

September 29, 2005

Mr. M. R. Blevins  
Senior Vice President &  
Chief Nuclear Officer  
TXU Power  
Attn: Regulatory Affairs Department  
P. O. Box 1002  
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2-  
AUTHORIZATION TO USE HIGHER ASSIGNED PROTECTION FACTORS  
WITH THE USE OF FRENCH-DESIGNED AIR-SUPPLIED RESPIRATOR  
EQUIPMENT (TAC NOS. MC8303 AND MC8304)

Dear Mr. Blevins:

By letter dated August 26, 2005, TXU Generating Company LP (the licensee) submitted, pursuant to the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1705, "Application for use of higher assigned protection factors," a request for authorization for Comanche Peak Steam Electric Station, Units 1 and 2 to use French-designed air-supplied respiratory equipment with an assigned protection factor (APF). Specifically, the licensee requested authorization to use an APF of 5000 with the Mururoa air-supplied suits, models V4 F1 and V4 MTH2, manufactured by Delta Protection.

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's request, as documented in the enclosed safety evaluation. The NRC staff concludes that, based on the testing data provided and when used in accordance with the applicable manufacturer's instructions, licensee's commitments, and requirements of Subpart H of 10 CFR Part 20, the licensee's request to use and take credit for an APF of 5000 with both the Mururoa V4 F1 and Mururoa V4 MTH2 air-supplied suits, is authorized pursuant to 10 CFR Part 20.

Sincerely,

/RA/

Mohan C. Thadani, Senior Project Manager, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosure: Safety Evaluation

cc: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

USE OF FRENCH-DESIGNED AIR-SUPPLIED RESPIRATOR EQUIPMENT

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

TXU GENERATING COMPANY LP

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By letter dated August 26, 2005, TXU Generating Company LP (the licensee) submitted, pursuant to the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1705, "Application for use of higher assigned protection factors," a request for authorization for Comanche Peak Steam Electric Station, Units 1 and 2 to use French-designed air-supplied respiratory equipment with an assigned protection factor (APF). Specifically, the licensee requested authorization to use an APF of 5000 with the Mururoa air-supplied suits, models V4 F1 and V4 MTH2, manufactured by Delta Protection.

2.0 REGULATORY EVALUATION

Subpart H, "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas," of 10 CFR Part 20, "Standards for Protection Against Radiation," concerns the use of respiratory protection equipment for protection against airborne radioactive materials.

Section 20.1703, "Use of individual respiratory protection equipment," paragraph(a), requires that respiratory protection equipment used by a licensee to limit the intake of radioactive material be tested and certified by the National Institute for Occupational Safety and Health (NIOSH). Section 20.1703(b) states that a licensee can submit an application to the NRC for authorized use of respiratory protection equipment that has not been tested and certified by NIOSH.

Appendix A, "Assigned Protection Factors for Respirators," of 10 CFR Part 20 does not provide an APF for atmosphere-supplying respirator (air-line respirator) suits in a continuous-flow operating mode. Instead, it references footnote (g) that states, "No NIOSH approval schedule is currently available for atmosphere supplying suits. This equipment may be used in an acceptable respiratory protection program as long as all the other minimum program requirements, with the exception of testing, are met (i.e., Section 20.1703)."

Section 20.1705 states that a licensee shall obtain NRC authorization before using APFs in excess of those specified in Appendix A to Part 20. Thus, the licensee must obtain NRC approval to take credit for an APF for the French-designed respiratory protection equipment.

Enclosure

Criteria and background information used for the NRC staff's technical evaluation include 10 CFR Part 20, Subpart H; 10 CFR Part 19, paragraph 19.12, "Instruction to Workers"; Regulatory Guide 8.15, Revision 1, "Acceptable Programs for Respiratory Protection"; NUREG/CR-0041, Revision 1, "Manual of Respiratory Protection Against Airborne Radioactive Materials"; 42 CFR Part 84, which addresses NIOSH testing and certification regulations; Los Alamos National Laboratory Report LA-101560MS, "Acceptance Testing Procedures for Air-Line Supplied Air Suits"; and American National Standards Institute (ANSI) standard Z88.2-1992, "American National Standard Practices for Regulatory Protection."

### 3.0 TECHNICAL EVALUATION

NRC guidance provided in NUREG/CR-0041 encourages the use of suits, noting that in certain work environments, air-supplied suits may be the best respiratory device when considering heat stress, trying to minimize skin contamination, and trying to maintain worker doses as low as reasonably achievable (ALARA).

Testing conducted by the Institute for Nuclear Protection and Security, the European certifying agency (comparable to NIOSH), and over 20 years of successful use in European power plants of similar certified suits form the basis for the licensee's request. The licensee has requested authorization to use the two suits during normal (non-emergency) operations. The two suits are made by the same manufacturer and are identified as Mururoa V4 F1 (Certificate No. 0073/197/162/12/97/0028) and Mururoa V4 MTH2 (Certificate No. 0073/197/162/01/96/0001). Both models have been approved as single-use suits (a suit that is disposed of after one use), and the licensee proposes to use the suits in the approved configurations, relative to the suits' form, fit, and function.

The European Standard EN 1073-1 (January 1998), "Protective Clothing Against Radioactive Contamination, Part 1: Requirements and Test Methods for Ventilated Protective Clothing Against Particulate Radioactive Contamination," provided testing and acceptance criteria used for certification of the suits. This standard is generally consistent with the pertinent acceptance criteria provided in Los Alamos National Laboratory Report LA-10156-MS, which is used to test and authorize the use of air-supplied suits at Department of Energy sites.

