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**Data Report for the 1988 Ontario-New York-New England
Seismic Refraction Experiment: Three-Component Profiles**

STEPHEN MANGINO
JOHN CIPAR



23 February 1990



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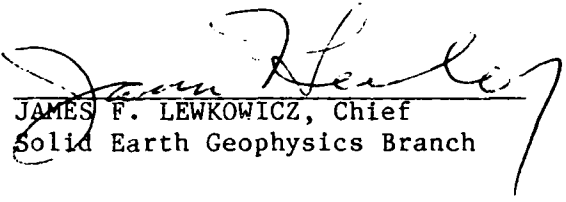
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PREFACE

We would like to extend our appreciation to James Leutgert and Edward Criley of the US Geological Survey for their cooperation during all stages of this experiment, as well as Gene Taylor. We also like to thank Al Leverette and Kent Anderson of the Air Force Weapons Laboratory for their technical expertise and dedication in deploying so many stations in difficult terrain, and James Battis of the Geophysics Laboratory (GL) for modifying the software when necessary to decode DCS-302 data. We also thank: Katharine Kadinsky-Cade, Janet Johnston, Sgt. Joseph Craig, Lt. Loyd Rainey, Charles Taylor, Henry Ossing and Christopher Botka of GL; the US National Forest Service; Terry Perkins of Stillwater Reservoir; Clarence Foster of Brandrith Lake; Mark Chellis of Whitney Lumber Industries; Lawrence Blacklock; Philip Capone of New York State Department of Environmental Conservation; Boise-Cascade Industries; Michael Schrotz of the Green Mountain National Forest Service; and Esra Brooks for assistance in the field. This research was supported by the Air Force Office of Scientific Research under Geophysics Laboratory Task 2309G2, Crustal Motion Studies.

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1. INTRODUCTION

During September 1988, the U.S. Geological Survey (USGS), the Geophysics Laboratory (GL) and the Geological Survey of Canada (GSC), conducted a seismic refraction - wide angle reflection survey across New England, upstate New York and western Ontario. The objective was to determine geologic structure and wave propagation characteristics across the northern Appalachian Mountains and western Grenville province. Shown in Figure 1 is a map of the study area and location of the survey lines. The longest line extends roughly east-west for 640 km beginning in Waterville, Maine, across New Hampshire, Vermont, upstate New York, and ending in Mammora, Ontario. This line was instrumented by the USGS and the GSC using FM recorders and digital vertical component seismograph stations. Information concerning this data can be obtained in Leutgert et al, (*in preparation*).

This report is a compilation of the Geophysics Laboratory data collected during deployments One, Two, and Three (denoted by solid lines in Figure 1), across the Adirondack Mountains in upstate New York and the Green Mountains of Vermont and southern New Hampshire. These lines were instrumented with three component digital seismograph stations. Although not shown, several universities and one private organization conducted 'add-on' experiments to the survey. They include: SUNY Binghamton, Boston College, Lamont Doherty Geological Observatory, Yale University, Rondout Associates, and the Massachusetts Institute of Technology (MIT). The Appendix of this report describes the data collected by Boston College and MIT, which extended the length of GL Deployment Two at both ends. All USGS, GL and GSC data are archived at the National Geophysical Data Center in Boulder, Colorado, and tapes are available from:

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
325 Broadway
Boulder, CO 80303

Data tapes are written in SEG-Y-LDS version 2.0 format (Spencer et al, 1989) with several modifications to accommodate GL three-component data that are documented in this report. Table 4 gives an example a shot gather header and a trace header within a typical shot gather data file. Interpretations of these

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seismograms will be published separately. The Geophysics Laboratory data are also available from:

Earth Sciences Division
Geophysics Laboratory /LWH
Hanscom AFB, MA 01731

2. TECTONIC SETTING AND GEOLOGY

The tectonic evolution of the Appalachian Orogen extends from the early Paleozoic through the Mesozoic Eras. As described by Bird and Dewey [1970], the morphological and structural characteristics of the North American continent were formed primarily during the closing of the proto-Atlantic Ocean from the early-mid Ordovician through the Permian period. This convergence between the American and African Plates produced three major accretionary events that coincide in time with the Taconian, Acadian and Alleghanian orogenies. Collectively, each orogeny is considered a separate pulse of a single long term collision that is generally referred to as the Appalachian Orogeny. The theory that the Appalachian Orogen consists of several microplates accreted during this time period is the focus of current debate in the literature (Hatch, 1982; Boudette, 1982; Zen, 1983; Zen, 1989). During the Mesozoic the Appalachians underwent crustal extension resulting in the opening of the North Atlantic Ocean and subsequent creation of a passive margin which remains today.

Figure 1 shows a map of the location of survey lines. In Maine, the profile samples three terranes known as the Gander, Dunnage and Piedmont defined by Williams and Hatcher (1983). A description of the geology of these and adjacent terranes can be found in Moench and St. Julien (1989). Continuing west across New Hampshire and Vermont the profile samples the Mesozoic White Mountain Series, the Bronson Hill Anticlinorium, the Connecticut Valley Synclinorium, the Green Mountain Anticlinorium, and the Champlain River Valley. These regions are described in detail by Lyons and Bothner (1989). In New York State, the profile samples the Adirondack Plateau which is a roughly circular exposure of granulite facies and anorthosite in sharp contrast with the typical north-north east trending meta-sedimentary rocks and intrusive Mesozoic volcanics of the Appalachians to the east. For a detailed description of

Adirondack geology and the Grenville province of Ontario see Bohlen et al, (1989).

3. PREVIOUS GEOPHYSICAL ANALYSIS

Previous geophysical surveys are generally sparse across the entire study area, but within the last decade several major traverses north and east of this profile have contributed significantly to our understanding of the near surface and deeper continental crust. Across the entire study area, Taylor and Toksoz (1982) investigated surface wave and regional body wave propagation throughout the crust and upper-mantle. In upstate New York the seismic refraction results given in Katz (1955), body-wave modeling results given in Taylor and Toksoz (1979), and teleseismic P-waveform modeling results of Owens et al, (1987) show the crust and upper mantle velocity structure beneath the Adirondack Mountains. The Consortium for Continental Reflection Profiling (COCORP) 1980 surveys provide the best, albeit discontinuous, data for the easternmost Adirondack Massif, southern Vermont and southern New Hampshire (Brown et al, 1983; Ando et al, 1984; Klemperer et al, 1985). In Maine and eastern Quebec the 1984 USGS - Canadian Department of Energy, Mines and Resources seismic survey provides detailed refraction data of the northeast Appalachians (Leutgert et al, 1987; Stewart et al, 1986). Mangino and Cipar (1988) studied the shear wave velocity structure in southwestern Maine. Analysis of seismic data collected in the Canadian Appalachians (St. Julien et al, 1983; Keen et al, 1986) and in the southern Appalachians (Cook et al, 1979) indicate thin-skinned tectonism is the principal mechanism of Appalachian orogenic deformation. Complementary studies by Simmons, (1964), Diment (1968), and Simpson et al, (1980) provide interpretations of gravity anomaly maps of the study area.

4. DESCRIPTION OF THE SURVEY

A total of 35 shots distributed among 20 shot points located in-line at 30-35 km intervals and off-line at larger offsets were fired during the survey. Shot points 21, 22, and 23 were located in southern Maine, New Hampshire and Vermont, respectively, to provide fan coverage. Shot point 20 was detonated in a water-filled quarry, otherwise all explosives were loaded into 8 inch diameter

drill holes cased to bedrock that varied in depth from 160 to 180 feet. The boreholes were filled with ammonium nitrate explosives that were detonated by electric caps, detonating cord and boosters. Shot point 24 near Lorraine, New York was abandoned after drilling into an unexpected natural gas reservoir and subsequent fire. Each shot was fired automatically and timed using WWVB and IRIG time codes by the USGS. Shot point locations and charge sizes are listed in Table 1.

Seismic data were collected in three separate deployments over three shooting nights. For GL Deployment One stations were installed in-line between Long Lake (SP-14) and Lorraine (SP-24) NY, at about 4 km spacing. Maintaining consistent in-line station spacing was difficult because of inaccessible Adirondack Park wilderness lands, and where there were 'roads', numerous deer made driving somewhat hazardous. Stations 1122-1124 were deployed by boat from the south shore of Still Water Reservoir. For GL Deployment Two, all stations were installed in-line at about 5 km spacing between Addison, VT (SP-10), and Warner, NH (SP-22). This line was augmented with 10 USGS stations deployed in the central third of the line. Boston College-MIT stations extended this profile at both ends during all shooting nights. For GL Deployment Three, stations were installed in-line from Port Henry NY, to Long Lake NY, at about 3 km spacing. This line is coincident with the USGS - CGS second deployment, and the earlier COCORP New York Line 7 reflection survey given in Ando et al, (1984). All station locations and elevations were digitized from USGS 1:24,000; 1:25,000; and 1:62,500 topographic maps. Several stations within each deployment were located at USGS bench marks. Locations are estimated to be accurate within 15 meters. Tables 3a, 3b, and 3c show seismogram constants, shot-station offsets, and coverage for each deployment. In addition to the GL data, the Appendix includes the data report and record sections of the Boston College - MIT Piggy-back Seismic Refraction Experiment.

5. INSTRUMENTATION

All GL seismograms were digitally recorded on cassette tape using automatic gain ranging Terra Technology DCS-302 seismographs. In standard configuration each DCS-302 records 3 channels of data at 100 samples/sec (sps) with a 5 pole 30-Hz Butterworth anti-aliasing filter. Some stations were configured to record at 200 sps with a 70-Hz filter. Each DCS-302 was connected to

either a Sprengnether Instruments S-6000 2-Hz triaxial seismometer, or three Hall Sears HS-10-1B 1-Hz seismometers. Horizontal seismometers were orientated to magnetic north using a standard Brunton compass with an estimated maximum error of ± 2 degrees. The HS-10-1B seismometers were installed on an aluminum baseplate that included machine drilled grooves to ensure sensor orthogonality. In this case the long axis of the baseplate was aligned to magnetic north. Physically, the recorder measures pendulum motion relative to the case, which has the opposite sense to the ground motion. Polarity of each seismometer is defined to be such that upward movement of the case gives a negative deflection. For the horizontal components, the upward direction is defined to be north and east. A calibration pulse through each seismometer was recorded on tape *in situ* during each deployment. Free period, damping and sensitivity values for each sensor are determined by least square error fitting to the theoretical system response and are tabulated for each deployment in Tables 3a-c, as well as in each seismogram header. Figure 2 shows a typical instrument response curve for an S-6000 as recorded through a DCS-302 with nominal unit gain.

Each DCS-302 was initially synchronized to a GOES master clock and deployed with an external programmable timer to initiate recording over the expected shot window. Each DCS-302 also recorded real-time IRIG time code from WWVB receivers installed in each unit. After each shooting window all tapes were changed and timers reset for the next window. After the last shot window in a given shooting night all DCS-302's were re-synchronized to the GOES master clock on cassette tape for internal clock drift measurement. Almost all data were corrected using WWVB time code, otherwise time corrections were obtained using GOES data assuming a linear drift rate. Some traces have no time correction due to instrument failure but are included for completeness. These are indicated in Tables 3a-c by 'none' under Time Correction. Figure 3 shows an example of a typical WWVB time code signal at the minute mark used for time corrections. Propagation differences between the GOES master clock signal and the WWVB time signal are unresolvable at 100 sps.

6. DATA REDUCTION

At the conclusion of the experiment all cassette tapes were returned to GL and uploaded to a VAX-8650. Figure 4 shows a schematic of the station setup and

data processing steps. Each 3-channel data file, approximately 14 minutes long, was then cut into 80 second traces with a minimum of 5 seconds of presignal noise. No reduction velocity windowing is used. For the 200 sps data a 40 second time window was used. Each trace was then grouped into a common shot gather and saved as single shot profiles. Data were then corrected in the trace header only for clock drift and seismometer constants. Polarity corrections were applied to the data where necessary to accommodate SEG-Y-LDS version 2.0 format prior to archiving on tape. Additional modifications to this format are discussed in Table 4.

7. RECORD SECTIONS

All record sections are indexed by deployment and shot point location. For example: SP1-14 indicates *Seismic Profile for Deployment 1 - Shot Point Location 14*. For each common shot gather shown in Illustrations 5-7, we plot all data as unfiltered trace-normalized vertical, north-south and east-west components, denoted as SPZ, SPN, or SPE, respectively. All data are plotted at a reduction velocity of either 6.0 or 6.5 km/s with the same trace normalized amplitude scale factor. About half of the shot gathers for Deployment One have offsets greater than 350 km and low signal to noise ratios and are not shown. For Deployment Two, the fan shot gathers are plotted by azimuth, and are labeled as such. For Deployment Three, SP3-17 was not large enough to be recorded at the GL stations. Individual traces within some shot gathers are muted due to recorder and/or seismometer malfunction.

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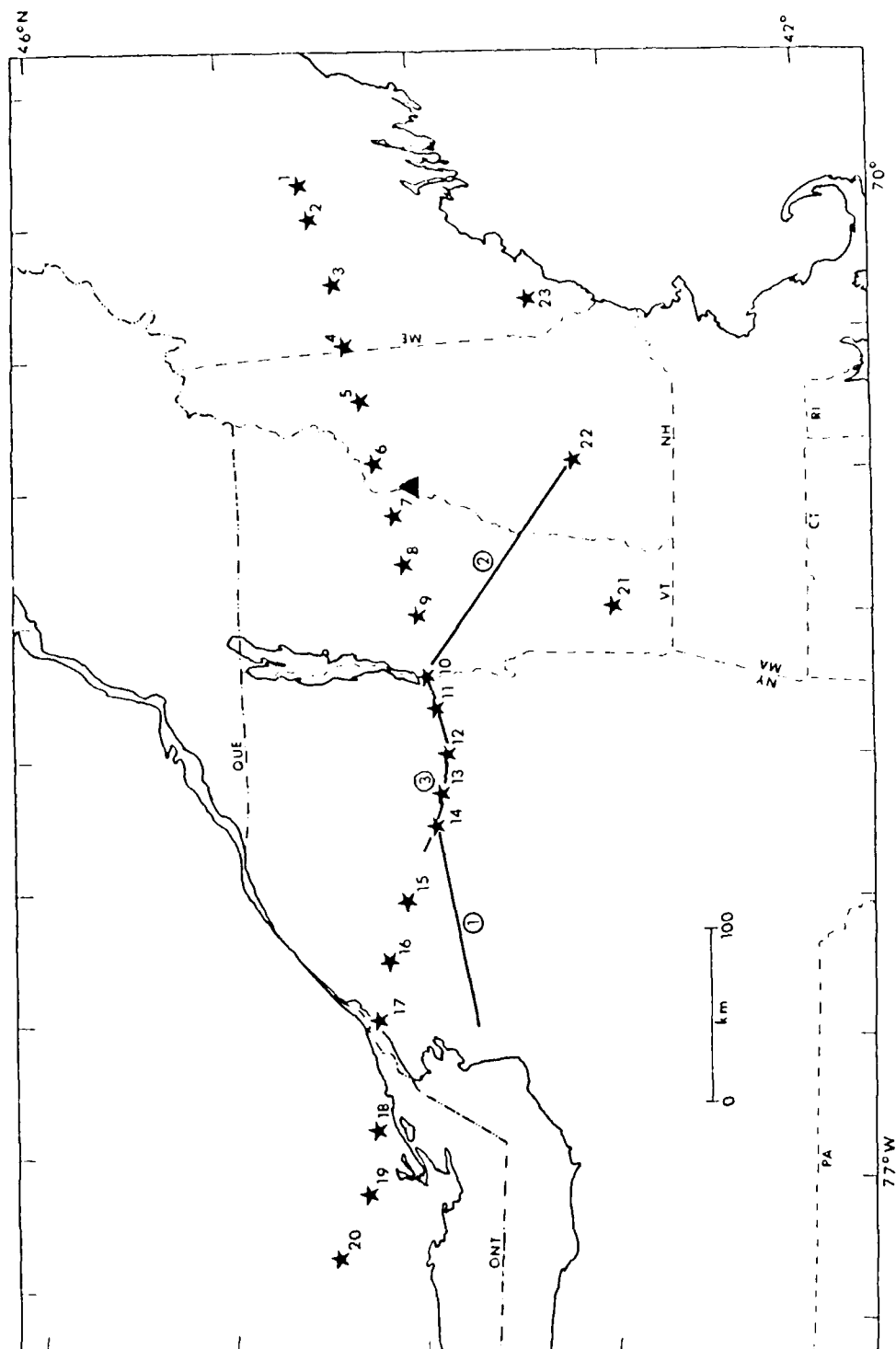


Figure 1. Map of the study area with shot point locations shown as stars, and GL Deployment Locations One, Two and Three shown as solid lines. The USGS and GSC stations were deployed in-line inbetween the shot points, and the solid triangle shows the location of the GL Small Aperture Array.

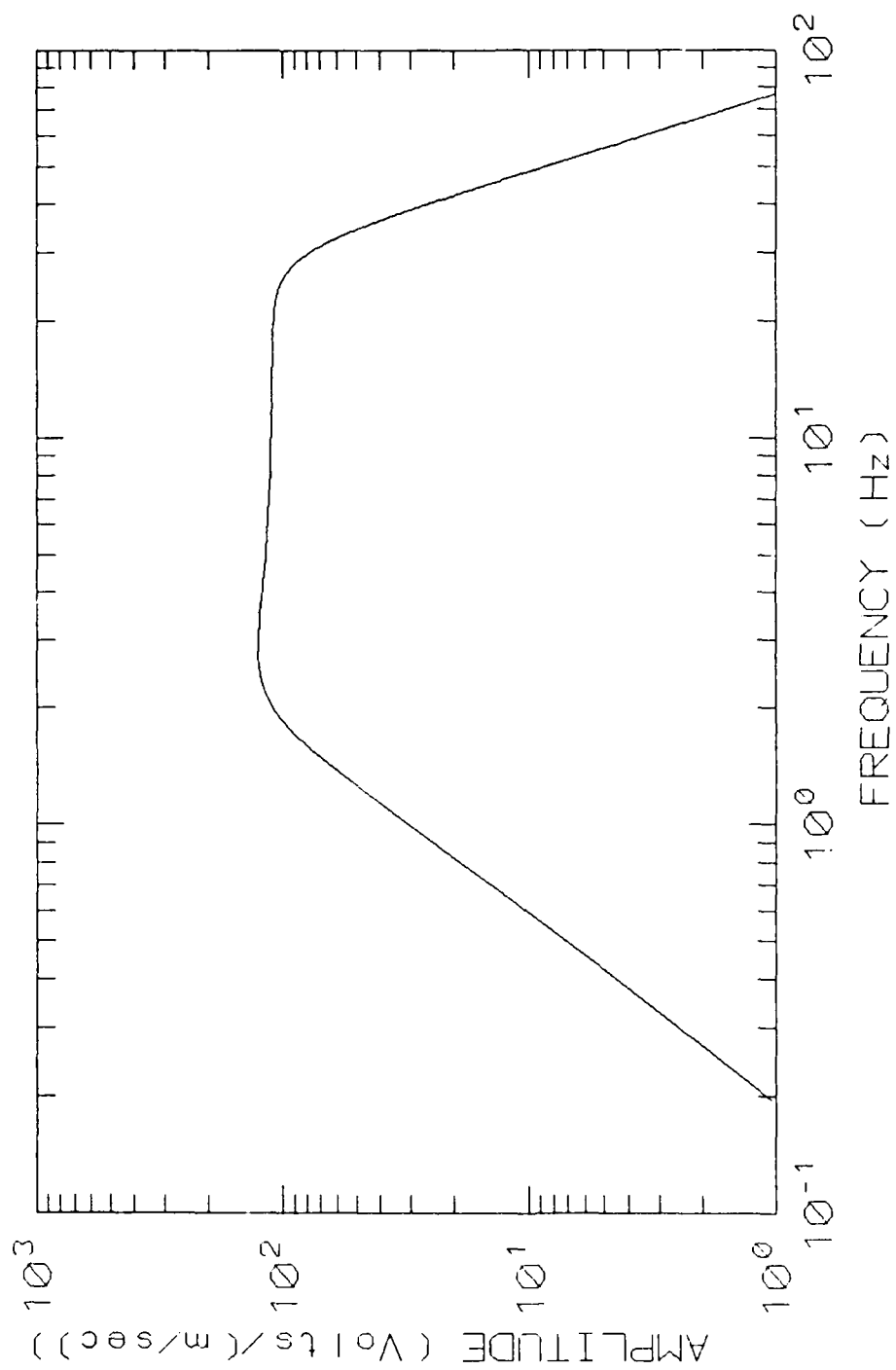


Figure 2. Typical GL S-6000 instrument response with nominal gain.

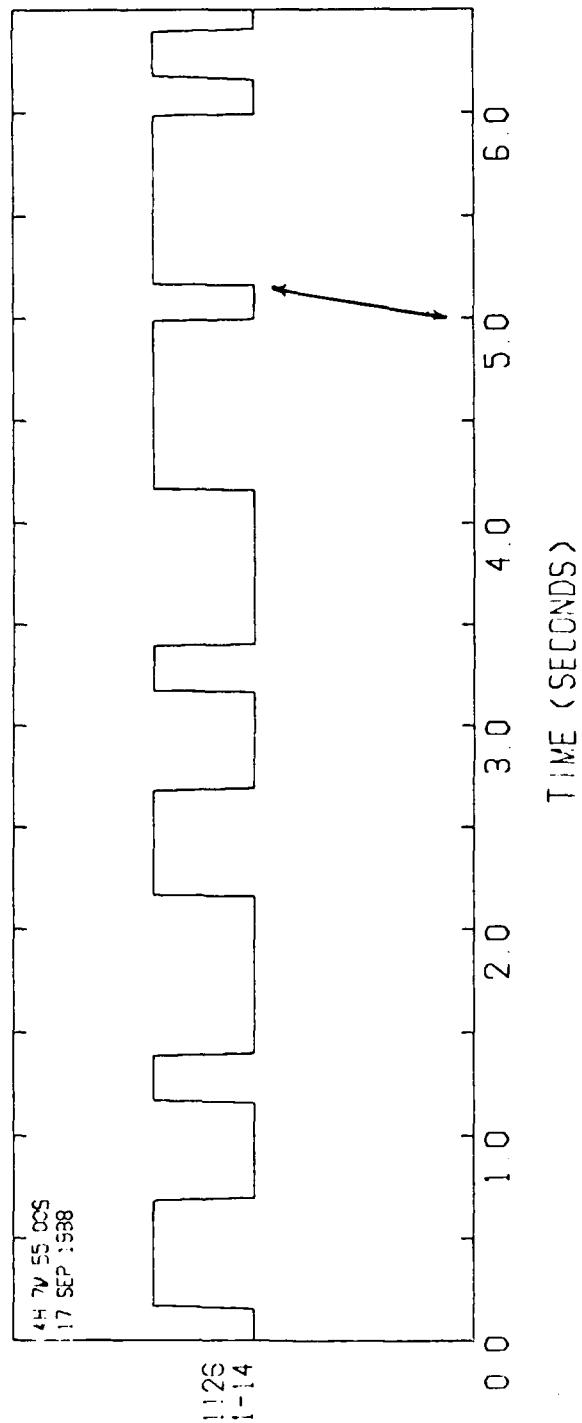


Figure 3. WWVB time code (top) and the corresponding DCS-302 internal time mark on the x-axis. The WWVB minute mark indicates the DCS-302's internal clock is slow. See Table 3a for the correction applied to this data.

Figure 4. Schematic representation of GL data processing.

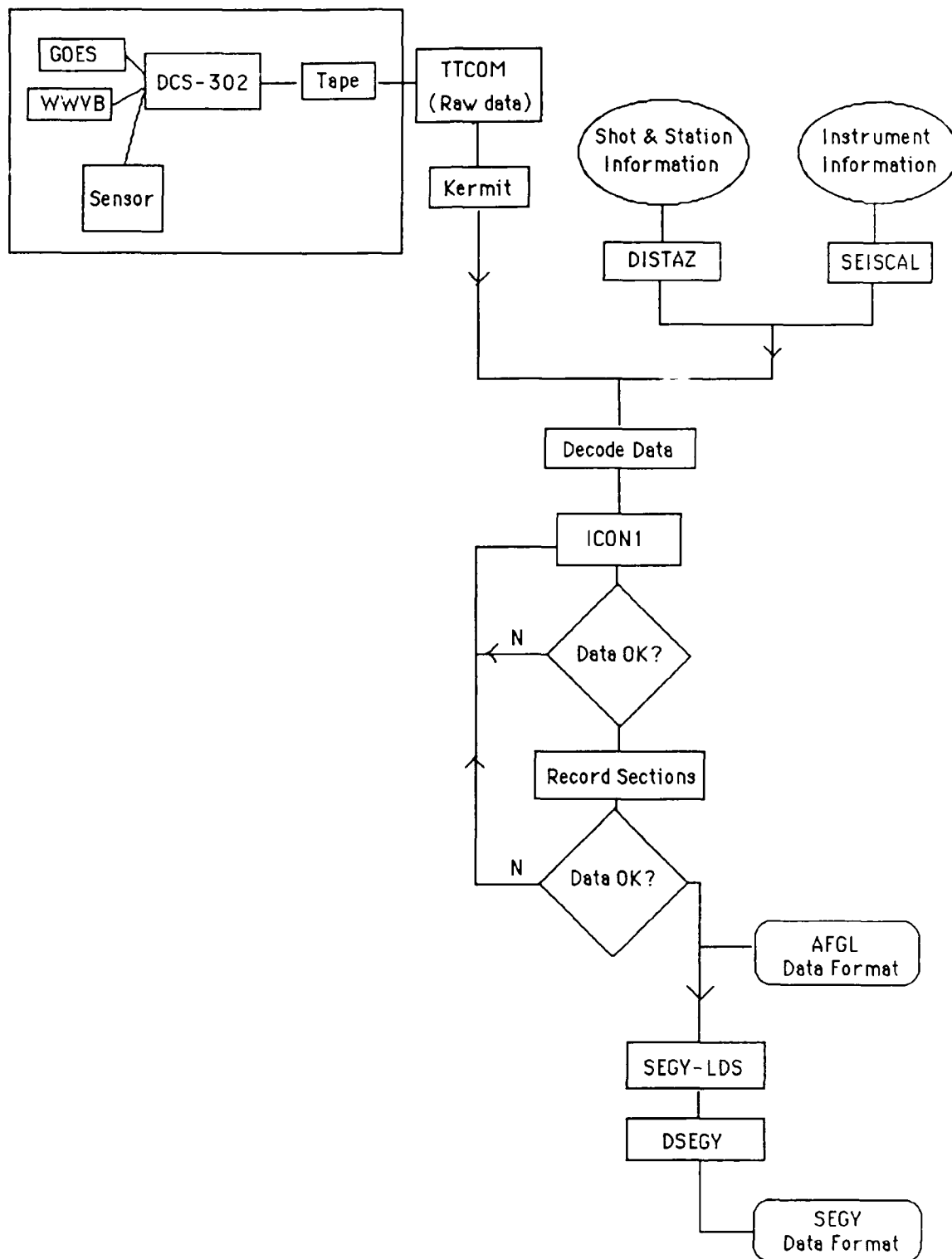
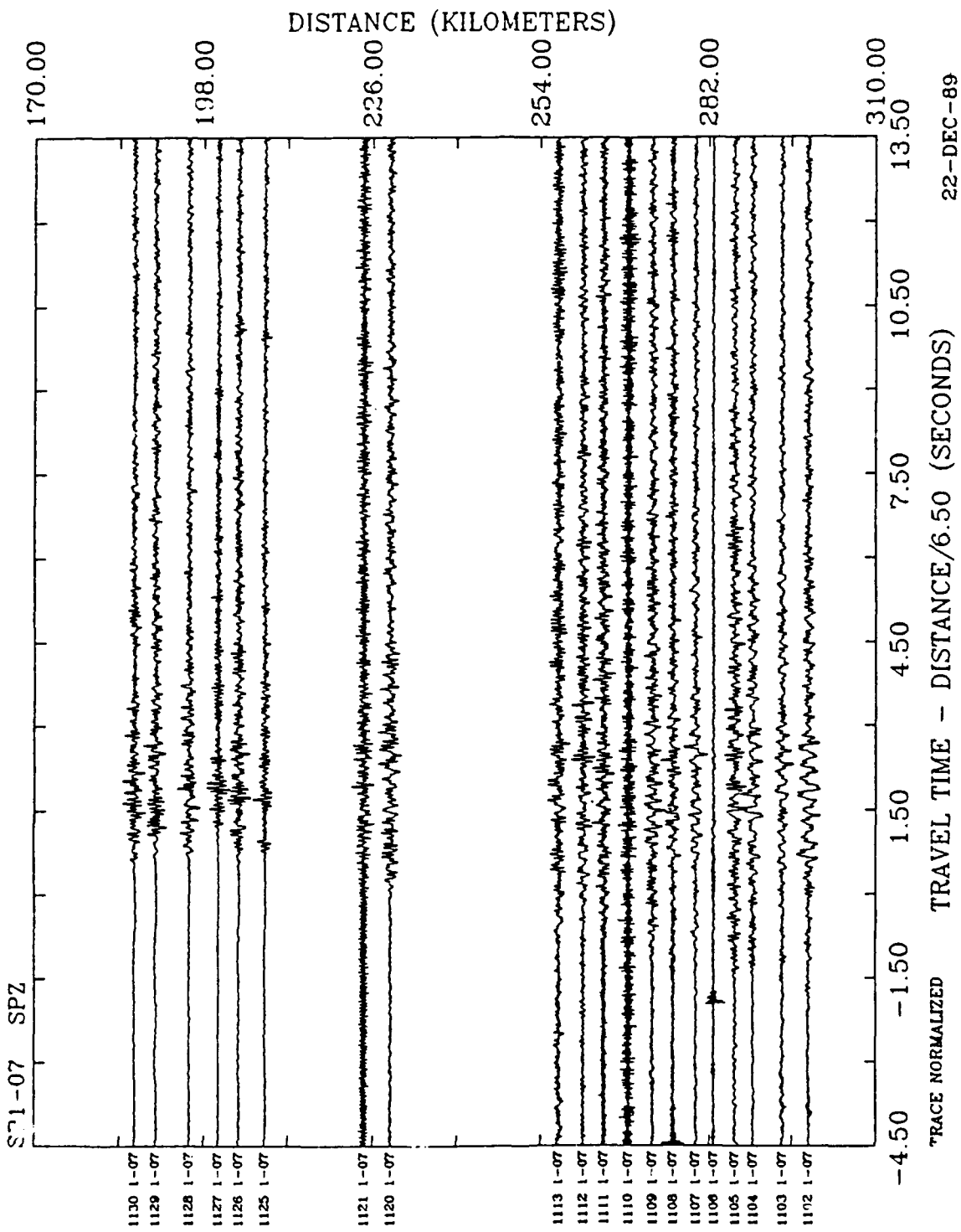
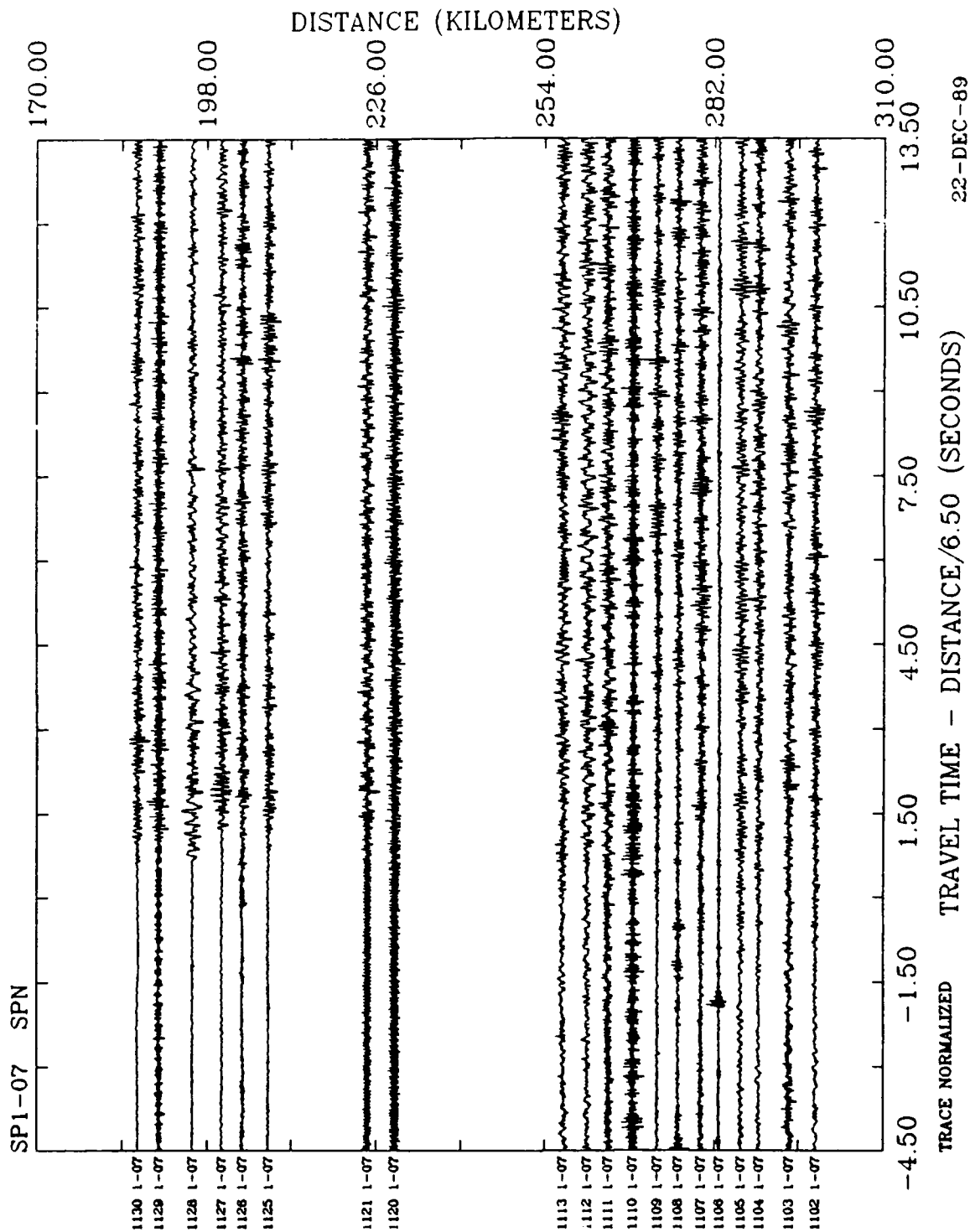


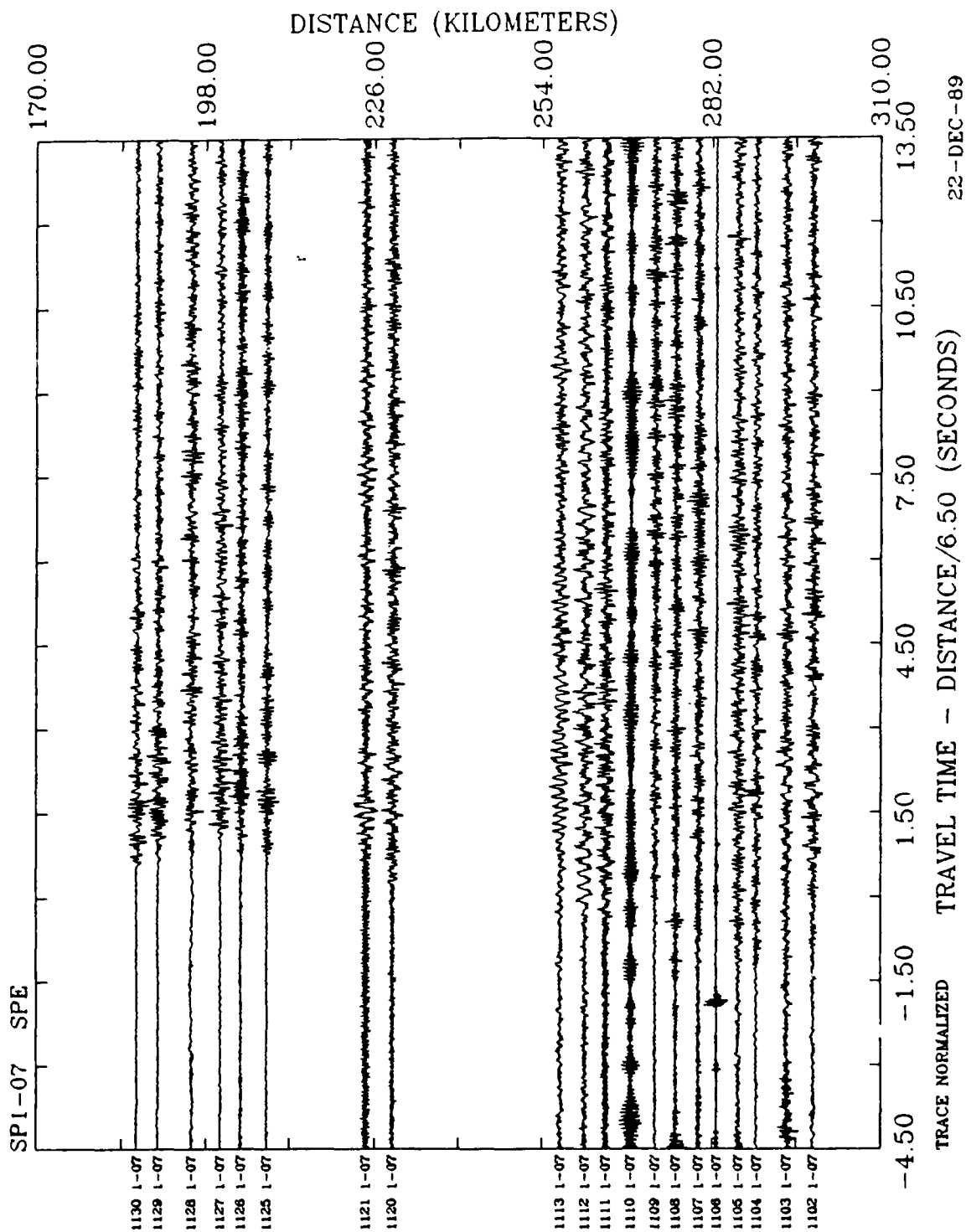
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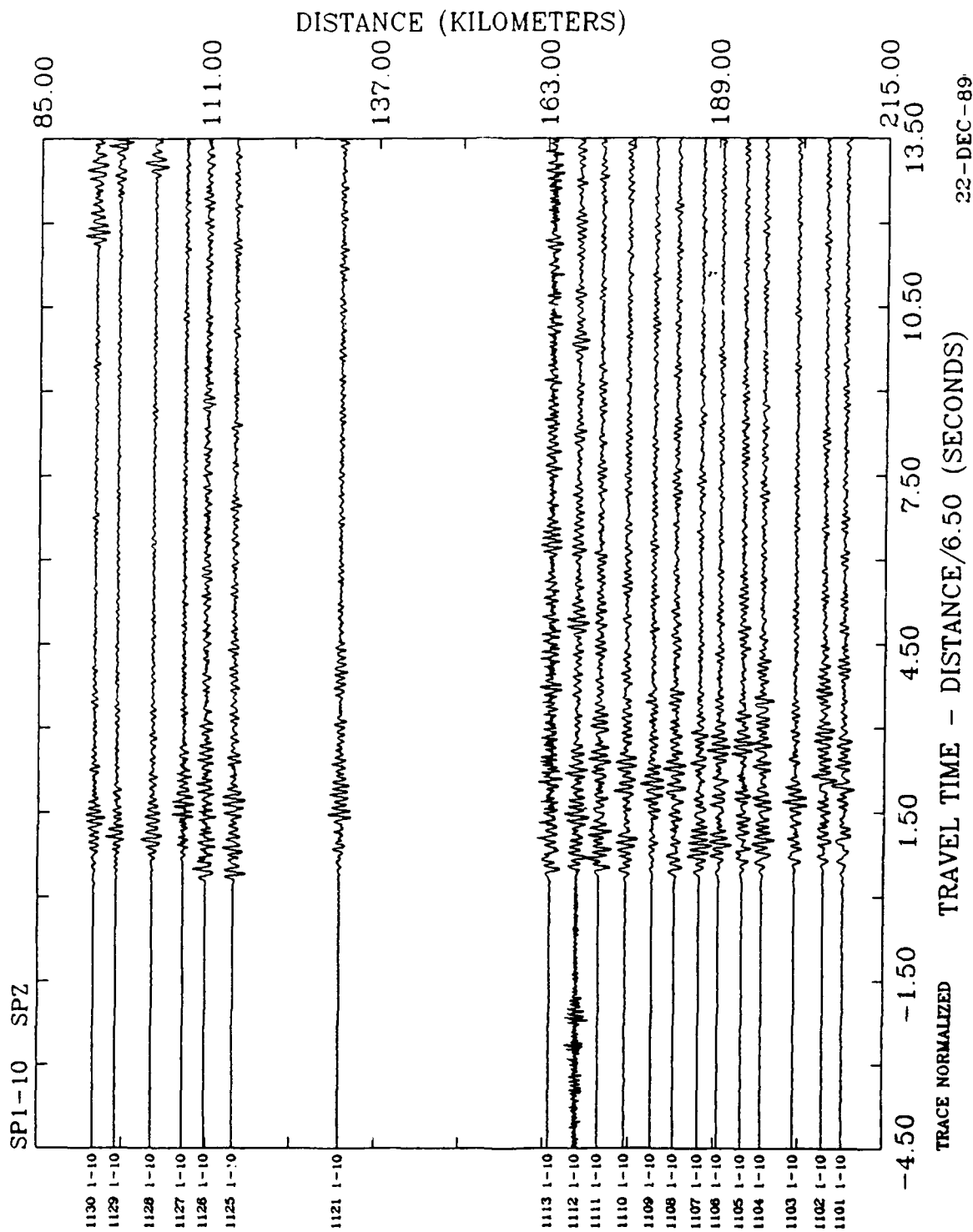
SPZ, SPN, and SPE record sections for Deployment One,
the * indicates shot gathers not shown.

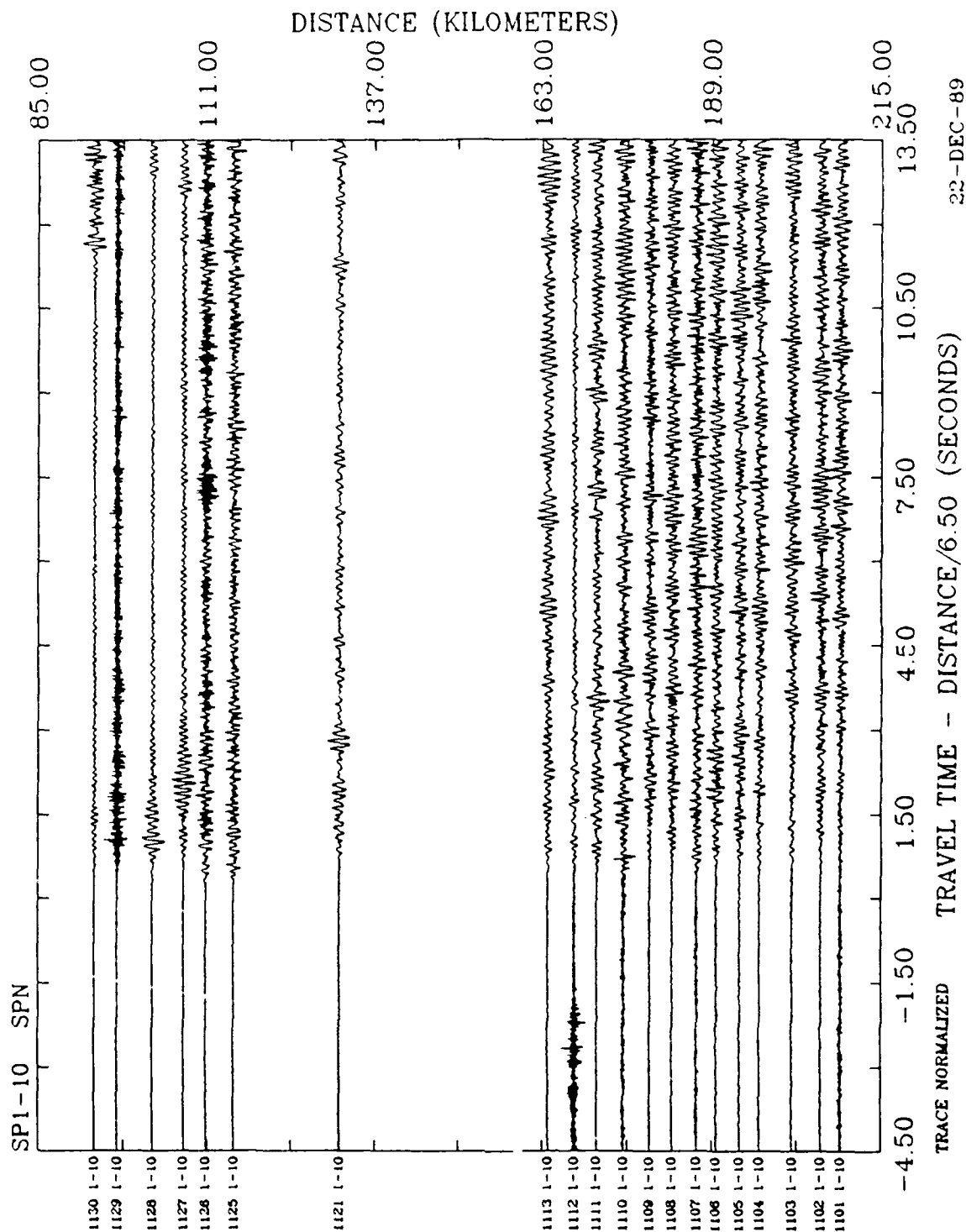
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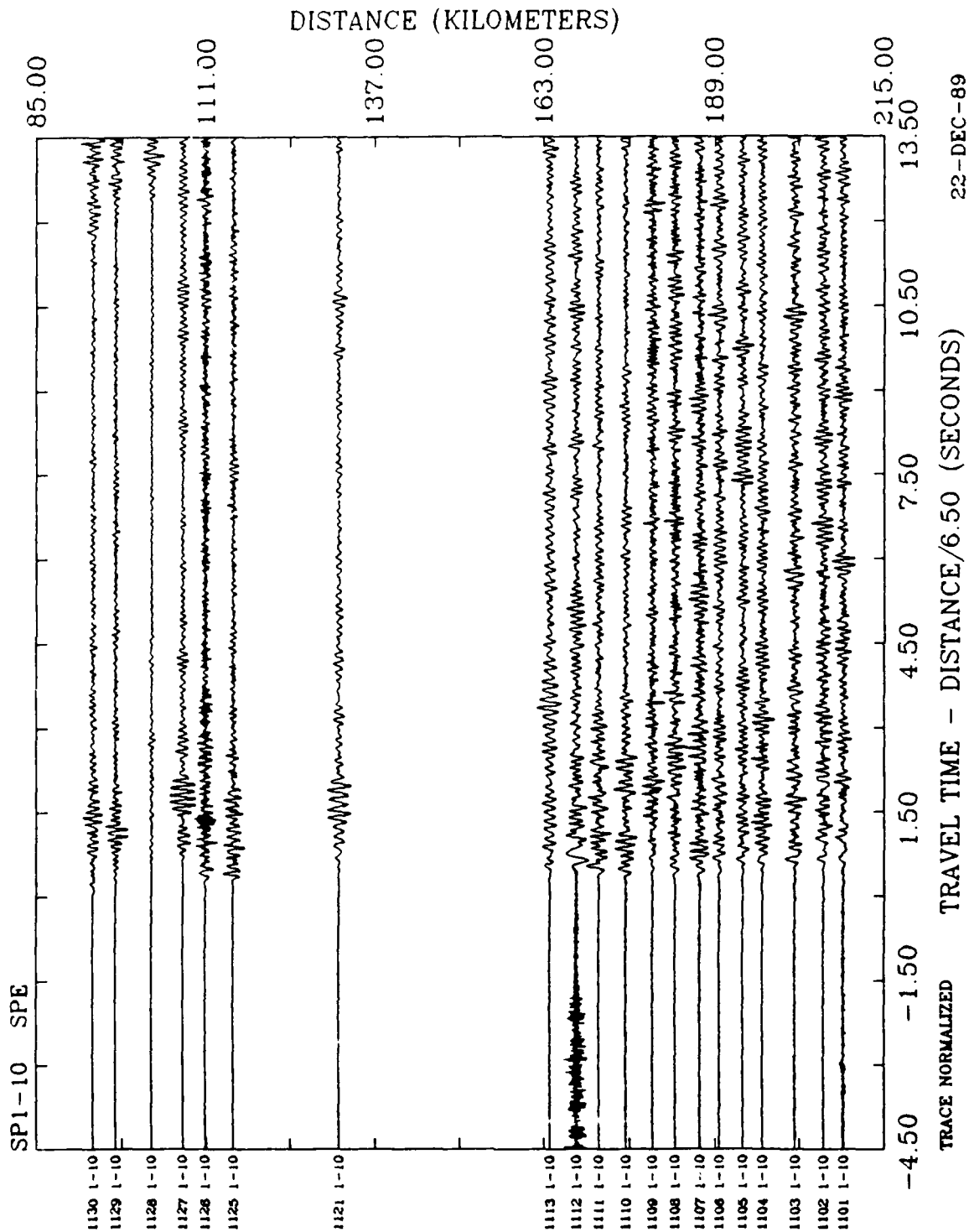


