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PG&E Letter DCL-14-078

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Reference: IMC-0410

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Request for Enforcement Discretion Regarding Compliance with Technical Specification 3.8.1, "AC Sources – Operating"

References: 1. NRC Regulatory Issue Summary 2005-01, Revision 1, "Changes to Notice of Enforcement Discretion Process and Staff Guidance," dated March 13, 2013

2. NRC Inspection Manual Chapter 0410, "Notices of Enforcement Discretion," dated March 13, 2013

Dear Commissioners and Staff:

This letter documents the background and technical information supporting the Diablo Canyon Power Plant Unit 2 notice of enforcement discretion (NOED) request discussed with the Nuclear Regulatory Commission (NRC) during a conference call held on August 15, 2014, at 1330 Pacific Daylight Time (PDT). Pacific Gas and Electric Company (PG&E) received verbal approval from the NRC Staff for the NOED. This submittal fulfills the requirement that a written NOED request be submitted to the NRC within two working days following NRC verbal approval of the NOED.

During the NOED conference call with the NRC, PG&E discussed that no permanent change to the Operating License or Technical Specification (TS) appeared necessary because of the application for risk informed completion times currently under review by the NRC. The NRC agreed that no follow up license amendment request would be necessary.

The events leading to PG&E's request began at 0656 PDT on August 10, 2014, when Diesel Generator (DG) 2-2 entered TS 3.8.1, Condition B, for a planned maintenance outage window (MOW). During the MOW, a diesel fuel oil header bolt was found to be broken. While performing extent of condition inspections, a crack on a DG 2-3 diesel fuel oil header bolt was also identified. All Unit 1 DGs and DG 2-1 were verified to not have any bolt issues prior to finding the cracked DG 2-3 bolt. TS 3.8.1, Condition E was entered for two DGs (2-2 and 2-3) inoperable at

1631 PDT on August 14, 2014, and expired at 1831 PDT on August 14, 2014. TS 3.8.1, Condition H, was entered at 1831 PDT on August 14, 2014, for Condition E completion time not met. Condition H, Action H.1, to be in Mode 3 within 6 hours was completed at 2351 PDT on August 14, 2014. During repair activities, PG&E identified a fuel oil leak on the DG 2-3 fuel oil booster pump.

PG&E requested enforcement discretion from the NRC from compliance with TS 3.8.1, Action H.2, to be in Mode 5 in 36 hours. PG&E requested an additional 3 hours for completion of Action H.2 (to 0931 PDT on August 16, 2015) in order to complete repairs prior to the time it would be necessary to start cool down towards Mode 5. Unit 2 was in Mode 3 at normal operating pressure and temperature.

Repairs were completed and DG 2-3 was declared operable at 1800 PDT on August 15, 2014.

This letter contains no new regulatory commitments and no new revisions to existing regulatory commitments (as defined in NEI 99-04).

If you have any questions, or require additional information, please contact Mr. Tom Baldwin at (805) 545-4720.

Sincerely,

Barry S. Allen
Site Vice President

mjrm/4557/50652179
Enclosure
cc: Diablo Distribution
cc/enc: Marc L. Dapas, NRC Region IV Administrator
Thomas R. Hipschman, NRC Senior Resident Inspector
Balwant K. Singal, NRC Project Manager

REQUEST FOR ENFORCEMENT DISCRETION REGARDING COMPLIANCE WITH TECHNICAL SPECIFICATION (TS) 3.8.1, "AC SOURCES – OPERATING"

The following provides the information, described in Nuclear Regulatory Commission (NRC) Inspection Manual Chapter (IMC) 0410, required to be included in requests for enforcement discretion:

07a. Did the licensee address what type of Notice of Enforcement Discretion (NOED) is being requested, which of the NOED criteria is satisfied, and how it satisfied those criteria?

IMC 0410, Section 06.02, "Types of NOEDs," Criterion a.2, is satisfied. This criterion applies to "plants in a shutdown condition, a NOED shall reduce shutdown risk by avoiding testing, inspection, high-risk evolutions, or system realignment that is inappropriate for the particular plant conditions, when adherence to the TS or license condition does not provide an overall safety benefit or may be detrimental to safety in the particular plant condition." A transition from Mode 3 to Mode 5 and Mode 5 back to Mode 3 would be a system realignment that does not provide an overall safety benefit.

