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BASALT WASTE ISOLATION PROJECT

Reidel, S. P., K. R. Fecht, and R. W. Cross, 1982, "Constraints on Tectonic Models for the Columbia Plateau From the Age and Growth Rates of Yakima Folds," Proceedings, the 33rd Alaska Science Conference, Arctic Division, American Association for Advancement of Science, p. 131.

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JHD METHOD IN THE KODIAK AREAS OF ALASKA

of Alaska, Fairbanks 99701

ity of Texas, Austin 78712

etwork data of the Joint Hypo-
ethod was used to simulta-
d earthquakes which were very
seismic network in the Kodiak
Lower Cook Inlet areas. In
ents clearly define a 10-
dipping at an angle of about
cated events lie distinctly
ut 15 to 20 km. These results
ed by Lahr (1975) for this
-Alaska Peninsula area, the
0 degrees and there is
fference in the strike
e between the two areas.
he 1964 Alaska earthquake
area were also relocated with
ismic data. The relocated
lf break in a much less
centers reported by the ISC.
nts were redetermined using
define a narrow, gently

CONSTRAINTS ON TECTONIC MODELS FOR THE COLUMBIA PLATEAU FROM THE AGE AND GROWTH RATES OF YAKIMA FOLDS

S. P. Reidel, K. R. Fecht and R. W. Cross
Rockwell International, Richland, Washington 99352

The age of deformation and the rate of growth of Yakima folds have been determined by studying the distribution and thickness variations of Columbia River basalt, intercalated sediments, and suprabasalt sediments. Mapping has shown that anticlinal ridges, synclinal basins and a westward tilting paleoslope are the main structural elements of the west and central Columbia Plateau. Thickness variations in the flows, as they cross these structural features, indicate that the anticlinal ridges and synclinal basins began growing in Grande Ronde time (16.5-14.4 mybp) and continued to grow through the Miocene. Suprabasalt sediments show similar variations, and indicate the structures continued to grow in the Pliocene and into the Quaternary.

The rate at which these structures grew can be calculated by using flow thickness variations which essentially record the relief at the time of eruption. These calculations indicate deformation was greatest in Grande Ronde time (>200 m/my) and decreased (<40m/my) into the Wanapum (14.5-13.5 mybp) and Saddle Mountains time (13.5-10.5 mybp). Suprabasalt sediment thickness variations suggest uplift and subsidence continued into the recent at this low rate.

The age and growth rate constrain tectonic models for the Columbia Plateau. These models must permit fold growth in restricted areas over at least 15.5 my and a decreasing rate of deformation with time.