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November 24, 2010

PG&E Letter DCL-10-147

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 Draft Requests for Additional Information (Sets 31 & 33) 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 emails dated October 27, 2010 and November 9, 2010, the NRC staff provided draft requests for additional information (RAI) needed to continue their review of the DCPP LRA.

PG&E's response to the draft RAIs are included in Enclosure 1. LRA Amendment 27 resulting from 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 November 24, 2010.

Sincerely,

James R. Becker
Site Vice President

TLG/50360349
Enclosure
cc: Diablo Distribution
cc/enc: Elmo E. Collins, NRC Region IV Regional Administrator
Nathanial B. 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 Emails dated October 27, 2010 and November 9, 2010, Draft Requests for Additional Information (Set 31 & 33) for the Diablo Canyon License Renewal Application

D-RAI 3.3.2.3.3-1 (follow-up)

Background:

In the response to RAI 3.3.2.3.3-1, the applicant stated that the following components will be maintained below 104°F at all times. GALL Report Chapter IX.C states that, "Hardening and loss of strength of elastomers can be induced by elevated temperature (over about 95°F), and additional aging factors such as exposure to ozone, oxidation, and radiation." For the following LRA Tables and line items, no aging effect and no AMP is proposed when the components are exposed to air-indoor (external):

LRA Table	***Component***	***Material***
3.3.2-3 & 3.3.2-5	*Pipe, Valves, Strainers, Filters and eye wash stations*	*PVC*
3.3.2-18	*Flow indicator, demineralizer*	*Plexiglas*
3.4.2-1	*Pipe*	*PVC*
3.4.2-5	*Tanks*	*Plexiglas*
3.4.2-2	*Tanks*	*Lexan*

Issue:

Given that the exposure temperature for the components exceeds the recommended threshold for hardening and loss of strength to occur in elastomeric materials, the staff does not have sufficient information to justify the applicant's proposal that there is no aging effect and no AMP is required.

Request:

Justify why the temperatures in the vicinity of the above components would not lead to (or contribute to) aging effects during the period of extended operation.

PG&E Response to D-RAI 3.3.2.3.3-1 (follow-up)

All of the components listed in the above license renewal application (LRA) tables operate in temperatures below the recommended threshold for hardening and loss of strength to occur in plastic and thermo-plastic materials. The specific materials for each application listed in the above table have been selected for the environment in which they operate. All of the components listed in the above LRA tables do not operate at temperatures with internal fluids greater than 95°F for extended periods of time. For the

external environment all systems are in ambient air temperature conditions. Diablo Canyon Power Plant's location near the ocean provides a cool marine environment where the air temperature rarely exceeds 95°F.

LRA Table 3.3.2-3
The subject components of System 17, Saltwater and Chlorination System, associated with LRA Table 3.3.2-3, are located in the intake structure and turbine building and exposed to ambient air temperatures. The internal environment for these components is less than 95°F. Because of the cool marine environment the external environment ambient air temperature rarely exceeds 95°F. There is no heat source near this system to heat up the air in these areas.

LRA Table 3.3.2-5
The subject components of System 16, Makeup Water System, associated with LRA Table 3.3.2-5, are the eye wash sinks located in the auxiliary building battery rooms. The six vital battery rooms have no normal heat load in them and are isolated behind closed doors from the nearby heat sources of inverters and battery chargers. Outside air is supplied directly to the battery rooms. The batteries produce heat when they have been load tested and are being recharged. The load testing happens every 2 years and only lasts for a few hours. The internal and external environments for these eye wash sinks are plant indoor air. The temperatures in these rooms do not exceed 95°F for extended periods of time.

LRA Table 3.3.2-18
The subject components of System 28, Secondary Sampling System, and System 19, Liquid Radwaste System, associated with LRA Table 3.3.2-18, are located in the auxiliary building and exposed to ambient air temperatures of plant indoor air. The internal environment for these components is less than 95°F. Ambient plant indoor air temperature rarely exceeds 95°F. There is no heat source near these systems to heat up the air in these areas.

