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PG&E Letter DCL-10-134

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 28, 2010, Summary of Telephone Conference Call Held on September 2, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, 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 28, 2010, the NRC staff sent a summary of a telephone conference between the NRC and representatives of Pacific Gas and Electric Company held on September 2, 2010. This telephone conference was to obtain clarification on the applicant's response to request for additional information (RAI) submitted to the NRC in letters dated June 3, 2010, July 7, 2010, and August 17, 2010, regarding fire water and One-Time Inspection Aging Management Programs.

PG&E's supplemental information to the RAI response for which the staff requested clarification is provided in Enclosure 1. LRA Amendment 23 resulting from the responses is included in Enclosure 2 showing the changed pages with line-in/line-out annotations. Other follow-up RAIs, determined by the NRC staff to be necessary will be issued separately by a formal letter.

PG&E makes a commitment in revised LRA Table A4-1, License Renewal Commitments, shown in Enclosure 2.

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 27, 2010.

Sincerely,

James R. Becker
Site Vice President

TLG/50347222
Enclosures
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
Alan B. Wang, NRC Project Manager, License Renewal

**PG&E Response to NRC Letter dated September 28, 2010,
Summary of Telephone Conference Call Held on September 2, 2010,
Concerning Responses to Requests for Additional Information (Set 1, 4, and 12)
Related to the Diablo Canyon License Renewal Application**

RAI B2.1.13-2

In its June 3, 2010, response to RAI B2.1.13-2, the applicant provided details of the basis for maintaining the 18-month inspection frequency for Fire Water System Program. However, the staff was unclear how the operating experience was applied as part of the basis for the inspection frequency.

Discussion:

PG&E agreed to supplement its response to RAI B2.1.13-2 to clarify how operating experience was considered as part of the basis for the 18-month inspection frequency.

PG&E Supplemental Response to Question B2.1.13-2

PG&E letter DCL-10-057 dated June 3, 2010, provided a response to NRC Request for Additional Information (RAI) B2.1.13-2. The response to this RAI revises/supplements the previously provided information on inspection frequency for above grade fire water piping and below grade fire water piping.

Above grade Diablo Canyon Power Plant (DCPP) fire water piping is visually inspected for early indications of aging effects (such as material wastage, pitting, blistering, or porosity) on an 18-month frequency. In addition, the firewater yard loop and underground feeds are flushed semi-annually. The flowing water removes accumulated debris and/or sediment which can be indicative of internal pipe aging. The firewater system is flow tested at least every three years in order to verify firewater system design and National Fire Protection Association test requirements.

These testing frequencies are performed to satisfy DCPP equipment control guidelines (ECGs), which were relocated from the DCPP Technical Specifications. Per License Amendments 74 and 75 for Units 1 and 2, respectively, NRC approved DCPP's request to relocate the fire protection Technical Specifications and associated bases to the ECGs. Therefore, DCPP's testing frequencies are in compliance with the licensing basis previously approved by NRC.

Plant procedures require that any degradation observed during inspection activities be entered into the corrective action program. As discussed in License Renewal Application Section B2.1.13, several examples of degradation or corrosion of fire water system including through wall leaks have occurred. These deficiencies were promptly

corrected and did not affect the fire water system intended function. Corrective actions and preventive measures have been developed in response to plant-specific operating experience on firewater components to ensure their license renewal intended function is maintained. DCPP corrective actions taken to resolve above grade firewater piping/hydrant leakage operating experience include piping replacement with current design specified materials; for example, ductile iron replaces cast iron pipe, polyvinyl chloride pipe replaces asbestos cement pipe, and new fire hydrants installed when degradation is identified. Planned buried pipe replacement will evaluate use of cathodic protection based on pipe and soil excavation findings.

The plant specific visual inspection interval is determined by engineering evaluation of the fire protection piping to ensure that degradation is detected before the loss of intended function. As discussed above, the current DCPP above grade firewater piping visual inspection frequency is 18 months. The ability of the fire water system to perform its intended function is periodically reviewed as part of plant health review process. In accordance with NUREG-1801, XI.M27, Fire Water System, the above grade visual inspection frequency is evaluated in response to plant specific and industrial operating experience to ensure this frequency is adequate for the fire water system above grade piping to perform its intended function.

PG&E is currently revising the Buried and Underground Piping and Tanks Program as part of its response to the NRC's RAI Set 29, RAI B2.1.18-2 (Follow-up). This response will also address below grade fire water piping inspections and frequencies. This response will be submitted no later then November 30, 2010.

RAI B2.1.13-4

In its August 17, 2010, response to RAI B2.1.13-4, the applicant provided details of the methodology and inspection techniques used for the firewater tank. However, the staff was unclear if the underside of the tank was accessible for the inspections described.

