Policy Recommendation provided in 2011 Annual Report to the Governor and State Legislature. This 'position statement' was provided in the 2012 annual report



ASHSC Policy Recommendation 2011-1

Position Statement in Support of Development of an Earthquake Research Program

Alaska is the most seismically active State in the union, yet active fault locations and characterization are the least understood. Therefore the Commission recommends that the legislature consider means to fund appropriate State governmental agencies in their on-going efforts to characterize these faults.

Introduction

As part of the mission of the Alaska Seismic Hazards Safety Commission (ASHSC), the Hazards Identification sub-committee is responsible for assessing the locations of active faults and associated secondary hazards that can potentially cause damage to state infrastructure and compromise the safety of Alaska's residents and visitors. This position statement lends support to ASHSC's policy recommendation 2011-1 and presents justification for establishment of an earthquake research program aimed at better characterizing active faults.

Justification

Identification and characterization of seismic hazards is fundamental to developing mitigation strategies and reducing losses from earthquakes. Accurate seismic hazards assessments depend on documenting the mapped traces of active faults and conducting studies to determine slip rates and paleo-earthquake histories. Without this information, estimates on the size and frequency of future earthquakes can only be based on assumptions of earthquake mechanics and leads to inaccurate forecasting. The State of Alaska, Division of Geological & Geophysical Surveys recent release of the Quaternary fault and fold database for Alaska represents a first step in identifying the locations of active faults. However, the database contains only limited information on earthquake parameters for individual faults.

The relatively few faults on the Quaternary fault and fold map of Alaska is a troubling reality for those who study seismic hazards in the state, especially considering the state's geographical position at the edge of one of the most active plate boundaries in the world. The scarce distribution of faults illustrates the real possibility that many more faults exist but have yet to be recognized, due to the general lack of detailed studies and remote, relatively inaccessible terrain. For faults that are known, data critical to assessing seismic potential such as slip rate, slip-per-event, recurrence interval, and time since the most recent event are few to non-existent. Thus, although it

is accepted that Alaska will experience large damaging earthquakes in the future, the states preparedness for earthquakes, and in particular the ability to answer the "where, when, and how big" questions commonly asked by engineers and planners are extremely compromised by the lack of appropriate information from which to determine earthquake potential and probabilities. These basic data gaps can be addressed by focused paleoseismic research, however the state currently does not have an earthquake research program or funding adequate for comprehensive evaluation of seismic hazards. The Alaska Seismic Hazards Safety Commission recommends that the state legislature appropriate funds to support fundamental paleoseismic research by implementing an earthquake research program similar to those established in other seismically active states (i.e. Utah, California, Washington, etc.).

In addition to paleoseismic studies, post-earthquake investigations following large events provide the opportunity to collect vast amounts of information related to the earthquake surface rupture process, secondary ground deformation effects, and the response of the engineered or built environment. In particular, combining observations on the distribution of slip along the fault, the amount of slip during prior events, and slip rate can provide insight into future rupture potential along a particular fault. It is critical to evaluate the effects of earthquakes before erosion and rebuilding efforts erase delicate and perishable surface features. While important in the immediate time frame, data collected in post-earthquake investigations (i.e. 1906 Great San Francisco earthquake, California) have also been shown to become increasingly more valuable as new theories and technologies are developed. Thus, timely, detailed archiving of information after an earthquake is a critical step towards reducing seismic related hazards in Alaska and elsewhere.

Recommendation

It is the recommendation of the ASHSC that post-earthquake investigations be funded as part of the state earthquake research program.

If established, information developed by an Alaska earthquake research program will have direct immediate influence on seismic hazard zone mapping, earthquake probability estimates, and earthquake planning scenarios such as those currently being conducted by the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security and Emergency Management (DHS&EM). Additionally, better information on the location, frequency, and size of earthquakes will help better assess potential earthquake damage and loss estimates due to future large events.

Submitted by Dr. Rich Koehler, Chair of the ASHSC Hazards Identification Committee