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THE KAPUSKASING STRUCTURAL ZONE
SEISMIC REFRACTION EXPERIMENT - 1984

A Phase I LITHOPROBE Experiment

Crustal Seismic Refraction Profiles
Across the Kapuskasing Structural Zone
North-West Ontario

by

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ABSTRACT

The Kapuskasing structural zone (KSZ) is a 500km long, NNE trending, linear region of high-grade metamorphic rocks that transects the east-west structural grain of the central Archean Superior Province of the Canadian Shield. The feature has recently been interpreted as an obducted and eroded slice through the top two thirds of continental crust. The KSZ could therefore provide an ideal natural laboratory for study of Archean lower crustal processes.

In July 1984 a total of 20 large shots were observed by seven spreads each with 60 recorders. Recording was concentrated on profile lines 350-450km long. Over 1130 seismograms were generated, and many shots were recorded on up to 21 stations of the ECTN network.

RÉSUMÉ

La zone structurale de Kapuskasing (ZSK) consiste en une bande de roches très métamorphisées qui s'étire sur 500 km en direction N-NE et qui coupe transversalement les structures est-ouest du centre de la province archéenne du Supérieur du Bouclier canadien. Selon une interprétation récente, il y aurait eu chevauchement et érosion, ce qui laisse entrevoir la possibilité d'y observer un échantillon des deux tiers supérieurs de la croûte continentale. La ZSK se prête donc particulièrement bien à l'étude sur le terrain des processus qui ont agi dans les couches profondes de l'écorce terrestre pendant l'Archéen.

En juillet 1984, les effets de 20 tirs sismiques importants ont été observés au moyen de 7 déploiements de 60 enregistreurs chacun. Les données ont été enregistrées le long de lignes sismiques d'une longueur variant de 350 à 450 km. Plus de 1130 sismogrammes ont été obtenus. De nombreux tirs ont été enregistrés par plus d'une station du RTEC, dans certains cas, 21 stations.

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INTRODUCTION

The Kapuskasing structural zone has attracted considerable interest from research groups working on the tectonics of the Archean. In order to image the shape of the structure, a crustal scale seismic refraction experiment was run in July 1984. The objectives also include; determination of the velocity structure of the crust (for modelling, and use in future reflection experiments), and determination of the depth and shape of the Moho discontinuity.

The principal parameters affecting the experimental design were : finance, shot point availability, road access, known shape of the KSZ, recording instrumentation availability, and personnel availability, in more or less descending order of importance.

This report outlines details of the experiment carried out by the University of Toronto in fulfilling these aims.

SCIENTIFIC BACKGROUND

The core of the North American continental craton is the Archean Superior Province. It is a complex of metamorphic and igneous rock , i.e., mainly granitoid gneisses and plutons and preserved belts of metamorphosed and deformed volcanic and sedimentary rocks (supracrustal sequences). The Superior Province is the world's largest contiguous area of exposed Precambrian rock that has remained tectonically quiescent since the end of Archean time 2.5

Ga ago. The province has been divided into several subprovinces in which the non-granitoid component is largely metavolcanic or metasedimentary. The characteristic greenstone belts of the metavolcanic-plutonic subprovinces contain most of the mineral deposits for which the Superior Province is famous.

The Kapuskasing structural zone (KSZ) is a zone of high-grade metamorphic rocks that transects the east-west structural grain of the central part of the Superior Province (Figure 1). The feature is at least 500km long and extends from south of Chapleau, Ontario, NNE to beneath the sediments of the Moose River basin.

The KSZ was first recognised as a regional gravity anomaly (Garland, 1950; Innes, 1960; Wilson and Brisbin, 1965). Later it was noted as the locus of alkalic intrusives (eg Gittins et al, 1967), and as an anomalous seismic crustal structure (Iyer et al, 1969; Halls, 1982). Publication of the Federal-Provincial Survey over the area in the 1960's led to a flurry of prospecting activity and geological mapping (Bennett et al, 1967; Gaucher, 1966). The distribution of granulite grade metamorphic rocks, anorthosites, and positions of major faults were established at this time. A provisional early interpretation of the feature as a late Archean or very early Proterozoic horst structure was widely accepted (McGlynn, 1970). Other early interpretations of the KSZ suggested it was a suture (Wilson, 1968), which was disputed by Gibb and Walcott (1971), or a failed arm of the 1 Ga old Keewenawan rift (Burke and Dewey, 1973). More recently, a number of detailed geological investigations were made of parts of the zone (Thurston et al, 1977; Simmons et al, 1980; Riccio, 1981). Watson (1980) re-examined the aeromagnetic data and configuration of diabase dyke swarms, reiterating that the zone was formed at the close of the Kenoran orogeny and

concluding that it is a broad, mainly transcurrent fault zone with an unknown sinistral displacement.

Geological, gravity and aeromagnetic maps demonstrate the continuity of geological features and geophysical anomalies across the KSZ uplift. The Wawa and Abitibi greenstone belts to the west and east have similar lithological characteristics, and ages of deposition and intrusion, which strongly suggests that they are parts of a formerly continuous belt, now interrupted by the KSZ uplift. Thus, the Wawa and Abitibi subprovinces shown in Figure 1 are thought to be correlative. Similarly, the Opatica and Quetico belts are presumed to be correlative.

GEOLOGY

Recent studies by Percival (1981, 1983), and Percival and Card (1983). have shown that high-grade rocks in the KSZ near Chapleau formed at crustal depths (23-30km). As well, they have shown that there is a continuous transition in metamorphic level from low grade greenschist facies rocks of the Wawa greenstone belt west of the KSZ, to upper amphibolite and granulite facies rocks in the KSZ proper.

They have also demonstrated major faulting on the Ivanhoe Lake cataclastic zone on the eastern margin, across which the metamorphic level drops abruptly to greenschist facies, (Figure 2). They interpreted the Ivanhoe Lake cataclastic zone as a listric thrust fault which cuts through the entire continental crust. Thus the KSZ is interpreted as an oblique cross-section through the upper two-thirds of the Superior Province continental crust.

Percival (1985) has, since the Phase I seismic experiments, completed a field survey of the north portion of the KSZ. He shows that the granulite grade

rocks continue north to highway 11, where the grade drops to amphibolite facies. There is no evidence for a northward continuance of the Ivanhoe Lake cataclastic zone. Granulite grade rocks are again found northeast of Fraserdale, trending NNE toward James Bay.

GEOPHYSICS

The geophysical coverage of the KSZ is reconnaissance in nature. Gravity and magnetic fields display strong positive anomalies that follow the strike of the mapped KSZ. In some areas they suggest deeper features, extending to more than 15km, that are not obviously related to the surface geology. A recent summary of seismicity, landsat linearments, gravity, magnetic, regional uplift and stress measurement data has been compiled by Forsyth et al (1983). Their study attempted to show the interrelationships between the various data sets and the seismicity data provided by improved earthquake recording since 1968. Structures in at least the northern part of the KSZ appear to be seismogenic. They probably extend to mid-crustal depths or greater and have been the locus of events at least as large as magnitude 5.

The time-term results from the 1963 and 1966 Lake Superior experiments have recently been summarised by Halls (1982). One interpretation of these results suggests a slight crustal thickening beneath the KSZ.

Paleomagnetic and structural studies by Ernst and Halls (1984) have shown that the 2.6 Ga old Matachewan dyke swarm of northern Ontario continues west of the KSZ and has a total length in excess of 800km. Their data support the model of Percival and Card (1983) by suggesting that large scale westward tilting of the crust has occurred in the vicinity of the KSZ.

A 10km long pilot seismic reflection line was shot in July 1984. Cook

(1984) has interpreted a set of dipping reflectors to be possibly related to the Ivanhoe Lake cataclastic zone. Flatter lying reflectors are also seen beneath the zone, at longer travel times, presumably from within the underlying Abitibi greenstone belt.

PARTICIPANTS

The refraction programme involved the cooperation of a large number of groups. The principal organisers and field participants form a part of the LITHOPROBE Seismic Group, and are listed in Table 1. The success of the experiment also relied on the cooperation of the Ontario Ministry of Natural Resources (MNR), and four mining companies (see Acknowledgements).

INSTRUMENTATION

Six different designs of recording equipment were deployed (see Table 2). In the case of the five major participants, (University of Toronto (UofT); Earth Physics Branch, DEMR (EMR); University of British Columbia (UBC); University of Western Ontario (UWO); and the University of Wisconsin, Madison (UWM)), the instruments were deployed and the data played back by the institutions involved. The University of Alberta (UA) and Memorial University of Newfoundland (MUN) Geotech Microcorders were deployed by UWO participants, and the data were played back by UBC. The UA Sprengnether was

deployed by UofT and the data played back at UA. A team was also fielded by McGill University, Montreal.

All instruments except those from UWM employed only a single vertical component seismometer. at some sites UWM recorded three orthogonal components. The UWM instruments were also on trigger mode recording between scheduled shot windows, and they collected a number of other events.

In the case of the UofT instruments, all seismograms were recorded on two channels with a factor of eight difference in gain. This was a useful precaution which overcame the relatively limited 60dB dynamic range in these instruments.

In addition to recordings of the survey instruments, most blasts were recorded by a number of the stations of the East Canada Telemetered Network (ECTN). Records from these stations are included in the data compilation.

PRESURVEY RECONNAISSANCE

Considerable effort was made prior to the main field survey to optimise the geometry of the lines and to maximise the proportion of sites on outcrop.

The planned contract to cover field and supplies costs was for \$150,000 of which \$60,000 was to be spent on explosives. To drill shot point holes would cost \$6-12,000 per shot, so the use of lakes and flooded mine pits was highly desirable to contain these costs. In October 1983, DJ Northey put the proposal to the management and district biologists of ten district and two regional offices of the MNR, and to five mining companies in the hope of gaining access to use certain lakes and pits. To reduce the chance of a blowout and to increase the

seismic efficiency of the blast, a water depth of at least 20m was considered desirable. (Luosto et al, 1984, however, show excellent signal to noise ratios for shot-receiver distances of over 300km using 100-1000kg of TNT fired in lakes of 4-10m deep. Luosto (pers. comm.) has shown that the explosives are distributed in charge parcels of 10-50kg, in a matrix with 8-10m between parcels. Water may be thrown 200m skyward by these blasts.)

Approximately 50 lakes and four flooded mine pits fitted the 20m depth criteria. The lakes were all categorised by the MNR as having little or no recreational use, containing no sport fish, and would suffer a minimum of environmental damage if used as a seismic shot point. The distribution of lakes was geographically poor, limiting flexibility in design of the line layout.

Accessibility to most of the lakes was very difficult and only a dozen were located in a pattern that could be useful for a refraction survey.

The MNR had attempted to compile road access maps of the region to be available in early 1984, however few districts were confident that many of the roads would be useable. The action of high river flows in spring, zealous beavers and growth of vegetation all serve to rapidly reclaim unused forestry roads.

Eventually, the six lakes and four mine pits shown in Figure 3 and listed in Table 3 were chosen as offering a suitable shot matrix.

A reconnaissance and flagging trip left Toronto after the spring thaw of May 1984 to verify road accessibility, and to locate 420 suitable recorder sites. Almost all of the selected sites were within 5km from a line linking the end shots, however a few sites drift off line up to 25km as necessitated by road location (Figure 4). Heavy use was made of four-wheel-drive vehicles and of

all-terrain tri-cycles (ATCs). After road scouting, line 2 had a gap of 50km in the middle so the Nemegosenda River was scouted for suitable sites. Gaps of 35 and 25km remained on lines 1 and 2 to be serviced by helicopter. In spite of generally poor outcrop coverage, 71% of the recorder sites were located on outcropping bedrock (see Table 4).

SHOT POINTS

In designing the experiment, consideration was given to maximising the use of mine pits and to minimising the use of lakes. A half of the tonnage and a half of the shots were fired in the four mine pits (see Table 3). All of the pits had excellent access.

Of the six lakes used, two had major access problems, and another two required trail preparation before the experiment.

Shot point A is only accessible across a 150m wide esker lake, and 200m of hilly terrain. Six-man inflatable boats and ATCs were used to ferry the 1600kg of explosives to this location.

Shot point C is located 2.2km from the nearest road over nearly flat terrain. A trail was prepared for use by ATCs to ferry the 3200kg of explosives to the site.

Shot point D needed minor trail preparation to move 1600kg of explosives to this site.

Shot point K is located 4km from the nearest road. A trail had to be cut and a bridge needed repair. A four meter high cliff, a swamp, and a hilly

terrain provided rather testing conditions in ferrying 1600kg of explosives to the site. An eight-wheeled all terrain vehicle and an ATC were used for the day prior to the experiment to transfer the 1600kg to the site.

During the survey heavy rain temporarily cut access to shot point J, however the shooting program was not interrupted.

Each shot was loaded into a number of 150 liter plastic barrels and lowered into the lake from small inflatable boats. Each barrel contained 200-250kg of ammonium nitrate based HYDROMEX explosive, together with two boosters. Shot depths varied from 27-80m and the barrels were dropped in the same location for each shot. PRIMACORD linked each barrel to an electrical detonator near the shooting site 200-400m away.

SHOOTING

All shots were loaded and supervised by EMR shooters, and detonation was controlled by those noted in Table 3. The shots were electrically detonated by chronometer controlled blasters checked with radio time signals.

EXPERIMENTAL PROGRAM

The main field experiment took place from July 4-22, 1984.

Five lines were chosen to probe the crust and upper mantle about the KSZ. Three lines parallel the structure, and two cross it obliquely (see Figure

3). The most important lines (2 and 5) were shot in two sections, to halve typical recorder site spacings from 5 to 3km. All lines were reverse shot and lines 3, 4, and 5 were center shot. In addition, lines 1 and 4 were fan shot from C and J respectively, at distances sufficient to provide a mantle head wave.

A few seismograms are not included in the data displayed in Figure 7, and the reason for these omissions are noted in Table 6.

Shooting took place at ten minute intervals starting at 0600 for the first five lines , and starting at 0520 for the last two lines (Table 3). When shooting into the 900 recorder spread (which lay along highway 101), it was found that traffic noise was significant at 0600-0630. An earlier shooting schedule was instituted for line 400 as many of the sites are near highway 11. An even earlier schedule would have been desirable from the point of view of wind noise (which became significant after 0500), however the desire to have some daylight at the shotpoint while shooting required later shot times.

All recorders were preprogrammed with six or seven time windows, allowing back-up times for each shooter. Back-up times were 30 minutes after each scheduled shot time, but were never used. Most recorders were limited to 30 min recording capacity, switching on one minute prior to shot time and recording for a four minute time window.

Details relating to each recording site are included in Table 6, with an explanation of the parameters listed.

At the same time as the refraction experiment, a 10km long pilot crustal scale seismic reflection line was being shot near Foleyet. A team from McGill University, led by D Crossley, employed UBC and UWO instruments to record seismograms from the large land airgun source. They attempted to establish

the feasibility of using refraction type recorders in association with such a source, to image horizons from wide angle reflections.

ENVIRONMENTAL IMPACT

Two environmental surveys were mounted by officers of the MNR in conjunction with the seismic shooting program to determine the effect of seismic blasts on fish. In addition, qualitative data were collected on the number and size distribution of killed fish found on the lake surface after each shot.

Preliminary findings suggest a kill radius of about 100-150m in the controlled surveys, and that dead fish were generally found floating over a similar area about the shot. In the case of the six lakes used apparent mortality varied from zero, through to a few fish, to several hundred fingerlings. In no case were the fish mortality species or figures alarming.

Full details on fish mortality are not yet available, but will be reported when the data comes to hand.

With respect to physical damage, shot 18 caused a 50m long slip from a steep esker bank. The shot was located about 100m from the bank and several trees were brought down into the lake. Most shots brought muddy water to the the surface over an area of a few hundred meters. No shots blew out to the atmosphere, although all caused a plume of spray a few meters high as the bubble broke the lake surface.

TIMING

There were four different timing systems used during the survey (see Table 7). Information from the US National Bureau of Standards (NBS) show that there is always less than 1msec time difference between the various signal sources. Of much greater importance is the propagation delays of the various signals, though these would only amount to a 5msec variation between participants' time records. As digitizing of the seismic signal was at 10 or 16msec intervals, no correction was made for either offset or propagation delay errors.

All NBS time signals are rated according to UTC(NBS) time. During the period of the seismic survey UTC(NBS) was within 5usec of UTC. It may be seen in Table 7 that WWV and WWVB varied from UTC by no more than a few microseconds, and that CHU (by mandate must be within 1msec of UTC) was generally less than 10usec from UTC. The WWVB code includes an "add" or "subtract" Xmsec to form UT2 time. During July 1984 the code reads "add 100msec" to form UT2 time, and in the same period NBS information showed that 88-95msec must be added to WWV or WWVB time codes to form UT1 time. Neither UT1 nor UT2 time are relevant to our needs, so it is not necessary to make any corrections to the raw time code values.

The accuracy to which the WWVB time code is read at UofT is usually better than 5msec, dependent mainly on the signal strength received. Information on the relative time of signals generated by Omega to that of UTC has been requested of the US Coast Guard, but is not yet at hand.

COMPILATION OF THE DATA

The data were initially played back and organised onto computer tape by each of the participants involved. The data from these tapes were then collated and put into a new format by the University of Toronto. The format is described in Appendix 1, and is suitable to be read by the fortran plotting program SEISPLT. Documentation on the use of SEISPLT is included in Appendix 2.

An advantage of the SEISPLT format is its storage volume. By using INTEGER*2 format for the data, this survey, with 20 shots and up to 60 recorders and 21 ECTN stations, each with two minutes of trace data, may be stored with full header information in less than 26 Mbytes. At 6250 BPI, the KSZ refraction data may be stored on less than a half of a regular computer tape. The data and the SEISPLT program is contained on a 6250 BPI tape that can be purchased for a nominal handling charge and the cost of materials and reproduction by writing to:

Manager
Seismological Data Centre
Division of Seismology and Geomagnetism
1 Observatory Crescent
Ottawa, Ontario
K1A 0Y3
CANADA

ECTN DATA

Many of the shots were recorded on up to 21 of the East Canada Telemetered Network (ECTN) of permanent seismicity stations (see Figure 5).

These stations recorded the "sections" plotted in Figures 8. (These sections are not of the same nature as the KSZ refraction sections as the stations form an array and do not lie on a straight line.) The relationship between site number and ECTN station number is listed in Table 8. Shot 9 was not recorded by the ECTN network.

OBSERVATIONS AND DISCUSSIONS

The raw unfiltered data are plotted in Figure 7. The sections are plotted for each shot using a reducing velocity of 7.0km/sec. The trend of arrivals with apparent velocities other than 7.0km/sec is plotted in Figure 6. The sections for two fan shots are reduced to 8.2km/sec. The figures alongside each trace are the station number and the participant. The traces have been scaled so that the maximum trace amplitude in the plotting window is a constant for each section.

The following comments may be made from a visual examination of the record sections.

- 1) The upper crustal velocity structure varies from less than 6km/sec (e.g. near shot point A and J), to greater than 6.5km/sec west of shot point G.
- 2) High seismic velocities (greater than 6.5km/sec) are apparent near the surface on lines 2 and 5 over the KSZ. In the case of sections 5-H and 5-G, there is a positive step in arrival time of about 0.4 sec, when shooting over the KSZ. This confirms the interpretation of the KSZ being a slab of high velocity material outcropping through an otherwise low velocity upper crust. It is noteworthy that shot point J lies on the southern extension of the KSZ, yet section 2-J does not show high speed arrivals for the first 40-50km moveout of the section.
- 3) An average of apparent mantle velocities suggests variations from about 8.2km/sec in the west to over 8.4km/sec in the east. The higher apparent mantle velocities may in fact be sampling a layer beneath the Mohorovicic

discontinuity. Mantle depths are in the range of 40-50km, being deeper beneath the KSZ and in the north. The thinnest crust sampled is towards the southern end of line 3.

4) Wide angle reflections are visible on most sections from mid-crustal reflectors and from the Mohorovicic discontinuity. These are, however, less obvious in the case of sections 2-C and 2-J, along the mapped strike of the KSZ.

5) From simple two-dimensional dipping-layer modeling, the crust is generally made up of three layers. The uppermost layer has a seismic velocity of 5.9-6.2km/sec and is 0-12km thick. The next layer has a seismic velocity of 6.4-6.6km/sec and resides between depths of 0-25km, and it overlays a layer with seismic velocity of 6.9-7.2km/sec.

6) Bubble pulses are clearly evident on many sections (e.g. 1-B, 2-C, 5-G, 5-H,), having a repetition period of 1-1.5 seconds. These certainly confuse the picking of later arrivals in many cases.

7) Several sections show high frequency energy (above 10Hz) dominating for considerable moveouts (e.g. 1-F, 1-H, 2-C, 2-J, and 5-H). The latter section shows a sudden loss of signal at 240km moveout. It is not clear whether this is caused by geological structural reasons, or by a lack of energy from this shot point. Shot point H was a flooded open-pit iron ore mine and the ore was in a long thin (fault controlled?) body whose strike is in the same orientation as line 5. A crush zone with a strike aligned with line 5 may have absorbed some of the seismic energy.

8) There appears to be a shallow high velocity body in the vicinity of Timmins. This is perhaps most clearly seen on section 5-G shooting east,

where the first arrival steps in a similar manner to section 5-G shooting west over the KSZ.

9) Although the ECTN data provide time term information only, (and the crustal velocity profiles beneath the stations are presently not known by the authors), their time terms suggest average mantle velocities higher than 8.2km/sec. Again, the head wave read may be from a layer beneath the Mohorovicic discontinuity.

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- 2) The participants listed in Table 1, who loaded shots and fielded recorders in extremely difficult terrain and weather conditions. They ensured the success of the experiment.
- 3) The technicians, students and advisors, etc, who contributed from behind the scenes, and in particular E Kanasewich (UA) and J Wright (MUN) for lending their recording instruments.
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Table 1 : PARTICIPANTS (Those in brackets were not in the field)

Institution	Organisers	Field Assistants
U of Toronto	GF West DJ Northey*	C Zelt*, A Nautiyal*, D White J Deere, D Harnois, S Singh S Hannan, N Bregman, P St Jean E Longworth*, (P Walker, R Ernst, J Bisson)**
Earth Physics Branch	(M Berry) A Green D Forsyth*	Asudeh, G Buchbinder, R Haddon Huang, C Michaud, P Morel R Schiemann
U of British Columbia	R Ellis	R Meldrum
U of Western Ontario	R Mereu	P Cox, P McGill, D Wang
U of Wisconsin, (Madn)	R Meyer	H Meyer, W Boone, W Unger **
McGill University	D Crossley	M Samson
U of Alberta	(E Kanasewich)	
Memorial Univ, Nfld	(J Wright)	

* These participants formed the flagging and shot point reconnaissance group.

** Replacement field assistants from the U of Toronto group were P Walker, R Ernst, and J Bisson; and from U of Wisconsin, W Boone and W Unger

Table 2 : INSTRUMENTATION

Institution	Recording Instruments	Geophones
U of Toronto	11 UofT design digital	Mark Products L4
Earth Physics Branch	12 EMR backpack digital	Mark Products L4C
U of British Columbia	12 Geotech MCR600 digital	Mark Products L4
U of Western Ontario	9 UWO design FM system	Mark Products L4C
U of Wisconsin (Madn)	12 UWM design digital	Hall Sears HS-10
U of Alberta	1 Sprengnether digital 1 Geotech MCR600 digital	Mark Products L4 Mark Products L4C
Memorial Univ, Nfld	2 Geotech MCR600 digital	Geotech
Total	— 60 instruments	

Table 3a : SHOT POINT INFORMATION

Shot point	Shot Name	Line name	Date/Time July 1984	Size (kg)	Depth (m)	
01	D	'POTTER LAKE'	'300-DK'	07 10 00 00.012	1600	32
02	G	'REEVES PIT'	'300-DK'	07 10 10 00.015	800	30
03	K	'RIOUXP2 LAKE'	'300-DK'	07 10 20 00.027	1600	28
04	E	'MUNRO PIT'	'900-EH'	09 10 00 00.022	800	80
05	G	'REEVES PIT'	'900-EH'	09 10 10 00.005	800	30
06	H	'SIRJAMES PIT'	'900-EH'	09 10 20 00.051	1600	33
07	E	'MUNRO PIT'	'500-EH'	11 10 00 00.022	1600	80
08	G	'REEVES PIT'	'500-EH'	11 10 10 00.005	800	30
09	H	'SIRJAMES PIT'	'500-EH'	11 10 20 00.051	800	33
10	C	'STAR LAKE'	'800-CJ'	14 09 59 59.988	1600	32
11	J	'LINEUS LAKE'	'800-CJ'	14 10 20 00.026	800	32
12	C	'STAR LAKE'	'200-CJ'	17 10 00 00.000	800	32
13	J	'LINEUS LAKE'	'200-CJ'	17 10 20 00.032	1600	36
14	E	'MUNRO PIT'	'400-AE'	19 09 20 00.006	1700	80
15	A	'GOLDENEYE LA'	'400-AE'	19 09 28 00.024	1600	30
16	C	'STAR LAKE'	'400-AE'	19 09 35 59.994	800	32
17	J	'LINEUS LAKE'	'400-AE'	19 09 44 00.027	2000	34
18	B	'GUILFOYLE LA'	'100-BH'	21 09 28 00.014	1600	30
19	F	'MATACHewan P'	'100-BH'	21 09 36 00.000	2000	33
20	H	'SIRJAMES PIT'	'100-BH'	21 09 44 00.039	1600	33

See Figure 3 for the Shot-receiver configurations.

Table 3b : SHOT POINT INFORMATION

Shot	Section	Latitude	Longitude	Elev'n (km)	Shooter
01	3-D	80.745014	49.336444	0.236	Forsyth
02	3-G	82.080281	48.205848	0.290	Buchbinder
03	3-K	83.283389	46.778379	0.406	Green
04	5-E	80.249323	48.560018	0.222	Forsyth
05	5-G	82.080281	48.205848	0.290	Buchbinder
06	5-H	84.675042	48.042317	0.310	Green
07	5-E	80.249323	48.560018	0.222	Forsyth
08	5-G	82.080281	48.205848	0.290	Buchbinder
09	5-H	84.675042	48.042317	0.310	Green
10	2-C	81.789079	49.355440	0.194	Forsyth
11	2-J	83.927115	47.407944	0.354	Green
12	2-C	81.789079	49.355440	0.194	Forsyth
13	2-J	83.927115	47.407944	0.354	Green
14	4-E	80.249323	48.560018	0.222	West
15	4-A	84.170978	50.014282	0.145	Forsyth
16	4-C	81.789079	49.355440	0.194	Buchbinder
17	4-J	83.927272	47.408390	0.355	Green
18	1-B	82.315951	49.791132	0.195	Forsyth
19	1-F	80.683953	47.948134	0.302	Buchbinder
20	1-H	84.675042	48.042317	0.310	Green

Table 4 : SITES / CONDITIONS

Outcrop	Sediment	Outcrop	Sediment
100	101-103	429-433	428
104	105	436	434-435
106-114	115-116	439	437-438
117-125	126	445	440-444
127-145	147	448	446-447
148-160		452-453	449-451
		456	454-455
		458-460	457
202	200-201		
209	203-208	501-507	508
211	210	509-515	516
213	212	517-546	547
215-222	214	548-555	556
225	223-224	557	558
235	226-234	559-560	
247-261	236-246		
		805	802-804
311-312	301-310	807-808	806
314	313	810-813	809
316-325	315	816-818	814-815
327-337	326	820-830	819
340-350	339	832-833	831
352-360	351	836-837	834-835
		841-861	838-840
405	401-404		
408-409	406-407	901-916	917
412-413	410-411	918	919-922
419-420	414-418	923-932	933-936
422-427	421	937-960	

Table 5 : SUCCESSFUL RECORDINGS

Successful recordings were obtained from all shots and sites numbered between -01 and -60, except as noted below.

Shot/site	Participant/Problem	Shot/site	Participant/Problem
+all/100	sited in lieu 123	-all/426	UA failure
- 18/106	UWM no data provided	-all/502	UT not sited
-all/123	see site 100	-7,8/503	EMR no data provided
- 18/133	UBC failure	- 7/507	EMR no data provided
-all/140	EMR no data provided	-all/531	UBC failure
-all/146	UWM no data provided	-8,9/534	UBC no data provided
- 20/148	UWM no data provided	-all/545	UBC failure
-all/154	EMR no data provided	-all/801	see site 861
+all/200	sited in lieu 251	- 10/820	EMR no data provided
-all/251	see site 200	-all/827	UA not sited
-all/252	see site 261	-all/842	UWM no data provided
+all/261	sited in lieu 252	-all/849	UT not sited
- 3/311	UA failure	+all/861	sited in lieu 801
-all/323	UT failure	- 6/924	UWM failure
-all/335	UBC failure	-all/926	UBC failure
-all/338	UWM not sited	-all/939	UT failure
-all/344	UWM failure	-all/944	UT not sited
-all/347	UA not sited	-all/959	UA not sited
-all/355	UT failure		

SUMMARY :

	Sites	Records
Not fielded	7	19
No data provided/failures	13	41
Partial failures		11
	—	—
Total lost sites/records	20	71
Total attempted sites/records	420	1200

Table 6 : RECORDER SITE INFORMATION

The following tables are for shots 1-20, and they list the following data :

Site = Recorder site number
Lat = Recorder site Latitude
Long = Recorder site Longitude
Elev = Recorder site Elevation
Dist = Recorder site to shot distance
Azim = Recorder site to shot site azimuth
Time = Time of first data point on data tape
GN = Gain of instrument (uV/unit of field data)
VS = Velocity Sensitivity of seismometer (V/m/s)
Part = Participant
SR = Sampling rate (samples/sec)

NOTE : A University of Alberta Sprengnether was sited at sites 114, 200, and 437. These data were not transcribed onto the data-tape at the time the sections were plotted in Figure 7. Also, at the time Table 5 was produced, the correct values for the GN of University of Wisconsin instruments was not available.

Shot 1
 KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984
 POTTER LAKE - Line 300-DK Shot time 1984-07-07 10:00: 0.01
 Lat 49.33644, Long 80.74501, Elev 0.236km, Depth 32.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
301	49.18045	80.92131	0.250	21.579	36.42	09:59:54.37	1.00	102.0	UWes	60.0
302	49.14472	80.98218	0.259	27.439	38.92	09:59:59.96	1.00	102.0	EMR	60.0
303	49.10100	81.01336	0.259	32.677	36.64	09:59:55.84	1.00	102.0	UWes	60.0
304	49.04175	81.05316	0.274	39.732	34.31	09:59:59.95	1.00	102.0	EMR	60.0
305	49.00018	81.07998	0.267	44.668	33.03	09:59:58.00	1.00	102.0	UWes	60.0
306	48.95894	81.12499	0.274	50.309	33.29	09:59:59.96	1.00	102.0	EMR	60.0
307	48.91858	81.13445	0.274	54.473	31.30	09:59:54.98	0.61	98.0	MemU	60.0
308	48.87743	81.12670	0.274	58.158	28.49	09:59:59.97	1.00	102.0	EMR	60.0
309	48.83409	81.11072	0.274	61.924	25.42	09:59:55.00	0.61	98.0	MemU	60.0
310	48.80990	81.33763	0.274	72.827	36.26	09:59:59.97	1.00	102.0	EMR	60.0
311	48.77522	81.36551	0.282	77.150	35.77	09:59:54.96	0.61	102.0	UAlb	60.0
312	48.70228	81.34521	0.290	83.071	31.68	09:59:59.95	1.00	102.0	EMR	60.0
313	48.63936	81.32815	0.290	88.492	28.62	10:00: 0.02	-	160.0	UWis100.0	
314	48.55902	81.38678	0.290	98.408	28.29	09:59:54.95	0.61	102.0	UBC	60.0
315	48.56570	81.45393	0.290	100.211	30.94	09:59:55.02	0.61	102.0	UBC	60.0
316	48.57402	81.54869	0.274	103.214	34.47	10:00: 7.27	0.25	60.0	UofT	60.0
317	48.51992	81.54655	0.335	108.142	32.60	09:59:54.95	0.61	102.0	UBC	60.0
318	48.48496	81.55740	0.335	111.859	31.86	10:00: 0.01	-	160.0	UWis100.0	
319	48.45042	81.61667	0.323	117.445	32.64	09:59:54.99	0.61	102.0	UBC	60.0
320	48.43457	81.68448	0.314	121.679	34.14	09:59:56.48	-	160.0	UWis100.0	
321	48.37757	81.66204	0.329	126.088	31.91	10:00: 8.94	0.25	60.0	UofT	60.0
322	48.34375	81.68346	0.335	130.121	31.61	09:59:54.97	0.61	102.0	UBC	60.0
324	48.28539	81.79113	0.335	139.872	32.93	09:59:54.94	0.61	102.0	UBC	60.0
325	48.23990	81.84356	0.335	146.235	33.09	10:00:10.16	0.25	60.0	UofT	60.0
326	48.20511	81.90416	0.351	151.942	33.67	09:59:59.73	-	160.0	UWis100.0	
327	48.14512	81.92495	0.351	158.370	32.79	09:59:54.97	0.61	102.0	UBC	60.0
328	48.17500	82.03437	0.366	160.212	35.80	10:00: 0.02	-	160.0	UWis100.0	
329	48.11152	82.00421	0.396	164.730	33.75	09:59:54.95	0.61	102.0	UBC	60.0
330	48.08105	82.08578	0.381	170.952	34.75	10:00:10.71	0.25	60.0	UofT	60.0
331	48.03433	82.12981	0.411	177.091	34.64	10:00: 6.35	0.25	60.0	UofT	60.0
332	48.00333	82.16198	0.411	181.291	34.62	10:00: 8.52	0.25	60.0	UofT	60.0
333	47.97914	82.18221	0.450	184.362	34.51	10:00: 7.38	0.25	60.0	UofT	60.0
334	47.95322	82.33885	0.373	193.522	36.77	09:59:54.98	0.61	102.0	UBC	60.0
336	47.88675	82.36730	0.396	200.734	35.97	09:59:55.00	0.61	102.0	UBC	60.0
337	47.85396	82.34438	0.387	202.708	34.99	09:59:55.01	0.61	102.0	UBC	60.0
339	47.75061	82.48354	0.396	218.107	35.41	10:00: 0.09	-	160.0	UWis100.0	
340	47.70329	82.46913	0.381	221.803	34.40	10:00:21.08	1.00	102.0	UWes	60.0
341	47.67845	82.49361	0.381	225.120	34.37	10:00:23.37	0.25	60.0	UofT	60.0
342	47.66138	82.53629	0.396	228.501	34.74	09:59:59.63	-	160.0	UWis100.0	
343	47.63708	82.59933	0.421	233.432	35.27	10:00:21.60	1.00	102.0	UWes	60.0
345	47.58174	82.67165	0.472	241.596	35.42	10:00:18.78	1.00	102.0	UWes	60.0
346	47.54356	82.79842	0.457	250.636	36.55	10:00: 0.90	-	160.0	UWis100.0	
348	47.52932	82.86190	0.457	254.770	37.15	09:59:59.97	1.00	102.0	EMR	60.0
349	47.50416	82.90616	0.457	259.014	37.33	10:00:24.25	0.25	60.0	UofT	60.0
350	47.47635	82.98093	0.427	264.902	37.84	09:59:59.77	-	160.0	UWis100.0	
351	47.41007	83.01231	0.427	272.186	37.26	10:00:19.74	1.00	102.0	UWes	60.0
352	47.35357	83.00890	0.442	277.059	36.44	09:59:59.96	1.00	102.0	EMR	60.0
353	47.25976	83.16912	0.457	292.663	37.02	10:00: 0.33	-	160.0	UWis100.0	
354	47.19042	83.16946	0.457	298.870	36.13	09:59:59.96	1.00	102.0	EMR	60.0
356	47.04692	83.17245	0.427	312.025	34.44	09:59:59.96	1.00	102.0	EMR	60.0
357	46.99978	83.18817	0.419	317.029	34.07	10:00:19.84	1.00	102.0	UWes	60.0
358	46.92648	83.19950	0.427	324.285	33.38	09:59:59.96	1.00	102.0	EMR	60.0
359	46.88635	83.26389	0.518	330.713	33.62	10:00:21.59	1.00	102.0	UWes	60.0
360	46.82057	83.32661	0.427	339.451	33.56	09:59:59.96	1.00	102.0	EMR	60.0

Shot 2
 KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984
 REEVES PIT - Line 300-DK Shot time 1984-07-07 10:10: 0.01
 Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
301	49.18045	80.92131	0.250	-137.932	218.65	10:10:11.97	1.00	102.0	UWes	60.0
302	49.14472	80.98218	0.259	-132.060	218.18	10:09:59.96	1.00	102.0	EMR	60.0
303	49.10100	81.01336	0.259	-126.837	218.70	10:10:10.64	1.00	102.0	UWes	60.0
304	49.04175	81.05316	0.274	-119.891	219.55	10:09:59.97	1.00	102.0	EMR	60.0
305	49.00018	81.07998	0.267	-115.085	220.25	10:10: 9.01	1.00	102.0	UWes	60.0
306	48.95894	81.12499	0.274	-109.456	220.45	10:09:59.96	1.00	102.0	EMR	60.0
307	48.91858	81.13445	0.274	-105.619	221.73	10:09:54.98	0.61	98.0	MemU	60.0
308	48.87743	81.12670	0.274	-102.641	223.68	10:09:59.97	1.00	102.0	EMR	60.0
309	48.83409	81.11072	0.274	-100.052	226.08	10:09:55.00	0.61	98.0	MemU	60.0
310	48.80990	81.33763	0.274	-86.735	219.53	10:09:59.96	1.00	102.0	EMR	60.0
311	48.77522	81.36551	0.282	-82.462	220.11	10:09:54.96	0.61	102.0	UALb	60.0
312	48.70228	81.34521	0.290	-77.484	224.84	10:09:59.96	1.00	102.0	EMR	60.0
313	48.63936	81.32815	0.290	-73.640	229.39	10:10: 0.02	-	160.0	UWis100.0	
314	48.55902	81.38678	0.290	-64.662	232.86	10:09:54.95	0.61	102.0	UBC	60.0
315	48.56570	81.45393	0.290	-61.266	229.46	10:09:55.02	0.61	102.0	UBC	60.0
316	48.57402	81.54869	0.274	-56.799	224.08	10:09:56.13	0.25	60.0	UoFT	60.0
317	48.51992	81.54655	0.335	-52.763	228.76	10:09:54.95	0.61	102.0	UBC	60.0
318	48.48496	81.55740	0.335	-49.654	231.51	10:10: 0.01	-	160.0	UWis100.0	
319	48.45042	81.61667	0.323	-43.835	231.83	10:09:54.99	0.61	102.0	UBC	60.0
320	48.43457	81.68448	0.314	-38.840	229.24	10:10: 0.41	-	160.0	UWis100.0	
321	48.37757	81.66204	0.329	-36.440	238.56	10:09:54.74	0.25	60.0	UoFT	60.0
322	48.34375	81.68346	0.335	-33.208	242.65	10:09:54.97	0.61	102.0	UBC	60.0
324	48.28539	81.79113	0.335	-23.226	247.72	10:09:54.94	0.61	102.0	UBC	60.0
325	48.23990	81.84356	0.335	-17.993	257.94	10:09:56.49	0.25	60.0	UoFT	60.0
326	48.20511	81.90416	0.351	-13.092	270.42	10:09:59.73	-	160.0	UWis100.0	
327	48.14512	81.92495	0.351	-13.381	300.36	10:09:54.97	0.61	102.0	UBC	60.0
328	48.17500	82.03437	0.366	4.839	315.15	10:10: 0.03	-	160.0	UWis100.0	
329	48.11152	82.00421	0.396	11.917	331.68	10:09:54.95	0.61	102.0	UBC	60.0
330	48.08105	82.08578	0.381	13.882	1.69	10:09:53.67	0.25	60.0	UoFT	60.0
331	48.03433	82.12981	0.411	19.424	10.93	10:09:56.36	0.25	60.0	UoFT	60.0
332	48.00333	82.16198	0.411	23.325	15.09	10:09:50.31	0.25	60.0	UoFT	60.0
333	47.97914	82.18221	0.450	26.326	16.73	10:09:53.57	0.25	60.0	UoFT	60.0
334	47.95322	82.33885	0.373	34.062	34.35	10:09:54.98	0.61	102.0	UBC	60.0
336	47.88675	82.36730	0.396	41.434	30.99	10:09:55.00	0.61	102.0	UBC	60.0
337	47.85396	82.34438	0.387	43.804	26.62	10:09:55.01	0.61	102.0	UBC	60.0
339	47.75061	82.48354	0.396	58.893	30.59	10:10: 0.09	-	160.0	UWis100.0	
340	47.70329	82.46913	0.381	62.975	27.32	10:10: 1.85	1.00	102.0	UWes	60.0
341	47.67845	82.49361	0.381	66.273	27.62	10:09:52.59	0.25	60.0	UoFT	60.0
342	47.66138	82.53629	0.396	69.468	29.20	10:09:59.63	-	160.0	UWis100.0	
343	47.63708	82.59933	0.421	74.190	31.33	10:10: 2.30	1.00	102.0	UWes	60.0
345	47.58174	82.67165	0.472	82.285	32.29	10:10: 3.90	1.00	102.0	UWes	60.0
346	47.54356	82.79842	0.457	91.149	35.85	10:09:59.78	-	160.0	UWis100.0	
348	47.52932	82.86190	0.457	95.276	37.57	10:09:59.97	1.00	102.0	EMR	60.0
349	47.50416	82.90616	0.457	99.530	38.08	10:09:55.04	0.25	60.0	UoFT	60.0
350	47.47635	82.98093	0.427	105.469	39.40	10:09:59.75	-	160.0	UWis100.0	
351	47.41007	83.01231	0.427	112.702	37.93	10:10: 9.09	1.00	102.0	UWes	60.0
352	47.35357	83.00890	0.442	117.568	35.95	10:09:59.96	1.00	102.0	EMR	60.0
353	47.25976	83.16912	0.457	133.172	37.43	10:10: 0.44	-	160.0	UWis100.0	
354	47.19042	83.16946	0.457	139.388	35.51	10:09:59.95	1.00	102.0	EMR	60.0
356	47.04692	83.17245	0.427	152.776	32.10	10:09:59.96	1.00	102.0	EMR	60.0
357	46.99978	83.18817	0.419	157.861	31.45	10:10:15.77	1.00	102.0	UWes	60.0
358	46.92648	83.19950	0.427	165.299	30.22	10:09:59.97	1.00	102.0	EMR	60.0
359	46.88635	83.26389	0.518	171.634	30.84	10:09:57.74	1.00	102.0	UWes	60.0
360	46.82057	83.32661	0.427	180.365	30.91	10:09:59.97	1.00	102.0	EMR	60.0

Shot 3

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

RIOUXP2 LAKE - Line 300-DK Shot time 1984-07-07 10:20: 0.03

Lat 46.77838, Long 83.28339, Elev 0.406km, Depth 28.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
301	49.18045	80.92131	0.250	320.010	214.32	10:20:18.85	1.00	102.0	UWes	60.0
302	49.14472	80.98218	0.259	314.229	214.01	10:19:59.97	1.00	102.0	EMR	60.0
303	49.10100	81.01336	0.259	308.927	214.14	10:20:18.92	1.00	102.0	UWes	60.0
304	49.04175	81.05316	0.274	301.844	214.36	10:19:59.96	1.00	102.0	EMR	60.0
305	49.00018	81.07998	0.267	296.921	214.53	10:20:19.33	1.00	102.0	UWes	60.0
306	48.95894	81.12499	0.274	291.275	214.47	10:19:59.96	1.00	102.0	EMR	60.0
307	48.91858	81.13445	0.274	287.190	214.86	10:19:54.98	0.61	98.0	MemU	60.0
308	48.87743	81.12670	0.274	283.777	215.48	10:19:59.96	1.00	102.0	EMR	60.0
309	48.83409	81.11072	0.274	280.559	216.26	10:19:55.00	0.61	98.0	MemU	60.0
310	48.80990	81.33763	0.274	268.813	213.56	10:19:59.97	1.00	102.0	EMR	60.0
312	48.70228	81.34521	0.290	258.606	214.92	10:19:59.96	1.00	102.0	EMR	60.0
313	48.63936	81.32815	0.290	253.638	216.07	10:20: 0.03	-	160.0	UWis100.0	
314	48.55902	81.38678	0.290	243.876	216.44	10:19:54.95	0.61	102.0	UBC	60.0
315	48.56570	81.45393	0.290	241.573	215.34	10:19:55.02	0.61	102.0	UBC	60.0
316	48.57402	81.54869	0.274	238.367	213.77	10:20:10.61	0.25	60.0	UofT	60.0
317	48.51992	81.54655	0.335	233.480	214.62	10:19:54.95	0.61	102.0	UBC	60.0
318	48.48496	81.55740	0.335	229.830	215.00	10:20: 0.01	-	160.0	UWis100.0	
319	48.45042	81.61667	0.323	224.176	214.60	10:19:54.99	0.61	102.0	UBC	60.0
320	48.43457	81.68448	0.314	219.899	213.73	10:20: 0.40	-	160.0	UWis100.0	
321	48.37757	81.66204	0.329	215.607	215.05	10:20: 8.98	0.25	60.0	UofT	60.0
322	48.34375	81.68346	0.335	211.619	215.27	10:19:54.97	0.61	102.0	UBC	60.0
324	48.28539	81.79113	0.335	201.731	214.40	10:19:54.94	0.61	102.0	UBC	60.0
325	48.23990	81.84356	0.335	195.358	214.26	10:20:10.24	0.25	60.0	UofT	60.0
326	48.20511	81.90416	0.351	189.633	213.74	10:19:59.72	-	160.0	UWis100.0	
327	48.14512	81.92495	0.351	183.243	214.49	10:19:54.97	0.61	102.0	UBC	60.0
328	48.17500	82.03437	0.366	181.582	211.69	10:20: 0.02	-	160.0	UWis100.0	
329	48.11152	82.00421	0.396	176.846	213.54	10:19:54.95	0.61	102.0	UBC	60.0
330	48.08105	82.08578	0.381	170.696	212.40	10:20: 7.51	0.25	60.0	UofT	60.0
331	48.03433	82.12981	0.411	164.552	212.37	10:20:10.69	0.25	60.0	UofT	60.0
332	48.00333	82.16198	0.411	160.356	212.28	10:20: 7.96	0.25	60.0	UofT	60.0
333	47.97914	82.18221	0.450	157.276	212.33	10:20: 8.75	0.25	60.0	UofT	60.0
334	47.95322	82.33885	0.373	148.828	208.99	10:19:54.98	0.61	102.0	UBC	60.0
336	47.88675	82.36730	0.396	141.343	209.67	10:19:55.00	0.61	102.0	UBC	60.0
337	47.85396	82.34438	0.387	139.063	211.05	10:19:55.01	0.61	102.0	UBC	60.0
339	47.75061	82.48354	0.396	123.882	209.55	10:20: 0.07	-	160.0	UWis100.0	
340	47.70329	82.46913	0.381	119.890	211.25	10:20: 0.33	1.00	102.0	UWes	60.0
341	47.67845	82.49361	0.381	116.576	211.16	10:20: 8.67	0.25	60.0	UofT	60.0
342	47.66138	82.53629	0.396	113.308	210.24	10:19:59.64	-	160.0	UWis100.0	
343	47.63708	82.59933	0.421	108.624	208.75	10:20: 9.90	1.00	102.0	UWes	60.0
345	47.58174	82.67165	0.472	100.632	207.66	10:20: 6.83	1.00	102.0	UWes	60.0
346	47.54356	82.79842	0.457	92.675	203.56	10:19:59.77	-	160.0	UWis100.0	
348	47.52932	82.86190	0.457	89.394	201.11	10:19:59.97	1.00	102.0	EMR	60.0
349	47.50416	82.90616	0.457	85.611	199.67	10:19:53.59	0.25	60.0	UofT	60.0
350	47.47635	82.98093	0.427	80.917	196.59	10:19:59.75	-	160.0	UWis100.0	
351	47.41007	83.01231	0.427	73.179	196.43	10:20: 1.65	1.00	102.0	UWes	60.0
352	47.35357	83.00890	0.442	67.258	198.16	10:19:59.96	1.00	102.0	EMR	60.0
353	47.25976	83.16912	0.457	54.216	189.26	10:20: 0.31	-	160.0	UWis100.0	
354	47.19042	83.16946	0.457	46.619	190.76	10:19:59.96	1.00	102.0	EMR	60.0
356	47.04692	83.17245	0.427	31.026	195.85	10:19:59.96	1.00	102.0	EMR	60.0
357	46.99978	83.18817	0.419	25.660	196.46	10:19:49.69	1.00	102.0	UWes	60.0
358	46.92648	83.19950	0.427	17.664	201.27	10:19:59.97	1.00	102.0	EMR	60.0
359	46.88635	83.26389	0.518	12.095	187.08	10:19:59.76	1.00	102.0	UWes	60.0
360	46.82057	83.32661	0.427	5.734	144.86	10:19:59.96	1.00	102.0	EMR	60.0

Shot 4

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 900-EH Shot time 1984-07-09 10:00: 0.02

