



**Pacific Gas and  
Electric Company®**

**James R. Becker**  
Vice President  
Diablo Canyon Operations and  
Station Director

Diablo Canyon Power Plant  
P. O. Box 56  
Avila Beach, CA 93424

805.545.3462  
Fax: 805.545.4234

July 21, 2006

PG&E Letter DCL-06-085  
PG&E Letter HBL-06-015

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2  
Docket No. 50-133, OL-DPR-7  
Humboldt Bay Power Plant, Unit 3  
Request for Authorization for Use of Delta Protection Mururoa BLU Single-Use Suits  
and Assignment of Assigned Protection Factor

Dear Commissioners and Staff:

Pursuant to the provision of 10 CFR 20.1703, "Use of Individual Respiratory Protection Equipment," and 10 CFR 20.1705, "Application for Use of Higher Assigned Protection Factors," Pacific Gas and Electric Company (PG&E) requests authorization to use the French-designed Delta Protection Mururoa BLU respiratory protection suits with an assigned protection factor (APF). PG&E has identified the Delta Protection Mururoa BLU self-fed single use suits as having benefits in contamination control, heat stress reduction, and respiratory protection. Pursuant to 10 CFR 20.1703(b), PG&E must request authorization for use of equipment that has not been tested or certified by the National Institute for Occupational Safety and Health (NIOSH), or for which there is no schedule for testing or certification.

PG&E commits to use the Delta Protection Mururoa BLU self-fed single-use suits consistent with Topical Report (TR), "Topical Report of Delta Protection Mururoa BLU Suit Systems" (TR MURUBLU05NP), and to use the suits within the device configuration, limitations, and conditions of use stated in the Safety Evaluation dated April 10, 2006 (TAC No. MC8994).

Pursuant to 10 CFR 20.1705, PG&E must obtain authorization from the NRC before using assigned protection factors in excess of those specified in Appendix A of 10 CFR 20. Because of the APF of 2000 assigned to the suit, PG&E needs approval for its use. Since these suits have no NIOSH approval for use as a respirator in the United States, PG&E requests authorization for their use as respiratory protection equipment. Additionally, PG&E has determined

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

Callaway • Comanche Peak • Diablo Canyon • Palo Verde • South Texas Project • Wolf Creek

A001  
NMSS01



that 10 CFR 20.1703(f), which requires provision of standby rescue persons, is not applicable to the Mururoa BLU respiratory protection suits. Thus, pursuant to 10 CFR 20.2301, "Applications for Exemptions," PG&E requests an exemption from 10 CFR 20.1703(f).

On October 27, 2005, Delta Protection, a member of the Bacou Dalloz group of personal safety equipment manufacture and supply companies, submitted a TR concerning the BLU models of their Mururoa respiratory protection suits for NRC review and approval. The TR covers two suit systems, the Mururoa BLU Ethyfuge and the Mururoa BLU PVC.

On April 10, 2006, the NRC issued a Safety Evaluation approving the use of both the Mururoa BLU Ethyfuge and the Mururoa BLU PVC model suits for use in accordance with the requirements of 10 CFR Part 20. Based on the April 10, 2006, Safety Evaluation and the commitments stated below in this submittal, PG&E requests authorization to use the Mururoa BLU respiratory suits with an APF of 2000.

Authorization to use these suits will allow PG&E to proceed with procedure changes and complete training necessary for the use of the suits during decontamination and decommissioning efforts that are scheduled to take place at Humboldt Bay Power Plant (HBPP) in the Fall of 2006. Therefore, PG&E is requesting NRC approval by September 21, 2006.

The Enclosure provides the justification for this request. As described in the Enclosure, approval of the request will improve worker safety in areas of airborne radioactivity, and high potential for facial/skin contamination from hot particles. Also, the full body cooling effect will help solve heat stress concerns identified in past projects. This will result in reduced outage time, as well as the reduction of personal contamination events.

PG&E has identified the following as commitments associated with this request:

1. The Delta Protection Mururoa model BLU single use suits will be integrated into the PG&E respiratory program using the information provided by the manufacturer.
2. New lesson plans will be developed to train workers on BLU features, donning, use, removal, cautions and use of mouth strip and tear off strips for routine and emergency egress, as well as the maintenance of the powered air purifying system that forms an integral part of the product.