07b. Did the licensee detail the TS or license condition that will be violated?

The Diablo Canyon Power Plant (DCPP) Technical Specification (TS) 3.8.1, "AC Sources – Operating," is applicable in Modes 1, 2, 3, and 4.

Due to broken diesel fuel oil header bolts, two DCPP Unit 2 Diesel Generator (DGs) were declared inoperable and TS 3.8.1, Condition E was entered. TS 3.8.1, Action E.1 requires at least two DGs are operable within 2 hours. TS 3.8.1, Condition E was exited after the 2-hour Completion Time expired. TS 3.8.1, Condition H was entered which requires the plant to be in Mode 3 in 6 hours and Mode 5 in 36 hours.

Pacific Gas and Electric Company (PG&E) requests regional enforcement discretion from compliance with TS 3.8.1, Action H.2, for DCPP Unit 2, such that the 36-hour Completion Time included in TS 3.8.1, Action H.2 will be extended by 3 hours, from 0631 Pacific Daylight Time (PDT) on August 16, 2014, to 0931 PDT on August 16, 2014, which will allow Unit 2 to remain in Mode 3 for an additional 3 hours, in order to complete the pump replacement, fill and vent, testing, and restoration activities. The additional 3 hours will avoid a cooldown of Unit 2 from Mode 3 to Mode 5. Unit 2 was in Mode 3 at normal operating pressure and temperature.

07c. Did the licensee provide a description of the circumstances, including: likely causes; the need for prompt action; the action taken to avoid the need for a NOED; and any relevant historical events?

BACKGROUND AND CAUSE OF THE EVENT

On August 10, 2014, at 0656 PDT, DCPP Unit 2 DG 2-2 was declared inoperable and TS 3.8.1, Condition B (one DG inoperable) was entered upon entry into a normally planned maintenance outage window. On August 13, 2014, while inspecting bolts on the DCPP Unit 2 DG 2-2, a diesel fuel oil header bolt was found to be broken off. The bolt is on the fuel injection pump inlet. There are two bolts that fasten the fuel injection pump inlet to the fuel supply rail.

On August 14, 2014, during an extent of condition inspection, a diesel fuel oil header bolt on DG 2-3 was found to be cracked. As a result of the cracked fuel header bolt on DG 2-3, DG 2-3 was declared inoperable on August 14, 2014, at 1631 PDT, and TS 3.8.1, Condition E (two or more DGs inoperable) was entered. At 1831 hours, the TS 3.8.1, Condition E completion time of 2 hours expired and TS 3.8.1, Condition H (required action and associated Completion Time of condition A, B, C, D, E, F, or G not met) was entered with Action H.1 to be in Mode 3 in 6 hours and H.2, Mode 5 in 36 hours.

All six DCPP Unit 1 and 2 DGs have been inspected for diesel fuel oil header bolt failures. No bolt failures were found on DGs 1-1, 1-2, 1-3, and 2-1.

The apparent cause of the bolt failures is fatigue. Comparison of the bolt failures to a new bolt showed minimal deformation from the original condition indicating that fracture occurred in a primarily brittle fashion with minimal plastic deformation. Observation of a bolt under 7x magnification determined the fracture surface contained beach marks that radiated from a single initiation site located at the thread root and that were present over most of the fracture surface, except for small portion that has a dull appearance resulting from overload failure. The percentage of surface in which overload occurred is very small, indicating stress on the fastener was relatively low, thus requiring many cycles to propagate the fatigue crack to the point at which the bolt failed.

While performing fill and vent activities of the DG 2-3 fuel header, a steady stream of fuel oil was observed flowing from the belt driven fuel oil booster pump at the shaft seal of the pump. At the time of the discovery, Unit 2 was in TS 3.8.1, Condition H (entered at 1831 PDT on August 14, 2014), which required (TS 3.8.1, Action H.1) Unit 2 to be placed in Mode 3 by 0031 PDT on August 15, 2014. A new pump is being installed.

