GEOLOGICAL SURVEY OF CANADA

OPEN FILE 1400

PRELIMINARY INVESTIGATION OF EARTHQUAKES WEST OF VANCOUVER ISLAND

by

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November 1986

Canada

ABSTRACT

This open file describes a data file of arrival times and epicentres that were compiled for the seismically active area west of Vancouver Island, roughly within the bounds of 46° N and 51° N and 126° W and 133° W. This is the most seismically active region in Canada with more than 100 earthquakes M>5 in the past 70 years and more than 500 earthquakes M>3 in the past 20 years. Data and solutions from earthquakes in the region have been collected from national and international sources: from published bulletins, punched cards, electronic media, and original work sheets. This includes ~8500 teleseismic P arrivals and ~5000 local P and S arrivals along with the known epicentral solutions. Data has been organized into one format and compiled onto one tape. Some preliminary editing has been carried out and some experiments performed to assess the accuracy of both local and teleseismic epicentres in the region. The the teleseismic P arrivals are used to compute revised epicentres for 78 of the larger earthquakes.

Particularily for the pre-1960 data where the station distribution is poor, significant teleseismic location differences are found for different earth models; further it is inferred that lack of stations in the southwest quadrant leads to a location bias to the northeast. For the local data set station corrections are found to be required with the EPB crustal model that has been used since 1972; and most epicentres calculated with that model appear to be located too far east.

TABLE OF CONTENTS

In their review of western Canada seismicity, Milne et al. (1978) plotted the data offshore of Vancouver Island and Washington State and found a very scattered distribution of epicentres (Fig. 1). This can be attributed, at least in part, to the poor quality of the early data, the variety of earth models and methods used in the calculations, and the distribution of seismic stations. Even using only the more modern data (1964-75), significant scatter still existed and the data groupings are offset from the ridges and fracture zones (Fig. 2). In this report we gather all previously reported epicentres. We then attempt to improve the consistency and accuracy of the teleseismically located events by using the most up-to-date earth model with station corrections and winnowing the arrivals with large residuals. For the earthquakes located using local stations, traveltime corrections to the currently used Canadian model are derived using large teleseismic earthquakes as calibrating events and selected epicentres relocated using these station corrections.

Milne et al. (1978) have indicated their sources of the offshore data set and the epicenter location procedures. For completeness, the essential points are repeated here.

The Canadian Earthquake Data File

The Canadian earthquake data file maintained by the Earth Physics Branch (EPB) is made up of all known earthquakes that occur in or near Canada.

(a) Sources of Data

For the area under consideration, all earthquakes before 1951 have been compiled from international catalogues. Since 1951 the Seismological Service

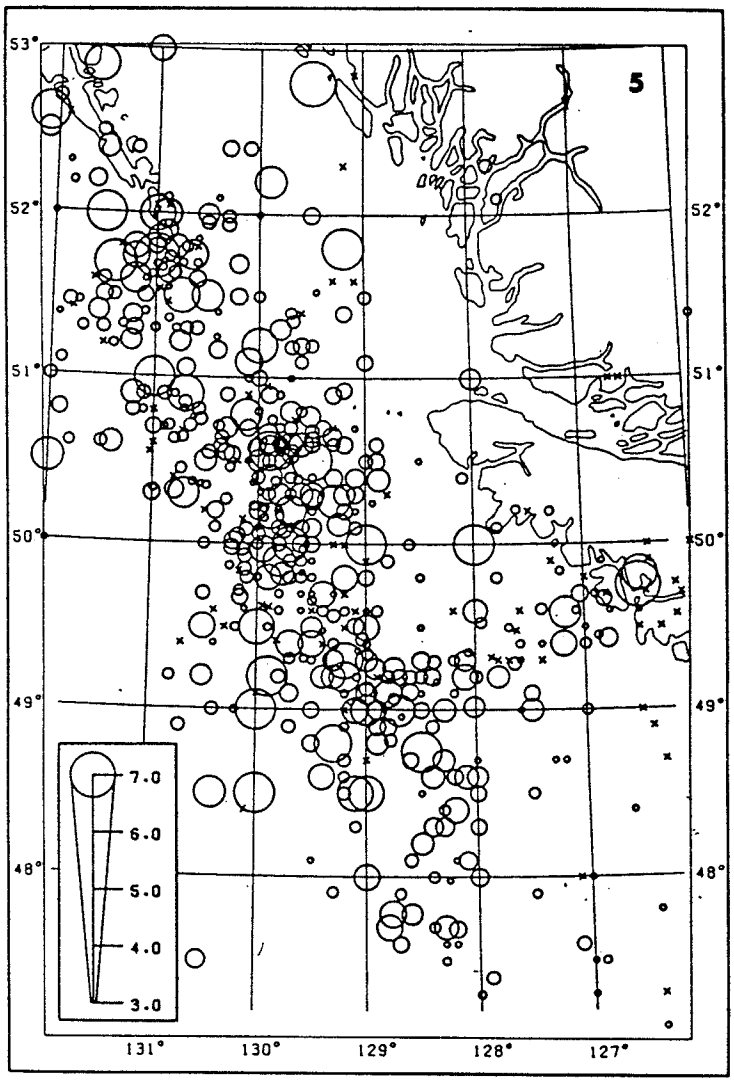

FIGURE 1. Offshore epicentres (1899-1975) of earthquakes with magnitudes greater than or equal to 2.0. Circle diameters are proportional to magnitude using scaling indicated in lower left corner. Earthquakes of less than magnitude 3.0 are marked by an X (from Milne et al., 1978).

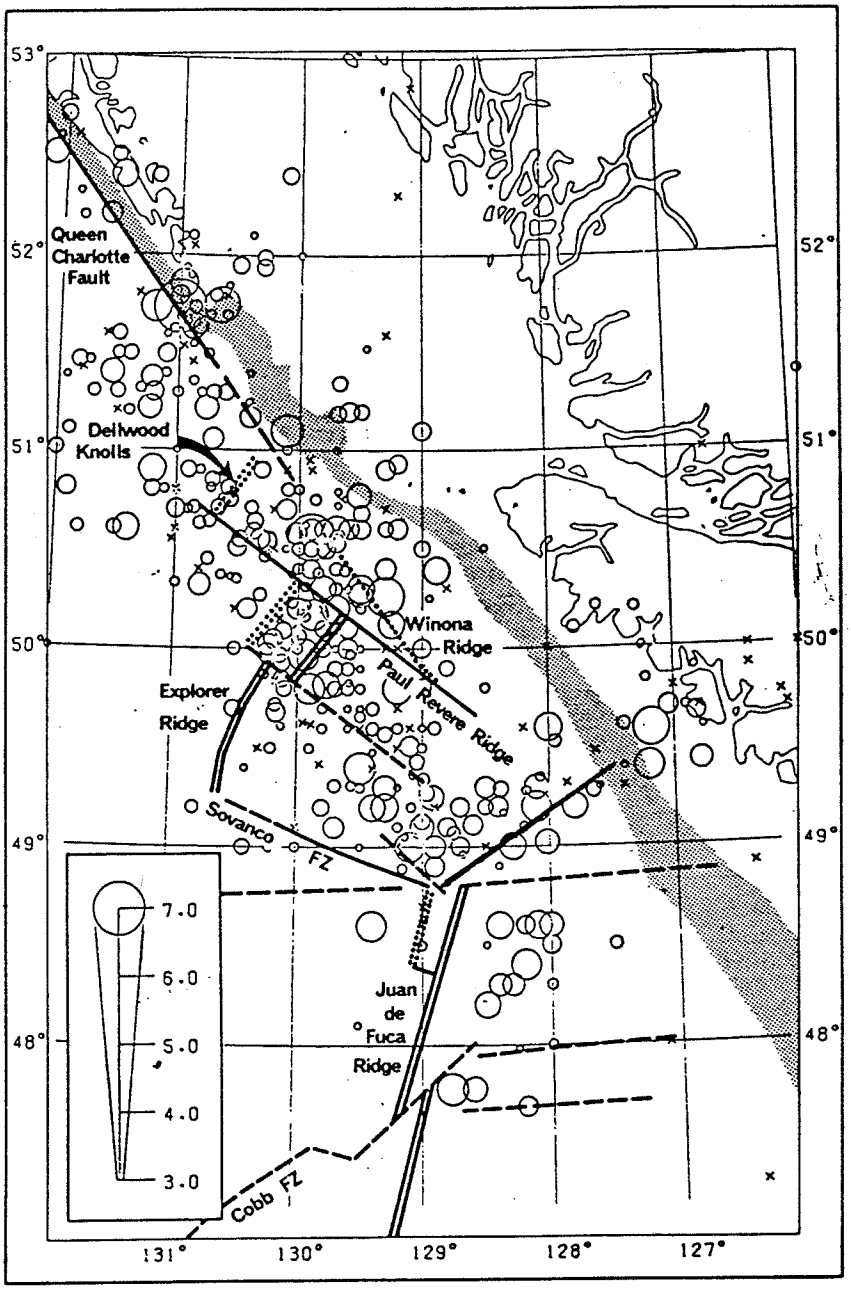

FIGURE 2. Tectonic map of the offshore region superimposed on post-1964 distribution of earthquakes (modified from Milne et al., 1978).

of Canada has operated a network of sensitive seismograph stations in British Columbia that has slowly increased in capability. This network, used in conjunction with neighbouring stations in the United States, has made possible the location of small earthquakes and an independent location of some larger earthquakes.

Epicenters for these earthquakes have been published in a series of catalogues which subsequently became the basis for the Canadian Earthquake Data File (CEDF) of the EPB. Also included in the file are the locations from the international catalogues and some epicenters computed in special studies.

b) Epicenter Location

The epicenters of teleseismically located earthquakes have been determined by the international organizations and research workers using a variety of methods (graphical procedures and computer algorithms) and parameters (earth models, station corrections). The EPB epicenters from 1951 to 1972 were located graphically using travel time curves representing a uniform single layer crustal model (32 km of 6.25 km/s crust; P velocity 8.2 km/s) (for details see Stevens et al. (1972)). Since 1972, the model has been changed (36 km of 6.2 km/s crust) to be identical for all of Canada and a computer based location program started. Clearly these models are inappropriate for the area under consideration as a significant portion of the travel path is in oceanic material and in a subduction zone. Locations are also affected by the marked velocity inhomogeneities and the number and location of reporting stations. Thus both biases and scatter are expected.

Milne et al. (1978) suggest that up to 1960 the errors in epicenter location in this area may be as large as 100 km. With the establishment of additional

stations, both local and international, marked improvement occurred at this time although significant systematic biases are expected to remain, particularly in the EPB locations since all earthquakes are outside the network.

PROGRAM OBJECTIVES

The objective of this open file report is to compile a data set and to conduct preliminary experiments to assess the accuracy and improve the locations of earthquake epicentres on the continental shelf and ocean floor west of Vancouver Island and Washington State, roughly within the bounds of 46° N to 51° N and 126° W to 133° W. The data file is stored on magnetic tape at the Pacific Geoscience Centre and this open file describes that tape, the compilation of data and the experiments conducted.

In this study the assigned magnitudes have not been reconsidered or systematically checked. A few errors that were noticed were corrected. However, many different types of magnitudes on the original EPB tape were listed as local or ML magnitudes. These were checked and sorted into ML, MS or mb classes, and the original source assigning the magnitude was identified where possible.

EPICENTRE AND MAGNITUDE COMPILATION FOR M≥4 EARTHQUAKES

Published epicentres and magnitude estimates for all events M≥4 in the region of interest were compiled. Principal data sources were the Earth Physics Branch data file, the National Earthquake Information Service data file, the International Seismological Centre Regional Catalogue of Earthquakes, the microfiche data of Kelleher and Savino (1975), Gutenberg and Richter (1954) and

Rogers (1983). The revised epicentres of this study were also added to this compilation.

The format of this data set as it exists on the submitted magnetic tape is provided in Table I; the complete file is listed in Appendix A. The source code for originators of hypocenters is given in Table II.

TELESEISMIC DATA SET AND COMPUTATIONS

P arrival times and first motion directions for earthquakes $M \geqslant 5$ from the International Seismological Summary (ISS) and the Bulletin of the International Seismological Centre (ISC) were 'keypunched' into computer files. These covered the periods 1917-1964 and 1964-1980 respectively. The data set for the 96 earthquakes consists of ~8500 P arrivals from ~1000 stations.

The ISS arrival data is in minutes and seconds after the calculated origin time while the ISC data is in absolute time. The ISS data has been converted to the same format as the ISC data with the complete data set submitted on magnetic tape. (For formats, see section entitled Magnetic Tape Data).

Program EPDET

To carry out the epicentre relocations we have used a version of EPDET, a standard iterative least squares program which uses P arrivals only (Weichert and Newton, 1970) . EPDET was modified to run in 4 stages. Initially the program was let run to convergence with the full data set. (Although convergence occurred within several iterations, the program was let run through 10 iterations). Following this the program automatically culls the data set by discarding arrival times having the largest residuals and the program rerun. This process was repeated twice allowing the use of successively more stringent criteria.

TABLE I

FILE FORMAT INFORMATION
MAGNITUDE 4 AND GREATER EARTHQUAKES
IN THE REGION 46N-51N 126W-133W

Columns	Example	Description	Comments
1-3	ISC	Data Source	-Originator of most parameters See Table
		MAGNITUDE 4 AND GREATER EARTHQUAKES FOR THE REGION 46-51N 126-133W	
4-7	1968	Year	
8-9	11	Month	
10-11	02	Day	
12-13	16	Hour	
14-15	32	Minute	
16-18	101	Second	- Implied decimal between cols.17,18
19-24	49513N	Geographic Lat.	- Implied decimal between cols.20,21 N/S in col. 24
25-31	131246W	Geographic Long	- Implied decimal between cols.27,28 E/W in col. 31
32-34	26	Focal Depth	- In kilometers
35	G	Depth designator	- G=Restrained depth N=Held at 33km (Normal depth) A=Assigned D=Restrained depth based on 2 or more reported pP's identified as such
36-37	56	MB Body Wave Mag	- Implied decimal between cols.36,37
38-39	57	MN Nuttli Mag	- Implied decimal between cols.38,39
40-41	46	ML Local Mag	- Implied decimal between cols.40,41
42-43	59	MS Surface Wave	- Implied decimal between cols.42,43
44-45	46	MC Coda Mag	- Implied decimal between cols.44,45
46-47	51	OT Other/Unknown	- Implied decimal between cols.46,47 Basis of estimate unknown or on the number of observations at distant stations
48-49	ML	Preferred Mag	- Either MB,MN,ML,MS,MC, or blank
50-52	101	No. of Station data	
53-55	101	No. of Phase Data	
56-58	32	No. of MB Data	
59-61	10	No. of MN Data	
62-64	25	No. of ML Data	
65-67	19	No. of MS Data	
68-70	22	No. of MC Data	
71-73	56	No. of Depth Data	
74	F	Map Characteristic	O=Open circle F=Full Circle
75-77	271	Std. H-time Error	-implied decimal between cols.75,76
78-80	026	Std. Latitude Error	-implied decimal between cols.77,78
81-83	013	Std. Longitude Error	-implied decimal between cols.80,81 for units of 78-83, see 108
84-85	03	Std. MB Mag Error	-implied decimal between cols.84,85
86-87	02	Std. MN Mag Error	-implied decimal between cols.86,87
88-89	01	Std. ML Mag Error	-implied decimal between cols.88,89
90-91	02	Std. MS Mag Error	-implied decimal between cols.90,91
92-93	03	Std. MC Mag Error	-implied decimal between cols.92,93
94-96	113	RMS Error	-implied decimal between cols.94,95
97-98	4	Std. Error in Depth	

TABLE II

DATA SOURCE CODE FOR ORIGINATORS OF HYPOCENTERS

EPB	- Earth Physics Branch data file
GAR	- Gutenberg and Richter (1954)
GCR	- Rogers (1983)
HF,HF1,HF2	- Hagfors Observatory, Swedish Research Institute for National Defence (designations as used by ISC)
ISC	- International Seismological Centre
ISS	- International Seismological Summary
K&S	- Kelleher and Savino (1975)
MOS	- Institute of Physics of the Earth, Moscow
NAO	- Norsar Array
NEI	- U.S. National Earthquake Information Service (and its predecessors the National Earthquake Information Centre and U.S. Coast and Geodetic Survey)
T&S	- Tobin and Sykes (1968)
UBC	- University of British Columbia (this report)

Dependence of Epicentre on Computational Parameters

As well as depending on the quality of the individual arrival times, the precision of the epicentral determination is a function of the applicability of the travel time tables used and the azimuthal station coverage.