3. Radiation Protection personnel will be provided additional training for selection, approval, issue, equipment set-up, operation and maintenance instructions for the BLU suit.
4. Procedural guidance will be developed to ensure single use only (other than those segregated for training purposes only), and appropriate suit disposal after each use.
5. Procedural guidance will be established to ensure PG&E-identified defects, and usage problems are reported to the suit manufacturer.
6. Procedure guidance will be established to ensure that only Scott PF 10 P3 or Delta Protection P3 high efficiency particulate filter cartridges are used with the Miconel blower, and that all four filters will be matched and replaced as a set. Additionally, the BLU suits will not be used in an Immediately Dangerous to Life and Health (IDLH) atmosphere.
7. Procedural guidance will be established to prohibit the use of the suits in an IDLH environment.
8. Procedural guidance will be established to ensure unused suit enclosures are stored in their original manufacturer's packaging (in an environment not colder than 32 degrees F, nor hotter than 140 degrees F), for not more than 3 years.
9. Procedural guidance will be established to ensure suits are only donned with a fully charged battery pack, and do not come in contact with anything colder than 41 degrees F, nor hotter than 140 degrees F, during use.

If you have any questions, please contact Jack Chadwick at HBPP, (707) 444-0878, or Mark Somerville at Diablo Canyon Power Plant, (805) 545-4007.

Sincerely,

James R. Becker  
*Vice President - Diablo Canyon Operations and Station Director*



Document Control Desk  
July 21, 2006  
Page 4

PG&E Letter DCL-06-085  
HBL-06-015

dds/0801

Enclosure

cc: Diablo Distribution  
PG Fossil Gen HBPP Humboldt Distribution

cc/enc: Emilio M. Garcia  
John B. Hickman  
Terry W. Jackson  
Bruce S. Mallett  
Alan B. Wang

A member of the **STARS** (Strategic Teaming and Resource Sharing) Alliance

Callaway • Comanche Peak • Diablo Canyon • Palo Verde • South Texas Project • Wolf Creek

**APPROVAL REQUEST FOR THE USE OF DELTA PROTECTION  
MURUROA BLU SINGLE-USE ENCAPSULATING SUIT**

**1.0 INTRODUCTION**

**1.1 PURPOSE**

**1.2 REGULATORY REQUIREMENTS**

**2.0 TECHNICAL JUSTIFICATION**

**2.1 BACKGROUND**

**2.2 IMPLEMENTATION**

**2.3 CONCLUSION**

**2.4 REFERENCES**

## 1.0 INTRODUCTION

### 1.1 PURPOSE

Pacific Gas and Electric Company (PG&E) proposes the use of the Mururoa fully enclosed suit model BLU self-fed single use suit manufactured by Delta Protection, France. The purpose of this letter is to request approval for the use of the suits from Delta Protection, and for authorization to use an assigned protection factor (APF) of 2000 with the Mururoa suits. Because of the advanced safety features for emergency breathing and emergency escape built into these models, PG&E notes that the Mururoa suits can be used without dedicated rescue personnel.

### 1.2 REGULATORY REQUIREMENTS

The following regulatory requirements are relevant to this request:

10 CFR 20.1703(b) allows that if the licensee wishes to use equipment that has not been tested or certified by the National Institute for Occupational Safety and Health (NIOSH), or for which there is no schedule for testing or certification, the licensee shall submit an application to the NRC for authorized use of this equipment.

10 CFR 20.1703(f) requires provision of standby rescue persons, whenever an unaided individual would have difficulty in exiting from an atmosphere-supplying suit.

10 CFR 20.1705, "Application for Use of Higher Assigned Protection Factors," requires the licensee to obtain authorization from the Commission before using assigned protection factors in excess of those specified in Appendix A to Part 20.

10 CFR 20, Appendix A, "APFs for Respirators," lists as item 11, atmosphere supplying respirators (particulate, gases, and vapors), suit in a continuous flow operating mode. No NIOSH approval scheduled 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., 10 CFR 20.1703, "Use of Individual Respiratory Protection Equipment").

