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September 28, 1992

PG&E Letter Nos. DCL-92-208  
HBL-92-060



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  
Docket No. 50-133, OL-DPR-7  
Humboldt Bay Power Plant, Unit 3  
Response to Supplement 1 of NRC Bulletin 92-01

Gentlemen:

PG&E's response to Supplement 1 of NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function," dated August 28, 1992, is provided in the enclosure. PG&E is following the efforts coordinated by NUMARC regarding the industry fire barrier operability assurance and restoration efforts. The NUMARC program includes establishment of a database of Thermo-Lag 330 tests, development of guidance for test applicability to as-built configurations, development of more detailed generic installation guidance, and consideration and coordination of additional Thermo-Lag 330 testing as appropriate. Results of the NUMARC program will be reviewed for applicability to DCPD when available.

Sincerely,

*W. Anderson for Gregory M. Rueger*

Gregory M. Rueger

cc: Biff Bradley  
Ann P. Hodgdon  
John B. Martin  
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Enclosure

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*W. Anderson*  
*JEH 9/11*



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ENCLOSURE

RESPONSE TO SUPPLEMENT 1 OF NRC BULLETIN 92-01

Supplement 1 to NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function," requested licensees to: (1) identify areas of the plant that use either 1- or 3-hour pre-formed Thermo-Lag 330 panels and conduit shapes for the protection and separation of the safe shutdown capability; (2) in those plant areas in which Thermo-Lag fire barriers are used in raceways, walls, ceilings, equipment enclosures, or other areas to protect cable trays, conduits, or separate redundant safe shutdown functions, implement in accordance with plant procedures the appropriate compensatory measures consistent with those which would be implemented by either the plant Technical Specifications or the operating license for an inoperable fire barrier; and (3) provide a written notification stating whether the licensee has or has not taken the above actions, and where the licensee has declared fire barriers inoperable, describe the measures being taken to ensure or restore fire barrier operability.

PG&E reviewed the applicability of Supplement 1 to Bulletin 92-01 for Humboldt Bay Power Plant (HBPP) and determined that HBPP does not use Thermo-Lag fire barriers. PG&E also reviewed Supplement 1 for Diablo Canyon Power Plant (DCPP). As a result of the expansion of scope in Supplement 1, PG&E has added three additional fire areas (Nos. 9, 10, and 11 of Table 1) to the fire areas previously identified in PG&E's original response to Bulletin 92-01. The fire areas in which Thermo-Lag is used as a 1- or 3-hour fire barrier are itemized in Table 1.

DCPP Technical Specification (TS) 3.7.10, "Fire Barrier Penetrations," requires for non-functional fire barrier penetrations either that an hourly fire watch be established in combination with operable fire detectors or that a continuous fire watch be established. As a result of the uncertainties associated with qualification of Thermo-Lag fire barrier systems, PG&E has taken action consistent with TS 3.7.10 for the Thermo-Lag fire barriers in the fire areas described in Table 1, until such time that information is available to verify the adequacy of these Thermo-Lag systems or to verify the level of protection provided by such systems.

As a conservative measure to augment the approved Appendix R Fire Protection Program, DCPP has maintained hourly fire watches in effect since the beginning of commercial operation in all safe shutdown fire areas (except in the Units 1 and 2 containments and intake structure) where DCPP credits Appendix R safe shutdown circuits. Also, in general, the combustible loadings for the DCPP fire areas with Thermo-Lag are relatively low. As interim compensatory measures in response to the original Bulletin and to Supplement 1, PG&E expanded the scope of the hourly fire watches to include the intake structure and verified that the fire areas with operable fire detection equipment where DCPP credits the use of Thermo-Lag to protect Appendix R safe shutdown circuits have been covered by the hourly roving fire watches. In addition, PG&E posted continuous fire watches for Fire Areas 22-C and 13-E. Fire Area 22-C has operable suppression (automatic wet pipe) capability, but does not have operable fire detection equipment. Fire Area 13-E has neither detection or suppression capability.



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In PG&E's original response to Bulletin 92-01 (PG&E letter DCL-92-173, dated July 29, 1992), PG&E had conservatively included the two containment Fire Areas 1 and 9, which each have one 1.5 inch  $\phi$  conduit and boxes made from pre-formed Thermo-Lag panels for fire junction boxes. These Thermo-Lag systems in the containment buildings are located in the annular areas, which are relatively free of combustibles. The major fire hazards in the containment buildings are the reactor coolant pump (RCP) motor oil and grease, but each RCP is provided with an automatic wet-pipe sprinkler system. In addition, the containment buildings are provided with both smoke and flame detection systems. However, PG&E considers these Thermo-Lag installations in the containments to be radiant energy heat shields, and not 1- or 3-hour fire barriers. The basis for considering these installations to be heat shields is presented in Attachment 1. As discussed with the NRC, PG&E is of the understanding that Thermo-Lag installations considered to be heat shields rather than barriers do not fall under the requirements of Bulletin 92-01 or Supplement 1, and therefore PG&E has not included Fire Areas 1 and 9 in this response to Supplement 1.