Three principal P wave traveltime tables exist: the Jeffreys and Bullen (1940) tables based on a very early data set, the Herrin (1968) tables based on less than 300 events including nuclear explosions and incorporating an upper mantle velocity which implies traveltimes consistent with the central United States, and the Dziewonski and Anderson (1983) tables based on a well distributed set of 3270 events. Further Dziewonski and Anderson provide azimuthally dependent station corrections for 994 seismic stations which should minimize the effects of near station anomalous structures.

In this section, we investigate both the effects of the different traveltime tables and azimuth on the epicentres.

Earth Model Tests

To investigate the effect on the solution of different earth models, 6 earthquakes distributed throughout the region were located with the following traveltime tables/station corrections:

(i) Jeffreys and Bullen (1940) - JB

(ii) Herrin (1968) - H

(iii) Herrin (1968) with Veith (1975) station corrections - HV

(iv) Dziewonski and Anderson (1983) - D

(v) Dziewonski and Anderson (1983) with their station corrections - DD

The results are provided in Table III and plotted in Figure 3(a)-3(f). As is expected for the pre-WWSSN earthquakes where the data set is more sparse, the epicentres are more model dependent; for the early earthquakes a circle of radius 15 km radius is needed to contain the events while for post-1970 the radius shrinks to ~5 km. Systematic biases are also present: the H and D solutions tend to be the most northerly with the DD and JB solutions to be southerly; the tendency is for DD solutions to be to the west and the JB solutions to the east. From Table III, the JB and DD solutions generally have earlier origin times and the HV solution the highest average standard deviation of the solution.

Azimuth Tests

For earthquakes in the region under consideration, a very poor azimuth distribution of stations exist. For example for the earthquake 1971 0313 2351 MS = 6.1, the original arrival time data set is distributed as follows: 1st quadrant, 129; 2nd quadrant, 67; 3rd quadrant, 11; and 4th quadrant, 35. The gross imbalance between the 1st and 3rd quadrants is even more accentuated when one notes that 5 of these 3rd quadrant stations are in the Society Islands at almost the same azimuth, distance, and generally high noise level.

Three earthquake data sets were examined. To test the imbalance the following EPDET runs were made in each case using the DD traveltimes and station corrections: (i) all stations (ii) an azimuthally balanced set of stations, and (iii) only 2nd and 4th quandrant stations from the azimuthally balanced set. The results are presented in Table IV and Figures 4(a) - 4(c). The azimuthally distributed set of stations are shown in Figures 5(a) - 5(c). We note that even in the 2nd and 4th quadrant the azimuths are confined to a range of ~45°.

TABLE III

EPICENTRES OF SIX EARTHQUAKES DETERMINED USING DIFFERENT TRAVELTIME TABLES AND/OR STATION CORRECTIONS

JB - Jeffreys - Bullen

H - Herrin

HV - Herrin with Veith

D - Dziewonski and Anderson

DD - Dziewonski and Anderson with station corrections

(The last 2 columns are no. of stations and standard deviation of the solutions.)

JB	1957	1324	0822	23.7	50.83	-130.36	64	1.36
H				26.4	50.89	-130.41	66	1.28
HV				26.0	50.77	-130.53	68	1.45
D				26.1	50.84	-130.43	67	1.34
DD				25.9	50.78	-130.46	70	1.33
JB	1957	1216	1727	49.3	49.78	-126.70	56	1.14
H				52.2	49.85	-126.64	58	1.22
HV				52.8	49.79	-126.42	57	1.47
D				52.1	49.83	-126.64	58	1.17
DD				51.0	49.79	-126.71	57	1.25
JB	1960	1201	2049	48.4	49.02	-128.89	69	1.42
H				50.4	49.08	-129.08	73	1.51
HV				50.1	49.02	-129.13	72	1.49
D				50.3	49.05	-129.05	72	1.51
DD				49.8	48.99	-129.16	68	1.44
JB	1971	0313	2351	32.4	50.63	-129.95	203	1.14
H				35.5	50.67	-130.01	205	1.12
HV				35.0	50.64	-130.02	206	1.17
D				34.9	50.64	-130.00	206	1.15
DD				34.4	50.60	-130.05	205	1.04

TABLE III (continued)

JB	1976	1220	2106	39.1	48.88	-128.69	87	1.09
H				41.9	48.95	-128.65	84	1.16
HV				41.9	48.94	-128.66	84	1.21
D				41.8	48.93	-128.70	88	1.11
DD				41.3	48.89	-128.70	86	1.09
JB	1980	1217	1621	59.2	49.43	-129.56	279	1.61
H			1622	1.8	49.46	-129.62	284	1.57
HV			1622	1.7	49.44	-129.62	279	1.55
DD			1622	1.7	49.46	-129.62	282	1.56
D			1622	1.4	49.42	-129.62	283	1.44