10 CFR 20.2301, "Application for Exemptions," allows the NRC to grant an exemption from any of the requirements in Part 20, if the NRC finds that the, "exemption is authorized by law and would not result in undue hazard to life or property."

## 2.0 TECHNICAL JUSTIFICATION

### 2.1 BACKGROUND

By letter dated October 27, 2005, Delta Protection, a member of the Bacou Dalloz group of personal safety equipment manufacture and supply companies, submitted a topical report (TR) concerning the BLU models of their Mururoa respiratory protection suits for NRC review and approval (Reference 1). The TR covers two suit systems, the Mururoa BLU Ethyfuse and the Mururoa BLU PVC. These suits differ only in the composition of the material with which the suit enclosures are made. The BLU model suits combine the powered air filtration feature of a powered-air-purifying respirator (PAPR) with the suit enclosure design of the Delta Protection Mururoa V4, supplied air suit systems. The air purifying feature of the BLU models eliminates the need for a breathable air distribution system (external manifold, regulator, air line hose, etc.) associated with a supplied air suit system. By letter dated April 10, 2006, the NRC issued a Safety Evaluation approving the use of both the Mururoa BLU Ethyfuse and the Mururoa BLU PVC model suits for use in accordance with the requirements of 10 CFR Part 20 (Reference 2).

Bacou Dalloz is a multi-national group of companies with extensive experience in the production and supply of occupational personal protective equipment. They have over 20 years of successful use with Mururoa style (and similar models) suits in European power plants. Their products must be certified to European Community (EC) Standards, as established by the Institute for Nuclear Protection and Security, the European certifying agency comparable to NIOSH.

The Delta Protection Mururoa BLU suits have a hybrid design for a respiratory protection device. The BLU design combines the powered air filtration of a PAPR with the suit enclosure design of the Delta Protection Mururoa V4 models of atmosphere-supplied suits. The Mururoa BLU has an advantage over atmosphere-supplied suits since wearers' movements are not restricted by an air line hose. Also, eliminating the need to set up an air distribution system at the work site saves time and overall radiation exposure. However, because the suit supplies filtered ambient air to the wearer, they are only effective against particulate airborne contamination. In addition, the suits are designed to be used only in atmospheres containing specific contaminants in concentrations that are not immediately dangerous to life or health (IDLH) and which have an oxygen content of at least 19.5 percent by volume.

As part of the technical basis to support NRC approval, Delta Protection provided the European safety certifications of both the Mururoa BLU Ethyfuge and the Mururoa BLU PVC model suits. EC Type Examination Certificates were issued by the German certifying body, BIA, for the Mururoa BLU Ethyfuge model and the Mururoa BLU PVC model (see Section 3.0 in Reference 2).

The EC Standards used to certify the Mururoa BLU models are generally consistent with the pertinent acceptance criteria provided in the Los Alamos National Laboratory Report used to test and authorize the use of air-supplied suits at U.S. Department of Energy sites and the proposed revised NIOSH standards for industrial PAPRs. Both models passed all required tests and both provided a measured average protection level (fit factor) of at least 20,000. Given an overall measured fit factor of 20,000 (averaged over all exercise activities), allowing an APF of 2,000 provides a conservative safety factor for estimating the actual protection provided to the user by the suit in the actual working environment.

The Mururoa BLU suits are constructed with the following design features common with other Mururoa models:

1. Dual zippers (metal zipper inside and plastic zipper outside);
2. 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 left arm, over the head, to the right arm that is used for undressing and for self-rescue in an emergency, such as loss of supplied air;
5. Dual magnetic exhaust valves that provide ventilation and relief of excess pressure in case the suit is squeezed/pinched unexpectedly;
6. Air flow to hands, feet, face, and chest;
7. Low noise levels (less than 75 dB at maximum rated blower speed); and
8. Reinforced elbows, knees, and crotch areas.