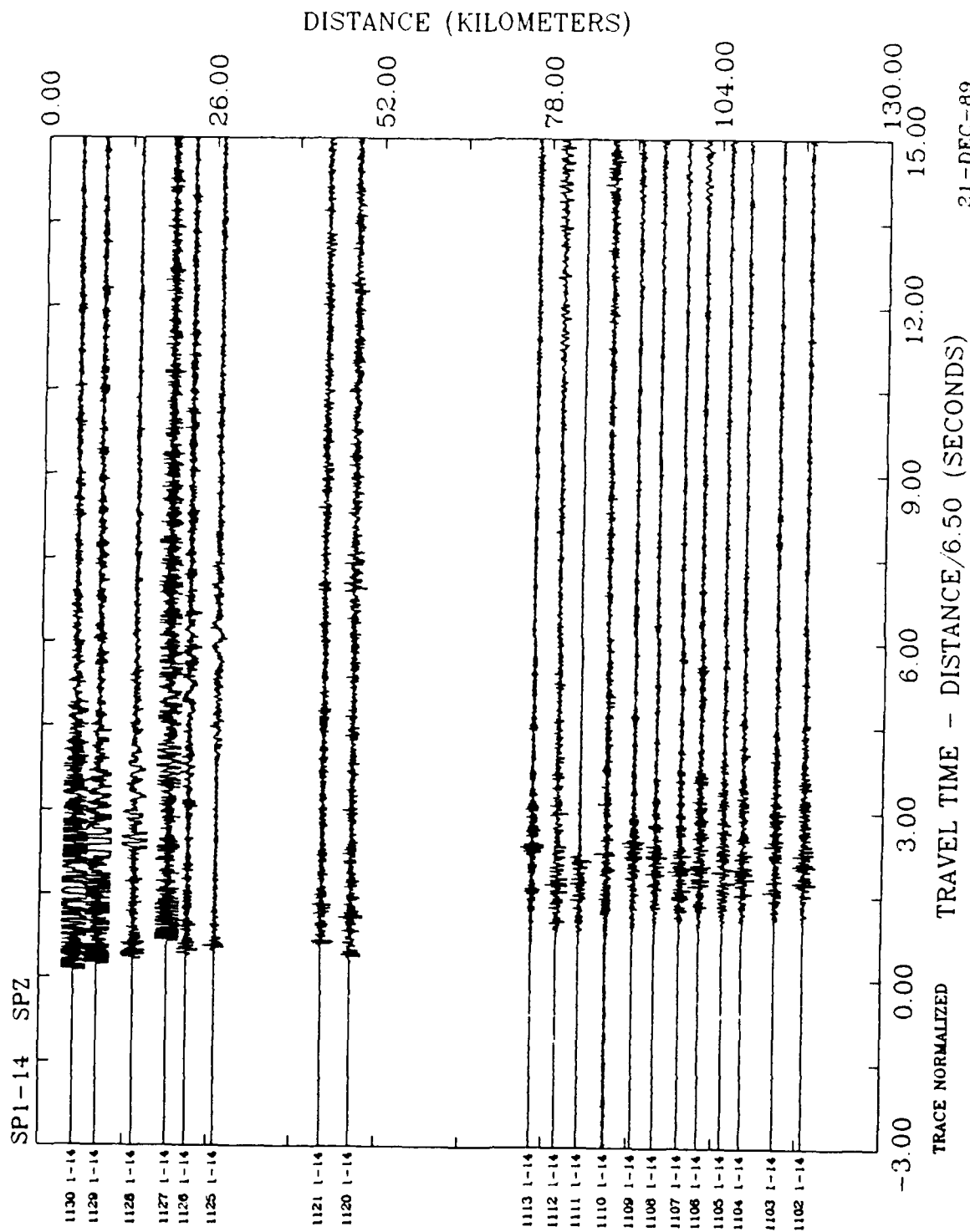


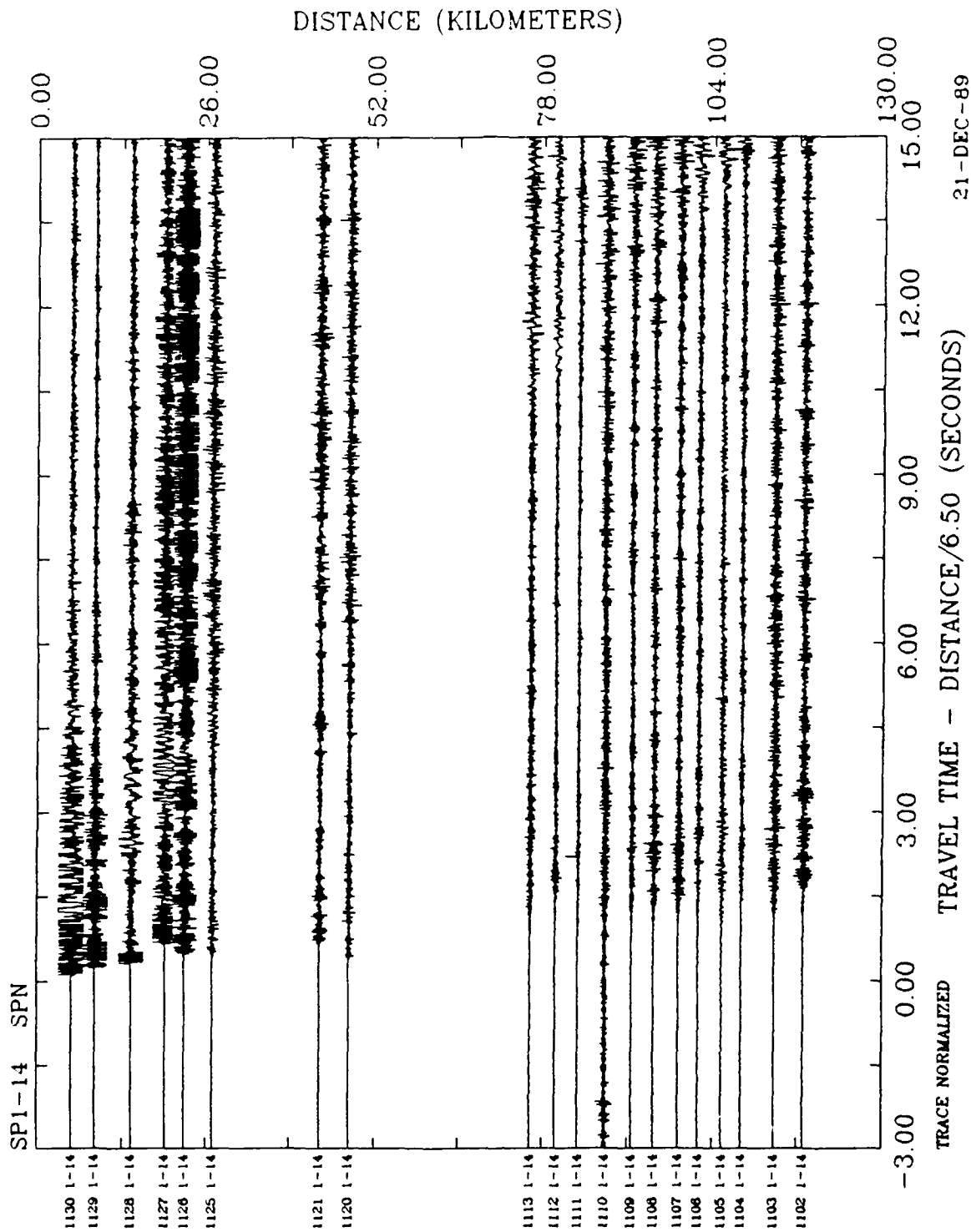




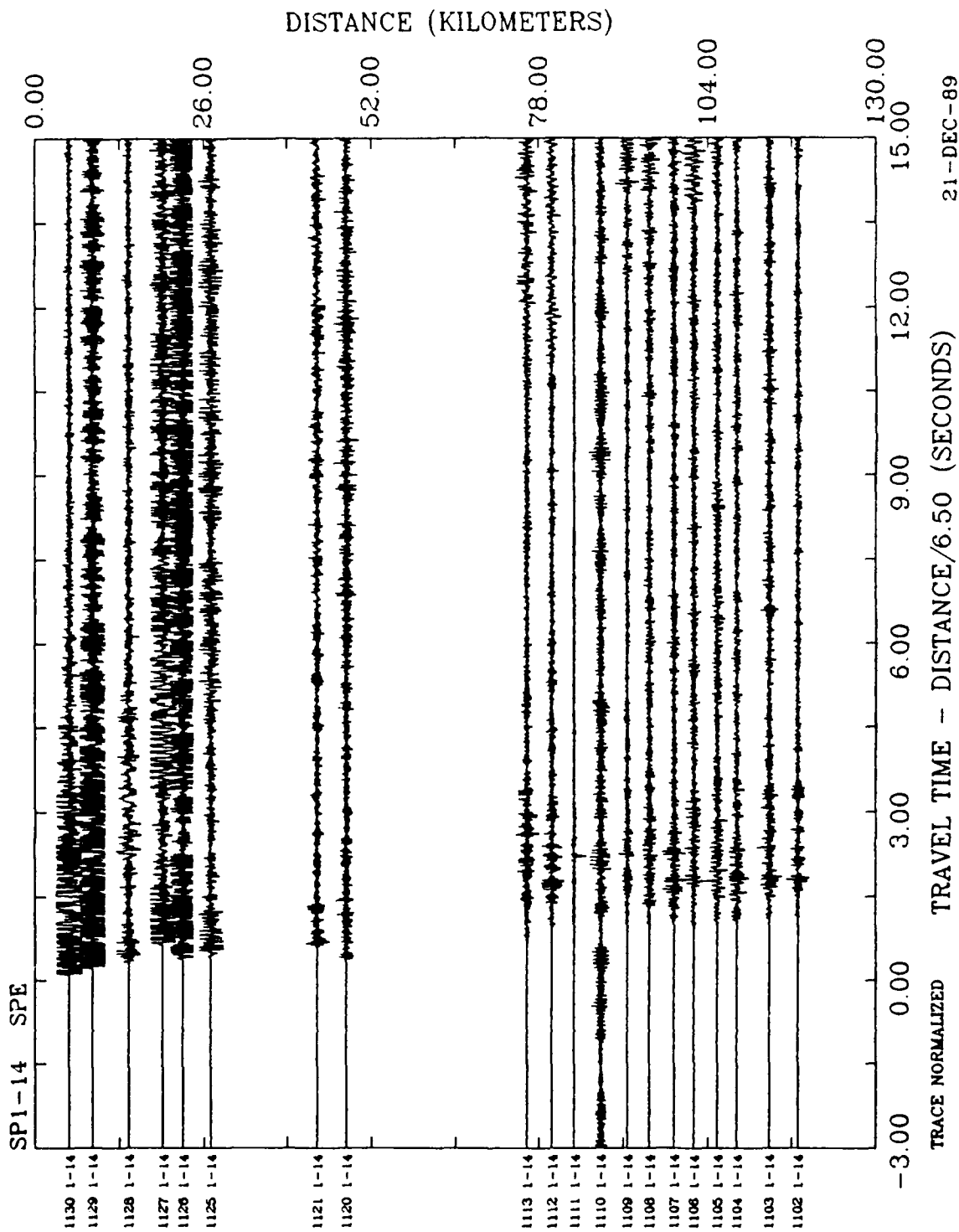


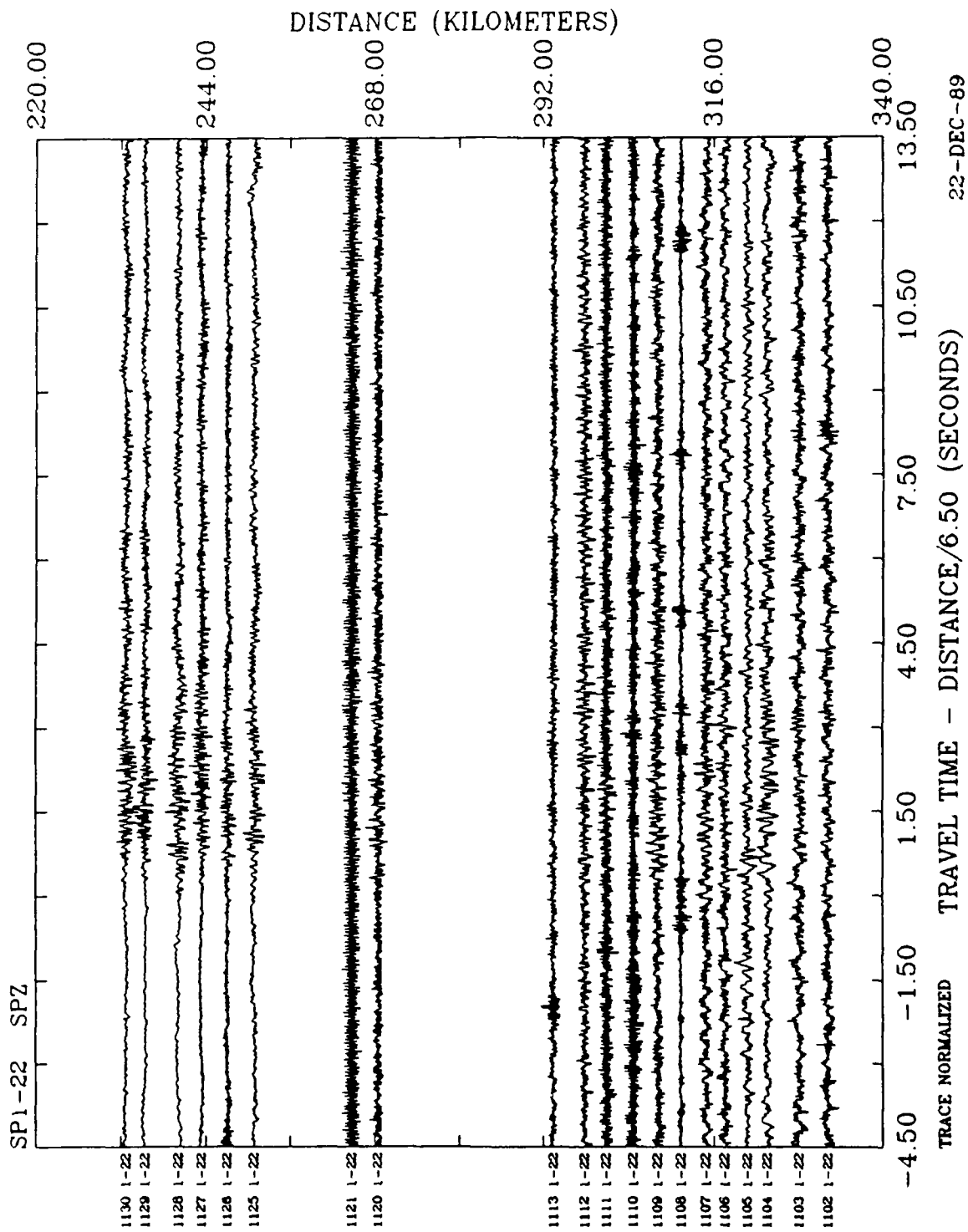


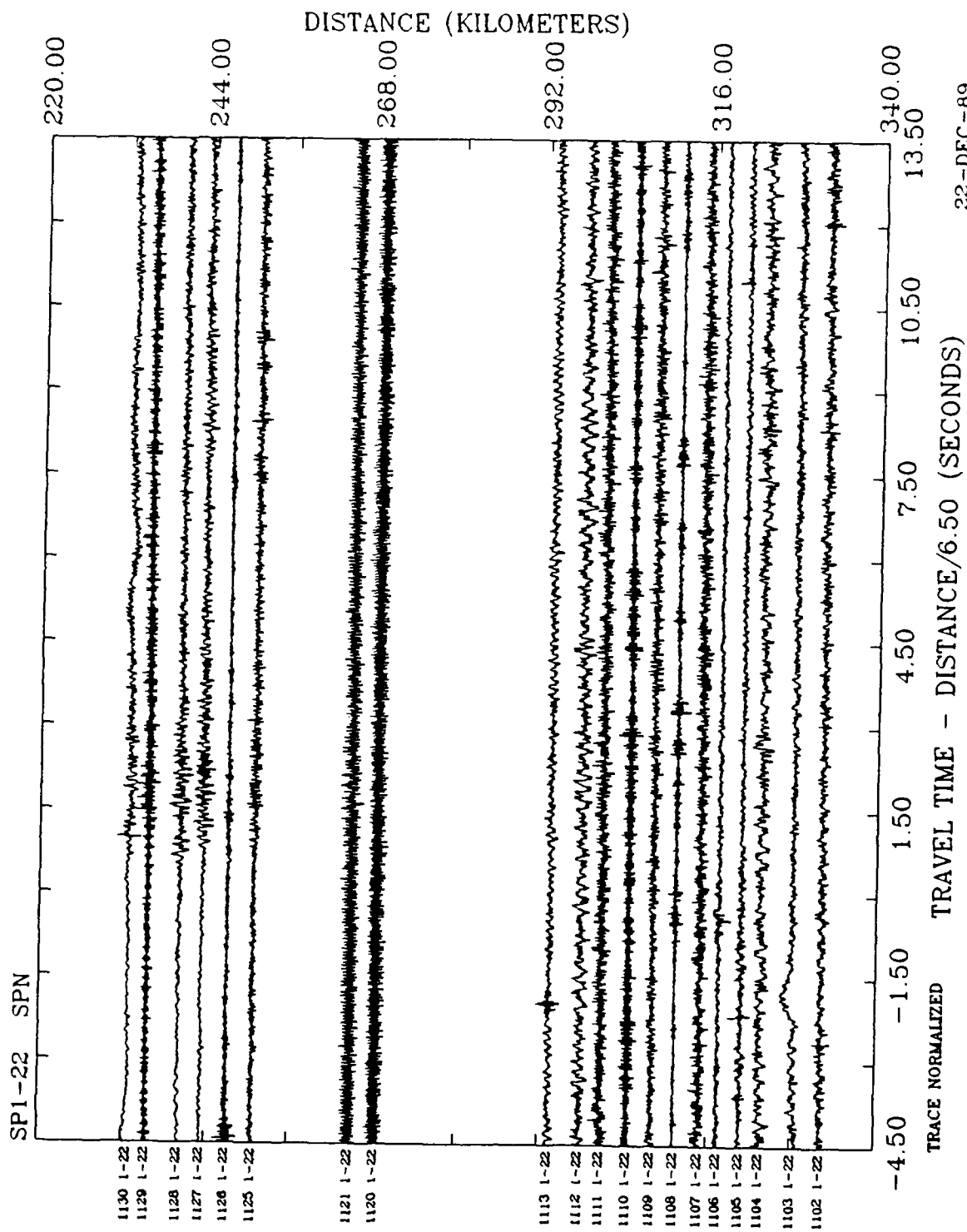




21-DEC-89







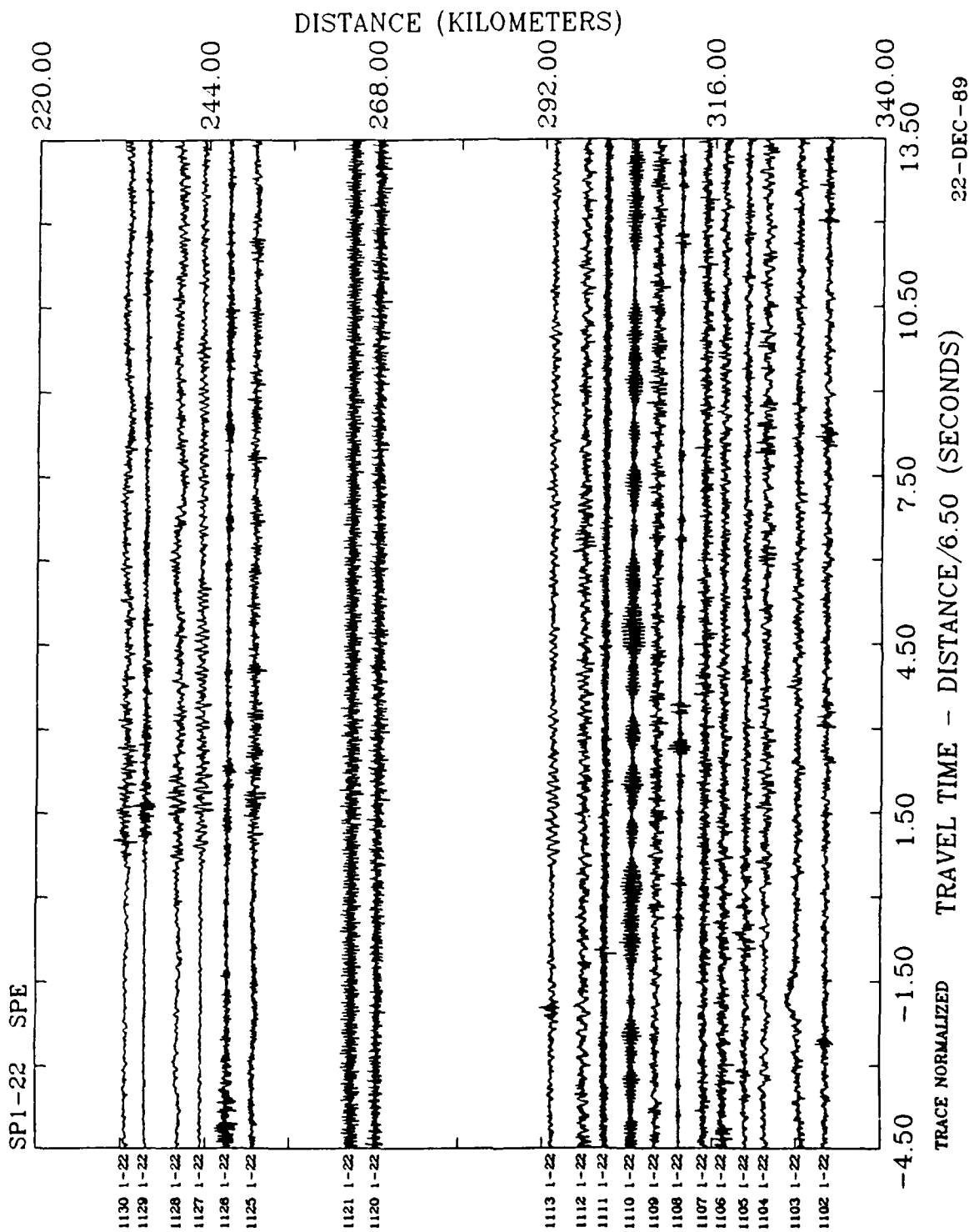
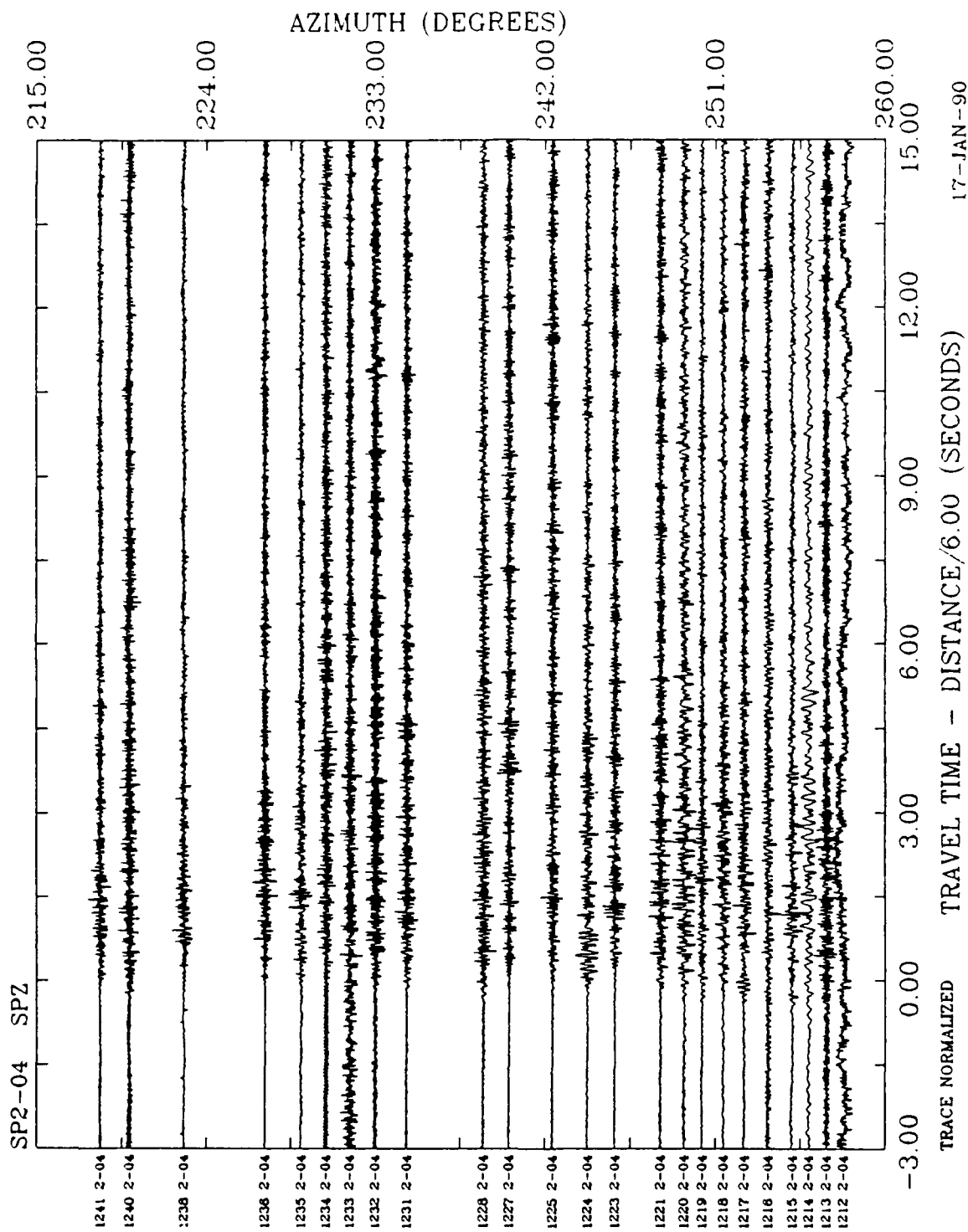
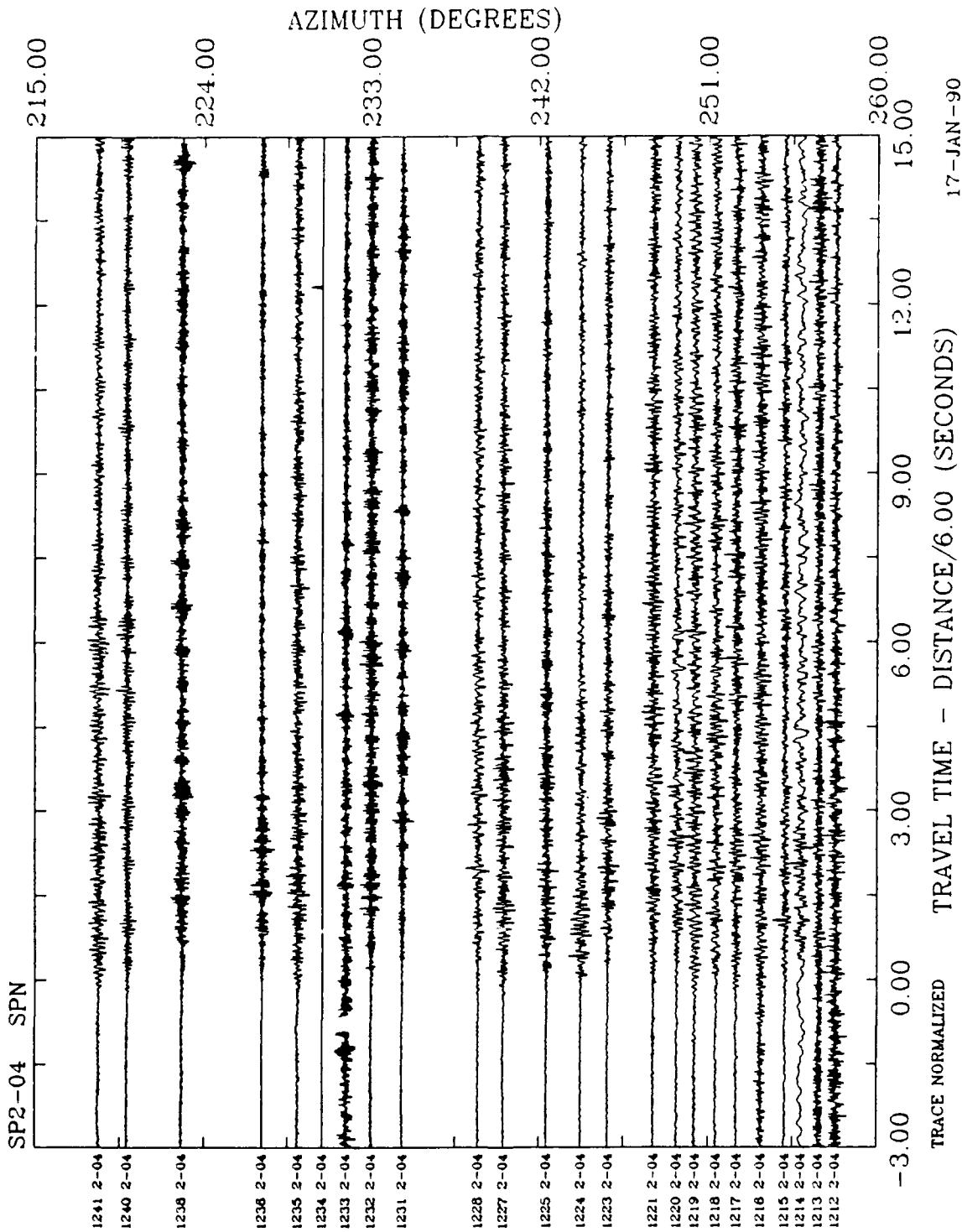


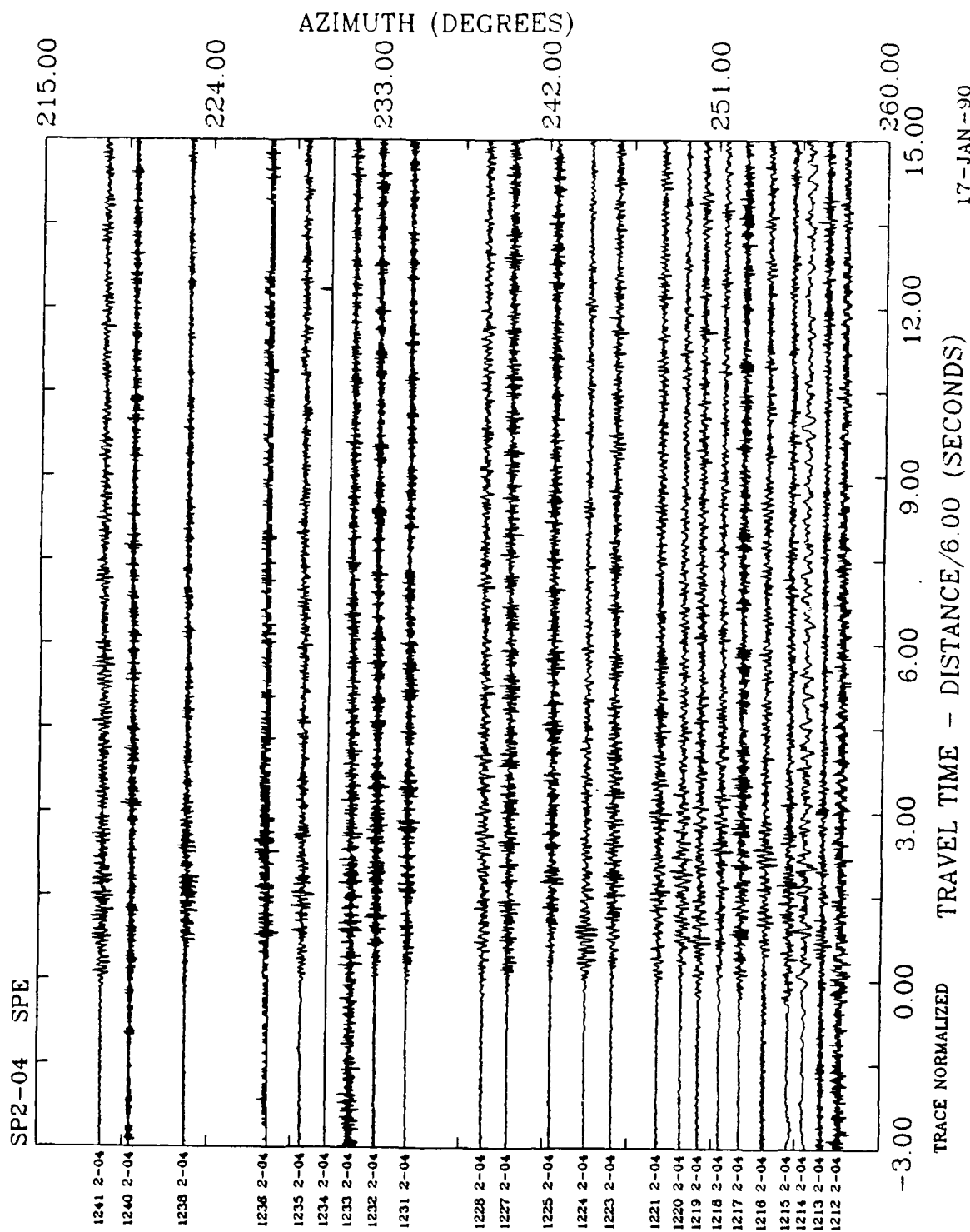
Figure 6.

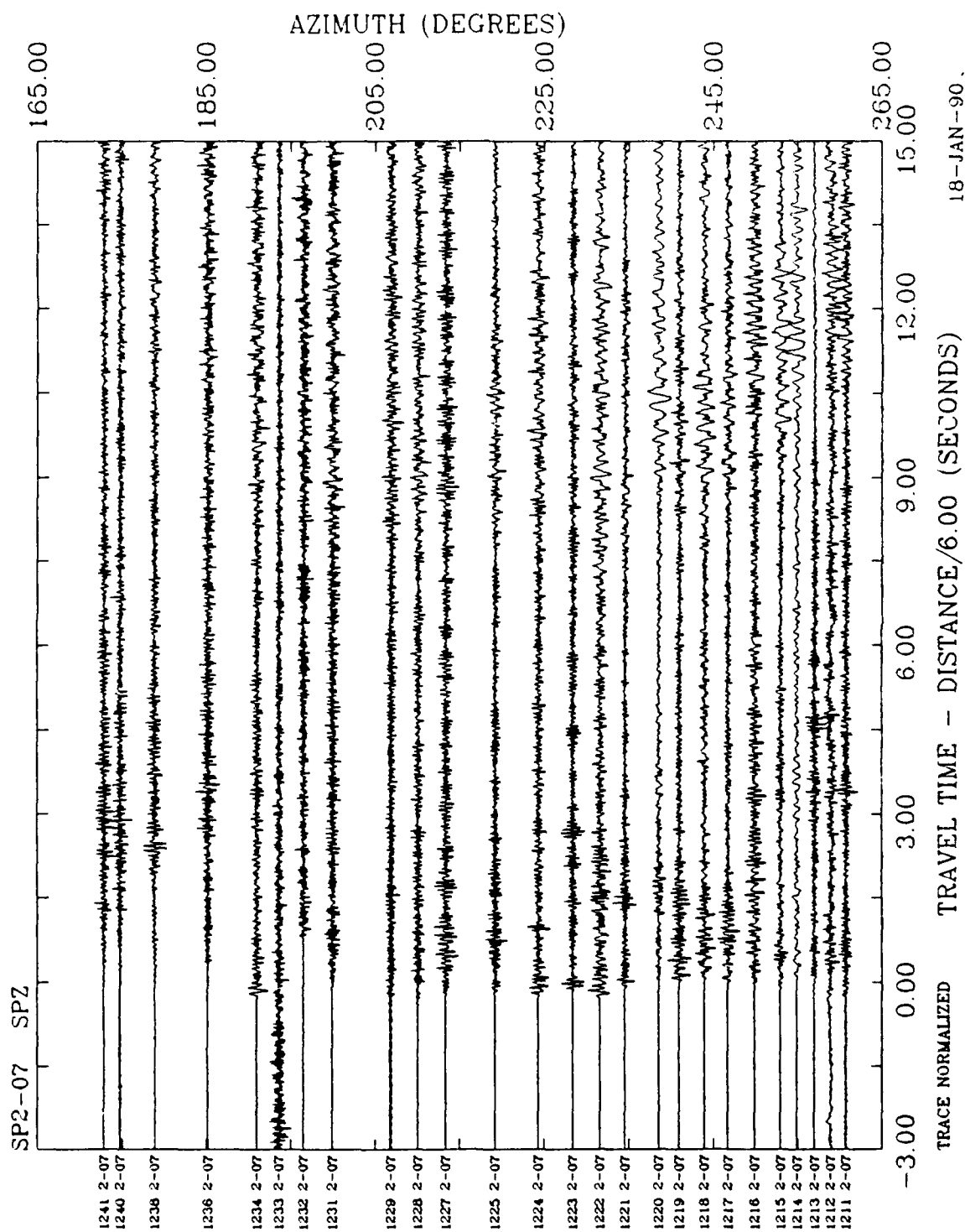
SPZ, SPN, and SPE record sections for Deployment Two.

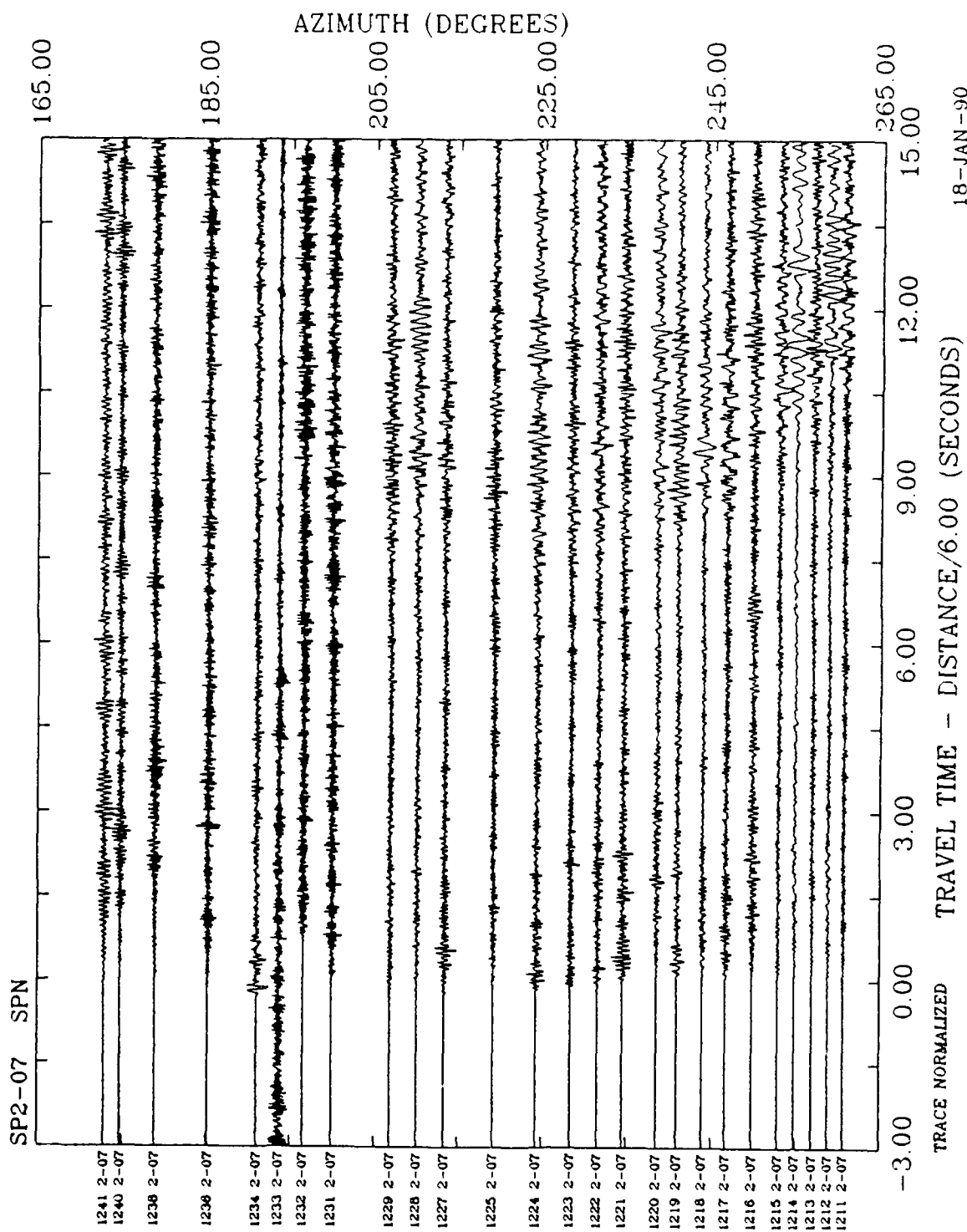
SP2-04
SP2-07
SP2-08
SP2-09
SP2-10
SP2-11
SP2-12
SP2-13
SP2-14
SP2-17
SP2-20
SP2-21
SP2-22

