



PO Box 1328
San Luis Obispo, CA 93406
(858) 337-2703 Rochelle Becker
(805) 704-1810 David Weisman
www.a4nr.org

February 13, 2012

Contact: David Weisman david@a4nr.org
Rochelle Becker rochelle@a4nr.org

FOR IMMEDIATE RELEASE:

A4NR FILES TESTIMONY BY FORMER PG&E GEOLOGIST AND STATE SENATOR DISPUTING NEW DIABLO CANYON SEISMIC WORK

The Alliance for Nuclear Responsibility (A4NR) has filed testimony from two surprise witnesses (Dr. Douglas Hamilton and Senator Sam Blakeslee, R-San Luis Obispo) in a proceeding at the CPUC reviewing PG&E's Diablo Canyon seismic safety studies. The testimony, which can be downloaded at <http://a4nr.org/?p=1928> forcefully questions the quality of PG&E's proposed assessment of earthquake risks to the nuclear power plant. Dr. Hamilton was part of PG&E's Diablo Canyon geosciences team from 1971 to 1988. Senator Blakeslee authored AB 1632, the legislation which required the current seismic studies.

Major points of Dr. Hamilton's testimony:

- “PG&E has failed to consider or acknowledge any seismic implication from the progressive late Quaternary uplift of the Irish Hills ... This has resulted in non-recognition or non acknowledgement by PG&E of what may well be the controlling seismic hazard to the seismic safety of DCNPP [San Luis Range/"Inferred Offshore Fault"]. This seismically active thrust system impinges on the seismically active Shoreline fault at shallow crustal depths. Likewise, 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.” (p.7)
- “The San Luis Range/"IOF" thrust has a length of as much as 80 km and a down dip width of approximately 20 km. It reaches the surface along the southwest margin of the "Pecho Shelf," Irish Hills, and San Luis Range as, respectively, the "N40W" fault of PG&E (2011), the scarp along the trace of the central reach of the Shoreline fault, and the Wilmar Avenue fault. Its leading edge passes beneath the DCNPP at a depth of approximately 1 to 2 km, within Franciscan Formation or Cretaceous sedimentary rock. Both PG&E (2011) and the CDMG (1998) assign a magnitude potential of M7.0 to the Wilmar Avenue fault. A calculation based on NGA (Next Generation Attenuation) attenuation relationships indicates a maximum spectral acceleration of 2.35g for ground motion at the DCNPP site resulting from a M7.0 earthquake on the San Luis Range/"IOF" thrust fault. This value considerably exceeds the ground motion from maximum earthquakes on either the Hosgri or the (separate) Shoreline fault.” (p. 32)

- “Length (of the Hosgri fault) is 150 km plus since there is no interruption in the continuity of the San Simeon and Hosgri faults, rather than the 110 maximum Hosgri length stated in PG&E 1988 and 2011, based on a northern termination of this fault at a "Cambria Stepmover" structure. The continuity of the Hosgri and San Simeon faults was demonstrated by the marine geophysical study reported in USGS OFR 81-430, and recently confirmed by multibeam sea floor imaging ... San Simeon and Hosgri are therefore merely different names given to reaches of the same 150 plus km long fault, as described both by Leslie in OFR-81-430 and by McColloch, 1987. The M_{max} for this fault is $>M7.5$, not $M7.1$ as listed in PG&E 2011 or "closer to $M6.0$ " as stated in a communication released by PG&E spokesman Kory Rafferty in January 2011.” (pp. 29-30)
- “Following its recognition by Hardebeck of the USGS 20 years after PG&E failed to recognize that seismologic and sea floor geomorphic evidence contained in its 1988 LTSP final Report indicated the existence of a shoreline fault, the Shoreline fault has been characterized in PG&E 2011 as a structurally isolated, segmented strike slip fault with a maximum seismic capability of a $M6.5$ earthquake. The writer (Hamilton 2010) and more definitively Hardebeck et. al. (2011) show that the Shoreline fault is structurally linked to the Hosgri fault...The appropriate magnitude for a conservative evaluation of a potential earthquake on the Shoreline fault is therefore circa $M7.0$ although a splay onto it from a long rupture along the San Simeon-Hosgri fault to the north, could give rise to a $M>7.0$ earthquake along the Shoreline fault.” (p. 30)
- “... the Fukushima disaster resulted from a replay of a tsunami event recorded both in the annals of Japanese history and in the sedimentary deposits that provided evidence of a tsunami inundation that extended as far inland as, and therefore resulted from a wave and causative offshore earthquake like, the one of...[March] 2011. This had been documented based on an investigation by Japanese geoscientists in an article published in 1991 (Minouru and Nakata)...During those twenty years following publication of this study—that provided the historic and geologic evidence of an earthquake and tsunami many times greater than what had been accounted for in the design of the Fukushima complex—apparently there was no move on the part of the plant's owner Tokyo Electric Power (TEPCO) or regulators to undertake any upgrade of its seismic/tsunami resistance. Instead TEPCO sought validation of its inadequate design mathematically with a Probabilistic Seismic Hazard Assessment (PSHA) but one with input parameters that, viewed in post disaster retrospect, were grossly low... At Diablo Canyon conditions are certainly better than at Fukushima so far as tsunami hazard is concerned, but the potential for the occurrence of vibratory ground motion exceeding that for which the plant has been designed and analyzed is probably greater.” (pp.35-36)
- “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 (LTSP) 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 Stepover." This misinterpretation was necessary to support PG&E's contention (since proven wrong) that this stepover limited the earthquake potential of the Hosgri fault." (p. 7)