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
901	48.25034	82.38593	0.344	161.896	76.92	09:59:59.95	1.00	102.0	EMR	60.0
902	48.25016	82.33675	0.347	158.345	76.65	10:00: 0.09	-	160.0	UWis100.0	
903	48.21150	82.29503	0.351	156.397	74.89	09:59:59.95	1.00	102.0	EMR	60.0
904	48.18816	82.22038	0.335	151.765	73.46	09:59:58.89	-	160.0	UWis100.0	
905	48.20186	82.16559	0.341	147.427	73.61	09:59:59.96	1.00	102.0	EMR	60.0
906	48.21818	82.08424	0.338	141.114	73.69	09:59:59.15	-	160.0	UWis100.0	
907	48.22142	82.06493	0.335	139.635	73.68	09:59:59.95	1.00	102.0	EMR	60.0
908	48.22721	82.01624	0.332	135.983	73.55	09:59:59.62	-	160.0	UWis100.0	
909	48.23611	81.96510	0.347	132.059	73.53	09:59:59.96	1.00	102.0	EMR	60.0
910	48.24385	81.90901	0.351	127.820	73.42	09:59:59.61	-	160.0	UWis100.0	
911	48.23976	81.84355	0.341	123.303	72.62	09:59:59.96	1.00	102.0	EMR	60.0
912	48.25982	81.79336	0.344	119.084	73.15	10:00: 0.51	-	160.0	UWis100.0	
913	48.29728	81.77580	0.354	116.685	74.93	10:00: 7.44	1.00	102.0	UWes	60.0
914	48.32197	81.74239	0.354	113.596	75.97	09:59:59.94	-	160.0	UWis100.0	
915	48.34106	81.68134	0.323	108.694	76.52	10:00: 5.50	1.00	102.0	UWes	60.0
916	48.36192	81.65273	0.335	106.106	77.49	09:59:52.01	-	160.0	UWis100.0	
917	48.36774	81.60973	0.338	102.855	77.49	10:00: 8.17	1.00	102.0	UWes	60.0
918	48.37886	81.55382	0.326	98.544	77.72	10:00: 0.41	-	160.0	UWis100.0	
919	48.41081	81.50180	0.299	94.063	79.37	10:00: 2.65	1.00	102.0	UWes	60.0
920	48.42628	81.45985	0.287	90.701	80.11	09:59:59.92	-	160.0	UWis100.0	
921	48.44278	81.42653	0.268	87.968	81.04	10:00: 4.19	1.00	102.0	UWes	60.0
922	48.45685	81.40562	0.274	86.206	81.92	09:59:25.04	-	160.0	UWis100.0	
923	48.45276	81.33405	0.296	81.036	81.13	09:59:51.04	1.00	102.0	UWes	60.0
924	48.45018	81.28886	0.320	77.782	80.58	09:59:59.59	-	160.0	UWis100.0	
925	48.46156	81.23062	0.296	73.328	81.05	09:59:51.97	0.25	60.0	UofT	60.0
927	48.49662	81.13251	0.287	65.614	83.50	09:59:54.93	0.25	60.0	UofT	60.0
928	48.52386	81.10733	0.290	63.484	86.05	09:59:55.00	0.61	102.0	UBC	60.0
929	48.54976	81.05318	0.287	59.355	88.60	09:59:52.79	0.25	60.0	UofT	60.0
930	48.54091	80.99268	0.274	54.923	87.51	09:59:55.01	0.61	102.0	UBC	60.0
931	48.53501	80.93965	0.271	51.046	86.62	09:59:53.98	0.25	60.0	UofT	60.0
932	48.54510	80.88983	0.280	47.987	87.78	09:59:55.01	0.61	102.0	UBC	60.0
933	48.54302	80.84894	0.280	44.309	87.33	09:59:47.70	0.25	60.0	UofT	60.0
934	48.53697	80.80547	0.271	41.142	86.22	09:59:54.97	0.61	102.0	UBC	60.0
935	48.53782	80.75704	0.265	37.567	86.04	09:59:48.68	0.25	60.0	UofT	60.0
936	48.53713	80.71133	0.265	34.206	85.56	09:59:55.00	0.61	102.0	UBC	60.0
937	48.53790	80.66283	0.274	30.629	85.24	09:59:53.09	0.25	60.0	UofT	60.0
938	48.53065	80.61546	0.283	27.232	82.97	09:59:54.98	0.31	102.0	UBC	60.0
940	48.54177	80.50090	0.262	18.685	83.67	09:59:54.97	0.31	102.0	UBC	60.0
941	48.53924	80.45934	0.253	15.677	81.45	09:59:54.98	0.61	102.0	UBC	60.0
942	48.53836	80.42683	0.253	13.325	79.52	09:59:54.98	0.61	102.0	UBC	60.0
943	48.53815	80.36893	0.293	9.159	74.56	09:59:56.56	0.25	60.0	UofT	60.0
945	48.53582	80.25076	0.320	2.692	2.26	09:59:54.01	0.25	60.0	UofT	60.0
946	48.53678	80.18687	0.335	-5.285	299.29	09:59:54.98	0.61	102.0	UBC	60.0
947	48.54440	80.12802	0.351	-9.122	281.02	09:59:59.96	1.00	102.0	EMR	60.0
948	48.52927	80.06855	0.357	-13.779	284.43	09:59:54.99	0.61	102.0	UBC	60.0
949	48.51330	80.01401	0.335	-18.138	286.73	09:59:54.99	0.61	98.0	MemU	60.0
950	48.52143	79.91769	0.302	-24.862	280.06	09:59:59.97	1.00	102.0	EMR	60.0
951	48.51788	79.84796	0.299	-30.007	279.13	09:59:54.96	0.61	98.0	MemU	60.0
952	48.51783	79.76502	0.293	-36.070	277.65	09:59:59.96	1.00	102.0	EMR	60.0
953	48.52833	79.67009	0.296	-42.915	274.93	09:59:54.99	0.61	102.0	UALb	60.0
954	48.52754	79.60002	0.283	-48.080	274.55	09:59:59.96	1.00	102.0	EMR	60.0
955	48.52592	79.54189	0.290	-52.375	274.42	09:59:58.78	1.00	102.0	UWes	60.0
956	48.52260	79.44915	0.299	-59.234	274.33	09:59:59.98	1.00	102.0	EMR	60.0
957	48.52146	79.37659	0.274	-64.588	274.13	09:59:58.43	1.00	102.0	UWes	60.0
958	48.52281	79.30782	0.274	-69.646	273.76	09:59:59.97	1.00	102.0	EMR	60.0
960	48.54804	79.14404	0.320	-81.608	271.35	10:00: 0.92	1.00	102.0	UWes	60.0

Shot 5

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

REEVES PIT - Line 900-EH Shot time 1984-07-09 10:10: 0.00

Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
901	48.25034	82.38593	0.344	-23.242	102.18	10:09:59.96	1.00	102.0	EMR	60.0
902	48.25016	82.33675	0.347	-19.682	104.40	10:10: 0.07	-	160.0	UWis100.0	
903	48.21150	82.29503	0.351	-15.974	92.17	10:09:59.96	1.00	102.0	EMR	60.0
904	48.18816	82.22038	0.335	-10.599	79.25	10:09:58.89	-	160.0	UWis100.0	
905	48.20186	82.16559	0.341	-6.357	85.97	10:09:59.95	1.00	102.0	EMR	60.0
906	48.21818	82.08424	0.338	-1.403	167.88	10:09:59.46	-	160.0	UWis100.0	
907	48.22142	82.06493	0.335	2.074	213.40	10:09:59.96	1.00	102.0	EMR	60.0
908	48.22721	82.01624	0.332	5.320	243.50	10:09:59.62	-	160.0	UWis100.0	
909	48.23611	81.96510	0.347	9.197	248.58	10:09:59.97	1.00	102.0	EMR	60.0
910	48.24385	81.90901	0.351	13.409	251.69	10:09:59.69	-	160.0	UWis100.0	
911	48.23976	81.84355	0.341	17.990	257.99	10:09:59.96	1.00	102.0	EMR	60.0
912	48.25982	81.79336	0.344	22.145	254.38	10:10: 0.39	-	160.0	UWis100.0	
913	48.29728	81.77580	0.354	24.792	245.90	10:09:50.12	1.00	102.0	UWes	60.0
914	48.32197	81.74239	0.354	28.215	242.89	10:10: 1.52	-	160.0	UWis100.0	
915	48.34106	81.68134	0.323	33.213	243.23	10:09:52.78	1.00	102.0	UWes	60.0
916	48.36192	81.65273	0.335	36.168	241.49	10:09:59.94	-	160.0	UWis100.0	
917	48.36774	81.60973	0.338	39.288	242.91	10:09:55.35	1.00	102.0	UWes	60.0
918	48.37886	81.55382	0.326	43.546	243.98	10:10: 0.41	-	160.0	UWis100.0	
919	48.41081	81.50180	0.299	48.589	242.24	10:09:57.73	1.00	102.0	UWes	60.0
920	48.42628	81.45985	0.287	52.139	242.19	10:09:59.93	-	160.0	UWis100.0	
921	48.44278	81.42653	0.268	55.177	241.72	10:10: 2.03	1.00	102.0	UWes	60.0
922	48.45685	81.40562	0.274	57.284	241.09	10:09:25.06	-	160.0	UWis100.0	
923	48.45276	81.33405	0.296	61.771	243.89	10:10: 0.40	1.00	102.0	UWes	60.0
924	48.45018	81.28886	0.320	64.670	245.45	10:09:59.59	-	160.0	UWis100.0	
925	48.46156	81.23062	0.296	69.117	246.03	10:09:52.60	0.25	60.0	UofT	60.0
927	48.49662	81.13251	0.287	77.331	245.64	10:09:55.78	0.25	60.0	UofT	60.0
928	48.52386	81.10733	0.290	80.300	244.24	10:09:55.00	0.61	102.0	UBC	60.0
929	48.54976	81.05318	0.287	85.157	243.70	10:09:53.43	0.25	60.0	UofT	60.0
930	48.54091	80.99268	0.274	88.773	245.59	10:09:55.01	0.61	102.0	UBC	60.0
931	48.53501	80.93965	0.271	92.096	247.01	10:09:54.43	0.25	60.0	UofT	60.0
932	48.54510	80.88993	0.280	95.302	247.13	10:09:55.01	0.61	102.0	UBC	60.0
933	48.54302	80.84894	0.280	98.628	248.12	10:10: 5.44	0.25	60.0	UofT	60.0
934	48.53697	80.80547	0.271	101.372	249.18	10:09:54.97	0.61	102.0	UBC	60.0
935	48.53782	80.75704	0.265	104.756	249.86	10:09:50.93	0.25	60.0	UofT	60.0
936	48.53713	80.71133	0.265	107.907	250.55	10:09:55.00	0.61	102.0	UBC	60.0
937	48.53790	80.66283	0.274	111.319	251.16	10:10: 6.63	0.25	60.0	UofT	60.0
938	48.53065	80.61546	0.283	114.385	252.14	10:09:54.98	0.31	102.0	UBC	60.0
940	48.54177	80.50090	0.262	122.826	252.89	10:09:54.97	0.31	102.0	UBC	60.0
941	48.53924	80.45934	0.253	125.683	253.45	10:09:54.98	0.61	102.0	UBC	60.0
942	48.53836	80.42683	0.253	127.958	253.82	10:09:54.98	0.61	102.0	UBC	60.0
943	48.53815	80.36893	0.293	132.065	254.39	10:10:10.17	0.25	60.0	UofT	60.0
945	48.53582	80.25076	0.320	140.426	255.54	10:10: 9.68	0.25	60.0	UofT	60.0
946	48.53678	80.18687	0.335	145.025	256.01	10:09:54.98	0.61	102.0	UBC	60.0
947	48.54440	80.12802	0.351	149.448	256.14	10:09:59.97	1.00	102.0	EMR	60.0
948	48.52927	80.06855	0.357	153.333	257.19	10:09:54.99	0.61	102.0	UBC	60.0
949	48.51330	80.01401	0.335	156.891	258.19	10:09:54.99	0.61	98.0	MemU	60.0
950	48.52143	79.91769	0.302	164.042	258.46	10:09:59.96	1.00	102.0	EMR	60.0
951	48.51788	79.84796	0.299	169.017	258.99	10:09:54.96	0.61	98.0	MemU	60.0
952	48.51783	79.76502	0.293	175.035	259.44	10:09:59.96	1.00	102.0	EMR	60.0
953	48.52833	79.67009	0.296	182.143	259.55	10:09:54.99	0.61	102.0	UALb	60.0
954	48.52754	79.60002	0.283	187.220	259.91	10:09:59.97	1.00	102.0	EMR	60.0
955	48.52592	79.54189	0.290	191.419	260.24	10:10:22.58	1.00	102.0	UWes	60.0
956	48.52260	79.44915	0.299	198.114	260.75	10:09:59.96	1.00	102.0	EMR	60.0
957	48.52146	79.37659	0.274	203.387	261.08	10:10:22.35	1.00	102.0	UWes	60.0
958	48.52281	79.30782	0.274	208.430	261.30	10:09:59.96	1.00	102.0	EMR	60.0
960	48.54804	79.14404	0.320	220.812	261.18	10:10:23.67	1.00	102.0	UWes	60.0

Shot 6

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

SIRJAMES PIT - Line 900-EH Shot time 1984-07-09 10:20: 0.05

Lat 48.04232, Long 84.67504, Elev 0.310km, Depth 33.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
901	48.25034	82.38593	0.344	171.904	263.12	10:19:59.96	1.00	102.0	EMR	60.0
902	48.25016	82.33675	0.347	175.528	263.31	10:20: 0.07	-	160.0	UWIs100.0	
903	48.21150	82.29503	0.351	178.167	264.83	10:19:59.96	1.00	102.0	EMR	60.0
904	48.18816	82.22038	0.335	183.488	265.84	10:19:58.89	-	160.0	UWIs100.0	
905	48.20186	82.16559	0.341	187.664	265.51	10:19:59.96	1.00	102.0	EMR	60.0
906	48.21818	82.08424	0.338	193.837	265.18	10:19:59.45	-	160.0	UWIs100.0	
907	48.22142	82.06493	0.335	195.298	265.12	10:19:59.95	1.00	102.0	EMR	60.0
908	48.22721	82.01624	0.332	198.958	265.06	10:19:59.62	-	160.0	UWIs100.0	
909	48.23611	81.96510	0.347	202.829	264.91	10:19:59.95	1.00	102.0	EMR	60.0
910	48.24385	81.90901	0.351	207.055	264.82	10:19:59.61	-	160.0	UWIs100.0	
911	48.23976	81.84355	0.341	211.859	265.11	10:19:59.96	1.00	102.0	EMR	60.0
912	48.25982	81.79336	0.344	215.771	264.64	10:20: 0.52	-	160.0	UWIs100.0	
913	48.29728	81.77580	0.354	217.494	263.59	10:20:21.19	1.00	102.0	UWes	60.0
914	48.32197	81.74239	0.354	220.277	262.98	10:19:59.95	-	160.0	UWIs100.0	
915	48.34106	81.68134	0.323	225.034	262.63	10:20:20.83	1.00	102.0	UWes	60.0
916	48.36192	81.65273	0.335	227.444	262.14	10:19:59.94	-	160.0	UWIs100.0	
917	48.36774	81.60973	0.338	230.688	262.12	10:20:18.62	1.00	102.0	UWes	60.0
918	48.37886	81.55382	0.326	234.962	262.00	10:20: 0.41	-	160.0	UWIs100.0	
919	48.41081	81.50180	0.299	239.288	261.33	10:20:21.76	1.00	102.0	UWes	60.0
920	48.42628	81.45985	0.287	242.620	261.07	10:19:59.93	-	160.0	UWIs100.0	
921	48.44278	81.42653	0.268	245.345	260.76	10:20:22.38	1.00	102.0	UWes	60.0
922	48.45685	81.40562	0.274	247.126	260.47	10:19:25.04	-	160.0	UWIs100.0	
923	48.45276	81.33405	0.296	252.276	260.83	10:20:22.07	1.00	102.0	UWes	60.0
925	48.46156	81.23062	0.296	259.984	260.96	10:20: 6.77	0.25	60.0	UofT	60.0
927	48.49662	81.13251	0.287	267.772	260.45	10:20:28.38	0.25	60.0	UofT	60.0
928	48.52386	81.10733	0.290	270.123	259.90	10:19:55.00	0.61	102.0	UBC	60.0
929	48.54976	81.05318	0.287	274.572	259.50	10:20:24.98	0.25	60.0	UofT	60.0
930	48.54091	80.99268	0.274	278.791	259.91	10:19:55.01	0.61	102.0	UBC	60.0
931	48.53501	80.93965	0.271	282.535	260.22	10:20:27.65	0.25	60.0	UofT	60.0
932	48.54510	80.89893	0.280	285.690	260.13	10:19:55.01	0.61	102.0	UBC	60.0
933	48.54302	80.84894	0.280	289.289	260.34	10:20:21.90	0.25	60.0	UofT	60.0
934	48.53697	80.80547	0.271	292.343	260.61	10:19:54.97	0.61	102.0	UBC	60.0
935	48.53782	80.75704	0.265	295.888	260.74	10:20: 8.56	0.25	60.0	UofT	60.0
936	48.53713	80.71133	0.265	299.208	260.89	10:19:55.00	0.61	102.0	UBC	60.0
937	48.53790	80.66283	0.274	302.759	261.02	10:20:22.53	0.25	60.0	UofT	60.0
938	48.53065	80.61546	0.283	306.091	261.30	10:19:54.98	0.31	102.0	UBC	60.0
940	48.54177	80.50090	0.262	314.641	261.40	10:19:54.97	0.31	102.0	UBC	60.0
941	48.53924	80.45934	0.253	317.635	261.56	10:19:54.98	0.61	102.0	UBC	60.0
942	48.53836	80.42683	0.253	319.995	261.67	10:19:54.98	0.61	102.0	UBC	60.0
943	48.53815	80.36893	0.293	324.224	261.82	10:19:53.91	0.25	60.0	UofT	60.0
945	48.53582	80.25076	0.320	332.829	262.17	10:20:24.16	0.25	60.0	UofT	60.0
946	48.53678	80.18687	0.335	337.519	262.31	10:19:54.98	0.61	102.0	UBC	60.0
947	48.54440	80.12802	0.351	341.939	262.31	10:19:59.97	1.00	102.0	EMR	60.0
948	48.52927	80.06855	0.357	346.074	262.72	10:19:54.99	0.61	102.0	UBC	60.0
949	48.51330	80.01401	0.335	349.855	263.14	10:19:54.99	0.61	98.0	MemU	60.0
950	48.52143	79.91769	0.302	357.027	263.20	10:19:59.95	1.00	102.0	EMR	60.0
951	48.51788	79.84796	0.299	362.097	263.41	10:19:54.96	0.61	98.0	MemU	60.0
952	48.51783	79.76502	0.293	368.185	263.58	10:19:59.96	1.00	102.0	EMR	60.0
953	48.52833	79.67009	0.296	375.284	263.60	10:19:54.99	0.61	102.0	UAlb	60.0
954	48.52754	79.60002	0.283	380.418	263.75	10:19:59.97	1.00	102.0	EMR	60.0
955	48.52592	79.54189	0.290	384.667	263.89	10:20:22.59	1.00	102.0	UWes	60.0
956	48.52260	79.44915	0.299	391.442	264.12	10:19:59.97	1.00	102.0	EMR	60.0
957	48.52146	79.37659	0.274	396.761	264.27	10:20:21.47	1.00	102.0	UWes	60.0
958	48.52281	79.30782	0.274	401.832	264.37	10:19:59.97	1.00	102.0	EMR	60.0
960	48.54804	79.14404	0.320	414.146	264.27	10:20:23.18	1.00	102.0	UWes	60.0

Shot 7

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 500-EH Shot time 1984-07-11 10:00: 0.02

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
501	48.05860	84.91428	0.317	350.454	79.11	09:59:59.96	1.00	102.0	EMR	60.0
504	47.99076	84.76368	0.299	340.971	77.62	10:00:21.71	1.00	102.0	UWes	60.0
505	48.00948	84.71594	0.305	337.048	77.88	09:59:59.96	1.00	102.0	EMR	60.0
506	48.02689	84.67561	0.311	333.701	78.12	10:00:21.38	1.00	102.0	UWes	60.0
508	48.04988	84.58379	0.335	326.477	78.38	10:00:19.70	1.00	102.0	UWes	60.0
509	48.02583	84.53609	0.341	323.548	77.83	09:59:59.98	1.00	102.0	EMR	60.0
510	48.01742	84.48016	0.320	319.672	77.55	10:00:19.95	1.00	102.0	UWes	60.0
511	47.95584	84.45630	0.326	319.486	76.30	09:59:59.98	1.00	102.0	EMR	60.0
512	47.95781	84.37610	0.329	313.616	76.14	10:00:21.15	1.00	102.0	UWes	60.0
513	47.96450	84.33624	0.384	310.547	76.17	10:00:23.78	0.25	60.0	UofT	60.0
514	47.96060	84.29665	0.381	307.782	75.99	10:00:20.09	1.00	102.0	UWes	60.0
515	47.95932	84.26148	0.427	305.269	75.87	09:59:59.97	1.00	102.0	EMR	60.0
516	47.95284	84.21313	0.439	301.946	75.61	00:00: 1.00	0.99	60.0	UA1b	60.0
517	47.94462	84.16758	0.418	298.882	75.31	09:59:59.96	1.00	102.0	EMR	60.0
518	47.99085	84.12161	0.415	294.288	76.14	10:00: 7.81	0.25	60.0	UofT	60.0
519	48.03680	84.12187	0.436	293.125	77.11	09:59:59.96	1.00	102.0	EMR	60.0
520	48.06794	84.07784	0.451	289.166	77.67	10:00: 9.40	0.25	60.0	UofT	60.0
521	48.11248	84.06699	0.387	287.356	78.61	09:59:59.96	1.00	102.0	EMR	60.0
522	48.12618	84.00163	0.402	282.286	78.76	10:00:24.72	0.25	60.0	UofT	60.0
523	48.12413	83.95753	0.381	279.111	78.62	10:00: 2.84	0.25	60.0	UofT	60.0
524	47.88691	84.00344	0.497	288.781	73.59	09:59:59.96	1.00	102.0	EMR	60.0
525	47.85710	83.80185	0.457	275.341	72.19	09:59:59.95	1.00	102.0	EMR	60.0
526	48.03879	83.77338	0.451	267.787	76.19	10:00:12.07	0.25	60.0	UofT	60.0
527	48.01540	83.72989	0.479	265.276	75.51	09:59:59.53	-	160.0	UWIS100.0	
528	48.00365	83.68851	0.448	262.621	75.10	10:00: 8.23	0.25	60.0	UofT	60.0
529	48.00641	83.66069	0.475	260.537	75.07	10:00: 0.57	-	160.0	UWIS100.0	
530	48.01818	83.61651	0.448	257.015	75.19	10:00:22.19	0.25	60.0	UofT	60.0
532	48.00612	83.54221	0.460	252.012	74.63	10:00:23.44	0.25	60.0	UofT	60.0
533	48.01191	83.50415	0.482	249.103	74.63	09:59:55.00	0.61	102.0	UBC	60.0
534	48.02662	83.46455	0.479	245.822	74.84	09:59:55.01	0.61	102.0	UBC	60.0
535	48.03583	83.43146	0.442	243.172	74.95	09:59:55.03	0.61	102.0	UBC	60.0
536	48.04751	83.38518	0.424	239.503	75.07	09:59:55.00	0.61	102.0	UBC	60.0
537	48.04697	83.34362	0.436	236.526	74.89	10:00: 0.03	-	160.0	UWIS100.0	
538	48.07737	83.31103	0.439	233.315	75.56	09:59:55.00	0.31	102.0	UBC	60.0
539	48.08299	83.27724	0.433	230.721	75.58	09:59:59.95	-	160.0	UWIS100.0	
540	48.08735	83.24339	0.393	228.158	75.57	09:59:54.99	0.31	102.0	UBC	60.0
541	48.09834	83.21043	0.402	225.476	75.74	09:59:59.88	-	160.0	UWIS100.0	
542	48.08421	83.11999	0.390	219.354	74.97	09:59:54.99	0.25	60.0	UofT	60.0
543	48.09302	83.14204	0.378	220.691	75.31	09:59:54.00	0.31	102.0	UBC	60.0
544	48.09875	83.17720	0.390	223.067	75.62	09:59:59.90	-	160.0	UWIS100.0	
546	48.11130	82.96747	0.381	207.601	75.08	09:59:55.00	0.31	102.0	UBC	60.0
547	48.11471	82.93112	0.402	204.889	75.02	09:59:55.00	0.61	102.0	UBC	60.0
548	48.12439	82.90629	0.402	202.825	75.19	09:59:54.99	0.61	102.0	UBC	60.0
549	48.13381	82.85019	0.381	198.520	75.22	09:59:59.50	-	160.0	UWIS100.0	
550	48.12716	82.80997	0.387	195.819	74.82	09:59:54.99	0.61	98.0	MemU	60.0
551	48.12855	82.77023	0.396	192.925	74.66	10:00: 0.03	-	160.0	UWIS100.0	
552	48.13187	82.73211	0.366	190.090	74.57	09:59:55.02	0.61	98.0	MemU	60.0
553	48.12777	82.69058	0.433	187.236	74.22	09:59:58.50	-	160.0	UWIS100.0	
554	48.11841	82.65971	0.375	185.313	73.74	09:59:54.99	0.61	102.0	UA1b	60.0
555	48.13748	82.60971	0.381	181.150	74.09	09:59:59.69	-	160.0	UWIS100.0	
556	48.16434	82.57713	0.381	178.014	74.82	10:00:19.07	1.00	102.0	UWes	60.0
557	48.21174	82.56512	0.363	175.840	76.41	10:00: 0.58	-	160.0	UWIS100.0	
558	48.20552	82.50854	0.372	171.922	75.90	10:00:15.76	1.00	102.0	UWes	60.0
559	48.21267	82.45995	0.335	168.226	75.90	09:59:59.84	-	160.0	UWIS100.0	
560	48.23083	82.44688	0.335	166.800	76.50	10:00:17.10	1.00	102.0	UWes	60.0

Shot 7

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 500-EH Shot time 1984-07-11 10:00: 0.02

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
501	48.05860	84.91428	0.317	350.454	79.11	09:59:59.96	1.00	102.0	EMR	60.0
504	47.99076	84.76368	0.299	340.971	77.62	10:00:21.71	1.00	102.0	UWes	60.0
505	48.00948	84.71594	0.305	337.048	77.88	09:59:59.96	1.00	102.0	EMR	60.0
506	48.02689	84.67561	0.311	333.701	78.12	10:00:21.38	1.00	102.0	UWes	60.0
508	48.04988	84.58379	0.335	326.477	78.38	10:00:19.70	1.00	102.0	UWes	60.0
509	48.02583	84.53609	0.341	323.548	77.83	09:59:59.98	1.00	102.0	EMR	60.0
510	48.01742	84.48016	0.320	319.672	77.55	10:00:19.95	1.00	102.0	UWes	60.0
511	47.95584	84.45630	0.326	319.486	76.30	09:59:59.98	1.00	102.0	EMR	60.0
512	47.95781	84.37610	0.329	313.616	76.14	10:00:21.15	1.00	102.0	UWes	60.0
513	47.96450	84.33624	0.384	310.547	76.17	10:00:23.78	0.25	60.0	UofT	60.0
514	47.96060	84.29665	0.381	307.782	75.99	10:00:20.09	1.00	102.0	UWes	60.0
515	47.95932	84.26148	0.427	305.269	75.87	09:59:59.97	1.00	102.0	EMR	60.0
516	47.95284	84.21313	0.439	301.946	75.61	00:00: 1.00	0.99	60.0	UALb	60.0
517	47.94462	84.16758	0.418	298.882	75.31	09:59:59.96	1.00	102.0	EMR	60.0
518	47.99085	84.12161	0.415	294.288	76.14	10:00: 7.81	0.25	60.0	UofT	60.0
519	48.03680	84.12187	0.436	293.125	77.11	09:59:59.96	1.00	102.0	EMR	60.0
520	48.06794	84.07784	0.451	289.166	77.67	10:00: 9.40	0.25	60.0	UofT	60.0
521	48.11248	84.06699	0.387	287.356	78.61	09:59:59.96	1.00	102.0	EMR	60.0
522	48.12618	84.00163	0.402	282.286	78.76	10:00:24.72	0.25	60.0	UofT	60.0
523	48.12413	83.95753	0.381	279.111	78.62	10:00: 2.84	0.25	60.0	UofT	60.0
524	47.88691	84.00344	0.497	288.781	73.59	09:59:59.96	1.00	102.0	EMR	60.0
525	47.85710	83.80185	0.457	275.341	72.19	09:59:59.95	1.00	102.0	EMR	60.0
526	48.03879	83.77338	0.451	267.787	76.19	10:00:12.07	0.25	60.0	UofT	60.0
527	48.01540	83.72989	0.479	265.276	75.51	09:59:59.53	-	160.0	UWis100.0	
528	48.00365	83.68851	0.448	262.621	75.10	10:00: 8.23	0.25	60.0	UofT	60.0
529	48.00641	83.66069	0.475	260.537	75.07	10:00: 0.57	-	160.0	UWis100.0	
530	48.01818	83.61651	0.448	257.015	75.19	10:00:22.19	0.25	60.0	UofT	60.0
532	48.00612	83.54221	0.460	252.012	74.63	10:00:23.44	0.25	60.0	UofT	60.0
533	48.01191	83.50415	0.482	249.103	74.63	09:59:55.00	0.61	102.0	UBC	60.0
534	48.02662	83.46455	0.479	245.822	74.84	09:59:55.01	0.61	102.0	UBC	60.0
535	48.03583	83.43146	0.442	243.172	74.95	09:59:55.03	0.61	102.0	UBC	60.0
536	48.04751	83.38518	0.424	239.503	75.07	09:59:55.00	0.61	102.0	UBC	60.0
537	48.04697	83.34362	0.436	236.526	74.89	10:00: 0.03	-	160.0	UWis100.0	
538	48.07737	83.31103	0.439	233.315	75.56	09:59:55.00	0.31	102.0	UBC	60.0
539	48.08299	83.27724	0.433	230.721	75.58	09:59:59.95	-	160.0	UWis100.0	
540	48.08735	83.24339	0.393	228.158	75.57	09:59:54.99	0.31	102.0	UBC	60.0
541	48.09834	83.21043	0.402	225.476	75.74	09:59:59.88	-	160.0	UWis100.0	
542	48.08421	83.11999	0.390	219.354	74.97	09:59:54.99	0.25	60.0	UofT	60.0
543	48.09302	83.14204	0.378	220.691	75.31	09:59:54.00	0.31	102.0	UBC	60.0
544	48.09875	83.17720	0.390	223.067	75.62	09:59:59.90	-	160.0	UWis100.0	
546	48.11130	82.96747	0.381	207.601	75.08	09:59:55.00	0.31	102.0	UBC	60.0
547	48.11471	82.93112	0.402	204.889	75.02	09:59:55.00	0.61	102.0	UBC	60.0
548	48.12439	82.90629	0.402	202.825	75.19	09:59:54.99	0.61	102.0	UBC	60.0
549	48.13381	82.85019	0.381	198.520	75.22	09:59:59.50	-	160.0	UWis100.0	
550	48.12716	82.80997	0.387	195.819	74.82	09:59:54.99	0.61	98.0	MemU	60.0
551	48.12855	82.77023	0.396	192.925	74.66	10:00: 0.03	-	160.0	UWis100.0	
552	48.13187	82.73211	0.366	190.090	74.57	09:59:55.02	0.61	98.0	MemU	60.0
553	48.12777	82.69058	0.433	187.236	74.22	09:59:58.50	-	160.0	UWis100.0	
554	48.11841	82.65971	0.375	185.313	73.74	09:59:54.99	0.61	102.0	UALb	60.0
555	48.13748	82.60971	0.381	181.150	74.09	09:59:59.69	-	160.0	UWis100.0	
556	48.16434	82.57713	0.381	178.014	74.82	10:00:19.07	1.00	102.0	UWes	60.0
557	48.21174	82.56512	0.363	175.840	76.41	10:00: 0.58	-	160.0	UWis100.0	
558	48.20552	82.50854	0.372	171.922	75.90	10:00:15.76	1.00	102.0	UWes	60.0
559	48.21267	82.45995	0.335	168.226	75.90	09:59:59.84	-	160.0	UWis100.0	
560	48.23083	82.44688	0.335	166.800	76.50	10:00:17.10	1.00	102.0	UWes	60.0

Shot 8

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

REEVES PIT - Line 500-EH Shot time 1984-07-11 10:10: 0.00

Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
501	48.05860	84.91428	0.317	-211.576	84.51	10:09:59.97	1.00	102.0	EMR	60.0
504	47.99076	84.76368	0.299	-201.290	82.18	10:10:20.90	1.00	102.0	UWes	60.0
505	48.00948	84.71594	0.305	-197.484	82.67	10:09:59.97	1.00	102.0	EMR	60.0
506	48.02689	84.67561	0.311	-194.259	83.16	10:10:21.47	1.00	102.0	UWes	60.0
507	48.04038	84.63541	0.317	-191.108	83.53	10:09:59.97	1.00	102.0	EMR	60.0
508	48.04988	84.58379	0.335	-187.165	83.75	10:10:20.59	1.00	102.0	UWes	60.0
509	48.02583	84.53609	0.341	-183.944	82.84	10:09:59.97	1.00	102.0	EMR	60.0
510	48.01742	84.48016	0.320	-179.927	82.42	10:10:18.65	1.00	102.0	UWes	60.0
511	47.95584	84.45630	0.326	-179.201	80.19	10:09:59.97	1.00	102.0	EMR	60.0
512	47.95781	84.37610	0.329	-173.262	79.99	10:10:17.43	1.00	102.0	UWes	60.0
513	47.96450	84.33624	0.384	-170.201	80.09	10:09:54.33	0.25	60.0	UoFT	60.0
514	47.96060	84.29665	0.381	-167.366	79.80	10:10:15.97	1.00	102.0	UWes	60.0
515	47.95932	84.26148	0.427	-164.808	79.62	10:09:59.96	1.00	102.0	EMR	60.0
516	47.95284	84.21313	0.439	-161.391	79.17	00:00: 1.00	0.99	60.0	UAlb	60.0
517	47.94462	84.16758	0.418	-158.227	78.65	10:09:59.95	1.00	102.0	EMR	60.0
518	47.99085	84.12161	0.415	-153.913	80.31	10:10: 5.47	0.25	60.0	UoFT	60.0
519	48.03680	84.12187	0.436	-153.155	82.19	10:09:59.96	1.00	102.0	EMR	60.0
520	48.06794	84.07784	0.451	-149.463	83.37	10:10: 8.18	0.25	60.0	UoFT	60.0
521	48.11248	84.06699	0.387	-148.167	85.24	10:09:59.96	1.00	102.0	EMR	60.0
522	48.12618	84.00163	0.402	-143.196	85.74	10:09:54.32	0.25	60.0	UoFT	60.0
523	48.12413	83.95753	0.381	-139.939	85.58	10:10: 8.92	0.25	60.0	UoFT	60.0
524	47.88691	84.00344	0.497	-147.707	75.40	10:09:59.96	1.00	102.0	EMR	60.0
525	47.85710	83.80185	0.457	-134.122	72.56	10:09:59.96	1.00	102.0	EMR	60.0
526	48.03879	83.77338	0.451	-127.412	80.99	10:10: 8.97	0.25	60.0	UoFT	60.0
527	48.01540	83.72989	0.479	-124.652	79.61	10:09:59.53	-	160.0	UWIS100.0	
528	48.00365	83.68851	0.448	-121.864	78.77	10:10: 4.86	0.25	60.0	UoFT	60.0
529	48.00641	83.66069	0.475	-119.769	78.74	10:10: 0.54	-	160.0	UWIS100.0	
530	48.01818	83.61651	0.448	-116.282	79.09	10:10: 8.09	0.25	60.0	UoFT	60.0
532	48.00612	83.54221	0.460	-111.117	77.93	10:10: 7.34	0.25	60.0	UoFT	60.0
533	48.01191	83.50415	0.482	-108.205	77.98	10:09:55.00	0.61	102.0	UBC	60.0
535	48.03583	83.43146	0.442	-102.358	78.86	10:09:53.20	0.61	102.0	UBC	60.0
536	48.04751	83.38518	0.424	-98.724	79.24	10:09:55.00	0.61	102.0	UBC	60.0
537	48.04697	83.34362	0.436	-95.693	78.89	10:10: 0.02	-	160.0	UWIS100.0	
538	48.07737	83.31103	0.439	-92.702	80.68	10:09:55.00	0.31	102.0	UBC	60.0
539	48.08299	83.27724	0.433	-90.117	80.84	10:09:59.94	-	160.0	UWIS100.0	
540	48.08735	83.24339	0.393	-87.550	80.91	10:09:54.99	0.31	102.0	UBC	60.0
541	48.09834	83.21043	0.402	-84.936	81.49	10:09:57.28	-	160.0	UWIS100.0	
542	48.08421	83.11999	0.390	-78.545	79.70	10:09:54.99	0.25	60.0	UoFT	60.0
543	48.09302	83.14204	0.378	-79.996	80.58	10:09:54.00	0.31	102.0	UBC	60.0
544	48.09875	83.17720	0.390	-82.483	81.29	10:09:59.90	-	160.0	UWIS100.0	
546	48.11130	82.96747	0.381	-66.837	80.62	10:09:55.00	0.31	102.0	UBC	60.0
547	48.11471	82.93112	0.402	-64.105	80.59	10:09:55.00	0.61	102.0	UBC	60.0
548	48.12439	82.90629	0.402	-62.110	81.31	10:09:54.99	0.61	102.0	UBC	60.0
549	48.13381	82.85019	0.381	-57.824	81.75	10:09:59.50	-	160.0	UWIS100.0	
550	48.12716	82.80997	0.387	-54.979	80.57	10:09:54.99	0.61	98.0	MemU	60.0
551	48.12855	82.77023	0.396	-52.037	80.24	10:10: 0.06	-	160.0	UWIS100.0	
552	48.13187	82.73211	0.366	-49.178	80.13	10:09:55.02	0.61	98.0	MemU	60.0
553	48.12777	82.69058	0.433	-46.221	78.95	10:09:58.50	-	160.0	UWIS100.0	
554	48.11841	82.65971	0.375	-44.188	77.07	10:09:54.99	0.61	102.0	UAlb	60.0
555	48.13748	82.60971	0.381	-40.106	78.88	10:09:59.59	-	160.0	UWIS100.0	
556	48.16434	82.57713	0.381	-37.233	82.69	10:09:54.06	1.00	102.0	UWes	60.0
557	48.21174	82.56512	0.363	-36.043	90.86	10:10: 0.38	-	160.0	UWIS100.0	
558	48.20552	82.50854	0.372	-31.833	89.77	10:09:53.42	1.00	102.0	UWes	60.0
559	48.21267	82.45995	0.335	-28.230	91.40	10:09:59.85	-	160.0	UWIS100.0	
560	48.23083	82.44688	0.335	-27.384	95.68	10:09:54.65	1.00	102.0	UWes	60.0

Shot 9

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

SIRJAMES PIT - Line 500-EH Shot time 1984-07-11 10:20: 0.05

Lat 48.04232, Long 84.67504, Elev 0.310km, Depth 33.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
501	48.05860	84.91428	0.317	-17.928	95.71	10:19:59.97	1.00	102.0	EMR	60.0
503	48.00262	84.82336	0.299	-11.912	68.19	10:19:59.97	1.00	102.0	EMR	60.0
504	47.99076	84.76368	0.299	-8.751	49.05	10:19:50.21	1.00	102.0	UWes	60.0
505	48.00948	84.71594	0.305	-4.757	39.87	10:19:59.96	1.00	102.0	EMR	60.0
506	48.02689	84.67561	0.311	-1.715	1.39	10:19:52.05	1.00	102.0	UWes	60.0
507	48.04038	84.63541	0.317	2.963	274.19	10:19:59.98	1.00	102.0	EMR	60.0
508	48.04988	84.58379	0.335	6.856	262.99	10:19:50.30	1.00	102.0	UWes	60.0
509	48.02583	84.53609	0.341	10.524	280.08	10:19:59.98	1.00	102.0	EMR	60.0
510	48.01742	84.48016	0.320	14.796	280.86	10:19:49.78	1.00	102.0	UWes	60.0
511	47.95584	84.45630	0.326	18.946	300.58	10:19:59.99	1.00	102.0	EMR	60.0
512	47.95781	84.37610	0.329	24.207	292.95	10:19:52.21	1.00	102.0	UWes	60.0
513	47.96450	84.33624	0.384	26.722	289.02	10:19:50.36	0.25	60.0	UofT	60.0
514	47.96060	84.29665	0.381	29.663	287.98	10:19:54.49	1.00	102.0	UWes	60.0
515	47.95932	84.26148	0.427	32.212	286.80	10:19:59.97	1.00	102.0	EMR	60.0
516	47.95284	84.21313	0.439	35.879	286.27	00:00: 1.00	0.99	60.0	UAlb	60.0
517	47.94462	84.16758	0.418	39.402	286.19	10:19:59.96	1.00	102.0	EMR	60.0
518	47.99085	84.12161	0.415	41.682	278.10	10:19:53.04	0.25	60.0	UofT	60.0
519	48.03680	84.12187	0.436	41.255	271.06	10:19:59.95	1.00	102.0	EMR	60.0
520	48.06794	84.07784	0.451	44.611	266.56	10:19:54.11	0.25	60.0	UofT	60.0
521	48.11248	84.06699	0.387	45.976	260.46	10:19:59.96	1.00	102.0	EMR	60.0
522	48.12618	84.00163	0.402	51.032	259.72	10:19:53.96	0.25	60.0	UofT	60.0
523	48.12413	83.95753	0.381	54.228	260.61	10:19:48.27	0.25	60.0	UofT	60.0
524	47.88691	84.00344	0.497	53.047	289.26	10:19:59.96	1.00	102.0	EMR	60.0
525	47.85710	83.80185	0.457	68.401	287.85	10:19:59.96	1.00	102.0	EMR	60.0
526	48.03879	83.77338	0.451	67.236	270.67	10:19:50.10	0.25	60.0	UofT	60.0
527	48.01540	83.72989	0.479	70.558	272.78	10:19:59.53	-	160.0	UWis100.0	
528	48.00365	83.68851	0.448	73.715	273.71	10:19:58.20	0.25	60.0	UofT	60.0
529	48.00641	83.66069	0.475	75.767	273.40	10:20: 0.57	-	160.0	UWis100.0	
530	48.01818	83.61651	0.448	78.995	272.34	10:19:53.59	0.25	60.0	UofT	60.0
532	48.00612	83.54221	0.460	84.595	273.15	10:19:50.71	0.25	60.0	UofT	60.0
533	48.01191	83.50415	0.482	87.400	272.65	10:19:55.00	0.61	102.0	UBC	60.0
535	48.03583	83.43146	0.442	92.738	270.91	10:19:55.03	0.61	102.0	UBC	60.0
536	48.04751	83.38518	0.424	96.177	270.14	10:19:55.00	0.61	102.0	UBC	60.0
537	48.04697	83.34362	0.436	99.275	270.20	10:20: 0.03	-	160.0	UWis100.0	
538	48.07737	83.31103	0.439	101.749	268.31	10:19:55.00	0.31	102.0	UBC	60.0
539	48.08299	83.27724	0.433	104.285	268.03	10:19:59.95	-	160.0	UWis100.0	
540	48.08735	83.24339	0.393	106.823	267.85	10:19:54.99	0.31	102.0	UBC	60.0
541	48.09834	83.21043	0.402	109.328	267.28	10:19:59.88	-	160.0	UWis100.0	
542	48.08421	83.11999	0.390	116.000	268.28	10:19:54.99	0.25	60.0	UofT	60.0
543	48.09302	83.14204	0.378	114.392	267.75	10:19:54.00	0.31	102.0	UBC	60.0
544	48.09875	83.17720	0.390	111.802	267.34	10:19:59.90	-	160.0	UWis100.0	
546	48.11130	82.96747	0.381	127.471	267.19	10:19:55.00	0.31	102.0	UBC	60.0
547	48.11471	82.93112	0.402	130.193	267.10	10:19:55.00	0.61	102.0	UBC	60.0
548	48.12439	82.90629	0.402	132.098	266.70	10:19:54.99	0.61	102.0	UBC	60.0
549	48.13381	82.85019	0.381	136.330	266.40	10:19:59.49	-	160.0	UWis100.0	
550	48.12716	82.80997	0.387	139.275	266.81	10:19:54.99	0.61	98.0	MemU	60.0
551	48.12855	82.77023	0.396	142.236	266.84	10:20: 0.06	-	160.0	UWis100.0	
552	48.13187	82.73211	0.366	145.090	266.79	10:19:55.02	0.61	98.0	MemU	60.0
553	48.12777	82.69058	0.433	148.153	267.06	10:19:58.50	-	160.0	UWis100.0	
554	48.11841	82.65971	0.375	150.400	267.53	10:19:54.99	0.61	102.0	UAlb	60.0
555	48.13748	82.60971	0.381	154.221	266.84	10:19:59.54	-	160.0	UWis100.0	
556	48.16434	82.57713	0.381	156.832	265.82	10:20:14.19	1.00	102.0	UWes	60.0
557	48.21174	82.56512	0.363	158.191	263.95	10:20: 0.36	-	160.0	UWis100.0	
558	48.20552	82.50854	0.372	162.305	264.39	10:20:15.69	1.00	102.0	UWes	60.0
559	48.21267	82.45995	0.335	165.977	264.27	10:19:59.85	-	160.0	UWis100.0	
560	48.23083	82.44688	0.335	167.157	263.63	10:20:17.54	1.00	102.0	UWes	60.0

Shot 10

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 800-CJ Shot time 1984-07-14 09:59:59.99

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part SR
802	48.26127	83.07360	0.381	153.968	37.31	09:59:59.94	-	160.0	UWis100.0
803	48.25649	83.11383	0.381	156.214	38.03	10:00:13.98	1.00	102.0	UWes 60.0
804	48.22696	83.12924	0.396	159.510	37.62	09:59:59.94	-	160.0	UWis100.0
805	48.20293	83.13451	0.396	161.870	37.15	10:00:15.21	1.00	102.0	UWes 60.0
806	48.18000	83.13382	0.402	163.880	36.60	10:00: 0.57	-	160.0	UWis100.0
807	48.15235	83.14504	0.399	166.850	36.19	10:00:17.22	1.00	102.0	UWes 60.0
808	48.12579	83.14575	0.375	169.273	35.61	09:59:59.45	-	160.0	UWis100.0
809	48.09958	83.15211	0.378	171.923	35.17	10:00:17.94	1.00	102.0	UWes 60.0
810	48.09834	83.21043	0.402	174.571	36.27	09:59:59.87	-	160.0	UWis100.0
811	48.08735	83.24339	0.393	177.013	36.65	10:00:17.89	1.00	102.0	UWes 60.0
812	48.08299	83.27724	0.433	178.915	37.18	09:59:59.89	-	160.0	UWis100.0
813	48.07426	83.30223	0.448	180.816	37.44	10:00:18.09	1.00	102.0	UWes 60.0
814	48.05367	83.33520	0.436	184.129	37.59	09:59:59.95	1.00	102.0	EMR 60.0
815	48.03553	83.35544	0.436	186.647	37.57	10:00:16.95	1.00	102.0	UWes 60.0
816	48.01969	83.36847	0.445	188.636	37.47	09:59:59.96	1.00	102.0	EMR 60.0
817	47.99609	83.36980	0.448	190.785	37.01	10:00:17.12	1.00	102.0	UWes 60.0
818	47.97399	83.37669	0.448	193.060	36.69	09:59:59.95	1.00	102.0	EMR 60.0
819	47.94850	83.38014	0.475	195.492	36.25	10:00:17.03	1.00	102.0	UWes 60.0
821	47.89581	83.39993	0.463	201.105	35.59	09:59:55.00	0.61	98.0	MemU 60.0
822	47.87794	83.42419	0.475	203.777	35.66	09:59:59.96	1.00	102.0	EMR 60.0
823	47.85884	83.43566	0.439	206.003	35.50	09:59:54.99	0.61	98.0	MemU 60.0
824	47.84452	83.44702	0.433	207.793	35.43	09:59:59.96	1.00	102.0	EMR 60.0
825	47.83455	83.47529	0.436	209.925	35.70	09:59:54.96	0.61	102.0	UA1b 60.0
826	47.82230	83.51719	0.448	212.869	36.14	09:59:59.97	1.00	102.0	EMR 60.0
828	47.79219	83.53223	0.454	216.240	35.85	10:00: 8.26	0.25	60.0	UofT 60.0
829	47.78575	83.55875	0.454	217.987	36.14	09:59:54.98	0.61	102.0	UBC 60.0
830	47.77604	83.55820	0.454	218.836	35.97	10:00:23.00	0.25	60.0	UofT 60.0
831	47.72682	83.56853	0.448	223.735	35.30	09:59:59.98	1.00	102.0	EMR 60.0
832	47.71568	83.57938	0.451	225.216	35.28	09:59:54.97	0.61	102.0	UBC 60.0
833	47.68190	83.59310	0.451	228.881	34.94	09:59:55.98	1.00	102.0	EMR 60.0
834	47.66549	83.61613	0.436	231.367	35.01	09:59:54.98	0.61	102.0	UBC 60.0
835	47.65514	83.64398	0.424	233.512	35.25	09:59:59.98	1.00	102.0	EMR 60.0
836	47.63426	83.67488	0.433	236.748	35.36	09:59:54.96	0.61	102.0	UBC 60.0
837	47.60536	83.69849	0.466	240.396	35.25	09:59:59.98	1.00	102.0	EMR 60.0
838	47.59234	83.70334	0.433	241.790	35.12	09:59:54.97	0.61	102.0	UBC 60.0
839	47.58035	83.72128	0.424	243.656	35.18	09:59:59.97	1.00	102.0	EMR 60.0
840	47.56070	83.73022	0.433	245.831	35.01	09:59:54.98	0.61	102.0	UBC 60.0
841	47.53697	83.71404	0.451	247.306	34.44	10:00: 6.48	0.25	60.0	UofT 60.0
843	47.49935	83.74796	0.433	252.199	34.36	10:00:24.83	0.25	60.0	UofT 60.0
844	47.49225	83.76286	0.433	253.486	34.45	09:59:59.32	-	160.0	UWis100.0
845	47.47975	83.80474	0.436	256.423	34.83	10:00:24.58	0.25	60.0	UofT 60.0
846	47.47601	83.83421	0.451	258.037	35.16	10:00: 0.44	-	160.0	UWis100.0
847	47.47093	83.86665	0.442	259.912	35.50	10:00:23.55	0.25	60.0	UofT 60.0
848	47.46700	83.90485	0.448	261.949	35.93	10:00: 0.00	-	160.0	UWis100.0
850	47.41629	83.92619	0.430	267.466	35.49	09:59:59.84	-	160.0	UWis100.0
851	47.39286	83.92926	0.436	269.725	35.21	10:00:22.56	0.25	60.0	UofT 60.0
852	47.37970	83.92807	0.433	270.870	35.01	09:59:57.91	-	160.0	UWis100.0
853	47.37449	84.02168	0.360	275.451	36.08	10:00:19.71	0.25	60.0	UofT 60.0
854	47.33104	84.13154	0.360	284.267	36.78	10:00:21.07	0.25	60.0	UofT 60.0
855	47.31486	84.30080	0.360	293.502	38.44	10:00:21.36	0.25	60.0	UofT 60.0
856	47.17470	84.29868	0.329	305.764	36.61	09:59:55.01	0.31	102.0	UBC 60.0
857	47.14775	84.39423	0.290	312.513	37.28	09:59:54.99	0.31	102.0	UBC 60.0
858	47.11647	84.46180	0.360	318.391	37.58	09:59:54.97	0.31	102.0	UBC 60.0
859	47.05906	84.45017	0.238	322.942	36.78	09:59:54.99	0.31	102.0	UBC 60.0
860	47.02439	84.49973	0.244	328.285	36.86	09:59:55.00	0.31	102.0	UBC 60.0
861	46.98263	84.52041	0.226	332.947	36.59	09:59:54.99	0.31	102.0	UBC 60.0