LRA Table 3.4.2-1
The subject components of System 04, Turbine Steam Supply System, associated with LRA Table 3.4.2-1, are located in the auxiliary building and exposed to ambient air temperatures. The PVC components are in the demineralizer chemical leak off line, which has an internal environment temperature of less than 95°F. Ambient plant indoor air temperature rarely exceeds 95°F. There is no heat source near this system to heat up the air in these areas.

LRA Table 3.4.2-5
The subject components of System 03, Auxiliary Feedwater System, associated with LRA Table 3.4.2-5, are the auxiliary feedwater hydrazine measuring tanks located in the auxiliary building and exposed to ambient air temperatures. The internal environment is less than 95°F. Ambient plant indoor air temperature rarely exceeds 95°F. There is no heat source near this system to heat up the air in these areas.

LRA Table 3.4.2-2

The subject components of System 06, Auxiliary Feedwater System, associated with LRA Table 3.4.2-2, is the abandoned-in-place auxiliary hydrazine feed unit located in Unit 1 ventilation building which is part of the auxiliary building. The internal environment is less than 95°F. The external environment in this area is plant indoor air. Ambient plant indoor air temperature rarely exceeds 95°F. There is no heat source near this system to heat up the air in these areas.

D-RAI 3.3.2.3.5-1 (follow-up)

In LRA Tables 3.3.2-5 and 3.4.2-1, the applicant stated that carbon steel indicators, sight glasses, piping, pumps, tanks, and valves internally exposed to sodium hydroxide (NaOH) are being managed for loss of material by the Water Chemistry and One-Time Inspection Programs.
The AMR line items cite generic note G and a plant specific note, which states "The use of carbon steel up to 200°F (93°C) and 50 wt percent NaOH is common in industrial applications with no special consideration for aging. The NaOH concentration is controlled by the Water Chemistry Program."

By letter dated August 30, 2010, the staff issued RAI 3.3.2.3.5-1, and noted that EPRI primary and secondary water chemistry guidelines, which are the basis for GALL AMP XI.M2 "Water Chemistry," do not include control parameters for managing NaOH used in auxiliary systems. The staff requested that the applicant describe the parameters being monitored and acceptance criteria for the sodium hydroxide solution being monitored by the Water Chemistry Program. In its response dated September 29, 2010, the applicant stated that the components exposed to NaOH are no longer in-service but have not been formally abandoned-in-place and therefore were assumed to contain liquid. The applicant did not include the parameters and acceptance criteria being monitored by the Water Chemistry Program.

Request

1. *State the parameters being monitored, frequency of monitoring, and acceptance criteria for the NaOH solution.*
2. *Confirm that these parameters are being monitored by the Water Chemistry Program.*
3. *Justify the use of the One-Time Inspection Program to manage loss of material for these components given that GALL AMP XI.M32, "One-Time Inspection" is only to be used to verify the effectiveness of an aging management program, confirm the absence of an aging effect, or confirm that the aging effect is occurring slowly enough such that it will not affect the intended function of the component during the period of extended operation.*

PG&E Response to D-RAI 3.3.2.3.5-1 (follow-up)

PG&E letter DCL-10-123 dated September 29, 2010 discusses structures, systems, and components (SSCs) in scope of license renewal that have an internal environment of sodium hydroxide (NaOH). These SSCs are in the Makeup Water (MWS), Turbine Steam Supply (TSS) and Chemical Volume and Control (CVCS) systems on lines connecting to the abandoned-in-place Caustic Storage Tank and therefore these SSCs are no longer in service.

As these SSCs are no longer in service, chemistry is not monitored and is not planned to be monitored for the period of extended operation. Therefore, in order to manage aging of these SSCs, their aging management review lines are amended to credit B2.1.22 Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components programs rather than the B2.1.2 Water Chemistry and B2.1.19 One-Time Inspection programs. License renewal application (LRA) Tables 3.3.2-5, 3.3.2-8 and 3.4.2-1 are amended to reflect this change. LRA Appendix B2.1.22 is also amended to include glass as a material. See amended LRA Tables 3.3.2-5, 3.3.2-8, 3.4.2-1 and Appendix B2.1.22 in Enclosure 2.

