

QUARTERLY TECHNICAL REPORT July, 1981 - B

on

Seismicity of the Washington-Oregon Area

March 23 through June 30, 1981 B

Geophysics Program

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Seattle, Washington

PREPARED FOR THE U.S. NUCLEAR REGULATORY AGENCY

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Operations

The expansion of the Washington State seismic network under N.R.C. support is about on schedule. A total of 10 new seismic stations will be added to the network within the next few months. Three of these stations are currently being operated by Tera Corp for Portland General Electric and recorded locally at Arlington Oregon. Arrangements are being made to also telemeter these data to Seattle to be recorded on our digital system. Three new stations will be added in southeast Oregon and telemetered through the Arlington area (See figure 1). Four sites in the Portland, Oregon area have been selected and installation of one of those is partially complete. All of these sites have been permitted, and all equipment ordered. We are waiting for delivery of the radio pairs and the amp-VCO units. All other equipment has been delivered. Telephone lease lines are not yet available to all tie points but should be soon. Table I gives the locations of the stations at least partially supported by the N.R.C.

Telemetry of the U.S.G.S.-operated northern Oregon seismic stations is being reorganized due to the large increases in long-line phone rates. This will cause significant outages of data from some of their stations over the next several months. Because of recent seismic activity in the southern Washington Cascades we are anticipating the installation of possibly two additional seismic stations in the Mount Adams-Yakima area. These sites are not chosen yet because of the difficulty in permitting sites on the Yakima Indian Reservation.

Data

Even though the N.R.C.-supported stations are not on line yet, we have located a number of events in the northern Oregon area of interest. This is due to the use of the U.S.G.S.-operated stations that we record and tuning our event detecting algorithm for this area. Figures 2 and 3 show the known or suspected blasts and earthquakes respectively. The separation of these events into two

catagories is only preliminary since we have not yet spent enough time tracking down artificial explosive sources. Events associate directly with Mount St. Helens have not been included in these figures. Table II is a catalog of the events shown in these figures.

TABLE I

| Code | Lat | Lon | Name |
|------|-------|--------|-----------------|
| VKM | 45.6 | 123.5 | Kings Mt |
| VTM | 45.7 | 122.9W | Tualatin Mt |
| VSQ | 45.0N | 122.5W | Squaw Butte |
| VSR | 45.6N | 119.3W | Sevice Butte |
| VBL | 45.2N | 119.3W | Black Mt |
| VNI | 46.1N | 123.5W | Nikolai Mt |
| FMC | 45.6N | 120.0W | Fourmile C(PGE) |
| RPK | 45.8N | 120.2W | Roosevelt (PGE) |
| ALD | 45.8N | 120.1W | Alder (PGE) |