Shot 11

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 800-CJ Shot time 1984-07-14 10:20: 0.03

Lat 47.40794, Long 83.92712, Elev 0.354km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	CN	VS	Part	SR
802	48.26127	83.07360	0.381	114.387	214.28	10:19:59.93	-	160.0	UWis100.0	
803	48.25649	83.11383	0.381	112.287	213.14	10:20: 8.52	1.00	102.0	UWes 60.0	
804	48.22696	83.12924	0.396	108.915	213.57	10:19:59.93	-	160.0	UWis100.0	
805	48.20293	83.13451	0.396	106.479	214.18	10:20: 7.70	1.00	102.0	UWes 60.0	
806	48.18000	83.13382	0.402	104.408	214.99	10:20: 0.56	-	160.0	UWis100.0	
807	48.15235	83.14504	0.399	101.416	215.60	10:20: 8.37	1.00	102.0	UWes 60.0	
808	48.12579	83.14575	0.375	98.999	216.56	10:19:59.45	-	160.0	UWis100.0	
809	48.09958	83.15211	0.378	96.385	217.37	10:20: 7.23	1.00	102.0	UWes 60.0	
810	48.09834	83.21043	0.402	93.701	215.26	10:19:59.84	-	160.0	UWis100.0	
811	48.08735	83.24339	0.393	91.296	214.42	10:20: 3.45	1.00	102.0	UWes 60.0	
812	48.08299	83.27724	0.433	89.489	213.24	10:19:59.88	-	160.0	UWis100.0	
813	48.07426	83.30223	0.448	87.663	212.55	10:20: 2.62	1.00	102.0	UWes 60.0	
814	48.05367	83.33520	0.436	84.415	211.96	10:19:59.96	1.00	102.0	EMR 60.0	
815	48.03553	83.35544	0.436	81.905	211.79	10:20: 1.09	1.00	102.0	UWes 60.0	
816	48.01969	83.36847	0.445	79.897	211.85	10:19:59.96	1.00	102.0	EMR 60.0	
817	47.99609	83.36980	0.448	77.626	212.81	10:20: 0.82	1.00	102.0	UWes 60.0	
818	47.97399	83.37669	0.448	75.288	213.49	10:19:59.95	1.00	102.0	EMR 60.0	
819	47.94850	83.38014	0.475	72.794	214.55	10:20: 1.02	1.00	102.0	UWes 60.0	
820	47.92394	83.38852	0.451	70.198	215.39	10:19:59.96	1.00	102.0	EMR 60.0	
821	47.89581	83.39993	0.463	67.163	216.33	10:19:55.00	0.61	98.0	MemU 60.0	
822	47.87794	83.42419	0.475	64.487	216.06	10:19:59.96	1.00	102.0	EMR 60.0	
823	47.85884	83.43566	0.439	62.268	216.56	10:19:54.99	0.61	98.0	MemU 60.0	
824	47.84452	83.44702	0.433	60.483	216.81	10:19:59.97	1.00	102.0	EMR 60.0	
825	47.83455	83.47529	0.436	58.338	215.77	10:19:54.96	0.61	102.0	UALb 60.0	
826	47.82230	83.51719	0.448	55.427	213.93	10:19:59.98	1.00	102.0	EMR 60.0	
828	47.79219	83.53223	0.454	52.028	214.95	10:19:54.86	0.25	60.0	UofT 60.0	
829	47.78575	83.55875	0.454	50.318	213.54	10:19:54.98	0.61	102.0	UBC 60.0	
830	47.77604	83.55820	0.454	49.445	214.27	10:19:51.80	0.25	60.0	UofT 60.0	
831	47.72682	83.56853	0.448	44.553	217.41	10:19:59.98	1.00	102.0	EMR 60.0	
832	47.71568	83.57938	0.451	43.075	217.54	10:19:54.97	0.61	102.0	UBC 60.0	
833	47.68190	83.59310	0.451	39.497	219.66	10:19:59.97	1.00	102.0	EMR 60.0	
834	47.66549	83.61613	0.436	36.989	219.39	10:19:54.98	0.61	102.0	UBC 60.0	
835	47.65514	83.64398	0.424	34.783	217.91	10:19:59.97	1.00	102.0	EMR 60.0	
836	47.63426	83.67488	0.433	31.528	217.15	10:19:54.96	0.61	102.0	UBC 60.0	
837	47.60536	83.69849	0.466	27.901	218.21	10:19:59.98	1.00	102.0	EMR 60.0	
838	47.59234	83.70334	0.433	26.544	219.52	10:19:54.97	0.61	102.0	UBC 60.0	
839	47.58035	83.72128	0.424	24.658	219.06	10:19:59.98	1.00	102.0	EMR 60.0	
840	47.56070	83.73022	0.433	22.553	221.22	10:19:54.98	0.61	102.0	UBC 60.0	
841	47.53697	83.71404	0.451	21.536	228.31	10:19:53.94	0.25	60.0	UofT 60.0	
843	47.49935	83.74796	0.433	16.907	233.12	10:19:57.97	0.25	60.0	UofT 60.0	
844	47.49225	83.76286	0.433	15.534	232.95	10:19:59.31	-	160.0	UWis100.0	
845	47.47975	83.80474	0.436	12.204	229.19	10:19:50.13	0.25	60.0	UofT 60.0	
846	47.47601	83.83421	0.451	10.315	222.84	10:19:52.67	-	160.0	UWis100.0	
847	47.47093	83.86665	0.442	8.358	213.10	10:19:55.07	0.25	60.0	UofT 60.0	
848	47.46700	83.90485	0.448	6.778	194.36	10:19:59.99	-	160.0	UWis100.0	
850	47.41629	83.92619	0.430	0.931	184.32	10:19:59.84	-	160.0	UWis100.0	
851	47.39286	83.92926	0.436	-1.685	5.51	10:19:53.24	0.25	60.0	UofT 60.0	
852	47.37970	83.92807	0.433	-3.140	1.31	10:19:57.91	-	160.0	UWis100.0	
853	47.37449	84.02168	0.360	-8.050	62.45	10:19:48.79	0.25	60.0	UofT 60.0	
854	47.33104	84.13154	0.360	-17.650	60.95	10:19:52.27	0.25	60.0	UofT 60.0	
855	47.31486	84.30080	0.360	-30.066	69.73	10:19:50.96	0.25	60.0	UofT 60.0	
856	47.17470	84.29868	0.329	-38.241	47.17	10:19:55.01	0.31	102.0	UBC 60.0	
857	47.14775	84.39423	0.290	-45.671	50.53	10:19:54.99	0.31	102.0	UBC 60.0	
858	47.11647	84.46180	0.360	-51.842	51.12	10:19:54.97	0.31	102.0	UBC 60.0	
859	47.05906	84.45017	0.238	-55.436	45.41	10:19:54.99	0.31	102.0	UBC 60.0	
860	47.02439	84.49973	0.244	-60.825	45.28	10:19:55.00	0.31	102.0	UBC 60.0	
861	46.98263	84.52041	0.226	-65.246	43.34	10:19:54.99	0.31	102.0	UBC 60.0	

Shot 12

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 200-CJ Shot time 1984-07-17 10:00: 0.00

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
200	48.96800	82.26395	0.277	55.282	38.61	00:00: 1.00	0.99	60.0	UAlb	60.0
201	49.86497	81.61361	0.218	-58.072	192.68	09:59:59.41	-	160.0	UWisl	100.0
202	49.74826	81.51414	0.204	-48.006	204.59	09:59:59.99	1.00	102.0	EMR	60.0
203	49.66428	81.51665	0.215	-39.613	209.98	09:59:59.12	-	160.0	UWisl	100.0
204	49.61072	81.51753	0.214	-34.544	214.83	09:59:59.97	1.00	102.0	EMR	60.0
205	49.57780	81.54603	0.221	-30.365	215.56	09:59:59.96	-	160.0	UWisl	100.0
206	49.47083	81.50047	0.235	-24.563	238.61	09:59:59.97	1.00	102.0	EMR	60.0
207	49.44185	81.52417	0.235	-21.497	243.55	09:59:59.86	-	160.0	UWisl	100.0
208	49.38094	81.51698	0.244	-19.966	261.94	09:59:53.36	1.00	102.0	UWes	60.0
209	49.37016	81.60667	0.241	-13.351	263.02	09:59:57.32	-	160.0	UWisl	100.0
210	49.37906	81.80661	0.210	-2.920	154.13	09:59:51.65	1.00	102.0	UWes	60.0
211	49.36643	81.81143	0.216	-2.033	126.97	09:59:59.99	1.00	102.0	EMR	60.0
212	49.32546	81.79816	0.223	3.398	11.20	09:59:57.92	1.00	102.0	UWes	60.0
213	49.29767	81.86703	0.232	8.567	41.38	09:59:59.97	1.00	102.0	EMR	60.0
214	49.28889	81.90951	0.238	11.465	49.74	09:59:53.38	1.00	102.0	UWes	60.0
215	49.29389	81.95843	0.229	14.086	60.86	09:59:59.98	1.00	102.0	EMR	60.0
216	49.27644	82.01019	0.232	18.321	61.26	09:59:52.98	1.00	102.0	UWes	60.0
217	49.25481	82.05043	0.226	22.057	59.41	09:59:59.97	1.00	102.0	EMR	60.0
218	49.22217	82.03374	0.229	23.161	50.12	09:59:51.30	1.00	102.0	UWes	60.0
219	49.20768	82.06975	0.256	26.212	51.07	09:59:54.99	0.31	102.0	UBC	60.0
220	49.18797	82.08497	0.247	28.470	49.03	09:59:59.14	-	160.0	UWisl	100.0
221	49.16246	82.11856	0.262	32.184	48.05	09:59:55.00	0.31	102.0	UBC	60.0
222	49.13636	82.11044	0.247	33.780	43.72	09:59:59.94	-	160.0	UWisl	100.0
223	49.11634	82.11150	0.244	35.474	41.32	09:59:55.01	1.22	102.0	UBC	60.0
224	49.09302	82.11317	0.241	37.537	38.85	09:59:59.59	-	160.0	UWisl	100.0
225	49.06596	82.11208	0.229	39.879	36.05	09:59:59.97	1.00	102.0	EMR	60.0
226	49.04657	82.14005	0.250	42.827	36.54	09:59:57.85	1.00	102.0	UWes	60.0
227	49.02528	82.16391	0.247	45.768	36.51	09:59:59.95	1.00	102.0	EMR	60.0
228	48.99918	82.16480	0.262	48.168	34.52	09:59:57.40	1.00	102.0	UWes	60.0
229	48.98351	82.18029	0.262	50.247	34.45	09:59:59.95	1.00	102.0	EMR	60.0
230	48.97018	82.21230	0.262	52.806	35.61	09:59:59.89	1.00	102.0	UWes	60.0
231	48.98108	82.30105	0.277	55.922	41.69	09:59:51.53	0.25	60.0	UoFT	60.0
232	48.98195	82.35506	0.259	58.556	44.61	09:59:55.00	1.22	102.0	UBC	60.0
233	48.96536	82.37660	0.268	60.977	44.43	09:59:55.00	1.22	102.0	UBC	60.0
234	48.93840	82.41177	0.265	64.923	44.17	09:59:54.97	0.61	102.0	UAlb	60.0
235	48.95133	82.50980	0.277	69.166	49.20	09:59:58.73	0.25	60.0	UoFT	60.0
236	48.93158	82.51303	0.277	70.795	47.98	09:59:55.01	0.61	98.0	MemU	60.0
237	48.90072	82.52731	0.280	73.894	46.54	09:59:57.31	0.25	60.0	UoFT	60.0
238	48.83824	82.46463	0.283	75.777	40.37	09:59:54.99	0.61	98.0	MemU	60.0
239	48.81996	82.48739	0.283	78.409	40.32	09:59:54.90	0.25	60.0	UoFT	60.0
240	48.81285	82.50836	0.274	80.011	40.78	09:59:59.97	1.00	102.0	EMR	60.0
241	48.79393	82.53734	0.277	82.995	40.92	09:59:56.02	0.25	60.0	UoFT	60.0
242	48.77446	82.54362	0.287	84.940	40.19	09:59:59.96	1.00	102.0	EMR	60.0
243	48.75077	82.56561	0.287	87.997	39.88	09:59:52.10	0.25	60.0	UoFT	60.0
244	48.72268	82.56406	0.287	90.345	38.55	09:59:54.96	1.22	102.0	UBC	60.0
245	48.69875	82.56780	0.311	92.610	37.66	10:00: 5.97	0.25	60.0	UoFT	60.0
246	48.68244	82.57932	0.302	94.564	37.38	09:59:54.96	1.22	102.0	UBC	60.0
247	48.63061	82.55328	0.311	98.107	34.47	09:59:54.96	0.61	102.0	UBC	60.0
248	48.59059	82.60785	0.314	104.056	34.87	09:59:54.97	0.61	102.0	UBC	60.0
249	48.54955	82.62213	0.360	108.418	33.93	09:59:54.98	0.61	102.0	UBC	60.0
250	48.51648	82.71831	0.326	115.495	35.77	09:59:54.99	0.61	102.0	UBC	60.0
253	48.47553	82.79019	0.329	122.306	36.49	09:59:54.98	0.61	102.0	UBC	60.0
254	48.46819	82.84202	0.317	125.267	37.64	09:59:59.91	-	160.0	UWisl	100.0
255	48.44351	82.86060	0.317	128.281	37.36	10:00: 7.16	0.25	60.0	UoFT	60.0
256	48.42318	82.87959	0.317	130.931	37.24	09:59:59.68	-	160.0	UWisl	100.0
257	48.39331	82.91226	0.317	135.039	37.18	10:00: 5.88	0.25	60.0	UoFT	60.0
258	48.35733	82.92259	0.317	138.701	36.42	09:59:59.75	-	160.0	UWisl	100.0
259	48.32565	82.94198	0.317	142.392	36.03	10:00: 8.35	0.25	60.0	UoFT	60.0
260	48.30186	82.98611	0.317	146.460	36.43	09:59:59.12	-	160.0	UWisl	100.0
261	48.29608	82.98737	0.317	147.033	36.31	10:00: 7.05	0.25	60.0	UoFT	60.0

Shot 13

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 200-CJ Shot time 1984-07-17 10:20: 0.03

Lat 47.40794, Long 83.92712, Elev 0.354km, Depth 36.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
200	48.96800	82.26395	0.277	213.023	216.11	00:00: 1.00	0.99	60.0	UAlb	60.0
201	49.86497	81.61361	0.218	322.030	212.84	10:19:59.40	-	160.0	UWisl00.0	
202	49.74826	81.51414	0.204	315.286	215.29	10:19:59.99	1.00	102.0	EMR	60.0
203	49.66428	81.51665	0.215	307.602	216.27	10:19:59.13	-	160.0	UWisl00.0	
204	49.61072	81.51753	0.214	302.781	216.92	10:19:59.98	1.00	102.0	EMR	60.0
205	49.57780	81.54603	0.221	298.617	217.01	10:19:59.96	-	160.0	UWisl00.0	
206	49.47083	81.50047	0.235	291.270	218.97	10:19:59.97	1.00	102.0	EMR	60.0
207	49.44185	81.52417	0.235	287.684	219.09	10:19:59.85	-	160.0	UWisl00.0	
208	49.38094	81.51698	0.244	282.793	220.04	10:20:18.89	1.00	102.0	UWes	60.0
209	49.37016	81.60667	0.241	277.720	219.10	10:19:57.32	-	160.0	UWisl00.0	
210	49.37906	81.80661	0.210	269.609	216.42	10:20:22.99	1.00	102.0	UWes	60.0
211	49.36643	81.81143	0.216	268.271	216.53	10:19:59.98	1.00	102.0	EMR	60.0
212	49.32546	81.79816	0.223	265.207	217.30	10:20:14.65	1.00	102.0	UWes	60.0
213	49.29767	81.86703	0.232	259.723	216.78	10:19:59.97	1.00	102.0	EMR	60.0
214	49.28889	81.90951	0.238	257.098	216.32	10:20:26.81	1.00	102.0	UWes	60.0
215	49.29389	81.95843	0.229	255.460	215.57	10:19:59.97	1.00	102.0	EMR	60.0
216	49.27644	82.01019	0.232	251.699	215.09	10:20:22.33	1.00	102.0	UWes	60.0
217	49.25481	82.05043	0.226	248.049	214.83	10:19:59.97	1.00	102.0	EMR	60.0
218	49.22217	82.03374	0.229	245.783	215.55	10:20:19.87	1.00	102.0	UWes	60.0
219	49.20768	82.06975	0.256	242.949	215.24	10:19:54.99	0.31	102.0	UBC	60.0
220	49.18797	82.08497	0.247	240.519	215.32	10:19:59.14	-	160.0	UWisl00.0	
221	49.16246	82.11856	0.262	236.789	215.21	10:19:55.00	0.31	102.0	UBC	60.0
222	49.13636	82.11044	0.247	234.769	215.74	10:19:59.92	-	160.0	UWisl00.0	
223	49.11634	82.11150	0.244	232.920	216.04	10:19:55.01	1.22	102.0	UBC	60.0
224	49.09302	82.11317	0.241	230.756	216.40	10:20: 0.70	-	160.0	UWisl00.0	
225	49.06596	82.11208	0.229	228.387	216.86	10:19:59.97	1.00	102.0	EMR	60.0
226	49.04657	82.14005	0.250	225.436	216.75	10:20:20.53	1.00	102.0	UWes	60.0
227	49.02528	82.16391	0.247	222.495	216.74	10:19:59.95	1.00	102.0	EMR	60.0
228	48.99918	82.16480	0.262	220.137	217.18	10:20:19.45	1.00	102.0	UWes	60.0
229	48.98351	82.18029	0.262	218.063	217.20	10:19:59.97	1.00	102.0	EMR	60.0
230	48.97018	82.21230	0.262	215.468	216.92	10:20:21.97	1.00	102.0	UWes	60.0
231	48.98108	82.30105	0.277	212.621	215.26	10:20: 6.83	0.25	60.0	UofT	60.0
232	48.98195	82.35506	0.259	210.443	214.32	10:19:55.00	1.22	102.0	UBC	60.0
233	48.96536	82.37660	0.268	208.031	214.23	10:19:55.00	1.22	102.0	UBC	60.0
234	48.93840	82.41177	0.265	204.103	214.08	10:19:54.97	0.61	102.0	UAlb	60.0
235	48.95133	82.50980	0.277	201.388	212.09	10:19:57.60	0.25	60.0	UofT	60.0
236	48.93158	82.51303	0.277	199.404	212.36	10:19:55.01	0.61	98.0	MemU	60.0
237	48.90072	82.52731	0.280	195.947	212.63	10:20:10.83	0.25	60.0	UofT	60.0
238	48.83824	82.46463	0.283	192.729	214.94	10:19:54.99	0.61	98.0	MemU	60.0
239	48.81996	82.48739	0.283	190.105	214.86	10:20: 7.98	0.25	60.0	UofT	60.0
240	48.81285	82.50836	0.274	188.578	214.60	10:19:59.96	1.00	102.0	EMR	60.0
241	48.79393	82.53734	0.277	185.639	214.41	10:19:56.30	0.25	60.0	UofT	60.0
242	48.77446	82.54362	0.287	183.593	214.67	10:19:59.96	1.00	102.0	EMR	60.0
243	48.75077	82.56561	0.287	180.507	214.70	10:20: 7.10	0.25	60.0	UofT	60.0
244	48.72268	82.56406	0.287	178.014	215.31	10:19:54.96	1.22	102.0	UBC	60.0
245	48.69875	82.56780	0.311	175.687	215.73	10:20: 9.01	0.25	60.0	UofT	60.0
246	48.68244	82.57932	0.302	173.721	215.85	10:19:54.96	1.22	102.0	UBC	60.0
247	48.63061	82.55328	0.311	170.245	217.52	10:19:54.96	0.61	102.0	UBC	60.0
248	48.59059	82.60785	0.314	164.265	217.32	10:19:54.97	0.61	102.0	UBC	60.0
249	48.54955	82.62213	0.360	160.008	217.99	10:19:54.98	0.61	102.0	UBC	60.0
250	48.51648	82.71831	0.326	152.776	216.67	10:19:54.99	0.61	102.0	UBC	60.0
253	48.47553	82.79019	0.329	145.960	216.01	10:19:54.98	0.61	102.0	UBC	60.0
254	48.46819	82.84202	0.317	143.071	214.92	10:19:59.94	-	160.0	UWisl00.0	
255	48.44351	82.86060	0.317	140.035	215.09	10:20: 8.92	0.25	60.0	UofT	60.0
256	48.42318	82.87959	0.317	137.377	215.14	10:19:59.69	-	160.0	UWisl00.0	
257	48.39331	82.91226	0.317	133.269	215.08	10:20: 4.16	0.25	60.0	UofT	60.0
258	48.35733	82.92259	0.317	129.566	215.82	10:19:59.75	-	160.0	UWisl00.0	
259	48.32565	82.94198	0.317	125.871	216.21	10:20: 6.04	0.25	60.0	UofT	60.0
260	48.30186	82.98611	0.317	121.808	215.67	10:19:59.08	-	160.0	UWisl00.0	
261	48.29608	82.98737	0.317	121.232	215.81	10:20: 7.19	0.25	60.0	UofT	60.0

Shot 14

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 400-AE Shot time 1984-07-19 09:20: 0.01

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 1700.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
401	50.03774	84.26604	0.137	335.143	117.82	09:19:59.72	-	160.0	UWis100.0	
402	50.00897	84.16348	0.189	327.149	118.01	09:20:19.92	1.00	102.0	UWes	60.0
403	49.97957	84.12251	0.183	323.024	117.77	09:19:59.11	-	160.0	UWis100.0	
404	49.96611	84.03281	0.186	316.638	118.15	09:20:24.66	1.00	102.0	UWes	60.0
405	49.95408	83.96262	0.207	311.568	118.42	09:19:59.72	-	160.0	UWis100.0	
406	49.91251	83.89738	0.235	305.253	118.13	09:19:59.72	-	160.0	UWis100.0	
407	49.86011	83.77798	0.244	294.939	118.01	09:20:21.35	1.00	102.0	UWes	60.0
408	49.83586	83.77248	0.244	293.332	117.58	09:19:59.97	1.00	102.0	EMR	60.0
409	49.79602	83.71281	0.244	287.479	117.24	09:19:59.87	-	160.0	UWis100.0	
410	49.75800	83.64925	0.244	281.477	116.95	09:19:59.96	1.00	102.0	EMR	60.0
411	49.73135	83.57882	0.226	275.608	116.94	09:19:59.80	-	160.0	UWis100.0	
412	49.68806	83.53694	0.259	270.749	116.35	09:19:59.96	1.00	102.0	EMR	60.0
413	49.65096	83.43394	0.250	262.255	116.34	09:20:21.54	1.00	102.0	UWes	60.0
414	49.63431	83.36261	0.238	256.818	116.54	09:19:59.97	1.00	102.0	EMR	60.0
415	49.62253	83.29987	0.232	252.178	116.78	09:20:20.77	1.00	102.0	UWes	60.0
416	49.60142	83.21791	0.235	245.833	116.98	09:19:59.96	1.00	102.0	EMR	60.0
417	49.60114	83.12205	0.244	239.666	117.79	09:20:21.64	1.00	102.0	UWes	60.0
418	49.57289	83.07780	0.244	235.374	117.51	09:19:59.97	1.00	102.0	EMR	60.0
419	49.55214	82.99985	0.244	229.306	117.71	09:20: 5.69	0.25	60.0	UofT	60.0
420	49.51917	82.91988	0.232	222.477	117.63	09:20:21.13	1.00	102.0	UWes	60.0
421	49.51884	82.82654	0.229	216.496	118.53	09:20: 7.08	0.25	60.0	UofT	60.0
422	49.50123	82.75523	0.241	211.026	118.78	09:20:20.54	1.00	102.0	UWes	60.0
423	49.47174	82.66625	0.238	203.796	118.92	09:20: 5.88	0.25	60.0	UofT	60.0
424	49.44976	82.59811	0.226	198.290	119.04	09:20:23.17	1.00	102.0	UWes	60.0
425	49.43721	82.51839	0.226	192.565	119.57	09:20: 7.94	0.25	60.0	UofT	60.0
427	49.39792	82.39527	0.229	182.640	119.86	09:20: 8.38	0.25	60.0	UofT	60.0
428	49.38043	82.31859	0.232	176.847	120.27	09:19:52.62	1.22	98.0	MemU	60.0
429	49.36337	82.24706	0.262	171.408	120.65	09:20: 6.95	0.25	60.0	UofT	60.0
430	49.33086	82.18197	0.244	165.496	120.46	09:19:52.64	2.46	98.0	MemU	60.0
431	49.32813	82.11742	0.235	161.313	121.26	09:19:52.57	0.61	102.0	UBC	60.0
432	49.29871	82.04517	0.229	155.124	121.29	09:19:57.13	0.25	60.0	UofT	60.0
433	49.29389	81.95843	0.229	149.482	122.44	09:19:53.00	0.61	102.0	UBC	60.0
434	49.28381	81.86775	0.235	143.339	123.55	09:20: 0.43	-	160.0	UWis100.0	
435	49.26474	81.79890	0.235	137.996	124.02	09:19:52.58	0.61	102.0	UBC	60.0
436	49.22195	81.70448	0.247	129.635	124.05	09:20: 0.66	-	160.0	UWis100.0	
437	49.15078	81.70690	0.244	125.526	121.01	00:00: 1.00	0.99	60.0	UAlb	60.0
438	49.09112	81.67374	0.283	120.114	118.91	09:19:56.85	-	160.0	UWis100.0	
439	49.09491	81.59680	0.241	115.442	120.51	09:19:57.36	0.25	60.0	UofT	60.0
440	49.07807	81.55627	0.293	111.941	120.48	09:19:52.59	0.61	102.0	UBC	60.0
441	49.01657	81.52003	0.274	106.285	118.05	09:19:59.32	-	160.0	UWis100.0	
442	48.98458	81.47179	0.262	101.507	117.26	09:19:52.58	0.61	102.0	UBC	60.0
443	48.94607	81.38936	0.271	94.184	116.69	09:19:52.59	0.61	102.0	UBC	60.0
444	48.94622	81.36976	0.271	92.912	117.11	09:19:53.30	0.25	60.0	UofT	60.0
445	48.94609	81.20744	0.274	82.505	120.99	09:19:58.98	-	160.0	UWis100.0	
446	48.94291	81.13737	0.280	77.959	122.77	09:19:59.97	1.00	102.0	EMR	60.0
447	48.90887	81.12746	0.280	75.351	120.66	09:19:59.19	-	160.0	UWis100.0	
448	48.86363	81.07178	0.256	69.308	118.84	09:20: 1.82	0.25	60.0	UofT	60.0
449	48.76845	80.92448	0.296	54.870	114.73	09:19:52.60	1.22	102.0	UBC	60.0
450	48.73968	80.85379	0.283	48.816	113.93	09:19:59.97	1.00	102.0	EMR	60.0
451	48.71085	80.79203	0.293	43.375	112.54	09:19:52.59	1.22	102.0	UBC	60.0
452	48.68144	80.71186	0.277	36.678	111.43	09:19:59.97	1.00	102.0	EMR	60.0
453	48.65260	80.64495	0.283	30.940	109.29	09:19:52.60	0.31	102.0	UBC	60.0
454	48.62349	80.57826	0.265	25.272	106.09	09:19:59.97	1.00	102.0	EMR	60.0
455	48.61030	80.49657	0.268	19.079	106.95	09:19:52.59	1.22	102.0	UBC	60.0
456	48.58625	80.44216	0.280	14.527	101.51	09:19:59.97	1.00	102.0	EMR	60.0
457	48.56646	80.36295	0.290	8.417	94.84	09:19:52.59	1.22	102.0	UBC	60.0
458	48.55898	80.24927	0.302	-0.115	358.06	09:19:55.09	0.25	60.0	UofT	60.0
459	48.51330	80.01401	0.335	-18.138	286.73	09:19:52.58	0.61	102.0	UBC	60.0
460	48.51783	79.76502	0.293	-36.070	277.65	09:19:59.97	1.00	102.0	EMR	60.0

Shot 15

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

GOLDENEYE LA - Line 400-AE Shot time 1984-07-19 09:28: 0.02

Lat 50.01428, Long 84.17097, Elev 0.145km, Depth 30.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part SR
401	50.03774	84.26604	0.137	-7.295	110.92	09:27:59.73	-	160.0	UWIs100.0
402	50.00897	84.16348	0.189	0.799	317.71	09:27:51.18	1.00	102.0	UWes 60.0
403	49.97957	84.12251	0.183	5.194	318.03	09:27:59.10	-	160.0	UWIs100.0
404	49.96611	84.03281	0.186	11.264	298.45	09:27:52.96	1.00	102.0	UWes 60.0
405	49.95408	83.96262	0.207	16.375	294.21	09:27:59.72	-	160.0	UWIs100.0
406	49.91251	83.89738	0.235	22.661	300.07	09:27:59.62	-	160.0	UWIs100.0
407	49.86011	83.77798	0.244	33.016	301.44	09:27:56.06	1.00	102.0	UWes 60.0
408	49.83586	83.77248	0.244	34.823	304.89	09:27:59.97	1.00	102.0	EMR 60.0
409	49.79602	83.71281	0.244	40.898	306.59	09:27:59.88	-	160.0	UWIs100.0
410	49.75800	83.64925	0.244	47.100	307.44	09:27:59.97	1.00	102.0	EMR 60.0
411	49.73135	83.57882	0.226	52.937	306.70	09:27:59.80	-	160.0	UWIs100.0
412	49.68806	83.53694	0.259	58.273	308.75	09:27:59.97	1.00	102.0	EMR 60.0
413	49.65096	83.43394	0.250	66.670	307.59	09:28: 0.84	1.00	102.0	UWes 60.0
414	49.63431	83.36261	0.238	71.900	306.31	09:27:59.97	1.00	102.0	EMR 60.0
415	49.62253	83.29987	0.232	76.346	305.13	09:28: 2.72	1.00	102.0	UWes 60.0
416	49.60142	83.21791	0.235	82.554	304.16	09:27:59.96	1.00	102.0	EMR 60.0
417	49.60114	83.12205	0.244	88.387	301.72	09:28: 4.44	1.00	102.0	UWes 60.0
418	49.57289	83.07780	0.244	92.766	302.37	09:27:59.97	1.00	102.0	EMR 60.0
419	49.55214	82.99985	0.244	98.771	301.80	09:27:51.09	0.25	60.0	UofT 60.0
420	49.51917	82.91988	0.232	105.623	301.90	09:28: 6.10	1.00	102.0	UWes 60.0
421	49.51884	82.82654	0.229	111.435	300.15	09:28: 5.50	0.25	60.0	UofT 60.0
422	49.50123	82.75523	0.241	116.887	299.76	09:28:10.42	1.00	102.0	UWes 60.0
423	49.47174	82.66625	0.238	124.112	299.66	09:28: 8.13	0.25	60.0	UofT 60.0
424	49.44976	82.59811	0.226	129.615	299.57	09:28: 8.89	1.00	102.0	UWes 60.0
425	49.43721	82.51839	0.226	135.342	298.94	09:27:55.13	0.25	60.0	UofT 60.0
427	49.39792	82.39527	0.229	145.274	298.83	09:28: 6.68	0.25	60.0	UofT 60.0
428	49.38043	82.31859	0.232	151.093	298.52	09:27:52.62	1.22	98.0	MemU 60.0
429	49.36337	82.24706	0.262	156.565	298.27	09:27:52.06	0.25	60.0	UofT 60.0
430	49.33086	82.18197	0.244	162.446	298.65	09:27:52.64	2.46	98.0	MemU 60.0
431	49.32813	82.11742	0.235	166.720	298.02	09:27:52.57	0.61	102.0	UBC 60.0
432	49.29871	82.04517	0.229	172.896	298.21	09:28:16.78	0.25	60.0	UofT 60.0
433	49.29389	81.95843	0.229	178.726	297.47	09:27:52.00	0.61	102.0	UBC 60.0
434	49.28381	81.86775	0.235	185.105	296.91	09:28: 0.43	-	160.0	UWIs100.0
435	49.26474	81.79890	0.235	190.533	296.84	09:27:52.58	0.61	102.0	UBC 60.0
436	49.22195	81.70448	0.247	198.820	297.24	09:28: 0.49	-	160.0	UWIs100.0
437	49.15078	81.70690	0.244	202.412	299.26	00:00: 1.00	0.99	60.0	UAlb 60.0
438	49.09112	81.67374	0.283	207.819	300.55	09:27:56.85	-	160.0	UWIs100.0
439	49.09491	81.59680	0.241	212.466	299.74	09:28:12.65	0.25	60.0	UofT 60.0
440	49.07807	81.55627	0.293	215.966	299.81	09:27:52.59	0.61	102.0	UBC 60.0
441	49.01657	81.52003	0.274	221.714	301.03	09:27:59.32	-	160.0	UWIs100.0
442	48.98458	81.47179	0.262	226.577	301.38	09:27:52.58	0.61	102.0	UBC 60.0
443	48.94607	81.38936	0.271	233.961	301.57	09:27:52.59	0.61	102.0	UBC 60.0
444	48.94622	81.36976	0.271	235.176	301.39	09:28:20.63	0.25	60.0	UofT 60.0
445	48.94609	81.20744	0.274	245.405	300.07	09:27:58.98	-	160.0	UWIs100.0
446	48.94291	81.13737	0.280	250.033	299.60	09:27:59.96	1.00	102.0	EMR 60.0
447	48.90887	81.12746	0.280	252.552	300.28	09:27:59.20	-	160.0	UWIs100.0
448	48.86363	81.07178	0.256	258.626	300.82	09:28:22.48	0.25	60.0	UofT 60.0
449	48.76845	80.92448	0.296	273.367	301.67	09:27:52.60	1.22	102.0	UBC 60.0
450	48.73968	80.85379	0.283	279.470	301.73	09:27:59.97	1.00	102.0	EMR 60.0
451	48.71085	80.79203	0.293	285.022	301.84	09:27:52.59	1.22	102.0	UBC 60.0
452	48.68144	80.71186	0.277	291.761	301.83	09:27:59.97	1.00	102.0	EMR 60.0
453	48.65260	80.64495	0.283	297.639	301.91	09:27:52.60	0.31	102.0	UBC 60.0
454	48.62349	80.57826	0.265	303.523	301.99	09:27:59.97	1.00	102.0	EMR 60.0
455	48.61030	80.49657	0.268	309.414	301.69	09:27:52.59	1.22	102.0	UBC 60.0
456	48.58625	80.44216	0.280	314.233	301.76	09:27:59.98	1.00	102.0	EMR 60.0
457	48.56646	80.36295	0.290	320.364	301.60	09:27:52.59	1.22	102.0	UBC 60.0
458	48.55898	80.24927	0.302	327.964	301.04	09:28:20.99	0.25	60.0	UofT 60.0
459	48.51330	80.01401	0.335	345.494	300.45	09:27:52.58	0.61	102.0	UBC 60.0
460	48.51783	79.76502	0.293	361.213	299.09	09:27:59.97	1.00	102.0	EMR 60.0

Shot 16

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 400-AE Shot time 1984-07-19 09:35:59.99

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
401	50.03774	84.26604	0.137	-194.141	112.06	09:35:59.71	-	160.0	UWis100.0	
402	50.00897	84.16348	0.189	-186.127	112.08	09:36: 9.60	1.00	102.0	UWes	60.0
403	49.97957	84.12251	0.183	-182.186	111.50	09:35:59.11	-	160.0	UWis100.0	
404	49.96611	84.03281	0.186	-175.653	111.89	09:36: 8.06	1.00	102.0	UWes	60.0
405	49.95408	83.96262	0.207	-170.482	112.16	09:35:59.72	-	160.0	UWis100.0	
406	49.91251	83.89738	0.235	-164.418	111.33	09:35:59.67	-	160.0	UWis100.0	
407	49.86011	83.77798	0.244	-154.320	110.57	09:36:15.75	1.00	102.0	UWes	60.0
408	49.83586	83.77248	0.244	-153.021	109.68	09:35:59.97	1.00	102.0	EMR	60.0
409	49.79602	83.71281	0.244	-147.510	108.67	09:35:59.88	-	160.0	UWis100.0	
410	49.75800	83.64925	0.244	-141.840	107.69	09:35:59.96	1.00	102.0	EMR	60.0
411	49.73135	83.57882	0.226	-136.108	107.21	09:35:59.81	-	160.0	UWis100.0	
412	49.68806	83.53694	0.259	-131.849	105.63	09:35:59.96	1.00	102.0	EMR	60.0
413	49.65096	83.43394	0.250	-123.591	104.80	09:36: 9.02	1.00	102.0	UWes	60.0
414	49.63431	83.36261	0.238	-118.138	104.62	09:35:59.97	1.00	102.0	EMR	60.0
415	49.62253	83.29987	0.232	-113.421	104.61	09:36: 8.99	1.00	102.0	UWes	60.0
416	49.60142	83.21791	0.235	-107.099	104.25	09:35:59.96	1.00	102.0	EMR	60.0
417	49.60114	83.12205	0.244	-100.391	105.29	09:36: 5.13	1.00	102.0	UWes	60.0
418	49.57289	83.07780	0.244	-96.500	104.02	09:35:59.97	1.00	102.0	EMR	60.0
419	49.55214	82.99985	0.244	-90.473	103.53	09:35:53.74	0.25	60.0	UofT	60.0
420	49.51917	82.91988	0.232	-84.015	102.09	09:36: 4.35	1.00	102.0	UWes	60.0
421	49.51884	82.82654	0.229	-77.411	103.18	09:35:50.99	0.25	60.0	UofT	60.0
422	49.50123	82.75523	0.241	-71.940	102.66	09:36: 0.47	1.00	102.0	UWes	60.0
423	49.47174	82.66625	0.238	-64.954	101.15	09:35:52.59	0.25	60.0	UofT	60.0
424	49.44976	82.59811	0.226	-59.651	99.82	09:35:58.44	1.00	102.0	UWes	60.0
425	49.43721	82.51839	0.226	-53.717	99.47	09:35:56.83	0.25	60.0	UofT	60.0
427	49.39792	82.39527	0.229	-44.275	95.90	09:35:53.38	0.25	60.0	UofT	60.0
428	49.38043	82.31859	0.232	-38.560	93.93	09:35:52.62	1.22	98.0	MemU	60.0
429	49.36337	82.24706	0.262	-33.283	91.34	09:35:54.66	0.25	60.0	UofT	60.0
430	49.33086	82.18197	0.244	-28.682	84.38	09:35:52.64	2.46	98.0	MemU	60.0
431	49.32813	82.11742	0.235	-24.054	82.62	09:35:52.57	0.61	102.0	UBC	60.0
432	49.29871	82.04517	0.229	-19.656	71.18	09:35:50.17	0.25	60.0	UofT	60.0
433	49.29389	81.95843	0.229	-14.086	60.86	09:35:52.00	0.61	102.0	UBC	60.0
434	49.28381	81.86775	0.235	-9.807	35.65	09:36: 0.43	-	160.0	UWis100.0	
435	49.26474	81.79890	0.235	10.112	4.05	09:35:52.58	0.61	102.0	UBC	60.0
436	49.22195	81.70448	0.247	16.070	337.52	09:36: 0.53	-	160.0	UWis100.0	
437	49.15078	81.70690	0.244	23.533	345.30	00:00: 1.00	0.99	60.0	UAlb	60.0
438	49.09112	81.67374	0.283	30.573	344.09	09:35:56.84	-	160.0	UWis100.0	
439	49.09491	81.59680	0.241	32.181	334.27	09:35:47.81	0.25	60.0	UofT	60.0
440	49.07807	81.55627	0.293	35.202	331.28	09:35:52.59	0.61	102.0	UBC	60.0
441	49.01657	81.52003	0.274	42.484	332.61	09:35:59.32	-	160.0	UWis100.0	
442	48.98458	81.47179	0.262	47.290	330.83	09:35:52.58	0.61	102.0	UBC	60.0
443	48.94607	81.38936	0.271	54.064	327.51	09:35:52.59	0.61	102.0	UBC	60.0
444	48.94622	81.36976	0.271	54.835	326.25	09:35:46.75	0.25	60.0	UofT	60.0
445	48.94609	81.20744	0.274	62.232	317.23	09:35:58.99	-	160.0	UWis100.0	
446	48.94291	81.13737	0.280	66.070	314.22	09:35:59.97	1.00	102.0	EMR	60.0
447	48.90887	81.12746	0.280	69.266	316.06	09:35:59.20	-	160.0	UWis100.0	
448	48.86363	81.07178	0.256	75.724	316.51	09:35:54.28	0.25	60.0	UofT	60.0
449	48.76845	80.92448	0.296	90.850	316.26	09:35:52.60	1.22	102.0	UBC	60.0
450	48.73968	80.85379	0.283	96.767	315.40	09:35:59.96	1.00	102.0	EMR	60.0
451	48.71085	80.79203	0.293	102.245	314.89	09:35:52.59	1.22	102.0	UBC	60.0
452	48.68144	80.71186	0.277	108.749	313.97	09:35:59.96	1.00	102.0	EMR	60.0
453	48.65260	80.64495	0.283	114.528	313.47	09:35:52.60	0.31	102.0	UBC	60.0
454	48.62349	80.57826	0.265	120.326	313.02	09:35:59.96	1.00	102.0	EMR	60.0
455	48.61030	80.49657	0.268	125.765	311.70	09:35:52.59	1.22	102.0	UBC	60.0
456	48.58625	80.44216	0.280	130.542	311.44	09:35:59.98	1.00	102.0	EMR	60.0
457	48.56646	80.36295	0.290	136.398	310.57	09:35:52.59	1.22	102.0	UBC	60.0
458	48.55898	80.24927	0.302	143.390	308.73	09:35:56.59	0.25	60.0	UofT	60.0
459	48.51330	80.01401	0.335	160.262	306.42	09:35:52.58	0.61	102.0	UBC	60.0
460	48.51783	79.76502	0.293	175.114	302.89	09:35:59.96	1.00	102.0	EMR	60.0

Shot 17

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 400-AE Shot time 1984-07-19 09:44: 0.03

Lat 47.40839, Long 83.92727, Elev 0.355km, Depth 34.0m, Shot size 2000.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part SR
401	50.03774	84.26604	0.137	293.450	175.00	09:43:59.74	-	160.0	UWis100.0
402	50.00897	84.16348	0.189	289.712	176.47	09:44:21.67	1.00	102.0	UWes 60.0
403	49.97957	84.12251	0.183	286.282	177.05	09:43:59.08	-	160.0	UWis100.0
404	49.96611	84.03281	0.186	284.530	178.40	09:44:21.28	1.00	102.0	UWes 60.0
405	49.95408	83.96262	0.207	283.098	179.46	09:43:59.72	-	160.0	UWis100.0
406	49.91251	83.89738	0.235	278.470	180.46	09:43:59.63	-	160.0	UWis100.0
407	49.86011	83.77798	0.244	272.855	182.37	09:44:22.55	1.00	102.0	UWes 60.0
408	49.83586	83.77248	0.244	270.177	182.48	09:43:59.97	1.00	102.0	EMR 60.0
409	49.79602	83.71281	0.244	265.976	183.49	09:43:59.88	-	160.0	UWis100.0
410	49.75800	83.64925	0.244	262.080	184.59	09:43:59.97	1.00	102.0	EMR 60.0
411	49.73135	83.57882	0.226	259.588	185.82	09:43:59.82	-	160.0	UWis100.0
412	49.68806	83.53694	0.259	255.129	186.63	09:43:59.96	1.00	102.0	EMR 60.0
413	49.65096	83.43394	0.250	252.017	188.50	09:44:21.60	1.00	102.0	UWes 60.0
414	49.63431	83.36261	0.238	251.007	189.78	09:44:35.15	1.00	102.0	EMR 60.0
415	49.62253	83.29987	0.232	250.532	190.90	09:44:23.85	1.00	102.0	UWes 60.0
416	49.60142	83.21791	0.235	249.428	192.40	09:43:59.96	1.00	102.0	EMR 60.0
417	49.60114	83.12205	0.244	250.982	194.02	09:44:21.03	1.00	102.0	UWes 60.0
418	49.57289	83.07780	0.244	248.739	194.94	09:43:59.96	1.00	102.0	EMR 60.0
419	49.55214	82.99985	0.244	248.040	196.40	09:44:21.15	0.25	60.0	UofT 60.0
420	49.51917	82.91988	0.232	246.248	197.99	09:44:20.40	1.00	102.0	UWes 60.0
421	49.51884	82.82654	0.229	248.388	199.54	09:44:21.22	0.25	60.0	UofT 60.0
422	49.50123	82.75523	0.241	248.334	200.87	09:44:21.19	1.00	102.0	UWes 60.0
423	49.47174	82.66625	0.238	247.675	202.60	09:44:10.49	0.25	60.0	UofT 60.0
424	49.44976	82.59811	0.226	247.381	203.93	09:44:22.92	1.00	102.0	UWes 60.0
425	49.43721	82.51839	0.226	248.522	205.34	09:44:11.54	0.25	60.0	UofT 60.0
427	49.39792	82.39527	0.229	248.603	207.72	09:44:20.19	0.25	60.0	UofT 60.0
428	49.38043	82.31859	0.232	249.541	209.12	09:43:52.62	1.22	98.0	MemU 60.0
429	49.36337	82.24706	0.262	250.473	210.42	09:44: 8.16	0.25	60.0	UofT 60.0
430	49.33086	82.18197	0.244	249.823	211.83	09:43:52.64	2.46	98.0	MemU 60.0
431	49.32813	82.11742	0.235	252.075	212.82	09:43:52.57	0.61	102.0	UBC 60.0
432	49.29871	82.04517	0.229	252.252	214.28	09:44:17.75	0.25	60.0	UofT 60.0
433	49.29389	81.95843	0.229	255.425	215.58	09:43:52.00	0.61	102.0	UBC 60.0
434	49.28381	81.86775	0.235	258.425	216.98	09:44: 0.46	-	160.0	UWis100.0
435	49.26474	81.79890	0.235	259.801	218.20	09:43:52.58	0.61	102.0	UBC 60.0
436	49.22195	81.70448	0.247	260.451	220.10	09:44: 0.42	-	160.0	UWis100.0
437	49.15078	81.70690	0.244	254.332	221.22	00:00: 1.00	0.99	60.0	UAAlb 60.0
438	49.09112	81.67374	0.283	251.014	222.66	09:43:56.85	-	160.0	UWis100.0
439	49.09491	81.59680	0.241	255.163	223.58	09:44:19.03	0.25	60.0	UofT 60.0
440	49.07807	81.55627	0.293	255.871	224.38	09:43:52.59	0.61	102.0	UBC 60.0
441	49.01657	81.52003	0.274	252.926	225.92	09:43:59.32	-	160.0	UWis100.0
442	48.98458	81.47179	0.262	253.037	227.09	09:43:52.58	0.61	102.0	UBC 60.0
443	48.94607	81.38936	0.271	254.649	228.78	09:43:52.59	0.61	102.0	UBC 60.0
444	48.94622	81.36976	0.271	255.742	229.00	09:44:19.36	0.25	60.0	UofT 60.0
445	48.94609	81.20744	0.274	264.829	230.81	09:43:58.99	-	160.0	UWis100.0
446	48.94291	81.13737	0.280	268.609	231.62	09:43:59.98	1.00	102.0	EMR 60.0
447	48.90887	81.12746	0.280	266.850	232.36	09:43:59.19	-	160.0	UWis100.0
448	48.86363	81.07178	0.256	267.091	233.79	09:44:16.62	0.25	60.0	UofT 60.0
449	48.76845	80.92448	0.296	269.995	237.07	09:43:52.60	1.22	102.0	UBC 60.0
450	48.73968	80.85379	0.283	272.676	238.28	09:43:59.97	1.00	102.0	EMR 60.0
451	48.71085	80.79203	0.293	274.905	239.39	09:43:52.59	1.22	102.0	UBC 60.0
452	48.68144	80.71186	0.277	278.383	240.65	09:43:59.97	1.00	102.0	EMR 60.0
453	48.65260	80.64495	0.283	281.156	241.76	09:43:52.60	0.31	102.0	UBC 60.0
454	48.62349	80.57826	0.265	284.005	242.85	09:43:59.97	1.00	102.0	EMR 60.0
455	48.61030	80.49657	0.268	288.726	243.72	09:43:52.59	1.22	102.0	UBC 60.0
456	48.58625	80.44216	0.280	291.171	244.58	09:43:59.97	1.00	102.0	EMR 60.0
457	48.56646	80.36295	0.290	295.542	245.51	09:43:52.59	1.22	102.0	UBC 60.0
458	48.55898	80.24927	0.302	302.865	246.39	09:44:22.08	0.25	60.0	UofT 60.0
459	48.51330	80.01401	0.335	316.981	248.66	09:43:52.58	0.61	102.0	UBC 60.0
460	48.51783	79.76502	0.293	334.366	249.91	09:43:59.96	1.00	102.0	EMR 60.0