Also, in PG&E's original response to Bulletin 92-01, PG&E had included Fire Area 19-A, which has two 2-inch  $\phi$  conduits and boxes made from pre-formed Thermo-Lag panels for two junction boxes. Fire Area 19-A has operable fire suppression capability and is included in the scope of the hourly fire watches that PG&E has maintained since the beginning of commercial operation. PG&E has determined that this Fire Area need not have been included in the scope of Bulletin 92-01 and Supplement 1. This determination is based on the consideration that the Thermo-Lag was installed as a prudent measure to protect the circuits for auxiliary saltwater solenoid valves FCV-602 and FCV-603, only one of which needs to be operable to achieve Mode 3 (Hot Standby). In the event of a fire in this area, the circuits for these valves could be disabled by hot shorts. If both valves are postulated to be made inoperable through the hot shorts, then as described in Emergency Operating Procedure (EP) M-10, the valves may be made operable by venting. Fire Area 19-A therefore has not been included in the scope of Supplement 1.

With respect to Fire Area 3-L, this Area has partial smoke detection, but PG&E has determined that the detectors are not in close enough proximity to the Thermo-Lag enclosure to credit as a compensatory measure. The Thermo-Lag enclosure is used to protect emergency lighting circuits, and not safe shutdown functions per se, to ensure that lighting is available for operator access to valves 8805A and 8805B. In conjunction with the hourly fire watch, PG&E has installed 8-hour battery-operated lights to ensure that a lighted access path for operators is available. In addition, the room in which the Thermo-Lag enclosure is installed is designated as a "No Storage Area".

While PG&E has stationed continuous fire watches in the two remaining areas where Thermo-lag is credited and that do not have fire detection equipment, PG&E proposes to use a portable detection system (PDS) for these areas, in conjunction with an hourly fire watch in place of the continuous fire watch. An evaluation performed in accordance with the guidance of 10 CFR 50.59 is provided as Attachment 2 for the use of the PDS. PG&E proposes to implement use of the PDS following concurrence from the NRC.



Table 1

## Thermo-Lag Installations

| Fire Area (FA)                                      | Thermo-Lag Installation  | Detection | Suppression   | Compensatory Actions   | Fire Duration (minutes) |
|---|--|-----------|---|--|-------------------------|
| 1. FA 3-BB<br>(Unit 1 Containment Penetration Area) | One 3" $\phi$ conduit; box made from pre-formed panels for one 1" $\phi$ conduit; boxes made from pre-formed panels for 5 junction boxes   | Smoke     | Sprinklers  | Hourly Fire Watch  | 17                      |
| 2. FA 3-CC<br>(Unit 2 Containment Penetration Area) | Two 3" $\phi$ conduits; boxes made from pre-formed panels for 6 junction boxes   | Smoke     | Sprinklers  | Hourly Fire Watch  | 11                      |
| 3. FA 3-L<br>(85 Foot Elevation Auxiliary Building) | One 4" $\phi$ conduit; box made from pre-formed panels for 1 junction box  | None      | None  | Continuous Fire Watch, or Hourly Fire Watch with Temporary 8-hour Lights to ensure a lighted path in case of Thermo-Lag failure causing loss of vital lights | 15                      |
| 4. FA 4-B<br>(Access Control)                       | One 4" $\phi$ conduit  | Smoke     | Sprinklers  | Hourly Fire Watch  | 32                      |
| 5. FA 5-A-4<br>(Unit 1 480 V Switchgear Room)       | One 2" $\phi$ conduit  | Smoke     | None  | Hourly Fire Watch  | 34                      |
| 6. FA 5-B-4<br>(Unit 2 480 V Switchgear Room)       | One 2" $\phi$ conduit  | Smoke     | None  | Hourly Fire Watch  | 34                      |
| 7. FA 22-C<br>(Unit 2 Diesel Generator Corridor)    | Two 2" $\phi$ conduits   | None      | Sprinklers  | Continuous Fire Watch, or Portable Detection System with Hourly Fire Watch   | 9                       |
| 8. FA 30-A-5<br>(Units 1 and 2 Intake Structure)    | Individual boxes made from pre-formed panels for two 1" $\phi$ conduits, two 2" $\phi$ conduits, and four 3" $\phi$ conduits; boxes made from pre-formed panels for 2 junction boxes | Smoke     | High pressure CO <sub>2</sub> for circulating water pump motors | Hourly Fire Watch  | 19                      |



