STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

To: Redacted
Regulatory Services Manager
Diablo Canyon Power Plant
Redacted

Cc: Ed Halpin; E1H8@pge.com

Subject: Document Request for Diablo Canyon Nuclear Power P lant (DCPP) Arc Flash Incident

The CPUC is investigating the July 10, 2013 arc flash incident at the Unit 2 Diablo Canyon Nuclear Power Plant. This incident happened adjacent to the Unit 2 main transformers where on August 18, 2008 another arc flash incident was suspected of causing these same transformers to explode and burn. It is also noted that there was a transformer fire on the Diablo Canyon Unit 1 on May 15, 2000 and two more transformer fires in 1995.

It is fortunate that this arc flash incident did not damage the main transformers and that there were no injuries. However, it did cause a forced outage on Unit 2 that delayed full load availability for approximately a week and required the replacement of a lighting arrestor.

The above incidents compel the CPUC to investigate PG&E's maintenance program and practices for high-voltage insulators on transformers and circuits. Therefore, a response and/or data submittal is requested for the arc flash incident on July 10, 2013 in accordance with the following:

1. What is the anticipated completion and submittal date(s) for the root-cause-analysis on the insulator flashover incident?
2. What is the name of the company doing the RCA?
3. Please submit an electrical single-line diagram showing the transformers, lighting arrestors and indicate which circuit breaker/relays was activated to shut down the plant.
4. Did the plant issue a "notice of unusual event" notification and/or issue an "emergency action level alert" (EAL) to NRC ? Please explain if one was not issued and submit if applicable.
5. Is the NRC investigating this incident?
6. Is there a predicted maintenance program for high-voltage insulators? If so, please submit a copy of your program.
7. How is the schedule for insulator washing developed, and what is the current washing frequency for these insulators? Please submit schedule.

8. When was the last time high-voltage insulators (including the dead-end and transformer insulators) were cleaned? Please submit cleaning records.
9. Did PG&E or a contractor perform the wash? If PG&E performed the wash, is the same crew always assigned to this task, and how many times has this crew perform this task at DCPP?
10. If a contractor performed the wash, did it follow PG&E's hot-wash procedure or did it have its own procedures? Please submit a copy of the contractor's procedure if applicable.
11. Does PG&E follow a different procedure for offline insulators washing? If so, please submit a copy of that procedure.
12. Was a Hazard Assessment Checklist used to evaluate the work site? Please submit a copy of the record.
13. Were formal emergency and communication contact lists created and established between the rig operators and the plant prior to the incident? Please submit a copy of the contact lists.Was the washing crew formally trained and qualified or certified per electrical Standards at 29 CFR 1910 Subpart S? What were their last training dates? Please submit certification records.
14. What is the insulators material made of (composite, ceramic or glass)?
15. Are insulators treated with silicon or similar anti-contaminant coating?
16. Are insulators tested to determine Equivalent Salt Deposit Density (ESDD)?
17. Are insulators included in DCPP's thermography monitoring program, and was a corona/ thermo- scan inspection performed before washing? Please submit thermography records on the insulators.
18. Are insulators continuously monitored for current leakage? Please submit monitoring record.
19. What is the typical source for insulator wash water? Are portable reverse osmosis water conditioners used?
20. Is a portable conductivity monitor available for testing conductivity of the water source before filling the tank?
21. What is the maximum water conductivity (MΩ-cm) or minimum water resistivity (Ω-cm) limit to perform hot-wash?
22. Did the wash water mixed with any other abrasive cleaning media?

23. Is the tank water conductivity and temperature continuously monitored during washing, and is there a warning alarm if water is out of specs? If not, how are the properties monitored?

24. How is the conductivity instrument calibrated and how often? Please submit calibration records.

25. Did insulator washing start on the lowest (distance) phase conductor(s)?

26. Was the arrestor down-wind of the washed dead-end insulator, and was it washed before the dead-end insulator?

27. Was wind direction monitored during washing and which instrument is used for this purpose, and what technique is used for monitoring wind speed?

28. Was wind a factor in causing the flashover?

29. At what wind velocity should washing not be attempted, and did workers test for spray wind drift direction prior to the flashover?

30. Did the fire suppression sprinklers activate on the main transformer during the arc flash?

31. What is the extent of damage on the lighting arrestor and was it repaired or completely replaced and will other equipment need replacing or repairs?

32. How long were the public system blackouts if any?

33. Did Unit 2 shut down as designed due to the flashover, and describe any system repairs or improvements due to this shutdown.

34. Was there any measureable radiation leak due to the outage?

35. Did the emergency cooling water to Unit 2's reactor core and containment vessel operate as designed during the shutdown?

36. Were there any violations of the plant's technical specification for "Emergency Operating Procedures" during the shutdown?

37. Does PG&E's Insulator Cleaning Manual* comply with the IEEE Std. 957™-2005 IEEE Guide for Cleaning Insulators?

38. PG&E's Insulator Cleaning Manual* does not address:

    a) Washing insulators around main step-up transformers.

    b) Table 4-2 on page 4-2 may not be applicable for a lighting arrestor insulator or may need further clarification for a lighting arrestor.

    c) Specific requirements for workers "Personnel Protective equipment" (PPE)

d) Parking the wash rig out of direct sun shine to avoid increased water temperature.

41. PG&E's Insulator Cleaning Manual* does not address the following requirements outlined in Cal-OSHA Subchapter 5. Electrical Safety Orders, Group 2. High-Voltage Electrical Safety Orders, Article, Work Procedures and Operating Procedures (Formerly Article 85). §2941.2. Washing Insulators Supporting Energized Conductors or Equipment.

a) Grounding and Bonding Requirements When Using Conductive Hoses.

b) When washing with a hand gun or utilizing fixed sprinklers, the pumper truck shall be bonded to the same metal structure supporting the insulators being washed.

c) All equipment used in the washing procedure shall be bonded to the metal structure supporting the insulators being washed.

d) During washing operations, employees shall not be permitted to step on or off the truck or metal structure, or touch any part of the truck, conductive hoses or metal structure while standing on the ground.

e) When washing has been completed, the nozzle operator shall be required to remain stationary in his position and observe until the truck operator has disconnected the hose and the truck bond from the metal structure.

f) Grounding and Bonding Requirements When Using Non-Conductive Hoses.

g) When a non-conductive hose is used and the operator is in contact with the metal structure, the gun, if conductive, shall be bonded to such structure.

h) Operational Checks. Prior to the start of washing operations each day, a check shall be made of the insulator washing equipment. Such check shall include, but is not limited to the following: aerial lift equipment, pumps, communication equipment and lights.

42. Please describe lessons learned and any revisions to procedures or changes to equipment due to this incident. Will washing procedure be revised?

*PG&E Insulator Cleaning Manual, Chapter 4 Transmission Line Washing Requirements and Techniques. May 2002, Revision 1

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Copies of the requested documents should be provided to the undersigned as soon as reasonably possible but no later than 15 business days from the date this request is made. If you are unable or unwilling to provide the documents requested, please identify in writing what documents you cannot provide and the reason why the documents cannot be provided. Send your response to:

Ronald Lok
Utilities Engineer
California Public Utilities Commission
Safety and Enforcement Division
Electric Generation Safety and Reliability
505 Van Ness Ave, 2nd Flr
San Francisco, CA 94102
Phone: 415-703-1355

Thank you for your cooperation.

Person served Redacted Title Redacted
Date served Aug. 20 , 2013 Time served 3:00 p.m.

Ronald Lok (Server)