Shot 18

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

GUILFOYLE LA - Line 100-BH Shot time 1984-07-21 09:28: 0.01

Lat 49.79113, Long 82.31595, Elev 0.195km, Depth 30.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
100	50.01149	82.18267	0.170	-26.314	201.39	09:27:51.45	1.00	102.0	UWes	60.0
101	49.90852	82.22903	0.198	-14.476	205.62	09:27:51.50	1.00	102.0	UWes	60.0
102	49.83271	82.25298	0.212	-6.476	224.45	09:27:56.29	1.00	102.0	UWes	60.0
103	49.78833	82.31664	0.214	0.315	9.03	09:27:56.05	1.00	102.0	UWes	60.0
104	49.74026	82.36273	0.194	6.585	30.76	09:27:51.12	1.00	102.0	UWes	60.0
105	49.69116	82.41766	0.204	13.318	33.36	09:27:58.84	-	160.0	UWis	100.0
107	49.62135	82.52819	0.229	24.309	38.95	09:28: 0.43	-	160.0	UWis	100.0
108	49.58143	82.58034	0.229	30.132	39.18	09:27:53.63	1.00	102.0	UWes	60.0
109	49.51830	82.55274	0.229	34.830	29.31	09:27:53.95	1.00	102.0	UWes	60.0
110	49.47842	82.60719	0.226	40.647	31.06	09:27:55.92	1.00	102.0	UWes	60.0
111	49.49272	82.71398	0.238	43.909	40.75	09:27:55.74	1.00	102.0	UWes	60.0
112	49.45783	82.84179	0.244	53.082	45.51	09:27:48.51	0.25	60.0	UoFT	60.0
113	49.43639	82.89120	0.250	57.314	46.28	09:27:51.09	0.25	60.0	UoFT	60.0
114	49.41852	82.91395	0.259	59.882	45.98	00:00: 1.00	0.99	60.0	UAlb	60.0
115	49.38948	82.92364	0.259	62.658	44.30	09:27:49.74	0.25	60.0	UoFT	60.0
116	49.29846	82.95757	0.253	71.823	40.04	09:27:46.94	0.25	60.0	UoFT	60.0
117	49.29024	83.02477	0.265	75.732	42.37	09:27:49.03	0.25	60.0	UoFT	60.0
118	49.24645	83.06689	0.293	81.402	41.63	09:27:50.26	0.25	60.0	UoFT	60.0
119	49.20033	83.12715	0.277	88.153	41.50	09:27:52.60	1.22	98.0	MemU	60.0
120	49.17533	83.16051	0.280	91.847	41.46	09:27:52.62	1.22	98.0	MemU	60.0
121	49.16191	83.20884	0.283	95.312	42.42	09:27:52.58	0.61	102.0	UAlb	60.0
122	49.12253	83.26788	0.280	101.451	42.51	09:27:50.64	0.25	60.0	UoFT	60.0
124	49.08242	83.35220	0.280	108.909	43.25	09:28: 6.44	0.25	60.0	UoFT	60.0
125	49.04870	83.44045	0.290	116.079	44.23	09:27:50.27	0.25	60.0	UoFT	60.0
126	49.01954	83.45578	0.274	119.193	43.52	09:28: 2.31	0.25	60.0	UoFT	60.0
127	48.99201	83.49120	0.293	123.198	43.39	09:28: 1.45	0.25	60.0	UoFT	60.0
128	48.98483	83.55236	0.335	126.881	44.56	09:27:59.29	-	160.0	UWis	100.0
129	48.97838	83.63711	0.354	131.801	46.20	09:27:59.13	-	160.0	UWis	100.0
130	48.96399	83.64263	0.344	133.203	45.82	09:28: 0.60	-	160.0	UWis	100.0
131	48.92438	83.71133	0.344	139.882	45.91	09:27:52.57	0.61	102.0	UBC	60.0
132	48.87344	83.74049	0.329	145.383	44.88	09:27:52.58	0.61	102.0	UBC	60.0
134	48.77979	83.84402	0.344	158.140	44.09	09:27:52.54	0.61	102.0	UBC	60.0
135	48.74710	83.90652	0.381	163.950	44.31	09:27:52.57	0.61	102.0	UBC	60.0
136	48.68256	83.91123	0.366	169.395	42.70	09:27:52.57	0.61	102.0	UBC	60.0
137	48.63282	83.93355	0.393	174.593	41.85	09:27:59.96	1.00	102.0	EMR	60.0
138	48.59224	83.97562	0.411	180.026	41.59	09:27:59.95	1.00	102.0	EMR	60.0
139	48.54708	84.00210	0.442	185.089	40.99	09:27:59.97	1.00	102.0	EMR	60.0
141	48.48586	84.09369	0.375	194.667	41.12	09:27:59.96	1.00	102.0	EMR	60.0
142	48.47283	84.15397	0.357	198.702	41.77	09:27:59.96	1.00	102.0	EMR	60.0
143	48.46099	84.22546	0.351	203.227	42.58	09:27:59.96	1.00	102.0	EMR	60.0
144	48.42090	84.29502	0.384	209.993	42.74	09:27:59.66	-	160.0	UWis	100.0
145	48.33624	84.27630	0.375	216.092	40.79	09:27:59.83	-	160.0	UWis	100.0
147	48.30996	84.39032	0.396	223.871	41.85	09:27:59.64	-	160.0	UWis	100.0
148	48.28810	84.44873	0.402	228.578	42.21	09:27:59.72	-	160.0	UWis	100.0
149	48.26373	84.52157	0.384	234.226	42.69	09:27:59.26	-	160.0	UWis	100.0
150	48.17738	84.49385	0.405	240.020	40.80	09:27:59.97	1.00	102.0	EMR	60.0
151	48.12785	84.53349	0.329	246.120	40.45	09:27:59.96	1.00	102.0	EMR	60.0
152	48.08137	84.54545	0.314	250.646	39.83	09:27:59.98	1.00	102.0	EMR	60.0
155	47.94044	84.82578	0.213	276.132	40.88	09:27:52.59	0.31	102.0	UBC	60.0
156	47.79193	84.89574	0.192	292.125	39.49	09:27:52.58	0.31	102.0	UBC	60.0
157	47.65922	84.80286	0.411	299.437	36.73	09:27:52.60	0.15	102.0	UBC	60.0
158	47.51479	84.80743	0.268	312.651	35.02	09:27:52.60	0.31	102.0	UBC	60.0
159	47.37191	84.69621	0.241	321.231	32.25	09:27:52.57	0.15	102.0	UBC	60.0
160	47.17666	84.67503	0.296	338.980	30.08	09:27:52.60	0.15	102.0	UBC	60.0

Shot 19

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MATACHewan P - Line 100-BH Shot time 1984-07-21 09:36: 0.00

Lat 47.94814, Long 80.68395, Elev 0.302km, Depth 33.0m, Shot size 2000.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
100	50.01149	82.18267	0.170	254.327	153.88	09:36:20.97	1.00	102.0	UWes	60.0
101	49.90852	82.22903	0.198	245.642	151.97	09:36:31.87	1.00	102.0	UWes	60.0
102	49.83271	82.25298	0.212	239.071	150.64	09:36:22.11	1.00	102.0	UWes	60.0
103	49.78833	82.31664	0.214	237.106	149.04	09:36:13.55	1.00	102.0	UWes	60.0
104	49.74026	82.36273	0.194	234.299	147.64	09:36:20.56	1.00	102.0	UWes	60.0
105	49.69116	82.41766	0.204	231.893	146.05	09:35:58.85	-	160.0	UWis	100.0
106	49.66200	82.46586	0.201	231.196	144.84	09:36:32.35	-	160.0	UWis	100.0
107	49.62135	82.52819	0.229	230.180	143.23	09:36: 0.41	-	160.0	UWis	100.0
108	49.58143	82.58034	0.229	228.952	141.77	09:36:21.99	1.00	102.0	UWes	60.0
109	49.51830	82.55274	0.229	222.217	141.08	09:36:21.35	1.00	102.0	UWes	60.0
110	49.47842	82.60719	0.226	221.324	139.52	09:36:20.15	1.00	102.0	UWes	60.0
111	49.49272	82.71398	0.238	227.612	138.22	09:36:21.79	1.00	102.0	UWes	60.0
112	49.45783	82.84179	0.244	231.093	135.77	09:36:24.84	0.25	60.0	UofT	60.0
113	49.43639	82.89120	0.250	231.923	134.69	09:36:21.65	0.25	60.0	UofT	60.0
114	49.41852	82.91395	0.259	231.714	134.04	00:00: 1.00	0.99	60.0	UAlb	60.0
115	49.38948	82.92364	0.259	229.992	133.33	09:36:18.21	0.25	60.0	UofT	60.0
116	49.29846	82.95757	0.253	225.024	131.00	09:36: 2.49	0.25	60.0	UofT	60.0
117	49.29024	83.02477	0.265	228.148	129.97	09:36: 6.48	0.25	60.0	UofT	60.0
118	49.24645	83.06689	0.293	227.442	128.50	09:36: 8.95	0.25	60.0	UofT	60.0
119	49.20033	83.12715	0.277	227.787	126.76	09:35:52.60	1.22	98.0	MemU	60.0
120	49.17533	83.16051	0.280	228.103	125.81	09:35:52.62	1.22	98.0	MemU	60.0
121	49.16191	83.20884	0.283	230.111	124.96	09:35:52.58	0.61	102.0	UAlb	60.0
122	49.12253	83.26788	0.280	231.214	123.41	09:36:16.59	0.25	60.0	UofT	60.0
124	49.08242	83.35220	0.280	234.010	121.61	09:36:22.64	0.25	60.0	UofT	60.0
125	49.04870	83.44045	0.290	237.632	119.96	09:36:23.54	0.25	60.0	UofT	60.0
126	49.01954	83.45578	0.274	237.008	119.13	09:36:17.57	0.25	60.0	UofT	60.0
127	48.99201	83.49120	0.293	237.816	118.16	09:36:17.23	0.25	60.0	UofT	60.0
128	48.98483	83.55236	0.335	241.402	117.44	09:35:59.29	-	160.0	UWis	100.0
129	48.97838	83.63711	0.354	246.604	116.57	09:35:59.15	-	160.0	UWis	100.0
130	48.96399	83.64263	0.344	246.256	116.19	09:36: 0.79	-	160.0	UWis	100.0
131	48.92438	83.71133	0.344	248.907	114.72	09:35:52.57	0.61	102.0	UBC	60.0
132	48.87344	83.74049	0.329	248.555	113.30	09:35:52.58	0.61	102.0	UBC	60.0
133	48.82039	83.81376	0.381	251.277	111.53	09:35:52.59	0.61	102.0	UBC	60.0
134	48.77979	83.84402	0.344	251.740	110.36	09:35:52.54	0.61	102.0	UBC	60.0
135	48.74710	83.90652	0.381	254.834	109.19	09:35:52.57	0.61	102.0	UBC	60.0
136	48.68256	83.91123	0.366	252.896	107.63	09:35:52.57	0.61	102.0	UBC	60.0
137	48.63282	83.93355	0.393	252.854	106.30	09:35:59.97	1.00	102.0	EMR	60.0
138	48.59224	83.97562	0.411	254.619	105.10	09:35:59.96	1.00	102.0	EMR	60.0
139	48.54708	84.00210	0.442	255.255	103.88	09:35:59.96	1.00	102.0	EMR	60.0
141	48.48586	84.09369	0.375	260.326	102.00	09:35:59.97	1.00	102.0	EMR	60.0
142	48.47283	84.15397	0.357	264.395	101.45	09:35:59.96	1.00	102.0	EMR	60.0
143	48.46099	84.22546	0.351	269.326	100.90	09:35:59.96	1.00	102.0	EMR	60.0
144	48.42090	84.29502	0.384	273.593	99.73	09:35:59.69	-	160.0	UWis	100.0
145	48.33624	84.27630	0.375	270.785	97.83	09:35:59.82	-	160.0	UWis	100.0
147	48.30996	84.39032	0.396	278.796	96.91	09:35:59.62	-	160.0	UWis	100.0
148	48.28810	84.44873	0.402	282.822	96.28	09:35:59.72	-	160.0	UWis	100.0
149	48.26373	84.52157	0.384	287.920	95.57	09:35:59.23	-	160.0	UWis	100.0
150	48.17738	84.49385	0.405	285.091	93.71	09:35:59.97	1.00	102.0	EMR	60.0
151	48.12785	84.53349	0.329	287.735	92.55	09:35:59.97	1.00	102.0	EMR	60.0
152	48.08137	84.54545	0.314	288.442	91.51	09:35:59.98	1.00	102.0	EMR	60.0
155	47.94044	84.82578	0.213	309.391	88.30	09:35:52.59	0.31	102.0	UBC	60.0
156	47.79193	84.89574	0.192	315.543	85.28	09:35:52.58	0.31	102.0	UBC	60.0
157	47.65922	84.80286	0.411	310.178	82.53	09:35:52.60	0.15	102.0	UBC	60.0
158	47.51479	84.80743	0.268	313.009	79.62	09:35:52.60	0.31	102.0	UBC	60.0
159	47.37191	84.69621	0.241	308.082	76.52	09:35:52.57	0.15	102.0	UBC	60.0
160	47.17666	84.67503	0.296	312.320	72.60	09:35:52.60	0.15	102.0	UBC	60.0

Shot 20

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

SIRJAMES PIT - Line 100-BH Shot time 1984-07-21 09:44: 0.04

Lat 48.04232, Long 84.67504, Elev 0.310km, Depth 33.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
100	50.01149	82.18267	0.170	284.890	220.72	09:44:31.22	1.00	102.0	UWes	60.0
101	49.90852	82.22903	0.198	274.082	221.72	09:44:21.53	1.00	102.0	UWes	60.0
102	49.83271	82.25298	0.212	266.677	222.63	09:44:19.08	1.00	102.0	UWes	60.0
103	49.78833	82.31664	0.214	259.943	222.57	09:44:21.71	1.00	102.0	UWes	60.0
104	49.74026	82.36273	0.194	253.761	222.80	09:44:21.06	1.00	102.0	UWes	60.0
105	49.69116	82.41766	0.204	247.064	222.95	09:43:58.84	-	160.0	UWis	100.0
106	49.66200	82.46586	0.201	242.320	222.83	09:44:33.82	-	160.0	UWis	100.0
107	49.62135	82.52819	0.229	235.944	222.73	09:44: 0.40	-	160.0	UWis	100.0
108	49.58143	82.58034	0.229	230.124	222.75	09:44:21.46	1.00	102.0	UWes	60.0
109	49.51830	82.55274	0.229	226.410	224.34	09:44:21.81	1.00	102.0	UWes	60.0
110	49.47842	82.60719	0.226	220.482	224.37	09:44:21.63	1.00	102.0	UWes	60.0
111	49.49272	82.71398	0.238	216.314	222.53	09:44:19.75	1.00	102.0	UWes	60.0
112	49.45783	82.84179	0.244	207.239	221.27	09:44: 2.59	0.25	60.0	UofT	60.0
113	49.43639	82.89120	0.250	203.087	220.92	09:44: 8.25	0.25	60.0	UofT	60.0
114	49.41852	82.91395	0.259	200.504	220.92	00:00: 1.00	0.99	60.0	UAlb	60.0
115	49.38948	82.92364	0.259	197.609	221.37	09:44: 3.62	0.25	60.0	UofT	60.0
116	49.29846	82.95757	0.253	188.443	222.81	09:44: 2.72	0.25	60.0	UofT	60.0
117	49.29024	83.02477	0.265	184.475	221.84	09:44: 6.76	0.25	60.0	UofT	60.0
118	49.24645	83.06689	0.293	178.805	222.12	09:44: 5.88	0.25	60.0	UofT	60.0
119	49.20033	83.12715	0.277	172.056	222.13	09:43:52.60	1.22	98.0	MemU	60.0
120	49.17533	83.16051	0.280	168.362	222.13	09:43:52.62	1.22	98.0	MemU	60.0
121	49.16191	83.20884	0.283	164.900	221.53	09:43:52.58	0.61	102.0	UAlb	60.0
122	49.12253	83.26788	0.280	158.766	221.37	09:44: 5.89	0.25	60.0	UofT	60.0
124	49.08242	83.35220	0.280	151.360	220.67	09:44: 6.48	0.25	60.0	UofT	60.0
125	49.04870	83.44045	0.290	144.334	219.63	09:44: 8.66	0.25	60.0	UofT	60.0
126	49.01954	83.45578	0.274	141.127	220.11	09:44: 7.29	0.25	60.0	UofT	60.0
127	48.99201	83.49120	0.293	137.116	220.08	09:44: 2.86	0.25	60.0	UofT	60.0
128	48.98483	83.55236	0.335	133.656	218.78	09:43:59.30	-	160.0	UWis	100.0
129	48.97838	83.63711	0.354	129.288	216.77	09:43:59.14	-	160.0	UWis	100.0
130	48.96399	83.64263	0.344	127.766	217.05	09:44: 0.51	-	160.0	UWis	100.0
131	48.92438	83.71133	0.344	121.226	216.36	09:43:52.57	0.61	102.0	UBC	60.0
132	48.87344	83.74049	0.329	115.408	217.15	09:43:52.58	0.61	102.0	UBC	60.0
133	48.82039	83.81376	0.381	107.461	216.70	09:43:52.59	0.61	102.0	UBC	60.0
134	48.77979	83.84402	0.344	102.516	217.19	09:43:52.54	0.61	102.0	UBC	60.0
135	48.74710	83.90652	0.381	96.854	216.28	09:43:52.57	0.61	102.0	UBC	60.0
136	48.68256	83.91123	0.366	90.949	218.77	09:43:52.57	0.61	102.0	UBC	60.0
137	48.63282	83.93355	0.393	85.635	220.22	09:43:59.97	1.00	102.0	EMR	60.0
138	48.59224	83.97562	0.411	80.188	220.57	09:43:59.96	1.00	102.0	EMR	60.0
139	48.54708	84.00210	0.442	75.123	221.91	09:43:59.97	1.00	102.0	EMR	60.0
141	48.48586	84.09369	0.375	65.539	221.41	09:43:59.96	1.00	102.0	EMR	60.0
142	48.47283	84.15397	0.357	61.552	219.14	09:43:59.97	1.00	102.0	EMR	60.0
143	48.46099	84.22546	0.351	57.289	215.82	09:43:59.95	1.00	102.0	EMR	60.0
144	48.42090	84.29502	0.384	50.687	213.99	09:43:59.69	-	160.0	UWis	100.0
145	48.33624	84.27630	0.375	44.127	222.36	09:43:59.81	-	160.0	UWis	100.0
147	48.30996	84.39032	0.396	36.525	215.54	09:43:59.60	-	160.0	UWis	100.0
148	48.28810	84.44873	0.402	32.098	211.72	00:00: 0.00	-	160.0	UWis	60.0
149	48.26373	84.52157	0.384	27.140	204.94	09:43:59.23	-	160.0	UWis	100.0
150	48.17738	84.49385	0.405	20.190	222.01	09:43:59.97	1.00	102.0	EMR	60.0
151	48.12785	84.53349	0.329	14.202	228.01	09:43:59.96	1.00	102.0	EMR	60.0
152	48.08137	84.54545	0.314	10.591	245.85	09:43:59.98	1.00	102.0	EMR	60.0
153	48.05752	84.59638	0.326	6.104	253.95	09:43:59.97	1.00	102.0	EMR	60.0
155	47.94044	84.82578	0.213	-15.965	44.75	09:43:52.59	0.31	102.0	UBC	60.0
156	47.79193	84.89574	0.192	-32.360	30.57	09:43:52.58	0.31	102.0	UBC	60.0
157	47.65922	84.80286	0.411	-43.656	12.61	09:43:52.60	0.15	102.0	UBC	60.0
158	47.51479	84.80743	0.268	-59.485	9.55	09:43:52.60	0.31	102.0	UBC	60.0
159	47.37191	84.69621	0.241	-74.554	1.21	09:43:52.57	0.15	102.0	UBC	60.0
160	47.17666	84.67503	0.296	-96.244	360.00	09:43:52.60	0.15	102.0	UBC	60.0

Shot 1
 KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984
 POTTER LAKE - Line 300-DK Shot time 1984-07-07 10:00: 0.01
 Lat 49.33644, Long 80.74501, Elev 0.236km, Depth 32.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	579.701	320.91	10:00:47.95	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	685.439	311.00	10:00:58.52	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	868.691	265.81	10:01:16.85	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	707.966	300.88	10:01: 0.77	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	797.650	306.64	10:01: 9.73	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	825.466	289.55	10:01:12.52	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	635.563	321.27	10:00:53.54	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	238.051	302.16	10:00:13.79	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	601.000	310.46	10:00:50.08	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	606.467	217.03	10:00:50.62	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	565.909	317.44	09:59:39.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	474.348	311.56	10:00:37.42	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	578.536	309.00	10:00:47.83	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	945.349	286.82	10:01:24.52	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	994.933	277.85	10:01:29.46	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1151.839	299.00	10:01:30.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1257.008	293.70	10:01:30.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	898.137	275.71	10:01:19.79	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1104.177	289.80	10:01:30.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	618.260	343.80	10:00:51.80	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	324.609	338.01	10:00:22.43	1.00	100.0	ECTN	60.0

Shot 2

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

REEVES PIT - Line 300-DK Shot time 1984-07-07 10:10: 0.01

Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	577.373	305.05	10:10:27.98	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	711.045	298.03	10:10:27.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	998.950	260.13	10:10:27.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	761.904	289.12	10:10:27.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	835.750	295.72	10:10:27.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	908.911	280.52	10:10:27.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	631.165	306.79	10:10:27.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	305.296	271.03	10:10:20.50	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	628.912	295.76	10:10:27.98	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	765.404	218.15	10:10:27.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	574.176	301.35	10:09:20.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	501.858	293.01	10:10:27.98	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	610.870	293.88	10:10:27.98	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1036.558	279.21	10:10:27.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1106.012	271.57	10:10:27.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1214.908	291.86	10:10:27.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1335.935	287.53	10:10:27.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1012.053	268.97	10:10:27.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1190.536	283.06	10:10:27.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	546.372	329.71	10:10:27.98	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	285.872	308.58	10:10:18.57	1.00	100.0	ECTN	60.0

Shot 3
 KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984
 RIOUXP2 LAKE - Line 300-DK Shot time 1984-07-07 10:20: 0.03
 Lat 46.77838, Long 83.28339, Elev 0.406km, Depth 28.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	604.858	287.44	10:20:50.46	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	759.286	284.22	10:21: 5.90	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1145.259	254.23	10:21:26.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	837.110	277.12	10:21:13.68	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	891.381	284.11	10:21:19.12	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1009.189	271.34	10:21:26.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	651.920	290.49	10:20:55.17	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	431.382	250.01	10:20:33.12	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	684.696	280.49	10:20:58.45	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	947.968	217.57	10:21:24.77	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	613.497	284.03	10:19:47.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	567.949	274.62	10:20:46.77	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	672.478	278.43	10:20:57.21	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1142.034	271.31	10:21:26.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1231.095	264.99	10:21:26.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1287.239	284.11	10:21:26.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1423.633	280.81	10:21:26.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1141.361	262.05	10:21:26.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1288.306	275.87	10:21:26.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	491.584	310.32	10:20:39.13	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	322.264	274.24	10:20:22.20	1.00	100.0	ECTN	60.0

Shot 4

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 900-EH Shot time 1984-07-09 10:00: 0.02

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	492.587	317.22	10:00:39.23	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	607.304	306.41	10:00:50.70	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	857.969	259.62	10:01:15.77	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	641.827	295.23	10:00:54.17	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	724.883	302.18	10:01: 2.46	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	776.220	283.83	10:01: 7.60	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	548.316	317.96	10:00:44.80	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	172.611	283.12	10:00: 7.23	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	523.132	305.13	10:00:42.29	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	663.288	210.29	10:00:56.30	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	481.422	312.99	10:00:38.10	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	395.111	304.94	10:00:29.48	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	502.150	303.23	10:00:40.18	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	901.485	281.67	10:01:20.12	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	966.061	272.62	10:01:26.58	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1091.693	295.31	10:01:39.15	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1205.851	290.03	10:01:50.57	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	871.596	269.87	10:01:17.13	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1057.390	285.48	10:01:35.71	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	525.023	344.70	10:00:42.48	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	230.943	337.92	10:00:13.07	1.00	100.0	ECTN	60.0

Shot 5

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

REEVES PIT - Line 900-EH Shot time 1984-07-09 10:10: 0.00

Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	577.373	305.05	10:10:27.98	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	711.045	298.03	10:10:27.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	998.950	260.13	10:10:27.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	761.904	289.12	10:10:27.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	835.750	295.72	10:10:27.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	908.911	280.52	10:10:27.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	631.165	306.79	10:10:27.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	305.296	271.03	10:10:20.50	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	628.912	295.76	10:10:27.98	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	765.404	218.15	10:10:27.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	574.176	301.35	10:09:44.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	501.858	293.01	10:10:27.98	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	610.870	293.88	10:10:27.98	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1036.558	279.21	10:10:27.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1106.012	271.57	10:10:27.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1214.908	291.86	10:10:27.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1335.935	287.53	10:10:27.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1012.053	268.97	10:10:27.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1190.536	283.06	10:10:27.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	546.372	329.71	10:10:27.98	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	285.872	308.58	10:10:18.57	1.00	100.0	ECTN	60.0

Shot 6

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

SIRJAMES PIT - Line 900-EH Shot time 1984-07-09 10:20: 0.05

Lat 48.04232, Long 84.67504, Elev 0.310km, Depth 33.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	744.922	296.48	10:21: 4.46	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	889.176	292.47	10:21:13.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1186.978	262.66	10:21:13.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	949.611	285.81	10:21:13.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	1017.464	291.48	10:21:13.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1102.060	279.47	10:21:13.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	795.918	298.48	10:21: 9.57	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	499.214	270.10	10:20:39.90	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	809.373	290.03	10:21:10.92	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	897.022	228.05	10:21:13.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	747.263	293.67	10:20: 6.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	684.810	286.69	10:20:58.45	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	793.322	288.44	10:21: 9.30	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1230.301	278.68	10:21:13.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1299.333	272.36	10:21:13.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1403.102	289.77	10:21:13.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1527.744	286.35	10:21:13.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1204.885	270.09	10:21:13.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1383.684	282.24	10:21:13.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	661.394	314.75	10:20:56.12	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	450.957	292.25	10:20:35.07	1.00	100.0	ECTN	60.0

Shot 7
 KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984
 MUNRO PIT - Line 500-EH Shot time 1984-07-11 10:00: 0.02
 Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	492.587	317.22	10:00:39.23	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	607.304	306.41	10:00:50.70	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	857.969	259.62	10:01:15.77	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	641.827	295.23	10:00:54.17	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	724.883	302.18	10:01: 2.46	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	776.220	283.83	10:01: 7.60	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	548.316	317.96	10:00:44.80	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	172.611	283.12	10:00: 7.23	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	523.132	305.13	10:00:42.29	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	663.288	210.29	10:00:56.30	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	481.422	312.99	10:00:38.10	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	395.111	304.94	10:00:29.48	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	502.150	303.23	10:00:40.18	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	901.485	281.67	10:01:20.12	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	966.061	272.62	10:01:26.58	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1091.693	295.31	10:01:39.15	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1205.851	290.03	10:01:50.57	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	871.596	269.87	10:01:17.13	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1057.390	285.48	10:01:35.71	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	525.023	344.70	10:00:42.48	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	230.943	337.92	10:00:13.07	1.00	100.0	ECTN	60.0

Shot 8

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

REEVES PIT - Line 500-EH Shot time 1984-07-11 10:10: 0.00

Lat 48.20585, Long 82.08028, Elev 0.290km, Depth 30.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	577.373	305.05	10:10:35.98	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	711.045	298.03	10:10:35.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	998.950	260.13	10:10:35.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	761.904	289.12	10:10:35.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	835.750	295.72	10:10:35.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	908.911	280.52	10:10:35.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	631.165	306.79	10:10:35.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	305.296	271.03	10:10:20.50	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	628.912	295.76	10:10:35.98	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	765.404	218.15	10:10:35.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	574.176	301.35	10:09:44.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	501.858	293.01	10:10:35.98	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	610.870	293.88	10:10:35.98	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1036.558	279.21	10:10:35.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1106.012	271.57	10:10:35.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1214.908	291.86	10:10:35.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1335.935	287.53	10:10:35.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1012.053	268.97	10:10:35.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1190.536	283.06	10:10:35.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	546.372	329.71	10:10:35.98	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	285.872	308.58	10:10:18.57	1.00	100.0	ECTN	60.0

Shot 10

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 800-CJ Shot time 1984-07-14 09:59:59.99

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	635.442	316.04	10:00:53.52	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	749.720	307.77	10:01: 0.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	942.093	267.04	10:01: 0.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	778.545	298.72	10:01: 0.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	865.308	304.26	10:01: 0.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	900.403	288.75	10:01: 0.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	691.080	316.79	10:00:59.08	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	307.098	295.47	10:00:20.68	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	665.399	306.81	10:00:56.52	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	648.920	222.79	10:00:54.87	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	624.726	312.81	09:59:53.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	537.643	306.80	10:00:43.73	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	643.884	305.37	10:00:54.37	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1020.927	286.42	10:01: 0.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1070.616	278.17	10:01: 0.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1224.707	297.97	10:01: 0.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1331.838	293.14	10:01: 0.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	973.693	276.15	10:01: 0.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1179.531	289.35	10:01: 0.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	648.047	337.46	10:00:54.79	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	363.487	327.12	10:00:26.32	1.00	100.0	ECTN	60.0

Shot 11

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 800-CJ Shot time 1984-07-14 10:20: 0.03

Lat 47.40794, Long 83.92712, Elev 0.354km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	669.516	292.46	10:20:56.93	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	818.792	288.68	10:21: 6.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1160.193	258.44	10:21: 6.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	887.511	281.71	10:21: 6.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	949.144	288.04	10:21: 6.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1049.771	275.54	10:21: 6.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	718.898	294.93	10:21: 1.87	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	455.135	260.64	10:20:35.48	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	741.151	285.66	10:21: 4.08	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	917.152	222.48	10:21: 6.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	674.686	289.35	10:19:55.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	619.628	281.20	10:20:51.93	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	726.808	283.84	10:21: 2.65	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1180.545	275.09	10:21: 6.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1259.578	268.71	10:21: 6.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1340.247	287.05	10:21: 6.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1470.728	283.65	10:21: 6.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1167.254	266.11	10:21: 6.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1330.731	279.13	10:21: 6.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	573.182	313.03	10:20:47.29	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	378.653	284.78	10:20:27.85	1.00	100.0	ECTN	60.0

Shot 12

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 200-CJ Shot time 1984-07-17 10:00: 0.00

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	635.442	316.04	10:00:49.98	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	749.720	307.77	10:00:49.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	942.093	267.04	10:00:49.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	778.545	298.72	10:00:49.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	865.308	304.26	10:00:49.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	900.403	288.75	10:00:49.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	691.080	316.79	10:00:49.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	307.098	295.47	10:00:20.68	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	665.399	306.81	10:00:49.98	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	648.920	222.79	10:00:49.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	624.726	312.81	09:59:46.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	537.643	306.80	10:00:43.73	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	643.884	305.37	10:00:49.98	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1020.927	286.42	10:00:49.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1070.616	278.17	10:00:49.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1224.707	297.97	10:00:49.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1331.838	293.14	10:00:49.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	973.693	276.15	10:00:49.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1179.531	289.35	10:00:49.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	648.047	337.46	10:00:49.98	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	363.487	327.12	10:00:26.32	1.00	100.0	ECTN	60.0

Shot 13

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 200-CJ Shot time 1984-07-17 10:20: 0.03

Lat 47.40794, Long 83.92712, Elev 0.354km, Depth 36.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	669.516	292.46	10:20:56.93	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	818.792	288.68	10:21:11.85	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1160.193	258.44	10:21:46.00	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	887.511	281.71	10:21:18.73	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	949.144	288.04	10:21:24.88	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1049.771	275.54	10:21:34.95	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	718.898	294.93	10:21: 1.87	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	455.135	260.64	10:20:35.48	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	741.151	285.66	10:21: 4.08	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	917.152	222.48	10:21:21.68	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	674.686	289.35	10:20:26.96	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	619.628	281.20	10:20:51.93	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	726.808	283.84	10:21: 2.65	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1180.545	275.09	10:21:48.04	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1259.578	268.71	10:21:55.93	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1340.247	287.05	10:22: 4.00	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1470.728	283.65	10:22:17.05	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1167.254	266.11	10:21:46.70	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1330.731	279.13	10:22: 3.05	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	573.182	313.03	10:20:47.29	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	378.653	284.78	10:20:27.85	1.00	100.0	ECTN	60.0

Shot 14

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MUNRO PIT - Line 400-AE Shot time 1984-07-19 09:20: 0.01

Lat 48.56002, Long 80.24932, Elev 0.222km, Depth 80.0m, Shot size 1700.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	492.587	317.22	09:20:39.23	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	607.304	306.41	09:20:50.70	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	857.969	259.62	09:21:15.77	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	641.827	295.23	09:20:54.17	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	724.883	302.18	09:21: 2.46	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	776.220	283.83	09:21: 7.60	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	548.316	317.96	09:20:44.80	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	172.611	283.12	09:20: 7.23	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	523.132	305.13	09:20:42.29	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	663.288	210.29	09:20:56.30	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	481.422	312.99	09:20:38.10	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	395.111	304.94	09:20:29.48	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	502.150	303.23	09:20:40.18	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	901.485	281.67	09:21:20.12	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	966.061	272.62	09:21:26.58	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1091.693	295.31	09:21:39.15	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1205.851	290.03	09:21:50.57	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	871.596	269.87	09:21:17.13	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1057.390	285.48	09:21:35.71	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	525.023	344.70	09:20:42.48	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	230.943	337.92	09:20:13.07	1.00	100.0	ECTN	60.0

Shot 15

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

GOLDENEYE LA - Line 400-AE Shot time 1984-07-19 09:28: 0.02

Lat 50.01428, Long 84.17097, Elev 0.145km, Depth 30.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	815.514	312.06	09:29:11.54	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	935.197	306.22	09:29:23.50	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1097.166	272.94	09:29:39.68	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	965.275	299.16	09:29:26.50	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	1051.945	303.72	09:29:35.17	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1082.598	291.16	09:29:38.23	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	870.681	312.97	09:29:17.04	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	493.912	296.00	09:28:39.37	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	851.033	305.19	09:29:15.08	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	717.424	237.45	09:29: 1.71	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	807.191	309.55	09:28:15.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	723.000	304.63	09:29: 2.29	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	829.932	304.02	09:29:12.96	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1200.230	289.15	09:29:46.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1240.042	282.11	09:29:46.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1410.326	298.91	09:29:46.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1514.178	294.80	09:29:46.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1141.999	280.58	09:29:44.17	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1359.982	291.55	09:29:46.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	798.523	328.61	09:29: 9.83	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	532.285	316.66	09:28:43.20	1.00	100.0	ECTN	60.0

Shot 16

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

STAR LAKE - Line 400-AE Shot time 1984-07-19 09:35:59.99

Lat 49.35544, Long 81.78908, Elev 0.194km, Depth 32.0m, Shot size 800.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	635.442	316.04	09:36:53.52	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	749.720	307.77	09:36:57.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	942.093	267.04	09:36:57.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	778.545	298.72	09:36:57.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	865.308	304.26	09:36:57.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	900.403	288.75	09:36:57.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	691.080	316.79	09:36:57.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	307.098	295.47	09:36:20.68	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	665.399	306.81	09:36:56.52	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	648.920	222.79	09:36:54.87	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	624.726	312.81	09:35:50.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	537.643	306.80	09:36:43.73	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	643.884	305.37	09:36:54.37	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1020.927	286.42	09:36:57.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1070.616	278.17	09:36:57.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1224.707	297.97	09:36:57.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1331.838	293.14	09:36:57.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	973.693	276.15	09:36:57.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1179.531	289.35	09:36:57.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	648.047	337.46	09:36:54.79	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	363.487	327.12	09:36:26.32	1.00	100.0	ECTN	60.0

Shot 17

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

LINEUS LAKE - Line 400-AE Shot time 1984-07-19 09:44: 0.03

Lat 47.40839, Long 83.92727, Elev 0.355km, Depth 34.0m, Shot size 2000.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	669.541	292.47	09:44:56.93	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	818.813	288.68	09:45:11.85	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1160.185	258.44	09:45:46.00	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	887.525	281.72	09:45:18.73	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	949.163	288.04	09:45:24.90	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1049.779	275.54	09:45:34.95	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	718.925	294.93	09:45: 1.87	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	455.134	260.64	09:44:35.48	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	741.170	285.66	09:45: 4.10	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	917.119	222.48	09:45:21.68	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	674.709	289.35	09:44:18.96	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	619.645	281.20	09:44:51.93	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	726.826	283.84	09:45: 2.67	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1180.551	275.09	09:45:48.04	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1259.578	268.72	09:45:55.93	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1340.263	287.05	09:46: 4.00	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1470.740	283.66	09:46:14.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1167.252	266.11	09:45:46.70	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1330.740	279.14	09:46: 3.05	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	573.222	313.03	09:44:47.30	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	378.675	284.78	09:44:27.85	1.00	100.0	ECTN	60.0

Shot 18

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

GUILFOYLE LA - Line 100-BH Shot time 1984-07-21 09:28: 0.01

Lat 49.79113, Long 82.31595, Elev 0.195km, Depth 30.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	696.157	316.96	09:28:59.60	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	807.830	309.29	09:29:10.75	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	969.787	270.36	09:29:26.95	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	832.355	300.87	09:29:13.21	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	921.533	305.88	09:29:22.13	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	947.050	291.26	09:29:24.68	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	751.864	317.61	09:29: 5.17	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	362.065	300.27	09:28:26.18	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	723.416	308.54	09:29: 2.32	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	636.822	228.18	09:28:53.67	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	684.735	314.05	09:27:53.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	596.068	308.79	09:28:49.58	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	701.418	307.26	09:29: 0.12	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1064.843	288.80	09:29:28.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1107.140	280.80	09:29:28.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1275.646	299.57	09:29:28.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1378.626	294.85	09:29:28.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1009.418	279.07	09:29:28.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1224.487	291.37	09:29:28.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	708.258	336.34	09:29: 0.80	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	425.058	326.67	09:28:32.48	1.00	100.0	ECTN	60.0

Shot 19

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

MATACHEWAN P - Line 100-BH Shot time 1984-07-21 09:36: 0.00

Lat 47.94814, Long 80.68395, Elev 0.302km, Depth 33.0m, Shot size 2000.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	474.270	308.54	09:36:14.98	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	604.063	299.27	09:36:14.98	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	912.472	256.24	09:36:14.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	654.143	288.64	09:36:14.98	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	728.051	296.23	09:36:14.98	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	804.269	278.75	09:36:14.98	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	528.873	310.20	09:36:14.98	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	204.465	262.19	09:36:10.42	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	521.545	296.86	09:36:14.98	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	738.577	210.16	09:36:14.98	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	468.983	304.02	09:35:31.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	394.200	293.98	09:36:14.98	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	503.190	294.63	09:36:14.98	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	933.259	277.39	09:36:14.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1008.839	269.01	09:36:14.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1107.297	291.45	09:36:14.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1229.806	286.65	09:36:14.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	916.458	265.98	09:36:14.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1085.853	281.73	09:36:14.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	471.947	338.54	09:36:14.98	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	189.614	320.61	09:36: 8.93	1.00	100.0	ECTN	60.0

Shot 20

KAPUSKASING STRUCTURAL ZONE SEISMIC REFRACTION EXPERIMENT - 1984

SIRJAMES PIT - Line 100-BH Shot time 1984-07-21 09:44: 0.04

Lat 48.04232, Long 84.67504, Elev 0.310km, Depth 33.0m, Shot size 1600.0kg

Site	Lat	Long	Elev	Dist	Azim	Time	GN	VS	Part	SR
271	45.39420	75.71670	0.077	744.922	296.48	09:45: 4.46	1.00	100.0	ECTN	60.0
272	45.50250	73.62300	0.112	889.176	292.47	09:45:18.90	1.00	100.0	ECTN	60.0
273	50.53330	68.77440	0.564	1186.978	262.66	09:45:41.98	1.00	100.0	ECTN	60.0
274	46.36280	72.37220	0.010	949.611	285.81	09:45:24.93	1.00	100.0	ECTN	60.0
275	45.37830	71.92640	0.265	1017.464	291.48	09:45:31.71	1.00	100.0	ECTN	60.0
276	47.34080	70.00930	0.126	1102.060	279.47	09:45:40.18	1.00	100.0	ECTN	60.0
277	45.00030	75.27500	0.085	795.918	298.48	09:45: 9.57	1.00	100.0	ECTN	60.0
278	48.23000	77.97170	0.305	499.214	270.10	09:44:39.90	1.00	100.0	ECTN	60.0
279	45.99440	74.45000	0.190	809.373	290.03	09:45:10.92	1.00	100.0	ECTN	60.0
280	53.80220	75.72110	0.366	897.022	228.05	09:45:19.68	1.00	100.0	ECTN	60.0
281	45.70300	75.47800	0.062	747.263	293.67	09:44: 6.00	1.00	100.0	ECTN	30.0
282	46.60670	75.86000	0.290	684.810	286.69	09:44:58.45	1.00	100.0	ECTN	60.0
283	46.22220	74.55560	0.853	793.322	288.44	09:45: 9.30	1.00	100.0	ECTN	60.0
284	47.54000	68.24100	0.189	1230.301	278.68	09:45:41.98	1.00	100.0	ECTN	60.0
285	48.91420	67.11060	0.398	1299.333	272.36	09:45:41.98	1.00	100.0	ECTN	60.0
286	45.11700	66.82200	0.030	1403.102	289.77	09:45:41.98	1.00	100.0	ECTN	60.0
287	45.85200	64.80600	0.363	1527.744	286.35	09:45:41.98	1.00	100.0	ECTN	60.0
288	49.19170	68.39390	0.123	1204.885	270.09	09:45:41.98	1.00	100.0	ECTN	60.0
289	46.84300	66.37200	0.411	1383.684	282.24	09:45:41.98	1.00	100.0	ECTN	60.0
290	44.01860	78.37440	0.149	661.394	314.75	09:44:56.12	1.00	100.0	ECTN	60.0
291	46.64110	79.07330	0.398	450.957	292.25	09:44:35.07	1.00	100.0	ECTN	60.0

Table 7 : TIMING SIGNAL

Participant	Time Signal	UTC-Time Signal (max, msec)	Propagation Delay (msec)
EMR (shooters)	WWV (NBS)	0.002	5
EMR (recorders)	CHU (NRC)	0.010	2.5
UofT	WWVB (NBS)	0.006	7
UBC, UA, MUN, UWO	WWVB (NBS)	0.006	7
UWM	Omega (USCG)	not known	not known

Offset data from :

NBS National Bureau of Standards
325 Broadway
Boulder, Colorado 80303, USA

NRC National Research Council, Physics Division
Electrical and Time Standards
Ottawa, Ontario, Canada K1A 0R6

USCG Operations Officer
US Coast Guard Headquarters (G-ONSOD/43)
Washington, DC 20593, USA

Table 8 : ECTN STATION NAMES - SITE NUMBERS

Station name	Site number	Latitude	Longitude	Elev'n (km)
OTTSPZ	271	45.3942	75.7167	0.077
MNTSPZ	272	45.5025	73.6230	0.112
MNQSPZ	273	50.5333	68.7744	0.564
GNTSPZ	274	46.3628	72.3722	0.010
SBQSPZ	275	45.3783	71.9264	0.265
LPQSPZ	276	47.3408	70.0093	0.126
WBQSPZ	277	45.0003	75.2750	0.085
VDQSPZ	278	48.2300	77.9717	0.305
CKQSPZ	279	45.9944	74.4500	0.190
JAQSPZ	280	53.8022	75.7211	0.366
GACSPZ	281	45.7030	75.4780	0.062
GRQSPZ	282	46.6067	75.8600	0.290
TRQSPZ	283	46.2222	74.5556	0.853
EBNSPZ	284	47.5400	68.2410	0.189
GSQSPZ	285	48.9142	67.1106	0.398
GGNSPZ	286	45.1170	66.8220	0.030
LMNSPZ	287	45.8520	64.8060	0.363
HTQSPZ	288	49.1917	68.3939	0.123
KLNSPZ	289	46.8430	66.3720	0.411
WEOSPZ	290	44.0186	78.3744	0.149
EEOSPZ	291	46.6411	79.0733	0.398

