DiabloCanyonNPEm Resource

From: Stuyvenberg, Andrew
Sent: Friday, July 16, 2010 11:42 AM
To: 'Grebel, Terence'; 'Tan, Miranda'
Subject: RAIs - SAMA and Environmental
Attachments: ML101450375_DCPP_ENV_SAMA_RAI.pdf

Terry, Miranda –

Please see attached for an electronic copy of the RAIs. Please let me know if you have any questions.

Best,
Drew

_____

Drew Stuyvenberg
U.S. Nuclear Regulatory Commission
301-415-4006
Andrew.Stuyvenberg@nrc.gov

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July 6, 2010

John Conway
Senior Vice President
Generation and Chief Nuclear Officer
Pacific Gas and Electric Company
77 Beale Street, MC B32
San Francisco, CA 94105

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE ENVIRONMENTAL REVIEW OF THE DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. ME2825 and ME2826)

Dear Mr. Conway:

The U.S. Nuclear Regulatory Commission (NRC or the staff) has reviewed the application submitted by Pacific Gas & Electric for the license renewal of Diablo Canyon Nuclear Power Plant Units 1 and 2, and has identified areas where additional information is needed to complete its review. Enclosed is the staff's request for additional information.

As discussed with your staff, we request that you provide your responses to questions related to cultural, archaeological, and socioeconomic issues (enclosure 1) no later than 30 days after the issuance of this letter. For requests related to the severe accident mitigation alternatives analysis (enclosure 2), we request your responses within 45 days. If you have any questions, please contact me at (301) 415-4006 or by e-mail at andrew.stuyvenberg@nrc.gov.

Sincerely,

/RA/

Andrew L. Stuyvenberg,
Environmental Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
Request for Additional Information

cc w/encl: See next page

July 6, 2010

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OFFICE	PM:RPB2:DLR	LA:DLR	BC:RERB:DLR	BC:RPB2:DLR	PM:RPB2:DLR
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DATE	06/07/10	06/02/10	07/02/10	07/02/10	07/06/10

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Request for Additional Information
Regarding the Environmental Review of the Proposed License Renewal
For Diablo Canyon Power Plant Units 1 and 2

Archaeological and Historic Resources

1. Please provide the updated 2010 file search results that supplement the cultural resources overview prepared by Price and Trumbly (2009), including any updates to Appendix C tables and maps.

2. Has Pacific Gas & Electric (PG&E) observed any change in the rate of coastal erosion in the Diablo Canyon Power Plant (DCPP) discharge cove or elsewhere on the property since operation of the DCPP cooling system started? If so, please explain the direction and magnitude of the changes in coastal erosion rates. Does PG&E monitor for erosion of archaeological sites, and especially for erosion of human burials?

3. Please provide information about two most recent training events for archaeological awareness for PG&E employees at DCPP. This information should include, at a minimum, dates for the training events, the number of PG&E staff and contractors in attendance, and a description of the material and instructions provided. Also, please indicate whether any tribal or State representatives were involved in the training, and if so, how.

4. During the site audit, NRC staff noted that archaeological surveys were completed for placement of emergency sirens. In several cases, intact archaeological sites are located immediately adjacent to the poles (pole location only was excavated). Does PG&E or its contractors perform additional archaeological work in pole maintenance or replacement scenarios? What procedures are in place to consistently treat archaeological resources previously identified at siren locations?

5. Please provide the total acres and percent of the PG&E lands archaeologically surveyed (indicate any overlap in survey boundaries, so acreage is not overestimated in calculating the percent). Please provide the same (total acres and percent) for all transmission line right-of-ways.

Socioeconomics

1. Please explain why tax payments from DCPP to San Luis Obispo County have risen from $20.7 million in 2007-2008 to $22.3 million in 2008-2009 and $24.5 million in 2009-2010 (see March 2010, “The Local Economic Impacts of Decommissioning the Diablo Canyon Power Plant”). Is this roughly $2 million annual increase going to continue? What future trend does PG&E anticipate and why?

