



DUNCAN CREEK GOLDDUSTERS LTD.

**SEISMIC REFRACTION AND REFLECTION
SURVEYS ON DUNCAN CREEK,
MAYO AREA, YUKON TERRITORY**

M.A. Power M.Sc. P. Geo.

Placer claims and leases

P2173, P16779, PL9758

1201-65

Location: 63° 48' N, ^{135° 30' W} ~~139° 30' W~~
NTS: 105 M 13/14
Mining District: Mayo
Date: December 3, 1995

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This report has been examined by
the Geological Evaluation Unit under
Section 41 Yukon Placer Mining Act
and is recommended as allowable
representation work in the amount
of \$

Chief Geologist, Exploration and
Geological Services Division, Northern
Affairs Program for Commissioner of
Yukon Territory.

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of \$ 5000.00.

for *William LeBarge*
Chief Geologist, Exploration and
Geological Services Division, Northern
Affairs Program for Commissioner of
Yukon Territory.

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Summary

Seismic refraction and surveys were performed on placer leases and claims owned by Duncan Creek Goldbusters Ltd. on the lower end of Duncan Creek in the Mayo area from October 20 to 25, 1995. The seismic refraction survey identified a refractor which appears to be bedrock based on its seismic velocity at a depth of 25 - 30 m beneath Duncan Creek. This refractor was traced to the west for several hundred metres before being lost in an area apparently underlain by permafrost. A deep reflection west of the end of the refractor may be bedrock but cannot be conclusively tied to any geological layer boundary.

1.0 Introduction

This report describes seismic refraction and surveys performed on placer claims and leases owned by Duncan Creek Goldusters Ltd. on the lower end of Duncan Creek in the Mayo Mining District, Yukon. The survey was conducted from October 20, 1995 to October 25, 1995 in order to determine the depth to bedrock and to map the bedrock topography before conducting further testing.

2.0 Location, access and property description

The Duncan Creek Placer Property owned by Duncan Creek Goldusters Ltd. is located on the lower end of Duncan Creek, above its confluence with the Mayo River in the central Yukon Territory (Figure 1). The property is 40 km from Mayo along the Duncan Creek Road and the Silver Trail.

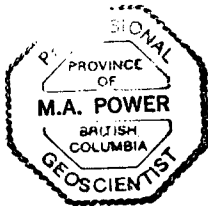
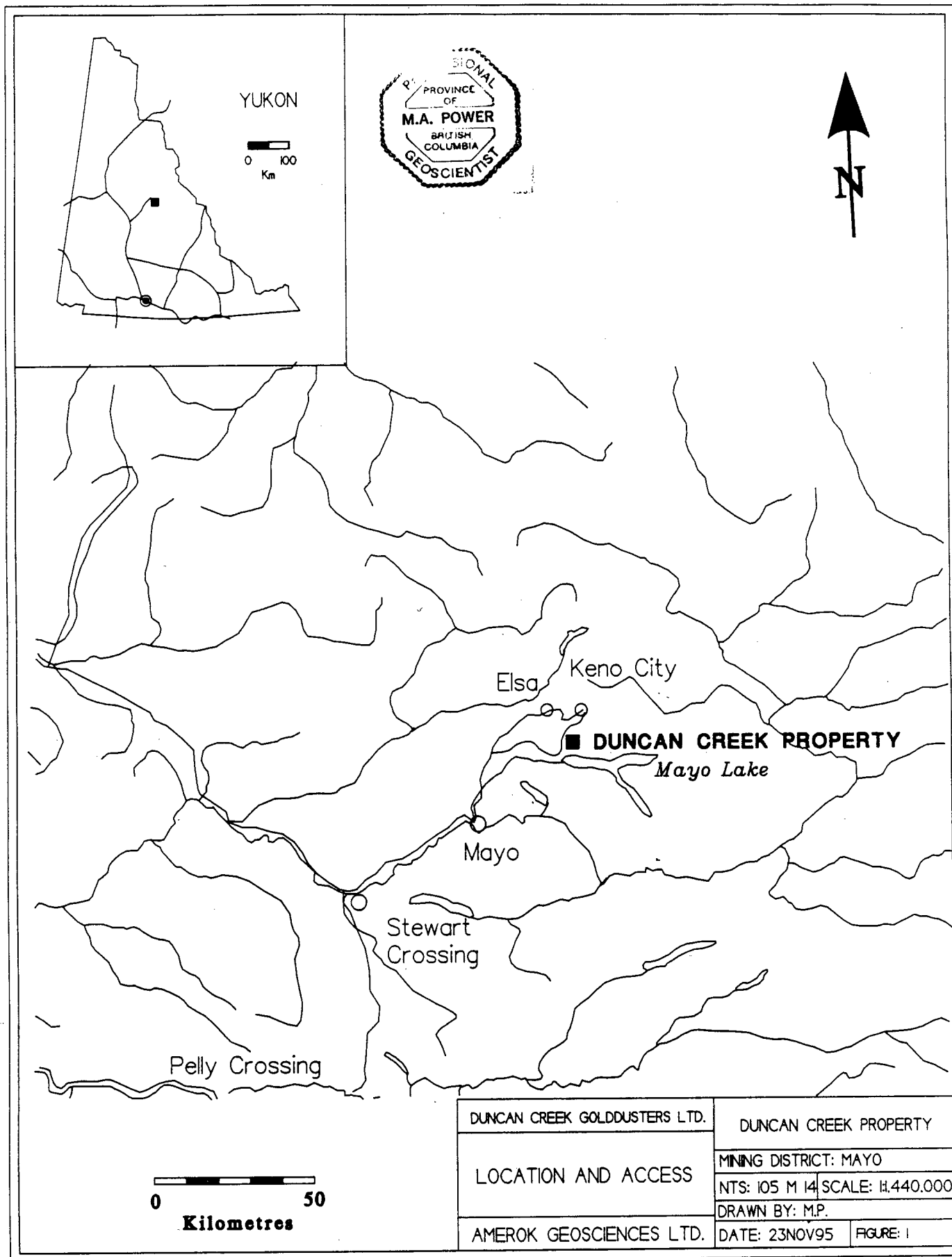
The geophysical survey was performed on the following placer leases and claims:

Placer Claim or Lease	Record number
Jimbo 8 Creek Claim	P2173
First Tier Claim	P16779
2nd Tier Placer Lease	PL9758

The property and seismic line location is shown in Figure 2. A detailed breakdown of the work performed on each claim and lease is contained in the survey log (Appendix B).

3.0 Geology

The Duncan Creek Property is underlain by PreCambrian rocks of the Hyland Group (Roots and Murphy 1992) (Figure 3). On Van Cleaves Hill, west of the property, and in the creek bed on the property, grey weathering fine to coarse grain quartzite and phyllite are found in outcrop. Rocks north of the property are cut by north to northeast verging shallow-dipping thrust faults which in turn are cut by steeply-dipping to vertical northeast-trending strike slip faults of minor displacement and complementary northwest-trending offset faults. These structures host the silver-lead-zinc deposits in the Elsa / Keno area. Outcrop is scarce near the placer property and no structures are mapped on it.



YUKON
0 100
Km

Elsa Keno City

■ **DUNCAN CREEK PROPERTY**
Mayo Lake

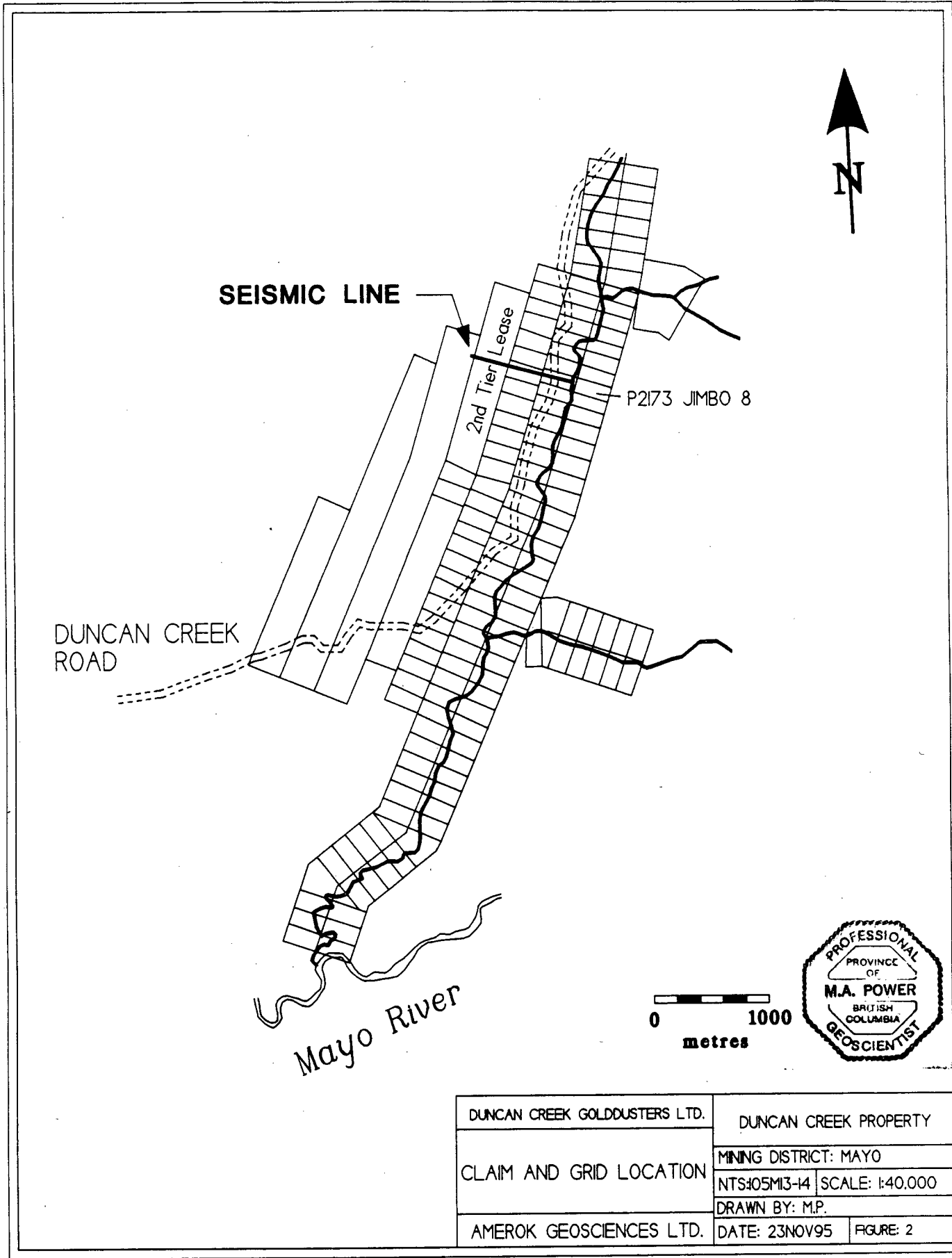
Mayo

Stewart Crossing

Pelly Crossing

0 50
Kilometres

DUNCAN CREEK GOLDDUSTERS LTD.	DUNCAN CREEK PROPERTY	
LOCATION AND ACCESS	MINING DISTRICT: MAYO	
	NTS: 105 M 14	SCALE: 1:440,000
AMEROK GEOSCIENCES LTD.	DRAWN BY: M.P.	
	DATE: 23NOV95	FIGURE: 1



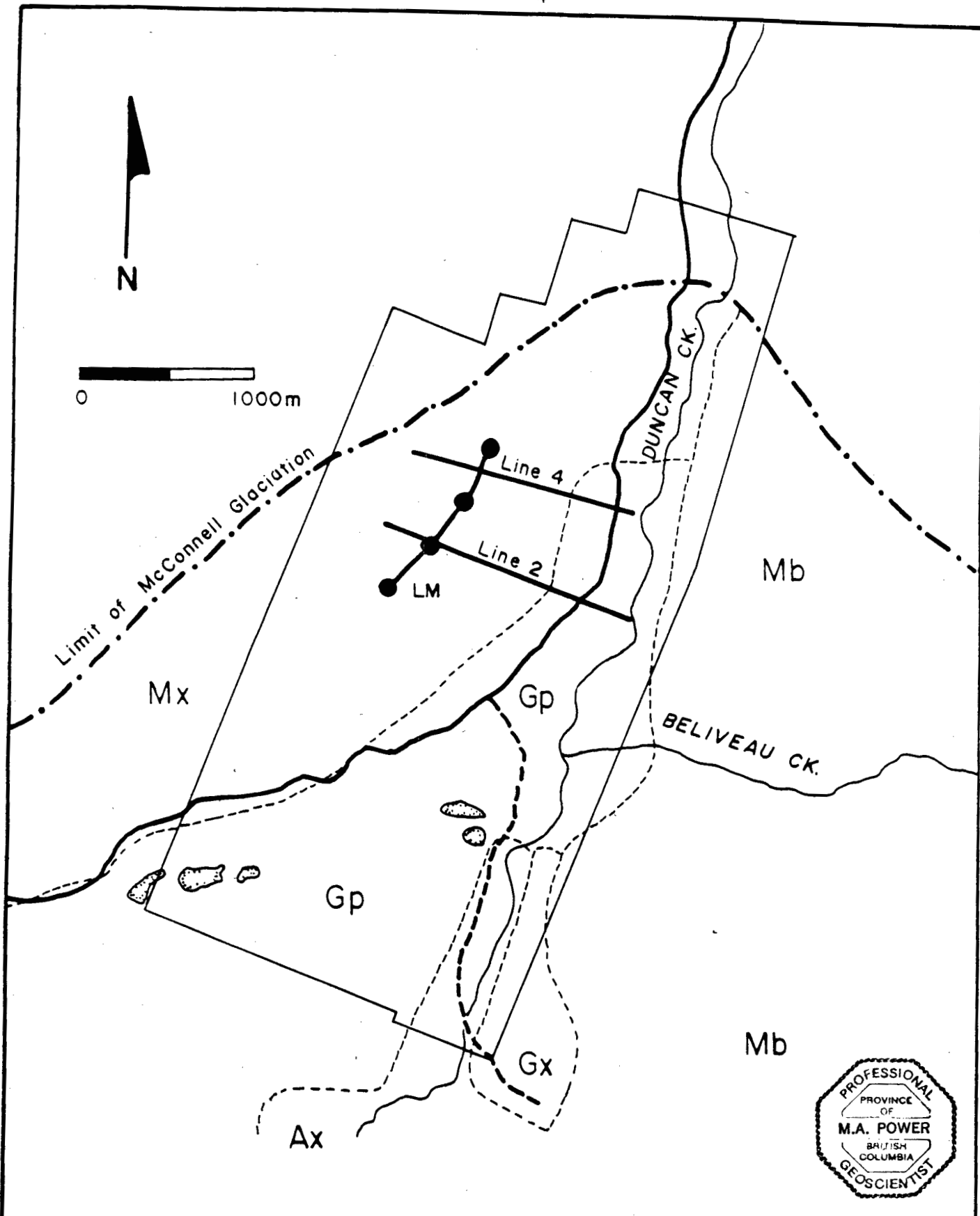


Figure 3. Surficial geology in the vicinity of the Duncan Creek Property after Hughes (1982). Mx - complex moraine. Mb - blanket moraine. Gp - glaciofluvial plain, Gx - glaciofluvial complex, Ax - recent alluvial complex, LM - lateral moraine.

The surficial geology of the lower end of Duncan Creek is dominated by glacial landforms and deposits and has been mapped by Hughes (1982). The overall U-shaped profile of the creek valley and the smoothing and plucking of bedrock outcrops below 4500 feet in the valley appear to predate the dominant effects of the McConnell glaciation and may be evidence of the Reid Glaciation in the area. During the McConnell Glaciation, a lobe of a large glacier in the Mayo River valley appears to have pushed up Duncan Creek as far as the north end of the Duncan Creek Property, leaving a blanket of glacial till and what appears to be a lateral moraine (**LM** in Figure 3). Hughes mapped extensive blankets and complex deposits of pebble through boulder till in the area (**Mb** and **Mx** in Figure 3). It is doubtful that older deposits lie beneath the glacial till given that the ice movement was parallel to the drainage. Duncan Creek re-established a channel on the east side of the valley following the retreat of the ice, depositing a sequence of glaciofluvial deposits (**Gp** and **Gx** in Figure 3). At the base of the sequence in the present mine workings, 7 to 10 m of massive to crudely stratified, poorly sorted gravel lie on weathered bedrock (Taylor 1990). This is overlain by gravel with interbedded laminated sand layers and 8 to 12 m of predominantly sand and silt. These sediments are thought to be derived from the glacial till and, in the area of the mine workings, they completely replace glacial deposits.

There are significant differences between flow regimes in the current stream and in the older postglacial stream. The post glacial stream formed a large deltaic lobe and the glaciofluvial sediments in section display bedforms associated with braided stream environments (Taylor 1990). The recent stream is confined to a single high gradient channel within the older alluvial plain. In some areas the recent stream has cut into bedrock while in others it has not yet cut down to the basal gravel unit. At the lower end of Duncan Creek, it has deposited a complex bed of alluvium (Unit **Ax** in Figure 3). The overall gradient of the recent stream is significantly steeper than the older drainage; near its confluence with the Mayo River, the present channel is 100 to 200 feet lower than the older glacial channel deposits. The recent stream is also cutting back upstream, dissecting the older alluvial plain and forming a steep-sided channel which now extends to near the limit of the McConnell Glaciation. This change in gradient between the older and recent drainage suggests that the area is currently undergoing uplift, perhaps caused by postglacial isostatic rebound.

Placer gold is mined from the lowermost gravels in the glaciofluvial sediments (Units **Gp** and **Gx**) where exposed in the recent channel of Duncan Creek. This is interesting in that these gravels are derived from glacial deposits and not from degradation of nearby bedrock (Taylor 1990). Normally, glacial processes tend to disrupt and disperse placer deposits. Sims (1982) points out, however, that under conditions where terminal ice positions remain relatively constant, rich bedrock or

placers can be moved to the terminus, reworked and reconcentrated. In the Westland District of New Zealand, economic placers occur in kame and esker complexes and at Valdez Creek in Alaska, rich placer ground is found in deep glacial outwash channels.

Sims states that placer gold in glacial deposits is generally fine, rounded or flattened and fairly evenly dispersed. The placer gold found in Duncan Creek fits this description (F. Taylor, 1992, personal communication). The ultimate bedrock source of the placer gold in Duncan Creek is probably upstream in silver-lead-zinc veins on Galena Hill and arsenopyrite-gold veins near Mount Hinton.

4.0 Seismic Theory

Seismic methods employ an energy source to generate acoustic waves in the earth and record reflected and refracted seismic waves with long period microphones known as geophones. For ease of operation, the geophones and shots are commonly laid out along a single cut line and the shot is spaced some distance from the geophones.

