UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket Nos. 50-275-OLA
Pacific Gas and Electric Company	)	50-323-OLA
	)	(Construction Period
(Diablo Canyon Nuclear Power	)	Recovery)
Plant, Units 1 and 2)	)	
	)	

AFFIDAVIT

I, John A. Lee, being duly sworn, hereby state as follows:

1. I am employed under contract to Pacific Gas and Electric Company as a Fire Protection engineer in the Nuclear Engineering Services Department of the Nuclear Power Generation Business Unit. My nuclear fire protection experience includes managing the fire protection program of an operating utility, participating in NRC Appendix R audits, functioning as the fire protection consultant on utility audits, and leading projects which concentrate on assessing and upgrading nuclear fire protection programs. My technical expertise is in the area of fire endurance of passive fire protection features, and I have been a consultant to the Electric Power Research Institute regarding issues concerning Thermo-Lag fire barrier material.

2. I am a registered fire protection engineer and registered civil engineer under the laws of the State of California.

3. I have been asked to address question number 2 in the April 16, 1993, Atomic Safety and Licensing Board "Memorandum (Questions for Parties)". Question number 2 asks what rationale, if any, explains the apparent inconsistency between the NRC Staff's evaluation of Thermo-Lag as combustible in NRC Information Notice 92-82, dated December 15, 1992, and PG&E's evaluation of Thermo-Lag as noncombustible under Underwriter Laboratories standards in its September 28, 1992, response to Supplement 1 of NRC Bulletin 92-1.

4. I have provided the information which forms the basis for the attached "Response to Atomic Safety and Licensing Board Question Regarding Thermo-Lag Combustibility."

5. The information contained in the attached "Response to Atomic Safety and Licensing Board Question Regarding Thermo-Lag

Combustibility" is true and correct to the best of my knowledge and belief.

John A. Lee

STATE OF CALIFORNIA
CITY AND COUNTY OF SAN FRANCISCO

Sworn and subscribed to before me this 7th day of May, 1993

OFFICIAL SEAL
SAUNDRA V. JACKSON
NOTARY PUBLIC - CALIFORNIA
San Francisco County
My Commission Expires Jan. 10, 1994

Saundra V. Jackson
Notary Public

January 10, 1994
My commission expires:

PACIFIC GAS AND ELECTRIC COMPANY
RESPONSE TO ATOMIC SAFETY AND LICENSING BOARD QUESTION
REGARDING THERMO-LAG COMBUSTIBILITY

In its April 16, 1993, order entitled "Memorandum (Questions for Parties)," the Nuclear Regulatory Commission Atomic Safety and Licensing Board asked the parties to address the following question at a prehearing conference, now scheduled for May 11-12, 1993:

> "2. With respect to the second late-filed contention, what rationale, if any, explains the apparent inconsistency between the Staff's evaluation of Thermo-Lag as being 'combustible' (NRC Information Notice 92-82, dated December 15, 1992, submitted as Attachment 2 to MFP's second late-filed contention), based on NIST tests, and the Applicant's designation of Thermo-Lag material as being 'noncombustible' under Underwriter Laboratories standards in its submission of its interim compensatory measures on September 28, 1992 (Enclosure, Attachment 1, at 2)(approved by the Staff by letter dated October 27, 1992)?"

PG&E has reviewed the Thermo-Lag combustibility test results contained in NRC Information Notice (IN) 92-82 in light of: (1) the NRC's definition of a noncombustible material under Branch Technical Position (BTP) CMEB 9.5-1, Section B.4 and Generic Letter 86-10; (2) PG&E's previous qualification of Thermo-Lag for use as a noncombustible radiant energy shield in DCPP Units 1 and 2 containments based on tests performed by Underwriters Laboratories in accordance with ASTM E-84; and (3) an engineering assessment by PG&E of the specific application of Thermo-Lag in containment, to determine whether or not the Thermo-Lag, "in the form in which it is used and under the conditions anticipated" (BTP CMEB 9.5-1, Section B.4), could become a combustible material in such a way as to negate its effectiveness as a radiant energy shield and result in fire damage to safe shutdown equipment.

