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CP-200800357
Log # TXX-08047

Ref. # 10CFR50.90

March 6, 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) 07-004
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. MD6615 AND MD6616)

REFERENCES:
1. 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
2. Letter logged TXX-08008 dated January 10, 2008 from Mike Blevins to the NRC submitting a supplement to License Amendment Request (LAR) 07-004
3. Letter logged TXX-08013 dated January 31, 2008 from Mike Blevins to the NRC submitting a supplement to License Amendment Request (LAR) 07-004
4. Letter logged TXX-08031 dated February 21, 2008 from Mike Blevins to the NRC submitting a supplement to License Amendment Request (LAR) 07-004

Dear Sir or Madam:

Per Reference 1, Luminant Generation Company LLC (Luminant Power) requested changes to the Comanche Peak Steam Electric Station, herein referred to as Comanche Peak Nuclear Power Plant (CPNPP), Units 1 and 2 Operating Licenses and to Technical Specification 1.0, "USE AND APPLICATION" to revise rated thermal power from 3458 MWT to 3612 MWT. Luminant Power supplemented that request by responding to NRC Requests for Additional Information (RAI) per References 2, 3, and 4.

In Reference 4, Luminant Power committed to provide additional information (Commitment No. 3458447) regarding maximum stress values at the steam generator nozzles and maximum stress values at a critical location closest to the containment penetration for Units 1 and 2. The additional information is provided in Attachments 1 and 2 to this letter.



A001
NRR

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

This communication closes commitment 3458447 and contains no new license basis commitments for 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 March 6, 2008.

Sincerely,

Luminant Generation Company LLC

Mike Blevins

By: Fred W. Madden
Fred W. Madden
Director, Oversight & Regulatory Affairs

Attachments - 1. Response to Mechanical and Civil Engineering Branch Questions on Steam Generator Nozzle Loads
2. Response to Mechanical and Civil Engineering Branch Questions on Critical Location Closest to the Containment Penetration

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

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## Response to Mechanical and Civil Engineering Branch Questions on Steam Generator Nozzle Loads, Applicable for NRC Questions 7b and 8b in Luminant Power letter logged TXX-08031 (Reference 4)

The Steam Generator (SG) Main Feed Water (FW) and Auxiliary Feedwater (AFW) nozzle loads were evaluated for the Stretch Power Uprate (SPU) conditions. The FW loads are impacted by the SPU, and the increased loads are presented for both units in the following tables. For Unit 1, there are no changes in loads on the AFW nozzles for the SPU, since the recent SG Replacement analyses for the AFW nozzles were performed at an uprated power level. For Unit 2, the AFW loads are impacted by the SPU, and the increased loads are presented in the following Unit 2 tables.

Note that in general, only the Upset condition loads, or in some cases, only the Faulted condition loads are increasing due to the uprate. Loads that do not change for the uprate are not listed in these tables. Actual loads (before and after SPU) were further evaluated, if required, to ensure that their combined effect is less than the combination of allowable loads.

Forces are in $lb_f$, and moments are in ft-$lb_f$.

The information presented in the tables is summarized by a comparison of the design allowable values divided by the SPU load values. This ratio presents the design margin, and in all cases the design margin after SPU is above 1.0. The conclusion is that the SPU load comparisons all result in acceptable loading combinations.

**Table SG Nozzle -- Unit 1 Steam Generator Feedwater and Auxiliary Feedwater Nozzles**

**FW Nozzle Loads on SG #1**

| | Fa | Fb | Fc | Ma | Mb | Mc |
|---|---|---|---|---|---|---|
| SG Nozzle Loads Affected by SPU - After SPU | 14480 | 54017 | 14528 | 134769 | 52460 | 126213 |
| Applicable SG Nozzle Loads Prior to SPU | 12865 | 49674 | 12983 | 125106 | 47834 | 114079 |
| SG Allowable [Upset] Load | 52000 | 90000 | 40000 | 237500 | 204167 | 445834 |
| Design Margin - After SPU | 3.59 | 1.67 | 2.75 | 1.76 | 3.89 | 3.53 |
| Design Margin - Before SPU | 4.04 | 1.81 | 3.08 | 1.90 | 4.27 | 3.91 |