2. According to the Environmental Report (ER), annual property taxes paid to San Luis Obispo County are based on the value of DCPP (see ER Section 2.7, Taxes). According to the

March 2010 report to the California Public Utilities Commission, “The Local Economic Impacts of Decommissioning the Diablo Canyon Power Plant,” DCPP’s assessed value is based on energy production capability rather than plant assets (see page 19). How is the assessed value determined? If there are different ways of assessing the value or taxing the value of DCPP, please describe these methods.

3. Please indicate whether the breakdown of the 2009/2010 Unitary Tax Revenue shown in Figure 4 and discussed on pages 17 to 19 in the March 2010 report, “The Local Economic Impacts of Decommissioning the Diablo Canyon Power Plant” (provided by DCPP staff to NRC staff at the site audit) is an accurate representation of the distribution of tax revenues from DCPP to the San Luis Obispo County General Fund, San Luis Coastal Unified School District, and Port San Luis Harbor District. Can the percent distributions identified in this report be applied for each of the tax years discussed in the DCPP ER?

Request for Additional Information
Regarding the Analysis of Severe Accident Mitigation Alternatives in the Proposed License Renewal for Diablo Canyon Power Plant Units 1 and 2

1. Provide the following information regarding the Level 1 Probabilistic Risk Assessment (PRA) used for the Severe Accident Mitigation Alternative (SAMA) analysis in Attachment F to the Environmental Report (ER):

   a. Section F.2.1.2 describes changes made in PRA model DCPRA-1991 (the Individual Plant Examination [IPE] model) to include emergency diesel generator fuel transfer system and charging pump back up cooling. The Brookhaven National Laboratory review of PRA model DCPRA-1988 (NUREG/CR-5726) indicates that these revisions were included in the 1988 model. Clarify this discrepancy.

   b. Section F.2.1.3 describes the changes made to model DCPRA-1988 to create model DCPRA-1993 (the Individual Plant Examination for External Events [IPEEE] model). Confirm that the changes made to model DCPRA-1988 to obtain model DCPRA-1991 (as described in Section F.2.1.2) were also made to the IPEEE model.

   c. Provide the internal events core damage frequency (CDF) associated with the IPEEE model. This should be different from the IPE value since the 6th emergency diesel generator (EDG) added subsequent to the IPE would be expected to affect the internal event results.

   d. Describe what is meant by "Level 2" in the initiating event "Non-Isolated Steam Generator Tube Rupture (SGTR) for Level 2" on page F-23. Describe the contribution to CDF from isolated SGTR initiating events.

   e. Provide the contribution to the DC01A internal event CDF due to Anticipated Transient Without Scram (ATWS) and station blackout (SBO) events.

   f. PG&E indicates, in Section F.2.1 that, since the two Diablo Canyon Power Plant (DCPP) units are essentially identical, no separate PRA model for Unit 2 was developed. Describe briefly how the availability or non-availability of Unit 2 impacts Unit 1 operation and how this is modeled in the Unit 1 PRA, including availability of shared systems, two-unit initiators, and cross ties between units.

   g. Section F.2.3.1 states that plant specific initiating event frequencies, failure rates, and maintenance unavailabilities are updated approximately every six years with the last update completed in March 2003. Section F.2.1.8 states that the component database in the DC01 model was updated using data through September 30, 2001. Confirm, via a review of current initiating event frequencies and important component unavailability values, that updating the PRA with these values would not adversely affect the results of the SAMA evaluation.

h. Section F.2.1.8 indicates that, except for the charging pump modification described in Section F.2.1.9, the last update for design or operational changes was made for changes through 2004. Confirm that operational or design changes made since that time will not adversely affect the results of the SAMA evaluation.

i. Identify the PRA model reviewed for each of the reviews described in Section F.2.3.2. Clarify the model reviewed in the May 2000 Westinghouse Owners Group (WOG) review and the CDF results for and changes to that model as implied in the discussion of the review in Section 1 of the DCPP Risk-Informed In-Service Inspection (RI-ISI) submittal.

