



22 November 2011

Mr. Eric Greene
California Public Utilities Commission
Energy Division
505 Van Ness Avenue
San Francisco, CA 94102-3214

RE: PG&E Response to IPRP Report No.2 *Comments on PG&E's Enhanced Seismic Study Plans for Diablo Canyon Power Plant*

Dear Mr. Greene:

I am writing to respond to IPRP Report No.2 *Comments on PG&E's Enhanced Seismic Study Plans for Diablo Canyon Power Plant* and to update you of the latest progress PG&E has made in conducting the Enhanced Seismic Studies Program at Diablo Canyon Power Plant (DCPP).

A status briefing on the Enhanced Seismic Study Program, now known as the Central Coastal California Seismic Imaging Project (CCCSIP) was presented to the CPUC IPRP on 26 July 2011 in Sacramento. At that briefing, PG&E described plans for a number of projects including the deployment of an Ocean Bottom Seismometer (OBS) array and a series of 2D/3D marine and onshore seismic surveys of the area surrounding DCPP. Following that meeting, PG&E prepared a memo that discussed earthquake hazard sensitivities for the geophysical survey targets presented at that briefing (PG&E, 8 August). The IPRP forwarded their Comments (IPRP Report No. 2) on these plans to PG&E on 7 September. I understand that Mark Krause, PG&E Director of State Agency Relations, responded to the IPRP Comments on 1 November. The following discussion provides additional background on PG&E's CCCSIP activities. The attached figure provides an index to these activities.

1] PG&E is in the process of finishing an initial report on a low energy 2D/3D marine seismic survey conducted offshore Point Buchon during the winter of 2010/2011. This low energy 3D survey is one of the first CCCSIP activities and is a precursor to the 3D High Energy Seismic Survey (3D HESS) discussed in IPRP Report No. 2 (Sec 2.2). The objective of the low energy survey is to image the proposed intersection of the Shoreline and Hosgri Fault Zone at shallow depth. The initial report will discuss preliminary geologic interpretations of the seismic data (re: IPRP Sec 2.5). Subsequent reports will attempt to identify geologic markers and piercing points that can be used to refine estimates of slip rate along the Hosgri and Shoreline faults (re: IPRP Sec. 2.3 and 2.6).

2] PG&E is planning to conduct a high resolution low energy 2D survey of the San Simeon-Hosgri stepover region offshore Point Estero in 2012. As noted in IPRP Report No. 2 (Sec 2.1), more closely spaced survey lines in this area will provide better resolution of shallow faulting and in conjunction with

the 3D HESS study, and enable better estimates of the potential for ruptures involving both the Hosgri and San Simeon faults.

3] PG&E is actively moving forward with plans to conduct the 3D HESS offshore DCPD in the fall of 2012. We have identified, and are in negotiations with, the National Science Foundation owned, and Columbia University operated, *R/V Marcus Langseth* to conduct the 3D HESS survey. A geophysical survey permit application was filed with the California State Lands Commission in the spring of 2011 and an Environmental Impact Report is currently in preparation per California CEQA requirements. PG&E is also coordinating the application for an Incidental Harassment Authorization (IHA) with NOAA and other Federal agencies per Federal NEPA requirements. 3D HESS activities will target the deeper, seismogenic portions of the continental shelf region offshore DCPD, and include the deeper structure of the San Simeon- Hosgri stepover (re: IPRP Sec. 2.1), the intersection of the Shoreline and Los Osos faults with the Hosgri fault in Estero Bay (re: IPRP Sec. 2.2), as well as the Hosgri and Shoreline faults themselves (re: IPRP Sec 2.4).

4] With regards to the Shoreline fault zone – two recent developments are worth noting. The first is the approval from the US Bureau of Land Management to the US Geological Survey for the installation of a Geographic Positioning System (GPS) marker on Pecho Rock. As discussed in the IPRP Report No. 2 (Sec 2.3 and 2.6), the need for GPS measurements southwest of the Hosgri and Shoreline fault zone is a high priority. Pecho Rock is located offshore, immediately west of the Shoreline fault. We are in the process of investigating the feasibility of seafloor GPS measurements west of the Hosgri Fault Zone.

5] The second development is the low energy, high resolution 3D marine seismic survey offshore Point San Luis that is scheduled to occur this December. The primary survey objective is to image a buried paleo-channel that cuts across the continental shelf and intersects the southern end of Shoreline fault. As noted in the IPRP Report No. 2 (sec 2.7), fault related offsets of this paleo-channel may provide constraints on the rate and style of motion of the Shoreline fault zone. In addition, the survey will be looking to further refine the segmentation of the Shoreline fault zone in this area (see IPRP Sec. 2.5) and identify potential interactions with other known faults in San Luis Bay, such as the Pecho fault.

6] As of mid- November, PG&E successfully conducted ~ 120 miles of on-shore seismic profiling in the vicinity of DCPD including the Irish Hills and the Los Osos Valley. This on-shore seismic survey was recognized in IPRP Report No. 2 (sec 2.8 and 2.9) as essential to constraining the structure of the Los Osos fault, and developing an improved tectonic model of the Irish Hills region. The density of both source routes and the 5000+ nodal geophones that were deployed throughout the Irish Hills region provided unprecedented spatial coverage of the area. The decision to increase the density of sources and recorders in the Irish Hills region was made in recognition of the difficult terrain and the need to clearly image complex geologic structures at depth. These onshore seismic data are currently being processed and will be available for initial interpretation during the winter of 2012. Preliminary results from these recently completed on-shore seismic surveys indicate a higher likelihood for successfully imaging these same geologic formations offshore during the 3D HESS study.

7] As of this writing, the installation of the OBS array is pending approval from the California State Lands Commission (CSLC). In response to their review of the Draft Mitigation Negative Declaration, the California Department of Fish and Game (CDF&G) notified the CSLC on October 6 that the proposed sea floor cable route that would connect the OBS array to an onshore recording facility encroached on a large area of the State Marine Reserve within the Point Buchon Marine Protected Area, and that the cable needed to be rerouted to avoid this environmentally sensitive area. A new cable route has been identified and agreed upon by PG&E and CDF&G using the new multibeam bathymetry (MBES) data. A Remotely Operated Vehicle (ROV) survey is planned for early December to confirm the seafloor habitat along the new route.

Discussion of these and other geologic and geophysical data sets will occur at the Diablo Canyon seismic hazard update workshop in San Luis Obispo on 29 November 29 through 1 December, 2011. The presentations will address the geologic and geophysical data that are either currently available or will be collected by the CCCSIP in the future. Notification will be sent once the Workshop presentations have been posted on a PG&E web page. A workshop to discuss modeling and interpretation of these data is scheduled for later in 2012.

In closing, each of the IPRP Recommendations is being considered as we move forward with the CCCSIP. The \$17 million in initial funding provided by the CPUC in 2010 has been fully accounted for in the projects described above. PG&E has filed to re-open Application 10-01-014 to recover the increased cost of conducting studies that are designed to improve understanding of seismic hazards near DCPD. Moving forward, further prioritization and implementation of the IPRP Recommendations will be contingent upon the availability of additional CPUC funding.

Sincerely,

Richard Klimczak
Director
PG&E Geosciences Department

Enc.

Cc: L. Sharp
M. Krause
K. Ferre
S. Nishenko



Figure 1 – Location of Central Coastal California Seismic Imaging Project activities referred to in the text