September 12, 2008

Mr. M. R. Blevins
Executive Vice President
& Chief Nuclear Officer
Luminant Generation Company LLC
ATTN: Regulatory Affairs
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: LICENSE AMENDMENT REQUEST (LAR) 2007-008, TO TECHNICAL SPECIFICATION 3.6.7, "SPRAY ADDITIVE SYSTEM" (TAC NOS. MD7456 AND MD7457)

Dear Mr. Blevins:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 147 to Facility Operating License No. NPF-87 and Amendment No. 147 to Facility Operating License No. NPF-89 for Comanche Peak Steam Electric Station, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated November 29, 2007.

The amendments allow modifications to address NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors," and authorize changes to TS 3.6.7, "Spray Additive System," to remove the current surveillances for sodium hydroxide and insert a surveillance to ensure equilibrium sump pH is greater than or equal to 7.1.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:
1. Amendment No. 147 to NPF-87
2. Amendment No. 147 to NPF-89
3. Safety Evaluation

cc w/encls: See next page

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ADAMS Accession Nos.: Pkg ML081830011 (Amdt. ML081840001, License/TS Pgs ML081840002)

*Memo transmitting SE

OFFICE	NRR/LPL4/PM	NRR/LPL4/LA	NRR/CSGB/BC	OGC	NRR/LPL4/BC	NRR/LPL4/PM
NAME	BSingal	JBurkhardt	AHiser*	RHomes	MMarkley	BSingal
DATE	9/4/08	9/4/08	5/12/08	9/5/08	9/12/08	9/12/08

OFFICIAL AGENCY RECORD

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LUMINANT GENERATION COMPANY LLC

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 1

DOCKET NO. 50-445

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 147
License No. NPF-87

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Luminant Generation Company LLC dated November 29, 2007, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-87 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A as revised through Amendment No. 147 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Luminant Generation Company LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan as indicated in the attachment to this license amendment.

3. The license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-87 and
Technical Specifications

Date of Issuance: September 12, 2008

LUMINANT GENERATION COMPANY LLC

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-446

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 147
License No. NPF-89

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Luminant Generation Company LLC dated November 29, 2007, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-89 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A as revised through Amendment No. 147 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. Luminant Generation Company LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-89 and
Technical Specifications

Date of Issuance: September 12, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 147

TO FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 147

TO FACILITY OPERATING LICENSE NO. NPF-89

DOCKET NOS. 50-445 AND 50-446

Replace the following pages of the Facility Operating License Nos. NPF-87 and NPF-89, and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License No. NPF-87

REMOVE	INSERT
3	3

Facility Operating License No. NPF-89

REMOVE	INSERT
3	3

Technical Specifications

REMOVE	INSERT
3.6-21	3.6-21

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 147 TO

FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 147 TO

FACILITY OPERATING LICENSE NO. NPF-89

LUMINANT GENERATION COMPANY LLC

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By letter dated November 29, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML073410318), Luminant Generation Company, LLC (the licensee), submitted license amendment request (LAR) 2007-008 pertaining to the spray addition system at Comanche Peak Steam Electric Station (CPSES), Units 1 and 2. The proposed license amendment would revise the existing pH surveillance requirements.

The amendment proposed to revise the current Technical Specification (TS) 3.6.7, "Spray Additive System," surveillance requirements for sodium hydroxide (NaOH) and insert a surveillance requirement to ensure sump pH is greater than or equal to 7.1. Details of the surveillance to ensure a minimum pH of 7.1 using NaOH would be included in the licensee-controlled Technical Requirements Manual. The purpose of the requested change is to allow CPSES, Units 1 and 2 to have a lower and, consequently, less corrosive, pH in the sump following a loss-of-coolant accident (LOCA) than the current TS requires. The lower pH is intended to reduce corrosion of containment materials and therefore reduce the potential impact of chemically formed precipitates on the sump strainer performance.

2.0 REGULATORY EVALUATION

In Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, the Commission established requirements related to the TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to the station operation: 1) safety limits, limiting safety settings, and limiting control settings; 2) limiting conditions for operation; 3) surveillance requirements; 4) design features; and 5) administrative controls. The rule does not specify the particular requirements to be included in the plant's TSs. The proposed change to TS 3.6.7 in Facility Operating Licenses NPF-87 and NPF-89 is within the surveillance requirement category.

10 CFR 50, Appendix A, Criterion 41, “Containment atmosphere cleanup,” specifies the requirements to provide containment atmosphere cleanup systems to control fission products, hydrogen, oxygen, and other substances which may be released into the reactor containment. The U.S. Nuclear Regulatory Commission (NRC) staff review addresses the impact of the proposed change to the NaOH spray additive system on containment sump performance, especially potential chemical effects impact, on sump screen blockage and head loss.