j. Section F.4 states that the internal events CDF of 8.44E-06 per year (for PRA model DC01A at a truncation of 1E-14 per year) was used for calculating the Maximum Averted Cost-Risk (MACR). The CDF reported in Section F.2.1.9 for model DC01A is 8.13E-06 per year. Address the disparities and the truncation limits on which the internal and external event CDF values given in Section F.2.1 were based.

k. The discussion of the assessment of open items/issues resulting from the reviews of the DCPP PRA in Sections F.2.3.4 and F.2.3.5 addresses only the impact on those systems, operator actions, etc., that have been identified in the importance analysis and then only with respect to the SAMA identification process. The assessment did not consider the impact on the evaluation of the benefit associated with any SAMA and the subsequent screening of the SAMAs. While Addendum 1 to Attachment F to the ER addresses the importance of each open item on the SAMA assessment, it is not clear that this assessment incorporates consideration of the impact on the evaluation of the benefit or subsequent screening of any SAMA. Provide further discussion of the evaluation of open items/issues to support the conclusion that none of the open items/issues will adversely impact the results of the SAMA assessment considering both the benefit evaluation and SAMA identification.

l. Provide definitions of the PRA Issue and Status codes used in Addendum 1. Confirm that all of the unresolved issues from the reviews identified in Section F.2.3.2 are addressed in the addendum.

m. In Addendum 1, Open Item 56 concerns the inclusion of expansion joints in the internal flooding modeling with the comment that expansion joints in the circulating water system would be included in the future. This item was judged to have no impact on the SAMA application because turbine building floods are not significant contributors to risk. Open Item 608 concerns crediting isolation of large turbine building floods to mitigate propagation to areas where equipment failure might be important. This item was judged to have no impact on the SAMA conclusion since SAMAs 4 and 5 are associated with alternative onsite power sources. There is the potential that the resolution of both these items could impact the SAMA analysis either by identifying additional SAMAs associated with the flooding events (barriers, automatic isolations, etc.) or increasing the benefit associated with the related SAMAs 4 or 5. Provide further support for the disposition of these two open items with respect to the SAMA assessment.

n. Section F.7.2, in presenting the results of the uncertainty analysis for PRA model DC00, states that the internal events CDF of 1.41E-05 per year is a point estimate value. The

table of results in Section F.2.1.6 labels this value as the mean CDF. For all of the CDF values reported in Section F.2.1, confirm whether these are point estimates or mean values. Also confirm whether the evaluation of base case benefits is based on point estimate or mean values.

o. Section F.2.1 describes the PRA model changes made since model DCPRA-1998. For PRA model versions 1995 and later, identify the model changes listed in Section E.2.1 that most impacted the change in CDF.

2. Provide the following information relative to the Level 2 analysis:

a. The discussion in Section F.2.2.1 through F.2.2.4, and associated figures and tables, appears to have been taken directly from the DCPP IPE submittal. Discuss the evolution of the current Level 2 model from that of the IPE including changes to the Level 2 analysis to reflect plant design and operation changes, incorporation of severe accident management guidelines, improvement in accident progression knowledge since the IPE (including consequential SGTR events) and changes to the Level 2 and/or Large Early Release Frequency (LERF) model alluded to in Sections F.2.1.6 and F.2.1.8.

b. The release category frequencies given in Table F.2-8 appear to be those for the IPE model. Provide updated values for the PRA model DC01A.

c. Provide a discussion of the process used to map the 37 release categories identified in Table F.2-5 to the six source term categories used in the SAMA analysis (e.g., Tables F.3-5 through F.3-7). Identify the release categories included in each source term category.

d. From Tables F.3-5 and F.3-6 it appears that only the results from six specific Modular Accident Analysis Program (MAAP) cases were used in the source term analysis. Confirm whether and how results from the parametric code ZISOR were used in the SAMA analysis. Provide the rationale for using selected MAAP results rather than ZISOR results for the source term release fractions when, in some release category cases, the ZISOR results are higher.

e. Provide more information on the selection of the MAAP case for each source term category, in particular how scenarios of less than dominant frequency but larger potential consequences were considered. Also confirm the version of MAAP used for the source term analysis.

