

U. S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

DATA REPORT FOR THE TACT 1987 SEISMIC REFRACTION SURVEY:
FAIRBANKS NORTH AND OLNES DEPLOYMENTS

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OPEN-FILE REPORT 92-196

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¹ Menlo Park, California

Table of Contents

Introduction	1
Geologic Setting	6
Seismic Recorders	8
Data Reduction	8
Record Sections	14
Acknowledgements	16
References	17
Table 1: True-Amplitude Efficiency Factors	19
Appendix A: Shot Point and Seismic Recorder Locations	61
Appendix B: Field Data Tables	72
Appendix C: Archive Tape Format	97

Figures

1. Profiles Location Map	2
2. Fairbanks North Shotpoint and Recorder Location Map	4
3. Olmes Shotpoint and Recorder Location Map	5
4. Schematic Diagram of Seismic Recorder System	9
5. System Response Curve for U.S.G.S. Seismic Recorders	10
6. System Response Curve for EDA Seismic Recorders	11
7. Comparison of U.S.G.S. and G.S.C. Seismograms	13
8. Shot 29, Shot Point 69, Normalized	20
9. Shot 29, Shot Point 69, True-Amplitude	21
10. Shot 30, Shot Point 62, Normalized	22
11. Shot 30, Shot Point 62, True-Amplitude	23
12. Shot 31, Shot Point 54, Normalized	24
13. Shot 31, Shot Point 54, True-Amplitude	25
14. Shot 32, Shot Point 57, Normalized	26
15. Shot 32, Shot Point 57, True-Amplitude	27
16. Shot 33, Shot Point 65, Normalized	28
17. Shot 33, Shot Point 65, True-Amplitude	29
18. Shot 34, Shot Point 67, Normalized	30
19. Shot 34, Shot Point 67, True-Amplitude	31
20. Shot 35, Shot Point 61, Normalized	32
21. Shot 35, Shot Point 61, True-Amplitude	33
22. Shot 36, Shot Point 70, Normalized	34
23. Shot 36, Shot Point 70, True-Amplitude	35

24.	Shot 37, Shot Point 64, Normalized	36
25.	Shot 37, Shot Point 64, True-Amplitude	37
26.	Shot 38, Shot Point 66, Normalized	38
27.	Shot 38, Shot Point 66, True-Amplitude	39
28.	Shot 39, Shot Point 60, Normalized	40
29.	Shot 39, Shot Point 60, True-Amplitude	41
30.	Shot 40, Shot Point 59, Normalized	42
31.	Shot 40, Shot Point 59, True-Amplitude	43
32.	Shot 42, Shot Point 74, Normalized	44
33.	Shot 42, Shot Point 74, True-Amplitude	45
34.	Shot 44, Shot Point 61, Normalized	46
35.	Shot 44, Shot Point 61, True-Amplitude	47
36.	Shot 45, Shot Point 59, Normalized	48
37.	Shot 45, Shot Point 59, True-Amplitude	49
38.	Shot 46, Shot Point 60, Normalized	50
39.	Shot 46, Shot Point 60, True-Amplitude	51
40.	Shot 47, Shot Point 60, Normalized	52
41.	Shot 47, Shot Point 60, True-Amplitude	53
42.	Shot 48, Shot Point 59, Normalized	54
43.	Shot 48, Shot Point 59, True-Amplitude	55
44.	Shot 49, Shot Point 61, Normalized	56
45.	Shot 49, Shot Point 61, True-Amplitude	57
46.	Shot Point 59, Normal Moveout, Normalized	58
47.	Shot Point 60, Normal Moveout, Normalized	59
48.	Shot Point 61, Normal Moveout, Normalized	60

Introduction

In the summer of 1987, the U.S. Geological Survey (USGS), in cooperation with the Geological Survey of Canada (GSC), collected three 130-km-long seismic-refraction/wide-angle reflection profiles and a 17-km-long reflection profile in central Alaska (Figure 1), as part of the ongoing Trans-Alaska Crustal Transect (TACT); (see Page and others, 1986). The three profiles were recorded using 120 USGS cassette recorders and 12 to 20 GSC PRS-1 digital recorders deployed at pre-surveyed sites with 1 km spacing. The reflection survey was recorded using 120 USGS cassette recorders deployed at 60 m spacing. A total of 48 shots, ranging from 227 to 2725 kg of explosive, were detonated in 30 to 50-m-deep drill holes, and in 2 to 15-m-deep lakes.

The southernmost refraction profile, the Alaska Range deployment, extends northward from near Paxson to south of Delta Junction (Figure 1). This profile lies along or near the Richardson Highway crossing the northern part of Wrangellia terrane and southern part of Yukon-Tanana terrane and is centered on the Denali fault.

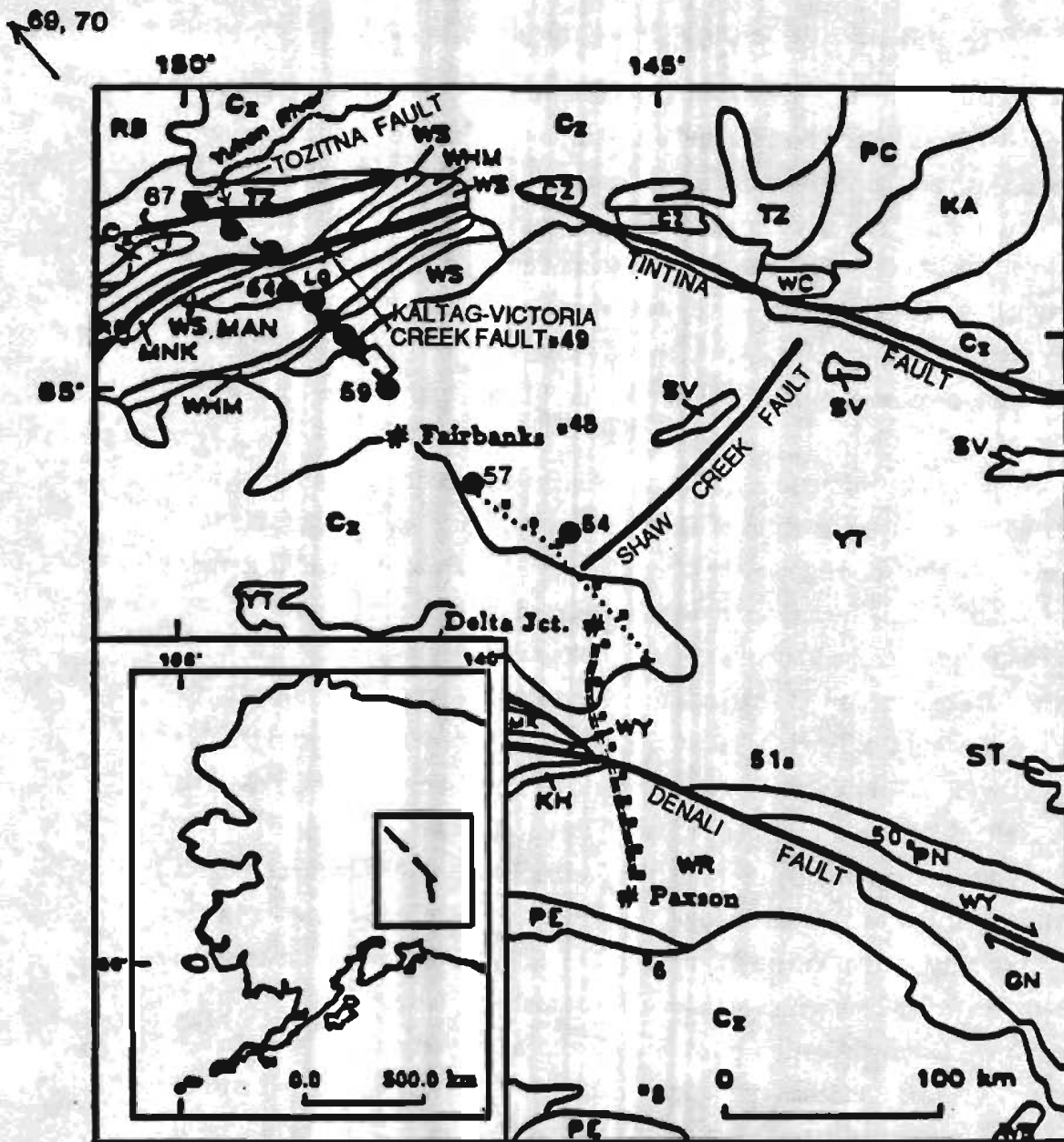
The central profile, the Fairbanks South deployment, begins approximately 20 km southeast of Delta Junction and extends northwestward to a point 30 km southeast of Fairbanks, following the Trans Alaska Oil Pipeline right-of-way (Figure 1). This profile lies within the Yukon-Tanana terrane crossing no major terrane boundaries. The Shaw Creek fault projects across the central part of this deployment.

The northernmost refraction profile, the Fairbanks North deployment, begins 30 km northwest of Fairbanks and follows the Elliot and Dalton highways and the pipeline right-of-way to the Yukon River (Figures 1, 2). This profile crosses the Yukon-Tanana terrane and numerous smaller terranes to the northwest.

The 17 km Olmes reflection profile, collected as an experiment to enhance detection of any vertical-incidence reflections that might be observable on this part of the line, is coincident with the southernmost part of the Fairbanks North deployment (Figures 1, 3).

Open-File Report 89-321 (Beaudoin and others, 1989) reports the data for the Alaska Range and Fairbanks South profiles. This report addresses the Fairbanks North and Olmes deployments. A SEG-Y standard format magnetic tape of these data may be obtained by writing or calling:

National Geophysical Data Center, NOAA/EGCI
325 Broadway; Boulder, CO 80303
(303)497-6123



After Jones, D. C. and others (1987) and
Beikman, H. M. (1980)

Figure 1. Terrane map of central Alaska showing location of 1987 TACT refraction/wide-angle reflection profiles. Map key is on the following page.

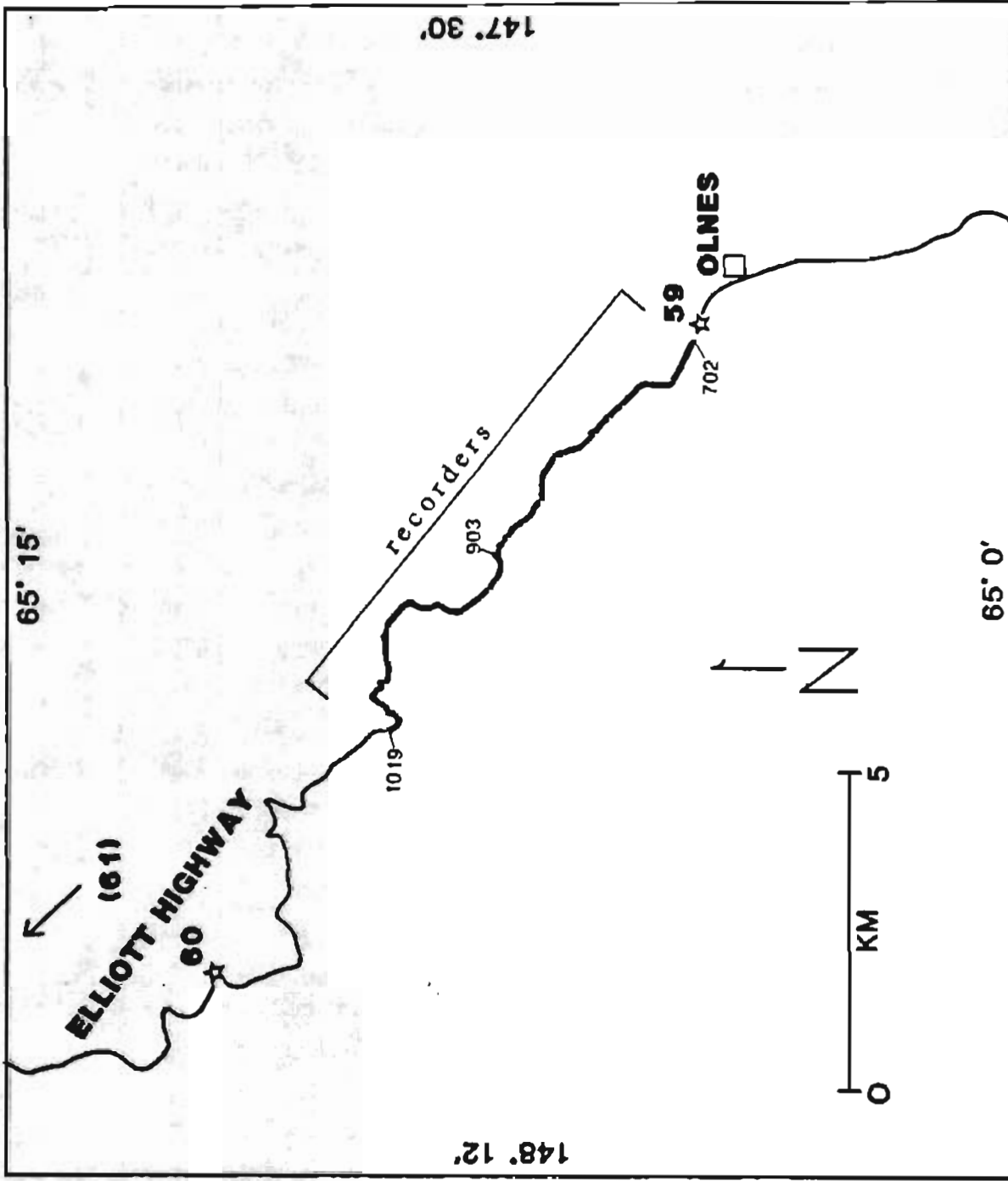


Figure 3: Olnes deployment location map

Geologic Setting

The Fairbanks North deployment crosses most of the complex suture region between the Yukon-Tanana and Ruby terranes (Figure 1), which is occupied by numerous terranes that are elongate in a northeast-southwest direction. Areally, the largest ones are the Manley and Tozitna terranes (MAN, TZ, Figure 1). Most terrane-bounding faults in this suture region are interpreted as shallowly to moderately southeast-dipping Mesozoic thrust faults (Dover, 1990). In addition, steeply dipping faults, including the Kaltag-Victoria Creek and Tozitna faults, offset these terranes and are believed to be westward extensions or splays of the Tintina fault system (Dover, 1990; Weber, 1990).

The Yukon-Tanana terrane (YT, Figure 1) is a composite metamorphic terrane of Proterozoic to Devonian metasedimentary and metavolcanic rocks, and Devonian and Mississippian metaplutonic rocks intruded by Mesozoic and Tertiary plutons (Nokleberg and others, 1989). Regional metamorphic facies range from lower greenschist to high amphibolite facies in different subterrane. Major lithologies include: quartzite, augen gneiss and biotite gneiss, semischist, amphibole schist, pelitic schist, and quartz-feldspathoid schist (Dusel-Bacon and Aleinikoff, 1985; Nokleberg and others, 1989). This terrane occupies the region between the Tintina and Denali faults (Nokleberg and others, 1989) and extends into the Yukon Territory and British Columbia, Canada. It is considered to be a parautochthonous North American terrane that has moved northwestward as much as 450 km (Templeman-Kluit, 1979; Mortensen and Jilson, 1985) to 900 km (Gabrielse, 1985). Displacement on the Denali fault is estimated to be 400 km in a right-lateral sense (Nokleberg and others, 1985).

The Tozitna terrane, beneath much of the northern part of the profile (TZ, Figure 1) is oceanic and consists of Mississippian to Triassic deep-marine sedimentary and volcanic rocks and Triassic (and older?) diabase and gabbro (Jones and others, 1987; Dover, 1990). Structure is complex. This terrane is interpreted to have been thrust great distances (hundreds of km) over the Ruby terrane (RB, Figure 1); hence the Ruby terrane probably underlies the north part of the profile at depth (Jones and others, 1987; Patton and others, 1989; Dover, 1990).

The Ruby terrane (RB, Figure 1), north and west of the profile, closely resembles on one hand the Yukon-Tanana terrane, and on the other hand the Arctic Alaska terrane of the Brooks Range, in that it consists of Devonian and older metasedimentary and metaplutonic rocks intruded by Mesozoic and Tertiary plutons

(Patton and others, 1989; Dover, 1990). Regional metamorphic facies is dominantly greenschist, but includes local amphibolite and high-pressure greenschist facies.

The Manley terrane (MAN, Figure 1) is composed of flyschoid Mesozoic sedimentary rocks that are complexly deformed and intruded by mid-Cretaceous plutons (Jones and others, 1987). Dover (1990) includes adjacent bodies of similar but older (Devonian and/or Mississippian) rocks. This terrane apparently represents a closed ocean basin and may, like the flyschoid Kahilma terrane in the Alaska Range to the south, underlie much of the region adjacent to its outcrop area (see Stanley and others, 1990).

Smaller terranes crossed by the Fairbanks North profile include the Wickersham, White Mountains, and Livengood terranes, (WS, WHM, LG, Figure 1). The Wickersham terrane (WS, Figure 1) is largely unmetamorphosed clastic, continental-marginal (quartz-rich) sedimentary rocks of Cambrian and/or Proterozoic age. The White Mountains terrane (WHM, Figure 1) consists of alkali-basaltic volcanic rocks, deposited locally on rocks equivalent to the Wickersham terrane, and overlain by Silurian limestone. The Livengood terrane (LG, Figure 1) consists chiefly of Proterozoic to lower Paleozoic oceanic rocks, including mafic and ultramafic rocks, carbonate, chert and shale. These rocks are highly folded but not strongly metamorphosed.

Weber (1990) considers the Tozitna and Kaltag-Victoria Creek faults to be deformed extensions of the Tintina fault; the more southerly, the Kaltag-Victoria Creek fault, is interpreted as older. She postulates even older buried strike-slip faults farther south that have been obscured by younger thrust faults in the area. Dover (1990) argues that the strike-slip faulting is entirely younger than the thrust faulting and interprets 400 km of post-thrusting offset on the Kaltag-Victoria Creek/Tozitna/Tintina system; a similar offset, 450 km, has been documented for the Tintina system farther southeast in Canada, where strike-slip faulting is clearly younger than thrusting (Templeman-Kluit, 1979; Mortensen and Jilson, 1985).

Seismic Recorders

The USGS cassette recorders have been described by Murphy (1988). The system consists of a Mark Products L4A 2-Hz geophone, a set of three parallel amplifiers with adjustable gain settings, a clock and memory board, and a cassette recorder (Figure 4). The use of three parallel amplifiers with gains set so that the dynamic ranges of the amplifiers overlap, affords a variable total dynamic range. For most of the instruments deployed, that range was 84 dB (Murphy, 1988). The signal from the geophone is passed through a signal splitter, the three amplifiers, and recorded as a multiplexed analog signal along with a reference frequency and an internally generated time code (IRIG E). Curves showing displacement and velocity versus frequency for the entire system peak at approximately 26 Hz and 6 Hz respectively (Figure 5).

The PRS-1 system used by the GSC also uses a Mark Products L4A 2 Hz geophone. These digitally recording instruments have a total dynamic range of 126 dB. Curves showing displacement and velocity versus frequency for this system peak at approximately 17 Hz and 5 Hz respectively (Figure 6) (Asudeh, pers. comm. 1988).

Data Collection and Reduction

For the 130 km long Fairbanks North deployment, 120 USGS instruments and 12-20 GSC instruments were deployed primarily along the Dalton Highway at 1.1 km spacing. In places where the highway diverged significantly from a straight line, instruments were deployed along the right-of-way of the Trans-Alaska Oil Pipeline (Figure 2). Nine shots, averaging 15 km apart, and ranging in size from 454 to 1361 kg. were detonated within the line of instruments. Five shots, including one fan shot, were detonated at distances of up to 109 km from the line of instruments (Figures 1, 2; Table 1). Maximum shot-receiver distances reached 240 km (Appendix A). All shots were detonated in 20.3cm X 32-55m drillholes except at shotpoints 54, 70, and 74, where shots were detonated in shallow (3-6m deep) lakes.

For the 14 km long Olmes deployment, 120 USGS instruments were deployed twice along the southern end of the Fairbanks North deployment, at a spacing of 60 m (Figure 3). Three 45 kg shots were fired at shotpoints 59, 60, and 61 into both deployments (Table 1). Maximum offsets reached 30 km (Appendix A).

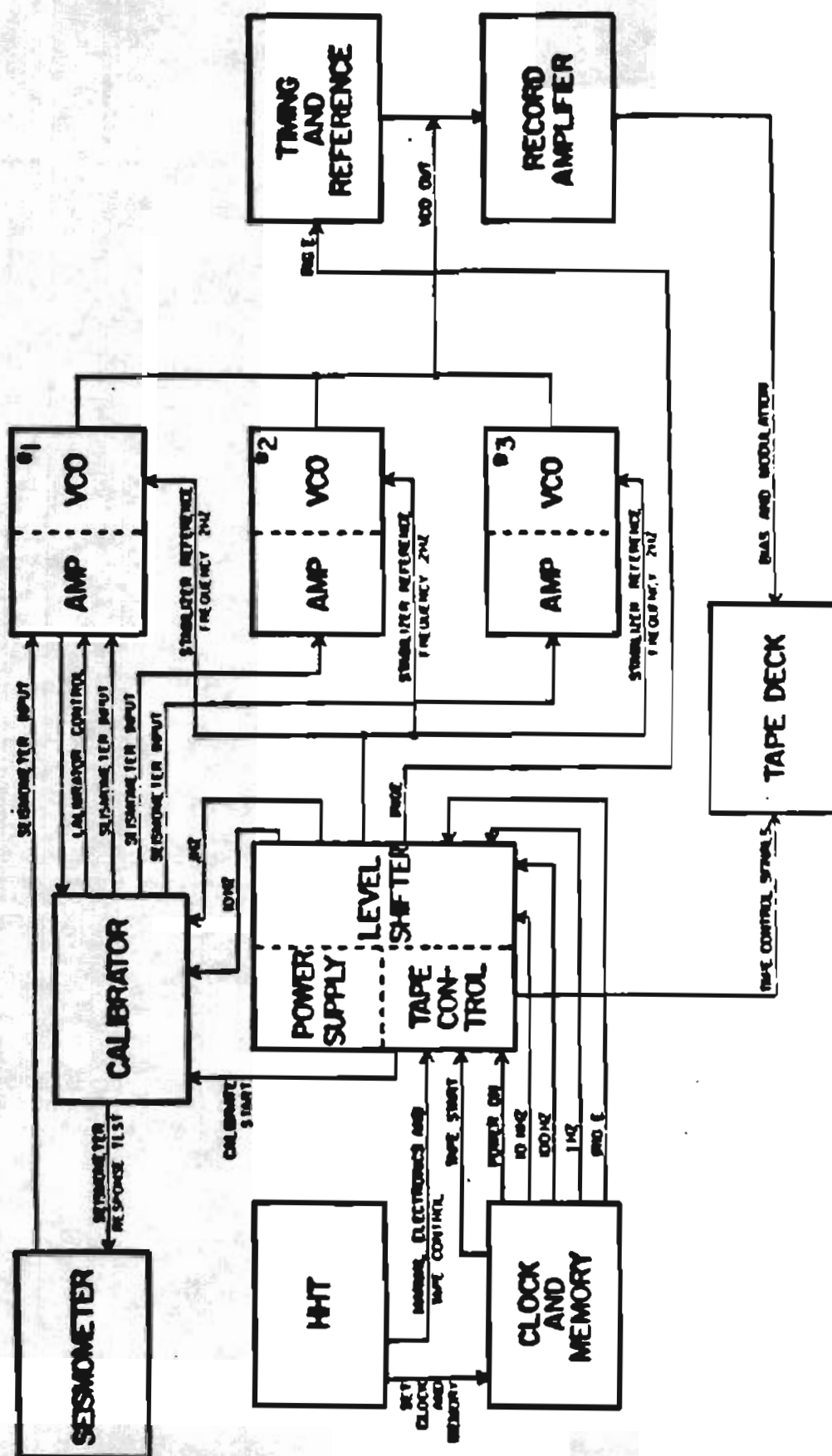


Figure 4. Schematic of U.S.G.S. cassette recorder system. (from Murphy, 1988)

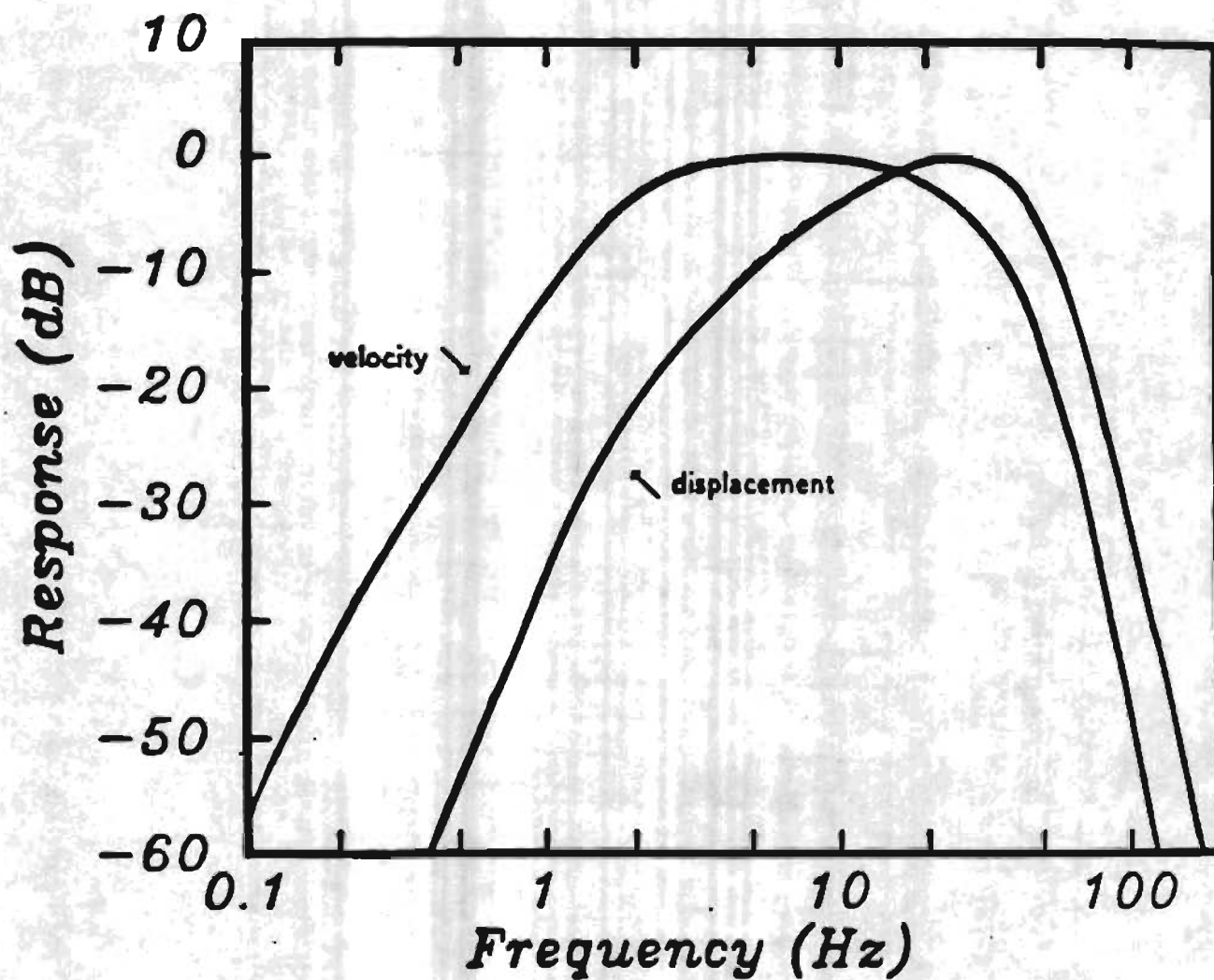


Figure 5. Theoretical velocity and displacement response curves for the U.S.G.S. cassette recorders. Maximum velocity and displacement responses peak at 6 Hz and 26 Hz respectively. (from Murphy, 1988)

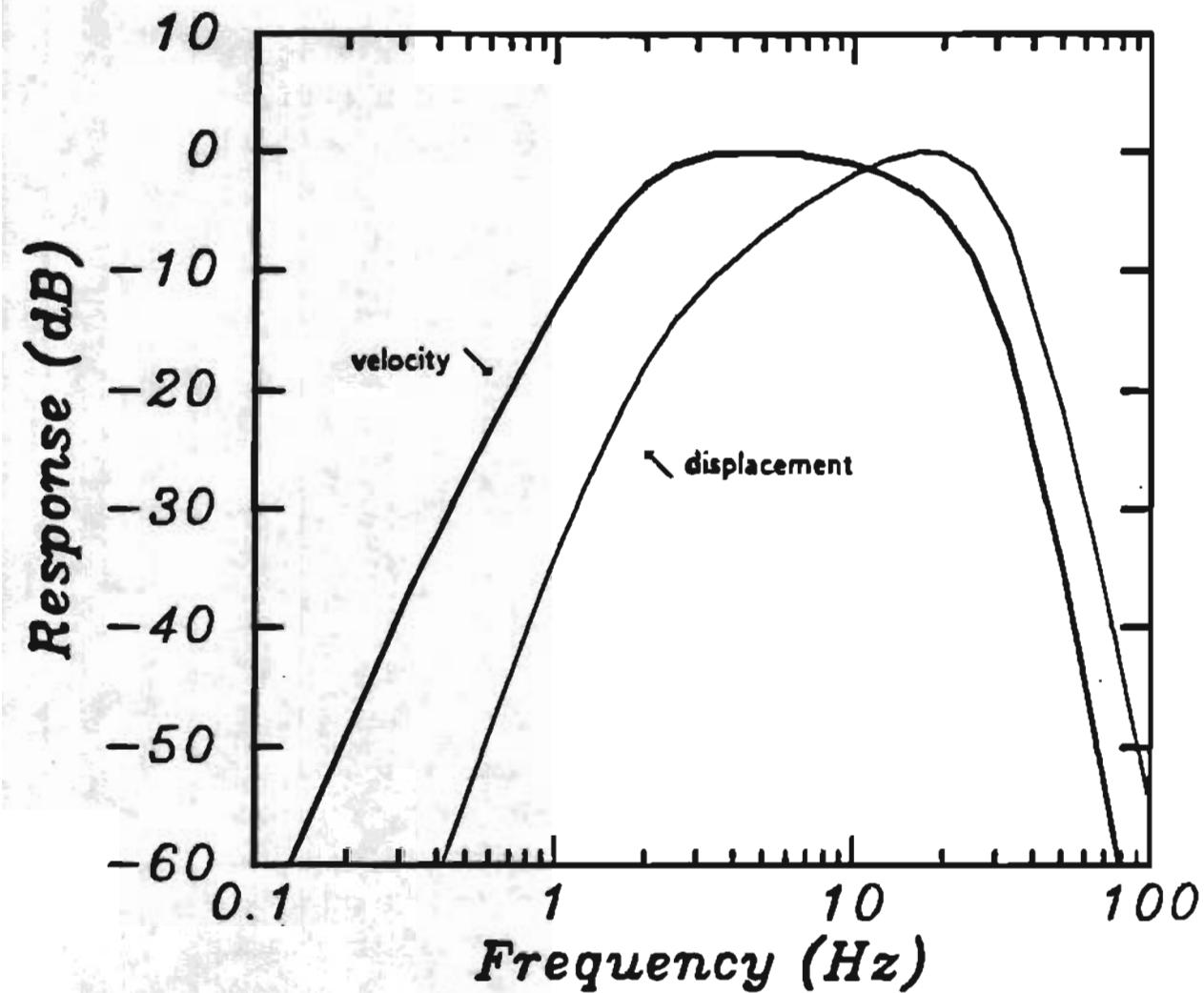


Figure 6. Theoretical velocity and displacement response curves for the EDA digital recorders. Maximum velocity and displacement responses peak at 5 Hz and 17 Hz respectively.

The instruments were deployed at pre-surveyed sites that were located using orthophotos, infrared photos, and topographic maps all at the scale of 1:63,360. Site locations have estimated errors of 50 m laterally and 25 m in elevation. From these maps latitude, longitude, and elevation are obtained for both shot and instrument locations (Appendix A). Shot-to-Instrument distance and azimuth and instrument amplifier gain settings are listed in Appendix B.

The analog data recorded on the USGS cassette recorders is converted to digital data using a mini-computer. Twenty seconds of data is digitized for each recorder per shot with a sampling interval of 5 ms. The digitizing start time is calculated as follows:

$$t_{start} = t_{shot} + t_{cd} + t_{min} + x_{ij}/v_{red}$$

where: t_{shot} is the shot time

t_{cd} is the recorder clock drift time at shot time

t_{min} is -2 s or -4 s depending on shot-station range

x_{ij} is the shotpoint(i) to recorder(j) range

v_{red} is the digitizing reducing velocity

USGS cassette recorders and GSC digital recorders were deployed at coincident sites (120, 140, 160, 180, 200) for the Alaska Range deployment. Coincident sites afforded comparison of wave forms and first break arrival times for the two instruments (Figure 7) (Beaudoin and others, 1989). A difference in timing of 31 ms was determined between the USGS and GSC recording and playback systems and was removed. An empirical amplitude scaling factor of 4.7 was calculated and applied to the GSC records. Ground motion can be calculated from recorded seismograms using the method of Dawson and Stauber (1986).

The GSC digital recorders were deployed at sites 541-560 for the Fairbanks North deployment and the -31 ms timing correction was applied to the GSC traces.

