QUARTERLY TECHNICAL REPORT 78 - D

for

HANFORD SEISMIC NETWORK

October 1 through December 31 1978

Geophysics Program

University of Washington

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY
UNDER CONTRACT NO. EY-76-S-06-2225
TASK AGREEMENT NO. 39

and

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
CONTRACT NO. C-10976

Operations

No station changes have taken place during the last quarter in the regular eastern Washington seismic array. The array has been operating in a fairly stable condition with only a few staitons going down because of the winter weather. We have had some serious problems with one of the develecorders which was out of operation for over two days. Using the other develecorder and helicorders we can be assured of not missing any events larger than magnitude 2.5 during this period.

We have begun the installation process for five new stations on the east flank of the Cascade mountains. Telephone lines to conect these stations, as well as the locally recording station at Goldendale, to the campus are being ordered. Sites have been chosen for the stations in the Yakima-Ellensburg area and the permitting is under way at present. All equipment for these stations has arrived, and the packages are being constructed. We anticipate several of these stations going on line as soon as the telephone circuits are connected. The planned locations of these stations are shown in Figure 1 as squares. The station up in the Snoqualmie Pass area will probably not go in until late spring because of the heavy snow cover.

The new U.S. Geological Survey computer systems have been delivered but are not yet installed. We anticipate that it will take another month to get the hardware fully

installed and connected to the seismic data lines. Since much of the software for the online system is being developed elsewhere, we do not know how long it will be until it is operational but suspect at least two months. The new east flank seismic station will not be able to be recorded until the computer system is operational.

Data

There was less activity in the normal southern Lake Chelan area than in past quarters, though there is a new area of activity to the northeast of the old area which had three events during this reporting period and has had several events there during the first part of the next reporting period including two felt events. These will be covered in more detail next quarter. There has been a very active swarm in the central part of the Saddle Mountains area plus several scattered events in other parts of this zone. One event in the Cle Elum area indicates this area is still active.

Two new blast sites have been discovered, one near Chief Joseph Dam in the north and one east of Eltopia in the south. Several other known and suspected blasts are plotted in Figure 1 with the stations. Figure 2 shows the earthquakes for this period.

Other Studies

Two of three broadband digital stations have been installed as part of the regional structure and attenuation studies. One station in western Washington will be used to compare the surface waves from medium to large regional earthquakes with stations located in the Cascades and in the central Columbia basin. We already have a partial record from one event on two of the stations. All three stations should be fully operational within another month, and hopefully the data collection will be complete by late summer.

The first of the downhole experiments is planned for early February. The single component downhole seismometer is in hand and has gone through electrical tests. The recording equipment is being readied with the installation planned for Feb. 7 and 8. This initial recording will probably last several weeks at which time we will reconfigure the system for three- component recording.