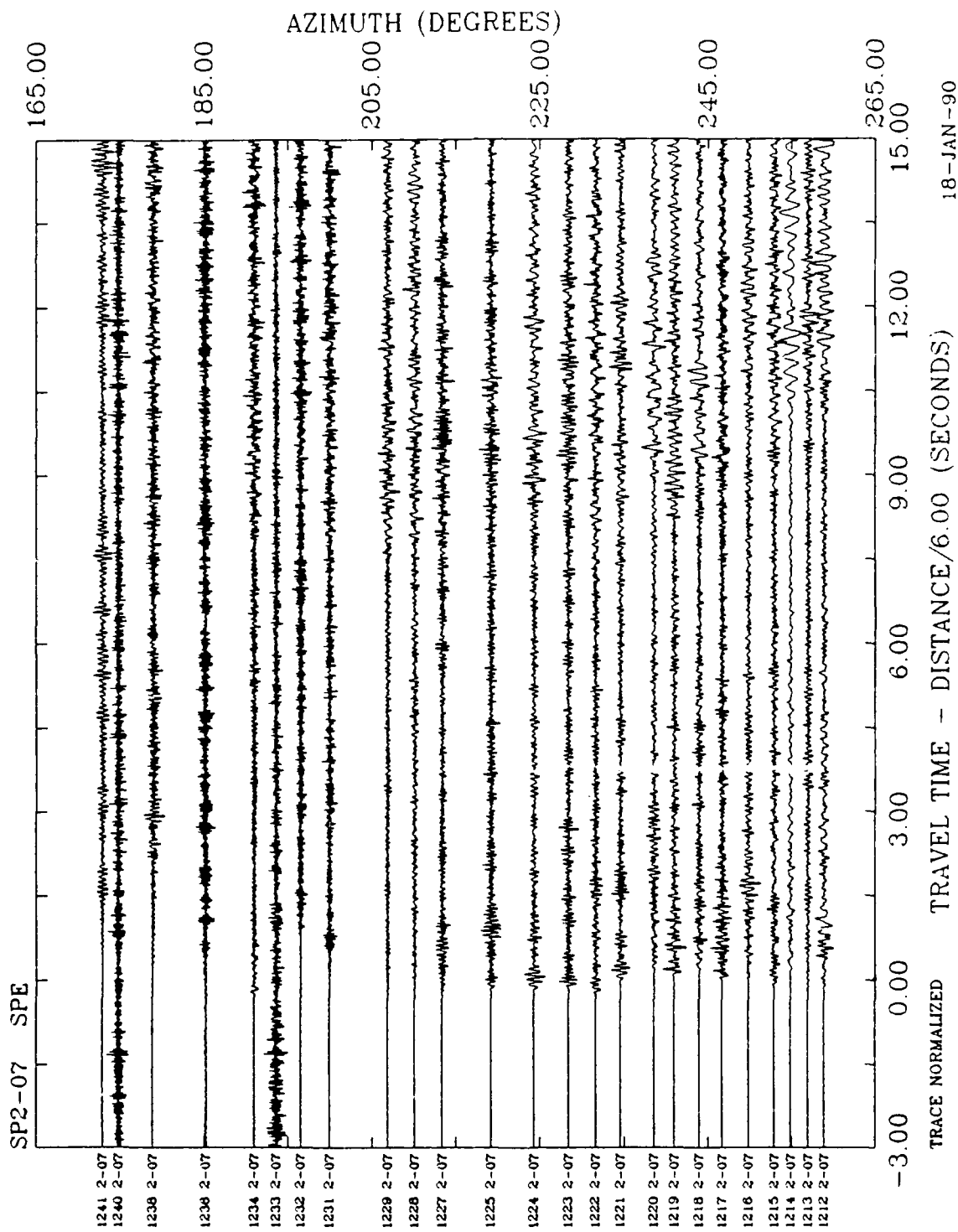


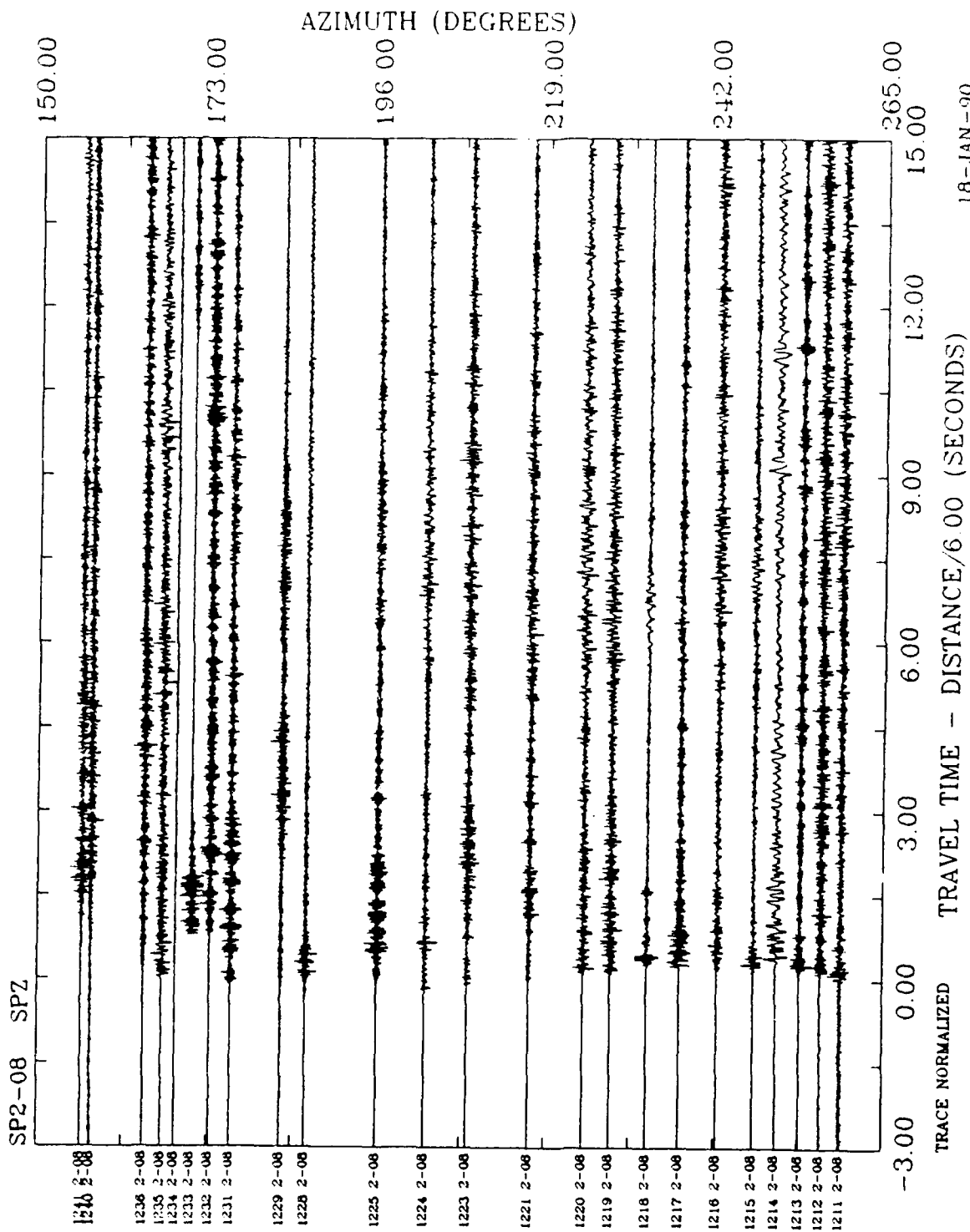


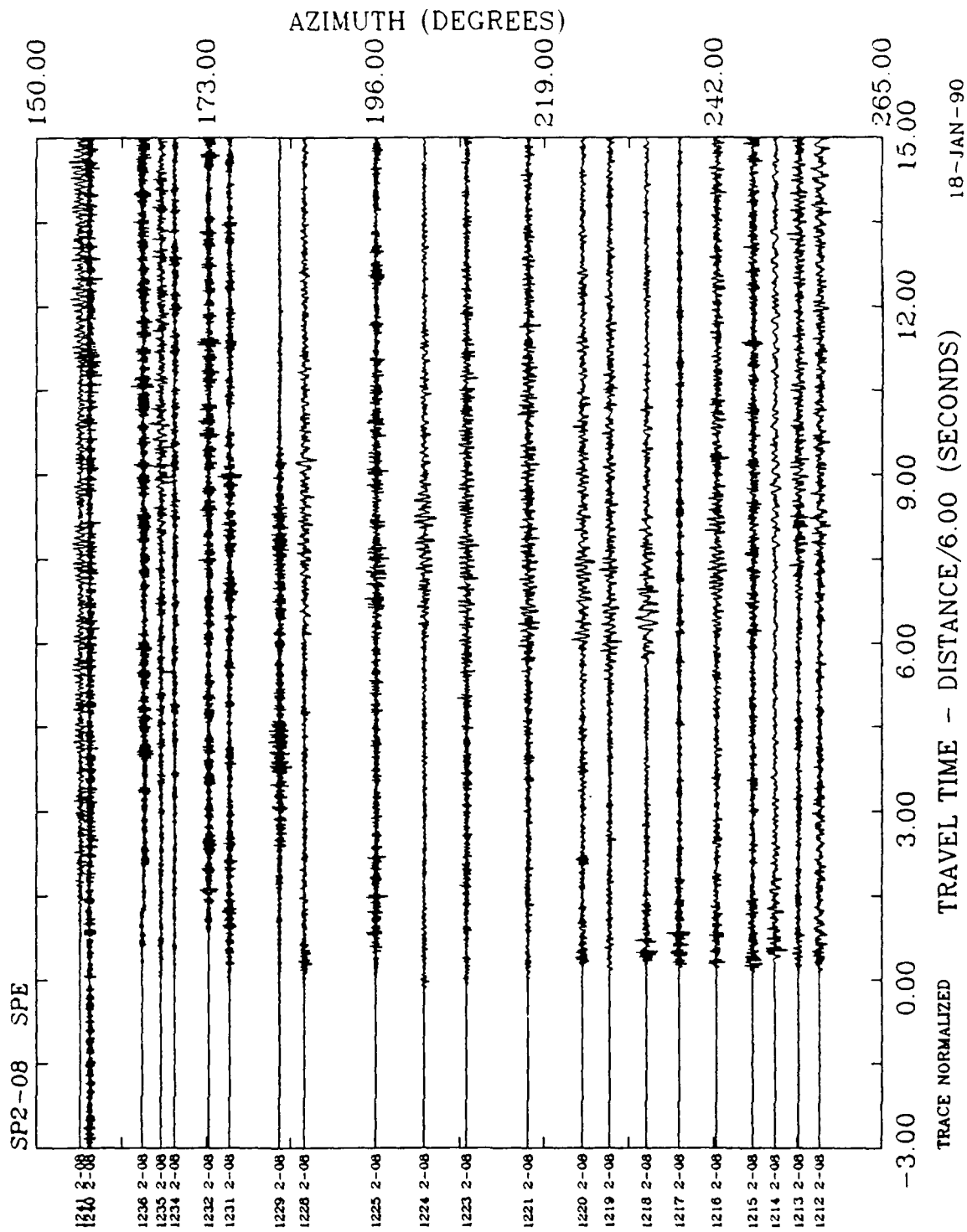


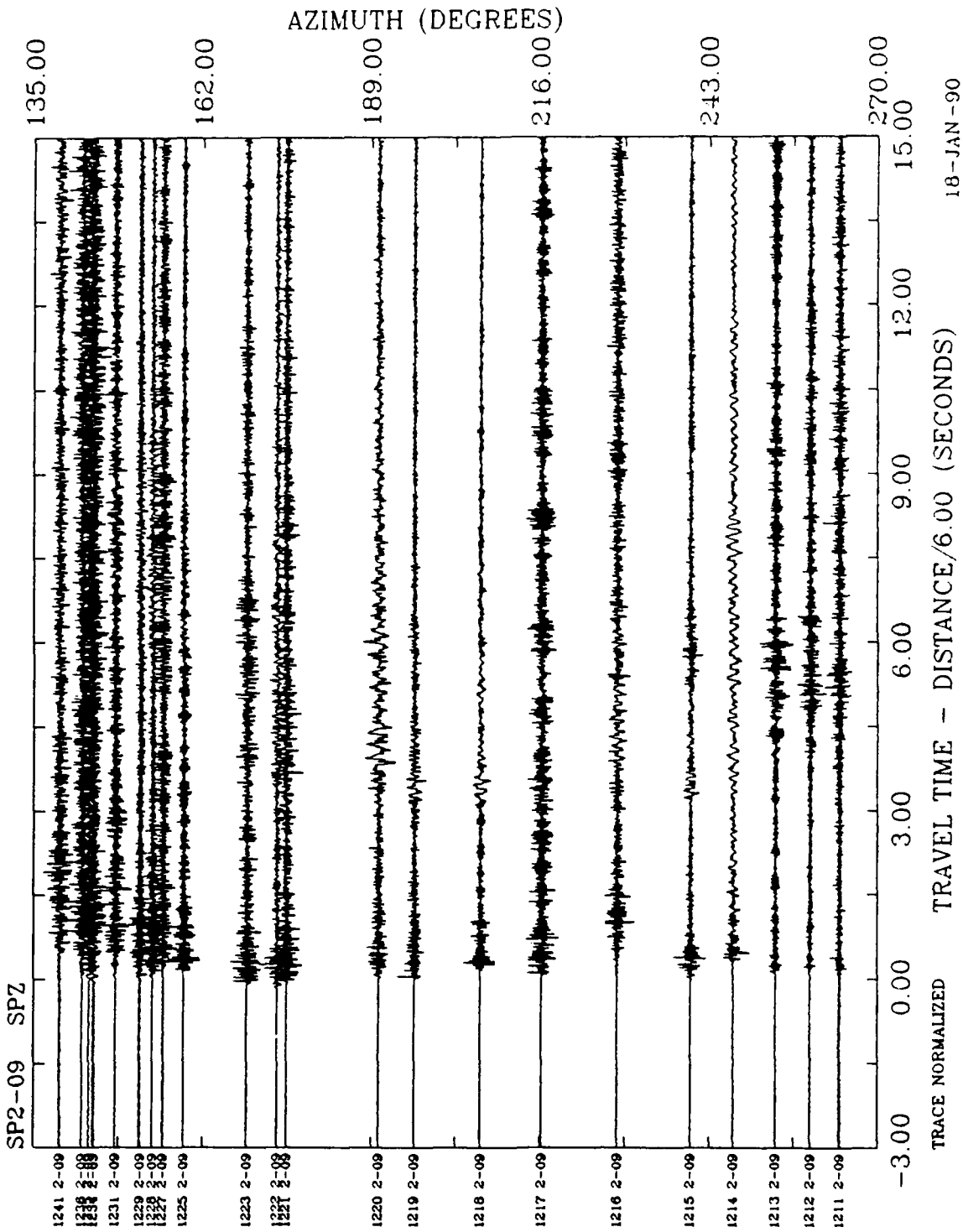


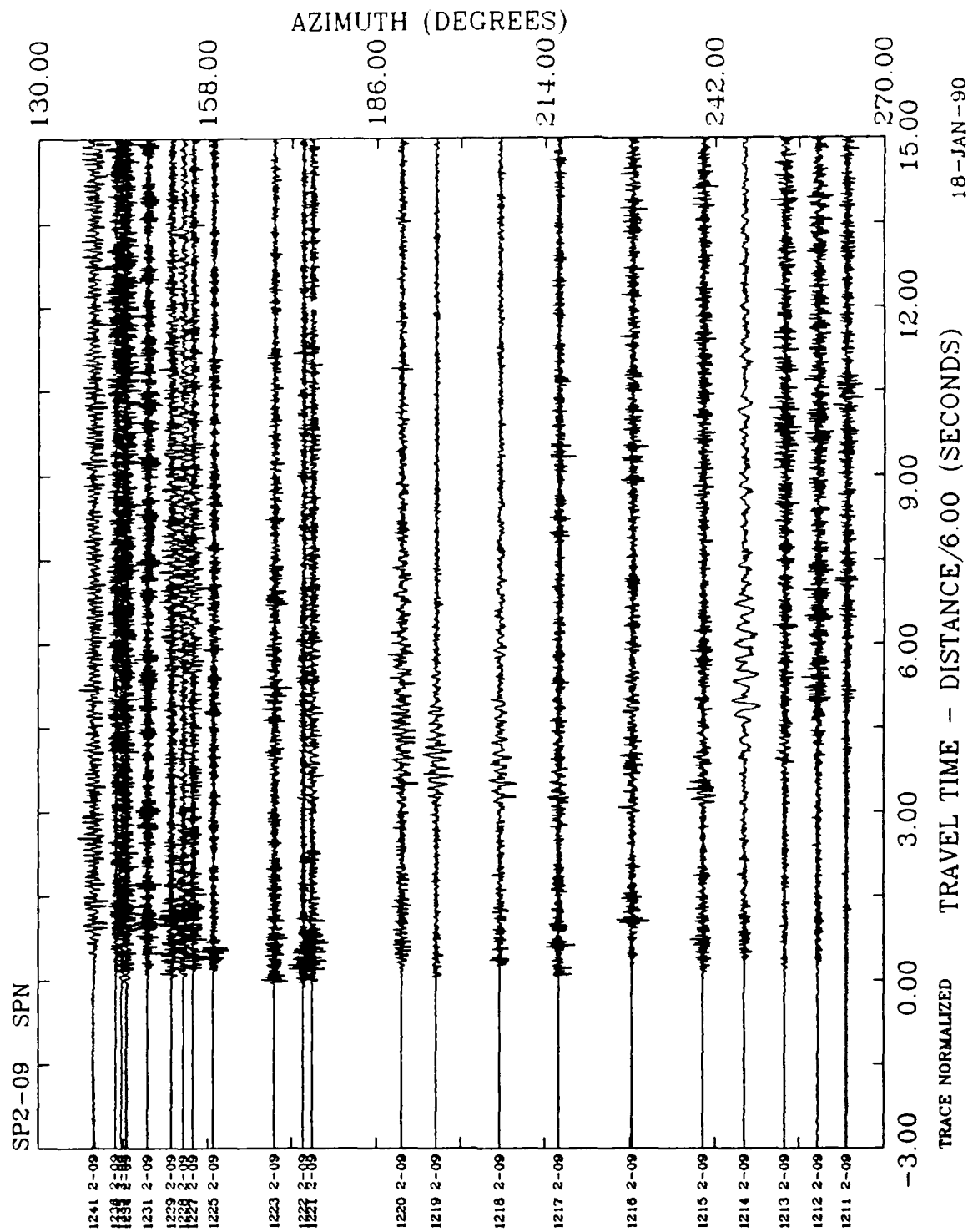


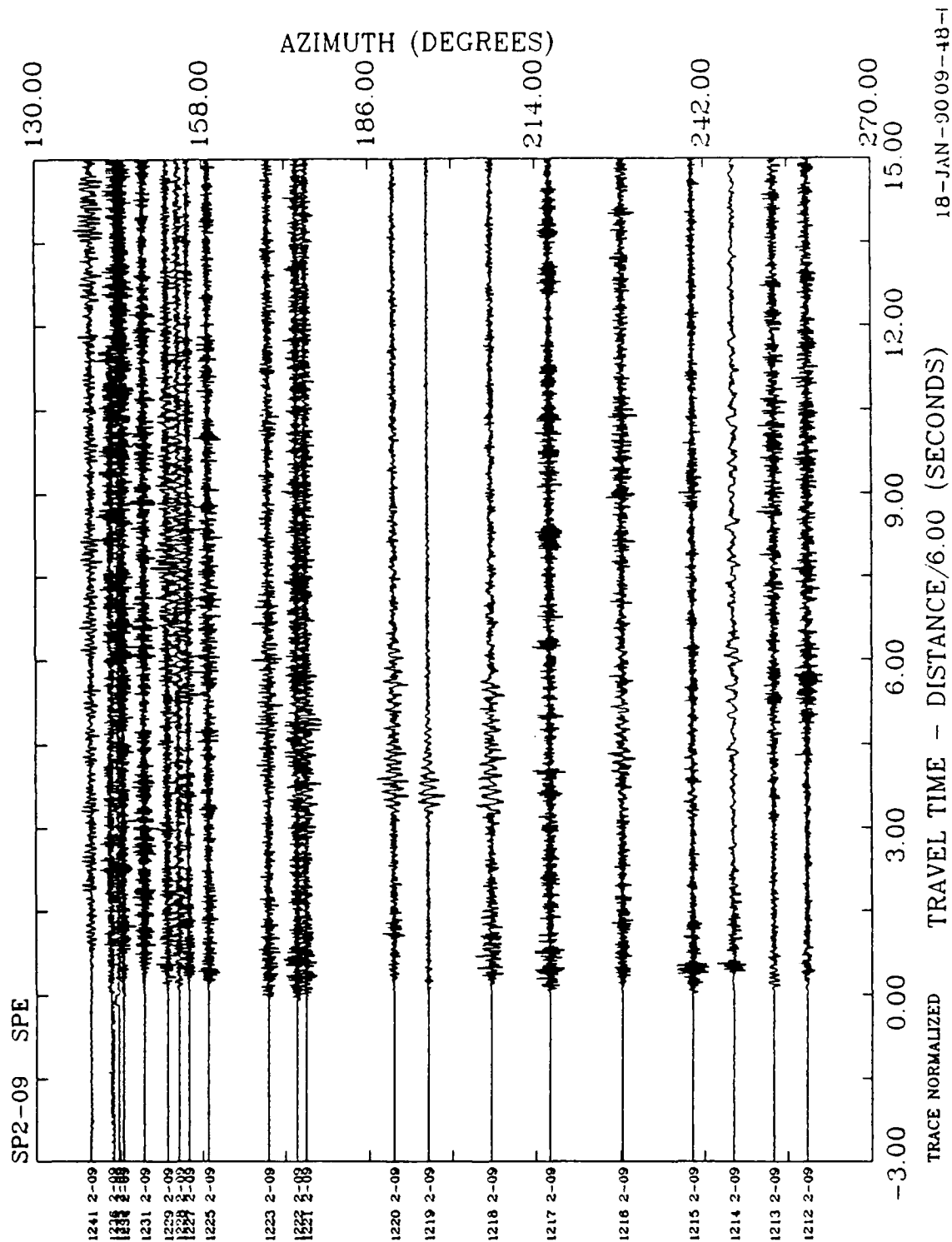


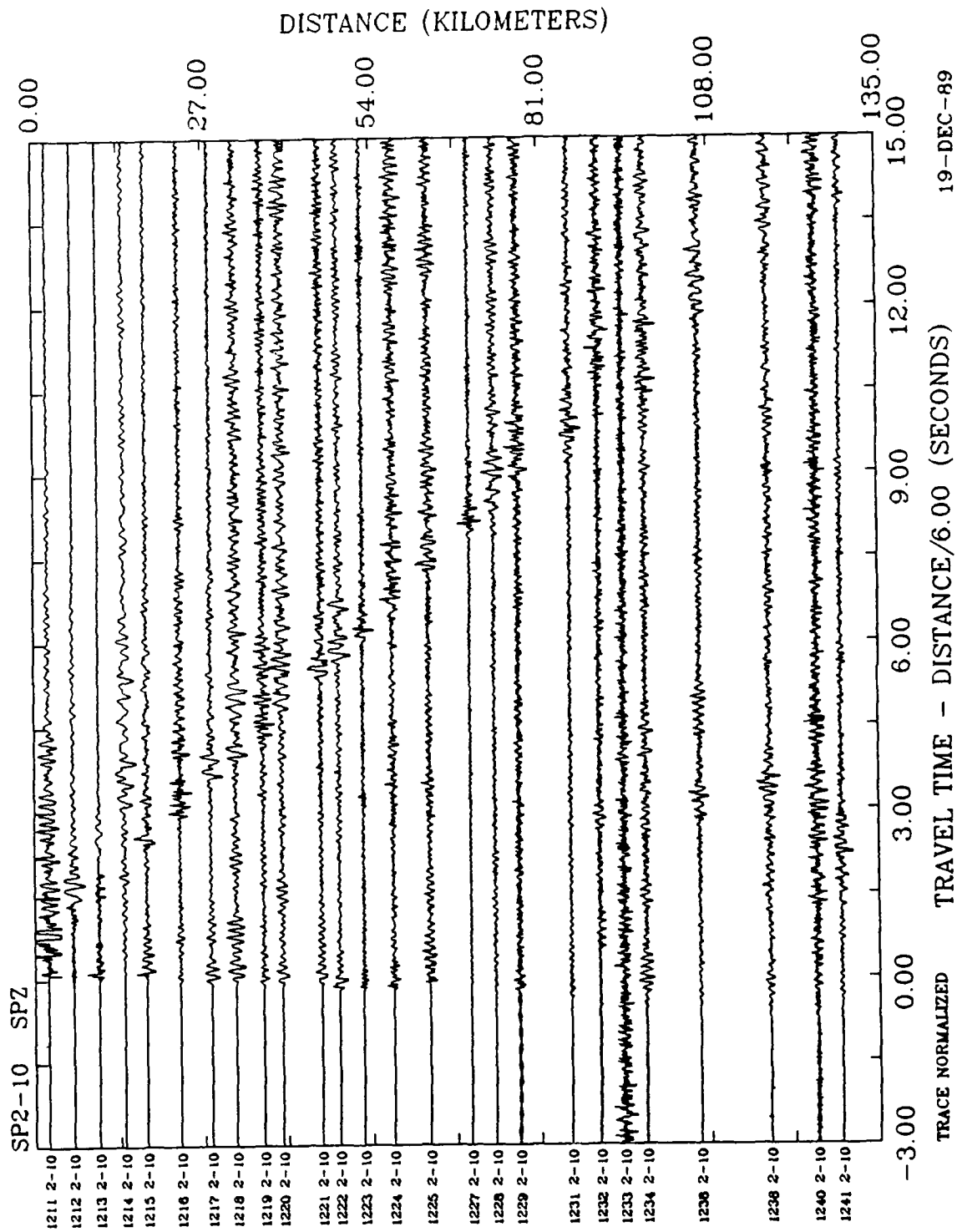


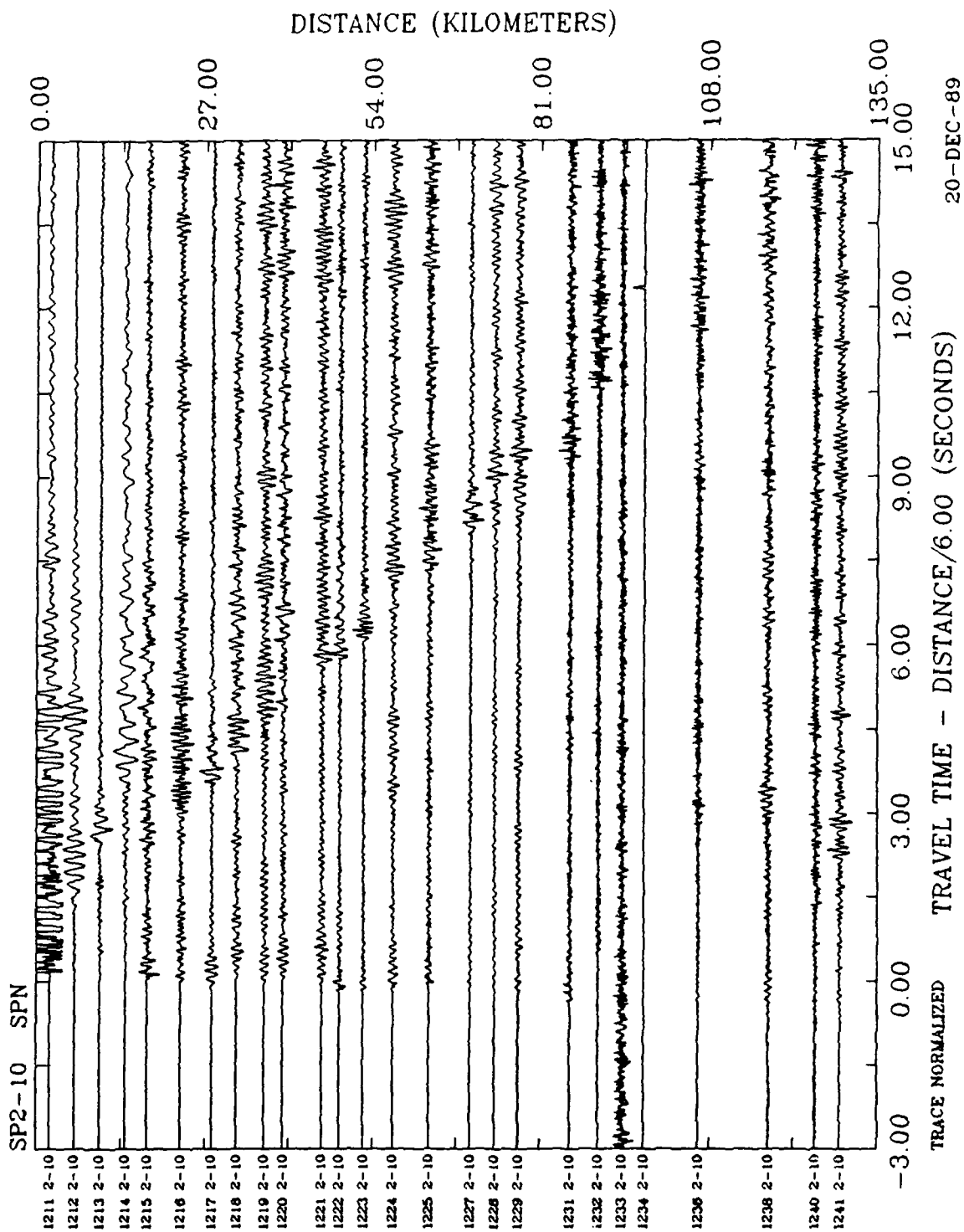




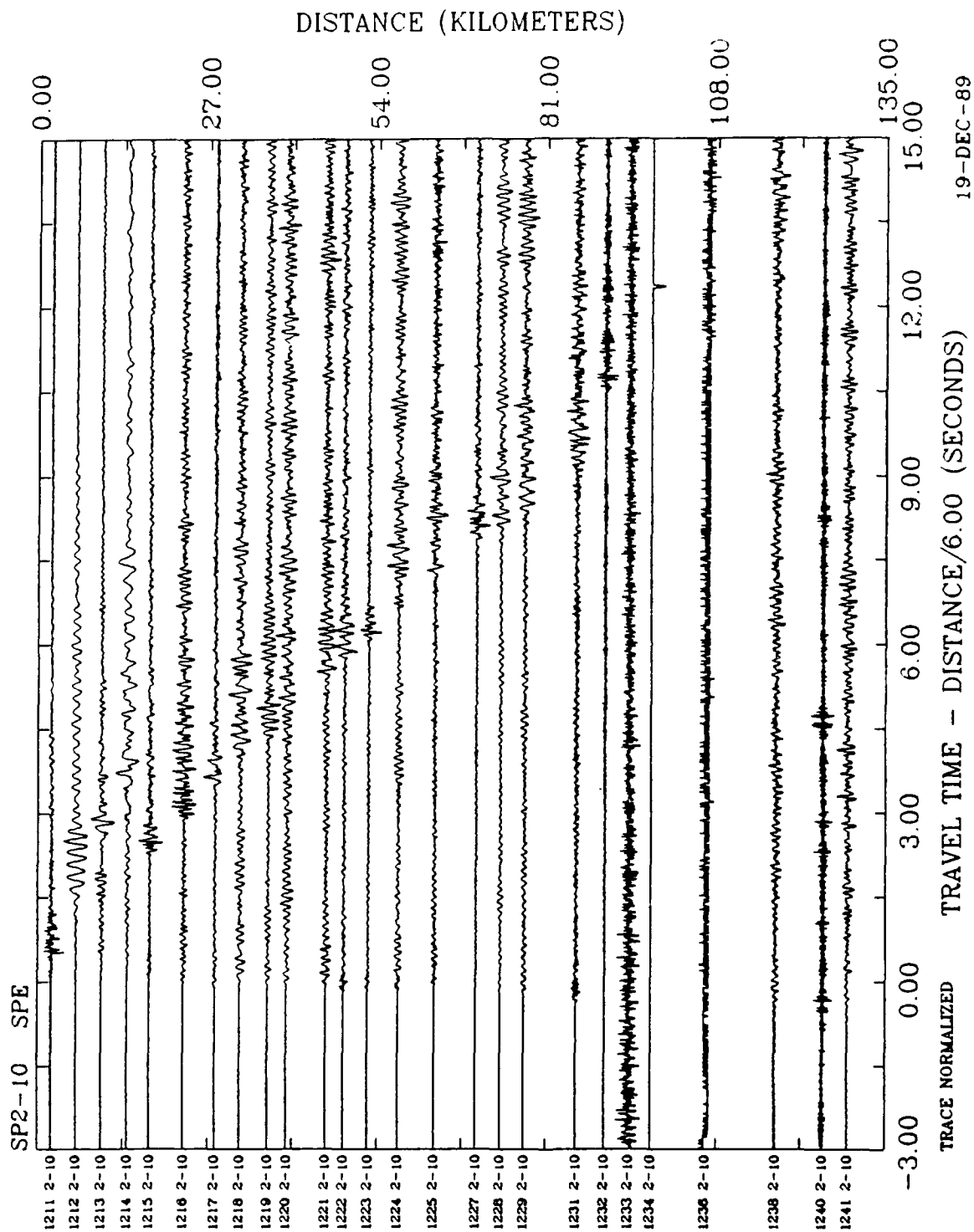


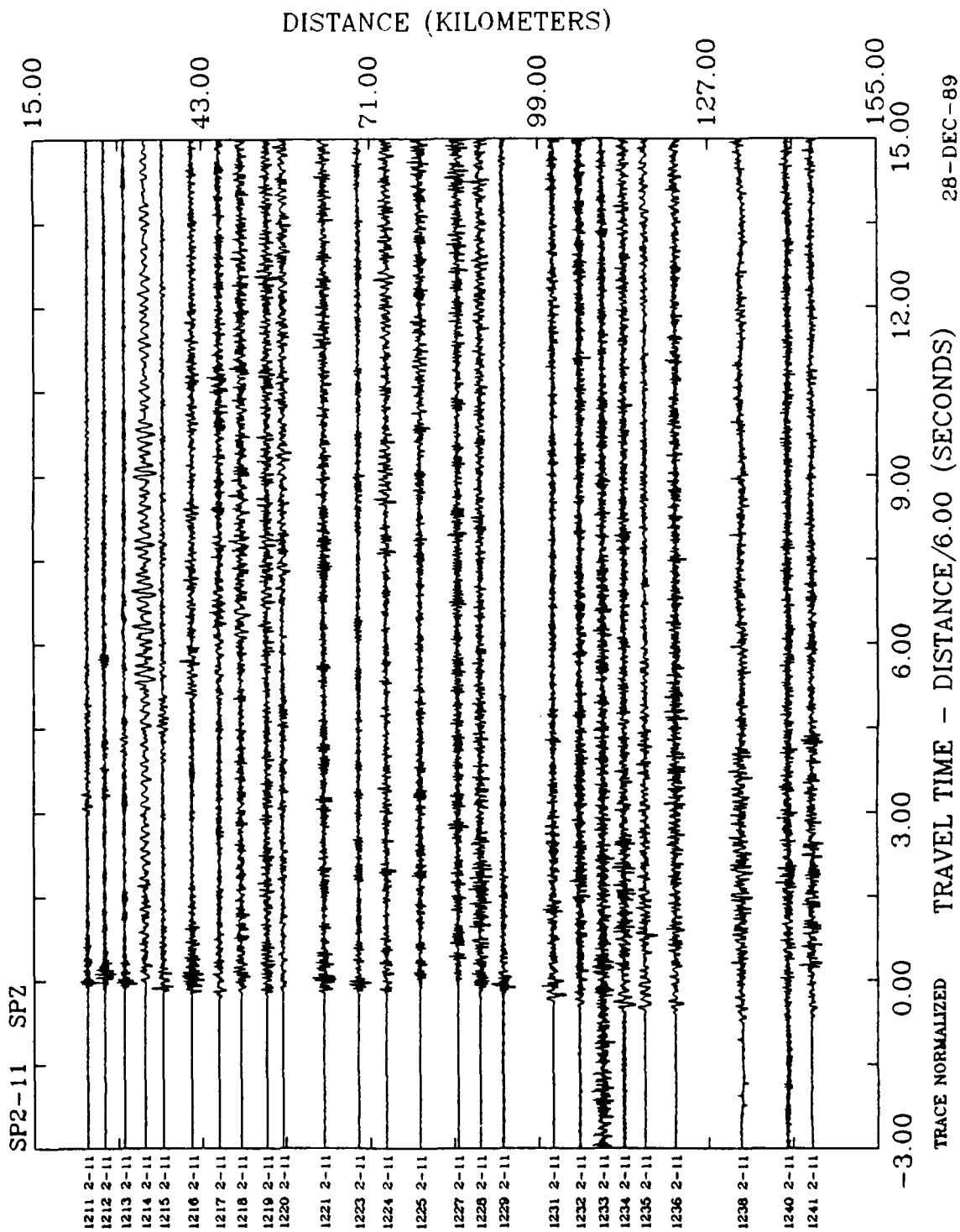


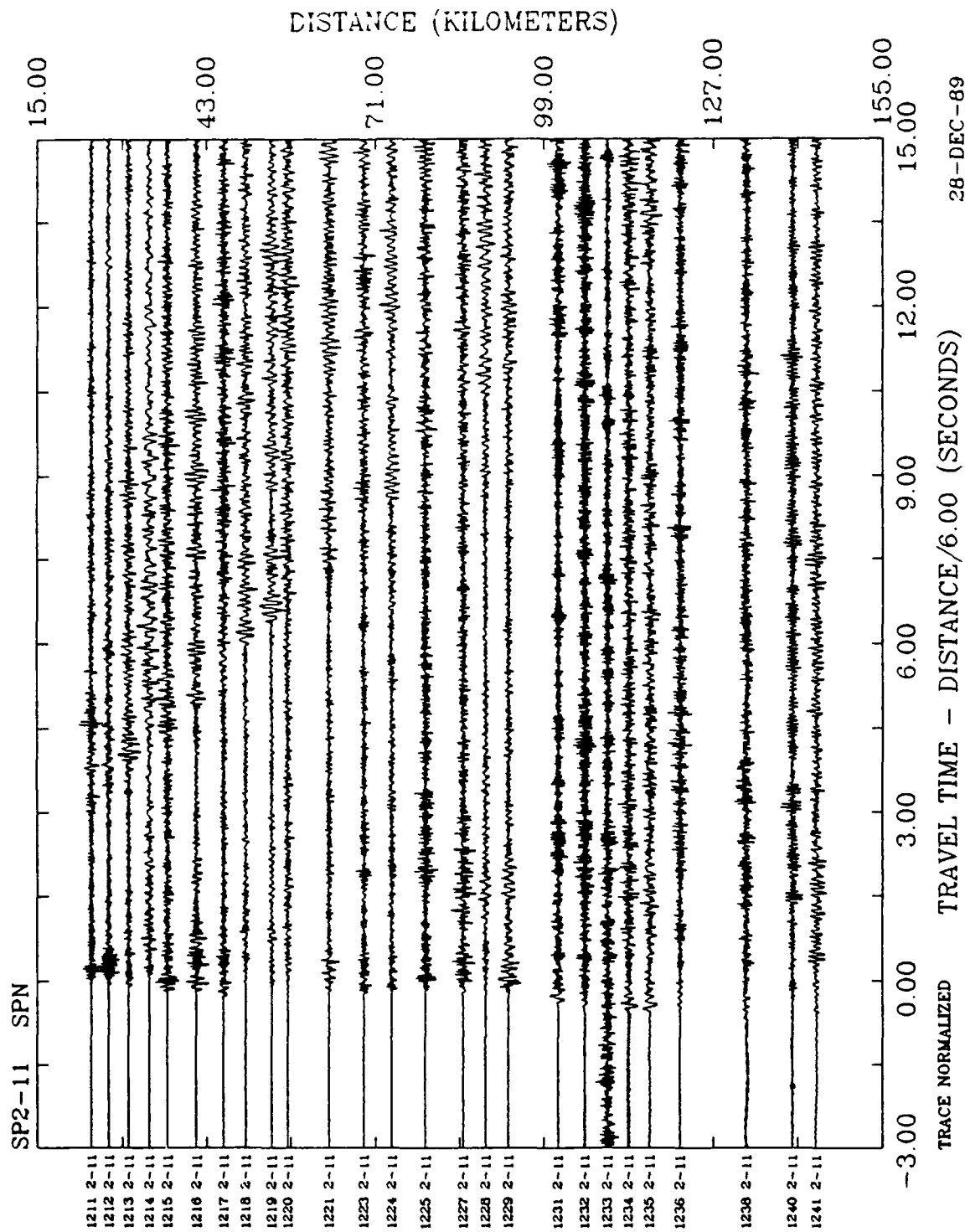


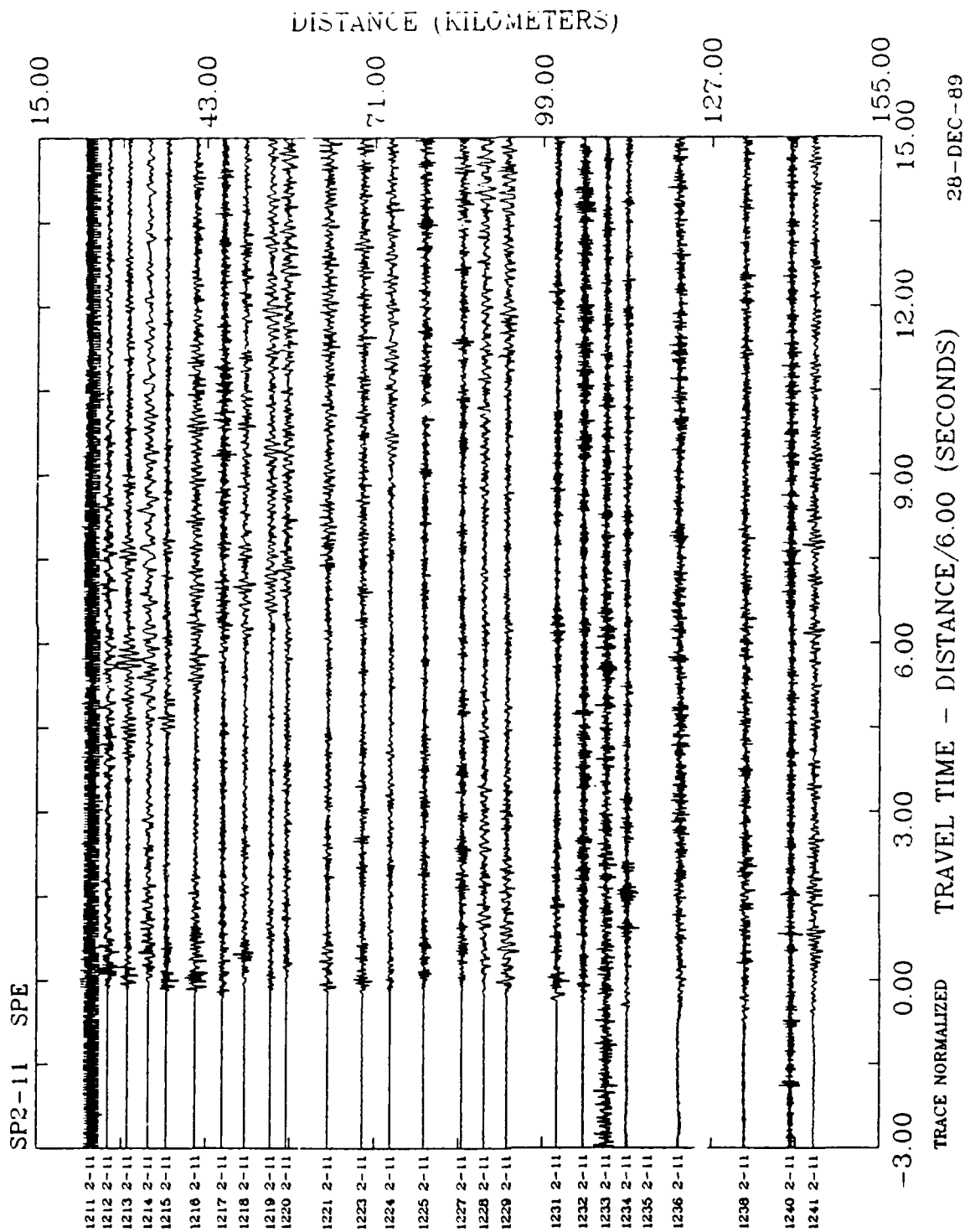


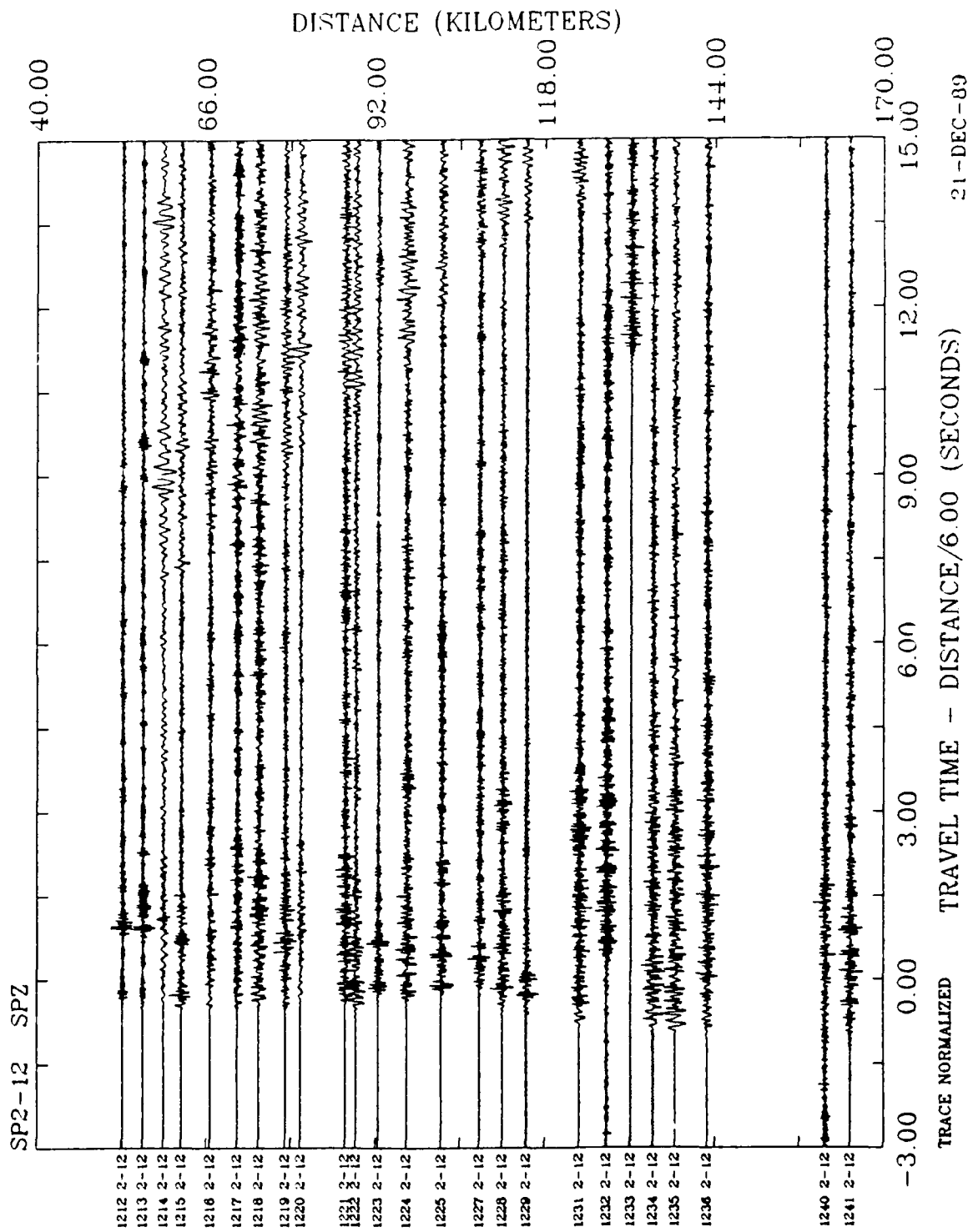
20-DEC-89

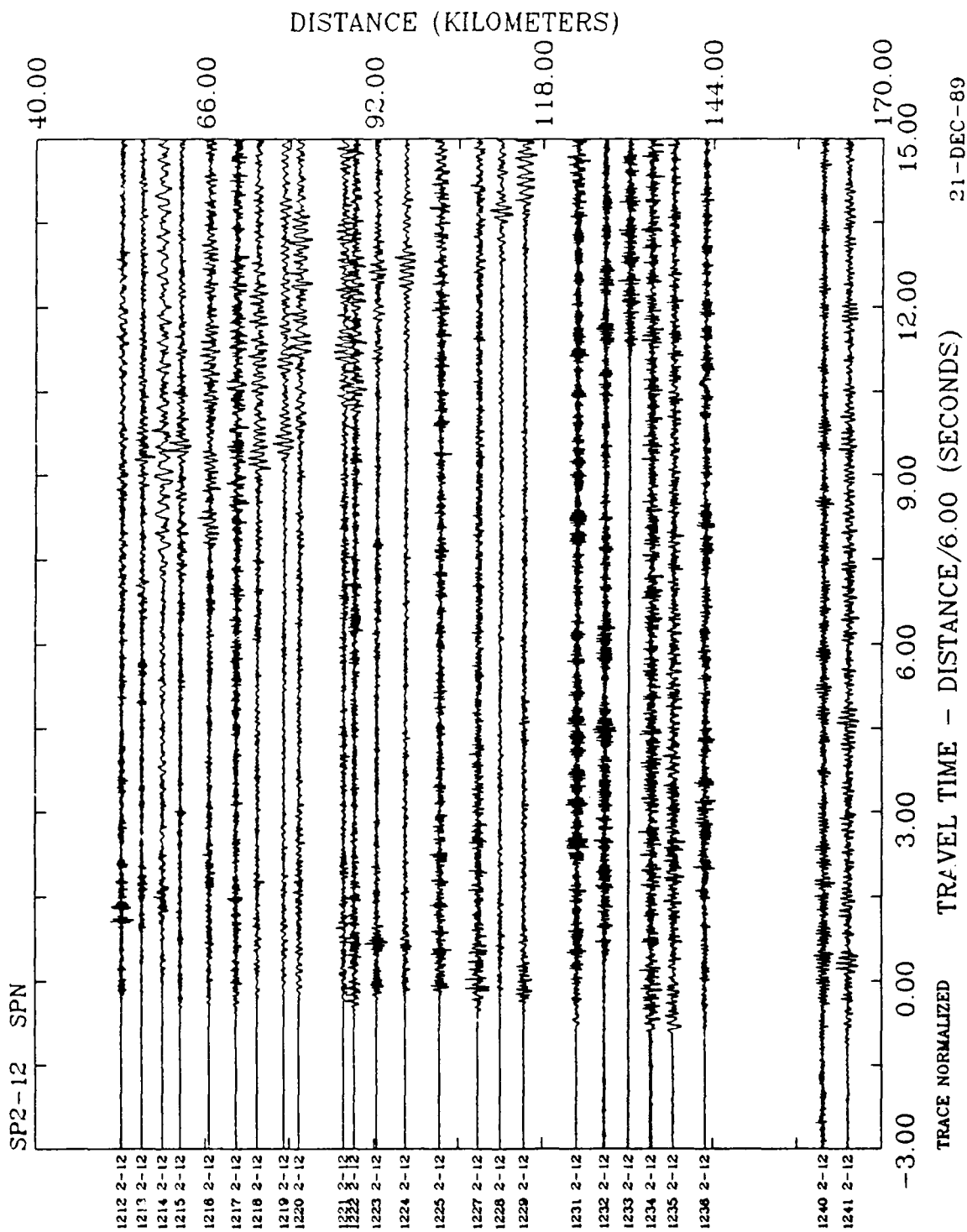


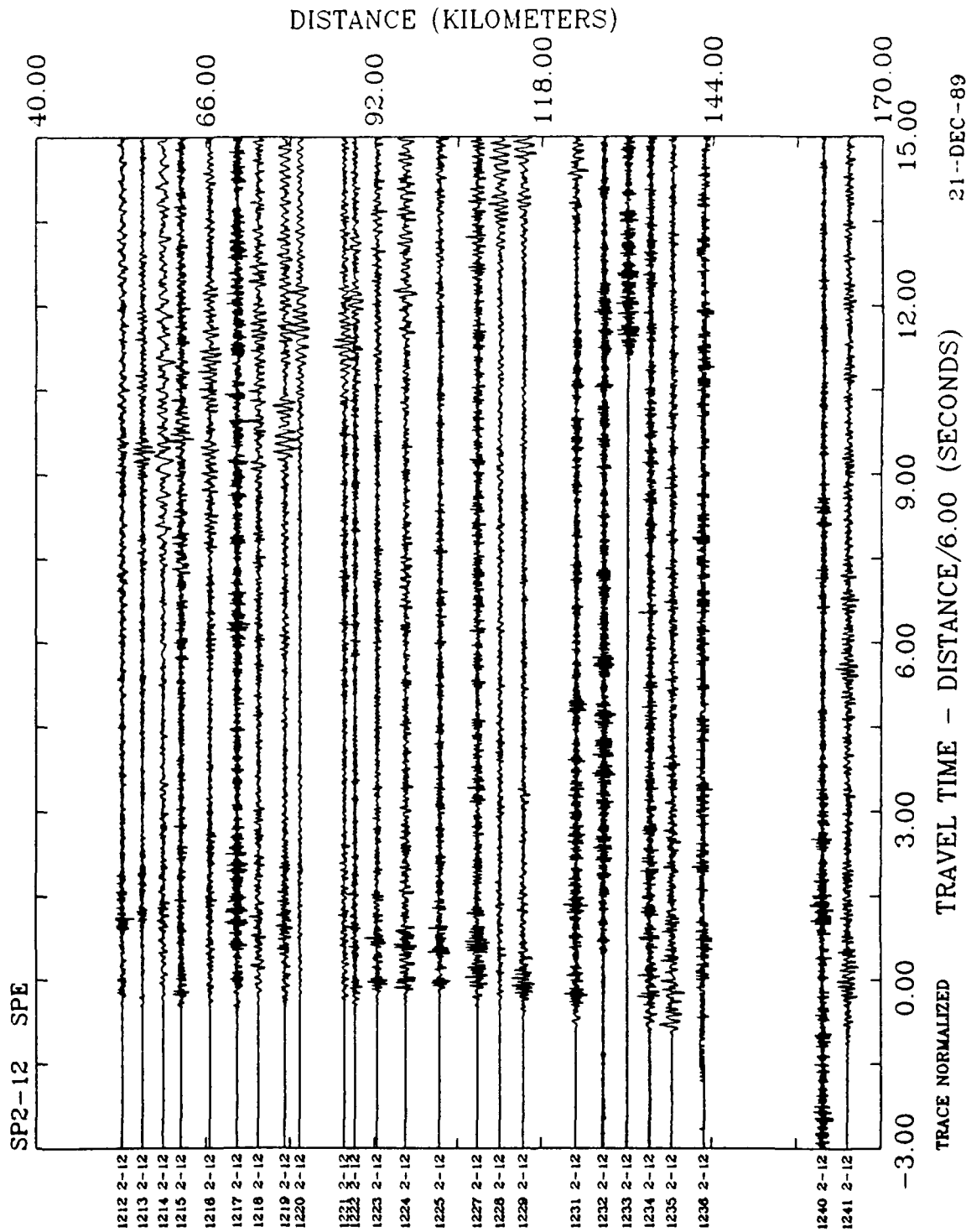


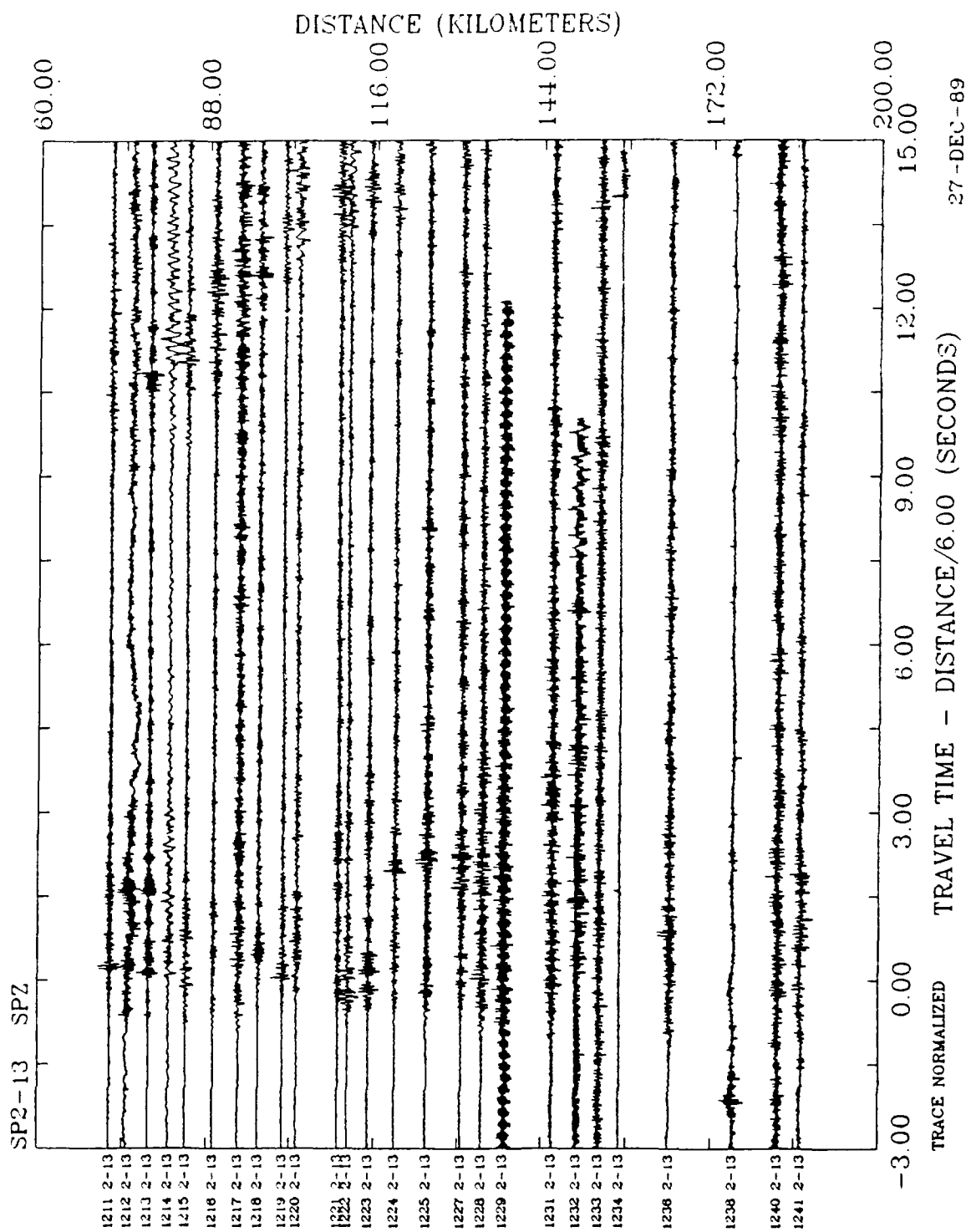


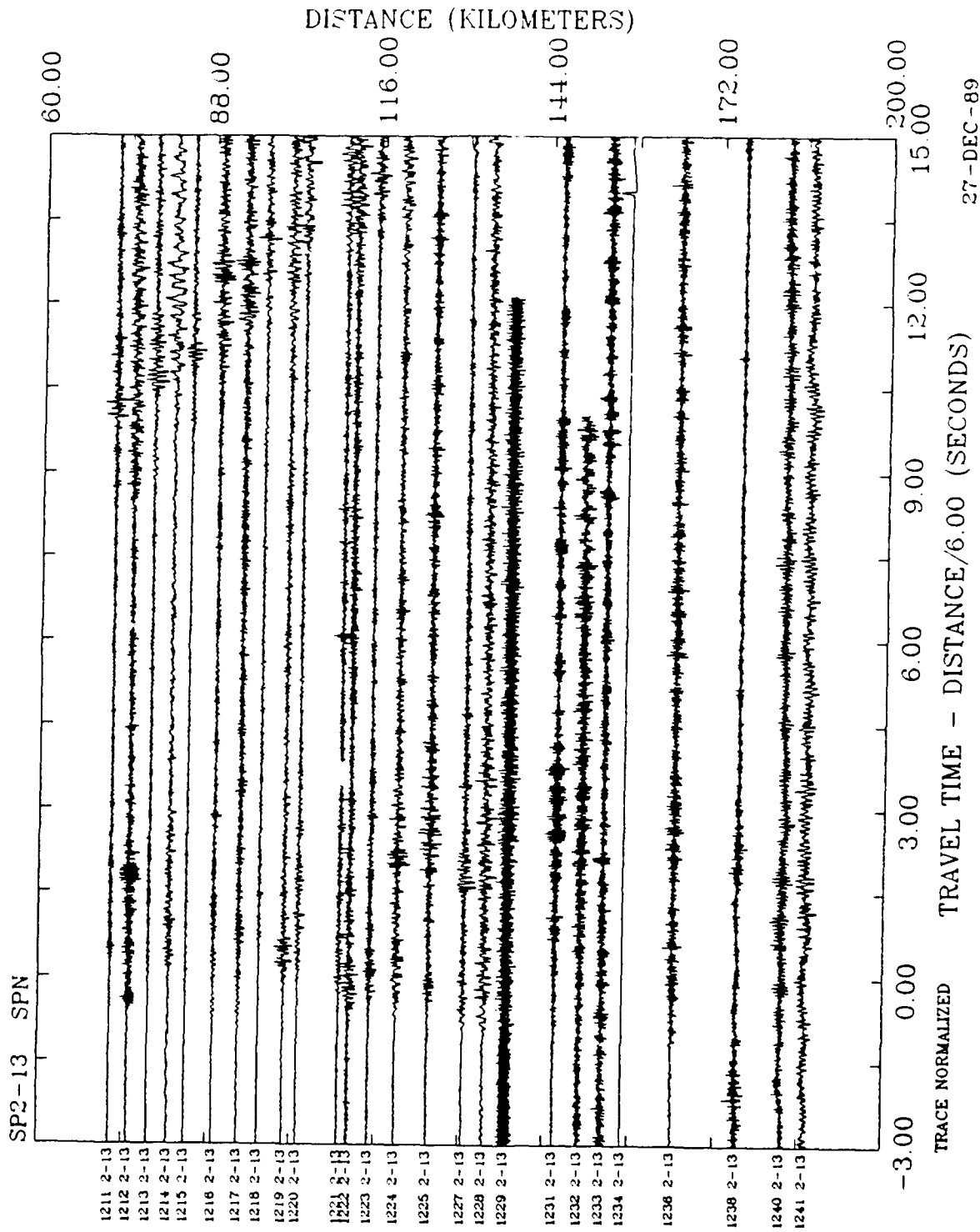


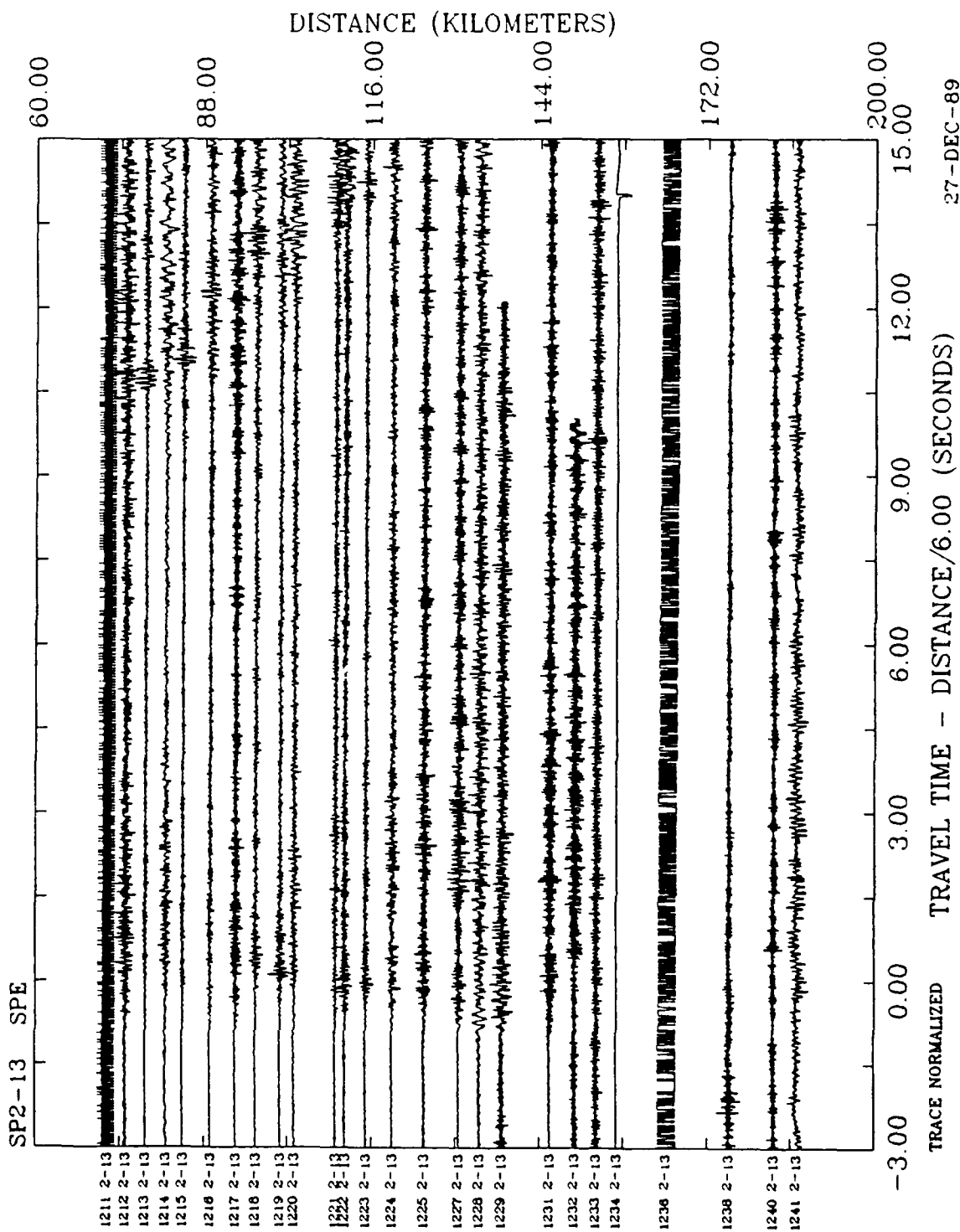


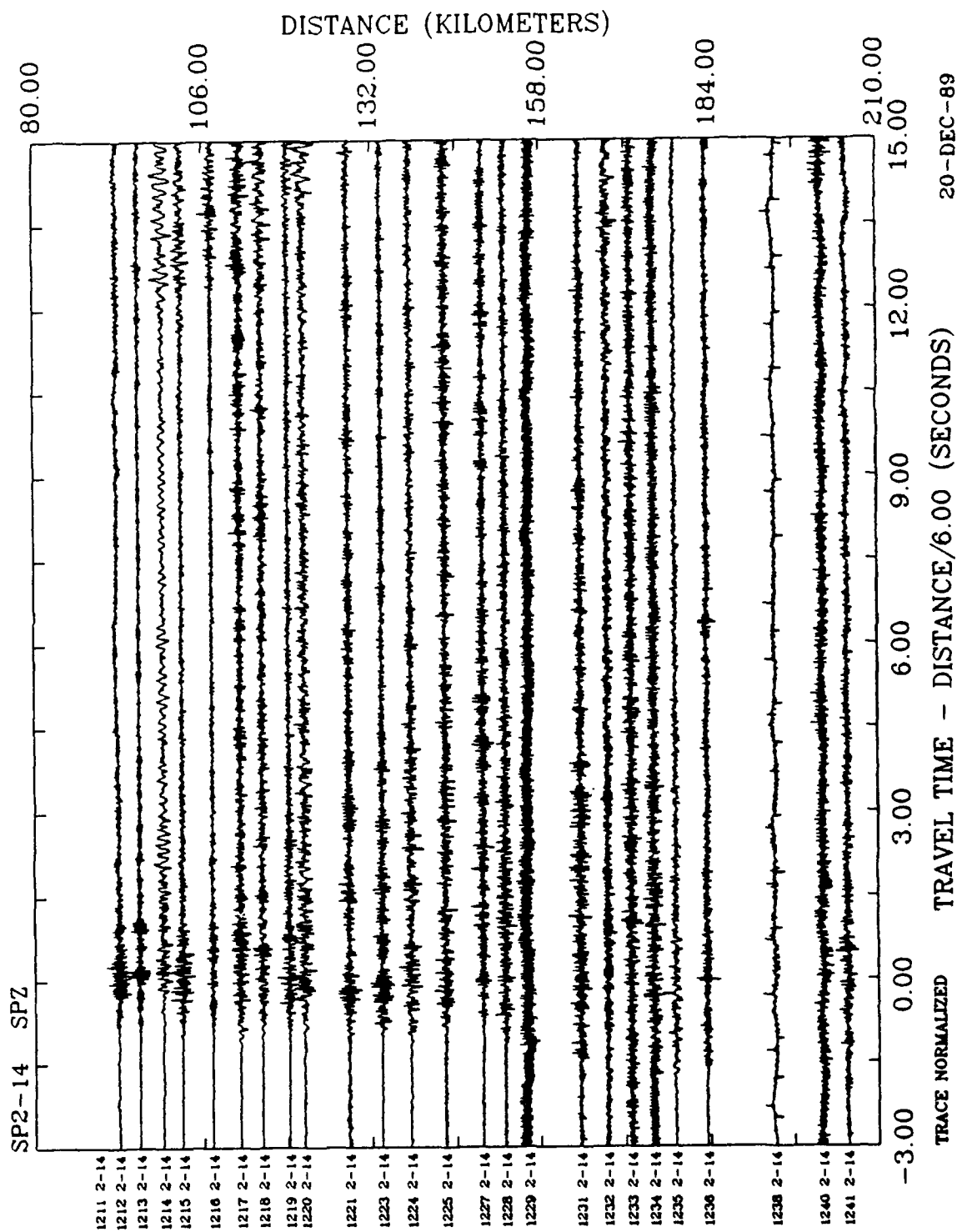


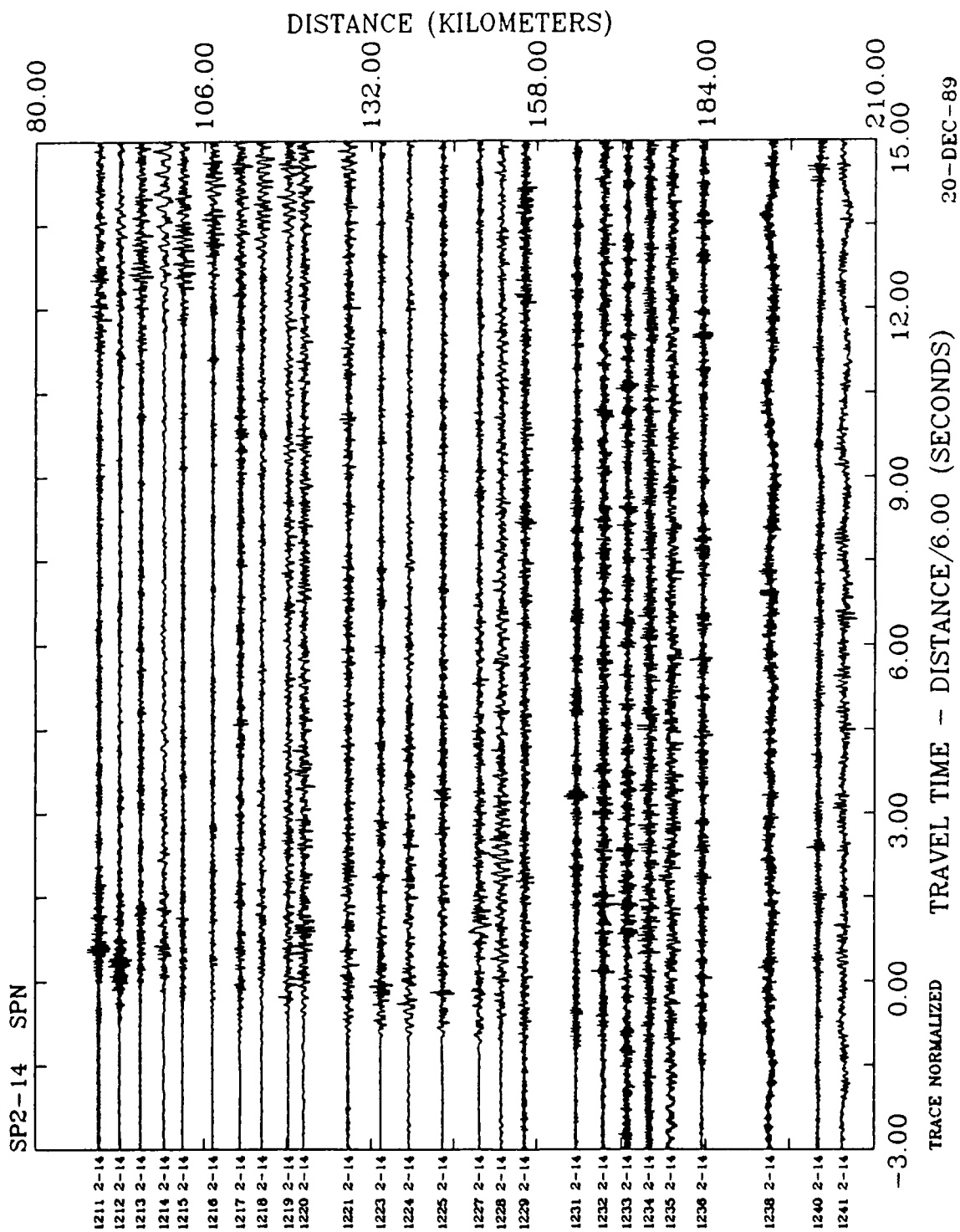


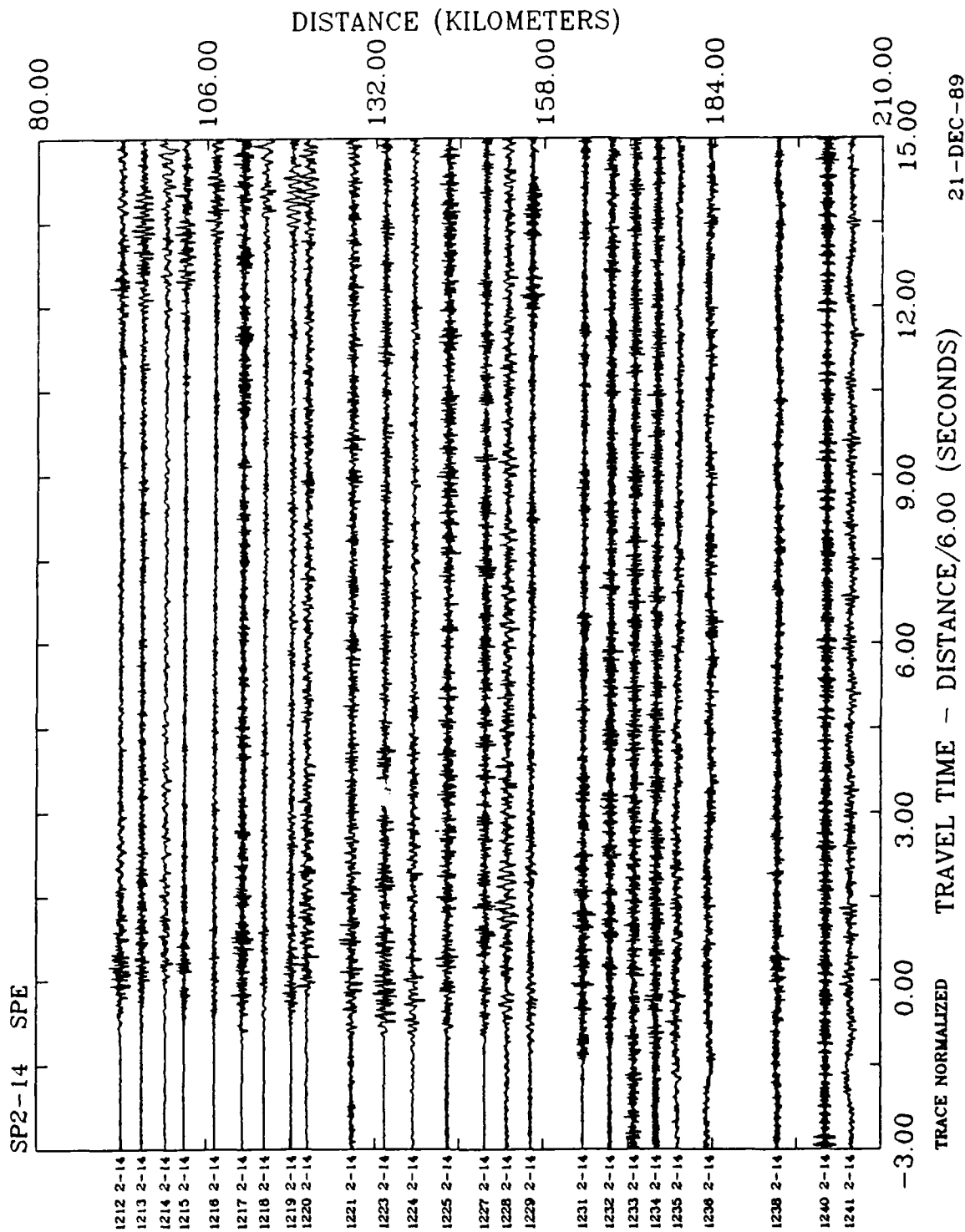


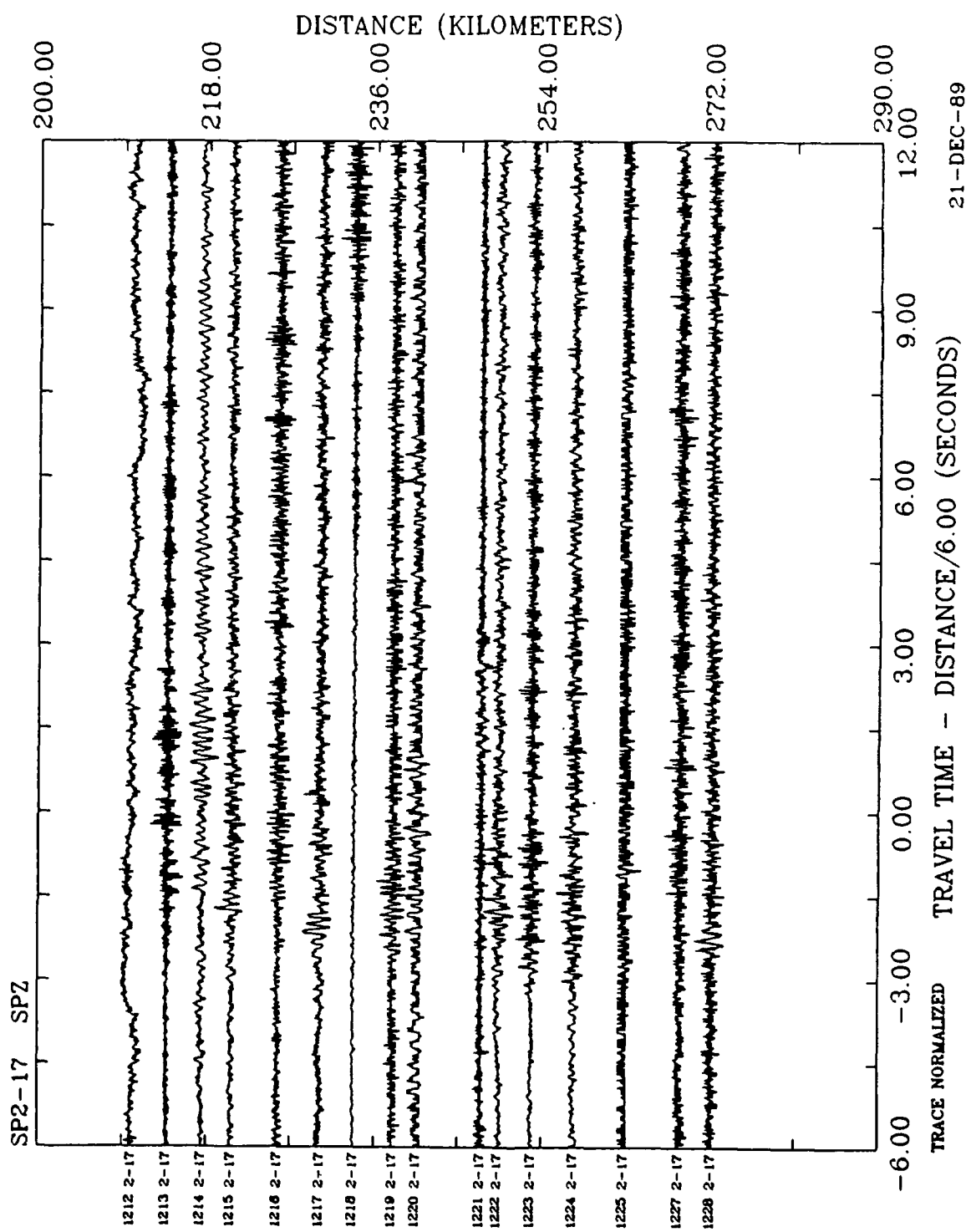


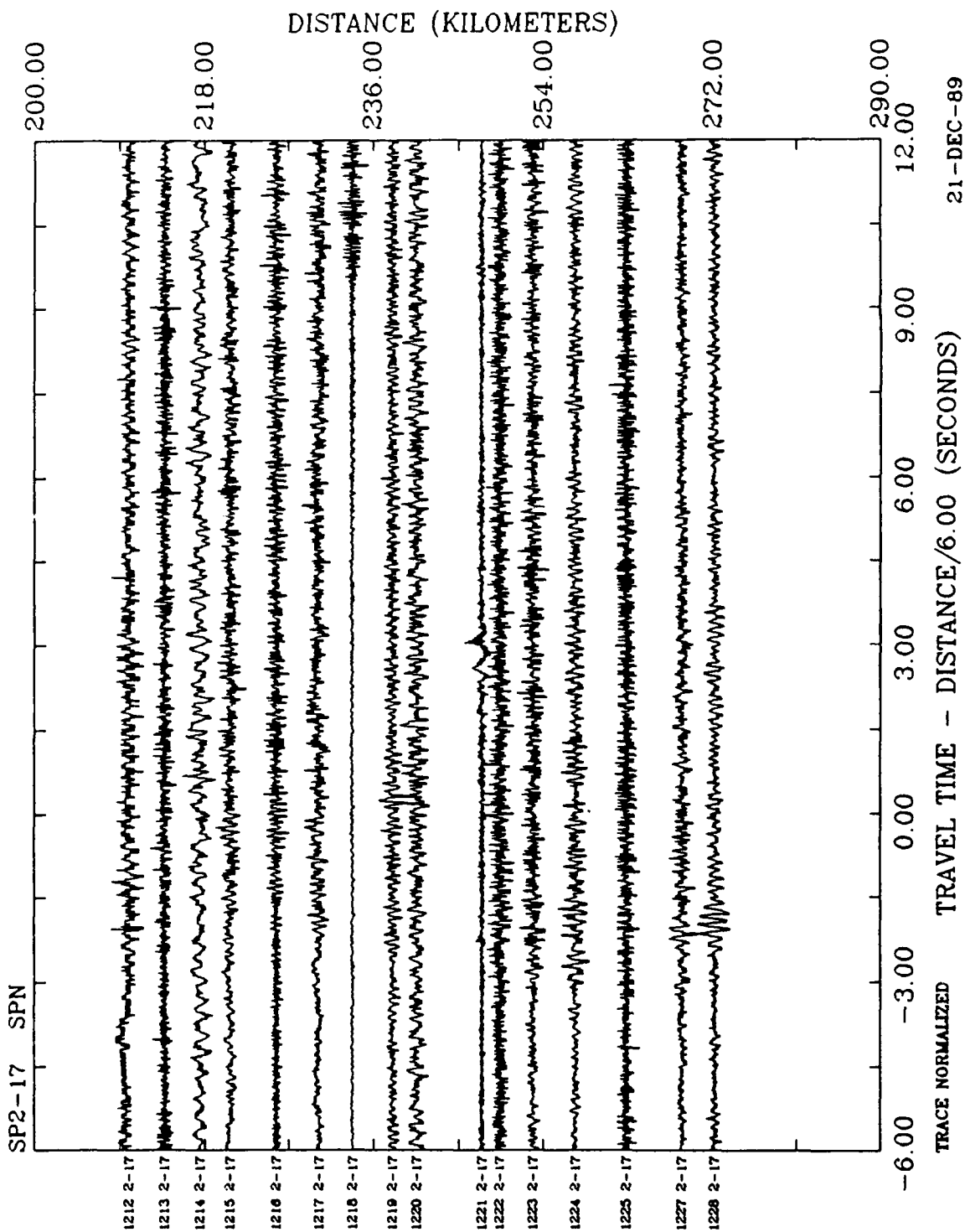


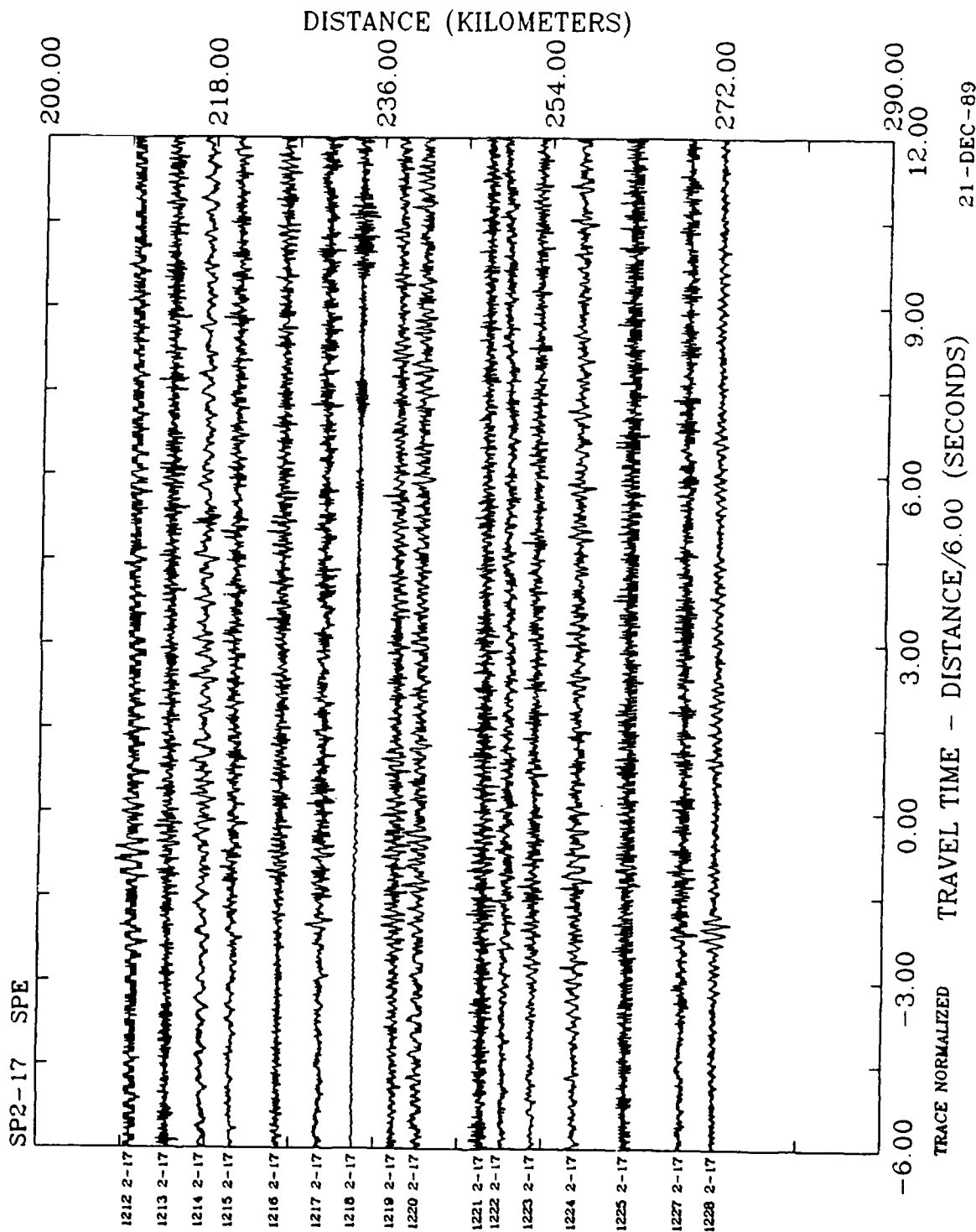


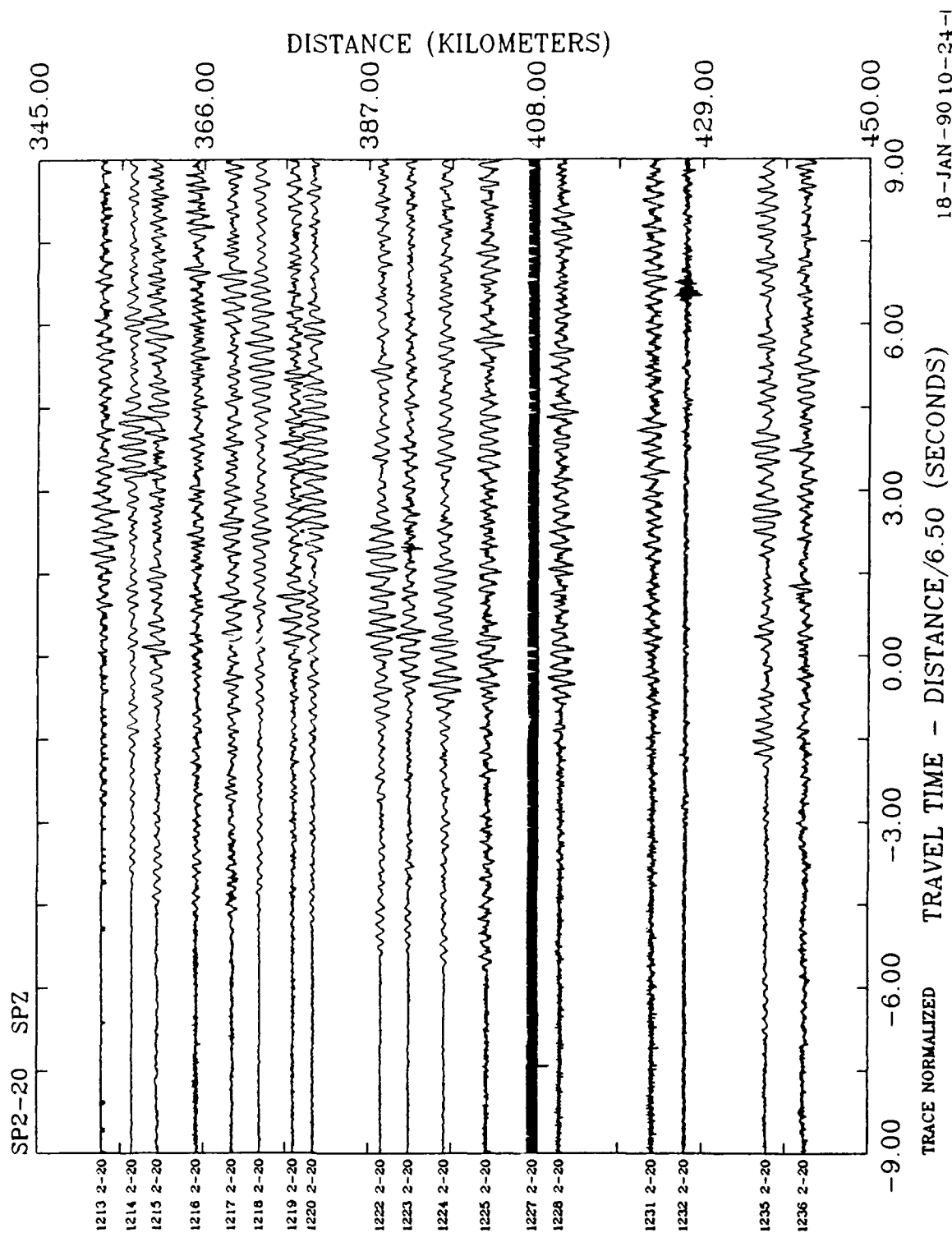


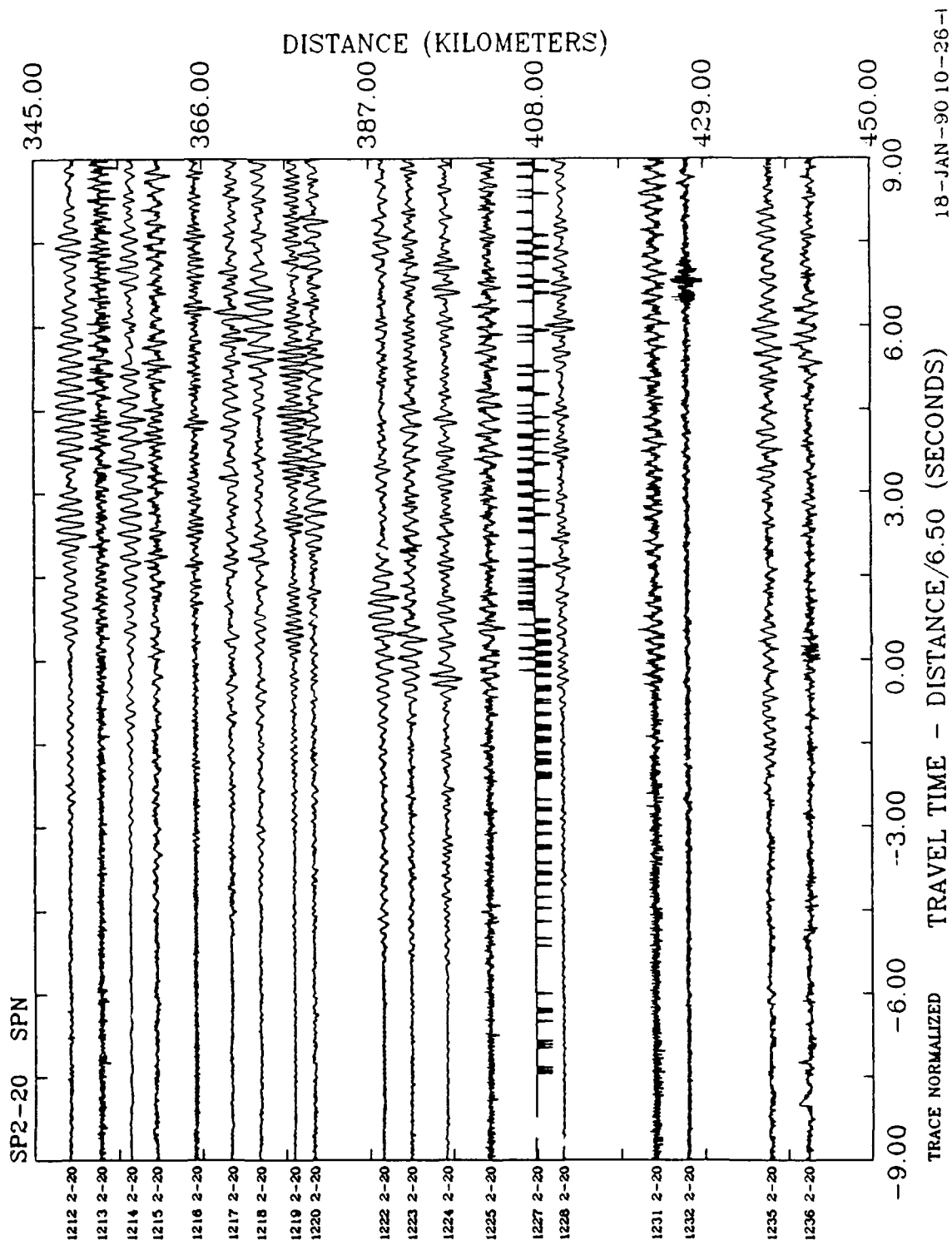


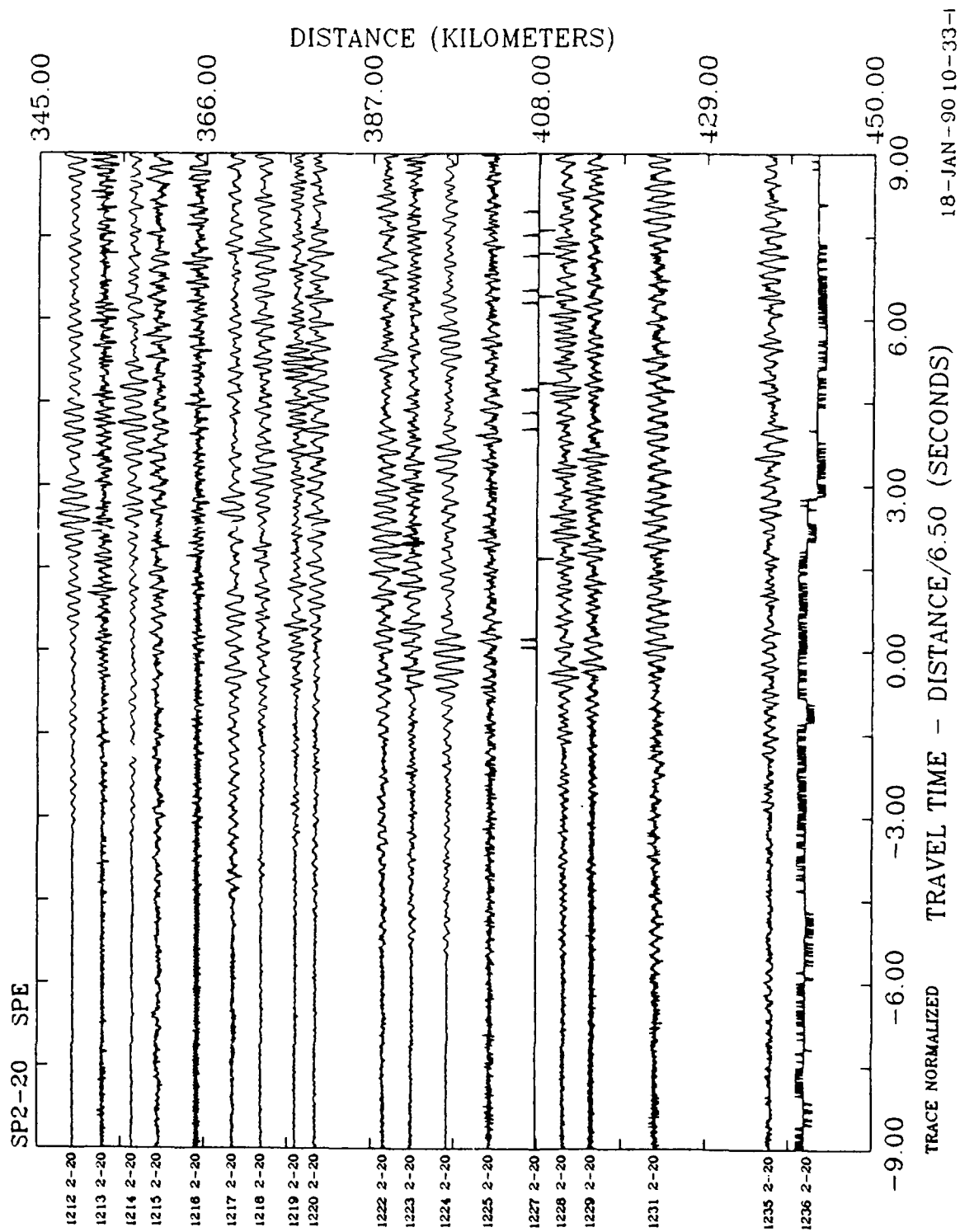


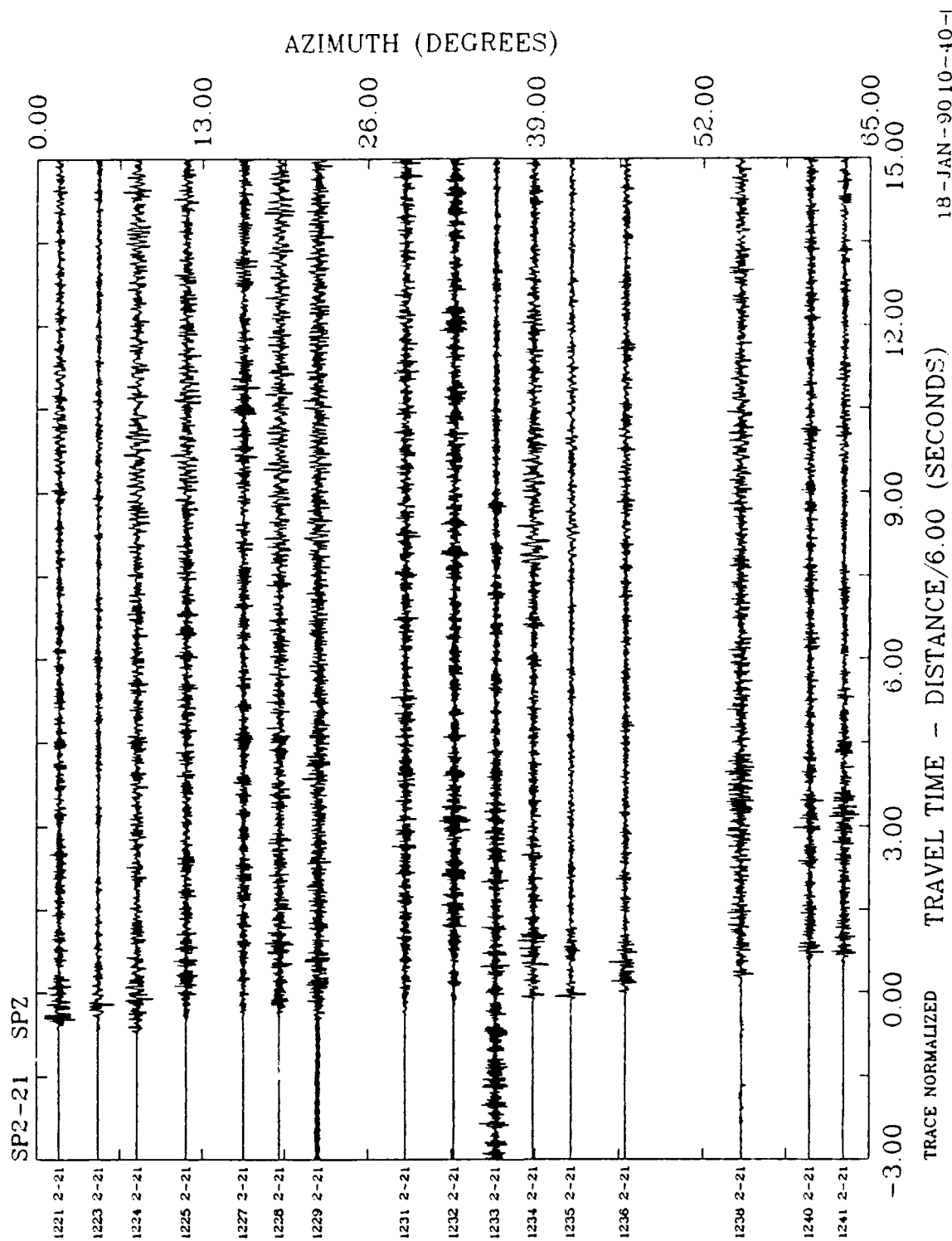








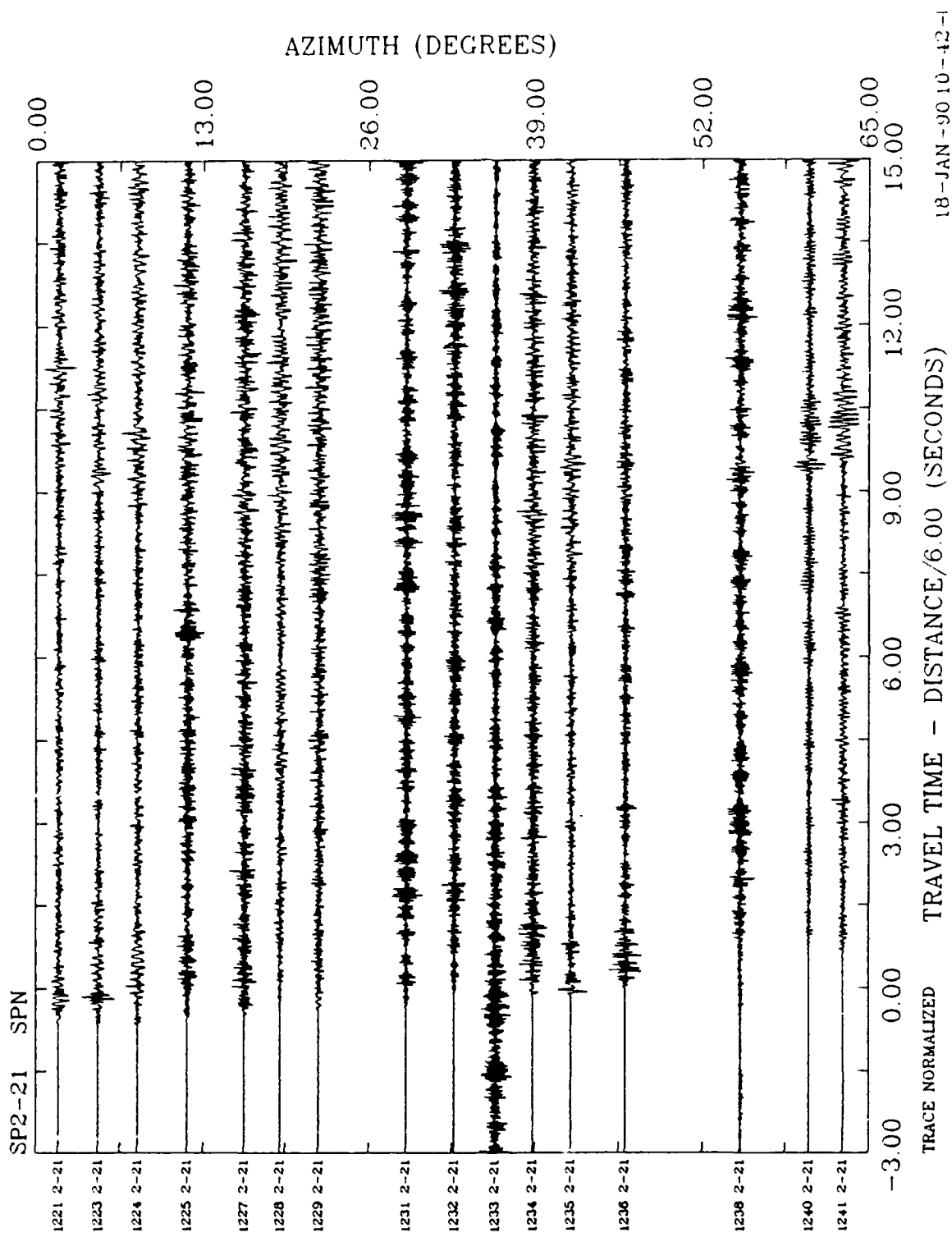


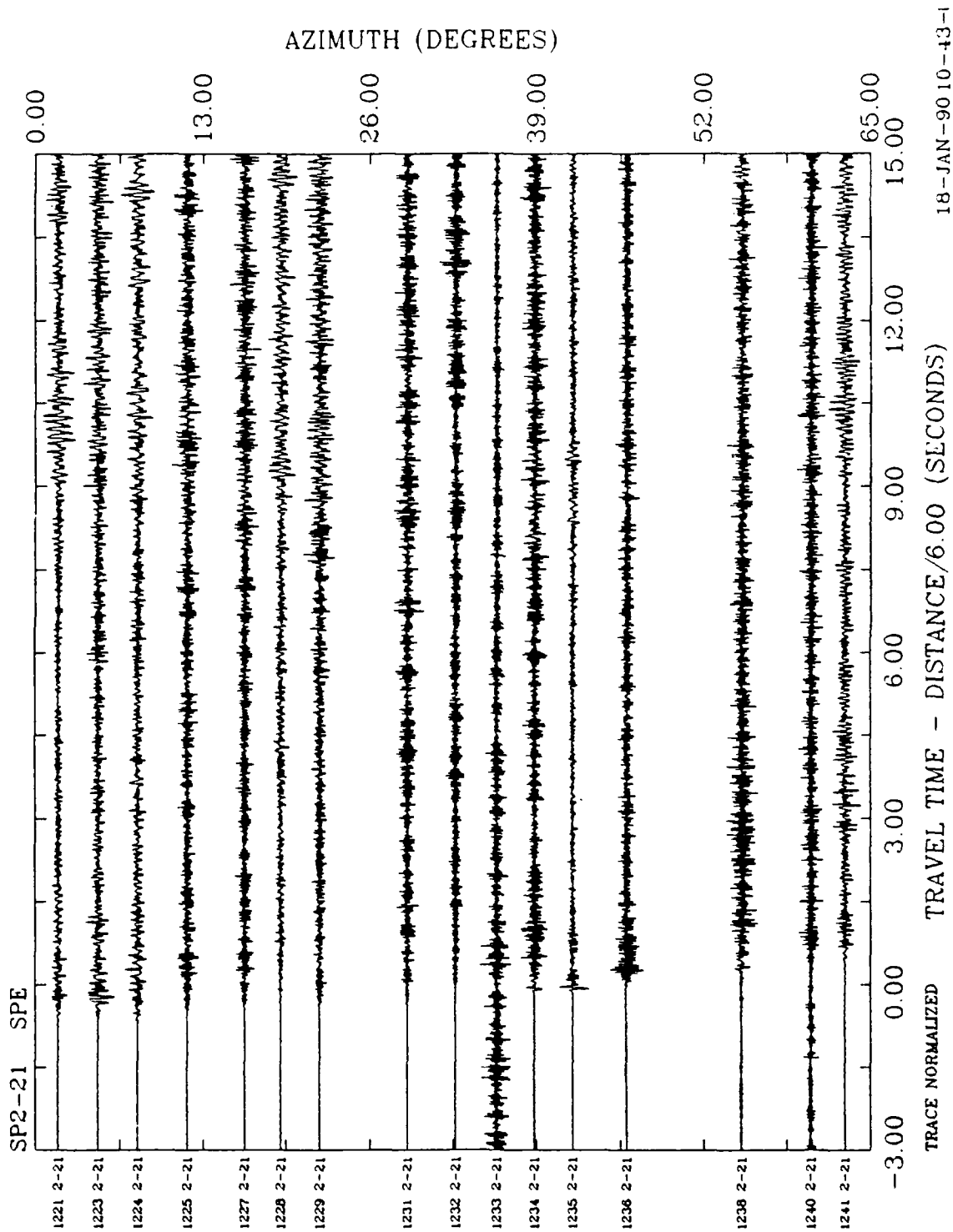


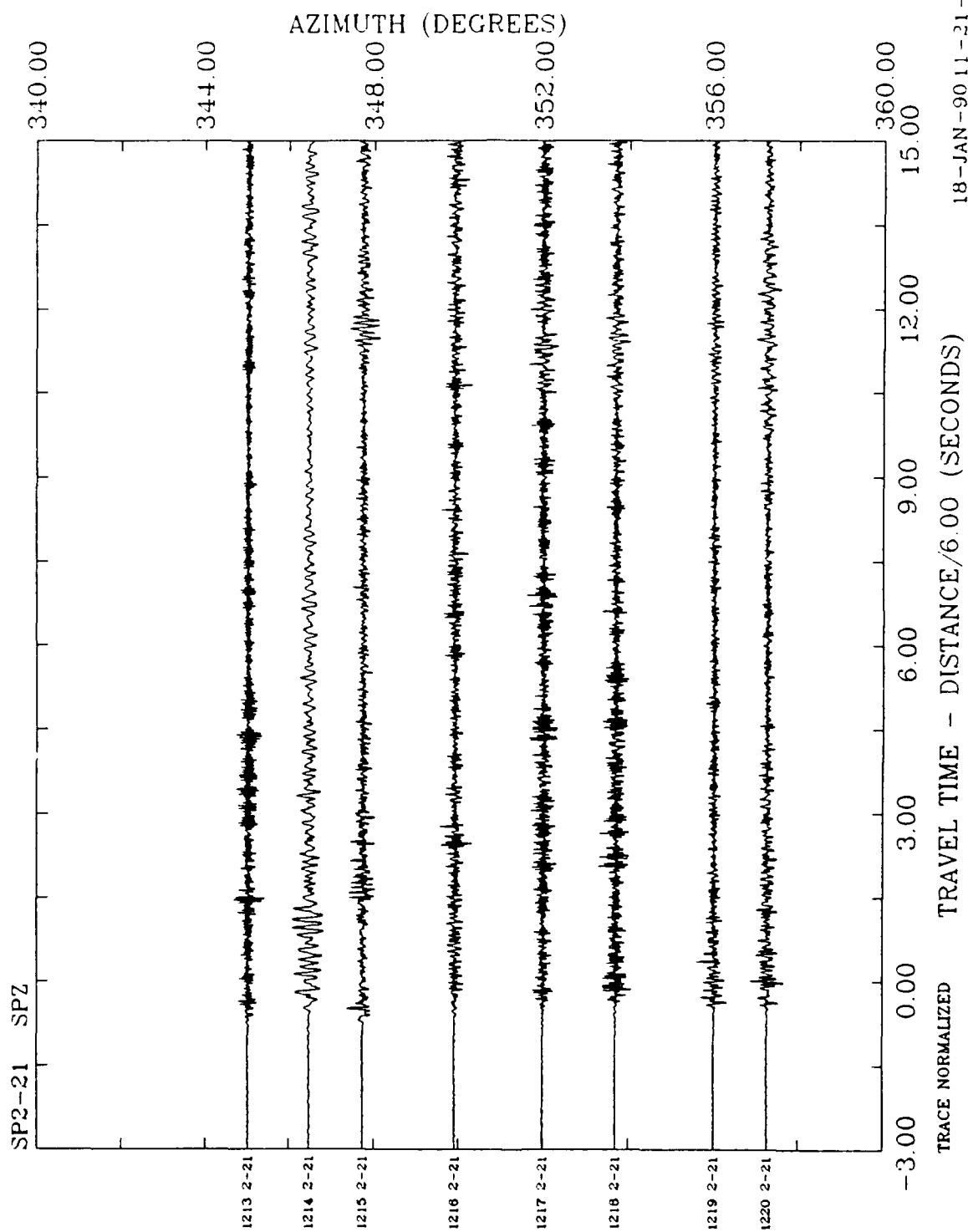
AZIMUTH (DEGREES)