The containment sump (also known as the emergency recirculation sump) is part of the emergency core cooling system (ECCS). Every nuclear power plant is required by Section 50.46 of Title 10 of the *Code of Federal Regulations* (10 CFR) to have an ECCS to mitigate a design-basis accident. Paragraph 10 CFR 50.46(a)(1)(i) states, in part, that “[e]ach boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding must be provided with an emergency core cooling system (ECCS) that must be designed so that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section.” Paragraph 10 CFR 50.46(b)(5), “Long-term cooling,” states “[a]fter any calculated successful initial operation of the ECCS, the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time required by the long-lived radioactivity remaining in the core.”

In addition, the NRC staff utilized the following regulatory guidance in performing this review:

- NUREG-0800, Section 6.5.2, “Containment Spray as a Fission Product Cleanup System,” which states, in part, that long-term iodine retention may be assumed only when the equilibrium sump solution pH, after mixing and dilution with the primary coolant and ECCS injection, is above 7.0.

- Regulatory Guide 1.82, Revision 3, “Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident,” Section 1.1.2, which states, in part, that debris that could accumulate on the sump screen, should be minimized.

3.0 TECHNICAL EVALUATION

Post-LOCA containment pool buffering is required primarily to control the radiological consequences of the accident by reducing the release of iodine fission products from the pool to the containment atmosphere as molecular iodine. Maintaining a pH above 7.0 prevents significant amounts of iodine, released from failed fuel and dissolved in the recirculation water, from converting to a volatile molecular iodine form and evolving into the containment atmosphere. The pH of the sump water at CPSES, Units 1 and 2, is controlled by the NaOH buffer, which is formed by the addition of NaOH to the boric acid dissolved in the sump water after a LOCA. However, current understanding of the sump chemistry has indicated that NaOH reacts with certain insulation materials forming insoluble aluminum-based precipitates. These precipitates, when generated in significant quantities, may block the flow of fluid though the strainers in the sump. To reduce the potential for strainer blockage by chemical precipitates, the licensee proposes to reduce the quantity of NaOH in containment to establish a sump pH value that still ensures iodine retention, but is less caustic and generates less chemical precipitates than the pH range created by the current amount of NaOH.

The NRC and the nuclear industry jointly sponsored Integrated Chemical Effects Tests (ICETs) to investigate potential chemical effects in representative post-LOCA containment environments. The ICET series was conducted by Los Alamos National Laboratory at the University of New Mexico. ICET No.1 represented an NaOH environment and the data report showed that chemical precipitates were generated following corrosion of insulation and metallic materials. Aluminum oxyhydroxide forms after the corrosion of aluminum. The corrosion of aluminum increases with increased pH. The proposed license amendment would allow CPSES, Units 1 and 2 to decrease the amount of NaOH in containment, which would reduce the post-LOCA sump pH and in turn reduce the corrosion of aluminum and formation of aluminum-based precipitates.

Based on the current CPSES, Units 1 and 2, TS requirements for spray additive tank levels and NaOH solution concentrations, sump pH is calculated to be in the range of 8.25 to 9.2. The proposed TS would allow a sump pH as low as 7.1. The licensee performed analysis using the model in Westinghouse WCAP-16530-NP, “Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support [Generic Safety Issue] GSI-191,” (ADAMS Accession No. ML060890509) for the existing pH range and the proposed pH. This analysis was performed using conservative values for boron concentration and water volume. The licensee’s analysis showed that the quantity of aluminum oxyhydroxide can be reduced by approximately 80 percent by reducing the concentration of NaOH to assure a minimum pH of 7.1 as opposed to the current minimum of 8.25.

The NRC staff concludes that revising the CPSES, Units 1 and 2 TS to require a minimum pH of 7.1 using NaOH will continue to provide acceptable containment sump buffering such that the sump pH will be maintained in an acceptable range under LOCA conditions.

Although potential chemical effects still exist with the use of NaOH in the containments of CPSES, Units 1 and 2, the NRC staff determined that chemical effects will be sufficiently reduced if the licensee is able to reduce the amount of NaOH in containment. Based on the proper buffering to be provided by NaOH at a final sump pH value of no less than 7.1 and the relative reduction in the mass of chemical precipitates achievable by reducing the total quantity of NaOH provided by the spray additive system in the case of a LOCA, the NRC staff concludes that the revision of the CPSES, Units 1 and 2 TS to specify a minimum pH of 7.1 using NaOH is acceptable.

Although the reduction in NaOH concentration will have a beneficial result on total mass of chemical precipitate generated, the licensee still needs to demonstrate acceptable ECCS performance under the proposed conditions, including the potential chemical effects at a lower pH in order to fully resolve GSI-191 for CPSES, Units 1 and 2.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendment. The State official had comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on December 31, 2007 (72 FR 74360). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: M. Yoder

Date: September 12, 2008