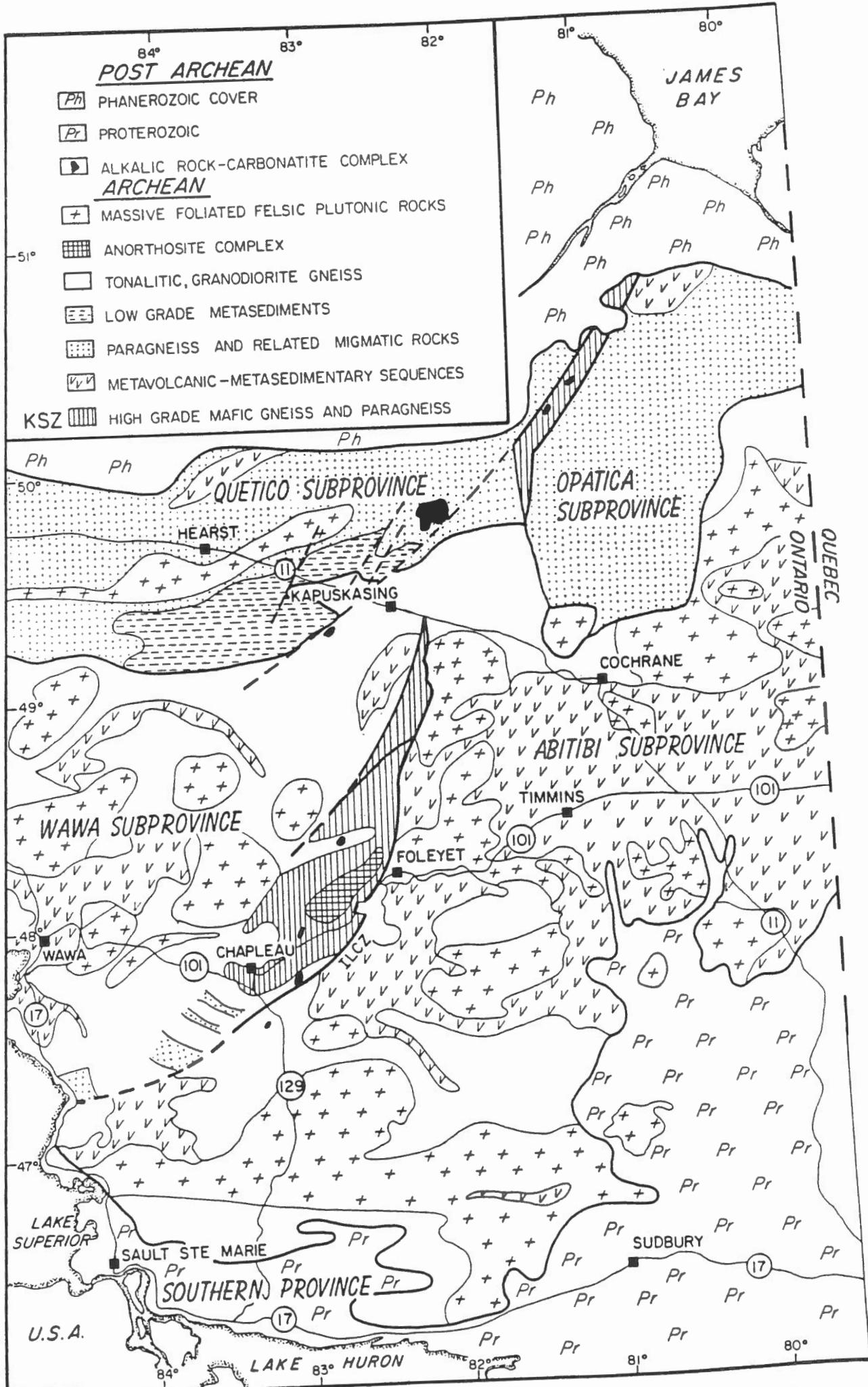


Figure 1 : General geology of northeastern Ontario

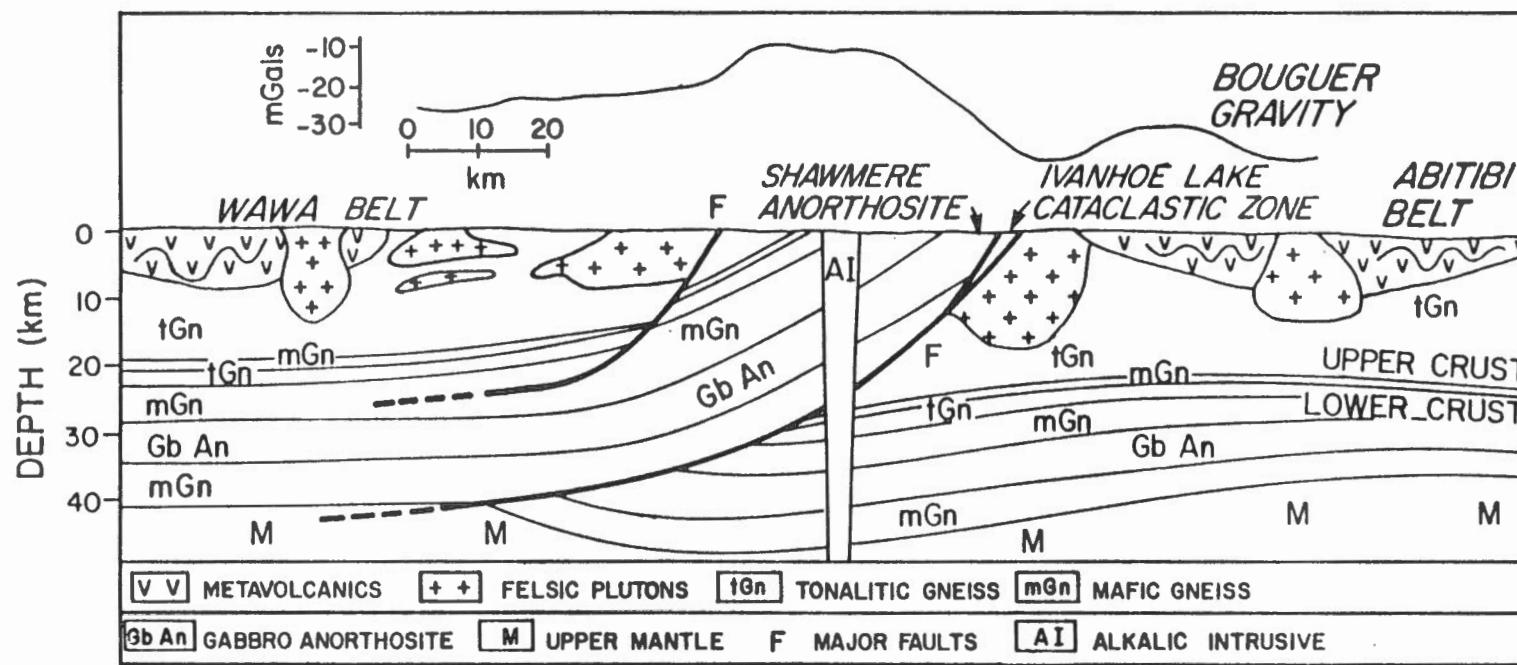


Figure 2 : Interpreted W-E geological cross-section of KSZ
near Foleyet

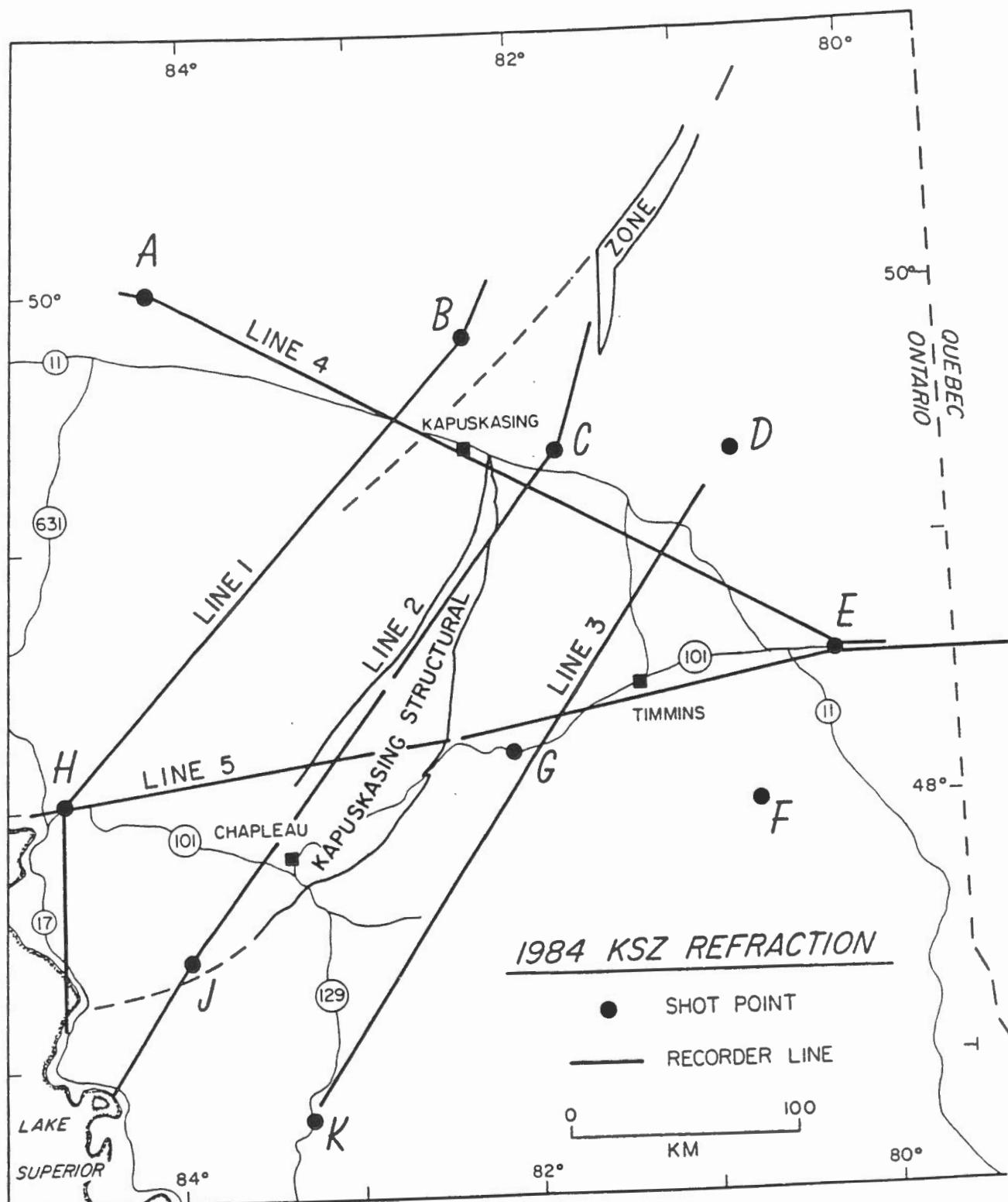


Figure 3 : Seismic refraction lines shot in summer 1984

Figure 4 : Shot and KSZ refraction recorder sites

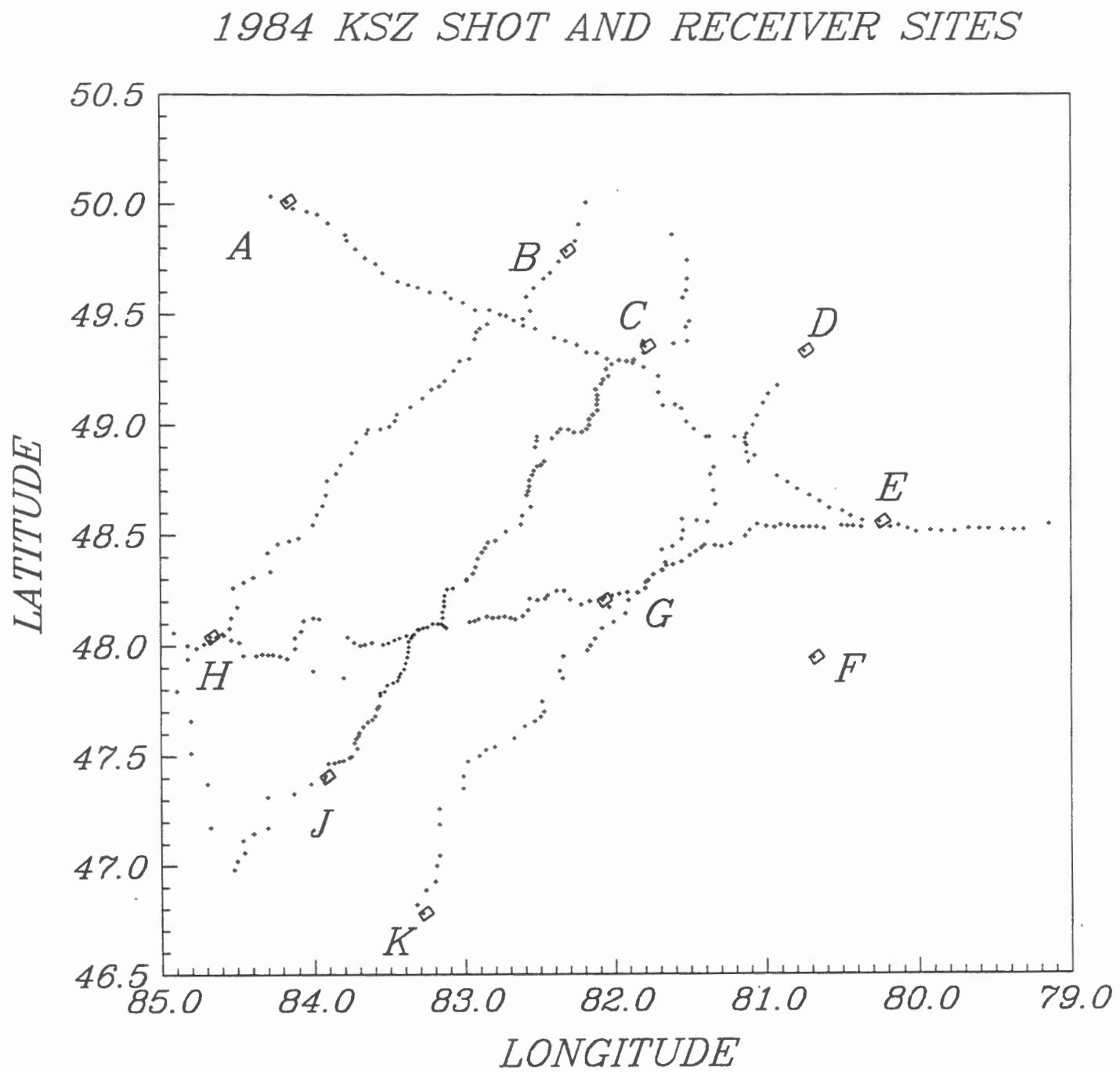
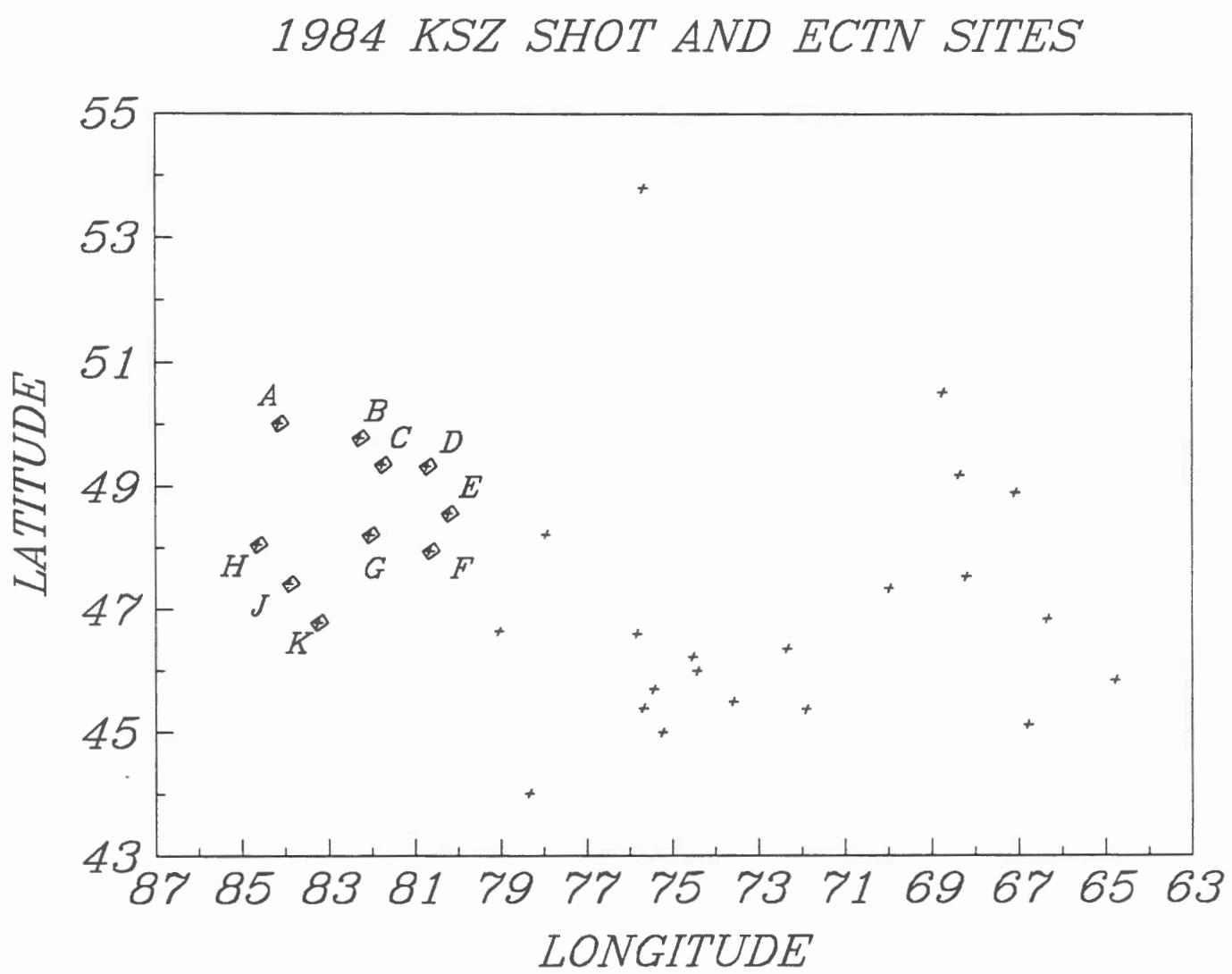


Figure 5 : ECTN sites and shot sites



TREND OF ARRIVALS WITH
APPARENT VELOCITIES OTHER
THAN 7.0 km/sec.

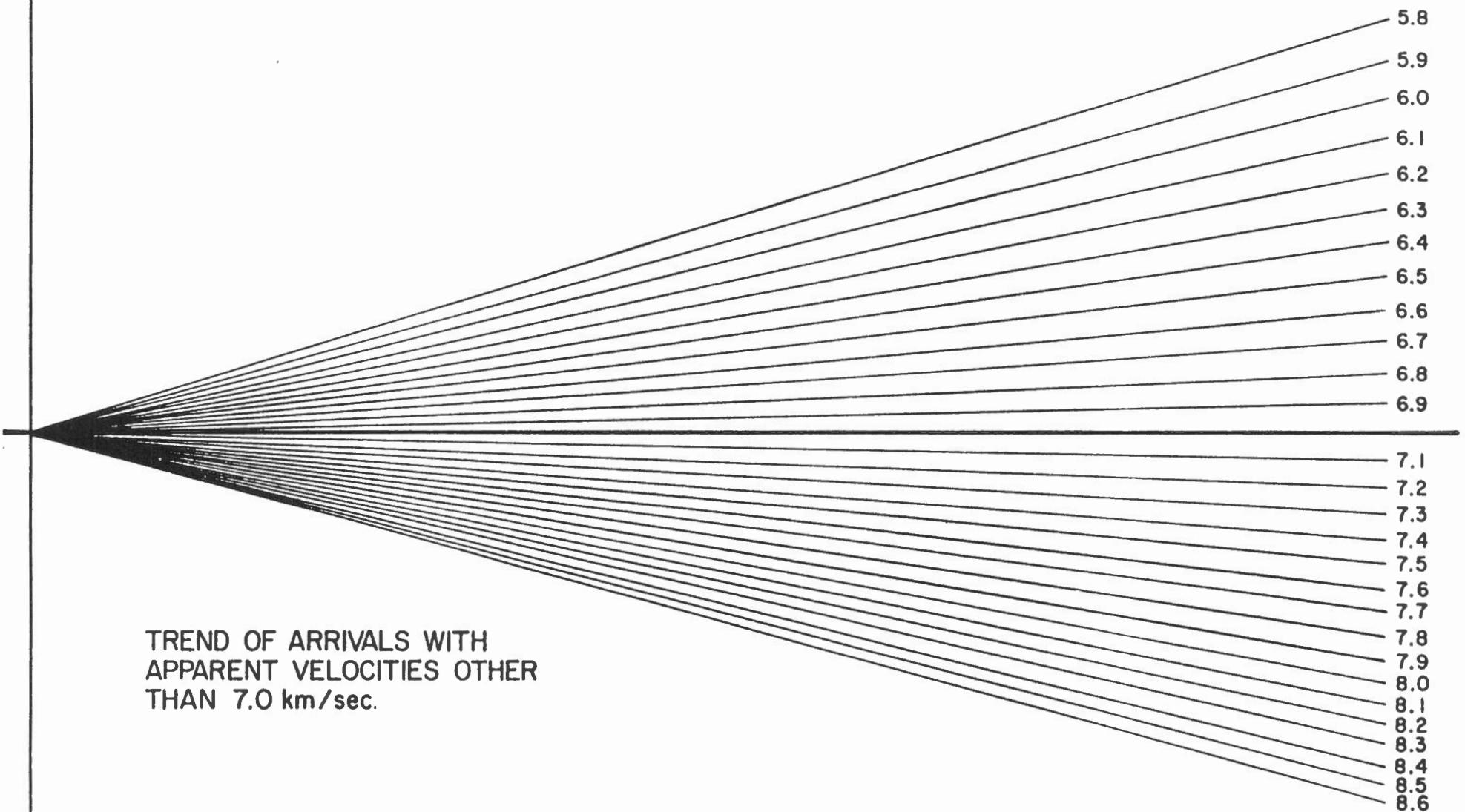


Figure 6 : Trend of arrivals with apparent velocities other than 7.0km/sec
appropriate for Figure 7, Shots 1-16, 18 and 20

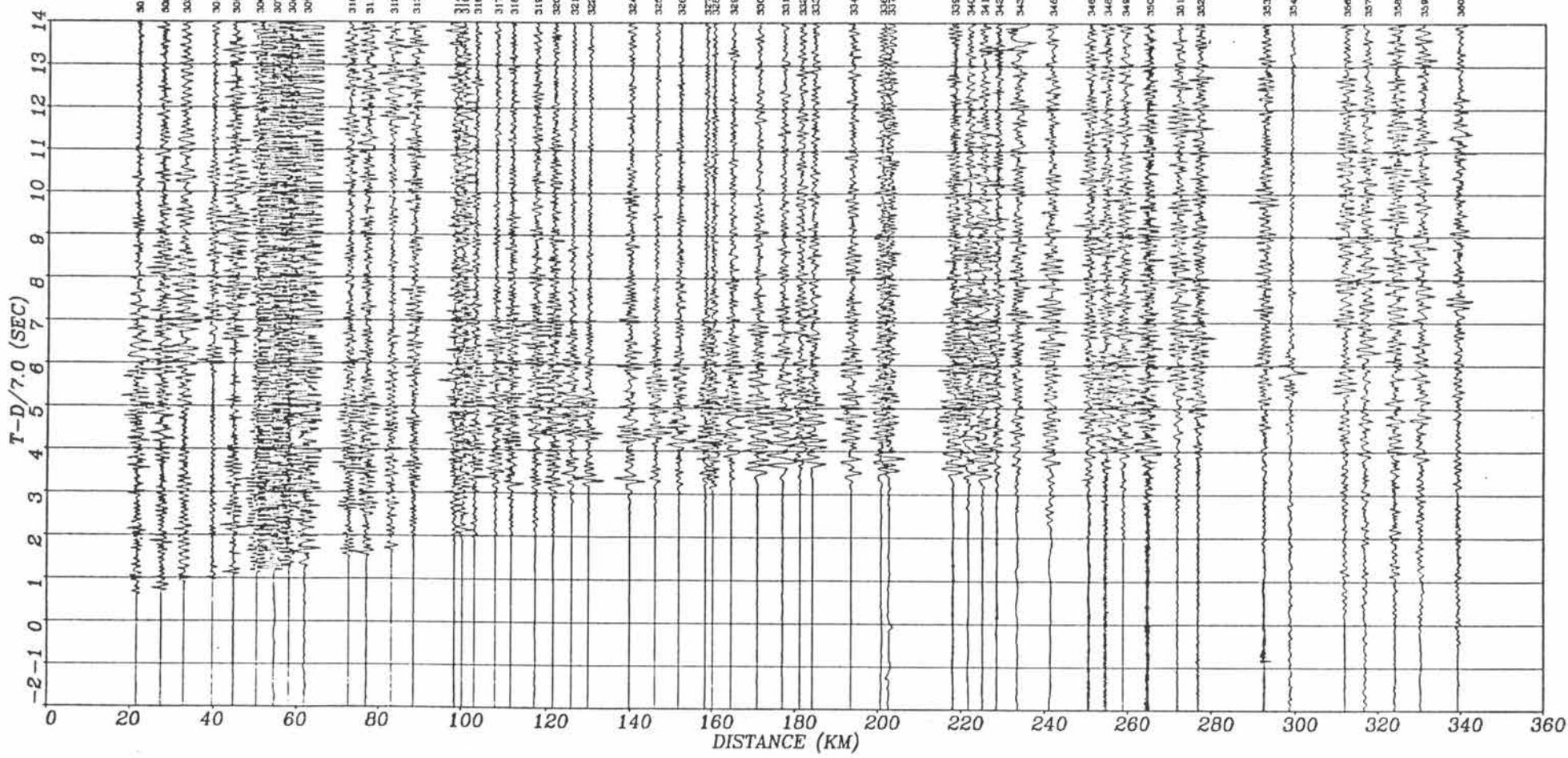
Figure 7 : KSZ refraction line sections (20 figures for shots 1-20)

The following figures are presented in the order that they were shot. The 'Section' number is made up with the Line number and Shot-Point character, (eg Section 3-D, for lines see Figure 3). Sections for Lines 1, 3, and 4 are presented on one page. For clarity, those of Lines 2 and 5 are presented in two portions. the following shot pairs combine to produce complete sections :

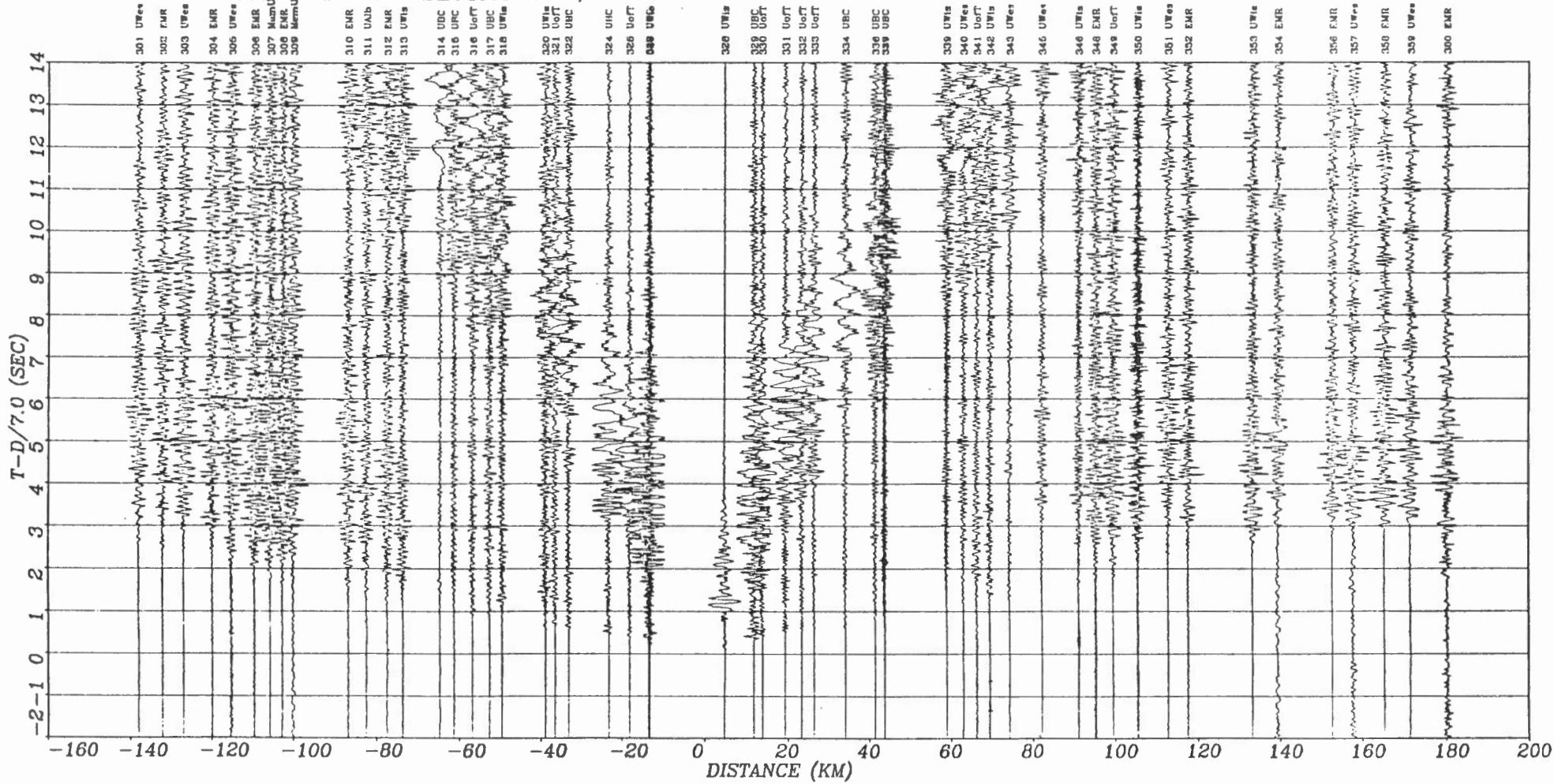
Shots 4 and 7, Section 5-E
Shots 5 and 8, Section 5-G
Shots 6 and 9, Section 5-H
Shots 10 and 12, Section 2-C
Shots 11 and 13, Section 2-J

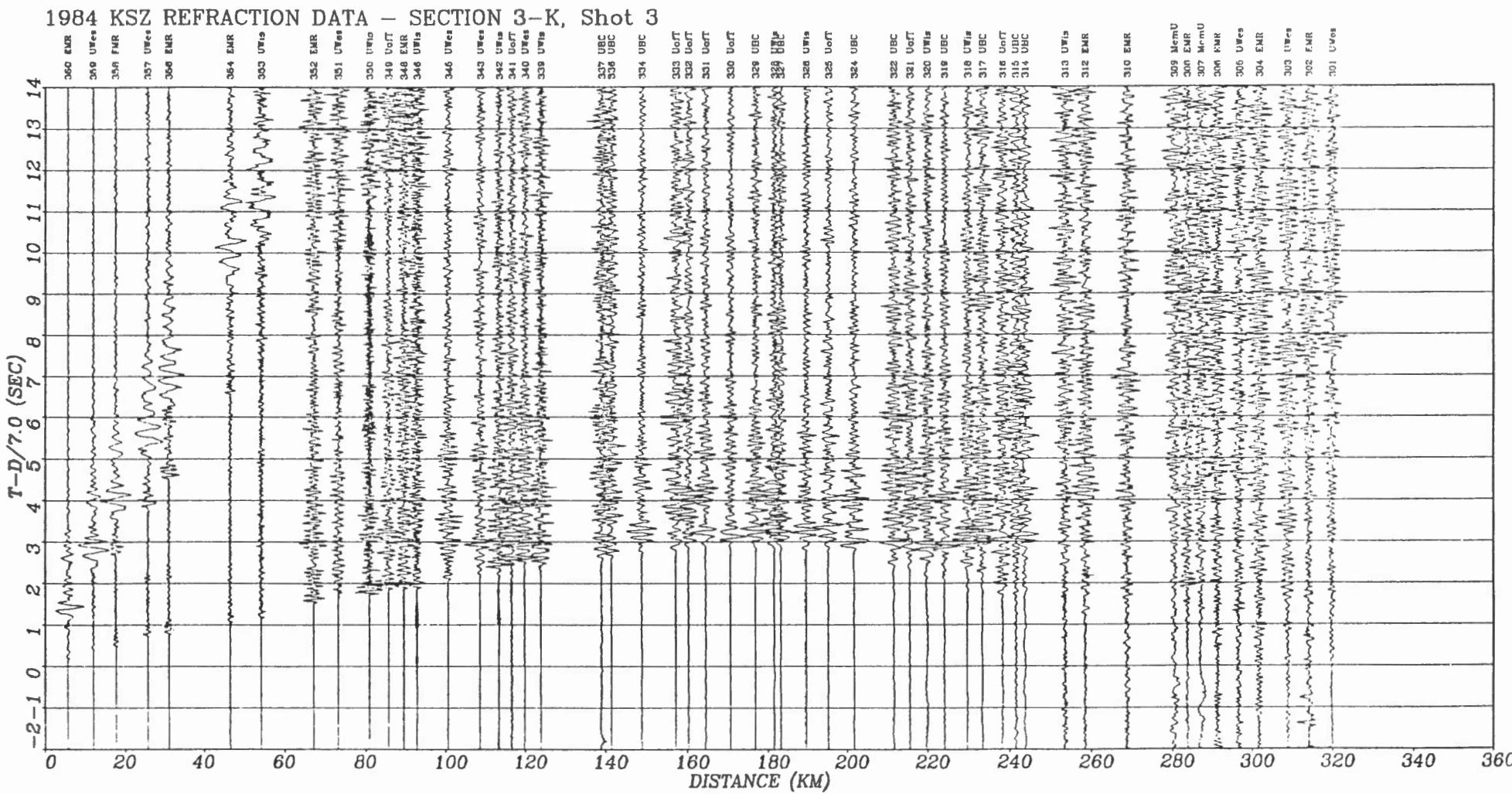
The reducing velocity used is 7.0km/sec, for shot 1-16, 18 and 20, and apparent velocities may be read with the aid of Figure 5. In the case of the two fan shots, 17 and 19, a reducing velocity of 8.2km/sec is used.

1984 KSZ REFRACTION DATA - SECTION 3-D, Shot 1

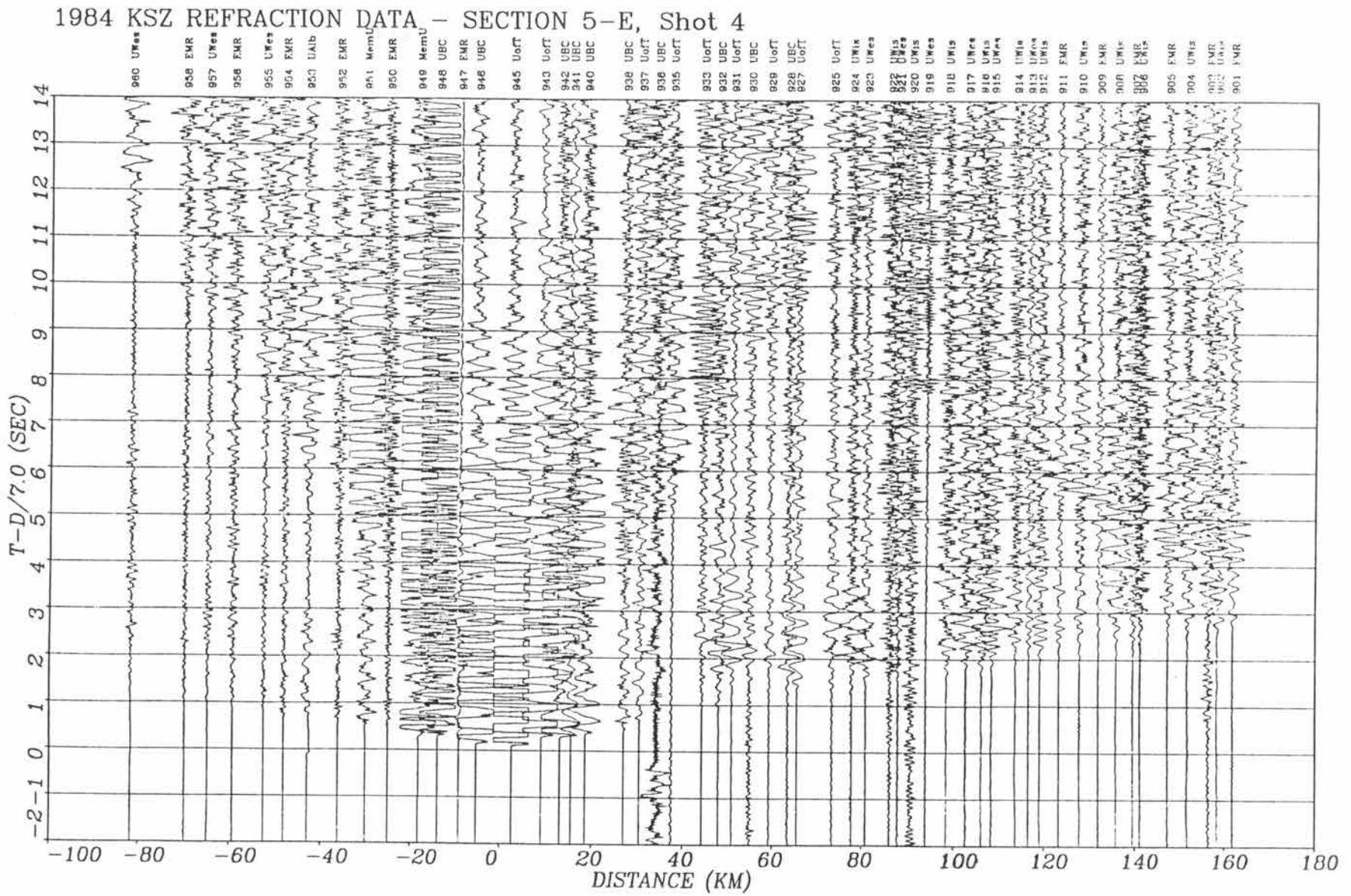


1984 KSZ REFRACTION DATA - SECTION 3-G, Shot 2

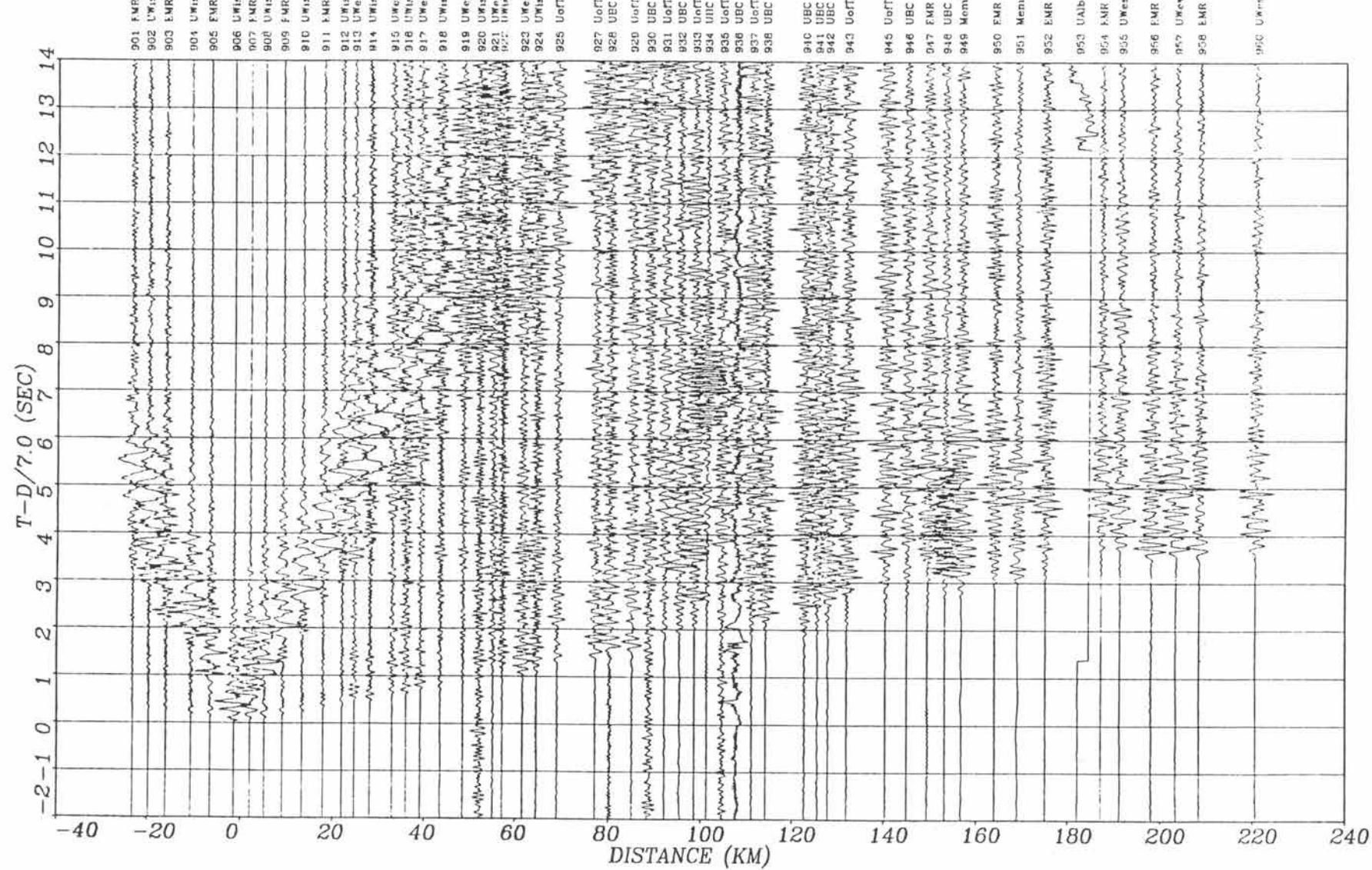




This is a half of Section 5-E,
for the other portion see Shot 7

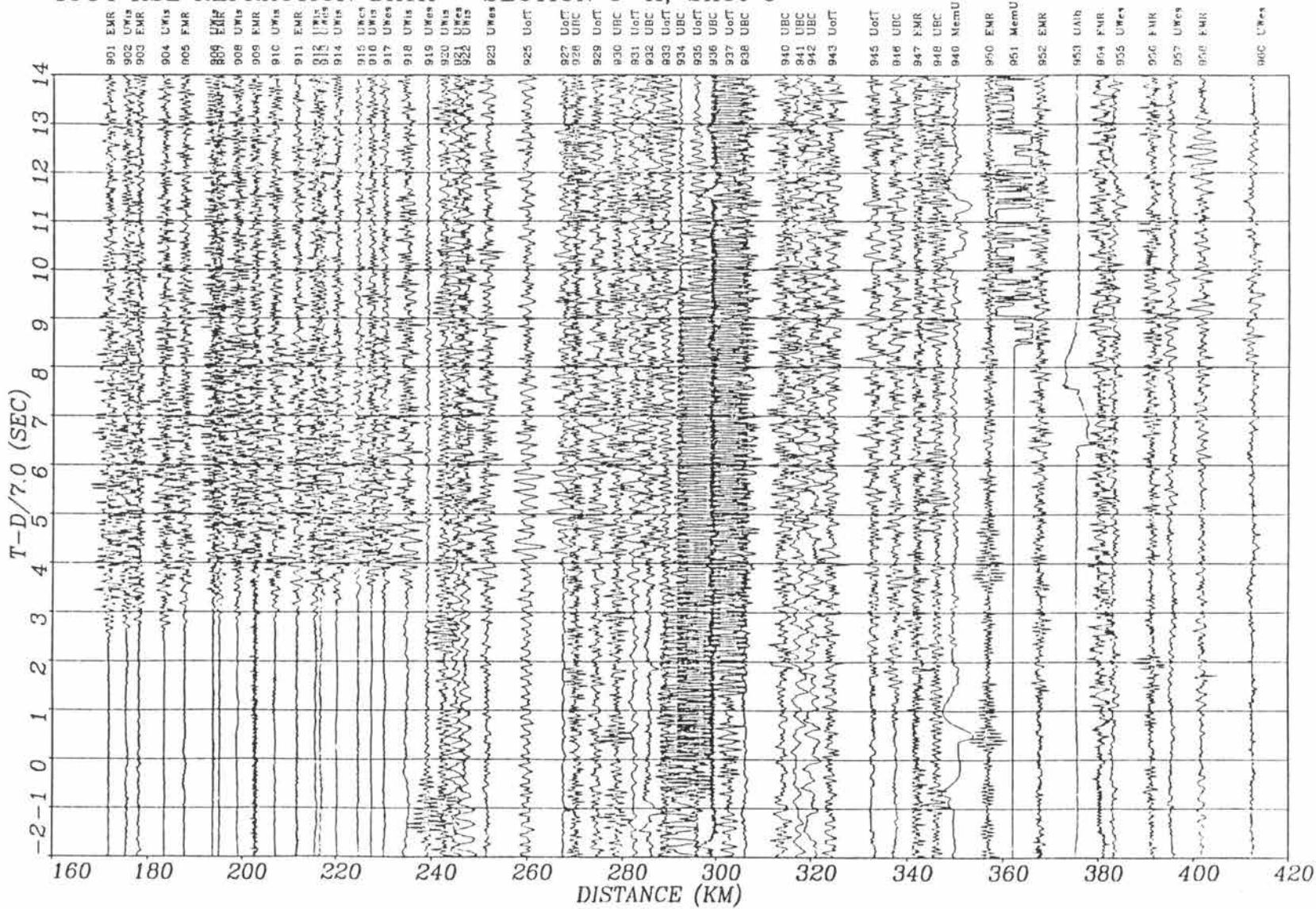


1984 KSZ REFRACTION DATA - SECTION 5-G, Shot 5



This is a half of Section 5-G,
for the other portion see Shot 8

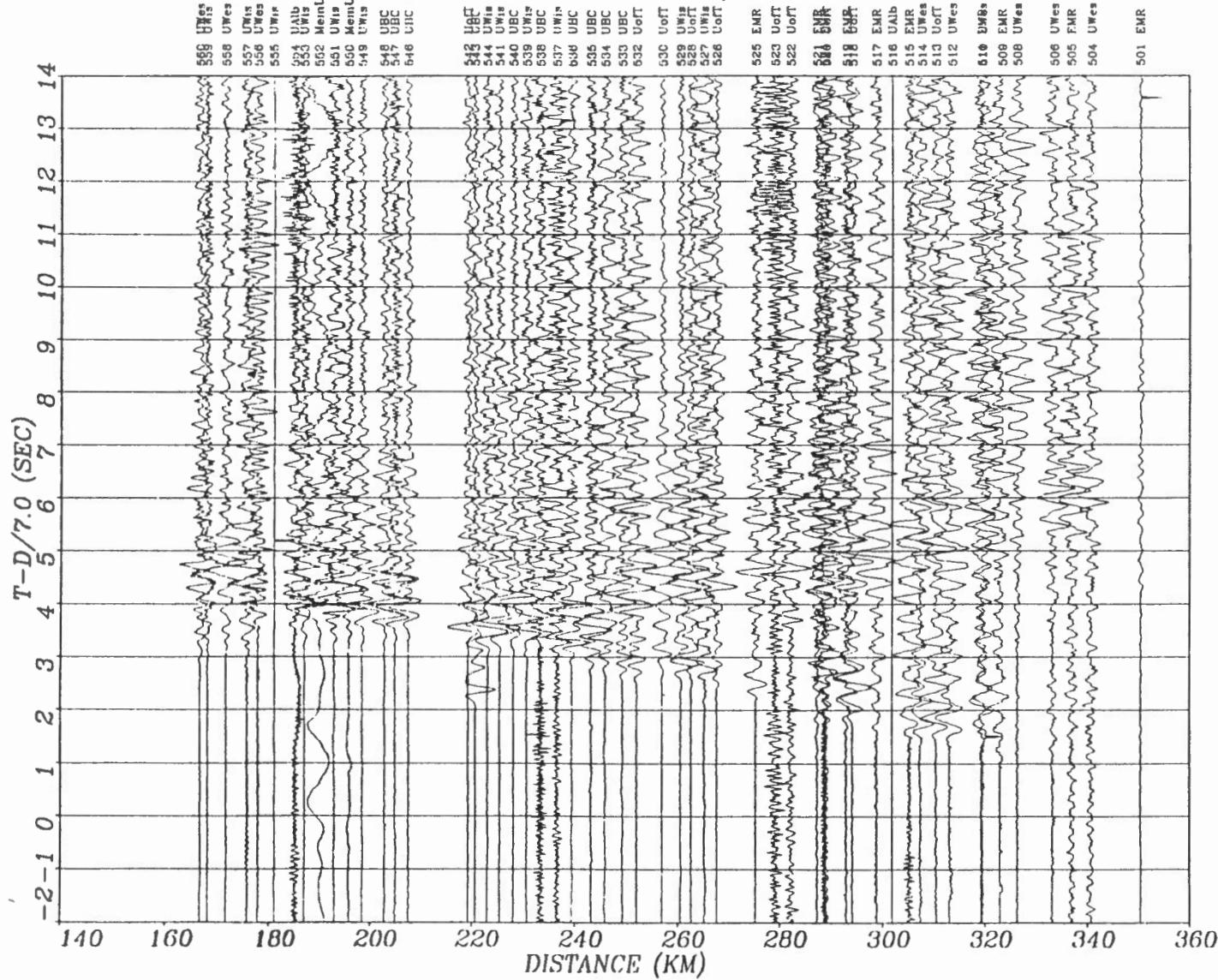
1984 KSZ REFRACTION DATA - SECTION 5-H, Shot 6