All Unit 1, and the Unit 2, DG 2-1 fuel oil booster pumps have been tested and no leakage was observed.

NEED FOR PROMPT ACTION

Prompt action is requested for the NRC to provide enforcement discretion to not enforce the provisions of TS 3.8.1, Action H.2 for an additional period of 3 hours beyond the expiration of the Completion Time (0631 PDT on August 16, 2014) until 0931 PDT on August 16, 2014, in order to remain in Mode 3 for additional 3 hours. This will prevent an unnecessary shutdown transient as a result of compliance with the license condition and, thus, minimize the potential safety consequences and operational risks.

ACTION TAKEN IN AN ATTEMPT TO AVOID THE NEED FOR AN NOED

PG&E took actions in an attempt to avoid the need for this NOED request, included staffing the outage control center and initiating a dedicated team to troubleshoot the cause of the DG bolt failure, fuel pump failure, and make repairs under a complex maintenance plan utilizing 24-hour coverage.

RELEVANT HISTORICAL EVENTS

PG&E performed a review of past operating history of the DG diesel fuel oil header bolts over the past 20 years. In 2011, a broken DG diesel fuel oil header bolt was identified on DG 2-1. The cause of the bolt failure was determined to be fatigue. The cylinder fuel header bolts (36 per DG) were replaced on DGs 2-1, 2-2, and 2-3 with new bolts in 2011.

07d. Did the licensee provide information that shows the licensee fully understands the cause of the situation that has led to the NOED request?

The cause of the inoperability of DG 2-3 is one broken DG diesel fuel oil header bolt and a leak on the fuel oil booster pump shaft identified during restoration activities.

The apparent cause of the bolt failure is fatigue. The DG 2-2 header bolt has been replaced; however additional work remains to return the DG 2-2 from the planned maintenance outage window. The DG 2-3 diesel fuel oil header bolt has been replaced.

The cause of the DG 2-3 fuel oil booster pump leak is a failed shaft seal.

07e. Did the licensee detail the proposed course of action to resolve the situation until the situation no longer warrants an NOED?

The diesel fuel oil header bolt has been replaced to restore DG 2-3 to operable status. The fuel oil booster pump is being replaced, which will support restoration of DG 2-3 (a second DCPP Unit 2 DG) to operable status and eliminate the further need for an NOED.

To support the replacement of the fuel oil booster pump on DG 2-3, a total of 3 additional hours is expected to be required. This includes the following activities: couple the pump, attach flanges, fill and vent the fuel system, remove clearance, and perform testing.

07f. Did the licensee address that the resolution itself does not result in a different, unnecessary transient?

The DG 2-3 repair and restoration activities will not result in a plant transient and the requested (36 plus 3-hour) Completion Time for TS 3.8.1, Action H.2 will not result in a different plant transient.

07g. Did the licensee explain why they did not have time to process an emergency TS or license amendment or that a license amendment is not needed?

The condition of a broken diesel fuel oil header bolt on DCPP DG 2-2, a cracked diesel fuel oil header bolt on DG 2-3, and entry into TS 3.8.1, Action H.1 with a Completion Time of 6 hours and TS 3.8.1, Action H.2 with a Completion Time of 36 hours could not have been anticipated. The preparation of an emergency TS amendment request prior to the time required to begin transition to Mode 5 is not practical.

07h. Did the licensee describe the condition and operational status of the plant, including safety-related equipment out of service or otherwise inoperable, and nonsafety-related equipment that is degraded or out of service that may have risk significance and that may increase the probability of a plant transient or may complicate the recovery from a transient or may be used to mitigate the condition?

Currently, DCPP Unit 2 is at 0 percent power in Mode 3. Unit 2 is at normal operating pressure and temperature. Unit 2 DG 2-2 is in a maintenance outage and DG 2-3 is cleared for repair. The Unit 2 Containment Fan Cooler 2-1 is in high speed and is inoperable; however the containment fan cooler system is operable per TS 3.6.6. A TS 3.6.3 containment isolation valve is inoperable and the

penetration flowpath is closed in accordance with TS 3.6.3, Condition C.1. Both TS 3.3.1 source range nuclear instrumentation are inoperable.