References

- Barry, K.M., Cravers, D.A., and Kneale, C.W., 1975, Recommended standards for digital tape formats: *Geophysics*, v. 40, p. 344-352.
- Beaudoin, B.C., Perkins, G., Fuis, G.S., and Luetgert, J.H., 1989, Data report for the 1987 seismic refraction survey: Alaska Range and Fairbanks South Deployments: U.S. Geological Survey Open-File Report 89-321, 114 p.
- Dawson, P.B., and Stauber, D.A., 1986, Data report for a three-dimensional high-resolution P-velocity structure investigation of the Summit Caldera of Newberry Volcano, Oregon, using seismic tomography: U.S. Geological Survey Open-File Report 86-352, 121p.
- Dover, J.H., 1990, Geology of east-central Alaska: U.S. Geological Survey Open-File Report 90-289, 91 p.
- Dusel-Bacon, C., and Aleinikoff, J.N., 1985, Petrology and tectonic significance of augen gneiss from a belt of Mississippian granitoids in the Yukon-Tanana terrane, east-central Alaska: *Geological Society of America, Bulletin*, v.96, p.411-425.
- Gabrielse, H., 1985, Major dextral transcurrent displacements along the Northern Rocky Mountain Trench and related lineaments in north-central British Columbia: *Geological Society of America, Bulletin*, v.96, p.1-14.
- Jones, D.L., Silberling, N.J., Coney, P.J., Plafker, G., 1987, Lithotectonic terrane map of Alaska (west of 141st meridian): U.S. Geological Survey Miscellaneous Field Studies Map, MF-1874, scale 1:2,500,000.
- Mortensen, J.K., and Jilson, G.A., 1985, Evolution of the Yukon-Tanana terrane: Evidence from southeastern Yukon Territory: *Geology*, v.13, p.806-810.
- Murphy, J.M., 1988, USGS FM cassette seismic refraction recording system: U.S. Geological Survey Open-File Report 88-570, 36 p.

- Nokleberg, W.J., Jones, D.L., and Silberling, N.J., 1985, Origin and tectonic evolution of the Maclaren and Wrangellia terranes, eastern Alaska Range, Alaska: Geological Society of America, Bulletin, v.96, p.1251-1270.
- Nokleberg, W.J., Foster, H.L., and Aleinikoff, J.N., 1989, Geology of northern Copper River Basin, eastern Alaska Range, and southern Yukon-Tanana Basin, southern and east-central Alaska, in Nokleberg, W.J., and Fisher, M.A., eds., Alaskan Geological and Geophysical Transect: 28th International Geological Congress Field Trip Guidebook T104, American Geophysical Union, Washington, D.C., p.34-63.
- Page, R.A., Plafker, G., Fuis, G.S., Nokleberg, W.J., Ambos, E.L., Mooney, W.D., and Campbell, D.L., 1986, Accretion and subduction tectonics in the Chugach Mountains and Copper River Basin, Alaska: Initial results of the Trans-Alaska Crustal Transect: *Geology*, v.14, p.501-505.
- Patton, W.W., Jr., Box, S.E., Moll-Stallcup, E.J., and Miller, T.P., 1989, Geology of west-central Alaska: U.S. Geological Survey Open-File Report 89-554, 41p.
- Stanley, W.D., Labson, V.F., Nokleberg, W.J., Csejtey, B., Jr., and Fisher, M.A., 1990, The Denali fault system and Alaska Range of Alaska: evidence for underplated Mesozoic flysch from magnetotelluric soundings: Geological Society of America, Bulletin, v.102, p. 160-173.
- Templeman-Kluit, D.J., 1979, Transported cataclasite, ophiolite, and granodiorite in Yukon: evidence of arc-continent collision: Geological Survey of Canada Paper 79-14, 27p.
- Weber, F., 1990, Correlations across the western part of the Tintina fault system and their implications for displacement history: Geological Association of Canada, Program with Abstracts, v.15, p.A138.

Table 1

Shot Number	Shot Point	Shot Size(kg)	Efficiency Factor(f_s)
29	69	1814	0.040
30	62	907	0.020
31	54	2268	0.007
32	57	1814	0.008
33	65	1814	0.018
34	67	1608	0.018
35	61	454	0.800
36	70	1814	0.012
37	64	454	0.014
38	66	907	1.500
39	60	907	0.200
40	59	1608	0.040
42	74	1608	0.008
44	61	136	0.080
45	59	136	0.500
46	60	136	0.180
47	60	136	0.400
48	59	136	0.400
49	61	136	0.120

