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Bob Rothman, MS 8D30-TO BE OPENED BY THE ADDRESSEE ONLY
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Bob:

This letter reports my impressions of the NRC/PG&E Meeting on Geology/Seismology/Tectonics, in San Francisco on June 12-16, 1989. This was an important meeting with new data provided for the specific issues which were discussed. Several significant issues continue to be subject to different interpretations and have not been resolved. In general, discussion of most segmentation and earthquake source characterization issues were reserved for the August meeting.

Issues related to the Hosgri fault system:

1. Style of Deformation:

The most vigorous discussions at this meeting demonstrated that questions of the existence and dominant style of deformation for the Hosgri fault system, and also for the contractional tectonic character and timing of activity for the zone west of the Hosgri fault have not been resolved for some of the consultants. I don't see any major additional data that PG&E should supply or compile, that would help resolve this issue in the near future.

The current data base, I believe, is clear that there is a major strike-slip input from the San Andreas fault system. Most of the appropriate data base for the Hosgri fault zone has been organized by PG&E. My only additional thought is that it would be useful for PG&E to expand information on the extent and prevalence of moderate dips on strike-slip faults. The southward change in more reverse-fault focal mechanisms, and some of the seismic reflection profiles of offshore regions show that there are reverse-slip faults and associated folds, but the data does not appear to conclusively indicate Quaternary activity. I believe that this suggests near surface strain partitioning of deeper oblique-slip faulting on the Hosgri, and a regional relationship of partitioning that is similar to the Coalinga area, where the strike-slip displacement is on the major through-going San Andreas

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fault, and the contraction is on fold and faults of the sub parallel structures.

I don't believe that balanced cross-section methods will be effective or appropriate for analysis of most of the offshore region.

2. Segmentation:

Selection of segmentation points is partly a geological-geophysical concern and was the subject of many discussions. The selection of segmentation points is partly subjective, and since this is a relatively new field of research, selection is at least partly influenced by personal experience. The PG&E selection was made carefully and the segmentation points are well-supported by discussions and data.

However, I believe that other alternative points are possible. My current preference for segmentation points uses a smaller number of points, and does not appear to result in great differences from the PG&E logic tree analysis. At the next meeting, I will provide further information for at least one alternative model.

The discussion of segmentation modelling, and of other methods of earthquake size determination, will also be discussed at the next meeting.

3. Slip Rates:

The possibility of other tectonically active structures intersecting the Cambria stepover, and of drag and distortion effects, suggest the possibility of the Hosgri fault system having a horizontal component that has a slip rate that is at, or near, the upper end of the 1-3 mm/yr range. There may also be some additional horizontal component, as well as a vertical component, in structures of the adjoining Piedra Blancas anticlinorium. I, provisionally, use the 3 mm/yr rate for the horizontal component.

Issues related to the Pismo/San Luis Block:

1. Segmentation and Tectonic Style:

The block appears to be segmented into at least three, and probably four segments that have little internal tilting. There is good evidence against applying fold-fault model for Quaternary deformation of the block.

2. Southwest Border Zone:

PG&E prepared new data regarding lack of fault control for the straight section of the coastline along the southwestern part of



this block. I will reanalyzing the data for this zone, but still have some questions on the character of this zone.

The Balanced Cross Section - Fold-Thrust Model for the Santa Maria Basin:

The well organized and clearly presented model by Jay Namson for this region appeared to be mainly model driven, rather than neotectonic field data driven. The model did not fit many of the field relations for the Pismo/San Luis Block. The fit was much better for the southern Santa Maria Basin, which used a northward instead of a southwestward direction of thrusting (although this may not be the critical factor). The late Quaternary shoreline terrace data of Doug Clark (from the University of Nevada), although not definitive at this time, seems to be inconsistent with the Namson model. Certainly, the Namson model should be considered for the southern part of the Santa Maria basin, as a working hypothesis for the late Quaternary deformation of the folds and faults.

Sincerely, .

D. Burton Slemmons

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