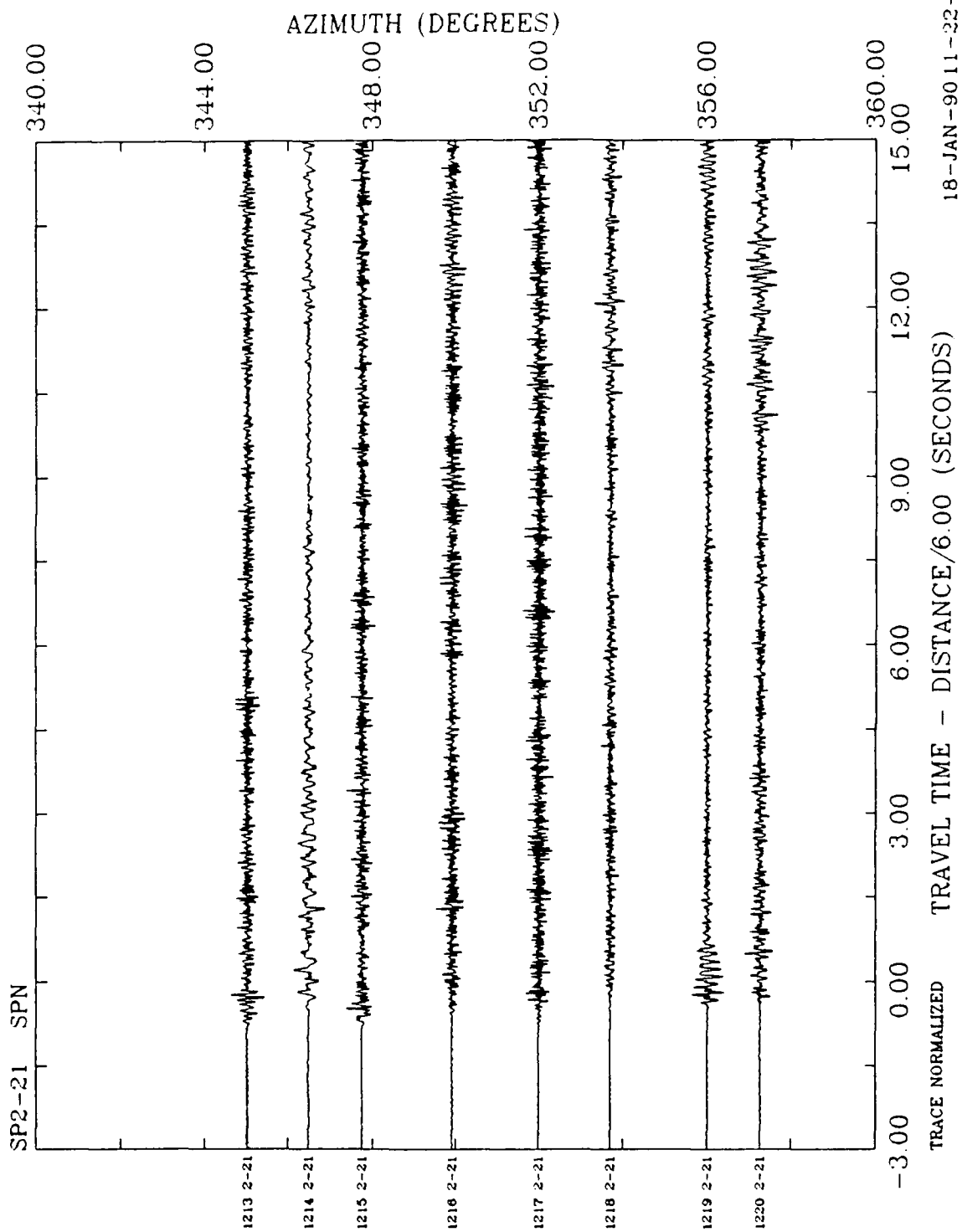
TRAVEL TIME -- DISTANCE/6.00 (SECONDS)

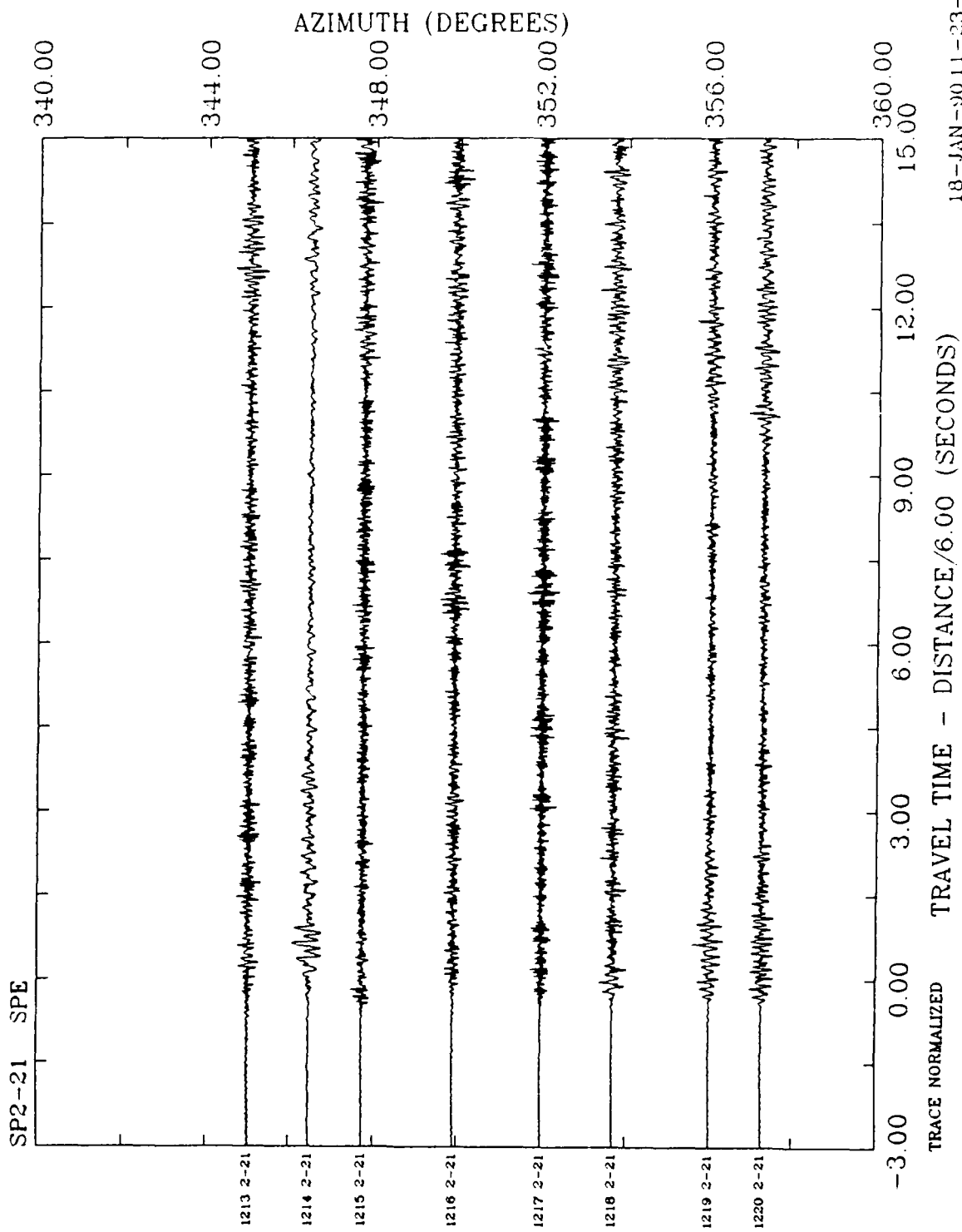
18-JAN-90 10~40-1

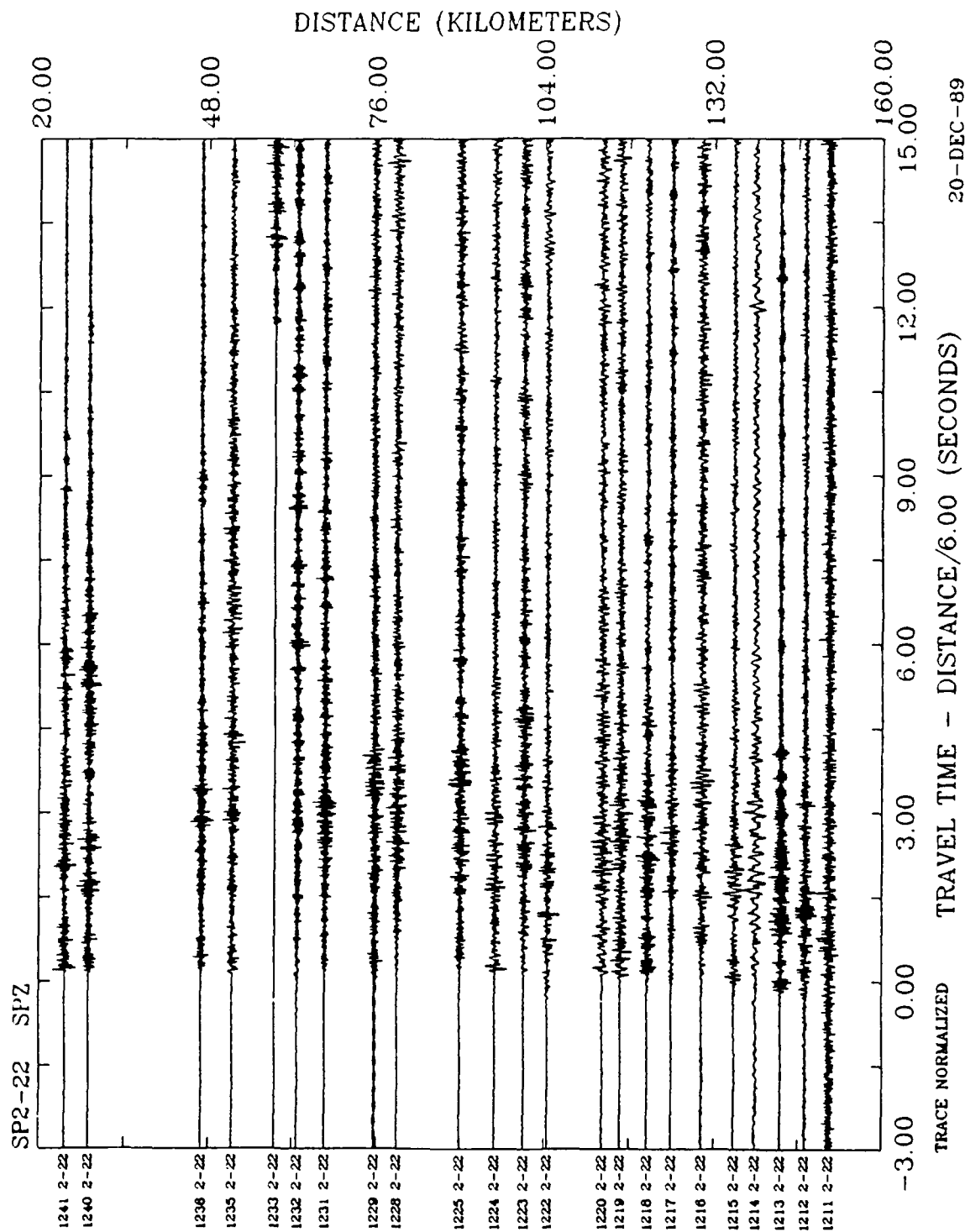


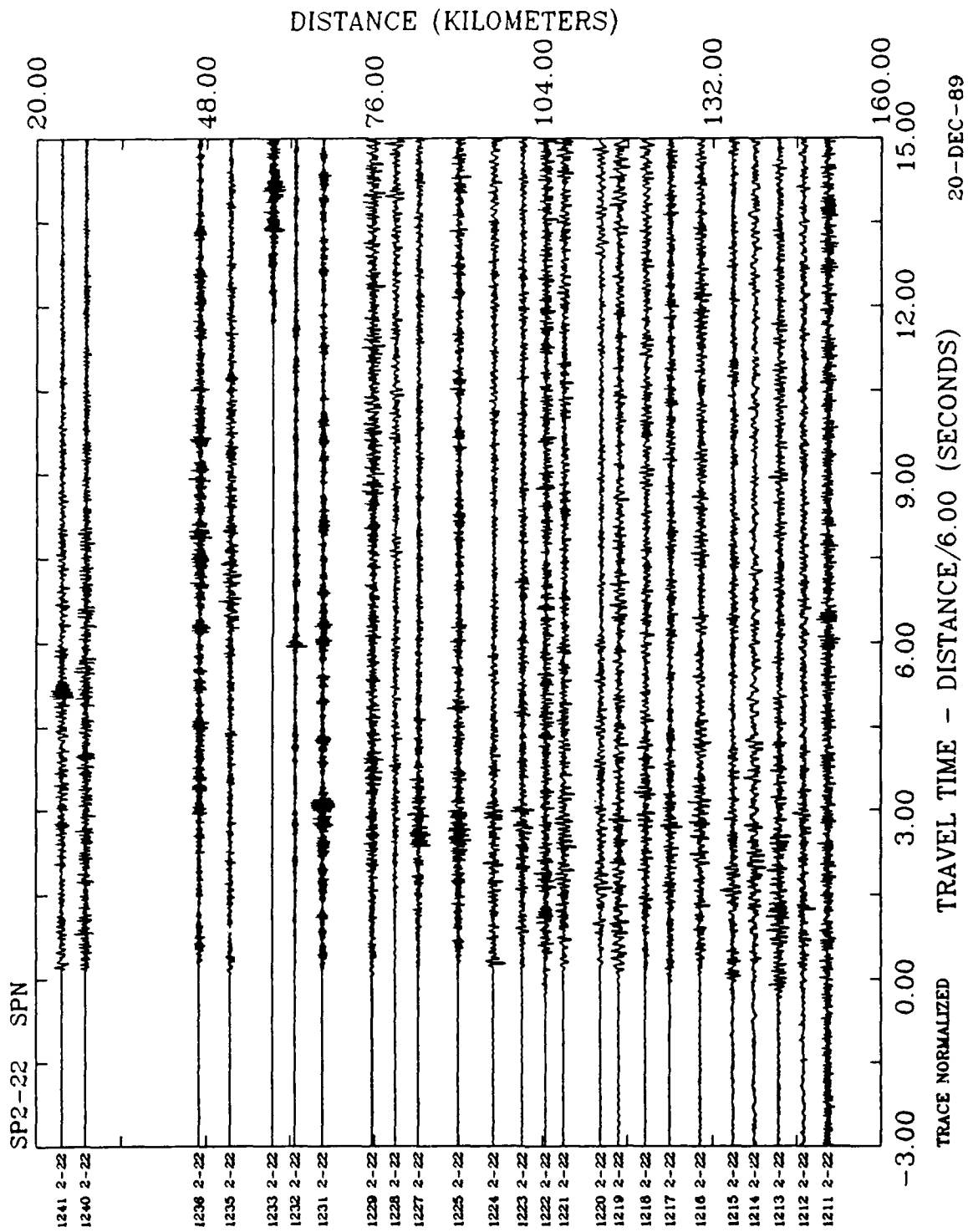












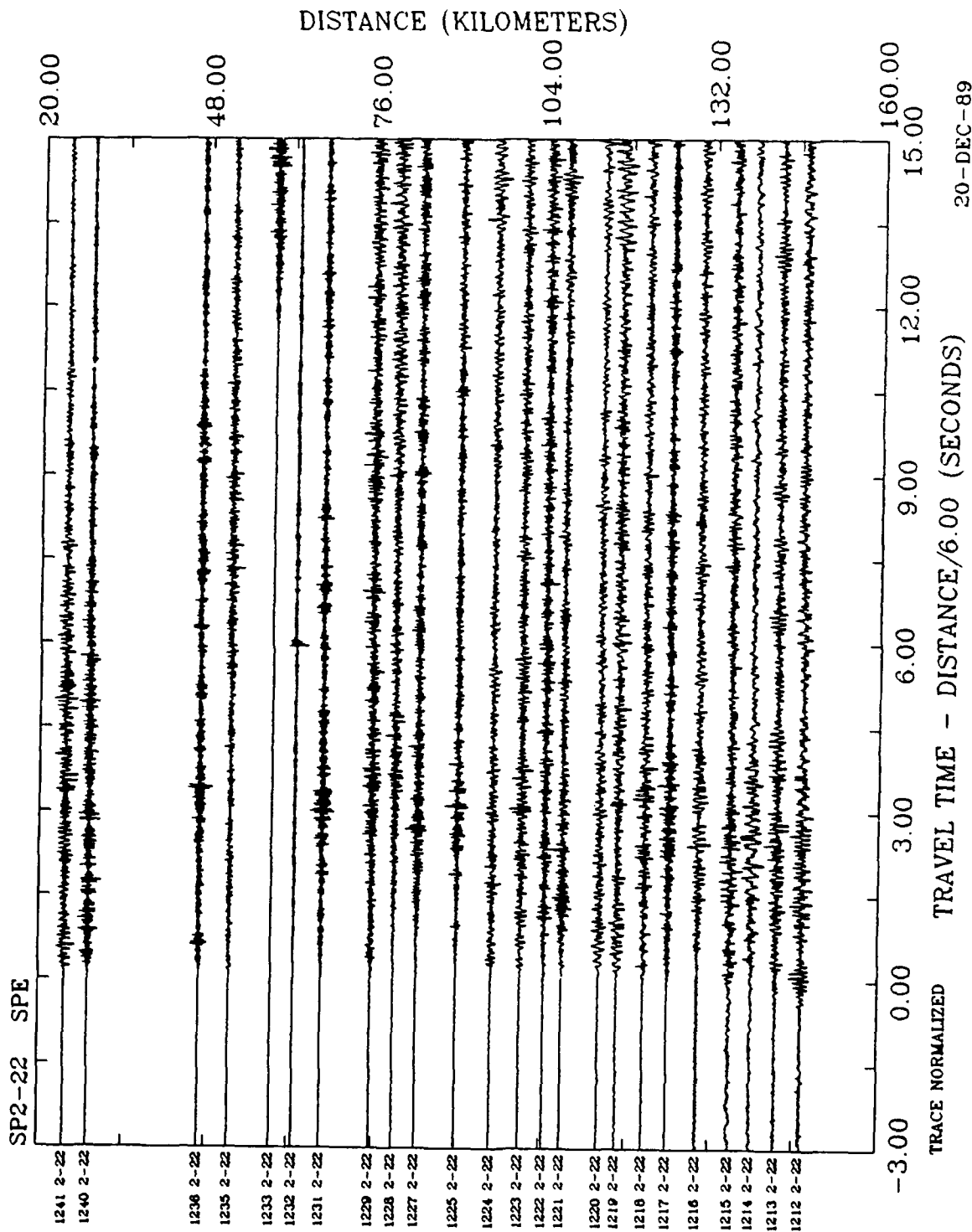


Figure 7.

SPZ, SPN, and SPE record sections for Deployment Three,

* indicates shot gathers not shown.