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Table 1

Thermo-Lag Installations  
(cont'd)

| Fire Area (FA)  | Thermo-Lag Installation   | Detection | Suppression | Compensatory Actions   | Fire Duration (minutes) |
|---|---|-----------|-------------|--|-------------------------|
| 9. FA 10<br>(Unit 1 - 12 kV<br>Switchgear Room)                   | Thermo-Lag/Pyrocrete<br>Barrier                                 | Smoke     | None        | Hourly Fire<br>Watch   | 23                      |
| 10. FA 20<br>(Unit 2 - 12 kV<br>Switchgear Room)                  | Thermo-Lag/Pyrocrete<br>Barrier                                 | Smoke     | None        | Hourly Fire<br>Watch   | 23                      |
| 11. FA 13-E/11-B-2<br>(107 Foot<br>Elevation Turbine<br>Building) | Partial Wall constructed<br>of pre-formed Thermo-<br>Lag panels | None/None | None/None   | Continuous Fire<br>Watch, or Portable<br>Detection System<br>with Hourly Fire<br>Watch | 2 min/<br>2 min         |



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## Attachment 1

PG&E considers the Thermo-Lag configurations inside the Units 1 and 2 containments to be radiant energy heat shields. The basis for this consideration is provided in the following clarification.

### 10 CFR 50, Appendix R, Requirements

The requirements of Appendix R for "Fire protection of safe shutdown capability" are outlined under Section III.G.2 of Appendix R. Specifically, Appendix R requires that one of the following fire protection means be provided inside non-inerted containments:

- III.G.2.d: "Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards";
- III.G.2.e: "Installation of fire detectors and an automatic fire suppression system in the fire area"; or
- III.G.2.f: "Separation of cables and equipment and associated nonsafety circuits of redundant trains by a noncombustible radiant energy shield."