Based on this review, including the engineering assessment of the specific application of Thermo-Lag for radiant energy shields within containment, PG&E concluded that Thermo-Lag meets the NRC definition of noncombustible material (BTP CMEB 9.5-1, Section B.4) in its specific application, and continues to provide an acceptable level of protection against the anticipated fire hazard within containment. Therefore, there is no inconsistency between IN 92-82 and PG&E's response to Supplement 1 to Bulletin 92-01, and there is no current safety concern relating to PG&E's use of Thermo-Lag as a noncombustible radiant energy shield in DCPP containment. This conclusion is based on:

(1) The NRC's definition of noncombustible material is provided in BTP CMEB 9.5-1, Section B.4 and reiterated in GL 86-10 as follows:

> "a. A material which in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat.
>
> b. Material having a structural base of noncombustible material, as defined in a., above, with a surfacing not over 1/8-inch thick that has a flame spread rating not higher than 50 when measured using ASTM E-84 Test 'Surface Burning Characteristics of Building Materials.'"

In performing the testing described in IN 92-82, NIST employed the definition of noncombustible provided by the Uniform Building Code (UBC). That definition is similar to the above NRC definition. Part b) of the UBC definition applies to flame spread, and part b) of the NRC definition is the same. Part a) of the UBC definition, which addresses base material burning characteristics, prescribes that the material must conform to ASTM E-136, while the NRC

definition addresses base material burning characteristics under anticipated conditions. Thus, the difference between the two definitions is that the NRC definition expressly allows consideration of plant unique applications, whereas the UBC definition may not. The basis for PG&E's plant specific application is summarized below under items (2) and (3).

(2) PG&E previously has qualified Thermo-Lag for use as a radiant energy shield based on reliance on Underwriters Laboratories (UL) testing in accordance with ASTM E-84. The UL tests demonstrated that Thermo-Lag has a flame spread of 5, well within the BTP CMEB 9.5-1, Section B.4 flame spread requirement of 50 or less. This very low flame spread of the base material (Thermo-Lag does not utilize a surface material) indicates that the material does not exhibit a propensity to burn. Thus, parts a) and b) of BTP CMEB 9.5-1, Section B.4 were satisfied and the material was considered noncombustible.

The NRC has not prescribed a specific test as a determinant of material igniting, burning, or supporting combustion (Part a. of BTP CMEB 9.5-1, Section B.4) similar to ASTM E-136 as used by NIST in the tests reported by IN 92-82, either in Appendix R regulations or implementing guidance. Therefore, the ASTM E-136 test results reported IN 92-82 do not invalidate or contradict PG&E's application of the previous UL test results under ASTM E-84 used to qualify the Thermo-Lag. ASTM E-136 tests the material in a more severe environment than necessary for PG&E's specific application as a radiant energy shield. In addition, as an information notice,

IN 92-82 by definition does not impose new requirements on licensees to retest or requalify Thermo-Lag.

(3) PG&E's engineering assessment of the fire hazards in the vicinity of the Thermo-Lag radiant energy shields in containment indicates that the Thermo-Lag is not expected to be subject to the extreme temperatures or the presence of large heat fluxes similar to the conditions under which the NIST tested Thermo-Lag as reported in IN 92-82. Therefore, in its specific application by PG&E, Thermo-Lag is a noncombustible material as defined by the NRC in BTP CMEB 9.5-1, Section B.4.

For these reasons, the NIST combustibility test results reported in IN 92-82 are not inconsistent with PG&E's conclusion that its Thermo-Lag radiant energy shields are noncombustible and will perform the required function as a radiant energy shield protecting safe shutdown equipment from a fire in containment.

However, this overall combustibility issue has been mooted by PG&E's decision earlier this year to voluntarily replace the Thermo-Lag in DCPP Units 1 and 2 containments with 3M material. The Unit 2 replacement was completed during the recent Unit 2 fifth refueling outage, and the Unit 1 replacement is scheduled for completion during the upcoming Unit 1 sixth refueling outage, scheduled for Spring of 1994. (See PG&E Letter No. DCL-93-109, April 30, 1993).