07i. Did the licensee request a specific period for the NOED, including a justification for the duration of the noncompliance?

The replacement of the fuel oil booster pump on DG 2-3 is currently in progress and the return of the DG to operable status is expected to require an additional 3 hours beyond the point where Unit 2 would have to start transitioning to Mode 5.

07j. Did the licensee detail and explain compensatory measures the plant has both taken and will take to reduce the risk associated with the specified configuration?

No work activities on offsite power are allowed during the DG maintenance outage window. A risk management plan has been put in place because of the DG 2-2 maintenance outage window. DG 2-1 has been posted as protected equipment. Startup transformers, electrical buses, and Auxiliary Feed Water (AFW) are all posted as protected equipment.

Probabilistic Risk Assessment (PRA) insights for compensatory measures:

- Protect Turbine Driven AFW Pump 2-1 and the steam supply to it
- Protect DG 2-1
- Protect offsite 230 kV and 500 kV power and prohibit all work in the Diablo Canyon 230 kV/500 kV switchyard and the Morro Bay and Mesa 230 kV switchyards
- Protect the vital Unit 2 125 V DC, 480 V, 4 kV Bus G
- Protect Component Cooling Water (CCW) Pump 2-2
- Protect makeup water capability to the Condensate Storage Tank (CST) and any alternative sources for AFW supply
- Provide a continuous fire watch in the Unit 2 cable spreading room and Unit 2 Solid State Protection System (SSPS) room
- Prohibit welding and cutting in Fire Areas 3-BB-115 and 5-B-4
- Tailboard the operating crew on the operator action to provide backup cooling to the charging pumps with firewater
- Tailboard the operating crew on the operator action to back feed offsite power from the 500 kV system

07k. Did the licensee discuss the status and potential challenges to offsite and onsite power sources, including any current or planned maintenance in the distribution system and any current or planned maintenance to the emergency diesel generators?

There are currently no challenges to offsite power sources. DG 2-1 is operable and has been posted as protected equipment. DG 2-1 recently went through a maintenance outage window and on August 14, 2014. An ultrasonic inspection verified that there are no diesel fuel oil header bolt failures and there is no fuel leakage during DG operation.

07l. Did the licensee include the safety basis for the request and an evaluation of the safety significance and potential consequences of the proposed course of action?

The request to extend the 36-hour Completion Time for TS 3.8.1, Action H.2 by an additional 3-hour period has a minimal impact on radiological risk and is not detrimental to public health and safety. The request does not result in any significant changes in the types, or significant increase in the amounts, of any effluents that may be released offsite.

07m. Did the licensee demonstrate that the NOED condition, along with any compensatory measures, will not result in more than a minimal increase in radiological risk, either in a quantitative assessment that risk will be within the normal work control levels (ICCDP less than or equal to 5E-7 and/or ICLERP less than or equal to 5E-8) or in a defensible qualitative manner?

The transition to Mode 5 from Mode 3 introduces additional risk. In Mode 5, the Residual Heat Removal (RHR) system is relied upon for core cooling with limited capability to respond to system failures or other risk significant events such as a Loss of Offsite Power event. In Mode 3, steam generator (SG) cooling would be used to remove decay heat using the AFW System. The AFW system would be capable of providing SG cooling using either the Motor-Driven AFW Pump 2-2 or 2-3 or the Turbine-Driven AFW Pump 2-1. There are approximately 6 hours to recover offsite power from a station blackout event with the Turbine Driven AFW Pump 2-1 operating in Mode 3. In Mode 5 with a postulated station blackout scenario all RHR cooling is lost. In addition with a Loss of Offsite Power in Mode 5, only one RHR pump and only one CCW pump is available.

While the Risk Informed Completion Time (RICT) license amendment has not currently been approved by the NRC, DCPP additionally did a comparison with the draft RICT PRA model to validate the conservatism of the request.

