

QUARTERLY TECHNICAL REPORT 80-A

on

Earthquake Monitoring of the Hanford Region, Eastern Washington

January 1 through March 31, 1980

Geophysics Program

University of Washington

Seattle, Washington

Dr. ...

[Handwritten initials]

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Operations

The first quarter of 1980 has seen the dramatic expansion of the Washington State seismographic network in response to the earthquake and eruptive activity at Mount St. Helens. Due to the gargantuan effort made by the entire staff of the Geophysics program in response to the volcanic seismicity the routine processing of data from eastern Washington is far behind.

Just before the show started at Mount St. Helens we were tooling up to do computer processing of the eastern Washington seismic data on our off-line computer system. The large number of earthquake produced by the volcano has swamped our analysis techniques. In the first month after March 20 our computer system has recorded more earthquakes from Mount St. Helens than had been located in all of Washington in the previous ten years.

The processing of the first quarter's data from eastern Washington must wait until our procesing techniques are improved enough to handle the quantity of data we are now obtaining. We anticipate the earthquake catalog for eastern Washington for the first two quarters of 1980 will be combined in July. As an apendix to this quarterly report we include the first monthly seismic activity report for the St. Helens area.

The technical operation of the eastern Washington network has gone almost as normal. There have been a few stations which have failed during the cold months of the winter. Most have been repaired and are back in operation. We have had more than the usual amount of trouble with some of the new stations on the east flank of the Cascades due to temperature problems with the newer model Develco VCOs. We have developed a modification to the units that should prevent these type of problems recurring next year.

Other Studies.

We have tested our down-hole seismic system on the surface near the Gable Mountain station. It was set up in the same configuration that will be used in a deep hole and run for several weeks to compare with the local seismic station. Some data was recorded on digital event recorders locally, and an attempt was made to telemeter one channel back to Seattle for recording on the on-line computer system. This telemetry system did not perform correctly but its problems have been corrected for subsequent installation in DC-3.

The Mount St. Helens activity has given us an opportunity to do some detailed surface wave studies across the state using the St. Helens earthquakes as seismic sources rich in surface wave energy. There are three lines planned for eastern Washington which should give us good average crustal shear wave velocities over most of the region.