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PG&E Letter DCL-10-130

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20852

Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2

Response to NRC Letter dated September 17, 2010, Request for Additional  
Information (Set 24) for the Diablo Canyon License Renewal Application

Dear Commissioners and Staff:

By letter dated November 23, 2009, Pacific Gas and Electric Company (PG&E) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for the renewal of Facility Operating Licenses DPR-80 and DPR-82, for Diablo Canyon Power Plant (DCPP) Units 1 and 2, respectively. The application included the license renewal application (LRA), and Applicant's Environmental Report – Operating License Renewal Stage.

By letter dated September 17, 2010, the NRC staff requested additional information needed to continue their review of the DCPP LRA.

PG&E's response to this request for additional information is provided in Enclosure 1. LRA Amendment 19 resulting from the responses is included in Enclosure 2 showing the changed pages with line-in/line-out annotations.

PG&E makes no regulatory commitments (as defined in NEI 99-04) in this letter.

If you have any questions regarding this response, please contact Mr. Terence L. Grebel, License Renewal Project Manager, at (805) 545-4160.



I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 12, 2010.

Sincerely,

James R. Becker  
*Site Vice President*

TLG/50342636

Enclosure

cc: Diablo Distribution

cc/enc: Elmo E. Collins, NRC Region IV Regional Administrator  
Nathanial Ferrer, NRC Project Manager, License Renewal  
Kimberly J. Green, NRC Project Manager, License Renewal  
Fred Lyon, NRC Project Manager, Office of Nuclear Reactor Regulation  
Michael S. Peck, NRC Senior Resident Inspector

**PG&E Response to NRC Letter dated September 17, 2010  
Request for Additional Information (Set 24) for the  
Diablo Canyon License Renewal Application**

RAI B2.1.20-2

Background

*GALL AMP XI.M36, "External Surfaces Monitoring Program" states, "[s]urfaces that are inaccessible or not readily visible during plant operations are inspected during refueling outages. Surfaces that are inaccessible or not readily visible during both plant operations and refueling outages are inspected at such intervals that would provide reasonable assurance that the effects of aging will be managed such that applicable components will perform their intended function during the period of extended operation."*

*The Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR) Section 3.2.2.4 states, "[t]he summary description of the programs and activities for managing the effects of aging for the period of extended operation in the Final Safety Analysis Report (FSAR) Supplement should be sufficiently comprehensive such that later changes can be controlled by 10 CFR SO.59." It also states that, "[e]xamples of the type of information required are provided in Table 3.2-2 of this SRP-LR." SRP-LR Section 3.2.3.4 states, "[t]he reviewer confirms that the applicant has provided information equivalent to that in Table 3.2-2 in the FSAR Supplement for aging management of the auxiliary systems for license renewal." The description of program for the "External Surfaces Monitoring Program" in Tables 3.2-2, 3.3-2 and 3.4-2 includes the following, "[s]urfaces that are inaccessible during plant operations are inspected during refueling outages. Surfaces that are inaccessible during both plant operations and refueling outages are inspected at frequencies to provide reasonable assurance that effect of aging will be managed such that applicable components will perform their intended function during the period of extended operation."*

Issue

*LRA Section B2.1.20 states, "[e]xternal surface inspections will be performed on passive components in scope for license renewal at intervals no longer than once per refueling cycle..." LRA Section B2.1.20 also states, "[t]he External Surfaces Monitoring Program will provide clarification for areas, or portions of systems or components, that may be exempted from walkdown inspections based on physical or environmental constraints."*

*It is not clear to the staff if the applicant has access to all surfaces being age managed by the External Surfaces Monitoring Program during plant operations and refueling outages as is implied in the first quoted statement, but given the second quoted statement, it does appear that the applicant has a process for excluding some external surfaces from walkdowns based on physical or environmental constraints. The License*