Discussion:

PG&E agreed to supplement its response to RAI B2.1.13-4 to clarify how the underside of firewater tank will be inspected.

PG&E Supplemental Response to Question B2.1.13-4

The underside of the firewater tank is inaccessible for visual inspection. PG&E routinely performs visual inspections of the firewater tank internals, as stated previously in PG&E Letter DCL-10-101 dated August 17, 2010. Recent dive inspections have found the firewater tank bottom to be in good condition. PG&E is currently scheduled to refurbish the firewater tank in 2011. The tank refurbishment will perform ultrasonic thickness (UT) thickness measurements of the firewater tank bottom. PG&E will evaluate UT measurement results and take appropriate corrective action to manage aging effects.

PG&E will perform an additional one-time UT examination of the tank bottom during the 10 years period prior to entering the period of extended operation to confirm its integrity. License Renewal Application (LRA) Table A4-1 has been revised to state that PG&E will perform a one-time inspection of the firewater tank bottom using non-intrusive volumetric examination technique. LRA Section B2.1.13 has been revised to clarify that the Fire Water System Aging Management Program will be used to manage the overall aging of the fire water tank. LRA Section B2.1.16, One-time Inspection, has been revised to include a one-time inspection of the firewater tank bottom using nonintrusive volumetric examination technique prior to the period of extended operation. See revised LRA Sections A1.13, A1.16, Table A4-1, B2.1.13, and B2.1.16 in Enclosure 2.

RAI B2.1.16-1

In its July 7, 2010, response to RAI B2.1.16-1, the applicant provided details of the sampling procedure that will be used for the One-Time Inspection Program. However, the staff was unclear on the basis for the sampling sizes selected for the various aging effects.

Discussion:

PG&E agreed to supplement its response to RAI B2.1.16-1 to provide additional information on the basis for the sampling size and criteria for the program.

PG&E Supplemental Response to Question B2.1.16-1

PG&E letter DCL-10-073 dated June 7, 2010, provided a response to NRC Request for Additional Information (RAI) B2.1.16-1. The basis for the sampling size and criteria for the program are noted below.

One-Time Inspection - Water Chemistry

The Diablo Canyon Power Plant (DCPP) One-Time Inspection (OTI) Program will verify the effectiveness of the Water Chemistry Program at managing material loss by identifying a population for each in-scope system based on the most susceptible material within the system (i.e. carbon steel in feedwater system, stainless steel in chemical and volume control system) at stagnant locations where the full effect of a Water Chemistry Program may not be achieved. A sample of 10 percent of the stagnant locations, with the most susceptible material type suitable for ultrasonic thickness examination will be selected for each in-scope system per unit. The OTI Program will take credit for volumetric examinations performed under other Aging Management Program (AMP), such as flow-accelerated corrosion, when the above criteria is met and the exams are performed within the 10 years prior to the period of extended operation.

The DCPP OTI Program will verify the effectiveness of the Water Chemistry Program at managing cracking of stainless steel with temperatures greater than 140°F by identifying the population of components within in-scope systems that are at stagnant locations where the full benefit of effective Water Chemistry Program may not be achieved. A sample of 10 percent of this population of stainless steel greater than 140°F in stagnant to low flow locations will be inspected using ultrasonic techniques appropriate to detect cracking. The OTI Program will take credit for volumetric examinations performed under other AMPs, such as Class 1 small bore and in service inspection, when the above criteria is met and the exams are performed within the 10 years prior to the period of extended operation. In addition to the 10 percent sample of stainless steel greater than 140°F in stagnant locations, DCPP OTI Program will

perform 100 percent eddy current testing of stainless steel tubes in one nonregenerative heat exchanger.

The DCPP OTI Program will verify the effectiveness of the Water Chemistry Program at managing fouling of heat exchanger tubes exposed to treated water by performing a visual examination of one heat exchanger per in-scope system, function, and material/environment combination per unit. Consideration of inspectability and radiological concerns will factor into selecting heat exchangers for this sample.

One-Time Inspection - Fuel Oil Chemistry

The DCPP OTI Program will verify the effectiveness of the Fuel Chemistry Program at managing material loss by identifying a population of components within the diesel generator system (DG) and DG fuel transfer system, which are stagnant at lower elevations that may permit the accumulation of water. A sample of 10 percent of carbon steel piping components identified in the DG system for each diesel as being stagnant and at a an elevation that would permit water accumulation will be examined using volumetric nondestructive examination techniques. In addition to the piping sample, stainless steel fuel oil priming tank bottoms will be volumetrically examined and carbon steel fuel oil day tanks that permit access to the inside surface of the tank bottom will be volumetrically examined to the extent accessible. A sample of 10 percent of carbon steel piping components identified in the DG fuel transfer system for each unit will be volumetrically inspected within the 10 years prior to the period of extended operation.