- "PG&E has sponsored the collection of various forms of high and low energy seismic reflection data, according to a program of its own design that apparently partly responded to the requirement mandated by AB1632 for a 3D seismic reflection survey. Some of the high energy data collected to date (January 2012) was displayed at and made available to the public following, the SSHAC workshop of 29 November-1 December, 2011. None of this data provided any information useful for significantly improving understanding of the seismic hazard to the DCNPP and nothing in the planned additional surveys, both onshore and offshore, offers any prospect for any result beyond marginal improvement to what is already known." (p. 43)

Major points of Senator Blakeslee's testimony:

- "A series of catastrophes that constitute a disturbing trend in the failure of regulatory agencies to fulfill their oversight obligations. There are the investigative news reports from Japan highlighting how the breakdown in regulatory oversight of the utility contributed to the catastrophic failures at the Fukushima nuclear units. After the *Deepwater Horizon* oil spill in the Gulf, it became clear that a passive regulatory environment allowed BP to take a number of safety shortcuts that contributed to the ecological and economic disaster. The result was the dissolution of the Minerals Management Services. Finally, and perhaps the most relevant to this proceeding, is the September 9, 2010 San Bruno pipeline explosion that killed eight people. In June of 2011 CPUC President Peevey, responded to an independent panel's recommendations for gas pipeline safety by acknowledging, "We seem to have drifted—ourselves, this commission and those we regulate—to a culture of complacency." The decisions made here at the Commission on Diablo Canyon—and SONGS, too, for that matter—could potentially be among the most consequential decisions ever made by the Commission." (pp. 3-4)
- "My chief concern is that at the IPRP (Independent Peer Review Panel) public meeting on February 6, 2012, members of the IPRP raised a number of questions about the most recent study plan, for which the State Lands Commission is currently preparing a draft EIR. What concerns me is that the IPRP questioned both the geographic scope of the study as well as the specific types of studies to be complete. In particular, the IPRP questioned whether the current footprint of the study is sufficient to provide meaningful data on the intersection of the Hosgri and Los Osos Faults, as well as the southern terminus of the Shoreline Fault. In addition, the IPRP questioned whether the proposed use of geophones, instead of a high energy three-dimensional seismic reflection mapping survey, was the most appropriate for analyzing the Shoreline Fault. My concern is that despite these fundamental and significant questions regarding PG&E's study plan, it appears that PG&E plans to proceed with the current study plan and has made no representation that they intend to address the IPRP's questions or concerns." (pp. 6-7)

- “The IPRP stated that should they obtain the requested information, it may result in a determination by the IPRP that the study plan is insufficient. I would argue that the more prudent course of action is for the Commission to require PG&E to provide the requested information to the IPRP before further steps are taken.” (p.7)
- “The most frustrating aspect is the lack of information surrounding the current PG&E study plan. Their unwillingness to share information regarding about how the study plan was developed and what guided their decision-making process has created doubt regarding whether or not the current study plan is, in fact, the best design it can be and the most likely to render useful data.” (p.8)

A4NR’s assessment:

“It is clear from A4NR’s testimony of our two acknowledged seismic experts, and in light of San Bruno, that ratepayers cannot afford for the CPUC to get this wrong. A great deal depends on the careful scrutiny of the Independent Peer Review Panel and the ability of the CPUC to carefully and thoughtfully weigh seismic vulnerability, economic resources and the reliability of aging reactors as the Commission invests ratepayer dollars” stated Rochelle Becker, Executive Director, Alliance for Nuclear Responsibility. “Ratepayers will benefit from the expert testimony of Dr. Hamilton and Senator Blakeslee and from our newly retained attorney, former California Energy Commissioner John Geesman. The Alliance has been active in all CPUC proceedings involving Diablo Canyon and San Onofre since its founding in 2005.”

#####