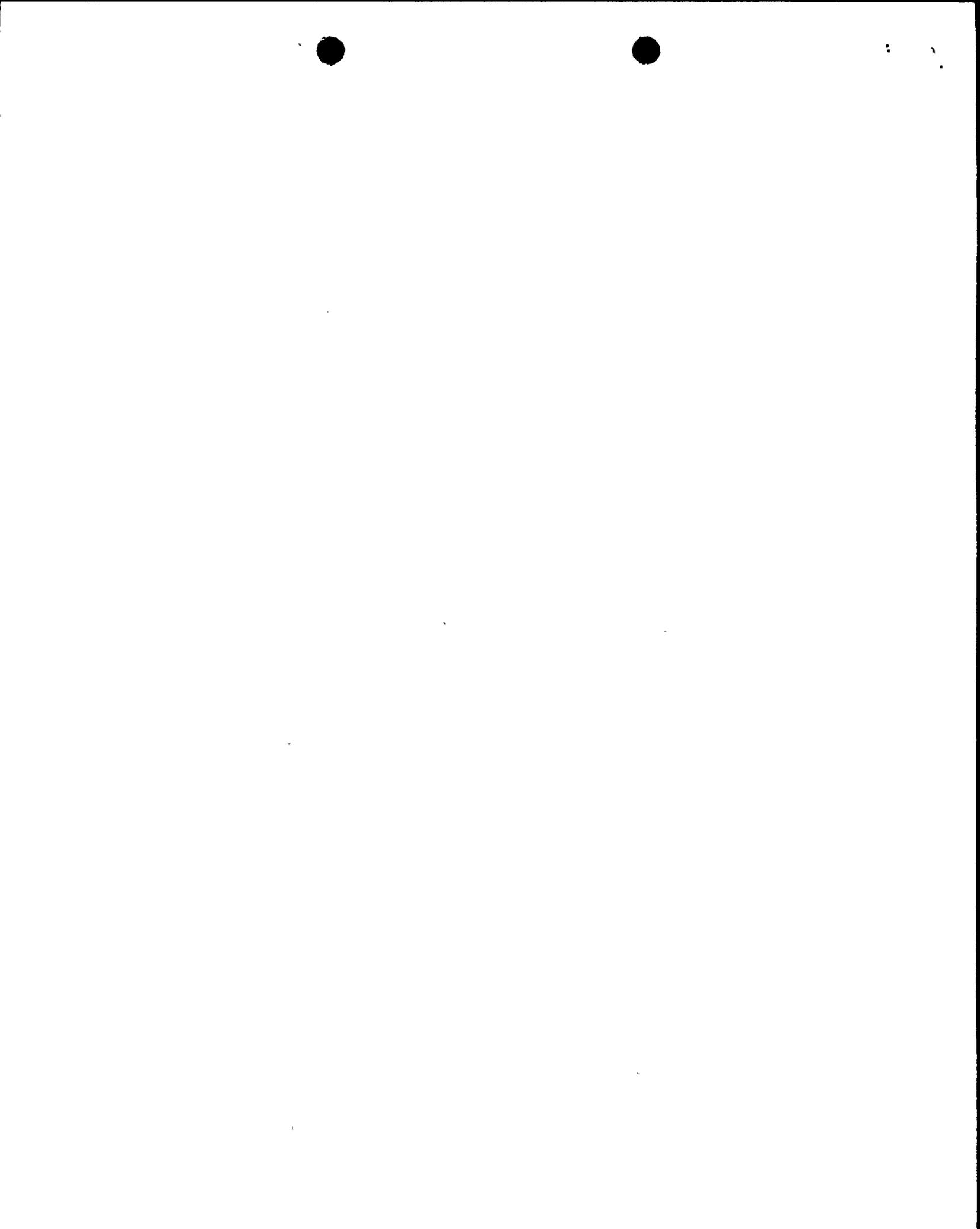
### PG&E Submittals

On September 23, 1983, PG&E provided supplemental information to the NRC regarding PG&E's compliance with Section III.G, III.J, III.L, and III.O of Appendix R. In Item 1 of the Enclosure to that letter, PG&E committed to "provide either a radiant energy shield or 1-hour rated fire barriers for the reactor coolant temperature instrumentation."

In Section 9.6.1.1 of Supplemental Safety Evaluation Report 23, the NRC staff concluded that "With the installation of a 1-hour fire-rated barrier or radiant energy shield..." the technical requirements of Section III.G.2 of Appendix R in containment would be met and that a deviation from the requirements of Appendix R was no longer necessary. Due to the fact that there are no provisions for use of a 1-hour fire-rated barrier to comply with Section III.G.2 of Appendix R inside containment, it is concluded that the NRC staff considered the Thermo-Lag barrier as a radiant energy shield.

### Generic Letter (GL) 86-10

Further, Section 3.7.1 of GL 86-10 provides the NRC's interpretation of "noncombustible radiant energy shields." As outlined in GL 86-10, radiant energy shields are provided so that "radiant energy from a fire involving the cables from one division would not degrade or ignite cables of the other divisions. The shields also direct the convective energy from the fire away from the surviving division." The example cited in GL 86-10 for a radiant energy shield is a 1/2-inch marinite board in a metal frame. The 1/2-inch thickness marinite board provides a fire endurance of 1/2 hour, which



corresponds to the guidelines outlined in Section C.7.a(1)b of Branch Technical Position (BTP) CMEB 9.5-1. Within the response provided in GL 86-10 is a position in which the NRC has previously accepted "nonfire-rated radiant energy shields that have been demonstrated by fire hazards analysis to provide an acceptable level of protection against the anticipated hazard of a localized fire within containment."

Thermo-Lag is classified as a "noncombustible" material based on tests, performed in accordance with ASTM E84 Standards by Underwriters Laboratories, with the following results:

|                  |    |
|------------------|----|
| Flame Spread     | 5  |
| Fuel Contributed | 0  |
| Smoke Developed  | 15 |

Section 5.4.1 of BTP APCS 9.5-1 identifies noncombustible materials as those whose properties exhibit a flame spread, smoke, and fuel contribution of 25 or less when tested in accordance with ASTM E84 Standards.

#### Conclusion

In accordance with the above discussion, PG&E considers the Thermo-Lag installations in the Units 1 and 2 containments to be radiant energy heat shields. As discussed with the NRC, PG&E is of the understanding that Thermo-Lag installations considered to be heat shields rather than barriers do not fall under the requirements of Bulletin 92-01 or Supplement 1; therefore, PG&E has not included Fire Areas 1 and 9 in this response to Supplement 1.



## Attachment 2

### 10 CFR 50.59 Safety Evaluation

#### DESCRIPTION OF CHANGE

This safety evaluation evaluates the acceptability of the design of the Portable Detection System (PDS) for use in DCPD Units 1 and 2. This safety evaluation will evaluate procedures that will control operation of the PDS and evaluate the technical review of the design of the PDS. The following documents will be covered by this safety evaluation:

Surveillance Test Procedure (STP) I-34J, "Portable Detection System Installation Testing and Operation Procedure"

STP I-34K, "Portable Detection System Weekly Test"

Compliance Review with NFPA 72 (1990), "Standard for the Installation, Maintenance, and Use of Protective Signaling Systems"

The PDS is a self-contained, portable fire detecting system that consists of a panel, UL-listed, commercial-grade fire detectors, cables, and end-of-line connectors. The PDS is powered by 120V AC power and has a 12V DC battery backup. The panel is an enclosed metal case with a hinged lockable door. The panel contains switches for AC and battery power, buzzer, detector zones 1 and 2, and external bell/strobe lights (optional). The panel has indicator LEDs for alarm, trouble, and normal conditions for detector zones 1 and 2. The panel also has LEDs for normal and trouble indication for AC power and a telephone line, and for battery power operation and low battery power. The PDS uses a voice-synthesized dialer to communicate/transmit supervisory and alarm signals via messages. The messages specify the location of the panel and the type of signal (trouble or alarm).

