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California State Lands Commission  
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Re: California State Lands Commission (CSLC) EIR No. 758

Dear Ms. DeLeon,

We share the concerns of the California Energy Commission noted in their AB 1632 Report and cited by the Independent Peer Review Panel, that “a major disruption because of an earthquake” at the Diablo Canyon Nuclear Power Plant “would have economic, environmental and reliability implications for California ratepayers.”

Because the EIR presents no substantial evidence in support of its assertion that the project will not cause significant long-term impacts to marine resources, we also share the concerns of those commenters who point out that the EIR’s estimations of impacts appears greatly understated, and hence the proposed mitigations insufficient to compensate for them.

Our primary concerns with the study as proposed fall within three categories.

1. Unstudied impacts on marine biological resources

The DEIR mentions squid as forage species for multiple species of marine wildlife found with the survey area. It does not appear to examine potential impacts on the species itself, and the ramifications of those impacts on the species that feed on it. "Almost every type of marine organism feeds somehow off the squid," per Woods Hole Oceanographic Institution biologist T. Aran Mooney. Per WHOI, whales consume some 320 metric tons of squid a year; people eat another 280 metric tons annually.

Seminal research published by Dr. Mooney in the Journal of Experimental Biology in 2010\* found that squid can hear, and their hearing is within the frequency range 30-500 Hz – well

\*T. Aran Mooney et al, Sound detection by the longfin squid (*Loligo pealeii*) studied with auditory evoked potentials: sensitivity to low-frequency particle motion and not pressure, November 1, 2010. J Exp Biol 213, 3748-3759.

within the range of the proposed project's maximum-over-depth broadband (10Hz-2kHz) sound pressure levels at 185 km from the source, as shown in the model results for Site 8.

The hearing organs of squid, called statocysts, are hollow, fluid-filled sacs lined with hair cells connected to nerves. The EIR should assess the potential of the air guns to cause squid to leave the area throughout the survey period, the potential disruption this would cause among predator species, and the potential for the air guns to rupture the statocysts of squid.

2. The marine survey area may be in excess of what is needed, while the onshore study area is inadequate, leading to unnecessary impacts on the marine environment and results that do not fulfill the project goals.

The proposed survey sites appear to focus on several areas that are already well characterized, and omit areas where studies are lacking and further data is needed.

Geologist Erik Layman noted: "A critical gap in PG&E's proposed onshore seismic line occurs in the immediate vicinity of the DCNPP. The east-west trending Diablo Cove fault runs directly beneath DCNPP and projects off shore to an intersection with the seismically active Shore Line Fault. The Diablo Cove Fault would not be imaged by PG&E's proposed line due to this gap. The Diablo Cove Fault does not offset marine terrace deposits near the power plant and thus has not ruptured to the surface for several millennia. However, there is evidence that the Diablo Cove Fault could pose a risk to DCNPP because:

- 1) Passive seismic monitoring indicates hypocenters of small earthquakes to the north of this north-dipping structure, indicating the fault could be active at depth; and
- 2) The height of the Shoreline fault scarp is significantly reduced at its projected intersection with the Diablo Cove fault, suggesting the Diablo Cove Fault is closely linked to this seismically active structure."

The Diablo Cove Fault was also spoken to by engineering geologist Dr. Douglas Hamilton, a former geology consultant for seismic studies conducted by PG&E for the original licensing of the Diablo Canyon Nuclear Power Plant, in uncontested testimony before the California Public Utilities Commission on February 10, 2012, as submitted by the Alliance for Nuclear Responsibility. His testimony is incorporated by reference and submitted herewith.

Dr. Hamilton concurs with Layman's observation on the understudied nature of the Diablo Cove Fault, and states "the Diablo Cove fault is of special interest in that it is a zone of north side up reverse faulting that displaces the Obispo Formation bedrock of the DCNPP Unit 1 Turbine-Generator and Reactor Containment foundations. This has the likely consequence of putting the safety of the plant, the electricity it provides to the state power grid, and potentially the health and property of the public at risk."