Seismic wave theory is well described in such standard texts as Telford *et. al.* (1990) and is briefly summarized below. An energy sources such as explosives, a sledge hammer or dropped weight is used to generate mechanical waves which radiate away from the shot or impact point. Compressional (P) and transverse (S) seismic waves generated by the source reflect and refract at the boundary between media with different seismic wave velocities (Figure 4(a)). Different earth materials have characteristic seismic velocities (Table I). The angle of emergence for a reflected wave equals the angle of incidence while the angle of refraction is governed by Snell's Law:

$$\frac{\sin\theta_i}{v_i} = \frac{\sin\theta_r}{v_r} \quad (1)$$

where v_i and v_r are the seismic wave velocities in the incident (overlying) and refracting (underlying) medium. If the velocity of the underlying layer is faster than that of the overlying layer, the refracted wave will flatten with depth as the angle of refraction (θ_r) increases. In this case, at an angle described as the critical angle (θ_c), the emergent wave will be refracted to 90° and travel along the boundary between the two layers at the faster velocity of the lower medium:

$$\sin\theta_c = \frac{v_i}{v_r} \quad (2)$$

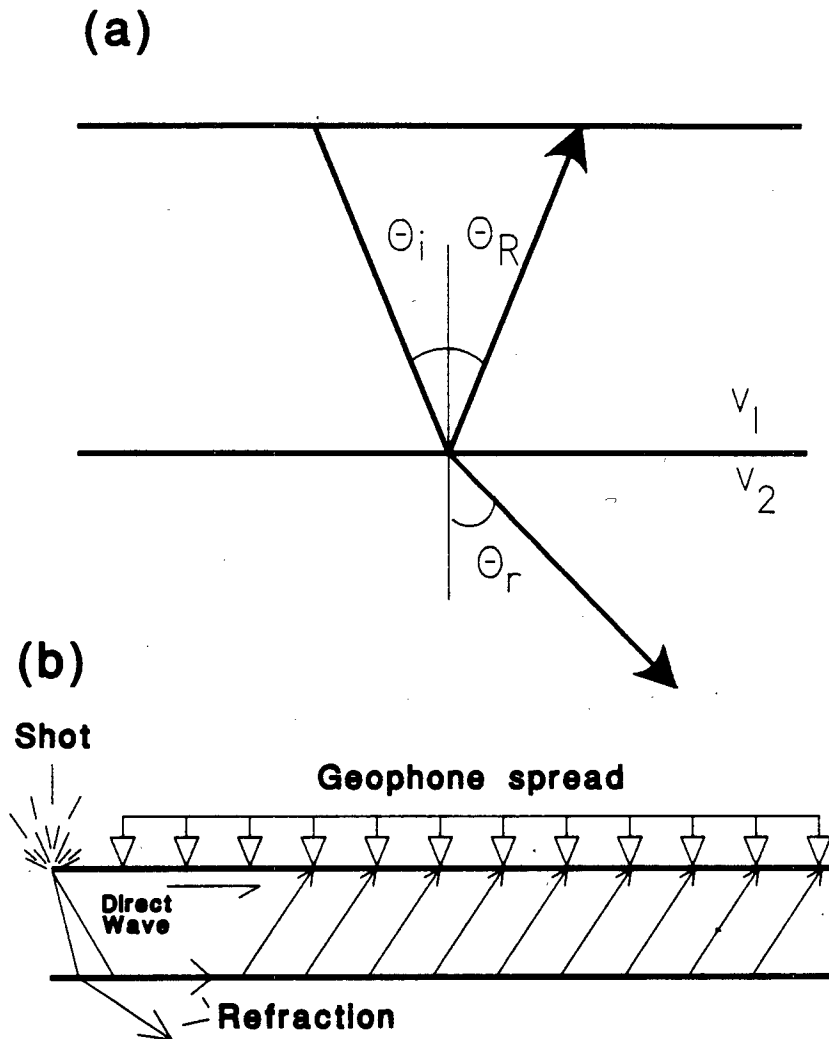


Figure 4. (a) Seismic reflection and refraction from a velocity boundary ($v_1 < v_2$) (b) At short separations, direct wave arrives before refraction. Past the crossover distance, the refracted wave arrives first.

Table I. Seismic Velocities of Rock and Overburden

Material	Velocity (m/s)
Air	330
Water	1400-1500
Ice	4000 (\pm)
Gravel - thawed	1800-2800
Gravel - frozen	4000 - 4600
Glacial till - frozen	3000 - 4300
Sand & silt - thawed	600 - 1500
Sand & silt - frozen	1500 -3000
Metamorphic and igneous rock	4000 - 6000
Shale and sandstones	2000 - 3500
Weathered granite	450 - 3200

Sources: Birch (1966)
Coates (1965)
Sims (1981)

As it travels along the boundary, the refracted wave will radiate energy back into the overlying medium at the critical angle and this energy will return to the surface. Near the shot point, energy travelling directly through the overlying medium (direct wave) will arrive before any refracted waves. At a distance known as the cross-over distance, the refracted wave begins to arrive before the direct wave and all subsequent first arrivals are refracted arrivals (Figure 4(b)).

Seismic waves will reflect at the boundary between layers with different seismic velocities. The angle of reflection will equal the angle of incidence (Figure 4(a)) and the strength of the reflection is proportional to the velocity contrast. If the geophone and shot are coincident and the reflector is horizontal (normal incidence), the travel time (t) is given by:

$$t = 2 \frac{z}{v} \quad (3)$$

where z is the depth to the reflector and v is the velocity of the medium. This is illustrated in Figure 5. In the general case where the shot and geophone are separated by a distance x , the travel time equation becomes:

$$v^2 t^2 = x^2 + 4z^2 \quad (4)$$

This is the equation of a hyperbola with the curvature governed by z and v . Reflections on a shot record have a diagnostic hyperbolic shape referred to as Normal Moveout (NMO) and the apparent velocity which accounts for this shape is referred to as the normal moveout velocity or V_{NMO} .

Figure 6 is a shot record made with equally spaced geophones and a shot set off a single geophone spacing to the left of the geophone array. The geophone spacing is 1 m. The shot record shows reflected and refracted arrivals together with the ground roll. Ground roll is a chaotic series of relatively slow (~330 m/s) seismic waves generated by the energy source travelling along the low velocity layer at the earth's surface. Since this energy travels directly from the shot to the geophones, it is linear on the shot records. Generally, no reflections can be read during the passage of ground roll and seismic surveys are designed to ensure that the ground roll arrives before or after the reflections of interest. Refracted wave arrivals are also relatively linear and refractions from overburden and bedrock are visible as first arrivals in the shot record.

It is apparent that there is an optimum separation between the shot and geophone array in which reflections are visible before the arrival of ground roll. If the shot point

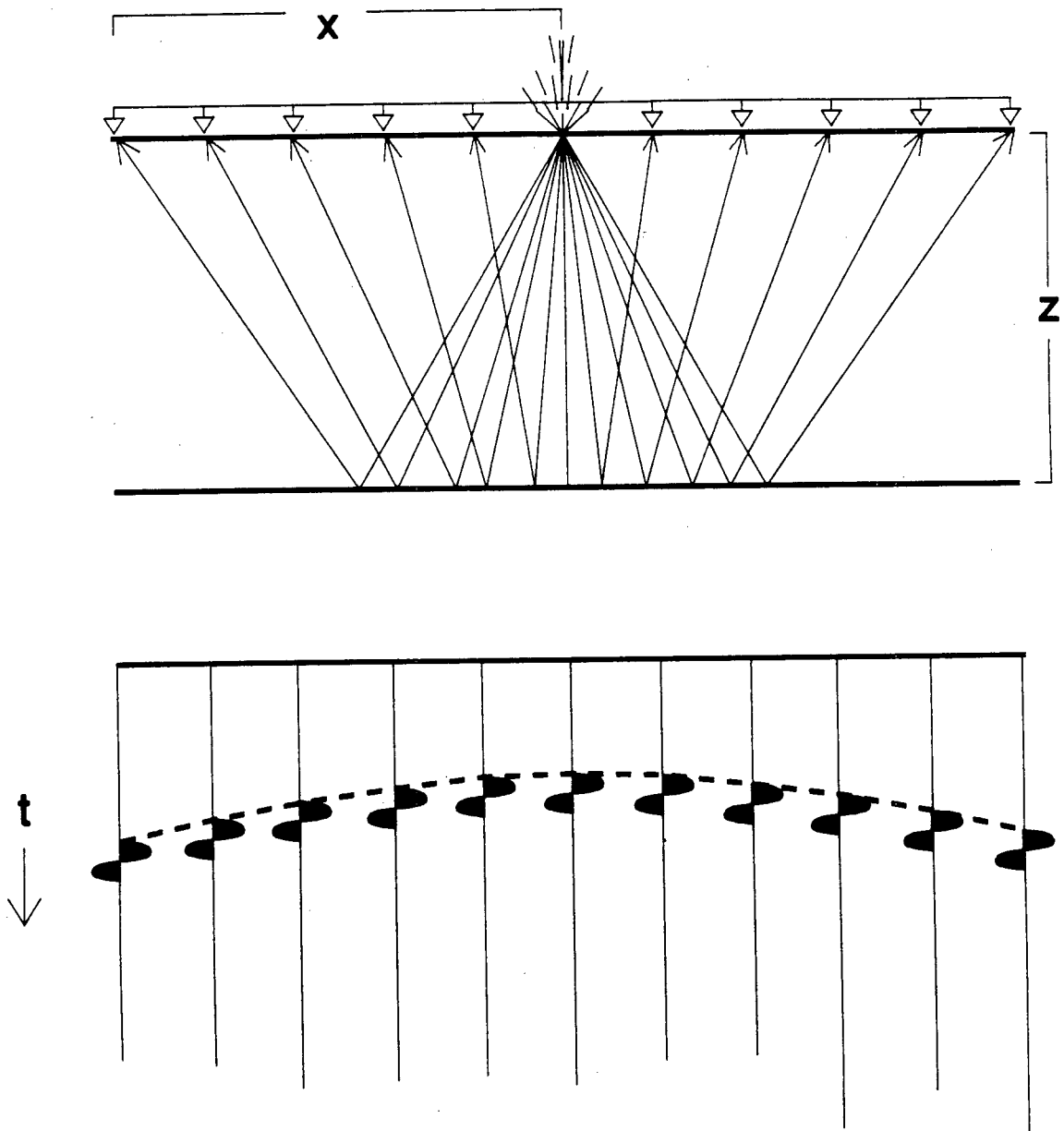


Figure 5. Reflection from a horizontal reflector. The hyperbolic pattern of arrivals is termed normal moveout.

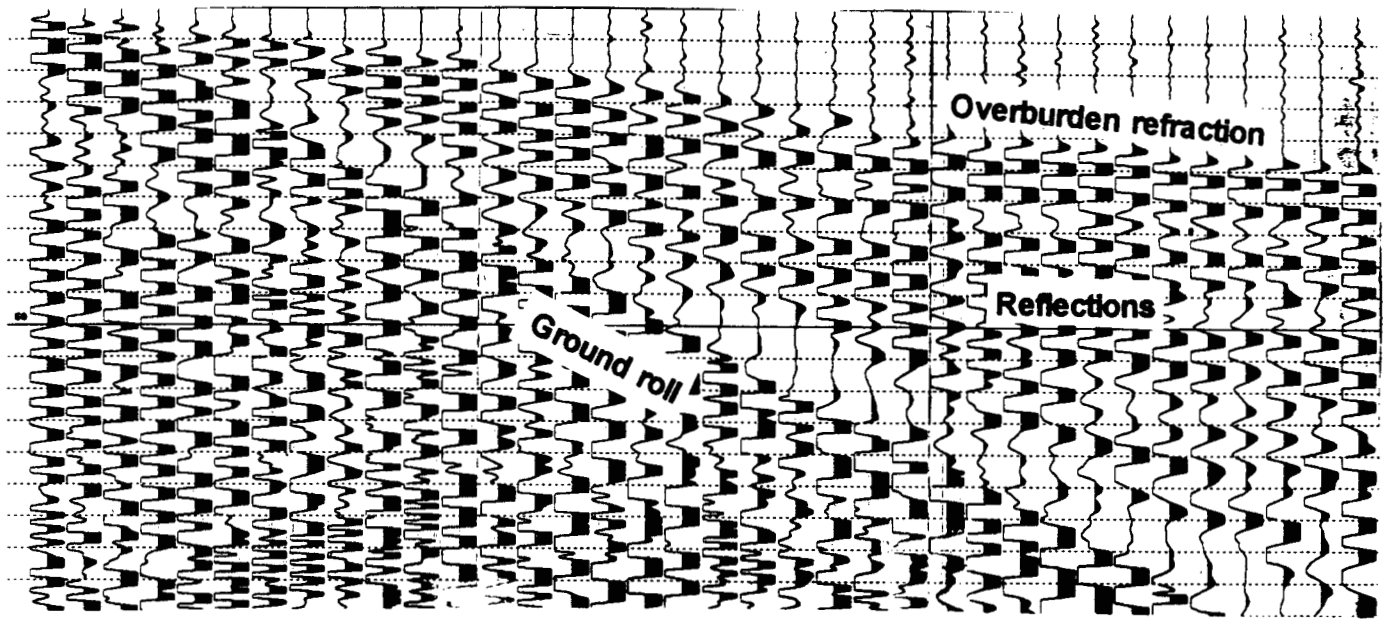


Figure 6. Walkaway seismic survey. Geophones spaced at 1 m intervals. Shot point is 1 m to the left of the geophone array. Refracted and reflected arrivals together with ground roll / blast wave are indicated on the record.

is too close to the geophones, the ground roll will obscure the reflected arrivals. If the shot point is too far from the geophone array, most of the arriving energy will be refracted along the reflector rather than reflecting from it.

4.1 Seismic Refraction Method

The seismic refraction method uses waves refracted along the boundary between two velocity layers to determine the depth to the layers. As noted above, refractions are only visible if the layer below is faster than the layer above and only at distances beyond the critical distance where seismic energy is refracted along the layer boundary. At a slightly greater separation, the cross-over distance (x_{cx}) the refracted wave becomes the first arrival. In the simple case (Figure 7(a)) where a seismic wave is refracted along a horizontal layer boundary, the cross-over distance will be:

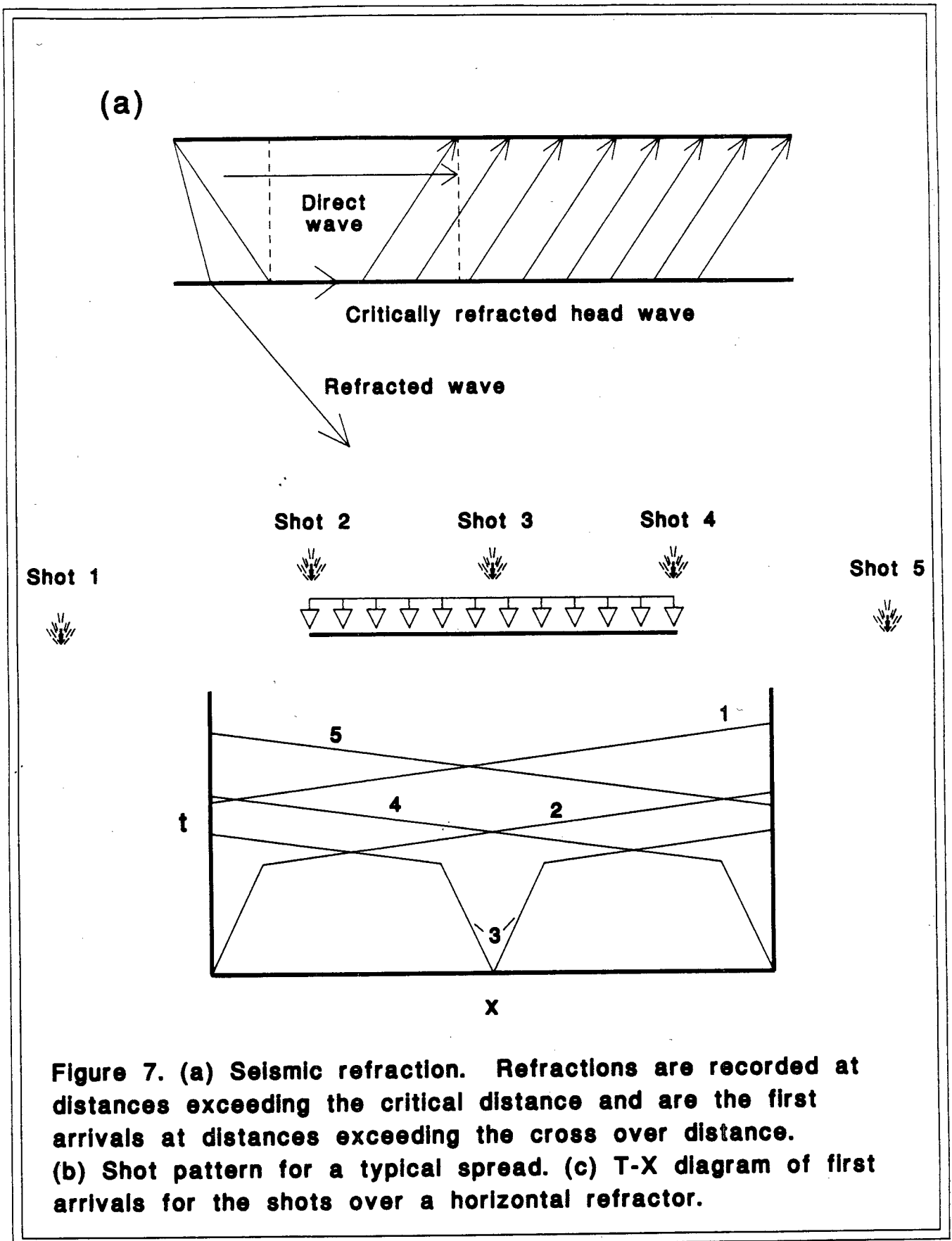
$$x_{cx} = 2z \sqrt{\frac{v_2 + v_1}{v_2 - v_1}} \quad (5)$$

From this relation, the minimum separation between shot and geophone array required to detect refractions can be calculated. Using average velocities of around 1800 m/s for water saturated gravels and bedrock velocity of around 3500 m/s, the relation reduces to:

$$x_{cx} = 3.5z \quad (6)$$

If the velocity contrast is greater, the separation will be less and, conversely, a larger separation will be required if the velocity contrast is smaller. This relation can be used to estimate the shot-geophone separations required to determine map a refractor if some estimate of the depth is available.