The PDS will be used, in lieu of a permanently installed fire detection system, as an "operable fire detector" to assist the plant in detecting fires. The limiting condition for operation for TS 3/4.7.10, "Fire Barrier Penetrations," requires that "all fire barrier penetrations (including cable penetration barriers, fire doors, and fire dampers) in fire area boundaries protecting safety-related areas shall be functional." Whenever the fire barrier penetration is non-functional or cannot perform its intended design function, TS 3/4.7.10 specifically requires that:

With one or more of the above required fire barrier penetrations non-functional, within 1 hour, either establish a continuous fire watch on at least one side of the affected penetration, or verify the OPERABILITY of fire detectors on at least one side of the non-functional fire barrier and establish an hourly fire watch patrol.

There are two Thermo-Lag configurations (Fire Areas 22-C and 13-E) that do not have a detection system that fulfills the intent of TS 3.7.10, and therefore a continuous fire watch has been established. In order to provide a means of fire protection/prevention without reducing the effectiveness of the existing fire protection capability, PG&E has proposed to use the PDS, in conjunction



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with an hourly fire patrol and administrative controls, as an acceptable compensatory measure for the Thermo-Lag fire barriers.

The design of the PDS was reviewed against the requirements of the 1990 edition of NFPA 72. Because NFPA 72 is written primarily for fire detection systems that are permanently installed, it is expected that the PDS will not comply fully with the requirements/recommendations provided in NFPA 72. The basis for acceptability of "deviations" or "complies with intent" to NFPA 72 has been evaluated with respect to using the PDS in lieu of a permanently installed fire detection system. Because a fire patrol will be provided on an hourly basis to check the PDS connections, power supply, operation, and phone line availability, and procedures for functional tests will be implemented, the use of the PDS was determined to be technically compatible with a permanently installed detection system. Acceptability of the implementing procedures, in conjunction with an hourly fire patrol, will ensure that the PDS will perform its intended function. Thus, the effectiveness of the Fire Protection Program is maintained.

#### SCREENING CRITERIA FOR DETERMINING THE NEED FOR A SAFETY EVALUATION

##### 1. 10 CFR 50.59 Safety Evaluation Screen

- a) Yes  No  Does it involve a change to the Technical Specifications (Appendix A of the DCPD Operating License) or the license itself? (NOTE: if the answer to this question is "YES", skip b-e and proceed to part 2, the Environmental Protection Plan screen.)
- b) Yes  No  Does it involve a change to the DCPD facility as described in the FSAR?
- c) Yes  No  Does it involve a change to a procedure (including the Fire Protection Plan or procedures) as described in the FSAR (i.e., Does it change system operation or administrative control over plant activities as described in the FSAR)?
- d) Yes  No  Does it involve a test or experiment that could result in the operation of the facility in a manner not described in the FSAR or which could have an adverse effect on nuclear safety?
- e) Yes  No  Does it involve a change to DCPD facilities or procedures that could affect nuclear safety in a way not previously evaluated in the FSAR because it was not anticipated?



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2. Environmental Protection Plan Screen

Yes \_\_\_\_\_ No  X

Does it involve a change to DCPD procedures or design which could affect the environment, or a change to the Environmental Protection Plan? (Appendix B of the DCPD Operating License.)

3. Emergency Plan Screen

Yes \_\_\_\_\_ No  X

Does it involve a change to the DCPD Emergency Plan (EP) or emergency response equipment or procedures described in the EP?

4. Security Plan Screen

Yes \_\_\_\_\_ No  X

May it involve a change to the Security Plan or Safeguards Contingency Plan or to equipment or procedures described in the Security Plan or Safeguards Contingency Plan?

The PDS, in conjunction with an hourly fire patrol, may be used in lieu of a permanently installed detection system to fulfill the action statement for TS 3/4.7.10. TS fire barriers are part of the Fire Protection Program. Use of the PDS is a change to system operation and administrative control of plant activities. Administrative controls are provided when using the PDS to ensure use of the 120V AC power supply and dedicated telephone line does not impact other DCPD commitments (i.e., Security Plan or Emergency Plan).

10 CFR 50.59 SAFETY EVALUATION

As described in the Safety Evaluation Screen, the PDS, in conjunction with an hourly fire patrol and administrative controls, will be used as a compensatory measure for Thermo-Lag barriers that do not have operable fire detectors.

The design of the PDS was compared against the requirements/recommendations of NFPA 72 (1990), and where the design "deviated" or "complied with the intent" of NFPA 72, a basis for acceptability was provided. Based on the intended use of the system, in conjunction with an hourly fire patrol and administrative controls, which will verify PDS connections, power supply, operation, and phone line availability, and the completion of functional tests, the use of the PDS was determined to be technically compatible with a permanently installed detection system. A dedicated phone line will be used with the PDS to ensure party lines and connections for existing phones and phone lines are not affected.