TABLE II - N. R. C. CATALOG

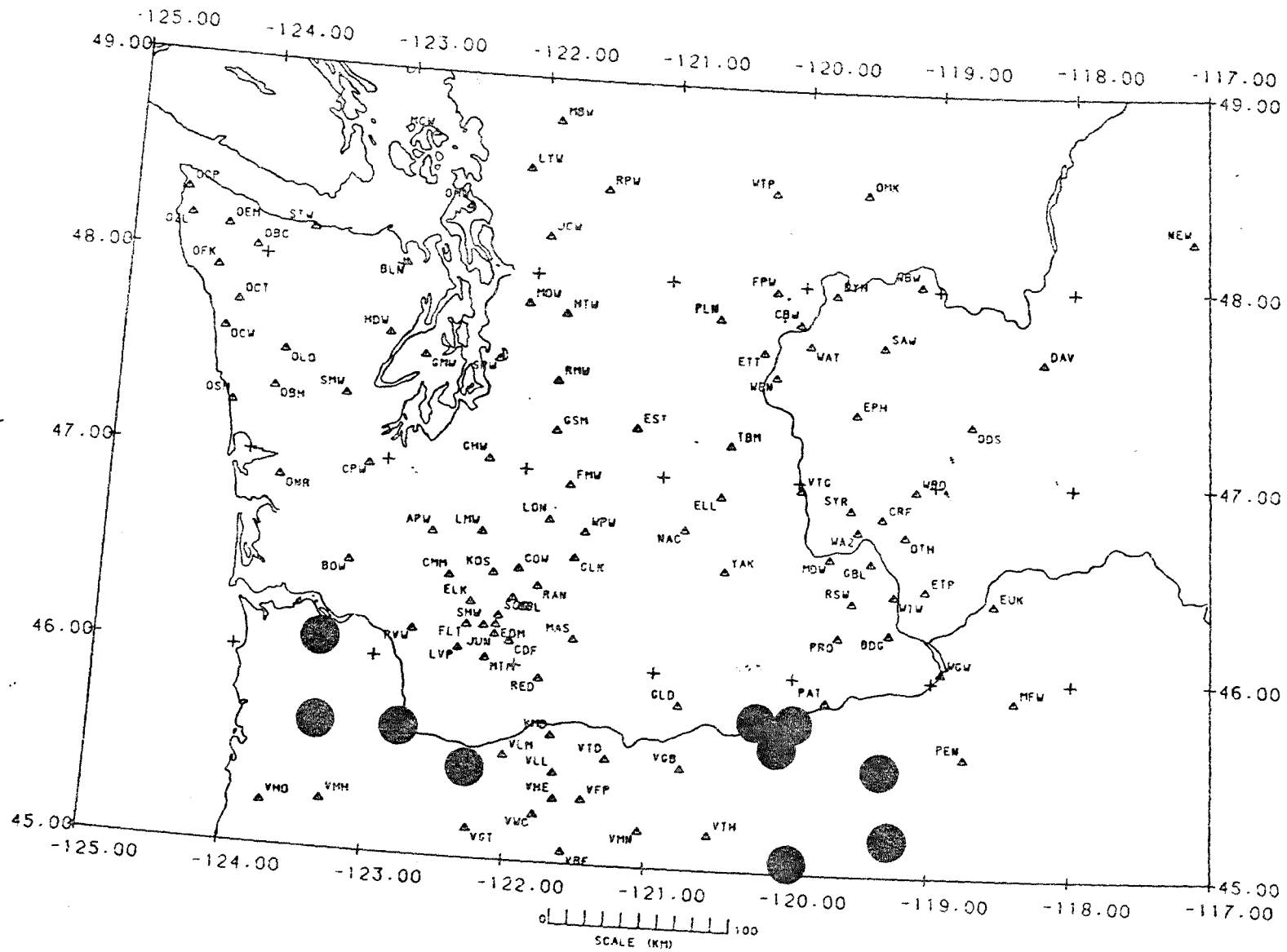
| Jan 1981 | | | | | | | | | | | |
|----------|-------|-------|----------|-----------|-------|-----|-------|------|----|-------|------|
| DAY | TIME | SEC | LAT | LON | DEPTH | MAG | NS/NP | RMS | Q | MODEL | TYPE |
| 13 | 1:43 | 0. | 45 12.60 | 121 40.74 | 0.31 | 0. | 5/05 | 0.30 | CD | S1 | |
| 15 | 6: 0 | 37.55 | 45 51.19 | 118 24.58 | 15.07 | 1.9 | 10/11 | 0.28 | CD | E1 | |
| 16 | 14:14 | 4.01 | 46 8.77 | 122 30.67 | 37.19 | 1.1 | 5/07 | 0.29 | CD | P1 | |
| 19 | 0:47 | 52.29 | 45 40.27 | 122 45.68 | 8.53 | 1.4 | 12/16 | 0.17 | BD | P1 | |
| 28 | 22:35 | 48.03 | 45 57.86 | 122 11.42 | 24.88 | 0.7 | 5/07 | 0.11 | BD | S1 | |
| 30 | 0:32 | 56.11 | 46 7.53 | 122 51.04 | 3.95 | 2.0 | 11/13 | 0.07 | AD | S1 | P |
| 30 | 4:13 | 19.53 | 45 48.25 | 120 1.76 | 0.10* | 2.3 | 9/10 | 0.45 | CC | C1 | |