Refraction surveys are conducted by laying out a spread of geophones on the ground and firing shots at fixed locations relative to the spread. At a minimum, a shot is fired at one end of the spread (single ended spread). Usually, shots are fired at either end and in the middle of the spread and in some cases, at distances equal to the spread length off either end of the spread. An example of the spread and shot pattern is shown in Figure 7(b). The critical data in refraction seismic surveys is the time of the first arrivals - the direct and refracted waves which arrive before the ground roll and reflections. This is usually plotted in time-distance (T-X) plots showing the geophone coordinates on the x-axis and the arrival times in milliseconds (or seconds) on the y-axis (Figure 7(c)).



There are several interpretation schemes available to interpret refraction data. Fitting the data to the simple case of planar dipping refractors is sometimes used to give very rough estimates of refractor geometry. Examples of T-X graphs for simple geometries are useful in gaining insight into the interpretation of refraction data. In the case of horizontal refractors (eg. Figure 7(c)) the travel time curves for shots at either end of the spread are symmetric. The slope of the refracted arrival is $1/V_2$ where V_2 is the velocity of the refractor. When the refractor dips, this is no longer the case. The apparent refractor velocity on down-dip shot travel time curve is faster than the true refractor velocity and the corresponding velocity for the up-dip shot is slower than the true refractor velocity. The true velocity can be approximated by the average of the two. If there is a depression or rise in the refractor along the spread, the corresponding travel time curves will show a similar depression or rise.

Delay time methods were developed in order to gain a more detailed more picture of the refractor geometry beneath the geophone spread. Figure 8 illustrates the theory behind this method. The delay time is defined as the observed travel time (ie. the time required to travel from **A** to **D** along the refraction path) less the time it would take to travel along the refractor from a point beneath **A** to a point beneath **D**. Essentially the delay time is the time it takes for the energy to travel directly down to the refractor beneath the shot plus the time it takes to travel directly up from the refractor to the geophone. This is the total delay time and it can be broken down into delay times for the shot (t_{ds}) and the geophone (t_{dg}). It is the plot of geophone delay times which is most useful since this indicates the depth of the layer beneath the geophone and thus defines the detailed geometry of the reflector.

The data collected in this report were interpreted using an automated delay time interpretation program (SIP T2) developed by James Scott of the U.S. Bureau of Mines (Scott 1973). Working from the top down, the program determines the geometry of individual layers by:

1. Calculating delay times for the layer.
2. Determining the geometry of the layer.
3. Calculating the portion of the refracted arrival time from deeper layers due to the layer in question.
4. Removing the contribution of the layer in question to the refracted arrival time of deeper layers. (Layer stripping).

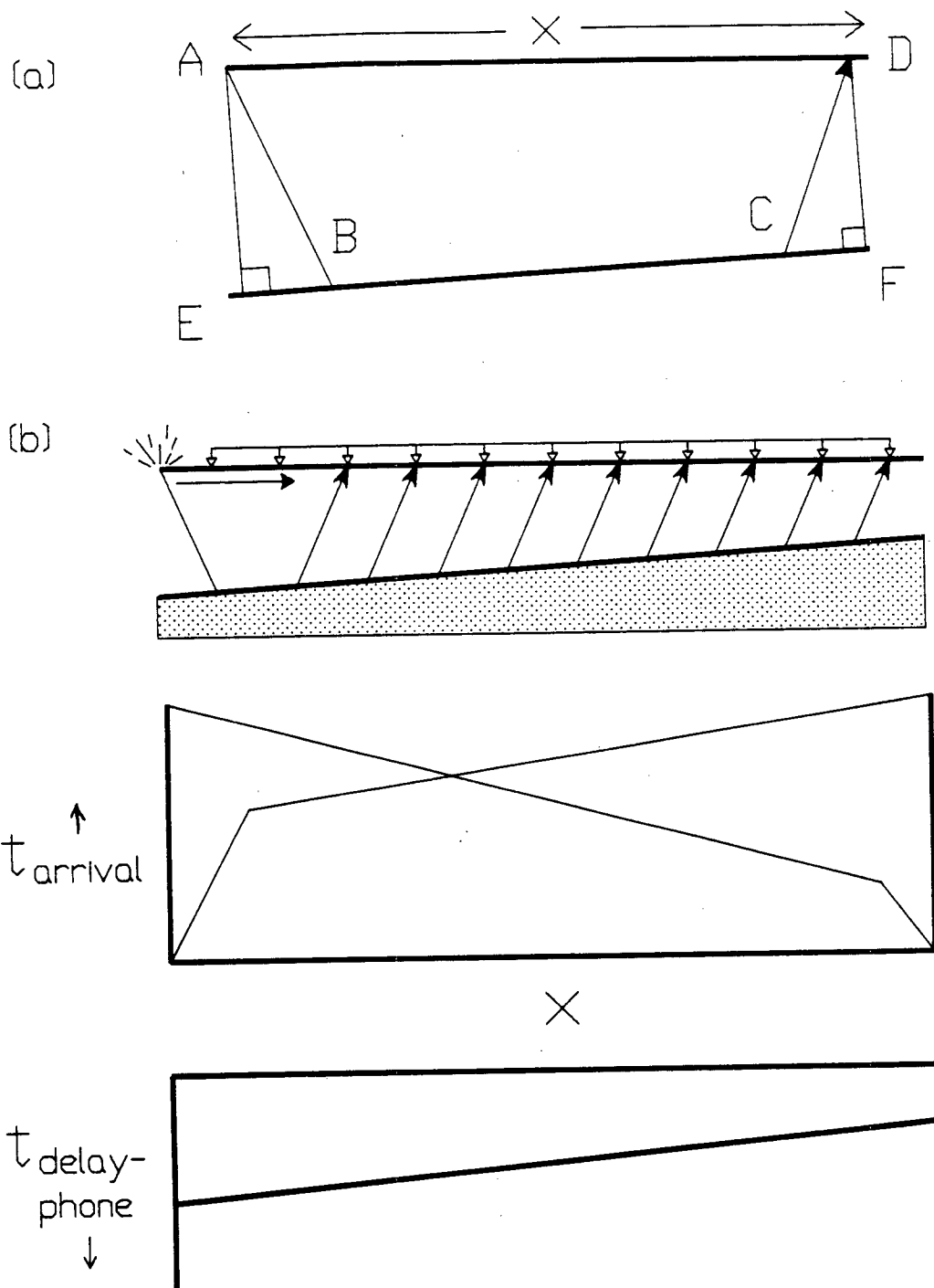


Figure 8. Delay time methods. (a) Delay time is the total arrival time over the path ABCE less the transit time along the refracted path EF. (b) Dipping refractor and T-X plot of first arrivals. The delay time at the geophone follows the dip of the refractor and depths can be calculated from the delay times.

This process is repeated iteratively, layer by layer working from the top down until a complete model of the refractors is constructed. The program incorporates uneven topography and any offset of shot points to either side of the seismic line in calculating the solution.

4.1 Seismic Reflection Method

Until recently, most shallow seismic investigations consisted of refraction surveys. With the advent of affordable, portable digital engineering seismographs, and the development of techniques to exploit them, it is now possible to conduct shallow seismic investigations and map reflectors at depths as shallow as 10 m. Reflection surveys require more care and expertise than refraction surveys however and to date are not as commonly used in shallow seismic work.

The central problem with determining depth to bedrock at shallow depths using reflection is that the ground motion created at the shot point where energy is applied will obliterate any bedrock reflections or refractions in nearby geophones. Since the bedrock reflections will arrive soon after the shot when bedrock is shallow, you cannot "wait out" the ground roll as is done in oilfield reflection surveys where deep reflectors are the target. The only way to record reflections at shallow depths is to design the seismic survey so that reflections arrive before the ground roll but after any refracted arrivals in overburden. Two approaches incorporating this principle - the Common Offset and Optimum Window techniques - were developed by the Geological Survey of Canada in the 1980's (Pullan and Hunter 1990). The Common Offset technique is an excellent means of recording high quality reflection seismograms with a minimum of data processing following collection. Unfortunately, the method requires frequent shots which increases the cost and time required to perform a survey. An alternative approach, described in Telford *et. al.* (1990) is to use an offset shot (broadside) array to suppress ground roll.

Broadside offset shooting is illustrated in Figure 9 using the case of 12 geophones. A shot is fired at an optimum broadside offset d and recorded at the geophones in the spread. The optimum broadside offset is that required to permit detection of strong reflections from bedrock without the interference of ground roll. Prior to running the survey a walkaway noise survey is conducted by placing geophones in-line using a short separation and firing shots at distances incremented by the geophone spread length moving away from the spread. This technique was used with a 12 channel seismograph to produce the seismic record shown in Figure 3 for example. The walkaway survey is used to identify the range of shot-geophone offsets within which strong reflections may be recorded without the interference of ground roll or refractions. The optimum broadside offset can be determined from the range of

acceptable offsets as follows:

- a. The geophone spread length must be no more than twice the width of the offset window. (eg. if the range of permissible offsets is 30 m, the maximum geophone spread is 60 m).
- b. The optimum broadside offset is the shortest permissible offset determined from the walkaway survey. This will be the offset to the middle of the spread and the offset to all other points will be greater than this.

Using a properly determined optimum broadside offset, reflections from the target of interest can be recorded on individual shot records and, after data processing, can be linked together to form a reflection seismogram. The steps involved in this process include:

1. Determine the optimum normal moveout velocity. This is most accurately done from the walkaway spread using NMO analysis and refraction analysis.
2. Correct the broadside shot for normal moveout using the velocity determined in the previous step.
3. Link adjacent reflection shot records together by matching reflections between sections. There may be a slight mismatch between first arrivals on adjacent sections because of variations in the low velocity layer.
4. Use the walkaway spread to determine a depth to the base of the low velocity layer and the equivalent first arrival time at the optimum broadside offset separation. Use this datum as the $t=0$ line for all of the reflection sections.
5. Time reflections from this datum and convert to depths. The depth conversion will be made assuming that the $t=0$ mark is at the base of the low velocity layer.

Converting the arrival times to depth is complicated by the broadside offset d . The normal moveout corrected sections show the reflections as if they were recorded with coincident shot and geophones. If $(z^2 + d^2)^{0.5}$ is substituted for z in equation 3, the depth to the reflector can be easily calculated. Normally a depth scale is calculated using this relation and is affixed to the reflection section.

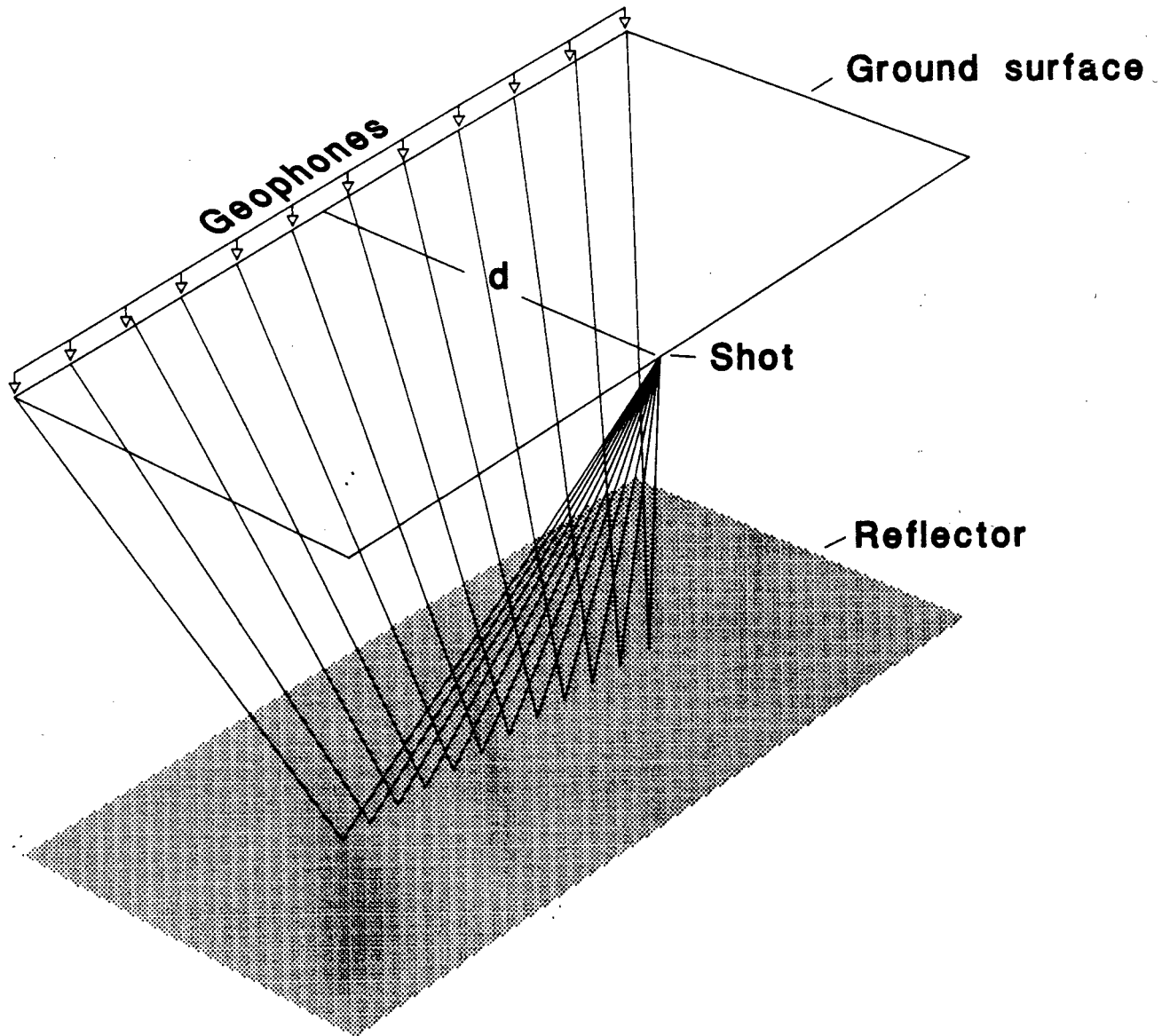


Figure 9. Broadside offset reflection shot. Shot is spaced a distance d from the geophone spread. Offset is set so as to ensure that reflections arrive before the ground roll and after overburden refractions.

5.0 Equipment and personnel.

The surveys were conducted by Mike Power P. Geo. and Troy Taylor using a EG&G Geometrics S-12 digital engineering seismograph, a 12 channel geophone spread and explosives as an energy source. All shots were initiated electrically using a Nimbus HVB-1 high voltage blasting box. Following the seismic surveys, the topography was surveyed in with a Nikon A-20 Total Station survey instrument (transit and electronic distance measuring device).

6.0 Survey parameters.

The seismic surveys were conducted on 1.5 m wide lines cut across the width of the valley. Stations were marked along the lines as the survey progressed by flagging the locations of the geophones.

The refraction survey was conducted using a 60 m geophone spread with take-outs (geophone locations) every 5 m along the cable. Five shots were fired for each spread, excepting the first and last spreads. These consisted of end-of-line shots, a mid-spread shot and two shots offset a full spread length (60 m) from either end of the spread. Seismocaps were used initially and EB caps were substituted when these ran out. A series of test shots were fired to determine the difference in initiation times between the seismocaps and the EB caps. The average discrepancy was 2.0 ms and is considered insignificant since this appears as a very slight static shift in the uppermost low velocity layer. The reflection survey was conducted using broadside shots with an offset of 50 m and the same geophone spread that was used in the refraction survey.

Following the seismic survey, geophone locations and elevations were surveyed to adjust the depths to refractors in order to produce a true picture of bedrock topography. Elevations along the survey line were corrected to an arbitrary datum near the lowest elevation of bedrock. Consequently, the elevations shown in the depth sections are relative and not tied to any surveyed datum.

7.0 Results

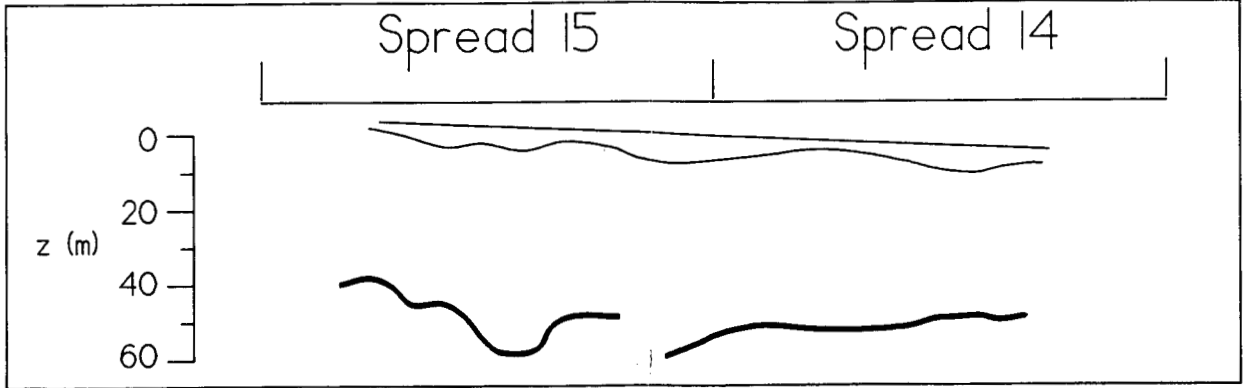
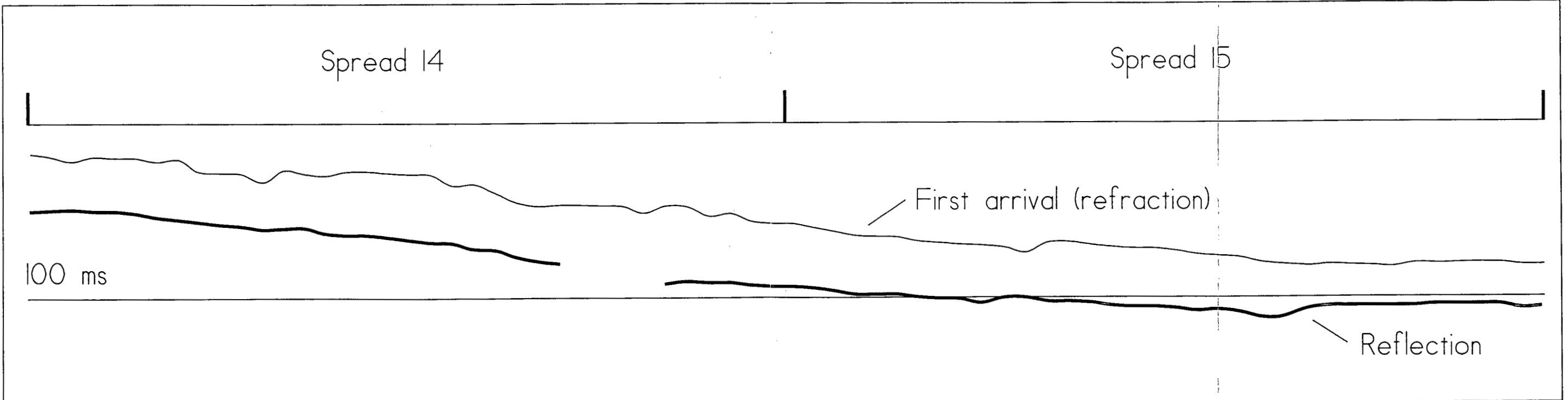
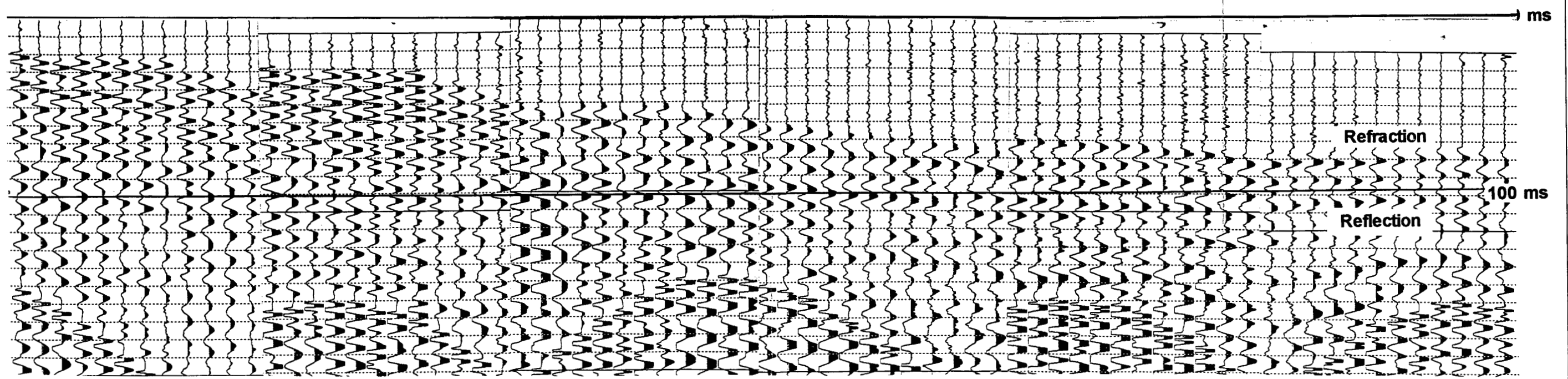
The results of the refraction survey are collated in the following appendices:

Appendix D.	Refraction shot records
Appendix E.	Picked first arrivals
Appendix F.	T-X plots
Appendix G.	Inversion model listings
Appendix H.	Inversion model plots

The data is of variable quality. In areas with low velocity in the middle of the survey line, static shifts and weak first arrivals complicated the identification of refractions. This was further complicated by an instrument fault, fixed during the last day of the survey, which introduced white noise into some of the seismograph channels. Initial picks were adjusted for parallelism and reciprocity and this partially compensated for statics problems and weak onsets.

The refraction data was processed using SIP T2 as described previously in section 4.2 of this report. As part of this process, layer velocities were calculated using two complementary methods and an average value was employed in the subsequent inversion. Velocity calculations are included in Appendix G. To facilitate the data processing, spreads with similar apparent velocities were grouped and inverted simultaneously. A total of 6 grouped spreads, labelled blocks in the composite section, were processed. The results of the individual block inversions are in appendices G and H. Where possible, a three layer model was fitted to the data since this seems to correspond to both the geology and the observed T-X arrival pattern in most cases. At the west end of the seismic line, this was not possible and a two layer inversion was performed.

Figure 10 is a composite depth / topographic section showing the results of the refraction survey. The thick line in the survey is interpreted to be the top of bedrock based on the apparent seismic velocity of the underlying layer. Near Duncan Creek there is a relatively strong contrast in seismic velocity between layers 2 and 3 and layer 3 has a velocity within the range expected for bedrock. The velocity of the overlying layer (2) is variable and is within the range expected for frozen and thawed gravel. It appears that layer 2 may be frozen on the west side of Duncan Creek in blocks 2 and 3. There is a dramatic change in layer 2 velocity near the crest of the slope in block 4A, perhaps attributable to a transition to thawed ground and/or a deeper water table. Using seismic velocities as a guide to the composition of layer 3,



DUNCAN CREEK GOLDDUSTERS LTD.	DUNCAN CREEK PROPERTY
SEISMIC REFLECTION SECTION	MINING DISTRICT: MAYO
LINE 1 - SPREADS 14-15	NTS: 105 M 14 SCALE: 1:1,000
	OPERATOR: M. POWER
AMEROK GEOSCIENCES LTD.	DATE: 23 NOV 95 FIGURE:

it appears that solid bedrock was not detected west of spread 8 and that layer 3 may be either weathered schist or gravel in this area. At the west end of the survey line, frozen ground was encountered and this is apparent as a shallow high velocity layer. The high velocity of this layer causes the crossover distance for a bedrock refractor to increase to a much larger separation and consequently it appears that no verifiable bedrock refractions were recorded here. It might have been possible to detect bedrock refractions if offset shots had been fired at greater distances but this was not recognized in the field and the opportunity was missed.

Figure 11 shows the composite reflection seismogram for spreads 14 and 15. Reflection shots were also recorded on spreads 12 and 13 but these are not included in this section because they cannot be reversed to match the records shown. A prominent reflection at around 100 ms at the west (right) end of the record is quite visible and continues across the seismic record. The reflection identified in the section is the first arrival refracted through overburden at the base of the low velocity layer (Layer 1 through most of Figure 8). This reflection was timed (by digitizing) and converted to depth using a normal moveout velocity of 3200 m/s derived from the refraction survey. The apparent relief in the reflector is probably an artifact introduced by poor timings and unremoved static shifts. The reflector is also shown in Figure 8 where it is reversed to match the refraction section. The reflection is the only prominent one in the seismic section and it is continuous across it. It cannot be conclusively attributed to bedrock given the absence of a reliable bedrock refraction data in this area.

8.0 Conclusions

The limited results of the survey suggest the following conclusions:

- a. Bedrock appears to occur at a depth of 28 to 30 m in Duncan Creek beneath the seismic line.
- b. Gravel or till on the west side of Duncan Creek is frozen on the steep slopes of the valley near the Duncan Creek Road. Further up the line, it appears to be thawed and the water table is low. This can be concluded from the velocity (much less than 1400 m/s) and thickness of layers 1 and 2 in this area.
- c. Permafrost is present on the west end of the seismic line and no reliable bedrock refractions were identified here.

d. A strong coherent reflection was recorded on the west end of the survey line. This could be originating from the bedrock / overburden interface but this cannot be definitely concluded given the absence of reliable refraction or drill hole data in the area.

9.0 Recommendations

Seismic surveys supplemented by drill holes should be continued in the Duncan Creek valley ahead of the current mine workings to permit the operators to mine ahead with confidence and to plan the location of bedrock drains and other necessary excavations well in advance. Test drill holes are essential to confirm the results of the seismic surveys and to indicate corrections which may be necessary to improve the reliability of the seismic methods.

Respectfully submitted,



M. A. Power M.Sc. P. Geo.
Geophysicist

December 3, 1995

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Appendix A. Statement of Qualifications

I, Michael Allan Power of Whitehorse, Yukon Territory, certify that:

1. I obtained a Bachelor of Science degree with First Class Honours in Geology from the University of Alberta in 1986 and a Masters degree in Geophysics from the University of Alberta in 1988. I am a Professional Geoscientist registered with the British Columbia Association of Engineers and Geoscientists (Number 21131).

2. I have worked in the mining exploration industry and in geophysical research since 1984.

3. I conducted the geophysical survey described in this report and prepared this report for submission.

4. I have not received nor expect to receive, directly or indirectly, any interest in the property of Duncan Creek Goldbusters Ltd.



Michael A. Power M.Sc. P. Geo.

Whitehorse, Yukon Territory
December 3, 1995

Appendix B. Survey Log

Date	Remarks
Thurs 19 OCT 95	Prepare and pack instruments and equipment in Whitehorse.
Fri 20 OCT 95	Drive to Duncan Creek Property, set up and commence surveying at east end of seismic line.
Sat 21 OCT 95	Surveys: spreads 1 -4
Sun 22 OCT 95	Surveys: spreads 5 - 8
Mon 23 OCT 95	Surveys: spreads 9-12
Tues 24 OCT 95	Surveys: spreads 13-15
Wed 25 OCT 95	Topo survey, demobe to Whitehorse

Appendix C. Statement of Costs

Mobe / demobe	\$1,000.00
Seismic survey: 5.0 days @ \$600	3,000.00
Report	1,000.00
Total	\$5,000.00

Costs apportioned to claims/leases surveyed:

P2173	\$1400
P16779	\$1400
2nd Tier PL9758	\$2200

D-1

Appendix D. Shot Records

Duncan Creek Seismic Survey

YUKON ENERGY, MINES
& RESOURCES LIBRARY
P.O. BOX 2703
WHITEHORSE, YUKON Y1A 2C6

GEOMETRICS

SAVED AS 0101-1.DAT

LINE NUMBER 1

SHOT LOC 0.00

SAMPLE INTERVAL 250 uS

ACQ FILT LO CUT 25HZ

DISP FILT OUT

GROUP INTERVAL 5.00

PHONE 1 LOC 55.00

RECORD LEN 512 MS

HI CUT 500HZ

OUT

SmartSeis

12:57:2722/OCT/1995

PHONE 12 LOC 0.00

DELAY 0 MS

STACKS 1

AGC 100

1	2	3	4	5	6	7	8	9	10	11	12
57	54	54	54	57	57	57	57	57	54	57	57

GEOMETRICS

SAVED AS 0101-2.DAT

LINE NUMBER 1

SHOT LOC 27.50

SAMPLE INTERVAL 250 uS

ACQ FILT LO CUT 25HZ

DISP FILT OUT

GROUP INTERVAL 5.00

PHONE 1 LOC 55.00

RECORD LEN 512 MS

HI CUT 500HZ

OUT

SmartSeis

13:10:2522/OCT/1995

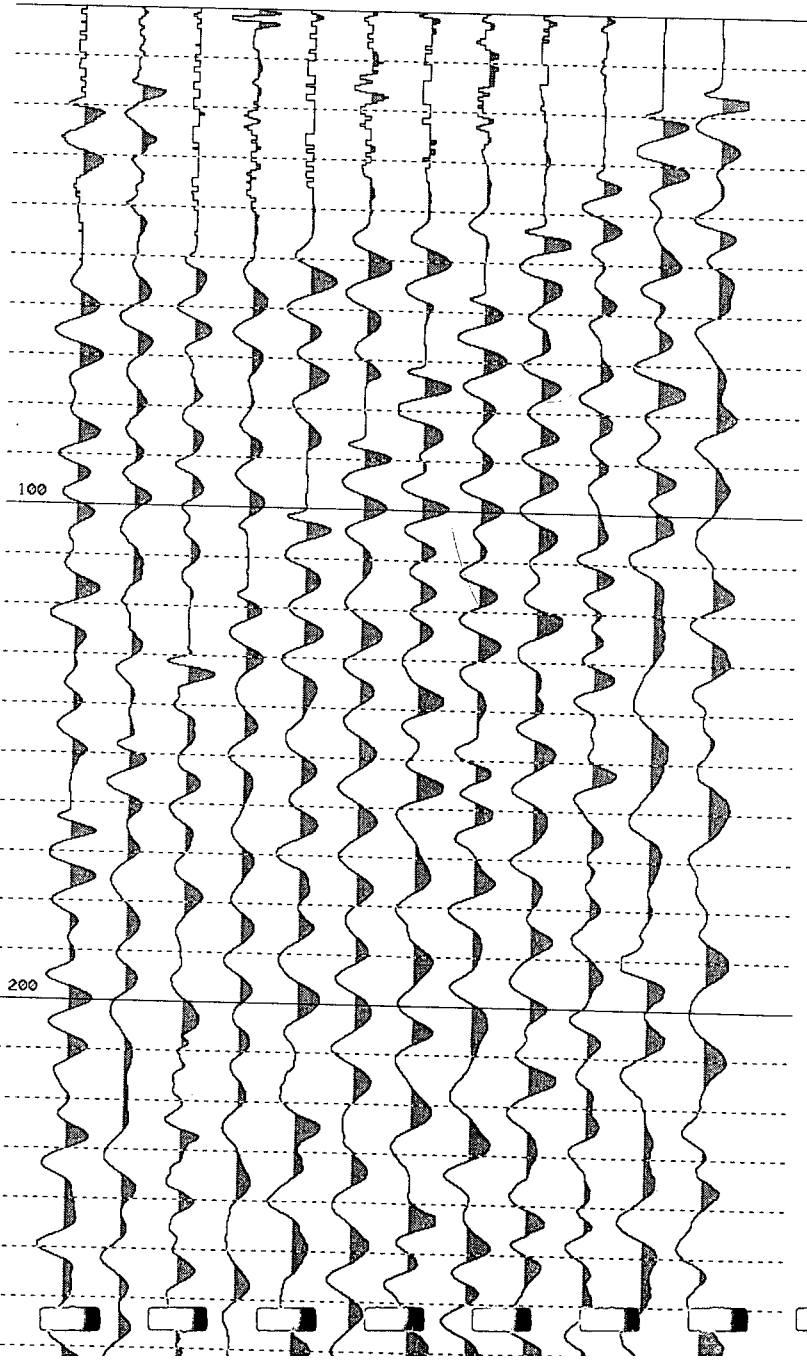
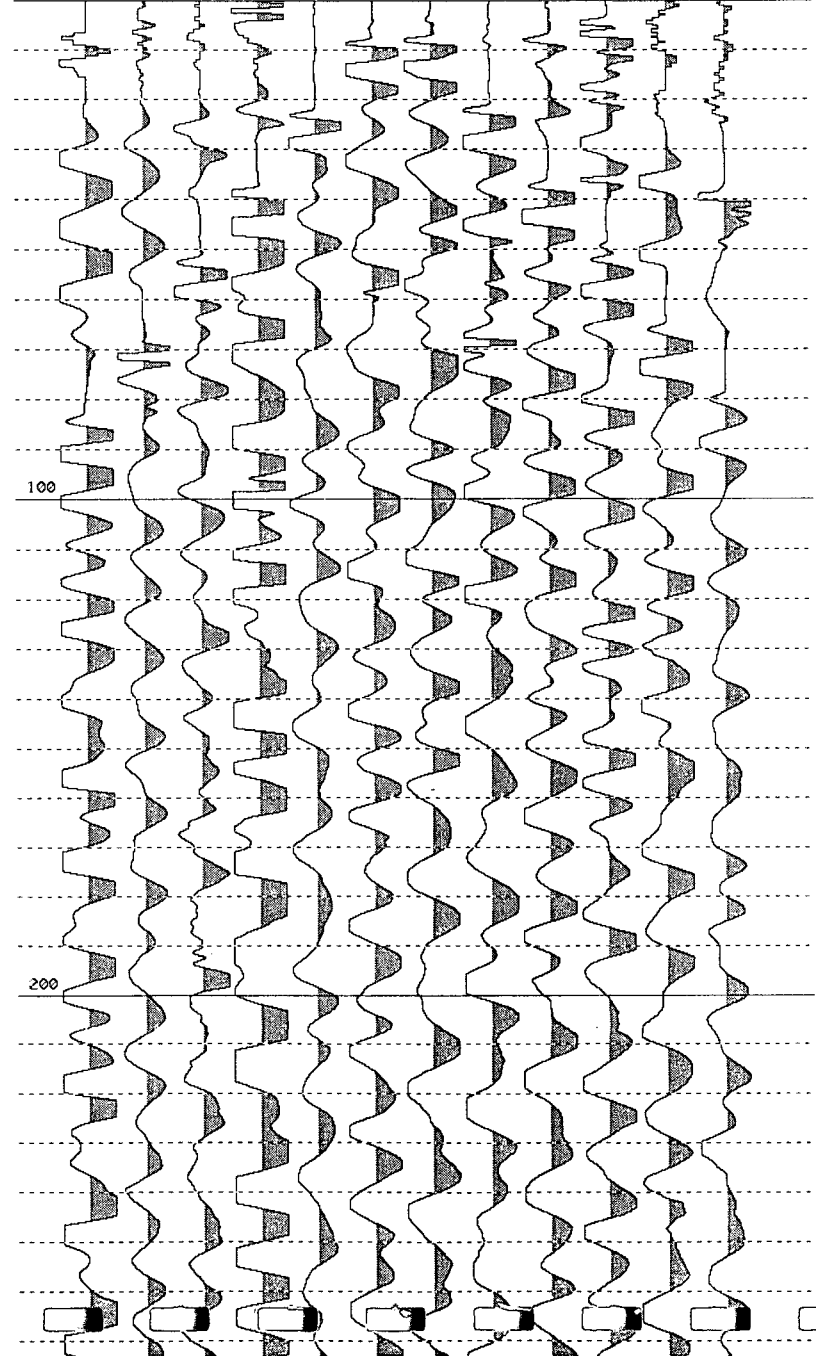
PHONE 12 LOC 0.00