The certification-testing regime was broadly based and encompassed a range of various functional areas, including: suit material strength, tear and puncture resistance, material flammability, wearer comfort, noise level, wearer visibility, air flow, carbon dioxide concentrations, and degree of contaminate in-leakage during a series of varied simulated work practices and exercises. Both models passed all required tests, and both provided a measured average protection level (fit factor) of 50,000. A fit factor, which was developed in a simulated work environment, is the ratio of contaminate concentration outside the suit to the contaminate concentration inside the suit. Given an overall measured fit factor of 50,000 (averaged over all exercise activities), allowing an APF of 5,000 provides a conservative safety factor for estimating the actual protection provided to the user by the suit in the actual working environment. APFs are generally lower than fit factors for all types of respirators, since workplace demands are typically greater on the user of the respirator than are laboratory conditions and simulated work activities, due to higher heat and humidity, longer work durations, greater worker fatigue, etc.

In general, when compared with other air-fed respirators, both Mururoa suit models provide the following advantages to the user: (1) dual zippers (metal zipper inside and plastic zipper outside); (2) a welded sleeve-to-insert communication cable; (3) a removable strip near the mouth that could be used for emergency breathing in case of loss of supplied air; (4) an egress strip stretching from the left arm, over the head, and to the right arm that is used for undressing and for self-rescue in an emergency, such as loss of supplied air; (5) an air intake located at the waist with a built-in regulator that can adjust, but not block, air flow; (6) dual magnetic valves that provide ventilation and relief of excess pressure in case the suit is squeezed or pinched unexpectedly; (7) a very low noise level at maximum air flow; and (8) air flow to the hands, feet, face, and chest.

Safety features also include light-weight (2.5 pounds), one-piece construction with welded gloves and booties with tie straps. Helmets are made with PVC material that provides distortion-free vision and are large enough for wearing a headset. Noise levels are less than 80 decibels at maximum air flow, and air flow can be adjusted by the user for comfort, but cannot be shut off below the required minimum air flow. The Mururoa V4 MTH2 model also provides two additional vents near the chin for cooling to the face. Both models are fire proof up to 65 °C and can be used in temperatures up to 60 °C. Suits are constructed with reinforced elbow, knee, and crotch areas.

The licensee intends to use the suits in highly contaminated areas, including the steam generator platform work, reactor head work, cavity decontamination, and equipment decontamination. Both Mururoa suit models offer a safer and more efficient means to protect workers in areas of high radiological contamination and in areas where there is a potential for airborne contamination. The existing practice of using a combination of rain suits and NIOSH-certified air-supplied hoods provides cooling only to the head and forces workers to wear the ensemble in a manner that makes self-rescue nearly impossible; thus, a rescue worker is required to be stationed nearby. The Mururoa suits provide improved cooling over the entire body, and the ease of removal features provide a means to undress that minimizes the potential for personnel contamination events and an easy-escape design.

Upon loss of supplied air to the suit, a worker can easily extricate himself or herself from the suit by pulling off the mouth strip and then opening the hood, or by pulling the egress strip from the forearm to the head. Based on these safety features, the NRC staff finds that the suit design provides for easy and effective self-rescue, thus, avoiding asphyxiation if the air supply is interrupted or lost.

Subpart H of 10 CFR Part 20 establishes the requirements for implementing a respiratory protection program. These programmatic requirements ensure that worker doses from airborne radioactive materials are maintained ALARA. The licensee intends to integrate use of the Mururoa suits into its existing, ongoing respiratory protection programs that satisfy Part 20 requirements. The NRC staff finds this approach acceptable. The following summary of controls and program elements generally follow the specific Part 20 requirements pertinent to the use of air-supplied suits. Since the licensee has a viable, ongoing respiratory protection program, only items pertinent and specific to the use of suits are discussed below.

1. Section 20.1703(c) requires, among other things, written procedures governing the training of respirator users (workers). The licensee has committed to develop new lesson plans to train workers on the suits' features; how to don, use, and doff the suit;

and instructions on using the built-in escape strips for routine and emergency egress conditions. This training should include appropriate hands-on and classroom instruction. Specific training will be provided on actions to be taken by the user in the event of equipment malfunction. The radiation protection personnel will be trained to ensure that they are competent to issue the suits, assist in helping the user don and doff the suits, and set up and operate the unit (including the regulated air supply).

2. Communication channels will be established and maintained between the licensee, the manufacturer, and the European certification authority to ensure that users are notified in a timely manner of significant problems that may affect suit safety, performance, or function. Depending on the severity of a problem or defect, the certification agency or the manufacturer may issue a product recall (e.g., a stop-use advisory or user warning issued to all registered users). The licensee has committed to report to the manufacturer, any defects experienced with these suits. The licensee will also share operating experience with NRC and other utilities.
3. Section 20.1703(c)(4)(vii) requires, among other things, written procedures governing respirator storage and quality assurance. The licensee has committed to implement the provisions in the manufacturer's "Instructions For Use" with the minor clarification that the suits will be inspected and removed from its protective packaging outside of the plant's radiological controlled areas, in a way that maintains the integrity of the suit but does not lead to the unnecessary generation of solid radioactive waste.
4. The Mururoa suits are single use only, and are not approved for use in atmospheres that are immediately deleterious to life and health (IDLH).

#### 4.0 CONCLUSION

Based on the testing data provided, and when used in accordance with the applicable manufacturer's instructions, licensee commitments, and requirements of Subpart H of 10 CFR Part 20, the NRC staff concludes that the licensee's request to use, and take credit for an APF of 5,000, with both the Mururoa V4 F1 and Mururoa V4 MTH2 supplied air suits, is acceptable.

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Date: September 29, 2005

Comanche Peak Steam Electric Station

cc:

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