*Renewal Application (LRA) does not contain a statement that the applicant will ensure that those components that are "exempted from walkdowns," will be ultimately inspected or evaluated to ensure the components will perform their intended functions during the period of extended operation if an inspection cannot be performed. The staff requires further information to understand how the applicant will evaluate components that are "exempted from walkdowns", thus implying that they will never be inspected. LRA Section A1.20, the FSAR Supplement description for the External Surfaces Monitoring Program does not contain information related to inaccessible surfaces during plant operations and inaccessible surfaces during plant operations and refueling outages.*

*Request*

- 1. Describe the criteria that will be used and evaluation methodology to ensure that components "exempted from walkdown" will be managed such that applicable components will perform their intended function during the period of extended operation.*
- 2. Revise FSAR Supplement Section A1.20 to ensure that surfaces that are inaccessible during both plant operations and refueling outages are inspected at frequencies to provide reasonable assurance that effect of aging will be managed such that applicable components will perform their intended function during the period of extended operation, or provide justification that a revision is not needed.*

PG&E Response to RAI B2.1.20-2

When the External Surfaces Monitoring Program system walkdowns identify components as being inaccessible during both plant operations and refueling outages, the requirement to perform an inspection of those components is tracked in the Corrective Action Program (CAP). The CAP will require an evaluation, which will take into consideration the applicable industry and plant specific aging operating experience for the material and environment combination. The evaluation will determine if there is a representative location, based on the material, environment, and applicable aging effect that has been or can be inspected in place of the inaccessible components.

License renewal application (LRA) Sections A1.20 and B2.1.20 have been revised to address the examination of components that are not accessible during both plant operations and refueling outages. See revised LRA Sections A1.20 and B2.1.20 in Enclosure 2.

RAI B2.1.20-3

*LRA Table 3.3.2-7, "Auxiliary Systems – Compressed Air" contains line items for copper alloy (>15 percent zinc) regulators and solenoid valves exposed to atmospheric weather being managed for loss of material by the External Surfaces Monitoring Program. LRA Section B2.1.20, External Surfaces Monitoring AMP, does not include copper alloy (>15 percent zinc) in the Program Description or "scope of program" exemption.*

*Given that the External Surfaces Monitoring Program does not include copper alloy (>15 percent zinc) material in LRA Section B2.1.20, the staff cannot conclude that associated AMR line items will be appropriately age managed.*

*Request:*

- 1. Revise LRA Section B2.1.20 to include copper alloy (>15 percent zinc) or state an alternative aging management program for the above line items.*
- 2. State whether the associated program basis documents include copper alloy (>15 percent zinc) material.*

PG&E Response to RAI B2.1.20-3

1. License renewal application (LRA) Section B2.1.20 states that the External Surfaces Monitoring Program manages loss of material for external surfaces of steel, aluminum, and copper alloy components and elastomers. The Aging Management Program (AMP) manages the aging effect of loss of material for all copper alloys, and therefore, there is no need to specifically identify the material type of copper alloy (greater than 15 percent zinc) as being within the scope of the External Surfaces Monitoring Program. Copper alloy (greater than 15 percent zinc) in an atmosphere/weather environment is susceptible to selective leaching. This aging effect will be managed by the Selective Leaching of Materials Program (B2.1.17), not the External Surfaces Monitoring Program. LRA Table 3.3.2-7 has been revised to indicate this. See revised LRA Table 3.3.2-7 in Enclosure 2.
- 2) The associated program basis documents do include specific types of copper alloy, and other metal and material types, that will be aging managed by the External Surfaces Monitoring Program. The basis documents have been revised to include the aging effect of selective leaching for compressed air system regulators and solenoid valves made of copper alloy (greater than 15 percent zinc) in an atmosphere/weather environment. The Selective Leaching of Materials Program has been added in the aging evaluation to manage this aging effect.

In review of materials managed by this AMP, it was identified that stainless steel is managed by the AMP. See revised LRA sections A1.20 and B2.1.20 in Enclosure 2.