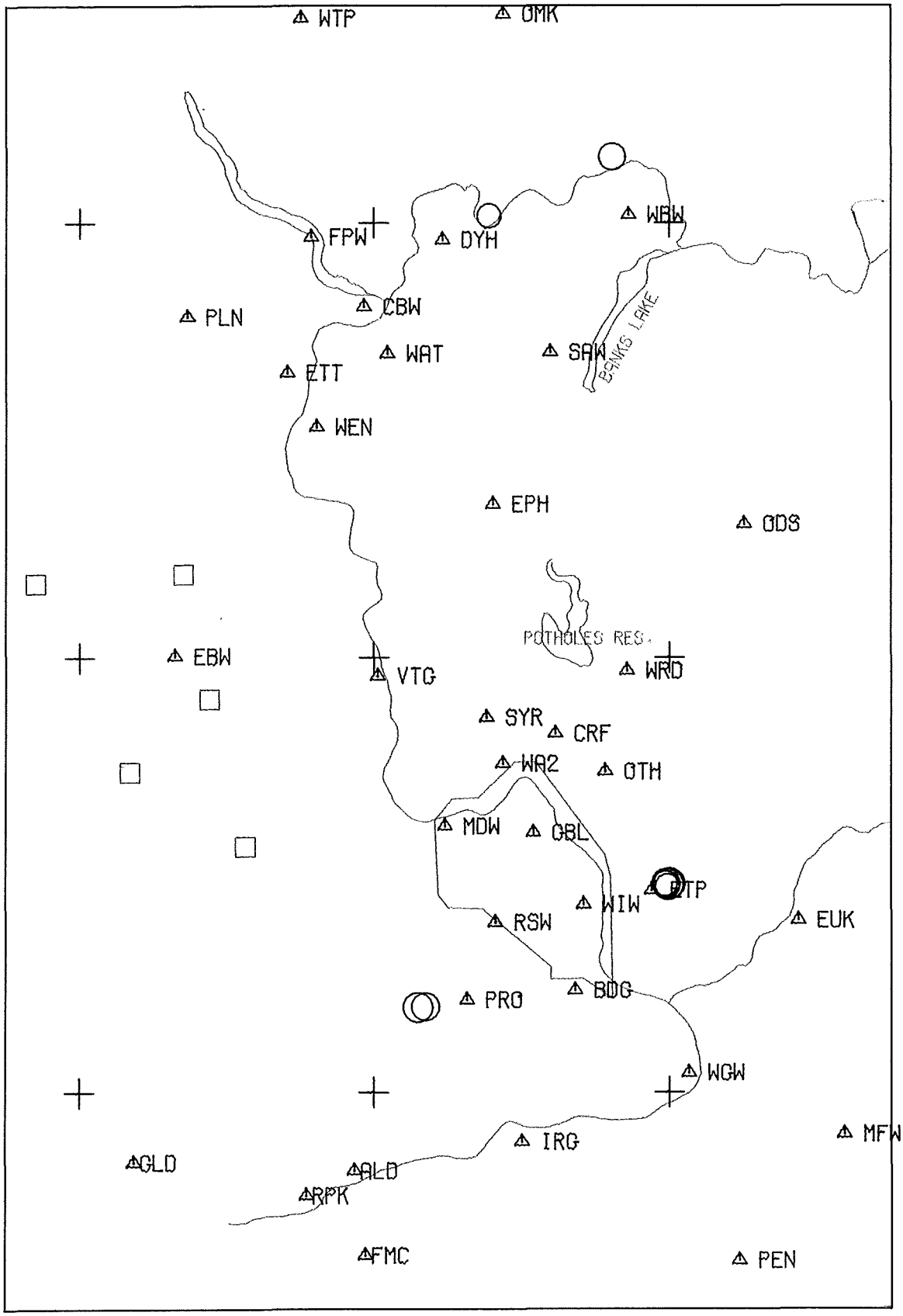
TABLE II

EASTERN WASHINGTON EARTHQUAKES (10,78)

DATE	DAY	TIME	LAT	LONG	DEPTH	MAG	#	Q	TYPE
10/ 1/78	274	715:31.8	47-46.71	119-23.88	3.0	1.6	8	C	
10/ 2/78	275	1037:12.2	47-54.53	119-41.40	8.3	1.3	9	B	
10/ 3/78	276	2141:17.1	46-36.54	119-32.09	4.7	1.6	5	D	P
10/ 4/78	277	18 9:20.4	46-28.47	119- 0.51	0.5	1.7	9	B	X
10/ 9/78	282	18 1: 8.9	46-27.77	118-57.54	0.9	1.3	5	D	
10/10/78	283	12 4:27.9	47-54.04	119-40.94	2.4	3.1	11	B	
10/10/78	283	12 4:37.0	47-21.51	119-25.22	7.9	3.2	4	C	
10/11/78	284	2128:41.9	47-54.17	119-41.35	7.6	1.2	7	B	
10/14/78	287	23 8:24.4	46-48.70	119-33.15	1.8	1.9	12	B	
10/15/78	288	128:41.4	46-49.22	119-33.34	1.9	1.2	8	B	
10/15/78	288	144:32.8	46-48.51	119-33.53	1.5	1.2	9	B	
10/15/78	288	213: 7.6	46-48.93	119-33.59	1.5	1.4	7	B	
10/17/78	290	4 7:27.0	46-48.93	119-33.51	1.7	1.6	11	B	
10/17/78	290	440: 0.6	46-48.97	119-33.80	1.2	1.0	9	B	
10/17/78	290	526:33.4	46-48.61	119-33.36	0.9	1.4	9	B	
10/17/78	290	611:34.9	46-48.76	119-33.16	1.3	1.3	11	B	
10/17/78	290	944:22.9	46-48.50	119-33.46	1.8	1.2	8	B	
10/17/78	290	1150:15.9	46-48.77	119-33.16	0.4	2.0	10	B	
10/17/78	290	1151:13.2	46-49.26	119-33.33	0.5	1.0	6	B	
10/17/78	290	2341:28.5	46-49.04	119-33.40	1.2	2.1	6	B	
10/18/78	291	436: 7.6	46-49.32	119-33.39	1.8	2.5	9	B	
~~10/19/78~~	~~292~~	~~1611:16.9~~	~~46-48.49~~	~~119-33.29~~	~~4.2~~	~~2.1~~	~~5~~	~~C~~	
10/19/78	292	1611:16.7	46-48.94	119-33.83	0.3	2.0	8	B	
10/19/78	292	1637:55.4	46-49.31	119-33.71	1.7	.5	6	C	
10/20/78	293	10 0: 2.5	46-50.45	119-39.36	2.7	1.6	11	B	