PG&E understands, based on communications from the Nuclear Management and Resources Council (NUMARC), that the NRC staff plans to issue a supplement to Generic Letter 92-08 in the summer of 1993

that may include more specific information relative to the generic Thermo-Lag combustibility issue. In the meantime, PG&E continues to monitor NUMARC's Thermo-Lag evaluation program, including NUMARC's evaluation of any further testing needs related to the combustibility issue. If the NRC provides new or revised generic guidance to licensees on the applicable standards for determining combustibility of Thermo-Lag in accordance with BTP CMEB 9.5-1, PG&E will evaluate and, if necessary, upgrade its current Appendix R fire protection program in light of that guidance.

Pacific Gas and Electric Company

77 Beale Street, Room 1451
P.O. Box 770000
San Francisco, CA 94177
415/973-4684
Fax 415/973-2313

Gregory M. Rueger
Senior Vice President and
General Manager
Nuclear Power Generation

April 30, 1993

PG&E Letter No. DCL-93-109

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Information Relating to Response to Supplement 1 of Bulletin 92-01

Gentlemen:

PG&E submitted PG&E Letter No. DCL-92-208 (HBL-92-060), dated September 28, 1992, in response to Supplement 1 of Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function," dated August 28, 1992. In DCL-92-208, PG&E noted the fire areas at Diablo Canyon Power Plant Units 1 and 2 where Thermo-Lag was used as a 1 or 3-hour fire barrier.

Also in DCL-92-208, PG&E included a discussion of the Thermo-Lag used for radiant energy heat shields in the Units 1 and 2 containments. DCL-92-208 noted that these radiant energy heat shields are outside the scope of Bulletin 92-01 and, therefore, do not require interim compensatory measures. This is to inform you that, subsequent to DCL-92-208, PG&E has elected to replace the Thermo-Lag used in these heat shields.

Accordingly, Thermo-Lag heat shield material in Unit 2 containment was replaced with 3M material during the recent Unit 2 fifth refueling outage. The Unit 1 containment Thermo-Lag heat shield material is scheduled for replacement with 3M material during the upcoming Unit 1 sixth refueling outage, scheduled to begin in the Spring of 1994.

Sincerely,

Gregory M. Rueger

cc: Ann P. Hodgdon
John B. Martin
Mary H. Miller
Sheri R. Peterson
CPUC
Diablo Distribution

6094S/85K/ALN/2242

9305110237 1P

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket Nos. 50-275-OLA
Pacific Gas and Electric Company	)	50-323-OLA
	)	(Construction Period
(Diablo Canyon Power	)	Recapture)
Plant, Units 1 and 2)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "PACIFIC GAS & ELECTRIC COMPANY'S INITIAL RESPONSE TO QUESTIONS FOR PARTIES" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk (*), by hand delivery, or as indicated by the (†) symbol, by deposit for Federal Express delivery, this 7th day of May, 1993.

Charles Bechhoefer, Chairman*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Jerry R. Kline*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555
Attn: Docketing and Service Section
(original + two copies)

Adjudicatory File
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Frederick J. Shon*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Office of Commission Appellate Adjudication
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Ann P. Hodgdon, Esq.*
Office of the General Counsel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Peter Arth, Jr.
Edward W. O'Neill
Peter G. Fairchild
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Nancy Culver, President
Board of Directors
San Luis Obispo Mothers for Peace
P.O. Box 164
Pismo Beach, CA 93448

Robert R. Wellington, Esq.
Diablo Canyon Independent Safety
Committee
857 Cass Street, Suite D
Monterey, CA 93940

Robert Kinosian
California Public Utilities
Commission
505 Van Ness, Rm. 4102
San Francisco, CA 94102

Mr. Gregory Minor
MHB Technical Associates
1723 Hamilton Ave., Suite K
San Jose, CA 95125

Truman Burns
California Public Utilities
Commission
505 Van Ness, Rm. 4103
San Francisco, CA 94102

Christopher J. Warner, Esq.(†)
Richard F. Locke, Esq.
Pacific Gas & Electric Company
77 Beale Street
San Francisco, CA 94106

Jill ZamEk(†)
1123 Flora Road
Arroyo Grande, CA 93420

David A. Repka

David A. Repka

Counsel for Pacific Gas &
Electric Company