LRA Amendment 27

LRA Section	RAI
Table 3.3.2-5	3.3.2.3.5-1
Table 3.3.2-8	3.3.2.3.5-1
Table 3.4.2-1	3.3.2.3.5-1
Appendix B2.1.22	3.3.2.3.5-1

Table 3.3.2-5 Auxiliary Systems – Summary of Aging Management Evaluation – Makeup Water System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 3
Piping	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 2
Pump	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 2
Strainer	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 2

Table 3.3.2-5 Auxiliary Systems – Summary of Aging Management Evaluation – Makeup Water System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Tank	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16~~) *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 3
Valve	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 3
Valve	LBS	Copper Alloy	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 4
Valve	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 2

Table 3.3.2-5 Auxiliary Systems – Summary of Aging Management Evaluation – Makeup Water System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Valve	LBS	Stainless Steel Cast Austenitic	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous piping and Ducting Components (B2.1.22)*	None	None	G, 2

Notes for Table 3.3.2-5:

Plant Specific Notes:

2 There is no NUREG-1801 line for the environment of NaOH. The use of stainless steel up to 200° F and 50 weight percent NaOH is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

3 There is no NUREG-1801 line for the environment of NaOH. The use of carbon steel up to 200° F and 50 weight percent NaOH is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

4 There is no NUREG-1801 line for the environment of NaOH. The use of copper alloy in non-elevated-temperature environments is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

Table 3.3.2-8 Auxiliary Systems – Summary of Aging Management Evaluation – Chemical and Volume Control System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping	LBS, PB, SIA	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 2
Tank	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 2
Valve	LBS, PB, SIA	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 2

Notes for Table 3.3.2-8:

Plant Specific Notes:

2 There is no NUREG-1801 line for the environment of NaOH. The use of stainless steel up to 200° F and 50 weight percent NaOH is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

Table 3.4.2-1 Steam and Power Conversion System – Summary of Aging Management Evaluation – Turbine Steam Supply System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Indicator	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 5
Piping	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 5
Piping	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 2
Pump	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 5

Table 3.4.2-1 Steam and Power Conversion System – Summary of Aging Management Evaluation – Turbine Steam Supply System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Sight Gauge	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, *5*
Tank	LBS	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 5
Valve	LBS, SIA	Carbon Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 5
Valve	LBS	Stainless Steel	Sodium Hydroxide (Int)	Loss of material	~~Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)~~ *Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B2.1.22)*	None	None	G, 2

Notes for Table 3.4.2-1:

Plant Specific Notes:

2 There is no NUREG-1801 line for the environment of NaOH. The use of stainless steel up to 200°F and 50 weight-percent NaOH is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

5 There is no NUREG-1801 line for the environment of NaOH. The use of carbon steel up to 200°F and 50 weight-percent NaOH is common in industrial applications with no special consideration for aging. ~~The NaOH concentration is controlled by the Water Chemistry Program. Therefore, the Water Chemistry Program (B2.1.2), supplemented by the One-Time Inspection Program (B2.1.16), has been selected for the aging management program.~~ *The NaOH concentration is not monitored. The Inspection of Internal Surfaces program is used to age-manage the components.*

B2.1.22 Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components

Exceptions to NUREG-1801

Program Elements Affected

Scope of Program - Element 1 and Detection of Aging Effects - Element 4

NUREG-1801, Section XI.M38 provides a program of inspections of the internal surfaces of miscellaneous steel, which includes cast iron and gray cast iron, piping and ducting components. The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program will also manage components made from aluminum, asbestos cement, copper alloy (greater than 15 percent zinc), copper alloy (less than 15 percent zinc), elastomers, nickel alloys, stainless steel, ~~and~~ stainless steel (cast austenitic) *and glass*. Visual inspections performed by qualified personnel have been found to be an effective method for detecting and monitoring pitting and crevice corrosion in stainless steels, general, pitting, and crevice corrosion in non-ferrous metals, and loss of material, cracking, and changes in surface condition in asbestos cement piping and elastomers.