SE NW

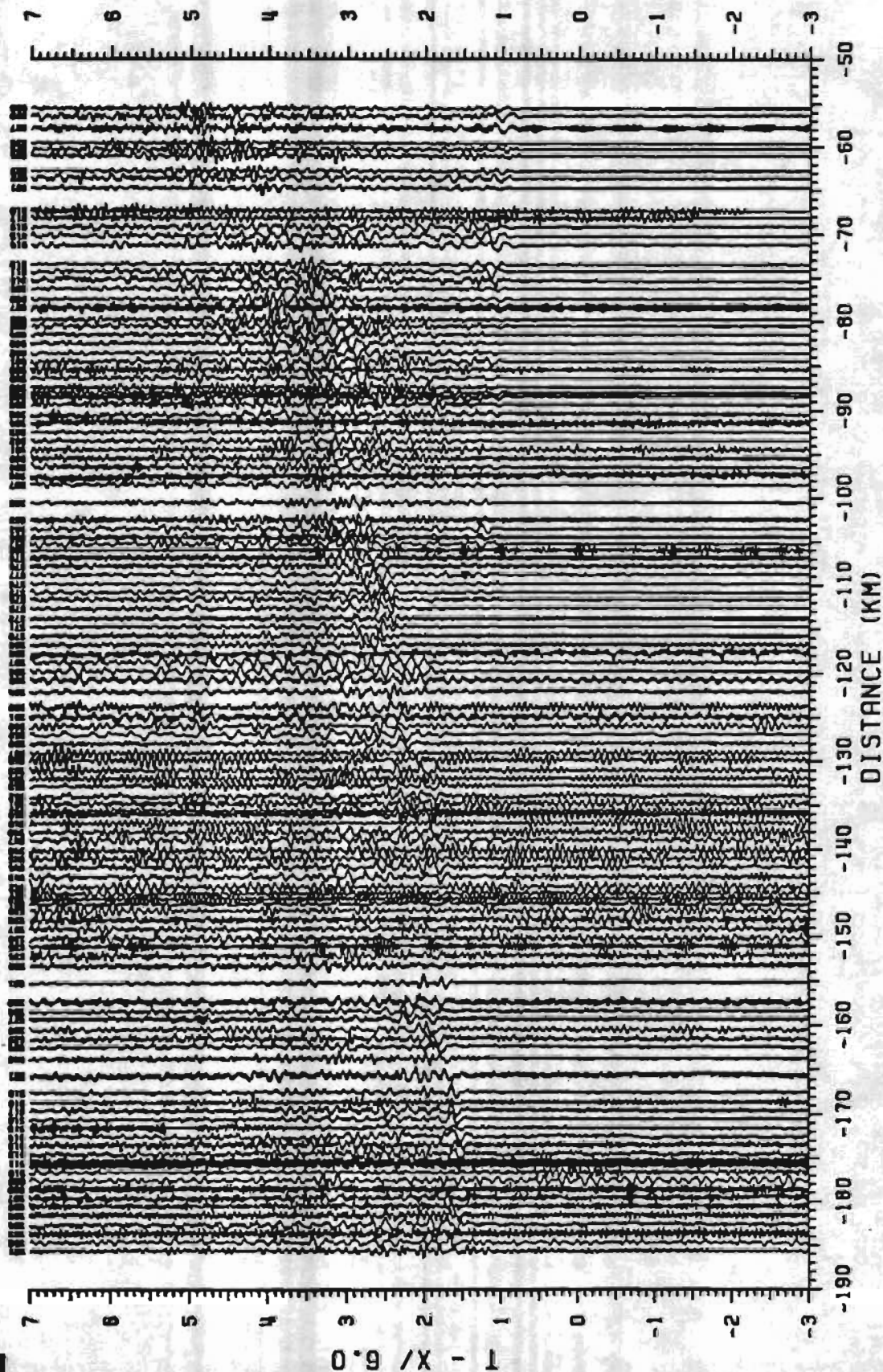


Figure 8: Fairbanks North, Shot 29, SP 69, Normalized

NW

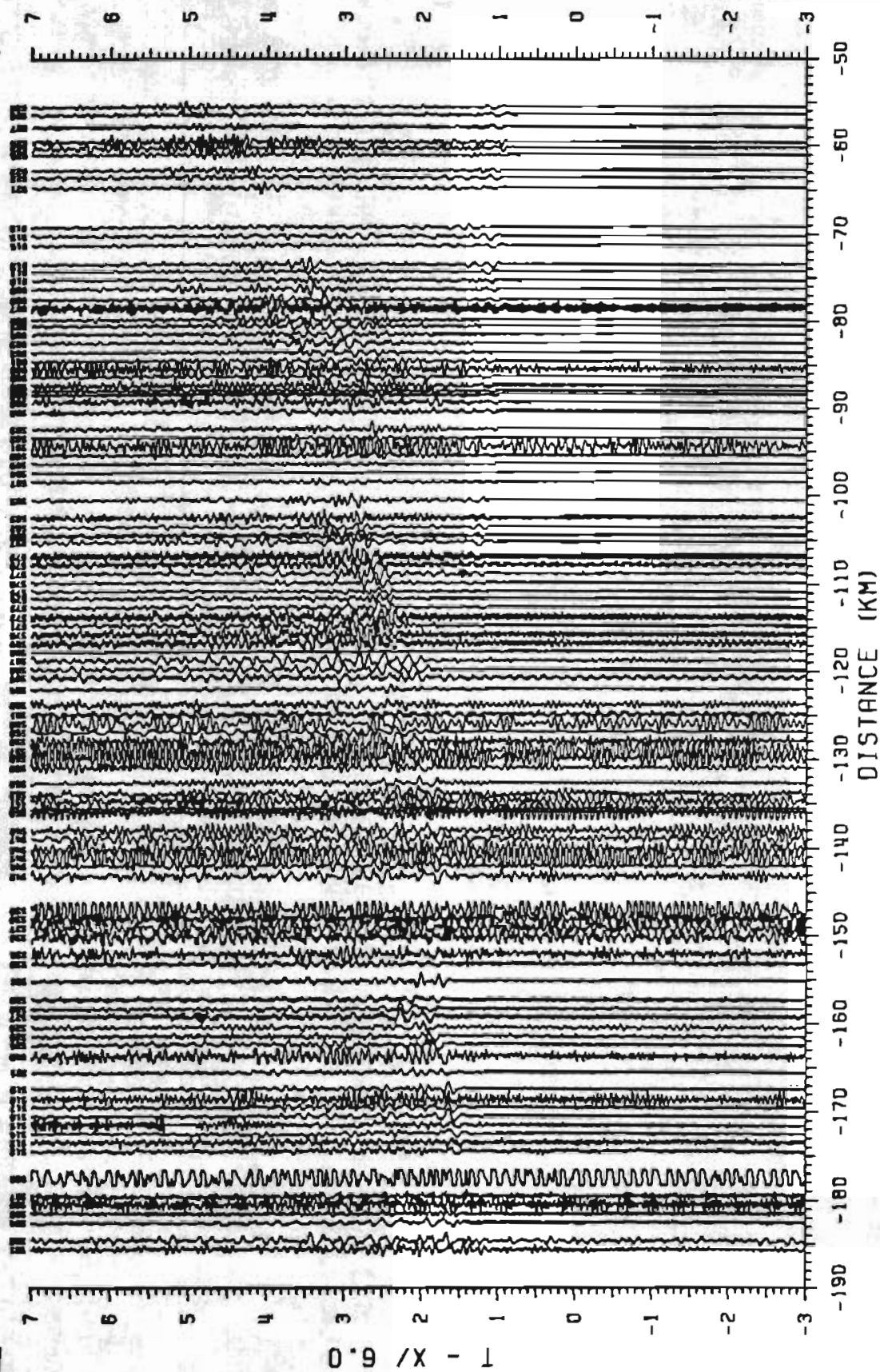


Figure 9: Fairbanks North, Shot 29, SP 69, True-Amplitude

SE

NW

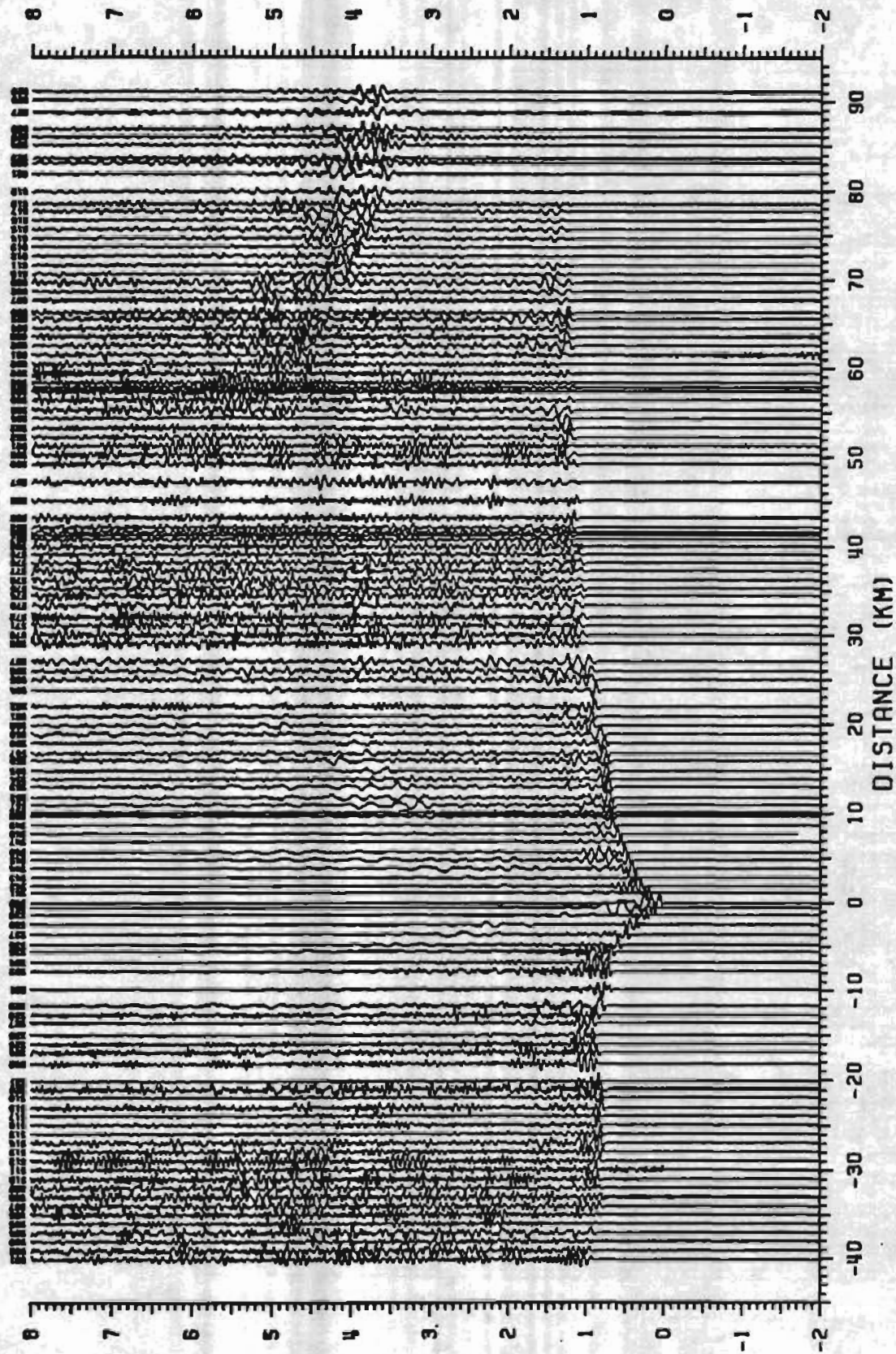


Figure 10: Fairbanks North, Shot 30, SP 62, Normalized

NW

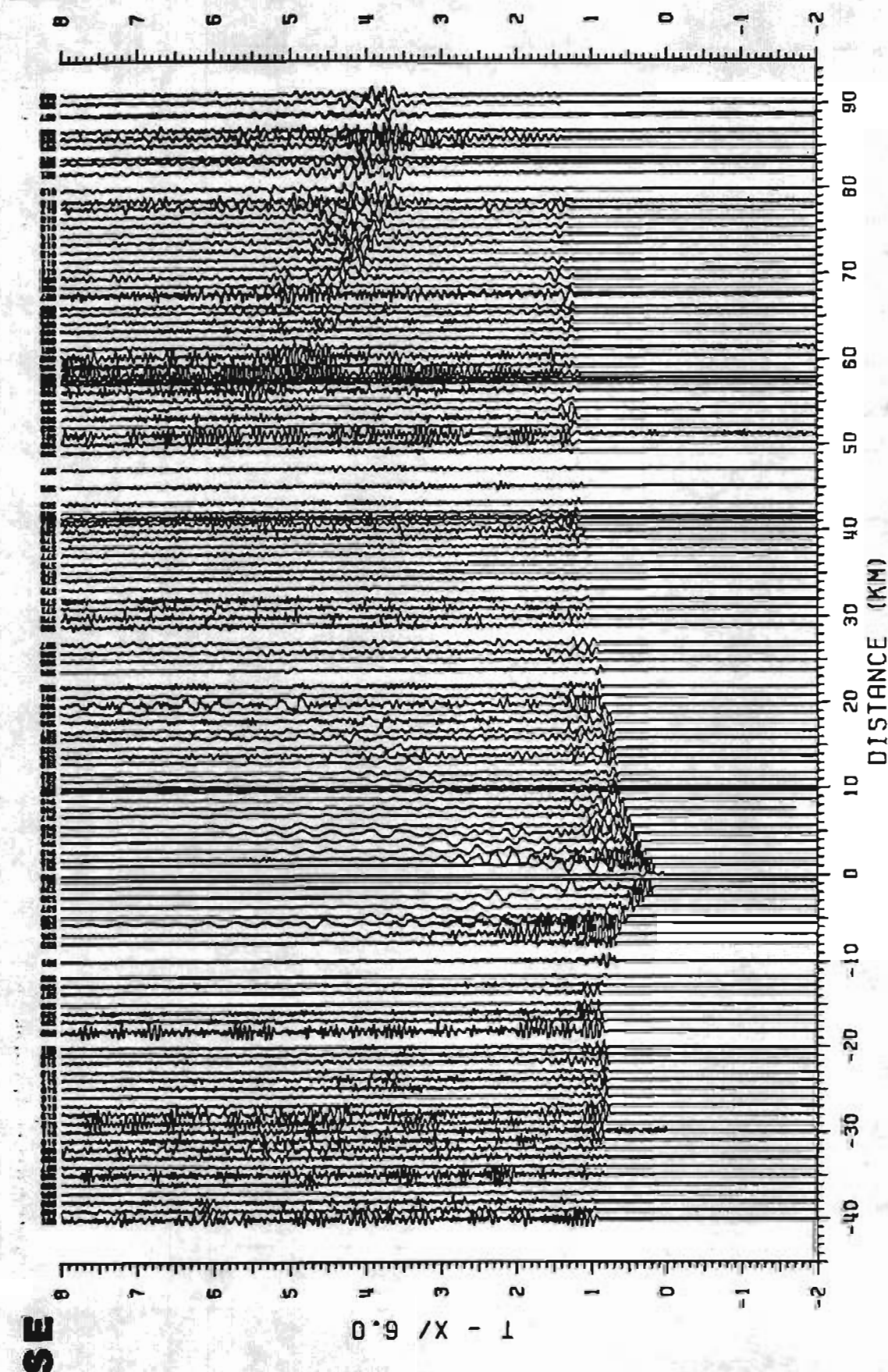


Figure 11: Fairbanks North, Shot 30, SP 62, True-Amplitude

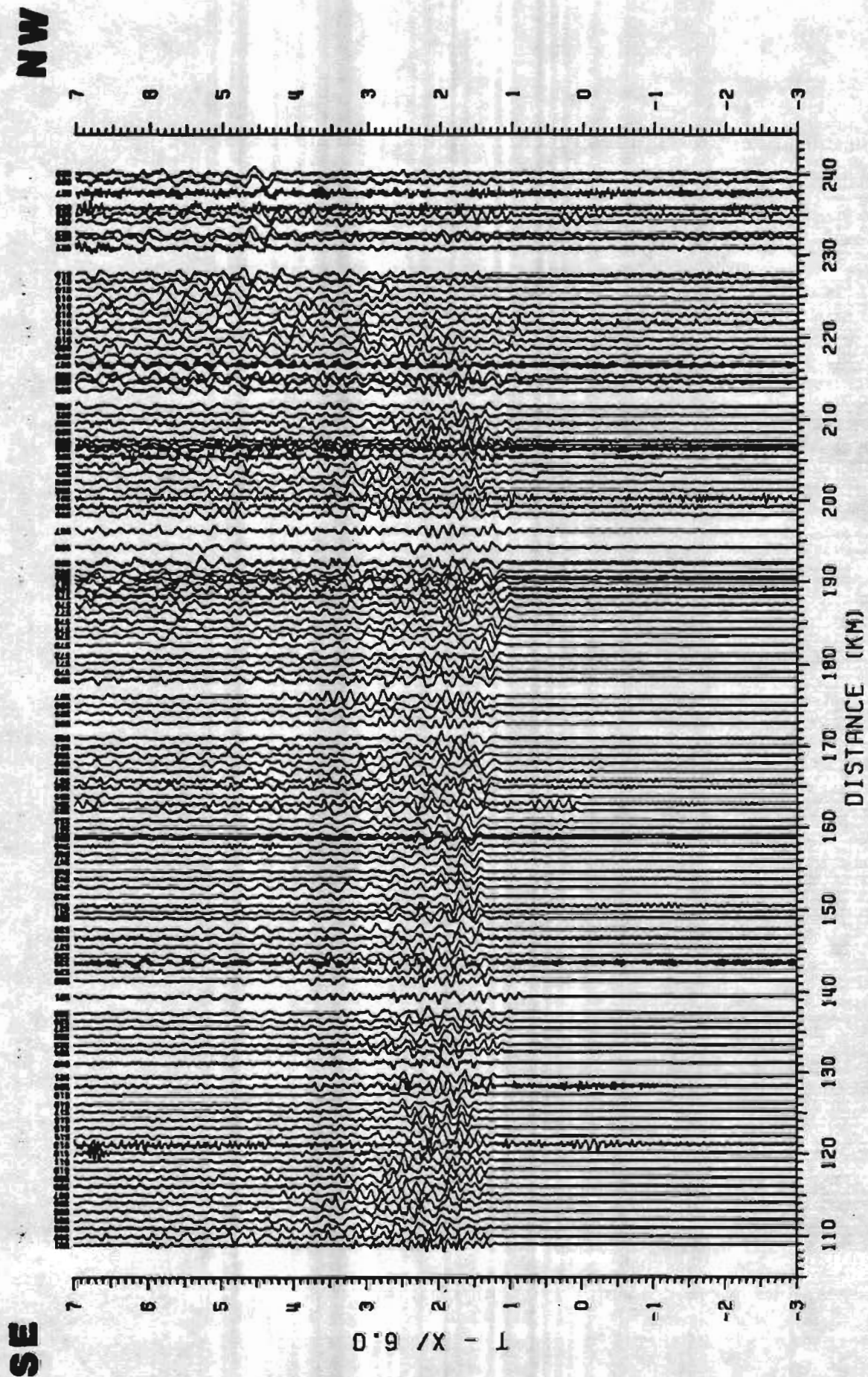


Figure 12: Fairbanks North, Shot 31, SP 54, Normalized

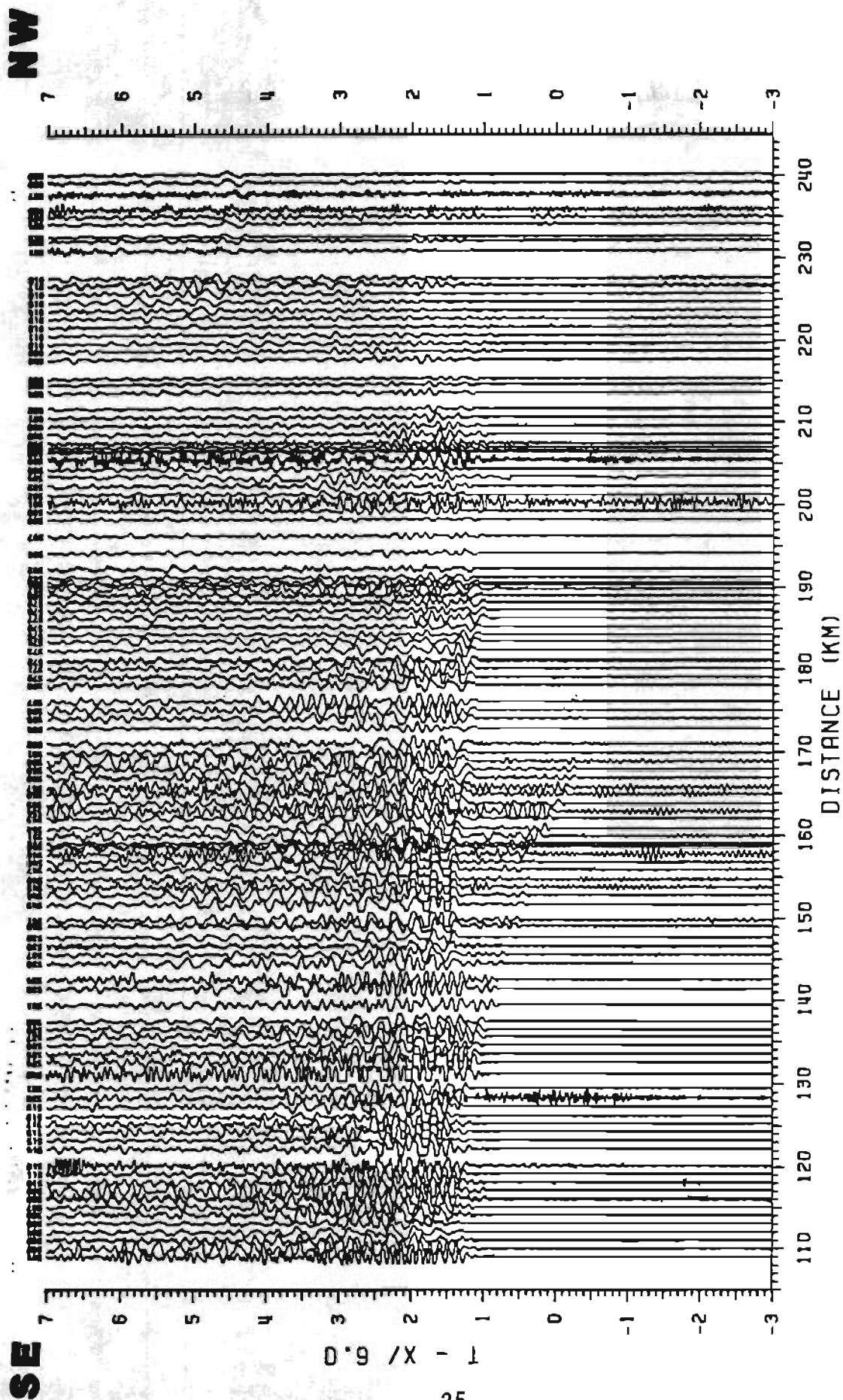


Figure 13: Fairbanks North, Shot 31, SP 54, True-Amplitude

SE NW

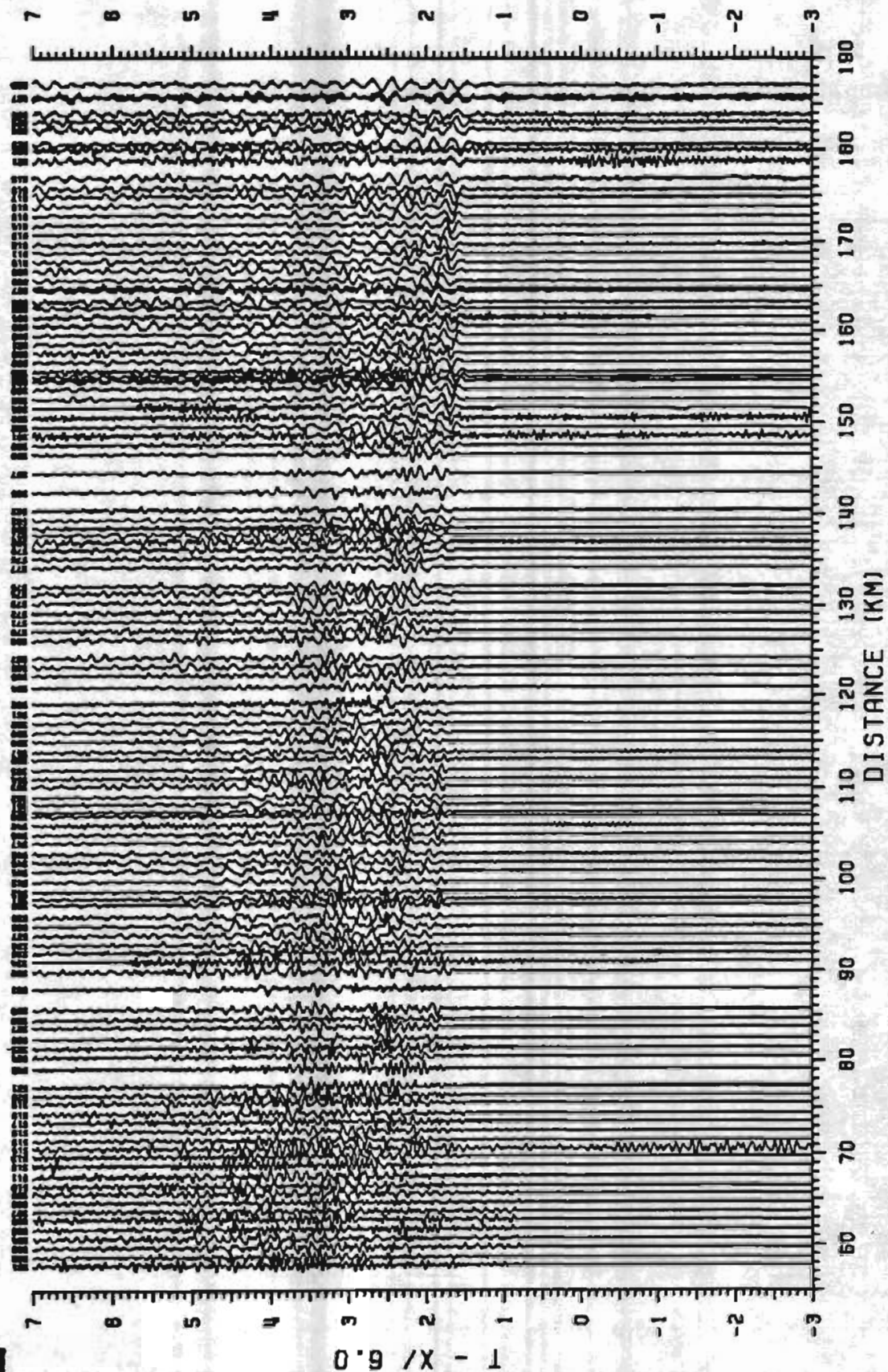


Figure 14: Fairbanks North, Shot 32, SP 57, Normalized

NW

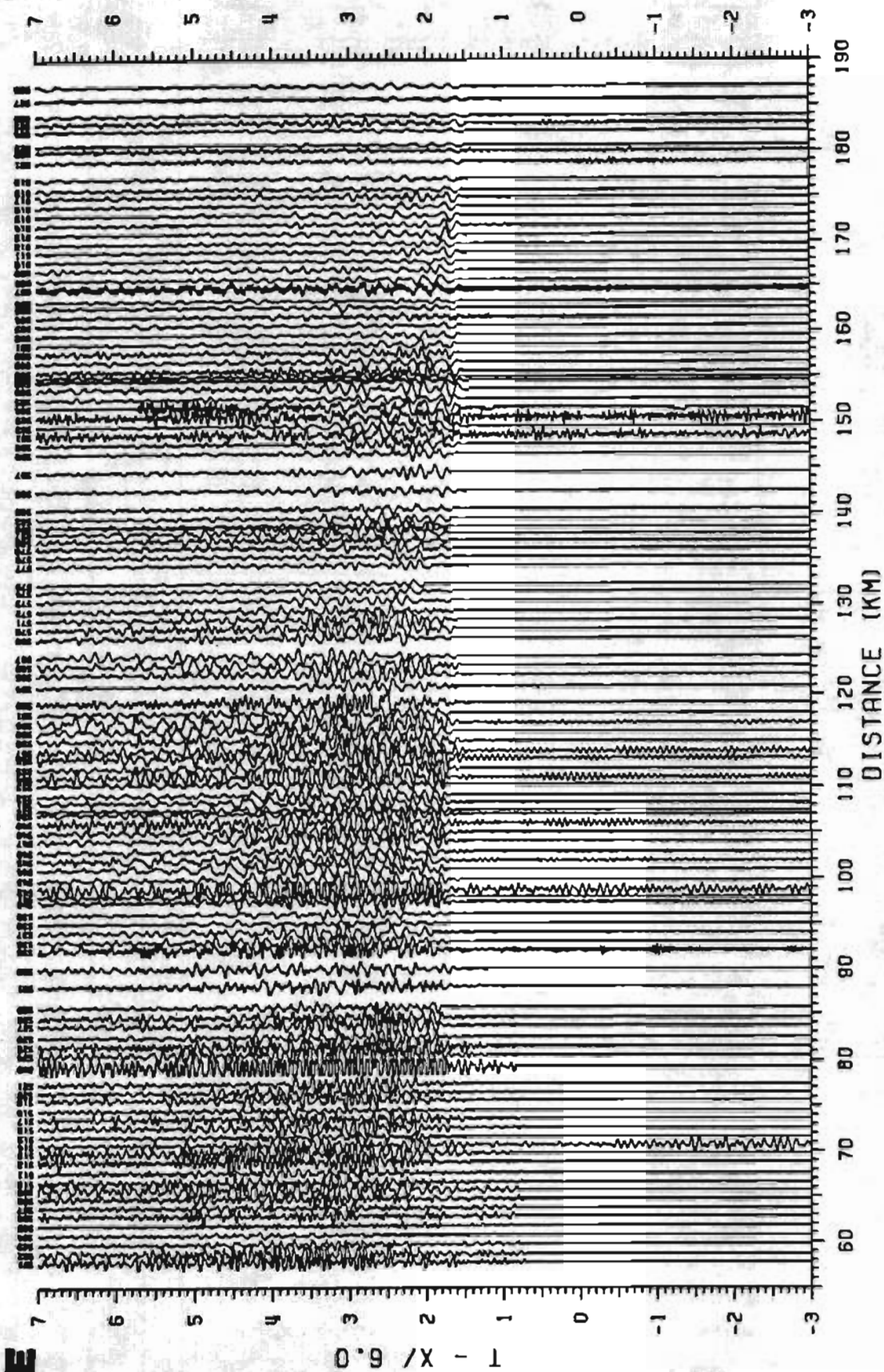


Figure 15: Fairbanks North, Shot 32, SP 57, True-Amplitude

SE

NW

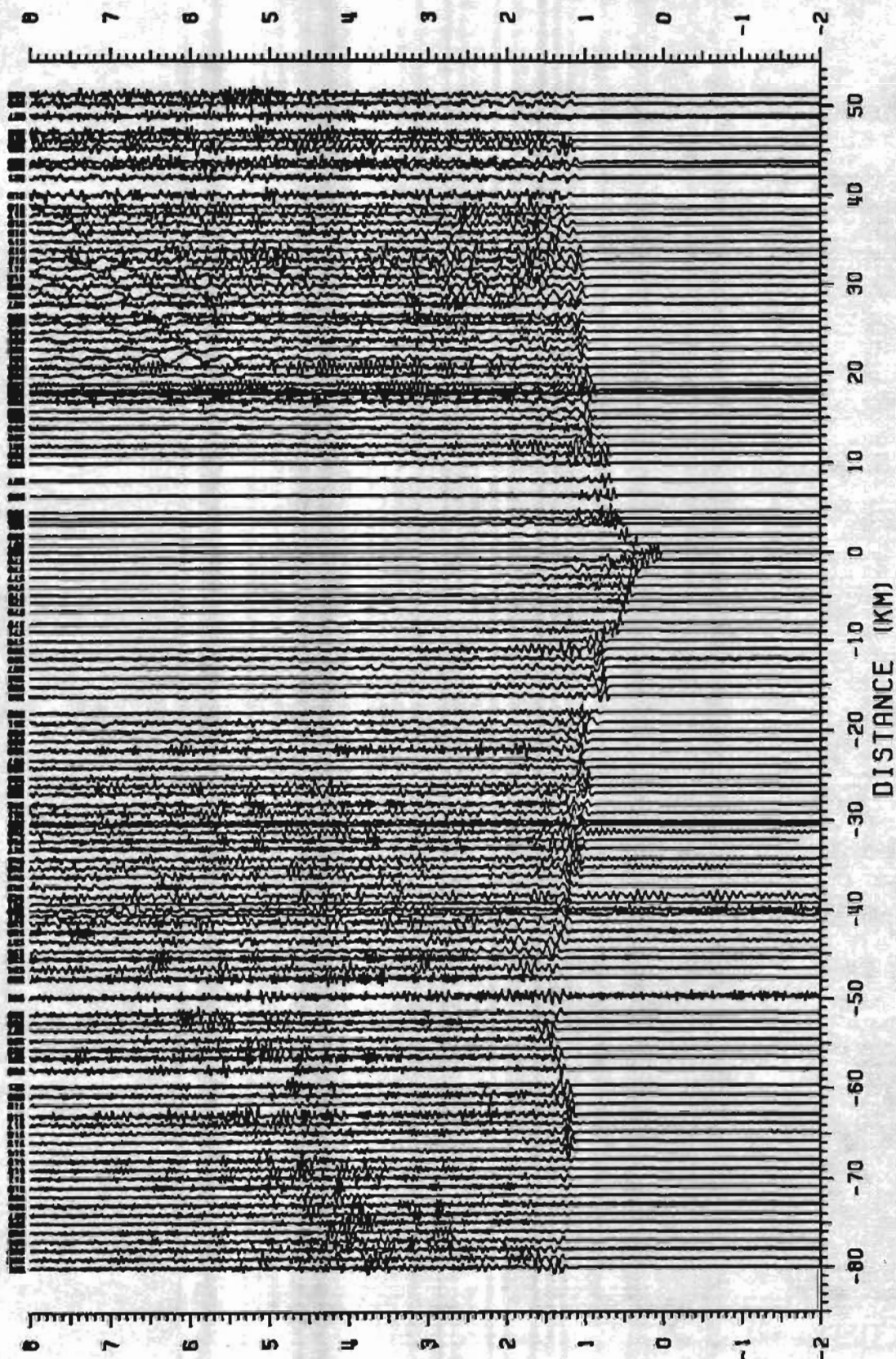


Figure 16: Fairbanks North, Shot 33, SP 65, Normalized

SE

0.9 / X - 1

SE NW

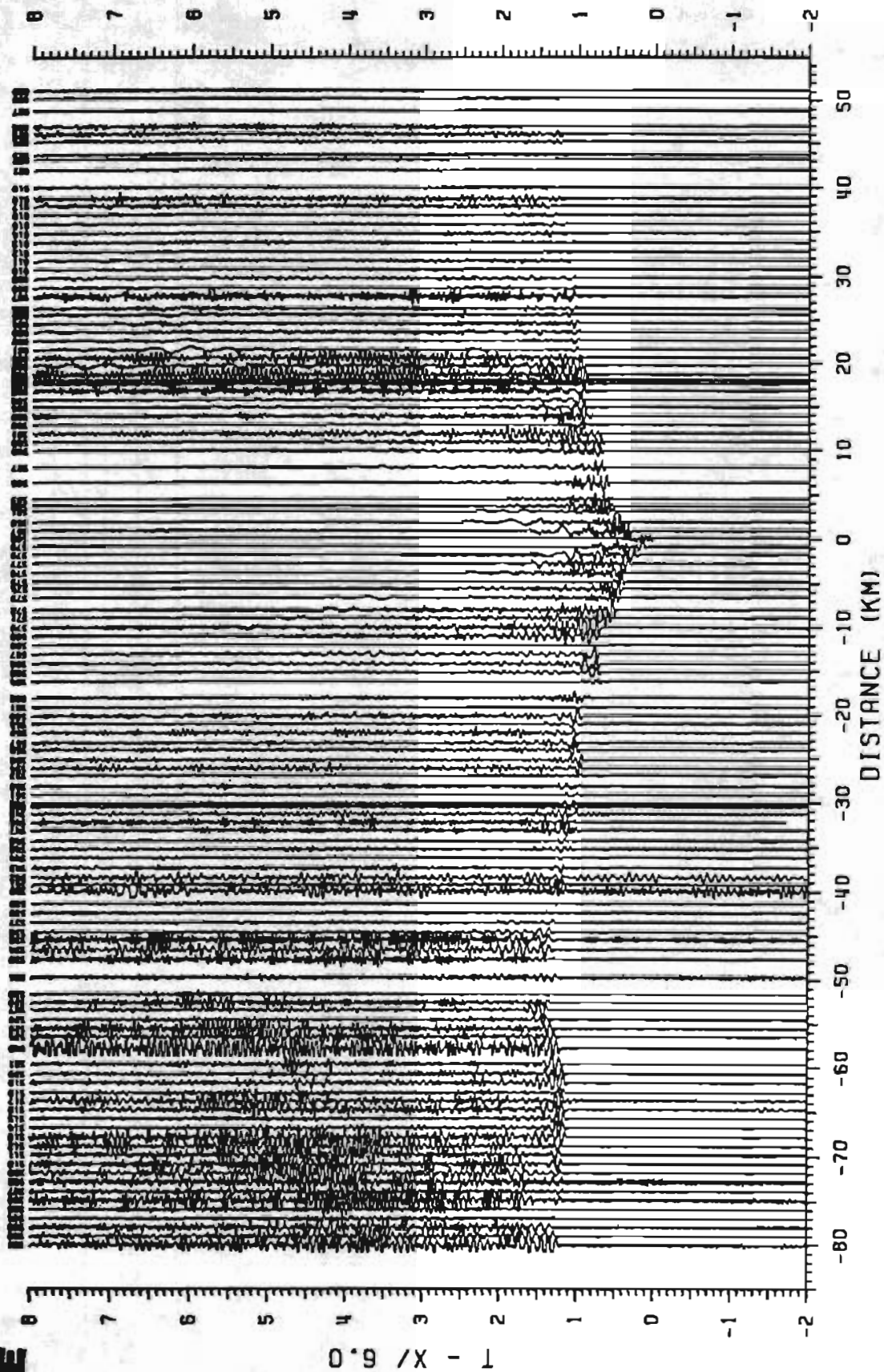


Figure 17: Fairbanks North, Shot 33, SP 65, True-Amplitude

NW

SE

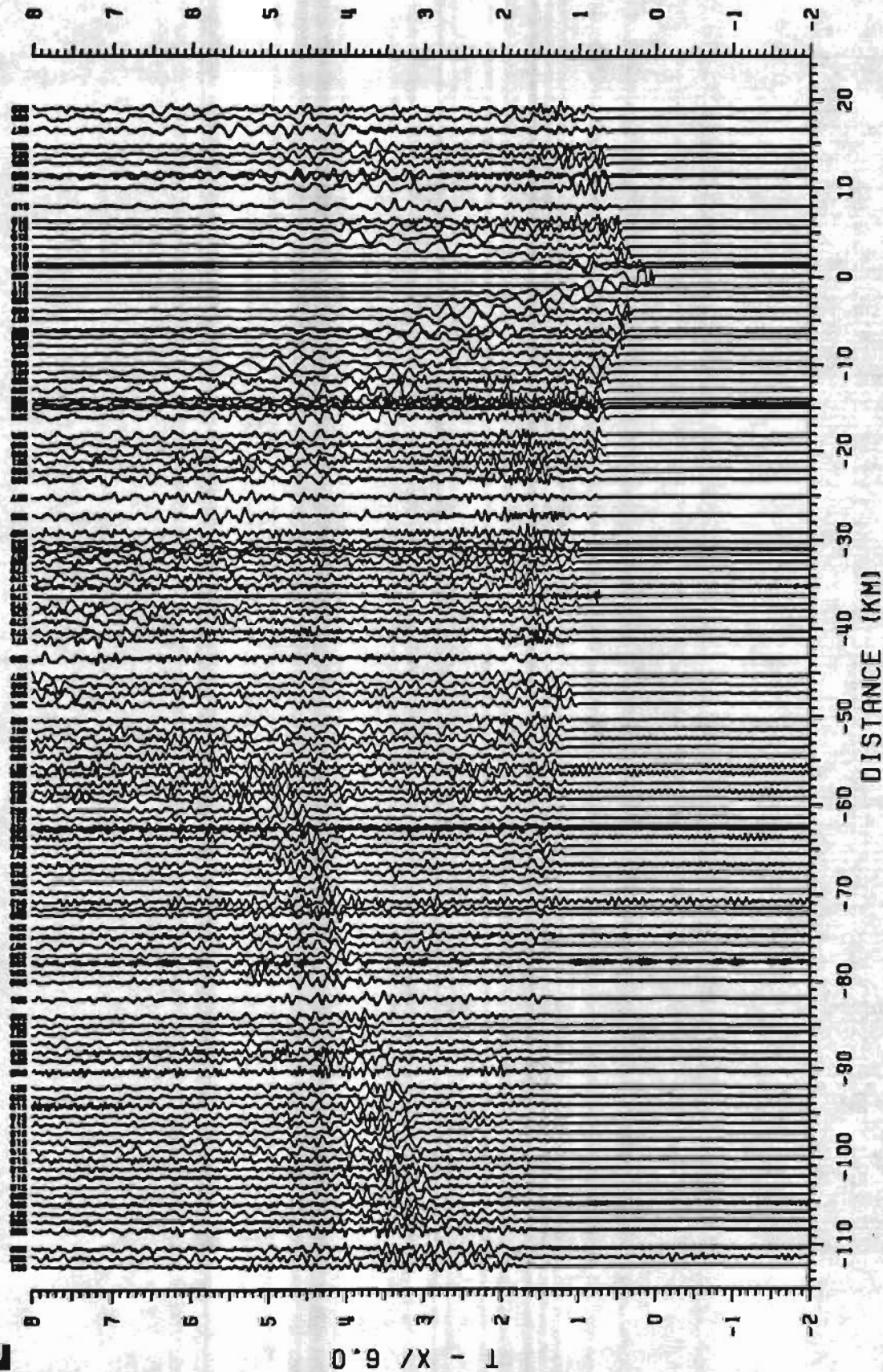


Figure 18: Fairbanks North, Shot 34, SP 67, Normalized

NW

SE

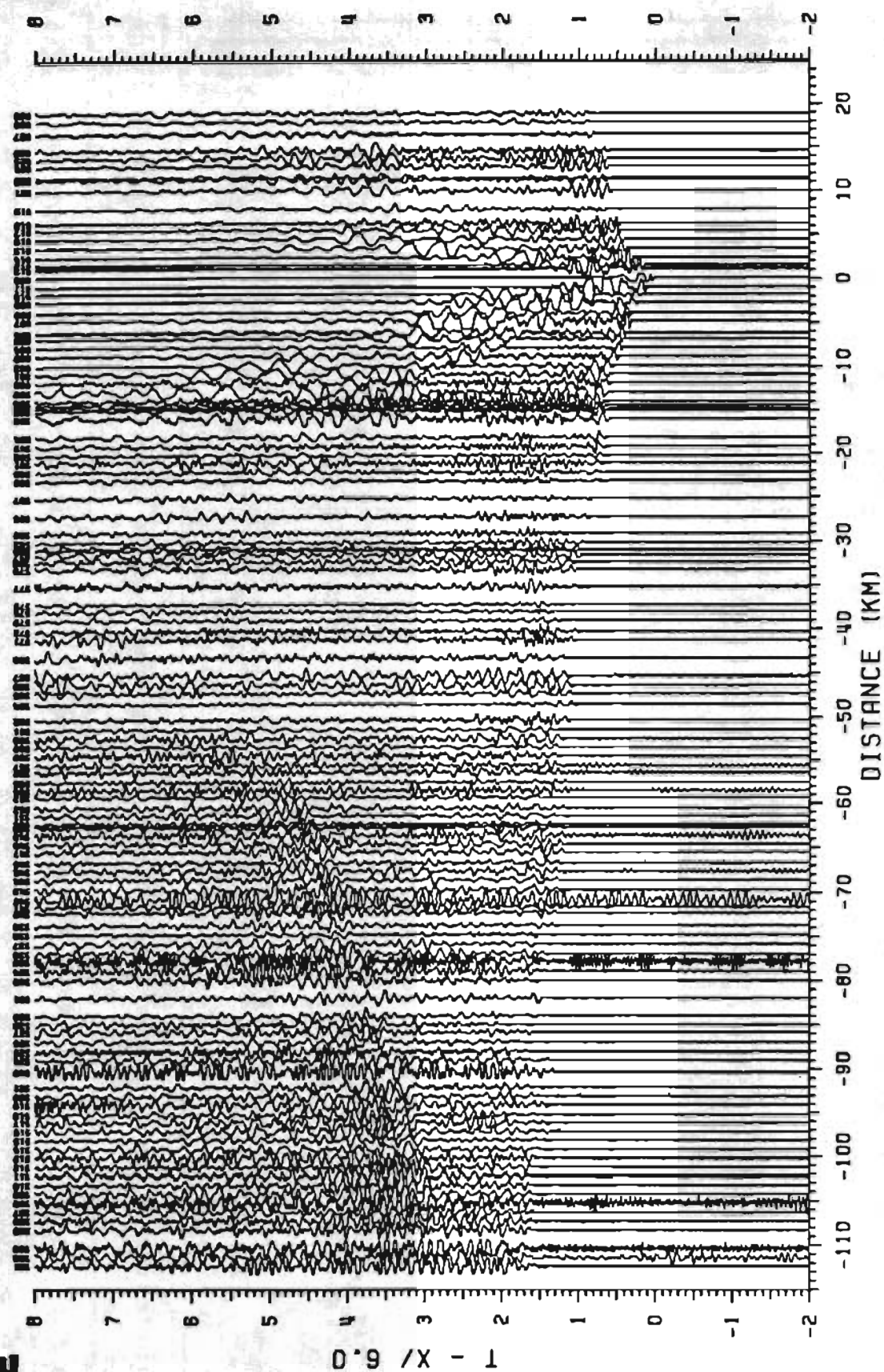


Figure 19: Fairbanks North, Shot 34, SP 67, True-Amplitude

NW

SE

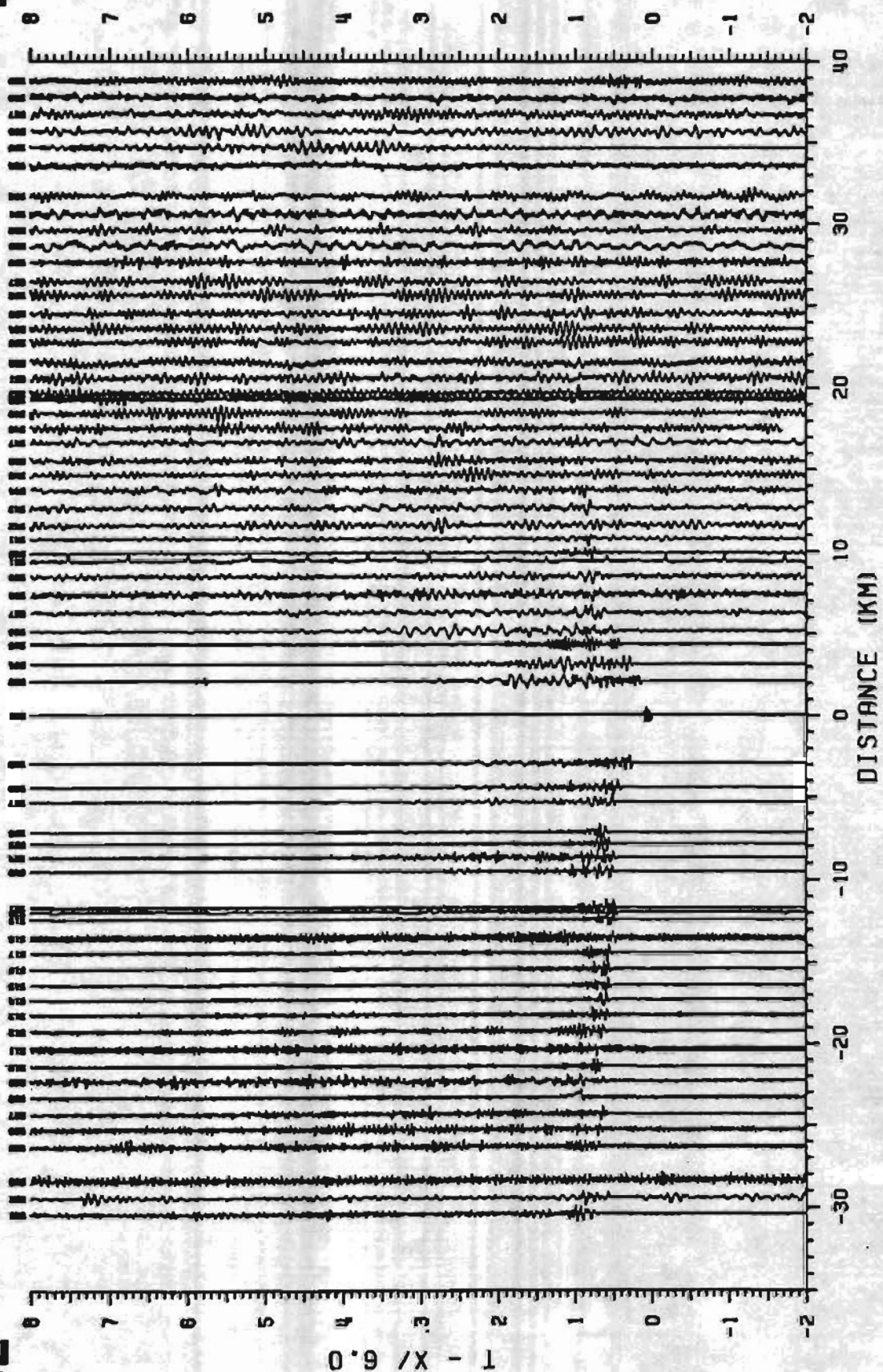


Figure 20: Fairbanks North, Shot 35, SP 61, Normalized

SE

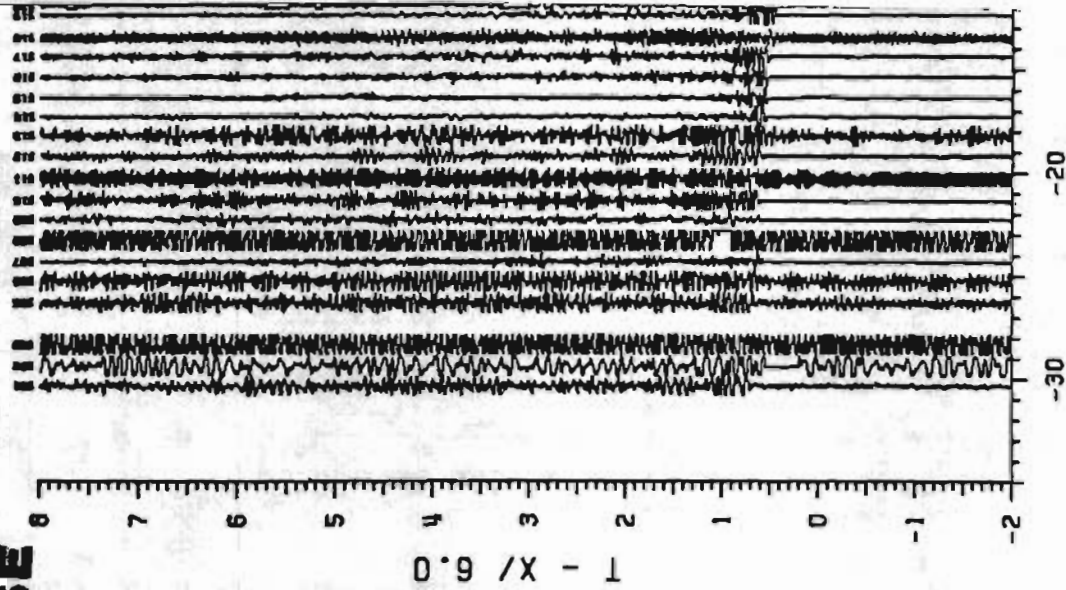


Figure 21: Fa

SE

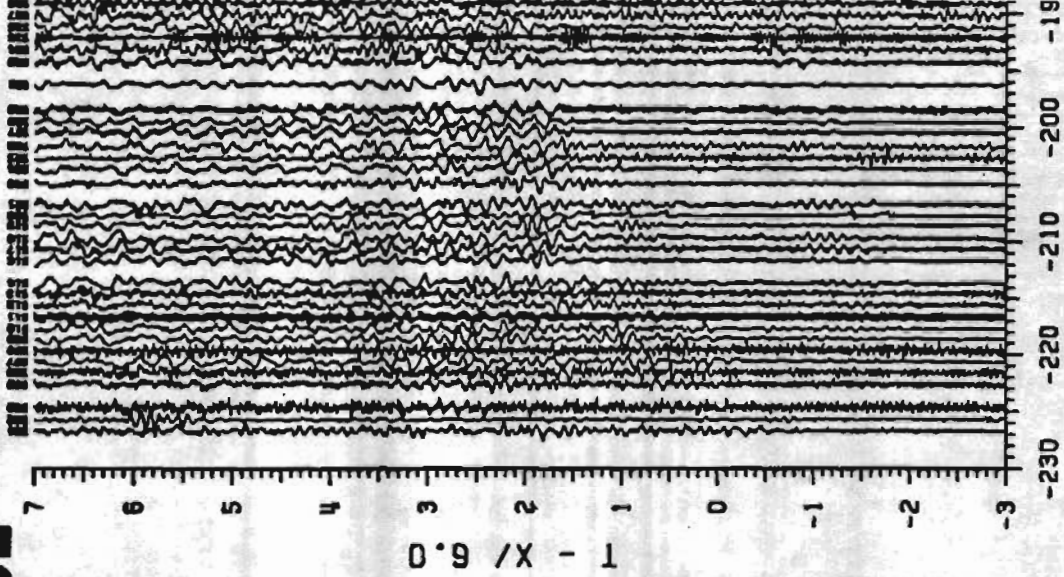


Figure 22:

NW

SE

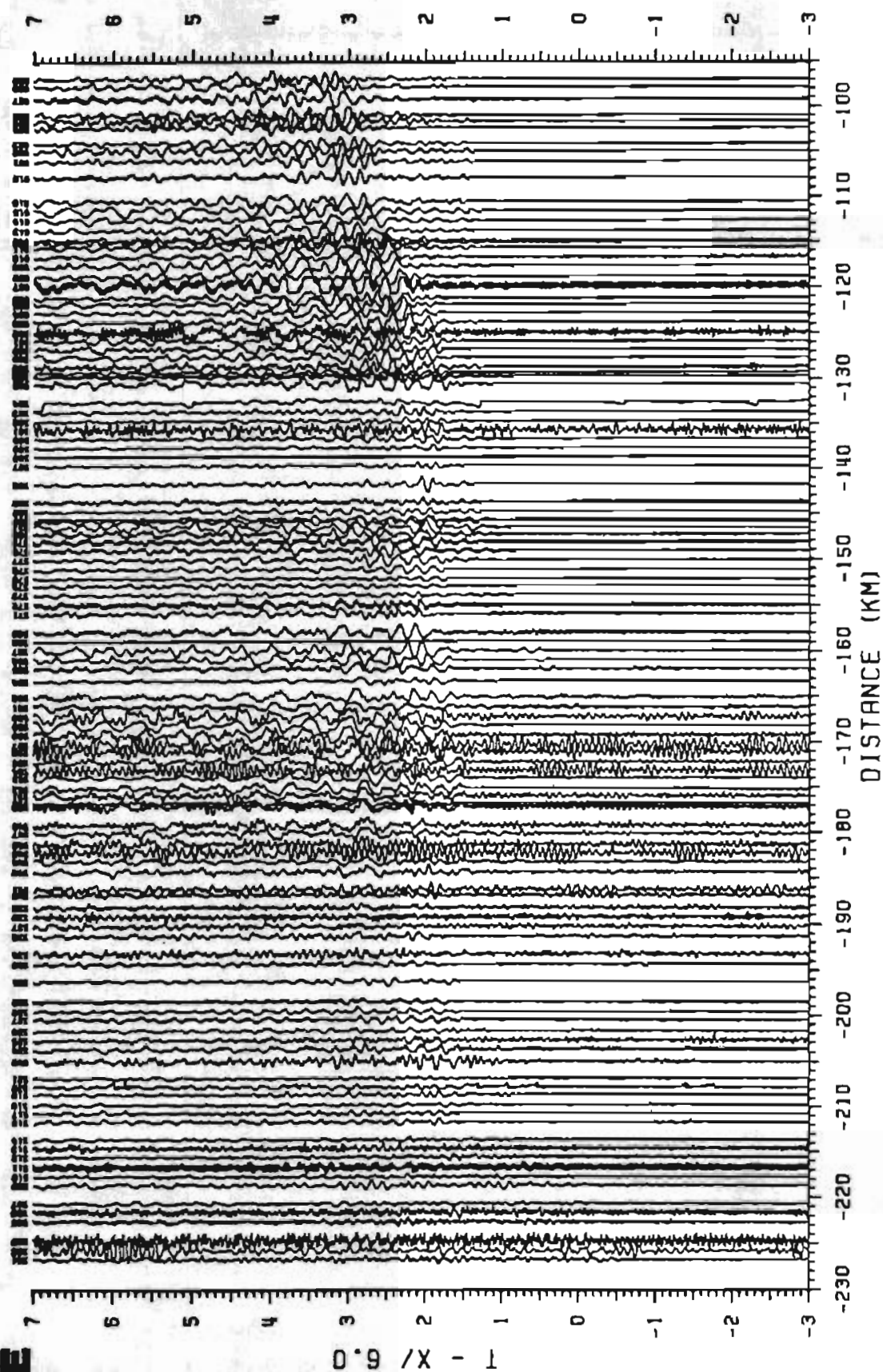


Figure 23: Fairbanks North, Shot 36, SP 70, True-Amplitude

NW

SE

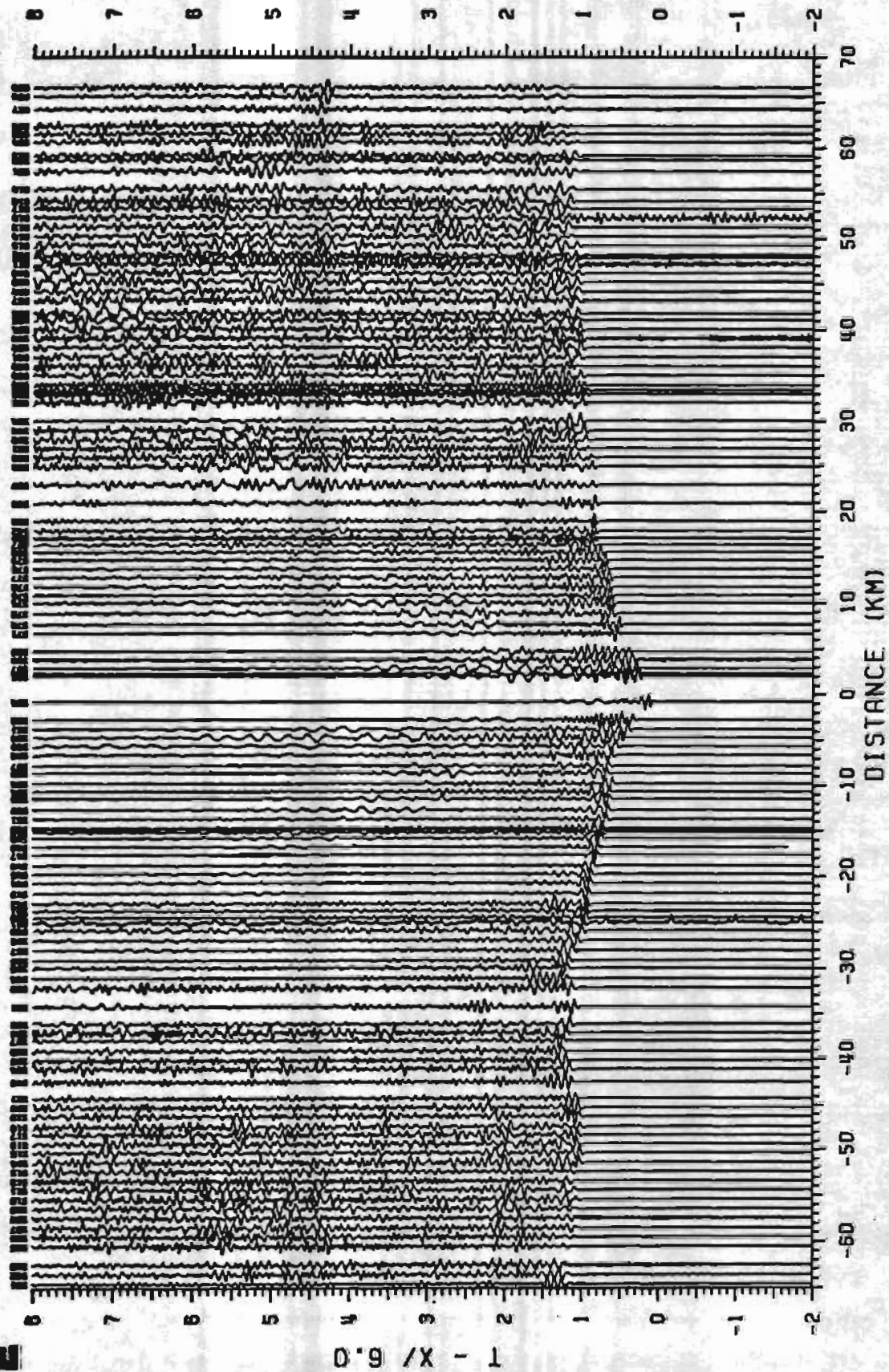


Figure 24: Fairbanks North, Shot 37, SP 64, Normalized

NW

SE

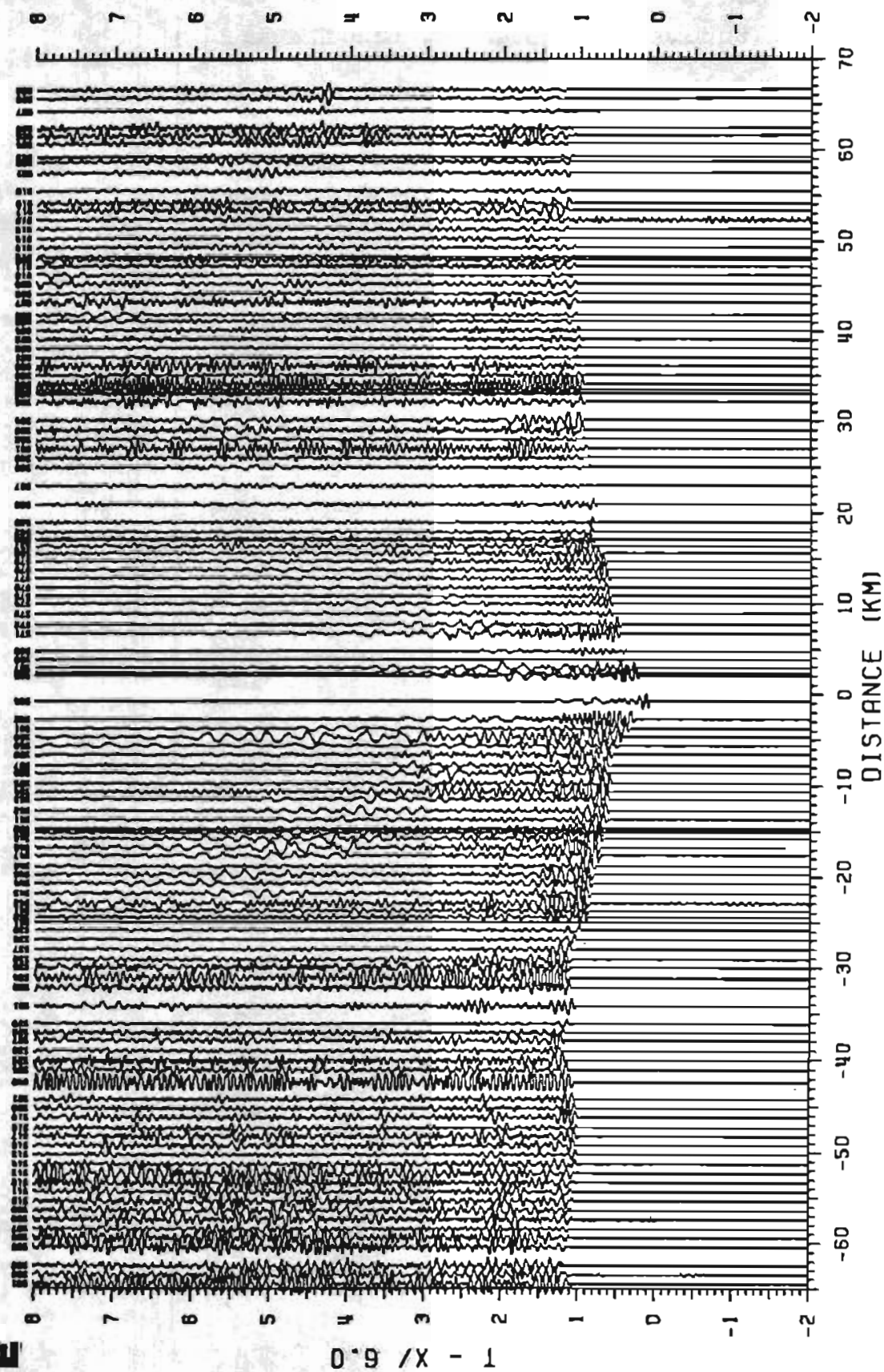


Figure 25: Fairbanks North, Shot 37, SP 64, True-Amplitude

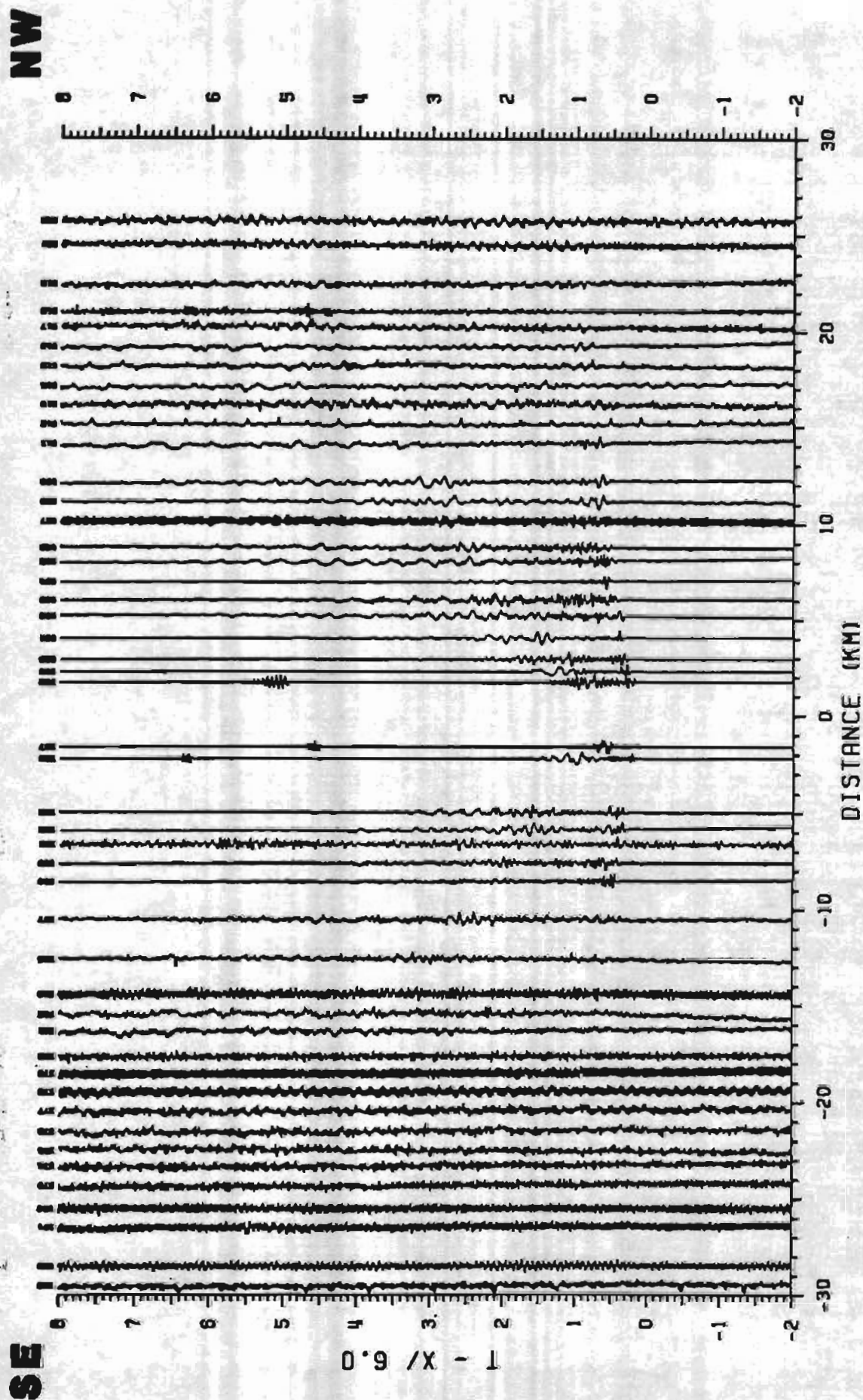


Figure 26: Fairbanks North, Shot 38, SP 66, Normalized

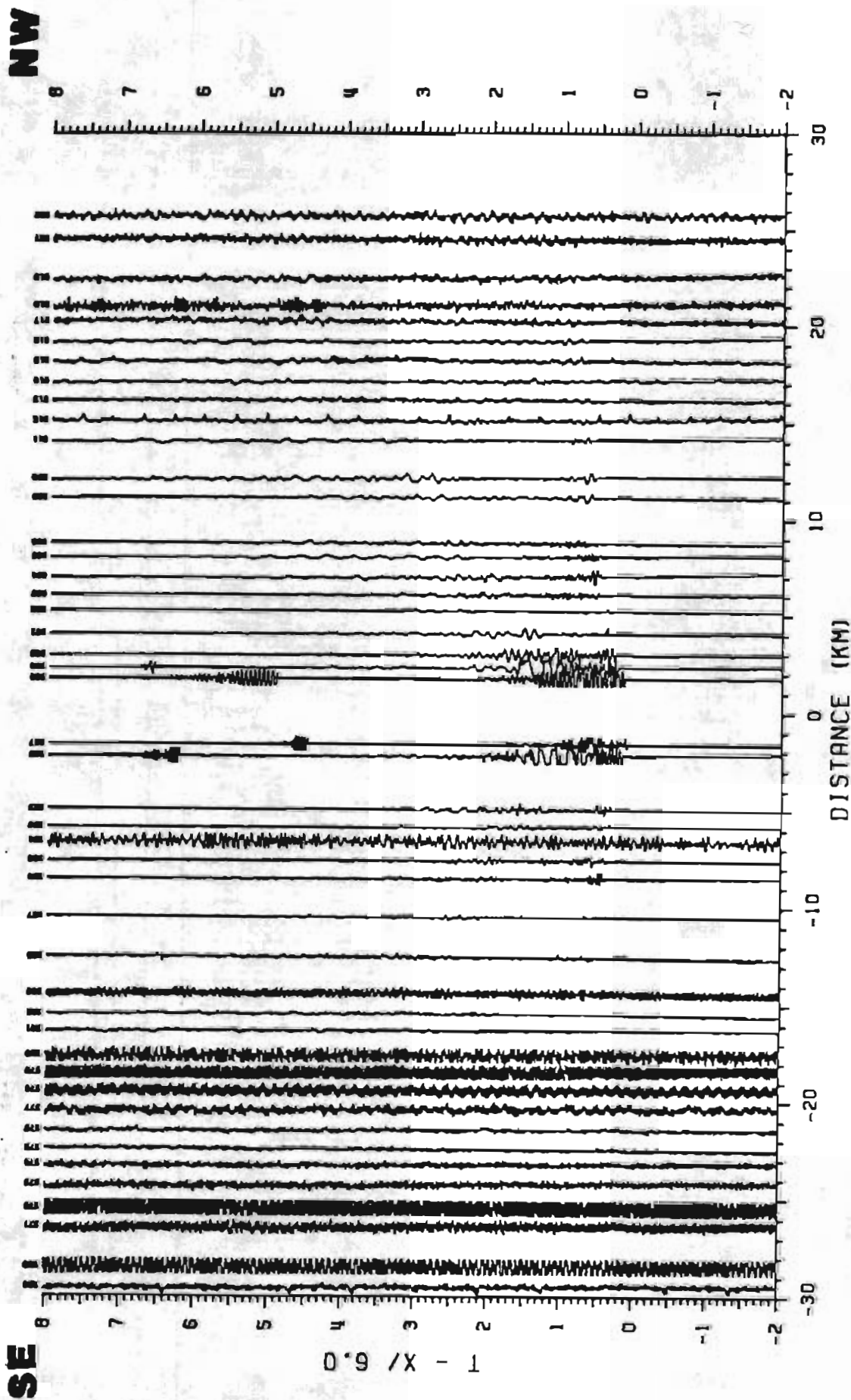


Figure 27: Fairbanks North, Shot 38, SP 66, True-Amplitude

SE

NW

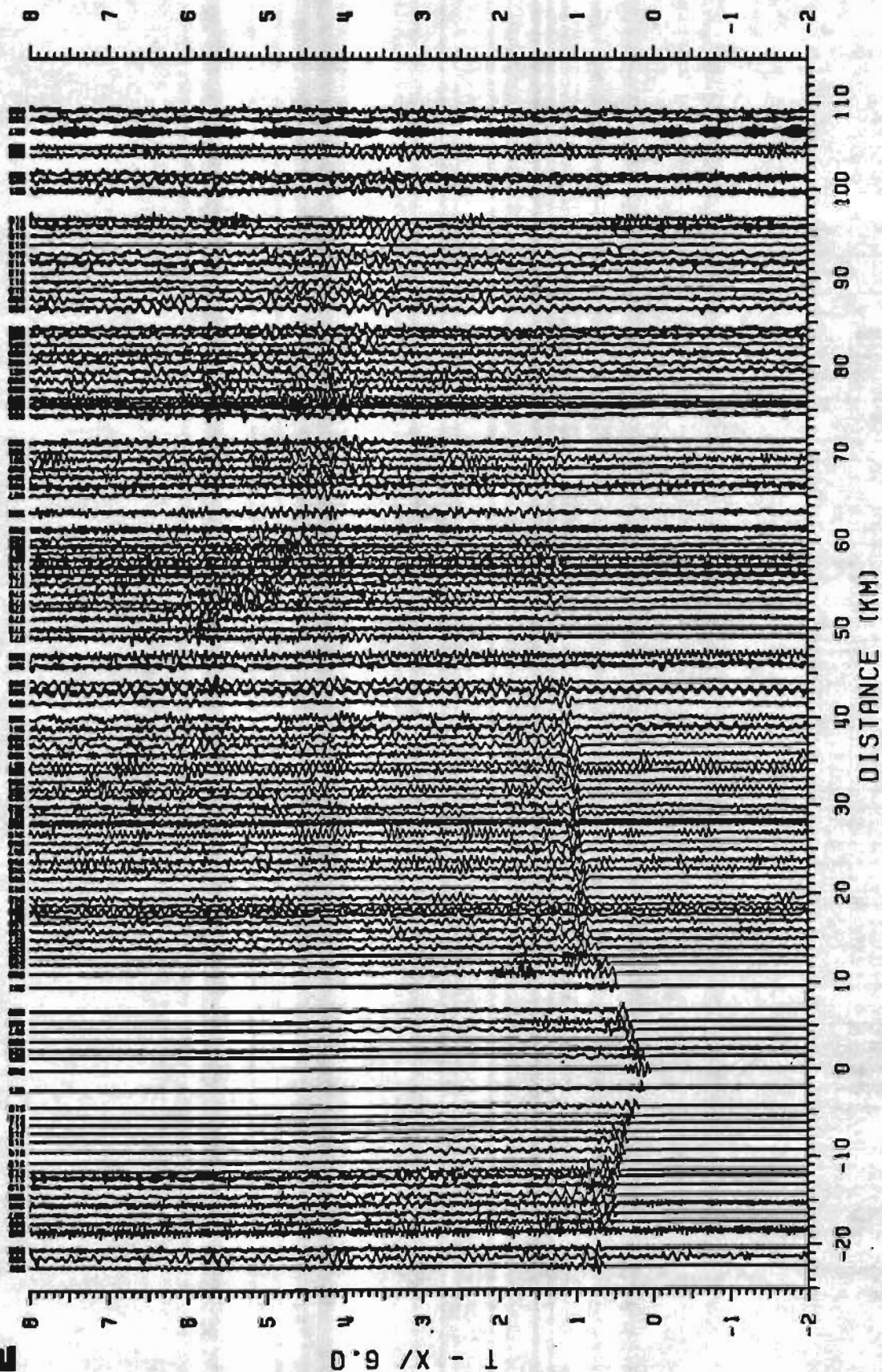


Figure 28: Fairbanks North, Shot 39, SP 60, Normalized

NW

SE

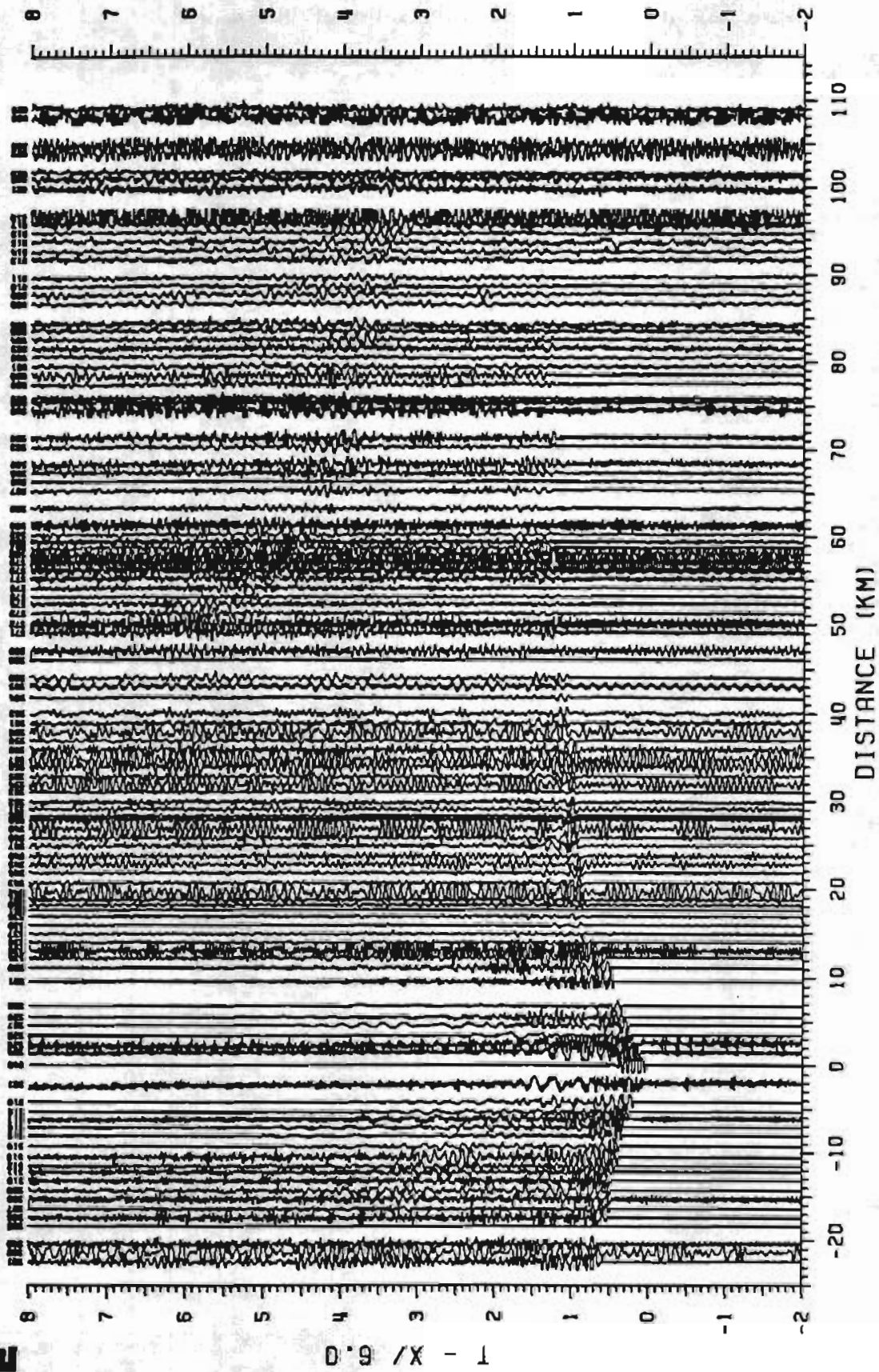


Figure 29: Fairbanks North, Shot 39, SP 60, True-Amplitude

NW

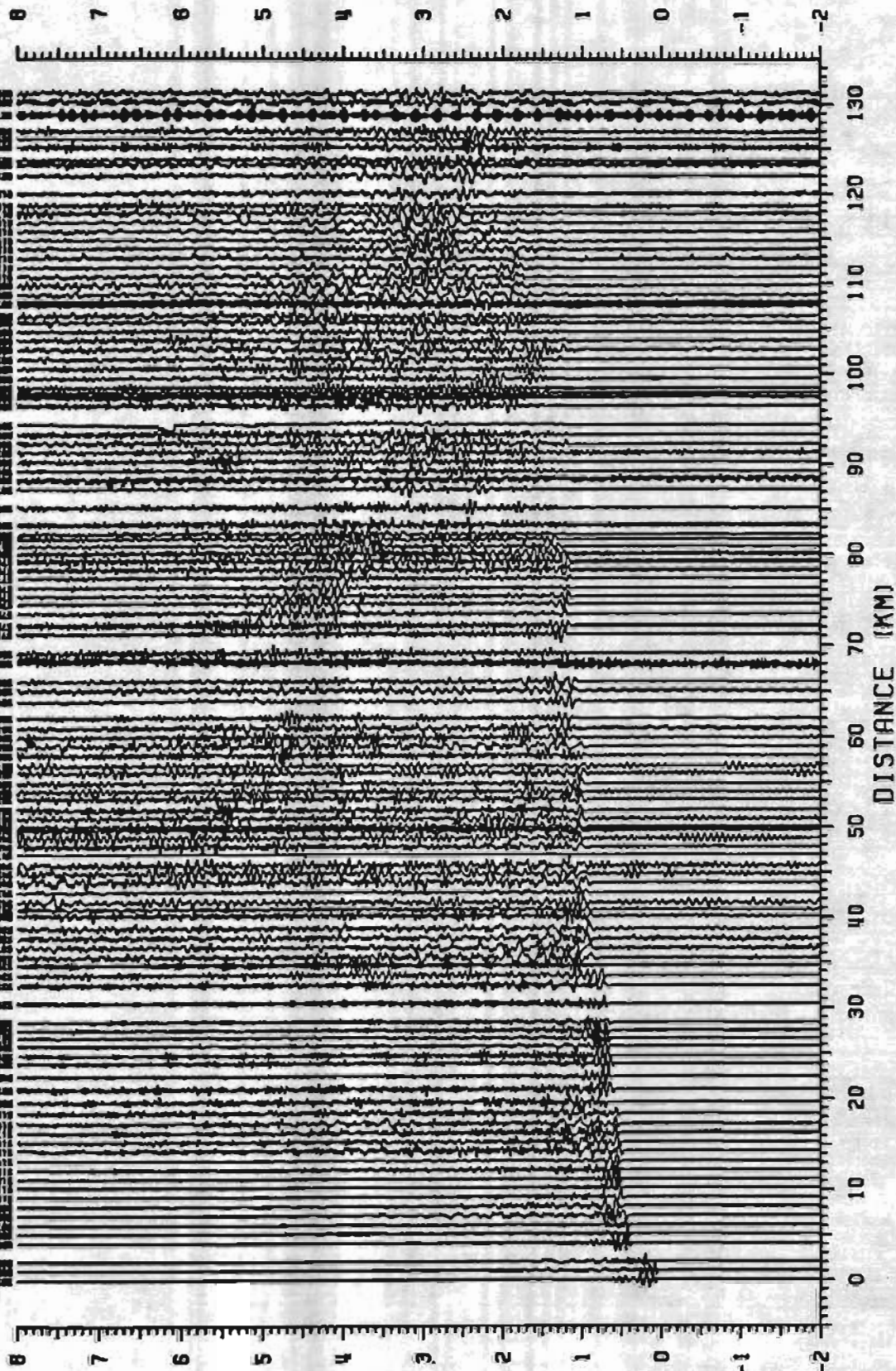


Figure 30: Fairbanks North, Shot 40, SP 59, Normalized

SE

1 - X / 6.0

NW

SE

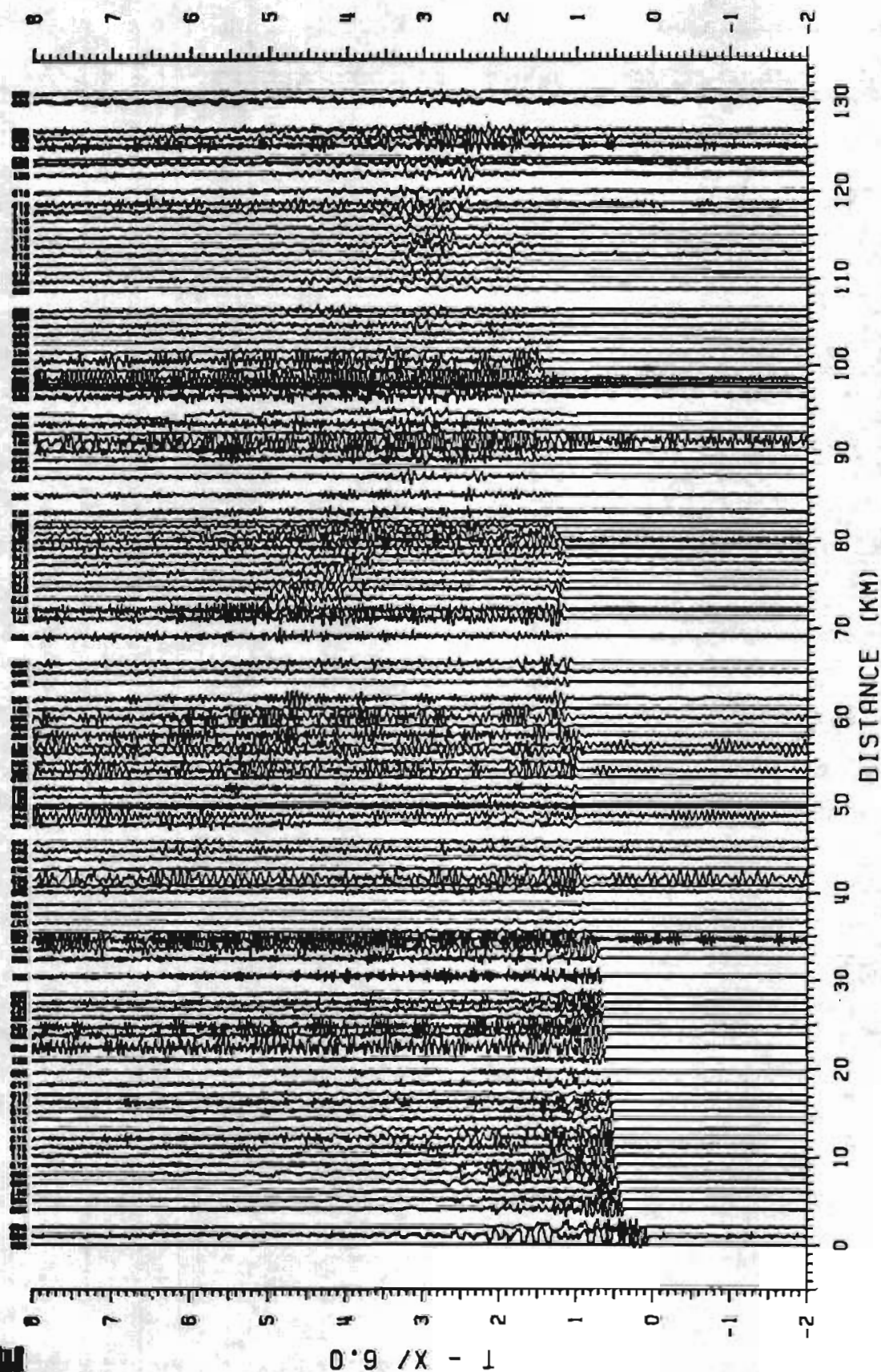
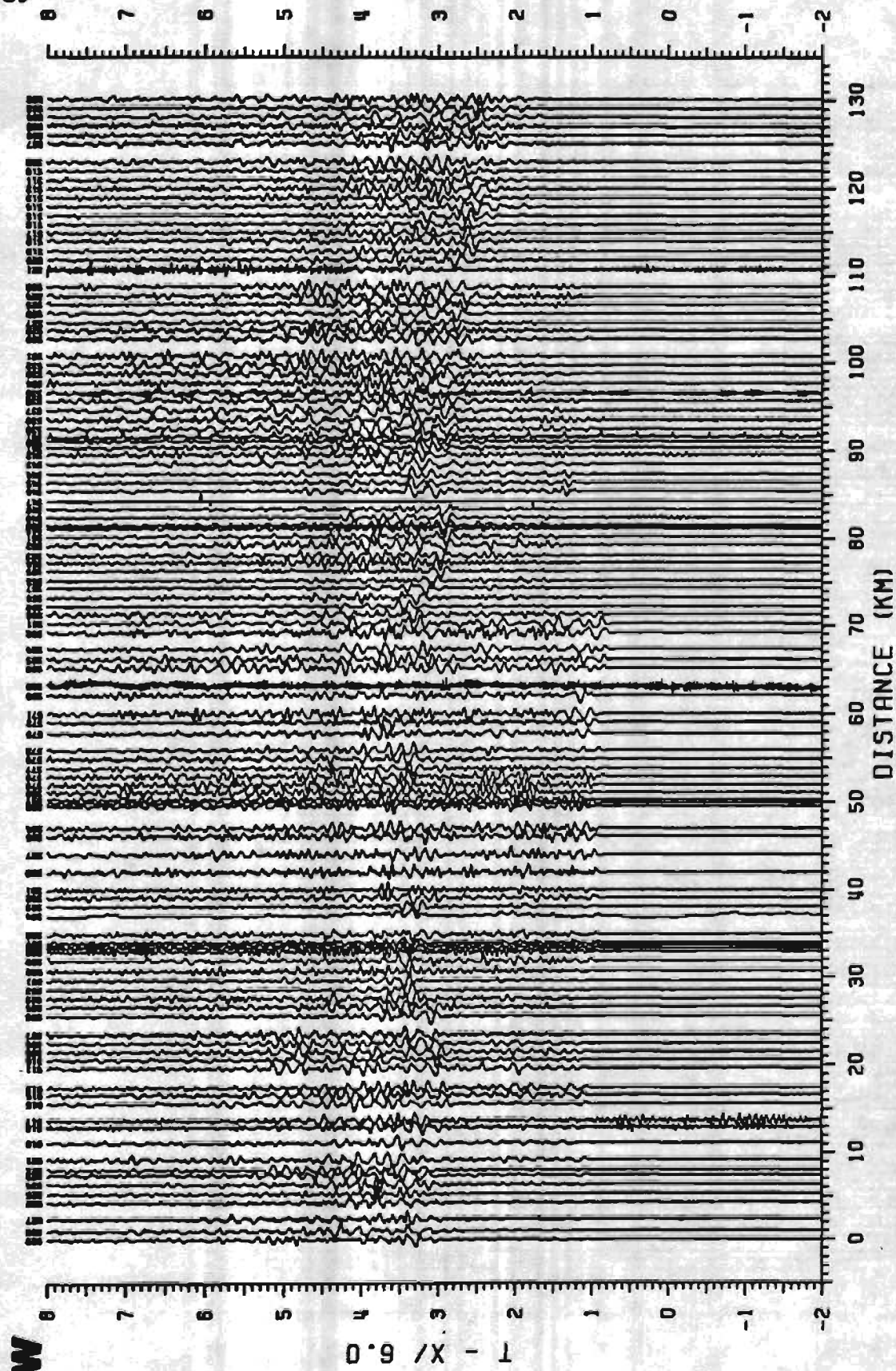