**LRA Amendment 19**

<b>LRA Section</b>	<b>RAI</b>
Table 3.3.2-7	B2.1.20-3
A1.20	B2.1.20-2 and B2.1.20-3
B2.1.20	B2.1.20-2 and B2.1.20-3

Table 3.3.2-7 Auxiliary Systems – Summary of Aging Management Evaluation – Compressed Air System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Regulators	PB	Copper Alloy (> 15% Zinc)	Atmosphere/ Weather (Ext)	Loss of material	Selective Leaching of Materials (B2.1.17)	None	None	G
Solenoid Valve	PB	Copper Alloy (> 15% Zinc)	Atmosphere/ Weather (Ext)	Loss of material	Selective Leaching of Materials (B2.1.17)	None	None	G

#### A1.20 *External Surfaces Monitoring Program*

The External Surfaces Monitoring Program manages loss of material for external surfaces of steel, *stainless steel*, aluminum, and copper alloy components, and hardening and loss of strength for elastomers. The program is a Visual Monitoring Program that includes those systems and components within the scope of license renewal that require external surfaces monitoring. *Surfaces that are inaccessible or not readily visible during plant operations are inspected during refueling outages. Surfaces that are inaccessible or not readily visible during both plant operations and refueling will be evaluated by the DCCP Corrective Action Program to evaluate applicable industry and plant specific aging operating experience for the material and environment combination. The evaluation will determine if there is a representative location, based on the material, environment, and applicable aging effect that has been or can be inspected in place of the inaccessible components.* When appropriate for the component configuration and material, physical manipulation of elastomers is used to augment visual inspections to confirm absence of hardening or loss of strength for elastomers. Personnel performing external surfaces monitoring inspection will be qualified in accordance with site controlled procedures and processes.

The External Surfaces Monitoring Program is a new program that will be implemented prior to the period of extended operation.

### **B2.1.20 External Surfaces Monitoring Program**

#### **Program Description**

The External Surfaces Monitoring Program manages loss of material for external surfaces of steel, *stainless steel*, aluminum, *and* copper alloy components and elastomers, and hardening and loss of strength for elastomers. The program is a visual monitoring program that includes those systems and components within the scope of license renewal. *Surfaces that are inaccessible or not readily visible during plant operations are inspected during refueling outages. Surfaces that are inaccessible or not readily visible during both plant operations and refueling will be evaluated by the DCPD Corrective Action Program to evaluate applicable industry and plant-specific aging operating experience for the material and environment combination. The evaluation will determine if there is a representative location, based on the material, environment, and applicable aging effect that has been or can be inspected in place of the inaccessible components.* When appropriate for the component configuration and material, physical manipulation of elastomers is used to augment visual inspections to confirm the absence of hardening or loss of strength.

~~The External Surfaces Monitoring program will provide clarification for areas, or portions of systems or components, that may be exempted from walkdown inspections based on physical or environmental constraints.~~

The External Surfaces Monitoring program may be credited with managing loss of material from internal surfaces for situations in which material and environment combinations are the same for internal and external surfaces such that external surface condition is representative of internal surface condition.

The External Surfaces Monitoring program is a monitoring program that provides measures for detecting the aging effects prior to loss of intended function, but does not prevent degradation due to aging effects.

The External Surfaces Monitoring Program manages aging for external surfaces that are not within the scope of the following programs:

1. Boric Acid Corrosion program (B2.1.4) for components in a system with treated boric acid water or reactor coolant environment in which boric acid corrosion may occur
2. Buried Piping and Tanks Inspection program (B2.1.18) for buried components

3. Structures Monitoring Program (B2.1.32) for civil structures, and other structural items which support and contain mechanical and electrical components
4. Fire Protection program (B2.1.12) for the CO<sub>2</sub> fire suppression system components.

Personnel performing external surfaces monitoring inspection will be qualified in accordance with DCPD-controlled procedures and processes.

