

STANFORD UNIVERSITY
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DEPARTMENT OF GEOLOGY
School of Earth Sciences

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Washington, DC 20555



Dear Mike:

The following are my opinions regarding seismotectonic questions which were considered during the meeting and field trips of April 12-13 in the region around the WPPSS site at Hanford, Washington:

1. The lineations on the gently sloping surface north of Rattlesnake Mountain are non-tectonic. Recent trenches across three of the lineaments prove the absence of faults in the exposures of Pleistocene Touchet sediments.
2. The Cold Creek - Horn Rapids lineament is insignificant with regard to seismic implications. If it is tectonic, which is doubtful, it is relatively trivial. It has no expression in magnetic, gravity, or seismic profiles that would confirm the presence of a linear structure; moreover, at intervals along its supposed trace, Pleistocene surfaces show no disturbance. If it were indeed a fault, its habit would be totally different from that of any other known structure in the region, as it would have to be a strike-slip feature in order to lack a geophysical signature.
3. The Wenas scarps are landslide features, not tectonic fault scarps. In one locality, a block which is bounded by two scarps meeting each other at right angles has simply subsided under the influence of gravity. A conspicuous linear graben is a landslide "pull-away" feature. Most of the linear features trend about east-west and are obviously extensional. They are totally unrelated to tectonics, as the region is dominated by structures resulting from north-south compression.
4. I did not see the Moxee West "faults", but judging from photos and reports by Woodward-Clyde geologists, I believe they are non-tectonic. Photos suggest that the lineaments were made by differential erosion along zones of closely spaced joints in basalt.
5. The Moxee East fault, which I only saw at a distance, is probably a real fault. It is north-south trending and is a good deal farther from the WPPSS site than the Rattlesnake-Wallula zone, so the latter would remain the controlling tectonic zone with regard to the SSE. Because of its trend, the Moxee East fault does not aim toward the site, and in addition, it could not be related to the postulated CLEW zone.
6. The CLEW zone, which is a wide nebulous band seen on maps and aerial photos, is supposed to include the Wenas "faults", Moxee features, and Cold Creek - Horn Rapids - Wallula lineament. I think it is non-existent as far as seismotectonics are concerned.

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7. The faults on Gable Mountain, which I did not visit on this recent occasion, could hardly threaten the WPPSS site. I examined trench exposures made by the USGS (I believe) about 1970. The main fault I saw is a rather small thrust fault which crosses Gable Mountain obliquely. It is related to anticlinal folding and is doubtless very shallow as well as very short. I don't think it could produce an earthquake larger than M 3 at the very most, and there is some evidence that its last movement was somehow related to the great Pleistocene floods which swept over the Pasco Basin. The other transverse fault(s) which cross the Gable Mountain anticline must be rather similar, but I have not seen them in trenches.

8. I think real faults occur at Wallula Gap and at the base of Rattlesnake Mountain, and probably intermittently between these localities. Although there are doubts as to the recency of the last movements, I believe this zone should be regarded as possibly seismogenic and capable of producing the SSE for the WPPSS site.

With best regards,

Ben M. Page

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