| Feb 1981 | | | | | | | | | | | |
|----------|-------|-------|----------|-----------|-------|-----|-------|------|----|-------|------|
| DAY | TIME | SEC | LAT | LON | DEPTH | MAG | NS/NP | RMS | Q | MODEL | TYPE |
| 2 | 22:22 | -7.09 | 45 33.35 | 121 57.62 | 7.62 | 1.7 | 7/07 | 0.09 | CD | C1 | |
| 6 | 1: 2 | 25.31 | 46 11.14 | 122 55.72 | 22.00 | 0. | 10/13 | 0.48 | CD | S1 | P |
| 15 | 20: 0 | 35.89 | 45 38.25 | 122 37.41 | 18.13 | 1.6 | 9/12 | 0.28 | CD | C1 | |
| 15 | 21:38 | 24.94 | 45 36.61 | 122 34.77 | 22.00 | 0. | 8/13 | 0.22 | BD | S1 | |
| 27 | 22:26 | 31.13 | 46 17.43 | 122 37.59 | 6.74 | 1.4 | 7/07 | 0.15 | AC | P1 | P |

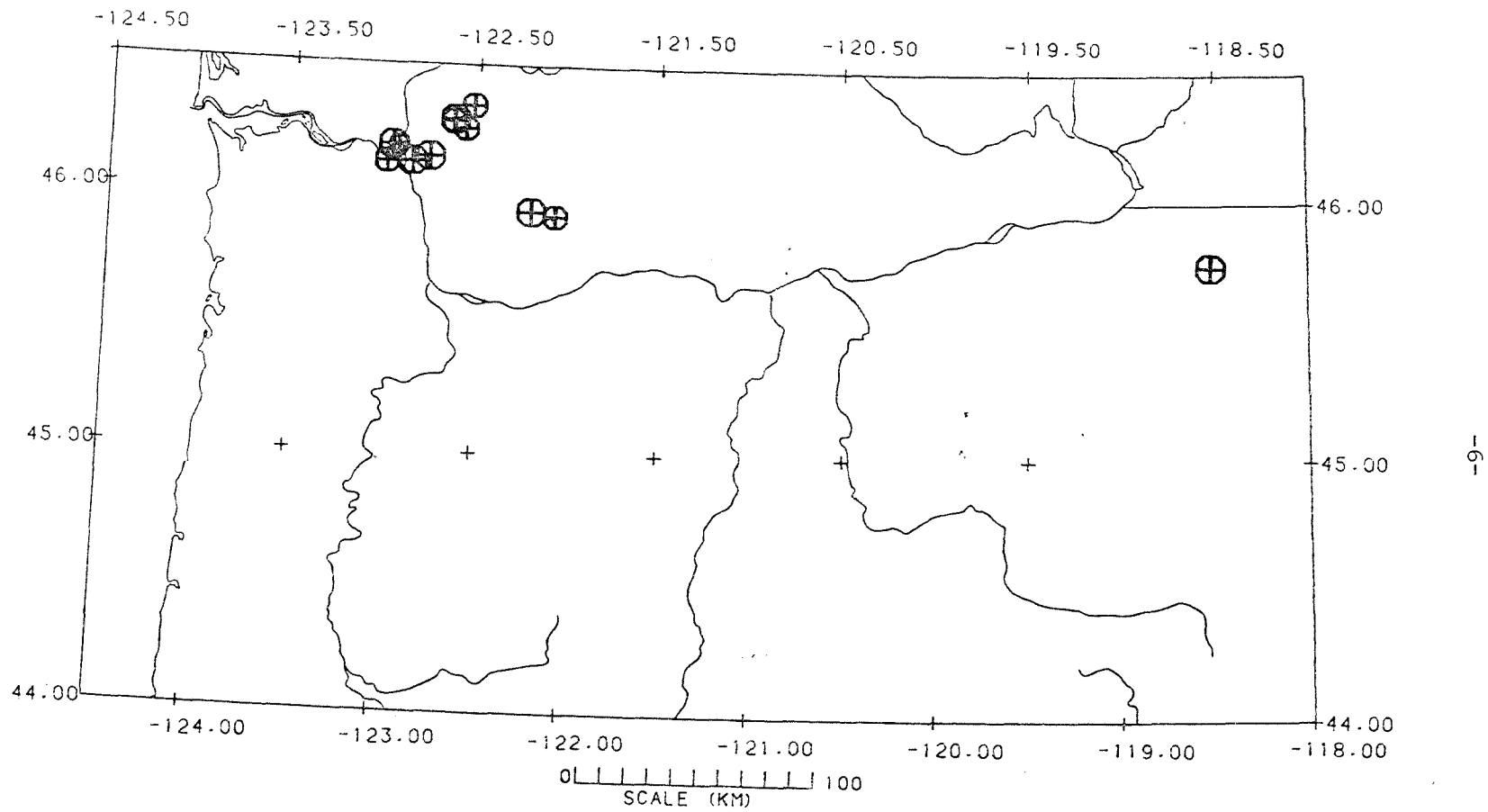
| Mar 1981 | | | | | | | | | | | |
|----------|-------|-------|----------|-----------|-------|-----|-------|------|----|-------|------|
| DAY | TIME | SEC | LAT | LON | DEPTH | MAG | NS/NP | RMS | Q | MODEL | TYPE |
| 3 | 2: 4 | 60.24 | 46 20.65 | 122 31.48 | 0.10* | 0.8 | 12/14 | 0.20 | BC | S1 | P |
| 5 | 21:53 | 65.20 | 46 17.05 | 122 37.88 | 6.75 | 0.7 | 10/11 | 0.16 | BC | P1 | P |
| 7 | 0:10 | 16.92 | 46 11.25 | 122 57.55 | 12.85 | 2.0 | 10/13 | 0.20 | BD | P1 | P |
| 11 | 20:42 | 21.16 | 46 7.39 | 122 59.36 | 15.39 | 0.9 | 4/07 | 0.27 | BD | P1 | P |
| 16 | 21:15 | 36.85 | 46 15.32 | 122 33.85 | 6.50 | 0.1 | 4/05 | 0.20 | BD | P1 | P |