Operation of the PDS will require a 120V AC power supply source and an operable telephone line. In addition, a backup battery is provided for the PDS in the event of a loss of a power source. Detectors are installed in one or two independent zones (up to 25 detectors per zone) per PDS panel, and when activated (by smoke particles or heat), will transmit a signal to the PDS control panel. The detectors are connected to the panel via cables. The cable wires are soldered to nine pin connectors that are screwed to female receptacles on the detectors and panel. This type of connector ensures there will be no inadvertent disconnects to cause false alarms or render the PDS



inoperable. The dialer will call eight (8) designated phone numbers to notify the recipient of a fire in the specified location. The phone numbers to be called are: Unit 1 Control Room, Unit 2 Control Room, Fire Watch Supervisor, Shift Supervisor, Central Alarm Station, Secondary Alarm Station, Industrial Fire Office, and the Safety Manager. The PDS dialer will continue to call each of these stations until an individual answers the phone and takes action to investigate the location of the alarm and reset the panel. Investigation of the fire alarm in accordance with existing emergency procedures will be conducted, and followup actions will be taken accordingly.

Upon installation, the PDS will be tested in accordance with the installation testing and operation procedure (STP I-34J). This procedure also provides instructions for care and maintenance while the PDS is in storage status. While the PDS is in use, the PDS will undergo a weekly functional test (STP I-34K) and a 6-month functional test (STP I-34L). The performance of these tests ensures that the PDS is functional by testing the alarm and trouble circuits for continuity, manually notifying the designated phone numbers on the dialer, and verifying that the proper messages are being transmitted from the recorder. In addition, the 6-month functional test ensures the PDS panel cables and detectors are functional (i.e., detectors are checked for sensitivity and activated using test gas). If at any point the hourly fire patrol or the individual responsible for the test determines that the operability of the PDS is not acceptable, a continuous fire watch is posted within an hour in accordance with TS 3/4.7.10 and the PDS is removed.

Yes \_\_\_\_\_ No X May the probability of occurrence of an accident previously evaluated in the FSAR be increased?

Justification: The PDS may be used as a means of fire detection in support of TS 3/4.7.10. The PDS will be placed in an area that currently does not have any detection. The PDS will utilize 120V AC and a telephone line for operation, and will not interact with equipment important to safety or its support equipment. Therefore, the occurrence of design basis accidents previously evaluated in the FSAR Update will not be affected.

Fire detectors will be connected to the PDS via cables, thereby introducing transient combustible materials to the area of concern. The transient combustible loading introduced by the PDS will be reviewed prior to installation to ensure transient combustible loading limits are not exceeded. In order to ensure the cables do not dangle and interact with equipment, they will be attached with wire ties in accordance with Administrative Procedure (AP) C-65, "Temporary Attachments." Each PDS could, at most, monitor 25 fire detectors per zone (the PDS can accommodate 2 zones), and each detector on each zone is connected with cable connections. Placement of the fire detectors is monitored by a fire protection engineer to ensure compliance with NFPA 72E requirements. The PDS panel is made of fire-resistive material and will not contribute to the combustible loading.

In addition, the PDS is not an ignition source and will not create a fire. Therefore, use of the PDS will not be a fire hazard, and the probability of a fire occurring in the area remains the same.



Failure of the PDS will not affect equipment important to safety. In the event the hourly fire patrol determines the PDS is non-functional or unable to perform its intended function, then the PDS is either replaced with another PDS or a continuous fire watch is posted (as required by TS 3/4.7.10). The probability of occurrence of any accident previously evaluated in the FSAR Update will remain the same.

Yes \_\_\_\_\_ No X May the consequences of an accident previously evaluated in the FSAR be increased?

Justification: As stated above, the PDS will not affect operation of equipment important to safety. Therefore, if an accident previously evaluated in the FSAR Update occurs, equipment expected to mitigate the consequences of the accident will be available. No new accidents will be created by the use of the PDS and an hourly fire patrol.

The hourly patrol verifies the PDS has adequate power and the phone line is adequately connected and operable. In addition, a weekly functional test and a 6-month functional test are performed. The fire patrol and functional tests ensure that the PDS will be operational to notify appropriate personnel immediately, in the event a fire occurs within the hour. If a fire occurs, operators and fire brigade members will mitigate the consequences of the fire in accordance with existing procedures. The consequences of a fire propagating across a TS barrier has not been evaluated in the Appendix R analysis (Section 9.5 of the FSAR Update). The Appendix R analysis relies on the functional integrity of the TS fire barrier to confine or retard fires from spreading to redundant safe shutdown equipment to ensure that at least one train of systems necessary to shut down the plant will be free from fire damage. The use of the PDS will provide early detection of the fire and reduce the potential for circuit damage to redundant equipment required for safe shutdown as documented in the Appendix R analysis. Section 9.5 of the FSAR Update will be reviewed to ensure Fire Protection Program commitments are not violated (i.e., verify that intervening combustibles are not introduced between redundant components where separation is credited). The Telecommunications group will also be notified upon installation of the PDS to ensure Communications commitments are not violated.