One-Time Inspection - Lubricating Oil Analysis

The DCPP OTI Program will verify the effectiveness of the Lubricating Oil Analysis Program at managing material loss by performing volumetric or visual examinations of one heat exchanger per in-scope system and function per unit. For example, one copper alloy centrifugal charging pump lube oil cooler per unit out of a population of two coolers per unit will be examined. This sample selection would include aluminum, copper alloy, and carbon steel heat exchanger shells.

LRA Amendment 23

LRA Section	RAI
A1.13	B2.1.13-4
A1.16	B2.1.13-4
B2.1.13	B2.1.13-4
B2.1.16	B2.1.13-4
Table A4-1	B2.1.13-4

A1.13 Fire Water System

The Fire Water System program manages loss of material due to corrosion, MIC, or biofouling for water-based fire protection systems. Internal and external inspections and tests of fire protection equipment are performed considering applicable National Fire Protection Association (NFPA) codes and standards. The fire water system is managed by performing routine preventive maintenance, inspections, and testing; operator rounds, performance monitoring, and reliance on the corrective action program; and system improvements to address aging and obsolescence issues.

The Fire Water System program conducts a water flow test through each open spray nozzle to verify that deluge systems provide full coverage of the equipment it protects. Either periodic non-intrusive volumetric examinations or visual inspections will be performed on firewater piping. Non-intrusive volumetric examinations would detect loss of material due to corrosion, and would confirm wall thickness is within acceptable limits so that aging will be detected before the loss of intended function. Visual inspections would evaluate (1) wall thickness as it applies to avoidance of catastrophic failure, and (2) the inner diameter of the piping as it applies to the design flow of the fire protection system. The volumetric examination technique employed will be one that is generally accepted in the industry, such as ultrasonic or eddy current.

Inspections of the firewater tank will be performed to detect loss of material.

A1.16 One-Time Inspection

The One-Time Inspection program conducts one-time inspections of plant system piping and components to verify the effectiveness of the Water Chemistry program (A1.2), *Fire Water System program (A1.13),* Fuel Oil Chemistry program (A1.14), and Lubricating Oil Analysis program (A1.23). The aging effects to be evaluated by the One-Time Inspection program are loss of material, cracking, and reduction of heat transfer. The One-Time Inspection program determines non-destructive examination sample size for each material-environment group using an engineered sampling technique for each material-environment group based on criteria such as the longest service period, most severe operating conditions, lowest design margins, lowest or stagnant flow conditions, high flow conditions, and highest temperature. The One-Time Inspection program evaluates unacceptable inspection results using the corrective action program.

This new program will be implemented and completed during the 10-year period prior to the period of extended operation. Industry and plant-specific operating experience will be evaluated in the development and implementation of this program.

B2.1.13 Fire Water System

Program Description

The Fire Water System program manages loss of material due to corrosion, MIC, or biofouling for water-based fire protection systems. Internal and external inspections and tests of fire protection equipment are performed in accordance with applicable National Fire Protection Association (NFPA) codes and standards. The fire water system is managed by performing routine preventive maintenance, inspections, and testing; operator rounds, performance monitoring, and reliance on the corrective action program; and system improvements to address aging and obsolescence issues.

The following are activities performed by the Fire Water System program:

Testing:

A fire water system flow test is performed at least every three years in accordance with plant procedures meeting requirements of NFPA 25. Hydraulic pump curves are obtained and compared with baseline curves to determine operability. During the Fire Water System flow test, parameters directly monitored are static pressure and velocity head.

The Fire Water System program conducts a water flow test through each open spray nozzle to verify that deluge systems provide full coverage of the equipment it protects. The Fire Water System program will be enhanced so sprinkler heads in service for 50 years will be replaced or representative samples from one or more sample areas will be tested in accordance with NFPA 25. Test procedures will be repeated at 10-year intervals during the period of extended operation, for sprinklers that were not replaced prior to being in service for 50 years to ensure that signs of degradation, such as corrosion, are detected prior to the loss of intended function.

The Fire Water System program conducts a water flow test through each open spray nozzle of the transformer deluge system periodically to verify that each nozzle is unobstructed. Water is flowed through the test valves of the deluge system periodically to ensure freedom from blockage.

Fire water is flowed from the Raw Water Storage Reservoir periodically to verify the system piping is capable of delivering the design flow rate.

The portable diesel driven fire pumps are tested periodically under full load/full flow conditions.