DELAY 0 MS

STACKS 1

AGC 100

1	2	3	4	5	6	7	8	9	10	11	12
63	57	57	66	57	60	60	60	60	60	60	57



GEOMETRICS

SmartSeis

SAVED AS 0101-3.DAT

13:20:2322/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 55.00

PHONE 1 LOC 55.00

PHONE 12 LOC 0.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

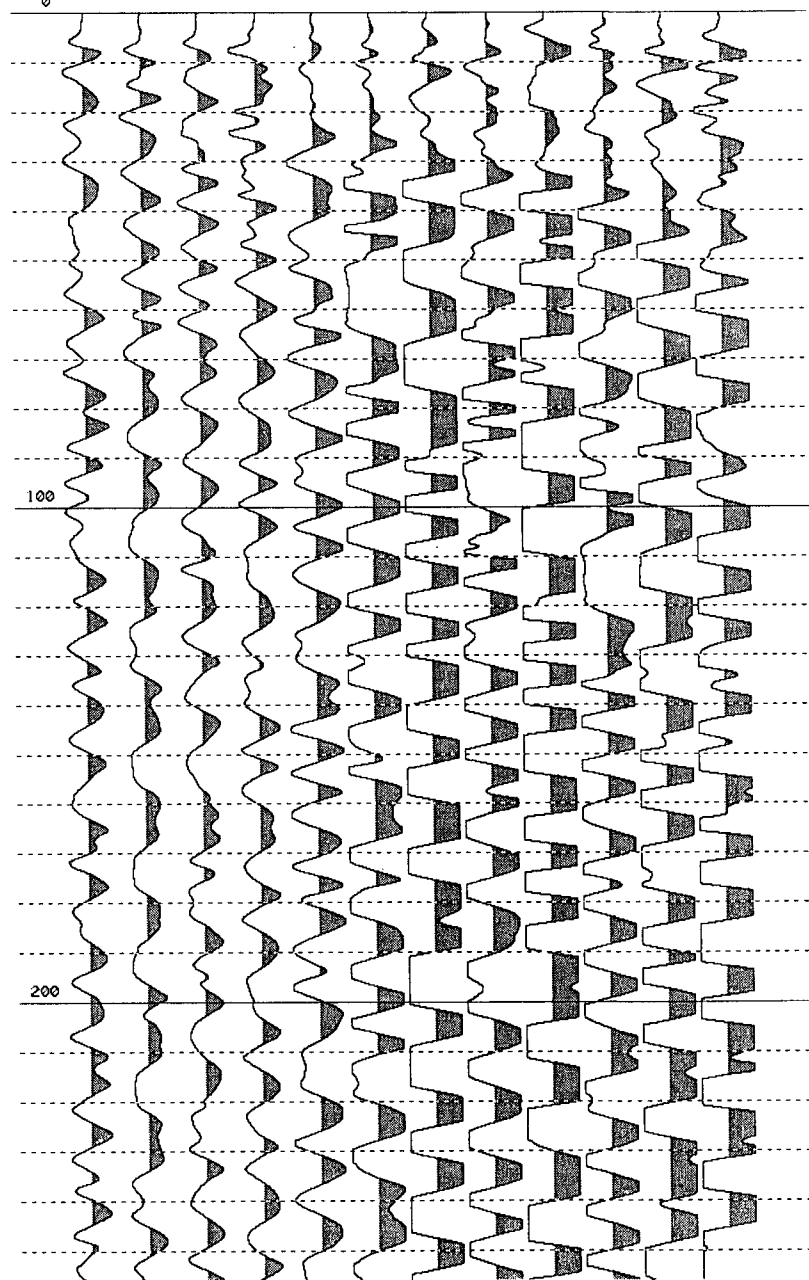
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	60	63	66	69	69	69	66	69



GEOMETRICS

SmartSeis

SAVED AS 0101-4.DAT

13:36:5722/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 115.00

PHONE 1 LOC 55.00

PHONE 12 LOC 0.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

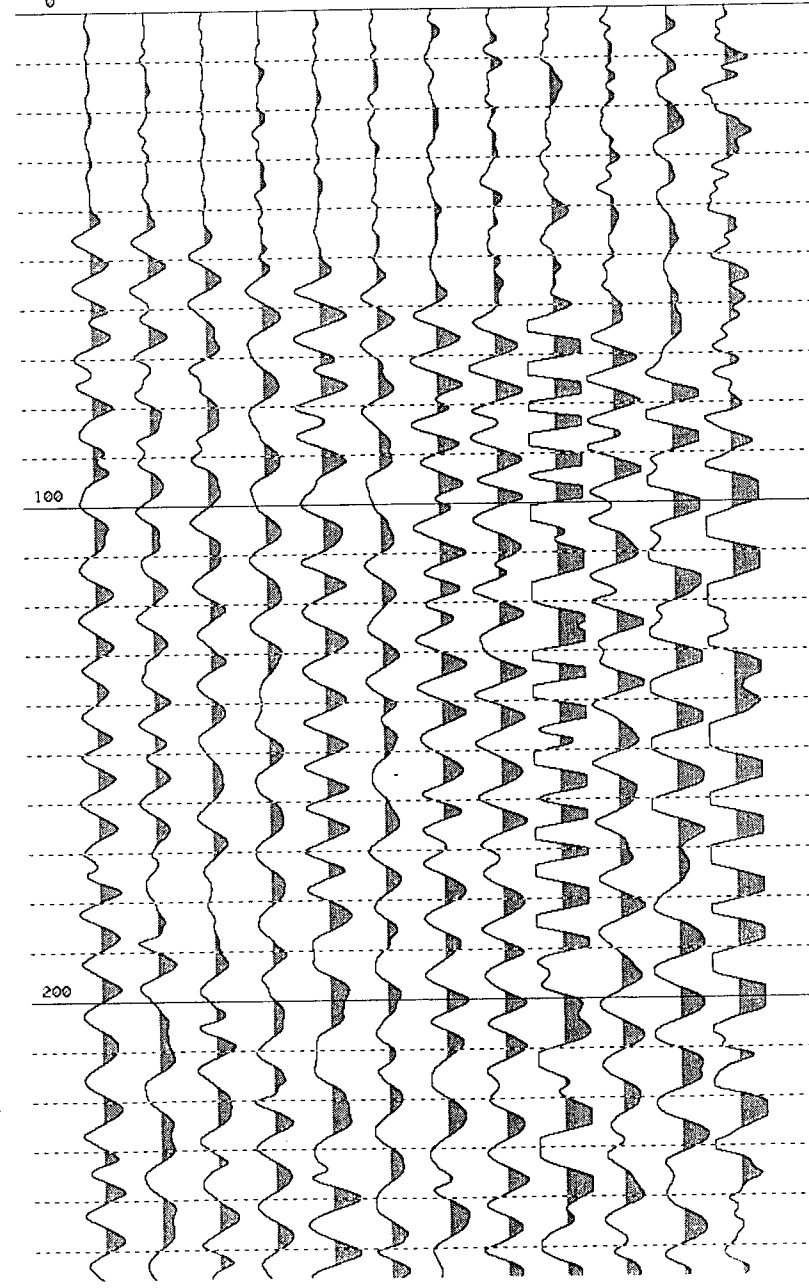
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	60	57	60	60	66	60	63	66



GEOMETRICS

SmartSeis

SAVED AS 0102-1.DAT

14:34:2422/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 0.00

PHONE 1 LOC 115.00

PHONE 12 LOC 60.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

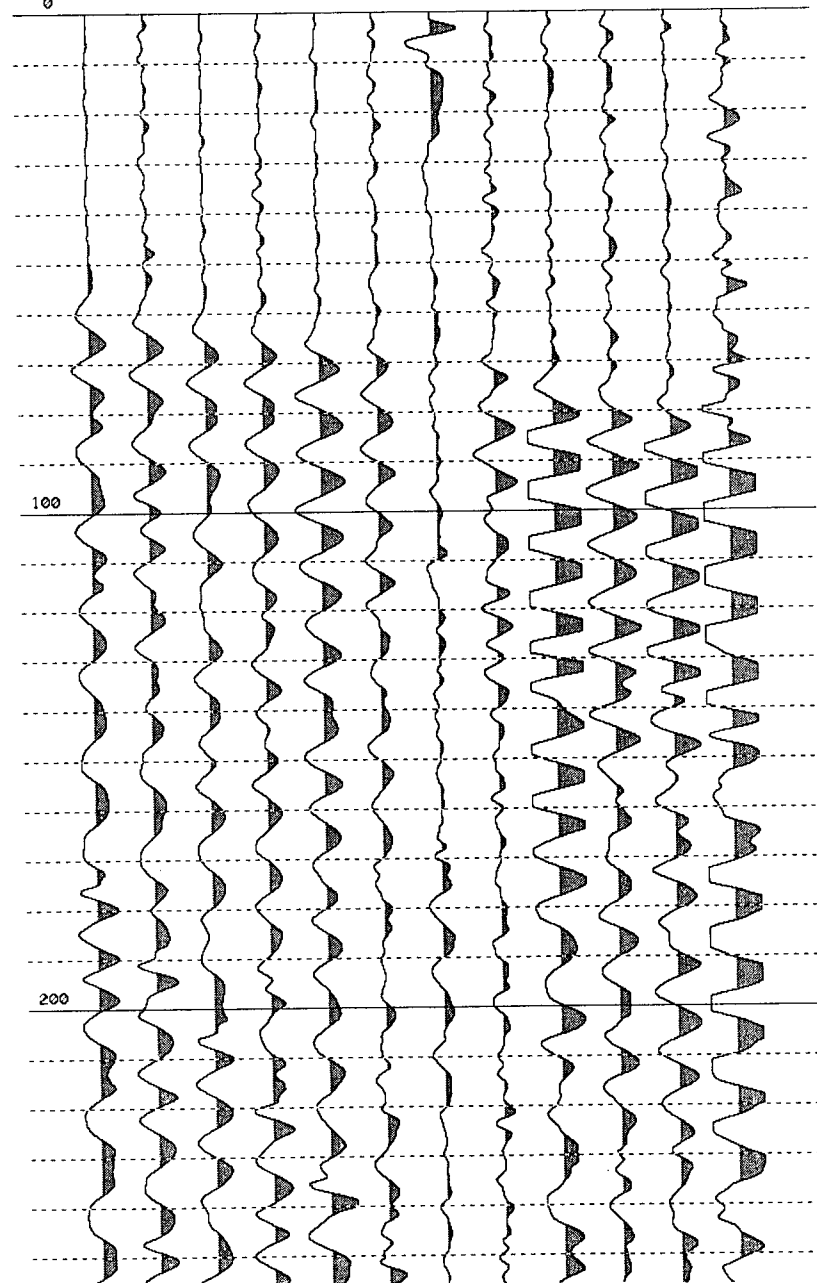
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	60	57	60	60	66	60	63	66



GEOMETRICS

SmartSeis

SAVED AS 0102-2.DAT

14:40:4222/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 60.00

PHONE 1 LOC 115.00

PHONE 12 LOC 60.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

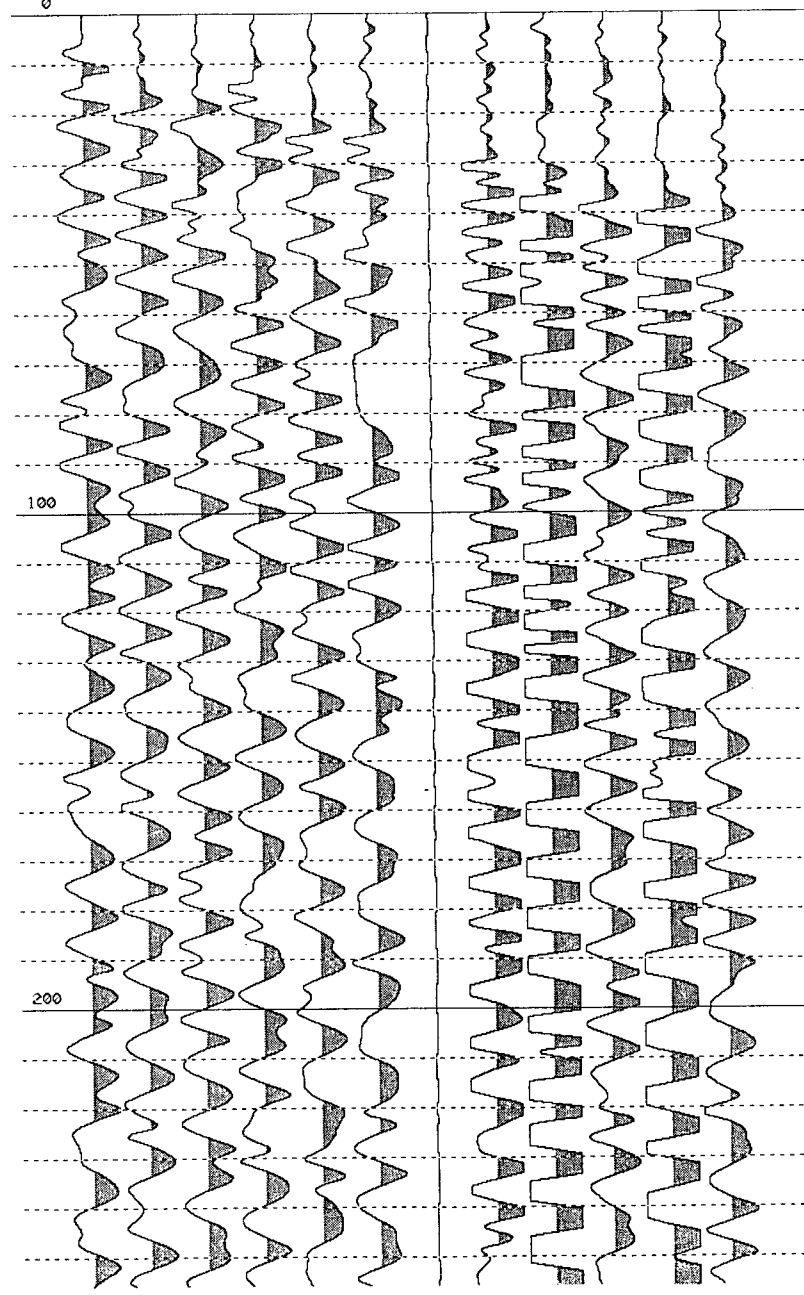
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	24	63	69	60	66	60



GEOMETRICS

SmartSeis

SAVED AS 0102-4.DAT

14:56:2622/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 115.00

PHONE 1 LOC 115.00

PHONE 12 LOC 60.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

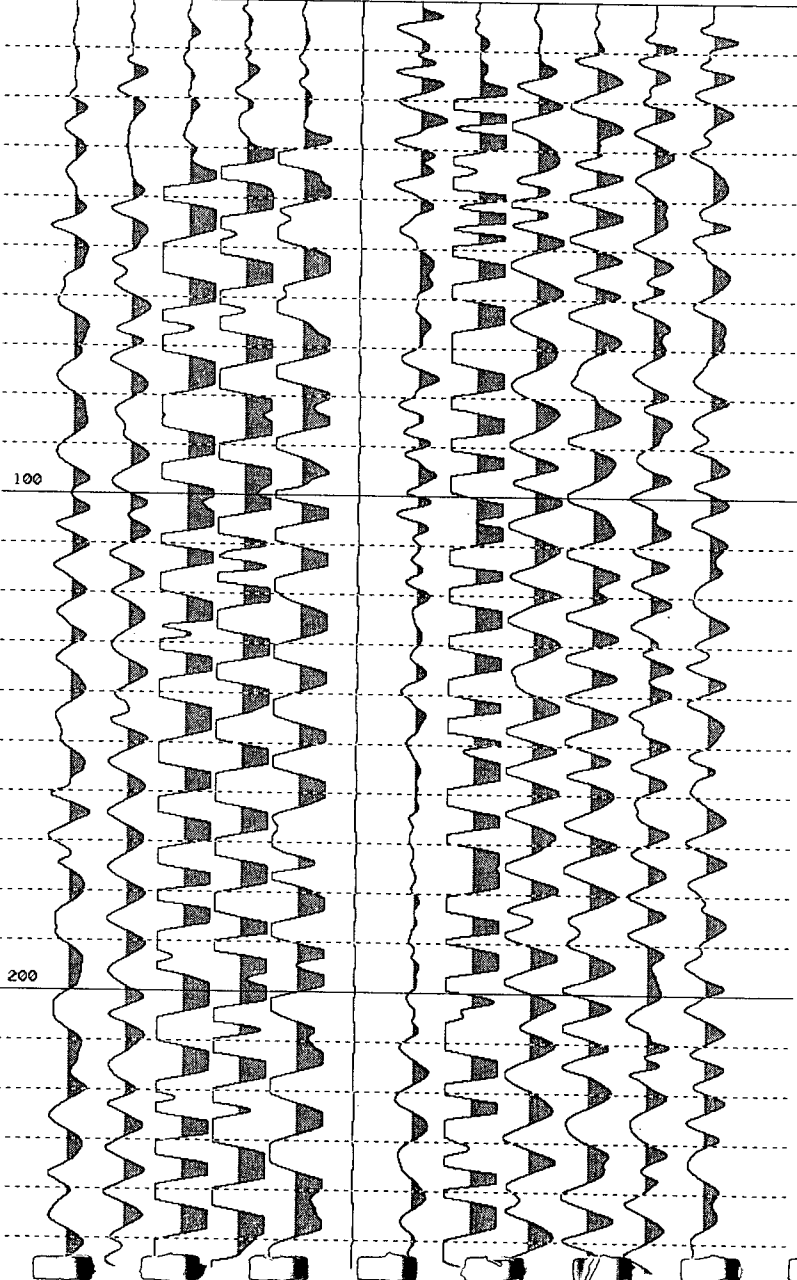
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	66	66	63	30	60	66	60	60	57	57



GEOMETRICS

SmartSeis

SAVED AS 0102-5.DAT

15:07:1722/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 175.00

PHONE 1 LOC 115.00

PHONE 12 LOC 60.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

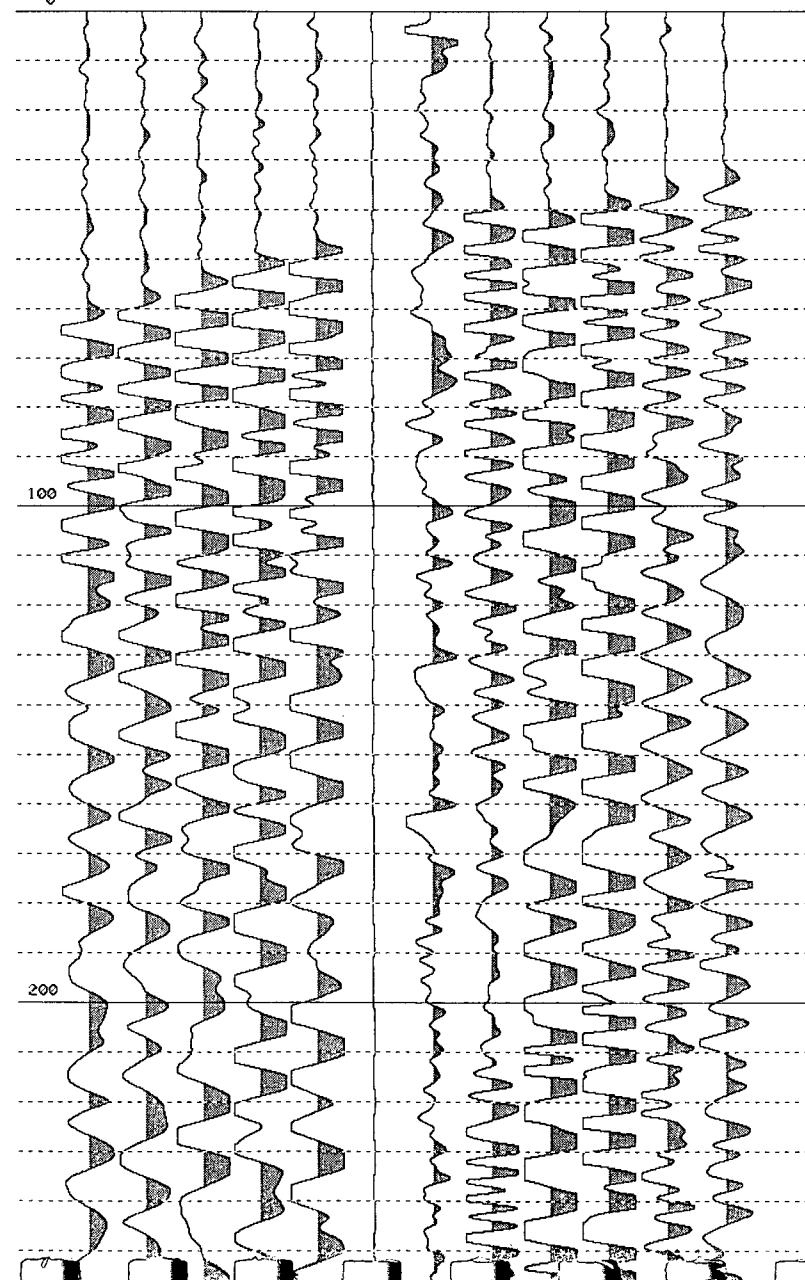
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	66	66	66	30	69	63	66	66	60	60



