondary side water mass for input to LOFTRAN.
- Consistent with the analysis basis for the Final ATWS Rule (NS-TMA-2182):
  - Thermal design flow (TDF) is assumed, no uncertainties are applied to the initial power, RCS average temperature or RCS pressure.
  - Zero-percent steam generator tube plugging (SGTP) is assumed. Zero-percent SGTP is more limiting (that is, results in a higher peak RCS pressure) for ATWS events.
  - Control rod insertion was not assumed.
  - 100-percent pressurizer power-operated relief valve capacity was assumed.
  - The AMSAC actuation setpoint is not directly assumed in the ATWS analyses. Turbine trip and AFW actuation are modeled to occur at generic times after event initiation, consistent with NS-TMA-2182.

- A CPNPP best-estimate AFW flow of 2,148 gpm was assumed.
- The reactivity feedback (MTC) was adjusted until the peak RCS pressure during the specific ATWS event equaled 3,200 psig.

To remain compliant with the basis of the final ATWS rule (10 CFR 50.62), the UET calculated for the ATWS reference conditions (no control rod insertion, nominal AFW flow, and unblocked pressurizer power-relief valves) must be less than 5 percent for a given cycle.

2.8.1.3 Description of Analyses and Evaluations

Calculation of the UET is a two step process. The first step is the calculation of critical power trajectories. In this step, the LOFTRAN code is used to determine the reactivity feedback conditions that result in a peak RCS pressure equal to or slightly below 3,200 psig (3,200 psia was used for conservatism) for the two ATWS transients (LOL and LONF). Each transient is analyzed from full power conditions. Reactivity coefficients, primarily MTC, are adjusted iteratively until the peak RCS pressure in the transient is at or near 3,200 psig (3,200 psia was used for conservatism). These reactivity feedback conditions are then held fixed in the calculation of the CPTs, which is performed using the LOFTRAN reactivity model. The CPT calculation is based on the assumption that the reactor is just critical at the nominal core power level and corresponding core inlet temperature. As the ATWS events result in an increase in the core inlet temperature, which, based on the fixed reactivity feedback, would require a lower power level to be just critical, a bounding range of expected core inlet temperatures was analyzed to determine the "just critical" core power level as a function of core inlet temperature. For each transient, the core power fractions as a function of inlet temperature and pressure represent the "critical power trajectory."

The second step is the calculation of the UET using the CPTs from the first step. The ANC code is used to perform a series of critical power calculations at the ATWS pressure limit (3,200 psia was used for conservatism) with various inlet temperatures. This is done at each burnup step. For each inlet temperature and burnup step, a parameter termed the "unfavorable power" is then calculated. This is the difference between the ANC critical power and the CPT power. Positive values indicate an unfavorable ATWS response since the ANC critical power is larger than the power level required to reach the peak pressure limit. Conversely, negative values indicate a favorable ATWS response since the ANC critical power is less than the power level required to reach the peak pressure limit. The UET is determined by the range of cycle burnups for which the unfavorable power is positive for any inlet temperature. The percentage of the cycle burnup for which the response is unfavorable is the UET for the cycle.

ATWS CPTs and UETs were generated for the two pressure-limiting ATWS events. The ATWS CPTs were generated based on the four-loop reference LOL and LONF ATWS models from the analyses supporting NS-TMA-2182. The models were revised to incorporate the uprated power conditions reflecting an NSSS power level of 3,628 MWt, the Unit 1 Westinghouse Δ76 steam generators (the Unit 1 Model Δ76 steam generators were determined to be limiting compared to the Unit 2 Model D-5 steam generators), and plant-specific, best-estimate AFW flow. The CPTs were then used to determine the ATWS UET.

2.8.1.4 Results

CPT curves were calculated for CPNPP Unit 1 with Westinghouse Δ76 steam generators at an uprated NSSS power level of 3,628 MWt. These critical power trajectory curves for the LOL and LONF ATWS transients are shown in Figures 2.8.5.7-1 and 2.8.5.7-2, respectively.

The results of this analysis may be conservatively applied to CPNPP Unit 2 with Model D-5 steam generators since the results obtained for the Model Δ76 SGs are more limiting than those obtained for the Model D-5 steam generators.

To remain compliant with the basis of the final ATWS rule (10 CFR 50.62), the UET must be less than 5 percent for a given cycle, or equivalently, the ATWS pressure limit of 3,200 psig must be met for 95 percent of the cycle. The UET will be met for the anticipated operating conditions with a cycle specific core design and will be checked on a cycle-specific basis. The CPTs and UET calculation are incorporated into the Reload Safety Evaluation process. Therefore, the basis of the final ATWS rule (10 CFR 50.62) is met for the CPNPP Units 1 and 2 TM and SPU.

2.8.2 Conclusion

The proposed CPNPP Units 1 and 2 TM and SPU programs Program effects on ATWS have been reviewed. For the anticipated operating conditions with a cycle specific core design, the UET will be less than five percent, or equivalently, the ATWS pressure limit of 3,200 psig will be met for at least 95 percent of the cycle. The UET will continue to be checked on a cycle-specific basis. Therefore, it is concluded that the proposed CPNPP Units 1 and 2 TM and SPU Programs effects on ATWS have been adequately addressed. The evaluation has demonstrated continued compliance with the bases for the 10 CFR 50.62 rule. It is concluded that the AMSAC is sufficient for compliance with 10 CFR 50.62, and a diverse scram system is not required.