Figure 31: Fairbanks North, Shot 40, SP 59, True-Amplitude

SE



NW

Figure 32: Fairbanks North, Shot 42, SP 74, Normalized

SE

NW

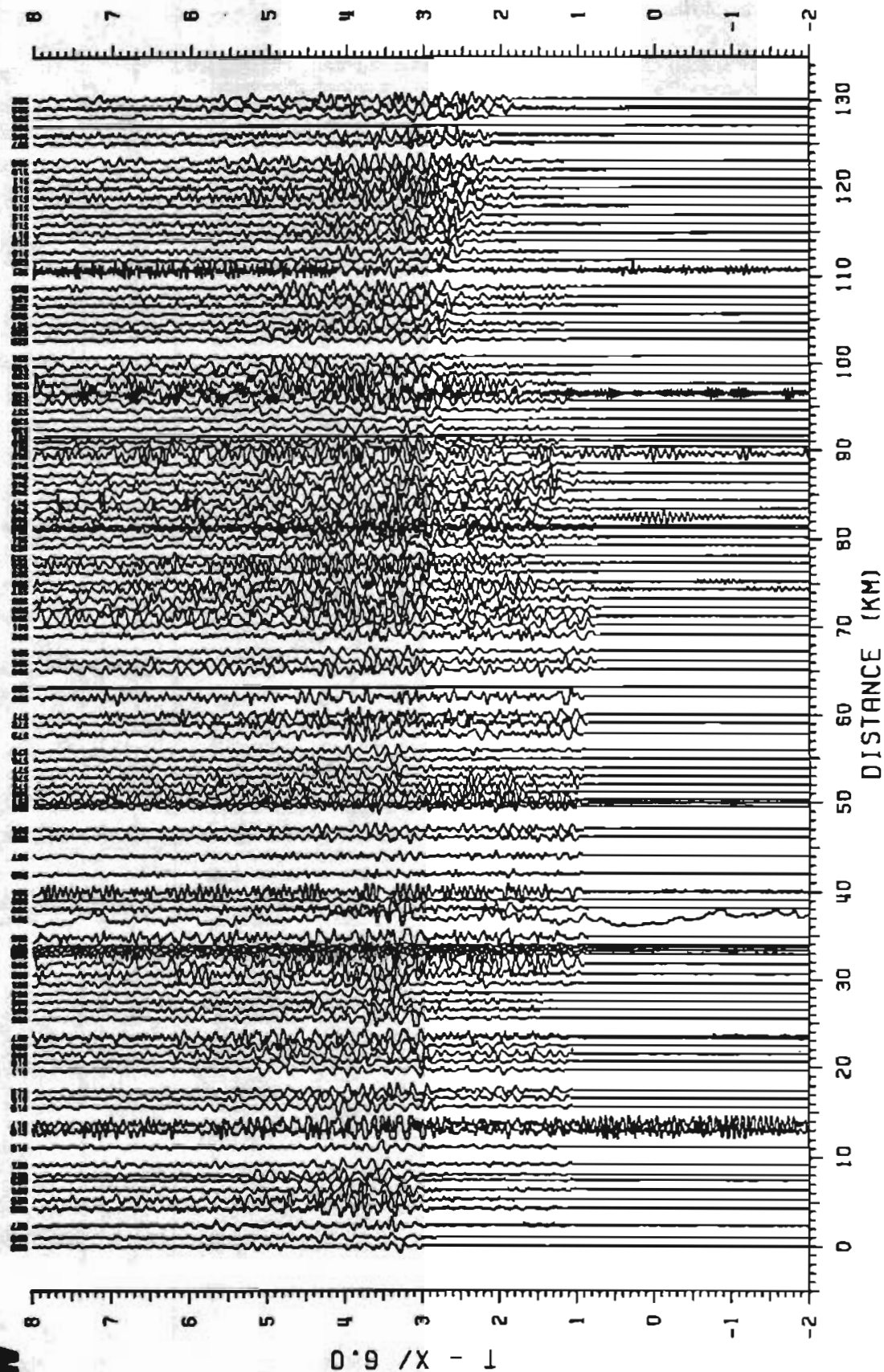


Figure 33: Fairbanks North, Shot 42, SP 74, True-Amplitude

NW

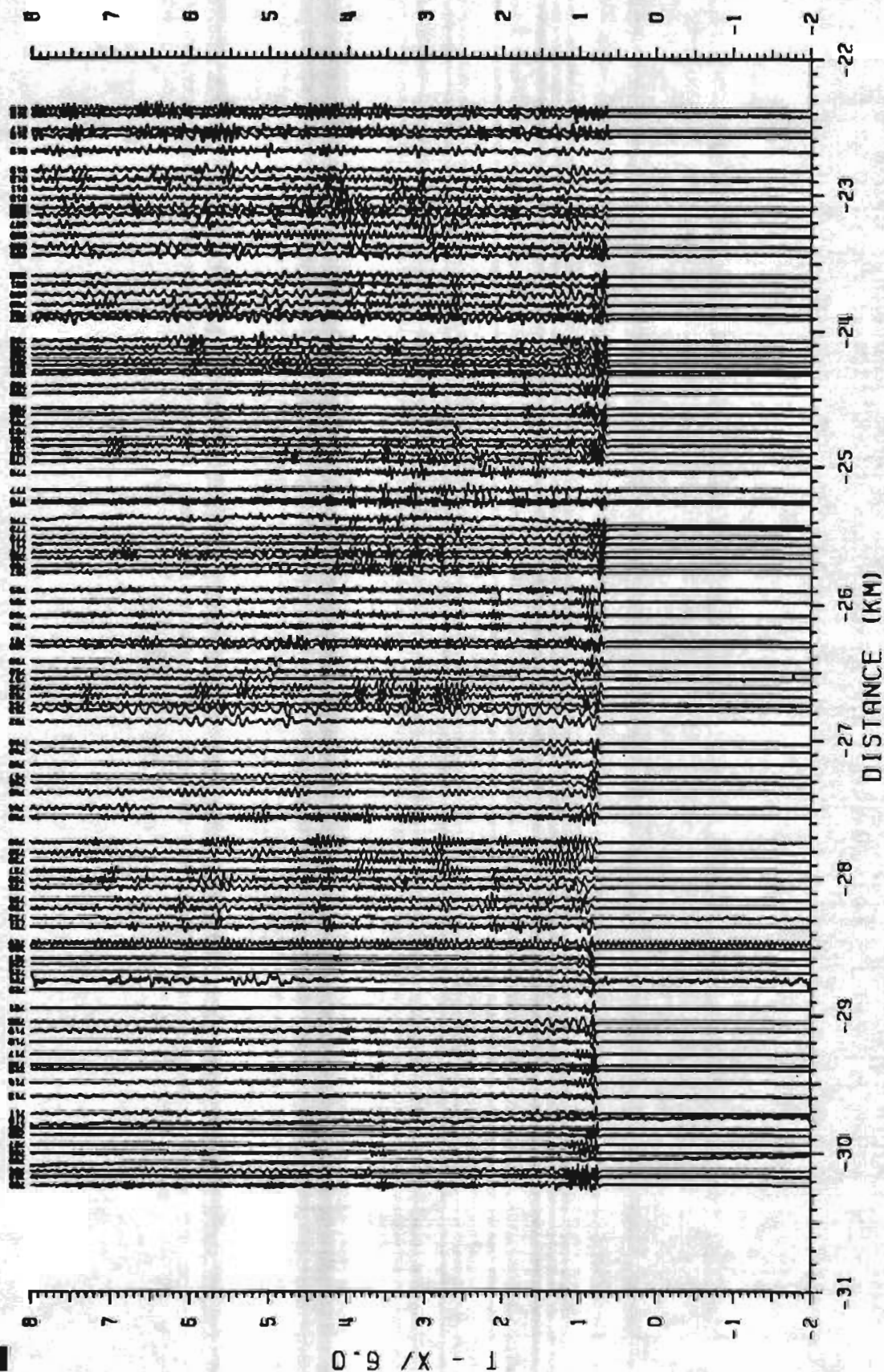


Figure 34: Olmes, Shot 44, SP 61, Normalized

NW

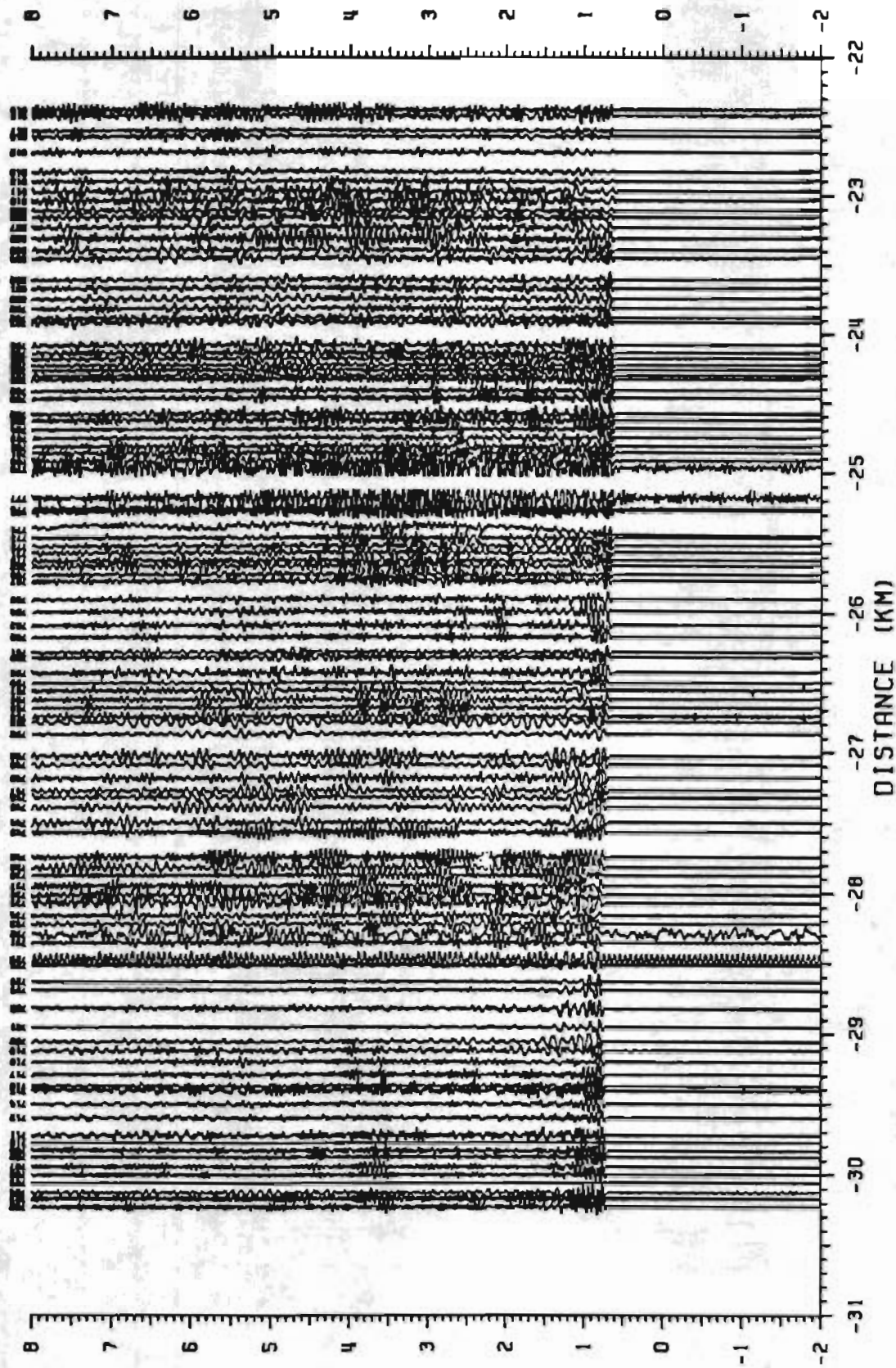
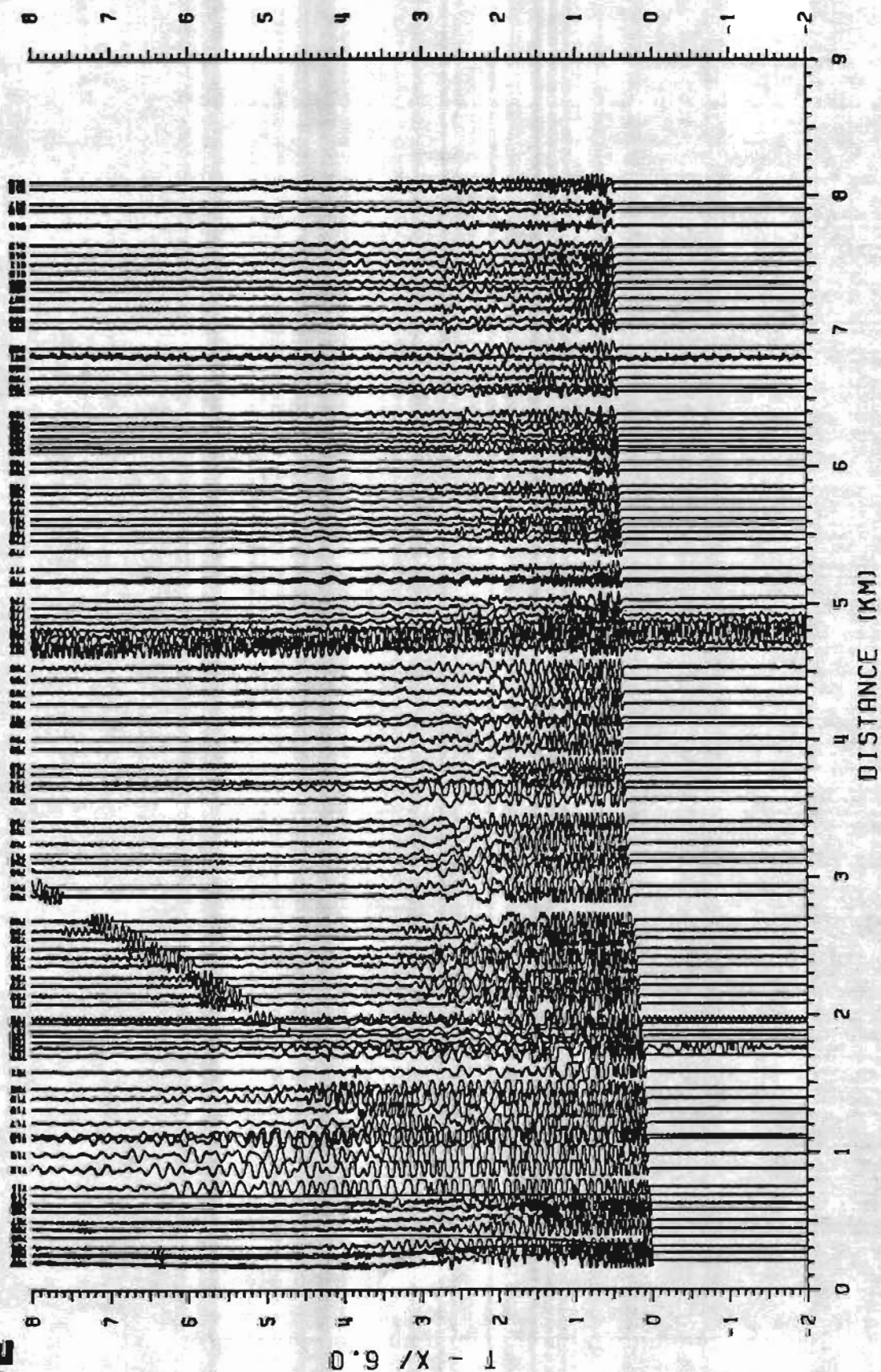