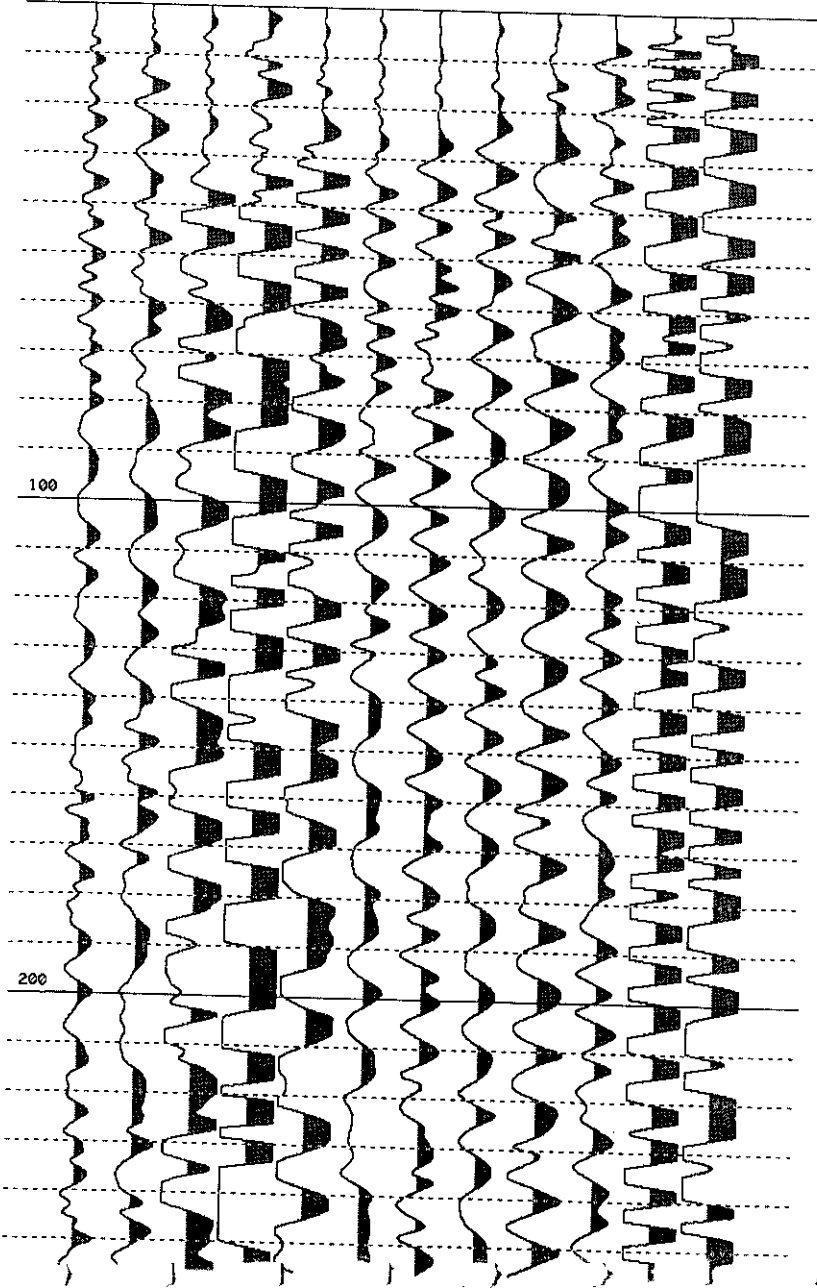
GEOMETRICS

SmartSeis

SAVED AS 0103-2.DAT
 LINE NUMBER 1
 SHOT LOC 120.00
 SAMPLE INTERVAL 125 uS
 ACQ FILT OUT
 DISP FILT LO CUT 25HZ
 GROUP INTERVAL 5.00
 PHONE 1 LOC 175.00
 RECORD LEN 256 MS
 PHONE 12 LOC 120.00
 DELAY 0 MS
 STACKS 1
 AGC 50

17:54:3922/OCT/1995

1	2	3	4	5	6	7	8	9	10	11	12
54	57	63	69	63	57	57	57	60	57	66	66



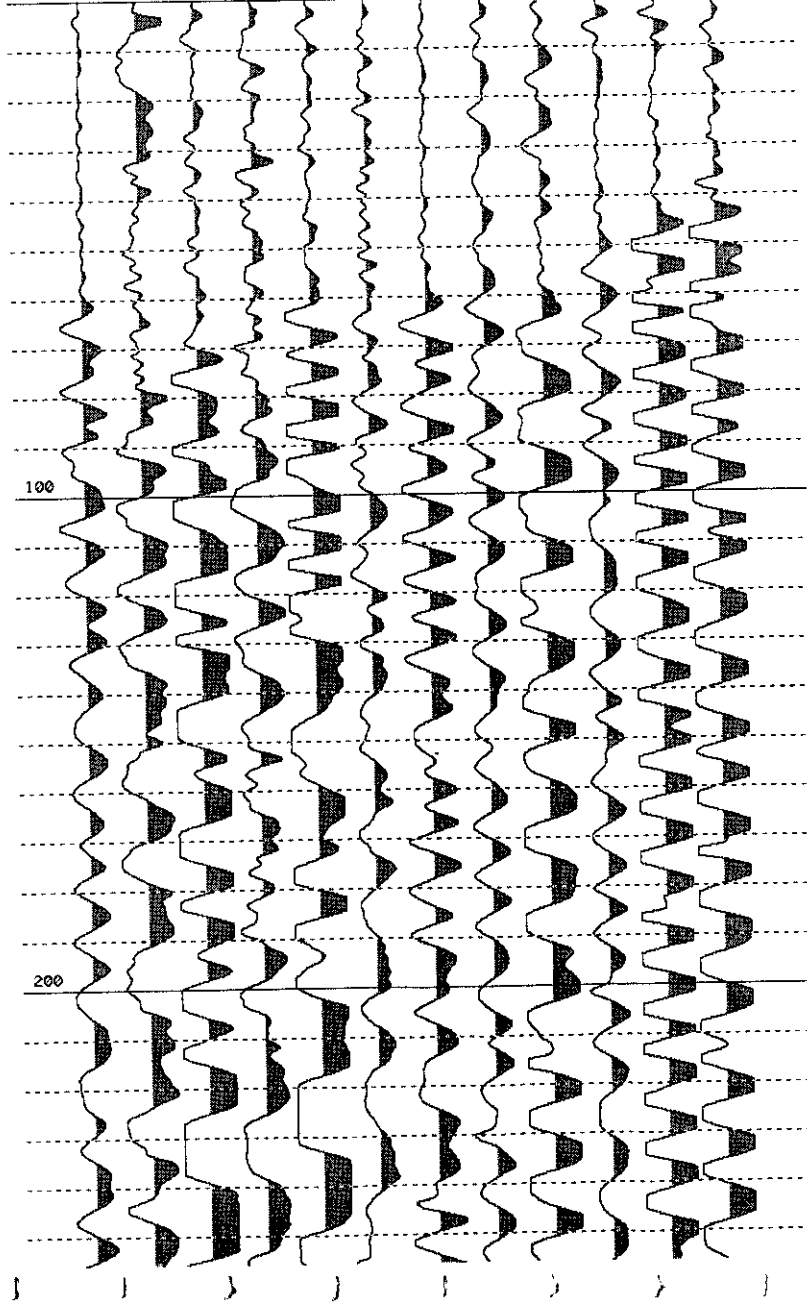
GEOMETRICS

SmartSeis

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 SHOT LOC 60.00
 SAMPLE INTERVAL 125 uS
 ACQ FILT OUT
 DISP FILT LO CUT 25HZ
 GROUP INTERVAL 5.00
 PHONE 1 LOC 175.00
 RECORD LEN 256 MS
 PHONE 12 LOC 120.00
 DELAY 0 MS
 STACKS 2
 AGC 50

17:42:4422/OCT/1995

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60	63	66	63	66	60	60	57	63	57	63	63



GEOMETRICS

SmartSeis

18:04:3122/OCT/1995

SAVED AS 0103-3.DAT

LINE NUMBER 1

SHOT LOC 147.50

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 175.00

RECORD LEN 256 MS

OUT HI CUT 250HZ

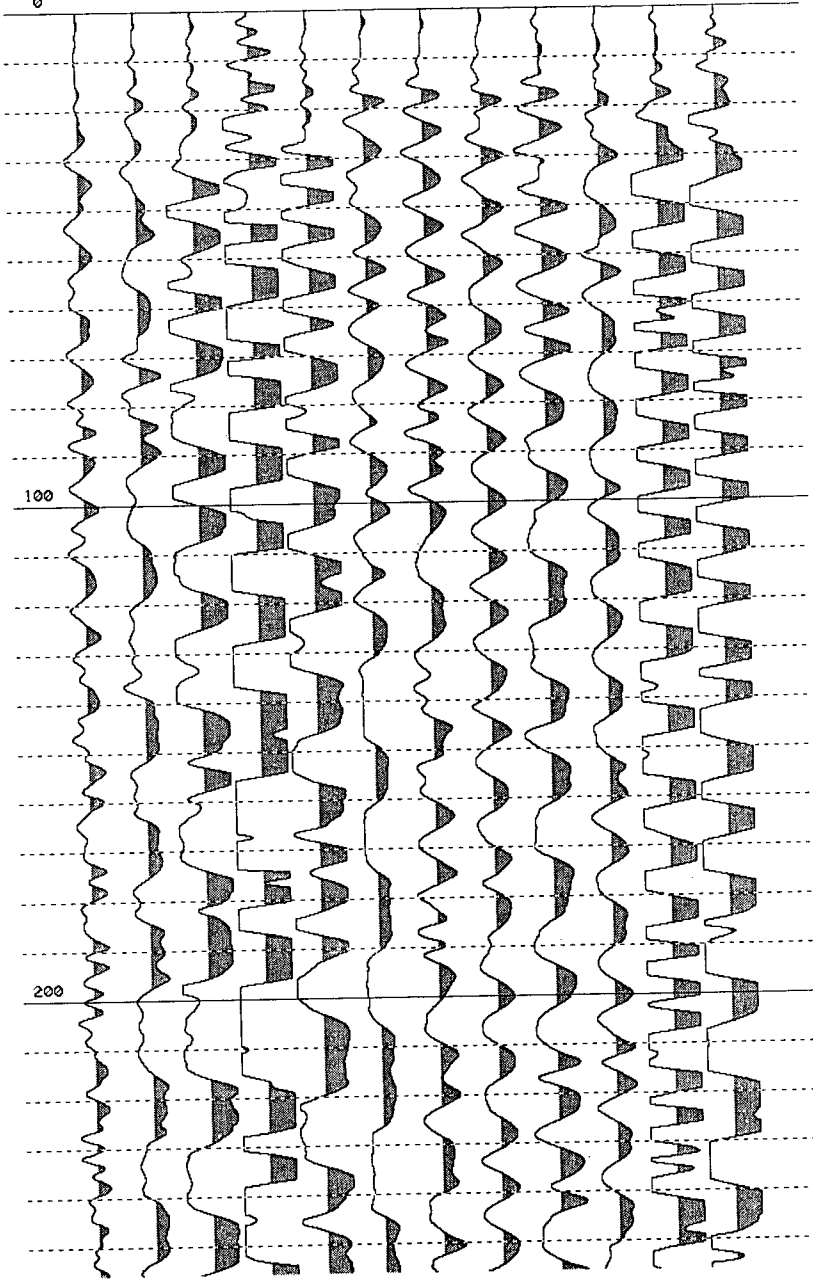
PHONE 12 LOC 120.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
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GEOMETRICS

SmartSeis

18:40:0122/OCT/1995

SAVED AS 0103-4.DAT

LINE NUMBER 1

SHOT LOC 175.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 175.00

RECORD LEN 256 MS

OUT HI CUT 250HZ

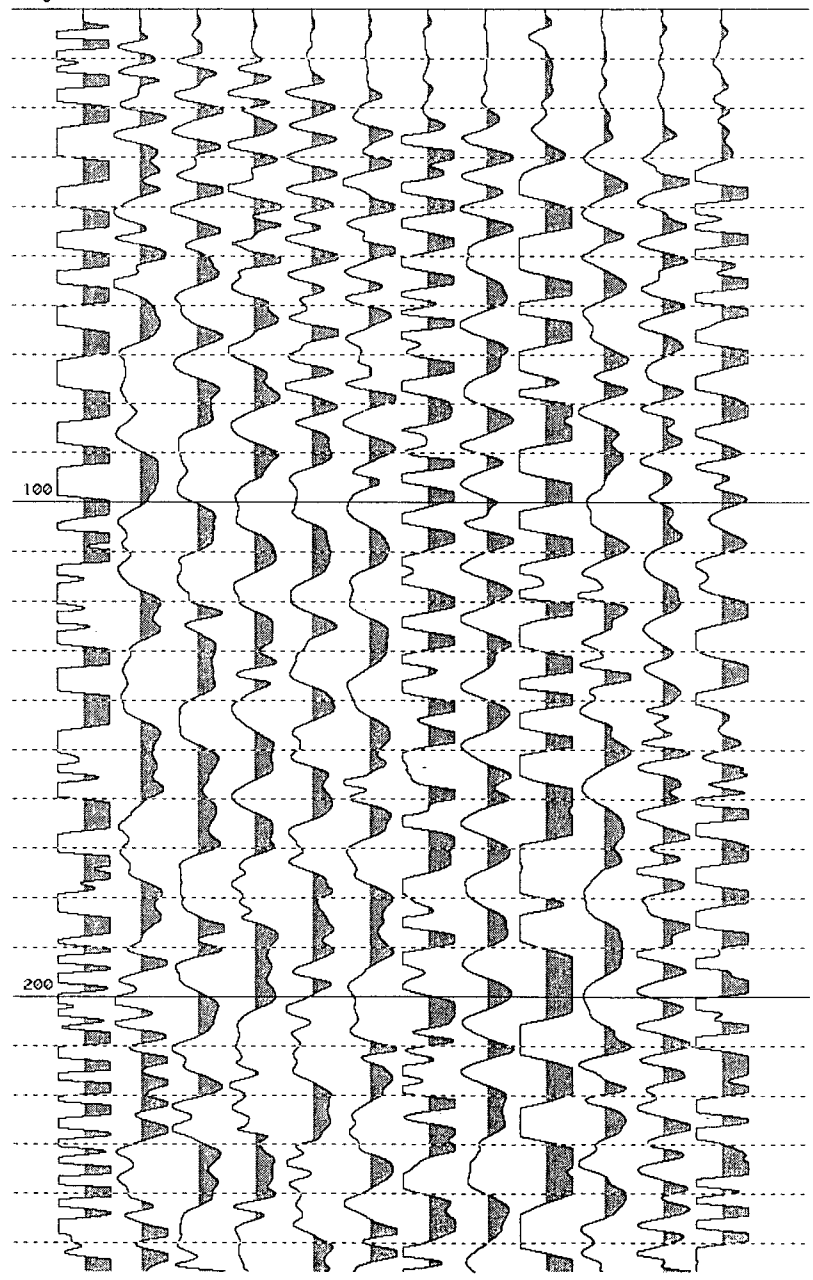
PHONE 12 LOC 120.00

DELAY 0 MS

STACKS 1

AGC 50

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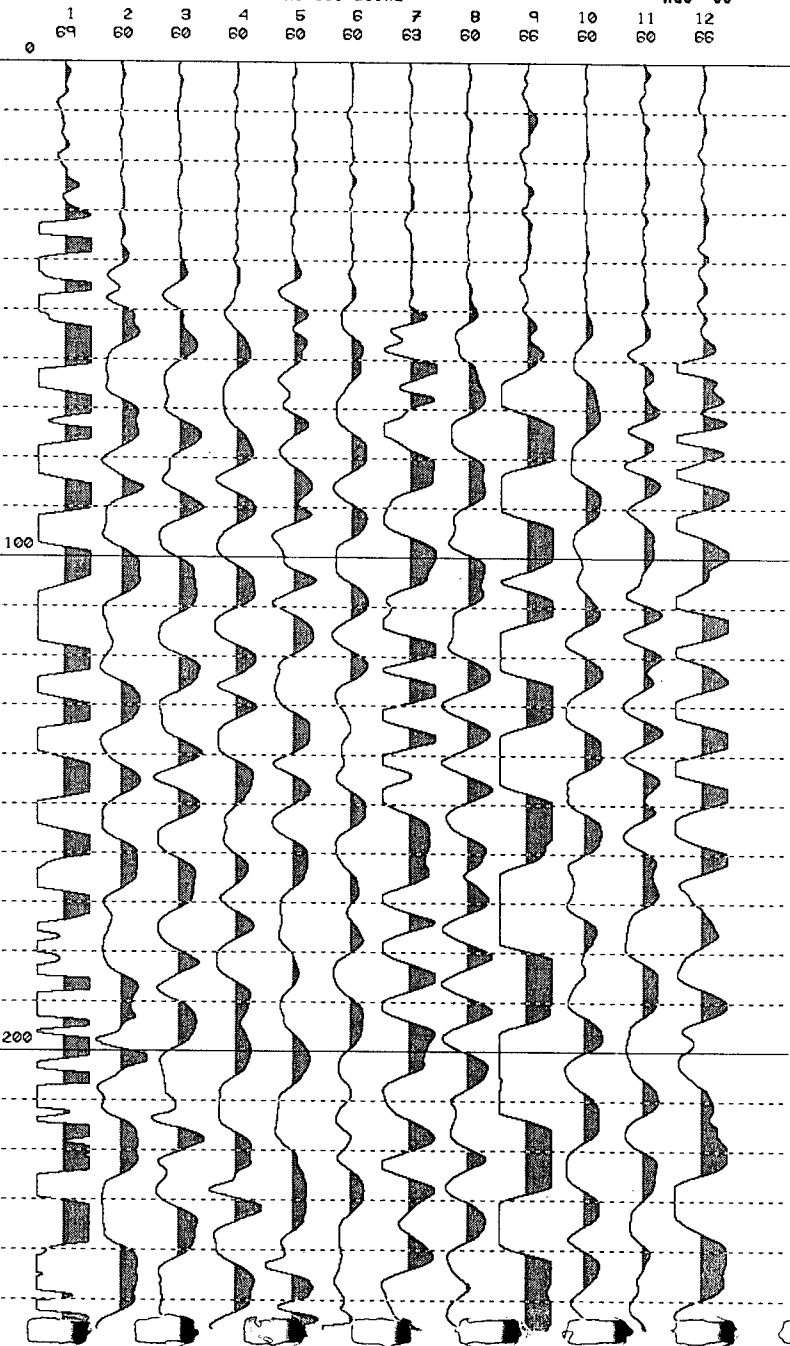
GEOMETRICS

