



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

January 17, 2017

Mr. Edward D. Halpin
Senior Vice President
and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

**SUBJECT: NRC RESPONSE TO QUESTIONS INVOLVING DIABLO CANYON POWER
PLANT - FINAL SIGNIFICANCE DETERMINATION OF A WHITE FINDING;
NRC INSPECTION REPORT 05000275/2016010 AND 05000323/2016010**

Dear Mr. Halpin:

This letter provides you the NRC's response to eight questions, submitted in writing by Pacific Gas and Electric (PG&E) Company on January 4, 2017, (Agency wide Documents Access and Management System (ADAMS) Accession No. ML17010A093). The question and answers are related to the NRC's assumptions used in the final significance determination documented in NRC inspection report 05000275/2016010 and 05000323/2016010, "Diablo Canyon Power Plant - Final Significance Determination of a White Finding, Notice of Violation and Follow-up Assessment Letter," dated December 28, 2016 (ADAMS Accession No. ML16363A429). The NRC provided verbal answers to these questions to Messrs. Hossein Hamzehee and Nathan Barber of your staff, during a teleconference on January 9, 2017.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room and in ADAMS, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA Ryan Alexander Acting for/

Jeremy R. Groom, Chief
Project Branch A
Division of Reactor Projects

Docket Nos. 50-275 and 50-323
License Nos. DPR-80 and DPR-82

Enclosure: NRC Response to PG&E Questions

NRC RESPONSE TO QUESTIONS INVOLVING DIABLO CANYON POWER PLANT –
 FINAL SIGNIFICANCE DETERMINATION OF A WHITE FINDING, NOTICE OF VIOLATION
 AND FOLLOW-UP ASSESSMENT LETTER; NRC INSPECTION REPORT
 05000275/2016010 AND 05000323/2016010, JANUARY 17, 2017

DISTRIBUTION

Regional Administrator (Kriss.Kennedy@nrc.gov)
 Deputy Regional Administrator (Scott.Morris@nrc.gov)
 DRP Director (Troy.Pruett@nrc.gov)
 DRP Deputy Director (Ryan.Lantz@nrc.gov)
 DRS Director (Anton.Vegel@nrc.gov)
 DRS Deputy Director (Jeff.Clark@nrc.gov)
 Senior Resident Inspector (Christopher.Newport@nrc.gov)
 Resident Inspector (John.Reynoso@nrc.gov)
 Administrative Assistant (Madeleine.Arel-Davis@nrc.gov)
 Branch Chief, DRP/A (Jeremy.Groom@nrc.gov)
 Senior Project Engineer, DRP/A (Ryan.Alexander@nrc.gov)
 Project Engineer, DRP/A (Mathew.Kirk@nrc.gov)
 Project Engineer, DRP/A (Thomas.Sullivan@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Project Manager (Balwant.Singal@nrc.gov)
 Team Leader, DRS/IPAT (Thomas.Hipschman@nrc.gov)
 Project Engineer, DRS/IPAT (Eduardo.Uribe@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)
 ACES (R4Enforcement.Resource@nrc.gov)
 Regional Counsel (Karla.Fuller@nrc.gov)
 Senior Congressional Affairs Officer (Jenny.Weil@nrc.gov)
 RIV Congressional Affairs Officer (Angel.Moreno@nrc.gov)
 RIV/ETA: OEDO (Jeremy.Bowen@nrc.gov)
 RIV RSLO (Bill.Maier@nrc.gov)

ADAMS ACCESSION NUMBER: ML17017A437

<input checked="" type="checkbox"/> SUNSI Review By: JRG/dll		ADAMS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available		Keyword: NRC-002	
OFFICE	BC:DRP/A	DRS:SRA	D:DRS	D:DRP	BC:DRP/A				
NAME	JGroom	RDeese	AVegel	TPruett	JGroom				
SIGNATURE	<i>/RA/</i>	<i>/RA/</i>	<i>/RA Jeff Clark Acting for/</i>	<i>/RA/</i>	<i>/RA Ryan Alexander Acting for/</i>				
DATE	1/11/2017	1/13/17	1/11/17	1/13/17	1/17/17				

OFFICIAL RECORD COPY

NRC RESPONSE TO PG&E QUESTIONS DATED JANUARY 4, 2017

The following eight questions were submitted in writing by PG&E on January 4, 2017, regarding NRC inspection report 05000275/2016010 and 05000323/2016010, "Diablo Canyon Power Plant- Final Significance Determination of a White Finding, Notice of Violation and Follow-up Assessment Letter," dated December 28, 2016 (ADAMS Accession No. ML16363A429).

