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NUCLEAR SYSTEMS SAFETY PROGRAM

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Ms. Kristin Westbrook, Project Manager
Geotechnical Branch, MS-623ss
Division of Waste Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

WM Record File

A0294

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Distribution:

K Westbrook

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12

SUBJECT: BWIP Tectonic Workshop and Field Trip, March 12-16, 1984 (Part Two)

REFERENCE: NRC FIN A0294, "Technical Assistance in Seismo-Tectonic Impacts in Repositories"

Dear Ms. Westbrook:

This is to transmit a letter report by Mr. Robert A. Whitney, Geologist, of our team. This letter report deals specifically with his field trip after the subject workshop.

If you have any questions, please let us know.

Sincerely yours,

Dae H. Chung
Leader

Nuclear Waste Management Project

DHC/tp

Attachment: Field trip letter report by R. A. Whitney

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PDR WMRES EXILLL
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April 16, 1984

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APR 18 1984

Dr. Dae Chung, L-95
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Dear Dae:

This letter is to report on my itinerary and observations during the brief field reconnaissance trip following our March 12-15, 1984, meeting with DOE and RHO in Richland, Washington. 35 mm color transparencies were acquired for most of the features observed.

Thursday, March 15, myself and Kristin Westbrook of NRC were in the field late in the afternoon. We inspected a new road cut for highway construction on the northwest flank of Badger Mountain, one of the anticlines marking the RAW structure. This new cut exposes an overthrust which S. Reidel (pers. comm.) indicates is the uppermost thrust in a series of at least three imbricate related thrusts, dipping southwest. Exposure in the excavation is being logged by RHO personnel (S. Reidel, pers. comm.).

Friday AM, March 16, was spent with DOE personnel and Kristin Westbrook and Warren Rehfeldt of NRC, inspecting the Gable Mountain structure within the Hanford Reservation. We visited the area of trenching on the south limb of the anticline and those on the Central Fault system crossing the structure. Multiple hypotheses for the causative tectonics for the structure observed in these trenches are possible. Upon receipt of the published interpretations in Reno, a review and comments will be submitted. Friday PM was spent with the NRC personnel inspecting the Saddle Mountains structure in the Sentinel Gap area. The geometry of anticlines exposed in this area is indicative of folding accomplished by overthrusting on thrusts which decrease in dip with depth. We observed no surficial geomorphic features indicative of fault displacement of Holocene age. The NRC personnel departed by commercial aircraft late Friday PM.

Saturday AM, March 17, I inspected the Yakima River cut through the RAW structure, the Horse Heaven Hills anticline, and the RAW structure southeast of the Yakima River. The following was observed: RAW apparently does not affect the uppermost basalt flows (Pomana?) in the Yakima River area.

Geomorphic and geometric features indicate both Rattlesnake Mountain and Badger Mountain are overthrust to the northeast, with fault planes decreasing in dip with depth. The largest anticline between these two structures (just southeast of the Yakima River) has a geometry indicative of overthrusting to the southwest (i.e., fault plane dipping NE). The Horse Heaven Hills anticline in the area immediately south of Rattlesnake Mountain, is overthrust, with the fault dipping southwest.

Geomorphic features indicative of Holocene activity were not observed along RAW. Horse Heaven Hills has a steep sloped scarp on the northern flank with wineglass canyon dissection on the hanging wall and small steep alluvial fans on the front wall. These features are indicative of Holocene displacement, probably amounting to several meters, and several excellent locations exist in this area for trenching the fault to determine timing and amount of displacement.

I departed from Pasco airport early in the afternoon on Saturday, with excellent low-sun angle conditions for aerial reconnaissance. The flight path was along the north flank of the Horse Heaven Hills is very indicative of Holocene faulting.

I am pleased to have been a participant in the NRC/RHO/DOE meetings and thank you for the support for the above described field reconnaissance.



Robert Whitney
Geologist

cc: D.B. Slemmons