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LINE NUMBER 1
SHOT LOC 235.00
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 175.00
RECORD LEN 256 MS

SmartSeis
18:56:5822/OCT/1995

PHONE 12 LOC 120.00
DELAY 0 MS
STACKS 1
AGC 50



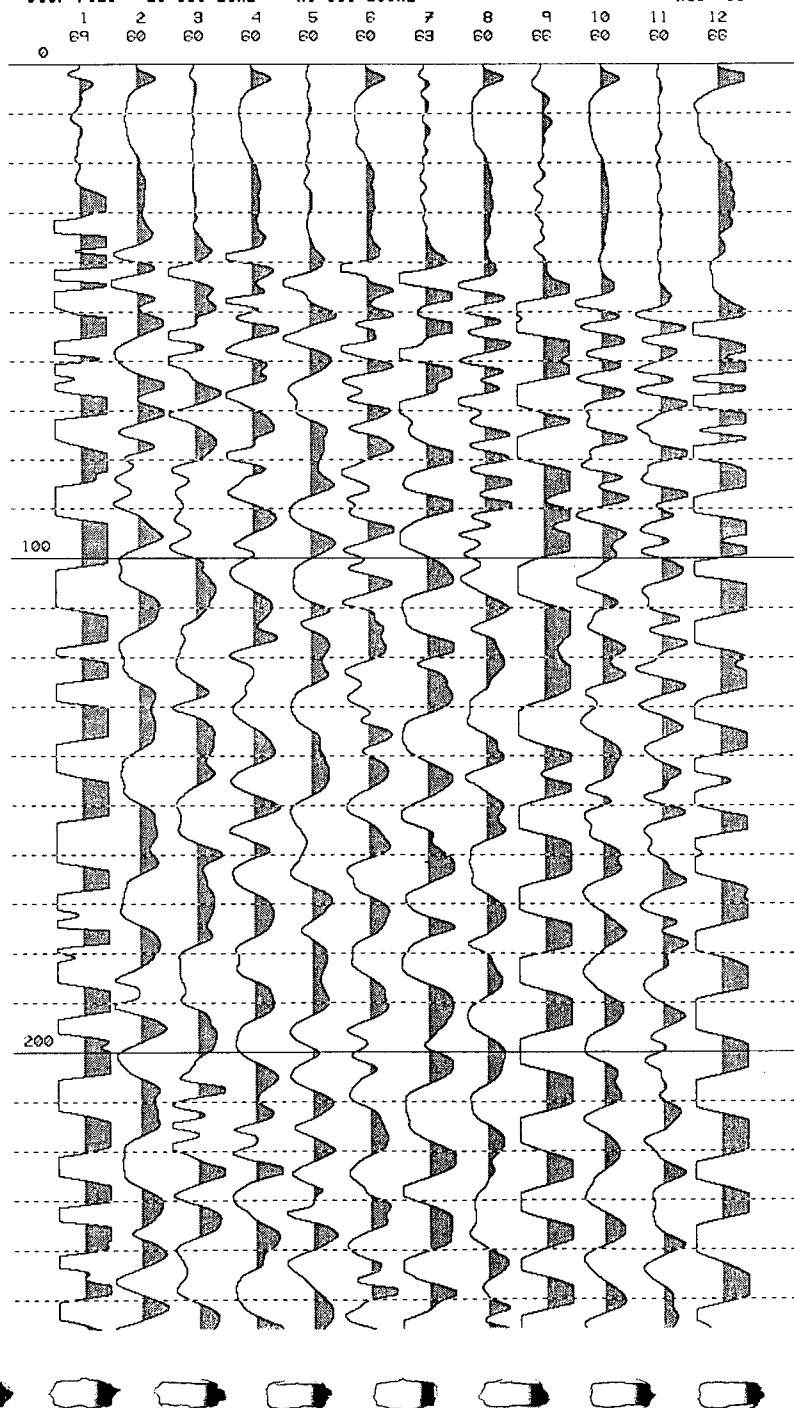
GEOMETRICS

SAVED AS 0104-1.DAT
LINE NUMBER 1
SHOT LOC 120.00
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 235.00
RECORD LEN 256 MS

SmartSeis
19:58:0822/OCT/1995

PHONE 12 LOC 180.00
DELAY 0 MS
STACKS 1
AGC 50



GEOMETRICS

SmartSeis

SAVED AS 0104-2.DAT

20:06:5122/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 180.00

PHONE 1 LOC 235.00

PHONE 12 LOC 180.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

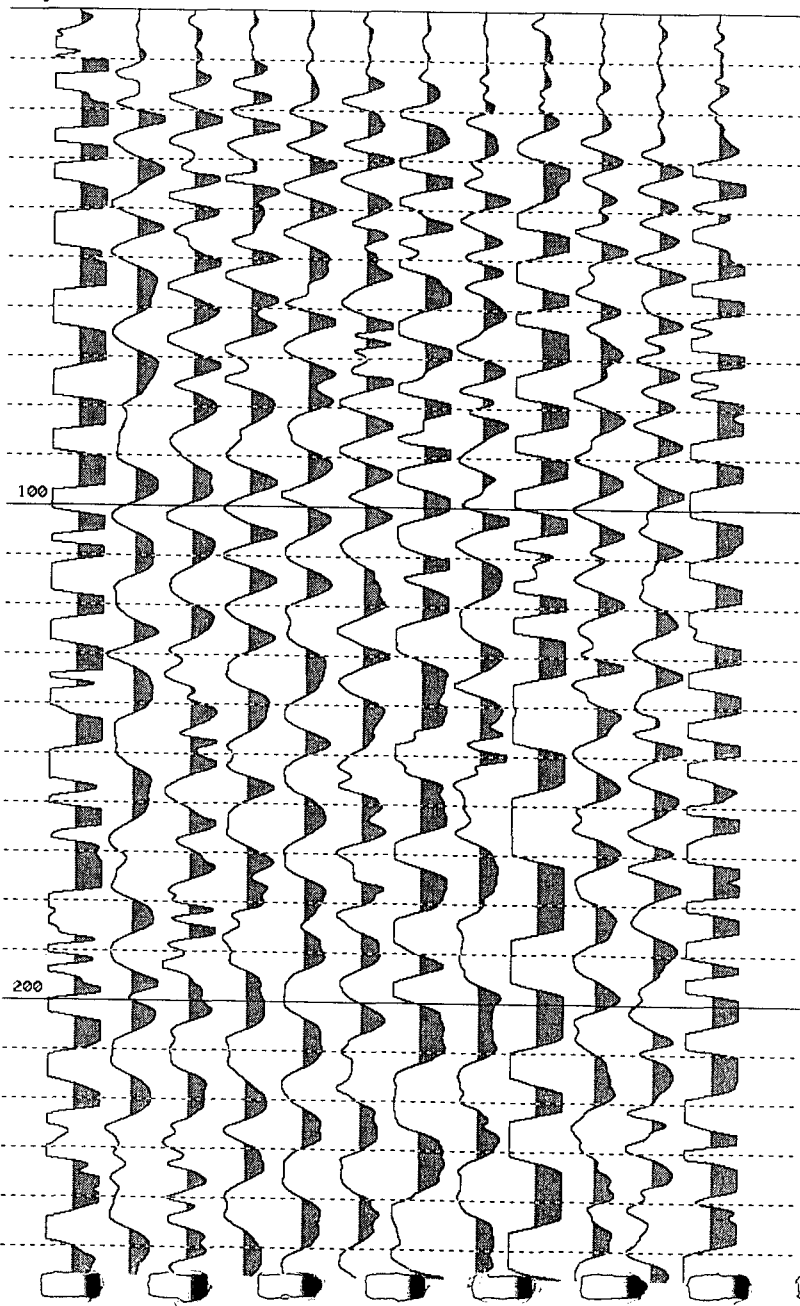
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

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69	60	60	60	60	60	63	60	66	60	60	66



GEOMETRICS

SmartSeis

SAVED AS 0104-3.DAT

20:15:5522/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 207.50

PHONE 1 LOC 235.00

PHONE 12 LOC 180.00

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RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

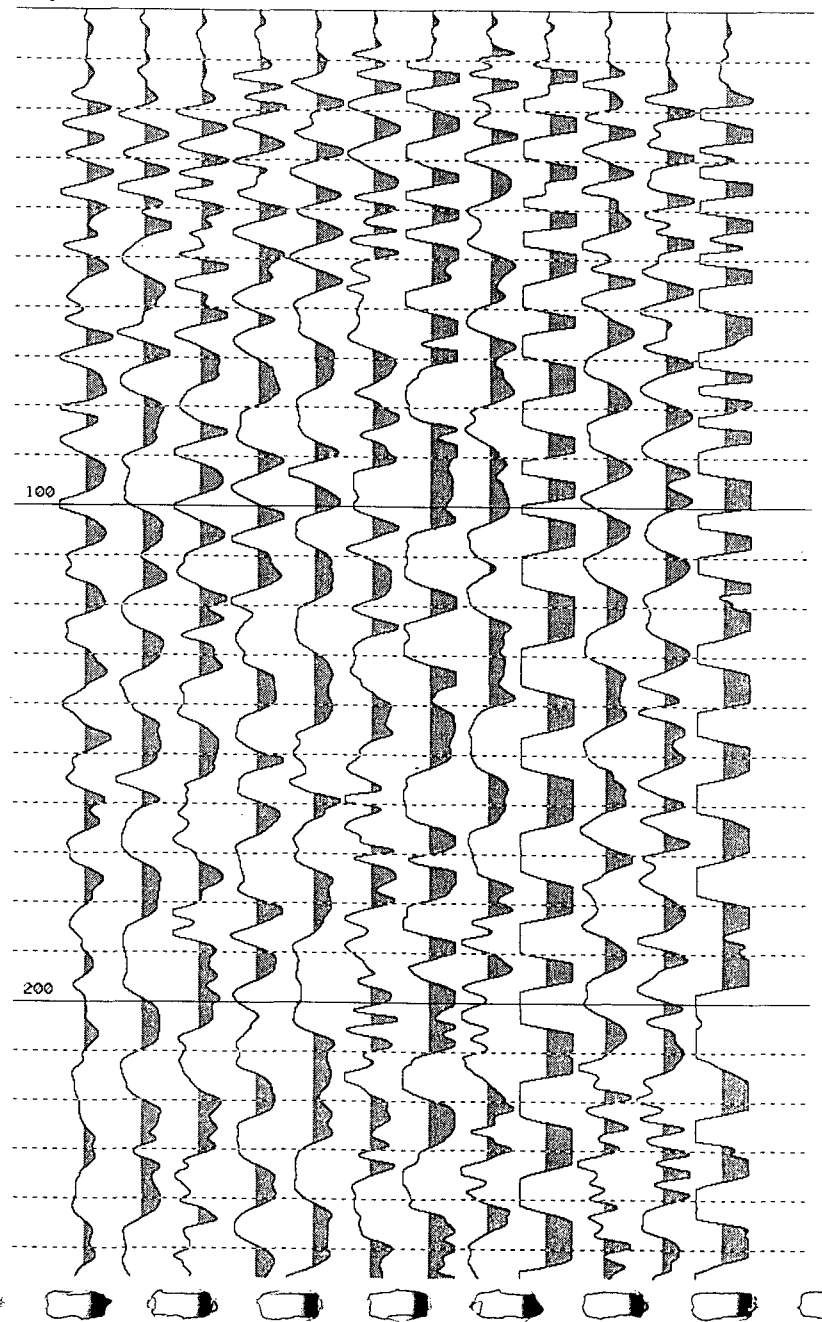
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

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GEOMETRICS

SmartSeis

SAVED AS 0104-4.DAT

20:32:0722/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 235.00

PHONE 1 LOC 235.00

PHONE 12 LOC 180.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

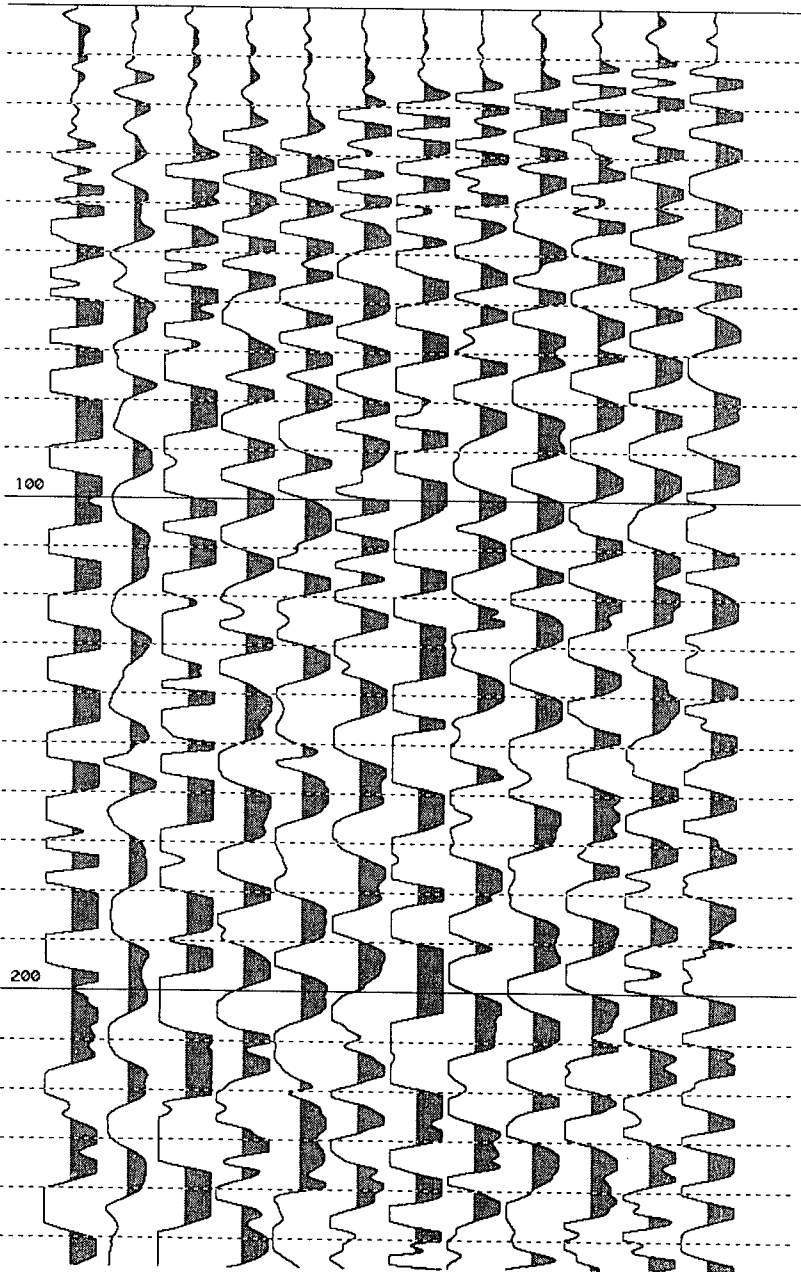
STACKS 1

DISP FILT LO CUT 25HZ

OUT HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
69	60	66	69	63	63	66	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0104-5.DAT

20:56:3922/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 295.00

PHONE 1 LOC 235.00

PHONE 12 LOC 180.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

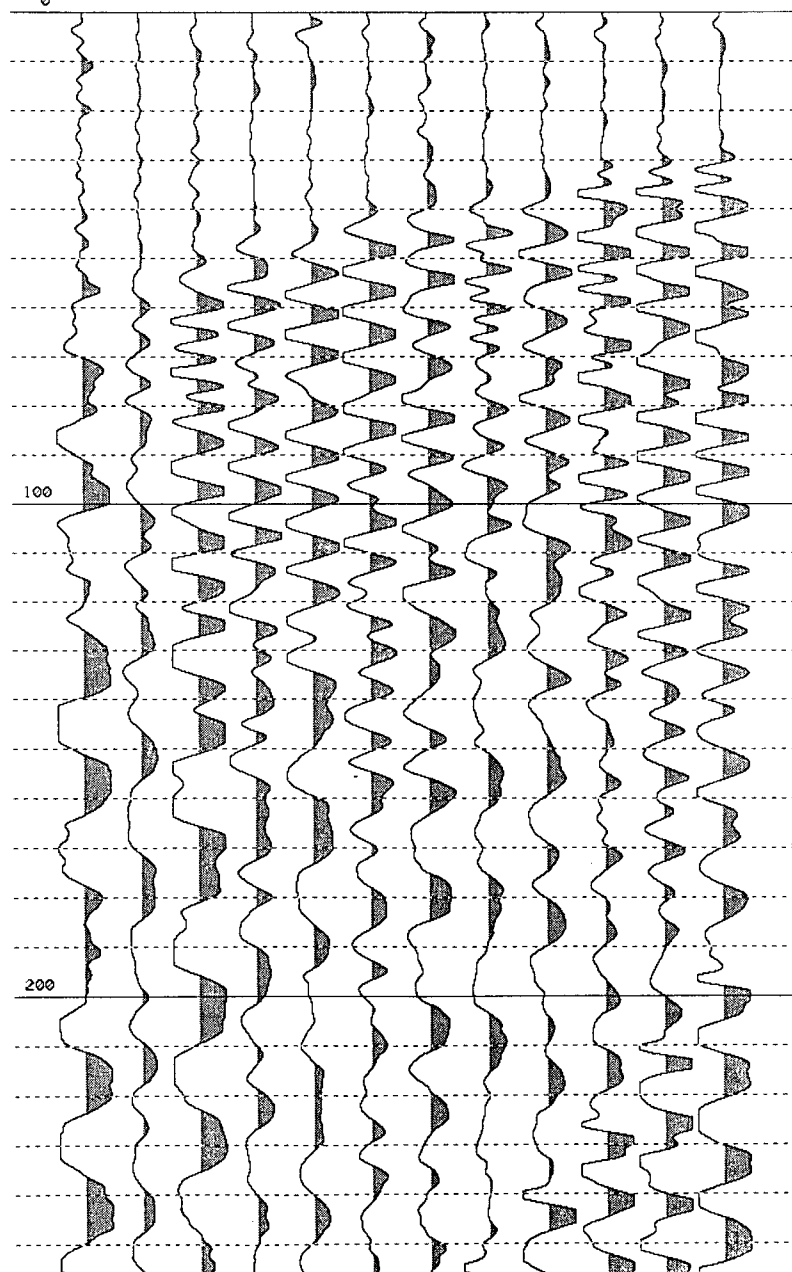
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