Figure 3. Earth model tests for 6 earthquakes

□ - JB

△ - H

○ - HV

◇ - D

✳ - DD

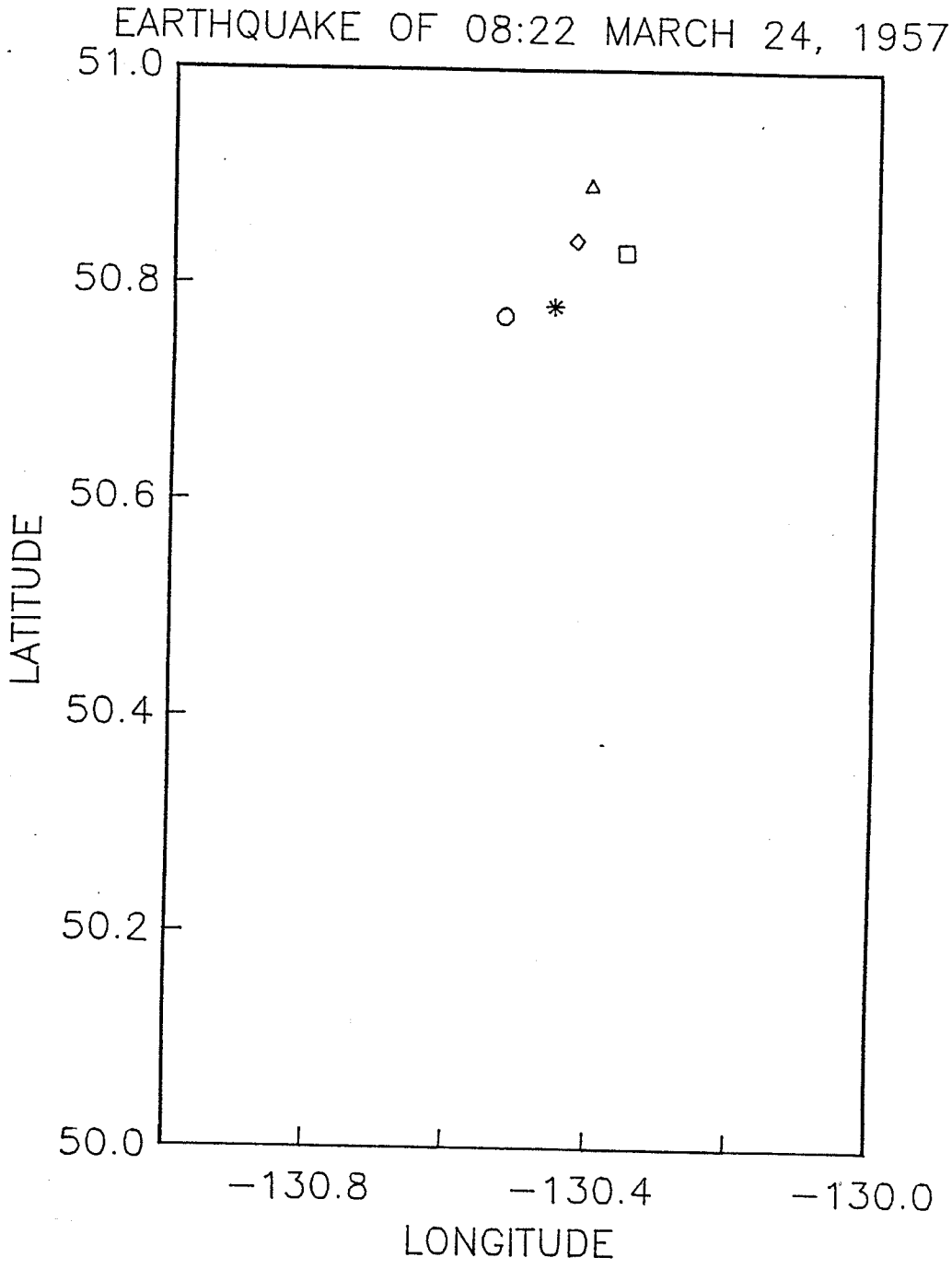

Fig. 3a. Earth model test for earthquake 1957 0324 0822

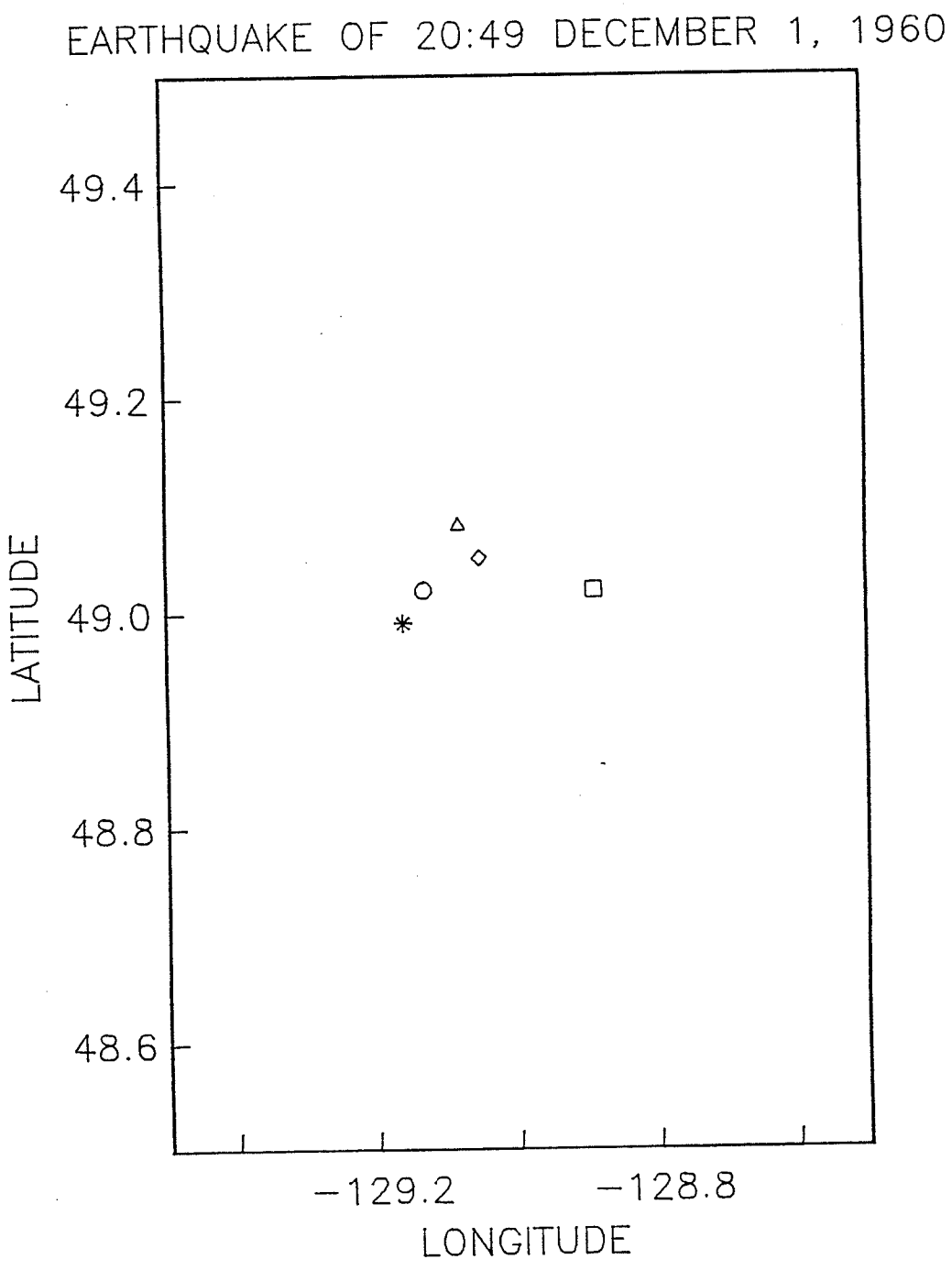

Fig. 3c. Earth model test for earthquake 1960 1201 2049

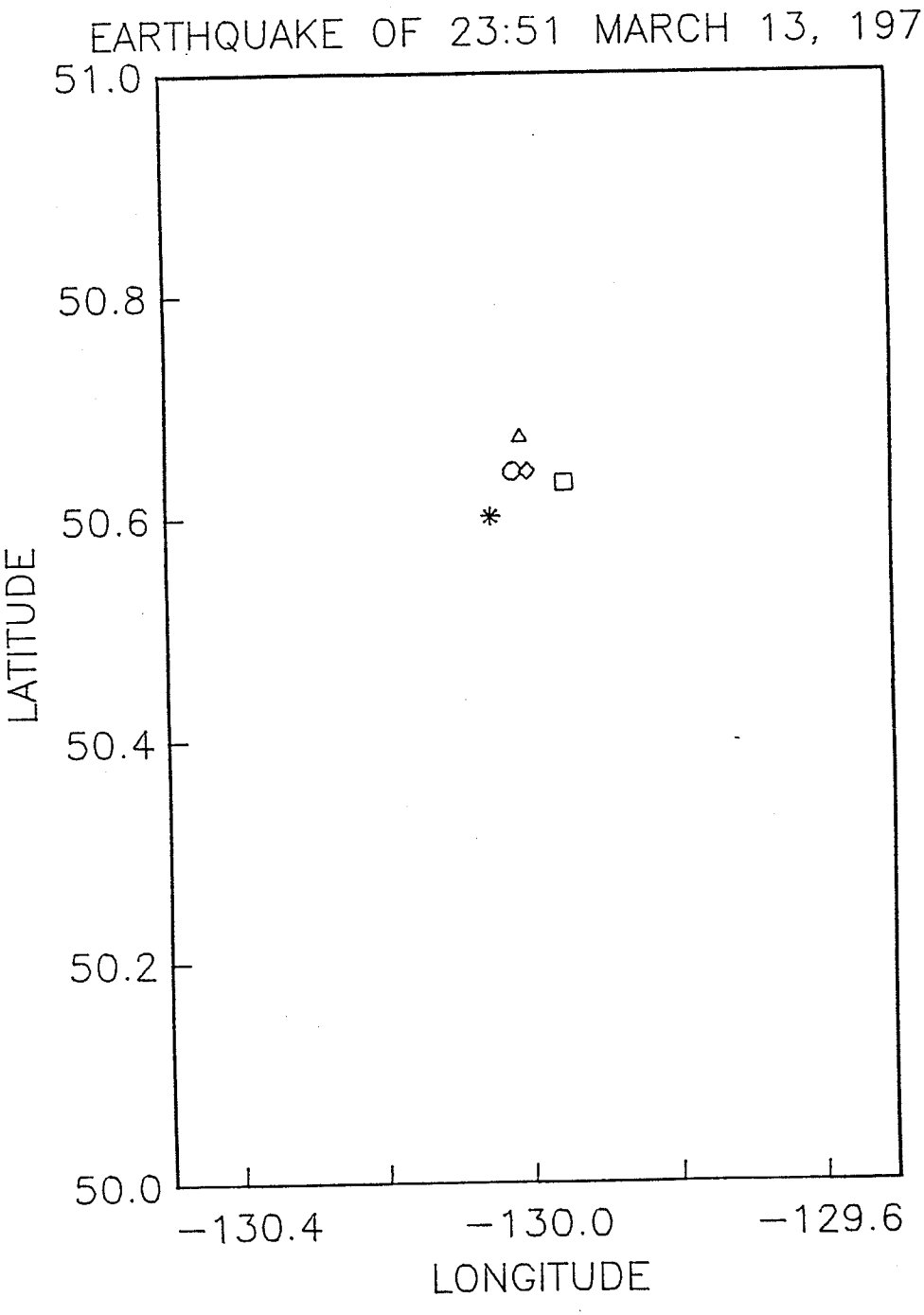

Fig. 3d. Earth model test for earthquake 1971 0313 2351

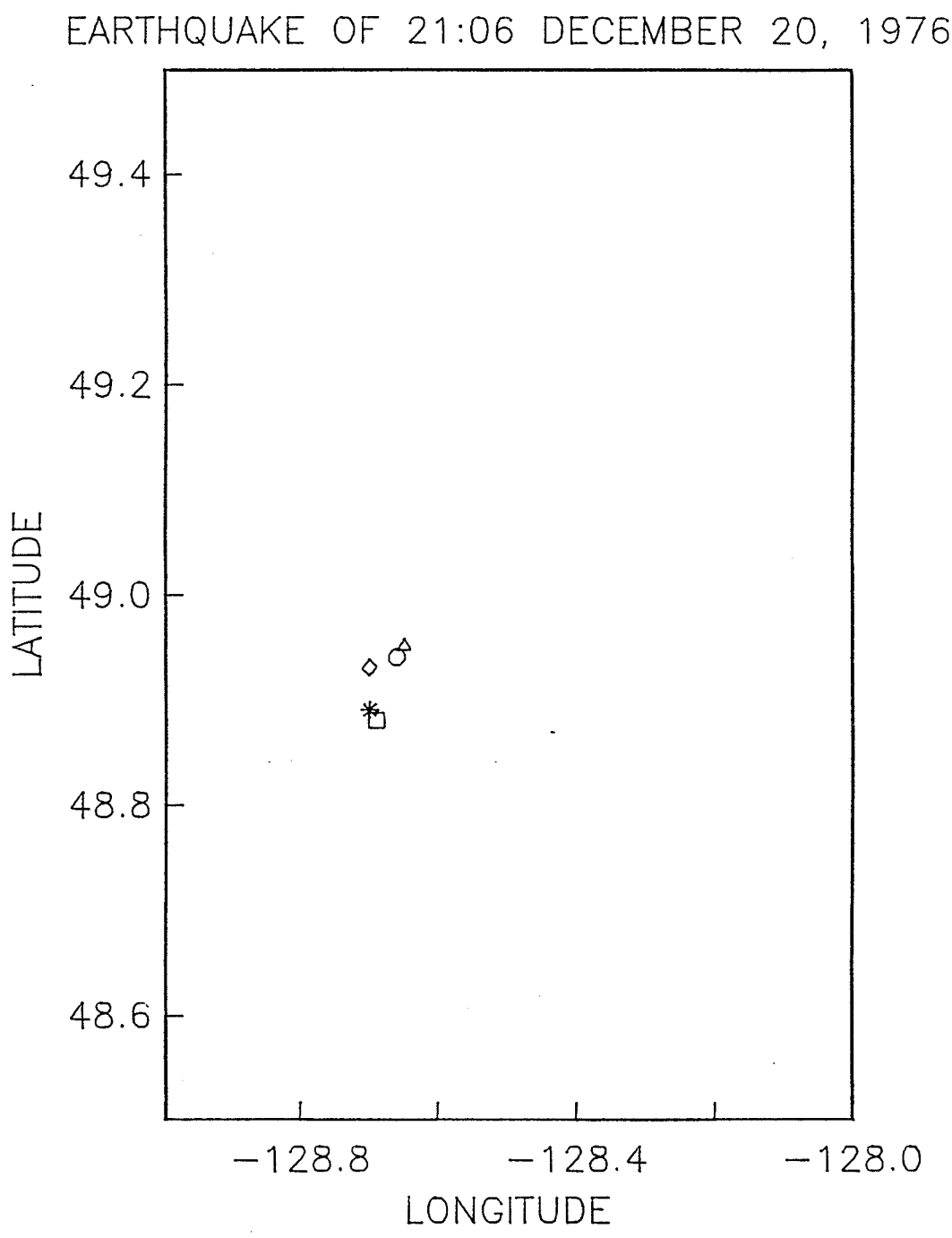

Fig. 3e. Earth model test for earthquake 1976 1220 2106

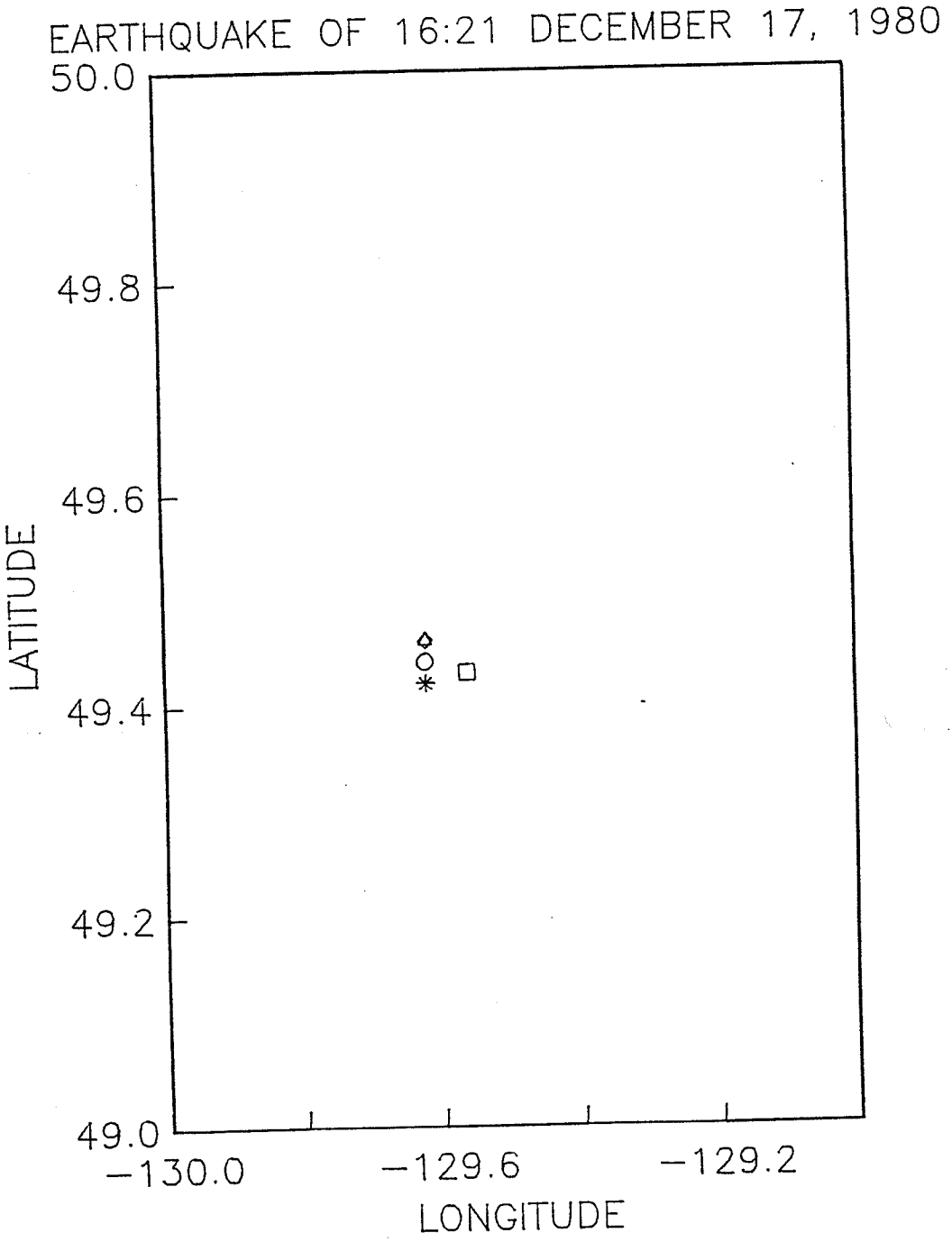

Fig. 3f. Earth model test for earthquake 1980 1217 1621

TABLE IV

EPICENTRE VARIATION WITH AZIMUTHAL DISTRIBUTION OF STATIONS

All	1971	03 13	2351	34.4	50.60	-130.05	205	1.04
Balanced				34.9	50.62	-129.88	44	1.23
2nd & 4th Quad				34.6	50.53	-130.07	30	1.18
All	1976	12 20	2033	09.9	48.79	-129.28	255	1.21
Balanced				10.1	48.75	-129.36	74	1.18
2nd & 4th Quad				10.0	48.74	-129.39	53	1.09
All	1980	12 17	1622	01.4	49.42	-129.62	283	1.44
Balanced				01.3	49.39	-129.71	61	1.24
2nd & 4th Quad				01.1	49.33	-129.81	45	1.20