DCPP performs a hydrostatic test of its indoor fire hoses at least every three years, while outdoor fire hoses are tested at least annually. Fire hoses that are inaccessible during normal plant operations are tested every refueling outage.

Inspections:

Either periodic non-intrusive volumetric examinations or visual inspections will be performed on firewater piping. Non-intrusive volumetric examinations would detect loss of material due to corrosion, and would confirm wall thickness is within acceptable limits so that aging will be detected before the loss of intended function. Visual inspections would evaluate (1) wall thickness as it applies to avoidance of catastrophic failure, and (2) the inner diameter of the piping as it applies to the design flow of the fire protection system. The volumetric examination technique employed will be one that is generally accepted in the industry, such as ultrasonic or eddy current.

The Fire Water System program performs periodic visual inspections of main fire system piping, yard loop fire hydrants, hose reel headers, hose stations, portable diesel driven fire pump hoses, fire hoses, gaskets, water spray headers, sprinkler system headers, water spray nozzles, ~~and~~ sprinkler heads*, and tank* to verify they are free of significant corrosion, foreign materials, biofouling, and physical damage. *Tank internal inspection is performed by divers using video and the tank is cleaned as needed at five year frequency. A one-time UT examination of the fire water tank bottom will be performed as part of the One-Time Inspection aging management program, LRA Section B2.1.16.*

DCPP performs a visual inspection of its indoor hose station gaskets once every 18 months, except hose stations in high radiation areas and the containment buildings which are tested during refueling outages. This inspection ensures that the gaskets have a satisfactory fit with no defects.

Fire detection instruments located in safety related power block structures, which are accessible during plant operation, are demonstrated to be operable at least once per six months by testing and surveillance activities. For fire detection instruments located in safety related power block structures which are not accessible during plant operation, operability is demonstrated during each cold shutdown exceeding 24 hours, unless performed in the last six months.

B2.1.16 One-Time Inspection

Program Description

The One-Time Inspection (OTI) program conducts one-time inspections of plant system piping and components to verify the effectiveness of the Water Chemistry program (B2.1.2), *Fire Water System program (B2.1.13),* Fuel Oil Chemistry program (B2.1.14), and Lubricating Oil Analysis program (B2.1.23). The aging effects to be evaluated by the One-Time Inspection program are loss of material, cracking, and reduction of heat transfer.

The DCPP OTI Program is a new program that will be implemented by DCPP prior to the period of extended operation. The DCPP OTI Program provides measures for detecting the aging effects prior to loss of intended function, but does not prevent degradation due to aging effects.

Plant system piping and components identified in the OTI procedure will be subject to OTI using inspection personnel qualified consistent with the ASME Section XI Code and 10 CFR 50, Appendix B. These inspection personnel will follow American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section V, Nondestructive Examination (NDE), using NDE techniques appropriate to each inspection. NDE acceptance criteria will be consistent with the design codes/standards or ASME Section XI as applicable to the component for each one-time inspection.

Inspection sample sizes will be determined based on an assessment of materials of fabrication, environment, plausible aging effects and mechanisms, and operating experience. The OTI program determines NDE sample size for each material-environment group using an engineered sampling technique for each material-environment group based on criteria such as the longest service period, most severe operating conditions, lowest design margins, lowest or stagnant flow conditions, high flow conditions, and highest temperature. Component selection will be performed by the system engineer or other knowledgeable personnel. When evidence of an aging effect is revealed by a one-time inspection, the engineering evaluation of the inspection results would identify appropriate corrective actions.

The OTI inspections will be performed during the 10 years prior to the period of extended operation. All one-time inspections will be completed prior to the period of extended operation. Completion of the OTI Program in this time period will ensure that confirmation of the absence of aging effects is based upon inspection of components that have aged for at least 30 years.

Major elements of the DCPP OTI Program will include:

a) Identifying piping and component populations subject to OTI based on common materials and environments,

b) Determining the sample size of components to inspect for each material-environment group,

c) Selecting piping and components within the material-environment groups for inspection based on service period, plausible aging effects, operating conditions and design margins,

d) Conducting one-time inspections of the selected components using ASME Code Section V NDE inspection techniques and acceptance criteria effective in detecting aging effects of interest,

e) An one time UT examination of the firewater tank bottom will be performed.

~~e~~*f*) Evaluating unacceptable inspection results using the corrective action program.

Table A4-1 License Renewal Commitments

Item #	Commitment	LRA Section	Implementation Schedule
51	***A one time UT examination of the firewater tank bottom will be performed as part of the One-Time Inspection aging management program, LRA Section B2.1.16.***	***B2.1.16***	***During the 10 years prior to the period of extended operation***