SP3-10

SP3-14

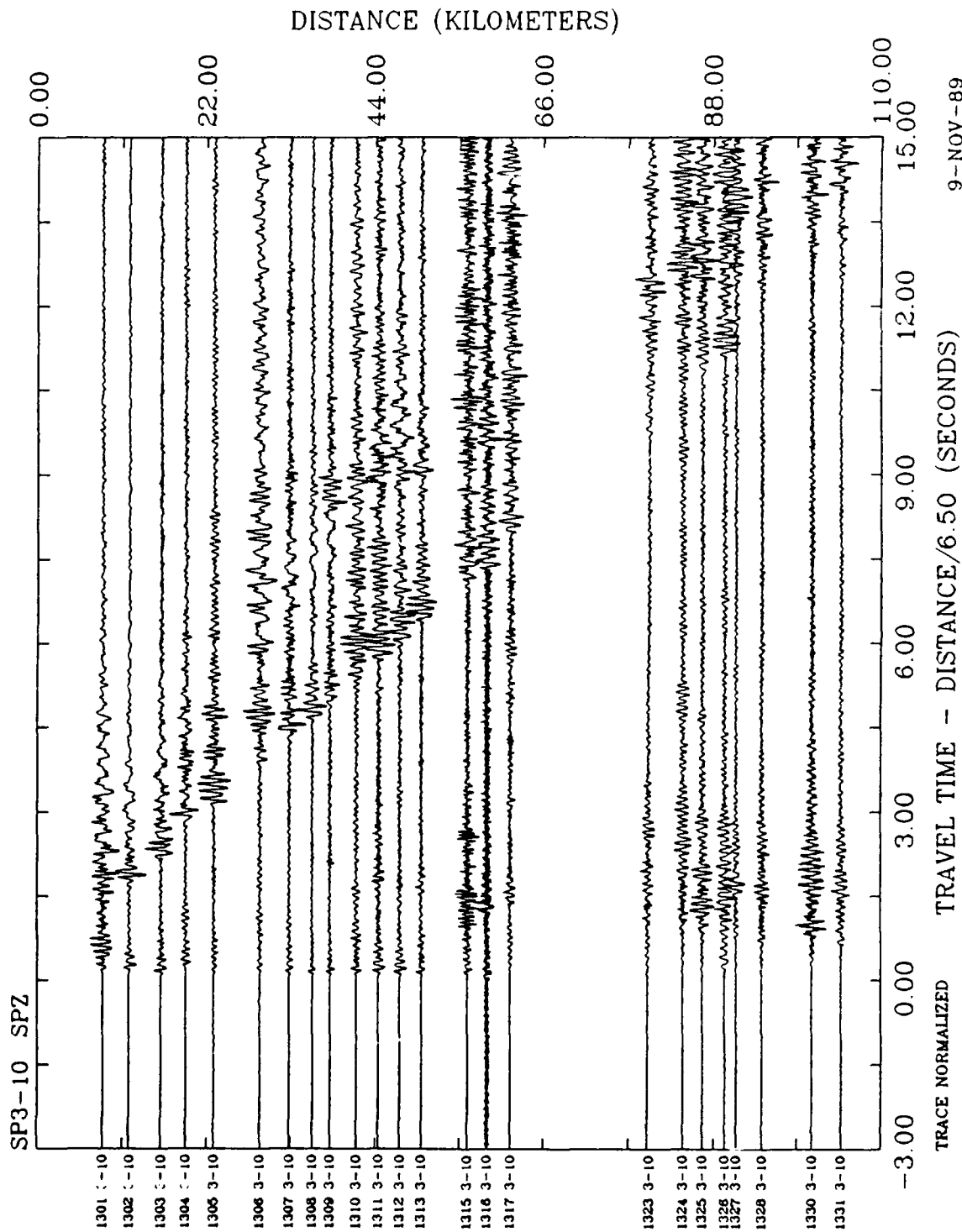
SP3-15

SP3-16

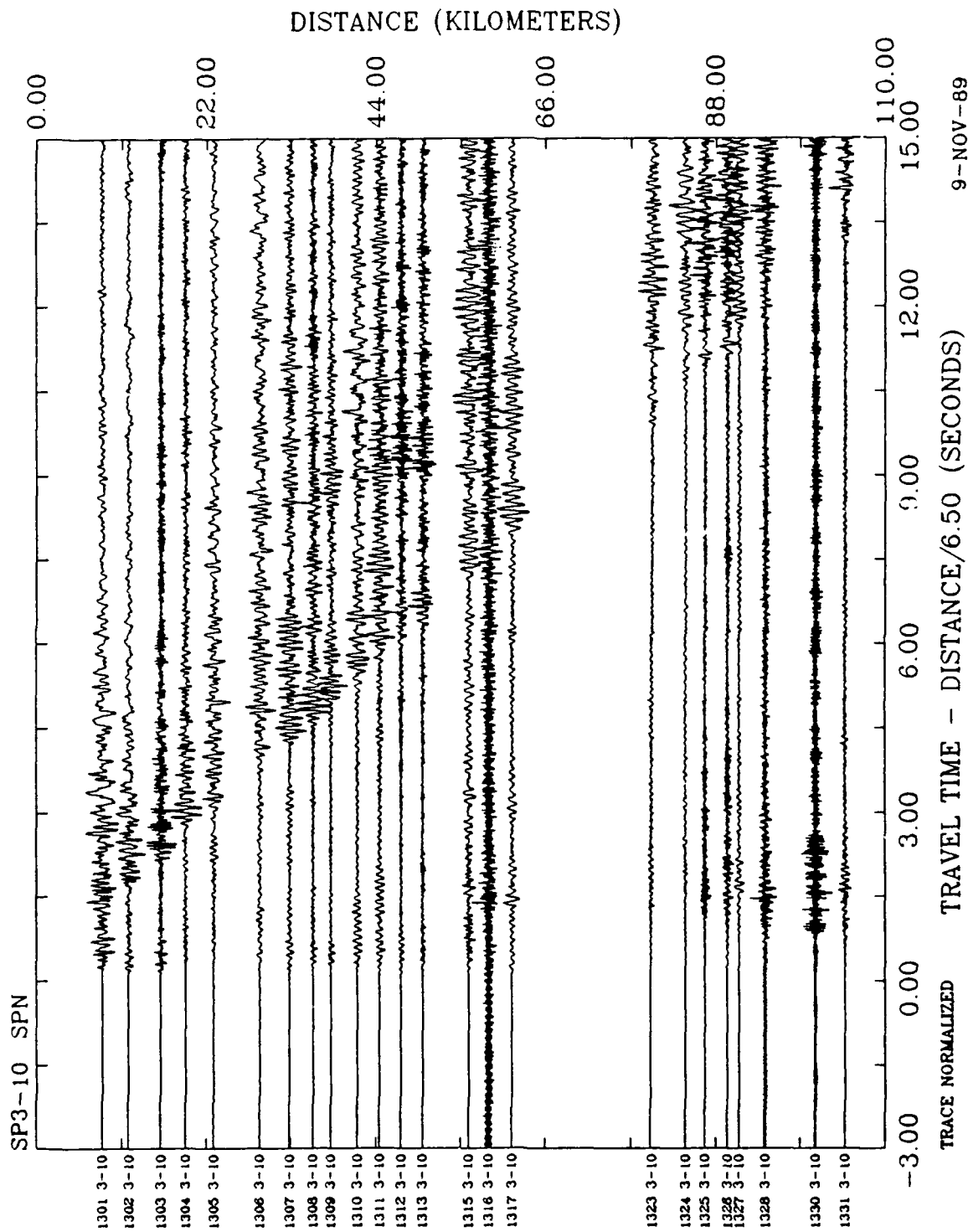
SP3-18*

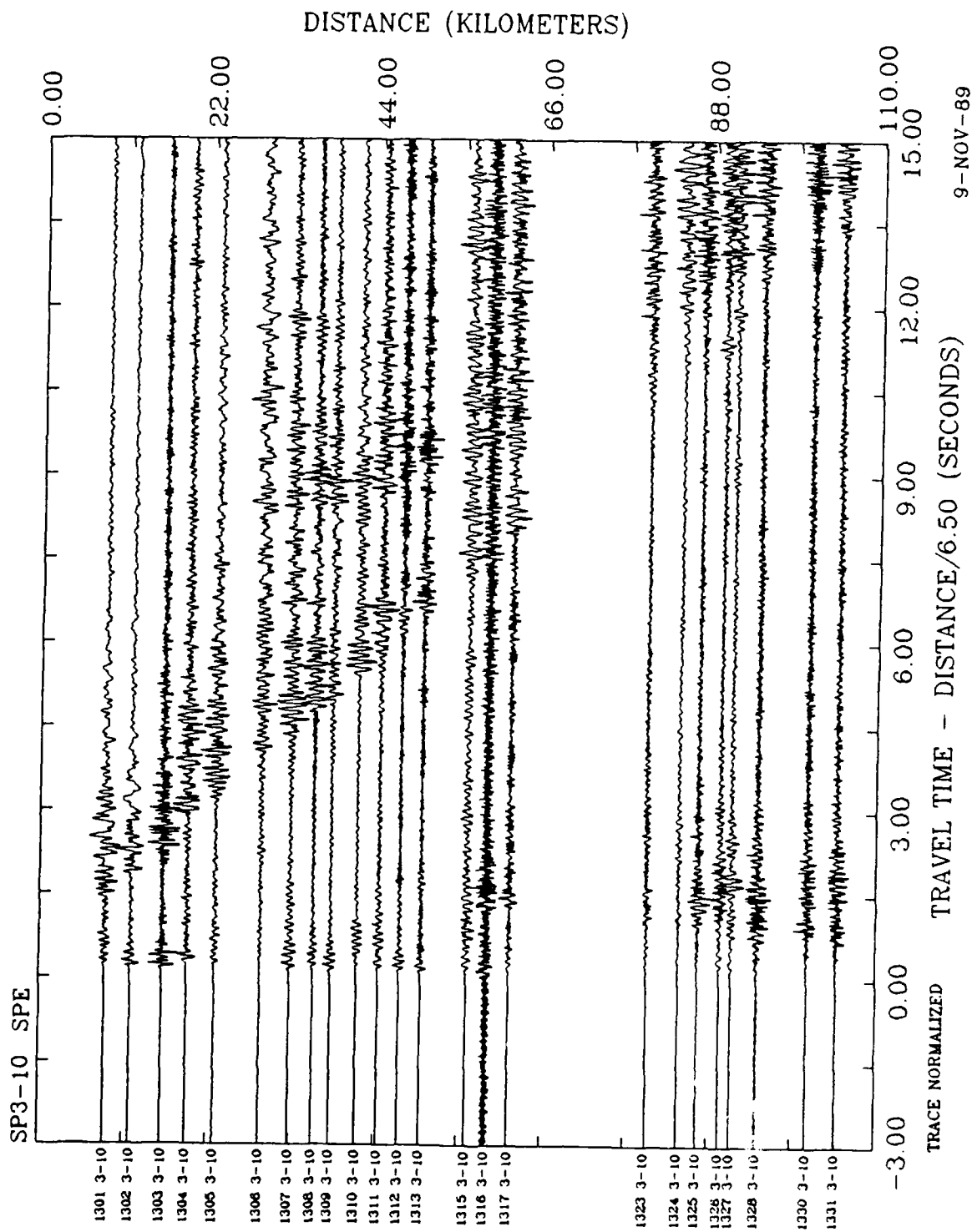
SP3-19*

SP3-20

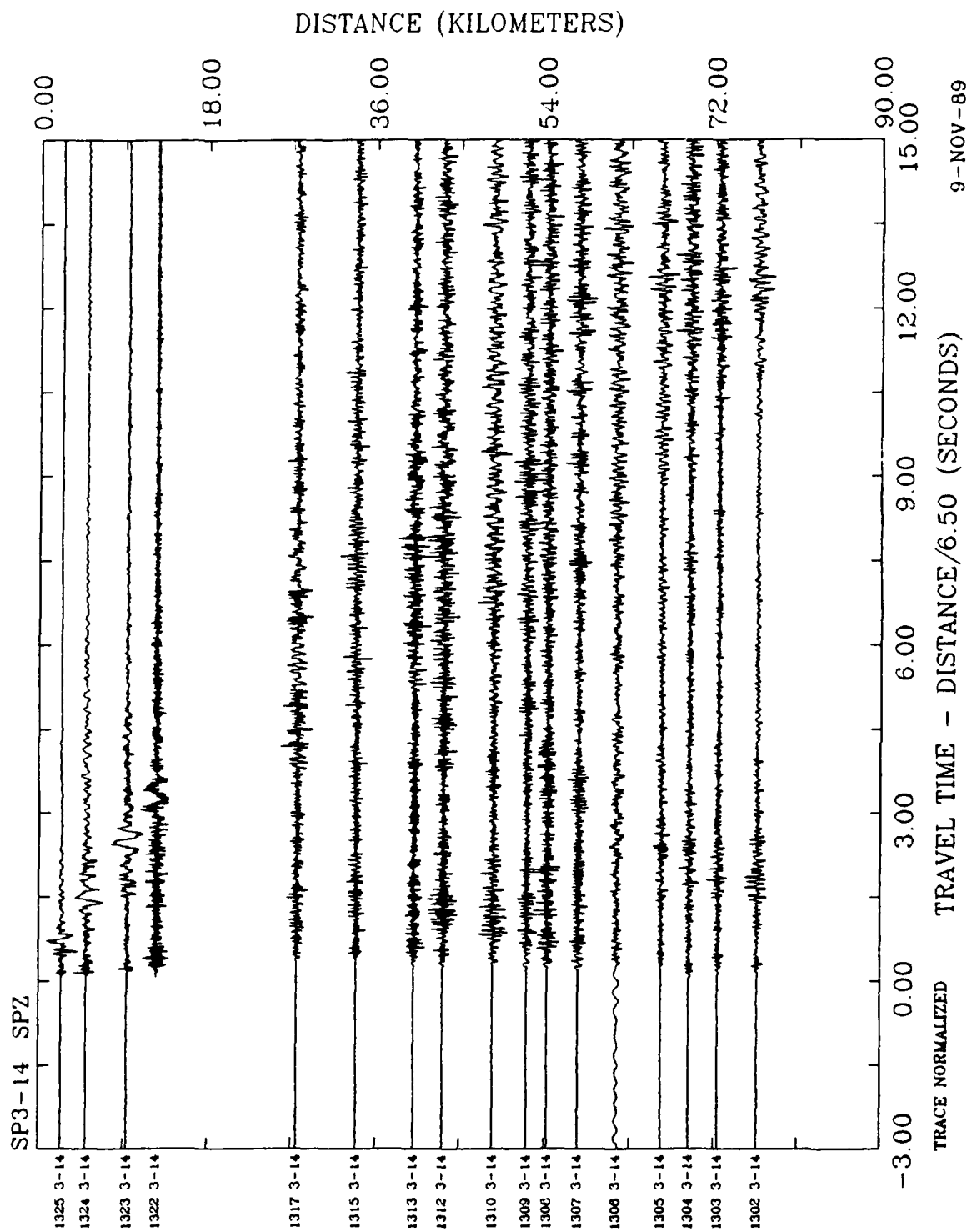


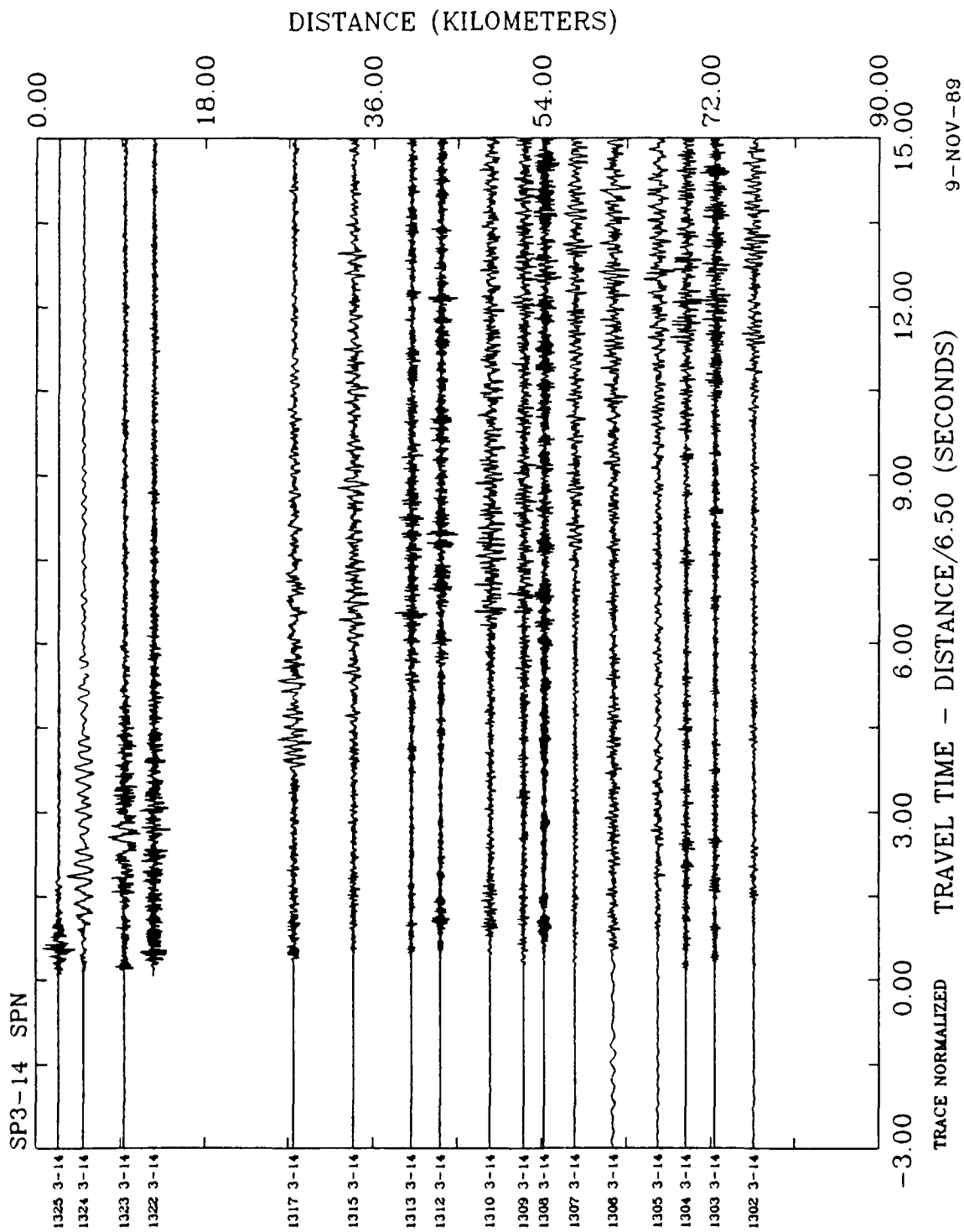
9-NOV-89

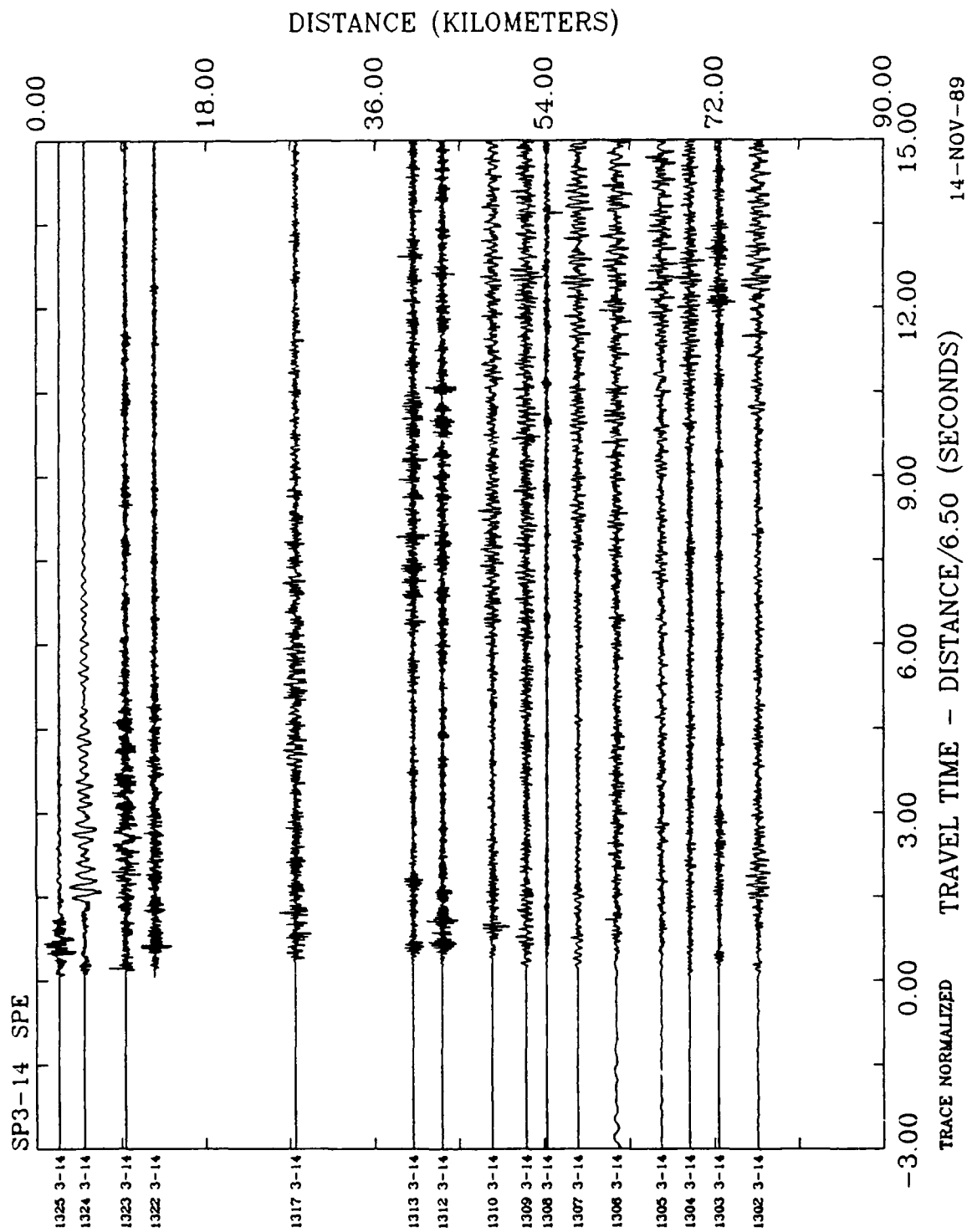


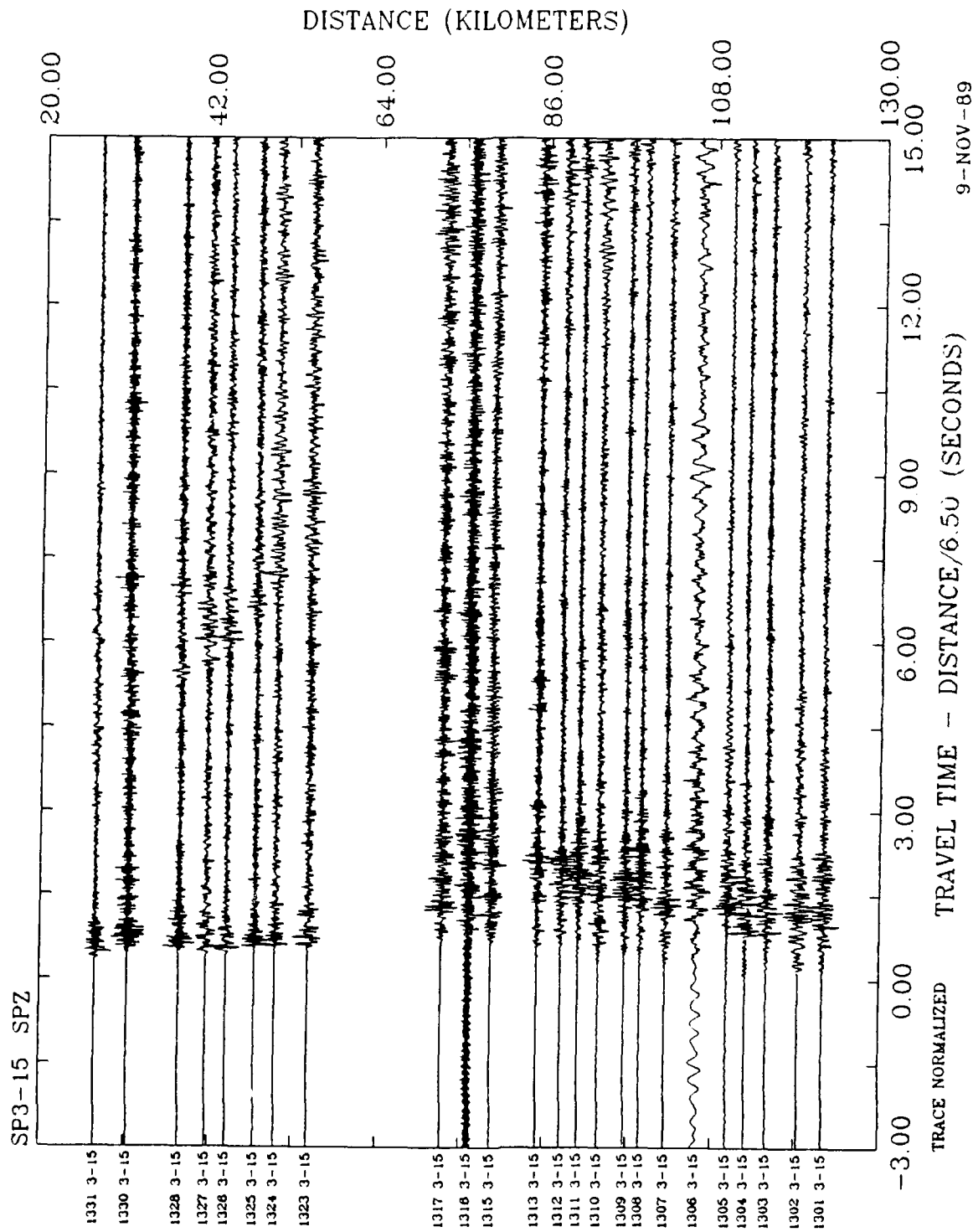


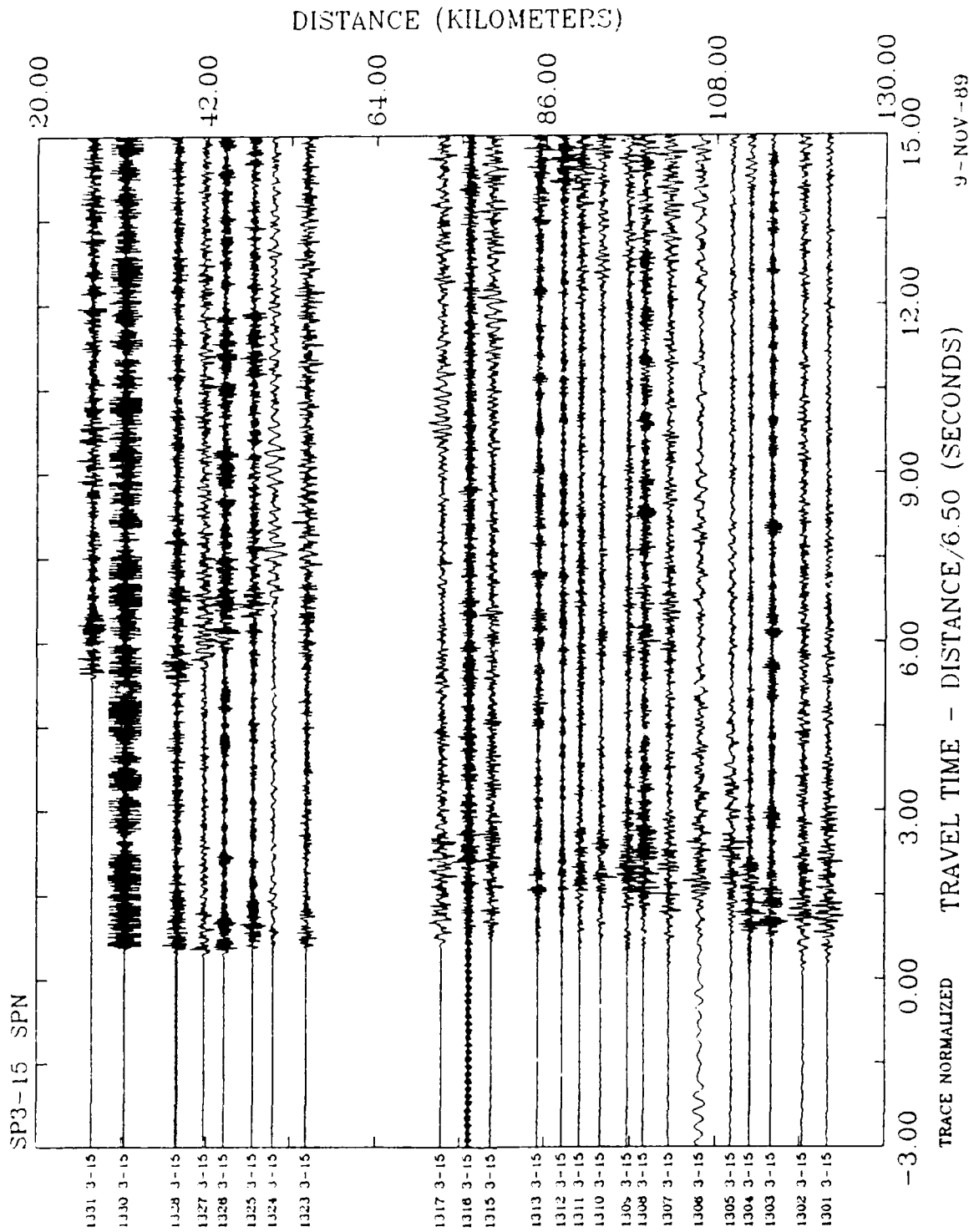
9-NOV-89

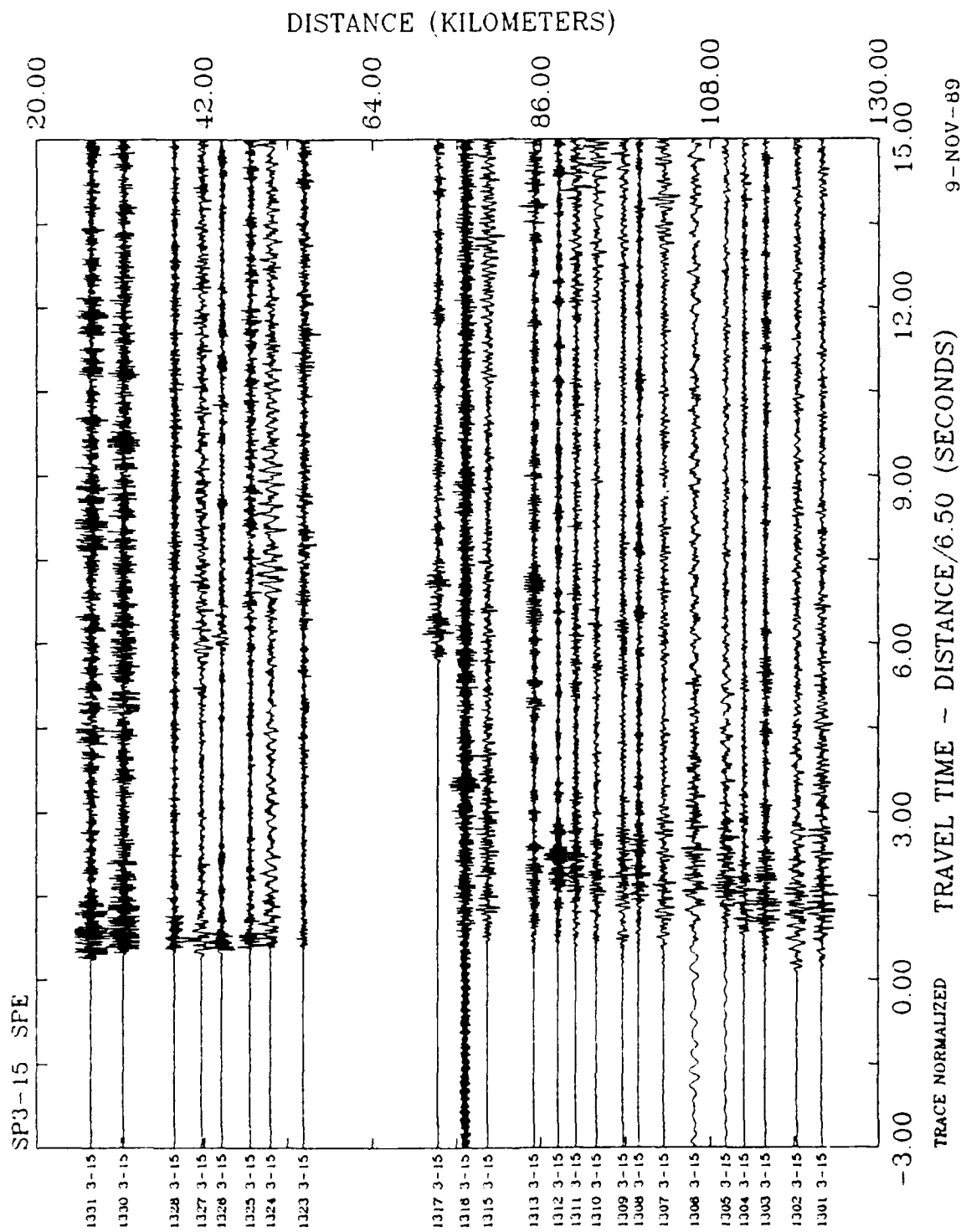


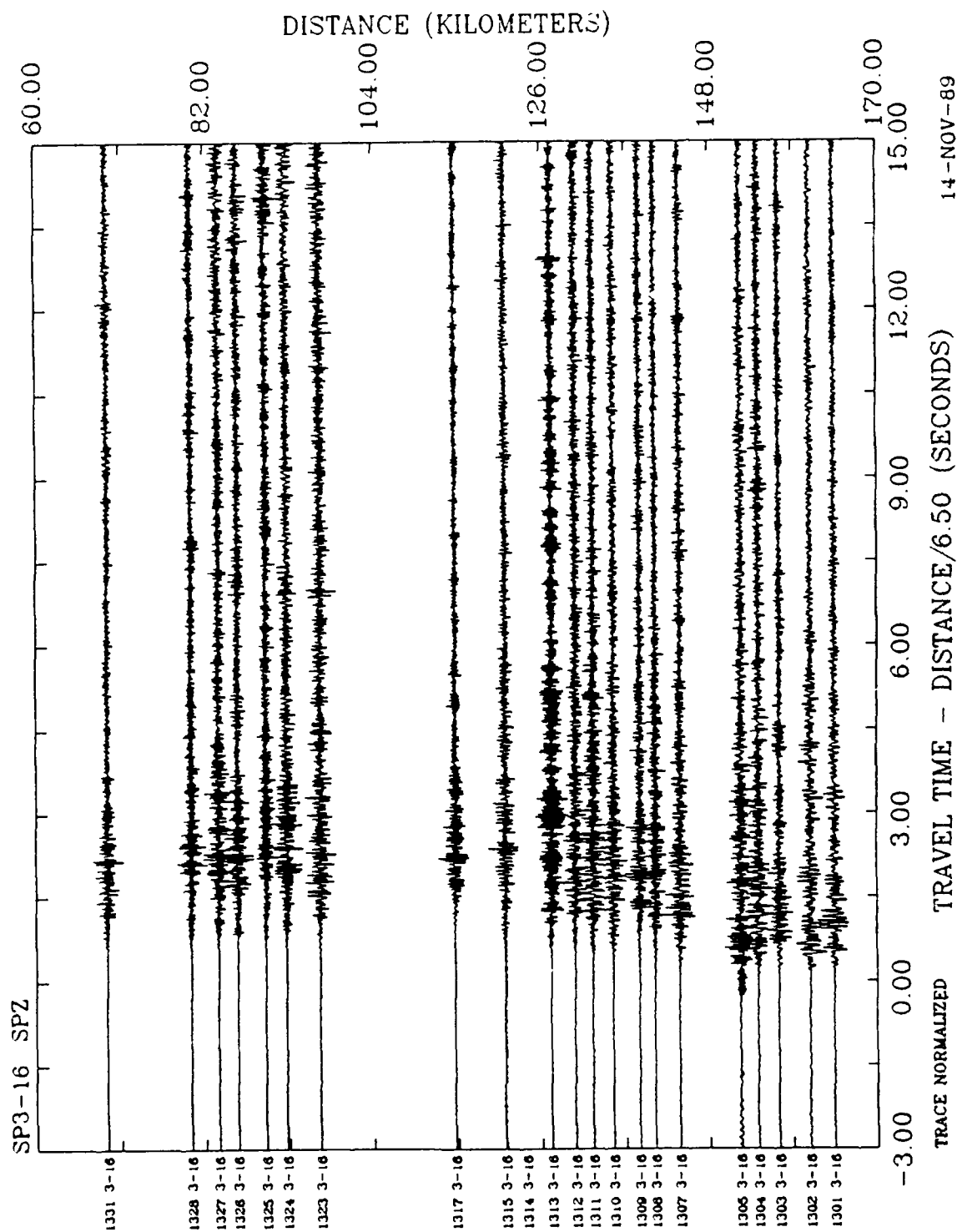


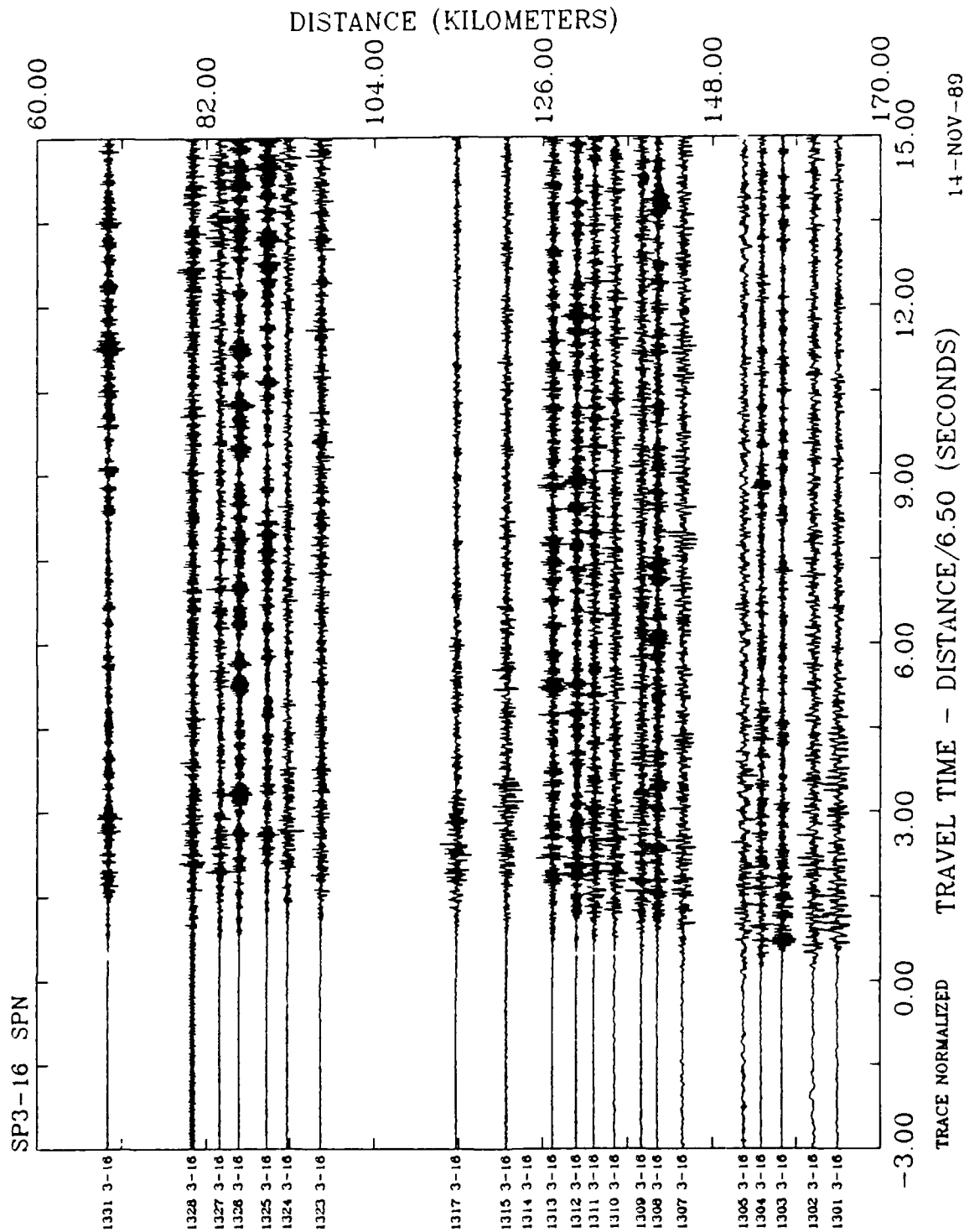


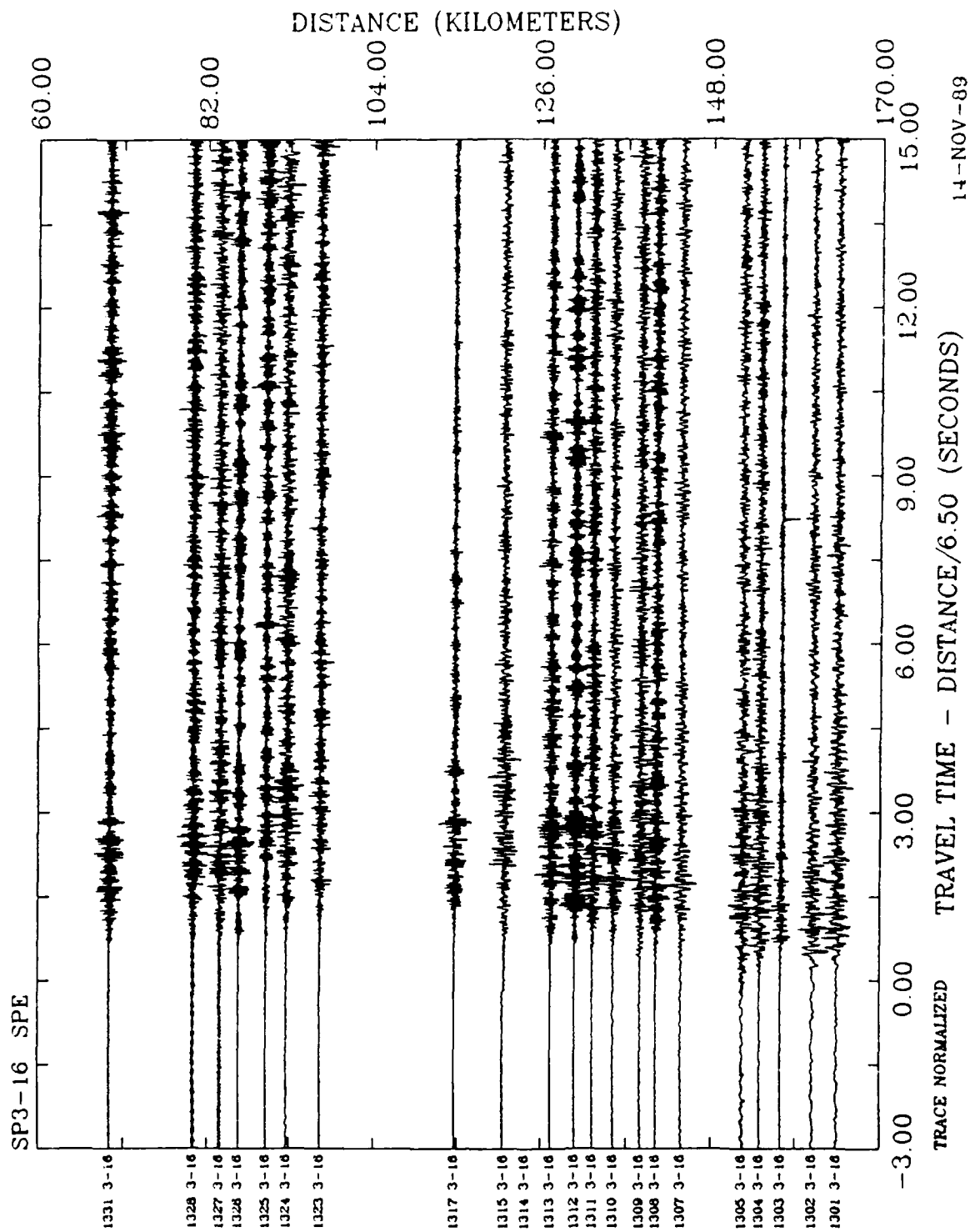


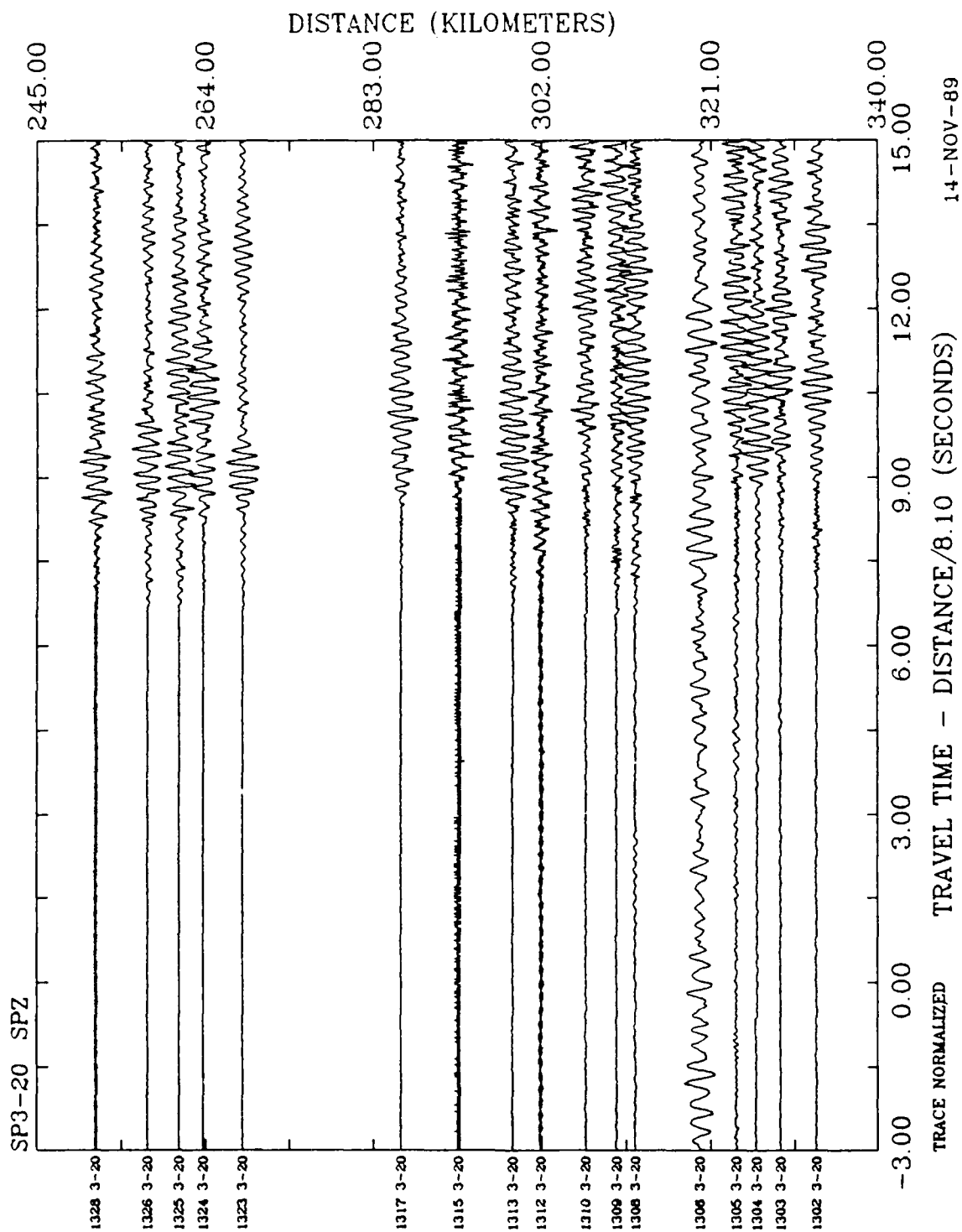


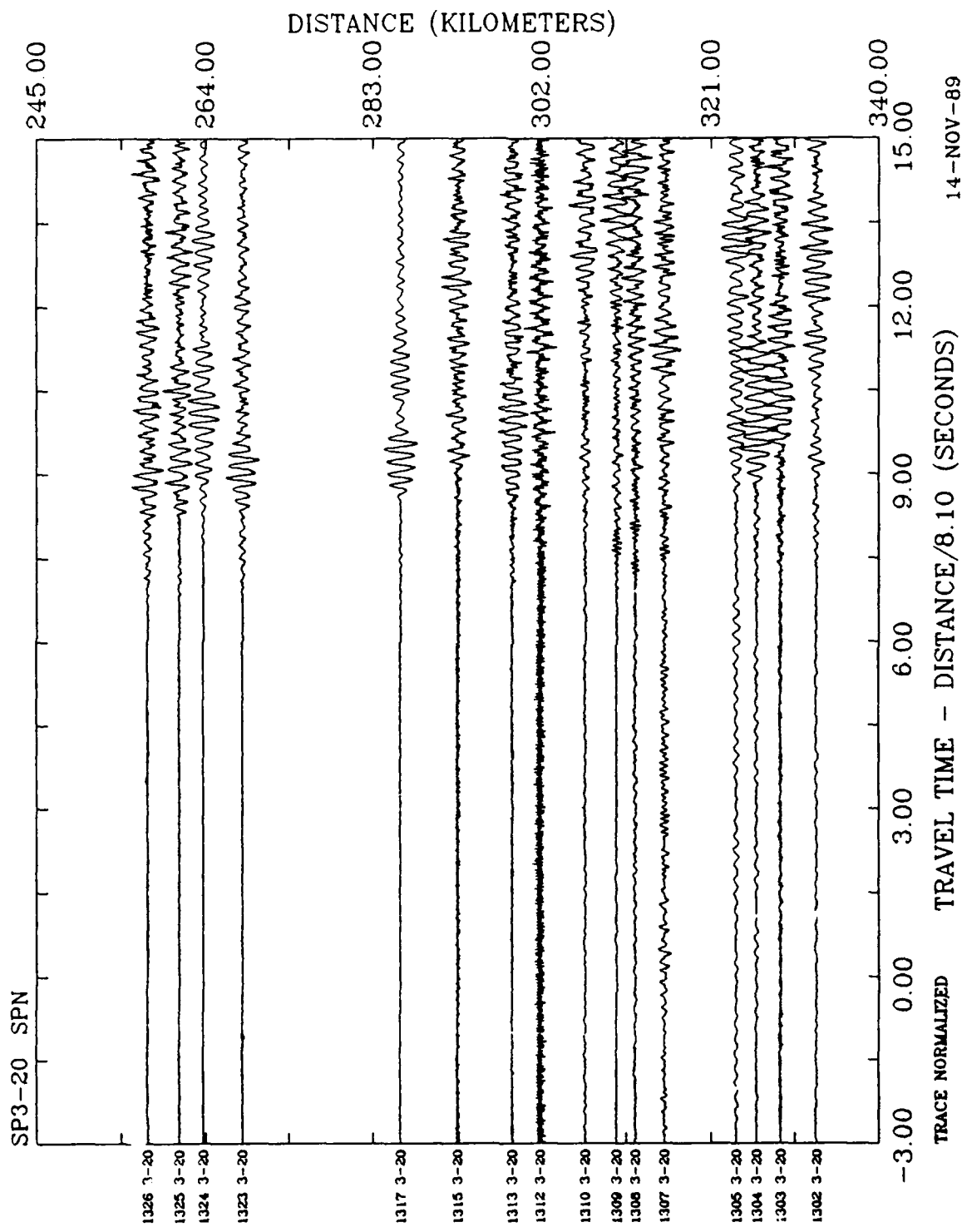












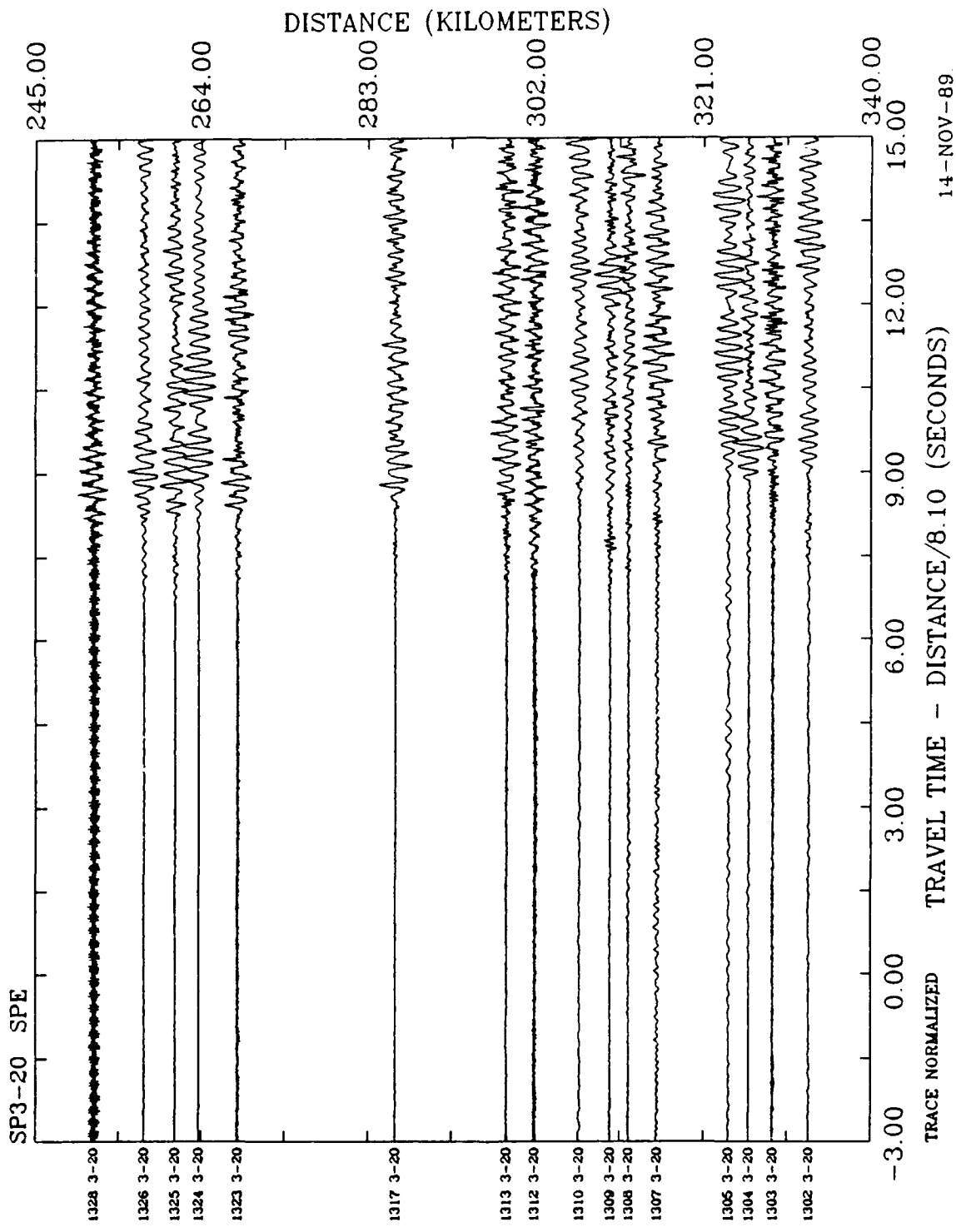


Table 1.

Index of Shot times and locations for all Deployments.

Index	Shot No.	Shot Time	Size (kg)	Latitude (deg,min)	Longitude (deg,min)	Elevation (m)
1-01	8	261:06:04:00.006	2091.1	44 35.409N	69 44.766W	95
1-02	1	261:04:00:00.006	1011.5	44 33.795N	70 02.672W	122
1-03	9	261:08:00:00.011	1020.6	44 27.537N	70 31.360W	277
1-04	7	261:06:02:00.010	986.6	44 24.686N	70 58.175W	317
1-05	2	261:04:02:00.009	997.9	44 20.173N	71 23.098W	516
1-06	6	261:06:00:00.006	907.2	44 16.857N	71 49.785W	329
1-07	3	261:04:04:00.006	1224.7	44 10.708N	72 14.192W	460
1-10	11	261:08:04:00.010	1360.8	44 03.217N	73 23.188W	35
1-14	5	261:04:08:00.006	1360.8	43 59.969N	74 29.266W	530
1-22	4	261:04:06:00.008	907.2	43 14.165N	71 51.534W	325
1-23	10	261:08:02:00.010	1029.7	43 26.947N	70 40.309W	79
2-04	27	268:08:06:00.011	1224.7	44 24.686N	70 58.175W	317
2-07	20	268:06:00:00.009	1224.7	44 10.708N	72 14.192W	460
2-08	15	268:04:00:00.009	907.2	44 09.047N	72 34.595W	433
2-09	16	268:04:02:00.006	907.2	44 04.409N	72 55.955W	671
2-10	23	268:06:06:00.006	907.2	44 03.217N	73 23.188W	35
2-11	25	268:08:02:00.006	975.2	43 59.532N	73 39.668W	287
2-12	17	268:04:04:00.007	952.5	43 56.259N	73 58.960W	535
2-13	22	268:06:04:00.007	1043.3	43 58.078N	74 15.689W	524
2-14	24	268:08:00:00.007	1247.2	43 59.969N	74 29.266W	530
2-17	21	268:06:02:00.010	1156.7	44 17.825N	75 55.547W	94
2-20	19	268:04:07:59.970	1360.8	44 28.633N	77 39.494W	0
2-21	26	268:08:04:00.007	907.2	43 03.415N	72 56.287W	710
2-22	18	268:04:06:00.007	907.2	43 14.165N	71 51.534W	325
3-10	35	274:06:06:00.005	1360.8	44 03.217N	73 23.188W	35
3-14	31	274:04:06:00.009	1134.0	43 59.969N	74 29.266W	530
3-15	34	274:06:04:00.006	816.5	44 09.337N	75 00.946W	427
3-16	33	274:06:02:00.007	884.5	44 14.635N	75 31.696W	175
3-17	30	274:04:04:00.009	272.2	44 17.825N	75 55.547W	94
3-18	29	274:04:01:59.990	907.2	44 18.079N	76 43.106W	140
3-19	32	274:05:59:59.996	907.2	44 20.110N	77 12.268W	180
3-20	28	274:03:59:59.969	907.2	44 28.633N	77 39.494W	0

Table 2a

NYNEX Deployment One Station Locations

SITE #	LATITUDE	LONGITUDE	ELEVATION (meters)
1101 AFGL	43.7255	-75.9438	347.4550
1102 AFGL	43.7339	-75.9088	384.0293
1103 AFGL	43.7436	-75.8545	441.9384
1104 AFGL	43.7564	-75.7947	502.8955
1105 AFGL	43.7621	-75.7581	496.7998
1106 AFGL	43.7721	-75.7155	502.8955
1107 AFGL	43.7808	-75.6797	512.0390
1108 AFGL	43.7878	-75.6339	508.9912
1109 AFGL	43.7916	-75.5918	512.0390
1110 AFGL	43.8068	-75.5443	362.6943
1111 AFGL	43.8134	-75.4941	265.1631
1112 AFGL	43.8235	-75.4532	249.9238
1113 AFGL	43.8319	-75.3998	246.8760
1114 AFGL	43.8377	-75.3602	332.2158
1115 AFGL	43.8450	-75.3154	333.7397
1116 AFGL	43.8498	-75.2664	387.0771
1117 AFGL	43.8565	-75.2140	460.2256
1118 AFGL	43.8618	-75.1640	441.9384
1119 AFGL	43.8621	-75.1163	508.9912
1120 AFGL	43.8761	-75.0620	387.0771
1121 AFGL	43.8903	-75.0091	518.1347
1122 AFGL	43.9019	-74.9612	536.4218
1123 AFGL	43.9098	-74.9183	516.6108
1124 AFGL	43.9318	-74.8628	518.1347
1125 AFGL	43.9338	-74.8123	548.6132
1126 AFGL	43.9421	-74.7595	556.2328
1127 AFGL	43.9341	-74.7149	583.0540
1128 AFGL	43.9617	-74.6594	560.8046
1129 AFGL	43.9743	-74.5921	548.6132
1130 AFGL	43.9863	-74.5504	585.1874
1131 AFGL	44.0000	-74.4902	508.9912

Table 2b

NYNEX Deployment Two Station Locations

SITE #	LATITUDE	LONGITUDE	ELEVATION (METERS)
1211 AFGL	44.0385	-73.3704	38.0981
1212 AFGL	44.0177	-73.3297	49.9848
1213 AFGL	43.9976	-73.2869	87.1685
1214 AFGL	43.9768	-73.2446	106.6748
1215 AFGL	43.9580	-73.2091	109.7226
1216 AFGL	43.9313	-73.1533	131.6672
1217 AFGL	43.9052	-73.1030	140.2012
1218 AFGL	43.8828	-73.0641	184.3950
1219 AFGL	43.8628	-73.0158	371.8379
1220 AFGL	43.8425	-72.9900	463.2734
1221 AFGL	43.8317	-72.9057	548.6100
1222 AFGL	43.8001	-72.8922	493.7519
1223 AFGL	43.7787	-72.8542	396.2207
1224 AFGL	43.7545	-72.8050	397.7446
1225 AFGL	43.7233	-72.7469	417.5556
1226 AFGL	43.7009	-72.7194	371.8379
1227 AFGL	43.6810	-72.6875	582.1396
1228 AFGL	43.6569	-72.6524	460.2256
1229 AFGL	43.6377	-72.6134	536.4218
1230 AFGL	43.6202	-72.5659	313.9287
1231 AFGL	43.5992	-72.5251	295.6416
1232 AFGL	43.5715	-72.4829	451.0820
1233 AFGL	43.5527	-72.4436	304.7851
1234 AFGL	43.5357	-72.4071	188.9668
1235 AFGL	43.5161	-72.3724	140.2012
1236 AFGL	43.4887	-72.3218	329.1679
1237 AFGL	43.4635	-72.2861	396.2207
1238 AFGL	43.4240	-72.2160	335.2636
1239 AFGL	43.4109	-72.1812	304.7851
1240 AFGL	43.3872	-72.1367	338.3115
1241 AFGL	43.3666	-72.0968	396.2207
1242 AFGL	43.3449	-72.0650	353.5508
1243 AFGL	43.3163	-72.0250	344.4072
1244 AFGL	43.2942	-71.9726	248.3999
1245 AFGL	43.2705	-71.9266	198.1103
1246 AFGL	43.2487	-71.8956	132.5815

Table 2c

NYNEX Deployment Three Station Locations

SITE #	LATITUDE	LONGITUDE	ELEVATION (Meters)
1301 AFGL	44.0476	-73.4921	353.5508
1302 AFGL	44.0393	-73.5338	368.7900
1303 AFGL	44.0373	-73.5858	384.0293
1304 AFGL	44.0238	-73.6235	353.5508
1305 AFGL	43.9927	-73.6605	292.5937
1306 AFGL	43.9573	-73.7222	271.2588
1307 AFGL	43.9568	-73.7732	323.0722
1308 AFGL	43.9592	-73.8139	377.9336
1309 AFGL	43.9544	-73.8419	390.1250
1310 AFGL	43.9543	-73.8864	566.9003
1311 AFGL	43.9504	-73.9223	566.9003
1312 AFGL	43.9423	-73.9551	530.3261
1313 AFGL	43.9482	-73.9933	572.9960
1314 AFGL	43.9529	-74.0343	594.3310
1315 AFGL	43.9504	-74.0707	512.0390
1316 AFGL	43.9596	-74.1057	505.9433
1317 AFGL	43.9708	-74.1468	502.8955
1318 AFGL	43.9720	-74.1846	487.6562
1319 AFGL	43.9704	-74.2256	496.7998
1320 AFGL	43.9754	-74.2726	518.1347
1321 AFGL	43.9853	-74.3031	563.8525
1322 AFGL	43.9785	-74.3346	547.0893
1323 AFGL	43.9765	-74.3749	572.9960
1324 AFGL	43.9816	-74.4301	524.2304
1325 AFGL	43.9881	-74.4626	560.8046
1326 AFGL	44.0091	-74.5013	551.6611
1327 AFGL	44.0375	-74.5218	597.3788
1328 AFGL	44.0473	-74.5642	542.5175
1329 AFGL	44.0538	-74.5981	539.4697
1330 AFGL	44.0571	-74.6486	579.0917
1331 AFGL	44.0785	-74.6941	554.7089

Table 3a

Seismogram Constants for Deployment One

Table 3a Seismogram Constants for Deployment One

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1101 1 01 SPZ	17 SEP 1988 261	6 4 40 000	0 6309 GOES		113.0980	0.494	0.465	504.9	261.2	76.9
" " " " SPN	" " " "	6 4 40 000	" " " "	13.00	115.7602	0.480	0.426	" "	" "	" "
" " " " SPE	" " " "	6 4 40 000	" " " "	77.00	105.1737	0.392	0.343	" "	" "	" "
1102 " " " " SPZ	" " " "	6 4 40 000	1 1699 WWVB		96.2929	0.470	0.388	501.8	261.2	76.9
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	102.6773	0.511	0.406	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	100.1123	0.517	0.434	" "	" "	" "
1103 " " " " SPZ	" " " "	6 4 40 000	1 1152		99.6815	0.487	0.444	497.4	261.2	77.0
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	110.1595	0.477	0.485	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	101.5023	0.479	0.444	" "	" "	" "
1104 " " " " SPZ	" " " "	6 4 40 000	1 1387		111.6818	0.457	0.463	492.4	261.3	77.1
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	110.8799	0.494	0.503	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	109.8537	0.512	0.514	" "	" "	" "
1105 " " " " SPZ	" " " "	6 4 40 000	1 0156		92.7538	0.415	0.356	489.4	261.3	77.1
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	85.1736	0.526	0.440	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	90.0945	0.488	0.382	" "	" "	" "
1106 " " " " SPZ	" " " "	6 4 40 000	0 1309		106.5799	0.423	0.348	485.8	261.3	77.1
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	110.7771	0.512	0.428	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	103.4123	0.515	0.418	" "	" "	" "
1107 " " " " SPZ	" " " "	6 4 40 000	1 0156		120.8491	0.427	0.361	482.8	261.3	77.2
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	114.9841	0.506	0.446	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	117.5121	0.490	0.419	" "	" "	" "
1108 " " " " SPZ	" " " "	6 4 40 000	0 7773		105.0776	0.412	0.329	479.0	261.3	77.2
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	122.8554	0.535	0.470	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	109.5664	0.535	0.450	" "	" "	" "
1109 " " " " SPN	" " " "	6 4 40 000	0 7617		105.0889	0.471	0.383	475.6	261.3	77.2
" " " " " " SPE	" " " "	6 4 40 000	" " " "	13.00	114.8958	0.468	0.415	" "	" "	" "
" " " " " " SPZ	" " " "	6 4 40 000	" " " "	77.00	106.2634	0.449	0.377	" "	" "	" "
1110 " " " " SPZ	" " " "	6 4 40 000	0 2148		119.1771	0.385	0.437	471.5	261.4	77.4
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	106.9796	0.473	0.453	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	131.8896	0.436	0.567	" "	" "	" "
1111 " " " " SPZ	" " " "	6 4 40 000	1 0355		113.0178	0.375	0.327	467.4	261.4	77.4
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	112.1968	0.496	0.423	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	120.1829	0.504	0.419	" "	" "	" "
1112 " " " " SPZ	" " " "	6 4 40 000	0 7383		90.1454	0.424	0.320	463.9	261.4	77.4
" " " " " " SPN	" " " "	6 4 40 000	" " " "	13.00	105.5084	0.497	0.430	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	93.7682	0.489	0.431	" "	" "	" "
1113 " " " " SPZ	" " " "	6 4 40 000	1 1914		121.0679	0.441	0.373	460.0	261.2	77.2
" " " " " " SPN	" " " "	6 4 40 000	" " " "	-13.00	98.8521	0.506	0.382	" "	" "	" "
" " " " " " SPE	" " " "	6 4 40 000	" " " "	77.00	110.1773	0.555	0.459	" "	" "	" "
1121 " " " " SPN	" " " "	6 4 40 000	0 0000		98.5121	0.471	0.362	427.5	261.4	77.7
" " " " " " SPE	" " " "	6 4 40 000	" " " "	13.00	101.6663	0.507	0.400	" "	" "	" "
" " " " " " SPZ	" " " "	6 4 40 000	" " " "	77.00	110.6077	0.386	0.339	" "	" "	" "
1125 " " " " SPN	" " " "	6 4 40 000	0 0156		590.0545	0.641	0.987	411.0	261.6	78.0
" " " " " " SPE	" " " "	6 4 40 000	" " " "	13.00	542.9311	1.033	1.646	" "	" "	" "
" " " " " " SPZ	" " " "	6 4 40 000	" " " "	77.00	442.2431	0.692	1.078	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1126 1 01 SPN	17 SEP 1988	261	0.1934 WWVB	13.00	833.3716	0.976	1.260	406.7	261.6	78.1
" " " " SPE	" " "	6 4 40.000	" "	77.00	476.0570	1.005	1.227	" "	" "	" "
" " " " SPZ	" " "	6 4 40.000	" "	" "	596.3226	0.673	0.842	" "	" "	" "
1128 " " " " SPN	" " "	6 4 40.000	0.0000 NONE	13.00	505.6474	0.902	1.454	398.4	261.6	78.2
" " " " " " SPE	" " "	6 4 40.000	" "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " " " " " SPZ	" " "	6 4 40.000	" "	" "	624.0928	0.864	1.000	" "	" "	" "
1129 " " " " SPN	" " "	6 4 40.000	0.0000	13.00	576.6406	1.042	0.325	392.8	261.7	78.3
" " " " " " SPE	" " "	6 4 40.000	" "	77.00	554.5508	1.042	0.314	" "	" "	" "
" " " " " " SPZ	" " "	6 4 40.000	" "	" "	553.7008	1.042	0.321	" "	" "	" "
1130 " " " " SPN	" " "	6 4 40.000	0.0000	13.00	564.8539	1.147	1.960	389.2	261.8	78.4
" " " " " " SPE	" " "	6 4 40.000	" "	77.00	565.5809	1.031	1.610	" "	" "	" "
" " " " " " SPZ	" " "	6 4 40.000	" "	" "	566.3342	1.351	2.205	" "	" "	" "
1102 1 02 SPZ	" " "	4 0 40.000	1.1387 WWVB	13.00	96.2929	0.470	0.386	478.0	260.9	76.9
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	102.6773	0.511	0.406	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	100.1123	0.517	0.434	" "	" "	" "
1103 " " " " SPZ	" " "	4 0 40.000	1.0918	13.00	99.6815	0.487	0.444	473.5	260.9	76.9
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	110.1595	0.477	0.485	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	101.5023	0.479	0.444	" "	" "	" "
1104 " " " " SPZ	" " "	4 0 40.000	1.1152	13.00	111.6818	0.457	0.463	468.5	261.0	77.0
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	110.8799	0.494	0.503	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	109.8537	0.512	0.514	" "	" "	" "
1105 " " " " SPZ	" " "	4 0 40.000	1.0000	13.00	92.7538	0.415	0.356	465.5	261.0	77.0
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	85.1736	0.526	0.440	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	90.0945	0.488	0.382	" "	" "	" "
1106 " " " " SPZ	" " "	4 0 40.000	0.1152	13.00	106.5799	0.423	0.348	461.9	261.0	77.1
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	110.7771	0.512	0.428	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	103.4123	0.515	0.418	" "	" "	" "
1107 " " " " SPZ	" " "	4 0 40.000	1.0078	13.00	120.8491	0.427	0.361	458.9	261.1	77.1
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	114.9841	0.506	0.446	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	117.5121	0.490	0.419	" "	" "	" "
1108 " " " " SPZ	" " "	4 0 40.000	0.8154	13.00	105.0776	0.412	0.329	455.1	261.0	77.2
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	122.8554	0.535	0.470	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	109.5664	0.535	0.450	" "	" "	" "
1109 " " " " SPZ	" " "	4 0 40.000	0.7695	13.00	105.0889	0.471	0.383	451.7	261.0	77.1
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	114.8958	0.468	0.415	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	106.2634	0.449	0.377	" "	" "	" "
1110 " " " " SPZ	" " "	4 0 40.000	-0.2002	13.00	119.1771	0.385	0.437	447.6	261.1	77.3
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	106.9796	0.473	0.453	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	131.8896	0.436	0.567	" "	" "	" "
1111 " " " " SPZ	" " "	4 0 40.000	1.0234	13.00	113.0178	0.375	0.327	443.5	261.1	77.3
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	112.1968	0.496	0.423	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	120.1829	0.504	0.419	" "	" "	" "
1112 " " " " SPZ	" " "	4 0 40.000	0.7617	13.00	90.1454	0.424	0.320	440.1	261.1	77.4
" " " " " " SPN	" " "	4 0 40.000	" "	77.00	105.5084	0.497	0.430	" "	" "	" "
" " " " " " SPE	" " "	4 0 40.000	" "	" "	93.7682	0.489	0.431	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1113 1 02 SP2	17 SEP 1988 261	4 0 40.000	1.1533 WWVB		121.0679	0.441	0.373	436.1	260.9	77.1
" " " SPN	" " "	4 0 40.000	"	13.00	98.8521	0.506	0.382	"	"	"
" " " SPE	" " "	4 0 40.000	"	77.00	110.1773	0.555	0.459	"	"	"
1120 " " " SPN	" " "	4 0 40.000	0.0000 NONE	13.00	102.7787	0.500	0.429	408.1	261.0	77.5
" " " SPE	" " "	4 0 40.000	"	77.00	101.8267	0.464	0.373	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	79.9450	0.378	0.300	"	"	"
1121 " " " SPN	" " "	4 0 40.000	0.0156 WWVB	13.00	98.5121	0.471	0.362	403.6	261.1	77.6
" " " SPE	" " "	4 0 40.000	"	77.00	101.6663	0.507	0.400	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	110.6077	0.386	0.339	"	"	"
1125 " " " SPN	" " "	4 0 40.000	0.0234	13.00	590.0545	0.641	0.987	387.1	261.3	77.9
" " " SPE	" " "	4 0 40.000	"	77.00	542.9311	1.033	1.646	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	442.2431	0.692	1.078	"	"	"
1126 " " " SPN	" " "	4 0 40.000	0.1611	13.00	833.3716	0.976	1.260	382.8	261.3	78.0
" " " SPE	" " "	4 0 40.000	"	77.00	694.0557	0.551	0.681	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	624.0928	0.864	1.000	"	"	"
1127 " " " SPN	" " "	4 0 40.000	0.0000 NONE	13.00	689.6237	0.838	1.063	379.5	261.0	77.8
" " " SPE	" " "	4 0 40.000	"	77.00	763.6659	1.003	1.294	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	719.0599	1.003	1.236	"	"	"
1128 " " " SPN	" " "	4 0 40.000	0.0900	13.00	505.6474	0.902	1.454	374.5	261.3	78.1
" " " SPE	" " "	4 0 40.000	"	77.00	694.0557	0.551	0.681	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	624.0928	0.864	1.000	"	"	"
1129 " " " SPN	" " "	4 0 40.000	0.0000	13.00	576.6406	1.042	0.325	368.9	261.4	78.2
" " " SPE	" " "	4 0 40.000	"	77.00	554.5508	1.042	0.314	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	553.7008	1.042	0.321	"	"	"
1130 " " " SPN	" " "	4 0 40.000	0.0000	13.00	564.8539	1.147	1.960	365.3	261.5	78.3
" " " SPE	" " "	4 0 40.000	"	77.00	565.5809	1.031	1.610	"	"	"
" " " SP2	" " "	4 0 40.000	"	"	566.3342	1.351	2.205	"	"	"
1101 1 03 SP2	" " "	8 0 35.000	0.7041 GOES	13.00	113.0980	0.494	0.465	441.6	261.3	77.5
" " " SPN	" " "	8 0 35.000	"	77.00	115.7602	0.480	0.426	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	105.1737	0.392	0.343	"	"	"
1102 " " " SP2	" " "	8 0 35.000	1.1836 WWVB	13.00	96.2929	0.470	0.386	438.6	261.3	77.6
" " " SPN	" " "	8 0 35.000	"	77.00	102.6773	0.511	0.406	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	100.1123	0.517	0.434	"	"	"
1103 " " " SP2	" " "	8 0 35.000	1.1387	13.00	99.6815	0.487	0.444	434.2	261.3	77.6
" " " SPN	" " "	8 0 35.000	"	77.00	110.1595	0.477	0.485	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	101.5023	0.479	0.444	"	"	"
1104 " " " SP2	" " "	8 0 35.000	1.1387	13.00	111.6818	0.457	0.463	429.2	261.4	77.7
" " " SPN	" " "	8 0 35.000	"	77.00	110.8799	0.494	0.503	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	109.8537	0.512	0.514	"	"	"
1105 " " " SP2	" " "	8 0 35.000	1.0156	-13.00	92.7538	0.415	0.356	426.1	261.4	77.7
" " " SPN	" " "	8 0 35.000	"	77.00	85.1736	0.526	0.440	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	90.0945	0.488	0.382	"	"	"
1106 " " " SP2	" " "	8 0 35.000	0.1543	-13.00	106.5799	0.423	0.348	422.6	261.4	77.8
" " " SPN	" " "	8 0 35.000	"	77.00	110.7771	0.512	0.428	"	"	"
" " " SPE	" " "	8 0 35.000	"	"	103.4123	0.515	0.418	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1107 1 03 SPZ	17 SEP 1988 261	8	0 35 000	1 0313 WWVB	13 00	120.8491	0.427	0.361	419.5	261.5	77.9
" " " SPN	" " "	8	0 35 000	" " "	77 00	114.9841	0.506	0.446	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	" " "	117.5121	0.490	0.419	"	"	"
1108 " " " SPZ	" " "	8	0 35 000	0.7695	13 00	105.0776	0.412	0.329	415.8	261.5	77.9
" " " SPN	" " "	8	0 35 000	" " "	77 00	122.8554	0.535	0.470	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	77 00	109.5664	0.535	0.450	"	"	"
1109 " " " SPN	" " "	8	0 35 000	0.7383	13 00	105.0889	0.471	0.383	412.4	261.4	77.9
" " " SPE	" " "	8	0 35 000	" " "	77 00	114.8958	0.468	0.415	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	106.2634	0.449	0.377	"	"	"
1110 " " " SPZ	" " "	8	0 35 000	0.2305	13 00	119.1771	0.385	0.437	408.3	261.5	78.0
" " " SPN	" " "	8	0 35 000	" " "	77 00	106.9796	0.473	0.453	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	" " "	131.8896	0.436	0.567	"	"	"
1111 " " " SPZ	" " "	8	0 35 000	1.0469	13 00	113.0178	0.375	0.327	404.2	261.5	78.1
" " " SPN	" " "	8	0 35 000	" " "	77 00	112.1968	0.496	0.423	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	" " "	120.1829	0.504	0.419	"	"	"
1112 " " " SPZ	" " "	8	0 35 000	0.7070	13 00	90.1454	0.424	0.320	400.7	261.6	78.1
" " " SPN	" " "	8	0 35 000	" " "	77 00	105.5084	0.497	0.430	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	" " "	93.7682	0.489	0.431	"	"	"
1113 " " " SPZ	" " "	8	0 35 000	1.2148	13 00	121.0679	0.441	0.373	396.7	261.3	77.9
" " " SPN	" " "	8	0 35 000	" " "	77 00	98.8521	0.506	0.382	"	"	"
" " " SPE	" " "	8	0 35 000	" " "	" " "	110.1773	0.555	0.459	"	"	"
1121 " " " SPN	" " "	8	0 35 000	0.0000	13 00	98.5121	0.471	0.362	364.3	261.6	78.5
" " " SPE	" " "	8	0 35 000	" " "	77 00	101.6663	0.507	0.400	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	110.6077	0.386	0.339	"	"	"
1125 " " " SPN	" " "	8	0 35 000	0.0234	13 00	590.0545	0.641	0.987	347.8	261.8	78.8
" " " SPE	" " "	8	0 35 000	" " "	77 00	542.9311	1.033	1.646	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	442.2431	0.692	1.078	"	"	"
1126 " " " SPN	" " "	8	0 35 000	0.2070	13 00	833.3716	0.976	1.260	343.5	261.9	78.9
" " " SPE	" " "	8	0 35 000	" " "	77 00	476.0570	1.005	1.227	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	596.3226	0.673	0.842	"	"	"
1127 " " " SPN	" " "	8	0 35 000	0.0000 NONE	13 00	689.6237	0.838	1.063	340.1	261.6	78.7
" " " SPE	" " "	8	0 35 000	" " "	77 00	763.6659	1.032	1.294	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	719.0599	1.003	1.236	"	"	"
1128 " " " SPN	" " "	8	0 35 000	0.0000	13 00	505.6474	0.902	1.454	335.2	262.0	79.1
" " " SPE	" " "	8	0 35 000	" " "	77 00	694.0557	0.551	0.681	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	624.0928	0.864	1.000	"	"	"
1129 " " " SPN	" " "	8	0 35 000	0.0000	13 00	576.6406	1.042	0.325	329.6	262.0	79.2
" " " SPE	" " "	8	0 35 000	" " "	77 00	554.5508	1.042	0.314	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	553.7008	1.042	0.321	"	"	"
1130 " " " SPN	" " "	8	0 35 000	0.0000	13 00	564.8539	1.147	1.960	326.1	262.1	79.3
" " " SPE	" " "	8	0 35 000	" " "	77 00	565.5809	1.031	1.610	"	"	"
" " " SPZ	" " "	8	0 35 000	" " "	" " "	566.3342	1.351	2.205	"	"	"
1101 1 04 SPZ	" " "	6	2 30 000	0.6309 GOES	13 00	113.0980	0.494	0.465	405.7	260.9	77.4
" " " SPN	" " "	6	2 30 000	" " "	77 00	115.7602	0.480	0.426	"	"	"
" " " SPE	" " "	6	2 30 000	" " "	" " "	105.1737	0.392	0.343	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting d h m	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1102 1 04 SPZ	17 SEP 1988	261	1.1699 WWVB		96.2929	0.470	0.386	402.6	261.0	77.5
" " SPN	" " "	"	"	13.00	102.6773	0.511	0.406	"	"	"
" " SPE	" " "	"	"	77.00	100.1123	0.517	0.434	"	"	"
1103 " " SPZ	" " "	"	1.1074	"	99.6815	0.487	0.444	398.2	261.0	77.6
" " SPN	" " "	"	"	13.00	110.1595	0.477	0.485	"	"	"
" " SPE	" " "	"	"	77.00	101.5023	0.479	0.444	"	"	"
1104 " " SPZ	" " "	"	1.1387	"	111.6818	0.457	0.463	393.2	261.0	77.7
" " SPN	" " "	"	"	13.00	110.8799	0.494	0.503	"	"	"
" " SPE	" " "	"	"	77.00	109.8537	0.512	0.514	"	"	"
1105 " " SPZ	" " "	"	1.0156	"	92.7538	0.415	0.356	390.2	261.0	77.7
" " SPN	" " "	"	"	13.00	85.1736	0.526	0.440	"	"	"
" " SPE	" " "	"	"	77.00	90.0945	0.488	0.382	"	"	"
1106 " " SPZ	" " "	"	0.1543	"	106.5799	0.423	0.348	386.6	261.1	77.8
" " SPN	" " "	"	"	13.00	110.7771	0.512	0.428	"	"	"
" " SPE	" " "	"	"	77.00	103.4123	0.515	0.418	"	"	"
1107 " " SPZ	" " "	"	1.0156	"	120.8491	0.427	0.361	383.6	261.1	77.8
" " SPN	" " "	"	"	13.00	114.9841	0.506	0.446	"	"	"
" " SPE	" " "	"	"	77.00	117.5121	0.490	0.419	"	"	"
1108 " " SPZ	" " "	"	0.7773	"	105.0776	0.412	0.329	379.8	261.1	77.9
" " SPN	" " "	"	"	13.00	122.8554	0.535	0.470	"	"	"
" " SPE	" " "	"	"	77.00	109.5664	0.535	0.450	"	"	"
1109 " " SPZ	" " "	"	0.7383	"	105.0889	0.471	0.383	376.4	261.1	77.9
" " SPN	" " "	"	"	13.00	114.8958	0.468	0.415	"	"	"
" " SPE	" " "	"	"	77.00	106.2634	0.449	0.377	"	"	"
1110 " " SPZ	" " "	"	0.2148	"	119.1771	0.385	0.437	372.3	261.2	78.0
" " SPN	" " "	"	"	-13.00	106.9796	0.473	0.453	"	"	"
" " SPE	" " "	"	"	77.00	131.8896	0.436	0.567	"	"	"
1111 " " SPZ	" " "	"	1.0355	"	113.0178	0.375	0.327	368.2	261.2	78.0
" " SPN	" " "	"	"	13.00	112.1968	0.406	0.423	"	"	"
" " SPE	" " "	"	"	77.00	120.1829	0.504	0.419	"	"	"
1112 " " SPZ	" " "	"	0.7383	"	90.1454	0.424	0.320	364.8	261.2	78.1
" " SPN	" " "	"	"	13.00	105.5084	0.497	0.430	"	"	"
" " SPE	" " "	"	"	77.00	93.7682	0.489	0.431	"	"	"
1113 " " SPZ	" " "	"	1.1914	"	121.0679	0.441	0.373	360.8	260.9	77.9
" " SPN	" " "	"	"	13.00	98.8521	0.506	0.381	"	"	"
" " SPE	" " "	"	"	77.00	110.1773	0.555	0.459	"	"	"
1121 " " SPZ	" " "	"	0.5840	"	98.5121	0.471	0.362	328.3	261.3	78.4
" " SPN	" " "	"	"	13.00	101.6663	0.507	0.400	"	"	"
" " SPE	" " "	"	"	77.00	110.6077	0.386	0.339	"	"	"
1125 " " SPZ	" " "	"	0.0156	"	590.0545	0.641	0.987	311.8	261.5	78.9
" " SPN	" " "	"	"	13.00	542.9311	1.033	1.646	"	"	"
" " SPE	" " "	"	"	77.00	442.2431	0.692	1.078	"	"	"
1126 " " SPZ	" " "	"	0.1777	"	833.3716	0.976	1.260	307.5	261.6	78.9
" " SPN	" " "	"	"	13.00	476.0570	1.005	1.227	"	"	"
" " SPE	" " "	"	"	77.00	596.3226	0.673	0.842	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1128 1-04 SPN	17 SEP 1988 261	6 2 30.000	0.0000 NONE	13.00	505.6474	0.902	1.454	299.2	261.7	79.1
" " SPE	" " "	6 2 30.000	" " "	77.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" " "	6 2 30.000	" " "	"	624.0928	0.864	1.000	"	"	"
1129 " " SPN	" " "	6 2 30.000	0.0000	13.00	576.6406	1.042	0.325	293.6	261.7	79.2
" " SPE	" " "	6 2 30.000	" " "	77.00	554.5508	1.042	0.314	"	"	"
" " SPZ	" " "	6 2 30.000	" " "	"	553.7008	1.042	0.321	"	"	"
1130 " " SPN	" " "	6 2 30.000	0.0000	13.00	564.8539	1.147	1.960	290.1	261.9	79.4
" " SPE	" " "	6 2 30.000	" " "	77.00	565.5809	1.031	1.610	"	"	"
" " SPZ	" " "	6 2 30.000	" " "	"	566.3342	1.351	2.205	"	"	"
1102 -05 SPN	" " "	4 2 25.000	1.1543 WWVB	13.00	96.2929	0.470	0.386	368.6	261.1	78.0
" " SPE	" " "	4 2 25.000	" " "	77.00	102.6773	0.511	0.406	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	100.1123	0.517	0.434	"	"	"
1103 " " SPN	" " "	4 2 25.000	1.0918	13.00	99.6815	0.487	0.444	364.2	261.1	78.0
" " SPE	" " "	4 2 25.000	" " "	77.00	110.1595	0.477	0.485	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	101.5023	0.479	0.444	"	"	"
1104 " " SPN	" " "	4 2 25.000	1.1152	13.00	111.6818	0.457	0.463	359.2	261.2	78.1
" " SPE	" " "	4 2 25.000	" " "	77.00	110.8799	0.494	0.503	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	109.8537	0.512	0.514	"	"	"
1105 " " SPN	" " "	4 2 25.000	0.9922	13.00	92.7538	0.415	0.356	356.2	261.2	78.2
" " SPE	" " "	4 2 25.000	" " "	77.00	85.1736	0.526	0.440	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	90.0945	0.488	0.440	"	"	"
1106 " " SPN	" " "	4 2 25.000	0.1230	13.00	106.5799	0.423	0.348	352.6	261.3	78.3
" " SPE	" " "	4 2 25.000	" " "	77.00	110.7771	0.512	0.428	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	103.4123	0.515	0.418	"	"	"
1107 " " SPN	" " "	4 2 25.000	1.0000	13.00	130.8491	0.427	0.361	349.6	261.3	78.3
" " SPE	" " "	4 2 25.000	" " "	77.00	114.9841	0.506	0.446	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	117.5121	0.490	0.419	"	"	"
1108 " " SPN	" " "	4 2 25.000	0.8154	13.00	105.0776	0.412	0.329	345.8	261.3	78.4
" " SPE	" " "	4 2 25.000	" " "	77.00	122.8554	0.535	0.470	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	109.5664	0.535	0.450	"	"	"
1109 " " SPN	" " "	4 2 25.000	0.7695	13.00	105.0889	0.471	0.383	342.4	261.3	78.4
" " SPE	" " "	4 2 25.000	" " "	77.00	114.8958	0.468	0.415	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	106.2634	0.449	0.377	"	"	"
1110 " " SPN	" " "	4 2 25.000	0.2002	13.00	119.1771	0.385	0.437	338.3	261.4	78.5
" " SPE	" " "	4 2 25.000	" " "	77.00	106.9796	0.473	0.453	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	131.8896	0.436	0.567	"	"	"
1111 " " SPN	" " "	4 2 25.000	1.0234	13.00	113.0178	0.375	0.327	334.2	261.4	78.6
" " SPE	" " "	4 2 25.000	" " "	77.00	120.1829	0.496	0.423	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	90.1454	0.504	0.419	"	"	"
1112 " " SPN	" " "	4 2 25.000	0.7695	13.00	105.5084	0.424	0.320	330.8	261.5	78.7
" " SPE	" " "	4 2 25.000	" " "	77.00	93.7682	0.497	0.430	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	121.0679	0.441	0.373	326.8	261.2	78.4
1113 " " SPN	" " "	4 2 25.000	1.1621	13.00	98.8521	0.506	0.382	"	"	"
" " SPE	" " "	4 2 25.000	" " "	77.00	110.1773	0.555	0.459	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1120 1 05 SPN	17 SEP 1988 261	4 2 25.000	0.0000 NONE	13.00	102.7787	0.500	0.429	298.8	261.4	78.9
" " SPE	" " "	4 2 25.000	" " "	77.00	101.8267	0.464	0.373	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	79.9450	0.378	0.300	"	"	"
1121 " " SPN	" " "	4 2 25.000	0.0234 WWVB	13.00	98.5121	0.471	0.362	294.3	261.6	79.1
" " SPE	" " "	4 2 25.000	" " "	77.00	101.6663	0.507	0.400	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	110.6077	0.386	0.339	"	"	"
1125 " " SPN	" " "	4 2 25.000	0.0234	13.00	590.0545	0.641	0.987	277.9	261.9	79.5
" " SPE	" " "	4 2 25.000	" " "	77.00	542.9311	1.033	1.646	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	442.2431	0.692	1.078	"	"	"
1126 " " SPN	" " "	4 2 25.000	0.1689	13.00	833.3716	0.976	1.260	273.5	262.0	79.6
" " SPE	" " "	4 2 25.000	" " "	77.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	624.0928	0.864	1.000	"	"	"
1127 " " SPN	" " "	4 2 25.000	0.0000 NONE	13.00	689.6237	0.828	1.063	270.2	261.6	79.3
" " SPE	" " "	4 2 25.000	" " "	77.00	763.6659	1.032	1.294	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	719.0599	1.003	1.236	"	"	"
1128 " " SPN	" " "	4 2 25.000	0.0000	13.00	505.6474	0.902	1.454	265.2	262.1	79.8
" " SPE	" " "	4 2 25.000	" " "	77.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	624.0928	0.864	1.000	"	"	"
1129 " " SPN	" " "	4 2 25.000	0.0000	13.00	576.6406	1.042	0.325	259.7	262.2	80.0
" " SPE	" " "	4 2 25.000	" " "	77.00	554.5508	1.042	0.314	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	553.7008	1.042	0.321	"	"	"
1130 " " SPN	" " "	4 2 25.000	0.0000	13.00	564.8539	1.147	1.960	256.1	262.4	80.2
" " SPE	" " "	4 2 25.000	" " "	77.00	565.5809	1.031	1.610	"	"	"
" " SPZ	" " "	4 2 25.000	" " "	"	566.3342	1.351	2.205	"	"	"
1131 " " SPN	" " "	4 2 40.000	0.0000 WWVB	13.00	707.9183	0.750	0.885	251.1	262.5	80.4
" " SPE	" " "	4 2 40.000	" " "	77.00	696.1515	1.041	1.315	"	"	"
" " SPZ	" " "	4 2 40.000	" " "	"	835.2012	0.680	0.900	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back. Azimuth (deg)
1101 1 06 SP2	17 SEP 1988 261	6 0 20.000	0.6309 GOES		113.0980	0.494	0.465	335.5	260.8	77.0
" " " SPN	" " "	6 0 20.000	" "	13.00	115.7602	0.426	0.426	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	105.1737	0.392	0.343	"	"	"
1102 " " " SP2	" " "	6 0 20.000	1.1699 WWVB		96.2929	0.470	0.386	332.5	260.9	78.1
" " " SPN	" " "	6 0 20.000	" "	13.00	102.6773	0.511	0.406	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	100.1123	0.517	0.434	"	"	"
1103 " " " SP2	" " "	6 0 20.000	1.1152		99.6815	0.487	0.414	328.1	260.9	78.1
" " " SPN	" " "	6 0 20.000	" "	13.00	110.1595	0.477	0.485	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	101.5023	0.479	0.444	"	"	"
1104 " " " SP2	" " "	6 0 20.000	1.1387		111.6818	0.457	0.463	323.0	261.0	78.2
" " " SPN	" " "	6 0 20.000	" "	13.00	110.8799	0.494	0.503	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	109.8537	0.512	0.514	"	"	"
1105 " " " SP2	" " "	6 0 20.000	1.0156		92.7538	0.415	0.356	320.0	261.0	78.3
" " " SPN	" " "	6 0 20.000	" "	13.00	85.1736	0.526	0.440	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	90.0945	0.488	0.382	"	"	"
1106 " " " SP2	" " "	6 0 20.000	0.1309		106.5799	0.473	0.343	316.4	261.1	78.4
" " " SPN	" " "	6 0 20.000	" "	13.00	110.7771	0.512	0.428	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	103.4123	0.515	0.418	"	"	"
1107 " " " SP2	" " "	6 0 20.000	1.0156		120.8491	0.427	0.361	313.4	261.1	78.5
" " " SPN	" " "	6 0 20.000	" "	13.00	114.9841	0.506	0.446	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	117.5121	0.490	0.419	"	"	"
1108 " " " SP2	" " "	6 0 20.000	0.7695		105.0776	0.412	0.329	309.7	261.1	78.5
" " " SPN	" " "	6 0 20.000	" "	13.00	122.8554	0.535	0.470	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	109.5664	0.535	0.450	"	"	"
1109 " " " SP2	" " "	6 0 20.000	0.7461		105.0889	0.471	0.383	306.3	261.1	78.5
" " " SPN	" " "	6 0 20.000	" "	13.00	114.8958	0.468	0.415	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	106.2634	0.449	0.377	"	"	"
1110 " " " SP2	" " "	6 0 20.000	0.2070		119.1771	0.385	0.437	302.2	261.3	78.7
" " " SPN	" " "	6 0 20.000	" "	13.00	106.9796	0.473	0.453	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	131.8896	0.436	0.567	"	"	"
1111 " " " SP2	" " "	6 0 20.000	1.0355		113.0178	0.375	0.327	298.1	261.2	78.7
" " " SPN	" " "	6 0 20.000	" "	13.00	112.1968	0.496	0.423	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	120.1829	0.504	0.419	"	"	"
1112 " " " SP2	" " "	6 0 20.000	0.7461		90.1454	0.424	0.320	294.6	261.3	78.8
" " " SPN	" " "	6 0 20.000	" "	13.00	105.5084	0.497	0.430	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	93.7682	0.489	0.431	"	"	"
1113 " " " SP2	" " "	6 0 20.000	1.1914		121.0679	0.441	0.373	290.6	261.0	78.5
" " " SPN	" " "	6 0 20.000	" "	13.00	98.8521	0.506	0.382	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	110.1773	0.555	0.459	"	"	"
1121 " " " SP2	" " "	6 0 20.000	0.0000		98.5121	0.471	0.362	258.2	261.4	79.2
" " " SPN	" " "	6 0 20.000	" "	13.00	101.6663	0.507	0.400	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	110.6077	0.386	0.339	"	"	"
1125 " " " SP2	" " "	6 0 20.000	-0.0156		590.0545	0.641	0.987	241.7	261.9	79.8
" " " SPN	" " "	6 0 20.000	" "	13.00	542.9311	1.033	1.646	"	"	"
" " " SPE	" " "	6 0 20.000	" "	77.00	442.2431	0.692	1.078	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1126 1-06 SPN	17 SEP 1988 261	6 0 20.000	0.1855 WWVB	-13.00	833.3716	0.976	1.260	237.4	261.9	79.9
" " SPE	" " "	6 0 20.000	" " "	77.00	476.0570	1.005	1.227	" "	" "	" "
" " SP2	" " "	6 0 20.000	" " "	" "	596.3226	0.673	0.842	" "	" "	" "
1128 " " SPN	" " "	6 0 20.000	0.0000 NONE	13.00	505.6474	0.902	1.454	229.1	262.1	80.1
" " SPE	" " "	6 0 20.000	" " "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " SP2	" " "	6 0 20.000	" " "	" "	624.0928	0.864	1.000	" "	" "	" "
1129 " " SPN	" " "	6 0 20.000	0.0000	13.00	576.6406	1.042	1.000	223.6	262.2	80.3
" " SPE	" " "	6 0 20.000	" " "	77.00	554.5508	1.042	0.314	" "	" "	" "
" " SP2	" " "	6 0 20.000	" " "	" "	553.7008	1.042	0.321	" "	" "	" "
1130 " " SPN	" " "	6 0 20.000	0.0000	13.00	564.8539	1.147	1.960	220.0	262.4	80.5
" " SPE	" " "	6 0 20.000	" " "	77.00	565.5809	1.031	1.610	" "	" "	" "
" " SP2	" " "	6 0 20.000	" " "	" "	566.3342	1.351	2.205	" "	" "	" "
1102 1 07 SP2	" " "	4 4 15.000	1.1465 WWVB	-13.00	96.2929	0.470	0.386	298.8	261.8	79.2
" " SPN	" " "	4 4 15.000	" " "	77.00	102.6773	0.511	0.408	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	100.1123	0.517	0.434	" "	" "	" "
1103 " " SP2	" " "	4 4 15.000	1.0996	13.00	99.6815	0.487	0.444	294.3	261.8	79.3
" " SPN	" " "	4 4 15.000	" " "	77.00	110.1595	0.477	0.444	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	101.5023	0.479	0.444	" "	" "	" "
1104 " " SP2	" " "	4 4 15.000	1.1074	-13.00	111.6818	0.494	0.463	289.3	261.9	79.4
" " SPN	" " "	4 4 15.000	" " "	77.00	110.8799	0.494	0.503	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	109.8537	0.512	0.514	" "	" "	" "
1105 " " SP2	" " "	4 4 15.000	1.0000	13.00	92.7538	0.415	0.356	286.3	261.9	79.5
" " SPN	" " "	4 4 15.000	" " "	77.00	85.1736	0.526	0.440	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	90.0945	0.488	0.382	" "	" "	" "
1106 " " SP2	" " "	4 4 15.000	0.1230	-13.00	106.5799	0.423	0.348	282.8	262.0	79.6
" " SPN	" " "	4 4 15.000	" " "	77.00	110.7771	0.512	0.428	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	103.4123	0.515	0.418	" "	" "	" "
1107 " " SP2	" " "	4 4 15.000	1.0078	13.00	120.8491	0.427	0.361	279.8	262.1	79.7
" " SPN	" " "	4 4 15.000	" " "	77.00	114.9841	0.506	0.446	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	117.5121	0.490	0.419	" "	" "	" "
1108 " " SP2	" " "	4 4 15.000	0.8154	13.00	105.0776	0.412	0.329	276.0	262.1	79.8
" " SPN	" " "	4 4 15.000	" " "	77.00	122.8554	0.535	0.470	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	109.5664	0.535	0.450	" "	" "	" "
1109 " " SPN	" " "	4 4 15.000	0.7617	13.00	105.0889	0.471	0.383	272.6	262.1	79.8
" " SPE	" " "	4 4 15.000	" " "	77.00	114.8958	0.468	0.415	" "	" "	" "
" " SP2	" " "	4 4 15.000	" " "	" "	106.2634	0.449	0.377	" "	" "	" "
1110 " " SP2	" " "	4 4 15.000	-0.2002	-13.00	119.1771	0.385	0.437	268.5	262.3	80.0
" " SPN	" " "	4 4 15.000	" " "	77.00	106.9796	0.473	0.453	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	131.8896	0.436	0.567	" "	" "	" "
1111 " " SP2	" " "	4 4 15.000	1.0234	13.00	113.0178	0.375	0.327	264.4	262.3	80.0
" " SPN	" " "	4 4 15.000	" " "	77.00	112.1968	0.496	0.423	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	120.1829	0.504	0.419	" "	" "	" "
1112 " " SP2	" " "	4 4 15.000	0.7617	13.00	90.1454	0.424	0.320	261.0	262.4	80.2
" " SPN	" " "	4 4 15.000	" " "	77.00	105.5084	0.497	0.430	" "	" "	" "
" " SPE	" " "	4 4 15.000	" " "	" "	93.7682	0.489	0.431	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1113 1-07 SP2	17 SEP 1988 261	4	4 15.000	1.1543 WWVB		121.0679	0.441	0.373	256.9	262.0	79.8
" " SPN	" " " "	4	4 15.000	" " "	13.00	98.8521	0.506	0.382	" "	" "	" "
" " SPE	" " " "	4	4 15.000	" " "	77.00	110.1773	0.555	0.459	" "	" "	" "
1120 " " SPN	" " " "	4	4 15.000	0.0000 NONE	13.00	102.7787	0.500	0.429	229.0	262.5	80.6
" " SPE	" " " "	4	4 15.000	" " "	77.00	101.8267	0.464	0.373	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	79.9450	0.378	0.300	" "	" "	" "
1121 " " SPN	" " " "	4	4 15.000	0.0234 WWVB	13.00	98.5121	0.471	0.362	224.5	262.9	80.8
" " SPE	" " " "	4	4 15.000	" " "	77.00	101.6663	0.507	0.400	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	110.6077	0.386	0.339	" "	" "	" "
1125 " " SPN	" " " "	4	4 15.000	0.0234	-13.00	590.0545	0.641	0.987	208.2	263.4	81.6
" " SPE	" " " "	4	4 15.000	" " "	77.00	542.9311	1.033	1.846	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	442.2431	0.692	1.078	" "	" "	" "
1126 " " SPN	" " " "	4	4 15.000	0.1611	13.00	833.3716	0.976	1.260	203.8	263.5	81.7
" " SPE	" " " "	4	4 15.000	" " "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	624.0828	0.864	1.000	" "	" "	" "
1127 " " SPN	" " " "	4	4 15.000	0.0000 NONE	-13.00	689.6237	0.838	1.063	200.4	263.1	81.4
" " SPE	" " " "	4	4 15.000	" " "	77.00	763.6659	1.032	1.294	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	719.0599	1.003	1.236	" "	" "	" "
1128 " " SPN	" " " "	4	4 15.000	0.0000	13.00	505.6474	0.902	1.454	195.6	263.8	82.1
" " SPE	" " " "	4	4 15.000	" " "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	624.0928	0.864	1.000	" "	" "	" "
1129 " " SPN	" " " "	4	4 15.000	0.0000	13.00	576.6406	1.042	0.325	190.0	264.0	82.3
" " SPE	" " " "	4	4 15.000	" " "	77.00	554.5508	1.042	0.314	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	553.7008	1.042	0.321	" "	" "	" "
1130 " " SPN	" " " "	4	4 15.000	0.0000	-13.00	564.8539	1.147	1.960	186.5	264.2	82.6
" " SPE	" " " "	4	4 15.000	" " "	77.00	565.5809	1.031	1.610	" "	" "	" "
" " SP2	" " " "	4	4 15.000	" " "	" "	566.3342	1.351	2.205	" "	" "	" "
1101 1-10 SP2	" " " "	8	3 57.000	0.7041 GOES	-13.00	113.0980	0.494	0.465	208.7	260.8	79.1
" " SPN	" " " "	8	3 57.000	" " "	77.00	115.7602	0.480	0.426	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	105.1737	0.392	0.343	" "	" "	" "
1102 " " SP2	" " " "	8	3 57.000	1.1836 WWVB	-13.00	96.2929	0.470	0.386	205.7	260.9	79.2
" " SPN	" " " "	8	3 57.000	" " "	77.00	102.6773	0.511	0.406	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	100.1123	0.517	0.434	" "	" "	" "
1103 " " SP2	" " " "	8	3 57.000	1.1309	-13.00	99.6815	0.487	0.444	201.2	261.0	79.3
" " SPN	" " " "	8	3 57.000	" " "	77.00	110.1595	0.477	0.485	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	101.5023	0.479	0.444	" "	" "	" "
1104 " " SP2	" " " "	8	3 57.000	1.1387	-13.00	111.6818	0.457	0.463	196.2	261.1	79.5
" " SPN	" " " "	8	3 57.000	" " "	77.00	110.8799	0.494	0.503	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	109.8537	0.512	0.514	" "	" "	" "
1105 " " SP2	" " " "	8	3 57.000	1.0156	-13.00	92.7538	0.415	0.356	193.2	261.2	79.5
" " SPN	" " " "	8	3 57.000	" " "	77.00	85.1736	0.526	0.440	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	90.0945	0.488	0.382	" "	" "	" "
1106 " " SP2	" " " "	8	3 57.000	-0.1485	-13.00	106.5799	0.423	0.348	189.7	261.3	79.7
" " SPN	" " " "	8	3 57.000	" " "	77.00	110.7771	0.512	0.428	" "	" "	" "
" " SPE	" " " "	8	3 57.000	" " "	" "	102.4123	0.515	0.418	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Starting Date	Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1107 1-10 SP2	17 SEP 1988 261	8 3 57.000	1.0313 WWVB		120 8491	0.427	0.361	186.7	261.5	79.9
" " SPN	" " "	8 3 57.000	" "	-13.00	114 9841	0.506	0.446	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	117 5121	0.490	0.419	"	"	"
1108 " " SP2	" " "	8 3 57.000	0.7695		105 0776	0.412	0.329	182.9	261.5	79.9
" " SPN	" " "	8 3 57.000	" "	13.00	122 8554	0.535	0.470	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	109 5664	0.535	0.450	"	"	"
1109 " " SPN	" " "	8 3 57.000	0.7383		105 0889	0.471	0.383	179.5	261.4	79.9
" " SPE	" " "	8 3 57.000	" "	13.00	114 8958	0.468	0.415	"	"	"
" " SP2	" " "	8 3 57.000	" "	77.00	106 2634	0.449	0.377	"	"	"
1110 " " SP2	" " "	8 3 57.000	0.2305		119 1771	0.385	0.437	175.4	261.8	80.3
" " SPN	" " "	8 3 57.000	" "	-13.00	106 9796	0.473	0.453	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	131 9896	0.436	0.567	"	"	"
1111 " " SP2	" " "	8 3 57.000	1.0625		113 0178	0.375	0.327	171.3	261.8	80.3
" " SPN	" " "	8 3 57.000	" "	13.00	112 1968	0.496	0.423	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	120 1829	0.504	0.419	"	"	"
1112 " " SP2	" " "	8 3 57.000	0.7148		90 1454	0.424	0.320	167.9	262.0	80.5
" " SPN	" " "	8 3 57.000	" "	13.00	105 5084	0.497	0.430	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	93 7682	0.489	0.431	"	"	"
1113 " " SP2	" " "	8 3 57.000	1.2227		121 0679	0.441	0.373	163.8	261.3	79.9
" " SPN	" " "	8 3 57.000	" "	13.00	98 8521	0.506	0.382	"	"	"
" " SPE	" " "	8 3 57.000	" "	77.00	110 1773	0.555	0.459	"	"	"
1121 " " SPN	" " "	8 3 57.000	0.0234		98 5121	0.471	0.362	131.5	262.6	81.5
" " SPE	" " "	8 3 57.000	" "	77.00	101 6663	0.507	0.400	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	110 6077	0.386	0.339	"	"	"
1125 " " SPN	" " "	8 3 57.000	0.0313		590 0545	0.641	0.987	115.1	263.9	82.9
" " SPE	" " "	8 3 57.000	" "	77.00	542 9311	1.033	1.646	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	442 2431	0.692	1.078	"	"	"
1126 " " SPN	" " "	8 3 57.000	0.2070		833 3716	0.976	1.260	110.8	264.1	83.1
" " SPE	" " "	8 3 57.000	" "	77.00	476 0370	1.005	1.227	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	596 3226	0.673	0.842	"	"	"
1127 " " SPN	" " "	8 3 57.000	0.0000 NONE		689 6237	0.838	1.063	107.4	263.4	82.4
" " SPE	" " "	8 3 57.000	" "	77.00	763 6659	1.032	1.294	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	719 0599	1.003	1.236	"	"	"
1128 " " SPN	" " "	8 3 57.000	0.0000		505 6474	0.902	1.454	102.6	264.7	83.8
" " SPE	" " "	8 3 57.000	" "	77.00	694 0557	0.551	0.681	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	624 0928	0.864	1.000	"	"	"
1129 " " SPN	" " "	8 3 57.000	0.0000		576 6406	1.042	0.325	97.1	265.2	84.4
" " SPE	" " "	8 3 57.000	" "	77.00	554 5503	1.042	0.314	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	553 7008	1.042	0.321	"	"	"
1130 " " SPN	" " "	8 3 57.000	0.0000		564 8539	1.147	1.960	93.6	265.8	85.0
" " SPE	" " "	8 3 57.000	" "	77.00	565 5809	1.031	1.610	"	"	"
" " SP2	" " "	8 3 57.000	" "	13.00	566 3342	1.351	2.205	"	"	"
1102 1-14 SP2	" " "	4 7 55.000	1.1465 WWVB		96 2829	0.470	0.386	117.9	256.0	75.0
" " SPN	" " "	4 7 55.000	" "	13.00	102 6773	0.511	0.406	"	"	"
" " SPE	" " "	4 7 55.000	" "	77.00	100 1123	0.517	0.434	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1103 1 14 SP2	17 SEP 1988	261	4	7 55 000	1 0850 WWVB	99 6815	0 487	113 5	256 0	75 0
SPN			4	7 55 000		110 1595	0 485			
SP2			4	7 55 000		101 5023	0 484			
1104 SP2			4	7 55 000	1 0608	111 6818	0 483	108 4	256 0	75 1
SPN			4	7 55 000		110 8799	0 494			
SP2			4	7 55 000		109 8537	0 512			
1105 SP2			4	7 55 000	0 9022	92 7538	0 415	105 4	256 0	75 1
SPN			4	7 55 000		85 1736	0 526			
SP2			4	7 55 000		90 0945	0 488			
1106 SP2			4	7 55 000	0 1387	106 5799	0 423	101 8	256 1	75 2
SPN			4	7 55 000		110 7721	0 512			
SP2			4	7 55 000		103 4123	0 515			
1107 SP2			4	7 55 000	1 0078	120 8491	0 427	98 8	256 2	75 4
SPN			4	7 55 000		114 9841	0 506			
SP2			4	7 55 000		117 5121	0 490			
1108 SP2			4	7 55 000	0 7842	105 0776	0 412	95 0	256 1	75 3
SPN			4	7 55 000		122 8554	0 535			
SP2			4	7 55 000		109 5664	0 535			
1109 SPN			4	7 55 000	0 7539	105 0889	0 471	91 7	255 8	75 0
SP2			4	7 55 000		114 8958	0 468			
1110 SP2			4	7 55 000		106 2634	0 449			
SPN			4	7 55 000	0 2158	119 1721	0 385	87 5	256 2	75 5
SP2			4	7 55 000		106 9796	0 473			
1111 SP2			4	7 55 000	1 0234	131 86 3	0 436			
SPN			4	7 55 000		113 0178	0 375	83 4	259 0	75 3
SP2			4	7 55 000		112 1968	0 496			
1112 SP2			4	7 55 000	0 7695	120 1829	0 504			
SPN			4	7 55 000		90 1454	0 424	80 0	256 2	75 5
SP2			4	7 55 000		105 5084	0 497			
1113 SP2			4	7 55 000	1 1387	93 7682	0 489			
SPN			4	7 55 000		121 0679	0 441	76 1	254 6	74 0
SP2			4	7 55 000		98 8521	0 506			
1120 SPN			4	7 55 000	0 0000 NONE	110 1773	0 555			
SP2			4	7 55 000		102 7787	0 500	48 1	253 6	73 2
1121 SP2			4	7 55 000		101 8267	0 464			
SPN			4	7 55 000	0 0313 WWVB	79 9450	0 378			
SP2			4	7 55 000		93 5121	0 471	43 6	254 0	70 7
1125 SP2			4	7 55 000	0 0234	101 6663	0 507			
SPN			4	7 55 000		110 6077	0 339			
SP2			4	7 55 000		590 0545	0 641	27 0	254 4	74 2
1126 SPN			4	7 55 000	0 1811	542 9311	1 033			
SP2			4	7 55 000		442 2431	0 692			
SPN			4	7 55 000		833 3716	0 976	22 7	253 8	73 8
SP2			4	7 55 000		694 0557	0 551			
						624 0928	1 000			