Figure 35: Olmes, Shot 44, SP 61, True-Amplitude

NW



SE

Figure 36: Olmes, Shot 45, SP 59, Normalized

SE

0.9 / X - 1

NW

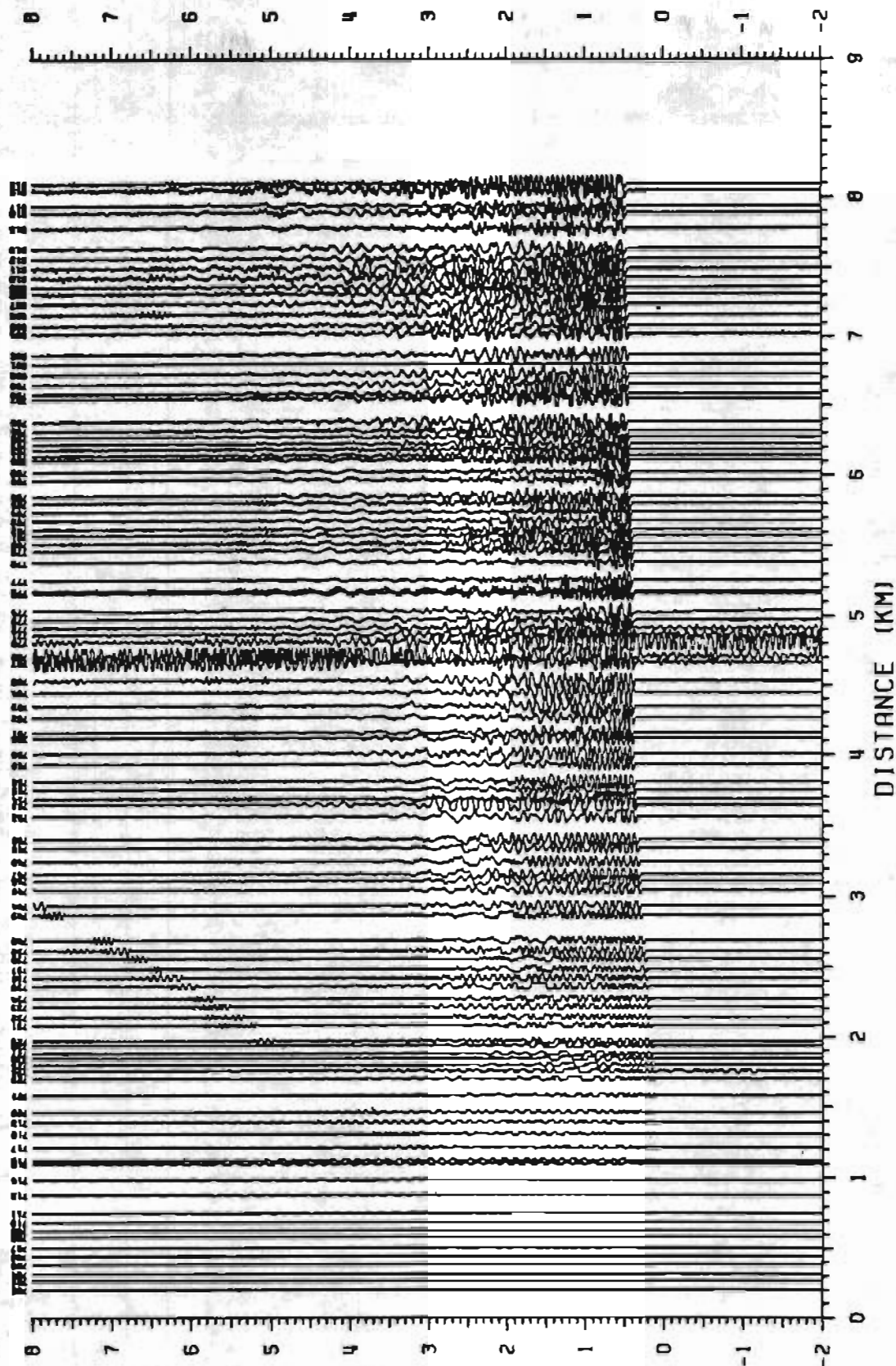


Figure 37: Olmes, Shot 45, SP 59, True-Amplitude

NW

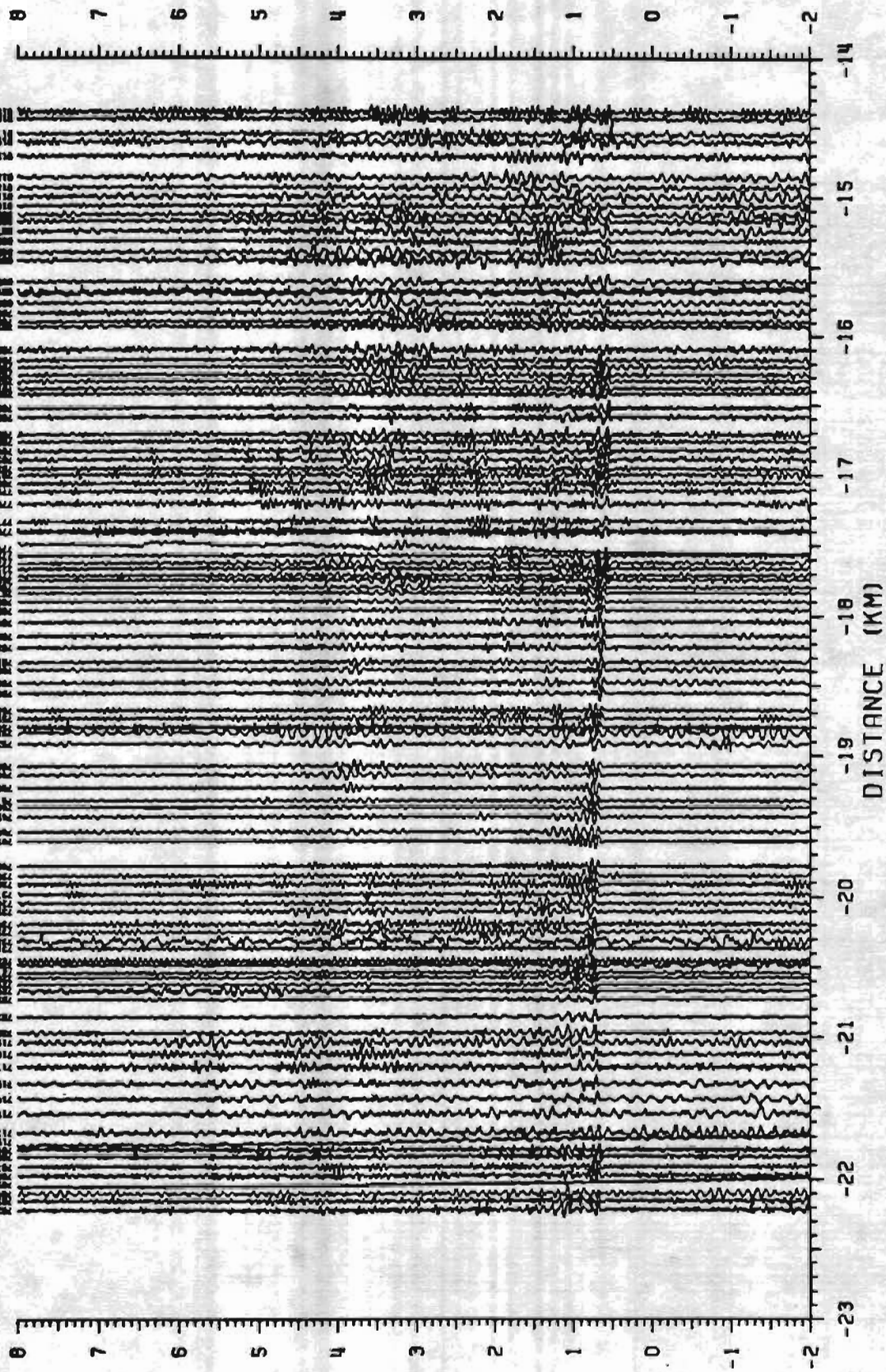


Figure 38: Olmes, Shot 46, SP 60, Normalized

SE

NW

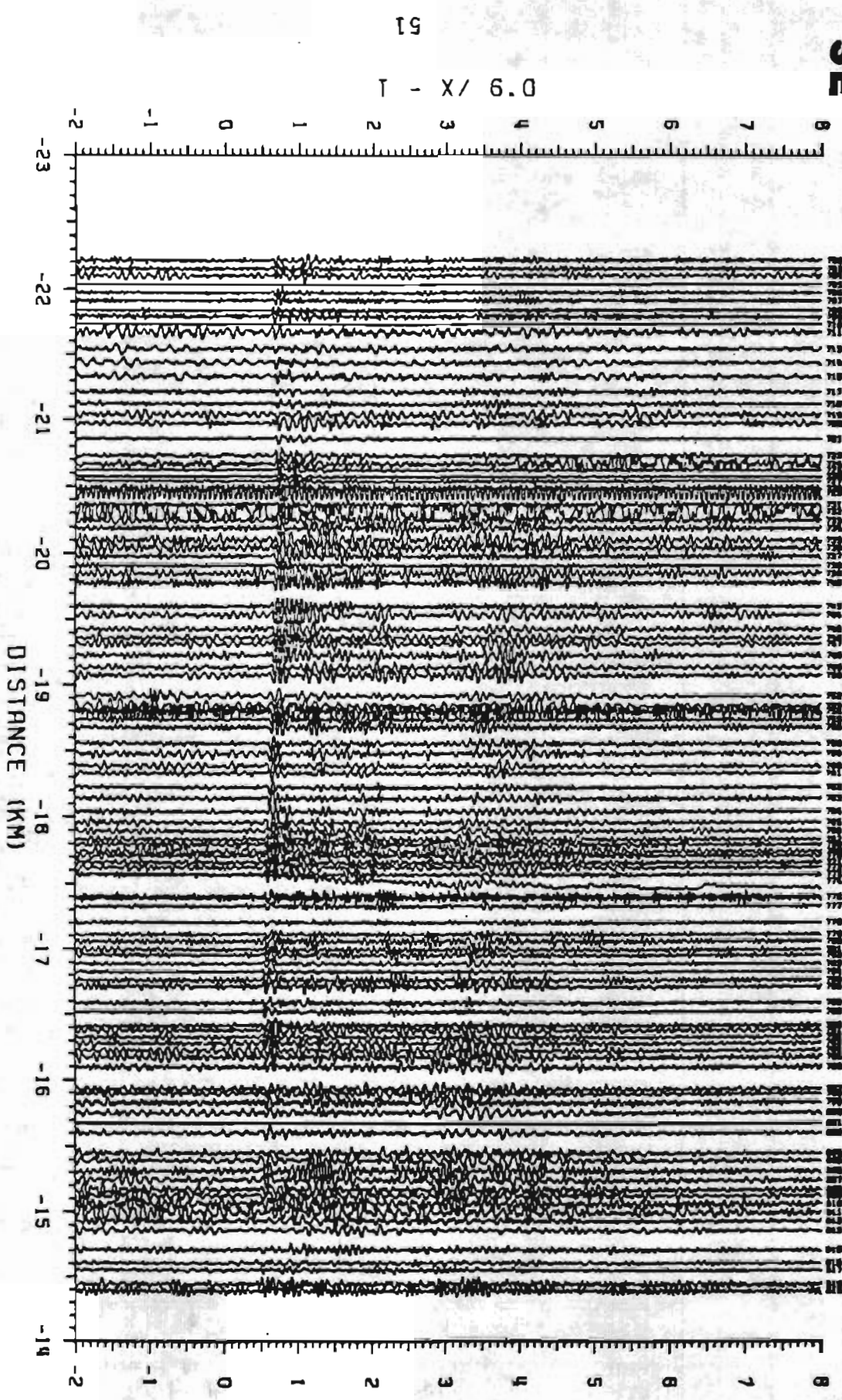


Figure 39: Olmes, Shot 46, SP 60, True-Amplitude

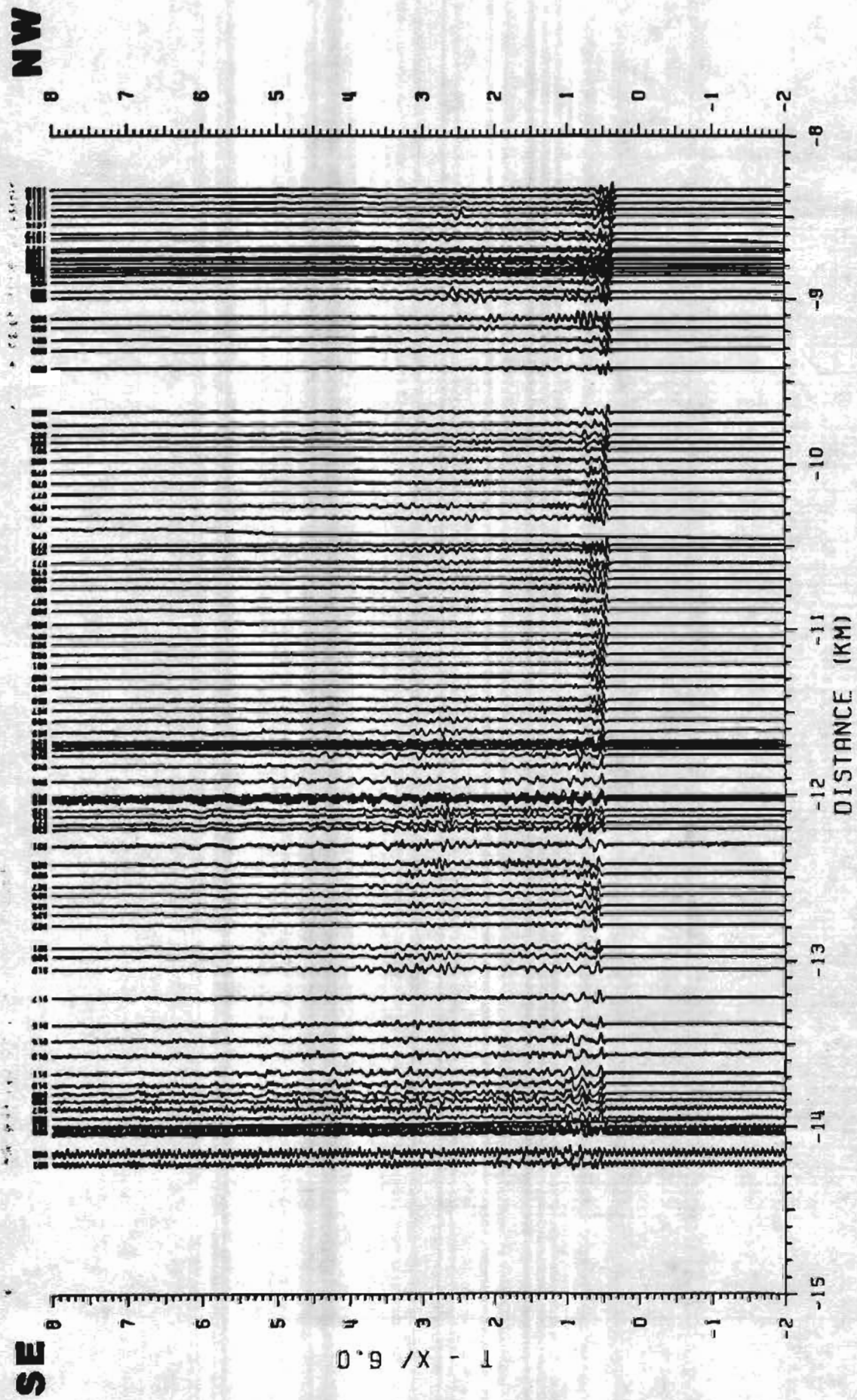


Figure 40: Olmes, Shot 47, SP 60, Normalized

SE

 $0.9 / X - 1$

NW

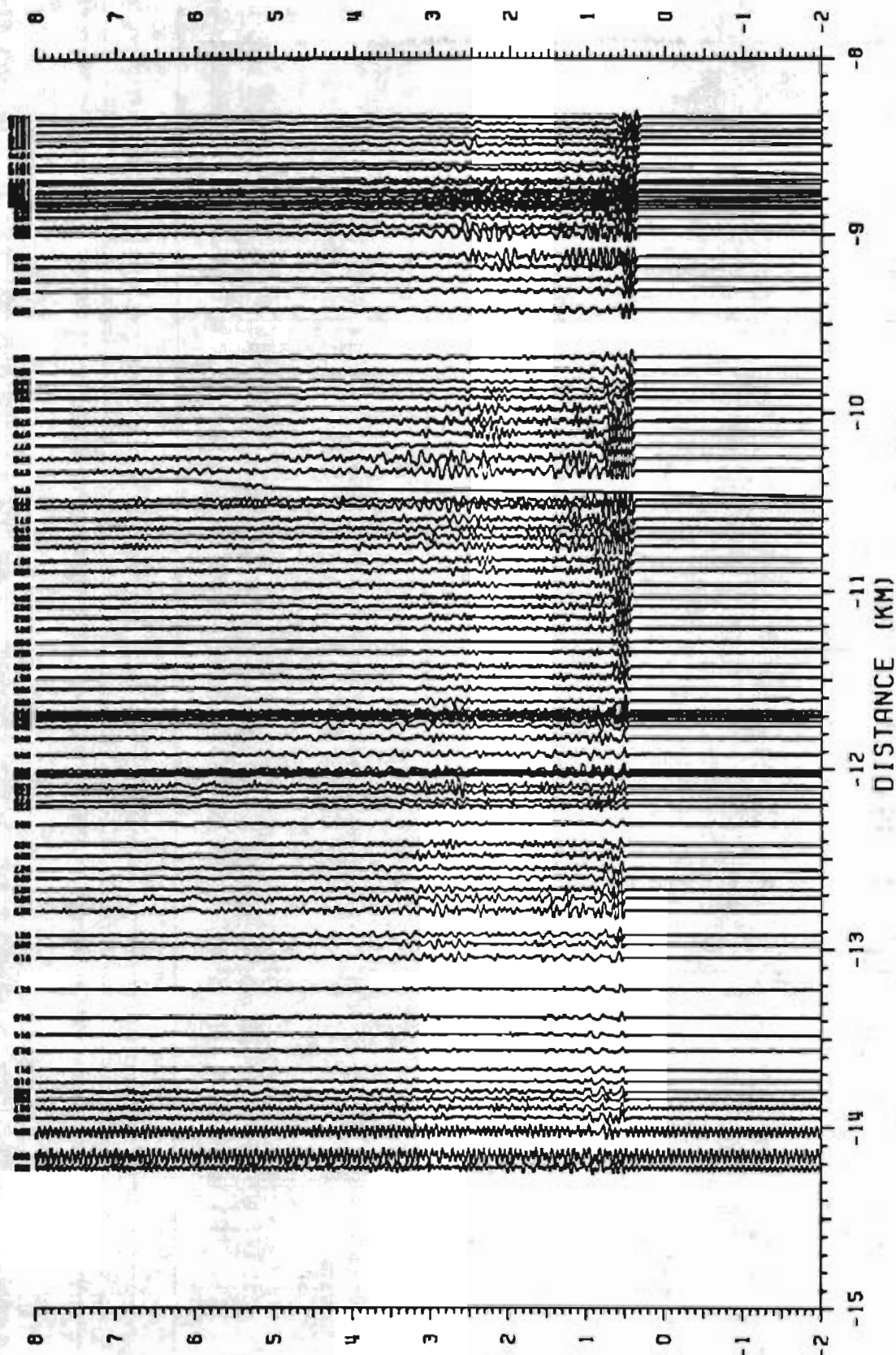


Figure 41: Olmes, Shot 47, SP 60, True-Amplitude

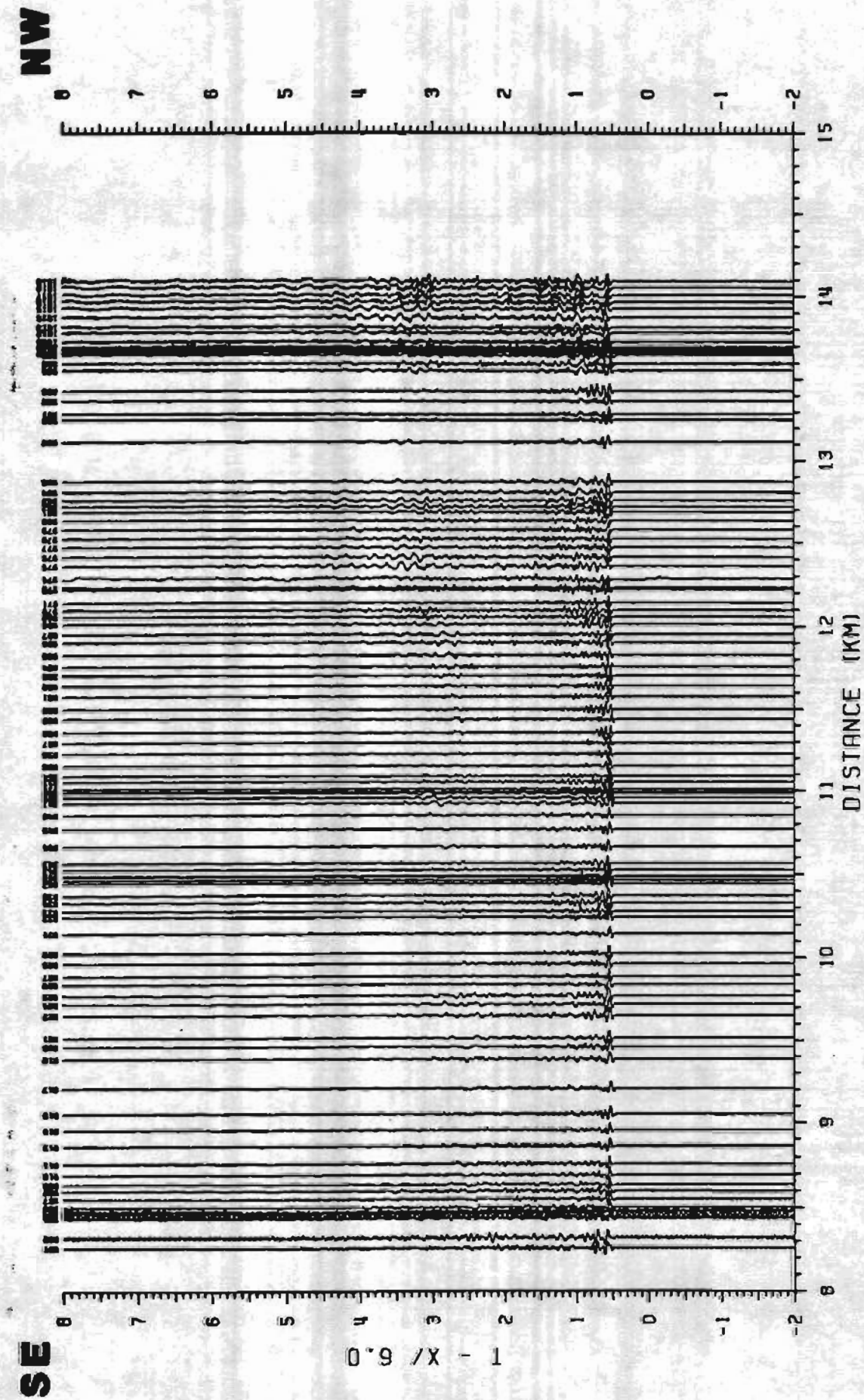


Figure 42: Olmes, Shot 48, SP 59, Normalized

SE

NW

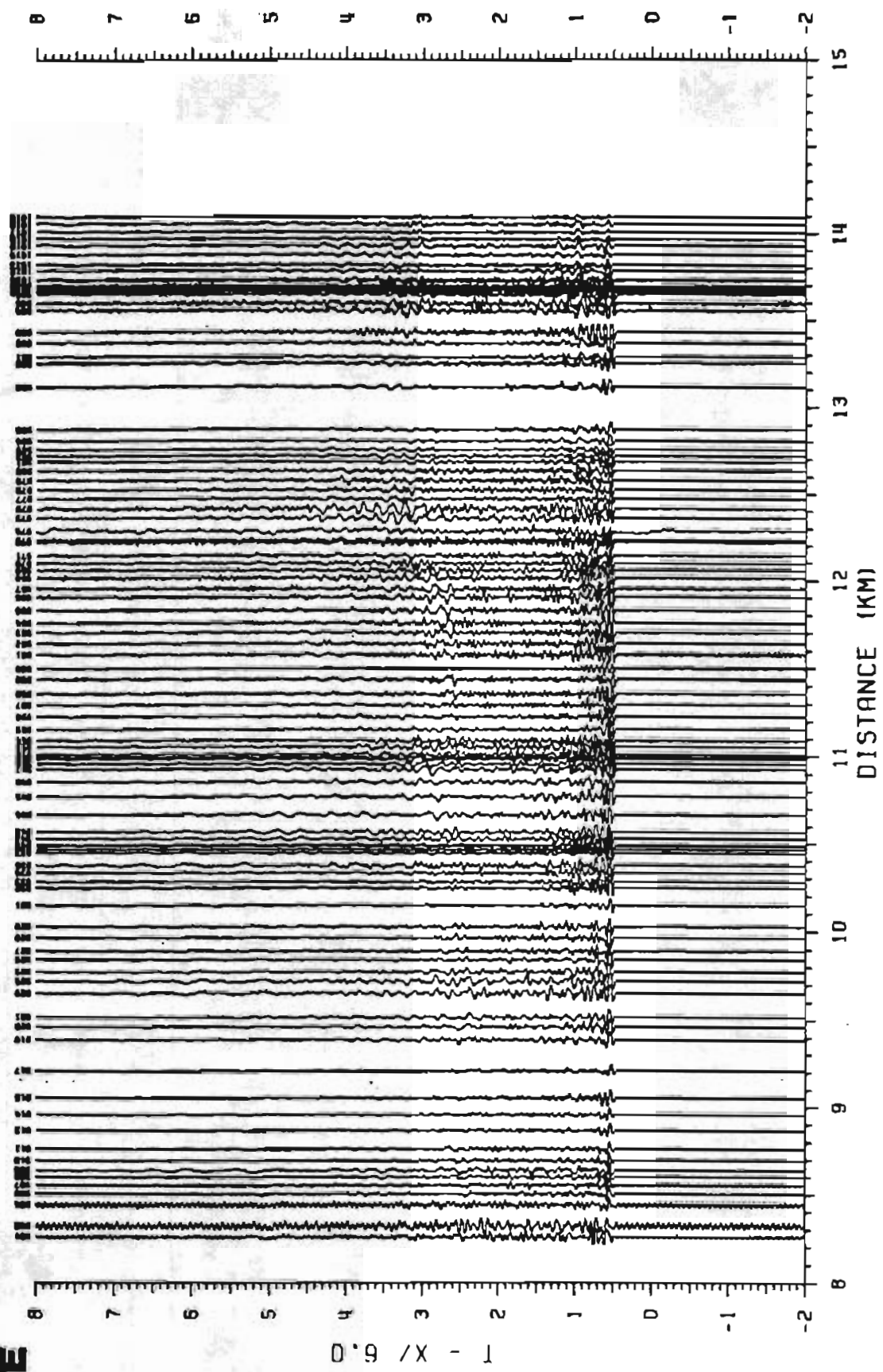


Figure 43: Olmes, Shot 48, SP 59, True-Amplitude

NW

SE

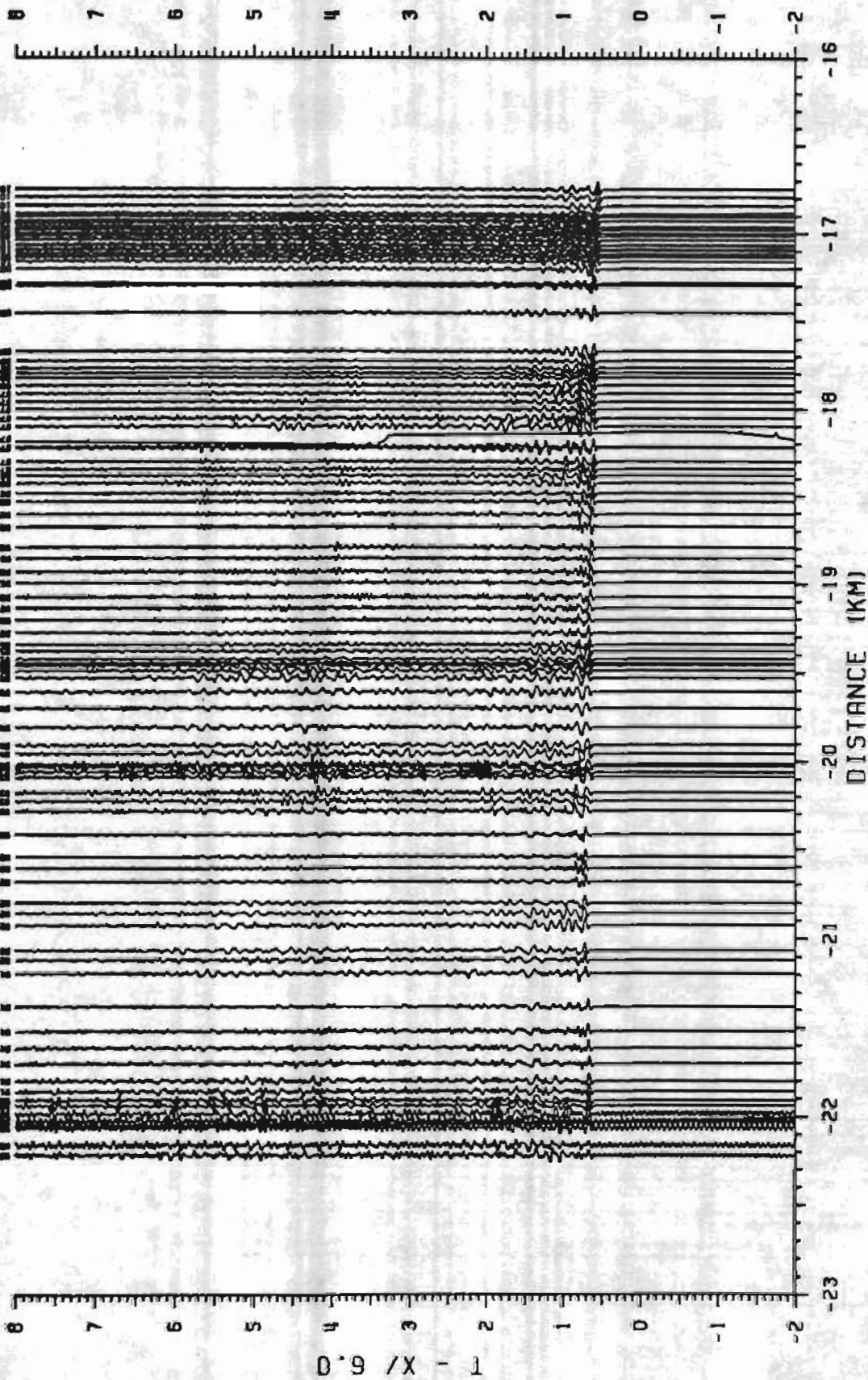


Figure 44: Olmes, Shot 49, SP 61, Normalized

NW

SE

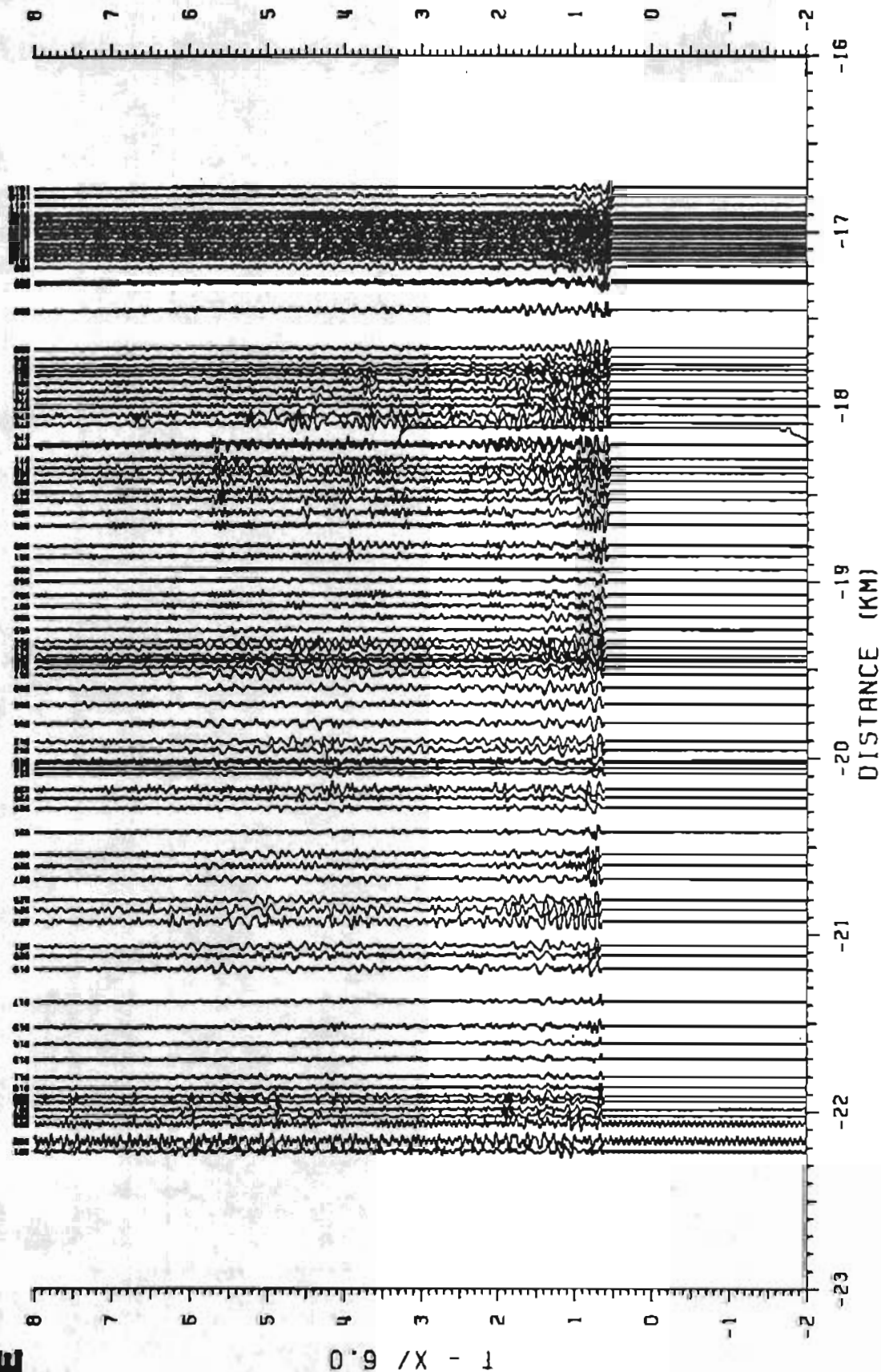
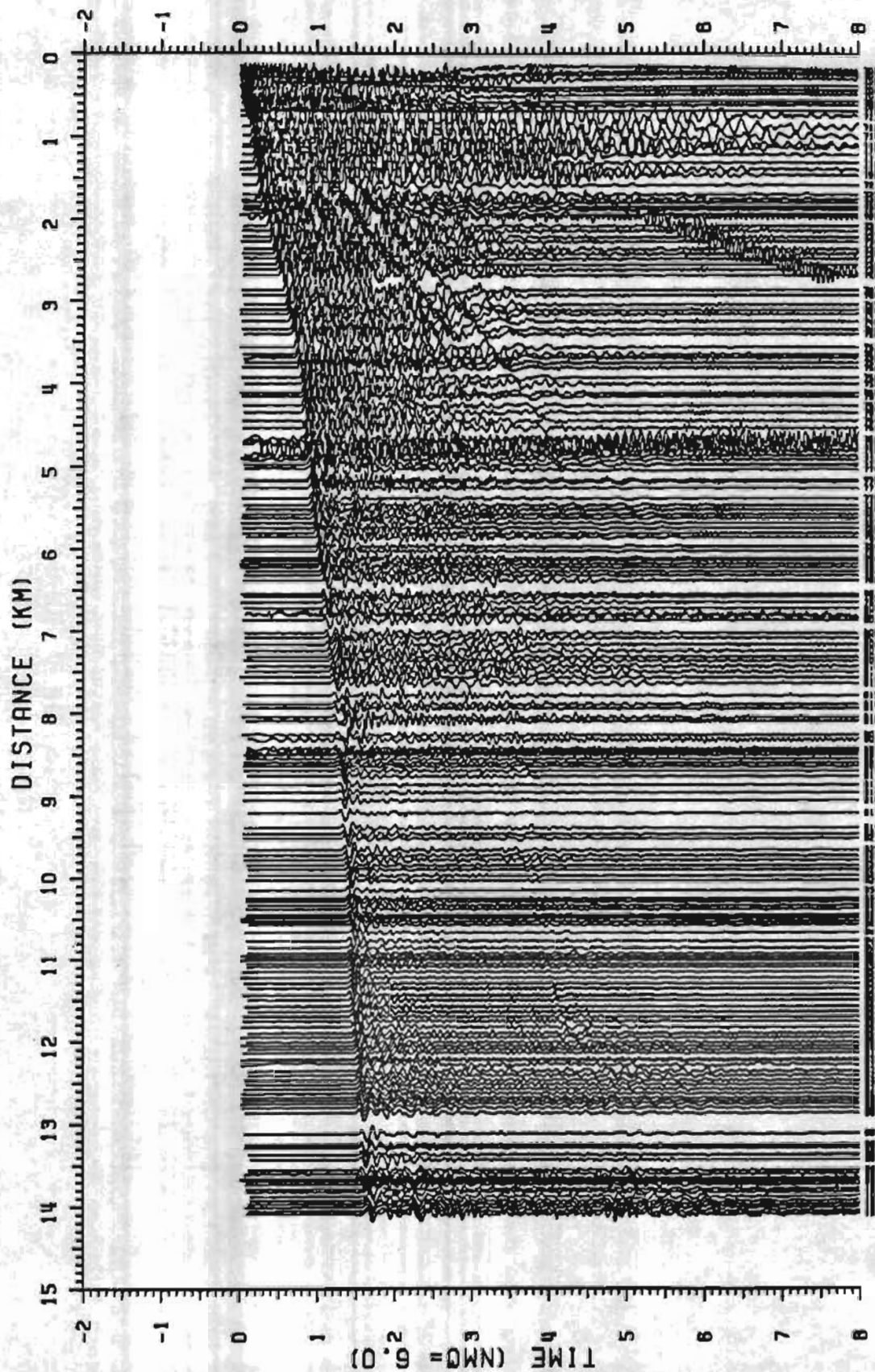


Figure 45: Olmes, Shot 49, SP 61, True-Amplitude

Figure 46, Olness, SP 59, Normal Moveout, Normalized



APPENDIX A

SHOTPOINT AND SEISMIC RECORDER LOCATIONS

U.S.G.S. Seismic Stations

SHOT POINT LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
54	64 22.029	146 7.739	454
57	64 38.670	147 1.998	170
59	65 4.714	147 41.788	167
60	65 11.926	148 4.763	594
61	65 16.890	148 7.838	213
62	65 19.851	148 18.444	152
63	65 24.347	148 25.137	441
64	65 28.758	148 41.698	152
65	65 34.472	148 56.313	243
66	65 41.688	149 11.320	335
67	65 47.363	149 24.887	518
69	66 18.295	150 25.835	672
70	66 36.115	150 59.185	224
74	65 3.421	150 11.263	134

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
228	64 22.124	146 7.792	454
426	64 38.669	147 1.945	169
430	65 41.689	149 11.190	335
501	65 4.739	147 41.807	175
502	65 4.984	147 43.033	167
503	65 5.516	147 43.635	205
504	65 5.910	147 44.489	175
505	65 6.342	147 45.345	182
506	65 6.799	147 46.137	228
507	65 7.085	147 47.187	320
508	65 7.340	147 48.480	335
509	65 7.726	147 49.377	350
510	65 7.844	147 50.900	350
511	65 8.291	147 51.741	335
512	65 9.128	147 51.532	259
513	65 9.437	147 52.650	304
514	65 9.510	147 54.316	320
515	65 9.594	147 56.022	381
516	65 10.014	147 56.838	411
517	65 10.398	147 57.726	457
518	65 10.769	147 58.504	518
519	65 11.165	147 59.655	472
520	65 10.930	148 2.076	579
521	65 10.754	148 4.514	662
522	65 11.300	148 4.984	640
523	65 11.978	148 5.131	579
524	65 12.258	148 6.506	563
525	65 12.669	148 7.191	518
526	65 13.044	148 8.191	518
527	65 14.031	148 7.775	396
528	65 14.518	148 8.165	289
529	65 15.322	148 8.022	266
530	65 16.319	148 7.520	243
531	65 16.914	148 7.871	228
532	65 17.257	148 8.979	228
533	65 17.460	148 10.223	304
534	65 17.982	148 10.970	243
535	65 18.142	148 12.591	236
536	65 18.587	148 13.105	342
537	65 18.854	148 14.443	297
538	65 19.131	148 15.718	274
539	65 19.449	148 16.871	274
540	65 19.828	148 18.497	152
541	65 19.787	148 19.847	152
542	65 20.007	148 20.771	167

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
543	65 20.470	148 21.679	182
544	65 20.931	148 22.645	243
545	65 21.291	148 23.542	304
546	65 21.748	148 24.132	396
547	65 22.247	148 25.083	259
548	65 22.693	148 25.650	304
549	65 23.242	148 26.125	411
550	65 23.767	148 26.640	411
551	65 24.392	148 27.377	304
552	65 24.417	148 28.968	365
553	65 24.749	148 30.380	411
554	65 25.084	148 31.089	518
555	65 25.476	148 31.848	457
556	65 25.892	148 32.927	441
557	65 26.134	148 33.830	320
558	65 26.406	148 35.255	167
559	65 26.876	148 35.985	144
560	65 27.264	148 36.793	137
561	65 27.790	148 37.403	137
562	65 28.229	148 38.379	137
563	65 28.600	148 39.099	137
564	65 28.658	148 40.703	152
565	65 29.695	148 40.404	274
566	65 29.986	148 41.494	304
567	65 30.240	148 42.819	350
568	65 30.602	148 43.790	502
569	65 30.921	148 44.891	502
570	65 31.274	148 45.893	396
571	65 31.566	148 47.108	213
572	65 32.028	148 47.751	228
573	65 31.950	148 50.239	487
574	65 32.121	148 51.789	411
575	65 32.360	148 52.703	441
576	65 32.829	148 53.355	441
577	65 33.266	148 54.238	365
578	65 33.810	148 54.670	335
579	65 34.194	148 55.493	274
580	65 34.517	148 56.299	274
581	65 36.062	148 54.989	335
582	65 36.449	148 55.648	304
583	65 36.878	148 56.579	228
584	65 37.376	148 57.167	182
585	65 37.809	148 57.867	182
586	65 38.248	148 58.835	198
587	65 38.540	148 59.914	304

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
588	65 38.771	149 1.330	411
589	65 39.329	149 1.741	381
590	65 39.761	149 2.555	289
591	65 40.128	149 3.550	137
592	65 40.610	149 4.118	137
593	65 41.010	149 5.039	182
594	65 41.399	149 6.084	274
595	65 41.644	149 7.251	304
596	65 41.988	149 8.510	289
597	65 42.223	149 9.668	274
598	65 42.588	149 10.685	274
599	65 42.908	149 11.832	228
600	65 42.848	149 13.936	243
601	65 42.886	149 15.721	198
602	65 43.057	149 17.245	182
603	65 43.743	149 17.434	182
604	65 44.204	149 18.131	213
605	65 44.441	149 19.425	228
606	65 44.693	149 20.157	228
607	65 45.221	149 21.402	274
608	65 45.564	149 22.401	301
609	65 46.409	149 22.272	350
610	65 46.880	149 22.901	411
611	65 47.325	149 23.654	502
612	65 47.076	149 26.158	454
613	65 47.617	149 26.776	518
614	65 48.440	149 26.588	332
615	65 48.881	149 27.433	381
616	65 49.389	149 28.079	441
617	65 49.775	149 29.040	487
618	65 50.078	149 29.826	502
619	65 49.347	149 34.061	399
620	65 49.525	149 35.346	481
621	65 49.775	149 36.631	381
622	65 50.116	149 38.044	353
623	65 50.923	149 37.151	384
624	65 52.136	149 36.964	137
625	65 52.179	149 38.493	97
626	65 52.158	149 40.118	60
627	65 52.724	149 42.163	94
628	65 53.275	149 43.452	118
629	65 53.509	149 44.650	112
649	65 11.927	148 4.826	594
650	66 36.150	150 59.306	224
651	65 19.564	148 18.134	249

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
652	65 24.272	148 26.028	445
653	65 24.318	148 25.216	438
655	65 47.387	149 24.797	320
656	66 18.251	150 25.817	
657	65 34.652	148 57.432	274
658	65 34.693	148 58.724	341
659	65 42.047	149 11.025	289
701	65 4.831	147 41.981	167
702	65 4.784	147 41.980	
703	65 4.798	147 42.053	
704	65 4.805	147 42.126	
705	65 4.828	147 42.191	
706	65 4.845	147 42.257	
707	65 4.860	147 42.330	167
708	65 4.876	147 42.420	
709	65 4.887	147 42.477	
710	65 4.904	147 42.542	
711	65 4.910	147 42.623	
712	65 4.927	147 42.705	
713	65 4.948	147 42.762	
714	65 4.972	147 42.884	
715	65 4.984	147 43.033	167
716	65 5.006	147 43.039	
717	65 5.026	147 43.144	
718	65 5.050	147 43.251	
719	65 5.073	147 43.341	167
720	65 5.092	147 43.419	167
721	65 5.111	147 43.568	
722	65 5.145	147 43.634	182
723	65 5.173	147 43.659	182
724	65 5.213	147 43.683	
725	65 5.255	147 43.684	
726	65 5.295	147 43.693	
727	65 5.330	147 43.685	
728	65 5.389	147 43.670	
729	65 5.419	147 43.662	
730	65 5.453	147 43.662	
731	65 5.516	147 43.635	205
732	65 5.552	147 43.655	
733	65 5.594	147 43.688	
734	65 5.621	147 43.729	
735	65 5.655	147 43.812	198
736	65 5.676	147 43.868	
737	65 5.700	147 43.926	
738	65 5.730	147 43.983	

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
909	65 7.701	147 50.235	
910	65 7.711	147 50.308	
911	65 7.725	147 50.391	
912	65 7.743	147 50.456	
913	65 7.752	147 50.513	
914	65 7.782	147 50.604	
915	65 7.813	147 50.702	
916	65 7.840	147 50.792	
917	65 7.844	147 50.899	350
918	65 7.909	147 50.980	
919	65 7.929	147 51.031	
920	65 7.956	147 51.105	
921	65 7.977	147 51.153	
922	65 8.007	147 51.219	
923	65 8.034	147 51.269	
924	65 8.062	147 51.326	
925	65 8.089	147 51.359	
926	65 8.116	147 51.417	
927	65 8.136	147 51.458	
928	65 8.171	147 51.516	
929	65 8.198	147 51.565	
930	65 8.225	147 51.598	
931	65 8.256	147 51.648	
932	65 8.292	147 51.741	335
933	65 8.314	147 51.755	335
934	65 8.348	147 51.771	
935	65 8.378	147 51.780	
936	65 8.413	147 51.765	
937	65 8.444	147 51.766	
938	65 8.471	147 51.741	
939	65 8.506	147 51.701	
940	65 8.527	147 51.669	
941	65 8.558	147 51.589	320
942	65 8.613	147 51.540	320
943	65 8.660	147 51.501	304
944	65 8.708	147 51.566	
945	65 8.763	147 51.625	
946	65 8.821	147 51.642	
947	65 8.872	147 51.651	
948	65 8.926	147 51.580	274
949	65 8.947	147 51.580	274
950	65 8.975	147 51.531	
951	65 9.007	147 51.476	
952	65 9.028	147 51.427	
953	65 9.053	147 51.444	265

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
954	65 9.087	147 51.428	265
955	65 9.117	147 51.470	
956	65 9.144	147 51.535	
957	65 9.168	147 51.601	
958	65 9.191	147 51.659	274
959	65 9.223	147 51.733	274
960	65 9.243	147 51.798	
961	65 9.273	147 51.865	
962	65 9.294	147 51.930	
963	65 9.315	147 51.996	
964	65 9.334	147 52.044	
965	65 9.362	147 52.110	
966	65 9.379	147 52.208	
967	65 9.385	147 52.282	
968	65 9.388	147 52.387	
969	65 9.396	147 52.453	
970	65 9.398	147 52.518	
971	65 9.405	147 52.584	
972	65 9.437	147 52.650	304
973	65 9.415	147 52.722	
974	65 9.418	147 52.812	304
975	65 9.415	147 52.959	
976	65 9.408	147 53.072	
977	65 9.407	147 53.178	
978	65 9.400	147 53.285	
979	65 9.397	147 53.390	
980	65 9.393	147 53.496	
981	65 9.389	147 53.594	
982	65 9.381	147 53.667	
983	65 9.378	147 53.741	
984	65 9.375	147 53.838	
985	65 9.378	147 53.944	
986	65 9.378	147 54.034	
987	65 9.388	147 54.131	
988	65 9.402	147 54.213	
989	65 9.418	147 54.278	
990	65 9.510	147 54.316	320
991	65 9.477	147 54.451	
992	65 9.513	147 54.509	
993	65 9.544	147 54.550	304
994	65 9.584	147 54.679	304
995	65 9.602	147 54.714	
996	65 9.608	147 54.788	
997	65 9.602	147 54.861	
998	65 9.588	147 54.909	

U.S.G.S. Seismic Stations

RECORDER LOCATIONS

Location Number	Latitude (deg, min)	Longitude (deg, min)	Elevation (meters)
999	65 9.567	147 54.958	304
1000	65 9.537	147 55.015	
1001	65 9.503	147 55.063	
1002	65 9.462	147 55.110	
1003	65 9.420	147 55.183	
1004	65 9.396	147 55.256	
1005	65 9.372	147 55.407	335
1006	65 9.337	147 55.385	335
1007	65 9.313	147 55.417	335
1008	65 9.289	147 55.482	
1009	65 9.258	147 55.521	344
1010	65 9.208	147 55.626	344
1011	65 9.223	147 55.676	
1012	65 9.229	147 55.757	
1013	65 9.240	147 55.790	
1014	65 9.261	147 55.848	
1015	65 9.284	147 55.888	
1016	65 9.300	147 55.922	
1017	65 9.321	147 55.947	
1018	65 9.348	147 55.972	
1019	65 9.369	147 55.997	

APPENDIX B

FIELD DATA TABLES

Field data tables include information related to the seismic recorders. Each table contains shot number, shotpoint number and shot time given in Julian day, hour, minutes and seconds. Column headings for the table are explained below:

Loc	-location number from the seismic recorder location (see Appendix A).
Dist	-distance in kilometers from the shotpoint to the recorder.
Azim	-azimuth from the shotpoint to the recorder (degrees clockwise from north).
Db	-attenuation down from a total gain of 102 decibels.

FAIRBANKS NORTH DEPLOYMENT

Shot Number 29 Shot Point 69

Shot Time (Julian day, hr, min, sec): 237:08:00:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	294.384	135.2	12	540	145.672	137.3	12	599	86.361	139.0	12
426	242.978	138.1	12	561	124.907	137.9	12	600	85.426	139.9	12
430	88.422	139.7	12	562	123.797	137.9	12	601	84.517	140.6	12
501	185.620	136.2	12	564	122.029	138.3	12	602	83.547	141.1	12
502	184.644	136.3	12	565	120.711	137.6	12	603	82.453	140.6	12
503	183.590	136.2	12	566	119.753	137.8	12	604	81.452	140.5	12
504	182.599	136.2	12	567	118.729	138.0	12	605	80.495	140.9	12
505	181.553	136.2	12	568	117.731	138.1	12	606	79.781	141.0	12
506	180.506	136.2	12	569	116.730	138.2	12	607	78.422	141.1	12
507	179.563	136.3	12	570	115.730	138.3	12	608	77.448	141.3	12
508	178.538	136.4	30	571	114.710	138.4	12	609	76.274	140.5	12
509	177.537	136.4	12	572	113.736	138.4	12	610	75.291	140.4	12
510	176.589	136.7	30	573	112.623	139.2	12	611	74.286	140.3	12
511	175.530	136.6	12	574	111.619	139.5	12	612	73.473	141.7	12
512	174.466	136.3	12	575	110.831	139.7	12	614	71.272	140.7	12
513	173.459	136.4	12	576	109.840	139.6	12	615	70.229	140.7	12
514	172.499	136.7	12	577	108.779	139.6	12	616	69.186	140.5	12
515	171.508	137.0	12	578	107.785	139.4	12	617	68.167	140.6	30
516	170.503	136.9	12	579	106.833	139.4	12	618	67.354	140.7	30
517	169.508	137.0	12	580	105.975	139.5	30	621	64.718	144.6	12
518	168.590	137.0	12	581	104.416	138.0	12	622	63.588	145.1	12
519	167.444	137.0	12	582	103.540	138.0	12	623	62.745	143.8	12
521	165.578	138.2	12	583	102.470	138.0	12	624	61.007	142.5	12
524	162.437	138.0	12	585	100.512	137.8	12	625	60.253	143.3	12
525	161.509	138.0	12	587	98.459	138.0	12	626	59.568	144.3	12
526	160.471	138.0	12	588	97.425	138.3	12	627	57.817	144.9	12
527	159.281	137.5	12	589	96.432	138.0	12	628	56.418	145.2	12
528	158.395	137.4	12	590	95.418	138.0	12	629	55.549	145.7	12
529	157.335	137.0	12	591	94.404	138.1	12	649	163.750	137.8	12
531	155.189	136.3	12	592	93.440	137.9	12	651	146.227	137.3	12
533	153.216	136.5	12	593	92.416	138.0	12	652	135.610	136.8	12
534	152.105	136.4	12	594	91.346	138.0	48	653	135.960	136.6	12
535	151.048	136.7	12	595	90.419	138.3	30	656	0.083	171.1	88
536	150.165	136.6	12	596	89.307	138.5	12	657	105.231	139.7	12
537	149.104	136.8	12	597	88.401	138.7	12	658	104.549	140.1	12
538	148.065	137.0	12	598	87.381	138.8	12	659	87.989	139.4	12
539	147.032	137.1	12								

FAIRBANKS NORTH DEPLOYMENT

Shot Number 30 Shot Point 62

Shot Time (Julian day, hr, min, sec): 237:08:02:00.006

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	148.905	135.1	12	539	1.433	121.4	68	601	61.496	314.5	12
426	97.349	141.2	12	540	0.058	224.4	88	602	62.561	314.0	12
430	57.457	315.3	12	561	20.816	315.3	30	603	63.546	314.8	12
501	40.071	134.2	30	562	21.926	315.4	30	604	64.522	315.0	12
502	39.070	134.7	12	564	23.768	313.7	30	605	65.539	314.7	12
503	38.037	134.2	30	565	24.972	317.3	12	606	66.268	314.6	12
504	37.047	134.1	12	566	25.943	316.7	30	607	67.634	314.7	12
505	36.005	134.0	12	567	26.993	315.8	30	608	68.628	314.6	12
506	34.969	133.7	30	569	29.017	315.4	30	609	69.651	315.6	12
507	34.009	134.0	12	570	30.028	315.2	30	610	70.607	315.8	12
508	32.956	134.6	30	571	31.077	314.7	30	611	71.599	316.0	12
509	31.952	134.6	30	572	32.031	315.2	12	612	72.642	314.7	12
510	30.964	135.9	30	573	33.321	312.7	12	613	73.679	315.0	12
511	29.908	135.7	30	574	34.427	311.7	12	614	74.645	315.9	12
512	28.925	133.3	30	575	35.249	311.5	12	615	75.681	316.0	12
513	27.898	133.7	30	576	36.199	312.0	12	616	76.695	316.2	12
514	26.880	135.4	12	577	37.248	312.3	12	617	77.721	316.2	12
515	25.853	137.3	30	578	38.173	313.1	12	618	78.542	316.2	12
516	24.848	137.2	30	579	39.122	313.2	12	619	79.926	313.9	12
517	23.852	137.3	30	580	39.985	313.3	12	621	81.906	313.4	12
518	22.935	137.2	30	581	41.287	317.1	30	622	83.129	313.2	12
519	21.784	137.7	30	582	42.158	317.3	12	623	83.641	314.3	12
520	20.910	142.3	12	583	43.228	317.3	12	624	85.095	315.4	12
521	20.085	147.2	30	585	45.170	317.9	12	625	85.988	314.9	12
524	16.896	146.5	30	587	47.233	317.6	12	626	86.857	314.3	12
525	15.965	146.6	30	589	49.262	317.6	12	627	88.713	314.2	12
526	14.954	147.7	30	590	50.274	317.7	12	628	90.129	314.2	12
527	13.634	142.4	30	591	51.292	317.6	30	629	91.092	314.0	12
528	12.734	141.0	30	592	52.245	317.9	12	649	18.144	144.1	30
529	11.685	136.0	30	593	53.270	317.9	12	651	0.584	155.6	30
531	9.866	123.5	30	594	54.345	317.8	12	652	10.103	324.5	30
533	7.782	124.8	30	595	55.288	317.5	12	653	9.824	327.7	30
534	6.767	120.8	48	596	56.414	317.2	12	656	145.598	319.2	12
535	5.547	124.9	48	597	57.343	316.9	12	657	40.798	312.7	30
536	4.768	119.5	48	598	58.372	316.8	30	658	41.592	311.8	12
537	3.618	120.8	48	599	59.410	316.6	12	659	57.835	315.9	12
538	2.505	122.2	68	600	60.465	315.4	30				