The PDS, hourly fire patrol, and daily, weekly, and semiannual functional tests ensure that if a fire were to occur, it would be detected and suppressed during its incipient stage and would not propagate across the TS barrier. Therefore, the consequences of a fire as evaluated in the FSAR Update will not be affected.

Yes \_\_\_\_\_ No X May the probability of occurrence of a malfunction of equipment important-to-safety, previously evaluated in the FSAR, be increased?



Justification: Use of the PDS will not interact with equipment important to safety. The PDS will require a 120V AC and an operable telephone line. The power outlets used in the area do not provide power to vital equipment; therefore, plugging in the PDS will not affect operation of safety-related equipment. In the event 120V AC power is lost, a battery back-up (12V DC source) is provided, and a trouble alarm is initiated locally. When the backup battery's voltage drops to 11.5V, a trouble signal is then initiated remotely (i.e., a "trouble" phone call is made to designated stations).

In addition, the telephone line is not used for operation of safety equipment; therefore, plugging in the PDS to an existing telephone line will not affect equipment important to safety. The PDS will be installed on a dedicated phone line and coordinated with Telecommunications to ensure commitments are not violated. The use of the PDS and administrative controls on phones on the same phone line will not affect the existing Communication Evaluation performed for the Appendix R analysis (Calculation No. E-134DC). Therefore, the probability of occurrence of malfunction of equipment important to safety, previously evaluated in the FSAR Update, will not be affected.

The PDS will be used to provide early detection of a fire and reduce the potential for fire damage to redundant components and/or circuits. The effects of a fire on equipment important to safety has been evaluated in the Appendix R analysis. The actions or equipment used (e.g., telephones) to mitigate fire-induced malfunctions of equipment important to safety will be the same as previously evaluated in Section 9.5 of the FSAR Update.

Yes \_\_\_\_\_ No X May the consequences of a malfunction of equipment important to safety, previously evaluated in the FSAR, be increased?

Justification: As stated above, the use of the PDS does not affect the function of equipment important to safety. Therefore, the consequences of malfunction of equipment important to safety will remain the same.

The PDS will provide early detection of a fire in the area. The hourly fire patrol will check on PDS operability by verifying power is supplied to the PDS, the telephone line is connected, and the fire detector zone(s) is connected. Other administrative controls (such as weekly and 6-month functional tests) are implemented to verify operability of the PDS. This will ensure that the PDS will provide early indication in the event of a fire within the fire watch's hourly patrol.

Yes \_\_\_\_\_ No X May the possibility of an accident of a different type than any already evaluated in the FSAR, be created?

Justification: The PDS is not a fire hazard. Installation of the PDS will be evaluated to ensure transient combustible loading



limits are not exceeded and commitments in Section 9.5 of the FSAR Update (Fire Protection) are not violated. In addition, installation of the PDS will be coordinated with Telecommunications to ensure communications commitments are not affected. The use of an existing telephone line will not affect plant operation. Where necessary, dedicated phone lines will be installed for use by the PDS. This will ensure the phone line is available for use by the PDS. If the phone line is connected to a phone required by other Diablo commitments (e.g., Security Plan or Emergency Plan), the PDS will not be used on that particular phone line, and a dedicated line will be utilized.

The PDS and detectors are not seismically qualified. Attention will be given to location of the detectors and connection cables to ensure that in the event of an earthquake, the detectors and cables will not affect Seismically Induced Systems Interaction (SISI) targets. The criteria for not affecting SISI targets as described in the SISI Manual will be reviewed by qualified reviewers prior to installation of the PDS panel and its detectors to ensure SISI concerns are not created. The existing fire detection system is not required to be seismically qualified; therefore, the PDS does not have to be seismically qualified.

Therefore, a new type of accident will not be created by use of the PDS.

Yes  No  May the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the FSAR, be created?

Justification: Use of the 120V AC power source and existing telephone line will not impact the operation of equipment important to safety. Therefore, the possibility of a malfunction of equipment of a different type will not be created. Where necessary, dedicated phone lines are used to ensure that commitments are not violated.

Phones that are required or committed for other reasons (e.g., Security Plan or Emergency Plan) will not be used by the PDS. Prior to installing the PDS, a representative from Telecommunications will approve placement of the PDS and ensure that commitments are not affected by the installation. In addition, Section 9.5 of the FSAR Update will be reviewed to ensure commitments made in the Fire Protection Program are not affected.