| May 1981 | | | | | | | | | | | |
|----------|-------|-------|----------|-----------|-------|-----|-------|------|----|-------|------|
| DAY | TIME | SEC | LAT | LON | DEPTH | MAG | NS/NP | RMS | Q | MODEL | TYPE |
| 1 | 20:47 | 63.69 | 46 8.68 | 122 45.41 | 2.37 | 1.3 | 7/11 | 0.15 | AD | P1 | P |
| 3 | 15:45 | 44.59 | 45 58.90 | 122 35.31 | 21.57 | 0.9 | 16/31 | 0.13 | AC | S1 | |
| 5 | 0: 5 | 24.78 | 45 57.75 | 122 6.38 | 9.29 | 0.6 | 13/18 | 0.15 | AC | S1 | |
| 6 | 12:16 | 31.19 | 45 19.96 | 121 42.02 | 6.15 | 1.3 | 6/12 | 0.18 | BB | C1 | |
| 8 | 18:44 | 28.62 | 46 17.96 | 122 47.45 | 20.66 | 1.3 | 22/34 | 0.14 | AB | P1 | |
| 8 | 22:53 | 29.82 | 45 55.40 | 122 3.94 | 6.92 | 0.8 | 6/08 | 0.16 | BD | S1 | P |
| 14 | 23:24 | 68.06 | 45 51.91 | 122 3.91 | 8.34 | 0.4 | 6/06 | 0.15 | CD | S1 | |
| 19 | 16:46 | 7.62 | 45 57.22 | 121 44.26 | 98.14 | 0. | 4/04 | 0. | AD | C1 | p |
| 21 | 0:33 | 50.46 | 45 45.38 | 118 31.15 | 0.10* | 1.3 | 13/14 | 0.16 | BD | E1 | p |
| 23 | 16:35 | 62.13 | 45 53.79 | 122 40.65 | 12.20 | 1.5 | 29/36 | 0.16 | BC | P1 | |