f. The Westinghouse Level 2 PRA review described in Section F.2.3.2 is stated to be in support of Risk Informed Technical Specification Test Frequency (RITSTF) Initiative 5-b and is cited in Reference 56 as an “ASME PRA Peer Review” for LERF. Provide more information on this review including the applicability to the SAMA application, the composition of review team, the criteria used, and the resolution/disposition of review findings for the SAMA application (if not addressed in Addendum 1 to the ER).

g. Discuss the binning of plant damage state (PDS) INNNB into key plant damage state (KPDS) INNGB. This appears to violate the fifth binning guideline given in Section F.2.2.3.

h. Discuss the extent to which recovery of systems or operator actions following the onset of core damage are credited in the Level 2 assessment, and how the recovery is modeled.

i. The DCPP IPE indicates that isolation failure contributes about 80 percent of the small-early release category frequency. The SAMA analysis indicates that this release category accounts for over one third of the offsite consequences. Discuss the importance of this containment failure mode and potential SAMAs to reduce this contribution to offsite consequences.

j. Section F.2.2.4.5.1 discusses the calculation time cutoff at 50 hours and indicates that simulations run for longer times "did not show huge increases" in the release fractions. Provide a brief but more quantitative discussion of the potential impact to dose-risk and offsite economic cost risk (OECR) if the simulation time were extended beyond 50 hours.

3. Provide the following information with regard to the treatment and inclusion of external events in the SAMA analysis:

a. Section F.4.6.2 states that some changes have been made to the external event models, but the models have not been updated to reflect recent plant changes or the full spectrum of current PRA techniques. Provide a discussion of: (1) the model changes that have been made, and (2) the plant design changes that have not been incorporated in the seismic and fire models and their potential impact on the results of the SAMA assessment. In addition, describe the most significant conservatisms and non-conservatisms in the seismic and fire models and their impact on the SAMA analysis.

b. Section 4.6.2 states that "the method chosen to account for external events contributions in the SAMA analysis is to use a multiplier on the internal events results." However, the Phase II SAMA evaluations do, in fact, use the IPEEE fire and seismic PRA models rather than the external events multiplier (see also RAI 6e). Discuss this apparent discrepancy. Justify the use of the fire and seismic PRA models for the SAMA analysis given: (1) the number of strong motion earthquakes worldwide since the Long Term Seismic Program (LTSP) seismic risk assessment that have provided the opportunity for reassessing and updating the methodologies associated with evaluating the impact of ground accelerations on structures and equipment, (2) the significant evolution in fire PRA methodology since the IPEEE as set forth in the fire PRA standard (ANSI/ANS-58.23-2007) and the joint NRC/EPRI fire PRA development guidance (NUREG/CR-6850), and (3) the publication of the external events PRA standard (ANSI/ANS-58.21-2007).

c. The seismic hazard analysis used to determine the seismic CDF is that developed for the LTSP in 1988. Since then there has been a continued investigation of seismicity in the DCPP region. The U.S. Geological Survey (USGS) has updated its assessment of seismic hazards across the US including California. In addition a new fault, the

Shoreline Fault, has been identified. This new fault could impact the seismic non-exceedance frequency used for the seismic analysis. Provide a justification for the continued use of the 1988 seismic hazard curves for the seismic analysis used in the SAMA assessment. Address whether consideration of the Shoreline Fault could result in identification of additional candidate SAMAs specific to failures introduced by the fault, or an increase in SAMA benefits sufficient to change a SAMA disposition from not-cost-beneficial to cost-beneficial.

d. Provide descriptions of the most important seismic CDF sequences including initiator, seismic failures and non-seismic failures and their CDF contributions.

e. Several differences in fire CDF results are apparent when comparing the model DC01A results in Figure F.2-4 with those in Table 4.6-4 of the IPEEE. Specifically, initiator VB1, the IPEEE's largest fire CDF contributor, is no longer ranked in the top 6 contributors and the CDF contribution from initiators FS6, FS1, and VB4 have been reduced in both a relative and an absolute sense, particularly when the change in the contribution from FS7 is considered. Discuss the reasons for these differences.

f. The description of the model changes resulting in PRA model DC00 (2000) suggest that the fire and seismic PRA models were integrated with the internal events Level 1 PRA model. Confirm whether this understanding is correct. If integrated, explain why the sequences from these models were not mapped into the CET and release categories.