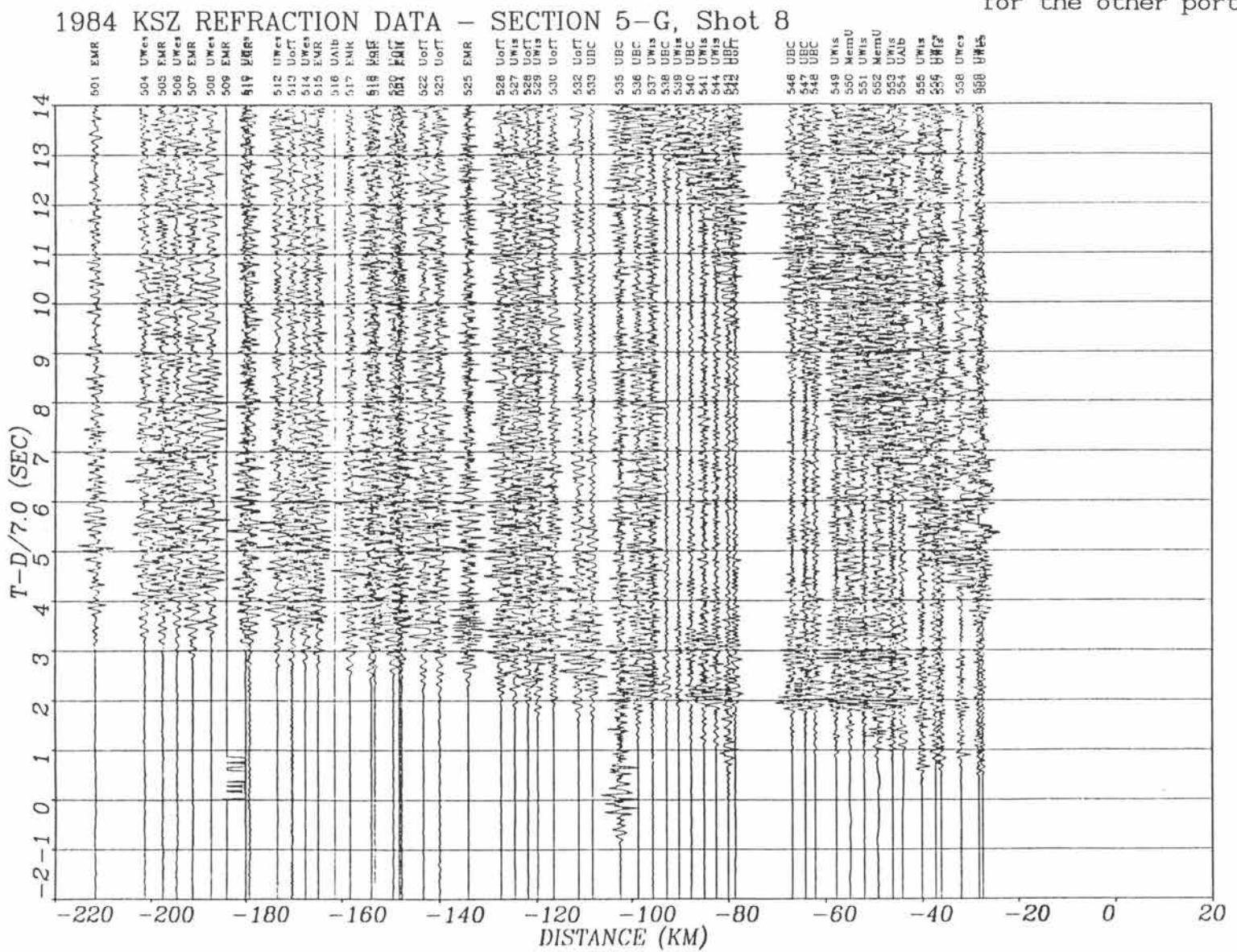


This is a half of Section 5-H,
for the other portion see Shot 9

This is a half of Section 5-E,
for the other portion see Shot 4

1984 KSZ REFRACTION DATA - SECTION 5-E, Shot 7

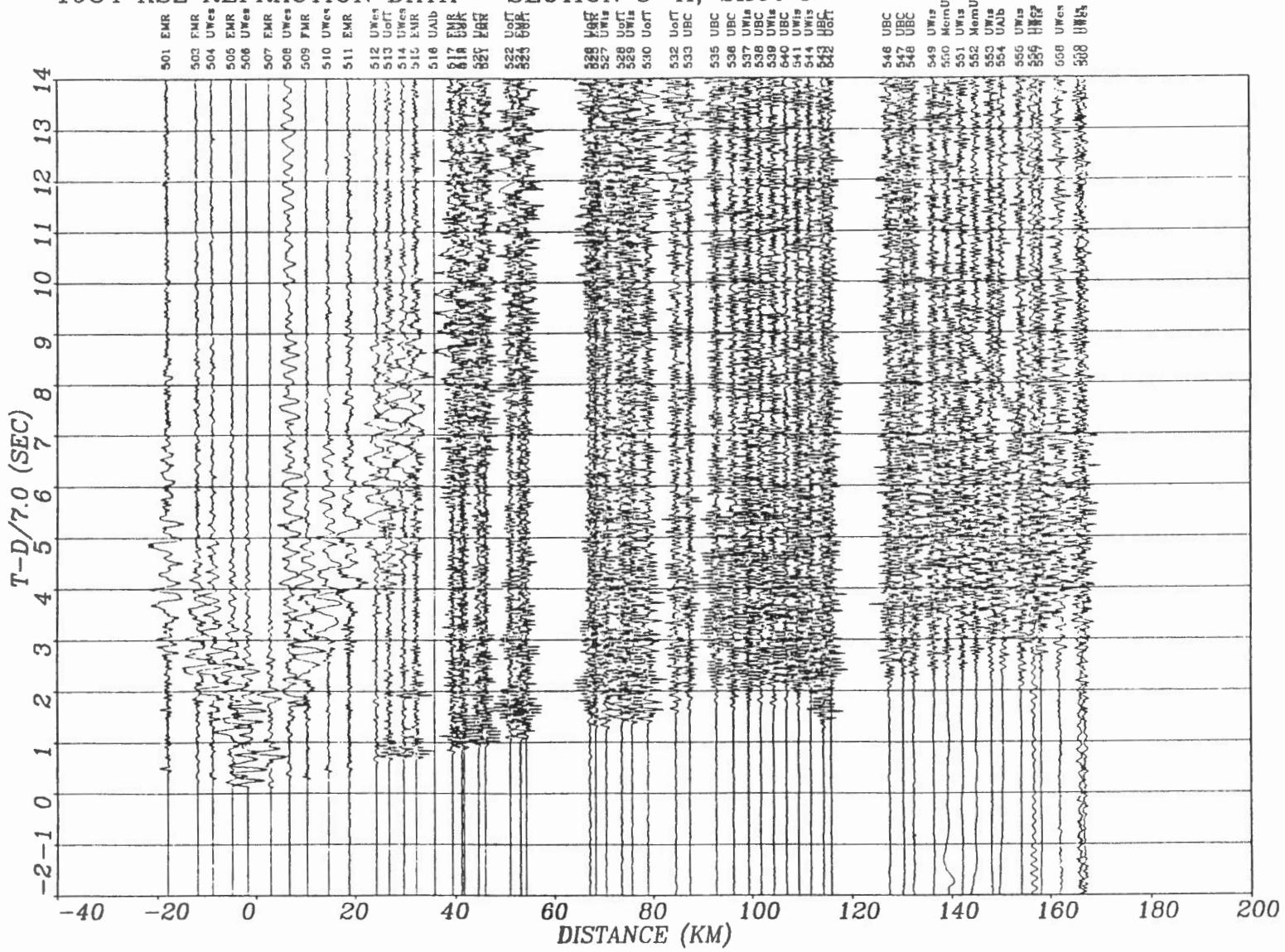




This is a half of Section 5-G,
for the other portion see Shot 5

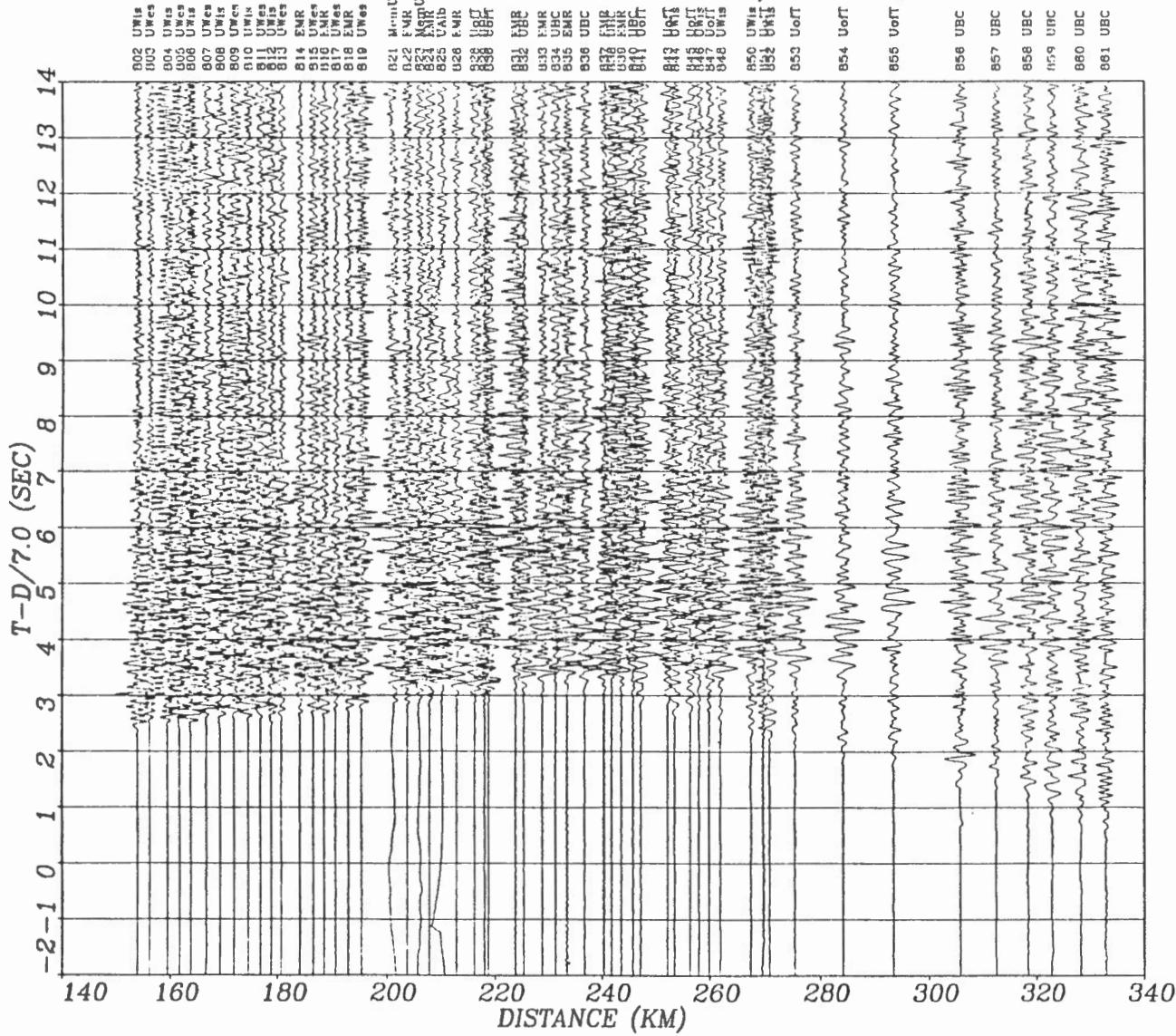
1984 KSZ REFRACTION DATA - SECTION 5-H, Shot 9

This is a half of Section 5-H,
for the other portion see Shot 6

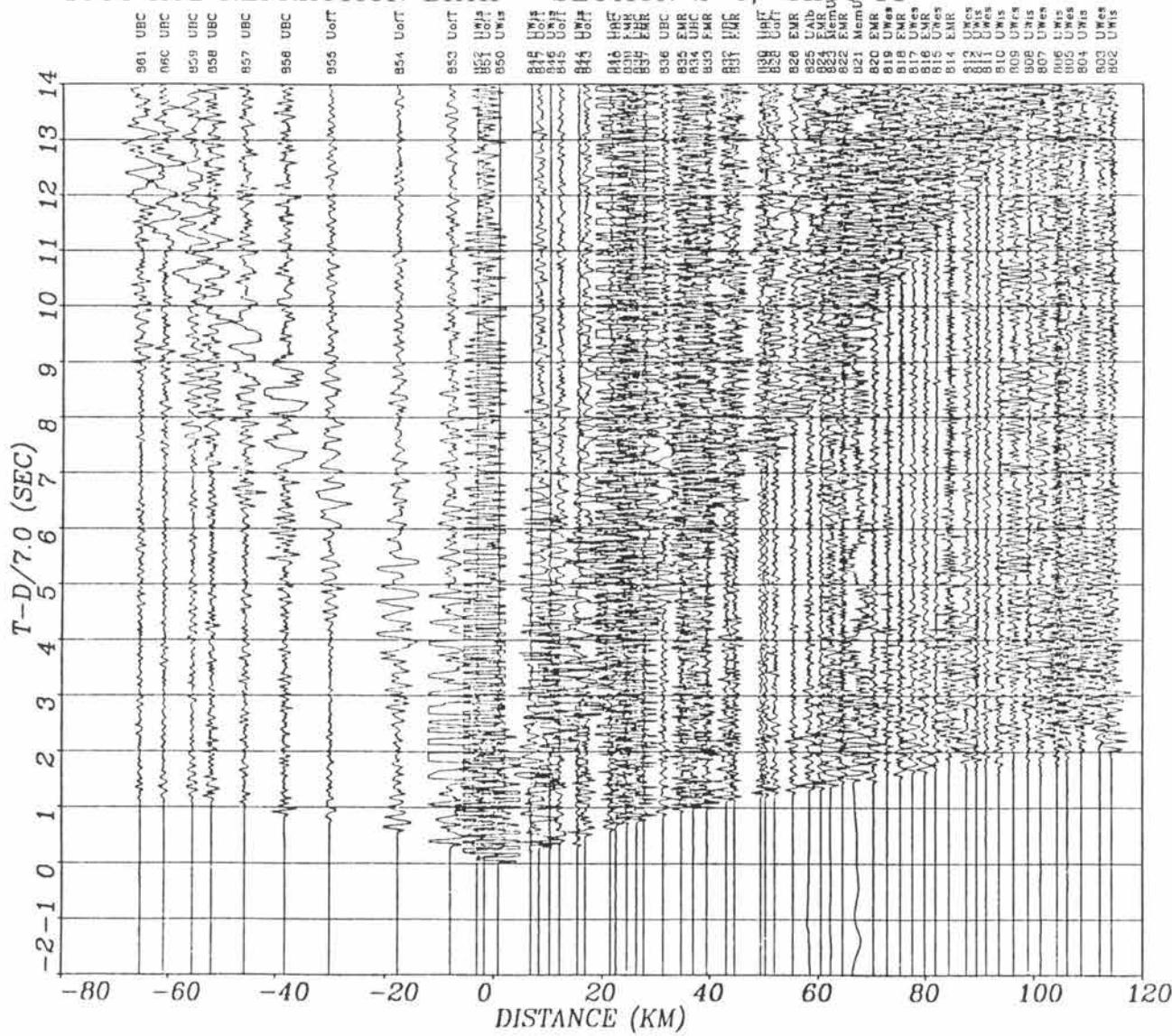


This is a half of Section 2-C,
for the other portion see Shot 12

1984 KSZ REFRACTION DATA - SECTION 2-C, Shot 10

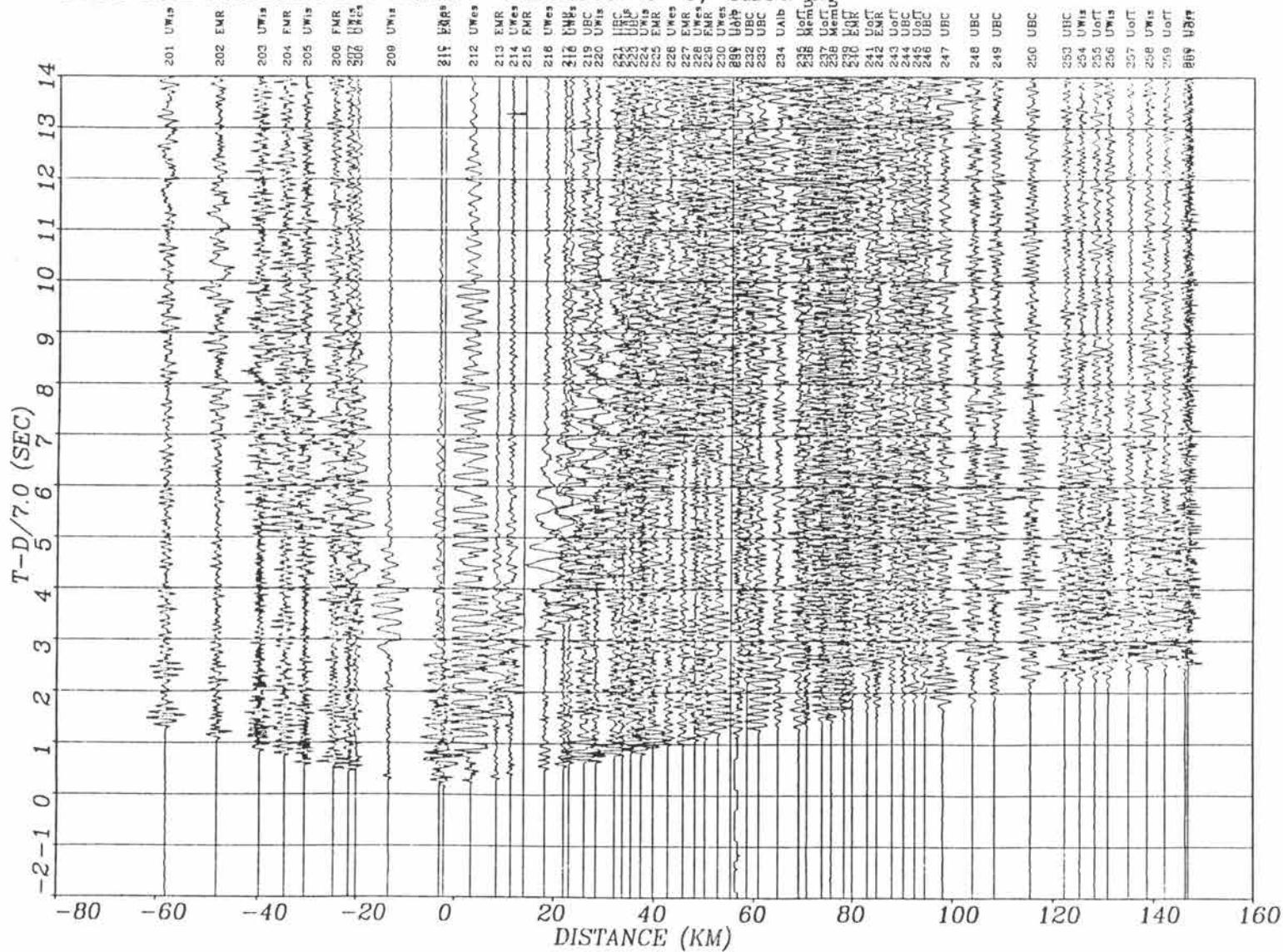


1984 KSZ REFRACTION DATA - SECTION 2-J, Shot 11



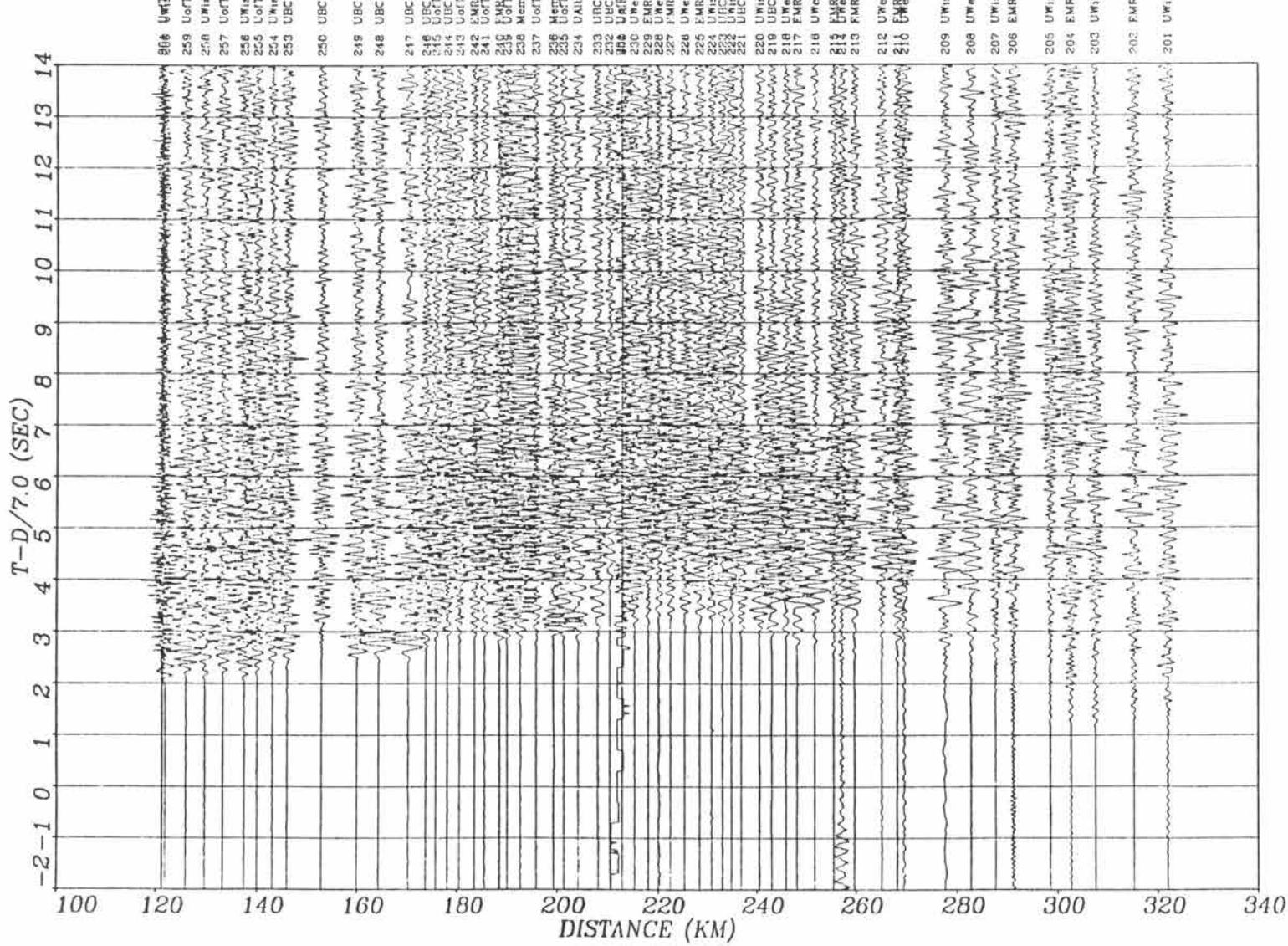
This is a half of Section 2-J,
for the other portion see Shot 13

1984 KSZ REFRACTION DATA - SECTION 2-C, Shot 12



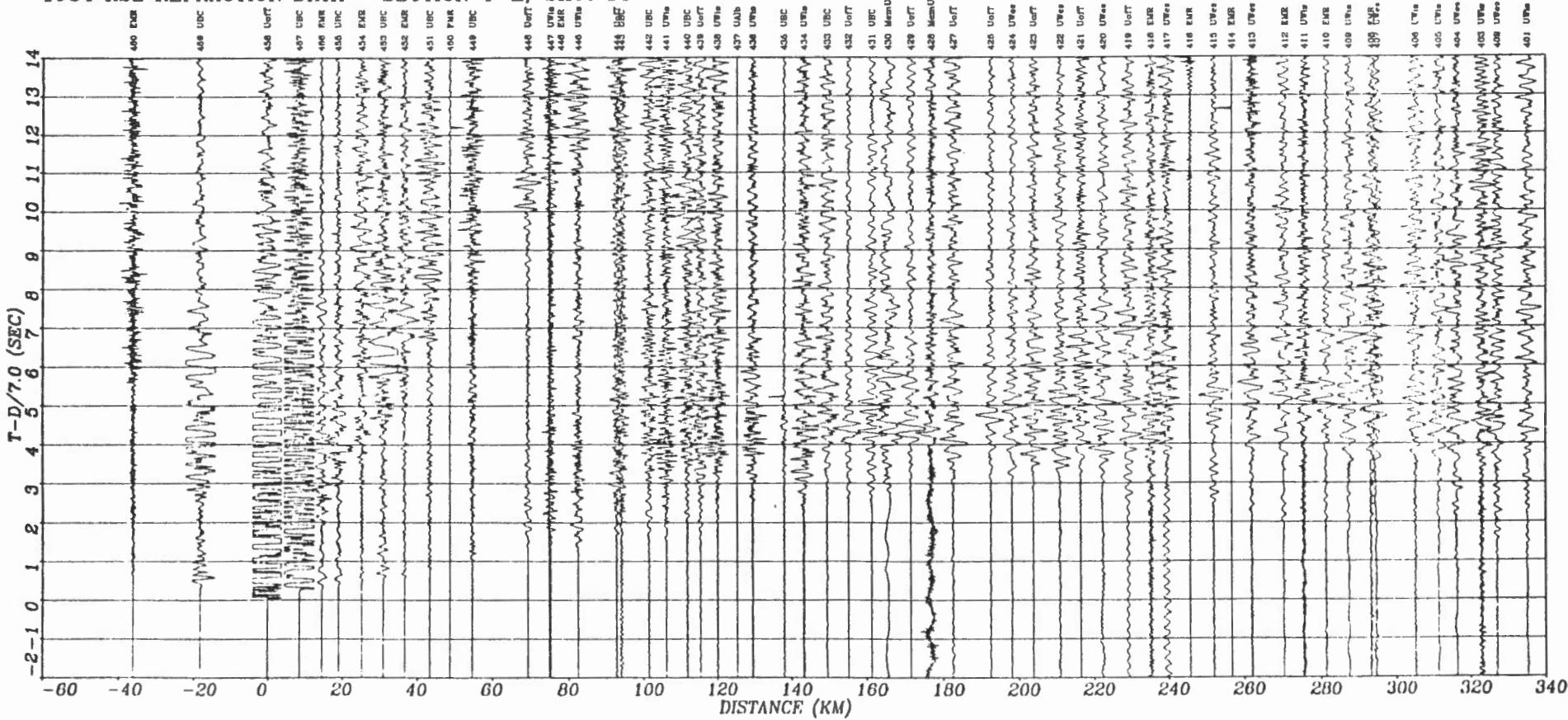
This is a half of Section 2-C,
for the other portion see Shot 10

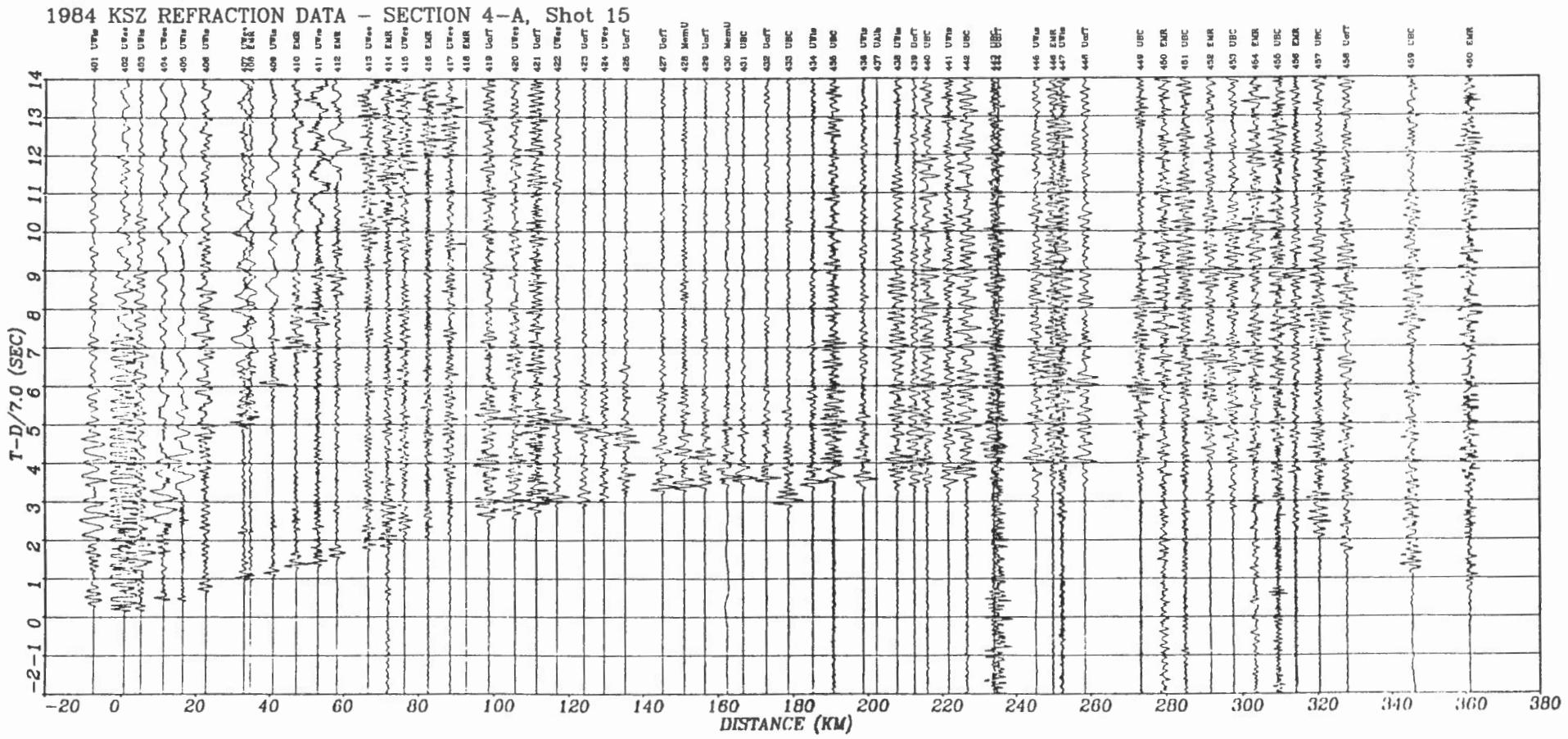
1984 KSZ REFRACTION DATA - SECTION 2-J, Shot 13



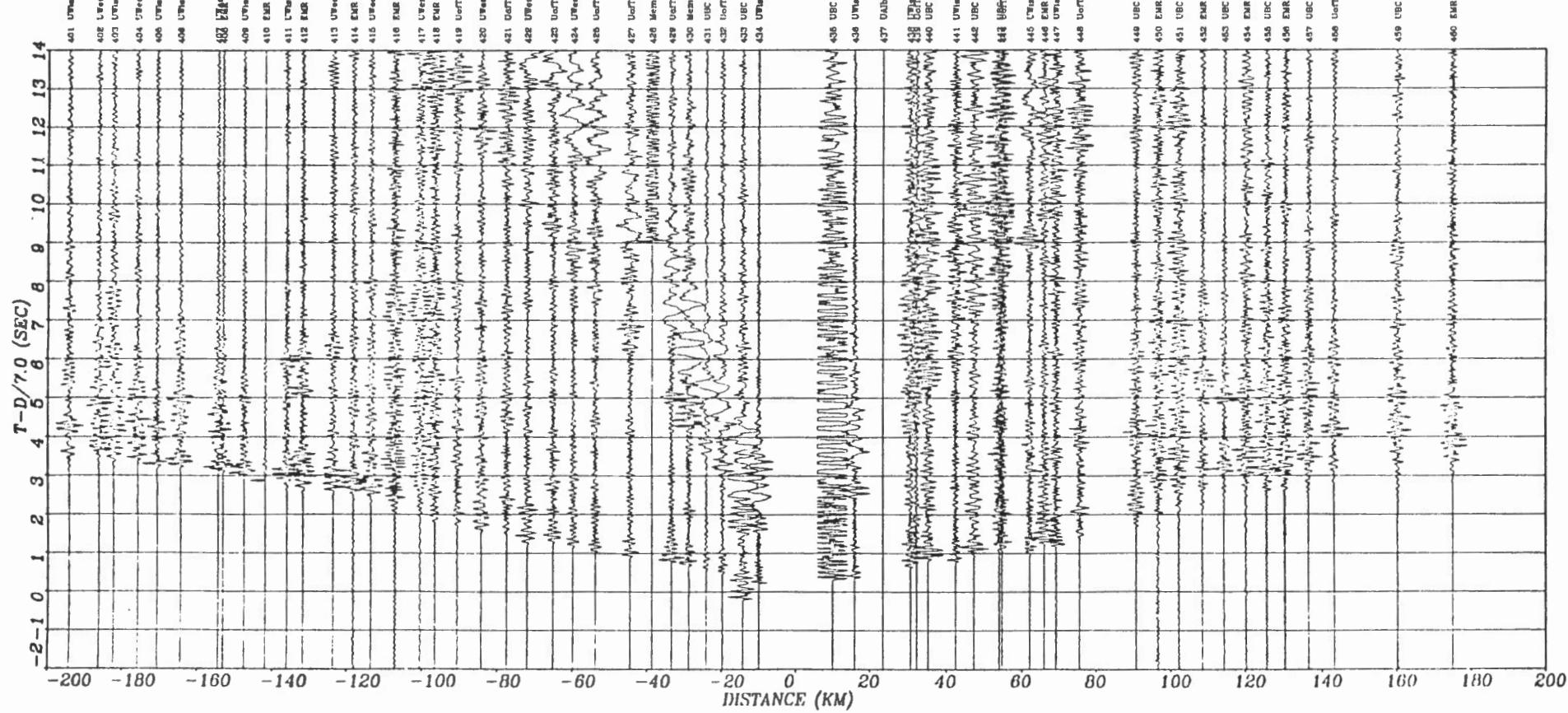
This is a half of Section 2-J,
for the other portion see Shot 11

1984 KSZ REFRACTION DATA - SECTION 4-E, Shot 14

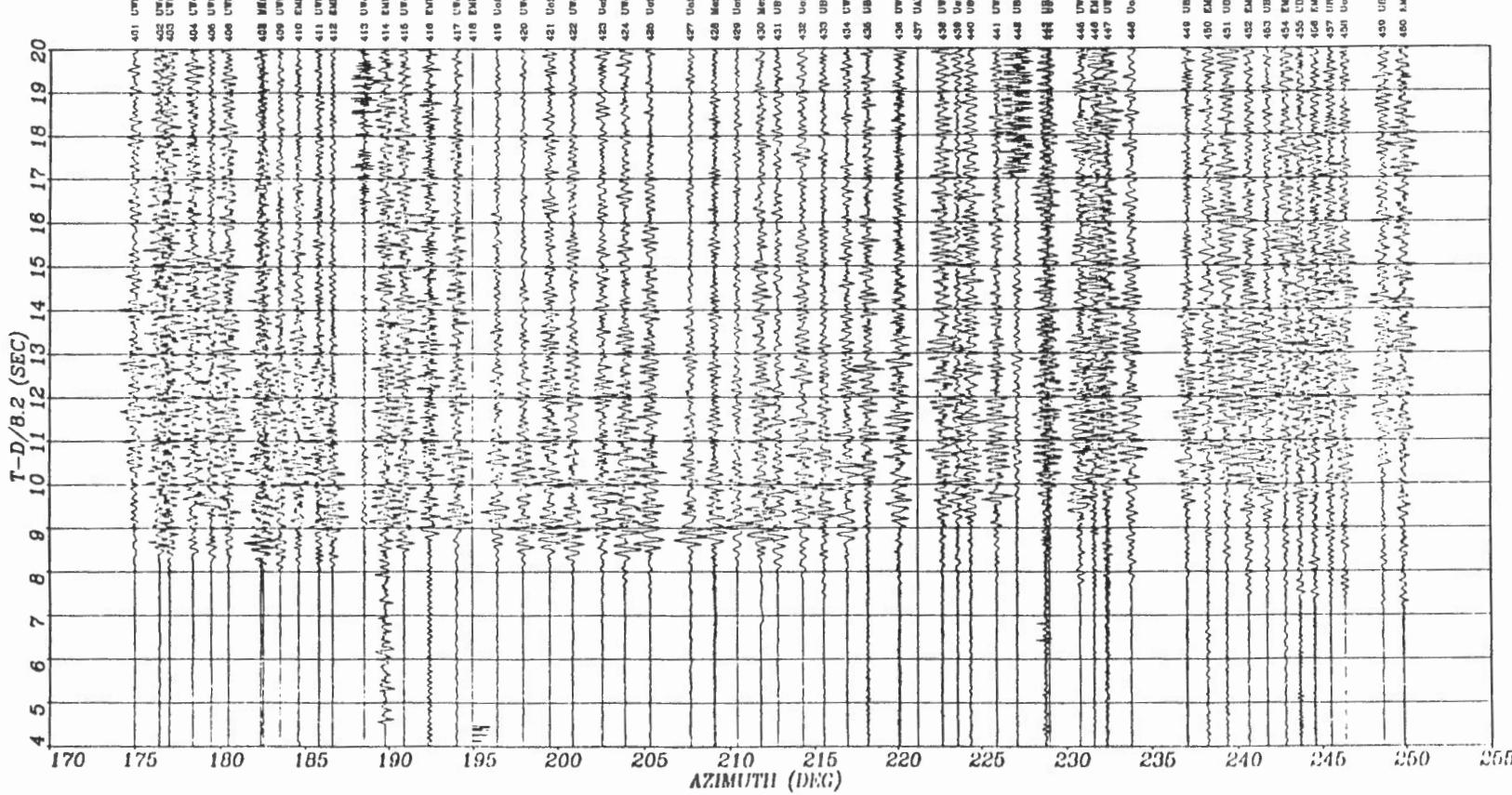




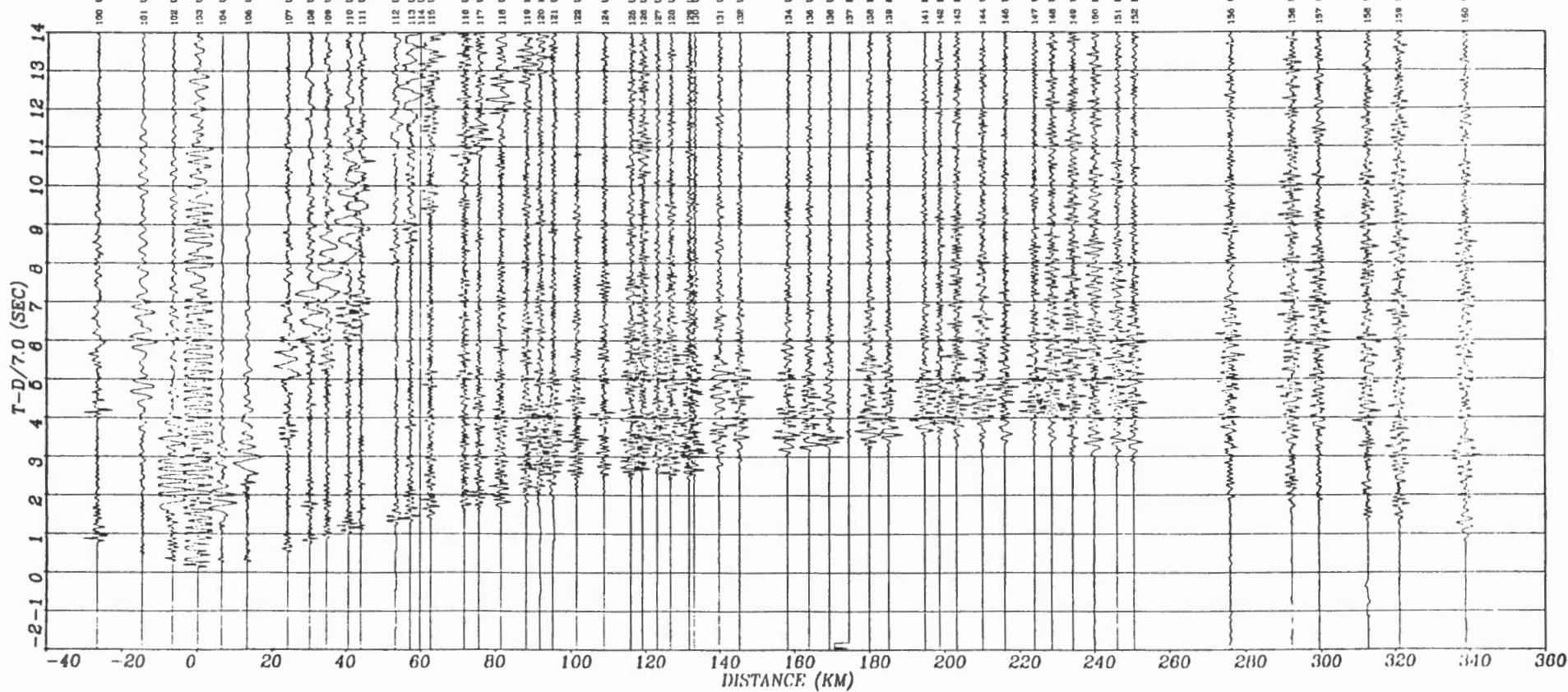
1984 KSZ REFRACTION DATA - SECTION 4-C, Shot 16



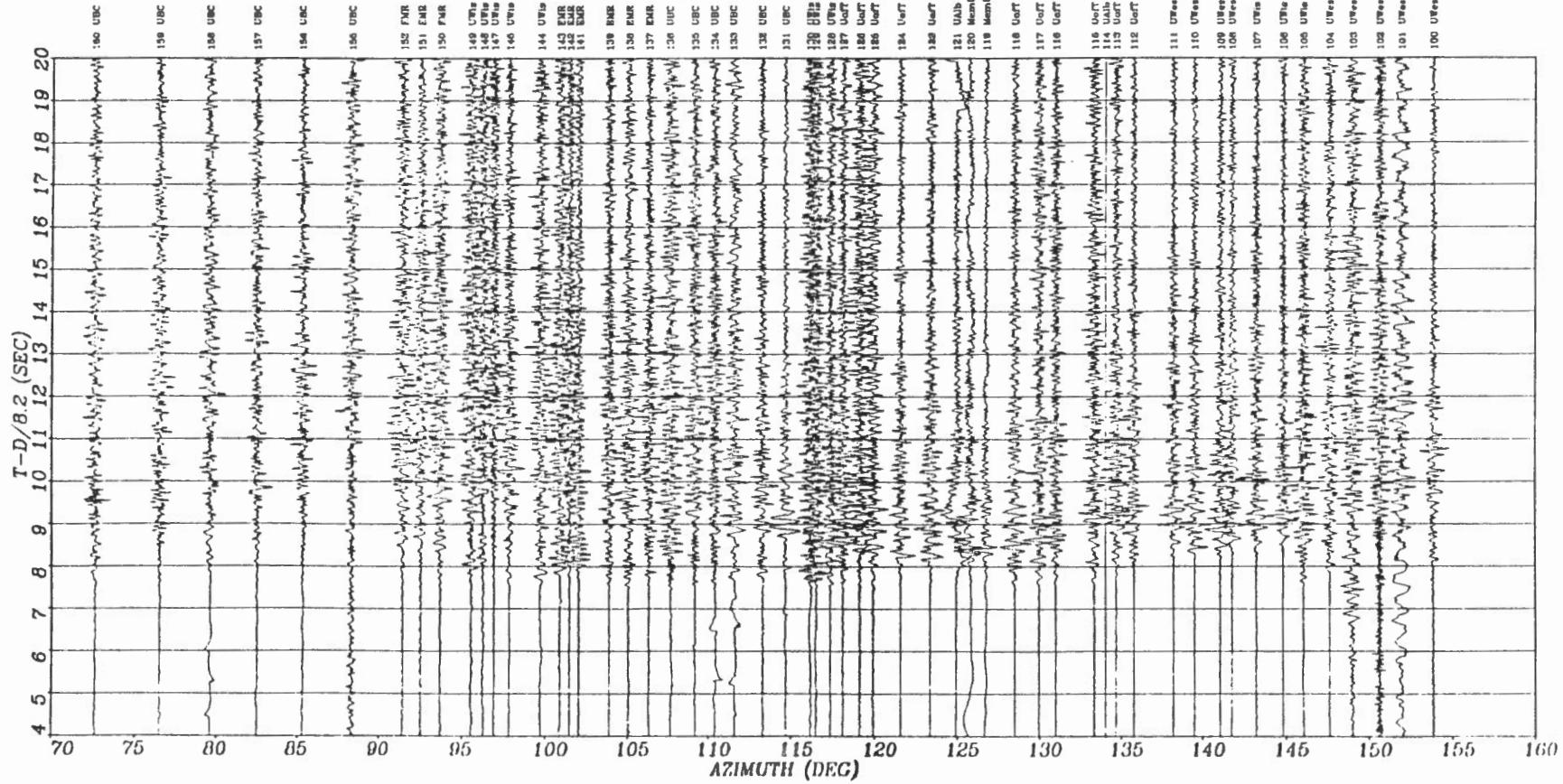
1984 KSZ REFRACTION DATA - SECTION 4-J, Shot 17



1984 KSZ REFRACTION DATA - SECTION 1-B Shot 18



1984 KSZ REFRACTION DATA - SECTION 1-F, Shot 19



1984 KSZ REFRACTION DATA - SECTION 1-H, Shot 20

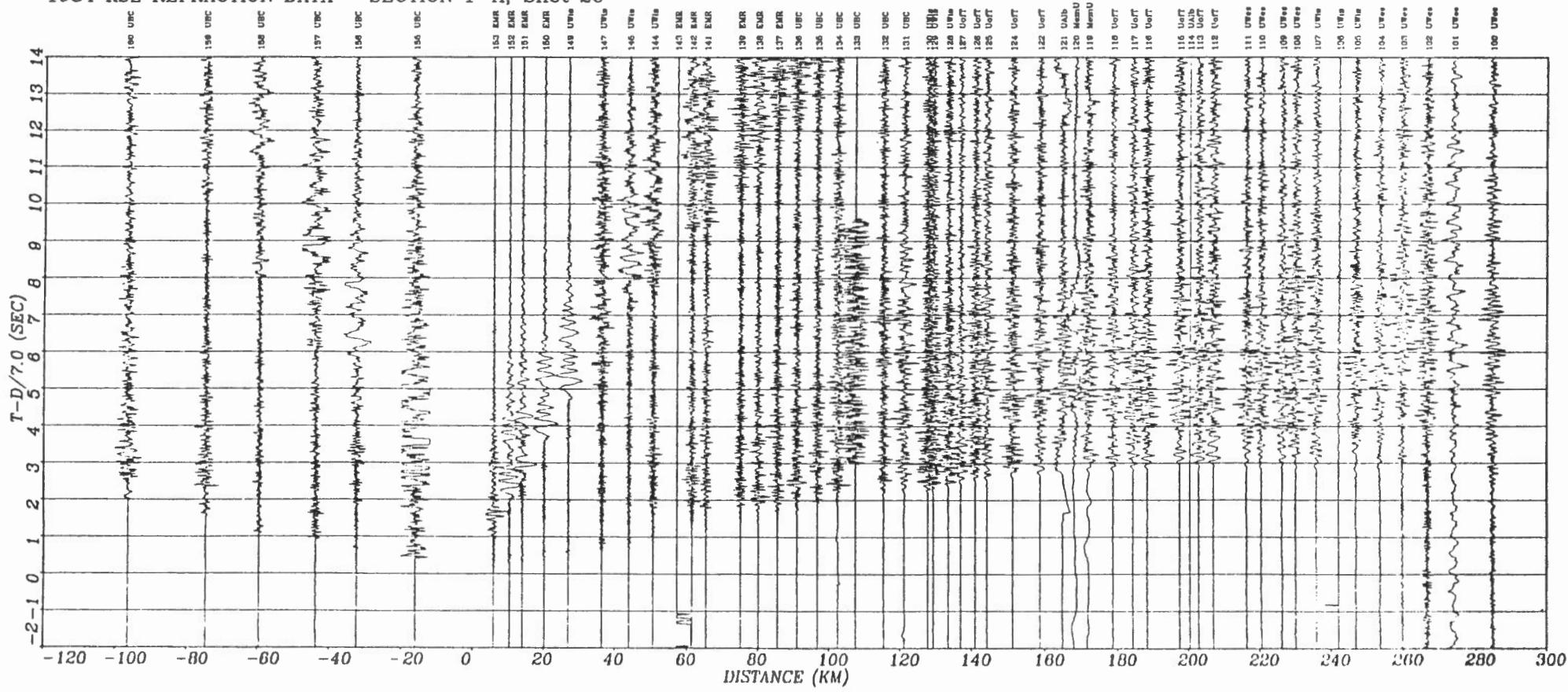


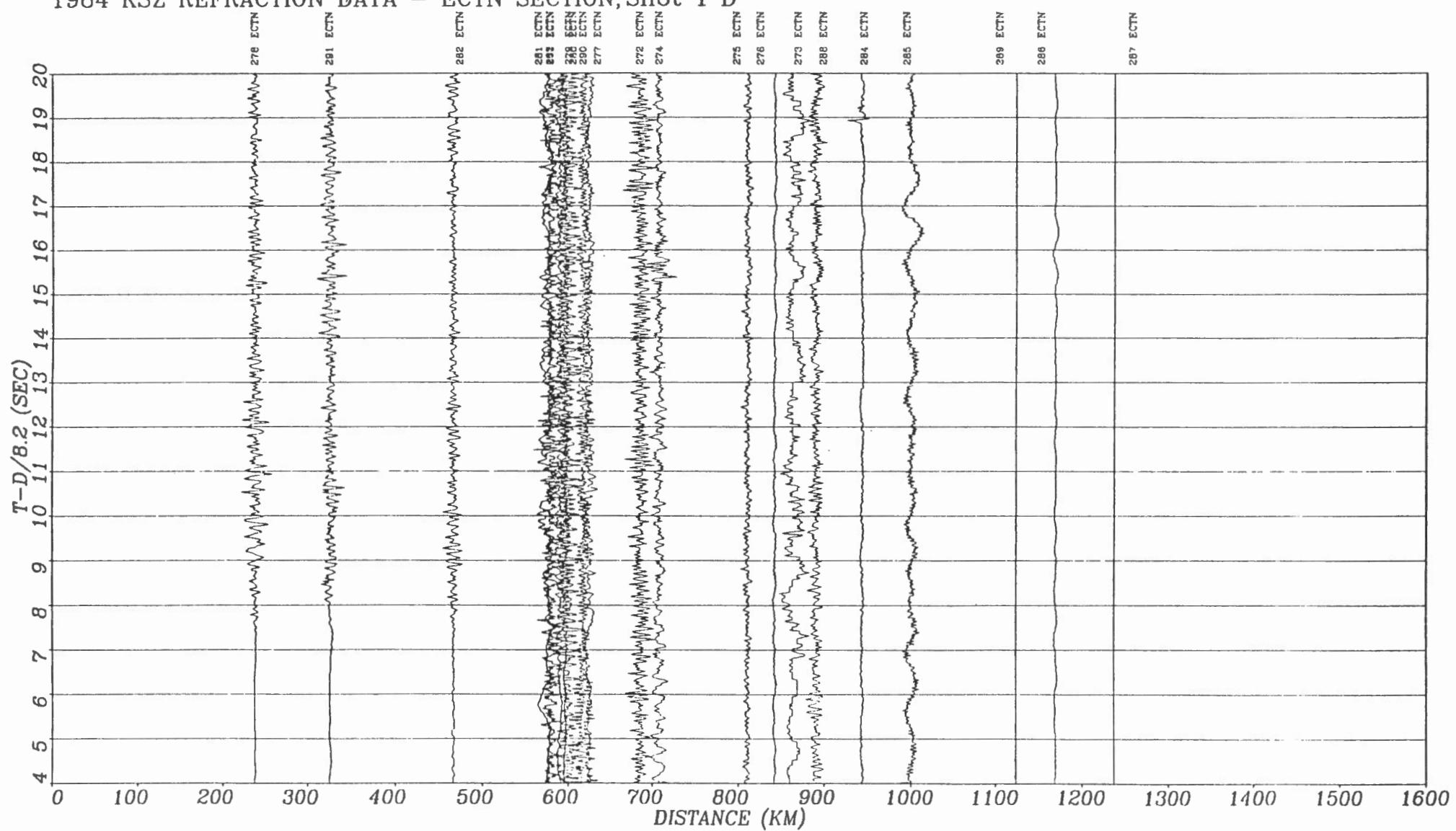
Figure 8 : ECTN "sections" (19 figures for shots 1-8, 10-20)

The following "sections" are plots of East Canada Telemetered Network recordings of shots 1-20. It should be noted that the Stations do not fall on a line! (See Figure 5).