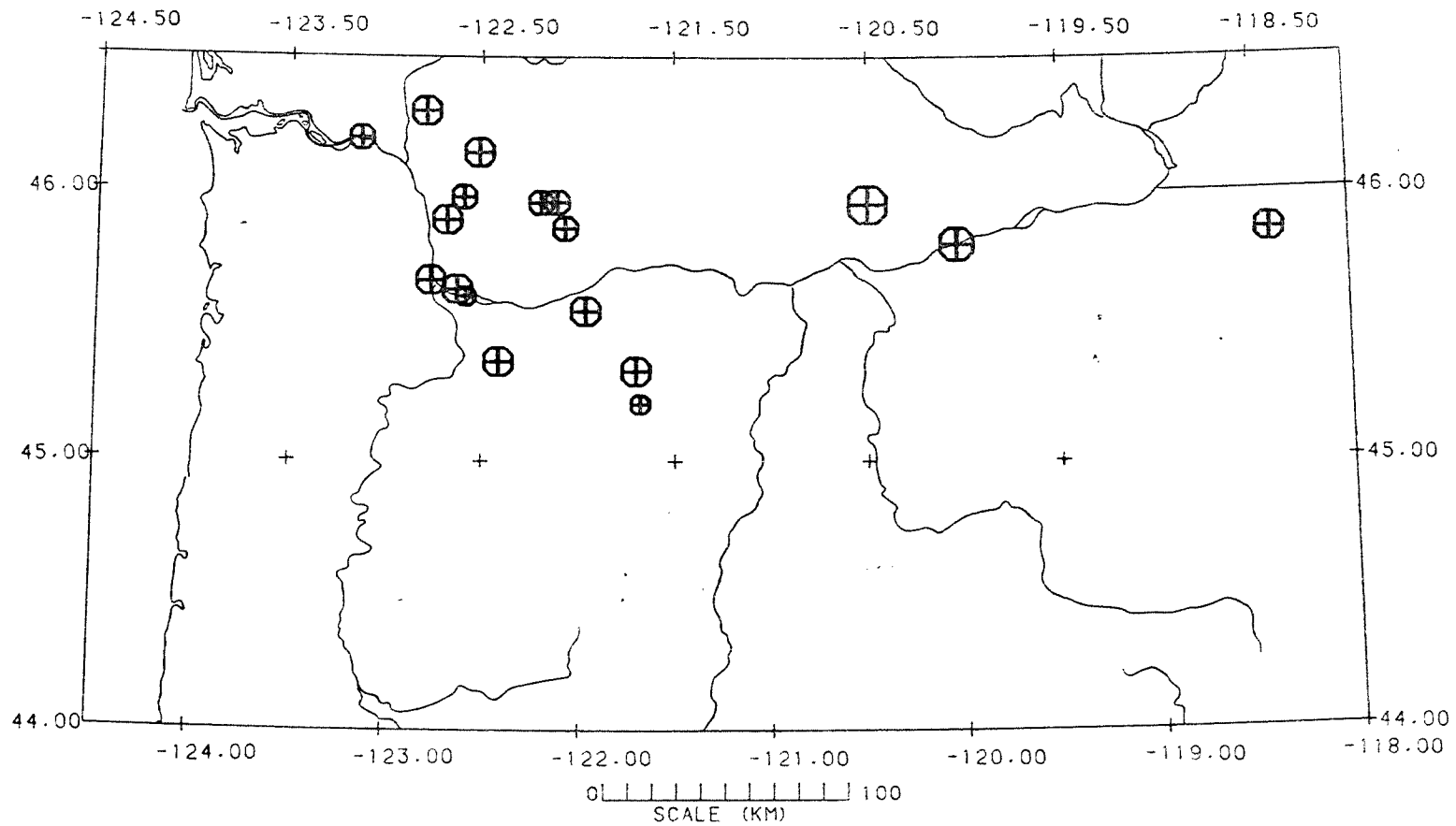
| June 1981 | | | | | | | | | | | |
|-----------|-------|-------|----------|-----------|-------|-----|-------|------|----|-------|------|
| DAY | TIME | SEC | LAT | LON | DEPTH | MAG | NS/NP | RMS | Q | MODEL | TYPE |
| 2 | 0:46 | 58.05 | 45 22.07 | 122 24.63 | 8.52 | 1.1 | 10/19 | 0.16 | BD | C1 | |
| 14 | 13: 6 | 6.23 | 46 11.91 | 123 7.72 | 18.40 | 0.9 | 10/13 | 0.13 | BD | P1 | |
| 14 | 13:12 | 57.61 | 45 57.22 | 120 29.51 | 14.39 | 3.3 | 72/73 | 0.19 | BB | C1 | |
| 26 | 20:31 | 34.88 | 45 56.42 | 122 11.77 | 4.86 | 1.3 | 16/17 | 0.17 | BC | S1 | p |



I-1 Washington State Seismograph Network.
 Solid circles are NRC-supported stations.



I-2 Known and probable explosions in southern Washington - northern Oregon.



I-3 Earthquakes in southern Washington - northern Oregon, first 1/2 of 1981 (excluding Mt. St. Helens activity).