DCPP submitted the Risk Managed Technical Specification (RMTS) License Amendment Request (LAR) in November of last year with the scope including Limiting Condition for Operation (LCO) 3.8.1, Condition E for two emergency DGs inoperable. The Diablo Canyon PRA model has gone through internal events, internal flooding, fire, and seismic peer reviews with a majority of the Findings and Observations (F&Os) resolved, which gives high confidence to the quality of the model. Based on a draft PRA model (internal events, internal flooding, fire, seismic) updated to address the peer review F&Os and commitments in the LAR, the following RICTs were calculated for two emergency diesel generators (EDGs) out of service:

DG 2-1 and DG 2-2: 8.4 days
DG 2-2 and DG 2-3: 6.7 days
DG 2-1 and DG 2-3: 6.7 days

Accordingly, the RICT for DG 2-2 and DG 2-3 inoperable would be 6.7 days, assuming no other PRA credited equipment is unavailable. Incremental conditional core damage probability (ICCDP) is the limiting constraint for these RICTs. Several assumptions made in the calculations include:

- No credit is taken for the reactor coolant pump hot shutdown seal modification in the PRA model
- No recovery is assumed for DG 2-2 and DG 2-3
- Credit is taken for the yet to be complete incipient detection and hot shutdown panel modifications, which the RMTS LAR proposed as crediting with a commitment to place a continuous fire watch in the cable spreading room and SSPS room while a RICT is in effect
- Credit is taken for the yet to be complete cable fire wrapping and cable rerouting modifications, which the RMTS LAR proposed as crediting with a commitment to prohibit welding and cutting in Fire Areas 3-BB-115 and 5-B-4, while a RICT is in effect
- The total core damage frequency (CDF) is less than 1.00E-03/yr and the total large early release frequency (LERF) is less than 1.00E-04/yr for any of the two EDGs out of service
- An ICCDP of 1.00E-05 and an incremental conditional large early release probability (ICLERP) of 1.00E-06 is used to determine the RICTs

DG 2-3 is proposed to be made operable at 2000 PDT on August 15, 2014, thus the calculated RICT of 6.7 days for DG 2-2 and DG 2-3 demonstrate that the risk increase is acceptable and would allow the DGs to be repaired in a timely manner without having to transition the plant to a lower mode and introduce new transients with two EDGs unavailable. Risk managed actions are an important component of the RMTS Program to manage the increased risk while in a RICT and thus the following risk managed actions are proposed:

- Protect Turbine Driven AFW Pump 2-1 and the steam supply to it
- Protect DG 2-1
- Protect offsite 230 kV and 500 kV power and prohibit all work in the Diablo Canyon 230 kV/500 kV switchyard and the Morro Bay and Mesa 230 kV switchyards
- Protect the vital Unit 2 125 V DC, 480 V, 4 kV Bus G
- Protect CCW Pump 2-2
- Protect makeup water capability to the CST and any alternative sources for AFW supply
- Provide a continuous fire watch in the Unit 2 cable spreading room and Unit 2 SSPS room
- Prohibit welding and cutting in Fire Areas 3-BB-115 and 5-B-4
- Tailboard the operating crew on the operator action to provide backup cooling to the charging pumps with firewater
- Tailboard the operating crew on the operator action to back feed offsite power from the 500 kV system

Based on the Diablo Canyon PRA model quality, the calculated RICT of 6.7 days compared to the time DG 2-3 is scheduled to be made operable (2000 PDT on August 15, 2014) and the proposed risk management actions there is reasonable assurance that the risk increase is acceptable to stay in Mode 3 and not transition to Mode 5.

Note: During the verbal request phone call with the NRC, the NRC asked if PG&E had also performed a calculation using the current At-Power PRA model. PG&E identified that the calculation had been performed and resulted in an approximate 14-hour time. The results of the Calculation File No. NOED 14-01, Revision 1, "PRA Evaluation for EDG 2-2 and EDG 2-3 Fuel Header Bolt Failure," are summarized below:

Assumptions and Assertions

1. For internal events and seismic risk contributions, the average Maintenance Model DC02 is conservatively used to model the failure of DG 2-2 and DG 2-3.
2. For the fire risk contribution, the No-maintenance Model DC01NM is used to model the failure of DG 2-2 and DG 2-3.
3. Common cause exists between the failures of DG 2-2 and DG 2-3.
4. Visual inspection, ultrasonic testing and a test run for leak check on DG 2-1 confirmed that there were no diesel fuel oil header bolt failures. Thus common cause failure of DG 2-1 can be removed due to the DG 2-2 and DG 2-3 failures.