The External Surfaces Monitoring Program will be implemented within the context of the System Engineering Program. Routine system walkdowns are required by the System Engineering Program to perform inspection on components. External surface inspections will be performed on passive components in scope for license renewal at intervals no longer than once per refueling cycle except for those inspections pertaining to the fire protection CO<sub>2</sub> system. The inspection interval for the passive fire protection CO<sub>2</sub> system components in scope for license renewal will be no longer than once every six months as discussed in the Fire Protection program (B2.1.12) for the CO<sub>2</sub> fire suppression system components. The program will include periodic visual inspections for loss of material, leakage, and conditions indicating elastomer hardening and loss of strength. Visual inspection parameters for metals and non-metals will be specified in walkdown procedures.

The External Surfaces Monitoring program will require that completed inspection documentation be reviewed by an engineer and retained for historical information and trending. Trending of inspection results will be performed to the extent reasonably practicable.

The External Surfaces Monitoring program will include inspection criteria for metals and non-metals that list general conditions that should be identified as discrepancies in the DCPD corrective action program. This listing will serve as acceptance criteria.

### **NUREG-1801 Consistency**

The External Surfaces Monitoring Program is a new program that, when implemented, will be consistent with exception to NUREG-1801, Section XI.M36, External Surfaces Monitoring Program.

### **Exceptions to NUREG-1801**

#### Program Elements Affected

*Scope of Program - Element 1, Parameters Monitored/Inspected – Element 3, and Detection of Aging Effects - Element 4*

NUREG-1801, Section XI.M36 provides a program of inspection of the external surfaces of steel components. DCPD has expanded the scope of materials inspected to include

*stainless steel*, aluminum, copper alloy and elastomers. The integrated plant assessment performed as part of license renewal identified the presence of these materials in the external surfaces of components within the scope of license renewal. Therefore, the scope of the program has been expanded to manage the external surfaces of those materials as well as the external surfaces of steel. The use of visual inspection to detect loss of material of *stainless steel*, aluminum, copper alloy and elastomer surfaces is an effective method for these materials.

NUREG-1801, Section XI.M36 provides aging management due to loss of material and leakage. The scope of this program is being expanded to include aging management due to elastomer hardening and loss of strength.

NUREG-1801, Section XI.M36 provides for a program of visual inspection. DCPD provides visual inspection as a primary inspection method augmented by manipulation of elastomers when appropriate to the component material and design. Manipulation of elastomers is an effective method to augment in the visual inspection of elastomers.

### **Enhancements**

None

### **Operating Experience**

The External Surfaces Monitoring Program is a new program; therefore, plant-specific operating experience to verify the effectiveness of the program is not available. However, routine system walkdowns by system engineers are performed as part of the DCPD System Engineering Program. The DCPD Corrective Action Program (CAP) is used in conjunction with the system walkdowns to identify and resolve issues pertaining to plant equipment. Since implementation of the System Engineering Program in 1993, walkdowns by system engineers have identified numerous degraded conditions on plant equipment external surfaces. These conditions were documented in the CAP and corrected in a timely manner, showing the effectiveness of the current program to detect and correct age related degradation.

As additional Industry and applicable plant-specific operating experience become available, the operating experience will be evaluated and appropriately incorporated into the new external surfaces inspection program through the DCPD CAP and Operating Experience Program. This ongoing review of operating experience will continue throughout the period of extended operation and the results will be maintained on site. This process will confirm the effectiveness of this new program by incorporating applicable operating experience and performing self-assessments of the program.

NRC Inspection Reports dated September 12, 1997 and March 20, 1998 noted that the external condition of observed structures, systems and components in various parts of the plant were visually free of external corrosion. Some minor oil and water leaks were observed, but the external condition of affected structures, systems, and components appeared to be well maintained. Additional plant-specific operating experience and

associated lessons learned will be incorporated into the External Surfaces Monitoring Program and procedures, as appropriate, during the 10 years prior to the beginning of extended operation. The CAP has proven to be effective in maintaining the material condition of the plant systems, and will continue to do so through the period of extended operation. The DCPD operating experience findings for this program identified no unique plant specific operating experience; therefore DCPD operating experience is consistent with NUREG-1801.

### **Conclusion**

The implementation of the External Surfaces Monitoring Program will provide reasonable assurance that aging effects will be managed such that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.