**Minimum Design Margin After SPU = 1.67 > 1.0, OK**

**AFW Nozzle Loads for SG #1 – No Changes to Loads due to SPU**

**Table SG Nozzle -- Unit 1 Steam Generator Feedwater and Auxiliary Feedwater Nozzles**

**FW Nozzle Loads on SG #2**

| | Fa | Fb | Fc | Ma | Mb | Mc |
|---|---|---|---|---|---|---|
| SG Nozzle Loads Affected by SPU - After SPU | 10193 | 54382 | 10572 | 118072 | 42591 | 121517 |
| Applicable SG Nozzle Loads prior to SPU | 9186 | 51004 | 9373 | 109118 | 40478 | 112418 |
| SG Allowable [Upset] Load | 52000 | 90000 | 40000 | 237500 | 204167 | 445834 |
| Design Margin - After SPU | 5.10 | 1.65 | 3.78 | 2.01 | 4.79 | 3.67 |
| Design Margin - Before SPU | 5.66 | 1.76 | 4.27 | 2.18 | 5.04 | 3.97 |

**Minimum Design Margin After SPU = 1.65 > 1.0, OK**

**AFW Nozzle Loads for SG #2 – No Changes to Loads due to SPU**

| Table SG Nozzle -- Unit 1 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **FW Nozzle Loads on SG #3** | | | | | | |
| | **Fa** | **Fb** | **Fc** | **Ma** | **Mb** | **Mc** |
| **SG Nozzle Loads Affected by SPU - After SPU** | 9833 | 46145 | 12291 | 131369 | 26019 | 133348 |
| **Applicable SG Nozzle Loads prior to SPU** | 8726 | 42462 | 11020 | 121929 | 23818 | 123339 |
| **SG Allowable [Upset] Load** | 52000 | 90000 | 40000 | 237500 | 204167 | 445834 |
| **Design Margin - After SPU** | 5.29 | 1.95 | 3.25 | 1.81 | 7.85 | 3.34 |
| **Design Margin - Before SPU** | 5.96 | 2.12 | 3.63 | 1.95 | 8.57 | 3.61 |
| **Minimum Design Margin After SPU = 1.81 > 1.0, OK** | | | | | | |
| | | | | | | |
| **AFW Nozzle Loads for SG #3 -- No Changes to Loads due to SPU** | | | | | | |