FAIRBANKS NORTH DEPLOYMENT

Shot Number 31 Shot Point 54

Shot Time (Julian day, hr, min, sec): 237:08:04:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	0.183	346.7	88	538	146.623	317.3	12	599	208.461	317.5	12
426	53.289	305.9	30	539	147.672	317.2	12	600	209.529	317.2	12
430	206.521	317.2	12	540	149.063	317.1	12	601	210.558	316.9	12
501	109.000	317.4	30	561	169.880	317.1	12	602	211.617	316.8	12
502	109.995	317.2	30	562	170.990	317.1	12	604	213.586	317.1	12
503	111.034	317.4	30	564	172.826	316.9	12	605	214.601	317.0	12
504	112.024	317.4	12	565	174.021	317.4	12	606	215.331	316.9	12
505	113.069	317.5	12	566	174.998	317.3	12	607	216.696	317.0	12
506	114.109	317.5	30	567	176.056	317.2	12	608	217.690	316.9	12
507	115.064	317.4	12	569	178.081	317.1	12	609	218.713	317.2	12
508	116.110	317.2	30	570	179.092	317.1	12	610	219.668	317.3	12
509	117.113	317.2	30	571	180.140	317.0	12	611	220.657	317.4	12
510	118.104	316.9	30	572	181.095	317.1	12	612	221.704	316.9	12
511	119.158	316.9	30	573	182.360	316.6	12	613	222.743	317.0	12
512	120.156	317.5	30	574	183.442	316.5	12	614	223.704	317.4	12
513	121.176	317.4	48	575	184.257	316.4	12	615	224.739	317.4	12
514	122.184	317.0	12	576	185.221	316.5	12	616	225.749	317.5	12
515	123.234	316.6	12	577	186.275	316.5	12	617	226.776	317.5	30
516	124.236	316.7	30	578	187.218	316.7	12	618	227.597	317.5	12
517	125.232	316.7	30	579	188.169	316.7	12	621	230.945	316.5	12
518	126.148	316.7	30	580	189.032	316.7	12	622	232.162	316.4	12
519	127.305	316.7	30	581	190.331	317.5	12	623	232.699	316.8	12
520	128.345	315.9	12	582	191.198	317.6	12	624	234.159	317.2	12
521	129.492	315.2	12	583	192.267	317.6	12	625	235.051	317.0	12
524	132.545	315.6	30	585	194.192	317.7	12	626	235.916	316.8	12
525	133.459	315.7	30	587	196.262	317.7	12	627	237.769	316.7	12
526	134.507	315.7	12	589	198.291	317.7	12	628	239.186	316.8	12
527	135.552	316.4	30	590	199.299	317.8	12	629	240.146	316.7	12
528	136.404	316.5	30	591	200.320	317.7	12	649	131.176	315.9	30
529	137.380	317.0	12	592	201.263	317.8	12	652	159.042	317.7	12
531	139.415	317.9	12	593	202.288	317.8	12	653	158.665	317.9	30
533	141.416	317.7	30	594	203.364	317.8	12	656	294.479	319.1	12
534	142.516	317.8	30	595	204.318	317.7	12	657	189.833	316.6	12
535	143.609	317.5	12	596	205.451	317.7	12	658	190.603	316.4	12
536	144.478	317.6	12	597	206.388	317.6	12	659	206.895	317.3	12
537	145.562	317.4	12	598	207.418	317.6	12				

FAIRBANKS NORTH DEPLOYMENT

Shot Number 32 Shot Point 57

Shot Time (Julian day, hr, min, sec): 237:08:06:00.157

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	53.186	124.9	30	538	94.957	322.9	12	599	156.608	320.6	12
426	0.043	92.3	88	539	95.974	322.7	12	600	157.591	320.2	12
430	154.586	320.2	12	540	97.314	322.4	30	601	158.558	319.8	12
501	57.763	327.3	30	561	118.044	321.4	12	602	159.579	319.6	12
502	58.673	326.8	30	562	119.154	321.3	30	603	160.621	319.9	12
503	59.758	326.9	30	564	120.923	320.9	12	604	161.611	319.9	12
504	60.737	326.8	12	565	122.246	321.6	12	605	162.601	319.8	12
505	61.779	326.7	12	566	123.200	321.5	12	606	163.325	319.7	12
506	62.829	326.6	30	567	124.220	321.2	12	607	164.691	319.7	12
507	63.731	326.3	30	569	126.220	321.1	12	608	165.678	319.7	12
508	64.698	325.8	30	570	127.221	321.0	12	609	166.775	320.1	12
509	65.688	325.6	30	571	128.244	320.8	12	610	167.745	320.1	12
510	66.557	324.9	30	572	129.217	320.9	12	611	168.745	320.2	12
511	67.616	324.9	12	573	130.364	320.2	12	612	169.687	319.6	12
512	68.789	325.7	30	574	131.397	319.9	12	613	170.748	319.7	12
513	69.760	325.4	30	575	132.197	319.8	12	614	171.781	320.1	12
514	70.632	324.6	12	577	134.239	319.9	12	615	172.822	320.1	12
515	71.551	323.8	12	578	135.216	320.1	12	616	173.851	320.2	12
516	72.557	323.8	30	579	136.169	320.1	12	617	174.875	320.2	12
517	73.546	323.7	30	580	137.030	320.1	12	618	175.694	320.2	12
518	74.461	323.7	12	581	138.533	321.2	12	619	176.883	319.1	12
519	75.593	323.4	30	582	139.410	321.2	12	621	178.804	318.8	12
520	76.416	322.1	12	583	140.480	321.2	12	622	180.004	318.7	12
521	77.373	320.9	30	585	142.440	321.4	12	623	180.626	319.2	12
524	80.512	321.3	30	587	144.491	321.2	12	624	182.182	319.7	12
525	81.441	321.4	30	589	146.518	321.2	12	625	183.030	319.4	12
526	82.478	321.3	30	590	147.532	321.2	12	626	183.844	319.2	12
527	83.691	322.2	30	591	148.546	321.2	12	627	185.678	319.0	12
528	84.587	322.5	30	592	149.509	321.3	12	628	187.096	319.0	12
529	85.692	323.1	12	593	150.534	321.2	12	649	79.206	321.8	30
531	87.977	324.4	30	594	151.603	321.2	12	652	107.411	322.7	12
533	89.887	323.8	12	595	152.532	321.0	12	656	242.880	321.2	12
534	91.011	323.9	48	596	153.646	320.9	12	657	137.798	319.9	12
535	92.013	323.4	30	597	154.558	320.8	12	658	138.520	319.6	12
536	92.911	323.5	30	598	155.581	320.7	12	659	154.997	320.4	12
537	93.941	323.2	12								

FAIRBANKS NORTH DEPLOYMENT

Shot Number 33 Shot Point 65

Shot Time (Julian day, hr, min, sec): 237:08:10:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	188.824	134.1	12	540	39.936	132.7	30	600	20.618	319.1	30
426	137.004	138.3	12	561	19.150	130.3	12	601	21.592	316.5	30
430	17.614	319.7	30	562	18.048	129.9	30	602	22.637	315.0	30
501	80.005	133.1	30	564	16.172	131.8	30	603	23.651	316.9	30
502	79.000	133.4	12	565	15.135	125.8	30	604	24.639	317.4	30
503	77.971	133.1	12	566	14.137	126.0	30	605	25.637	316.4	12
504	76.982	133.0	12	567	13.035	127.0	30	606	26.364	316.3	12
505	75.941	133.0	12	568	12.032	126.6	12	607	27.731	316.3	30
506	74.906	132.8	30	569	10.997	126.8	30	608	28.722	316.1	12
507	73.944	133.0	12	569	10.997	126.8	30	609	29.799	318.3	12
508	72.887	133.3	30	570	9.986	126.4	48	610	30.770	318.7	12
509	71.884	133.2	30	571	8.910	127.2	48	611	31.771	319.0	12
510	70.881	133.8	12	572	8.005	124.5	48	612	32.735	315.9	12
511	69.828	133.7	12	573	6.623	135.0	48	613	33.786	316.5	12
512	68.862	132.7	30	574	5.587	141.4	48	614	34.805	318.5	12
513	67.835	132.8	30	575	4.809	144.7	48	615	35.847	318.6	12
514	66.805	133.5	12	576	3.811	143.3	48	616	36.877	319.0	12
515	65.749	134.2	12	577	2.753	144.5	68	617	37.901	318.9	12
516	64.747	134.1	12	578	1.764	134.2	68	618	38.719	318.8	12
517	63.751	134.1	30	579	0.816	129.5	88	619	39.995	314.0	12
518	62.835	134.1	12	580	0.083	7.4	88	621	41.969	313.0	12
519	61.678	134.2	30	581	3.125	19.0	48	622	43.192	312.6	12
520	60.672	135.7	12	582	3.709	7.9	48	623	43.718	314.7	12
521	59.621	137.3	12	583	4.475	357.4	48	624	45.217	316.9	12
524	56.509	136.6	12	585	6.317	349.1	48	625	46.086	315.9	12
525	55.587	136.4	30	587	8.049	339.9	48	626	46.936	314.8	12
526	54.542	136.5	12	589	9.944	335.2	48	627	48.787	314.4	12
527	53.438	134.9	12	590	10.935	334.0	30	628	50.204	314.5	12
528	52.580	134.5	12	591	11.888	332.2	48	629	51.163	314.1	12
529	51.611	133.2	12	592	12.885	332.3	30	649	57.852	136.0	30
531	49.690	130.7	12	593	13.875	331.2	30	651	40.477	132.9	12
533	47.649	131.2	12	594	14.898	329.8	30	652	30.095	128.8	12
534	46.571	130.8	30	595	15.752	327.9	30	653	30.530	127.9	30
535	45.433	131.6	30	596	16.813	326.3	30	656	105.961	320.8	12
536	44.584	131.1	12	597	17.678	324.7	30	657	0.923	291.2	88
537	43.478	131.6	12	598	18.684	323.9	30	658	1.899	282.5	68
538	42.399	131.9	12	599	19.687	322.9	30	659	18.044	321.4	30
539	41.341	132.2	12								

FAIRBANKS NORTH DEPLOYMENT

Shot Number 34 Shot Point 67

Shot Time (Julian day, hr, min, sec): 237:10:00:00.012

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	221.219	134.2	12	539	73.706	134.2	12	601	10.876	139.8	48
426	169.456	137.8	12	540	72.317	134.5	12	602	9.906	143.8	48
430	14.860	135.1	30	561	51.500	134.6	12	603	8.811	139.7	48
501	112.380	134.0	12	562	50.390	134.5	12	604	7.816	138.6	48
502	111.383	134.2	12	564	48.565	135.4	12	605	6.849	142.4	48
503	110.346	134.0	12	565	47.362	133.6	12	606	6.138	143.9	68
505	108.312	134.0	12	566	46.382	133.8	30	607	4.789	146.2	48
506	107.273	133.9	12	567	45.323	134.3	30	608	3.843	150.4	48
507	106.316	134.0	12	569	43.298	134.6	30	609	2.668	131.6	68
508	105.269	134.2	30	571	41.244	135.1	30	610	1.761	120.7	68
509	104.265	134.2	12	572	40.285	134.7	30	611	0.943	94.2	88
510	103.279	134.6	12	573	39.069	136.9	12	612	1.108	241.2	88
511	102.223	134.5	12	574	38.030	137.9	12	613	1.518	288.2	68
512	101.226	133.9	12	575	37.231	138.2	12	614	2.384	327.0	68
513	100.204	134.0	12	576	36.247	137.9	48	615	3.426	325.5	48
514	99.196	134.5	12	577	35.188	137.9	30	616	4.482	327.1	48
515	98.159	135.0	12	578	34.214	137.2	12	617	5.488	324.8	48
516	97.156	134.9	12	579	33.260	137.2	30	618	6.295	323.3	48
517	96.159	134.9	12	580	32.399	137.2	30	619	7.908	297.9	48
518	95.242	134.9	12	581	31.068	132.3	30	621	10.013	296.7	48
519	94.088	135.0	12	582	30.208	132.0	30	622	11.259	297.1	30
520	93.111	136.0	12	583	29.143	131.7	30	623	11.451	305.4	30
521	92.073	137.0	12	585	27.254	130.4	30	624	12.780	314.0	30
524	88.957	136.6	12	587	25.179	130.4	30	625	13.694	310.9	48
525	88.033	136.5	12	589	23.159	130.0	30	626	14.629	307.6	30
526	86.990	136.6	12	590	22.166	129.4	30	627	16.504	307.3	30
527	85.866	135.6	12	591	21.144	129.3	30	628	17.905	308.0	30
528	84.999	135.3	12	592	20.241	128.2	30	629	18.893	307.3	30
529	84.000	134.6	12	593	19.226	127.7	30	649	90.294	136.2	30
531	81.991	133.1	12	594	18.151	127.5	30	652	62.355	133.0	12
533	79.975	133.4	12	596	16.014	128.5	30	653	62.750	132.6	12
534	78.881	133.2	30	597	15.051	129.3	30	655	0.081	57.9	88
535	77.774	133.7	12	598	14.019	129.2	30	657	31.630	138.1	30
536	76.909	133.5	30	599	12.963	129.6	30	658	30.921	139.4	30
537	75.820	133.8	12	600	11.851	135.0	30	659	14.487	132.9	30
538	74.756	134.0	12								

FAIRBANKS NORTH DEPLOYMENT

Shot Number 35 Shot Point 61

Shot Time (Julian day, hr, min, sec): 237:10:02:00.006

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	139.205	136.1	12	538	7.407	304.3	12	601	71.252	313.2	12
426	87.953	143.4	12	539	8.479	304.2	12	602	72.332	312.8	12
430	67.192	313.8	12	540	9.922	303.5	12	603	73.295	313.4	12
501	30.383	137.8	12	561	30.589	311.7	12	604	74.265	313.6	12
502	29.406	138.6	12	562	31.693	311.9	12	605	75.291	313.4	12
503	28.352	138.0	12	564	33.572	310.9	12	606	76.021	313.4	12
505	26.314	138.0	12	565	34.683	313.6	30	607	77.385	313.4	12
506	25.269	137.7	12	566	35.667	313.3	12	608	78.380	313.4	12
507	24.324	138.4	12	567	36.740	312.7	12	609	79.373	314.3	30
508	23.303	139.4	30	568	37.747	312.7	12	610	80.322	314.5	12
509	22.303	139.6	12	569	38.774	312.5	12	611	81.308	314.6	12
510	21.382	141.7	12	571	40.849	312.2	12	612	82.392	313.5	12
511	20.322	141.7	12	572	41.789	312.6	12	613	83.420	313.8	12
512	19.228	138.5	12	573	43.137	310.8	12	614	84.356	314.6	12
513	18.223	139.4	12	575	45.087	310.0	12	615	85.389	314.7	12
514	17.299	142.3	12	576	46.027	310.4	12	616	86.394	315.0	12
515	16.392	145.7	12	577	47.070	310.6	12	617	87.421	315.0	12
516	15.390	146.1	12	578	47.977	311.3	12	618	88.242	315.0	12
517	14.411	146.8	12	579	48.922	311.4	12	619	89.696	312.9	12
518	13.504	147.3	12	580	49.784	311.5	12	621	91.690	312.5	12
519	12.404	149.0	12	582	51.841	314.9	12	622	92.917	312.3	12
520	11.951	157.9	12	583	52.909	315.0	12	623	93.401	313.3	12
521	11.692	167.2	12	585	54.829	315.5	12	624	94.819	314.4	12
524	8.672	173.1	12	587	56.899	315.4	12	625	95.727	313.9	12
525	7.862	176.3	30	589	58.928	315.5	12	626	96.613	313.4	12
526	7.150	182.2	12	590	59.935	315.6	12	627	98.474	313.3	12
527	5.315	179.5	12	591	60.957	315.5	12	628	99.888	313.3	12
528	4.417	183.3	12	592	61.897	315.8	12	629	100.857	313.2	12
529	2.919	182.8	12	593	62.923	315.9	12	649	9.516	165.7	30
531	0.051	329.9	88	596	66.090	315.3	12	651	9.421	301.9	12
533	2.136	299.7	30	597	67.029	315.1	12	652	19.685	314.3	12
534	3.169	309.8	30	598	68.061	315.0	12	653	19.300	315.8	12
535	4.367	302.2	30	599	69.106	314.9	12	655	82.019	314.3	12
536	5.167	307.6	12	600	70.198	313.9	12	659	67.553	314.3	12
537	6.300	305.4	12								

FAIRBANKS NORTH DEPLOYMENT

Shot Number 36 Shot Point 70

Shot Time (Julian day, hr, min, sec): 237:10:04:00.005

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	335.376	135.7	12	540	186.854	138.1	12	601	125.852	141.0	12
426	284.192	138.3	12	561	166.130	138.8	12	602	124.893	141.4	12
430	129.732	140.4	12	562	165.022	138.8	12	603	123.789	141.1	12
501	226.717	137.0	12	564	163.274	139.1	12	604	122.786	141.0	12
502	225.751	137.1	12	565	161.922	138.6	12	605	121.838	141.3	12
503	224.690	137.0	12	566	160.971	138.7	12	606	121.125	141.3	12
505	222.653	137.0	12	567	159.960	138.9	12	607	119.769	141.4	12
506	221.605	137.0	12	568	158.966	138.9	12	608	118.798	141.5	12
507	220.668	137.1	12	569	157.971	139.0	12	609	117.608	141.0	12
508	219.654	137.2	30	571	155.964	139.3	12	610	116.622	140.9	12
509	218.654	137.2	12	572	154.986	139.2	12	611	115.616	140.9	12
510	217.723	137.4	12	573	153.907	139.8	12	612	114.830	141.8	12
511	216.664	137.4	12	574	152.918	140.1	12	613	113.741	141.7	12
512	215.574	137.1	12	575	152.135	140.2	12	614	112.611	141.2	12
513	214.574	137.2	12	576	151.141	140.1	12	615	111.567	141.2	12
514	213.635	137.5	12	577	150.081	140.1	12	616	110.521	141.1	12
516	211.658	137.7	12	578	149.079	140.0	12	617	109.505	141.2	48
517	210.665	137.7	12	579	148.128	140.0	12	618	108.694	141.2	30
518	209.748	137.7	12	580	147.273	140.1	12	619	107.863	143.0	12
519	208.607	137.8	12	581	145.654	139.1	12	621	106.082	143.6	12
520	207.748	138.3	12	582	144.776	139.0	12	622	104.947	143.9	12
521	206.810	138.7	12	583	143.707	139.1	12	623	104.114	143.1	12
524	203.658	138.6	12	585	141.739	138.9	12	624	102.372	142.3	12
525	202.729	138.6	12	587	139.695	139.1	12	625	101.622	142.8	30
526	201.694	138.6	12	588	138.676	139.3	12	626	100.935	143.4	12
527	200.474	138.2	12	589	137.672	139.1	12	627	99.178	143.8	12
528	199.581	138.1	12	590	136.657	139.1	12	628	97.776	143.9	12
529	198.498	137.8	12	591	135.647	139.2	12	629	96.900	144.2	12
531	196.301	137.3	12	592	134.677	139.1	12	649	204.958	138.4	12
533	194.347	137.5	12	593	133.654	139.1	12	652	176.769	137.9	12
534	193.231	137.4	12	594	132.589	139.2	12	653	177.105	137.7	12
535	192.193	137.6	12	596	130.571	139.5	12	655	114.996	141.2	12
536	191.304	137.6	12	597	129.676	139.7	12	657	146.538	140.3	12
537	190.255	137.7	12	598	128.659	139.8	12	658	145.869	140.6	12
538	189.227	137.9	12	599	127.647	139.9	12	659	129.287	140.2	12
539	188.202	138.0	12	600	126.742	140.6	12				

FAIRBANKS NORTH DEPLOYMENT

Shot Number 37 Shot Point 64

Shot Time (Julian day, hr, min, sec): 237:10:06:00.011

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	173.346	134.4	12	539	25.865	131.8	30	601	37.057	315.4	12
426	121.594	139.2	12	540	24.457	132.6	30	602	38.112	314.5	12
430	33.041	316.9	12	561	3.774	118.5	48	603	39.112	315.7	12
501	64.525	133.3	30	562	2.746	111.0	68	604	40.093	316.0	12
502	63.520	133.6	30	564	0.791	103.7	88	605	41.102	315.4	12
503	62.491	133.3	30	565	2.006	29.8	68	606	41.830	315.4	12
505	60.461	133.1	30	566	2.287	4.0	68	607	43.196	315.4	30
506	59.426	132.9	30	567	2.886	342.6	48	608	44.189	315.3	12
507	58.464	133.1	12	568	3.788	334.8	12	609	45.239	316.8	12
508	57.407	133.5	30	569	4.714	328.5	48	610	46.202	317.1	12
509	56.404	133.5	30	571	6.683	321.4	48	611	47.199	317.3	12
510	55.402	134.2	12	572	7.663	322.5	48	612	48.203	315.3	12
511	54.349	134.0	12	573	8.863	312.1	30	613	49.248	315.7	12
512	53.383	132.7	30	574	9.982	308.8	48	614	50.240	317.1	12
513	52.355	132.9	30	575	10.810	308.3	30	615	51.279	317.2	12
514	51.325	133.8	12	576	11.747	310.2	30	616	52.302	317.5	12
515	50.272	134.8	12	577	12.792	311.0	30	617	53.327	317.4	12
516	49.270	134.7	12	578	13.716	313.3	30	618	54.147	317.4	12
517	48.274	134.6	30	579	14.665	313.6	30	619	55.474	314.0	12
518	47.357	134.6	12	580	15.529	313.7	30	621	57.449	313.2	12
519	46.201	134.7	30	581	17.001	323.1	30	622	58.671	313.0	12
520	45.212	136.8	12	582	17.881	323.2	30	623	59.194	314.5	12
521	44.194	138.9	30	583	18.948	322.9	30	624	60.674	316.1	12
524	41.066	138.0	30	585	20.927	323.6	30	625	61.553	315.4	30
525	40.141	137.9	30	587	22.957	322.5	30	626	62.411	314.6	12
526	39.099	138.1	30	589	24.977	322.0	30	627	64.264	314.3	12
527	37.968	135.9	30	590	25.992	322.0	30	628	65.681	314.4	12
528	37.106	135.2	12	591	27.001	321.7	30	629	66.642	314.1	12
529	36.131	133.5	30	592	27.973	322.1	30	649	42.397	137.3	30
531	34.232	129.8	30	593	28.994	321.9	30	651	24.998	132.9	12
533	32.183	130.5	30	594	30.058	321.6	30	652	14.708	124.4	30
534	31.111	129.8	48	596	32.084	320.2	30	653	15.181	122.8	30
535	29.962	131.0	30	597	32.992	319.5	12	655	47.882	316.6	12
536	29.119	130.3	30	598	34.015	319.3	30	657	16.339	312.2	30
537	28.007	130.9	30	599	35.043	318.9	12	658	17.141	310.2	30
538	26.925	131.4	30	600	36.050	316.8	30	659	33.440	317.8	12

FAIRBANKS NORTH DEPLOYMENT

Shot Number 38 Shot Point 66

Shot Time (Julian day, hr, min, sec): 237:12:00:00.015

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
501	97.594	134.0	12	538	59.970	133.9	12	592	5.869	109.9	12
502	96.596	134.2	12	539	58.919	134.1	12	593	4.973	104.6	12
503	95.560	134.0	12	540	57.528	134.5	12	596	2.222	75.5	30
505	93.527	134.0	12	561	36.711	134.5	12	597	1.608	51.8	30
506	92.488	133.9	12	562	35.601	134.4	12	598	1.740	16.2	30
508	90.481	134.2	30	564	33.775	135.6	12	599	2.300	350.2	30
510	88.489	134.7	12	565	32.582	132.9	12	600	2.941	317.1	30
512	86.441	133.8	12	566	31.599	133.3	12	601	4.038	303.5	12
513	85.418	134.0	12	568	29.531	134.0	12	602	5.200	299.3	12
514	84.407	134.5	12	569	28.510	134.4	12	603	6.041	309.3	12
515	83.369	135.1	12	571	26.453	135.1	12	604	7.001	311.9	12
516	82.365	135.0	12	572	25.496	134.6	12	605	8.038	309.6	12
517	81.369	135.1	12	573	24.286	138.0	12	606	8.768	309.6	12
518	80.452	135.0	12	574	23.263	139.7	12	607	10.128	310.5	12
519	79.297	135.1	12	575	22.471	140.3	12	608	11.124	310.4	12
521	77.289	137.5	12	576	21.482	139.9	12	609	12.130	316.4	12
524	74.170	137.0	12	577	20.422	139.9	12	611	14.094	318.1	12
525	73.246	136.9	12	578	19.436	138.8	12	612	15.130	311.5	12
526	72.203	137.0	12	579	18.483	138.8	12	613	16.156	313.1	12
527	71.075	135.8	12	580	17.623	139.0	12	614	17.133	317.2	12
528	70.209	135.5	12	581	16.318	129.7	12	615	18.173	317.5	12
529	69.212	134.6	12	582	15.469	128.9	12	616	19.200	318.3	12
531	67.216	132.7	12	583	14.413	128.2	12	617	20.224	318.1	12
533	65.194	133.2	12	585	12.583	124.8	12	618	21.043	317.9	12
534	64.103	133.0	12	587	10.520	123.7	12	619	22.459	309.5	12
535	62.991	133.6	12	589	8.549	120.8	12	621	24.486	308.1	12
536	62.129	133.3	12	590	7.611	118.0	12	622	25.725	307.7	12
537	61.036	133.6	12	591	6.621	115.9	12	649	75.505	136.6	12

FAIRBANKS NORTH DEPLOYMENT

Shot Number 39 Shot Point 60

Shot Time (Julian day, hr, min, sec): 237:12:02:00.005

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	130.981	134.1	12	538	15.875	327.6	12	599	77.467	318.5	12
426	79.201	140.8	30	539	16.860	326.1	12	600	78.481	317.6	12
430	75.473	317.6	12	540	18.164	324.0	12	601	79.478	316.9	12
501	22.378	126.5	12	561	38.877	319.6	12	602	80.521	316.5	12
502	21.337	127.0	12	562	39.987	319.5	12	603	81.536	317.0	12
503	20.368	125.6	12	564	41.775	318.4	12	604	82.520	317.2	12
505	18.388	124.2	12	565	43.073	320.3	12	605	83.524	316.9	12
506	17.400	123.1	12	566	44.031	319.9	12	606	84.251	316.8	12
507	16.420	123.1	12	568	46.057	319.2	12	608	86.608	316.8	12
508	15.314	123.7	30	569	47.063	318.9	12	609	87.670	317.6	12
509	14.333	122.9	12	571	49.100	318.3	12	610	88.634	317.7	12
510	13.224	124.9	12	572	50.067	318.6	12	611	89.630	317.8	12
511	12.211	123.5	12	573	51.265	316.9	12	612	90.622	316.7	12
512	11.568	116.6	12	574	52.327	316.2	12	613	91.672	317.0	12
513	10.530	116.0	30	575	53.138	316.0	12	614	92.672	317.7	12
514	9.312	118.7	12	576	54.109	316.2	12	615	93.711	317.7	12
515	8.085	122.3	30	577	55.166	316.3	12	616	94.733	317.9	12
516	7.136	119.8	30	578	56.123	316.8	12	617	95.759	317.9	12
517	6.185	117.3	48	579	57.076	316.8	12	618	96.579	317.9	12
518	5.339	113.7	30	580	57.939	316.8	12	621	99.822	315.5	12
519	4.230	109.5	30	581	59.370	319.4	12	622	101.036	315.3	12
521	2.185	174.9	68	582	60.245	319.5	12	623	101.599	316.2	12
524	1.493	294.3	68	583	61.315	319.5	12	625	103.973	316.7	12
525	2.343	306.1	68	585	63.271	319.9	12	626	104.817	316.2	12
526	3.388	307.9	48	587	65.326	319.6	12	627	106.664	316.0	12
527	4.562	329.0	30	588	66.368	319.2	12	628	108.081	316.1	12
528	5.497	331.2	30	589	67.354	319.6	12	629	109.036	315.9	12
529	6.801	338.1	30	590	68.367	319.6	12	649	0.049	272.4	88
531	9.580	345.4	30	591	69.383	319.5	12	651	17.603	323.8	12
533	11.128	337.6	12	592	70.343	319.7	12	652	28.277	324.4	12
534	12.247	336.8	30	593	71.368	319.7	12	653	27.985	325.5	12
535	13.062	332.2	30	596	74.491	319.1	12	657	58.726	316.4	12
536	13.978	332.4	12	597	75.409	318.8	12	658	59.481	315.7	12
537	14.919	329.7	12	598	76.435	318.7	12	659	75.870	318.0	12

FAIRBANKS NORTH DEPLOYMENT

Shot Number 40 Shot Point 59

Shot Time (Julian day, hr, min, sec): 237:12:04:00.241

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
228	108.796	136.0	12	538	37.668	315.6	12	600	100.575	315.5	12
426	57.740	146.6	30	539	38.719	315.3	12	601	101.610	315.0	12
430	97.568	315.4	12	540	40.115	314.7	12	602	102.676	314.7	12
501	0.050	343.4	88	561	60.929	315.2	12	603	103.660	315.1	12
502	1.097	297.3	88	562	62.038	315.2	12	604	104.635	315.3	12
503	2.078	315.9	68	564	63.882	314.6	12	605	105.653	315.1	12
505	4.114	317.4	48	565	65.066	316.0	12	606	106.382	315.0	12
506	5.160	318.7	48	566	66.043	315.8	12	607	107.748	315.1	12
507	6.108	316.2	48	568	68.108	315.4	48	608	108.742	315.0	12
508	7.163	313.0	30	569	69.129	315.3	12	609	109.759	315.7	12
509	8.166	313.3	48	571	71.192	315.0	12	610	110.712	315.8	12
510	9.207	309.3	48	572	72.144	315.2	12	611	111.702	315.9	12
511	10.245	310.5	48	573	73.429	314.1	12	612	112.756	315.1	12
512	11.203	317.2	48	574	74.523	313.6	12	613	113.792	315.3	12
513	12.220	316.0	30	575	75.343	313.5	12	614	114.749	315.9	12
514	13.252	312.4	30	576	76.300	313.8	12	615	115.783	315.9	12
515	14.366	309.3	30	577	77.351	313.9	12	616	116.794	316.1	12
516	15.353	310.0	30	578	78.284	314.2	12	617	117.820	316.1	12
517	16.344	310.4	30	579	79.234	314.3	12	618	118.641	316.1	12
518	17.253	310.8	30	580	80.097	314.3	12	619	120.040	314.6	12
519	18.415	310.8	30	582	82.243	316.4	12	621	122.017	314.2	12
520	19.632	306.2	12	583	83.313	316.4	12	622	123.239	314.1	12
521	21.029	302.4	12	585	85.241	316.8	12	623	123.756	314.8	12
524	23.879	306.1	30	587	87.310	316.6	12	624	125.204	315.6	12
525	24.760	306.8	30	588	88.380	316.3	12	625	126.101	315.3	12
526	25.805	307.1	30	589	89.339	316.7	12	626	126.972	314.9	12
527	26.690	310.6	30	590	90.347	316.7	12	627	128.828	314.7	12
528	27.511	311.7	30	591	91.368	316.7	12	628	130.244	314.8	12
529	28.437	314.1	12	592	92.313	316.9	12	629	131.207	314.6	12
531	30.478	318.3	30	593	93.338	316.9	12	649	22.459	306.8	30
533	32.464	317.1	12	594	94.414	316.9	12	652	50.090	316.9	12
534	33.569	317.5	30	596	96.498	316.5	12	653	49.721	317.4	12
535	34.654	316.3	30	597	97.433	316.3	12	657	80.905	314.0	12
536	35.525	316.8	12	598	98.463	316.3	12	658	81.689	313.6	12
537	36.607	316.1	12	599	99.505	316.2	12	659	97.940	315.8	12