5. No other maintenance activity which could impact the PRA model results is assumed during the maintenance activity of the DGs.
6. The At-Power PRA model was conservatively applied to plant conditions at Mode 3.

HAZARD GROUP	BASE CDF (DC02)	Application case (DEG2223)
Internal CDF	1.35E-05	2.21E-04
Seismic CDF	2.74E-05	1.20E-04
TOTAL	**4.09E-05**	**3.41E-04**
ΔCDF	**3.01E-04**	

HAZARD GROUP	BASE LERF (DC02)	Application case (DEG2223)
Internal LERF	1.59e-06	1.33E-05
Seismic LERF	1.58e-06	1.97E-06
TOTAL	**3.17E-06**	**1.53E-05**
ΔLERF	**1.21E-05**	

HAZARD GROUP	BASE CDF (DC01NM)	Application case (DEG2223)
Fire CDF	1.47E-05	1.52E-05
ΔCDF	**4.97E-07**	

At DCPP, the risk contribution from internal flooding events is insignificant compared to other types of hazards. Not including its impact should not affect the conclusion.

ΔCDF = **3.01E-04 / year**
ΔLERF = **1.21E-05 / year**

The results of the At-Power PRA model for this evaluation are:

ICCDP = (Unavailable Duration) x ΔCDF
ICCDP = (14.5 hours / 8760) x 3.01E-04 / year

For a 14.5-hour extension:

ICCDP 4.98E-07
ICLERP 2.01E-08

The calculated values of ICCDP and ICLERP are less than their respective guidance thresholds of 5E-07 and 5E-08. Thus 14.5 hours meets the acceptance criteria for the NOED. This is calculated from the At-Power PRA model (Mode 1) and conservatively applied to the Mode 3 plant condition.

07n. Did the licensee discuss forecasted weather and pandemic conditions for the NOED period and any plant vulnerabilities related to weather or pandemic conditions?

There are no active alerts for any adverse weather conditions in the Avila Beach area. The forecast calls for mostly sunny with dense fog in the evening, with a low of 57°F and a high today of 76°F. There are no pandemic flu conditions present.

07o. Did the licensee describe the basis for the conclusion that the noncompliance will not create undue risk to public health and safety?

The proposed period of noncompliance will not be detrimental to public health and safety. PG&E has evaluated the risk and determined that it is sufficiently low. A summary of the evaluation is provided as part of Item 07m. To further protect the health and safety of the public, risk management actions have been taken to not allow work activities on offsite power during the DG 2-2 maintenance outage window and DG 2-1 has been posted as protected equipment.

07p. Did the licensee describe the basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment?

This request for enforcement discretion will not result in any significant changes in the types, or significant increase in the amounts, of any effluents that may be released offsite. In addition, no significant increase in individual or cumulative occupational radiation exposures will be involved as a result of the request. Therefore, it can be concluded that the NRC's granting of this request for enforcement discretion will not involve any adverse consequences to the environment.

07q. Did the licensee's facility organization that normally reviews safety issues approve the request?

This NOED request was reviewed and approved by the DCPP Plant Staff Review Committee on August 15, 2014.

07r. Did the licensee commit that it will submit a written NOED request within two working days and a follow-up license amendment request following the staff's verbal granting of the NOED?

This letter fulfills the requirement to submit a written NOED request within two working days (Tuesday August 19, 2014). A follow-up LAR will not be submitted because it is not expected that this condition will recur in the foreseeable future. In addition, PG&E has submitted a LAR for TSTF-505 on November 25, 2013, which will allow PG&E to calculate a risk-informed TS Completion Time when 2 DGs are inoperable.