Figure 4. Azimuth tests for 3 earthquakes

□ - all stations

○ - azimuthally balanced

△ - 2nd and 4th quadrant only

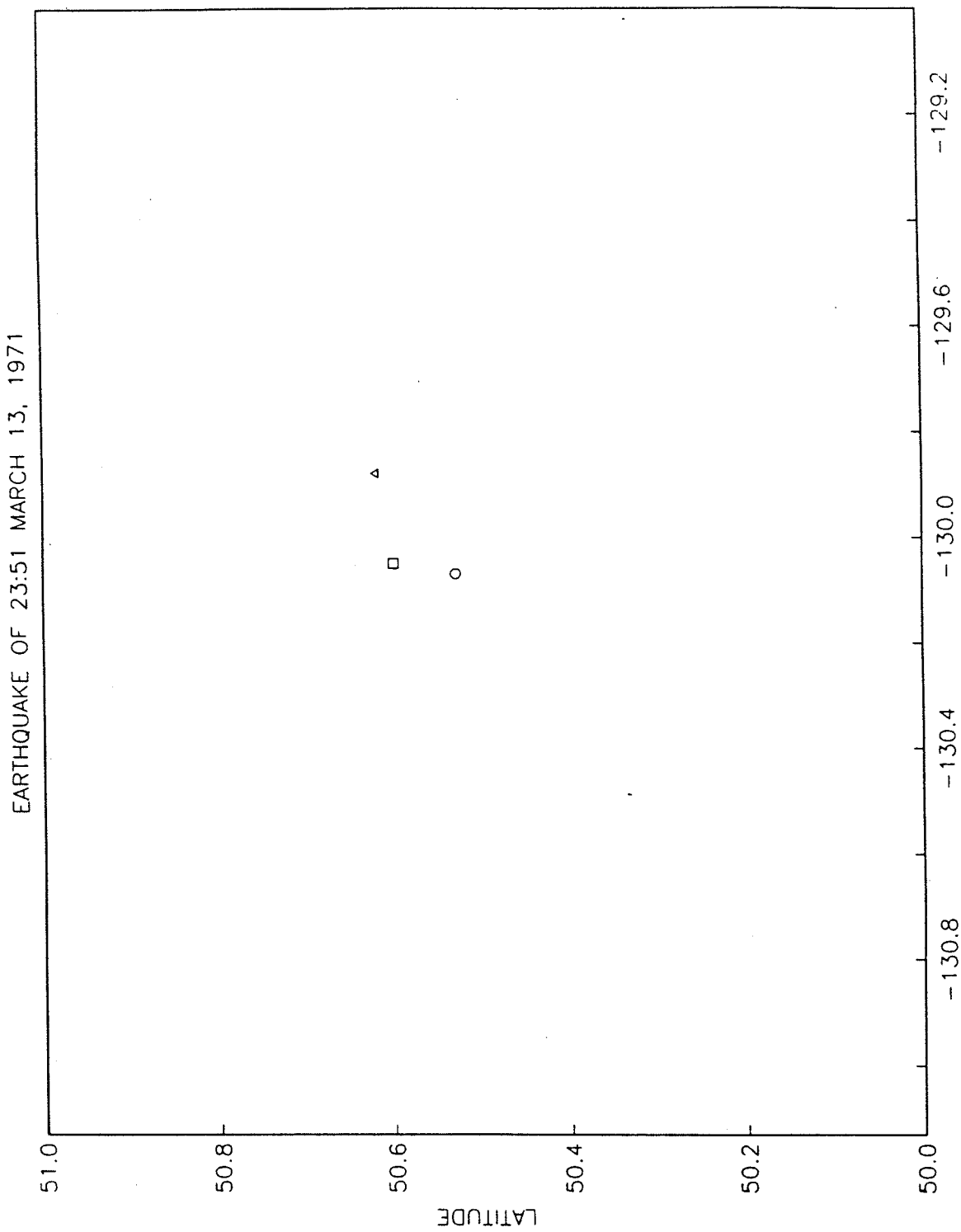

Fig. 4a. Azimuth test for earthquake 1971 0313 2351

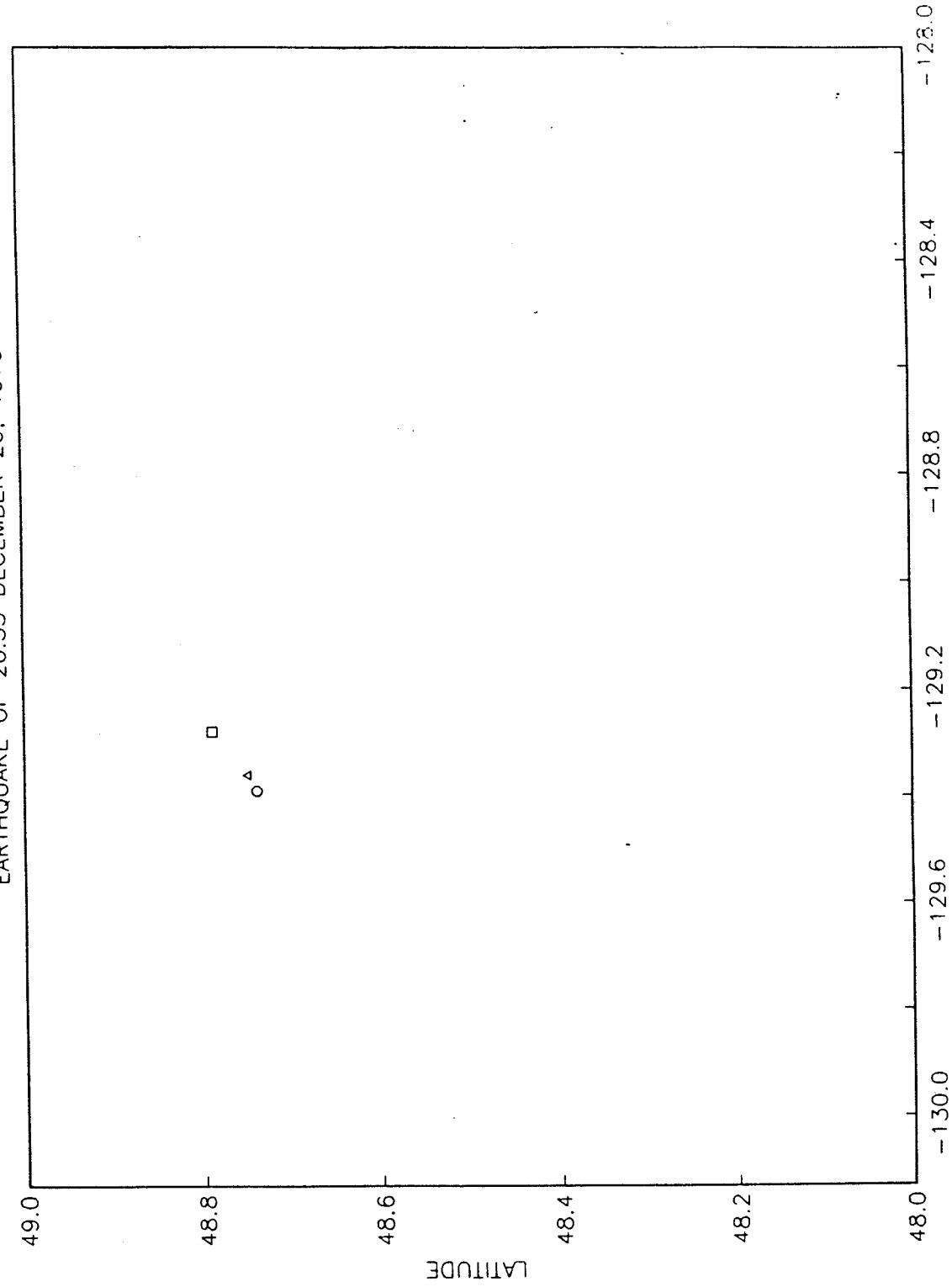

Fig. 4b. Azimuth test for earthquake 1976 1220 2033

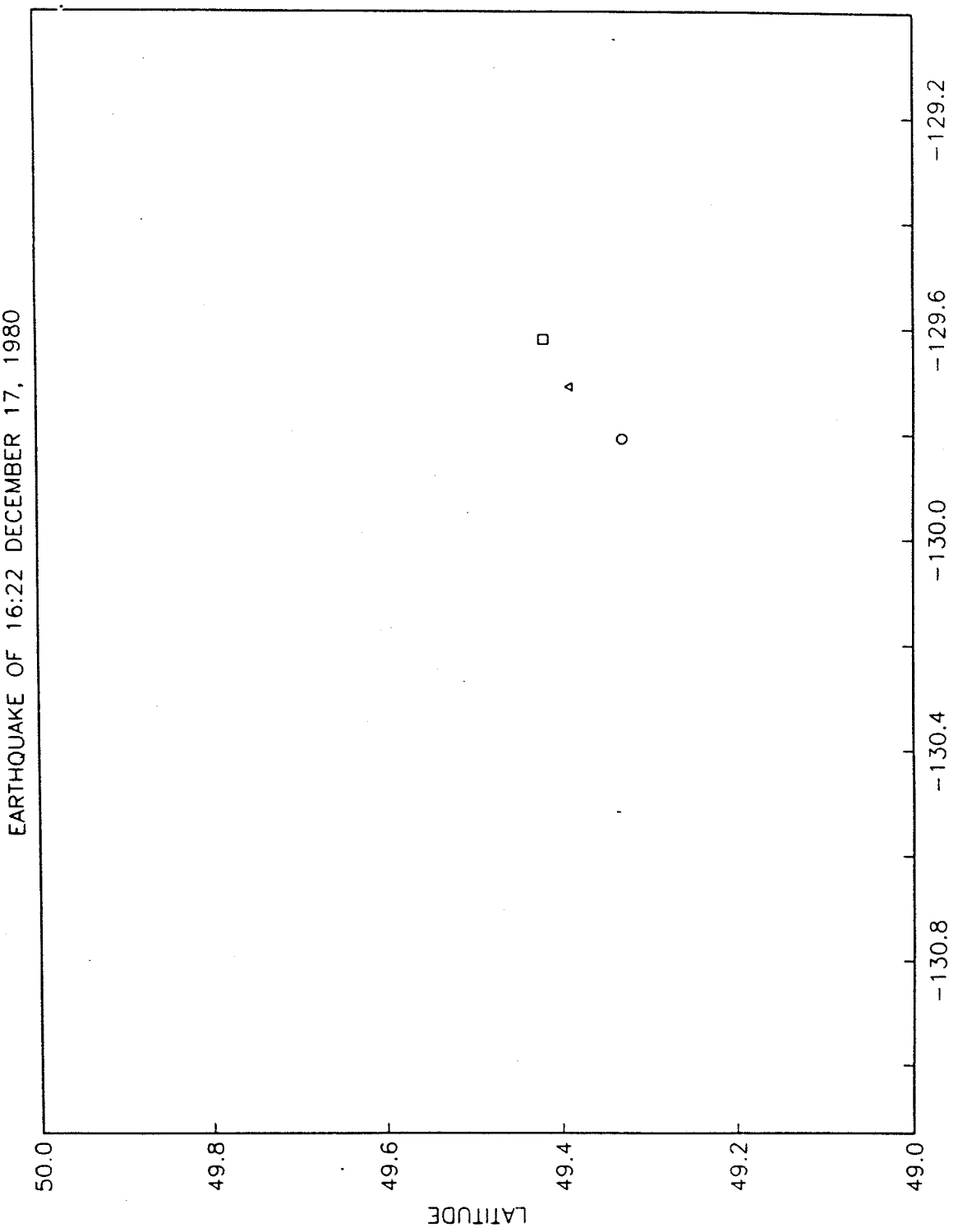

Fig. 4c. Azimuth test for earthquake 1980 1217 1622

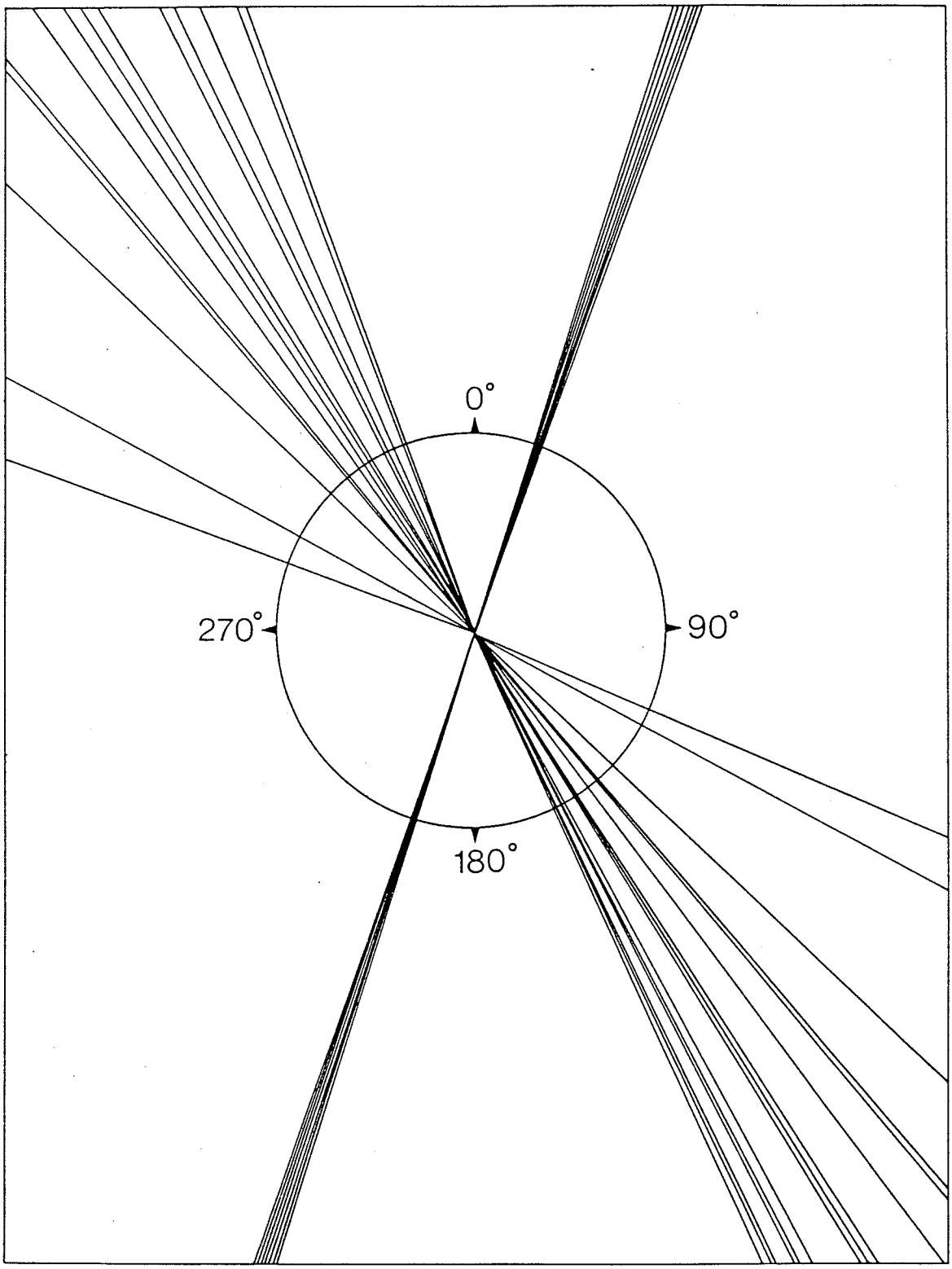

Fig. 5a. Azimuth test: final distribution of stations for earthquake 1971 03 13 2351.

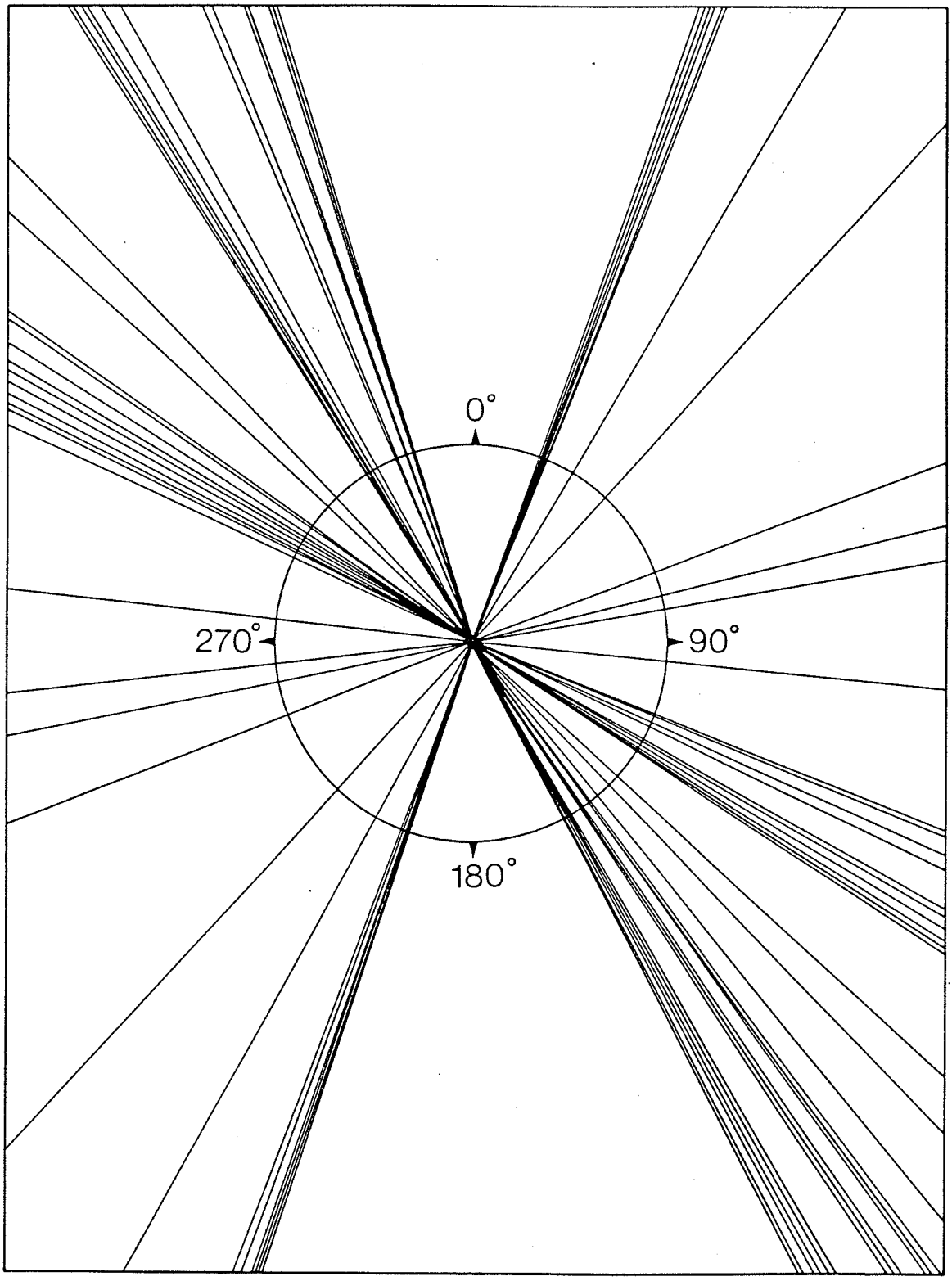

Fig. 5b. Azimuth test: final distribution of stations for earthquake 1976 12 20 2033.

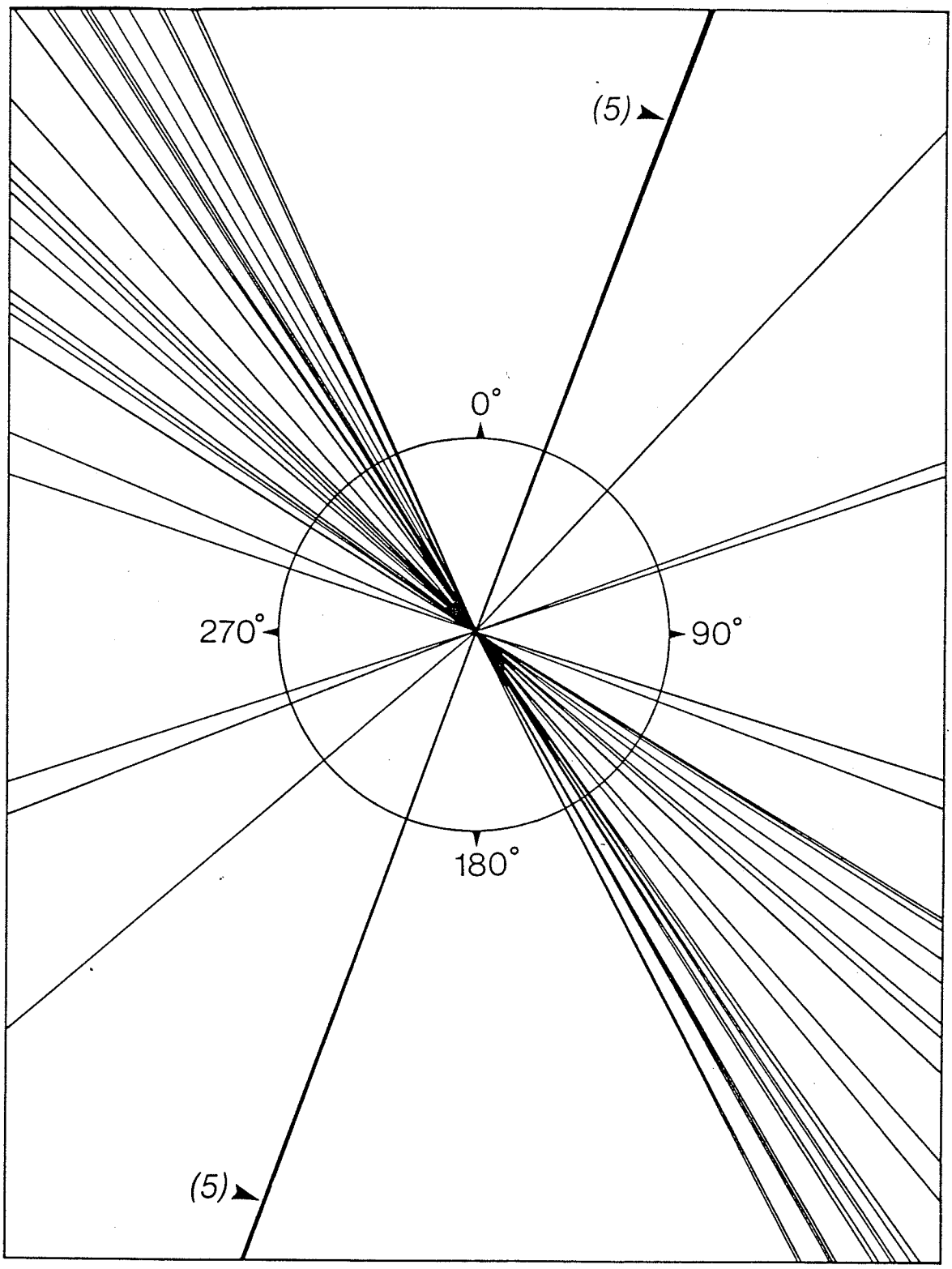

Fig. 5c. Azimuth test: final distribution of stations for earthquake 1980 12 17 1622.