DATE	DAY	TIME	LAT	LONG	DEPTH	MAG	#	Q	TYPE
10/22/78	295	1117: 3.9	47-40.52	120- 6.44	7.5	1.2	8	B	
10/26/78	299	11 8:28.8	46-49.22	119-22.71	1.0	1.1	5	C	
10/27/78	300	853:24.5	46-48.68	119-33.58	1.4	1.3	9	C	
11/ 4/78	308	15 4:59.2	46-49.04	119-34.12	3.8	1.3	6	B	
11/ 4/78	308	1530:40.1	46-48.67	119-33.98	0.4	1.4	9	B	
11/ 4/78	308	16 3:51.2	46-48.66	119-33.47	3.6	1.2	7	B	
11/ 5/78	309	2 7:56.0	46-48.75	119-33.48	2.1	1.4	10	B	
11/ 7/78	311	252:24.8	47-47.12	119-24.23	2.4	.4	6	B	
11/ 8/78	312	2335:15.4	47-52.17	118- 8.57	0.2	1.8	8	D	X
11/13/78	317	2159:35.3	46-28.69	119- 0.85	0.5	1.3	7	C	X
11/14/78	318	22 5:59.5	46-28.77	119- 1.00	0.5	1.7	7	D	X
11/15/78	319	944:54.3	47-37.14	120-17.30	5.4	1.3	9	B	
11/17/78	321	649:57.3	46-48.32	119-24.79	2.2	.7	8	B	
11/20/78	324	727:49.9	47-54.32	119-40.95	8.3	1.4	9	B	
11/21/78	325	1747:26.2	46-48.74	119-33.04	2.9	1.4	9	B	
11/21/78	325	1751:47.7	46-48.81	119-33.43	3.5	.8	7	B	
11/21/78	325	18 9:47.3	46-48.97	119-33.13	3.5	1.0	9	B	
11/23/78	327	1631:14.7	46-48.95	119-23.87	1.4	.4	7	B	
11/24/78	328	1753:30.0	46-56.01	120-56.83	8.8	2.0	19	C	
12/ 4/78	338	2 7:18.2	46-49.41	119-13.74	1.0	2.0	11	C	
12/ 5/78	339	2110:35.3	46-28.73	118-59.94	1.3	1.7	14	B	X
12/ 6/78	340	2016:13.9	47-53.09	118- 8.02	0.1	1.8	8	C	X
12/ 8/78	342	14 3:50.1	46-45.63	119-33.89	21.4	.8	7	B	
12/ 8/78	342	2059:11.8	46-28.92	119- 0.66	0.5	1.5	7	C	X
12/ 8/78	342	2250:40.9	48- 1.08	119-36.74	0.5	1.2	5	D	X