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Starting Date	Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Fendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1127 1 14 SPN	17 SEP 1988 281	4 7 55 000	0 0000 NONE	13.00	689 6237	0 838	1 063	19.6	248.3	68.2
" " " " SP2	" " " "	4 7 55 000	" " " "	77.00	763 6859	1 032	1 294	" "	" "	" "
" " " " SP2	" " " "	4 7 55 000	" " " "	" "	719 0599	1 003	1 236	" "	" "	" "
1128 " " " " SPN	" " " "	4 7 55 000	0 0000	13.00	505 6474	0 902	1 454	14.4	253.1	72.9
" " " " SP2	" " " "	4 7 55 000	" " " "	77.00	694 0557	0 551	0 681	" "	" "	" "
" " " " SP2	" " " "	4 7 55 000	" " " "	" "	624 0928	0 864	1 000	" "	" "	" "
1129 " " " " SPN	" " " "	4 7 55 000	0 0000	13.00	576 6406	1 042	0 325	8.8	251.5	71.4
" " " " SP2	" " " "	4 7 55 000	" " " "	77.00	554 5508	1 012	0 314	" "	" "	" "
" " " " SP2	" " " "	4 7 55 000	" " " "	" "	553 7008	1 042	0 321	" "	" "	" "
1130 " " " " SPN	" " " "	4 7 55 000	0 0000	13.00	564 8539	1 147	1 960	5.2	253.7	73.7
" " " " SP2	" " " "	4 7 55 000	" " " "	77.00	565 5809	1 031	1 610	" "	" "	" "
" " " " SP2	" " " "	4 7 55 000	" " " "	" "	566 3342	1 351	2 205	" "	" "	" "
1102 1 22 SP2	" " " "	4 6 20 000	1 1465 WWVB	13.00	96 2929	0 470	0 386	332.1	281.0	98.2
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	102 6773	0 511	0 406	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	100 1123	0 517	0 434	" "	" "	" "
1103 " " " " SP2	" " " "	4 6 20 000	1 0918	13.00	99 6815	0 487	0 444	328.1	281.3	98.5
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	110 1595	0 477	0 485	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	101 5023	0 479	0 444	" "	" "	" "
1104 " " " " SP2	" " " "	4 6 20 000	1 1074	13.00	111 6818	0 457	0 463	323.5	281.6	98.9
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	110 8799	0 494	0 503	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	109 8537	0 512	0 514	" "	" "	" "
1105 " " " " SP2	" " " "	4 6 20 000	1 0000	13.00	92 7538	0 415	0 356	320.7	281.8	99.2
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	85 1736	0 526	0 440	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	90 0945	0 488	0 382	" "	" "	" "
1106 " " " " SP2	" " " "	4 6 20 000	0 1230	13.00	106 5799	0 423	0 348	317.5	282.1	99.5
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	110 7771	0 512	0 428	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	103 4123	0 515	0 418	" "	" "	" "
1107 " " " " SP2	" " " "	4 6 20 000	1 0078	13.00	120 8491	0 427	0 361	314.8	282.4	99.8
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	114 9841	0 506	0 446	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	117 5121	0 490	0 419	" "	" "	" "
1108 " " " " SP2	" " " "	4 6 20 000	0 7998	13.00	105 0776	0 412	0 329	311.3	282.6	100.1
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	132 8554	0 535	0 470	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	109 5664	0 535	0 450	" "	" "	" "
1109 " " " " SPN	" " " "	4 6 20 000	0 7539	13.00	105 0889	0 471	0 383	308.0	282.8	100.3
" " " " SP2	" " " "	4 6 20 000	" " " "	77.00	114 8958	0 468	0 415	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	106 2634	0 449	0 377	" "	" "	" "
1110 " " " " SP2	" " " "	4 6 20 000	0 2158	13.00	119 1771	0 385	0 437	304.6	283.3	100.7
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	108 9796	0 473	0 453	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	131 8896	0 436	0 567	" "	" "	" "
1111 " " " " SP2	" " " "	4 6 20 000	1 0234	13.00	113 0178	0 375	0 327	300.8	283.6	101.1
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	112 1968	0 496	0 423	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	120 1829	0 504	0 419	" "	" "	" "
1112 " " " " SP2	" " " "	4 6 20 000	0 7695	13.00	90 1454	0 424	0 320	297.8	283.9	101.4
" " " " SPN	" " " "	4 6 20 000	" " " "	77.00	105 5084	0 497	0 430	" "	" "	" "
" " " " SP2	" " " "	4 6 20 000	" " " "	" "	93 7682	0 489	0 431	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a. (continued)

Seismogram	Starting Date	Time d h m s	Time Correction (Sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1113 1 22 SP2	17 SEP 1988 261	4 6 20 000	1 1621 WWVB		121.0679	0.441	0.373	293.3	283.9	101.4
" " " SPN	" " "	4 6 20 000	" " "	13.00	95.8521	0.506	0.382	" "	" "	" "
" " " SPE	" " "	4 6 20 000	" " "	77.00	110.1773	0.555	0.459	" "	" "	" "
1120 " " " SPN	" " "	4 6 20 000	0 0000 NONE	13.00	102.7787	0.500	0.429	268.4	286.5	104.3
" " " SPE	" " "	4 6 20 000	" " "	77.00	101.8267	0.464	0.373	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	79.9450	0.378	0.300	" "	" "	" "
1121 " " " SPN	" " "	4 6 20 000	0 0234 WWVB	13.00	98.5121	0.471	0.362	264.7	267.0	104.8
" " " SPE	" " "	4 6 20 000	" " "	77.00	101.6663	0.507	0.400	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	110.6077	0.386	0.339	" "	" "	" "
1125 " " " SPN	" " "	4 6 20 000	0 0234	13.00	590.0545	0.641	0.987	250.8	289.0	107.0
" " " SPE	" " "	4 6 20 000	" " "	77.00	542.9311	1.033	1.646	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	442.2431	0.692	1.078	" "	" "	" "
1126 " " " SPN	" " "	4 6 20 000	0 1689	13.00	833.3716	0.976	1.260	247.0	289.5	107.5
" " " SPE	" " "	4 6 20 000	" " "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	624.0928	0.864	1.000	" "	" "	" "
1127 " " " SPN	" " "	4 6 20 000	0 0000 NONE	13.00	689.6237	0.838	1.063	243.3	289.6	107.6
" " " SPE	" " "	4 6 20 000	" " "	77.00	763.6659	1.032	1.294	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	719.0599	1.003	1.236	" "	" "	" "
1128 " " " SPN	" " "	4 6 20 000	0 0000	13.00	505.6474	0.902	1.454	240.0	290.6	108.7
" " " SPE	" " "	4 6 20 000	" " "	77.00	694.0557	0.551	0.681	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	624.0928	0.864	1.000	" "	" "	" "
1129 " " " SPN	" " "	4 6 20 000	0 0000	13.00	576.6406	1.042	0.725	235.4	291.3	109.4
" " " SPE	" " "	4 6 20 000	" " "	77.00	554.5508	1.042	0.314	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	553.7008	1.042	0.321	" "	" "	" "
1130 " " " SPN	" " "	4 6 20 000	0 0000	13.00	564.8539	1.147	1.960	232.7	291.9	110.1
" " " SPE	" " "	4 6 20 000	" " "	77.00	565.5809	1.031	1.610	" "	" "	" "
" " " SP2	" " "	4 6 20 000	" " "	" "	566.3342	1.351	2.205	" "	" "	" "
1101 1 23 SP2	" " "	8 2 35 000	0 7041 GOES	13.00	113.0980	0.494	0.465	426.8	275.9	92.3
" " " SPN	" " "	8 2 35 000	" " "	77.00	115.7602	0.480	0.426	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	105.1737	0.392	0.343	" "	" "	" "
1102 " " " SP2	" " "	8 2 35 000	1 1836 WWVB	13.00	96.2829	0.470	0.386	423.9	276.1	92.5
" " " SPN	" " "	8 2 35 000	" " "	77.00	102.6773	0.511	0.406	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	100.1123	0.517	0.434	" "	" "	" "
1103 " " " SP2	" " "	8 2 35 000	1 1387	-13.00	99.6815	0.487	0.444	419.7	276.3	92.7
" " " SPN	" " "	8 2 35 000	" " "	77.00	110.1595	0.477	0.485	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	101.5023	0.479	0.444	" "	" "	" "
1104 " " " SP2	" " "	8 2 35 000	1 1621	-13.00	111.6818	0.457	0.463	415.0	276.5	92.9
" " " SPN	" " "	8 2 35 000	" " "	77.00	110.8798	0.494	0.503	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	109.8537	0.512	0.514	" "	" "	" "
1105 " " " SP2	" " "	8 2 35 000	1 0078	-13.00	92.7538	0.415	0.356	412.1	276.6	93.1
" " " SPN	" " "	8 2 35 000	" " "	77.00	85.1736	0.526	0.440	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	90.0945	0.488	0.382	" "	" "	" "
1106 " " " SP2	" " "	8 2 35 000	-0 1543	-13.00	106.5799	0.423	0.348	408.7	276.8	93.3
" " " SPN	" " "	8 2 35 000	" " "	77.00	110.7771	0.512	0.428	" "	" "	" "
" " " SPE	" " "	8 2 35 000	" " "	" "	103.4123	0.515	0.418	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3a (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1107 1 23 SP2	17 SEP 1988 261	8 2 35 000	1 0234 WWVB		120.8491	0.427	0.361	405.9	276.9	93.5
" " SPN	" "	8 2 35 000	" "	13.00	114.9841	0.506	0.446	"	"	"
" " SPE	" "	8 2 35 000	" "	77.00	117.5121	0.490	0.419	"	"	"
1108 " " SP2	" "	8 2 35 000	0.7695	"	105.0776	0.412	0.329	402.2	277.1	93.7
" " SPN	" "	8 2 35 000	" "	13.00	122.8554	0.535	0.470	"	"	"
" " SPE	" "	8 2 35 000	" "	77.00	109.5664	0.535	0.450	"	"	"
1109 " " SPN	" "	8 2 35 000	0.7383	13.00	105.0889	0.471	0.383	398.9	277.2	93.8
" " SPE	" "	8 2 35 000	" "	77.00	114.8958	0.468	0.415	"	"	"
" " SP2	" "	8 2 35 000	" "	"	106.2634	0.449	0.377	"	"	"
1110 " " SP2	" "	8 2 35 000	0.2305	"	119.1771	0.385	0.437	395.2	277.4	94.1
" " SPN	" "	8 2 35 000	" "	13.00	106.9796	0.473	0.453	"	"	"
" " SPE	" "	8 2 35 000	" "	77.00	131.8896	0.436	0.567	"	"	"
1111 " " SP2	" "	8 2 35 000	1.0469	13.00	113.0178	0.375	0.327	391.2	277.6	94.3
" " SPN	" "	8 2 35 000	" "	77.00	112.1968	0.496	0.423	"	"	"
" " SPE	" "	8 2 35 000	" "	"	120.1829	0.504	0.419	"	"	"
1112 " " SP2	" "	8 2 35 000	0.7227	13.00	90.1454	0.424	0.320	388.0	277.8	94.5
" " SPN	" "	8 2 35 000	" "	77.00	105.5084	0.497	0.430	"	"	"
" " SPE	" "	8 2 35 000	" "	"	93.7682	0.489	0.431	"	"	"
1113 " " SP2	" "	8 2 35 000	1.2070	13.00	121.0679	0.441	0.373	383.6	277.7	94.4
" " SPN	" "	8 2 35 000	" "	77.00	98.8521	0.506	0.382	"	"	"
" " SPE	" "	8 2 35 000	" "	13.00	110.1773	0.555	0.459	"	"	"
1121 " " SPN	" "	8 2 35 000	0.0000	13.00	98.5121	0.471	0.362	353.2	279.5	96.5
" " SPE	" "	8 2 35 000	" "	77.00	101.6663	0.507	0.400	"	"	"
" " SP2	" "	8 2 35 000	" "	"	110.6077	0.386	0.339	"	"	"
1125 " " SPN	" "	8 2 35 000	0.0313	13.00	590.0545	0.641	0.987	338.1	280.6	97.7
" " SPE	" "	8 2 35 000	" "	77.00	542.9311	1.033	1.646	"	"	"
" " SP2	" "	8 2 35 000	" "	"	442.2431	0.692	1.078	"	"	"
1126 " " SPN	" "	8 2 35 000	0.0234	13.00	833.3716	0.976	1.260	334.0	280.8	98.0
" " SPE	" "	8 2 35 000	" "	77.00	476.0570	1.005	1.227	"	"	"
" " SP2	" "	8 2 35 000	" "	"	596.3226	0.673	0.842	"	"	"
1127 " " SPN	" "	8 2 35 000	0.0000	13.00	689.6237	0.838	1.063	330.3	280.8	98.0
" " SPE	" "	8 2 35 000	" "	77.00	763.6659	1.032	1.294	"	"	"
" " SP2	" "	8 2 35 000	" "	"	719.0599	1.003	1.236	"	"	"
1128 " " SPN	" "	8 2 35 000	0.0000	13.00	505.6474	0.902	1.454	326.4	281.4	98.7
" " SPE	" "	8 2 35 000	" "	77.00	694.0557	0.551	0.681	"	"	"
" " SP2	" "	8 2 35 000	" "	"	624.0928	0.864	1.000	"	"	"
1129 " " SPN	" "	8 2 35 000	0.0000	13.00	576.6406	1.042	0.325	321.3	281.8	99.1
" " SPE	" "	8 2 35 000	" "	77.00	554.5508	1.042	0.314	"	"	"
" " SP2	" "	8 2 35 000	" "	"	553.7008	1.042	0.321	"	"	"
1130 " " SPN	" "	8 2 35 000	0.0000	13.00	564.8539	1.147	1.960	318.2	282.1	99.5
" " SPE	" "	8 2 35 000	" "	77.00	565.5809	1.031	1.610	"	"	"
" " SP2	" "	8 2 35 000	" "	"	566.3342	1.351	2.205	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b
Seismogram Constants for Deployment Two

Table 3b. Seismogram Constants for Deployment Two

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1211 2-04 SPN	24 SEP 1988 268	8 5 55.000	-0.1157 GOES	-15.00	113.1000	0.453	0.475	196.2	258.7	77.0
-- SP2	--	8 5 55.000	--	75.00	113.7880	0.357	0.426	--	--	--
-- SP2	--	8 5 55.000	--	--	101.4590	0.392	0.338	--	--	--
1212 -- SP2	--	8 5 55.000	-0.0169	--	95.8404	0.457	0.449	193.6	257.8	76.1
-- SPN	--	8 5 55.000	--	-15.00	104.6157	0.501	0.539	--	--	--
-- SPE	--	8 5 55.000	--	75.00	98.2109	0.493	0.492	--	--	--
1213 -- SP2	--	8 5 55.000	0.2305 WWVB	--	119.9548	0.434	0.361	190.8	256.9	75.3
-- SPN	--	8 5 55.000	--	-15.00	98.0937	0.509	0.384	--	--	--
-- SPE	--	8 5 55.000	--	75.00	111.1635	0.542	0.457	--	--	--
1214 -- SP2	--	8 5 55.000	-0.2773	--	89.0961	0.427	0.320	188.2	255.9	74.3
-- SPN	--	8 5 55.000	--	-15.00	104.5607	0.501	0.434	--	--	--
-- SPE	--	8 5 55.000	--	75.00	91.2114	0.488	0.418	--	--	--
1215 -- SP2	--	8 5 55.000	0.0319	--	113.8695	0.376	0.333	186.0	255.1	73.5
-- SPN	--	8 5 55.000	--	-15.00	112.8435	0.497	0.425	--	--	--
-- SPE	--	8 5 55.000	--	75.00	120.7941	0.486	0.401	--	--	--
1216 -- SP2	--	8 5 55.000	-0.1992	--	104.9737	0.405	0.329	182.6	253.8	72.3
-- SPN	--	8 5 55.000	--	-15.00	106.2555	0.509	0.416	--	--	--
-- SPE	--	8 5 55.000	--	75.00	104.0743	0.504	0.435	--	--	--
1217 -- SPN	--	8 5 55.000	-0.2305	-15.00	106.3744	0.468	0.385	179.7	252.5	71.0
-- SPE	--	8 5 55.000	--	75.00	115.5783	0.468	0.417	--	--	--
-- SP2	--	8 5 55.000	--	--	107.6735	0.445	0.377	--	--	--
1218 -- SP2	--	8 5 55.000	-0.2539	--	102.4046	0.415	0.326	177.6	251.4	70.0
-- SPN	--	8 5 55.000	--	-15.00	119.5301	0.538	0.463	--	--	--
-- SPE	--	8 5 55.000	--	75.00	107.1711	0.534	0.444	--	--	--
1219 -- SPN	--	8 5 55.000	-0.2773	-15.00	109.2437	0.422	0.357	174.7	250.3	68.9
-- SP2	--	8 5 55.000	--	75.00	112.1432	0.507	0.423	--	--	--
-- SPE	--	8 5 55.000	--	--	106.2984	0.511	0.436	--	--	--
1220 -- SP2	--	8 5 55.000	0.0156	-15.00	92.7538	0.415	0.356	173.6	249.4	67.9
-- SPN	--	8 5 55.000	--	75.00	85.1736	0.526	0.440	--	--	--
-- SPE	--	8 5 55.000	--	--	90.0945	0.488	0.382	--	--	--
1221 -- SP2	--	8 5 55.000	0.0156	-15.00	120.8625	0.428	0.366	167.8	248.1	66.8
-- SPN	--	8 5 55.000	--	75.00	117.0131	0.509	0.464	--	--	--
-- SPE	--	8 5 55.000	--	--	115.8302	0.490	0.420	--	--	--
1223 -- SP2	--	8 5 55.000	0.1309	-15.00	99.5213	0.485	0.441	166.5	245.7	64.4
-- SPN	--	8 5 55.000	--	75.00	110.9653	0.477	0.487	--	--	--
-- SPE	--	8 5 55.000	--	--	100.4654	0.480	0.440	--	--	--
1224 -- SP2	--	8 5 55.000	0.2070	-15.00	99.9986	0.468	0.394	164.1	244.2	63.0
-- SPN	--	8 5 55.000	--	75.00	105.2339	0.509	0.407	--	--	--
-- SPE	--	8 5 55.000	--	--	103.0961	0.514	0.438	--	--	--
1225 -- SPN	--	8 5 55.000	-0.7251 GOES	-15.00	115.7602	0.480	0.424	161.6	242.4	61.2
-- SPE	--	8 5 55.000	--	75.00	105.1737	0.392	0.343	--	--	--
-- SP2	--	8 5 55.000	--	--	113.0980	0.494	0.465	--	--	--
1227 -- SPN	--	8 5 55.000	0.2128	-15.00	119.6034	0.426	0.393	159.8	240.1	58.9
-- SPE	--	8 5 55.000	--	75.00	106.0839	0.472	0.416	--	--	--
-- SP2	--	8 5 55.000	--	--	118.8165	0.494	0.429	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1228 2-04 SPN	24 SEP 1988 268	8 5 55.000	0.0078 WWVB	-15.00	107.8404	0.474	0.417	158.8	238.7	57.6
" " SPE	" " " "	8 5 55.000	" " " "	75.00	115.2925	0.469	0.430	" "	" "	" "
" " SPN	" " " "	8 5 55.000	" " " "	" "	100.8098	0.459	0.399	" "	" "	" "
1231 " " SPN	" " " "	8 5 55.000	0.0244 GOES	-15.00	98.5121	0.471	0.362	154.0	234.7	53.6
" " SPE	" " " "	8 5 55.000	" " " "	75.00	101.6663	0.507	0.400	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	110.6077	0.386	0.339	" "	" "	" "
1232 " " SPN	" " " "	8 6 15.000	-0.9082 WWVB	-15.00	109.6534	0.490	0.405	153.1	233.0	51.9
" " SPE	" " " "	8 6 15.000	" " " "	75.00	102.3860	0.485	0.414	" "	" "	" "
" " SPZ	" " " "	8 6 15.000	" " " "	" "	97.2723	0.422	0.338	" "	" "	" "
1233 " " SPN	" " " "	8 5 55.000	0.0000 NONE	-15.00	98.5043	0.506	0.425	151.9	231.6	50.6
" " SPE	" " " "	8 5 55.000	" " " "	75.00	89.4856	0.487	0.379	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	99.6476	0.416	0.340	" "	" "	" "
1234 " " SPN	" " " "	8 5 55.000	-1.0234 WWVB	-15.00	107.4674	0.488	0.424	150.9	230.4	49.4
" " SPE	" " " "	8 5 55.000	" " " "	75.00	105.9664	0.488	0.453	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	114.1378	0.468	0.487	" "	" "	" "
1235 " " SPN	" " " "	8 5 55.000	0.0048 GOES	-15.00	102.6012	0.516	0.418	150.2	229.0	48.1
" " SPE	" " " "	8 5 55.000	" " " "	75.00	114.3616	0.476	0.416	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	107.8076	0.391	0.339	" "	" "	" "
1236 " " SPN	" " " "	8 5 55.000	-0.2211	-15.00	786.2735	0.610	0.823	149.3	227.1	46.2
" " SPE	" " " "	8 5 55.000	" " " "	75.00	752.1228	0.554	1.952	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	715.6757	0.652	0.809	" "	" "	" "
1238 " " SPN	" " " "	8 5 55.000	-0.0156 WWVB	-15.00	505.6474	0.902	1.454	148.5	222.8	41.9
" " SPE	" " " "	8 5 55.000	" " " "	75.00	694.0557	0.551	0.681	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	624.0928	0.864	1.000	" "	" "	" "
1240 " " SPN	" " " "	8 5 55.000	0.1777	-15.00	743.4758	1.024	1.293	147.4	219.9	39.1
" " SPE	" " " "	8 5 55.000	" " " "	75.00	706.5759	0.938	1.117	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	697.1599	1.007	1.238	" "	" "	" "
1241 " " SPN	" " " "	8 5 55.000	-0.1992	-15.00	622.2807	0.978	1.277	147.2	218.4	37.6
" " SPE	" " " "	8 5 55.000	" " " "	75.00	696.1515	1.041	1.315	" "	" "	" "
" " SPZ	" " " "	8 5 55.000	" " " "	" "	835.2012	0.680	0.900	" "	" "	" "
1211 2-07 SPN	" " " "	5 59 55.000	-0.1038 GOES	-15.00	113.1000	0.453	0.475	92.1	260.7	79.9
" " SPE	" " " "	5 59 55.000	" " " "	75.00	113.7880	0.357	0.426	" "	" "	" "
" " SPZ	" " " "	5 59 55.000	" " " "	" "	101.4590	0.392	0.338	" "	" "	" "
1212 " " SPN	" " " "	5 59 55.000	-0.0153	-15.00	95.8404	0.457	0.449	89.3	258.8	78.1
" " SPE	" " " "	5 59 55.000	" " " "	75.00	104.6157	0.501	0.539	" "	" "	" "
" " SPZ	" " " "	5 59 55.000	" " " "	" "	98.2109	0.493	0.492	" "	" "	" "
1213 " " SPN	" " " "	5 59 55.000	0.1992 WWVB	-15.00	119.9548	0.434	0.361	86.5	256.9	76.2
" " SPE	" " " "	5 59 55.000	" " " "	75.00	98.0937	0.509	0.384	" "	" "	" "
" " SPZ	" " " "	5 59 55.000	" " " "	" "	111.1635	0.542	0.457	" "	" "	" "
1214 " " SPN	" " " "	5 59 55.000	-0.2461	-15.00	89.0961	0.427	0.320	83.8	254.8	74.1
" " SPE	" " " "	5 59 55.000	" " " "	75.00	104.5607	0.501	0.434	" "	" "	" "
" " SPZ	" " " "	5 59 55.000	" " " "	" "	91.2114	0.488	0.418	" "	" "	" "
1215 " " SPN	" " " "	5 59 55.000	0.0391	-15.00	113.8695	0.376	0.333	81.7	252.9	72.2
" " SPE	" " " "	5 59 55.000	" " " "	75.00	112.8435	0.497	0.425	" "	" "	" "
" " SPZ	" " " "	5 59 55.000	" " " "	" "	120.7941	0.486	0.401	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1216 2-07 SPZ	24 SEP 1988	268	-0.1855 WWVB	-	104.9737	0.405	0.329	78.4	249.8	69.2
" " SPN	" "	"	"	-15.00	106.2555	0.509	0.416	"	"	"
" " SPE	" "	"	"	75.00	104.0743	0.504	0.435	"	"	"
1217 " " SPN	" "	"	-0.1992	-15.00	106.3744	0.468	0.385	75.8	248.7	66.1
" " SPE	" "	"	"	75.00	115.5793	0.468	0.417	"	"	"
" " SPZ	" "	"	"	-	107.6735	0.445	0.377	"	"	"
1218 " " SPZ	" "	"	-0.2227	-	102.4046	0.415	0.326	74.0	243.9	63.4
" " SPN	" "	"	"	-15.00	119.5301	0.538	0.463	"	"	"
" " SPE	" "	"	"	75.00	107.1711	0.534	0.444	"	"	"
1219 " " SPZ	" "	"	-0.2617	-	109.4437	0.422	0.357	71.7	241.0	60.4
" " SPN	" "	"	"	-15.00	112.1432	0.507	0.423	"	"	"
" " SPE	" "	"	"	75.00	106.2984	0.511	0.436	"	"	"
1220 " " SPZ	" "	"	0.0156	-	92.7538	0.415	0.356	71.0	238.6	58.0
" " SPN	" "	"	"	-15.00	85.1736	0.526	0.440	"	"	"
" " SPE	" "	"	"	75.00	80.0945	0.488	0.382	"	"	"
1221 " " SPZ	" "	"	0.0156	-	120.8625	0.428	0.366	66.1	234.6	54.1
" " SPN	" "	"	"	-15.00	117.0131	0.509	0.464	"	"	"
" " SPE	" "	"	"	75.00	115.8302	0.490	0.420	"	"	"
1222 " " SPZ	" "	"	0.5436 GOES	-	111.8476	0.457	0.464	67.3	231.6	51.1
" " SPN	" "	"	"	-15.00	112.9581	0.493	0.514	"	"	"
" " SPE	" "	"	"	75.00	111.3782	0.510	0.523	"	"	"
1223 " " SPZ	" "	"	0.1074 WWVB	-	99.5213	0.485	0.441	66.6	228.3	47.9
" " SPN	" "	"	"	-15.00	110.9653	0.477	0.487	"	"	"
" " SPE	" "	"	"	75.00	100.4654	0.480	0.440	"	"	"
1224 " " SPZ	" "	"	0.1889	-	99.9986	0.468	0.394	65.6	224.3	43.9
" " SPN	" "	"	"	-15.00	105.2339	0.509	0.407	"	"	"
" " SPE	" "	"	"	75.00	103.0961	0.514	0.438	"	"	"
1225 " " SPZ	" "	"	-0.6511 GOES	-	113.0980	0.494	0.465	65.1	219.2	38.8
" " SPN	" "	"	"	-15.00	115.7602	0.480	0.424	"	"	"
" " SPE	" "	"	"	75.00	105.1737	0.392	0.343	"	"	"
1227 " " SPN	" "	"	0.1841	-15.00	119.6034	0.426	0.393	66.1	213.4	33.1
" " SPE	" "	"	"	75.00	106.0839	0.472	0.416	"	"	"
" " SPZ	" "	"	"	-	118.8165	0.494	0.429	"	"	"
1228 " " SPN	" "	"	0.0078 WWVB	-15.00	107.8404	0.474	0.417	66.9	210.1	29.8
" " SPE	" "	"	"	75.00	115.2925	0.469	0.430	"	"	"
" " SPZ	" "	"	"	-	100.8098	0.459	0.399	"	"	"
1229 " " SPN	" "	"	0.0547	-15.00	145.0600	0.560	0.400	67.3	206.9	26.6
" " SPE	" "	"	"	75.00	145.0600	0.540	0.400	"	"	"
" " SPZ	" "	"	"	-	135.9900	0.480	0.400	"	"	"
1231 " " SPN	" "	"	0.0212 GOES	-15.00	98.5121	0.471	0.362	68.4	199.9	19.7
" " SPE	" "	"	"	75.00	101.6663	0.507	0.400	"	"	"
" " SPZ	" "	"	"	-	110.6077	0.386	0.339	"	"	"
1232 " " SPN	" "	"	0.0000 NONE	-15.00	109.6534	0.480	0.405	70.3	196.4	16.3
" " SPE	" "	"	"	75.00	102.3860	0.485	0.414	"	"	"
" " SPZ	" "	"	"	-	97.2723	0.422	0.338	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1233 2-07 SPN	24 SEP 1988	268	5 59 55.000	0.0000 NONE	-15.00	98.5043	0.506	0.425	71.5	193.5	13.4
" " SPE	" "	"	5 59 55.000	" "	75.00	89.4856	0.487	0.379	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	99.6476	0.416	0.340	"	"	"
1234 " SPN	" "	"	5 59 55.000	-1.0469 WWVB	-15.00	107.4674	0.488	0.424	72.7	190.9	10.8
" " SPE	" "	"	5 59 55.000	" "	75.00	105.9664	0.488	0.453	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	114.1378	0.468	0.487	"	"	"
1236 " SPN	" "	"	5 59 55.000	-0.1919 GOES	-15.00	786.2735	0.610	0.823	76.9	185.1	5.1
" " SPE	" "	"	5 59 55.000	" "	75.00	752.1223	0.554	1.952	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	715.6757	0.652	0.809	"	"	"
1238 " SPN	" "	"	5 59 55.000	-0.0313 WWVB	-15.00	505.6474	0.902	1.454	83.8	178.9	358.9
" " SPE	" "	"	5 59 55.000	" "	75.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	624.0928	0.864	1.000	"	"	"
1240 " SPN	" "	"	5 59 55.000	0.1717	-15.00	743.4758	1.024	1.293	88.3	174.7	354.8
" " SPE	" "	"	5 59 55.000	" "	75.00	706.5759	0.938	1.117	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	697.1599	1.007	1.238	"	"	"
1241 " SPN	" "	"	5 59 55.000	-0.1699	-15.00	622.2807	0.978	1.277	90.9	172.8	352.9
" " SPE	" "	"	5 59 55.000	" "	75.00	696.1515	1.041	1.315	"	"	"
" " SPZ	" "	"	5 59 55.000	" "	"	835.2012	0.680	0.900	"	"	"
1211 2-08 SPN	" "	"	3 59 55.000	-0.0919 GOES	-15.00	113.1000	0.453	0.475	64.8	259.2	78.6
" " SPE	" "	"	3 59 55.000	" "	75.00	113.7880	0.357	0.426	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	101.4590	0.392	0.338	"	"	"
1212 " SPN	" "	"	3 59 55.000	-0.0135	-15.00	85.8404	0.457	0.449	62.1	256.5	76.0
" " SPE	" "	"	3 59 55.000	" "	75.00	104.6157	0.501	0.539	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	98.2109	0.493	0.492	"	"	"
1213 " SPN	" "	"	3 59 55.000	0.1689 WWVB	-15.00	119.9548	0.434	0.361	59.4	253.6	73.1
" " SPE	" "	"	3 59 55.000	" "	75.00	98.0937	0.509	0.384	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	111.1635	0.542	0.457	"	"	"
1214 " SPN	" "	"	3 59 55.000	-0.2158	-15.00	89.0961	0.427	0.320	56.9	250.4	69.9
" " SPE	" "	"	3 59 55.000	" "	75.00	104.5607	0.501	0.434	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	91.2114	0.488	0.418	"	"	"
1215 " SPN	" "	"	3 59 55.000	0.0313	-15.00	113.8695	0.376	0.333	55.0	247.3	66.9
" " SPE	" "	"	3 59 55.000	" "	75.00	112.8435	0.497	0.425	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	120.7941	0.486	0.401	"	"	"
1216 " SPN	" "	"	3 59 55.000	-0.1689	-15.00	104.9737	0.405	0.329	52.3	242.4	62.0
" " SPE	" "	"	3 59 55.000	" "	75.00	106.2555	0.509	0.416	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	104.0743	0.504	0.435	"	"	"
1217 " SPN	" "	"	3 59 55.000	-0.1846	-15.00	106.3744	0.468	0.385	50.3	237.3	56.9
" " SPE	" "	"	3 59 55.000	" "	75.00	115.5783	0.468	0.417	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	107.6735	0.445	0.377	"	"	"
1218 " SPN	" "	"	3 59 55.000	-0.2002	-15.00	102.4046	0.415	0.326	49.1	232.9	52.5
" " SPE	" "	"	3 59 55.000	" "	75.00	119.5301	0.538	0.463	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	107.1711	0.534	0.444	"	"	"
1219 " SPN	" "	"	3 59 55.000	-0.2539	-15.00	109.2437	0.422	0.357	47.6	227.9	47.6
" " SPE	" "	"	3 59 55.000	" "	75.00	112.1432	0.507	0.423	"	"	"
" " SPZ	" "	"	3 59 55.000	" "	"	106.2984	0.511	0.436	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m. sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1220 2-08 SP2	24 SEP 1988 268	3 59 55.000	0.0078 WWVB	-	92.7538	0.415	0.356	47.7	224.2	43.9
" " SPN	" " "	3 59 55.000	"	-15.00	85.1736	0.526	0.440	"	"	"
" " SPE	" " "	3 59 55.000	"	75.00	90.0945	0.488	0.382	"	"	"
1221 " SP2	" " "	3 59 55.000	0.0078	-	120.8625	0.428	0.366	44.2	216.8	36.6
" " SPN	" " "	3 59 55.000	"	-15.00	117.0131	0.509	0.464	"	"	"
" " SPE	" " "	3 59 55.000	"	75.00	115.8302	0.490	0.420	"	"	"
1223 " SP2	" " "	3 59 55.000	0.0996	-	99.5213	0.485	0.441	47.0	208.4	28.2
" " SPN	" " "	3 59 55.000	"	-15.00	110.9653	0.477	0.487	"	"	"
" " SPE	" " "	3 59 55.000	"	75.00	100.4654	0.480	0.440	"	"	"
1224 " SP2	" " "	3 59 55.000	0.1689	-	99.8986	0.468	0.394	47.7	202.7	22.5
" " SPN	" " "	3 59 55.000	"	-15.00	105.2339	0.509	0.407	"	"	"
" " SPE	" " "	3 59 55.000	"	75.00	103.0961	0.514	0.438	"	"	"
1225 " SP2	" " "	3 59 55.000	-0.5772 GOES	-	113.0980	0.494	0.465	49.4	196.1	16.0
" " SPN	" " "	3 59 55.000	"	-15.00	115.7602	0.480	0.424	"	"	"
" " SPE	" " "	3 59 55.000	"	75.00	105.1737	0.392	0.343	"	"	"
1228 " SPN	" " "	3 59 55.000	-0.0156 WWVB	-15.00	107.8404	0.474	0.417	55.2	186.4	6.3
" " SPE	" " "	3 59 55.000	"	75.00	115.2925	0.469	0.430	"	"	"
" " SP2	" " "	3 59 55.000	"	-	100.8098	0.459	0.399	"	"	"
1229 " SPN	" " "	3 59 55.000	0.0537	-15.00	145.0600	0.560	0.400	57.1	183.0	3.0
" " SPE	" " "	3 59 55.000	"	75.00	145.0600	0.540	0.400	"	"	"
" " SP2	" " "	3 59 55.000	"	-	135.8900	0.480	0.400	"	"	"
1231 " SPN	" " "	3 59 55.000	0.0179 GOES	-15.00	98.5121	0.471	0.362	61.4	176.1	356.2
" " SPE	" " "	3 59 55.000	"	75.00	101.6663	0.507	0.400	"	"	"
" " SP2	" " "	3 59 55.000	"	-	110.6077	0.386	0.339	"	"	"
1232 " SPN	" " "	3 59 58.000	0.0000 NONE	-15.00	109.6534	0.480	0.405	64.8	173.3	353.4
" " SPN	" " "	3 59 58.000	"	75.00	102.3860	0.485	0.414	"	"	"
" " SP2	" " "	3 59 58.000	"	-	97.2723	0.422	0.338	"	"	"
1233 " SPN	" " "	4 0 12.000	0.0000	-15.00	98.5043	0.506	0.425	67.3	170.8	350.9
" " SPE	" " "	4 0 12.000	"	75.00	89.4856	0.487	0.379	"	"	"
" " SP2	" " "	4 0 12.000	"	-	89.6476	0.416	0.340	"	"	"
1234 " SPN	" " "	3 59 55.000	-1.0469 WWVB	-15.00	107.4674	0.488	0.424	69.7	168.7	348.8
" " SPE	" " "	3 59 55.000	"	75.00	105.8664	0.488	0.453	"	"	"
" " SP2	" " "	3 59 55.000	"	-	114.1378	0.468	0.487	"	"	"
1235 " SPN	" " "	3 59 55.000	0.0035 GOES	-15.00	102.6012	0.516	0.418	72.4	166.8	347.0
" " SPE	" " "	3 59 55.000	"	75.00	114.3616	0.476	0.416	"	"	"
" " SP2	" " "	3 59 55.000	"	-	107.8076	0.391	0.339	"	"	"
1236 " SPN	" " "	3 59 55.000	-0.1626	-15.00	786.2735	0.610	0.823	76.4	164.3	344.5
" " SPE	" " "	3 59 55.000	"	75.00	752.1228	0.554	1.852	"	"	"
" " SP2	" " "	3 59 55.000	"	-	715.6757	0.652	0.809	"	"	"
1240 " SPN	" " "	3 59 55.000	0.1717 WWVB	-15.00	743.4758	1.024	1.293	81.9	157.2	337.5
" " SPE	" " "	3 59 55.000	"	75.00	706.5759	0.938	1.117	"	"	"
" " SP2	" " "	3 59 55.000	"	-	697.1599	1.007	1.238	"	"	"
1241 " SPN	" " "	3 59 55.000	-0.1465	-15.00	622.2807	0.978	1.277	95.3	155.9	336.3
" " SPE	" " "	3 59 55.000	"	75.00	696.1515	1.041	1.315	"	"	"
" " SP2	" " "	3 59 55.000	"	-	835.2012	0.680	0.900	"	"	"