4. Provide the following information relative to the Level 3 analysis:

a. Section F.3.1 indicates that the complex mountain terrain would be expected to increase the amount of deposition close to the site. Provide a brief discussion of whether/how the terrain effects were incorporated into the MELCOR Accident Consequence Code System Version 2 (MACCS2) analysis.

b. Section F.3.2 indicates that the transient population was included for the region within 10 miles of the site, but not for the 10-50 mile region. Section 2.1.3.4 of the final safety analysis report (FSAR) identifies that the peak transient population within the 50-mile radius is about 100,000 people. Also, from Table 2.1-4 of the FSAR the total transient visitor-days within the 50-mile radius is about 10,000,000, which would equate to a yearly average population of about 28,000 people. These values appear to be for the year 2000 time frame. Justify not including a transient population in the 10-50 mile radius. Clarify whether/how the transient population was adjusted for year 2045 as these values are a significant fraction of the year 2000 permanent population. Discuss how the 10-mile radius transient population was developed from the FSAR transient population data, which appears to be based on the 6-mile radius low population zone (LPZ).

c. Discuss whether and how the evacuation time was adjusted for the difference in population between year 2045 and the year of the referenced evacuation time estimate study.

d. Section F.3.5 identifies the reference for the core inventory (Table F.3-3) as a "DCPP Informal Calculation." Describe the level of review of this calculation. Confirm that this core inventory reflects the anticipated fuel management/burnup during the renewal period.

5. Provide the following information with regard to the SAMA selection and screening process:

a. Section F.5.1.1 describes the basis for the lower risk reduction worth (RRW) cutoff associated with the importance analysis review for the Phase 1 SAMA identification process. It is stated that, for the internal events model, an RRW of 1.04 corresponds to a single unit averted cost-risk of $49,965. This however does not include the additional benefits in external events. Using a total MACR of $7.4 million, the internal events cutoff of 1.02 actually used in the importance review corresponds to a minimum averted cost-risk of $145,000 for a single unit. This is considerably greater than the single unit procedure change cost of $50,000 used in the SAMA analysis. Provide a review of importance analysis results down to a RRW of 1.007 and provide an assessment of any new SAMAs identified.

b. The identification of potential DCPP SAMAs from importance reviews utilizes the importance at the split fraction level as opposed to the basic event or component level. The latter might lead to the identification of more specific failures that might be mitigated by a design or procedure change. For example, IPEEE Table 3-10 lists the importance of top events, while Table 3-11 lists the importance at the component level. The latter includes failure of block walls that lead to failure of top event SACSS, "Failure of all vital 4 kV AC power." This indicates that a SAMA related to fixing the block walls might be considered as an alternative to SAMA 18. Provide justification that use of top event importance rather than basic event or component importance provides an adequate identification of potential low cost SAMAs, and additional supporting analyses, as appropriate.

c. The NRC Staff Evaluation Report (SER) on the DCPP IPE identifies three potential plant improvements (p. 15 of the June 30, 1993 SER). Two items were not addressed in Section F.5.1.4 – modification of reactor coolant drain tank (RCDT) door to flood the reactor cavity and incorporating insights from the SGTR results into severe accident management. Provide the implementation status of these items and a Phase I/II evaluation of any not implemented or resolved by other means.

d. IPE Section 6.1 and IPEEE Section 7.1 identify a number of plant improvements that, although not PRA-related, were considered to have a beneficial impact on the PRA results. Provide the implementation status of these items and a Phase I/II evaluation of any not implemented or resolved by other means.

e. Table F.5-3 identifies SAMA 21, "Provide a Portable Air Compressor to Pressurize IA Header," as a Phase I SAMA and dispositions it as not used. This SAMA is not discussed elsewhere in the ER. Furthermore, SAMA 21 appears to be an alternative to SAMA 9 that would mitigate a broader set of basic events. Clarify how SAMA 21 was identified and justify why it should not be further evaluated.