As might be expected the epicentres vary along a NE-SW axis. The length of the axis ~16 km. The location with an azimuthally balanced set of stations is always to the southwest indicating that epicentres in this area are likely to be systematically biased to the northeast.

Relocation of M≥5 Earthquakes

The original ISS, NEIS, or OTT epicentres for the 78 earthquakes for which epicentres were recomputed are shown in Figure 6. The earthquake numbering system, data source and original coordinates are provided in Table V.

In the relocation procedure almost all earthquakes are in the oceanic lithosphere and so depths were fixed at 10 km. The traveltime table used was that of Dziewonski and Anderson (1983) and included their station corrections. Where no station corrections were available, they were set to zero. Use of this model is justified as it is based on modern (1964-78) data. In this period, there was a comparatively dense network of stations deployed worldwide with high gains and good time resolution.

The culling criteria for specific data periods and events were largely based on experience with the data set. We note that the early data are derived from seismographs operating at speeds typically 30 mm/min or less with poor time control and low gain. Consequently for the earlier data much less stringent culling criteria could be used and the epicentral precision is correspondingly less accurate. In all cases, as an initial step, data with traveltime residuals greater than 60 s were eliminated. For earthquakes 1-32 the further culling criteria were 15, 10 and 5 s; and for events 33-78 the criteria were 10, 5, and 3 s. In all cases preliminary runs were made and the residuals examined to detect obvious keypunch and station coordinate or assignment (e.g. Boulder-BOU vs. Boulder City-BCN) errors. The revised epicentres are plotted in

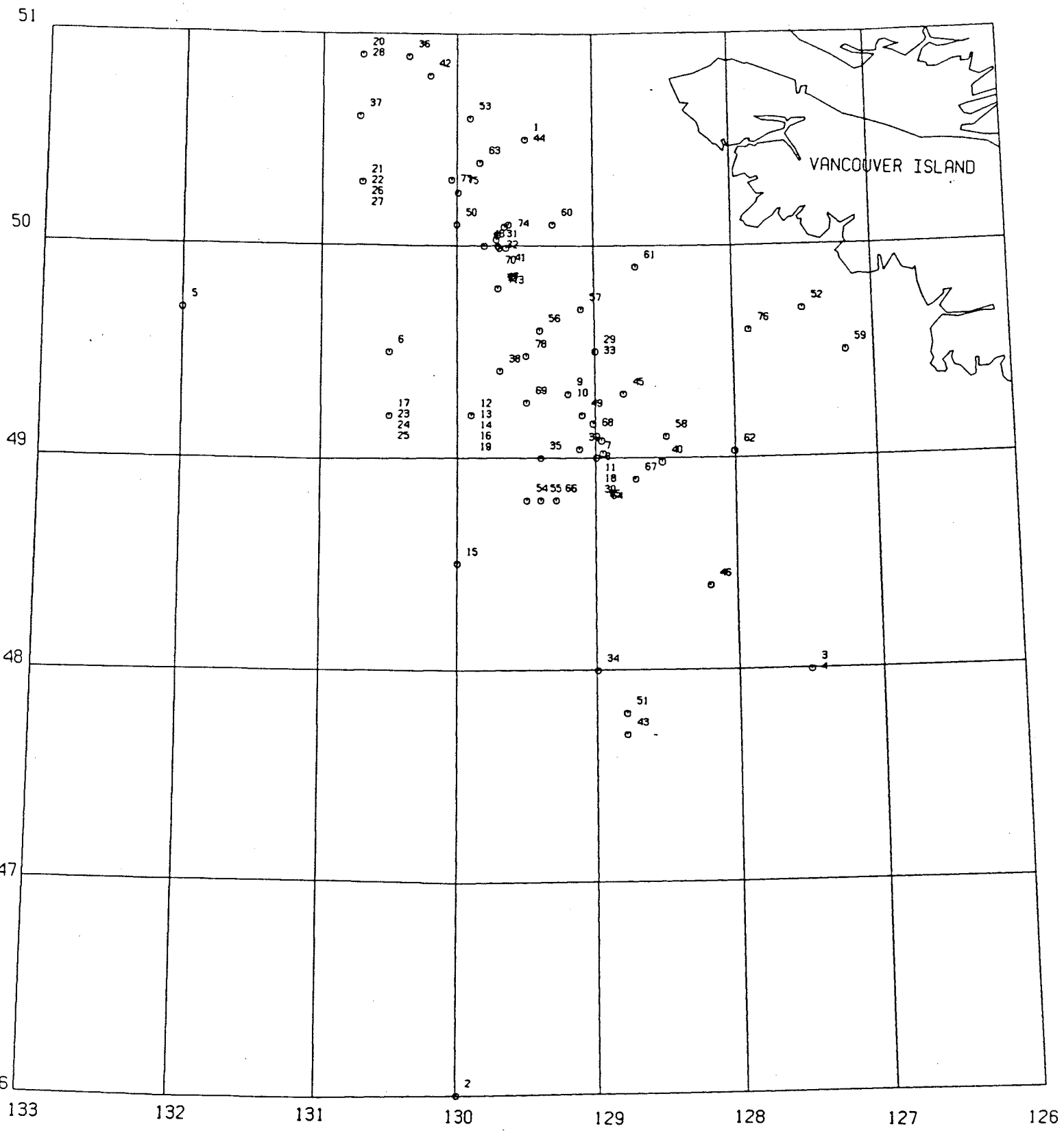

Fig. 6. Initial ISC, NEIS and OTT epicentres.

TABLE V

LIST OF ORIGINAL EPICENTRES

1	ISS	1920	3	29	5	7	40.0	50.500N	129.500W	5.5
2	ISS	1926	5	12	14	53	30.0	46.000N	130.000W	5.6
3	ISS	1926	10	30	19	41	42.0	48.000N	127.500W	6.1
4	ISS	1926	11	1	1	39	15.0	48.000N	127.500W	6.1
5	ISS	1929	9	17	19	17	25.0	49.700N	132.000W	6.3
6	ISS	1930	4	16	14	30	44.0	49.500N	130.500W	5.5
7	ISS	1930	5	31	10	22	0.0	49.000N	129.000W	5.4
8	ISS	1932	8	18	20	22	56.0	49.000N	129.000W	5.5
9	ISS	1933	5	5	4	14	16.0	49.300N	129.200W	5.5
10	ISS	1935	9	24	22	12	25.0	49.300N	129.200W	6.2
11	ISS	1937	2	4	10	32	46.0	49.000N	129.000W	5.2
12	ISS	1937	9	29	11	30	17.0	49.200N	129.900W	5.5
13	ISS	1938	4	22	4	15	46.0	49.200N	129.900W	5.5
14	ISS	1939	1	3	17	18	34.0	49.200N	129.900W	5.2
15	ISS	1939	2	8	6	39	21.0	48.500N	130.000W	6.5
16	ISS	1939	7	18	3	26	35.0	49.200N	129.900W	6.5
17	ISS	1941	10	1	19	49	33.0	49.200N	130.500W	6.0
18	ISS	1941	11	6	17	32	2.0	49.000N	129.000W	6.0
19	ISS	1942	6	9	11	6	45.0	49.200N	129.900W	5.7
20	ISS	1944	8	10	1	52	51.0	50.900N	130.700W	6.2
21	ISS	1944	8	13	8	21	24.0	50.300N	130.700W	4.5
22	ISS	1944	8	13	8	22	25.0	50.300N	130.700W	5.8
23	ISS	1945	10	20	0	32	43.0	49.200N	130.500W	5.5
24	ISS	1946	7	18	6	6	55.0	49.200N	130.500W	6.5
25	ISS	1946	7	18	7	16	25.0	49.200N	130.500W	6.5
26	ISS	1948	7	22	20	5	18.0	50.300N	130.700W	5.5
27	ISS	1948	7	22	20	52	32.0	50.300N	130.700W	5.5
28	ISS	1948	12	30	23	49	54.0	50.900N	130.700W	6.0
29	ISS	1950	8	25	2	15	11.0	49.500N	129.000W	5.0
30	ISS	1951	9	27	19	24	12.0	49.000N	129.000W	5.8
31	ISS	1953	5	14	7	41	43.0	50.000N	129.700W	5.0
32	ISS	1953	5	20	23	14	23.0	50.000N	129.700W	5.5
33	ISS	1953	12	4	14	54	48.0	49.500N	129.000W	6.3
34	NEI	1954	4	5	19	26	0.0	48.000N	129.000W	5.0
35	ISS	1956	6	28	22	58	49.0	49.000N	129.400W	6.3
36	ISS	1957	3	24	8	22	22.0	50.890N	130.360W	6.2
37	ISS	1959	8	26	10	27	40.0	50.610N	130.720W	5.7
38	ISS	1960	9	30	6	35	6.0	49.410N	129.690W	5.2
39	ISS	1960	12	1	20	49	46.0	49.040N	129.120W	6.0
40	ISS	1961	10	29	9	12	15.0	48.980N	128.530W	5.8

TABLE V (continued)

41	ISS	1962	6	2	12	26	7.0	49.990N	129.640W	5.8
42	NEI	1964	3	31	9	1	30.2	50.800N	130.200W	5.7
43	NEI	1964	7	2	17	17	34.4	47.700N	128.800W	5.0
44	NEI	1964	9	3	5	31	15.0	50.500N	129.500W	5.0
45	NEI	1964	10	1	18	30	1.9	49.300N	128.800W	5.3
46	NEI	1965	9	2	21	27	16.6	48.400N	128.200W	5.0
47	NEI	1966	3	30	12	40	1.0	49.800N	129.700W	5.1
48	NEI	1968	2	1	7	58	3.5	50.000N	129.800W	5.4
49	NEI	1968	3	2	3	14	44.5	49.200N	129.100W	4.5
50	NEI	1969	3	18	20	31	27.3	50.100N	130.000W	5.1
51	NEI	1970	12	31	5	34	13.5	47.800N	128.800W	5.2
52	NEI	1971	3	10	15	38	30.0	49.700N	127.500W	5.0
53	NEI	1971	3	13	23	51	35.5	50.600N	129.900W	6.4
54	NEI	1971	11	20	21	24	42.6	48.800N	129.500W	5.0
55	NEI	1971	11	25	23	40	12.1	48.800N	129.400W	5.1
56	NEI	1971	12	5	5	50	5.8	49.600N	129.400W	5.2
57	NEI	1971	12	5	6	12	51.1	49.700N	129.100W	5.1
58	NEI	1971	12	8	8	38	24.0	49.100N	128.500W	5.3
59	NEI	1972	7	5	10	16	38.4	49.500N	127.200W	5.7
60	NEI	1972	7	23	19	13	9.0	50.100N	129.300W	5.8
61	NEI	1972	7	23	21	43	7.2	49.900N	128.700W	4.8
62	NEI	1973	7	13	2	59	39.1	49.030N	128.010W	4.5
63	NEI	1976	1	2	3	36	20.4	50.390N	129.830W	4.4
64	NEI	1976	6	6	2	17	17.4	49.020N	128.950W	5.0
65	NEI	1976	12	20	17	12	41.0	49.080N	128.960W	4.7
66	NEI	1976	12	20	20	33	7.8	48.800N	129.290W	6.7
67	NEI	1976	12	20	21	6	39.1	48.900N	128.720W	5.1
68	NEI	1976	12	20	21	12	48.8	49.160N	129.020W	4.1
69	NEI	1978	6	11	14	55	25.5	49.260N	129.500W	5.3
70	NEI	1979	3	13	9	51	32.6	50.030N	129.710W	5.1
71	NEI	1979	3	13	12	0	17.2	49.990N	129.690W	5.4
72	NEI	1979	3	13	15	2	52.3	50.050N	129.700W	5.1
73	NEI	1979	3	13	22	39	8.4	50.090N	129.650W	5.0
74	NEI	1979	3	14	14	36	23.9	50.100N	129.620W	5.1
75	OTT	1979	3	14	15	13	32.4	50.250N	129.990W	5.3
76	NEI	1980	5	16	22	34	5.4	49.600N	127.890W	5.0
77	NEI	1980	10	2	3	42	48.6	50.310N	130.040W	5.3
78	NEI	1980	12	17	16	21	58.8	49.480N	129.500W	6.8

Figure 7 and listed in Table VI.

As noted earlier in the report, arrival time data for 96 earthquakes were 'keypunched' but epicentres for only 78 of these were computed. Ten epicentres are reported by ISS (Table VII) for which very poor data sets exist. These do not allow epicentre determination by EPDET but several of these merit individual attention. The remaining 8 earthquakes were found to have epicentres either outside the area or on land. The reported arrivals are provided on the accompanying tape in the same file as the other arrival time data.

LOCAL EARTHQUAKE DATA SET AND COMPUTATIONS

Arrival time data and local epicentre solutions for earthquakes $M \geqslant 3$ in the study area for the years 1965 to 1983 were also added to the data tape. Data came from three sources:

i) For the years 1965-1971, solutions had been calculated by drawing arcs. Arrival times on the original worksheets were 'keypunched' and combined with the original hand calculated solutions. Arrival time data was run through the contemporary EPB local earthquake program CANSES. So many solutions did not converge that no new computer solutions were added to the tape. This will require further investigation.

ii) For 1972-1977, keypunched arrival times were obtained from cards stored in Ottawa and combined with solutions in the EPB's Canadian earthquake data file. The data has not been run through the contemporary CANSES program to see if the solutions generated are identical to those in the data file.

iii) For 1978-1983 a data tape of epicentres and the arrival times used to

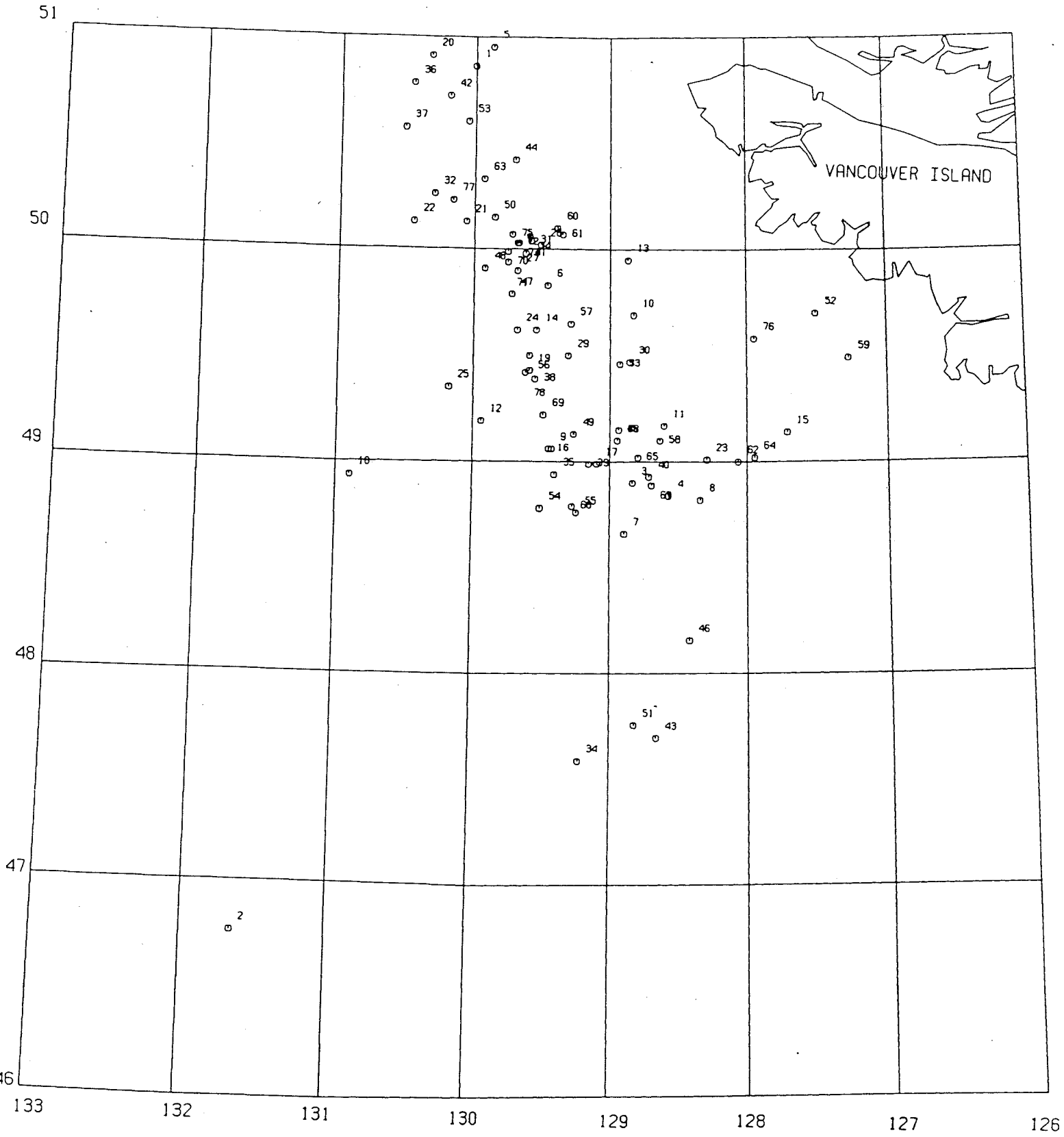

Fig. 7. Epicentres as recomputed in this project.