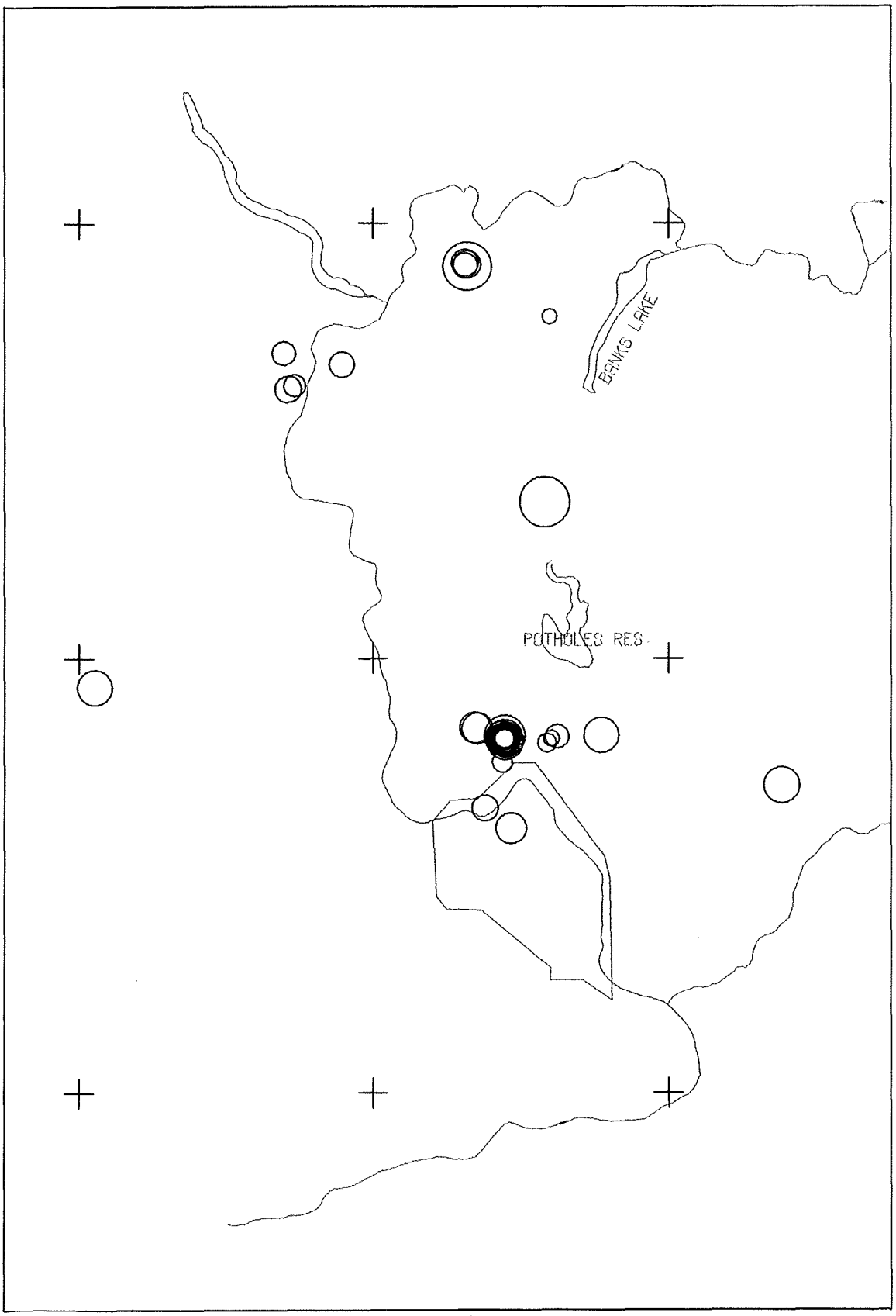
DATE	DAY	TIME	LAT	LONG	DEPTH	MAG	#	Q	TYPE
12/ 9/78	343	030:40.8	46-39.31	119-37.36	0.2	1.2	12	C	
12/10/78	344	1643:15.3	47-37.64	120-15.99	5.8	.9	8	B	
12/11/78	345	2334: 1.3	47-52.73	118- 8.09	0.4	3.1	8	D	X
12/13/78	347	16 3:35.5	46-28.38	119- 0.37	1.2	1.2	6	C	X
12/13/78	347	2348:50.7	46-12.57	119-49.67	0.3	1.5	5	C	X
12/14/78	348	20 0: 9.9	48- 0.87	119-36.56	0.5	1.4	5	D	X
12/14/78	348	2148:13.3	46-28.74	119- 0.56	0.5	1.4	6	D	X
12/14/78	348	2350:38.7	46-12.68	119-49.62	0.2	1.6	7	C	X
12/19/78	353	23 0: 7.5	48- 9.08	119-11.57	1.5	1.4	5	D	P
12/22/78	356	17 6:10.5	45-53.15	119-20.44	1.6	2.6	5	D	P
12/24/78	358	1250:56.3	46-50.35	119-38.88	2.9	1.6	9	B	
12/26/78	360	1557: 6.7	46-42.50	118-37.06	1.8	2.1	11	C	
12/27/78	361	123:54.0	47-42.11	120-18.23	12.9	1.0	7	B	



EASTERN WASHINGTON STATIONS AND EXPLOSIONS OCT - DEC , 1978
CENTER OF MAP IS 47.00 N 119.75 W

MAGNITUDE KEY ○ 0.0 ◯ 1.3 ◯ 2.7 ◯ 4.0

FIGURE 2



EASTERN WASHINGTON EARTHQUAKES OCT. - DEC. 1978

CENTER OF MAP IS 47.00 N 119.75 W

MAGNITUDE KEY o 0.0 ○ 1.3 ◯ 2.7 ◯ 4.0