Seismometer Orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts-m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1211 2-09 SPN	24 SEP 1988	268								
--	--	--	-0.0919	-15.00	113.1000	0.453	0.475	35.3	263.8	83.5
--	--	4 1 55.000	--	75.00	113.7880	0.357	0.426	--	--	--
--	--	4 1 55.000	--	--	101.4590	0.392	0.338	--	--	--
1212	--	4 1 55.000	-0.0135	--	95.8404	0.457	0.449	32.4	259.1	78.8
--	--	4 1 55.000	--	-15.00	104.6157	0.501	0.539	--	--	--
--	--	4 1 55.000	--	75.00	98.2109	0.493	0.492	--	--	--
1213	--	4 1 55.000	0.1689	--	119.9548	0.434	0.361	29.6	253.6	73.3
--	--	4 1 55.000	--	-15.00	98.0937	0.509	0.384	--	--	--
--	--	4 1 55.000	--	75.00	111.1635	0.542	0.457	--	--	--
1214	--	4 1 55.000	-0.2158	--	89.0961	0.427	0.320	27.2	246.9	66.6
--	--	4 1 55.000	--	-15.00	104.5607	0.501	0.434	--	--	--
--	--	4 1 55.000	--	75.00	91.2114	0.488	0.418	--	--	--
1215	--	4 1 55.000	0.0381	--	113.8695	0.376	0.333	25.6	240.0	59.8
--	--	4 1 55.000	--	-15.00	112.8435	0.497	0.425	--	--	--
--	--	4 1 55.000	--	75.00	120.7941	0.486	0.401	--	--	--
1216	--	4 1 55.000	0.1689	--	104.9737	0.405	0.329	23.7	228.3	48.2
--	--	4 1 55.000	--	-15.00	106.2555	0.509	0.416	--	--	--
--	--	4 1 55.000	--	75.00	104.0743	0.504	0.435	--	--	--
1217	--	4 1 55.000	-0.1924	--	106.3744	0.468	0.385	23.2	216.2	36.1
--	--	4 1 55.000	--	75.00	115.5793	0.468	0.417	--	--	--
--	--	4 1 55.000	--	--	107.6735	0.445	0.377	--	--	--
1218	--	4 1 55.000	-0.2002	--	102.4046	0.415	0.326	23.7	206.5	26.4
--	--	4 1 55.000	--	-15.00	119.5301	0.538	0.463	--	--	--
--	--	4 1 55.000	--	75.00	107.1711	0.534	0.444	--	--	--
1219	--	4 1 55.000	-0.2539	--	109.2437	0.422	0.357	24.3	195.9	15.9
--	--	4 1 55.000	--	-15.00	112.1432	0.507	0.423	--	--	--
--	--	4 1 55.000	--	75.00	106.2984	0.511	0.436	--	--	--
1220	--	4 1 55.000	0.0078	--	92.7538	0.415	0.356	26.1	190.2	10.2
--	--	4 1 55.000	--	-15.00	85.1736	0.526	0.440	--	--	--
--	--	4 1 55.000	--	75.00	90.0945	0.488	0.382	--	--	--
1221	--	4 1 55.000	0.0078	--	120.8625	0.428	0.366	27.0	175.4	355.4
--	--	4 1 55.000	--	-15.00	117.0131	0.509	0.464	--	--	--
--	--	4 1 55.000	--	75.00	115.8302	0.490	0.420	--	--	--
1222	--	4 1 55.000	0.4825	--	111.8476	0.457	0.464	30.5	173.9	353.9
--	--	4 1 55.000	--	-15.00	112.9581	0.483	0.514	--	--	--
--	--	4 1 55.000	--	75.00	111.3782	0.510	0.523	--	--	--
1223	--	4 1 55.000	0.0996	--	99.5213	0.485	0.441	33.4	169.1	349.1
--	--	4 1 55.000	--	-15.00	110.9653	0.477	0.487	--	--	--
--	--	4 1 55.000	--	75.00	100.4654	0.480	0.440	--	--	--
1225	--	4 1 55.000	-0.5778	--	113.0980	0.494	0.465	41.7	159.0	339.1
--	--	4 1 55.000	--	-15.00	115.7602	0.480	0.424	--	--	--
--	--	4 1 55.000	--	75.00	105.1737	0.392	0.343	--	--	--
1227	--	4 1 55.000	0.1553	--	119.6034	0.426	0.393	47.9	155.6	335.8
--	--	4 1 55.000	--	-15.00	106.0839	0.472	0.416	--	--	--
--	--	4 1 55.000	--	75.00	118.8165	0.494	0.429	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1228 2-09 SPN	24 SEP 1988	268	-0.0156 WWVB	-15.00	107.8404	0.474	0.417	51.5	154.0	334.1
" " " " SPE	" " "	"	"	75.00	115.2925	0.469	0.430	"	"	"
" " " " SPZ	" " "	"	"	"	100.8298	0.459	0.399	"	"	"
1229 " " " " SPN	" " "	"	0.0615	-15.00	145.0600	0.560	0.400	54.8	152.0	332.2
" " " " " " SPE	" " "	"	"	75.00	145.0600	0.540	0.400	"	"	"
" " " " " " SPZ	" " "	"	"	"	135.9900	0.480	0.400	"	"	"
1231 " " " " " " SPN	" " "	"	0.0179 GOES	-15.00	98.5121	0.471	0.362	62.1	148.0	328.3
" " " " " " SPE	" " "	"	"	75.00	101.6663	0.507	0.400	"	"	"
" " " " " " SPZ	" " "	"	"	"	110.6077	0.388	0.339	"	"	"
1232 " " " " " " SPN	" " "	"	0.0000 NONE	-15.00	109.6534	0.490	0.405	66.5	146.9	327.2
" " " " " " SPE	" " "	"	"	75.00	102.3860	0.485	0.414	"	"	"
" " " " " " SPZ	" " "	"	"	"	97.2723	0.422	0.338	"	"	"
1233 " " " " " " SPN	" " "	"	0.0000	-15.00	98.5043	0.506	0.425	70.0	145.6	326.0
" " " " " " SPE	" " "	"	"	75.00	89.4856	0.487	0.379	"	"	"
" " " " " " SPZ	" " "	"	"	"	98.6476	0.416	0.340	"	"	"
1234 " " " " " " SPN	" " "	"	-1.0615 WWVB	-15.00	107.4674	0.488	0.424	73.2	144.5	324.9
" " " " " " SPE	" " "	"	"	75.00	105.9664	0.488	0.453	"	"	"
" " " " " " SPZ	" " "	"	"	"	114.1378	0.468	0.487	"	"	"
1235 " " " " " " SPN	" " "	"	0.0035 GOES	-15.00	102.6012	0.516	0.416	76.6	143.8	324.1
" " " " " " SPE	" " "	"	"	75.00	114.3616	0.476	0.416	"	"	"
" " " " " " SPZ	" " "	"	"	"	107.8076	0.391	0.339	"	"	"
1236 " " " " " " SPN	" " "	"	-0.1626	-15.00	786.2735	0.610	0.823	81.5	142.7	323.1
" " " " " " SPE	" " "	"	"	75.00	752.1228	0.554	1.952	"	"	"
" " " " " " SPZ	" " "	"	"	"	715.6757	0.652	0.809	"	"	"
1240 " " " " " " SPN	" " "	"	0.1717 WWVB	-15.00	743.4758	1.024	1.293	99.6	139.7	320.2
" " " " " " SPE	" " "	"	"	75.00	706.5759	1.007	1.117	"	"	"
" " " " " " SPZ	" " "	"	"	"	697.1599	1.007	1.238	"	"	"
1241 " " " " " " SPN	" " "	"	-0.1465	-15.00	622.2807	0.978	1.277	103.5	139.1	319.7
" " " " " " SPE	" " "	"	"	75.00	696.1515	1.041	1.315	"	"	"
" " " " " " SPZ	" " "	"	"	"	835.2012	0.680	0.900	"	"	"
1211 2-10 SPN	" " "	"	-0.1038 GOES	-15.00	113.1000	0.453	0.475	2.1	142.4	322.4
" " " " " " SPE	" " "	"	"	75.00	113.7880	0.357	0.426	"	"	"
" " " " " " SPZ	" " "	"	"	"	101.4590	0.392	0.338	"	"	"
1212 " " " " " " SPN	" " "	"	-0.0135	-15.00	95.8404	0.457	0.449	6.1	131.2	311.2
" " " " " " SPE	" " "	"	"	75.00	104.6157	0.501	0.539	"	"	"
" " " " " " SPZ	" " "	"	"	"	98.2109	0.493	0.492	"	"	"
1213 " " " " " " SPN	" " "	"	0.1992 WWVB	-15.00	119.9548	0.434	0.361	10.1	127.9	308.0
" " " " " " SPE	" " "	"	"	75.00	98.0937	0.509	0.384	"	"	"
" " " " " " SPZ	" " "	"	"	"	111.1635	0.542	0.457	"	"	"
1214 " " " " " " SPN	" " "	"	-0.2461	-15.00	89.0961	0.427	0.320	14.2	126.8	306.9
" " " " " " SPE	" " "	"	"	75.00	104.5607	0.501	0.434	"	"	"
" " " " " " SPZ	" " "	"	"	"	91.2114	0.488	0.418	"	"	"
1215 " " " " " " SPN	" " "	"	0.0313	-15.00	113.8695	0.376	0.333	17.8	126.7	306.8
" " " " " " SPE	" " "	"	"	75.00	112.8435	0.497	0.425	"	"	"
" " " " " " SPZ	" " "	"	"	"	120.7941	0.486	0.401	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1216 2-10 SPZ	24 SEP 1988 268	6	5 55.000	-0.1992 WWVB	-	104.9737	0.405	0.329	23.1	125.9	306.1
" SPN	"	6	5 55.000	"	-15.00	106.2555	0.509	0.416	"	"	"
" SPE	"	6	5 55.000	"	75.00	104.0743	0.504	0.435	"	"	"
1217 " SPN	"	6	5 55.000	0.2148	-15.00	106.3744	0.468	0.385	28.1	125.8	306.0
" SPE	"	6	5 55.000	"	75.00	115.5793	0.468	0.417	"	"	"
" SPZ	"	6	5 55.000	"	-	107.6735	0.445	0.377	"	"	"
1218 " SPZ	"	6	5 55.000	-0.2227	-	102.4046	0.415	0.326	32.1	126.1	306.4
" SPN	"	6	5 55.000	"	-15.00	119.5301	0.538	0.463	"	"	"
" SPE	"	6	5 55.000	"	75.00	107.1711	0.534	0.444	"	"	"
1219 " SPZ	"	6	5 55.000	-0.2773	-	109.2437	0.422	0.357	76.5	125.3	305.6
" SPN	"	6	5 55.000	"	-15.00	112.1432	0.507	0.423	"	"	"
" SPE	"	6	5 55.000	"	75.00	106.2884	0.511	0.436	"	"	"
1220 " SPZ	"	6	5 55.000	0.0078	-	92.7538	0.415	0.356	39.5	126.2	306.5
" SPN	"	6	5 55.000	"	-15.00	85.1736	0.526	0.440	"	"	"
" SPE	"	6	5 55.000	"	75.00	90.0945	0.488	0.382	"	"	"
1221 " SPZ	"	6	5 55.000	0.0156	-	120.8625	0.428	0.366	45.8	122.4	302.7
" SPN	"	6	5 55.000	"	-15.00	117.0131	0.509	0.464	"	"	"
" SPE	"	6	5 55.000	"	75.00	115.8302	0.490	0.420	"	"	"
1222 " SPZ	"	6	5 55.000	0.5436 GOES	-	111.8476	0.457	0.464	48.7	125.2	305.5
" SPN	"	6	5 55.000	"	-15.00	112.9581	0.493	0.514	"	"	"
" SPE	"	6	5 55.000	"	75.00	111.3782	0.510	0.523	"	"	"
1223 " SPZ	"	6	5 55.000	0.1074 WWVB	-	99.5213	0.485	0.441	52.5	125.4	305.7
" SPN	"	6	5 55.000	"	-15.00	110.9653	0.477	0.487	"	"	"
" SPE	"	6	5 55.000	"	75.00	100.4654	0.480	0.440	"	"	"
1224 " SPZ	"	6	5 55.000	0.1855	-	99.9986	0.468	0.394	57.3	125.2	305.6
" SPN	"	6	5 55.000	"	-15.00	105.2339	0.509	0.407	"	"	"
" SPE	"	6	5 55.000	"	75.00	103.0961	0.514	0.438	"	"	"
1225 " SPZ	"	6	5 55.000	-0.6511 GOES	-	113.0980	0.494	0.465	63.2	125.3	305.8
" SPN	"	6	5 55.000	"	-15.00	115.7602	0.480	0.424	"	"	"
" SPE	"	6	5 55.000	"	75.00	105.1737	0.392	0.343	"	"	"
1227 " SPZ	"	6	5 55.000	0.1841	-	119.6034	0.426	0.393	69.8	126.1	306.6
" SPN	"	6	5 55.000	"	-15.00	106.0839	0.472	0.416	"	"	"
" SPE	"	6	5 55.000	"	75.00	118.8165	0.494	0.429	"	"	"
1228 " SPZ	"	6	5 55.000	0.0156 WWVB	-	107.8404	0.474	0.417	73.7	126.5	307.0
" SPN	"	6	5 55.000	"	-15.00	115.2925	0.469	0.430	"	"	"
" SPE	"	6	5 55.000	"	75.00	100.8098	0.459	0.399	"	"	"
1229 " SPZ	"	6	5 59.000	0.0684	-	145.0600	0.560	0.400	77.5	126.4	306.9
" SPN	"	6	5 59.000	"	75.00	145.0600	0.540	0.400	"	"	"
" SPE	"	6	5 59.000	"	-15.00	135.9900	0.480	0.400	"	"	"
1231 " SPZ	"	6	5 55.000	0.0212 GOES	-	98.5121	0.471	0.362	85.7	125.8	306.4
" SPN	"	6	5 55.000	"	75.00	101.6663	0.507	0.400	"	"	"
" SPE	"	6	5 55.000	"	-	110.6077	0.386	0.339	"	"	"
1232 " SPZ	"	6	5 58.000	0.0000 NONE	-15.00	108.6534	0.490	0.405	90.3	126.1	306.7
" SPN	"	6	5 58.000	"	75.00	102.3860	0.485	0.414	"	"	"
" SPE	"	6	5 58.000	"	-	97.2723	0.422	0.338	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1233 2-10 SPN	24 SEP 1988 268	6 5 55.000	0.0000 NONE	-15.00	98.5043	0.506	0.425	94.1	125.9	306.6
" " SP2	" " " "	6 5 55.000	" " "	75.00	88.4856	0.487	0.379	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	89.6476	0.416	0.340	" "	" "	" "
1234 " " SPN	" " " "	6 5 55.000	-1.0469 WWVB	-15.00	107.4674	0.488	0.424	97.6	125.8	306.5
" " SP2	" " " "	6 5 55.000	" " "	75.00	105.9664	0.488	0.453	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	114.1378	0.468	0.487	" "	" "	" "
1236 " " SPN	" " " "	6 5 55.000	-0.1919 GOES	-15.00	786.2735	0.610	0.823	106.2	125.8	306.6
" " SP2	" " " "	6 5 55.000	" " "	75.00	752.1228	0.554	1.952	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	715.6757	0.652	0.809	" "	" "	" "
1238 " " SPN	" " " "	6 5 55.000	-0.0156 WWVB	-15.00	505.6474	0.902	1.454	117.4	126.2	307.0
" " SP2	" " " "	6 5 55.000	" " "	75.00	694.0557	0.551	0.681	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	624.0928	0.864	1.000	" "	" "	" "
1240 " " SPN	" " " "	6 5 55.000	0.1717	-15.00	743.4758	1.024	1.293	125.0	125.9	306.8
" " SP2	" " " "	6 5 55.000	" " "	75.00	706.5759	0.938	1.117	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	697.1599	1.007	1.238	" "	" "	" "
1241 " " SPN	" " " "	6 5 55.000	-0.1699	-15.00	622.2807	0.978	1.277	129.0	125.8	306.7
" " SP2	" " " "	6 5 55.000	" " "	75.00	696.1515	1.041	1.315	" "	" "	" "
" " SP2	" " " "	6 5 55.000	" " "	" "	835.2012	0.680	0.900	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1211 2 11 SPN	24 SEP 1988	268	8 1 55 000	0 1157 GOES	15 00	113 1000	0 453	0 475	23 9	77 5	257 7
" " " SP2	"	"	8 1 55 000	"	75 00	113 7880	0 357	0 426	"	"	"
" " " SP2	"	"	8 1 55 000	"	"	101 4590	0 392	0 328	"	"	"
1212 " " " SP2	"	"	8 1 55 000	0 0169	"	95 8404	0 457	0 449	26 7	83 8	264 0
" " " SPN	"	"	8 1 55 000	"	15 00	104 6157	0 501	0 539	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	98 2109	0 483	0 482	"	"	"
1213 " " " SP2	"	"	8 1 55 000	0 2305 WWVB	"	119 9548	0 434	0 361	30 0	88 7	269 0
" " " SPN	"	"	8 1 55 000	"	15 00	98 0837	0 509	0 384	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	111 1635	0 542	0 457	"	"	"
1214 " " " SP2	"	"	8 1 55 000	0 2773	"	89 0961	0 427	0 320	33 5	92 8	273 1
" " " SPN	"	"	8 1 55 000	"	-15 00	104 5607	0 501	0 434	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	91 2114	0 488	0 418	"	"	"
1215 " " " SP2	"	"	8 1 55 000	0 0319 GOES	-15 00	113 8695	0 376	0 333	36 5	95 8	276 1
" " " SPN	"	"	8 1 55 000	"	75 00	120 7941	0 486	0 401	"	"	"
" " " SP2	"	"	8 1 55 000	0 2148 WWVB	"	104 9737	0 405	0 329	41 3	99 3	279 6
" " " SPN	"	"	8 1 55 000	"	-15 00	106 2555	0 509	0 416	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	104 0743	0 504	0 435	"	"	"
1217 " " " SPN	"	"	8 1 55 000	0 2305	-15 00	106 3744	0 468	0 385	45 8	102 0	282 4
" " " SP2	"	"	8 1 55 000	"	75 00	115 5793	0 468	0 417	"	"	"
" " " SP2	"	"	8 1 55 000	"	"	107 6735	0 445	0 377	"	"	"
1218 " " " SP2	"	"	8 1 55 000	0 2461	"	102 4046	0 415	0 326	49 5	104 0	284 4
" " " SPN	"	"	8 1 55 000	"	-5 00	119 5301	0 538	0 467	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	107 1711	0 524	0 444	"	"	"
1219 " " " SP2	"	"	8 1 55 000	0 2773	"	109 2437	0 422	0 357	53 8	105 3	285 7
" " " SPN	"	"	8 1 55 000	"	-15 00	112 1432	0 507	0 423	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	106 2984	0 511	0 436	"	"	"
1220 " " " SP2	"	"	8 1 55 000	0 0078	-15 00	92 7538	0 415	0 356	56 4	106 9	287 4
" " " SPN	"	"	8 1 55 000	"	75 00	85 1736	0 526	0 440	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	90 0945	0 488	0 382	"	"	"
1221 " " " SP2	"	"	8 1 55 000	0 0313	"	120 8625	0 428	0 366	63 2	106 1	286 6
" " " SPN	"	"	8 1 55 000	"	15 00	117 0131	0 509	0 464	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	115 8302	0 490	0 420	"	"	"
1223 " " " SP2	"	"	8 1 55 000	0 1309	"	89 5213	0 485	0 441	69 0	109 8	290 4
" " " SPN	"	"	8 1 55 000	"	15 00	110 9653	0 477	0 487	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	100 4654	0 480	0 440	"	"	"
1224 " " " SP2	"	"	8 1 55 000	0 2070	"	99 9986	0 468	0 394	73 7	110 7	291 3
" " " SPN	"	"	8 1 55 000	"	15 00	105 2339	0 509	0 407	"	"	"
" " " SP2	"	"	8 1 55 000	"	75 00	103 0961	0 514	0 438	"	"	"
1225 " " " SPN	"	"	8 1 55 000	0 7251 GOES	15 00	115 7602	0 480	0 424	79 3	111 8	292 4
" " " SP2	"	"	8 1 55 000	"	75 00	105 1737	0 392	0 343	"	"	"
" " " SP2	"	"	8 1 55 000	"	"	113 0880	0 494	0 465	"	"	"
1227 " " " SPN	"	"	8 1 55 000	0 2128	-15 00	119 6034	0 426	0 383	85 6	113 0	294 2
" " " SP2	"	"	8 1 55 000	"	75 00	106 0839	0 472	0 416	"	"	"
" " " SP2	"	"	8 1 55 000	"	"	118 8165	0 474	0 429	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1228 2-11 SPN	24 SEP 1988 268	8 1 55.000	0 0078 WWVB	-15.00	107.8404	0.474	0.417	89.3	114.3	295.0
" " SPE	" " "	8 1 55.000	" " "	75.00	115.2925	0.469	0.430	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	100.8098	0.459	0.399	"	"	"
1229 " " SPN	" " "	8 1 57.000	0.0547	-15.00	145.0600	0.560	0.400	93.0	114.7	295.4
" " SPE	" " "	8 1 57.000	" " "	75.00	145.0600	0.540	0.400	"	"	"
" " SPZ	" " "	8 1 57.000	" " "	"	135.9900	0.480	0.400	"	"	"
1231 " " SPN	" " "	8 1 55.000	0.0244 GOES	-15.00	98.5121	0.471	0.362	101.3	115.1	295.9
" " SPE	" " "	8 1 55.000	" " "	75.00	101.6663	0.507	0.400	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	110.6077	0.386	0.339	"	"	"
1232 " " SPN	" " "	8 1 58.000	-0.9004 WWVB	-15.00	100.6534	0.490	0.405	105.7	115.8	296.6
" " SPE	" " "	8 1 58.000	" " "	75.00	102.3860	0.485	0.414	"	"	"
" " SPZ	" " "	8 1 58.000	" " "	"	8.2723	0.422	0.338	"	"	"
1233 " " SPN	" " "	8 1 55.000	0.0000 NCNE	-15.00	98.5043	0.508	0.425	109.5	116.1	296.9
" " SPE	" " "	8 1 55.000	" " "	75.00	89.4856	0.487	0.379	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	99.6476	0.416	0.340	"	"	"
1234 " " SPN	" " "	8 1 55.000	1 0156 WWVB	-15.00	107.4674	0.424	0.428	113.0	116.2	297.1
" " SPE	" " "	8 1 55.000	" " "	75.00	105.9664	0.488	0.453	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	114.1378	0.468	0.487	"	"	"
1235 " " SPN	" " "	8 1 55.000	0.0048 GOES	-15.00	102.6012	0.516	0.418	116.5	116.6	297.5
" " SPE	" " "	8 1 55.000	" " "	75.00	114.3616	0.476	0.416	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	107.8076	0.391	0.339	"	"	"
1236 " " SPN	" " "	8 1 55.000	-0.2211	-15.00	786.2735	0.610	0.823	121.5	116.9	297.9
" " SPE	" " "	8 1 55.000	" " "	75.00	752.1228	0.554	1.952	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	715.6757	0.652	0.809	"	"	"
1238 " " SPN	" " "	8 1 55.000	-0.0156 WWVB	-15.00	505.6474	0.802	1.454	132.5	118.0	299.0
" " SPE	" " "	8 1 55.000	" " "	75.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	624.0928	0.864	1.000	"	"	"
1240 " " SPN	" " "	8 1 55.000	0.1777	-15.00	743.4758	1.024	1.293	140.1	118.1	299.2
" " SPE	" " "	8 1 55.000	" " "	75.00	706.5759	0.928	1.117	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	697.1599	1.007	1.238	"	"	"
1241 " " SPN	" " "	8 1 55.000	-0.1992	-15.00	622.2807	0.978	1.277	144.0	118.3	299.4
" " SPE	" " "	8 1 55.000	" " "	75.00	835.2012	1.041	1.315	"	"	"
" " SPZ	" " "	8 1 55.000	" " "	"	113.1000	0.453	0.475	50.4	76.9	257.4
1211 2-12 SPN	" " "	4 3 55.000	-0.0919 GOES	-15.00	113.7880	0.357	0.426	"	"	"
" " SPE	" " "	4 3 55.000	" " "	75.00	101.4580	0.392	0.328	"	"	"
" " SPZ	" " "	4 3 55.000	-0.0135	"	95.8404	0.457	0.449	53.1	80.1	267.6
1212 " " SPN	" " "	4 3 55.000	" " "	-15.00	104.6157	0.501	0.539	"	"	"
" " SPE	" " "	4 3 55.000	" " "	75.00	98.2109	0.493	0.492	"	"	"
" " SPZ	" " "	4 3 55.000	0.1689 WWVB	-15.00	119.9548	0.434	0.361	56.2	87.0	267.4
1213 " " SPN	" " "	4 3 55.000	" " "	75.00	98.0937	0.509	0.384	"	"	"
" " SPE	" " "	4 3 55.000	" " "	"	111.1635	0.542	0.457	"	"	"
" " SPZ	" " "	4 3 55.000	0.2158	-15.00	89.0961	0.427	0.320	59.4	85.6	266.1
1214 " " SPN	" " "	4 3 55.000	" " "	75.00	104.5607	0.501	0.434	"	"	"
" " SPE	" " "	4 3 55.000	" " "	"	91.2114	0.488	0.418	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1215 2-12 SP2	24 SEP 1988	268	4 3 55.000	0 0381 WWVB	113.8695	0.376	0.333	62.1	87.7	268.2
" " SPN	" "	"	4 3 55.000	"	112.8435	0.487	0.425	"	"	"
" " SPE	" "	"	4 3 55.000	"	120.7941	0.486	0.401	"	"	"
1216 " " SP2	" "	"	4 3 55.000	-0.1689	104.9737	0.405	0.329	66.6	90.3	270.9
" " SPN	" "	"	4 3 55.000	"	106.2555	0.509	0.416	"	"	"
" " SPE	" "	"	4 3 55.000	"	104.0743	0.504	0.435	"	"	"
1217 " " SPN	" "	"	4 3 55.000	0.1924	106.3744	0.468	0.385	70.7	92.6	273.2
" " SPN	" "	"	4 3 55.000	"	115.5793	0.468	0.417	"	"	"
" " SPE	" "	"	4 3 55.000	"	107.6735	0.445	0.377	"	"	"
1218 " " SP2	" "	"	4 3 55.000	-0.2002	102.4046	0.415	0.326	74.0	94.4	275.0
" " SPN	" "	"	4 3 55.000	"	119.5301	0.538	0.463	"	"	"
" " SPE	" "	"	4 3 55.000	"	107.1711	0.534	0.444	"	"	"
1219 " " SP2	" "	"	4 3 55.000	-0.2539	109.2437	0.422	0.357	78.1	95.8	276.5
" " SPN	" "	"	4 3 55.000	"	112.1432	0.507	0.423	"	"	"
" " SPE	" "	"	4 3 55.000	"	106.2984	0.511	0.436	"	"	"
1220 " " SP2	" "	"	4 3 55.000	0.0000	92.7538	0.415	0.356	80.5	97.2	277.9
" " SPN	" "	"	4 3 55.000	"	85.1736	0.526	0.440	"	"	"
" " SPE	" "	"	4 3 55.000	"	90.0945	0.488	0.382	"	"	"
1221 " " SP2	" "	"	4 3 55.000	0.0078	120.8625	0.428	0.366	87.3	97.4	278.1
" " SPN	" "	"	4 3 55.000	"	117.0131	0.509	0.464	"	"	"
" " SPE	" "	"	4 3 55.000	"	115.8302	0.490	0.420	"	"	"
1222 " " SP2	" "	"	4 3 55.000	0.4825 GOES	111.8476	0.457	0.464	89.0	99.5	280.3
" " SPN	" "	"	4 3 55.000	"	112.9581	0.493	0.514	"	"	"
" " SPE	" "	"	4 3 55.000	"	111.3782	0.510	0.523	"	"	"
1223 " " SP2	" "	"	4 3 55.000	0.0996 WWVB	99.5213	0.485	0.441	92.4	100.6	281.4
" " SPN	" "	"	4 3 55.000	"	110.9653	0.477	0.487	"	"	"
" " SPE	" "	"	4 3 55.000	"	100.4654	0.480	0.440	"	"	"
1224 " " SP2	" "	"	4 3 55.000	0.1689	99.9986	0.468	0.394	96.9	101.7	282.5
" " SPN	" "	"	4 3 55.000	"	105.2339	0.509	0.407	"	"	"
" " SPE	" "	"	4 3 55.000	"	103.0961	0.514	0.438	"	"	"
1225 " " SP2	" "	"	4 3 55.000	0.5778 GOES	113.0980	0.494	0.465	102.2	103.0	283.9
" " SPN	" "	"	4 3 55.000	"	115.7602	0.480	0.424	"	"	"
" " SPE	" "	"	4 3 55.000	"	105.1737	0.392	0.343	"	"	"
1227 " " SPN	" "	"	4 3 55.000	0.1553	119.6034	0.426	0.393	108.0	104.9	285.8
" " SPN	" "	"	4 3 55.000	"	106.0839	0.472	0.416	"	"	"
" " SPE	" "	"	4 3 55.000	"	118.8165	0.494	0.429	"	"	"
1228 " " SPN	" "	"	4 3 55.000	-0.0156 WWVB	107.8404	0.474	0.417	111.5	105.8	286.7
" " SPN	" "	"	4 3 55.000	"	115.2925	0.469	0.430	"	"	"
" " SPE	" "	"	4 3 55.000	"	100.8088	0.459	0.399	"	"	"
1229 " " SPN	" "	"	4 4 10.000	0.0078	145.0600	0.560	0.400	115.1	106.4	287.3
" " SPN	" "	"	4 4 10.000	"	145.0600	0.540	0.400	"	"	"
" " SPE	" "	"	4 4 10.000	"	135.9900	0.480	0.400	"	"	"
1231 " " SPN	" "	"	4 3 55.000	0.0179 GOES	98.5121	0.471	0.362	123.2	107.3	288.3
" " SPN	" "	"	4 3 55.000	"	101.6663	0.507	0.400	"	"	"
" " SPE	" "	"	4 3 55.000	"	110.6077	0.386	0.339	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1232 2-12 SPN	24 SEP 1988	268	4	4 10.000	0.0000 NONE	109.6534	0.490	0.405	127.5	108.1	289.1
-- SP2	--	--	4	4 10.000	-15.00	102.3860	0.485	0.414	--	--	--
-- SP2	--	--	4	4 10.000	75.00	97.2723	0.422	0.338	--	--	--
1233 -- SPN	--	--	4	4 10.000	--	98.5043	0.506	0.425	131.1	108.5	289.6
-- SP2	--	--	4	4 10.000	-15.00	89.4856	0.487	0.379	--	--	--
-- SP2	--	--	4	4 10.000	75.00	89.6476	0.416	0.340	--	--	--
1234 -- SPN	--	--	4	4 10.000	-15.00	107.4674	0.488	0.424	134.6	108.8	289.9
-- SP2	--	--	4	4 10.000	75.00	105.9664	0.488	0.453	--	--	--
-- SP2	--	--	4	4 10.000	--	114.1378	0.468	0.487	--	--	--
1235 -- SPN	--	--	4	4 10.000	-15.00	102.6012	0.516	0.418	137.9	109.3	290.4
-- SP2	--	--	4	4 10.000	75.00	114.3616	0.476	0.416	--	--	--
-- SP2	--	--	4	4 10.000	--	107.8076	0.391	0.339	--	--	--
1236 -- SPN	--	--	4	4 10.000	-15.00	786.2735	0.610	0.823	142.8	109.9	291.0
-- SP2	--	--	4	4 10.000	75.00	752.1228	0.554	1.952	--	--	--
-- SP2	--	--	4	4 10.000	--	715.6757	0.652	0.809	--	--	--
1240 -- SPN	--	--	4	4 10.000	-15.00	743.4758	1.024	1.293	161.0	111.7	293.0
-- SP2	--	--	4	4 10.000	75.00	706.5759	0.838	1.117	--	--	--
-- SP2	--	--	4	4 10.000	--	697.1599	1.007	1.238	--	--	--
1241 -- SPN	--	--	4	4 10.000	-15.00	622.2807	0.978	1.277	164.8	112.0	293.3
-- SP2	--	--	4	4 10.000	75.00	696.1515	1.041	1.315	--	--	--
-- SP2	--	--	4	4 10.000	--	835.2012	0.680	0.900	--	--	--
1211 2-13 SPN	--	--	6	6 35.000	-15.00	113.1000	0.453	0.475	71.9	83.4	264.1
-- SP2	--	--	6	6 35.000	75.00	113.7880	0.357	0.428	--	--	--
-- SP2	--	--	6	6 35.000	--	101.4590	0.392	0.338	--	--	--
1212 -- SP2	--	--	6	6 35.000	-15.00	95.8404	0.457	0.449	74.9	85.5	266.1
-- SPN	--	--	6	6 35.000	75.00	104.6157	0.501	0.539	--	--	--
-- SP2	--	--	6	6 35.000	--	98.2109	0.493	0.482	--	--	--
1213 -- SP2	--	--	6	6 35.000	-15.00	119.9548	0.434	0.361	78.3	87.3	267.9
-- SPN	--	--	6	6 35.000	75.00	98.0937	0.509	0.384	--	--	--
-- SP2	--	--	6	6 35.000	--	111.1635	0.542	0.457	--	--	--
1214 -- SP2	--	--	6	6 35.000	-15.00	89.0981	0.427	0.320	81.6	89.0	269.7
-- SPN	--	--	6	6 35.000	75.00	104.5807	0.501	0.434	--	--	--
-- SP2	--	--	6	6 35.000	--	91.2114	0.488	0.418	--	--	--
1215 -- SP2	--	--	6	6 35.000	-15.00	113.8695	0.376	0.333	84.5	90.4	271.1
-- SPN	--	--	6	6 35.000	75.00	112.8435	0.497	0.425	--	--	--
-- SP2	--	--	6	6 35.000	--	120.7941	0.486	0.401	--	--	--
1216 -- SP2	--	--	6	6 35.000	-15.00	104.9737	0.405	0.329	89.1	92.2	273.0
-- SPN	--	--	6	6 35.000	75.00	106.2555	0.509	0.418	--	--	--
-- SP2	--	--	6	6 35.000	--	104.0743	0.504	0.435	--	--	--
1217 -- SPN	--	--	6	6 35.000	-15.00	106.3744	0.468	0.385	93.3	93.9	274.7
-- SP2	--	--	6	6 35.000	75.00	115.5783	0.417	0.355	--	--	--
-- SP2	--	--	6	6 35.000	--	107.6735	0.445	0.377	--	--	--
1218 -- SP2	--	--	6	6 35.000	-15.00	102.4046	0.415	0.326	96.6	95.2	276.0
-- SPN	--	--	6	6 35.000	75.00	119.5301	0.538	0.463	--	--	--
-- SP2	--	--	6	6 35.000	--	107.1711	0.534	0.444	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1219 2-13 SPZ	24 SEP 1988	268	6	3 55.000	-0.2773 WWVB	0.422	0.357	100.7	96.2	277.1
" " SPN	" "	"	6	3 55.000	"	0.507	0.423	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.511	0.436	"	"	"
1220 " " SPZ	" "	"	6	3 55.000	0.0078	0.415	0.356	103.1	97.3	278.2
" " SPN	" "	"	6	3 55.000	"	0.526	0.440	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.488	0.382	"	"	"
1221 " " SPZ	" "	"	6	3 55.000	0.0156	0.428	0.366	110.0	97.4	278.4
" " SPN	" "	"	6	3 55.000	"	0.509	0.464	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.490	0.420	"	"	"
1222 " " SPZ	" "	"	6	3 55.000	0.5436 GOES	0.457	0.464	111.6	99.1	280.1
" " SPN	" "	"	6	3 55.000	"	0.493	0.514	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.510	0.523	"	"	"
1223 " " SPZ	" "	"	6	3 55.000	0.1074 WWVB	0.485	0.441	115.1	100.0	281.0
" " SPN	" "	"	6	3 55.000	"	0.477	0.487	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.480	0.440	"	"	"
1224 " " SPZ	" "	"	6	3 55.000	0.1855	0.468	0.394	119.5	100.9	282.0
" " SPN	" "	"	6	3 55.000	"	0.509	0.407	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.514	0.438	"	"	"
1225 " " SPZ	" "	"	6	3 55.000	-0.6511 GOES	0.494	0.465	124.8	102.1	283.1
" " SPN	" "	"	6	3 55.000	"	0.480	0.424	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.392	0.343	"	"	"
1227 " " SPZ	" "	"	6	3 55.000	0.1841	0.426	0.393	130.6	103.6	284.7
" " SPN	" "	"	6	3 55.000	"	0.472	0.416	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.494	0.429	"	"	"
1228 " " SPZ	" "	"	6	3 55.000	-0.0156 WWVB	0.474	0.417	134.0	104.4	285.5
" " SPN	" "	"	6	3 55.000	"	0.469	0.430	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.459	0.399	"	"	"
1229 " " SPZ	" "	"	6	3 55.000	0.0625	0.560	0.400	137.6	104.9	286.0
" " SPN	" "	"	6	3 55.000	"	0.540	0.400	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.480	0.400	"	"	"
1231 " " SPZ	" "	"	6	3 55.000	0.0212 GOES	0.471	0.362	145.7	105.7	286.9
" " SPN	" "	"	6	3 55.000	"	0.480	0.400	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.507	0.400	"	"	"
1232 " " SPZ	" "	"	6	3 55.000	0.0000 NONE	0.386	0.339	149.8	106.5	287.7
" " SPN	" "	"	6	3 55.000	"	0.485	0.414	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.422	0.338	"	"	"
1233 " " SPZ	" "	"	6	3 55.000	0.0000	0.506	0.425	153.5	106.9	288.1
" " SPN	" "	"	6	3 55.000	"	0.487	0.379	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.416	0.340	"	"	"
1234 " " SPZ	" "	"	6	3 55.000	-1.0469 WWVB	0.488	0.424	156.9	107.2	288.5
" " SPN	" "	"	6	3 55.000	"	0.488	0.453	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.468	0.487	"	"	"
1236 " " SPZ	" "	"	6	3 55.000	-0.1919 GOES	0.610	0.823	165.1	108.1	289.5
" " SPN	" "	"	6	3 55.000	"	0.554	1.952	"	"	"
" " SPE	" "	"	6	3 55.000	-15.00	0.652	0.809	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts·m·sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1238 2-13 SPN	24 SEP 1988	268								
" " SP2	" "	6 3 55.000	-0.0156 WWVB	-15.00	505.6474	0.902	1.454	175.6	109.4	290.8
" " SP2	" "	6 3 55.000	" "	75.00	694.0557	0.551	0.681	" "	" "	" "
1240 " " SPN	" "	6 3 55.000	" "	" "	624.0828	0.864	1.000	" "	" "	" "
" " SP2	" "	6 3 55.000	0.1717	-15.00	743.4758	1.024	1.293	183.1	109.9	291.4
" " SP2	" "	6 3 55.000	" "	75.00	706.5759	0.838	1.117	" "	" "	" "
1241 " " SPN	" "	6 3 55.000	" "	" "	397.1589	1.007	1.238	" "	" "	" "
" " SP2	" "	6 3 55.000	-0.1699	-15.00	622.2807	0.978	1.277	186.9	110.2	291.7
" " SP2	" "	6 3 55.000	" "	75.00	696.1515	1.041	1.315	" "	" "	" "
1211 2-14 SPN	" "	7 59 55.000	" "	" "	835.2012	0.680	0.900	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.1157 GOES	-15.00	113.1000	0.453	0.475	89.7	86.8	267.6
" " SP2	" "	7 59 55.000	" "	75.00	113.7880	0.357	0.426	" "	" "	" "
1212 " " SPN	" "	7 59 55.000	" "	" "	101.1590	0.392	0.338	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.0169	-15.00	95.8404	0.457	0.449	92.9	88.4	269.2
" " SP2	" "	7 59 55.000	" "	75.00	104.6157	0.501	0.539	" "	" "	" "
1213 " " SPN	" "	7 59 55.000	" "	" "	98.2109	0.493	0.492	" "	" "	" "
" " SP2	" "	7 59 55.000	0.2305 WWVB	-15.00	119.9548	0.434	0.361	96.1	89.7	270.5
" " SP2	" "	7 59 55.000	" "	75.00	98.0837	0.509	0.384	" "	" "	" "
1214 " " SPN	" "	7 59 55.000	" "	" "	111.1635	0.542	0.457	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.2773	-15.00	89.0861	0.427	0.320	99.8	91.0	271.9
" " SP2	" "	7 59 55.000	" "	75.00	104.5607	0.501	0.434	" "	" "	" "
1215 " " SPN	" "	7 59 55.000	" "	" "	91.2114	0.488	0.418	" "	" "	" "
" " SP2	" "	7 59 55.000	0.0319	-15.00	113.8695	0.376	0.333	102.7	92.1	273.0
" " SP2	" "	7 59 55.000	" "	75.00	112.8435	0.497	0.425	" "	" "	" "
1216 " " SPN	" "	7 59 55.000	" "	" "	120.7841	0.486	0.401	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.1992	-15.00	104.9737	0.405	0.329	107.4	93.6	274.5
" " SP2	" "	7 59 55.000	" "	75.00	106.2555	0.509	0.416	" "	" "	" "
1217 " " SPN	" "	7 59 55.000	" "	" "	104.0743	0.504	0.435	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.2305	-15.00	106.3744	0.468	0.385	111.7	94.9	275.9
" " SP2	" "	7 59 55.000	" "	75.00	115.5793	0.468	0.417	" "	" "	" "
1218 " " SPN	" "	7 59 55.000	" "	" "	107.6735	0.445	0.377	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.2461	-15.00	102.4046	0.415	0.326	115.0	96.0	277.0
" " SP2	" "	7 59 55.000	" "	75.00	119.5301	0.538	0.463	" "	" "	" "
1219 " " SPN	" "	7 59 55.000	" "	" "	107.1711	0.534	0.444	" "	" "	" "
" " SP2	" "	7 59 55.000	-0.2773	-15.00	108.2437	0.422	0.357	119.2	96.8	277.8
" " SP2	" "	7 59 55.000	" "	75.00	112.1452	0.501	0.423	" "	" "	" "
1220 " " SPN	" "	7 59 55.000	" "	" "	106.2884	0.511	0.436	" "	" "	" "
" " SP2	" "	7 59 55.000	0.0156	-15.00	92.7538	0.415	0.356	121.6	97.7	278.8
" " SP2	" "	7 59 55.000	" "	75.00	85.1736	0.526	0.440	" "	" "	" "
1221 " " SPN	" "	7 59 55.000	" "	" "	90.0945	0.488	0.382	" "	" "	" "
" " SP2	" "	7 59 55.000	0.0156	-15.00	120.8625	0.428	0.366	128.4	97.8	278.9
" " SP2	" "	7 59 55.000	" "	75.00	117.0131	0.509	0.464	" "	" "	" "
1223 " " SPN	" "	7 59 55.000	" "	" "	115.8302	0.490	0.420	" "	" "	" "
" " SP2	" "	7 59 55.000	0.1309	-15.00	99.5213	0.485	0.441	133.5	100.0	281.2
" " SP2	" "	7 59 55.000	" "	75.00	110.9653	0.477	0.487	" "	" "	" "
" " SP2	" "	7 59 55.000	" "	" "	100.4654	0.480	0.440	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts.m.sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1224 2-14 SPZ	24 SEP 1988	268	0.2070	WWVB	99.9986	0.468	0.394	138.0	100.8	282.0
" " SPN	" "	"	"	"	105.2339	0.509	0.407	"	"	"
" " SPE	" "	"	"	-15.00	103.0961	0.514	0.438	"	"	"
1225 " SPN	" "	"	-0.7251	GOES	115.7602	0.480	0.424	143.3	101.8	283.0
" " SPE	" "	"	"	-15.00	105.1737	0.392	0.343	"	"	"
" " SPZ	" "	"	"	75.00	113.0980	0.494	0.465	"	"	"
1227 " SPN	" "	"	0.2128	"	119.6034	0.426	0.383	149.0	103.1	284.4
" " SPE	" "	"	"	-15.00	106.0839	0.472	0.416	"	"	"
" " SPZ	" "	"	"	75.00	118.8165	0.474	0.429	"	"	"
1228 " SPN	" "	"	0.0078	WWVB	107.8404	0.474	0.417	152.5	103.8	285.1
" " SPE	" "	"	"	-15.00	115.2925	0.469	0.430	"	"	"
" " SPZ	" "	"	"	75.00	100.8098	0.459	0.399	"	"	"
1229 " SPN	" "	"	0.0547	"	145.0600	0.560	0.400	156.1	104.3	285.6
" " SPE	" "	"	"	-15.00	145.0600	0.540	0.400	"	"	"
" " SPZ	" "	"	"	75.00	135.9900	0.480	0.400	"	"	"
1271 " SPN	" "	"	0.0244	GOES	98.5121	0.471	0.362	164.1	105.0	286.4
" " SPE	" "	"	"	-15.00	101.6663	0.507	0.400	"	"	"
" " SPZ	" "	"	"	75.00	110.6077	0.386	0.339	"	"	"
1232 " SPN	" "	"	-0.9082	WWVB	109.6534	0.490	0.405	168.2	105.7	287.1
" " SPE	" "	"	"	-15.00	102.3860	0.485	0.414	"	"	"
" " SPZ	" "	"	"	75.00	97.2723	0.422	0.338	"	"	"
1233 " SPN	" "	"	0.0000	NONE	98.5043	0.506	0.425	171.9	106.1	287.5
" " SPE	" "	"	"	-15.00	99.4856	0.487	0.379	"	"	"
" " SPZ	" "	"	"	75.00	99.6476	0.416	0.340	"	"	"
1234 " SPN	" "	"	-1.0234	WWVB	107.4674	0.488	0.424	175.3	106.4	287.8
" " SPE	" "	"	"	-15.00	105.9664	0.488	0.453	"	"	"
" " SPZ	" "	"	"	75.00	114.1378	0.468	0.487	"	"	"
1235 " SPN	" "	"	0.0048	GOES	102.6012	0.516	0.418	178.6	106.8	288.2
" " SPE	" "	"	"	-15.00	114.3616	0.476	0.416	"	"	"
" " SPZ	" "	"	"	75.00	107.8076	0.391	0.339	"	"	"
1236 " SPN	" "	"	-0.2211	"	786.2735	0.610	0.823	183.5	107.3	288.8
" " SPE	" "	"	"	-15.00	752.1228	0.554	1.952	"	"	"
" " SPZ	" "	"	"	75.00	715.6757	0.652	0.809	"	"	"
1238 " SPN	" "	"	-0.0156	WWVB	505.6474	0.402	1.454	193.9	108.5	290.0
" " SPE	" "	"	"	-15.00	694.0557	0.551	0.681	"	"	"
" " SPZ	" "	"	"	75.00	624.0928	0.864	1.000	"	"	"
1240 " SPN	" "	"	0.1777	"	743.4758	1.024	1.293	201.4	108.9	290.6
" " SPE	" "	"	"	-15.00	706.5759	0.938	1.117	"	"	"
" " SPZ	" "	"	"	75.00	697.1598	1.007	1.238	"	"	"
1241 " SPN	" "	"	-0.1992	"	622.2807	0.978	1.277	205.2	109.2	290.9
" " SPE	" "	"	"	-15.00	696.1515	1.041	1.315	"	"	"
" " SPZ	" "	"	"	75.00	835.2012	0.680	0.900	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1211 2-17 SPN	24 SEP 1988	268	6	1 55.000	-0.1038 GCES	113.1000	0.453	206.4	97.1	278.9
" " SP2	" "	"	6	1 55.000	"	113.7880	0.357	"	"	"
" " SP2	" "	"	6	1 55.000	"	101.4590	0.338	"	"	"
1212 " " SP2	" "	"	6	1 55.000	-0.0135	95.8404	0.457	210.0	97.6	279.4
" " SPN	" "	"	6	1 55.000	"	104.8157	0.501	"	"	"
" " SP2	" "	"	6	1 55.000	"	98.2109	0.483	"	"	"
1213 " " SP2	" "	"	6	1 55.000	0.1992 WWVB	119.9548	0.434	213.7	98.0	279.9
" " SPN	" "	"	6	1 55.000	"	98.0837	0.509	"	"	"
" " SP2	" "	"	6	1 55.000	"	111.1635	0.542	"	"	"
1214 " " SP2	" "	"	6	1 55.000	-0.2461	89.0961	0.427	217.5	98.5	280.4
" " SPN	" "	"	6	1 55.000	"	104.5607	0.501	"	"	"
" " SP2	" "	"	6	1 55.000	"	91.2114	0.488	"	"	"
1215 " " SP2	" "	"	6	1 55.000	0.0313	113.8695	0.376	220.7	98.9	280.8
" " SPN	" "	"	6	1 55.000	"	112.8435	0.497	"	"	"
" " SP2	" "	"	6	1 55.000	"	120.7941	0.486	"	"	"
1216 " " SP2	" "	"	6	1 55.000	-0.1992	104.9737	0.405	225.6	99.4	281.3
" " SPN	" "	"	6	1 55.000	"	106.2555	0.509	"	"	"
" " SP2	" "	"	6	1 55.000	"	104.0743	0.504	"	"	"
1217 " " SPN	" "	"	6	1 55.000	-0.1992	106.3744	0.468	230.2	99.9	281.9
" " SP2	" "	"	6	1 55.000	"	115.5793	0.468	"	"	"
" " SPN	" "	"	6	1 55.000	"	107.6735	0.445	"	"	"
1218 " " SP2	" "	"	6	1 55.000	-0.2227	102.4046	0.415	233.7	100.4	282.4
" " SPN	" "	"	6	1 55.000	"	119.5301	0.538	"	"	"
" " SP2	" "	"	6	1 55.000	"	107.1711	0.534	"	"	"
1219 " " SP2	" "	"	6	1 55.000	0.2773	108.2437	0.422	238.0	100.7	282.7
" " SPN	" "	"	6	1 55.000	"	112.1432	0.507	"	"	"
" " SP2	" "	"	6	1 55.000	"	106.2984	0.511	"	"	"
1220 " " SP2	" "	"	6	1 55.000	0.0078	92.7538	0.415	240.5	101.1	283.1
" " SPN	" "	"	6	1 55.000	"	85.1736	0.526	"	"	"
" " SP2	" "	"	6	1 55.000	"	90.0845	0.488	"	"	"
1221 " " SP2	" "	"	6	1 55.000	0.0156	120.8625	0.428	247.4	101.0	283.1
" " SPN	" "	"	6	1 55.000	"	117.0131	0.508	"	"	"
" " SP2	" "	"	6	1 55.000	"	115.8302	0.490	"	"	"
1222 " " SPN	" "	"	6	1 55.000	0.5436 GOES	111.8476	0.457	249.3	101.7	283.8
" " SP2	" "	"	6	1 55.000	"	112.9581	0.493	"	"	"
" " SPN	" "	"	6	1 55.000	"	111.3782	0.510	"	"	"
1223 " " SP2	" "	"	6	1 55.000	0.115 WWVB	99.5213	0.485	252.8	102.1	284.2
" " SPN	" "	"	6	1 55.000	"	110.9653	0.477	"	"	"
" " SP2	" "	"	6	1 55.000	"	100.4654	0.440	"	"	"
1224 " " SP2	" "	"	6	1 55.000	0.1992	98.8986	0.468	257.3	102.5	284.6
" " SPN	" "	"	6	1 55.000	"	105.2339	0.509	"	"	"
" " SP2	" "	"	6	1 55.000	"	103.0961	0.514	"	"	"
1225 " " SP2	" "	"	6	1 55.000	-0.6511 GOES	113.0880	0.494	262.8	102.9	285.1
" " SPN	" "	"	6	1 55.000	"	115.7602	0.480	"	"	"
" " SP2	" "	"	6	1 55.000	"	105.1737	0.392	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1227 2-17 SPN	24 SEP 1988	268	0.1841 GOES	-15.00	119.6034	0.426	0.393	268.6	103.6	285.9
" " SPE	"	6 1 55 000	"	75.00	106.0839	0.472	0.416	"	"	"
" " SPZ	"	6 1 55 000	"	"	118.8165	0.474	0.429	"	"	"
1228 " " SPN	"	6 1 55 000	0.0078 WWVB	-15.00	107.8404	0.474	0.417	272.1	104.0	286.3
" " SPE	"	6 1 55 000	"	75.00	115.2925	0.469	0.430	"	"	"
" " SPZ	"	6 1 55 000	"	"	100.8098	0.459	0.399	"	"	"
1229 " " SPN	"	6 2 25 000	0.0625	-15.00	145.0600	0.560	0.400	275.7	104.3	286.6
" " SPE	"	6 2 25 000	"	75.00	135.8900	0.540	0.400	"	"	"
" " SPZ	"	6 2 25 000	"	"	98.5121	0.480	0.400	"	"	"
1231 " " SPN	"	6 1 55 000	0.0212 GOES	-15.00	101.6663	0.471	0.362	283.8	104.7	287.0
" " SPE	"	6 1 55 000	"	75.00	110.6077	0.507	0.400	"	"	"
" " SPZ	"	6 1 55 000	"	"	109.6534	0.386	0.339	"	"	"
1232 " " SPN	"	6 2 25 000	0.9082 WWVB	-15.00	102.3860	0.490	0.405	287.9	105.1	287.4
" " SPE	"	6 2 25 000	"	75.00	97.2723	0.485	0.414	"	"	"
" " SPZ	"	6 2 25 000	"	"	98.5043	0.422	0.338	"	"	"
1233 " " SPN	"	6 1 55 000	0.0000 NONE	-15.00	89.4856	0.506	0.425	291.6	105.3	287.7
" " SPE	"	6 1 55 000	"	75.00	99.6476	0.487	0.379	"	"	"
" " SPZ	"	6 1 55 000	"	"	107.4674	0.416	0.340	"	"	"
1234 " " SPN	"	6 1 55 000	-1.0469 WWVB	-15.00	105.9664	0.488	0.424	295.0	105.4	287.9
" " SPE	"	6 1 55 000	"	75.00	114.1378	0.488	0.453	"	"	"
" " SPZ	"	6 1 55 000	"	"	786.2735	0.468	0.487	"	"	"
1236 " " SPN	"	6 1 55 000	-0.1919	-15.00	715.6757	0.610	0.823	303.2	106.0	288.5
" " SPE	"	6 1 55 000	"	75.00	752.1228	0.554	1.952	"	"	"
" " SPZ	"	6 1 55 000	"	"	505.6474	0.652	0.809	"	"	"
1238 " " SPN	"	6 1 55 000	-0.0156	-15.00	694.0557	0.902	1.454	313.6	106.7	289.3
" " SPE	"	6 1 55 000	"	75.00	624.0828	0.551	0.681	"	"	"
" " SPZ	"	6 1 55 000	"	"	706.5759	0.864	1.000	"	"	"
1240 " " SPN	"	6 1 55 000	0.1717	-15.00	697.1599	1.024	1.293	321.0	107.0	289.7
" " SPE	"	6 1 55 000	"	75.00	622.2807	0.938	1.117	"	"	"
" " SPZ	"	6 1 55 000	"	"	686.1515	1.007	1.238	"	"	"
1241 " " SPN	"	6 1 55 000	-0.1699	-15.00	835.2012	0.878	1.277	324.8	107.2	289.9
" " SPE	"	6 1 55 000	"	75.00	113.1000	1.041	1.315	"	"	"
" " SPZ	"	6 1 55 000	"	"	113.7880	0.680	0.900	"	"	"
1211 2-20 SPN	"	4 8 30 000	-0.0919 GOES	-15.00	101.4590	0.453	0.475	345.8	96.6	279.6
" " SPE	"	4 8 30 000	"	75.00	95.8404	0.357	0.426	"	"	"
" " SPZ	"	4 8 30 000	"	"	104.6157	0.392	0.338	"	"	"
1212 " " SPN	"	4 8 30 000	-0.0135	-15.00	98.2109	0.457	0.449	349.4	96.9	279.9
" " SPE	"	4 8 30 000	"	75.00	119.9548	0.501	0.539	"	"	"
" " SPZ	"	4 8 30 000	"	"	98.0937	0.493	0.492	"	"	"
1213 " " SPN	"	4 8 30 000	0.1768 WWVB	-15.00	111.1635	0.434	0.361	353.2	97.1	280.2
" " SPE	"	4 8 30 000	"	75.00	89.0961	0.509	0.384	"	"	"
" " SPZ	"	4 8 30 000	"	"	104.5607	0.542	0.457	"	"	"
1214 " " SPN	"	4 8 30 000	-0.2158	-15.00	91.2114	0.427	0.320	357.0	97.4	280.5
" " SPE	"	4 8 30 000	"	75.00	"	0.501	0.434	"	"	"
" " SPZ	"	4 8 30 000	"	"	"	0.488	0.418	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1215 2-20 SPZ	24 SEP 1988	268	0.0313 WWVB	-	113.8695	0.376	0.333	360.1	97.7	280.8
" " " " SPN	" " "	"	"	-15.00	112.8435	0.497	0.425	"	"	"
" " " " SPE	" " "	"	"	75.00	120.7941	0.486	0.401	"	"	"
1216 " " " " SPZ	" " "	"	-0.1689	-	104.9737	0.405	0.329	365.1	98.0	281.1
" " " " " " SPN	" " "	"	"	-15.00	106.2555	0.509	0.416	"	"	"
" " " " " " SPE	" " "	"	"	75.00	104.0743	0.504	0.435	"	"	"
1217 " " " " SPN	" " "	"	-0.1924	-15.00	106.3744	0.468	0.468	369.6	98.3	281.5
" " " " " " SPE	" " "	"	"	75.00	115.5793	0.468	0.417	"	"	"
" " " " " " SPZ	" " "	"	"	-	107.6735	0.445	0.377	"	"	"
1218 " " " " SPZ	" " "	"	-0.2002	-	102.4046	0.415	0.326	373.2	98.6	281.8
" " " " " " SPN	" " "	"	"	-15.00	119.5301	0.538	0.463	"	"	"
" " " " " " SPE	" " "	"	"	75.00	107.1711	0.534	0.444	"	"	"
1219 " " " " SPZ	" " "	"	-0.2539	-	109.2437	0.422	0.357	377.5	98.8	282.0
" " " " " " SPN	" " "	"	"	-15.00	112.1432	0.507	0.423	"	"	"
" " " " " " SPE	" " "	"	"	75.00	106.2964	0.511	0.436	"	"	"
1220 " " " " SPZ	" " "	"	0.0078	-	92.7538	0.415	0.356	380.0	99.1	282.3
" " " " " " SPN	" " "	"	"	-15.00	85.1736	0.526	0.440	"	"	"
" " " " " " SPE	" " "	"	"	75.00	90.0945	0.488	0.382	"	"	"
1221 " " " " SPZ	" " "	"	0.0078	-	120.8625	0.428	0.366	386.8	99.0	282.3
" " " " " " SPN	" " "	"	"	-15.00	117.0131	0.509	0.464	"	"	"
" " " " " " SPE	" " "	"	"	75.00	115.8302	0.490	0.420	"	"	"
1222 " " " " SPZ	" " "	"	0.4825 GOES	-	111.8476	0.457	0.464	388.7	99.5	282.8
" " " " " " SPN	" " "	"	"	-15.00	112.9581	0.493	0.514	"	"	"
" " " " " " SPE	" " "	"	"	75.00	111.3782	0.510	0.523	"	"	"
1223 " " " " SPZ	" " "	"	0.0996 WWVB	-	99.5213	0.485	0.441	392.2	99.7	283.1
" " " " " " SPN	" " "	"	"	-15.00	110.8653	0.477	0.487	"	"	"
" " " " " " SPE	" " "	"	"	75.00	100.4654	0.480	0.440	"	"	"
1224 " " " " SPZ	" " "	"	0.1768	-	99.9986	0.468	0.394	396.6	100.0	283.4
" " " " " " SPN	" " "	"	"	-15.00	105.2339	0.509	0.407	"	"	"
" " " " " " SPE	" " "	"	"	75.00	103.0961	0.514	0.438	"	"	"
1225 " " " " SPZ	" " "	"	-0.5778 GOES	-	113.0980	0.494	0.465	402.0	100.3	283.7
" " " " " " SPN	" " "	"	"	-15.00	115.7602	0.480	0.424	"	"	"
" " " " " " SPE	" " "	"	"	75.00	105.1737	0.392	0.343	"	"	"
1227 " " " " SPN	" " "	"	0.1553	-15.00	119.6034	0.426	0.393	407.8	100.8	284.2
" " " " " " SPE	" " "	"	"	75.00	106.0839	0.472	0.416	"	"	"
" " " " " " SPZ	" " "	"	"	-	118.8165	0.494	0.429	"	"	"
1228 " " " " SPN	" " "	"	0.0156 WWVB	-15.00	107.8404	0.474	0.417	411.2	101.1	284.5
" " " " " " SPE	" " "	"	"	75.00	115.2925	0.469	0.430	"	"	"
" " " " " " SPZ	" " "	"	"	-	100.8098	0.459	0.399	"	"	"
1229 " " " " SPN	" " "	"	0.0693	-15.00	145.0600	0.560	0.400	414.8	101.2	284.7
" " " " " " SPE	" " "	"	"	75.00	145.0600	0.540	0.400	"	"	"
" " " " " " SPZ	" " "	"	"	-	135.9800	0.480	0.400	"	"	"
1231 " " " " SPN	" " "	"	0.0179 GOES	-15.00	98.5121	0.571	0.362	422.8	101.5	285.1
" " " " " " SPE	" " "	"	"	75.00	101.6663	0.407	0.400	"	"	"
" " " " " " SPZ	" " "	"	"	-	110.6077	0.386	0.339	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting d h m	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1232 2-20 SPN	24 SEP 1988 268	4 8 45.000	0.0000 NONE	-15.00	109.6534	0.490	0.405	426.9	101.8	285.4
" " SPE	" " "	4 8 45.000	" " "	75.00	102.3860	0.485	0.414	"	"	"
" " SPZ	" " "	4 8 45.000	" " "	"	97.2723	0.422	0.338	"	"	"
1233 " " SPN	" " "	4 8 30.000	0.0000	-15.00	98.5043	0.506	0.425	430.5	102.0	285.6
" " SPE	" " "	4 8 30.000	" " "	75.00	89.4856	0.487	0.379	"	"	"
" " SPZ	" " "	4 8 30.000	" " "	"	89.6476	0.416	0.340	"	"	"
1233 " " SPN	" " "	4 8 30.000	0.0035 GOES	-15.00	102.6012	0.516	0.418	437.1	102.3	286.0
" " SPE	" " "	4 8 30.000	" " "	75.00	114.3616	0.476	0.416	"	"	"
" " SPZ	" " "	4 8 30.000	" " "	"	107.8076	0.391	0.339	"	"	"
1236 " " SPN	" " "	4 8 30.000	-0.1626	15.00	786.2735	0.610	0.823	441.9	102.5	286.2
" " SPE	" " "	4 8 30.000	" " "	75.00	752.1228	0.554	1.952	"	"	"
" " SPZ	" " "	4 8 30.000	" " "	"	715.6757	0.652	0.809	"	"	"
1240 " " SPN	" " "	4 8 30.000	0.1717 WWVB	-15.00	743.4758	1.024	1.293	459.5	103.3	287.2
" " SPE	" " "	4 8 30.000	" " "	75.00	706.5759	0.938	1.117	"	"	"
" " SPZ	" " "	4 8 30.000	" " "	"	697.1599	1.007	1.238	"	"	"
1241 " " SPN	" " "	4 8 30.000	0.1465	15.00	622.2807	0.978	1.277	463.3	103.5	287.4
" " SPE	" " "	4 8 30.000	" " "	75.00	686.1515	1.041	1.315	"	"	"
" " SPZ	" " "	4 8 30.000	" " "	"	835.2012	0.680	0.900	"	"	"
1211 2-21 SPN	" " "	8 3 55.000	-0.1157 GOES	-15.00	113.1000	0.453	0.475	114.5	342.4	162.1
" " SPE	" " "	8 3 55.000	" " "	75.00	113.7880	0.357	0.426	"	"	"
" " SPZ	" " "	8 3 55.000	" " "	"	101.4590	0.392	0.338	"	"	"
1212 " " SPZ	" " "	8 3 55.000	-0.0169	-15.00	95.8404	0.457	0.449	111.3	343.6	163.3
" " SPN	" " "	8 3 55.000	" " "	75.00	104.6157	0.501	0.539	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	98.2109	0.493	0.492	"	"	"
1213 " " SPZ	" " "	8 3 55.000	0.2305 WWVB	-15.00	119.9548	0.434	0.361	108.3	345.0	164.8
" " SPN	" " "	8 3 55.000	" " "	75.00	98.0937	0.509	0.384	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	111.1635	0.542	0.457	"	"	"
1214 " " SPZ	" " "	8 3 55.000	-0.2617	-15.00	89.0961	0.427	0.320	105.2	346.5	166.3
" " SPN	" " "	8 3 55.000	" " "	75.00	104.5607	0.501	0.434	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	91.2114	0.488	0.418	"	"	"
1215 " " SPZ	" " "	8 3 55.000	0.0319	-15.00	113.8695	0.376	0.333	102.5	347.7	167.6
" " SPN	" " "	8 3 55.000	" " "	75.00	112.8435	0.497	0.425	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	120.7941	0.486	0.401	"	"	"
1216 " " SPZ	" " "	8 3 55.000	-0.2227	-15.00	104.9737	0.405	0.329	98.7	349.9	169.8
" " SPN	" " "	8 3 55.000	" " "	75.00	106.2555	0.509	0.416	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	104.0743	0.504	0.435	"	"	"
1217 " " SPN	" " "	8 3 55.000	-0.2305	-15.00	106.3744	0.468	0.385	95.2	352.0	171.9
" " SPE	" " "	8 3 55.000	" " "	75.00	115.5793	0.468	0.417	"	"	"
" " SPZ	" " "	8 3 55.000	" " "	"	107.6735	0.445	0.377	"	"	"
1218 " " SPZ	" " "	8 3 55.000	0.2461	-15.00	102.4046	0.415	0.326	92.3	353.7	173.6
" " SPN	" " "	8 3 55.000	" " "	75.00	119.5301	0.538	0.463	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	107.1711	0.534	0.444	"	"	"
1219 " " SPZ	" " "	8 3 55.000	0.2773	-15.00	109.2437	0.422	0.357	89.8	356.0	176.0
" " SPN	" " "	8 3 55.000	" " "	75.00	112.1432	0.507	0.423	"	"	"
" " SPE	" " "	8 3 55.000	" " "	"	106.2984	0.511	0.436	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1220 2-21 SP2	24 SEP 1988 268	8 3 55.000	0.0156 WWVB	-	92.7538	0.415	0.356	87.4	357.3	177.2
" " SPN	" " " "	8 3 55.000	" " " "	-15.00	85.1736	0.526	0.440	" "	" "	" "
" " SPE	" " " "	8 3 55.000	" " " "	75.00	90.0945	0.488	0.382	" "	" "	" "
1221 " " SP2	" " " "	8 3 55.000	0.0313	-	120.8625	0.428	0.366	86.1	1.7	181.8
" " " "	" " " "	8 3 55.000	" " " "	-15.00	117.0131	0.509	0.464	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	75.00	115.8302	0.490	0.420	" "	" "	" "
1223 " " SP2	" " " "	8 3 55.000	0.1309	-	99.5213	0.485	0.441	80.5	4.8	184.9
" " " "	" " " "	8 3 55.000	" " " "	-15.00	110.9653	0.477	0.487	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	75.00	100.4654	0.480	0.440	" "	" "	" "
1224 " " SP2	" " " "	8 3 55.000	0.2118	-	99.9986	0.468	0.394	78.3	7.9	188.0
" " " "	" " " "	8 3 55.000	" " " "	-15.00	105.2339	0.509	0.407	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	75.00	103.0961	0.514	0.438	" "	" "	" "
1225 " " SPN	" " " "	8 3 55.000	-0.7251 GOES	-15.00	115.7602	0.480	0.424	75.6	11.8	191.9
" " " "	" " " "	8 3 55.000	" " " "	75.00	105.1737	0.392	0.343	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	113.0980	0.494	0.465	" "	" "	" "
1227 " " SPN	" " " "	8 3 55.000	0.2128	-15.00	119.6034	0.426	0.393	72.3	16.2	196.4
" " " "	" " " "	8 3 55.000	" " " "	75.00	106.0839	0.472	0.416	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	118.8165	0.494	0.429	" "	" "	" "
1228 " " SPN	" " " "	8 3 55.000	0.0078 WWVB	-15.00	107.8404	0.474	0.417	70.6	19.1	199.3
" " " "	" " " "	8 3 55.000	" " " "	75.00	115.2925	0.469	0.430	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	100.8098	0.459	0.389	" "	" "	" "
1229 " " SPN	" " " "	8 3 55.000	0.0547	-15.00	145.0600	0.560	0.400	69.7	22.1	202.3
" " " "	" " " "	8 3 55.000	" " " "	75.00	145.0600	0.540	0.400	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	135.9900	0.480	0.400	" "	" "	" "
1231 " " SPN	" " " "	8 3 55.000	0.0244 GOES	-15.00	98.5121	0.471	0.362	68.9	28.9	209.2
" " " "	" " " "	8 3 55.000	" " " "	75.00	101.6663	0.507	0.400	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	110.6077	0.386	0.339	" "	" "	" "
1232 " " SPN	" " " "	8 3 58.000	0.9531 WWVB	-15.00	109.6534	0.490	0.405	68.1	32.7	213.0
" " " "	" " " "	8 3 58.000	" " " "	75.00	102.3860	0.485	0.414	" "	" "	" "
" " " "	" " " "	8 3 58.000	" " " "	-	97.2723	0.422	0.338	" "	" "	" "
1233 " " SPN	" " " "	8 3 55.000	0.0000 NONE	-15.00	98.5043	0.506	0.425	68.1	35.9	216.2
" " " "	" " " "	8 3 55.000	" " " "	75.00	89.4856	0.487	0.379	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	99.6476	0.416	0.340	" "	" "	" "
1234 " " SPN	" " " "	8 3 55.000	1.0156 WWVB	-15.00	107.4674	0.488	0.404	68.5	38.8	219.2
" " " "	" " " "	8 3 55.000	" " " "	75.00	105.9664	0.488	0.453	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	114.1378	0.468	0.487	" "	" "	" "
1235 " " SPN	" " " "	8 3 55.000	0.0048 GOES	-15.00	102.6012	0.516	0.418	68.6	41.8	222.2
" " " "	" " " "	8 3 55.000	" " " "	75.00	114.3616	0.476	0.416	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	107.8076	0.391	0.339	" "	" "	" "
1236 " " SPN	" " " "	8 3 55.000	0.2211	-15.00	786.2735	0.610	0.823	69.3	46.0	226.4
" " " "	" " " "	8 3 55.000	" " " "	75.00	752.1228	0.554	1.952	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	715.6757	0.652	0.809	" "	" "	" "
1238 " " SPN	" " " "	8 3 55.000	-0.0156 WWVB	-15.00	505.6474	0.902	1.454	71.4	54.9	235.4
" " " "	" " " "	8 3 55.000	" " " "	75.00	694.0557	0.551	0.681	" "	" "	" "
" " " "	" " " "	8 3 55.000	" " " "	-	624.0928	0.864	1.000	" "	" "	" "

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b (continued)

Seismogram	Date	Starting d	Time h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1240 2-21 SPN	24 SEP 1988	268	8 3 55.000	0.1777 WWVB	-15.00	743.4758	1.024	1.293	74.7	60.3	240.9
" " " " SPE	" " "	"	8 3 55.000	"	75.00	706.5759	0.938	1.117	"	"	"
" " " " SPZ	" " "	"	8 3 55.000	"	"	697.1599	1.007	1.238	"	"	"
1241 " " " " SPN	" " "	"	8 3 55.000	0.1992	-15.00	622.2807	0.978	1.277	76.5	63.0	243.6
" " " " SPE	" " "	"	8 3 55.000	"	75.00	696.1515	1.041	1.315	"	"	"
" " " " SPZ	" " "	"	8 3 55.000	"	"	835.2012	0.680	0.900	"	"	"
1211 2-22 SPN	" " "	"	4 5 55.000	-0.0919 GOES	-15.00	113.1000	0.453	0.475	151.1	306.7	125.6
" " " " SPE	" " "	"	4 5 55.000	"	75.00	113.7880	0.357	0.426	"	"	"
" " " " SPZ	" " "	"	4 5 55.000	"	"	101.4590	0.392	0.378	"	"	"
1212 " " " " SPZ	" " "	"	4 5 55.000	-0.0135	-15.00	95.8404	0.457	0.449	147.1	306.7	125.7
" " " " SPN	" " "	"	4 5 55.000	"	75.00	104.6157	0.501	0.539	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	98.2109	0.493	0.492	"	"	"
1213 " " " " SPZ	" " "	"	4 5 55.000	0.1689 WWVB	-15.00	119.9548	0.434	0.361	143.0	306.8	125.8
" " " " SPN	" " "	"	4 5 55.000	"	75.00	98.0937	0.509	0.384	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	75.00	111.1635	0.542	0.457	"	"	"
1214 " " " " SPZ	" " "	"	4 5 55.000	0.2158	-15.00	89.0961	0.427	0.320	138.9	306.8	125.9
" " " " SPN	" " "	"	4 5 55.000	"	75.00	104.5607	0.501	0.434	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	91.2114	0.488	0.418	"	"	"
1215 " " " " SPZ	" " "	"	4 5 55.000	0.0313	-15.00	113.8695	0.376	0.333	135.3	306.8	125.9
" " " " SPN	" " "	"	4 5 55.000	"	75.00	112.8435	0.497	0.425	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	120.7941	0.486	0.401	"	"	"
1216 " " " " SPZ	" " "	"	4 5 55.000	-0.1689	-15.00	104.9737	0.405	0.329	130.0	306.9	126.0
" " " " SPN	" " "	"	4 5 55.000	"	75.00	106.2555	0.509	0.416	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	104.0743	0.504	0.435	"	"	"
1217 " " " " SPN	" " "	"	4 5 55.000	-0.1924	-15.00	106.3744	0.468	0.385	125.0	306.9	126.1
" " " " SPE	" " "	"	4 5 55.000	"	75.00	115.5793	0.468	0.417	"	"	"
" " " " SPZ	" " "	"	4 5 55.000	"	"	107.6735	0.445	0.377	"	"	"
1218 " " " " SPZ	" " "	"	4 5 55.000	-0.2002	-15.00	102.4046	0.415	0.326	121.0	306.8	126.0
" " " " SPN	" " "	"	4 5 55.000	"	75.00	119.5301	0.538	0.463	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	107.1711	0.534	0.444	"	"	"
1219 " " " " SPZ	" " "	"	4 5 55.000	-0.2539	-15.00	109.2437	0.422	0.357	116.6	307.1	126.3
" " " " SPN	" " "	"	4 5 55.000	"	75.00	112.1432	0.507	0.423	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	106.2984	0.511	0.436	"	"	"
1220 " " " " SPZ	" " "	"	4 5 55.000	0.0078	-15.00	92.7538	0.415	0.356	113.6	306.8	126.0
" " " " SPN	" " "	"	4 5 55.000	"	75.00	85.1736	0.526	0.440	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	90.0945	0.488	0.382	"	"	"
1221 " " " " SPZ	" " "	"	4 5 55.000	0.0078	-15.00	120.8625	0.428	0.366	107.4	308.4	127.7
" " " " SPN	" " "	"	4 5 55.000	"	75.00	117.0131	0.509	0.464	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	115.8302	0.490	0.420	"	"	"
1222 " " " " SPZ	" " "	"	4 5 55.000	0.4825 GOES	-15.00	111.8476	0.457	0.464	104.4	307.2	126.5
" " " " SPN	" " "	"	4 5 55.000	"	75.00	112.9581	0.493	0.514	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	111.3782	0.510	0.523	"	"	"
1223 " " " " SPZ	" " "	"	4 5 55.000	0.0996 WWVB	-15.00	99.5213	0.485	0.441	100.6	307.2	126.5
" " " " SPN	" " "	"	4 5 55.000	"	75.00	110.9653	0.477	0.487	"	"	"
" " " " SPE	" " "	"	4 5 55.000	"	"	100.4654	0.480	0.440	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3b (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1224 2-22 SPZ	24 SEP 1988	268	0.1689 WVB	-	99.9986	0.468	0.394	95.8	307.3	126.6
" " SPN	" "	"	"	-15.00	105.2339	0.509	0.407	"	"	"
" " SPE	" "	"	"	75.00	103.0961	0.514	0.438	"	"	"
1225 " SPZ	" "	"	0.5778 GOES	-	113.0980	0.494	0.465	90.0	307.3	126.7
" " SPN	" "	"	"	-15.00	115.7602	0.480	0.424	"	"	"
" " SPE	" "	"	"	75.00	105.1737	0.392	0.343	"	"	"
1227 " SPN	" "	"	0.1553	-15.00	119.6034	0.426	0.393	83.3	306.7	126.1
" " SPE	" "	"	"	75.00	106.0839	0.472	0.416	"	"	"
" " SPZ	" "	"	"	-	118.8165	0.494	0.429	"	"	"
1228 " SPN	" "	"	0.0156 WVB	-15.00	107.8404	0.474	0.417	79.4	306.3	125.8
" " SPE	" "	"	"	75.00	115.2925	0.469	0.430	"	"	"
" " SPZ	" "	"	"	-	100.8098	0.459	0.399	"	"	"
1229 " SPN	" "	"	0.0537	-15.00	145.0600	0.560	0.400	75.6	306.4	125.9
" " SPE	" "	"	"	75.00	145.0600	0.540	0.400	"	"	"
" " SPZ	" "	"	"	-	135.9900	0.480	0.400	"	"	"
1231 " SPN	" "	"	0.0179 GOES	-15.00	98.5121	0.471	0.362	67.4	307.0	126.6
" " SPE	" "	"	"	75.00	101.6663	0.507	0.400	"	"	"
" " SPZ	" "	"	"	-	110.6077	0.386	0.339	"	"	"
1232 " SPN	" "	"	-0.9072 WVB	-15.00	109.6534	0.490	0.405	62.8	306.6	126.2
" " SPE	" "	"	"	75.00	102.3860	0.485	0.414	"	"	"
" " SPZ	" "	"	"	-	97.2723	0.422	0.338	"	"	"
1233 " SPN	" "	"	0.0000 NONE	-15.00	98.5043	0.506	0.425	59.0	306.8	126.4
" " SPE	" "	"	"	75.00	89.4856	0.487	0.379	"	"	"
" " SPZ	" "	"	"	-	99.6476	0.416	0.340	"	"	"
1235 " SPN	" "	"	0.0035 GOES	-15.00	102.6012	0.516	0.418	52.0	307.0	126.6
" " SPE	" "	"	"	75.00	114.3616	0.476	0.416	"	"	"
" " SPZ	" "	"	"	-	107.8076	0.391	0.339	"	"	"
1236 " SPN	" "	"	-0.1626	-15.00	786.2735	0.610	0.823	46.9	307.0	126.6
" " SPE	" "	"	"	75.00	752.1228	0.554	1.952	"	"	"
" " SPZ	" "	"	"	-	715.6757	0.652	0.809	"	"	"
1240 " SPN	" "	"	0.1717 WVB	-15.00	743.4758	1.024	1.293	28.1	306.8	126.6
" " SPE	" "	"	"	75.00	706.5759	0.938	1.117	"	"	"
" " SPZ	" "	"	"	-	697.1599	1.007	1.238	"	"	"
1241 " SPN	" "	"	-0.1465	-15.00	622.2807	0.978	1.277	24.1	307.0	126.8
" " SPE	" "	"	"	75.00	696.1515	1.041	1.315	"	"	"
" " SPZ	" "	"	"	-	835.2012	0.680	0.900	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c