TABLE VI

LIST OF REVISED EPICENTRES

(with magnitude, no. of stations and phases used in the final computation and standard deviation of the solution).

1	UBC	1920	03	29	05	07	52.8	50.860N	130.000W	10G	6.4	14	14	2.71
2	UBC	1926	05	12	14	53	42.2	46.770N	131.650W	10G	5.6	5	5	3.24
3	UBC	1926	10	30	19	42	1.4	48.900N	128.840W	10G	6.1	19	19	2.25
4	UBC	1926	11	1	01	39	22.4	48.840N	128.580W	10G	6.6	21	21	2.58
5	UBC	1929	09	17	19	17	41.4	50.950N	129.870W	10G	6.3	55	55	2.60
6	UBC	1930	04	16	14	30	42.9	49.830N	129.460W	10G	5.5	10	10	3.35
7	UBC	1930	05	31	10	21	55.4	48.660N	128.900W	10G	5.4	7	7	3.27
8	UBC	1932	08	18	20	22	55.9	48.820N	128.350W	10G	5.5	9	9	1.37
9	UBC	1933	05	5	04	14	12.0	49.060N	129.430W	10G	5.5	14	14	1.91
10	UBC	1935	09	24	22	12	23.8	49.690N	128.830W	10G	6.2	41	41	2.25
11	UBC	1937	02	4	10	32	49.0	49.170N	128.610W	10G	5.2	9	9	1.62
12	UBC	1937	09	29	11	30	20.4	49.190N	129.940W	10G	5.5	15	15	1.42
13	UBC	1938	04	22	04	15	54.7	49.950N	128.870W	10G	5.5	26	26	1.84
14	UBC	1939	01	3	17	18	37.1	49.620N	129.540W	10G	5.2	20	20	2.17
15	UBC	1939	02	8	06	39	30.2	49.140N	127.710W	10G	6.5	13	13	2.37
16	UBC	1939	07	18	03	26	40.9	49.060N	129.450W	10G	6.5	61	61	1.87
17	UBC	1941	10	1	19	49	46.9	48.990N	129.100W	10G	6.0	16	16	1.72
18	UBC	1941	11	6	17	31	56.6	48.930N	130.890W	10G	6.0	9	9	2.28
19	UBC	1942	06	9	11	06	49.3	49.430N	129.590W	10G	5.7	14	14	2.56
20	UBC	1944	08	10	01	52	56.8	50.910N	130.019W	10G	6.2	43	43	1.90
21	UBC	1944	08	13	08	21	31.8	50.130N	130.060W	10G	4.5	10	10	2.62
22	UBC	1944	08	13	08	22	31.6	50.130N	130.450W	10G	5.8	9	9	1.05
23	UBC	1945	10	20	00	32	60.0	49.010N	128.300W	10G	5.5	25	25	1.77
24	UBC	1946	07	18	06	07	1.8	49.620N	129.680W	10G	6.5	56	56	2.13
25	UBC	1946	07	18	07	16	30.7	49.350N	130.180W	10G	6.5	50	50	2.37
26	UBC	1948	07	22	20	05	30.7	50.020N	129.510W	10G	5.5	24	24	1.51
27	UBC	1948	07	22	20	52	46.1	49.900N	129.680W	10G	5.5	17	17	1.65
28	UBC	1948	12	30	23	50	0.3	51.030N	130.130W	10G	6.0	49	49	2.53
29	UBC	1950	08	25	02	15	13.6	49.500N	129.310W	10G	5.0	13	13	1.47
30	UBC	1951	09	27	19	24	15.1	49.470N	128.860W	10G	5.8	55	55	2.22
31	UBC	1953	05	14	07	41	47.0	50.040N	129.580W	10G	5.0	29	29	1.70
32	UBC	1953	05	20	23	14	23.5	50.260N	130.300W	10G	5.5	29	29	1.97
33	UBC	1953	12	4	14	54	51.7	49.460N	128.930W	10G	6.3	94	94	1.24
34	UBC	1954	04	05	19	26	0.9	47.590N	129.230W	10G	5.0	8	8	1.48
35	UBC	1956	06	28	22	58	52.6	48.940N	129.410W	10G	6.3	95	95	1.21
36	UBC	1957	03	24	08	22	25.9	50.780N	130.460W	10G	6.2	70	70	1.33
37	UBC	1959	08	26	10	27	44.1	50.570N	130.520W	10G	5.7	123	123	1.45
38	UBC	1960	09	30	06	35	10.4	49.390N	129.550W	10G	5.2	32	32	1.39
39	UBC	1960	12	1	20	49	49.8	48.990N	129.160W	10G	6.0	68	68	1.44
40	UBC	1961	10	29	09	12	18.6	48.930N	128.720W	10G	5.8	101	101	1.21

TABLE VI (continued)

41	UBC	1962	06	2	12	26	11.3	49.980N	129.620W	10G	5.8	44 44	1.28
42	UBC	1964	03	31	09	01	32.4	50.720N	130.190W	10G	5.7	148148	1.26
43	UBC	1964	07	2	17	17	38.1	47.700N	128.670W	10G	5.0	45 45	1.26
44	UBC	1964	09	3	05	31	14.7	50.420N	129.700W	10G	5.0	42 42	0.93
45	UBC	1964	10	1	18	30	4.5	49.100N	128.950W	10G	5.3	31 31	1.16
46	UBC	1965	09	2	21	27	17.5	48.160N	128.430W	10G	5.0	16 16	1.61
47	UBC	1966	03	30	12	40	0.9	49.790N	129.720W	10G	5.1	101101	1.28
48	UBC	1968	02	1	07	58	4.9	49.910N	129.920W	10G	5.4	111111	1.24
49	UBC	1968	03	2	03	14	44.4	49.130N	129.270W	10G	4.5	93 93	1.45
50	UBC	1969	03	18	20	31	27.1	50.150N	129.850W	10G	5.0	80 80	1.17
51	UBC	1970	12	31	05	34	12.9	47.760N	128.830W	10G	5.2	103103	1.24
52	UBC	1971	03	10	15	38	30.0	49.700N	127.500W	10G	5.0	64 64	1.11
53	UBC	1971	03	13	23	51	34.4	50.600N	130.050W	10G	6.4	205205	1.04
54	UBC	1971	11	20	21	24	41.8	48.780N	129.510W	10G	5.0	177177	1.13
55	UBC	1971	11	25	23	40	11.8	48.760N	129.250W	10G	5.1	104104	1.16
56	UBC	1971	12	5	05	50	9.3	49.500N	129.590W	10G	5.2	117117	1.38
57	UBC	1971	12	5	06	12	52.4	49.650N	129.290W	10G	5.0	90 90	1.04
58	UBC	1971	12	8	08	38	23.5	49.100N	128.640W	10G	5.0	100100	1.24
59	UBC	1972	07	5	10	16	38.3	49.490N	127.270W	10G	5.7	198198	1.10
60	UBC	1972	07	23	19	13	7.4	50.100N	129.390W	10G	5.8	258258	1.04
61	UBC	1972	07	23	21	43	3.1	50.070N	129.350W	10G	5.0	67 67	1.34
62	UBC	1973	07	13	02	59	38.5	49.000N	128.070W	10G	4.5	150150	1.22
63	UBC	1976	01	2	03	36	21.0	50.330N	129.930W	10G	4.4	90 90	1.23
64	UBC	1976	06	6	02	17	17.0	49.020N	127.950W	10G	5.0	136136	1.39
65	UBC	1976	12	20	17	12	44.6	49.020N	128.800W	10G	4.7	88 88	1.30
66	UBC	1976	12	20	20	33	9.9	48.790N	129.280W	10G	6.7	255255	1.21
67	UBC	1976	12	20	21	06	41.3	48.890N	128.700W	10G	5.1	86 86	1.09
68	UBC	1976	12	20	21	12	51.7	49.150N	128.940W	10G	4.1	86 86	1.21
69	UBC	1978	06	11	14	55	28.4	49.220N	129.490W	10G	5.3	211211	1.33
70	UBC	1979	03	13	09	51	35.1	49.990N	129.750W	10G	5.1	89 89	1.15
71	UBC	1979	03	13	12	00	19.3	49.940N	129.750W	10G	5.4	205205	1.05
72	UBC	1979	03	13	15	02	55.1	50.030N	129.680W	10G	5.1	81 81	1.15
73	UBC	1979	03	13	22	39	10.9	50.030N	129.670W	10G	5.0	71 71	1.09
74	UBC	1979	03	14	14	36	26.8	50.060N	129.590W	10G	5.1	87 87	0.95
75	UBC	1979	03	14	15	13	35.1	50.070N	129.720W	10G	5.3	136136	1.19
76	UBC	1980	05	16	22	34	7.7	49.580N	127.950W	10G	5.0	156156	1.08
77	UBC	1980	10	2	03	42	50.6	50.230N	130.160W	10G	5.3	158158	1.19
78	UBC	1980	12	17	16	22	1.4	49.420N	129.620W	10G	6.8	283283	1.44

TABLE VII

EARTHQUAKES FOR WHICH LIMITED ISS ARRIVAL TIME DATA EXISTS BUT EPICENTRES NOT DIRECTLY COMPUTABLE BY PROCEDURES INDICATED

1917	07	01	1320	50	50	N	128	W	6.4
1917	12	23	1548	0	50	N	128	W	6.5
1919	07	01	2149	36	50	N	128	W	5.5
1919	07	10	0222	10	50	N	128	W	5.0
1921	05	28	2003	42	48	N	127.5	W	5.5
1923	05	02	1623	36	50	N	128	W	5.0
1923	10	13	0428	24	50.5	N	129.5	W	5.0
1924	3	30	0008	55	50.5	N	129.5	W	5.6
1927	05	07	2156	52	49	N	124	W	5.5
1929	03	01	0731	0	50.2	N	130.7	W	6.1
1930	09	17	0314	43	49.5	N	130.5	W	5.0

calculate them was obtained from EPB in Ottawa.

This 18 year data set of arrival times and solutions collected during a time when station geometry was adequate for attempting to locate earthquakes west of Vancouver Island is a valuable resource for investigating the accuracy of epicentre calculations in the offshore region.

Accuracy of Epicentre Determination from Local Stations

Many smaller earthquakes in the area of interest and well-recorded at the nearby seismic stations of British Columbia, Washington and Oregon but are not recorded at teleseismic distances. As outlined in the introduction, the epicentres have been determined with laterally homogeneous earth models which are continental in character; these are clearly inappropriate as a significant portion of the travel path is oceanic; further there are marked lateral variations in crustal parameters.

Determination of Residuals

To obtain improved epicentres our approach has been to select well-located teleseisms; use these as fixed epicentres with an assigned focal depth of 10 km in HYPOELLIPSE which then provides travel time residuals; find average residuals for several earthquakes; then use these averages as station delays to calculate epicentres of the earthquakes recorded only at the local stations.

The areas in which the teleseisms were grouped is shown in Figure 8. The earth model used (Table VIII) is a 36 km crust of P velocity 6.2 km/s overlying a mantle with P velocity 8.2 km/s. Since the S data is comparatively sparse and relatively inaccurate only P residuals were determined.

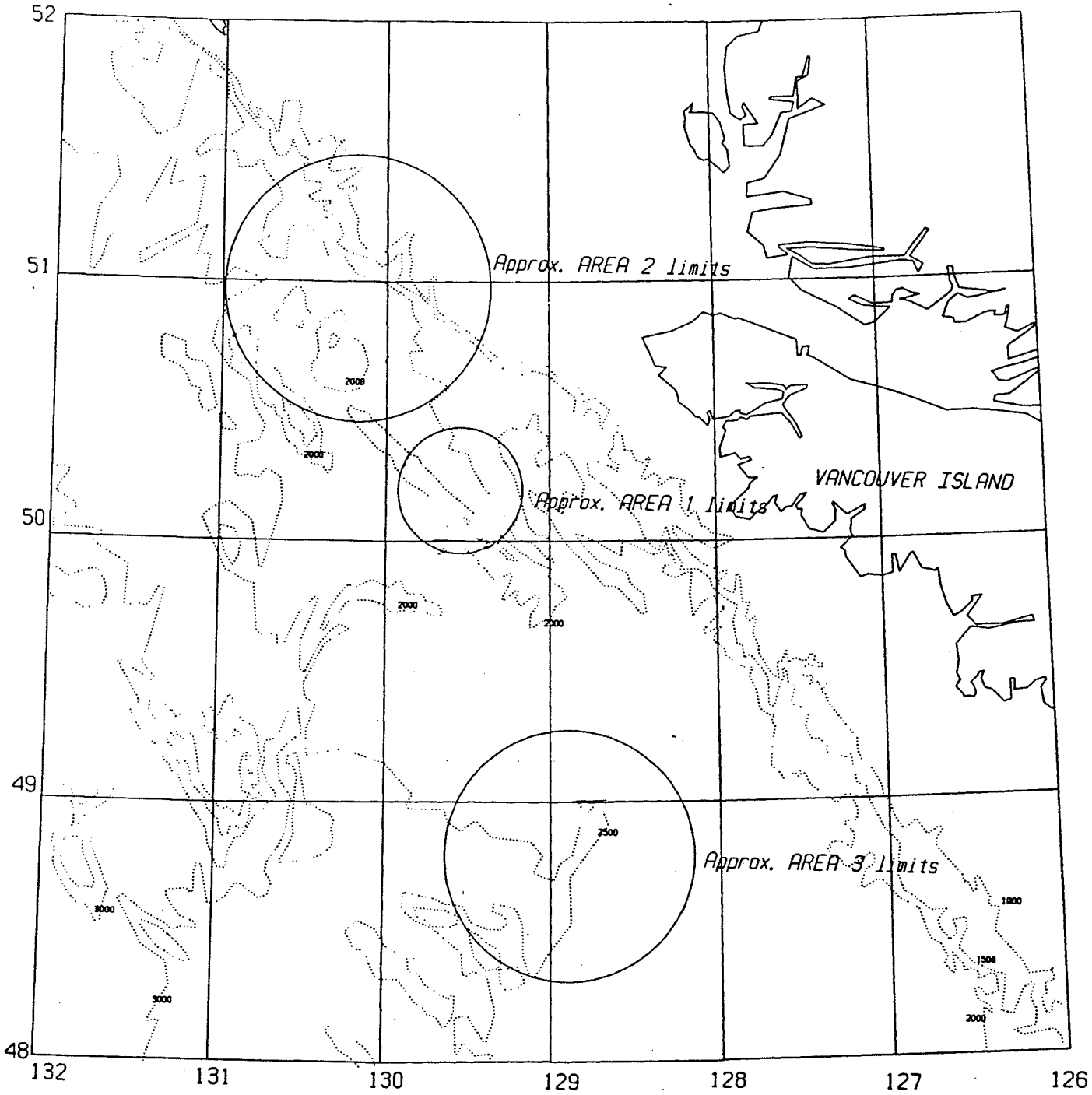

Fig. 8. Areas from which calibrating events were chosen to determine station corrections for local stations.