FAIRBANKS NORTH DEPLOYMENT

Shot Number 42 Shot Point 74

Shot Time (Julian day, hr, min, sec): 238:08:00:00.005

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
430	85.002	32.8	12	537	95.611	71.7	12	600	85.680	30.8	30
502	116.271	87.4	12	538	94.812	71.2	12	601	85.032	30.0	30
503	115.809	86.9	30	539	94.132	70.7	12	602	84.715	29.2	30
504	115.152	86.6	12	540	93.147	70.1	30	603	85.752	28.7	12
505	114.502	86.2	12	561	85.968	57.5	12	604	86.238	28.1	12
506	113.910	85.8	12	562	85.752	56.8	12	605	86.152	27.4	30
507	113.107	85.5	12	564	84.662	55.7	12	607	86.741	26.0	30
509	111.452	84.8	12	565	85.917	54.7	12	608	86.973	25.4	30
510	110.276	84.7	12	566	85.528	54.1	12	609	88.428	25.0	30
511	109.667	84.2	12	568	84.741	52.8	30	610	89.010	24.5	12
512	109.941	83.4	12	569	84.407	52.1	30	611	89.519	23.9	12
513	109.117	83.1	30	571	83.774	50.7	12	613	89.052	22.4	12
514	107.831	82.9	12	572	83.918	50.1	30	614	90.514	22.1	12
515	106.516	82.8	12	573	82.337	49.3	30	615	91.026	21.5	12
516	105.955	82.3	30	575	81.377	48.0	12	617	92.118	20.4	30
517	105.338	81.9	12	576	81.570	47.3	12	618	92.431	20.0	30
518	104.810	81.5	12	577	81.608	46.6	12	619	90.064	18.4	12
519	104.002	81.1	12	578	82.046	45.9	12	621	90.206	17.0	12
520	102.073	81.2	12	579	82.071	45.3	12	622	90.493	16.2	12
521	100.144	81.2	30	580	82.042	44.7	12	623	92.125	16.4	12
523	99.965	79.9	12	581	84.777	43.8	12	624	94.327	16.0	12
524	98.978	79.5	12	584	85.377	41.8	12	625	94.078	15.4	30
525	98.569	79.0	12	585	85.607	41.2	12	626	93.708	14.6	30
526	97.912	78.6	12	587	85.579	39.8	12	627	94.338	13.6	12
527	98.553	77.5	12	589	85.797	38.4	12	628	95.103	12.9	12
528	98.425	77.0	12	591	86.082	37.1	30	629	95.322	12.3	12
529	98.835	76.1	12	592	86.525	36.5	12	651	93.263	70.4	12
531	99.606	74.5	12	593	86.691	35.8	30	652	90.714	63.9	30
532	98.922	74.0	12	594	86.796	35.1	30	653	91.322	64.0	30
533	98.077	73.7	12	596	86.614	33.7	30	657	81.597	44.1	30
534	97.764	73.0	30	597	86.475	33.0	12	658	80.951	43.6	12
535	96.629	72.7	30	598	86.608	32.4	30	659	85.625	32.6	12
536	96.469	72.1	30	599	86.631	31.7	30				

FAIRBANKS NORTH DEPLOYMENT
(CANADIAN)

Shot Number 29 Shot Point 69

Shot Time (Julian day, hr, min, sec): 237:08:00:00.007

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	145.052	137.6	548	138.020	137.6	555	130.969	137.7
542	144.276	137.7	549	137.008	137.4	556	129.840	137.7
543	143.163	137.7	550	136.009	137.3	557	129.043	137.8
544	142.023	137.7	551	134.756	137.1	558	127.944	138.1
545	141.063	137.7	552	133.916	137.5	559	126.913	138.0
546	140.119	137.6	553	132.736	137.7	560	125.959	138.0
547	138.937	137.6	554	131.907	137.7			

Shot Number 30 Shot Point 62

Shot Time (Julian day, hr, min, sec): 237:08:02:00.006

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	1.094	263.8	548	7.692	313.5	555	14.740	315.3
542	1.828	279.2	549	8.672	316.7	556	15.875	315.1
543	2.762	294.7	550	9.663	318.9	557	16.690	314.5
544	3.830	301.7	551	10.920	320.7	558	17.837	313.2
545	4.777	304.1	552	11.773	316.2	559	18.847	314.0
546	5.651	308.7	553	12.980	314.6	560	19.797	314.3
547	6.809	310.9	554	13.808	314.9			

Shot Number 31 Shot Point 54

Shot Time (Julian day, hr, min, sec): 237:08:04:00.007

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	149.755	316.8	548	156.757	317.0	555	163.809	317.1
542	150.553	316.7	549	157.738	317.2	556	164.944	317.1
543	151.659	316.7	550	158.711	317.3	557	165.758	317.0
544	152.796	316.8	551	159.940	317.5	558	166.896	316.9
545	153.761	316.8	552	160.839	317.2	559	167.912	317.0
546	154.685	316.9	553	162.048	317.0	560	168.864	317.0
547	155.860	316.9	554	162.876	317.1			

FAIRBANKS NORTH DEPLOYMENT
(CANADIAN)

Shot Number 32 Shot Point 57

Shot Time (Julian day, hr, min, sec): 237:08:06:00.157

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	97.917	321.9	548	104.949	321.9	555	111.995	321.6
542	98.688	321.7	549	105.971	322.0	556	113.121	321.5
543	99.801	321.7	550	106.979	322.2	557	113.916	321.4
544	100.941	321.7	551	108.243	322.4	558	115.012	321.2
545	101.900	321.6	552	109.056	321.9	559	116.044	321.2
546	102.846	321.7	553	110.227	321.6	560	116.998	321.2
547	104.029	321.7	554	111.056	321.6			

Shot Number 33 Shot Point 65

Shot Time (Julian day, hr, min, sec): 237:08:10:00.007

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	39.233	133.8	548	32.246	132.5	555	25.214	131.3
542	38.435	134.1	549	31.286	131.6	556	24.078	131.3
543	37.329	133.9	550	30.340	130.8	557	23.255	131.6
544	36.192	133.8	551	29.148	129.8	558	22.101	132.5
545	35.227	133.8	552	28.189	131.3	559	21.095	131.9
546	34.307	133.3	553	26.964	131.9	560	20.148	131.5
547	33.135	133.1	554	26.140	131.7			

Shot Number 34 Shot Point 67

Shot Time (Julian day, hr, min, sec): 237:10:00:00.012

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	71.644	135.2	548	64.632	134.7	555	57.578	134.5
542	70.853	135.4	549	63.647	134.3	556	56.443	134.6
543	69.743	135.3	550	62.675	133.9	557	55.630	134.8
544	68.605	135.3	551	61.451	133.6	558	54.500	135.2
545	67.640	135.3	552	60.546	134.4	559	53.480	135.0
546	66.711	135.1	553	59.340	134.7	560	52.527	134.9
547	65.533	135.0	554	58.511	134.6			

FAIRBANKS NORTH DEPLOYMENT
(CANADIAN)

Shot Number 35 Shot Point 61

Shot Time (Julian day, hr, min, sec): 237:10:02:00.006

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	10.774	300.1	548	17.539	308.1	555	24.529	310.8
542	11.600	300.0	549	18.464	309.9	556	25.664	310.9
543	12.646	301.9	550	19.399	311.4	557	26.489	310.6
544	13.739	303.3	551	20.601	312.8	558	27.658	310.0
545	14.688	304.0	552	21.554	310.6	559	28.652	310.6
546	15.548	305.6	553	22.788	310.0	560	29.595	310.9
547	16.688	306.8	554	23.608	310.3			

Shot Number 36 Shot Point 70

Shot Time (Julian day, hr, min, sec): 237:10:04:00.005

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	186.254	138.4	548	179.222	138.4	555	172.180	138.6
542	185.484	138.5	549	178.201	138.3	556	171.055	138.6
543	184.371	138.5	550	177.194	138.2	557	170.263	138.7
544	183.232	138.5	551	175.932	138.1	558	169.177	138.9
545	182.274	138.5	552	175.116	138.4	559	168.143	138.8
546	181.326	138.5	553	173.947	138.5	560	167.189	138.8
547	180.143	138.5	554	173.118	138.6			

Shot Number 37 Shot Point 64

Shot Time (Julian day, hr, min, sec): 237:10:06:00.011

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	23.754	134.4	548	16.767	132.1	555	9.754	128.6
542	22.958	134.9	549	15.817	130.3	556	8.621	128.1
543	21.850	134.7	550	14.888	128.4	557	7.792	128.7
544	20.713	134.5	551	13.726	126.1	558	6.624	131.2
545	19.748	134.5	552	12.726	129.3	559	5.630	128.4
546	18.826	133.6	553	11.492	130.3	560	4.695	126.2
547	17.654	133.1	554	10.672	129.7			

FAIRBANKS NORTH DEPLOYMENT
(CANADIAN)

Shot Number 38 Shot Point 66

Shot Time (Julian day, hr, min, sec): 237:12:00:00.015

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	56.853	135.3	548	49.842	134.8	555	42.789	134.4
542	56.062	135.6	549	48.860	134.2	556	41.654	134.5
543	54.952	135.5	550	47.890	133.7	557	40.840	134.8
544	53.814	135.4	551	46.670	133.2	558	39.709	135.4
545	52.849	135.5	552	45.758	134.2	559	38.689	135.1
546	51.920	135.2	553	44.550	134.6	560	37.736	135.0
547	50.742	135.1	554	43.722	134.6			

Shot Number 39 Shot Point 60

Shot Time (Julian day, hr, min, sec): 237:12:02:00.005

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	18.743	321.3	548	25.775	321.1	555	32.821	320.3
542	19.514	320.4	549	26.799	321.9	556	33.948	320.1
543	20.627	320.5	550	27.813	322.5	557	34.746	319.7
544	21.766	320.4	551	29.084	323.0	558	35.852	318.9
545	22.726	320.1	552	29.881	321.1	559	36.880	319.1
546	23.671	320.6	553	31.053	320.3	560	37.835	319.1
547	24.855	320.7	554	31.883	320.3			

Shot Number 40 Shot Point 59

Shot Time (Julian day, hr, min, sec): 237:12:04:00.241

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	40.822	313.6	548	47.807	314.7	555	54.854	315.1
542	41.625	313.4	549	48.782	315.2	556	55.990	315.0
543	42.728	313.6	550	49.752	315.7	557	56.806	314.9
544	43.862	313.7	551	50.981	316.2	558	57.950	314.5
545	44.827	313.7	552	51.883	315.3	559	58.962	314.7
546	45.743	314.1	553	53.096	314.9	560	59.913	314.8
547	46.915	314.3	554	53.923	315.0			

FAIRBANKS NORTH DEPLOYMENT
(CANADIAN)

Shot Number 42 Shot Point 74

Shot Time (Julian day, hr, min, sec): 238:08:00:00.005

Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)	Loc	Dist (km)	Azim (deg)
541	92.131	69.9	548	89.811	65.7	555	87.635	61.4
542	91.582	69.5	549	89.871	65.0	556	87.251	60.7
543	91.199	68.8	550	89.899	64.3	557	86.847	60.2
544	90.784	68.2	551	89.862	63.5	558	86.122	59.5
545	90.366	67.6	552	88.765	63.2	559	86.058	58.8
546	90.243	67.0	553	88.046	62.5	560	85.879	58.2
547	89.901	66.3	554	87.830	62.0			

OLNES DEPLOYMENT

Shot Number 44 Shot Point 61

Shot Time (Julian day, hr, min, sec): 240:22:00:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
701	30.165	137.8	12	743	27.563	137.9	12	781	24.855	137.8	12
702	30.230	137.9	12	744	27.495	137.9	12	782	24.811	137.8	30
703	30.172	137.9	12	745	27.384	137.9	12	783	24.748	137.8	12
704	30.126	138.0	12	746	27.316	137.9	30	784	24.687	137.8	12
705	30.058	138.0	12	747	27.268	138.0	30	785	24.624	137.9	30
706	30.000	138.1	12	748	27.180	138.0	30	786	24.576	137.9	30
707	29.943	138.1	12	749	27.085	138.0	12	788	24.462	138.0	12
708	29.874	138.2	12	750	27.025	138.0	30	789	24.406	138.1	12
709	29.829	138.2	30	752	26.868	138.0	12	790	24.324	138.4	12
710	29.772	138.2	12	753	26.783	138.0	12	791	24.297	138.5	30
711	29.720	138.3	12	754	26.742	138.0	12	792	24.257	138.6	12
713	29.597	138.4	12	755	26.678	138.0	12	793	24.220	138.7	12
714	29.499	138.5	12	756	26.620	138.0	12	794	24.174	138.8	12
715	29.405	138.6	30	757	26.554	138.1	12	795	24.131	138.9	12
716	29.372	138.6	12	758	26.500	138.1	12	796	24.074	139.1	12
717	29.290	138.6	12	759	26.425	138.1	12	797	23.909	139.1	12
718	29.201	138.7	12	760	26.314	138.0	12	798	23.875	139.2	12
719	29.121	138.8	12	761	26.277	138.2	12	799	23.808	139.2	12
720	29.056	138.8	12	762	26.169	138.2	12	800	23.736	139.2	12
721	28.952	138.9	12	763	26.084	138.2	12	801	23.662	139.3	30
723	28.819	138.9	30	764	25.986	138.2	12	802	23.598	139.4	12
724	28.748	138.8	30	765	25.900	138.2	12	804	23.444	139.4	12
725	28.690	138.7	12	767	25.769	138.2	12	805	23.385	139.4	12
726	28.629	138.6	12	768	25.722	138.1	12	806	23.304	139.4	30
727	28.585	138.5	48	769	25.661	138.1	12	807	23.224	139.4	12
728	28.511	138.4	12	770	25.620	138.0	12	808	23.152	139.4	12
729	28.472	138.3	12	771	25.564	138.0	12	809	23.103	139.4	12
731	28.351	138.0	12	772	25.517	137.9	12	810	23.033	139.4	30
732	28.290	138.0	30	773	25.458	137.8	12	811	22.965	139.4	12
733	28.216	137.9	12	774	25.397	137.8	12	812	22.895	139.4	12
734	28.156	137.9	12	775	25.268	137.7	12	813	22.828	139.4	12
735	28.067	137.9	30	776	25.253	137.6	30	815	22.686	139.5	12
736	28.009	137.9	12	777	25.176	137.6	30	816	22.574	139.5	12
737	27.945	137.9	12	778	25.048	137.6	48	817	22.531	139.6	12
738	27.872	137.9	12	779	24.966	137.7	30	818	22.423	139.7	12
739	27.814	137.9	12	780	24.913	137.7	30	819	22.378	139.7	12
740	27.741	137.9	12								

OLNES DEPLOYMENT

Shot Number 45 Shot Point 59

Shot Time (Julian day, hr, min, sec): 240:22:02:00.009

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
701	0.266	325.5	12	740	2.687	317.7	12	781	5.573	318.6	12
702	0.199	311.2	12	743	2.866	317.3	12	782	5.617	318.6	12
703	0.261	307.2	12	744	2.933	317.3	12	783	5.680	318.5	12
704	0.314	302.6	12	745	3.044	317.4	12	784	5.741	318.3	12
705	0.381	304.3	12	746	3.112	317.4	12	785	5.804	318.2	12
706	0.442	303.8	12	747	3.160	317.3	12	786	5.852	318.0	12
707	0.504	302.6	12	748	3.249	317.3	12	788	5.966	317.5	12
708	0.580	301.4	12	749	3.344	317.3	12	789	6.024	317.1	12
709	0.628	300.8	12	750	3.404	317.1	12	790	6.109	316.2	12
710	0.688	300.9	12	752	3.561	316.7	12	791	6.138	315.8	12
711	0.750	299.3	12	753	3.646	317.1	12	792	6.181	315.3	12
713	0.878	299.6	12	754	3.686	317.2	12	793	6.221	314.9	12
714	0.984	299.3	12	755	3.751	317.2	12	794	6.270	314.6	12
715	1.098	297.3	12	756	3.809	317.0	12	795	6.316	314.3	12
716	1.121	299.0	12	758	3.929	316.6	12	796	6.380	313.6	12
717	1.211	298.7	12	759	4.005	316.5	12	797	6.547	313.5	12
718	1.306	298.7	12	760	4.114	317.4	12	798	6.582	313.4	12
719	1.389	298.9	12	761	4.154	316.3	12	799	6.649	313.5	12
720	1.459	298.8	12	762	4.262	316.3	12	800	6.723	313.4	12
721	1.579	298.0	12	763	4.347	316.3	12	801	6.800	313.2	12
723	1.697	300.2	12	764	4.445	316.1	12	802	6.868	312.9	12
724	1.753	302.1	12	765	4.531	316.3	12	804	7.023	312.9	12
725	1.795	304.2	12	767	4.662	316.4	12	805	7.081	313.0	12
726	1.843	306.0	12	768	4.708	316.7	12	806	7.163	313.0	12
727	1.877	307.6	12	769	4.768	317.1	12	807	7.240	313.3	12
728	1.936	310.4	12	770	4.809	317.4	12	808	7.312	313.2	12
729	1.969	311.8	12	771	4.864	317.6	12	809	7.361	313.3	12
731	2.079	315.9	12	772	4.911	318.0	12	810	7.429	313.5	12
732	2.139	316.9	12	773	4.970	318.2	12	812	7.564	313.7	12
733	2.213	317.7	12	774	5.031	318.5	12	813	7.635	313.5	12
734	2.272	318.0	12	775	5.160	318.7	12	815	7.781	313.3	12
735	2.361	317.8	12	776	5.176	319.4	12	816	7.890	313.5	12
736	2.420	317.7	12	777	5.254	319.6	12	817	7.939	313.2	12
737	2.483	317.6	12	778	5.382	319.4	12	811	7.496	313.6	12
738	2.556	317.8	12	779	5.463	319.0	12	818	8.048	313.1	12
739	2.614	317.6	12	780	5.515	318.8	12	819	8.096	313.0	12

OLNES DEPLOYMENT

Shot Number 46 Shot Point 60

Shot Time (Julian day, hr, min, sec): 240:22:30:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
702	22.219	126.5	12	744	19.540	125.0	12	782	16.956	122.7	12
703	22.157	126.5	12	745	19.432	124.9	12	783	16.892	122.7	12
704	22.104	126.6	12	746	19.366	124.9	12	784	16.829	122.7	12
705	22.036	126.6	12	747	19.319	124.8	12	785	16.765	122.6	12
706	21.976	126.6	12	748	19.230	124.8	12	786	16.714	122.7	12
707	21.915	126.6	12	749	19.138	124.7	12	788	16.589	122.8	12
708	21.841	126.7	12	750	19.077	124.7	12	789	16.522	122.9	12
709	21.793	126.7	12	752	18.919	124.7	12	790	16.419	123.1	12
710	21.734	126.7	12	753	18.841	124.6	12	791	16.381	123.2	12
711	21.675	126.8	12	754	18.802	124.5	12	792	16.329	123.4	12
713	21.547	126.8	12	755	18.739	124.5	12	793	16.281	123.5	12
714	21.443	126.9	12	756	18.681	124.5	12	794	16.225	123.6	12
715	21.336	127.0	12	758	18.557	124.5	12	795	16.174	123.7	12
717	21.219	127.0	12	759	18.481	124.5	12	796	16.099	123.9	12
718	21.126	127.1	12	760	18.388	124.2	12	797	15.932	123.8	12
719	21.043	127.1	12	761	18.332	124.4	12	798	15.896	123.8	12
720	20.975	127.1	12	762	18.226	124.4	12	799	15.831	123.8	12
721	20.860	127.2	12	763	18.143	124.3	12	800	15.758	123.8	12
723	20.733	127.1	12	764	18.044	124.3	12	801	15.677	123.8	12
724	20.672	127.0	12	765	17.962	124.2	12	802	15.605	123.9	12
725	20.625	126.8	12	766	17.899	124.1	12	804	15.452	123.8	12
726	20.575	126.6	12	767	17.836	124.1	12	805	15.394	123.7	12
727	20.541	126.5	12	768	17.797	124.0	12	806	15.315	123.7	12
728	20.486	126.2	12	769	17.745	123.8	12	807	15.244	123.5	12
729	20.456	126.1	12	770	17.712	123.7	12	808	15.172	123.5	12
731	20.367	125.6	12	771	17.662	123.6	12	809	15.126	123.4	12
732	20.315	125.5	12	772	17.624	123.5	12	810	15.064	123.3	12
733	20.249	125.4	12	773	17.571	123.4	12	811	14.998	123.2	12
734	20.193	125.3	12	774	17.519	123.2	12	812	14.933	123.1	12
735	20.105	125.3	12	775	17.399	123.1	12	813	14.861	123.1	12
736	20.046	125.2	12	776	17.400	122.9	12	815	14.711	123.2	12
737	19.983	125.2	12	777	17.330	122.7	12	816	14.609	123.0	12
738	19.913	125.2	12	778	17.204	122.7	12	817	14.553	123.1	12
739	19.854	125.1	12	779	17.116	122.7	12	818	14.444	123.1	12
740	19.784	125.1	12	780	17.060	122.7	12	819	14.393	123.1	12
743	19.606	125.0	12	781	16.999	122.7	12				

OLNES DEPLOYMENT

Shot Number 47 Shot Point 60

Shot Time (Julian day, hr, min, sec): 241:01:30:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
901	14.226	123.1	12	944	11.918	120.0	12	980	9.980	118.1	12
902	14.162	123.2	12	945	11.827	119.7	12	981	9.915	118.3	12
903	14.021	123.3	12	946	11.761	119.3	12	982	9.871	118.5	12
904	14.026	123.7	12	947	11.709	118.9	12	983	9.824	118.7	12
905	13.982	123.9	12	948	11.709	118.3	12	984	9.761	119.0	12
906	13.948	124.2	12	949	11.690	118.2	12	985	9.686	119.2	12
907	13.893	124.4	12	950	11.700	117.9	12	989	9.422	119.6	12
908	13.844	124.4	12	952	11.726	117.2	12	990	9.312	118.7	12
909	13.802	124.5	12	953	11.692	117.1	12	991	9.251	119.4	12
910	13.745	124.6	12	954	11.676	116.8	12	992	9.178	119.2	12
911	13.678	124.7	12	955	11.622	116.6	12	993	9.122	119.0	12
913	13.570	124.8	12	956	11.552	116.5	12	994	8.998	118.8	12
914	13.480	124.7	12	957	11.487	116.4	12	995	8.958	118.7	12
915	13.383	124.7	12	958	11.427	116.3	12	996	8.901	118.9	12
917	13.224	124.9	12	959	11.349	116.2	12	997	8.857	119.1	12
919	13.050	124.6	12	960	11.288	116.1	12	998	8.837	119.4	12
920	12.974	124.6	12	961	11.215	116.0	12	999	8.823	119.7	12
921	12.921	124.5	12	962	11.153	115.9	12	1000	8.813	120.2	12
923	12.787	124.3	12	963	11.090	115.9	12	1001	8.814	120.7	12
924	12.721	124.3	12	964	11.039	115.8	12	1002	8.820	121.2	12
925	12.669	124.2	12	965	10.970	115.6	12	1004	8.788	122.3	12
926	12.605	124.1	12	966	10.889	115.7	12	1005	8.713	122.9	12
927	12.555	124.0	12	967	10.831	115.8	12	1006	8.762	123.2	12
928	12.483	123.9	12	968	10.754	115.9	12	1007	8.767	123.6	12
929	12.423	123.8	12	969	10.702	116.0	12	1008	8.750	124.0	12
931	12.309	123.5	12	970	10.654	116.1	12	1009	8.756	124.4	12
932	12.211	123.5	12	971	10.603	116.1	12	1011	8.695	125.2	12
933	12.178	123.3	12	972	10.530	116.0	12	1012	8.636	125.4	12
934	12.133	123.1	12	973	10.497	116.3	12	1013	8.604	125.4	12
935	12.097	122.9	12	974	10.432	116.4	12	1014	8.545	125.4	12
937	12.040	122.4	12	975	10.333	116.8	12	1015	8.493	125.2	12
938	12.029	122.2	12	976	10.260	117.1	12	1016	8.454	125.2	12
939	12.021	121.8	12	977	10.187	117.3	12	1017	8.415	125.0	12
940	12.023	121.6	12	978	10.119	117.5	12	1018	8.372	124.8	12
942	12.026	120.7	12	979	10.050	117.8	12	1019	8.333	124.7	12
943	12.007	120.3	12								

OLNES DEPLOYMENT

Shot Number 48 Shot Point 59

Shot Time (Julian day, hr, min, sec): 241:01:32:00.009

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
901	8.259	312.7	12	944	10.664	314.2	12	981	12.685	313.3	12
902	8.320	312.6	12	945	10.768	314.4	12	982	12.718	313.1	12
903	8.457	312.3	12	946	10.853	314.8	12	983	12.755	312.9	12
904	8.439	311.6	12	947	10.925	315.1	12	984	12.806	312.7	12
905	8.475	311.2	12	948	10.957	315.7	12	985	12.871	312.4	12
906	8.502	310.8	12	949	10.985	315.8	12	989	13.116	311.9	12
907	8.551	310.5	12	950	10.995	316.1	12	990	13.252	312.4	12
908	8.599	310.3	12	952	11.011	316.8	12	991	13.288	311.9	12
909	8.637	310.1	12	953	11.054	316.9	12	992	13.368	312.0	12
910	8.693	309.9	12	954	11.090	317.2	12	993	13.430	312.0	12
911	8.759	309.8	12	955	11.153	317.3	12	994	13.555	312.0	12
913	8.864	309.6	12	956	11.226	317.2	12	995	13.598	312.0	12
914	8.955	309.6	12	957	11.293	317.2	12	996	13.649	311.9	12
915	9.052	309.6	12	958	11.356	317.2	12	997	13.684	311.7	12
917	9.207	309.3	12	959	11.438	317.2	12	998	13.694	311.5	12
919	9.386	309.6	12	960	11.499	317.1	12	999	13.697	311.3	12
920	9.462	309.6	12	961	11.577	317.1	12	1000	13.695	311.0	12
921	9.516	309.7	12	962	11.640	317.1	12	1001	13.680	310.7	12
923	9.653	309.8	12	963	11.702	317.0	12	1002	13.661	310.3	12
924	9.720	309.9	12	964	11.756	317.0	12	1004	13.670	309.6	12
925	9.774	310.0	12	965	11.828	317.0	12	1005	13.732	309.2	12
926	9.840	310.1	12	966	11.903	316.8	12	1006	13.680	309.0	12
927	9.890	310.1	12	967	11.952	316.7	12	1007	13.670	308.8	12
928	9.964	310.2	12	968	12.013	316.4	12	1008	13.682	308.5	12
929	10.027	310.3	12	969	12.057	316.3	12	1009	13.671	308.3	12
931	10.146	310.5	12	970	12.097	316.1	12	1010	13.678	307.7	12
932	10.245	310.5	12	971	12.142	316.0	12	1011	13.726	307.7	12
933	10.281	310.7	12	972	12.220	316.0	12	1012	13.784	307.6	12
934	10.331	310.9	12	973	12.232	315.7	12	1013	13.817	307.6	12
935	10.373	311.1	12	974	12.285	315.5	12	1014	13.876	307.6	12
937	10.445	311.7	12	975	12.360	315.1	12	1015	13.928	307.7	12
938	10.464	311.9	12	976	12.414	314.7	12	1016	13.967	307.7	12
939	10.484	312.3	12	977	12.473	314.5	12	1017	14.007	307.8	12
940	10.490	312.6	12	978	12.523	314.2	12	1018	14.052	307.9	12
942	10.526	313.6	12	979	12.578	313.9	12	1019	14.092	308.0	12
943	10.565	314.0	12	980	12.633	313.6	12				

OLNES DEPLOYMENT

Shot Number 49 Shot Point 61

Shot Time (Julian day, hr, min, sec): 241:02:00:00.007

Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db	Loc Num	Dist (km)	Azim (deg)	Db
901	22.221	139.9	12	945	19.698	139.9	12	981	17.823	141.3	12
902	22.164	140.0	12	946	19.606	139.8	12	982	17.797	141.5	12
903	22.033	140.1	12	947	19.528	139.6	12	983	17.768	141.7	12
904	22.066	140.4	12	948	19.488	139.3	12	984	17.726	141.9	12
905	22.041	140.5	12	949	19.458	139.2	12	985	17.671	142.1	12
906	22.025	140.7	12	950	19.445	139.0	12	989	17.453	142.6	12
907	21.986	140.9	12	952	19.422	138.7	12	990	17.299	142.3	12
908	21.944	140.9	12	953	19.378	138.6	12	991	17.285	142.7	12
909	21.912	141.1	12	953	19.378	138.6	30	992	17.203	142.7	12
910	21.863	141.1	12	954	19.341	138.4	12	993	17.138	142.7	12
911	21.803	141.2	12	955	19.277	138.4	12	994	17.017	142.8	12
913	21.704	141.3	12	956	19.205	138.4	12	995	16.975	142.8	12
914	21.616	141.4	12	957	19.138	138.5	12	996	16.930	143.0	12
915	21.522	141.5	12	958	19.075	138.5	12	997	16.906	143.1	12
917	21.382	141.7	12	959	18.994	138.5	12	998	16.904	143.3	12
919	21.195	141.7	12	960	18.932	138.5	12	999	16.913	143.5	12
920	21.120	141.7	12	961	18.855	138.5	12	1000	16.932	143.7	12
921	21.067	141.7	12	962	18.793	138.6	12	1001	16.962	143.9	12
923	20.927	141.7	12	964	18.676	138.6	12	1002	17.001	144.2	12
924	20.860	141.7	12	965	18.604	138.6	12	1004	17.035	144.7	12
925	20.803	141.7	12	966	18.531	138.8	12	1005	17.005	145.2	12
927	20.685	141.7	12	967	18.484	138.9	12	1006	17.066	145.2	12
928	20.608	141.7	12	968	18.425	139.0	12	1007	17.090	145.4	12
929	20.544	141.7	12	969	18.382	139.1	12	1008	17.099	145.6	12
931	20.419	141.7	12	970	18.345	139.3	12	1009	17.129	145.8	12
933	20.282	141.7	12	971	18.301	139.3	12	1010	17.161	146.2	12
934	20.225	141.6	12	972	18.223	139.4	12	1011	17.116	146.3	12
935	20.177	141.5	12	973	18.217	139.6	12	1012	17.071	146.4	12
937	20.088	141.3	12	974	18.168	139.7	12	1013	17.040	146.4	12
938	20.060	141.1	12	975	18.100	140.0	12	1014	16.984	146.5	12
939	20.029	140.9	12	976	18.053	140.3	12	1015	16.929	146.5	12
940	20.016	140.8	12	977	18.001	140.5	12	1016	16.889	146.5	12
942	19.955	140.3	12	978	17.959	140.7	12	1017	16.845	146.5	12
943	19.907	140.1	12	979	17.913	140.9	12	1018	16.794	146.5	12
944	19.806	140.0	12	980	17.866	141.1	12	1019	16.750	146.5	12

APPENDIX C

ARCHIVE TAPE FORMAT

Archive data tapes are written in SEG-Y standard format (Barry and others, 1975). Recording density is 1600 bpi, phase encoded (PE). In order to accommodate seismic refraction data, some minor changes have been made to the tape header fields. A complete list of header fields is provided in the card image portion of the reel identification header, shown below:

C 1 REEL IDENTIFICATION HEADER BYTES:

C 2	3217-3218	sampling interval (microsecs)
C 3	3221-3222	number of samples per trace
C 4	3225-3226	data sample format code
C 5	3255-3256	measurement system (1 = meters; 2 = feet)

C 6

C 7

C 8 TRACE IDENTIFICATION HEADER BYTES:

C 9	1 - 4	trace sequence number within reel
C10	5 - 8	trace sequence number within reel
C11	9 - 12	station location number
C12	29 - 30	trace ID code (1 = seismic data)
C13	37 - 40	shotpoint-receiver distance (M)
C14	41 - 44	station elevation (M)
C15	45 - 48	shotpoint elevation (M)
C16	49 - 52	source depth (M)
C17	69 - 70	scalar to be applied to all elevations
C18	71 - 72	scalar to be applied to all coordinates
C19	73 - 76	shotpoint coordinate, X
C20	77 - 80	shotpoint coordinate, Y
C21	81 - 84	receiver coordinate, X
C22	85 - 88	receiver coordinate, Y
C23	89 - 90	coordinate units (1 = meters; 2 = seconds of arc)
C24	115 - 116	number of samples in this trace
C25	117 - 118	sample interval in microseconds for this trace
C26	121 - 122	instrument attenuation in db
C27	157 - 158	shot time - year
C28	159 - 160	shot time - day of year
C29	161 - 162	shot time - hour of day (24 hour clock)
C30	163 - 164	shot time - minute of hour
C31	165 - 166	shot time - second of minute
C32	167 - 168	time basis code (2 = GMT)
C33	181 - 182	shot time milliseconds
C34	183 - 184	shotpoint location number
C35	185 - 186	recording instrument unit number
C36	191 - 192	distance weighting exponent (hundredths)
C37	193 - 194	shot sequence number (shot number)
C38	195 - 196	shot size (kg)
C39	197 - 200	shot point - station azimuth (seconds of arc)
C40	201 - 204	time of first point minus shot time (msec)

The data point is "32 bit floating point", and the appropriate bytes (3225-3226) of the binary reel id header contain a value of 1. The trace amplitudes have not been adjusted for instrument gain, but the gain correction factor can be estimated from the instrument attenuation value (att) specified in bytes 121-122. To correct for gain, the data should be demeaned and then multiplied by:

$$10^{(att/20)}$$

The measurement system (bytes 3255-3256 of the binary reel header) is set to 1, meters.

Shotpoint an receiver coordinates are in seconds of arc (byte field 89-90). The coordinate scalar multiplier (bytes 71-72) is set to -100, so the coordinates (bytes 73-88) are in hundredths of a second of arc.

Bytes 157-166 and bytes 181-182 refer to the shot detonation time. The time of the first data sample is found by adding the shot detonation time to the time specified in bytes 201-204.

Since there is no weighting of amplitudes with distance for archive tapes, the distance weighting exponent (bytes 191-192) is not used.

Shot sequence number (bytes 193-194) refers to the order in which shots were fired during the field campaign.