In addition, the Mururoa BLU suits are fitted with a battery-powered Micronel Powered Air Purifying blower unit to provide air flow (optional rated settings of 600 l/min [20 cfm] or 400 l/min [14 cfm]) to the suit. A pocket, internal to the suit, holds the blower with attached battery pack in the small of the wearer's back to minimize interference with suit movement. This design minimizes contamination of the blowing unit and battery pack. Ambient air is drawn in and filtered through four external high-efficiency filters and distributed throughout the suit during use. The blower has an internal electronic controller to maintain the selected rated flow output. In the event of a defective controller, the blower unit fails safe to its maximum speed. Two warning alarms associated with the blower units signal the wearer to leave the work area and discontinue use of suit. A continuous tone, clearly audible to the wearer, is sounded within the suit on a low battery voltage condition. The unit is designed to alarm when there are 15 minutes of use remaining. An intermittent tone is sounded if the air flow rate drops below the rated setting. In the event of loss of air flow to the suit, the dual magnetic ventilation valves shut, keeping the suit inflated and providing breathable air to the wearer for several minutes. In addition, the wearer can easily extricate himself/herself by pulling off the mouth strip and then opening the hood, or pulling the egress strip from either forearm over the head toward the other forearm.

Based on these safety features the suit provides for easy and effective self-rescue, thus avoiding asphyxiation if the air flow is interrupted or lost. As a result of external radiation levels present in typical job sites, suit users are typically provided with radiological protection (RP) coverage (closed-circuit television or on-scene RP coverage, and continuous audio communication). This communication/coverage adds to the assistance available to the suit wearer, if needed. Therefore, due to these design features of the suit, coupled with required training of all suit users on escape methods, and limiting the use of the suits to non-IDLH atmospheres, PG&E requests that the NRC grant an exemption from the requirement for standby rescue personnel in Section 20.1703(f).

## **2.2 IMPLEMENTATION**

To implement the requirements identified in the NRC Safety Evaluation dated April 10, 2006, PG&E commits to the following actions:

1. The Delta Protection Mururoa model BLU single use suits will be integrated into the PG&E respiratory program using the information provided by the manufacturer.
2. New lesson plans will be developed to train workers on BLU features, donning, use, removal, cautions and use of mouth strip

and tear off strips for routine and emergency egress, as well as the maintenance of the "powered air purifying system" that forms an integral part of the product.

3. Radiation Protection personnel will be provided additional training for selection, approval, issue, equipment set-up, operation and maintenance instructions for the BLU suit.
4. Procedural guidance will be developed to ensure single use only (other than those segregated for training purposes only), and appropriate suit disposal after each use.
5. Procedural guidance will be established to ensure PG&E-identified defects and usage problems are reported to the suit manufacturer.
6. Procedure guidance will be established to ensure that only Scott PF 10 P3 or Delta Protection P3 high efficiency particulate filter cartridges are used with the Miconel blower, and that all four filters will be matched and replaced as a set. Additionally, the BLU suits will not be used in an IDLH atmosphere.
7. Procedural guidance will be established to prohibit the use of the suits in an IDLH environment.
8. Procedural guidance will be established to ensure unused suit enclosures are stored in their original manufacturer's packaging (in an environment not colder than 32 degrees F, nor hotter than 140 degrees F), for not more than 3 years.
9. Procedural guidance will be established to ensure suits are only donned with a fully charged battery pack and do not come in contact with anything colder than 41 degrees F, nor hotter than 140 degrees F, during use.

### **2.3 CONCLUSION**

By letter dated April 10, 2006, the NRC issued a Safety Evaluation approving the use of both the Mururoa BLU Ethyfuse and the Mururoa BLU PVC model suits for use in accordance with the requirements of 10 CFR Part 20 (Reference 2). Based on the Safety Evaluation, the commitments stated in this submittal, and pursuant to 10 CFR 20.1703(b), PG&E requests authorization to use the Mururoa BLU respiratory suits with an APF of 2000. Also, pursuant to 10 CFR 20.2301 as explained above, PG&E requests an exemption from 10 CFR 20.1703(f).

## 2.4 REFERENCES

1. Delta Protection /Bacou Dalloz MURUBLU05NP, "Topical Report of Delta Protection Mururoa BLU Single Use Suits," dated October 27, 2005. (ADAMS Accession No. ML053060280)
2. Final Safety Evaluation for Delta Protection/Bacou Dalloz Topical Report (TR) MURUBLU05NP, "Topical Report of Delta Protection Mururoa BLU Suit Systems", dated April 10, 2006. (TAC No. MC8994)