TABLE VIII

CONTROL SECTION OF INPUT DATA

FOR HYPOELLIPSE

1	HEADER CONTENT			
2	CRUSTAL STRUCTURE	6.2	0.0	1.78
3	CRUSTAL STRUCTURE	8.2	36.0	1.78
4	RESET TEST	5	10.00	
5	RESET TEST	10	2	
6	RESET TEST	11	480.00	
7	RESET TEST	12	833.00	
7.5	RESET TEST	38	2.0	
8	QUALITY OPTION	4		
9	COMPRESS	0		
10	SUMMARY OPTION	2		
11	PRINTER OPTION	0		

The results of the residual calculations are shown in Table IX. Values which were not used are bracketed. For an event where the residual at one station is markedly inconsistent with other residuals, one suspects a mispick (e.g. Event 81 at FSJ); where all residuals are markedly different from the average an inaccurate teleseismic location is most probable (e.g. Events 47 and 85). Adequate average residuals were obtained for Areas 1 and 3; for Area 2 the data were too sparse and inconsistent to assign an average.

Epicentre Calculations

As a test the epicentres of 26 events in or adjacent to Area 1 were determined. The depth was fixed at 10 km; P arrivals were assigned a weight of 1.0 and S arrivals a weight of 0.5; Poisson's ratio was set at 1.78; stations within 480 km were assigned a weight of 1.0 which was linearly decreased to zero at 833 km (See Table VIII). S station delays were assigned a value 1.78 times the determined P station delay.

Two runs were made, the first with no station delays and the second with P and S station delays. The results are plotted in Figure 9 and listed in Table X. There is significant westward movement of most epicentres. This is consistent with the observation of Hyndman and Rogers (1981). Surprisingly they are more scattered. We note that by 1982 and 1983 a number of additional stations were in operation for which residuals were not determined; an effort should be made to determine these residuals if adequate teleseisms are available. Further it would appear advisable to determine residuals for earth models which more clearly approximate the earth structure along the travel path; the calculated station residuals would then better characterize the delays over a wider area. Poisson's ratio should also be experimentally determined.

TABLE IX

SUMMARY OF RESIDUALS TO LOCAL STATIONS AND DERIVED STATION CORRECTIONS

AREA 1 EVENTS	ALB	VIC	PNT	PHC	FSJ	SIT	SKB QCC	HYC	PGC	PIB	HBC
47	(2.05)	(3.88)	(3.79)								
55			-0.52	-4.12	-1.72						
56	-1.85	-1.22		-2.32	0.58						
67		-4.11	-0.79		-0.26	2.23					
68		-1.34	-0.92	-2.65	0.40						
70	-1.63	-2.20		-4.25	0.40		-6.19	-0.73			
79	-0.14		0.14	-2.50	0.53		-1.75	-0.64	-1.15	-0.25	
80	-2.22		-0.54	-2.81	0.37		4.57	0.03	-1.38	-0.30	
81	-0.65		1.23	-3.41	(-5.67)		-4.98	-1.09	-0.92	-2.28	
83			0.29	-2.22	0.41		-5.13	0.44	0.02	-0.32	
84	-2.10		-0.15	-2.99	-0.43		-3.85	0.30	-0.40	-0.26	
Tc	-1.4	-2.2	-0.2	-3.1	0.0	2.2	-4.4	-0.3	-0.8	-0.7	
AREA 2 EVENTS											
4	-0.29	-0.14				-0.60					1.5
50		-1.68		-5.71		-2.16					
59		-0.93	-0.90	-2.58		-0.24					
85			(-6.18)	(-2.31)		(-8.91)	(-5.09)		(18.09)		
AREA 3 EVENTS											
53			-0.07								
60		-4.24	-1.87	-2.23		(8.39)					
61		-2.90	-0.60	-2.22							
64		-3.58	-1.12	-2.88							
71	-1.71	-1.91	0.05	-2.28	0.91		-2.08		-0.66	-1.63	
72	(-6.73)	(-4.58)	(-5.91)	(-6.11)	(-4.10)	(1.68)	(-1.61)	(-5.61)		(-4.86)	
73	-2.28	-2.57			1.00		-0.76	-1.18		-1.53	
Tc	-2.0	-3.0	-0.7	-2.4	1.0			-1.2	-0.7	-1.6	

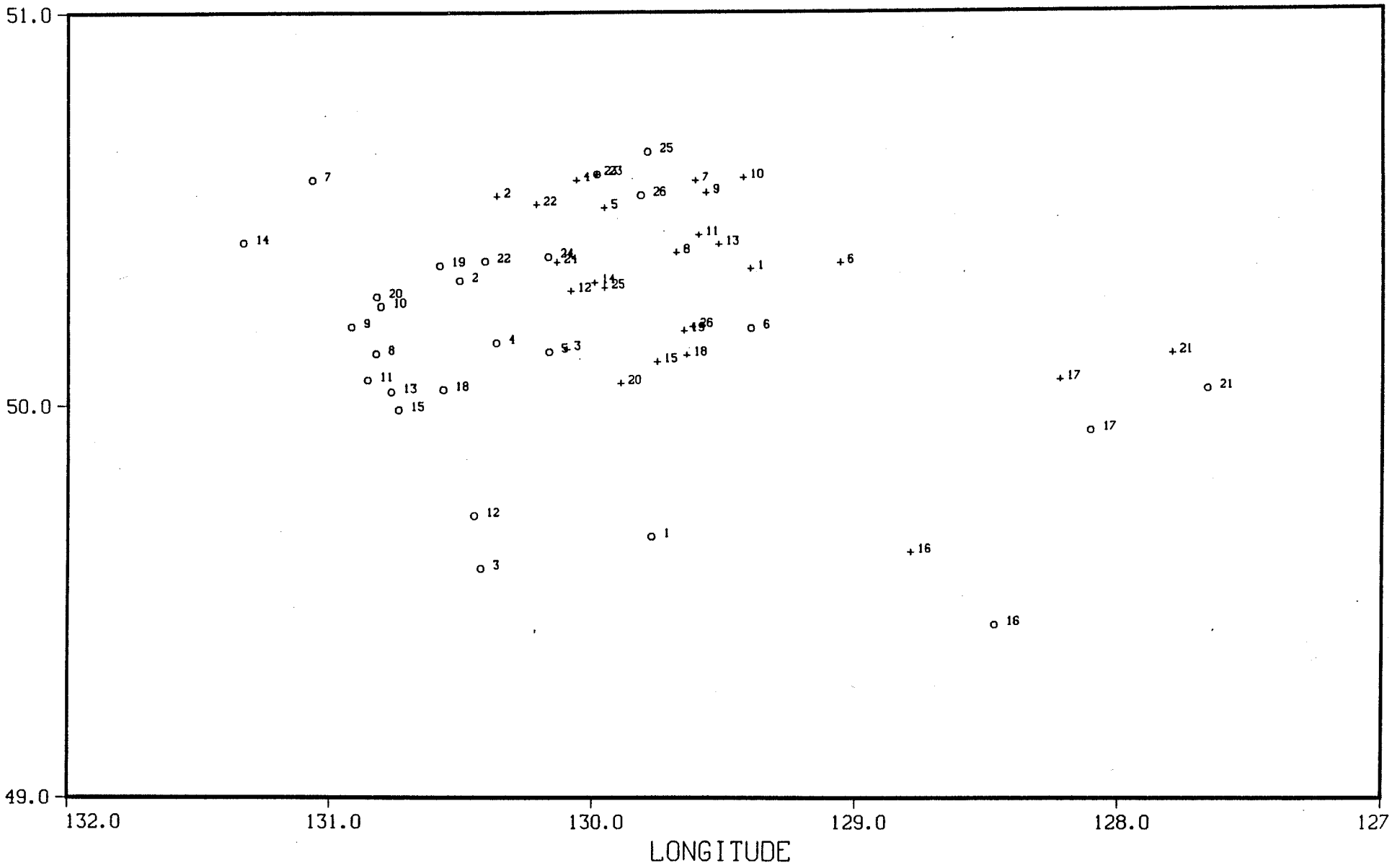

Fig. 9. Epicentres calculated using local stations. Those calculated with no station corrections are indicated by crosses and those with derived station corrections by hexagons. In most cases a westward movement occurs when corrections are added.

TABLE X

EPICENTRES CALCULATED USING LOCAL STATIONS

(a) without station corrections.

1	82012820 3575050N2083129W2420
2	820213 8 1389050N3198130W2211
3	820324 840 69950N 869130W 604
4	8205151848496550N3437130W 392
5	820516 5 4532750N3019129W5760
6	82060811 7214150N2173129W 372
7	8206081156261150N3425129W3681
8	820608145332550N2327129W4111
9	8206081525445450N3243129W3438
10	8206081541 20550N3472129W2587
11	820708 718263350N2598129W3608
12	8207081422586950N1752130W 521
13	8207081435286750N2453129W3148
14	82110920 4248350N1877129W5974
15	830106 331288850N 672129W4545
16	830107 136 22849N3738128W4740
17	830627 627 30650N 398128W1349
18	8307051124 63950N 776129W3874
19	8307071138433450N1144129W3931
20	831009 9 3391350N 348129W5370
21	8311261326375350N 796127W4789
22	8312071537118850N3070130W1306
23	831228 4 0117650N3529129W5926
24	831228 518261350N2188130W 837
25	831228 528595950N1801129W5752
26	831231 250229250N1210129W3737

(b) with station corrections.

1	82012820 3545149N3978129W4660
2	820213 8 1386050N1910130W3060
3	820324 840 31249N3496130W2562
4	8205151848489150N 966130W2219
5	820516 5 4531850N 828130W1013
6	82060811 7195250N1185129W2408
7	8206081156147050N3449131W 425
8	820608145324735ON 801130W4967
9	8206081525341250N1212130W5528
10	8206081540513350N1524130W4859
11	820708 718167050N 398130W5155
12	8207081422548449N4296130W2713
13	820708143519115ON 216130W4617
14	82110920 4148850N2487131W1999
15	830106 331220449N5939130W4446
16	830107 136 46449N2639128W2830
17	830627 627 48249N5614128W 648
18	8307051124 1450N 251130W3429
19	8307071138398850N2141130W3520
20	831009 9 3360450N1669130W4957
21	8311261326393850N 256127W3986
22	8312071537112750N2204130W2484
23	831228 4 0117650N3529129W5926
24	831228 518266650N2271130W1039
25	831228 529 43050N3871129W4771
26	831231 250260350N3206129W4928

Conclusions

From the above experiments three conclusions may be drawn:

(i) Large station corrections are required to the existing EPB crustal model.

(ii) With the current EPB crustal model, the epicentres appear to be located too far east, in some cases by more than 50 km.

(iii) A similar experiment should be carried out using a more realistic crustal model before final conclusions about accuracy are made.

MAGNETIC TAPE DATA

The magnetic tape accompanying this report has the following characteristics: unlabeled, 1600 bpi, EBCDIC, FMT=FB(2640,132) [i.e. fixed length, blocked, blocksize = 2640 bytes, logical record length = 132 bytes].

The data is contained in 2 files:

File 1 - Epicentre and magnitude compilation for M>4 earthquakes to December 31, 1983. (Note: Up to and including 1980, data from all available sources is included. For 1981-83, the data is that from the EPB file.) Format as described in Table I

File 2 - File 1 data

plus arrival time data used to recompute M>5 epicentres

plus arrival time data and local epicentre solutions for earthquakes M>3 for 1965 - 1983.

The format of this file is provided in Table XIa and a selected section of the data is shown in Table XIb.

TABLE XIa

The data for each earthquake is ordered as follows:

Solutions
#
Local observed data records
Program control record
=
Teleseismic arrival time records
*

Notes: 1. The #, =, and * all occur in column 1.

2. # - indicates local arrival time data follows

= - indicates teleseismic arrival time data follows

* - indicates end of event

Formats: 1. SOLUTIONS - see Table I

2. LOCAL OBSERVED DATA RECORDS

COLUMNS	ENTRY	DEFINITION	FORMAT
1-3	OTT	STATION CODE	A3
4-5	79	YEAR, 19TH CENTURY	I2
6-7	12	MONTH	I2
8-9	23	DAY	I2
10-11	12	HOUR, U.T.	I2
12-13	14	MINUTE OF FIRST RECORDED P PHASE NOT NECESSARILY AT THIS STATION	
14		INSTRUMENT CODE	A1
	P	SHORT PERIOD INSTRUMENT READ	
	L	LONG PERIOD INSTRUMENT READ	
		AMPLITUDE AND FIRST MOTION DATA ONLY	
16		PN QUALITY DESIGNATOR 0.25	A1
	A	SHARP CLEAR BEGINNING (+,- 0.25 SEC)	
	B	GOOD BEGINNING (+,- 1.0 SEC)	
	C	WEAK POOR BEGINNING (+,- 4.0 SEC OR MORE)	
	X	PHASE NOT USED IN SOLUTION, LARGE RESIDUAL	
	O	PHASE NOT READ	

TABLE XIa (continued)

17-18	14	MINUTE OF PN ARRIVAL	I2
19-22	2341	SECOND OF PN ARRIVAL	F4.2
23-25	CNW	FIRST MOTIONS OF PN ARRIVAL	3A1
26-31	TC	TIME CORRECTION, SEC	F6.0
32	A,B,C,X,O	PG QUALITY DESIGNATOR, SEE 16	A1
33-34	14	MINUTE OF PG ARRIVAL	I2
35-38	264	SECOND OF PG ARRIVAL	F4.2
39-41	DSE	FIRST MOTIONS OF PG ARRIVAL	3A1
42	A,B,C,X.O	SN QUALITY DESIGNATOR, SEE 16	A1
43-44	145	MINUTE OF SN ARRIVAL	3A1
45-48	52	SECOND OF SN ARRIVAL	F4.2
52	A,B,C,X,O	LG QUALITY DESIGNATOR, SEE 16	A1
53-54	589	SECOND OF LG ARRIVAL	F4.2
60-62	031	PERIOD AT MAXIMUM TRACE AMPLITUDE, SEC	F3.2
63-66	150	MAGNIFICATION OF INSTRUMENT AT GIVEN PERIOD, K	
67-70	125	ONE-HALF MAXIMUM PEAK TO PEAK TRACE AMPLITUDE MM	F4.1
72-75		DURATION, SEC	I4
78		MAGNITUDE CODE	I1
	BLANK	AMPLITUDE SUITABLE FOR NUTTLI OR RICHTER SCALES	
	1	AMPLITUDE SUITABLE FOR RICHTER ONLY, CORDILLERN PATH	
	3	AMPLITUDE UNRELIABLE, NOT USED FOR MAGNITUDE	
	5	AMPLITUDE SUITABLE FOR MS SCALE ONLY	
	8	SN AMPLITUDE READ, USE RICHTER SCALE ONLY BEYOND 600 KM IF REQUIRED	
79-80	1	NUMBER OF FREE FORMAT COMMENT CARDS FOLLOWING	I2

3. PROGRAM CONTROL RECORD

COLUMNS	ENTRY	DEFINITION	FORMAT
14	Z	FLAG THAT MARKS END OF DATA SET	A1
34-37	1341	INITIAL WEST LONGITUDE, DEGREES	F4.4
45-47	503	INITIAL NORTH LATITUDE, DEGREES	F3.1
71-72	18	INITIAL DEPTH, KM	I2

TABLE XIa (continued)