The NRC provided the following verbal answers to these questions during a teleconference with the licensee on January 9, 2017.

Question 1. Element #2 (Page A-1): "The estimate of increase in core damage frequency from large break LOCAs was 1.4E-7 per year." Is the 1.4E-7 value a delta-CDF or does it represent the total contribution from large break loss-of-coolant accidents?

NRC Response to Question 1: The 1.4E-7 per year used for large break loss-of-coolant accidents is a delta-CDF (core damage frequency) value.

Question 2. Element #5 (Page A-3): Following the termination of emergency core cooling system flow which occurs at refueling water storage tank (RWST) Level=4%, did you consider normal makeup to the reactor coolant system (RCS) from normal charging as discussed within our response to request for information (RFI)-011?

NRC Response to Question 2: Yes. As discussed in the final significance determination, Element 9, Page A-7, the NRC did consider normal makeup to the RCS from normal charging when evaluating additional technical support center and emergency response organization (TSC/ERO) directed recoveries.

Question 3. Element #7 (Page A-4): We note that the NRC has used emergency operating procedure (EOP) E-1.3, Revision 15, in the response to Element #8. The response to RFI-010 attached Revision 15 with its change documentation to illustrate when and why the caution statement, discussed in the RFI, was added to the EOP. At DCCP, the current revisions of EOP E-1.3 are Revision 31 (Unit 1) and Revision 22 (Unit 2), both effective 1/5/16. Did you use EOP E-1.3, Rev. 15 in your analysis for Element #7?

NRC Response to Question 3: Yes. However, the NRC reviewed both EOP E-1.3, "Transfer to Cold Leg Recirculation," Revision 15 and Revision 22 to inform our understanding of what valves are manipulated prior to reaching the point at which operators enter emergency contingency action procedure ECA 1.1, "Loss of Emergency Coolant Recirculation." We also compared this information with the most recent version of the Diablo Canyon Final Safety Analysis Report to understand the sequence of valve manipulations performed in the first few minutes of the transition to emergency core cooling system cold leg recirculation.

Question 4. Element #7 (Page A-4): What is the time duration used in your analysis to perform local manual operation of 8982B?

NRC Response to Question 4: The NRC assumed 30 minutes for diagnosis, followed by approximately 103 minutes of manual action to access and open valve SI-2-8982B through use of the manual hand wheel.

Question 5. Element #8 (Page A-6): What EPRI study is referred to on page A-6?

NRC Response to Question 5: The Electric Power Research Institute (EPRI) study referenced on page A-6 is EPRI TR-106563, Volume 1, "Application Guide for Motor-Operated Valves in Nuclear Power Plants," Revision 1. This report includes a summary of motor operated valve incidents based on nuclear power plant experience documented in EPRI NP-6660D, "Application Guide for Motor-Operated Valves in Nuclear Power Plants," Appendix F.

Question 6. Element #8 (Page A-5): What is the time delay from RWST level at 33% to initiate the electrical recovery?

NRC Response to Question 6: The NRC assumed the licensee would initiate the electrical recovery option approximately 46 minutes after RWST level reached 33 percent. The NRC assumed that the electrical recovery option would be completed approximately 209 minutes after RWST level reached 33 percent.

Question 7. Element #9 (Pages A-6 and A-7): Please clarify whether the electrical and mechanical recovery actions are performed in parallel or in series.

NRC Response to Question 7: The NRC assumed that the TSC/ERO could pursue both the electrical and mechanical recovery actions in parallel but that because of the format of some station procedures including those used to manually operate motor operated valves, certain portions of the recovery actions were sequential.

Question 8. Element #9 (Page A-7): What actions are included in the effective failure probability of 5.0E-1? Does this include actions to prolong the time to core damage or actions to open 8982B?

NRC Response to Question 8: As discussed in the final significance determination, Element 9, Page A-7, the actions included in the effective failure probability of 5.0E-1 include additional TSC/ERO directed recoveries involving the electrical jumper method, additional electrical contactor attempts, and/or additional mechanical operations.

As discussed in the final significance determination, Element 9, Page A-7, the NRC did account for the added time to core damage through additional RCS/RWST makeup strategies when evaluating the human error probability.