| Table SG Nozzle -- Unit 1 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **FW Nozzle Loads on SG #4** | | | | | | |
| | **Fa** | **Fb** | **Fc** | **Ma** | **Mb** | **Mc** |
| **SG Nozzle Loads Affected by SPU - After SPU** | 14771 | 51224 | 19093 | 207960 | 29879 | 168261 |
| **Applicable SG Nozzle Loads prior to SPU** | 13218 | 47614 | 16931 | 189708 | 28036 | 155930 |
| **SG Allowable [Upset] Load** | 52000 | 90000 | 40000 | 237500 | 204167 | 445834 |
| **Design Margin - After SPU** | 3.52 | 1.76 | 2.10 | 1.14 | 6.83 | 2.65 |
| **Design Margin - Before SPU** | 3.93 | 1.89 | 2.36 | 1.25 | 7.28 | 2.86 |
| **Minimum Design Margin After SPU = 1.14 > 1.0, OK** | | | | | | |
| | | | | | | |
| **AFW Nozzle Loads for SG #4 – No Changes to Loads due to SPU** | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **FW Nozzle Loads on SG # 1** | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 29053 | 91148 | 28787 | 205252 | 88328 | 99741 |
| Applicable SG Nozzle Loads prior to SPU | 28511 | 89384 | 28380 | 203325 | 87636 | 98010 |
| SG Allowable [Faulted] Load | 62000 | 95000 | 65000 | 266666 | 225000 | 475000 |
| Design Margin - After SPU | 2.13 | 1.04 | 2.26 | 1.30 | 2.55 | 4.76 |
| Design Margin - Before SPU | 2.17 | 1.06 | 2.29 | 1.31 | 2.57 | 4.85 |
| Minimum Design Margin After SPU = 1.04 > 1.0, OK | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **AFW Nozzle Loads on SG # 1** | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 6590 | 29130 | 6779 | 30217 | 4983 | 27702 |
| Applicable SG Nozzle Loads prior to SPU | 6475 | 28541 | 6672 | 29905 | 4930 | 27334 |
| SG Allowable [Faulted] Load | 28000 | 48000 | 23000 | 37500 | 42083 | 42083 |
| Design Margin - After SPU | 4.25 | 1.65 | 3.39 | 1.24 | 8.45 | 1.52 |
| Design Margin - Before SPU | 4.32 | 1.68 | 3.45 | 1.25 | 8.54 | 1.54 |
| Minimum Design Margin After SPU = 1.24 > 1.0, OK | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **FW Nozzle Loads on SG # 2** | | | | | | |
| | **Fa** | **Fb** | **Fc** | **Ma** | **Mb** | **Mc** |
| **SG Nozzle Loads Affected by SPU - After SPU** | 21368 | 72157 | 39965 | 265046 | 130949 | 136475 |
| **Applicable SG Nozzle Loads prior to SPU** | 21103 | 70901 | 39250 | 261753 | 130133 | 134944 |
| **SG Allowable [Upset] Load** | 62000 | 95000 | 65000 | 545833 | 441667 | 729167 |
| **Design Margin - After SPU** | 2.90 | 1.32 | 1.63 | 2.06 | 3.37 | 5.34 |
| **Design Margin - Before SPU** | 2.94 | 1.34 | 1.66 | 2.09 | 3.39 | 5.40 |
| **Minimum Design Margin After SPU = 1.32 > 1.0, OK** | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| **AFW Nozzle Loads on SG # 2** | | | | | | |
| | **Fa** | **Fb** | **Fc** | **Ma** | **Mb** | **Mc** |
| **SG Nozzle Loads Affected by SPU - After SPU** | 6491 | 28236 | 6117 | 26398 | 7757 | 19232 |
| **Applicable SG Nozzle Loads prior to SPU** | 6357 | 27668 | 6015 | 26062 | 7637 | 18871 |
| **SG Allowable [Faulted] Load** | 28000 | 48000 | 23000 | 37500 | 42083 | 42083 |
| **Design Margin - After SPU** | 4.31 | 1.70 | 3.76 | 1.42 | 5.43 | 2.19 |
| **Design Margin - Before SPU** | 4.40 | 1.73 | 3.82 | 1.44 | 5.51 | 2.23 |
| **Minimum Design Margin After SPU = 1.42 > 1.0, OK** | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| FW Nozzle Loads on SG # 3 | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 24626 | 66043 | 21631 | 155488 | 101223 | 160796 |
| Applicable SG Nozzle Loads prior to SPU | 24294 | 64866 | 21280 | 153799 | 100570 | 158748 |
| SG Allowable [Faulted] Load | 62000 | 95000 | 65000 | 266666 | 225000 | 475000 |
| Design Margin - After SPU | 2.52 | 1.44 | 3.00 | 1.72 | 2.22 | 2.95 |
| Design Margin - Before SPU | 2.55 | 1.46 | 3.05 | 1.73 | 2.24 | 2.99 |
| Minimum Design Margin After SPU = 1.44 > 1.0, OK | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| AFW Nozzle Loads on SG # 3 | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 8132 | 26986 | 7186 | 30393 | 8571 | 34485 |
| Applicable SG Nozzle Loads prior to SPU | 7989 | 26448 | 7043 | 29867 | 8469 | 33994 |
| SG Allowable [Faulted] Load | 28000 | 48000 | 23000 | 37500 | 42083 | 42083 |
| Design Margin - After SPU | 3.44 | 1.78 | 3.20 | 1.23 | 4.91 | 1.22 |
| Design Margin - Before SPU | 3.50 | 1.81 | 3.27 | 1.26 | 4.97 | 1.24 |
| Minimum Design Margin After SPU = 1.22 > 1.0, OK | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| FW Nozzle Loads on SG # 4 | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 10997 | 73604 | 32654 | 145237 | 93518 | 135149 |
| Applicable SG Nozzle Loads prior to SPU | 10940 | 72202 | 32090 | 143583 | 92630 | 133373 |
| SG Allowable [Faulted] Load | 62000 | 95000 | 65000 | 266666 | 225000 | 475000 |
| Design Margin - After SPU | 5.64 | 1.29 | 1.99 | 1.84 | 2.41 | 3.51 |
| Design Margin - Before SPU | 5.67 | 1.32 | 2.03 | 1.86 | 2.43 | 3.56 |
| Minimum Design Margin After SPU = 1.29 > 1.0, OK | | | | | | |

| Table SG Nozzle -- Unit 2 Steam Generator Feedwater and Auxiliary Feedwater Nozzles | | | | | | |
|---|---|---|---|---|---|---|
| AFW Nozzle Loads on SG # 4 | | | | | | |
| | Fa | Fb | Fc | Ma | Mb | Mc |
| SG Nozzle Loads Affected by SPU - After SPU | 5920 | 27227 | 5835 | 27889 | 5953 | 22565 |
| Applicable SG Nozzle Loads prior to SPU | 5816 | 26699 | 5743 | 27648 | 5893 | 22281 |
| SG Allowable [Faulted] Load | 28000 | 48000 | 23000 | 37500 | 42083 | 42083 |
| Design Margin - After SPU | 4.73 | 1.76 | 3.94 | 1.34 | 7.07 | 1.86 |
| Design Margin - Before SPU | 4.81 | 1.80 | 4.01 | 1.36 | 7.14 | 1.89 |
| Minimum Design Margin After SPU = 1.34 > 1.0, OK | | | | | | |

