

October 2, 2006

Mr. Randall K. Edington
Vice President-Nuclear and CNO
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - USE OF DELTA PROTECTION SUITS
(TAC NO. MC9280)

Dear Mr. Edington:

By letter dated December 8, 2005, as supplemented by letter dated June 7, 2006, you submitted a request, under Part 20 of Title 10 of the *Code of Federal Regulations*, for authorization to use and take credit for the Mururoa V4 MTH2 air-supplied suits. These suits provide respiratory protection for persons working in areas of airborne radioactivity. The Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and finds it acceptable. The NRC staff's related Safety Evaluation is enclosed.

Sincerely,

/RA/

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure: As stated

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

USE OF RESPIRATORY PROTECTION EQUIPMENT

FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated December 8, 2005, as supplemented by letter dated June 7, 2006, Nebraska Public Power District (NPPD/the licensee) submitted a request to use certain air-supplied suits that provide respiratory protection for persons working in areas of airborne radioactivity. Specifically, the licensee requested authorization (1) to use French-designed respiratory protection equipment that has not been tested and certified by the National Institute of Occupational Safety and Health (NIOSH), (2) to not provide standby rescue persons whenever this equipment is used, and (3) to take credit for an assigned protection factor (APF) of 5000 for this equipment.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation," Subpart H, "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas," 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 NIOSH. Section 20.1703(b) states that a licensee can submit an application to the Nuclear Regulatory Commission (NRC) for authorized use of respiratory protection equipment that has not been tested and certified by NIOSH.

Section 20.1703(f) requires that standby rescue personnel be provided whenever respiratory protection equipment from which an unaided individual would have difficulty extricating himself or herself is used.

Appendix A, "Assigned Protection Factors for Respirators," 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 fit testing, are met (i.e., §20.1703)."

Section 20.1705, "Application for use of higher assigned protection factors," 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.

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 standard ANSI 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 is reasonably achievable (ALARA).

Testing conducted by the Institute for Nuclear Protection and Security Technical Center for Nuclear Equipment Certification (IPSN/CTHEN), the French 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, and to take credit for, the protection provided by the Mururoa V4 MTH2 air-supplied suit from Delta Protection. This respiratory protection equipment has not been certified by NIOSH. However, this model suit has been approved as a single-use suit (a suit that is disposed of after one use) by the IPSN/CTHEN (Certificate No. 0073/197/162/01/96/0001).

The licensee proposes to use the suit in the approved configurations, relative to the suit's form, fit, and function. Specifically, the Mururoa V4 MTH2 will be provided with a reliable source of breathable air capable of supplying a minimum of 20 cubic feet per minute (CFM), and a maximum of 40 CFM.

The European Standard CEN/TC 162N738 (July 1996), "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 suit. 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 the following: 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. The Mururoa V4 MTH2 suit passed all required tests, and it 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 5000 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.

When compared with other air-fed respirators, Mururoa V4 MTH2 suit provides 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 arms, legs, and face.

Safety features also include light-weight (2.5 pounds), one-piece construction with welded gloves and booties with tie straps. Helmets are made with Poly Vinyl Chloride material that provides distortion-free vision and are large enough for wearing a headset. Noise levels are less than 76 decibels at maximum air flow, and air flow can be adjusted by the user for comfort, but cannot be throttled to below the required minimum. The Mururoa V4 MTH2 suit can be used in temperatures up to 131 °F. The suit is constructed with reinforced elbow, knee, and crotch areas.

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. When used as proposed, the design features of the suit, coupled with the required training on escape methods that is given to all suit users, are adequate for the staff to conclude that the standby rescue personnel addressed in Section 20.1703(f) are not required.

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 the use of the Mururoa suit into the licensee's 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 and has successfully used air-supplied hoods in the past, 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 an 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.

2. The licensee indicated that communication channels will be established and maintained between the licensee, the manufacturer, and the United States nuclear industry 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 manufacturer may issue a product recall (e.g., a stop-use advisory or user warning issued to all registered users). This communication network is analogous to the NIOSH-vendor-user link established in the United States of America.
3. Section 20.1703(c)(4)(vii) requires, among other things, written procedures governing respirator storage and quality assurance. Since the suits are approved for only single use, there are no maintenance requirements. The vendor's manufacturing process is inspected annually by ASQUAL, a European quality assurance organization, to ensure that the required level of process and product quality is maintained. Additionally, on a formalized sample basis, the vendor performs destructive and nondestructive testing of the product line.

4.0 REGULATORY COMMITMENTS

The licensee's December 8, 2005, application and June 7, 2006, supplemental letter contains the following regulatory commitments:

COMMITMENT	COMMITMENT NUMBER	COMMITTED DATE OR OUTAGE
The Mururoa V4 MTH2 single use suit will be integrated into the NPPD respiratory program using information provided by the manufacturer.	NLS2005029-01	Prior to first use.
New lesson plans will be developed to train workers on Mururoa's features, donning, use and removal, cautions, and use of mouth strip and tear off strips for routine and emergency egress.	NLS2005029-02	Prior to first use.

Radiation Protection personnel will be provided additional training for selection, approval, issue, equipment set-up, operation and maintenance instructions for the Mururoa suit.	NLS2005029-03	Prior to first use.
NPPD will report any defects of these suits in a timely manner to the United States nuclear industry through our Operating Experience process and to the manufacturer.	NLS2005029-04	Upon discovery NPPD will report any defects of these suits to the United States nuclear Industry through our Operating Experience process and to the manufacturer.
All instructions for use and emergency features supplied by the manufacturer will be included in our procedures/training.	NLS2005029-05	Prior to first use.
NPPD understands that this is a single use suit and will discard each suit after a single use.	NLS2005029-06	Prior to first use.

The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments are best provided by the licensee's administrative processes, including its commitment management program. The above regulatory commitments do not warrant the creation of a regulatory requirement (item requiring prior NRC approval of subsequent changes).

5.0 CONCLUSION

Based on the testing data provided, and use 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 the Mururoa V4 MTH2 is acceptable and that the licensee can take credit for an APF of 5000.

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Date: October 2, 2006

Cooper Nuclear Station

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