2.8.3 References

1. 10 CFR 50.62 and Supplementary Information Package, "Requirements for Reduction of Risk from ATWS Events for Light Water-Cooled Nuclear Power Plants."

2. NS-TMA-2182, "Anticipated Transients Without Scram for Westinghouse Plants," December 1979.

3. NRC letter to D. L. Farrar (ComEd), "Issuance of Amendments (TAC NOs. M89092, M89093, M89072, and M89091)," July 27, 1995.

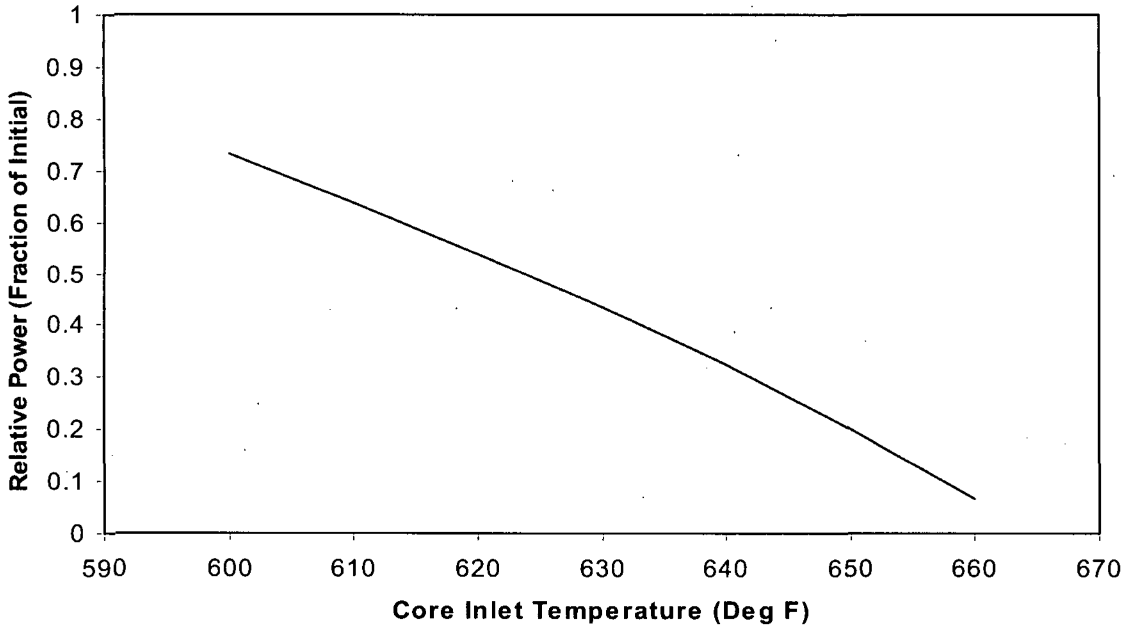

Figure 2.8-1 **Critical Power Trajectory for Loss of Load ATWS at Uprated NSSS Power Conditions (3,628 MWt)**

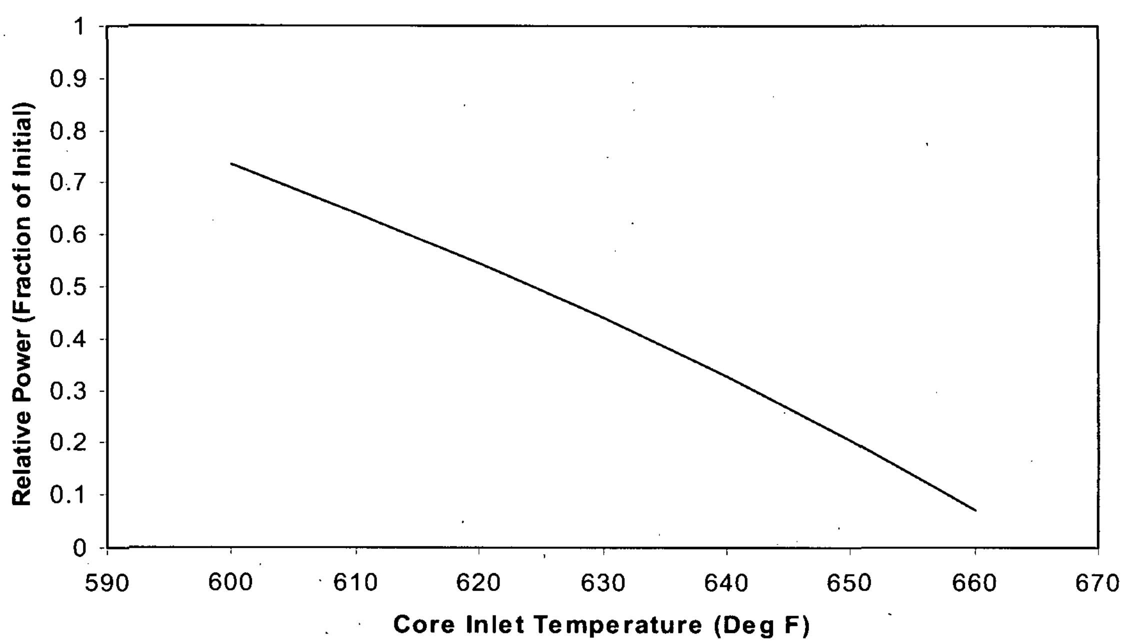

Figure 2.8-2 **Critical Power Trajectory for Loss of Normal Feedwater ATWS at Uprated NSSS Power Conditions (3,628 MWt)**