6. Provide the following information with regard to the Phase II cost-benefit evaluations:

   a. Section F.6 states that plant personnel developed DCPP-specific implementation cost estimates for each of the SAMAs. Provide a description of: the process PG&E used to develop the SAMA implementation costs, the level of detail used to develop the cost estimates (e.g., general cost categories such as hardware design, procurement, installation, and testing, as well as procedure development, quality assurance and licensing support, etc.), and how the calculations are documented. Provide the details of the cost estimates for SAMAs 3, 8, 10, 11, 12, and 14.

   b. The discussion in Section F.6 indicates that the Phase 2 benefit analysis utilized the sum of the release category frequencies (8.44E-06 per year) instead of the Level 1 CDF value of 8.47E-06 per year, and that the release category results did not include the contribution from the negligible (intact) release category. The Level 1 CDF is given in Section F.2.1.9 as 8.13E-06 per year and a negligible release category is not discussed elsewhere. Clarify this discrepancy.

   c. In each of the subsections in Section F.6, there is a discussion of assumptions made in evaluating the respective SAMA. Most of these are described in terms of the split fractions of the PRA and can be confusing without recourse to the details of the split fraction definitions and usage. Provide a brief description of the model changes for each SAMA in layman's terms without recourse to PRA jargon. Furthermore, the discussion describes the development of the split fractions used for the SAMA analysis but does not provide a corresponding description of the baseline split fractions. Provide a description of the baseline split fractions that are being changed in each SAMA evaluation.

   d. In each of the subsections in Section F.6, split fractions and top events are listed under a heading "PRA Model Changes to Model SAMA," followed by a discussion of model changes. In most cases the discussion describes the changes made to the items listed. In some cases the description doesn't include all the split fractions listed or includes a discussion of other spit fractions without an explanation. See for example the discussions in Sections F.6.2 and F.6.3. Without a detailed knowledge of the composition and relationship of the split fractions in the DCPP PRA model it is difficult to fully understand the changes made to the model. Explain the intent and source of the split fractions and top events listed in each section and clarify the discussions as to the changes made and why changes were or were not made to those items listed.

   e. The discussion in Section F.6.2 of modeling the impact of SAMA 3 notes that no credit is taken for seismic or fire initiators. However, the results indicate a large reduction in fire CDF. Explain this result. Provide an assessment of the additional risk reduction from this SAMA in seismic scenarios.

   f. The discussion in Section F.6.4 of modeling the impact of SAMA 7 notes that the assumptions result in an underestimate of the risk benefit. Characterize the magnitude of this underestimate.

   g. The evaluation of SAMA 11, "Install Containment Combustible Gas Igniters," in Section F.6.8 indicates a 68.3 percent reduction in the fire CDF. Explain this significant

reduction and why the associated split fractions involved do not appear in the fire CDF importance list.

h. For SAMA 13, “Improve Cable Wrap for the Power Operated Relief Valves (PORVs) in the Cable Spreading Room,” provide the baseline initiating event frequency for initiator CSR2.

i. The evaluation of SAMA 17, “Install Alternate Power Connections to Centrifugal Charging Pump (CCP) 1-2,” in Section F.6.12 indicates a very small reduction in internal events CDF and no reduction in fire CDF, even though this SAMA was identified based on the fire analysis importance review. Split fraction SE9F, representing the probability of a seal loss-of-coolant accident (LOCA) given reactor coolant pumps are tripped and all seal injection and thermal barrier cooling is lost, is indicated in Table F.5-1b to have a RRW of 1.03 for fires. Based on this non-negligible contribution, some reduction in fire CDF would be expected. Discuss this evaluation.