Further:

"No serious question regarding the apparent lack of conclusive evidence demonstrating the non-capability of the Diablo Cove fault was raised during the protracted AEC/NRC licensing process,

or either during the conduct of the LTSP Program or of the external reviews of this program. For the latter case, the lack of further inquiry apparently resulted partly because PG&E largely avoided any update study of the DCNPP site itself during the LTSP [Long Term Seismic Plan] program, and then argued forcefully against the possible existence of a ‘shoreline’ fault paralleling the coastline in the near offshore region when reviewers from the University of Nevada, Reno, raised that question in 1989.”

Of the survey project, Dr. Hamilton notes: “a good deal of their planned work includes offshore and onshore geophysical programs that duplicate existing investigations and analyses completed by the USGS and others (for the Shoreline fault, Cambria stepover, etc.). Rather, PG&E should develop a 3-D model of the tectonic structure beneath the Irish Hills based on uplift mechanism and earthquake hypocenters distribution; expand consideration of potential near field seismic sources to include faults underlying the Irish Hills in order to account for observed seismicity and level uplift of the hills; and investigate possible compressional interaction of thrust faults with the strike-slip Hosgri and Shoreline faults as a mechanism for the origin of prominent west-facing scarps along the Hosgri fault crossing of outer Estero Bay and the trace of the Shoreline fault opposite the Irish Hills southeastward from Diablo Cove.”

Dr. Hamilton notes that “the ground motion that could be expected from the combination of a Hosgri plus San Luis Range/‘IOF’ [Inferred Offshore Fault] event may well exceed the original estimate, and a reinterpretation subject to contemporary understanding is overdue. PG&E’s current Application for seismic studies does not adequately recognize this deficiency.”

Further:

“The potential for the occurrence of vibratory ground motion exceeding that for which the plant has been designed and analyzed is probably greater [than at Fukushima]... PG&E’s current Application for seismic studies does not adequately recognize nor address this deficiency.”

“Southward from San Simeon Bay the San Simeon-Hosgri fault trace is entirely offshore, but it can be mapped with a high degree of confidence by geophysical means.”

Dr. Hamilton concludes that “nothing in the planned additional surveys, both onshore and offshore, offers any prospect for any result beyond marginal improvement to what is already known,” and that “the only component of the PG&E updated LTSP Program as now set forth that has the potential to significantly improve understanding of the seismogenic structures that constitute the potential seismic hazard to DCNPP, is the installation of at least 4 ocean bottom seismometers on the sea floor offshore from the vicinity of the DCNPP.”

### 3. The applicant has demonstrated an inability to conduct an unbiased study.

In his unchallenged testimony, Dr. Hamilton notes:

“Historically, there have been numerous deficiencies and oversights in PG&E’s previous seismic investigations, both pre-and post-licensing of the plant. Pre-licensing, PG&E failed to conduct any detailed geologic investigation outside of the DCNPP coastal terrace area. Consequently, much time and effort during construction were wasted when the Hosgri fault was later

discovered, requiring costly and time-consuming retrofits. Post-licensing, the best known of the deficiencies from their Long Term Seismic Program findings is the failure to recognize the Shoreline fault, which they identified in 1991 as a harmless 'lineament related to old shoreline' and in a response to an NRC inquiry argued that there was no fault along the shoreline. Another significant deficiency was PG&E's defense of its representation of the relationship of the offshore Hosgri to the onshore San Simeon faults as one of separation across the 'Cambria Stepmover.' This misinterpretation was necessary to support PG&E's contention (since proven wrong) that this stepover limited the earthquake potential of the Hosgri fault."

In light of this history, we urge the Commission to take into consideration the expert testimony submitted herewith as concerns the design of the study, the potential for significant impacts in marine areas that are already adequately understood and the failure to study areas that should be part of this project, and to require the preparation of an amended and recirculated EIR to address these issues.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "Andrew Christie". The signature is fluid and cursive, with a large initial "A" and "C".

Andrew Christie  
Chapter Director

Attachment: Direct testimony of Douglas H. Hamilton before the Public Utilities Commission of the State of California, Application of Pacific Gas and Electric Company for Approval of Ratepayer Funding to Perform Additional Seismic Studies Recommended by the California Energy Commission. (U 39 E) Application No. 10-01-014.

<http://a4nr.org/?p=1928>