4. TELESEISMIC ARRIVAL TIME RECORD

COLUMNS	ENTRY	DEFINITION	FORMAT
2-5	PHC	STATION CODE	A4
37-38	22	HOUR	I2
40-41	34	MINUTE	I2
43-46	27.5	SECOND	F4.1

TABLE XIb

SAMPLE OF FILE 2 DATA

```
13212  EPB1980041107390 9 4924 N12823 W 10G 0 031 0 0      4  8        3          F100 5009      1      7
13213  #
13214  GDR8004110739P  3935                          3956                07   31  78         1
13215  PHC8004110739P  39365                         3956                08   20  60         1
13216  HYC8004110739P  40065                         4048
13217  PGC8004110739P  39575                         4035                08   33  08         1
13218                Z                      130        49                                10
13219  *
13220  UBC1980051622340774958 N12795 W 10G                  156156                                      108
13221  EPB1980051622340504961 N12802 W 10G                    9 11                      010 03006       8
13222  ISC1980051622340624961 N12791 W 14 50     50         181181                       016021036            3
13223  NEI1980051622340544960 1N127891W 10G50    49     MB 94 94 27         6          F10 02003       9
13224  MOS1980051622340735020 N12834 W  3 52     49               19        4
13225  #
13226  PHC8005162234P                    34275 DSW
13227  GDR8005162234P  34284
13228  ALB8005162234P  34395
13229  PGC8005162234P  34541                         3532                04   075 380         1
13230  PIB8005162234P  34550                                             02   157 452         1
13231  HYC8005162234P  35002
13232  SKB8005162234P  3511
13233  FSB8005162234P  3527                                      3652
13234  PNT8005162234P  3527
13235  EDM8005162234P X3628                                     X3913   25    6  100         1
13236  SES8005162234P X3643
13237  FFC8005162234P X3757
13238  FCC8005162234P X3857                                                 22    5   90
13239  BLC8005162234P X3906                                                 18   60   80
13240                Z
13241  =
13242   PHC                                  22 34 27.5
13243   GDR                                  22 34 28.4
13244   ALB                                  22 34 39.5
13245   PGC                                  22 34 54.1
13246   PIB                                  22 34 55.0
13247   HYC                                  22 35 00.2
13248   SKB                                  22 35 11.0
13249   LON                                  22 35 22.8
13250   FSB                                  22 35 27.0
13251   PNT                                  22 35 27.0
13252   NEW                                  22 35 50.0
13253   YKM                                  22 36 04.0
13254   LDM                                  22 36 08.5
13255   RXF                                  22 36 09.2
13256   SIT                                  22 36 18.0
13257   FHC                                  22 36 20.3 D
13258   MSO                                  22 36 26.5 D
13259   WDC                                  22 36 29.4 D
13260   EDM                                  22 36 28.0
13261   MIN                                  22 36 36.3 D
13262   SES                                  22 36 43.0
13263   ORV                                  22 36 46.2 D
13264   PNL                                  22 37 01.0
13265   BKS                                  22 37 04.0 D
13266   JAS                                  22 37 10.0 D
13267   MHC                                  22 37 13.2 D
13268   ARN                                  22 37 13.6 C
13269   MNV                                  22 37 16.0 D
13270   SAO                                  22 37 19.8
  !
  !
13410   DSH                                  22 47 10.0
13411   KUL                                  22 47 13.0
13412   ASH                                  22 47 20.0
13413   MAIO                                 22 47 28.0
13414   KAAO                                 22 47 28.5
13415  *
13416  EPB1980051718421 1 4958 N12794 W 10G 0 031 0 0      6 11        6          F200 6016      2     13
13417  #
13418  PHC8005171842P                    4232                      42482  03    50 350         1
13419  GDR8005171842P                    42332                            04    63 120         1
13420  ALB8005171842P  4244                          43098                025 130  60         1
13421  PGC8005171842P  4300                          4334                 02   157  32         1
13422  PIB8005171842P  4302                          4339                 02   157  45         1
13423  HYC8005171842P  4306                          4347                 03   209  40         1
13424                Z                                                                  10
13425  *
```

SUMMARY AND CONCLUSIONS

We have compiled epicentres and arrival time data for earthquakes within the bounds 46°N to 51°N and 126°W to 133°W.

From the experiments performed the following conclusions are drawn:

(i) For the pre-1970 data, the use of different earth models and station corrections for the telesesmic data set yield epicentres which vary by as much as 15 km. For post-1970 data, this variation is ~5 km. Systematic biases are introduced by the use of particular models.

(ii) For the teleseismic data, lack of data in the southwest quadrant is likely to lead to epicentres which are systematically to the northeast by as much as 15 km.

(iii) Use of the Dziewonski and Anderson station corrections are not sufficient to remove these azimuthal biases.

(iv) With the use of the local data set, large station corrections are found to be required with the EPB crustal model.

(v) The epicentres as currently calculated generally appear to be east of the true location, some by more than 50 km.

FUTURE WORK

With the data set in its present form future efforts should be directed to:

(i) further examination of the teleseismically located epicentres to see if they can be improved,

(ii) examination of the 10 earthquakes (Table VII) for which epicentres could not be obtained by the procedures of this report to obtain improved locations,

(iii) a study of the relative location of the teleseismic earthquakes through joint epicentre determination and thence their relationship to the tectonic environment,

(iv) further investigations with the local earthquake data set: testing to determine the optimum Poisson's ratio, using crustal models more appropriate for the mixed oceanic/continental travel path and then relocating the events,

(v) relocation by computer of the hand-calculated epicentres for 1965-1971.

Acknowledgements:

Douglas Brown, John Cassidy, Michael Ehling, Lynda Fisk, Christiane Martin and Barbara Smith assisted in the preparation of this open file. Many corrections to the original 'keypunched' teleseismic data set and station list were provided by Rutger Wahlstrom. R.B. Horner and R. J. Wetmiller provided Earth Physics Branch data from 1972 to 1983.

REFERENCES

Dziewonski, A.M. and D.L. Anderson (1981). Preliminary Reference Model (PREM), Phys. Earth Planet. Inter., 25, 297-356.

Dziewonski, A.M. and Anderson (1983). Travel times and station corrections for P waves at teleseismic distances, J. Geophys. Res., 88, 3295-3314.

Gutenberg, B. and C.F. Richter (1954). Seismicity of the Earth and Associated Phenomena, Princeton Univ. Press. Princeton, 310p.

Herrin, E. (1968). 1968 Seismological tables for P phases, Bull. Seism. Soc. Am., 58, 1193-1241.

Hyndman, R.D. and G.C. Rogers (1981). Seismicity surveys with ocean bottom seismographs off western Canada. J. Geophys. Res.,86,3867-3880.

Jeffreys, H. and K.E. Bullen (1940). Seismological Tables, British Association Gray-Milne Trust, London.

Kelleher, T. and J. Savino (1975). Distribution of seismicity before large strike slip and thrust type earthquakes, J. Geophys. Res., 80, 260-271.

Lahr, J.C. (1978). HYPOELLIPSE: A computer program for determining hypocentre, magnitude, and first motion pattern of local earthquakes. U.S. Geological Survey, Menlo Park, Open File Rept., 28 p.

Milne, W.G., G.C. Rogers, R.P. Riddihough, G.A. McMechan, and R.D. Hyndman (1978). Seismicity of western Canada, Can. J. Earth Sci., 15, 1170-1193.

Rogers, G.C. (1983). Seismotectonics of British Columbia, Ph.D. thesis, Dept. of Geophysics & Astronomy, Univ. of British Columbia, 247 pp.

Stevens, A.E., W.G. Milne, R.J. Wetmiller and R.B. Horner (1972). Canadian earthquakes - 1966. Seismol. Series of the Earth Physics Branch, No. 62, Ottawa, 55 p.

Stevens, A.E., W.G. Milne, R.B. Horner, R.J. Wetmiller, G. Leblanc, and G.A. McMechan (1976). Canadian Earthquakes - 1968, Seismol. Series of the Earth Physics Branch, No. 71, Ottawa, 39 p.

Veith, K.F. (1975). Refined hypocenters and accurate reliability estimates, Bull. Seism. Soc. Am., 65, 1199-1222.

Weichert, D.H. and J.C. Newton (1970). Epicentre determination from first arrival times at Canadian stations, Seismol. Series of the Earth Physics Branch, No. 59, Ottawa.

APPENDIX A

Listing of Tape File 1

MAGNITUDE 4 AND GREATER EARTHQUAKES

IN THE REGION 46°N-51°N 126°W-133°W

TO DECEMBER 31, 1983

(Note: Up to and including 1980, data from all available sources is included. For 1981-83, the data is that from the EPB file).

Listing of DISPSUM at 18:46:26 on SEP 14, 1986 for CCid=DISP

```
    1   GAR19120311101730051   N131   W          65
    2   *
    3   GAR191407212231180490O0N130000W          65
    4   *
    5   ISS191707 1132050050000N128000W
    6   EPB                                          64
    7   *
    8   ISS191712231548000500O0N128000W
    9   EPB                                          65
   10   *
   11   GCR191812 6084105849620N125920W
   12   GAR191812 6084105049750N126500W          70
   13   ISS191812 608410304900 N124   W
   14   *
   15   ISS191907 1214936050000N128000W
   16   EPB                                          55
   17   *
   18   ISS191907100222100500O0N128000W
   19   EPB                                          50
   20   *
   21   EPB1919101001071654863 N12715 W              55
   22   ISS191910100107200490  N1240  W
   23   *
   24   GCR192003290507518506  N129870W
   25   UBC1920032905075285086 N13000 W 10G      14 14                                  271
   26   GAR19200329050753051000N129000W          64
   27   ISS192003290507400505  N1295  W
   28   *
   29   EPB192105282055000492O0N129200W              55
   30   ISS192105282003420480  N1275  W
   31   *
   32   ISS192305 2162430050000N128000W
   33   EPB                                          50
   34   *
   35   ISS192310130428240505O0N129500W
   36   EPB                                          50
   37   *
   38   GAR19240330000856050   N13025 W          60
   39   ISS192403300008550505  N1295  W
   40   *
   41   UBC1926051214534224677 N13165 W 10G       5  5                                  324
   42   GAR192605121453300465  N131   W          56
   43   ISS192605121453300460  N1300  W
   44   *
   45   UBC1926103019420144890 N12884 W 10G      19 19                                  225
   46   GAR192610301941550485  N129   W          61
   47   ISS192610301941420480  N1275  W
   48   *
   49   UBC192611 101392244884 N12858 W 10G      21 21                                  258
   50   GAR192611 101391804875 N1285  W          66
   51   ISS192611 10139150480  N1250  W
   52   *
   53   GCR192705 721560005015 N12785 W              55
   54   ISS192705 72156520490  N1240  W
   55   *
   56   GAR192903 107311305150 N13075 W          61
   57   K&S192903 1073113751790N129740W
   58   ISS192903 10731000502  N1307  W
```

```
 59    *
 60    GCR19290526223958551510N13074W
 61    K&S19290526224001151190N130160W
 62    GAR19290526223954051000N131000W          70
 63    NEI19290526224006 513  N131   W
 64    ISS19290526223948 502  N1307  W
 65    EPB19290526223954052800N129500W
 66    *
 67    UBC1929091719174145095 N12987 W 10G              55 55                    260
 68    K&S1929091719173905092 N12958 W
 69    GAR19290917191734051000N131000W          63
 70    ISS192909171917250497  N1320  W
 71    *
 72    UBC1930041614304294983 N12946 W 10G              10 10                    335
 73    K&S1930041614304034973 N12933 W
 74    GAR19300416143040049500N130000W          55
 75    ISS193004161430440495  N1305  W
 76    *
 77    UBC1930053110215544866 N12890 W 10G               7  7                    327
 78    K&S1930053110215164864 N12895 W
 79    GAR19300531102153048500N129000W          54
 80    ISS193005311022000490  N1290  W
 81    *
 82    K&S1930091703143444981 N12988 W
 83    ISS193009170314430495  N1305  W
 84    EPB                                  50
 85    *
 86    UBC1932081820225594882 N12835 W 10G               9  9                    137
 87    GAR19320818202249049000N129000W
 88    K&S1932081820230044839 N12762 W
 89    ISS193208182022560490  N1290  W
 90    EPB                                  55
 91    *
 92    UBC193305 504141204906 N12943 W 10G              14 14                    191
 93    K&S193305 504140864885 N12965 W
 94    GAR193305 50414110490O0N129000W          55
 95    ISS193305 50414160493  N1292  W
 96    *
 97    UBC1935092422122384969 N12883 W 10G              41 41                    225
 98    K&S1935092422121964963 N12917 W
 99    GAR19350924221215049500N130000W          62
100    ISS193509242212250493  N1292  W
101    *
102    UBC193702 410324904917 N12861 W 10G               9  9                    162
103    K&S193702 410324504885 N12943 W
104    GAR193702 41032460490O0N129000W          52
105    ISS193702 41032460490  N1290  W
106    *
107    UBC1937092911302044919 N12994 W 10G              15 15                    142
108    K&S1937092911301594908 N13024 W
109    GAR19370929113019049250N129500W          55
110    ISS193709291130170492  N1299  W
111    *
112    UBC1938042204155474995 N12887 W 10G              26 26                    184
113    K&S1938042204155385003 N12845 W
114    GAR19380422041549049750N129750W          55
115    ISS193804220415460492  N1299  W
116    *
```

```
117  UBC193901 317183714962 N12954 W 10G          20 20          217
118  K&S193901 317183314960 N12962 W
119  GAR193901 3171832049500N130000W
120  ISS193901 31718340492  N1299  W
121  EPB                                  52
122  *
123  UBC193902 806393024914 N12771 W 10G          13 13          237
124  K&S193902 806392584908 N12804 W
125  ISS193902 80639210485  N1300  W
126  EPB                                  65
127  *
128  UBC1939071803264094906 N12945 W 10G          61 61          187
129  K&S1939071803263854901 N12922 W
130  GAR1939071803263804900ON129250W      65
131  ISS1939071803263504920ON129900W
132  *
133  UBC194110 119494694899 N12910 W 10G          16 16          172
134  K&S194110 119493804918 N12985 W
135  ISS194110 11949330492  N1305  W
136  EPB                                  60
137  *
138  UBC194111 617315664893 N13089 W 10G           9  9          228
139  K&S194111 617315394935 N12983 W
140  ISS194111 61732020490  N1290  W
141  EPB                                  60
142  *
143  ISS194111 6181124049   N129   W
144  EPB                                  45
145  *
146  K&S1942031911592565121ON130080W
147  ISS1942031911592605120ON130000W
148  GAR1942031911591905050ON131000W      60
149  *
150  UBC194206 911064934943 N12959 W 10G          14 14          256
151  GAR194206 9110648049500N129000W      57
152  ISS194206 91106450492  N1299  W
153  *
154  UBC194408100152568509l N13091 W 10G          43 43          190
155  K&S194408100152539509 2 N13013 W
156  GAR194408100152500512ON131000W       62
157  ISS194408100152510509  N1307  W
158  *
159  UBC194408130821318501 3 N13006 W 10G          10 10          262
160  K&S194408130821285502 4 N12980 W
161  ISS194408130821240503  N1307  W
162  EPB                                  45
163  *
164  UBC194408130822316501 3 N13045 W 10G           9  9          105
165  K&S194408130822278501 3 N13046 W
166  ISS194408130822250503  N1307  W
167  EPB                                  58
168  *
169  ISS194408130823450503  N1307  W
170  *
171  UBC1945102000326004901 N12830 W 10G          25 25          177
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1378    ISC19790313103109950 02 N12974 W 10 43           42 42                043040078
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1382    EPB19790313120019049 93 N12984 W 18G             21 23       14   F10 06011         17
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1524    NEI198010 203424865031 3N130043W 10G53   50    MB 92 92 49        3     F00 02003            9
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Listing of DISPSUM at 18:46:26 on SEP 14, 1986 for CCid=DISP

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Listing of DISPSUM at 18:46:26 on SEP 14, 1986 for CCid=DISP

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1672    NEI198312 715371505067 N12970 W 10G43 0 0 0 0     30 30  8                                13
1673    *
1674    EPB19831210 0201705042 N13007 W 10G 0 0 0 0 0      7  9  0                                 7
1675    NEI19831210 0201805053 N13002 W 10G41 0 0 0 0     23 23  5                                 9
1676    *
1677    EPB19831210 544  04778 N12827 W 10G 0 0 0 0 0     21 25  0
1678    NEI19831210 544 104782 N12805 W 10G43 0 0 0 0     26 26  5
1679    *
```