**Response to Mechanical and Civil Engineering Branch Questions on Critical Location Closest to the Containment Penetration, Applicable for NRC Questions 7b and 8b in Luminant Power letter logged TXX-08031 (Reference 4)**

Containment Penetration Qualification for Stretch Power Uprate (SPU)

The following provides a summary of the qualification results for the limiting components in the containment penetrations for impacts due to the SPU. The load increase factors are conservative since they are based on enveloping loads and do not take credit for the relative contributions from all six components of the penetration reactions. These results are undergoing final review.

Qualification of the containment penetrations is covered in three areas; the anchorage, the reinforced concrete, and the sleeve.

a. Anchorage

The analysis of record compares pipe reaction loads as listed below for SERVICE and FACTORED load categories:

- axial force compared against allowable axial for each load category
- torsional moment compared against allowable torsion for SERVICE and plastic torsion for FACTORED
- shear compared against plastic shear
- bending compared against plastic bending

Qualification for the SPU conditions is performed by generating the SPU penetration load combinations and comparing the SPU load s to allowables as described above. The following table summarizes the highest existing and SPU load interaction ratios for each penetration:

| | Load Interaction Ratio | |
|---|---|---|
| | Existing | SPU |
| SERVICE (Normal/Upset) | 0.78 | 0.87 |
| FACTORED (Faulted) | 0.945 | 0.948 |

Thus, the maximum SPU load interaction ratio for containment penetration anchorage is 0.948. Prior to the SPU conditions, the maximum load interaction ratio for containment penetration anchorage was 0.945. Since the load interaction ratio remains below 1.0, the SPU load conditions are acceptable for the anchorage.

b. Reinforced Concrete

Existing analyses calculates rebar stresses due to the most critical FACTORED load combination. The most critical load combination is in the unbroken loop with another loop break inside containment.

The SPU penetration loads were compared to the design loads to determine the change of rebar loads due to SPU. The results show the following:

Maximum increase in penetration axial load, all penetrations = 1.06
Maximum increase in penetration bending moment, all penetrations = 2.17

Since axial loads affect the rebar stresses different from bending loads, a composite load ratio is calculated using axial and bending weight factors. A final composite load factor is calculated based on the relative contribution of the penetration load to the shell load. The resulting composite load factors are averaged for the local rebar forces and moments to obtain conservative overall load increase factor for rebar stress check as follows:

Average increase factor for Location 1 = 1.07 (closest to penetration)
Average increase factor for Location 2 = 1.06
Average increase factor for Location 3 = 1.04 (farthest from the penetration)

The most critical responses are:

| | Existing | SPU (1) | Allowable |
|---|---|---|---|
| Maximum average stress in vertical rebar, ksi | 44 | 47.1 | 54 |
| Maximum strain in diagonal rebar (2) | 80.83/E | 86.5/E | 90/E |

Note 1: Maximum increase at location 1 is conservatively applied to the above most critical results at location 3
Note 2: E is the elastic modulus for the rebar

Thus, the existing margins in both of the most critical responses are more than adequate for the SPU load increases.

c. Sleeve

The metal sleeve consists of the sleeve pipe and flued head. The existing analysis uses ANSYS finite element analysis (FEA) methods to evaluate the stresses due to the penetration design loads and other containment loads. The SPU penetration loads are compared to the existing penetration loads for the critical load combinations to determine load increase factors. The maximum load increase factors are applied to the existing FEA stress results to obtain the critical stresses for SPU. The load increase factors are also conservatively applied to all loads including pipe reactions and containment loads.

| | Existing Stress Interaction Ratio | Load Increase Factor | SPU Stress Interaction Ratio |
|---|---|---|---|
| Upset | 0.78 | 1.25 | 0.97 |
| Faulted | 0.50 | 1.12 | 0.62 |

Since the SPU Stress Interaction Ratios are less than 1.0, the SPU results are acceptable.