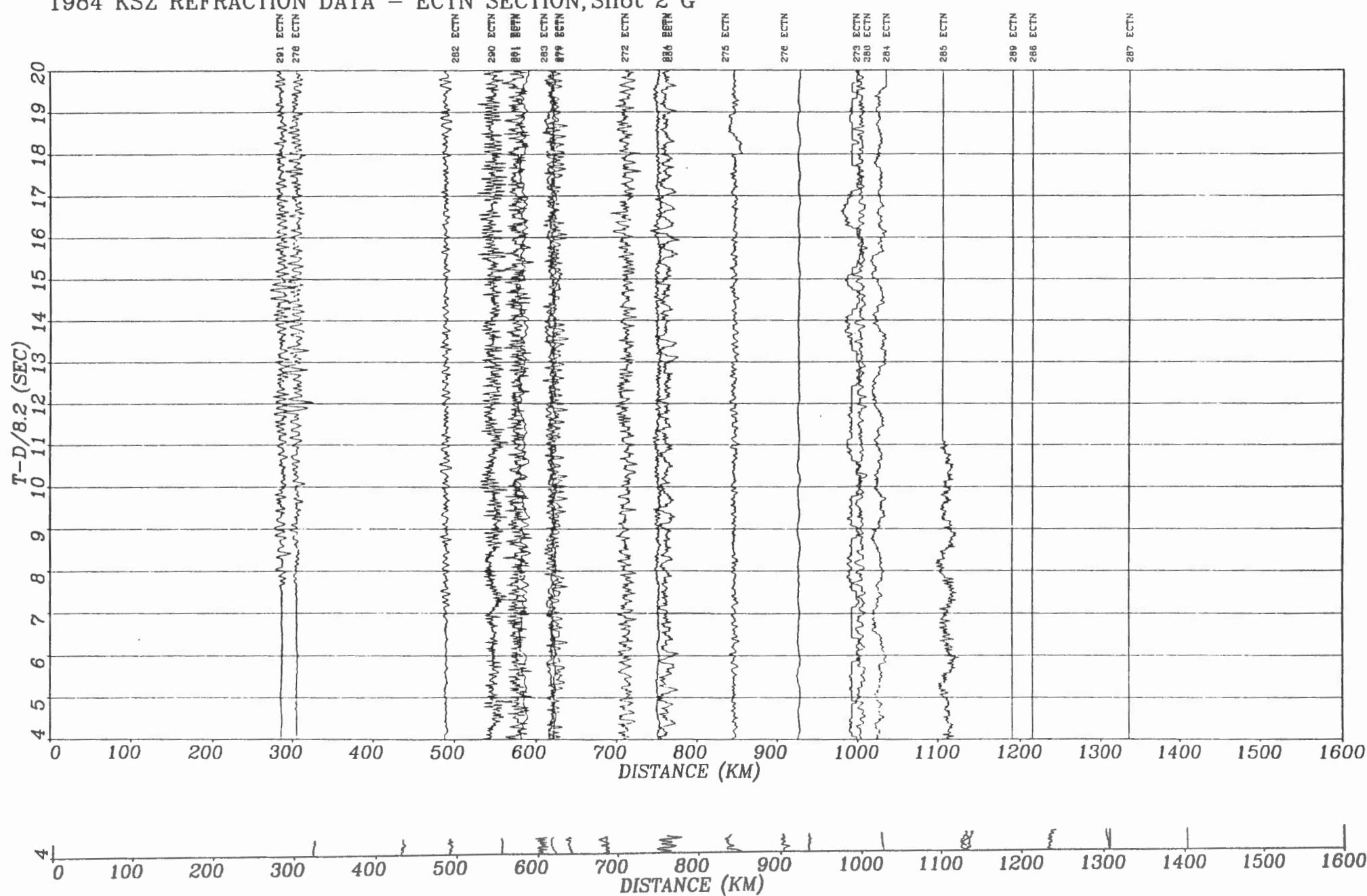
The reducing velocity used is 8.2km/sec.

Shot 9 was not recorded by the ECTN network, so this section is not included.

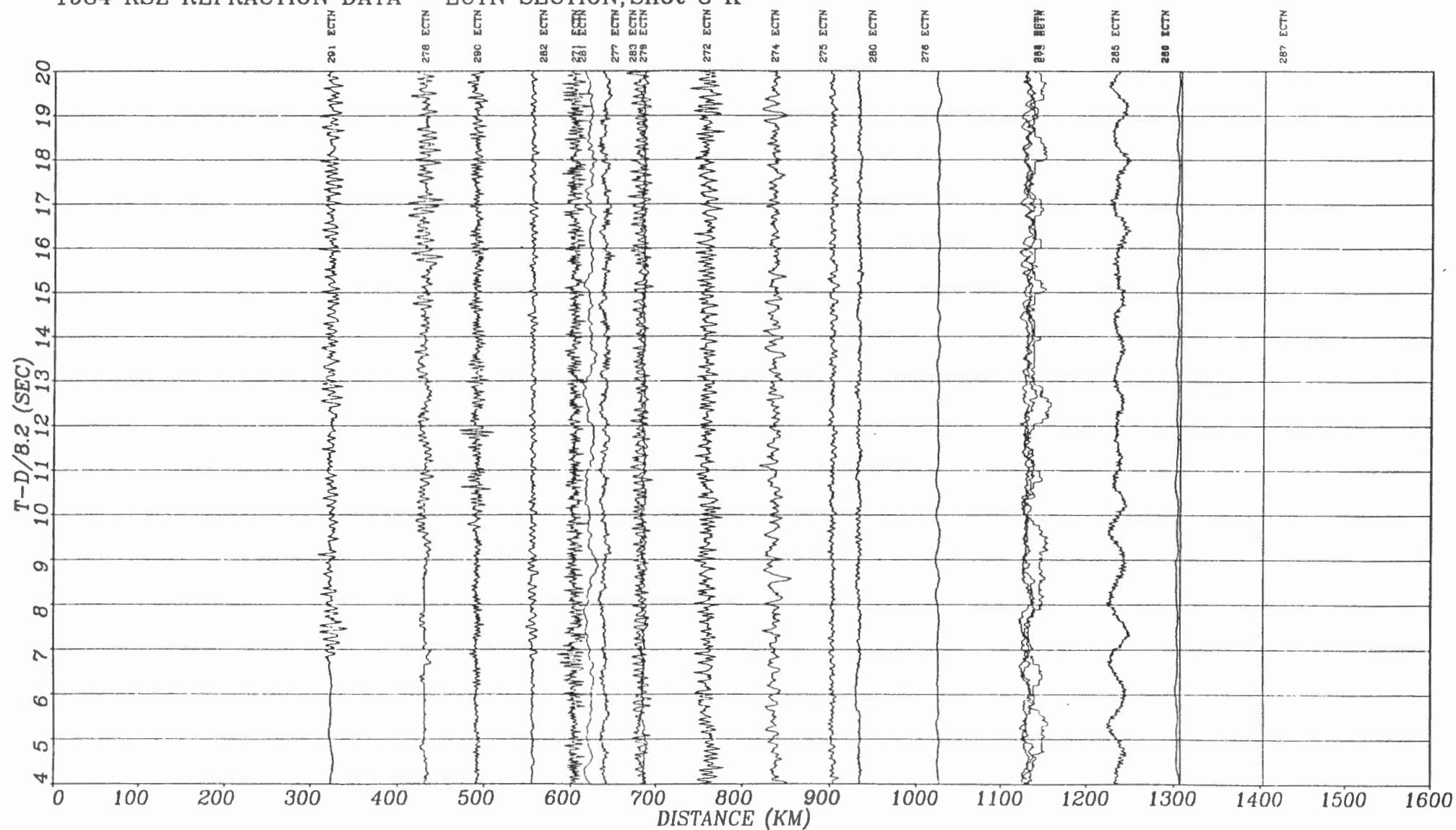
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 1 D



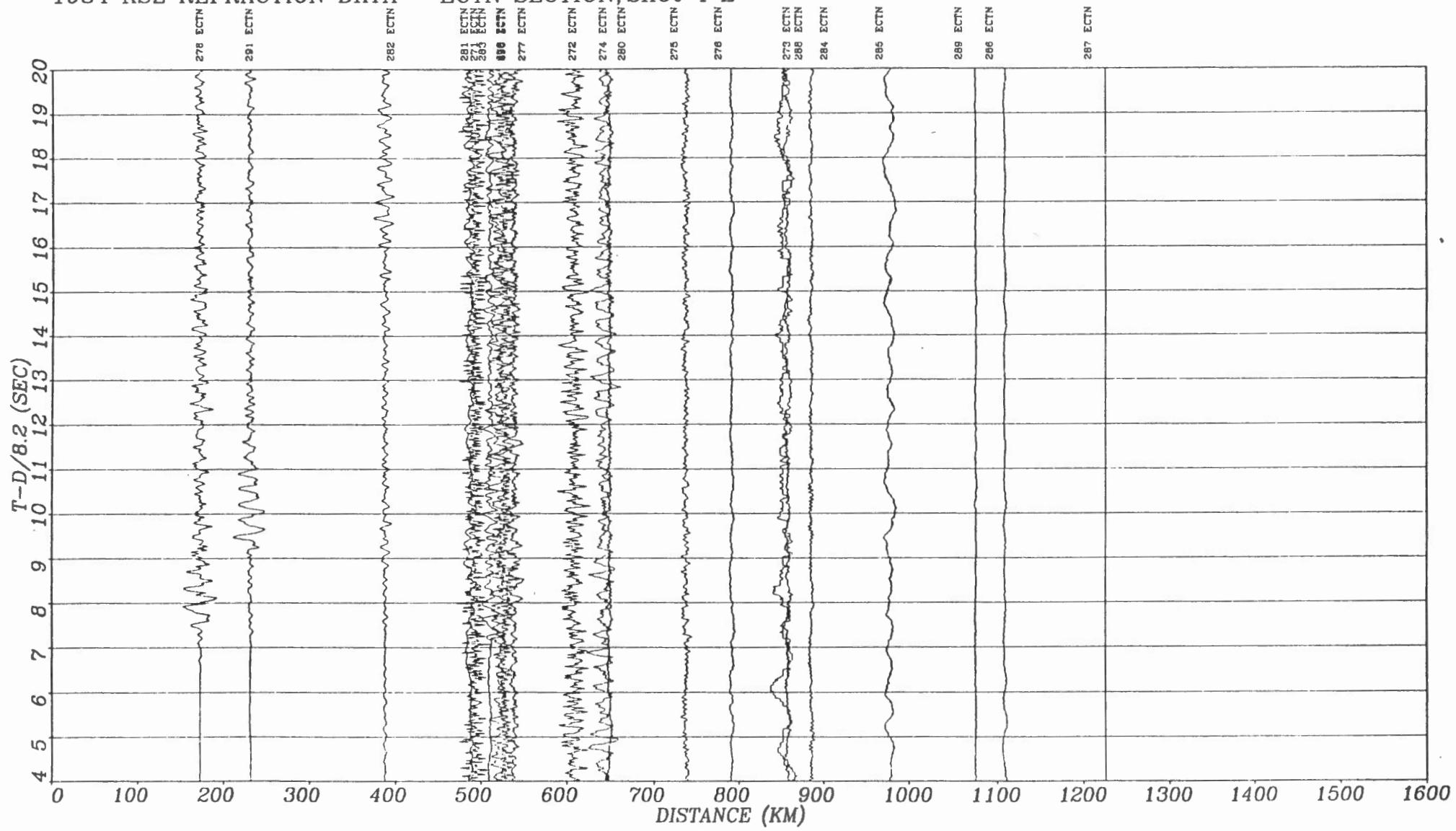
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 2 G



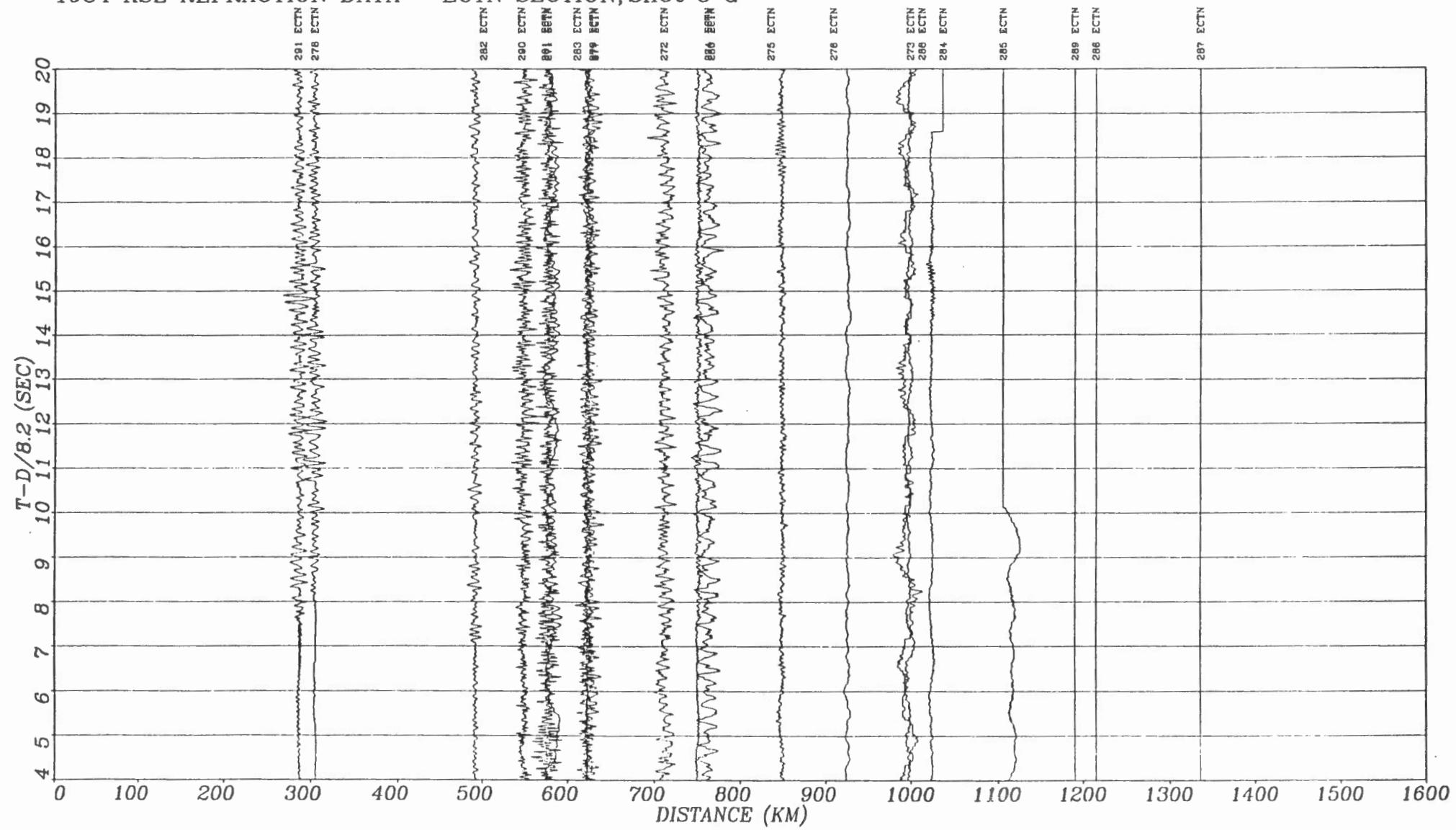
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 3 K



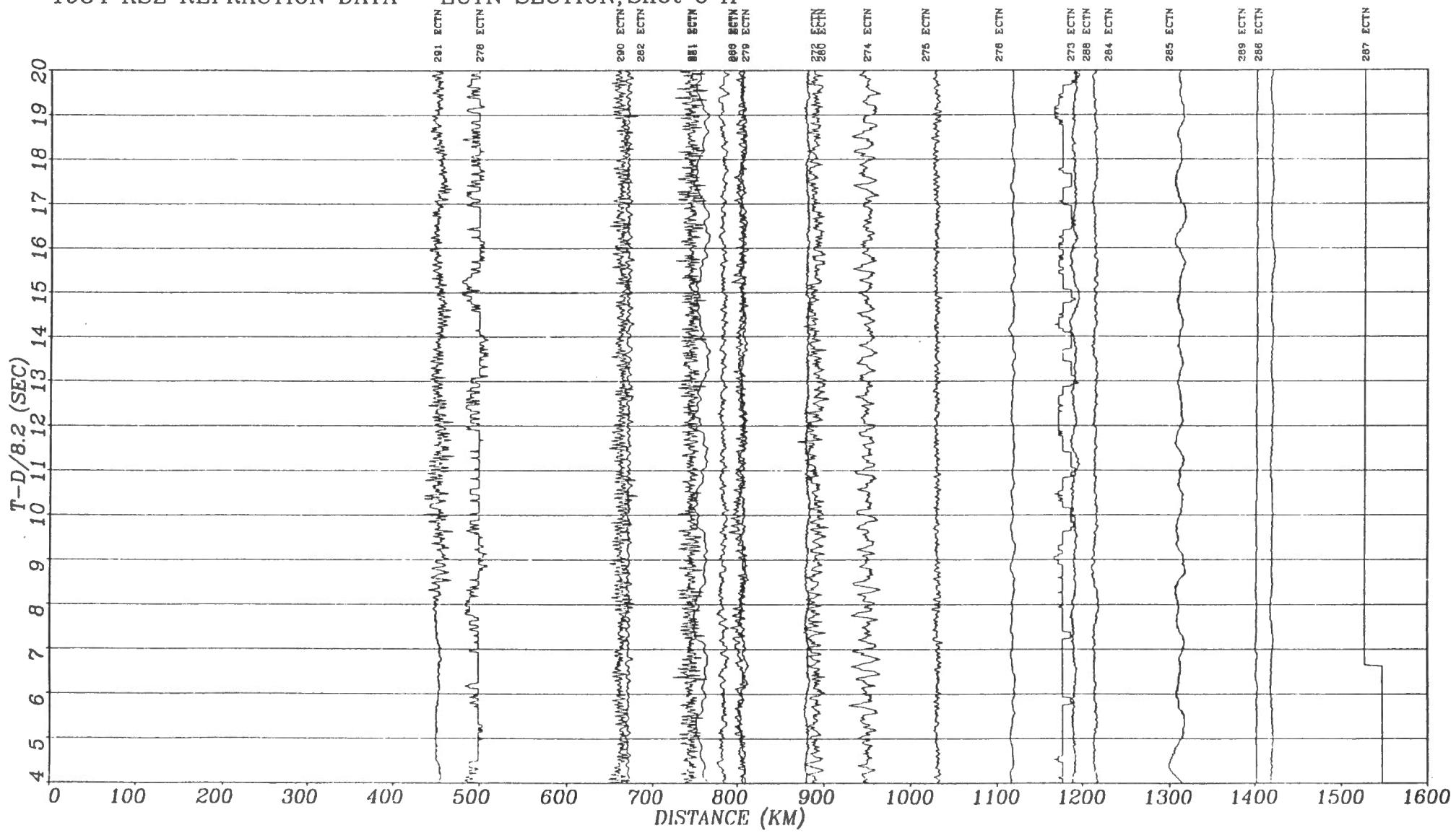
1984 KSZ REFRACTION DATA - ECTN SECTION Shot 4 E



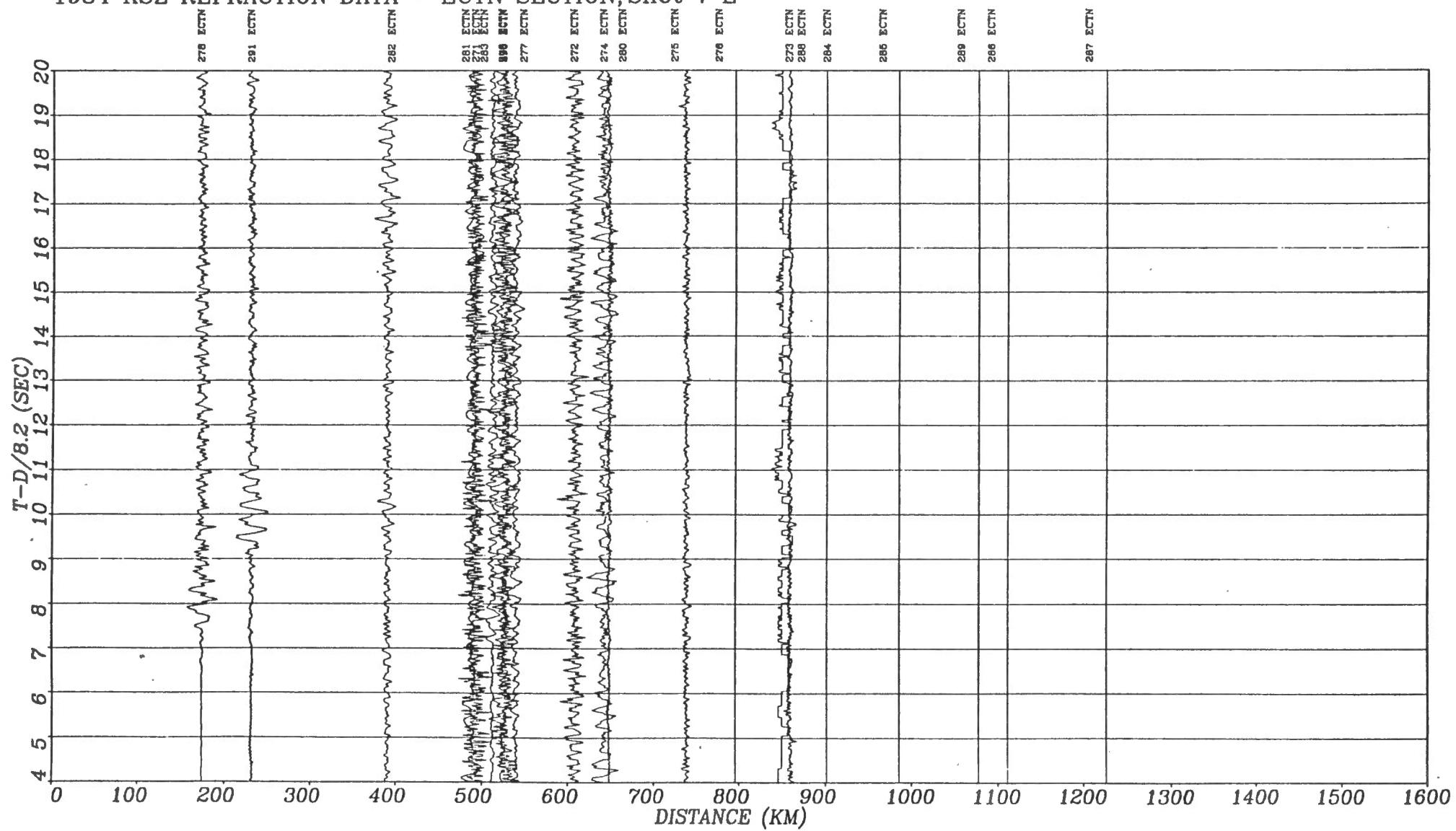
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 5 G



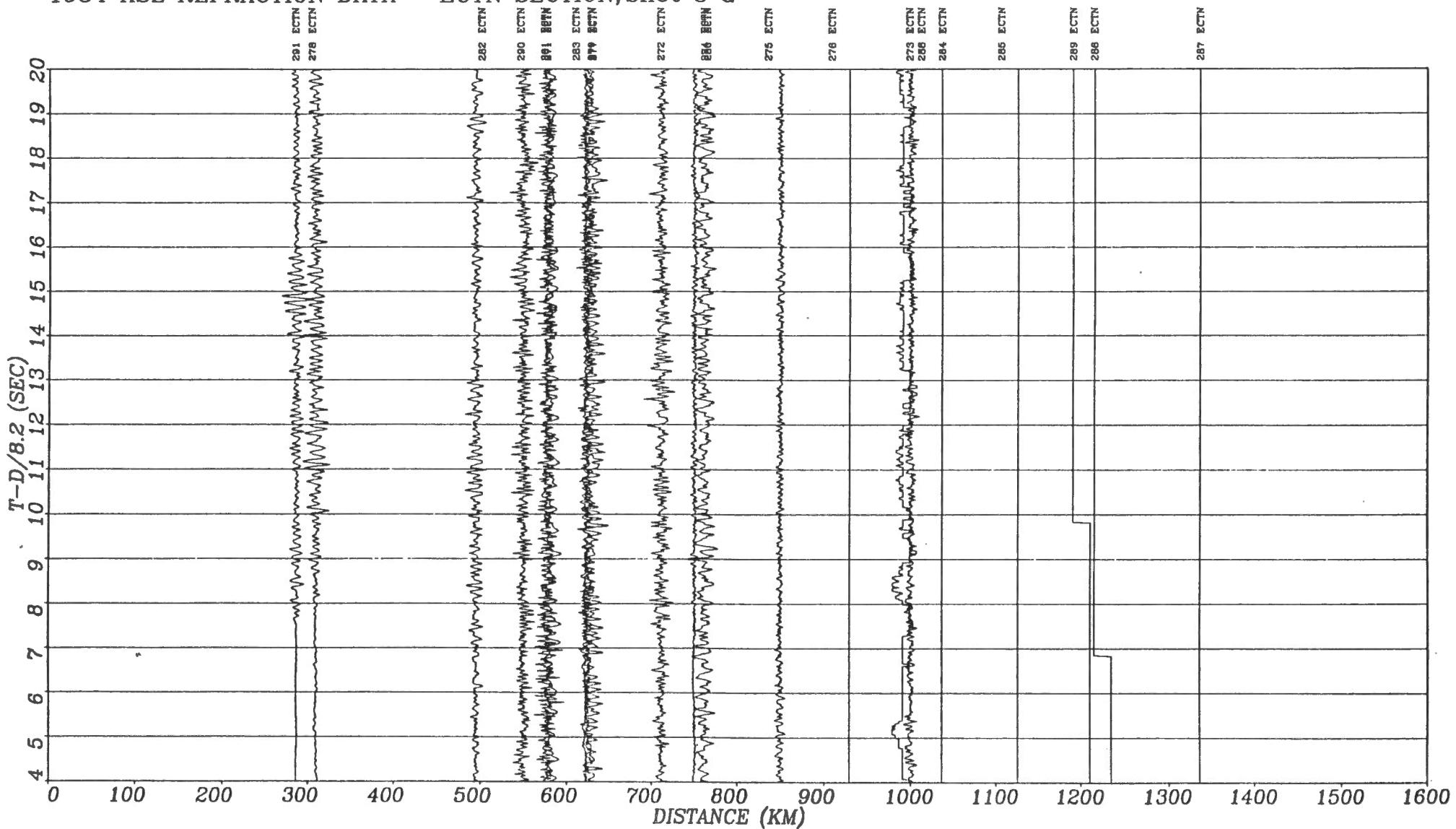
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 6 H



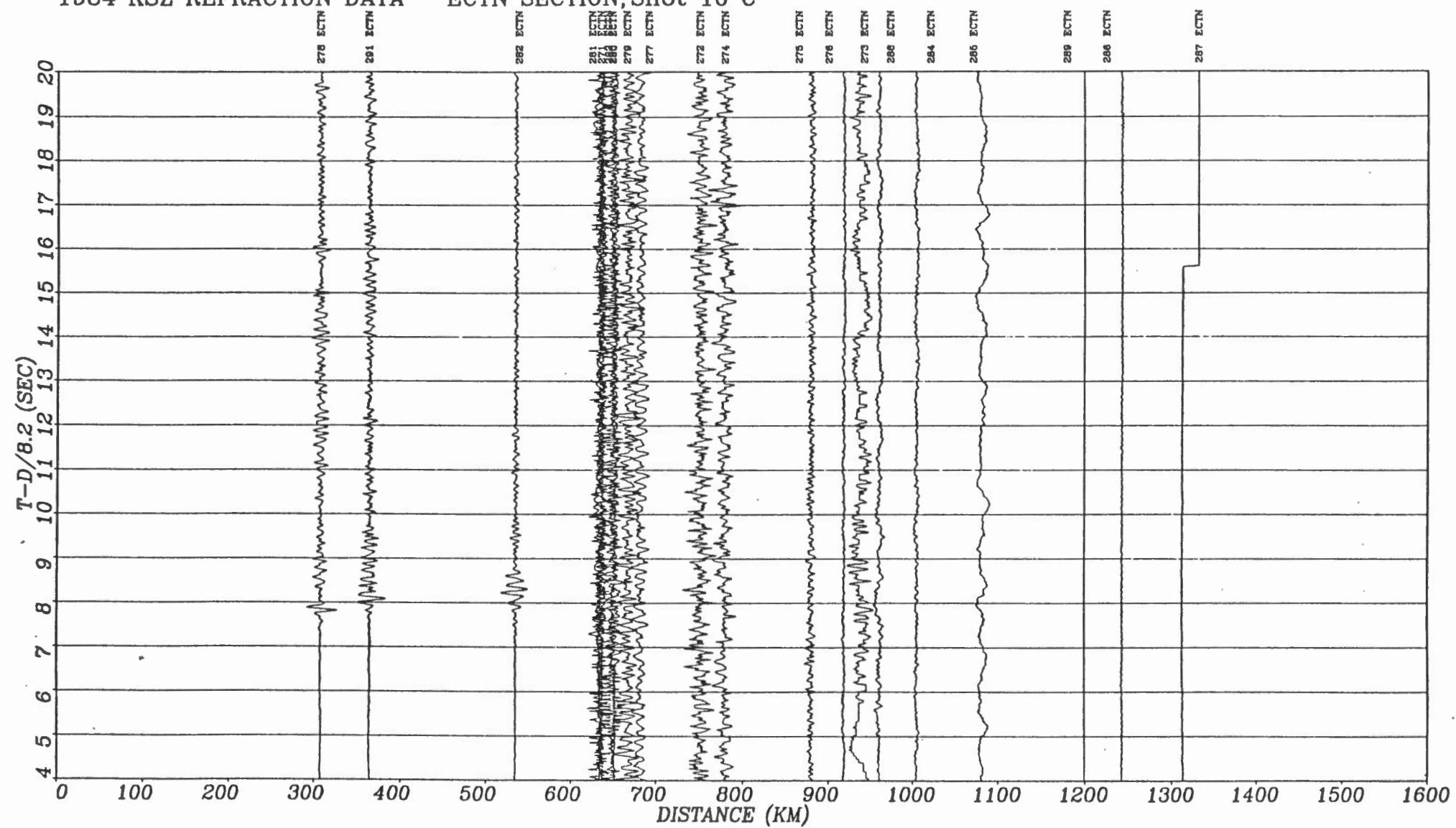
1984 KSZ REFRACTION DATA - ECTN SECTION Shot 7 E



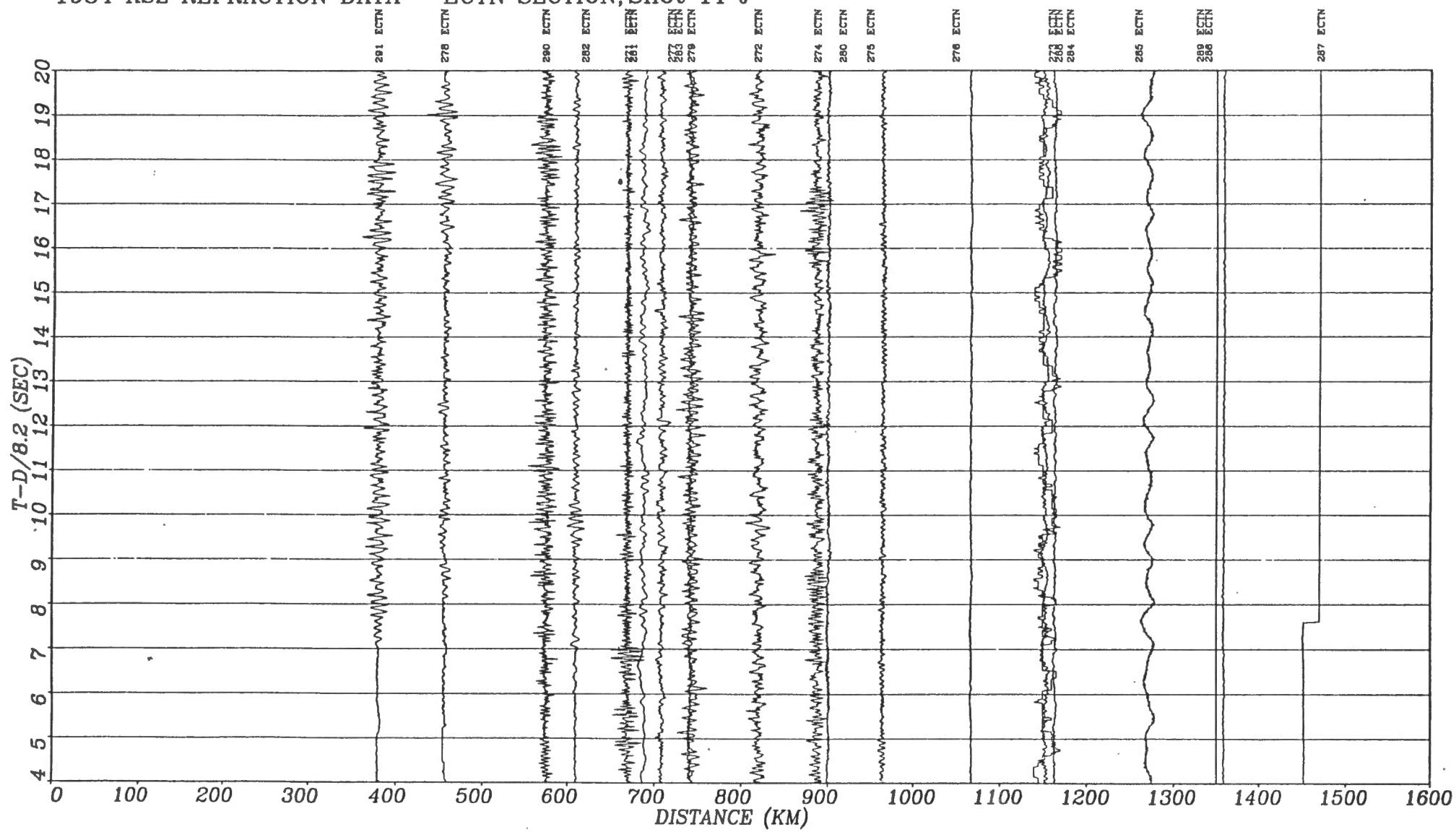
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 8 G



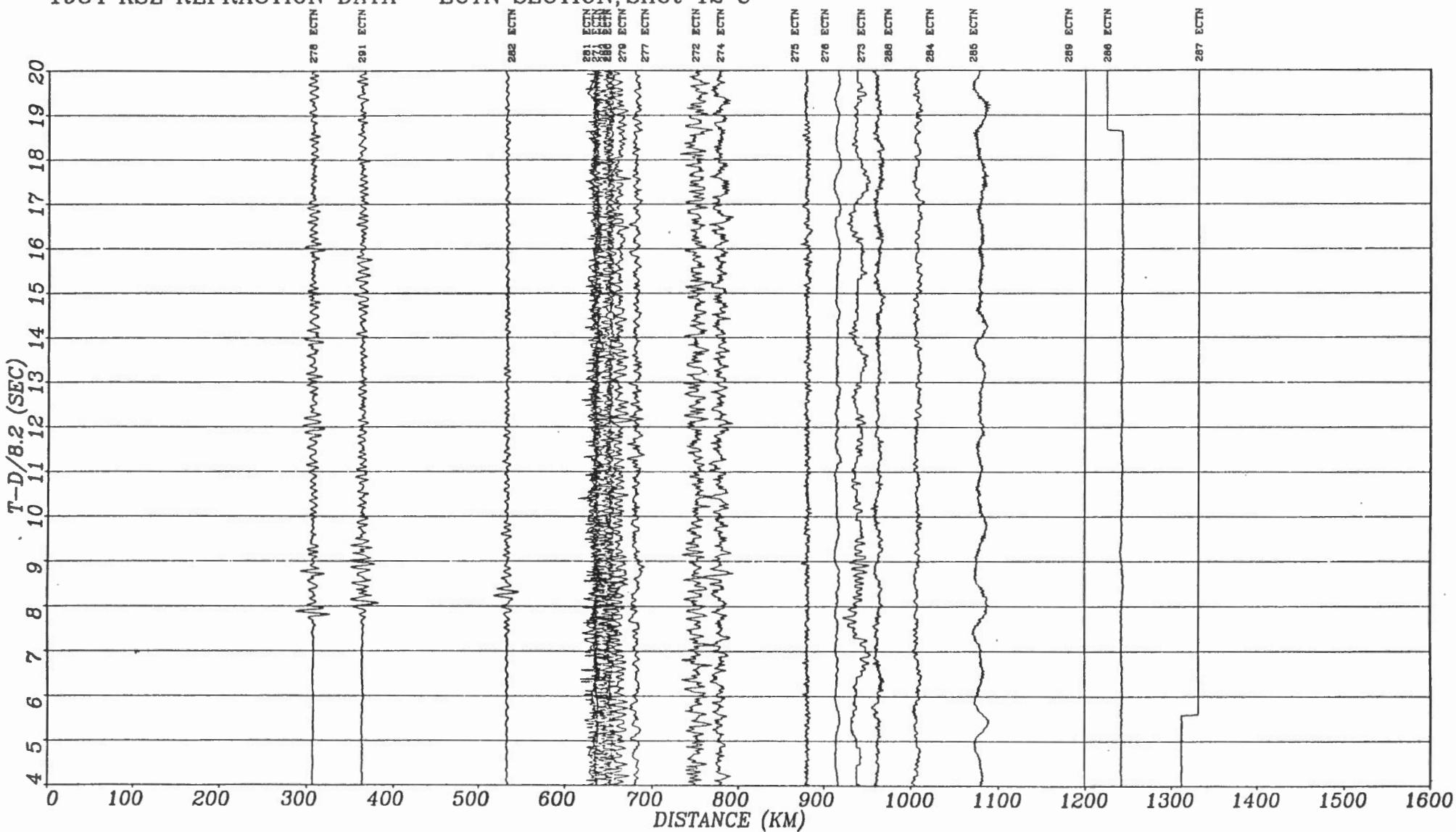
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 10 C



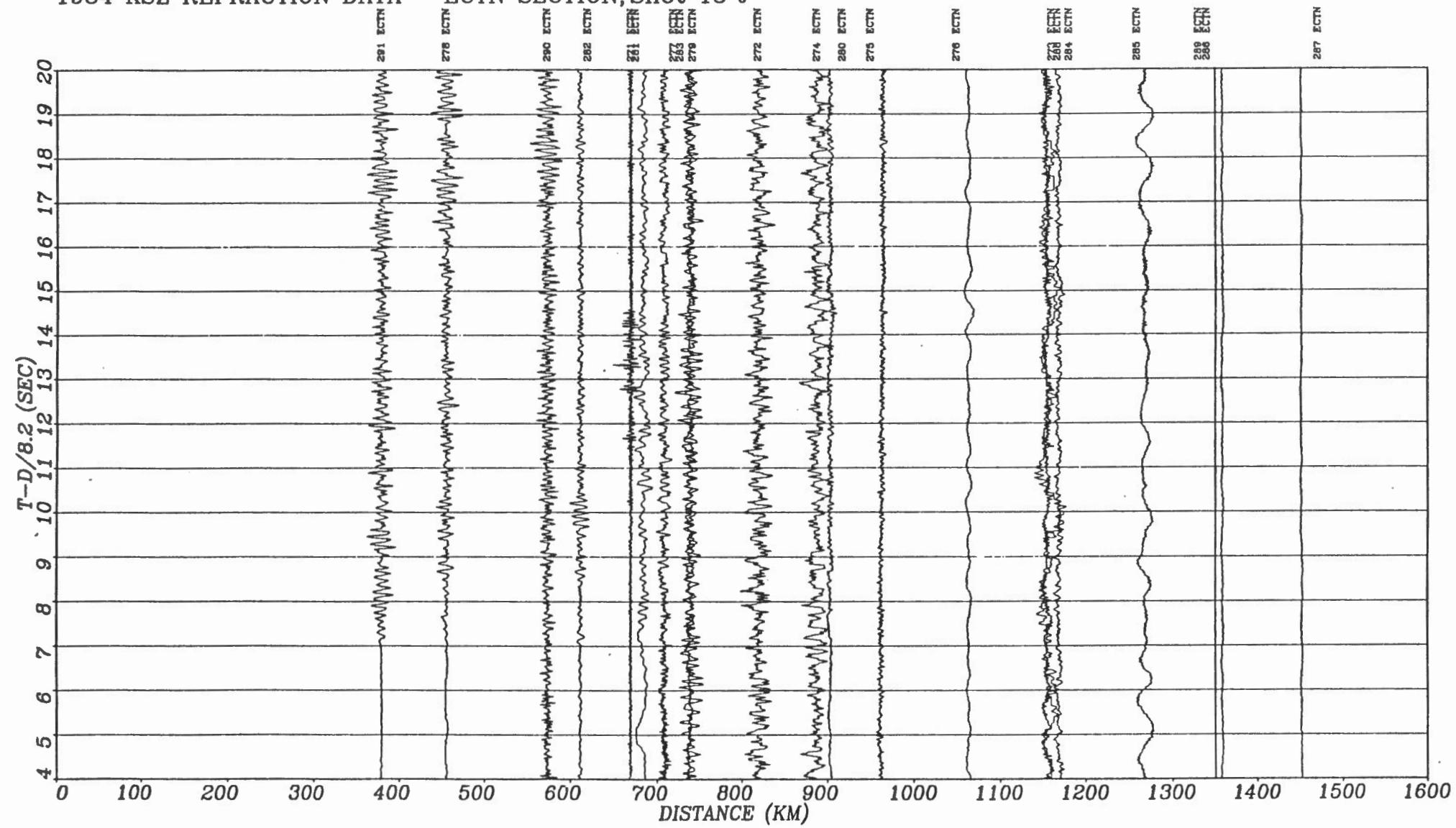
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 11 J



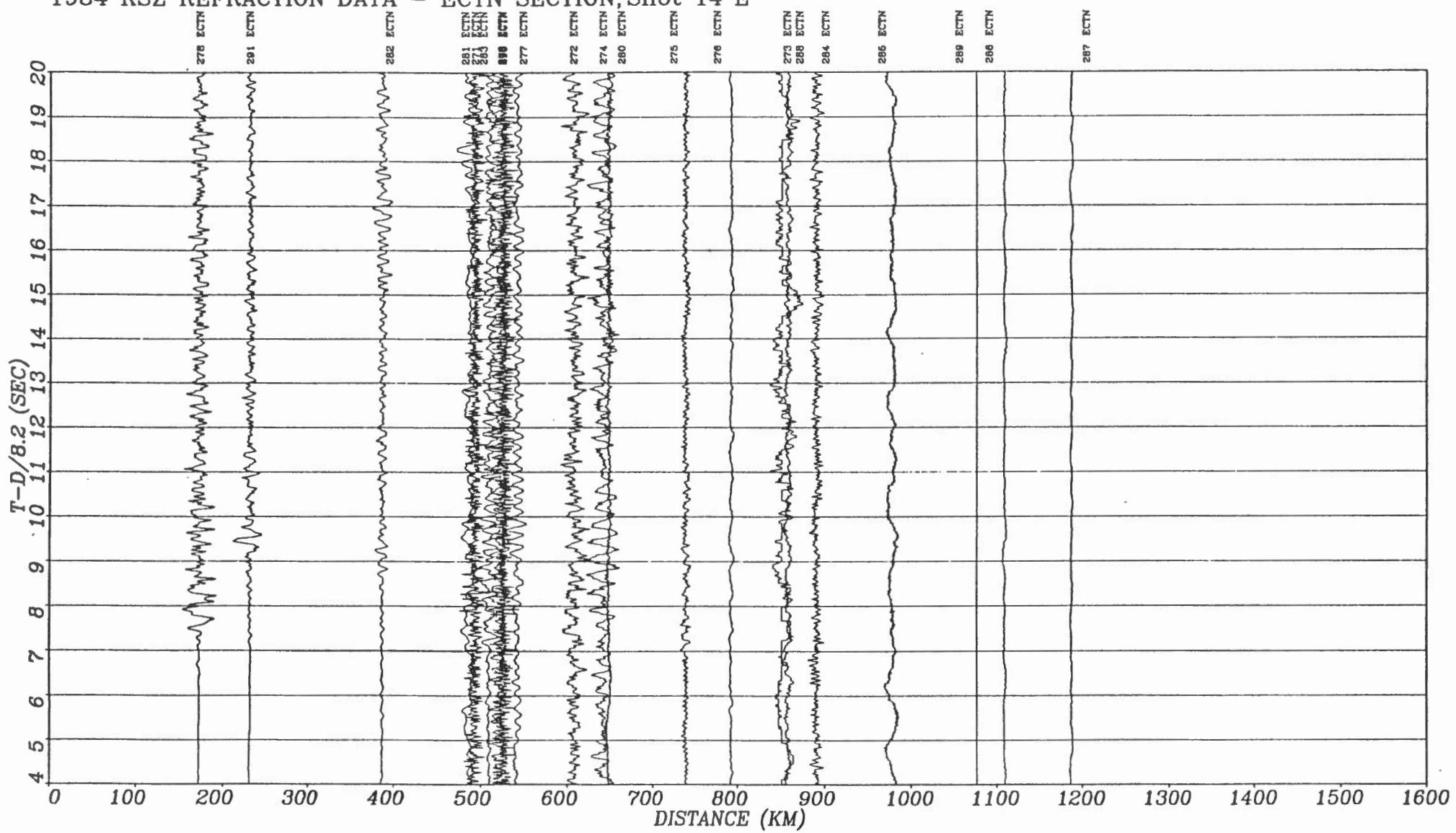
1984 KSZ REFRACTION DATA - ECTN SECTION Shot 12 C



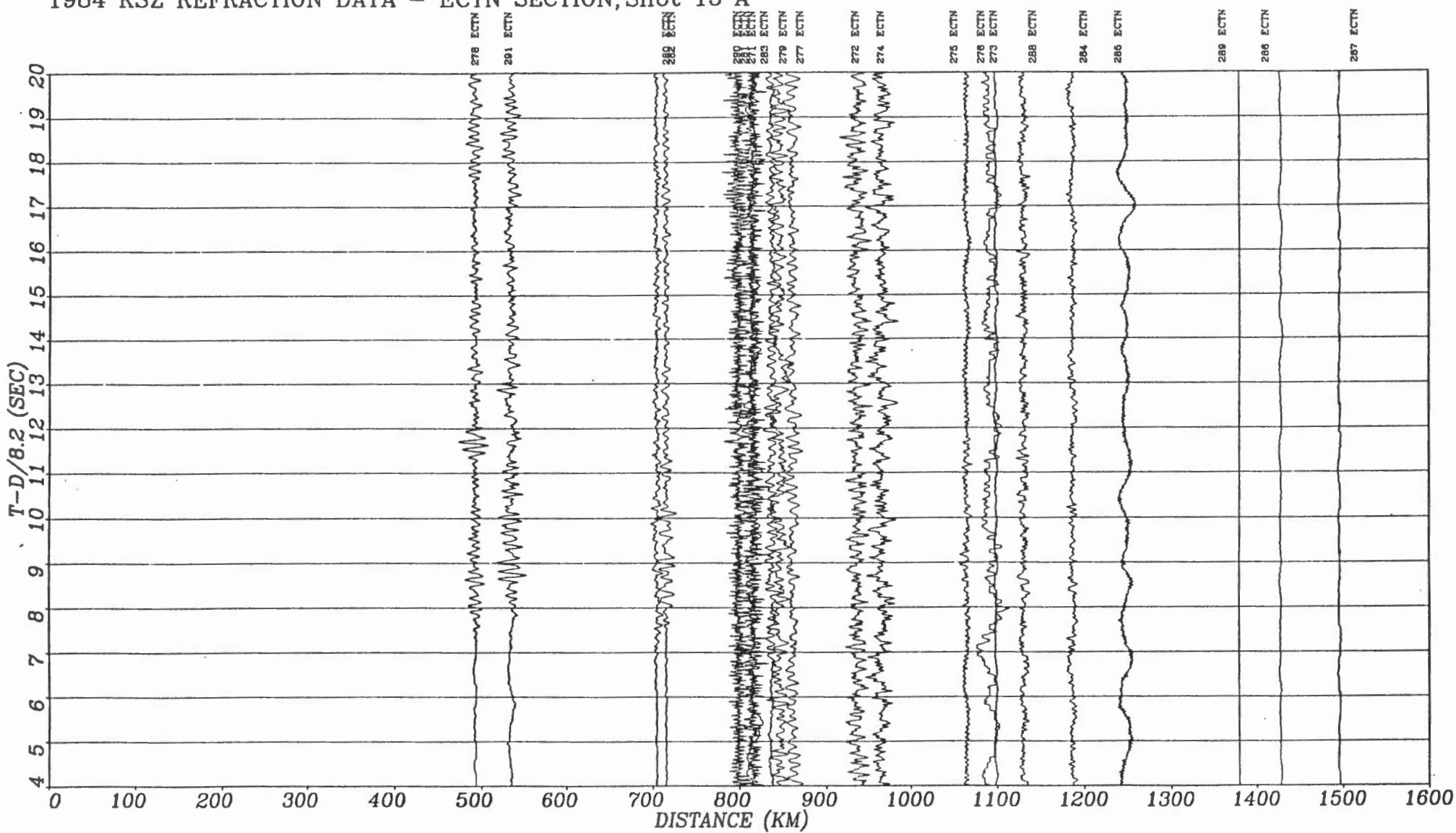
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 13 J