j. SAMAs 5 and 18 are essentially identical and involve use of an alternate EDG to support auxiliary feedwater (AFW) operation and a 480V AC self-cooled positive displacement pump for primary makeup. The only difference is that SAMA 18 is stated to be seismically qualified. However, NRC staff notes the following: (1) the costs of implementation are the same, (2) no seismic failure is incorporated in the SAMA 5 evaluation, (3) the model changes described for each SAMA are different with respect to the impact on AFW availability, and (4) the change in internal events CDF, dose-risk, and OECR are different with the SAMA 5 benefit being larger than the SAMA 18 benefit. It would be expected that SAMA 18 would have the same benefit in internal events but a higher benefit in seismic events, and a higher implementation cost due to the higher seismic capacity for SAMA 18. Clarify the differences between SAMAs 5 and 18 and discuss the differences in modeling and in results.

k. The estimated per unit cost of $1.7M for SAMA 9, “Backup Air System for PORV Pressure Control Valve (PCV) 474,” seems high for what is described as installation of nitrogen bottles to support the PORV only. Justify the cost estimate for SAMA 9.

l. SAMA 5 provides for a small, alternate EDG to mitigate loss of level instrumentation and AFW control and a redundant positive displacement pump (PDP), powered by the alternate EDG, to mitigate RCP seal LOCAs. Previous SAMA analyses (i.e., Susquehanna and Point Beach) have shown procurement of a portable EDG to be significantly less costly than procurement and installation of an additional injection pump. Provide an evaluation of an alternative SAMA involving procuring just a small portable EDG to supply critical plant systems such as AFW.

m. Provide the modeling assumptions used to evaluate SAMA 6 in the uncertainty analysis (Section F.7.2.1.1).

n. For SAMA 15 (Section F.7.2.1.3), provide the implementation cost and the 95th percentile averted cost-risk value.

o. In estimating the benefit of the reduction in risk from external events, PG&E provides a separate analysis to estimate the benefit of the reduction in fire and seismic risk. Since a Level 2 PRA model was not developed as part of the fire and seismic models, the benefit from the reduction in fire and seismic risk is based on the reduction in fire and seismic CDF. However, this approach may underestimate the benefit for SAMAs in which the benefit is dominated by the reduction in population dose risk or OECR and not CDF. This is the case for SAMAs 3, 11, 24, and 25. Provide an assessment of the impact on the results for SAMAs 3, 11, 24, and 25 that accounts for the potentially higher reduction in dose-risk and OECR than CDF for these SAMAs.

p. PG&E's review of the Prairie Island SAMAs in Section F.5.1.3.5 did not address Prairie Island SAMA 3, "Provide Alternate Flow Path from RWST to Charging Pump Station" or SAMA 19a, "Upgrade Equipment and Procedures for Replenishing RWST Inventory from a Large Water Source," which were determined to be potentially cost-beneficial in response to NRC staff RAIs. Review these SAMAs for applicability to DCPP and provide a cost-benefit evaluation, if applicable.

7. For certain SAMAs considered in the Environmental Report, there may be lower-cost alternatives that could achieve much of the risk reduction at a lower cost. In this regard, provide an evaluation of the following SAMA: Purchase or manufacture of a "gagging device" that could be used to close a stuck-open steam generator safety valve for a SGTR event prior to core damage.

8. Regulatory Guide 1.23, Revision 1 states that "Whenever possible, wind measurements should be made at locations and heights that avoid airflow modifications by obstructions such as large structures, trees, and nearby terrain. The sensors should be located over level, open terrain at a distance of at least 10 times the height of any nearby obstruction if the height of the obstruction exceeds one-half the height of the wind measurement." During the Diablo Canyon Site Audit, the NRC meteorology reviewer noted that the onsite meteorological tower is within 250 feet of the Simulator Building. Given that the building height is about 35 feet – approximately the same elevation as the 10 meter wind speed sensor – its proximity to the meteorological tower could influence the wind speed and direction data used in the SAMA analysis. The meteorological tower is also located within an asphalt parking lot, which could potentially affect the stability classification under certain meteorological conditions (e.g., sunny days with low windspeed). Justify that the meteorological data used in the SAMA analysis (collected at 10 meters) are high quality data representative of the Diablo Canyon site and are not adversely affected by the siting of the meteorological tower.

Letter to J. Conway from A. Stuyvenberg dated July 6, 2010

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE ENVIRONMENTAL REVIEW OF THE DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. ME2825 and ME2826)

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