



AUTHOR Lorraine W. Wolf and John N. Davies
AFFILIATION Geophysical Institute, University of Alaska
ADDRESS Fairbanks, AK 99775-0800
TELEPHONE (907) 474-6166

TITLE: A Comparison of Acceleration Values Derived From Recent Seismic Hazard Studies of the Anchorage Area, Alaska

ABSTRACT

Over the past decade several seismic hazard evaluations have been made for sites in and near Anchorage, Alaska. Some of these were part of regional or statewide studies and others were focused on sites proposed for specific structures. Estimates of peak acceleration expected in the Anchorage area range from 0.15 to 0.49 g, for a 50 year exposure period and a 90% probability that these values will not be exceeded. Because the basic data and assumptions used in these studies are not always given or are in different formats it is difficult to compare them and to assess the reasons for their significantly different results. We have attempted to cast four of these studies into a single format and to evaluate the sensitivity of their conclusions to several of the key model assumptions. Three of these studies were done by Woodward-Clyde Consultants: (1) the Offshore Alaska Seismic Exposure Study, OASES, (2) an evaluation of southcentral Alaska for the Outer Continental Shelf Environmental Assessment Program, OCEAP, and (3) the Anchorage Office Complex Geotechnical Investigation. The fourth study, by Harding-Lawson Associates was of the site of a proposed bridge across Knik Arm. While there were substantial differences among these studies in the characterization of the seismic source zones and their respective seismic recurrence estimates, these differences were not large enough to explain the differences in acceleration values. Our sensitivity calculations show that all of the variation in the acceleration estimates could be accounted for by the choice of attenuation relationship and its associated level of uncertainty. This suggests that a high priority should be placed on acquiring new, Alaskan strong-motion data to constrain the attenuation relationships used in evaluation earthquake hazards in Alaska.