In addition, because the PDS and detectors are not seismically qualified, attention will be made to installation of detectors and connecting cables to ensure that in the event of an earthquake, the detectors and cables will not affect operation of SISI targets. The PDS will not be used in areas where SISI targets may be affected. SISI requirements will be coordinated with a qualified individual. The criteria in the SISI Manual will be reviewed to ensure the potential for creating SISIs due to installation of the PDS will not be involved.



Yes \_\_\_\_\_ No X Does the proposed change, test or experiment reduce the margin of safety as defined in the basis for any Technical Specification?

Justification: The PDS, in conjunction with the hourly fire patrol and administrative controls, will be used as a compensatory measure for the Thermo-Lag fire barriers. Use of the PDS will maintain the margin of safety as described in the basis of TS 3/4.7.10. The PDS, in conjunction with the hourly fire patrol verifying operation of the PDS (i.e., check the power connection, telephone connection, detector zone connection, etc.) provides an equivalent level of fire protection of a permanently installed fire detection system. In addition, the PDS is checked weekly to ensure the dialer and battery backup works properly. A functional test is performed upon installation and every six months to ensure proper operation of the PDS. In the event the PDS is determined non-functional, a continuous fire watch is posted in accordance with TS 3/4.7.10.

NFPA Code Comparison Review was conducted to evaluate the basis for acceptability of "deviations" and "complies with intent" of the code requirements. Because the system is not a permanent system, it was not expected to fully comply with the code. The temporary use of the system, in conjunction with the fire patrol and additional administrative controls, provides an equivalent level of fire protection consistent with a permanently installed detection system that would have been used, if it was available, in accordance with the action statements of TS 3/4.7.10.

TS 3/4.3.3.8, "Fire Detection Instrumentation," is not affected by use of the PDS. The PDS is used to supplement the permanently installed detection systems required by TS 3/4.3.3.8. As stated in the basis of TS 3/4.3.3.8:

The operability of detection instrumentation ensures that adequate warning capability is available for prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility Fire Protection Program.

The intent of using the PDS to satisfy the TS 3/4.7.10 action statement for Thermo-Lag fire barriers is to provide early detection of a fire. The hourly fire patrol and additional administrative controls will provide assurance that the PDS is as reliable as a permanently installed system.

Yes \_\_\_\_\_ No X May this change result in a decrease of effectiveness of the Fire Protection Plan?

Indicate the Fire Protection Plan (FSAR Update, Section 9.5, Volume 11) sections reviewed?



4 .

If the answer to the above question is "no", provide a statement justifying the conclusion. Include the following:

- a. Cite and describe the sections of the Fire Protection Plan being changed.
- b. Describe the proposed change and how it affects the effectiveness of the program.
- c. Cite and describe the applicable NRC requirements (including the NRC basis of acceptance) or PG&E commitments and justify that the proposed revision meets these requirements or commitments.

The Fire Protection Plan credits the functional integrity of fire barriers to ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. TS 3/4.7.10 provides action statements to provide an equivalent level of fire protection in the event a fire barrier or its penetrations is non-functional. The design of the PDS was reviewed against the requirements of NFPA 72, which is applicable to permanently installed detection systems. Because the PDS is a "portable system" and not a permanent installation, several requirements of the code could not be met. The basis for acceptability of the "deviations" and "complies with intent" are documented in the Code Compliance Review. Because of the temporary use of the PDS, the hourly fire patrol, and additional administrative controls, the use of the PDS is determined to be an equivalent level of fire protection.

The PDS is not described in Section 9.5 of the FSAR Update. The PDS supplements the permanently installed fire detection system, and therefore does not reduce the ability to detect fires as described in the FSAR Update. The PDS is a temporary means of fire detection. Use of the PDS does not reduce the effectiveness of the Fire Protection Program or change the description of the fire detection system in Section E.1 of Table B-1 of Section 9.5B.

The use of the PDS was discussed with the NRC prior to implementation. The NRC appeared to not have a technical concern with using the PDS and an hourly fire patrol, but requested a safety evaluation be performed to determine that an unreviewed safety question is not created.

In addition, Section 9.5 of the FSAR Update will be reviewed to ensure that commitments made in the Fire Protection Program are not affected. Based on the above safety evaluation, use of the PDS will not reduce the effectiveness of the approved Fire Protection Program.



Conclusion

Based upon the above criteria and justification, PG&E has determined that an unreviewed safety question is not involved. Further, a change to the DCP Technical Specifications is not involved.

2. Environmental Protection Plan Evaluation

Not applicable.

3. Emergency Plan Evaluation - 10 CFR 50.54(q)

Not applicable.

4. Security Plant Evaluation - 10 CFR 50.54(p)

Not applicable.



12.12