Seismogram Constants for Deployment Three

Table 3c. Seismogram Constants for Deployment Three

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1301 3 10 SP2	30 SEP 1988	274 6 5 55.000	-0.4113 WWVB	-	113.0880	0.484	0.465	8.5	265.5	85.5
" " " " SPN	" " " "	6 5 55.000	"	-14.00	115.7602	0.480	0.426	"	"	"
" " " " SPE	" " " "	6 5 55.000	"	76.00	105.1737	0.392	0.343	"	"	"
1302 " " " " SP2	" " " "	6 5 55.000	0.1187	-	98.2104	0.465	0.389	11.9	262.4	82.3
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	104.5629	0.509	0.411	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	101.6230	0.516	0.438	"	"	"
1303 " " " " SP2	" " " "	6 5 55.000	0.1387	-	99.4546	0.481	0.444	16.1	263.6	83.5
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	111.6448	0.478	0.481	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	99.4548	0.480	0.443	"	"	"
1304 " " " " SP2	" " " "	6 5 55.000	0.1387	-	112.4042	0.459	0.468	18.3	260.2	80.0
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	112.0597	0.493	0.508	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	114.3942	0.510	0.538	"	"	"
1305 " " " " SP2	" " " "	6 5 55.000	0.0587	-	121.3985	0.427	0.361	23.0	253.0	72.8
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	115.4130	0.506	0.447	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	118.3055	0.490	0.429	"	"	"
1306 " " " " SP2	" " " "	6 5 55.000	0.0186	-	92.7538	0.415	0.356	29.0	248.4	68.2
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	85.1735	0.526	0.440	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	80.0945	0.488	0.382	"	"	"
1307 " " " " SP2	" " " "	6 5 55.000	0.0000	-	109.2437	0.422	0.357	32.8	251.0	70.7
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	112.1432	0.507	0.423	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	106.2884	0.511	0.436	"	"	"
1308 " " " " SP2	" " " "	6 5 55.000	-0.1611	-	109.2437	0.422	0.357	35.8	253.1	72.8
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	112.1432	0.507	0.423	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	106.2884	0.511	0.436	"	"	"
1309 " " " " SPN	" " " "	6 5 55.000	-0.1714	-14.00	108.3807	0.468	0.386	38.2	253.4	73.0
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	118.122	0.465	0.419	"	"	"
" " " " " " SP2	" " " "	6 5 55.000	"	-	109.7043	0.447	0.382	"	"	"
1310 " " " " SP2	" " " "	6 5 55.000	-0.0514	-	108.8102	0.405	0.335	41.6	254.8	74.4
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	109.9149	0.501	0.416	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	106.6236	0.502	0.440	"	"	"
1311 " " " " SP2	" " " "	6 5 55.000	0.0614	-	119.7059	0.378	0.336	44.5	255.2	74.9
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	111.1007	0.496	0.424	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	122.3248	0.490	0.410	"	"	"
1312 " " " " SP2	" " " "	6 5 55.000	-0.2328	-	183.7783	0.422	0.324	47.3	255.0	74.6
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	107.2989	0.489	0.437	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	93.9411	0.489	0.426	"	"	"
1313 " " " " SP2	" " " "	6 5 55.000	0.1699	-	121.0679	0.441	0.373	50.1	256.7	76.3
" " " " " " SPN	" " " "	6 5 55.000	"	-14.00	98.8521	0.506	0.382	"	"	"
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	110.1773	0.555	0.459	"	"	"
1315 " " " " SPN	" " " "	6 5 55.000	0.0000 NONE	-14.00	113.1000	0.483	0.479	56.1	258.4	78.0
" " " " " " SPE	" " " "	6 5 55.000	"	76.00	113.7880	0.357	0.426	"	"	"
" " " " " " SP2	" " " "	6 5 55.000	"	-	101.4590	0.392	0.338	"	"	"
1316 " " " " SPN	" " " "	6 5 58.000	-0.0165 WWVB	-14.00	102.2861	0.487	0.397	58.6	260.0	79.5
" " " " " " SPE	" " " "	6 5 58.000	"	76.00	117.5009	0.502	0.405	"	"	"
" " " " " " SP2	" " " "	6 5 58.000	"	-	102.1071	0.408	0.346	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1317 3-10 SPN	30 SEP 1968	274 6 5 55.000	0.0831 GOES	-14.00	118.6034	0.426	0.393	61.7	261.7	81.2
-- SP2	--	6 5 55.000	--	76.00	106.0839	0.472	0.416	--	--	--
-- SP2	--	6 5 55.000	--	--	118.8165	0.494	0.429	--	--	--
1323 -- SPN	--	6 5 55.000	-1.3457 WWVB	-14.00	97.4227	0.511	0.424	79.7	264.2	83.5
-- SP2	--	6 5 55.000	--	76.00	88.3918	0.488	0.372	--	--	--
-- SP2	--	6 5 55.000	--	--	98.3327	0.422	0.345	--	--	--
1324 -- SPN	--	6 5 55.000	0.1284	-14.00	145.0600	0.540	0.400	84.1	264.9	84.2
-- SP2	--	6 5 55.000	--	76.00	149.5900	0.540	0.400	--	--	--
-- SP2	--	6 5 55.000	--	--	135.8985	0.580	0.400	--	--	--
1325 -- SPN	--	6 5 55.000	0.0000	-14.00	105.7116	0.515	0.430	86.6	265.6	84.8
-- SP2	--	6 5 55.000	--	76.00	118.0167	0.472	0.425	--	--	--
-- SP2	--	6 5 55.000	--	--	112.0626	0.395	0.368	--	--	--
1328 -- SPN	--	6 5 55.000	-0.1716	-14.00	786.2735	0.610	0.823	89.5	267.2	86.4
-- SP2	--	6 5 55.000	--	76.00	752.1228	0.554	1.852	--	--	--
-- SP2	--	6 5 55.000	--	--	715.6757	0.652	0.809	--	--	--
1327 -- SPN	--	6 5 55.000	-0.3016	-14.00	689.6237	0.838	1.063	91.0	269.3	88.5
-- SP2	--	6 5 55.000	--	76.00	763.6659	1.032	1.294	--	--	--
-- SP2	--	6 5 55.000	--	--	719.0599	1.003	1.236	--	--	--
1328 -- SPN	--	6 5 55.000	-0.0316	-14.00	505.6474	0.902	1.454	94.4	270.0	88.2
-- SP2	--	6 5 55.000	--	76.00	694.0557	0.551	0.681	--	--	--
-- SP2	--	6 5 55.000	--	--	624.0828	0.864	1.000	--	--	--
1331 -- SPN	--	6 5 55.000	-0.1916	-14.00	622.2807	0.978	1.277	104.8	272.0	91.1
-- SP2	--	6 5 55.000	--	76.00	696.1515	1.041	1.315	--	--	--
-- SP2	--	6 5 55.000	--	--	835.2012	0.680	0.900	--	--	--
1330 -- SPN	--	6 5 40.000	15.2600 GOES	-14.00	576.6407	1.042	0.325	100.9	270.7	89.8
-- SP2	--	6 5 40.000	--	76.00	554.5508	1.042	0.314	--	--	--
-- SP2	--	6 5 40.000	--	--	553.7008	1.042	0.321	--	--	--
1302 3-14 SP2	--	4 5 55.000	0.1187 WWVB	-14.00	98.2104	0.465	0.389	76.6	86.4	267.0
-- SPN	--	4 5 55.000	--	76.00	104.5629	0.509	0.411	--	--	--
-- SP2	--	4 5 55.000	--	--	101.6230	0.516	0.438	--	--	--
1303 -- SP2	--	4 5 55.000	0.1087	-14.00	98.4546	0.481	0.444	72.4	86.4	267.0
-- SPN	--	4 5 55.000	--	76.00	111.6448	0.478	0.491	--	--	--
-- SP2	--	4 5 55.000	--	--	99.4548	0.480	0.443	--	--	--
1304 -- SP2	--	4 5 55.000	0.1187	-14.00	112.4042	0.459	0.468	69.4	87.5	268.1
-- SPN	--	4 5 55.000	--	76.00	112.0597	0.493	0.508	--	--	--
-- SP2	--	4 5 55.000	--	--	114.3942	0.510	0.538	--	--	--
1305 -- SP2	--	4 5 55.000	0.0387	-14.00	121.3985	0.427	0.361	66.4	90.4	270.9
-- SPN	--	4 5 55.000	--	76.00	115.4130	0.506	0.447	--	--	--
-- SP2	--	4 5 55.000	--	--	118.3055	0.490	0.429	--	--	--
1306 -- SP2	--	4 5 55.000	0.0086	-14.00	92.7538	0.415	0.356	61.6	94.1	274.6
-- SPN	--	4 5 55.000	--	76.00	85.1735	0.526	0.440	--	--	--
-- SP2	--	4 5 55.000	--	--	90.0945	0.488	0.382	--	--	--
1307 -- SP2	--	4 5 55.000	0.0000	-14.00	109.2437	0.422	0.357	57.5	94.5	275.0
-- SPN	--	4 5 55.000	--	76.00	112.1432	0.507	0.423	--	--	--
-- SP2	--	4 5 55.000	--	--	106.2984	0.511	0.436	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1308 3-14 SP2	30 SEP 1988	274 4 5 55.000	-0.1514 WVB	-	105.7755	0.412	0.329	54.3	94.5	275.0
-- SPN	--	4 5 55.000	--	-14.00	122.8554	0.535	0.470	--	--	--
-- SPE	--	4 5 55.000	--	76.00	109.5663	0.535	0.450	--	--	--
1309 -- SPN	--	4 5 55.000	-0.1614	-14.00	108.3807	0.468	0.386	52.1	95.3	275.7
-- SPE	--	4 5 55.000	--	76.00	118.1922	0.465	0.419	--	--	--
-- SP2	--	4 5 55.000	--	--	109.7043	0.447	0.382	--	--	--
1310 -- SP2	--	4 5 55.000	-0.0814	--	108.8102	0.405	0.335	48.5	95.7	276.1
-- SPN	--	4 5 55.000	--	-14.00	109.9149	0.501	0.416	--	--	--
-- SPE	--	4 5 55.000	--	76.00	106.6236	0.502	0.440	--	--	--
1312 -- SP2	--	4 5 55.000	-0.2214	--	183.7793	0.422	0.324	43.2	98.3	278.6
-- SPN	--	4 5 55.000	--	-14.00	107.2989	0.499	0.437	--	--	--
-- SPE	--	4 5 55.000	--	76.00	93.9411	0.489	0.426	--	--	--
1313 -- SP2	--	4 5 55.000	0.1586	--	121.0679	0.441	0.373	40.1	98.0	278.3
-- SPN	--	4 5 55.000	--	-14.00	98.8521	0.506	0.382	--	--	--
-- SPE	--	4 5 55.000	--	76.00	110.1773	0.555	0.459	--	--	--
1315 -- SPN	--	4 5 55.000	0.0000 NONE	-14.00	113.1000	0.493	0.479	33.9	99.1	279.4
-- SPE	--	4 5 55.000	--	76.00	113.7880	0.357	0.426	--	--	--
-- SP2	--	4 5 55.000	--	--	101.4590	0.392	0.338	--	--	--
1317 -- SPN	--	4 5 55.000	0.0691 GOES	-14.00	119.6034	0.426	0.393	27.5	96.5	276.8
-- SPE	--	4 5 55.000	--	76.00	106.0839	0.472	0.416	--	--	--
-- SP2	--	4 5 55.000	--	--	118.8165	0.484	0.429	--	--	--
1322 -- SPN	--	4 6 2.000	-0.0115 WVB	-14.00	107.7476	0.480	0.396	12.5	100.7	280.8
-- SPE	--	4 6 2.000	--	76.00	100.3686	0.480	0.410	--	--	--
-- SP2	--	4 6 2.000	--	--	96.8154	0.416	0.319	--	--	--
1323 -- SPN	--	4 5 55.000	-1.1115	-14.00	97.4237	0.511	0.424	9.4	105.7	285.8
-- SPE	--	4 5 55.000	--	76.00	88.3918	0.488	0.372	--	--	--
-- SP2	--	4 5 55.000	--	--	98.3327	0.422	0.345	--	--	--
1324 -- SPN	--	4 5 55.000	0.0984	-14.00	145.0600	0.540	0.400	5.0	113.2	293.3
-- SPE	--	4 5 55.000	--	76.00	149.5900	0.540	0.400	--	--	--
-- SP2	--	4 5 55.000	--	--	135.9995	0.580	0.400	--	--	--
1325 -- SPN	--	4 5 55.000	0.0000	-14.00	105.7116	0.515	0.420	2.4	122.1	302.1
-- SPE	--	4 5 55.000	--	76.00	118.0167	0.472	0.425	--	--	--
-- SP2	--	4 5 55.000	--	--	112.0626	0.395	0.368	--	--	--
1326 -- SPN	--	4 5 55.000	-0.1416	-14.00	786.2735	0.610	0.623	1.5	214.6	134.6
-- SPE	--	4 5 55.000	--	76.00	752.1228	0.554	1.952	--	--	--
-- SP2	--	4 5 55.000	--	--	715.6757	0.652	0.809	--	--	--
1328 -- SPN	--	4 5 55.000	-0.0216	-14.00	505.6474	0.902	1.454	8.1	311.0	130.9
-- SPE	--	4 5 55.000	--	76.00	694.0557	0.551	0.681	--	--	--
-- SP2	--	4 5 55.000	--	--	624.0928	0.864	1.000	--	--	--
1329 -- SPN	--	4 5 55.000	-0.0166	-14.00	743.4759	1.024	1.293	10.7	304.3	124.3
-- SPE	--	4 5 55.000	--	76.00	706.5760	0.838	1.117	--	--	--
-- SP2	--	4 5 55.000	--	--	697.1599	1.007	1.238	--	--	--
1301 3-15 SP2	--	6 3 55.000	-0.4113	--	113.0980	0.484	0.465	122.6	95.1	276.1
-- SPN	--	6 3 55.000	--	-14.00	115.7602	0.480	0.426	--	--	--
-- SPE	--	6 3 55.000	--	76.00	105.1737	0.392	0.343	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Starting Time Date	d	h	m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts./m./sec)	Fendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1302 3-15 SP2	30 SEP 1988	274	6	3	55.000	0.1187 WWVB	-	88.2104	0.465	0.389	118.4	95.7	276.7
" SPN	"	"	6	3	55.000	"	-14.00	104.5629	0.509	0.411	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	101.6230	0.516	0.438	"	"	"
1303 " SP2	"	"	6	3	55.000	0.1387	-	99.4546	0.481	0.444	115.3	96.1	277.0
" SPN	"	"	6	3	55.000	"	-14.00	111.6448	0.478	0.491	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	99.4548	0.480	0.443	"	"	"
1304 " SP2	"	"	6	3	55.000	0.1387	-	112.4042	0.459	0.468	112.5	97.0	278.0
" SPN	"	"	6	3	55.000	"	-14.00	112.0587	0.493	0.508	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	114.3942	0.510	0.538	"	"	"
1305 " SP2	"	"	6	3	55.000	0.0587	-	121.3985	0.427	0.361	110.1	99.0	279.9
" SPN	"	"	6	3	55.000	"	-14.00	115.4130	0.506	0.447	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	118.3055	0.490	0.429	"	"	"
1306 " SP2	"	"	6	3	55.000	0.0186	-	92.7538	0.415	0.356	106.0	101.6	282.5
" SPN	"	"	6	3	55.000	"	-14.00	85.1735	0.526	0.440	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	90.0845	0.488	0.382	"	"	"
1307 " SP2	"	"	6	3	55.000	0.0000	-	109.2437	0.422	0.357	102.0	102.1	282.9
" SPN	"	"	6	3	55.000	"	-14.00	112.1432	0.507	0.423	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	106.2984	0.511	0.436	"	"	"
1308 " SP2	"	"	6	3	55.000	-0.1611	-	109.2437	0.422	0.357	98.7	102.3	283.2
" SPN	"	"	6	3	55.000	"	-14.00	112.1432	0.507	0.423	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	106.2984	0.511	0.436	"	"	"
1309 " SP2	"	"	6	3	55.000	-0.1714	-	108.3807	0.468	0.386	96.7	103.0	283.8
" SPN	"	"	6	3	55.000	"	-14.00	118.1922	0.465	0.418	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	109.7043	0.447	0.382	"	"	"
1310 " SP2	"	"	6	3	55.000	-0.0514	-	108.8102	0.405	0.335	93.2	103.5	284.3
" SPN	"	"	6	3	55.000	"	-14.00	109.8149	0.501	0.416	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	106.6236	0.502	0.440	"	"	"
1311 " SP2	"	"	6	3	55.000	-0.0614	-	119.7059	0.378	0.336	90.5	104.2	285.0
" SPN	"	"	6	3	55.000	"	-14.00	111.1007	0.496	0.424	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	122.3248	0.480	0.410	"	"	"
1312 " SP2	"	"	6	3	55.000	-0.2382	-	183.7793	0.422	0.324	88.2	105.2	285.9
" SPN	"	"	6	3	55.000	"	-14.00	107.2989	0.489	0.437	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	93.8411	0.489	0.426	"	"	"
1313 " SP2	"	"	6	3	55.000	0.1699	-	121.0679	0.441	0.373	85.1	105.4	286.1
" SPN	"	"	6	3	55.000	"	-14.00	98.8521	0.506	0.382	"	"	"
" SPE	"	"	6	3	55.000	"	76.00	110.1773	0.555	0.459	"	"	"
1315 " SP2	"	"	6	3	55.000	0.0000 NONE	-	113.1000	0.483	0.478	79.1	106.4	287.1
" SPN	"	"	6	3	55.000	"	76.00	113.7880	0.357	0.426	"	"	"
" SPE	"	"	6	3	55.000	"	-	101.4590	0.392	0.338	"	"	"
1316 " SP2	"	"	6	3	58.000	-0.0165 WWVB	-14.00	102.2961	0.487	0.397	76.1	106.3	286.9
" SPN	"	"	6	3	58.000	"	76.00	117.5009	0.504	0.405	"	"	"
" SPE	"	"	6	3	58.000	"	-	102.1071	0.408	0.346	"	"	"
1317 " SP2	"	"	6	3	55.000	0.0831 GOES	-14.00	119.6034	0.426	0.393	72.6	106.1	286.7
" SPN	"	"	6	4	0.000	"	76.00	106.0839	0.472	0.416	"	"	"
" SPE	"	"	6	3	55.000	"	-	118.8165	0.494	0.429	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1323 3-15 SPN	30 SEP 1988	274	-1.3457	WWVB	97.4227	0.511	0.424	55.1	111.0	291.4
-- SPE	--	--	--	--	88.3918	0.488	0.372	--	--	--
-- SPZ	--	--	--	--	88.3327	0.422	0.345	--	--	--
1324 -- SPN	--	--	0.1284	--	145.0600	0.540	0.400	50.7	112.2	292.6
-- SPE	--	--	--	--	149.5900	0.540	0.400	--	--	--
-- SPZ	--	--	--	--	135.9995	0.580	0.400	--	--	--
1325 -- SPN	--	--	0.0000	--	105.7116	0.515	0.430	48.1	112.6	293.0
-- SPE	--	--	--	--	118.0167	0.472	0.425	--	--	--
-- SPZ	--	--	--	--	112.0628	0.395	0.368	--	--	--
1326 -- SPN	--	--	-0.1716	--	786.2735	0.610	0.823	44.3	111.4	291.7
-- SPE	--	--	--	--	752.1228	0.554	1.952	--	--	--
-- SPZ	--	--	--	--	715.6757	0.652	0.809	--	--	--
1327 -- SPN	--	--	-0.3016	--	689.6237	0.838	1.063	41.7	108.2	288.5
-- SPE	--	--	--	--	763.6659	1.032	1.294	--	--	--
-- SPZ	--	--	--	--	719.0599	1.003	1.236	--	--	--
1328 -- SPN	--	--	-0.0316	--	505.6474	0.902	1.454	38.1	108.3	288.6
-- SPE	--	--	--	--	684.0557	0.551	0.681	--	--	--
-- SPZ	--	--	--	--	624.0928	0.864	1.000	--	--	--
1331 -- SPN	--	--	-0.1916	--	622.2807	0.978	1.277	27.1	108.3	288.5
-- SPE	--	--	--	--	696.1515	1.041	1.315	--	--	--
-- SPZ	--	--	--	--	835.2012	0.680	0.900	--	--	--
1330 -- SPN	--	--	15.2600	GOES	576.6407	1.042	0.325	31.4	110.3	290.6
-- SPE	--	--	--	--	554.5508	1.042	0.314	--	--	--
-- SPZ	--	--	--	--	553.7008	1.042	0.321	--	--	--
1301 3-16 SPZ	--	--	-0.4113	WWVB	113.0980	0.494	0.465	164.4	96.9	278.3
-- SPN	--	--	--	--	115.7602	0.480	0.426	--	--	--
-- SPE	--	--	--	--	105.1737	0.392	0.343	--	--	--
1302 -- SPZ	--	--	0.1187	--	98.2104	0.465	0.389	161.2	97.4	278.8
-- SPN	--	--	--	--	104.5629	0.509	0.411	--	--	--
-- SPE	--	--	--	--	101.6230	0.516	0.438	--	--	--
1303 -- SPZ	--	--	0.1387	--	99.4546	0.481	0.444	157.1	97.7	279.1
-- SPN	--	--	--	--	111.6448	0.478	0.491	--	--	--
-- SPE	--	--	--	--	99.4548	0.480	0.443	--	--	--
1304 -- SPZ	--	--	0.1387	--	112.4042	0.459	0.468	154.4	98.4	279.8
-- SPN	--	--	--	--	112.0597	0.493	0.506	--	--	--
-- SPE	--	--	--	--	114.3942	0.510	0.538	--	--	--
1305 -- SPZ	--	--	0.0587	--	121.3985	0.427	0.361	152.1	99.9	281.2
-- SPN	--	--	--	--	115.4130	0.506	0.447	--	--	--
-- SPE	--	--	--	--	118.3055	0.490	0.429	--	--	--
1306 -- SPZ	--	--	0.0186	--	92.7538	0.415	0.356	148.1	101.8	283.0
-- SPN	--	--	--	--	85.1735	0.526	0.440	--	--	--
-- SPE	--	--	--	--	90.0945	0.488	0.382	--	--	--
1307 -- SPZ	--	--	0.0078	--	109.2437	0.422	0.357	144.1	102.2	283.4
-- SPN	--	--	--	--	112.1432	0.507	0.423	--	--	--
-- SPE	--	--	--	--	106.2954	0.511	0.436	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1308 3-16 SP2	30 SEP 1988 274	6 1 55.000	-0.1611 WWVB	-	109.2437	0.422	0.357	140.9	102.4	283.6
-- SPN	--	6 1 55.000	--	-14.00	112.1432	0.507	0.423	--	--	--
-- SPE	--	6 1 55.000	--	76.00	106.2984	0.511	0.436	--	--	--
1309 -- SPN	--	6 1 55.000	-0.1714	-14.00	108.3807	0.468	0.388	138.8	102.8	284.0
-- SPE	--	6 1 55.000	--	76.00	118.1922	0.465	0.419	--	--	--
-- SP2	--	6 1 55.000	--	--	109.7043	0.447	0.382	--	--	--
1310 -- SP2	--	6 1 55.000	-0.0514	-	108.8102	0.405	0.335	135.4	103.2	284.3
-- SPN	--	6 1 55.000	--	-14.00	109.9149	0.501	0.416	--	--	--
-- SPE	--	6 1 55.000	--	76.00	106.6236	0.502	0.440	--	--	--
1311 -- SP2	--	6 1 55.000	-0.0614	-	119.7059	0.378	0.336	132.7	103.7	284.8
-- SPN	--	6 1 55.000	--	-14.00	111.1007	0.496	0.424	--	--	--
-- SPE	--	6 1 55.000	--	76.00	122.3248	0.490	0.410	--	--	--
1312 -- SP2	--	6 1 55.000	-0.2382	-	183.7793	0.422	0.324	130.4	104.3	285.4
-- SPN	--	6 1 55.000	--	-14.00	107.2989	0.499	0.437	--	--	--
-- SPE	--	6 1 55.000	--	76.00	93.9411	0.489	0.426	--	--	--
1313 -- SP2	--	6 1 55.000	0.1699	-	121.0679	0.441	0.373	127.2	104.4	285.5
-- SPN	--	6 1 55.000	--	-14.00	98.8521	0.506	0.382	--	--	--
-- SPE	--	6 1 55.000	--	76.00	110.1773	0.555	0.459	--	--	--
1314 -- SP2	--	6 1 55.000	-97.4114	-	87.6544	0.460	0.483	123.9	104.6	285.6
-- SPN	--	6 1 55.000	--	-14.00	102.5912	0.505	0.544	--	--	--
-- SPE	--	6 1 55.000	--	76.00	96.8535	0.492	0.499	--	--	--
1315 -- SPN	--	6 1 55.000	0.0000 NONE	-14.00	113.1000	0.493	0.479	121.2	105.1	286.1
-- SPE	--	6 1 55.000	--	76.00	113.7880	0.357	0.426	--	--	--
-- SP2	--	6 1 55.000	--	--	101.4590	0.392	0.338	--	--	--
1316 -- SPN	--	6 2 10.000	-0.0165 WWVB	-14.00	102.2961	0.487	0.397	118.3	105.0	286.0
-- SPE	--	6 2 10.000	--	76.00	117.5009	0.502	0.405	--	--	--
-- SP2	--	6 2 10.000	--	--	102.1071	0.408	0.346	--	--	--
1317 -- SPN	--	6 1 55.000	0.0831 GOES	-14.00	119.6034	0.426	0.393	114.7	104.9	285.8
-- SPE	--	6 1 55.000	--	76.00	106.0839	0.472	0.416	--	--	--
-- SP2	--	6 1 55.000	--	--	118.8165	0.494	0.429	--	--	--
1323 -- SPN	--	6 1 55.000	-1.3457 WWVB	-14.00	97.4227	0.511	0.424	97.0	107.4	288.2
-- SPE	--	6 1 55.000	--	76.00	88.3918	0.468	0.372	--	--	--
-- SP2	--	6 1 55.000	--	--	98.3327	0.422	0.345	--	--	--
1324 -- SPN	--	6 1 55.000	0.1284	-14.00	145.0600	0.540	0.400	92.6	108.0	288.7
-- SPE	--	6 1 55.000	--	76.00	149.5900	0.540	0.400	--	--	--
-- SP2	--	6 1 55.000	--	--	135.9995	0.580	0.400	--	--	--
1325 -- SPN	--	6 1 55.000	0.0000	-14.00	105.7116	0.515	0.430	89.9	108.1	288.8
-- SPE	--	6 1 55.000	--	76.00	116.0167	0.472	0.425	--	--	--
-- SP2	--	6 1 55.000	--	--	112.0826	0.395	0.368	--	--	--
1326 -- SPN	--	6 1 55.000	-0.1716	-14.00	786.2735	0.610	0.623	86.2	107.3	288.0
-- SPE	--	6 1 55.000	--	76.00	752.1228	0.554	1.952	--	--	--
-- SP2	--	6 1 55.000	--	--	715.6757	0.652	0.609	--	--	--
1327 -- SPN	--	6 1 55.000	-0.3016	-14.00	689.6237	0.838	1.063	83.7	105.5	286.2
-- SPE	--	6 1 55.000	--	76.00	763.6659	1.032	1.294	--	--	--
-- SP2	--	6 1 55.000	--	--	719.0599	1.003	1.236	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1328 3-16 SPN	30 SEP 1988	274	6	1 55.000	-0.0316 WWVB	-14.00	505.6474	0.902	80.2	105.5	286.1
SPN				1 55.000		76.00	594.0557	0.551			
SPN				1 55.000			624.0828	0.864			
1331 SPN				6 1 55.000	-0.1816	-14.00	622.2807	0.878	69.2	105.1	285.7
SPN				6 1 55.000		76.00	696.1515	1.041			
SPN				6 1 55.000			835.2012	0.680			
1302 3-18 SP2				4 2 10.000	0.1187	-14.00	98.2104	0.465	256.3	95.4	277.6
SPN				4 2 10.000		76.00	104.5629	0.509			
SPN				4 2 10.000			101.6230	0.516			
1303 SPN				4 2 10.000	0.1087	-14.00	99.4546	0.461	252.2	95.6	277.8
SPN				4 2 10.000		76.00	111.6448	0.478			
SPN				4 2 10.000			99.4548	0.480			
1304 SPN				4 2 10.000	0.1187	-14.00	112.4042	0.459	249.5	96.0	278.2
SPN				4 2 10.000		76.00	112.0597	0.493			
SPN				4 2 10.000			114.3942	0.510			
1305 SPN				4 2 10.000	0.0387	-14.00	121.3985	0.427	247.0	96.9	279.0
SPN				4 2 10.000		76.00	115.4130	0.506			
SPN				4 2 10.000			118.3055	0.490			
1306 SPN				4 2 10.000	0.0186	-14.00	92.7538	0.415	242.8	98.0	280.1
SPN				4 2 10.000		76.00	85.1735	0.526			
SPN				4 2 10.000			90.0945	0.488			
1307 SPN				4 2 10.000	0.0000	-14.00	109.2437	0.422	238.8	98.2	280.2
SPN				4 2 10.000		76.00	112.1432	0.507			
SPN				4 2 10.000			106.2884	0.511			
1308 SPN				4 2 10.000	-0.1514	-14.00	105.7755	0.412	235.5	98.3	280.3
SPN				4 2 10.000		76.00	122.8554	0.535			
SPN				4 2 10.000			109.5663	0.535			
1309 SPN				4 2 10.000	-0.1614	-14.00	108.5807	0.468	233.4	98.5	280.5
SPN				4 2 10.000		76.00	118.1822	0.465			
SPN				4 2 10.000			109.7043	0.447			
1310 SPN				4 2 10.000	-0.0814	-14.00	108.8102	0.405	229.9	98.7	280.6
SPN				4 2 10.000		76.00	109.9149	0.501			
SPN				4 2 10.000			106.6236	0.502			
1312 SPN				4 2 10.000	-0.2214	-14.00	183.7793	0.422	224.7	99.3	281.2
SPN				4 2 10.000		76.00	107.2889	0.489			
SPN				4 2 10.000			93.8411	0.489			
1313 SPN				4 2 10.000	0.1486	-14.00	121.0679	0.441	221.6	99.2	281.1
SPN				4 2 10.000		76.00	98.8521	0.506			
SPN				4 2 10.000			110.1773	0.555			
1315 SPN				4 2 10.000	0.0000 NONE	-14.00	113.1030	0.493	215.5	99.5	281.3
SPN				4 2 10.000		76.00	113.7880	0.357			
SPN				4 2 10.000			101.4590	0.392			
1317 SPN				4 2 10.000	0.0661 GOES	-14.00	119.6034	0.426	209.0	99.2	281.0
SPN				4 2 10.000		76.00	106.0839	0.472			
SPN				4 2 10.000			118.8165	0.494			

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (Volts.m.sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1323 3-18 SPN	30 SEP 1988	274	4	2 10.000	-14.00	97.4227	0.511	0.424	191.0	100.1	281.7
-- SPZ	--	--	4	2 10.000	76.00	88.3918	0.468	0.372	--	--	--
-- SPZ	--	--	4	2 10.000	--	88.3327	0.422	0.345	--	--	--
1324 -- SPN	--	--	4	2 10.000	-14.00	145.0600	0.540	0.400	186.5	100.2	281.8
-- SPZ	--	--	4	2 10.000	76.00	149.5800	0.540	0.400	--	--	--
-- SPZ	--	--	4	2 10.000	--	135.8995	0.580	0.400	--	--	--
1325 -- SPN	--	--	4	2 10.000	-14.00	105.7116	0.515	0.430	183.8	100.1	281.7
-- SPZ	--	--	4	2 10.000	76.00	118.0167	0.472	0.425	--	--	--
-- SPZ	--	--	4	2 10.000	--	112.0626	0.395	0.368	--	--	--
1326 -- SPN	--	--	4	2 10.000	-14.00	786.2735	0.610	0.823	180.3	99.6	281.1
-- SPZ	--	--	4	2 10.000	76.00	752.1228	0.554	1.952	--	--	--
-- SPZ	--	--	4	2 10.000	--	715.6757	0.652	0.809	--	--	--
1328 -- SPN	--	--	4	2 10.000	-14.00	505.6474	0.902	1.454	174.6	98.6	280.1
-- SPZ	--	--	4	2 10.000	76.00	694.0557	0.551	0.681	--	--	--
-- SPZ	--	--	4	2 10.000	--	624.0928	0.864	1.000	--	--	--
1301 3-19 SPZ	--	--	6	0 15.000	-14.00	113.0980	0.494	0.465	298.5	94.8	277.4
-- SPN	--	--	6	0 15.000	76.00	115.7602	0.480	0.426	--	--	--
-- SPZ	--	--	6	0 15.000	--	105.1737	0.392	0.343	--	--	--
1302 -- SPZ	--	--	6	0 15.000	-14.00	98.2104	0.465	0.389	285.3	95.1	277.7
-- SPN	--	--	6	0 15.000	76.00	104.5629	0.509	0.411	--	--	--
-- SPZ	--	--	6	0 15.000	--	101.6230	0.516	0.438	--	--	--
1303 -- SPZ	--	--	6	0 15.000	-14.00	99.4546	0.481	0.444	291.2	95.3	277.8
-- SPN	--	--	6	0 15.000	76.00	111.6448	0.478	0.491	--	--	--
-- SPZ	--	--	6	0 15.000	--	99.4548	0.480	0.443	--	--	--
1304 -- SPZ	--	--	6	0 15.000	-14.00	112.4042	0.459	0.468	288.4	95.6	278.1
-- SPN	--	--	6	0 15.000	76.00	112.0597	0.493	0.508	--	--	--
-- SPZ	--	--	6	0 15.000	--	114.3942	0.510	0.538	--	--	--
1305 -- SPZ	--	--	6	0 15.000	-14.00	121.3985	0.427	0.361	286.0	96.4	278.9
-- SPN	--	--	6	0 15.000	76.00	115.4130	0.506	0.447	--	--	--
-- SPZ	--	--	6	0 15.000	--	118.3055	0.490	0.429	--	--	--
1306 -- SPZ	--	--	6	0 15.000	-14.00	92.7538	0.415	0.356	281.7	97.4	279.8
-- SPN	--	--	6	0 15.000	76.00	85.1735	0.526	0.440	--	--	--
-- SPZ	--	--	6	0 15.000	--	90.0945	0.488	0.382	--	--	--
1307 -- SPZ	--	--	6	0 15.000	-14.00	109.2437	0.422	0.357	277.7	97.5	279.9
-- SPN	--	--	6	0 15.000	76.00	112.1432	0.507	0.423	--	--	--
-- SPZ	--	--	6	0 15.000	--	106.2984	0.511	0.436	--	--	--
1308 -- SPZ	--	--	6	0 15.000	-14.00	109.2437	0.422	0.357	274.5	97.6	279.9
-- SPN	--	--	6	0 15.000	76.00	112.1432	0.507	0.423	--	--	--
-- SPZ	--	--	6	0 15.000	--	106.2984	0.511	0.436	--	--	--
1309 -- SPN	--	--	6	0 15.000	-14.00	108.3807	0.468	0.386	272.3	97.8	280.1
-- SPZ	--	--	6	0 15.000	76.00	118.1922	0.465	0.419	--	--	--
-- SPZ	--	--	6	0 15.000	--	109.7043	0.447	0.382	--	--	--
1310 -- SPZ	--	--	6	0 15.000	-14.00	108.8102	0.405	0.335	268.8	97.9	280.2
-- SPN	--	--	6	0 15.000	76.00	109.9149	0.501	0.416	--	--	--
-- SPZ	--	--	6	0 15.000	--	106.6236	0.502	0.440	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1311 3-19 SP2	30 SEP 1988	274 6 0 15.000	-0.9614 WWVB	-	119.7059	0.378	0.336	266.1	98.1	280.4
-- SPN	--	6 0 15.000	--	-14.00	111.1007	0.496	0.424	--	--	--
-- SPE	--	6 0 15.000	--	76.00	122.3248	0.490	0.410	--	--	--
1312 -- SP2	--	6 0 15.000	-0.2382	-	183.7793	0.422	0.324	263.6	98.4	280.7
-- SPN	--	6 0 15.000	--	-14.00	107.2989	0.499	0.437	--	--	--
-- SPE	--	6 0 15.000	--	76.00	93.9411	0.489	0.426	--	--	--
1313 -- SP2	--	6 0 15.000	0.1699	-	121.0679	0.441	0.373	260.5	98.4	280.6
-- SPN	--	6 0 15.000	--	-14.00	98.8521	0.506	0.382	--	--	--
-- SPE	--	6 0 15.000	--	76.00	110.1773	0.555	0.459	--	--	--
1315 -- SPN	--	6 0 15.000	0.0000 NONE	-14.00	113.1000	0.493	0.479	254.4	98.6	280.8
-- SPE	--	6 0 15.000	--	76.00	113.7880	0.357	0.426	--	--	--
-- SP2	--	6 0 15.000	--	-	101.4590	0.392	0.338	--	--	--
1316 -- SPN	--	6 0 30.000	-0.0165 WWVB	-14.00	102.2961	0.487	0.397	251.4	98.5	280.6
-- SPE	--	6 0 30.000	--	76.00	117.5009	0.502	0.405	--	--	--
-- SP2	--	6 0 30.000	--	-	102.1071	0.408	0.346	--	--	--
1317 -- SPN	--	6 0 15.000	0.0831 GOES	-14.00	119.6034	0.426	0.393	247.9	98.3	280.5
-- SPE	--	6 0 15.000	--	76.00	106.0839	0.472	0.416	--	--	--
-- SP2	--	6 0 15.000	--	-	118.8165	0.494	0.429	--	--	--
1323 -- SPN	--	6 0 15.000	-1.3457 WWVB	-14.00	97.4227	0.511	0.424	229.8	99.0	281.0
-- SPE	--	6 0 15.000	--	76.00	88.3918	0.488	0.372	--	--	--
-- SP2	--	6 0 15.000	--	-	98.3327	0.422	0.345	--	--	--
1324 -- SPN	--	6 0 15.000	0.1284	-14.00	145.0600	0.540	0.400	225.4	99.1	281.0
-- SPE	--	6 0 15.000	--	76.00	149.5900	0.540	0.400	--	--	--
-- SP2	--	6 0 15.000	--	-	135.8995	0.580	0.400	--	--	--
1325 -- SPN	--	6 0 15.000	0.0000	-14.00	105.7116	0.515	0.430	222.7	99.0	280.9
-- SPE	--	6 0 15.000	--	76.00	118.0167	0.472	0.425	--	--	--
-- SP2	--	6 0 15.000	--	-	112.0626	0.395	0.368	--	--	--
1326 -- SPN	--	6 0 15.000	-0.1716	-14.00	786.2735	0.610	0.823	219.2	98.6	280.5
-- SPE	--	6 0 15.000	--	76.00	752.1228	0.554	1.952	--	--	--
-- SP2	--	6 0 15.000	--	-	715.6757	0.652	0.609	--	--	--
1327 -- SPN	--	6 0 15.000	-0.3016	-14.00	689.6237	0.838	1.063	217.0	97.8	279.7
-- SPE	--	6 0 15.000	--	76.00	763.6659	1.032	1.294	--	--	--
-- SP2	--	6 0 15.000	--	-	719.0599	1.003	1.236	--	--	--
1328 -- SPN	--	6 0 15.000	-0.0316	-14.00	505.6474	0.902	1.454	213.5	97.7	279.5
-- SPE	--	6 0 15.000	--	76.00	694.0557	0.551	0.681	--	--	--
-- SP2	--	6 0 15.000	--	-	624.0828	0.864	1.000	--	--	--
1331 -- SPN	--	6 0 15.000	-0.1916	-14.00	622.2807	0.978	1.277	202.7	97.2	279.0
-- SPE	--	6 0 15.000	--	76.00	696.1515	1.041	1.215	--	--	--
-- SP2	--	6 0 15.000	--	-	835.2012	0.680	0.900	--	--	--
1302 3-20 SP2	--	4 0 20.000	0.1187	-	98.2104	0.465	0.389	332.9	97.0	279.8
-- SPN	--	4 0 20.000	--	-14.00	104.5629	0.508	0.411	--	--	--
-- SPE	--	4 0 20.000	--	76.00	101.6230	0.516	0.438	--	--	--
1303 -- SP2	--	4 0 20.000	0.1087	-	99.4546	0.481	0.444	328.8	97.1	280.0
-- SPN	--	4 0 20.000	--	-14.00	111.6448	0.478	0.491	--	--	--
-- SPE	--	4 0 20.000	--	76.00	99.4548	0.480	0.443	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1304 3-20 SPZ	30 SEP 1988 274	4 0 20.000	0.1187 WVB	-	112.4042	0.459	0.468	326.1	97.5	280.3
-- SPN	--	4 0 20.000	--	-14.00	112.0597	0.493	0.508	--	--	--
-- SPE	--	4 0 20.000	--	76.00	114.3942	0.510	0.538	--	--	--
1305 -- SPZ	--	4 0 20.000	0.0387	--	121.3985	0.427	0.361	323.8	98.2	281.0
-- SPN	--	4 0 20.000	--	-14.00	115.4130	0.506	0.447	--	--	--
-- SPE	--	4 0 20.000	--	76.00	118.3055	0.490	0.429	--	--	--
1306 -- SPZ	--	4 0 20.000	0.0086	--	92.7538	0.415	0.356	319.8	99.0	281.8
-- SPN	--	4 0 20.000	--	-14.00	85.1735	0.526	0.440	--	--	--
-- SPE	--	4 0 20.000	--	76.00	90.0845	0.488	0.382	--	--	--
1307 -- SPZ	--	4 0 20.000	0.0000	--	109.2437	0.422	0.357	315.8	99.2	281.9
-- SPN	--	4 0 20.000	--	-14.00	112.1432	0.507	0.423	--	--	--
-- SPE	--	4 0 20.000	--	76.00	106.2984	0.511	0.436	--	--	--
1308 -- SPZ	--	4 0 20.000	-0.1514	--	105.7755	0.412	0.329	312.5	99.3	281.9
-- SPN	--	4 0 20.000	--	-14.00	122.8554	0.535	0.470	--	--	--
-- SPE	--	4 0 20.000	--	76.00	109.5663	0.535	0.450	--	--	--
1309 -- SPN	--	4 0 20.000	-0.1614	-14.00	108.3807	0.468	0.386	310.4	99.4	282.1
-- SPZ	--	4 0 20.000	--	76.00	116.1822	0.465	0.419	--	--	--
-- SPE	--	4 0 20.000	--	--	109.7043	0.447	0.382	--	--	--
1310 -- SPZ	--	4 0 20.000	-0.0814	--	108.8102	0.405	0.335	306.9	99.6	282.2
-- SPN	--	4 0 20.000	--	-14.00	109.9149	0.501	0.416	--	--	--
-- SPE	--	4 0 20.000	--	76.00	106.6236	0.502	0.440	--	--	--
1312 -- SPZ	--	4 0 20.000	-0.2214	--	183.7793	0.422	0.324	301.8	100.1	282.6
-- SPN	--	4 0 20.000	--	-14.00	107.2989	0.489	0.437	--	--	--
-- SPE	--	4 0 20.000	--	76.00	93.9411	0.489	0.426	--	--	--
1313 -- SPZ	--	4 0 20.000	0.1486	--	121.0679	0.441	0.373	298.7	100.1	282.6
-- SPN	--	4 0 20.000	--	-14.00	98.8521	0.506	0.382	--	--	--
-- SPE	--	4 0 20.000	--	76.00	110.1773	0.555	0.459	--	--	--
1315 -- SPN	--	4 0 20.000	0.0000 NONE	-14.00	113.1000	0.493	0.479	292.6	100.3	282.8
-- SPZ	--	4 0 20.000	--	76.00	113.7880	0.357	0.426	--	--	--
-- SPE	--	4 0 20.000	--	--	101.4590	0.392	0.338	--	--	--
1317 -- SPN	--	4 0 20.000	0.0681 GOIS	-14.00	119.6034	0.426	0.393	286.1	100.1	282.6
-- SPZ	--	4 0 20.000	--	76.00	106.0839	0.472	0.416	--	--	--
-- SPE	--	4 0 20.000	--	--	118.8165	0.484	0.429	--	--	--
1323 -- SPN	--	4 0 20.000	-1.1015 WVB	-14.00	97.4227	0.511	0.424	268.2	100.8	283.1
-- SPZ	--	4 0 20.000	--	76.00	88.3918	0.488	0.372	--	--	--
-- SPE	--	4 0 20.000	--	--	98.3327	0.422	0.345	--	--	--
1324 -- SPN	--	4 0 20.000	0.0984	-14.00	145.0600	0.540	0.400	263.7	100.9	283.2
-- SPZ	--	4 0 20.000	--	76.00	149.5900	0.540	0.400	--	--	--
-- SPE	--	4 0 20.000	--	--	135.9895	0.580	0.400	--	--	--
1325 -- SPN	--	4 0 20.000	0.0000	-14.00	105.7116	0.515	0.430	261.0	100.9	283.1
-- SPZ	--	4 0 20.000	--	76.00	118.0167	0.472	0.425	--	--	--
-- SPE	--	4 0 20.000	--	--	112.0626	0.395	0.368	--	--	--
1326 -- SPN	--	4 0 20.000	-0.1516	-14.00	786.2735	0.610	0.623	257.5	100.6	282.8
-- SPZ	--	4 0 20.000	--	76.00	752.1228	0.554	1.952	--	--	--
-- SPE	--	4 0 20.000	--	--	715.6757	0.652	0.809	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 3c. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts/m/sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1328 3-20 SPN	30 SEP 1988	274 4 0 20.000	-0.0316 WWVB	-14.00	505.6474	0.902	1.454	251.6	99.9	282.0
-- SPE	--	4 0 20.000	--	76.00	694.0557	0.551	0.681	--	--	--
-- SPZ	--	4 0 20.000	--	--	624.0928	0.864	1.000	--	--	--

Seismometer orientation is measured as degrees clockwise from geographic north

Table 4

Typical direct access SEGY-LDS version 2.0 Reel Header Block information from NYNEX2-07.SGY data file and Trace Header Block information for seismogram station 1211, component SPN. There are five modifications to the SEGY-LDS v 2.0 format given in Spencer et al, (1989) to accommodate AFGL three component data.

1. TSNL is re-defined as 1,2,3,4 or 5, for the Z,N,E, Radial or Tangential components, respectively.
2. DELR is re-defined as the sensor serial number.
3. DELS is re-defined as the sensor sensitivity in volts/meter/second. Divide DELS by 10000.0 for actual value. (This value was scaled to an I*4 location)
4. WDS is re-defined as pendulum period in milli seconds.
5. WDR is re-defined as pendulum damping, divide WDR by 1000 for actual value.

Binary Reel Id Header Block

```

-----
jobid:                0
lineno:               0
reelno:               0
ntrace:               0
nauxt:                0
sint:                 10000
sint2:                10000
nsam:                 8001
nsamf:                0
icode:                2
ncdp:                 0
itsort:               0
vcode:                0
ssweep:               0
esweep:               0
sleng:                0
stype:                0
nts:                  0
stts:                 0
stte:                 0
ttype:                0
cort:                 0
bgr:                  0
arm:                  0
isys:                 1
ipol:                 1
vpc:                  0
notif:                78
attri:                0
meanas:               0.00000000E+00
domain:               0
vred:                 0
minass:               0.00000000E+00

```

maxass: 0.0000000E+00
iinstr: 11
cryear: 1989
crmnth: 12
crday: 18
padtyp: 0
ccode: 2
nnb: 0
bord: 0
fvn: 200

Trace Id Header Block for trace # 1

tsnl: 2
tsnt: 1
ofrn: 20
tnofr: 0
espn: 7
cdp: 0
tncdp: 0
tic: 1
nvs: 0
nhs: 0
duse: 0
idist: 92102
irel: 38
ishe: 460
ishd: 0
delr: 9261
dels: 1131000
wds: 2209
wdr: 475
smul1: 1
smul2: -100
ishlo: -26005141
ishla: 15904260
irlo: -26413344
irla: 15853861
cunits: 2
wvel: 0
swvel: 0
utimes: 0
utimeg: 0
sstati: 0
gstatl: 0
tstati: 0
istime: 0
ibtime: 0
ictime: 0
mtimes: 0
mtimee: 0
length: 8001
isi: 10000

gaint:	3	
gc:	10	
gidb:	0	
tcorr:	0	
tsswee:	0	
teswee:	0	
tsleng:	0	
tstype:	5	
tstts:	0	
tstte:	0	
tttype:	0	
aif:	30	
ais:	0	
nif:	0	
nis:	0	
flc:	0	
fhc:	0	
slc:	0	
shc:	0	
tyear:	1988	
tday:	268	
thour:	5	
tmin:	59	
tsec:	55	
tbcode:	2	
twf:	0	
ggrpl:	0	
ggtp:	0	
errlt:	0	
daca:	0	
edc:	0	
mst:		0
cor:	-104	
charge:	1224	
syear:	1988	
sday:	268	
shour:	6	
smin:	0	
sseco:	0	
ssmic:		9000
azimut:	15640	
geoazi:	0	
geover:	-900	
ttrace:		0
scrs:	319	
deploy:	DEP2	
spname:	0007	
rstnam:	1211	
shotid:	0020	
lineid:		
geocr:	SPN	

.....

APPENDIX

Boston College - MIT Piggy-Back Seismic Refraction Experiment

by

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Department of Geology and Geophysics
Boston College
Weston, MA 02193

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- A3. SPE Seismograms

A-1. EXPERIMENTAL CONFIGURATION

In a cooperative effort, Boston College and MIT (BC-MIT) conducted a piggyback experiment as part of the 1988 Ontario - New York - New England Seismic Refraction Experiment. John E. Ebel of Weston Observatory of Boston College coordinated experiment, and Robert Cicerone and Charles Doll supervised the MIT participation. A total of nine seismic instruments were available for the BC-MIT deployment. Five were portable Sprengnether MEQ-800 analog seismographs which were connected to vertical component, 1-sec period HS-10 seismometers. The other four instruments were Sprengnether DR-200 portable digital seismographs which were connected to three-component Sprengnether S-6000 seismometers. Because of this limited number of instruments available to the

BC-MIT group, it was decided to use the instruments to augment the recording along a cross line between shot points 10 and 22 which was instrumented by the Geophysics Laboratory (GL). On the first night of shooting the BC-MIT seismographs were deployed to the northwest of shotpoint 10, while on the second and third nights of shooting the BC-MIT group deployed just northwest and southeast of shotpoint 22. The primary effect of the BC-MIT recording effort was to extend the refraction profile northwest from shotpoint 22 and southeast from shotpoint 10 to distances of about 200 km from the shotpoints, as well as to record at distances within 40 km of shotpoint 22 in southern New Hampshire.

A-2. DIGITAL DATA RECOVERY

Instrument failures limited the recovery of useable data from the digital instruments. Most of those failures occurred during read, write or rewind operations of the cassette tape drives, which were apparently affected by low nighttime temperatures (in the thirties and forties Fahrenheit), high humidity (dew formed on the instruments all three nights) or insufficient battery voltages for the operating conditions. At least some seismograms were obtained from all four digital instruments on the first night of shooting, while on the second and third nights of shooting each only two of the instruments remained operational. Unfortunately, some of the digital waveforms recorded had the signals buried by noise or were otherwise unuseable due to instrument malfunctions.

All of the DR-200 instruments were operated with common settings: digitization rate - 100 Hz; no high pass filter; low pass filter corner frequency at 25 Hz; gain amplifiers set at X1000; ADC set at auto, and all data were recorded continuously in each shot window. Channels 1, 2 and 3 recorded the vertical, north-south and east-west ground motion, respectively, with up, north and east ground motions being positive in the waveforms. The north-south geophone was generally aligned with magnetic north except for station 1209 which was aligned to geographic north.

One problem evident on the digital seismic traces are regular noise bursts with intervals of about 2.5 sec and 4.5 sec. These are from vibrations generated by the recording unit as the tape drive head engaged and disengaged during recording. The seismometers cables were only about 8 feet long, and this distance was obviously insufficient to permit the attenuation of this source of noise in the recording unit. We have not corrected the raw traces for these noise bursts,

although it should be a straightforward procedure to estimate their shapes from the portions of the traces before the arrivals from the shots and then subtract the shapes from the records.

Accurate absolute time calibrations were achieved by synchronizing the instruments clocks to absolute time standards within hours of their deployment. On the first night of shooting, all of the instrument clocks were set to WWV time about 3 hours before the first shot window. On the second and third nights of shooting, the instruments clocks were set to GOES satellite time about 10 hours before the first shot window. In a few cases the clocks were checked after the recordings to ascertain the clock drift, which almost invariably proved to be minimal. In other cases post experiment clock corrections were not determined, and the initial clock setting was assumed to be accurate throughout the experiment. In one case (station 1207 on the first shot night) the clock was turned off and restarted at an arbitrary time just before the first shot. This clock was calibrated to absolute time after the last shot window and was assumed to have not drifted throughout the duration of the night of shooting. Clock corrections are summarized in Table A1.

A-3. ANALOG DATA RECOVERY

The data recovery rate for the analog MEQ-800 recorders varied with the night of shooting. On the first night of the experiment, records were recovered from all five instruments, while three useful records were recovered from the second night of shooting and two good records were taken during the third night. A seismometer which was removed from one site and operator error lost two records during the second night of the experiment. Some of the records on the third night were affected by low instrument voltages in near-freezing temperature conditions. About of 90 P-wave arrival times could be read with some accuracy from the records. They are summarized in Table A3.

Time calibrations on the analog records were established in the same way as described above for the digital data. Four of the recorders were set to run at 240 mm/min, while the fifth was operated at 120 mm/min. Instrument settings for such parameters as high and low cut filters, gain and maximum pen deflection were set by the individual operators.

The digital data are presented in trace-normalized record sections format in Figures A1-A6. No instrument corrections have been applied and the clock

corrections are assumed to be zero. Table A2 lists station and seismogram information for all records tht could be recovered from the field cassette tapes.

A-4. ACKNOWLEDGMENTS

Special thanks go to the Boston College and MIT students who who assisted with the data acquisition. These include Bill Dupree, Chris Kulig, Andrea Steckerl, Sue D'Annolfo, Zhi-ping Tu, Xiao-min Zhao, Richard Spielman from Boston College and Debbie Cicerone. Several MIT undergraduates also participated. The Boston College field effort was support by a grant from the Mobil Oil Foundation, and their support is gratefully appreciated.

Table A1. Time Corrections for DR-200 Data

<u>Station</u>	<u>DR-200 Unit #</u>	<u>Time Correction*</u>	<u>Remarks</u>
September 17, 1988			
1201	173	0.00	Time set to absolute time 3 hours before first shot window.
1203	210	0.00	Time set to absolute time 3 hours before first shot window.
1207	178	+04:33:18.77	Clock was restarted from 00:00:00.00 before first shot window. 04:58:41.23 on record was found to correspond to 09:32:00.00 absolute time after last shot window.
1209	141	0.00	Time set to absolute time 3 hours before first shot window.
September 24, 1988			
1243	178	0.00	Clock set to absolute time 10 hours before first shot window.
1244	210	0.00	Clock set to absolute time 10 hours before first shot window.
September 30, 1988			
1246	173	+0.02	Clock setting was slow compared to absolute time 10 hours before first shot window.
1252	210	0.00	Clock set to absolute time 10 hours before first shot window.

*Clock corrections to be added to time on records to calibrate waveforms to absolute time.

Note: All geophones were oriented to magnetic north except station 1209 (first shot night).

Table A2. Boston College MIT Station and Seismometer Constants

Seismogram	Date	Starting d h m	s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1201 1-02 SP2	17 SEP 1988	261	4 0 0.000	0.0000	NONE	100.0000	0.500	0.400	297.7	267.8	85.2
" " SPN	" "	"	4 0 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 0 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-05 SP2	" "	"	4 2 0.000	0.0000	"	100.0000	0.500	0.400	191.1	273.0	91.3
" " SPN	" "	"	4 2 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 2 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-07 SP2	" "	"	4 4 0.000	0.0000	"	100.0000	0.500	0.400	125.7	281.9	100.8
" " SPN	" "	"	4 4 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 4 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-22 SP2	" "	"	4 6 0.000	0.0000	"	100.0000	0.500	0.400	201.6	310.6	129.3
" " SPN	" "	"	4 6 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 6 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-14 SP2	" "	"	4 8 0.000	0.0000	"	100.0000	0.500	0.400	72.0	51.5	232.0
" " SPN	" "	"	4 8 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 8 0.000	"	"	100.0000	0.500	0.400	"	"	"
1203 " SP2	" "	"	4 8 9.700	0.0000	"	100.0000	0.500	0.400	70.6	59.8	240.3
" " SPN	" "	"	4 8 9.700	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	4 8 9.700	"	"	100.0000	0.500	0.400	"	"	"
1209 1-02 SP2	" "	"	3 38 4.300	0.0000	"	100.0000	0.500	0.400	276.1	260.7	78.3
" " SPN	" "	"	3 38 4.300	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	3 38 4.300	"	"	100.0000	0.500	0.400	"	"	"
1201 1-04 SP2	" "	"	6 1 57.000	0.0000	"	100.0000	0.500	0.400	223.7	270.7	88.7
" " SPN	" "	"	6 1 57.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	6 1 57.000	"	"	100.0000	0.500	0.400	"	"	"
1-01 SP2	" "	"	6 4 0.000	0.0000	"	100.0000	0.500	0.400	321.5	267.7	84.8
" " SPN	" "	"	6 4 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	6 4 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-05 SP2	" "	"	8 0 0.000	0.0000	"	100.0000	0.500	0.400	259.5	269.7	87.4
" " SPN	" "	"	8 0 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	8 0 0.000	"	"	100.0000	0.500	0.400	"	"	"
1-23 SP2	" "	"	8 2 0.000	0.0000	"	100.0000	0.500	0.400	271.1	294.0	111.9
" " SPN	" "	"	8 2 0.000	"	"	100.0000	0.500	0.400	"	"	"
" " SPE	" "	"	8 2 0.000	"	"	100.0000	0.500	0.400	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table A2. (continued)

Seismogram	Date	Starting Time d h m s	Time Correction (sec)	Seismometer Orientation (deg)	Seismometer Sensitivity (volts m sec)	Pendulum Period (sec)	Damping Ratio	Distance (km)	Azimuth (deg)	Back Azimuth (deg)
1201 1-10 SPZ	17 SEP 1988 261	8 4 0.000	0.0000 NONE	-	100.0000	0.500	0.400	49.8	320.9	140.6
" " SPN	" " " "	8 4 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 4 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 1-02 SPZ	" " " "	8 7 55.000	0.0000	-	100.0000	0.500	0.400	297.7	267.8	85.2
" " SPN	" " " "	8 7 55.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 7 55.000	" "	90.00	100.0000	0.500	0.400	"	"	"
1203 1-10 SPZ	" " " "	8 4 3.800	0.0000	-	100.0000	0.500	0.400	39.7	317.5	137.3
" " SPN	" " " "	8 4 3.800	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 4 3.800	" "	90.00	100.0000	0.500	0.400	"	"	"
1207 1-03 SPZ	" " " "	8 0 20.770	0.0000	-	100.0000	0.500	0.400	238.5	264.0	82.0
" " SPN	" " " "	8 0 20.770	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 0 20.770	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 1-23 SPZ	" " " "	8 2 20.770	0.0000	-	100.0000	0.500	0.400	241.5	291.1	109.2
" " SPN	" " " "	8 2 20.770	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 2 20.770	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 1-10 SPZ	" " " "	8 3 50.770	0.0000	-	100.0000	0.500	0.400	18.0	332.5	152.4
" " SPN	" " " "	8 3 50.770	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	8 3 50.770	" "	90.00	100.0000	0.500	0.400	"	"	"
1243 2-08 SPZ	24 SEP 1988 268	4 0 0.000	0.0000	-	100.0000	0.500	0.400	102.8	154.2	334.6
" " SPN	" " " "	4 0 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	4 0 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 2-09 SPZ	" " " "	4 2 0.000	0.0000	-	100.0000	0.500	0.400	111.5	138.7	319.3
" " SPN	" " " "	4 2 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	4 2 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 2-12 SPZ	" " " "	4 4 0.000	0.0000	-	100.0000	0.500	0.400	172.4	112.9	294.3
" " SPN	" " " "	4 4 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	4 4 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 2-22 SPZ	" " " "	4 6 0.000	0.0000	-	100.0000	0.500	0.400	16.2	303.5	123.4
" " SPN	" " " "	4 6 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	4 6 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"
" " 2-20 SPZ	" " " "	4 8 0.000	0.0000	-	100.0000	0.500	0.400	470.5	103.9	287.8
" " SPN	" " " "	4 8 0.000	" "	0.00	100.0000	0.500	0.400	"	"	"
" " SPE	" " " "	4 8 0.000	" "	90.00	100.0000	0.500	0.400	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table A2. (continued)

Seismogram	Starting Time			Time		Seismometer	Seismometer	Pendulum	Damping	Distance	Azimuth	Back
	Date	d	h	m	s	Correction	Orientation	Sensitivity	Ratio	(km)	(deg)	Azimuth
						(sec)	(deg)	(volts m.sec)				(deg)
1243 2-14 SP2	24 SEP 1988	268	8	0	0.000	0.0000	NONE	100.0000	0.400	212.7	110.1	291.8
" " " SPN	" " "	"	8	0	0.000	"	"	100.0000	0.400	"	"	"
" " " SPE	" " "	"	8	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	2	0.000	0.0000	"	100.0000	0.400	151.8	119.1	300.2
" " " " 0.00	" " "	"	8	2	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	2	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 0.00	" " "	"	8	4	0.000	0.0000	"	100.0000	0.400	79.6	68.5	249.1
" " " " 90.00	" " "	"	8	4	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	4	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 0.00	" " "	"	8	6	2.000	0.0000	"	100.0000	0.400	148.3	215.3	34.5
" " " " 90.00	" " "	"	8	6	2.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	6	2.000	"	0.00	100.0000	0.400	"	"	"
1244 2-14 SP2	" " "	"	8	0	0.000	0.0000	"	100.0000	0.400	217.5	110.2	292.0
" " " " 0.00	" " "	"	8	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	8	0	0.000	"	0.00	100.0000	0.400	443.9	103.9	287.6
1246 3-19 SP2	30 SEP 1988	274	6	0	0.000	0.0000	"	100.0000	0.400	"	"	"
" " " " 0.00	" " "	"	6	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	2	0.000	0.0000	"	100.0000	0.400	312.8	109.4	292.0
" " " " 0.00	" " "	"	6	2	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	2	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 0.00	" " "	"	6	4	0.000	0.0000	"	100.0000	0.400	270.9	110.8	292.9
" " " " 90.00	" " "	"	6	4	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	4	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 0.00	" " "	"	6	6	0.000	0.0000	"	100.0000	0.400	149.9	126.1	307.1
" " " " 90.00	" " "	"	6	6	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	6	0.000	"	0.00	100.0000	0.400	"	"	"
1290 3-19 SP2	" " "	"	6	0	0.000	0.0000	"	100.0000	0.400	149.9	126.1	307.1
" " " " 0.00	" " "	"	6	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	0	0.000	"	0.00	100.0000	0.400	"	"	"
" " " " 90.00	" " "	"	6	0	0.000	"	0.00	100.0000	0.400	"	"	"

Seismometer orientation is measured as degrees clockwise from geographic north

Table A3. MEQ-800 Arrival Times

<u>Phase</u>	<u>Arrival Time</u>	<u>Notes</u>	<u>Phase</u>	<u>Arrival Time</u>	<u>Notes</u>
Station 1202			September 17, 1988		
eP	04:00:43.80	Very small	eP	04:02:30.13	
iP	04:04:19.83		eP	04:06:31.38	
eP	06:00:25.20		eP	06:02:35.08	
eP	06:04:46.60		eP	08:00:39.08	
eP	08:02:41.08		iP	08:04:07.08	
			iS	08:04:12.88	
Station 1204			September 17, 1988		
eP	04:00:43.1	Very small	eP	04:02:28.30	
eP	04:04:18.00		eP	04:06:29.50	
eP	04:08:12.50		eP	06:00:23.70	
eP	06:02:33.45		eP	06:04:45.38	
eP	08:00:38.10		eP	08:02:37.55	Very small
iP	08:04:05.08				
Station 1205			September 17, 1988		
eP	04:00:42.63?	Very small	eP	04:02:27.73	
eP	04:04:17.23		eP	04:06:28.75	
eP	04:08:12.53		eP	06:00:22.95	Very small
eP	06:02:33.09		eP	06:04:45.09	
eP	08:00:38.93		eP	08:02:39.10	
iP	08:04:04.35				
Station 1206			September 17, 1988		
eP	04:00:42.38?	Questionable	iP	04:04:16.88	
eP	04:06:28.10		eP	04:08:12.83	
eP	06:02:33.05		eP	06:04:45.08	
eP	08:00:37.65	Very small	eP	08:02:38.45	
iP	08:04:03.68				

Table A3. (continued)

Station 1208		September 17, 1988	
eP	04:00:41.73	eP	04:02:27.20
iP	04:04:15.85	eP	04:06:26.5
iP	04:08:13.20	eP	06:00:22.03
eP	06:02:26.13	eP	06:04:44.23? Very small
eP	08:00:37.08	eP	08:02:36.53
iP	08:04:02.20		
Station 1242		September 24, 1988	
eP	04:00:16.96	Very small	eP 04:08:25.08? Very small
eP	06:00:15.65		eP 06:04:55.05? Very small
iP	08:04:13.38		eP 08:06:24.86? Very noisy
Station 1248		September 24, 1988	
eP	04:00:20.43?	Very small	eP 04:02:22.10? Very small
eP	04:04:30.60		iP 04:06:01.05
eP	06:00:81.78		eP 06:04:34.08? Very small
iP	06:06:25.53		eP 08:00:36.35
eP	08:02:27.80		iP 08:04:15.95
eP	08:06:25.13		
Station 1249		September 24, 1988	
eP	04:00:21.40		eP 04:02:23.55
eP	04:04:32.50		iP 04:06:02.30
eP	06:00:19.60		eP 06:04:34.70? Very small
eP	06:06:26.58		eP 08:00:37.75? Very small
iP	08:02:29.10	Very small	iS 08:02:51.05? Questionable
eP	08:04:16.93		eP 08:06:25.15
Station 1251		September 30, 1988	
eP	04:01:08.60		eP 04:06:39.38
eP	06:04:43.63		eP 06:06:28.10? Questionable
Station 1254		September 30, 1988	
eP	04:01:13.08		eP 06:06:31.55