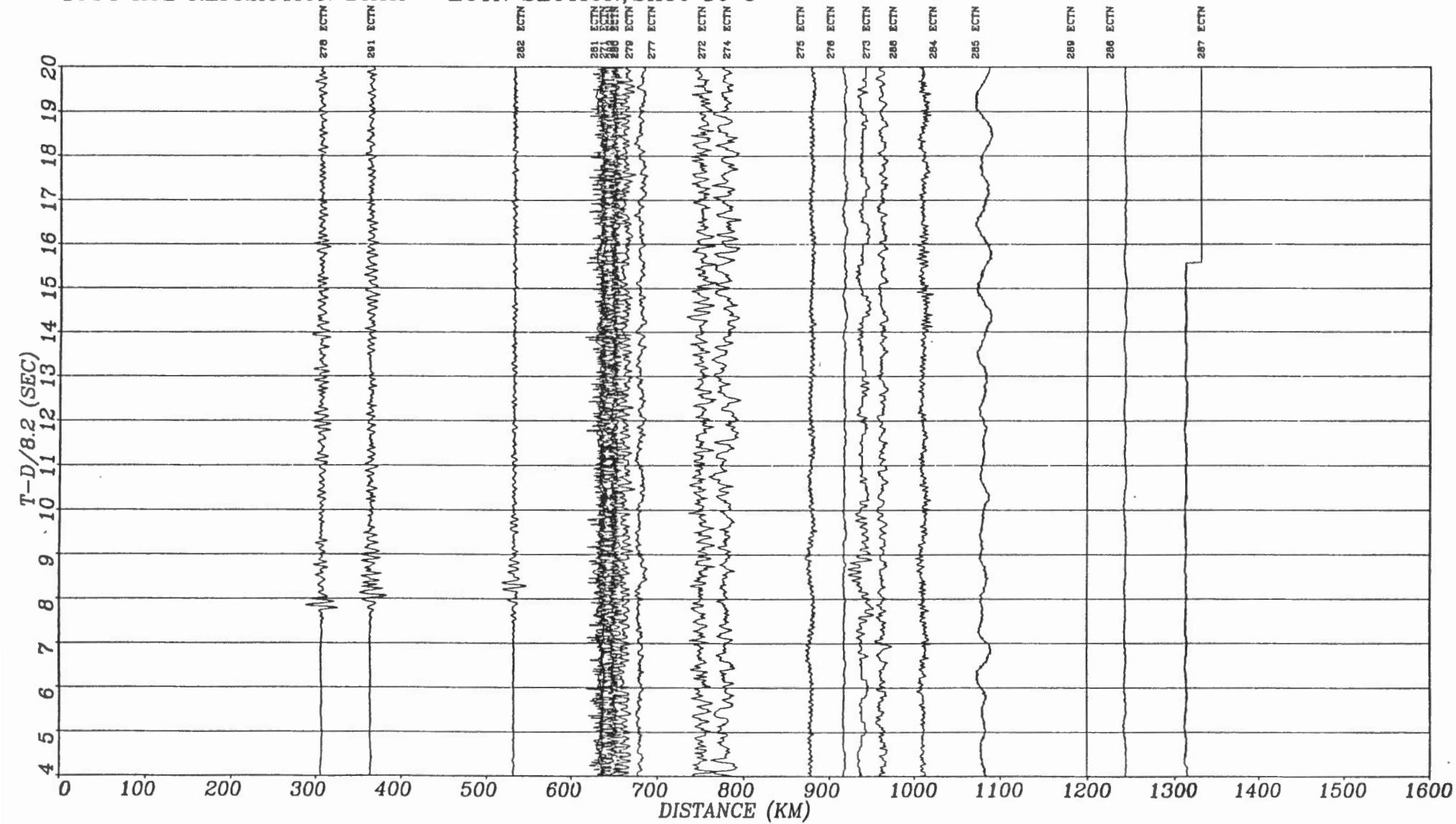
1984 KSZ REFRACTION DATA - ECTN SECTION Shot 14 E



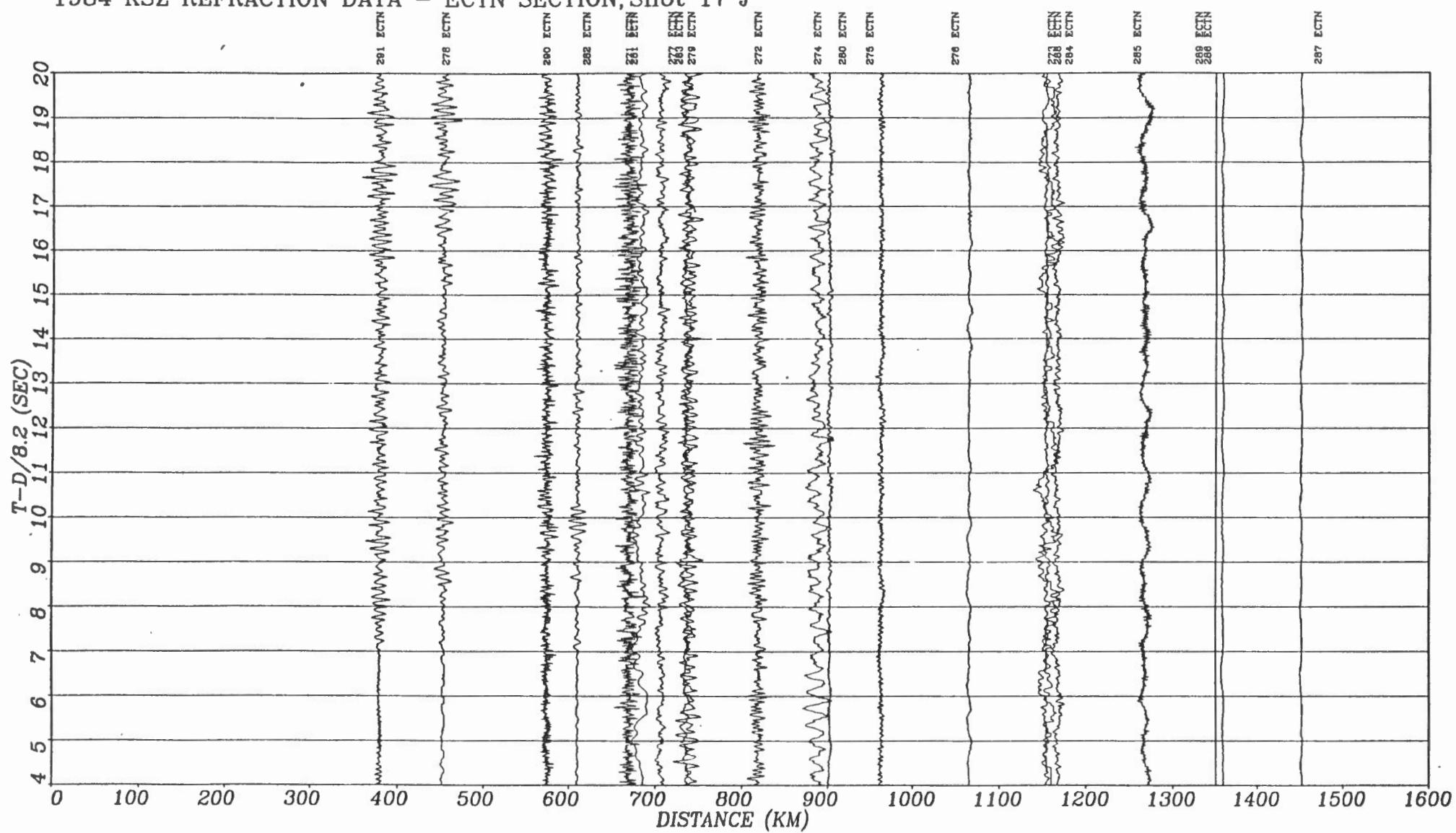
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 15 A



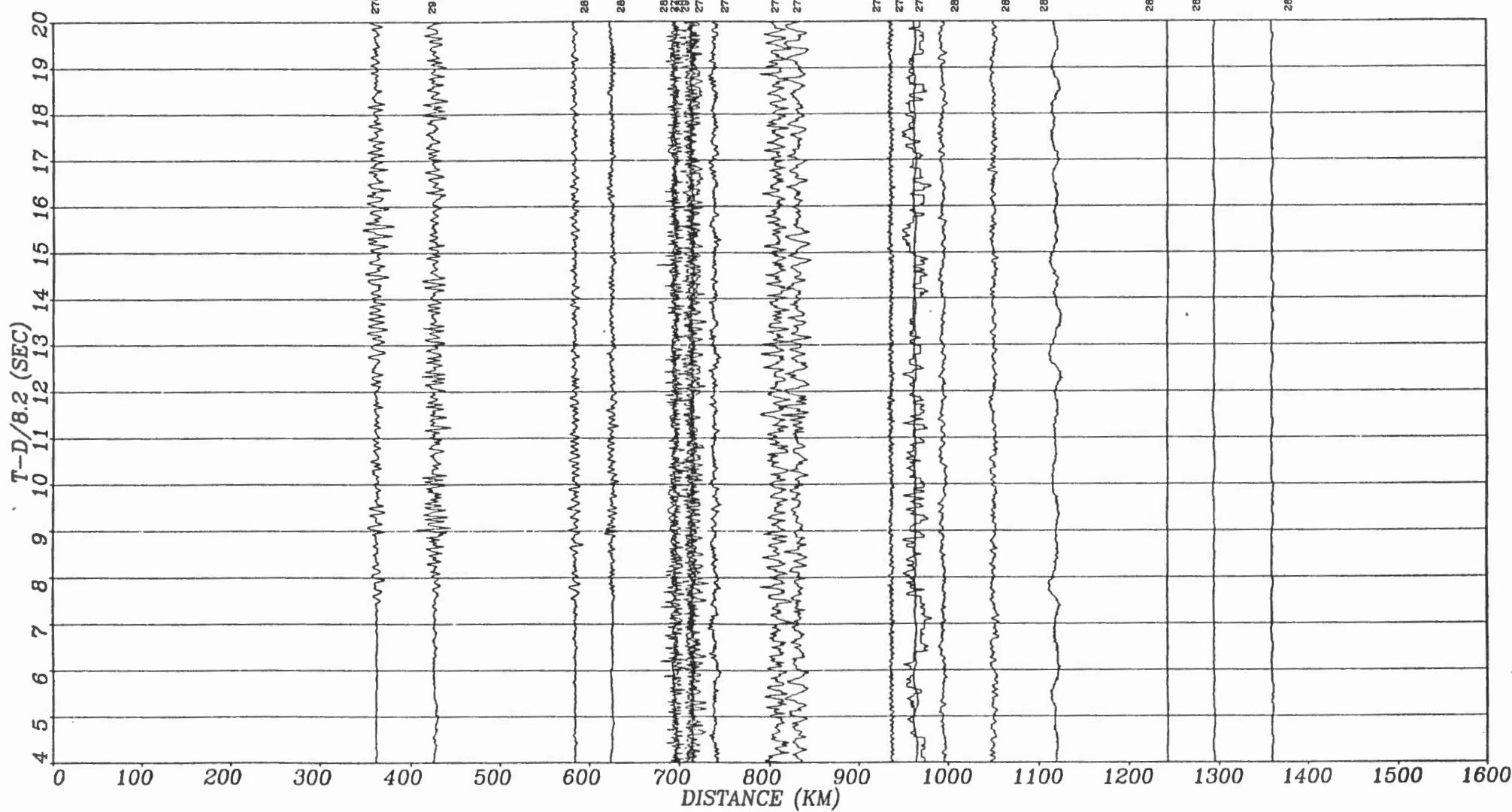
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 16 C



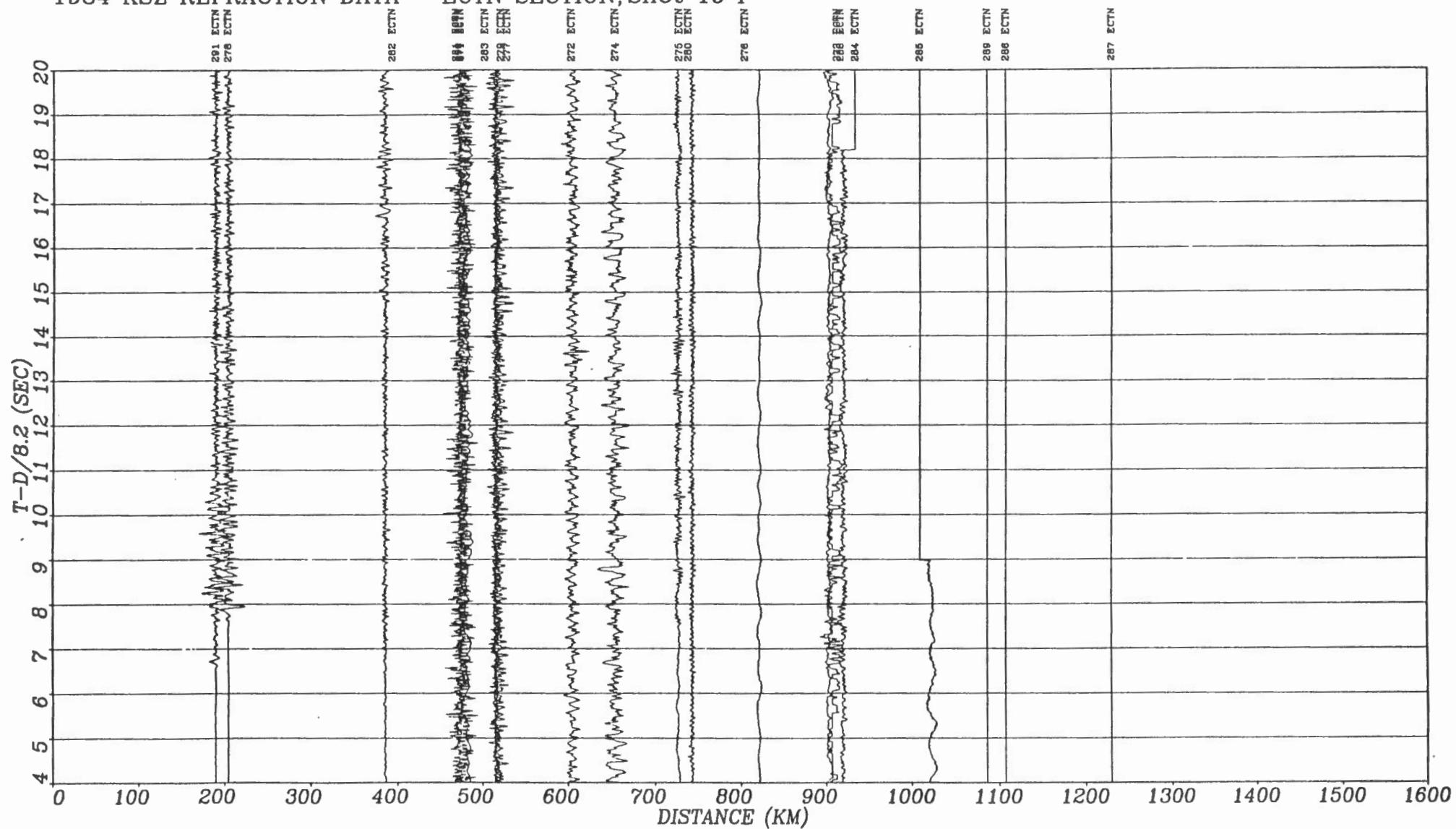
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 17 J



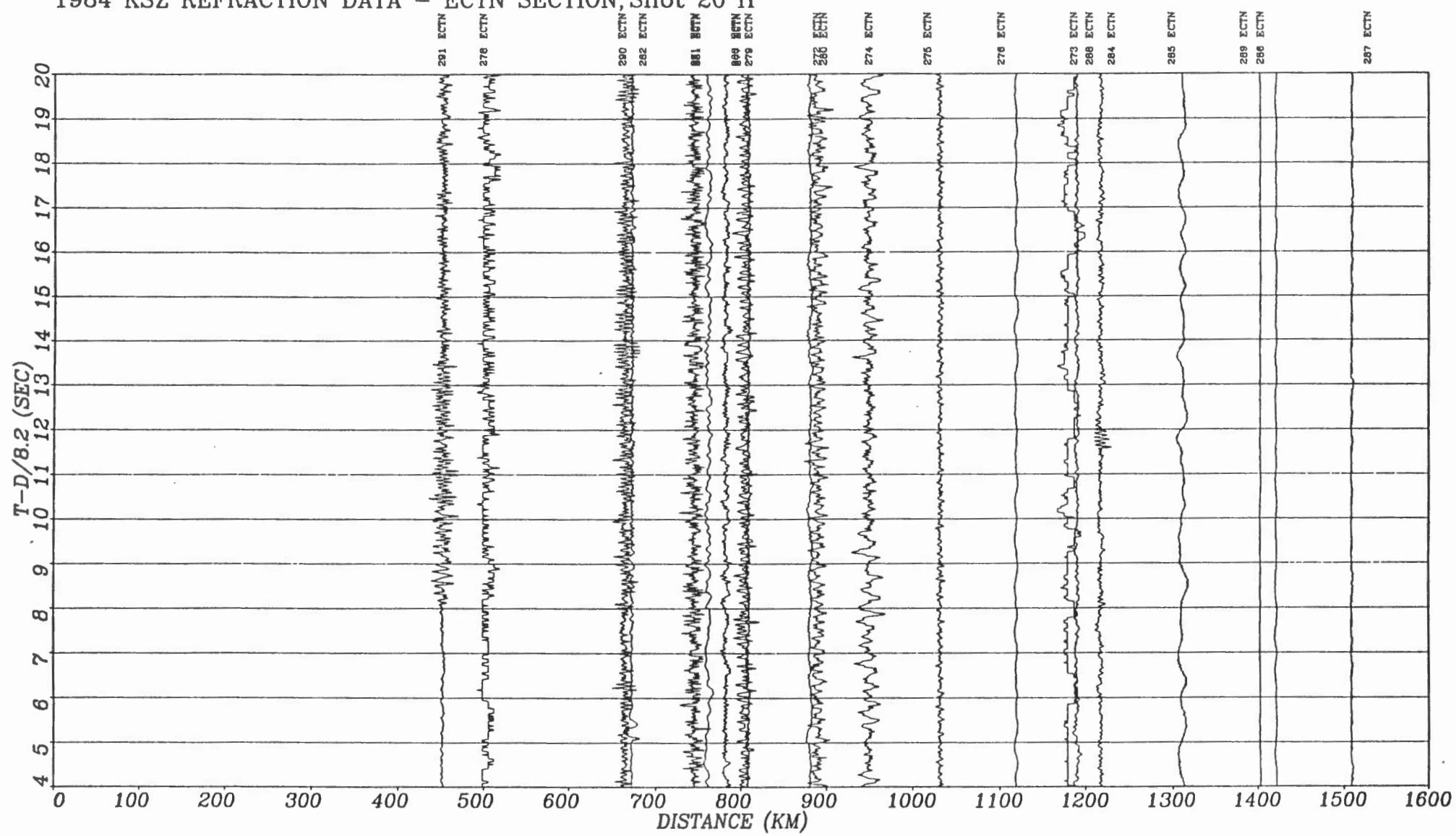
1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 18 A



1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 19 F



1984 KSZ REFRACTION DATA - ECTN SECTION, Shot 20 H



APPENDIX 1

DATA STORAGE FORMAT FOR KSZ SEISMIC REFRACTION DATA

SEISPLT is a program written at the University of Toronto by D. White, which is currently being improved to assist implementation. An updated version is expected to be available in fall 1985. These Appendices are intended to be a guide to the nature of SEISPLT, and not full documentation for its implementation. Copies of SEISPLT.FOR and the required data DECLARATION, READ and WRITE statements are not presented here but are available on request.

1.0 INTRODUCTION

This Appendix describes a format for storage of seismic refraction data. It is suitable for large data sets, with specific parameters stored for each shot and receiver. The data values are stored as INTEGER*2 numbers (i.e. 2 bytes each), to minimize the storage space required. This format is that expected by the TRACEREAD subroutine called in the plotting program SEISPLT.

2.0 FILE FORMAT

The data files used are UNFORMATTED. To open such a file, the FORTRAN statement is:

```
OPEN(UNIT=unit number,STATUS='NEW',FORM='UNFORMATTED',
      FILE=filename)
```

Note : Non VAX/VMS system users should note that the KSZ data is in variable length segmented records.

3.0 FILE STRUCTURE

Seismic traces are grouped together according to common shot and common seismic motion component, with all of the traces for a single shot and common component stored in the same file. The first record of each file contains the 'shot header', giving a description of the shot parameters. Each successive record contains a 'receiver header' and the data values for one trace. The record length used is variable, and in the case of the KSZ data there are 7200 to 12000 bytes of data behind each receiver header.

Shot Header		Record 1
Receiver Header	SEISMIC DATA (1 trace)	Record 2
Receiver Header	SEISMIC DATA (1 trace)	Record 3
*		
*		
*		
etc.		

4.0 SHOT RECORD

The first record of each file is the shot record which contains the shot header. It stores parameters which describe the location, time, and size of the shot. Also, the last parameter ADDCO leaves room for any additional comments that might be included to describe some aspect of the shot or shooting conditions etc. The data types of each of the parameters is also listed.

1. EXT: Experiment Title (CHARACTER*80)
2. SHNU: Shot number (INTEGER*4)
3. SHNA: Shot name (CHARACTER*12)
4. SHLA: Shot latitude in degrees (REAL*4)
5. DLA: Latitude direction (N or S) (CHARACTER*1)
6. SHLO: Shot longitude in degrees (REAL*4)
7. DLO: Longitude direction (E or W) (CHARACTER*1)
8. LNA: Line name (CHARACTER*10)
9. SHS: Shot time second (REAL*4)
10. SHM: Shot time minute (INTEGER*4)
11. SHH: Shot time hour (INTEGER*4)
12. SDY: Shot time day (INTEGER*4)
13. SMN: Shot time month (INTEGER*4)
14. SYR: Shot time year (INTEGER*4)
15. SHE: Shot elevation in km (REAL*4)
16. SHD: Shot depth in km (REAL*4)
17. SSZ: Shot size in kg (REAL*4)
18. RN: Number of recordings of the given seismic component for this shot (INTEGER*4)
19. ADDCO: Additional comments (CHARACTER*400)

Total number of bytes: 556 (or 139 longwords).

5.0 RECEIVER RECORDS

Each receiver record contains a receiver header followed by data values.

5.1 Receiver Header

Parameters which describe the receiver, its location, and the recorded data are included in the receiver header. The following list describes these parameters including the data types.

1. RNU: Station number (INTEGER*4)
2. SNU: Shot number (INTEGER*4)
3. REL: Receiver elevation in km (REAL*4)
4. RLA: Receiver latitude in degrees (REAL*4)
5. RLAD: Receiver latitude direction (N or S) (CHARACTER*1)
6. RLO: Receiver longitude in degrees (REAL*4)
7. RLOD: Receiver longitude direction (E or W) (CHARACTER*1)
8. LNAM: Line name (CHARACTER*10)
9. NPTS: Number of data points in trace (INTEGER*4)
10. SR: Sampling rate for data (REAL*4)
11. BGS: Start second of data (REAL*4)
12. BGM: Start minute of data (INTEGER*4)
13. BGH: Start hour of data (INTEGER*4)
14. DST: Shot to receiver distance in km (REAL*4)
15. AZM: Shot to receiver azimuth in degrees (REAL*4)
16. GN: Receiver voltage sensitivity (uV/unit of REAL*4 recorded amplitude) (REAL*4)
17. CF: Conversion factor used to convert real data values to integer values (i.e. divide integer values by CF to get real values.) (REAL*4)

18. SOR: Seismometer orientation (R(azim), T, or Z where R=radial, T=total, Z=vertical. If the seismometer is set to record the radial seismic motion component, then the azimuthal orientation is included, ex. R270). (CHARACTER*10)
19. STY: Seismometer type (CHARACTER*10)
20. SNF: Seismometer natural frequency (REAL*4)
21. VS: Velocity sensitivity of seismometer in passband (V/m/s) (REAL*4)
22. RTY: Recorder type (CHARACTER*25)
23. ADCOR: Additional comments (CHARACTER*240)

Total number of bytes: 368 (92 longwords)

5.2 Seismic Data

The seismic data follow the receiver header in the receiver record. The values are stored as INTEGER*2 numbers, and must be divided by the conversion factor CF to obtain the real data values. In the case of the KSZ data CF is always equal to one.

APPENDIX 2

DOCUMENTATION FOR PROGRAM "SEISPLT". Version 2.0

Program and documentation written by D. White, Feb, 1984;
modified by D.J. Northey and M. Bloore to March 1984, U of T.

NOTE : This program is still being modified to assist implementation

INTRODUCTION

The program SEISPLT has been written for use on a VAX/VMS 11/780 machine and operating system. At the University of Toronto there is a supporting CALCOMP library of Calcomp compatible plotting routines. PLTGEN takes Calcomp output files to produce plot files for various devices. DIRPLT produces Versatec plot files directly from raster input.

Program SEISPLT is a plotting routine written specifically for the plotting of seismic refraction-type record sections. The program allows the user to obtain simple plots of just the data (suitable for initial viewing of the data) requiring only a minimum number of input parameters, or more elaborate plots including labelled axes, title, and data processing information can be obtained by specifying a greater number of plot input parameters. The data may be plotted using several different plotting formats (i.e. wiggle plot, variable area plot with positive or negative shading, or variable area + wiggle plot with positive or negative shading), and plot files may be generated by direct rasterization (using DIRPLT routines) or by rasterization of the initial CALCOMP plot file (using PLTGEN). Different amplitude corrections are available in the program as well as frequency filtering. The following documentation describes the I/O files required when running the program, how to run the program, and makes some general comments concerning the program.

1.0 PROGRAM INPUT

Before running the program, the following input files must exist:

- i) Unit 80 Main input file,
- ii) Unit 8 Data location catalogue file,
- iii) Unit 9 Seismic data file.

A description of the content and format of each of the files is given below.

1.1 Main Input File (Unit 80)

This file consists of 2 segments: a sequence of namelist statements, and a list of variables which identify the seismic traces which are to be plotted. In all, there are 11 namelist statements and over 50 parameters, although not all parameters need be specified to obtain a plot. The namelist statements are:

1./ &PLOTP1 NAMELIST

AZIMTRUE. if plot is azimuth vs. time
.FALSE. if plot is distance vs. time
(default value is .FALSE.)

PLTYPETRUE. if plot is a CALCOMP plot
.FALSE. if plot is a DIRPLT plot
(default value is .TRUE.)

PLSZ is a scale factor applied to the CALCOMP plot.
For PLSZ >1.0, =1.0, or <1.0 the plot size is increased, remains unchanged, and is reduced respectively.

SCALETRUE. if traces are to be automatically scaled
.FALSE. if not (default value is .TRUE.)

If .TRUE. and SPACE=.TRUE., each trace is scaled so that the maximum amplitudes do not overlap.
If .TRUE. and SPACE=.FALSE., each trace is scaled so that the maximum amplitude is CLIP inches.

SPACETRUE. if the traces are to be plotted at arbitrary equal distances
.FALSE. if the traces are to be plotted at the true distances that are input
(default value is .TRUE.)

TRACESTRUE. if traces are to be plotted
.FALSE. if not (i.e. if only the axes are desired)
(default value is .TRUE.)

TRNUMTRUE. if traces are to be numbered with receiver number
.FALSE. if not
(default value is .FALSE.)

ALL if .TRUE., all traces in the trace location file with shot number and seismic component corresponding to those indicated by the first line following the namelist statements in unit 80, are plotted.
if .FALSE., only the traces as indicated by each line following the namelist statements in unit 80 are plotted. (default value is .FALSE.)

VRED Reducing velocity (in km/sec) for the plot.
(default value is 0.0)

HVRED Reducing velocity (in km/sec) expressed as a
character string (of 3 characters).
(default value is '0.0')

2./ &AXES1 NAMELIST

XO X-position (in inches) of the plot origin.
(default value is 1.0)

YO Y-position (in inches) of the plot origin.
(default value is 1.0)

** NOTE: all subsequent parameters concerning coordinates on the plot are
in inches relative to the origin specified by XO, YO.

XLEN Length of X-axis (in inches). (default value is 10.0)

YLEN Length of Y-axis (in inches). (default value is 5.0)

XSCALE Scale of X-axis (in km/inch or deg/inch).
(default value is 10.0)

YSCALE Scale of Y-axis (in sec/inch). (default value is 2.0)

FS Starting time (in seconds) on the Y-axis.
(default value is 0.0)

FD Starting distance (in km) or starting azimuth (in deg)
on the X-axis. (default value is 0.0)

TSTART The start time (reduced time in sec) of the time
window for plotting the traces.
(default value is 0.0)

TEND The end time (reduced time in sec) of the time
window for plotting the traces.
(default value is 10.0)

3./ &AXES2 NAMELIST

AXESTRUE. if axes are to be plotted
.FALSE. if not
(default value is .FALSE.)

BOXTRUE. if box is to be drawn around plot
.FALSE. if not
(default value is .TRUE.)

NUMTICX Number of tic marks on the X-axis.
(default value is 5)

NUMTICY Number of tic marks on the Y-axis.
(default value is 5)

XHT Height of the numbers (in inches) labelling the X-axis.
(default value is 0.15)

YHT Height of the numbers (in inches) labelling the Y-axis.
(default value is 0.15)

XINC Increment (in km or degrees) between successive tic marks on the X-axis.
(default value is XLEN*XSCALE/NUMTICX)

YINC Increment (in seconds) between successive tic marks on the Y-axis.
(default value is YLEN*YSCALE/NUMTICY)

NDIGX Number of digits (excluding decimal point) to be used in labelling the tics on the X-axis.
(default value is 3)

NDIGY Number of digits (excluding decimal point) to be used in labelling the tics on the Y-axis.
(default value is 3)

NDECX Number of digits to the right of the decimal place to be used in labelling the tics on the X-axis. NDECX=-1 suppresses the decimal.
(default value is -1)

NDECY Number of digits to the right of the decimal place to be used in labelling the tics on the Y-axis.
NDECX=-1 suppresses the decimal.
(default value is 1)

XWIDTH The width (in inches) allowed for characters used in tic mark annotation of X-axis. This value is used to centre annotation on the tics.
(default value is 0.10)

YWIDTH The width (in inches) allowed for characters used in tic mark annotation of Y-axis.
(default value is 0.10)

SLANT The angle (in degrees) at which labelling characters and numbers are plotted. Should be 0.0 for vertical and > 0 for the top slanted to the right.
(default value is 0.0)

CHARTYPE Integer (1-5) index indicating the desired character set. See CALCOMP subroutine CTYPE for different character sets. (default value is 1)

4./ &DATA NAMELIST

RECL Is the record length (in longwords) in the direct access file which contains the seismic traces.
(default value is 3693)

SPS Sampling rate (in samples/sec) of data to be plotted.
(default value is 60.0)

JUMP Every JUMPth point is plotted.
This parameter only applies for CALCOMP plots.
(default value is 1)

NTRACE The number of data traces to be plotted. Only required when SPACE=.TRUE..
(default value is 50)

IMARK Index indicating whether time lines should be plotted.
= 0 no time lines are plotted
= 1 time lines are plotted (default value is 0)

TMARK Time interval (in seconds) for successive time marks.
(default value is 1.0)

CLIP Is the amplitude (in inches) above which traces are clipped when LSCALE=.FALSE., and the amplitude (in inches) to which the max. amplitude for each trace is set when LSCALE=.TRUE. and SPACE=.FALSE..
(default value is 1.5)

THRESH Is the absolute amplitude (in inches) above which the trace is shaded in for variable area formats.
(default value is 0)

IFORM Controls the plotting format of the traces.
= 1 for wiggle plot
= 2 for variable area + wiggle plot
= 3 for variable area only plot (default value is 1)

FILL Determines whether positive or negative amplitudes are shaded for IFORM=2,3 formats.
= 1 for shading of positive amplitudes
= -1 for shading of negative amplitudes.
(default value is 1)

5./ &SCALE NAMELIST

DISTFAC Is the multiplicative power to which the shot-receiver distance is taken to calculate the distance amplitude scaling factor (i.e. DISTNC**DISTFAC) for that trace. This scaling factor is applied only when LSCALE=.FALSE.. (default value is 0.0)

SIZE Is a constant scaling factor applied to each trace, which allows the overall scaling of the traces to make the amplitudes suitable for the plot size. This scaling factor is applied only when LSCALE=.FALSE.. (default value is 1.0)

6./ &FILT NAMELIST

LFILT =.TRUE. if band-pass filtering is to be applied to trace
=.=FALSE. if not (default value is .FALSE.)

NPOLES Number of poles of the band-pass filter to be applied. Must be integer multiple of 4, and < 40.
(default value is 8)

FH High-cut frequency (in Hz) for band-pass filter.
(default value is 10.)

FL Low-cut frequency (in Hz) for band-pass filter.
(default value is 4.)

ZERO =.TRUE. for zero phase filter
=.=FALSE. for non-zero phase filter
(default value is .FALSE.)

7./ &INFORM NAMELIST

INFO =.TRUE. if processing information is to be plotted
=.=FALSE. if not
(default value is .FALSE.)

URCX X-coordinate (in inches) at which the upper right corner of the processing information box is to be plotted.
(default value is 13.0)

URCY Y-coordinate (in inches) at which the upper left corner of the processing information box is to be plotted.
(default value is 7.0)

8./ &LABEL NAMELIST

TITLE Is a character string of up to 40 characters that is plotted as the title.

NUMCHAR Is the number of characters in TITLE.

XTL Is the X-coordinate (in inches) at which the lower left hand corner of TITLE is to be plotted.
(default value is 1.0)

YTL Is the Y-coordinate (in inches) at which the lower left hand corner of TITLE is to be plotted
(default value is 6.5)

TANGLE Is the angle (in degrees) from horizontal at which the title is to be plotted.
(default value is 0.0)

HRT Is the ratio of the height of the title characters to the height used for characters labelling the axes.
(default value is 1.0)

9./ &LABEL1 NAMELIST

STITLE1 Is a character string of up to 40 characters that is plotted as subtitle.

NUMCHAR1 Is the number of characters in STITLE1.

XTL1 Is the X-coordinate (in inches) at which the lower left hand corner of STITLE1 is to be plotted.
(default value is 1.0)

YTL1 Is the Y-coordinate (in inches) at which the lower left hand corner of STITLE1 is to be plotted.
(default value is 6.0)

TANGLE1 Is the angle (in degrees) from horizontal at which the subtitle is to be plotted
(default value is 0.0)

HRT1 Is the ratio of the height of the subtitle characters to the height used for characters labelling the axes.
(default value is 1.0)

10./ &LABEL2 NAMELIST

STITLE2 Is a character string of up to 40 characters that is plotted as a subtitle.

NUMCHART2 ... Is the number of characters in STITLE2.

XTL2 Is the X-coordinate (in inches) at which the lower left hand corner of STITLE2 is to be plotted.
(default value is 1.0)

YTL2 Is the Y-coordinate (in inches) at which the lower left hand corner of STITLE2 is to be plotted.
(default value is 5.5)

TANGLE2 Is the angle (in degrees) from horizontal at which the subtitle is to be plotted.
(default value is 0.0)

HRT2 Is the ratio of the height of the subtitle characters to the height used for characters labelling the axes.
(default value is 1.0)

11./ &PLOTP2 NAMELIST

PLOTFILE1 ... Character string (of up to 15 characters) containing the name of the deferred CALCOMP plotfile
(default is 'SECTION.DEF').

PLOTFILE2 ... Character string (of up to 15 characters) containing the name of the DIRPLT plotfile
(default is 'DSECTION.DAT').

** NOTE: each namelist statement must begin with '&' in column 2, and must be terminated by '&END'.

Following the sequence of namelist statements is the list of seismic traces which are to be plotted. A single statement is required for each seismic trace which includes SHOTNUM, RECNUM, COMP, FACTOR, where:

SHOTNUM is the shot number of the desired trace (I10).

RECNUM is the receiver number of the desired trace (I10).

COMP is the seismic component (Z for vertical, and R for radial) of the desired trace (A10).

FACTOR is an arbitrary scaling factor applied when plotting the trace (can be left blank if not required). This allows each individual trace to be arbitrarily scaled if desired.

These variables are free formatted.

Two examples of input files are at the end of the documentation. The first shows the input with a minimum of input parameters, while the second includes all of the parameters.

1.2 Data Location Catalogue File

This file contains a catalogue of where the data for each seismic trace is stored; one line for each trace. Each line of the file contains SHOT,REC,CMP,LFNAME,RECRD, where:

SHOT shot number (I10) associated with the trace.
REC receiver number (I10) associated with the trace.
CMP seismic component (A10) associated with the trace.
LFNAME name (A15) of the DIRECT ACCESS data file where the trace is stored.

Each line of this file is free formatted.

An example of such a file is shown below.

```
2 301      'z' 'tape:shot02.dat'  
2 302      'z' 'tape:shot02.dat'  
2 303      'z' 'tape:shot02.dat'  
2 304      'z' 'tape:shot02.dat'  
2 305      'z' 'tape:shot02.dat'
```

1.3 Seismic Data File

This is an unformatted file containing the shot header in the first record, and in each subsequent record containing a receiver header followed by the seismic data for that receiver. The program is easily modified to allow for different data storage formats.

2.0 PROGRAM OUTPUT

The program produces an output file containing a description of the plotting process, as well as the resultant plot file(s). These files are:

- (i) UNIT 7 (default name OUTSEIS.DAT) contains a description of the plotting procedure.

- (ii) UNIT 99 (default name SECTION.DEF) is the deferred plot file produced by the program. A deferred plot file is produced when PLTYPE=.TRUE. or when PLTYPE=.FALSE. and AXES=.TRUE.. In order to obtain a plot on the VERSATEC plotter, the deferred plot file must be rasterized using SYS\$UTILITY:[CHRISPLOT]PLTGEN. The resultant raster plot file can be plotted directly by issuing the command: PLOT filename.
- (iii) UNIT 98 (default name DSECTION.DAT) is the rasterized plot file produced by the program when the plot is generated by direct rasterization. A rasterized plot file is produced when PLTYPE=.FALSE., and can be plotted directly on the VERSATEC plotter by issuing the command: PLOT filename.

3.0 RUNNING THE PROGRAM

Once the required input files have been created, the program can be run. The command sequence for running it is:

```
$RUN SEISPLT
INPUTFILE          (name of main input file)
OUTPUTFILE         (name of output file)
LOCATIONFILE       (name of location table file)
```

If the program is run interactively, it will prompt for the above input file names. They are read from UNIT 5 (i.e. the terminal in interactive mode, or the command file in batch mode).

4.0 GENERAL COMMENTS

4.1 Discussion of INPUT parameters

The desired sophistication of the plot determines how many of the input parameters need to be specified in the namelist statements. Below are listed some guidelines as to which parameters are required.

4.1.1 Data Only - When the objective is simply to obtain a plot of the data to observe data quality, a plot of the data without axes is useful. The only namelist parameters necessary in this case are:

```
AXES1: XLEN,YLEN,YSCALE,FS,TSTART,TEND
DATA: NTRACE
```

If time marks are required or the traces are to be numbered, then the following additional parameters can be included:

DATA: IMARK, TMARK and PLOTP1: TRNUM.

This input will produce a wiggle plot of the traces which are indicated in the trace list following the namelist statements in the input file, and they will be equally spaced and automatically scaled as not to overlap. The maximum trace amplitude for each trace is output to unit 7, which is useful in determining the distance correction factor and overall size scaling factors to use in subsequent plots where the traces aren't arbitrarily scaled.

4.1.2 Axes - To include the simplest type of axes in the plot, only one extra parameter need be specified;

AXES2: AXES=.TRUE.

To obtain more elaborate axes, any or all of the AXES2 namelist parameters may be changed from their default values. It is often useful to produce a plot of the axes only, until the desired format is obtained by setting TRACES=.FALSE.. Once the axes are obtained as desired, the program can be rerun to include the data traces.

4.1.3 Labelling - Additional labelling may be included in the plot, by specifying the parameters for the namelist statements LABEL, LABEL1, and LABEL2. These allow 3 character strings of up to 40 characters each to be plotted anywhere on the plot. Also the INFO namelist parameters, allow the plotting of the in-program processing information anywhere on the plot. For these labels to be included in the plot, AXES=.TRUE. (i.e. they can be included only if axes are included in the plot).

4.1.4 Filtering - Frequency filtering of the data may be applied by including the FILT namelist parameters. If LFILT=.TRUE., an NPOLE, zero or non-zero phase (for ZERO=.TRUE. or .FALSE. respectively) Butterworth band-pass filter with frequency cut-offs FL and FH is applied to each of the traces before plotting them. The parameters of the filter are included on the plot if INFO=.TRUE..

4.1.5 Amplitudes - If LSCALE=.TRUE. and SPACE=.TRUE., then each trace is amplitude scaled such that it doesn't overlap the adjacent traces in the plot.

If LSCALE=.TRUE. and SPACE=.FALSE., then each trace is amplitude scaled such that the maximum amplitude in each trace is CLIP inches.

If LSCALE=.FALSE., then each trace is amplitude scaled by the total factor:

$$\text{FACTOR} * \text{SIZE} * \text{DISTANCE}^{**} \text{DISTFAC}/\text{GN} \quad \text{where,}$$

FACTOR is an arbitrary scale factor for each trace read from unit 80, SIZE is an overall scale factor applied to all traces, DISTANCE is the shot-receiver distance for each trace, DISTFAC is an arbitrary distance compensation factor, and GN is the gain of the receiver.

4.1.6 PLTYPE=.TRUE. or .FALSE. ? - This program is capable of producing either a CALCOMP deferred plotfile (which requires subsequent rasterization to be plotted on the VERSATEC plotter), or directly producing a rasterized plotfile. These two modes of plotting differ in both the time required to produce a plot and the allowable dimensions for the plot.

(i) CALCOMP deferred plot (PLTYPE=.TRUE.)

This is the plotting mode which is generally most suitable for producing seismic sections. The maximum allowable dimensions of the plot are 10.235 inches in the Y-direction (corresponding to the time axis) and 163.835 inches in the X-direction (corresponding to the distance or azimuth axis). The deferred plot file produced by the program needs to be rasterized using SYS\$UTILITY:[CHRIS PLOT]PLTGEN. Because PLTGEN uses the Array Processor in the rasterization procedure (when it is available), it produces a rasterized plot file much quicker than direct rasterization in the SEISPLT program.

(ii) Direct rasterization plot (PLTYPE=.FALSE.)

The maximum allowable dimensions of the plot are 10.235 inches in the X-direction (corresponding to the distance or azimuth axis) and 163.835 inches in the Y-direction (corresponding to the time axis). Obviously, from these dimensions this mode is suitable for plotting traces with a large time window. This method is much slower than the above method, unless the Array Processor is not available.

If axes, or any other labelling is required on the plot (other than time marks), they are produced in a separate CALCOMP deferred plot file during execution of the program. This deferred plot file must be rasterized and merged with the direct raster plot file. Rasterization is done using program PLTGEN and merging using

SYS\$UTILITY:[CHRIS PLOT]PLTMER.

4.1.7 Complete record sections - All of the traces for a single shot, and single seismic component can be plotted without specifying each trace individually in the input file. This is done by setting the namelist parameter ALL=.TRUE.. Then, all traces with shot numbers and seismic components corresponding to those of the first line following the namelist statements, are plotted.

4.2 How the program works

The program handles a single seismic trace at a time, retaining only the data for the immediate trace in active memory. For each trace, a shot number, receiver number, and seismic component are read from Unit 80. The program then searches the data location catalogue file (Unit 8) for these values and obtains the name of the file and the record number where the data for this trace are stored. All of this is done by the subroutine TRACEREAD, which obtains the plotting time window of the seismic data from this file as well as the shot-receiver distance and azimuth, and the receiver gain. The trace is processed and if the program is operating in the CALCOMP type plot mode (i.e. PLTYPE=.TRUE.), the trace is sent for plotting in compliance with the input parameters, and the process is repeated until all of the desired traces have been sent.

The same procedure is implemented when a raster plot file is produced directly (PLTYPE=.FALSE.) except that each of the processed traces is stored in a two-dimensional array, and then rasterized when all traces have been entered.

4.3 Modification for different data formats

The program is easily modified to allow plotting of seismic data which is stored in a different format, than that presently used. That part of the program which retrieves each trace is contained in the subroutine TRACEREAD. A modified subroutine needs only to return the window of seismic data, shot-receiver distance or azimuth (depending on the type of plot), and receiver gain, to the main program. There are also a few statements in the main program which would require removal or modification.

4.4 Virtual memory limitations

The file 'SEISPLT.GBL', which is INCLUDED in the dimension statements of the SEISPLT program, contains two PARAMETER statements which set the maximum number of traces allowed for the SEISPLT program. This allows the dimensions of the two-dimensional array (which is used to store all of the traces when direct rasterization is implemented) to be set independently. This is convenient as, otherwise, when a large number of traces are to be plotted using the CALCOMP mode, the virtual memory required for the two-dimensional array (which is not even used) is excessive and may result in the program exceeding the virtual memory limits when it is LINKED. Thus it is useful to set TRACELIM (the column dimension of the two-dimensional array) to a small value which may be changed when direct rasterization is required. Obviously, in the direct rasterization mode, the virtual memory limitations constrain the number of traces which can be plotted at one time.

5.0 INPUT EXAMPLES

Ex. 1/ The following example includes the minimum number of input parameters required to produce a plot of the data (without axes) of a desired size. The 5 traces indicated by the variables following the namelists will be plotted equispaced and with arbitrary amplitude scaling.

```
&PLOTP1 &END
&AXES1 XLEN=8.,YLEN=5.,YSCALE=2.,FS=-2.0,TSTART=-2.0,TEND=8.0, &END
&AXES2 &END
&DATA NTRACE=5, &END
&FILT &END
&INFORM &END
&LABEL &END
&LABEL1 &END
&LABEL2 &END
&PLOTP2 &END
&SCALE &END
      1      301      'z'      1.
      1      302      'z'      1.
      1      303      'z'      1.
      1      304      'z'      1.
      1      305      'z'      1.
```

Ex. 2/ All of the namelist parameters are included in this example of an input file. This input file will produce a plot of the 5 seismic traces (indicated by the variables following the namelists) as well as axes and labelling as indicated by the namelist parameters.

```
&PLOTP1 AZIM=F,PLTYPE=T,LSCALE=T,PLSZ=1.0
  SPACE=F,TRACES=T,TRNUM=T,ALL=F,VRED=6.5,HVRED='6.5', &END
&AXES1 X0=1.,Y0=1.,XLEN=8.,YLEN=5.,XSCALE=40.,YSCALE=2.,
  FS=-2.0,FD=0.0,TSTART=-2.0,TEND=8.0, &END
&AXES2 NUMTICX=8,NUMTICY=5,XHT=0.20,YHT=0.20,XINC=80.0,YINC=2.0,
  NDIGX=3,NDIGY=1,NDECX=-1,NDECY=-1,XWIDTH=0.20,AXES=T,BOX=T,
  YWIDTH=0.20,SLANT=10.,CHARTYPE=4, &END
&DATA SPS=60.,JUMP=1,NTRACE=5,IMARK=1,TMARK=2.0,
  THRESH=0.,CLIP=0.15,IFORM=1,FILL=1,RECL=3693, &END
&FILT LFILT=F,FH=10.0,FL=1.0,ZERO=F,NPOLES=8, &END
&INFORM INFO=F,URCX=11.5,URCY=5., &END
&LABEL TITLE='1984 KSZ REFRACTION DATA - Section 4-E.',XTL=1.0,
  YTL=6.0,NUMCHART=39,TANGLE=0.,HRT=1.,&END
&LABEL1 STITLE1='Shot 14',XTL1=1.5,YTL1=6.0,NUMCHART1=7,
  TANGLE1=0.,HRT1=1., &END
&LABEL2 STITLE2='Figure 16',XTL2=1.0,YTL2=6.5,NUMCHART2=9,
  TANGLE2=0.,HRT2=0.5, &END
&PLOTP2 PLOTFILE1='SECTION.DEF',PLOTFILE2='DSECTION.DAT', &END
&SCALE DISTFAC=0.0,SIZE=0.5, &END
      1        301      'z'      1.
      1        302      'z'      1.
      1        303      'z'      1.
      1        304      'z'      1.
      1        305      'z'      1.
```