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GEOMETRICS

SmartSeis

SAVED AS 0105-1.DAT

13:17:523/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 180.00

PHONE 1 LOC 295.00

PHONE 12 LOC 240.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

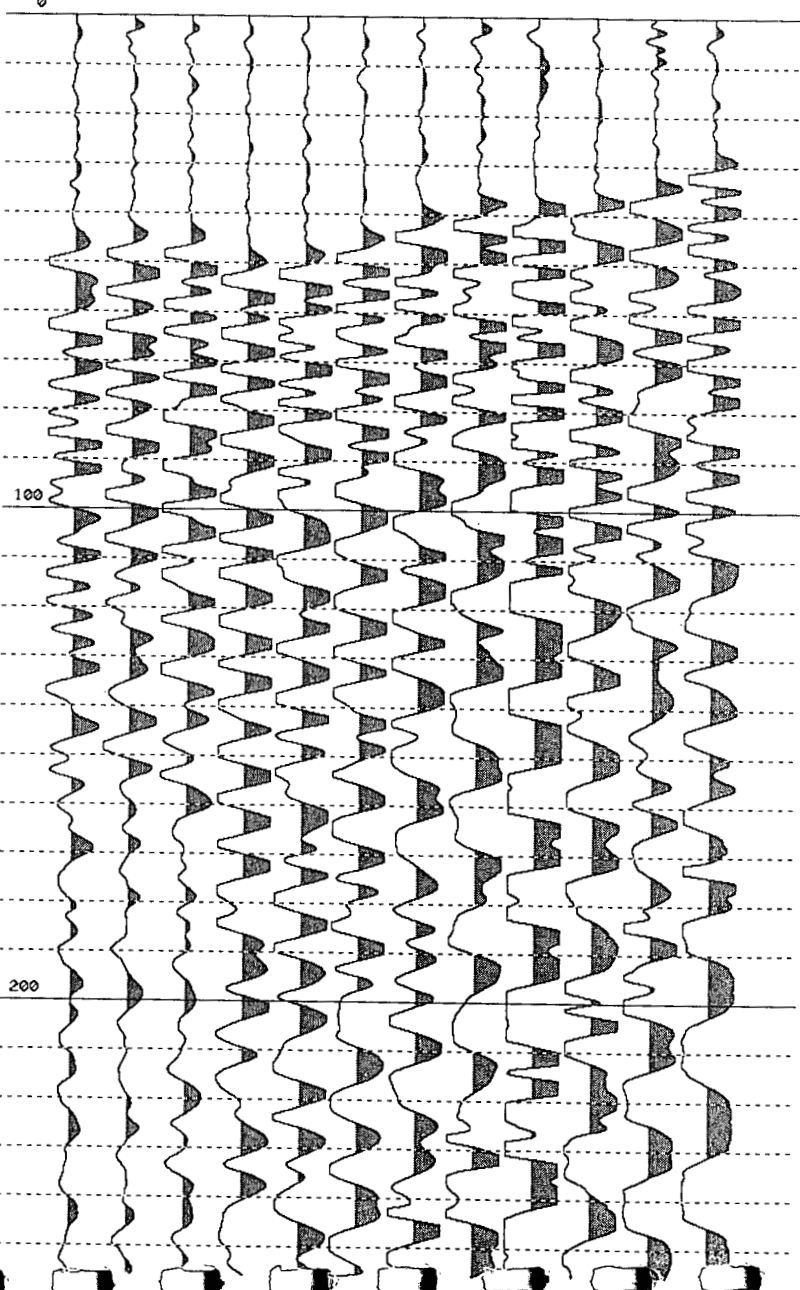
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

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GEOMETRICS

SmartSeis

SAVED AS 0105-2.DAT

13:38:0023/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 240.00

PHONE 1 LOC 295.00

PHONE 12 LOC 240.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

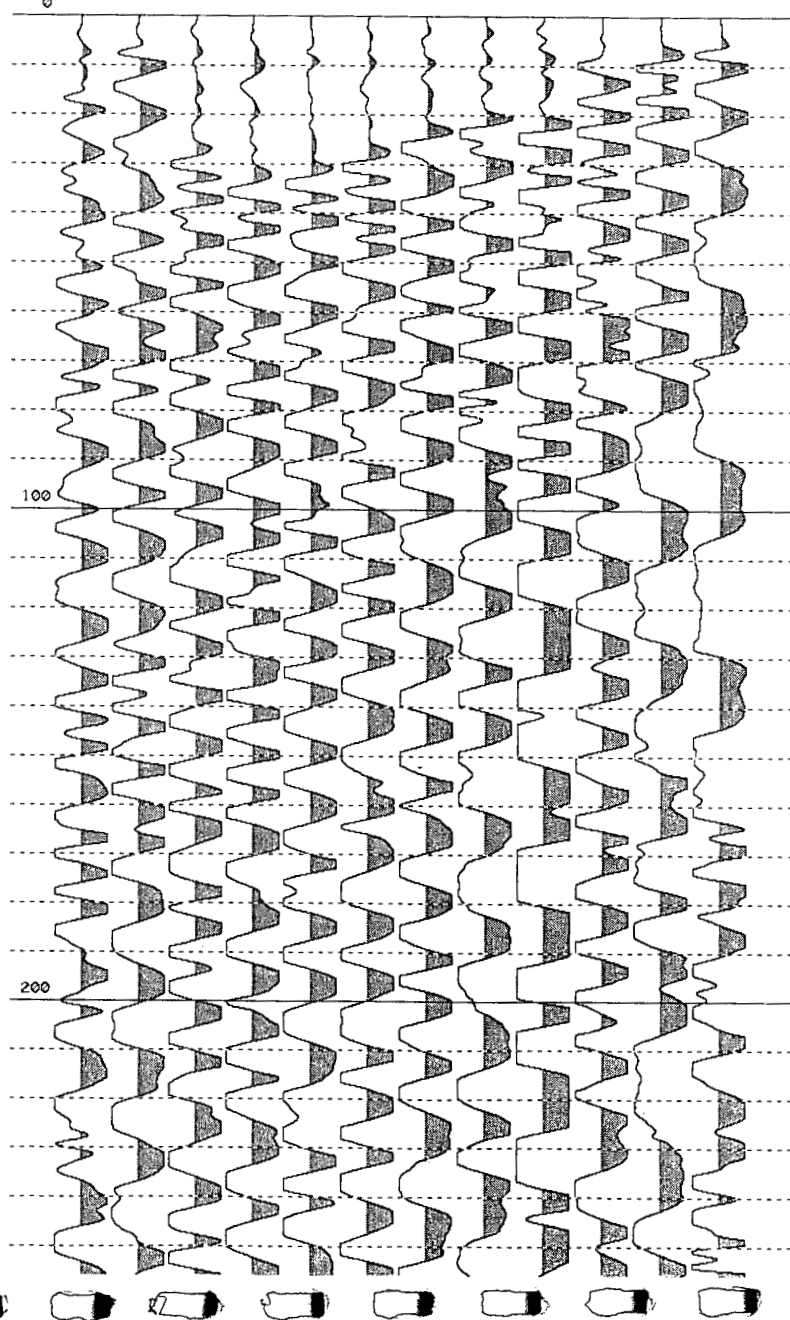
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0105-3.DAT

13:49:0923/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 267.50

PHONE 1 LOC 295.00

PHONE 12 LOC 240.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

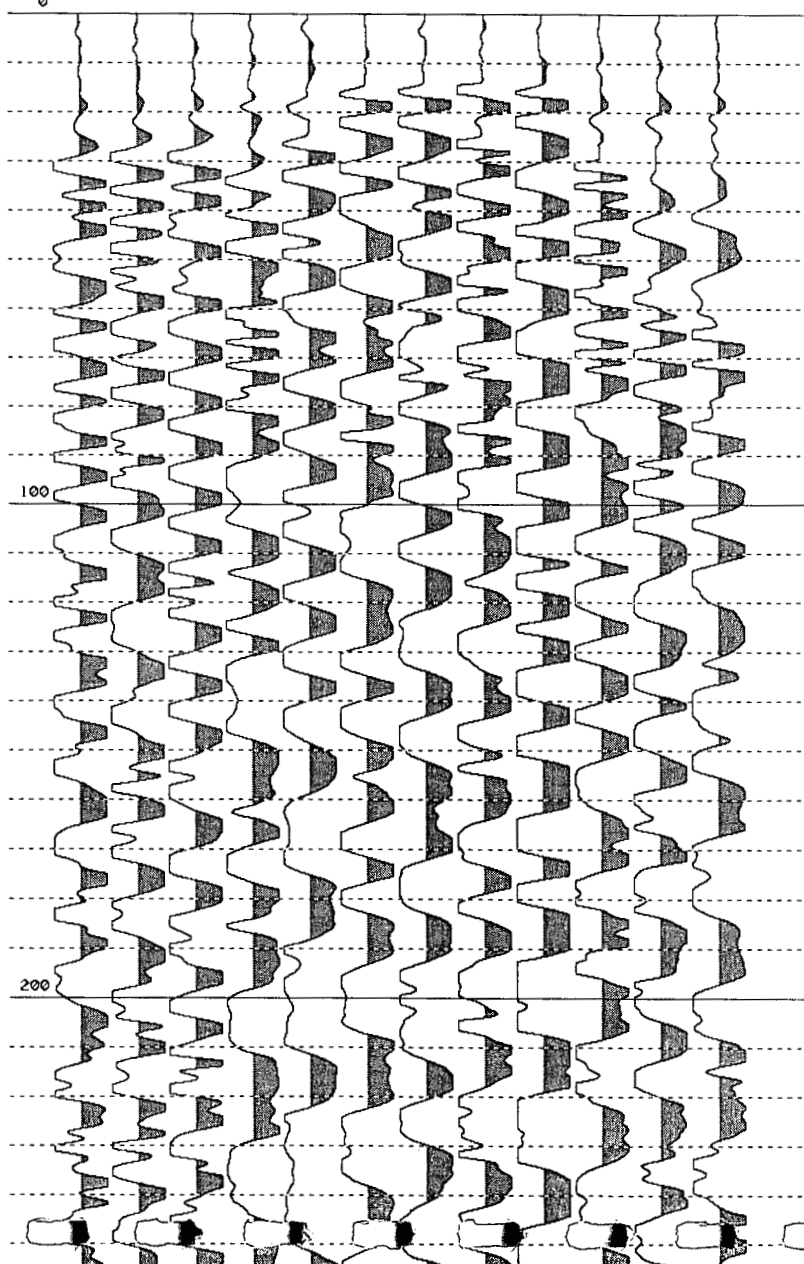
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0105-4.DAT

13:59:5323/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 295.00

PHONE 1 LOC 295.00

PHONE 12 LOC 240.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

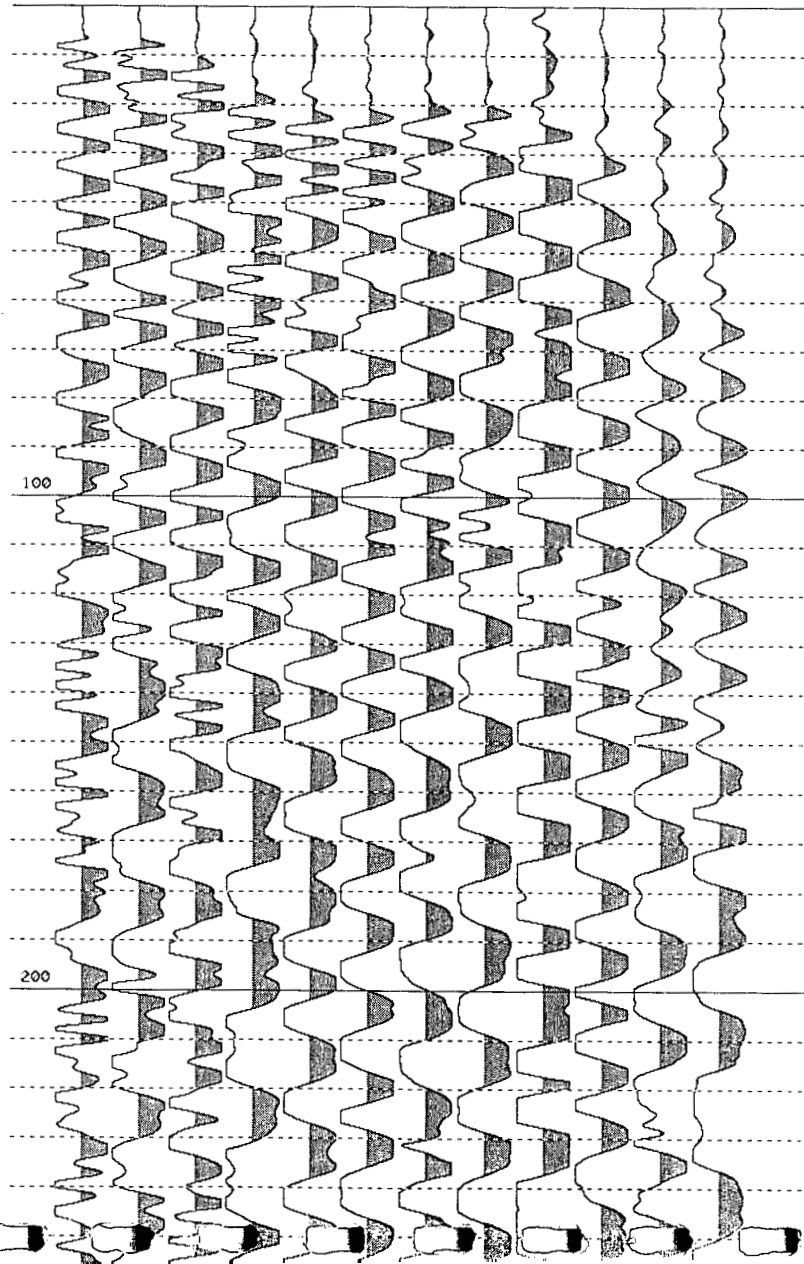
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SAVED AS 0105-5.DAT

LINE NUMBER 1

SHOT LOC 355.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 295.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

14:22:0123/OCT/1995

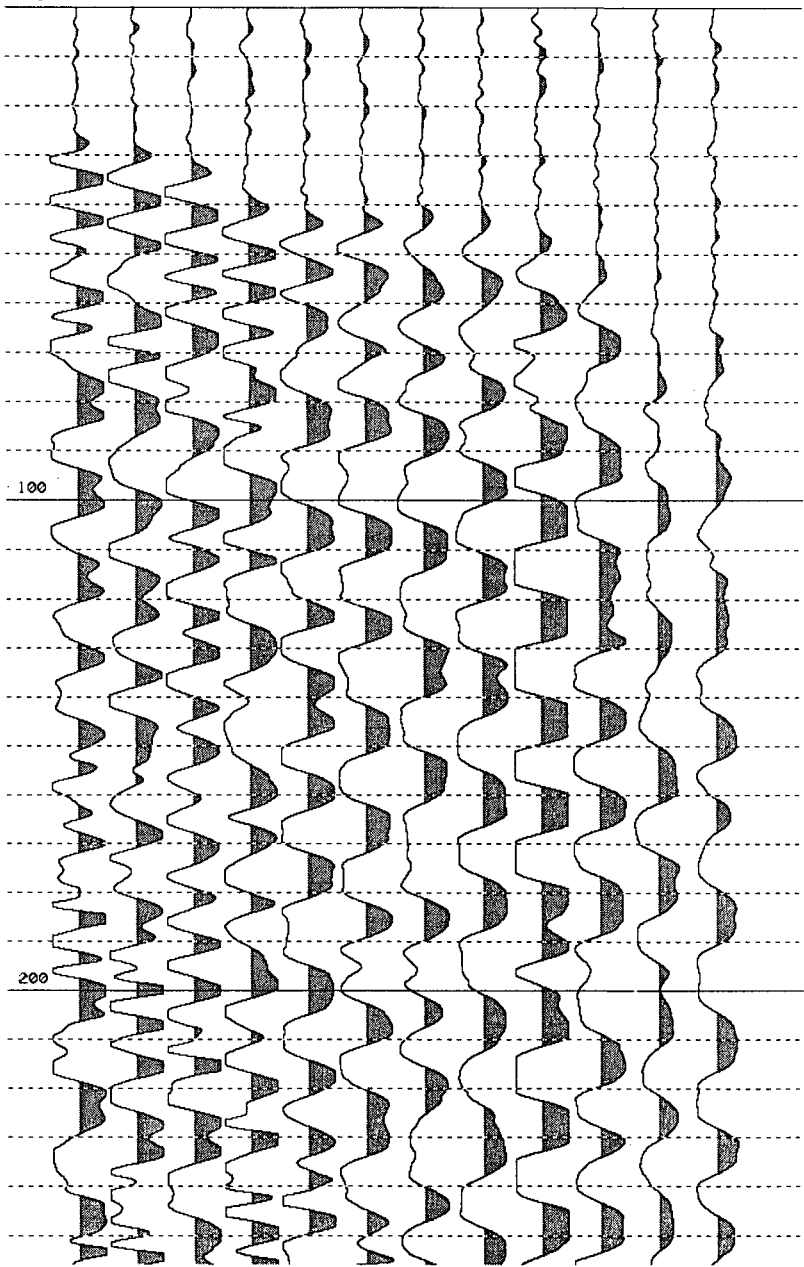
PHONE 12 LOC 240.00

DELAY 0 MS

STACKS 1

AGC 50

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63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SAVED AS 0106-1.DAT

LINE NUMBER 1

SHOT LOC 240.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 355.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

15:10:0923/OCT/1995

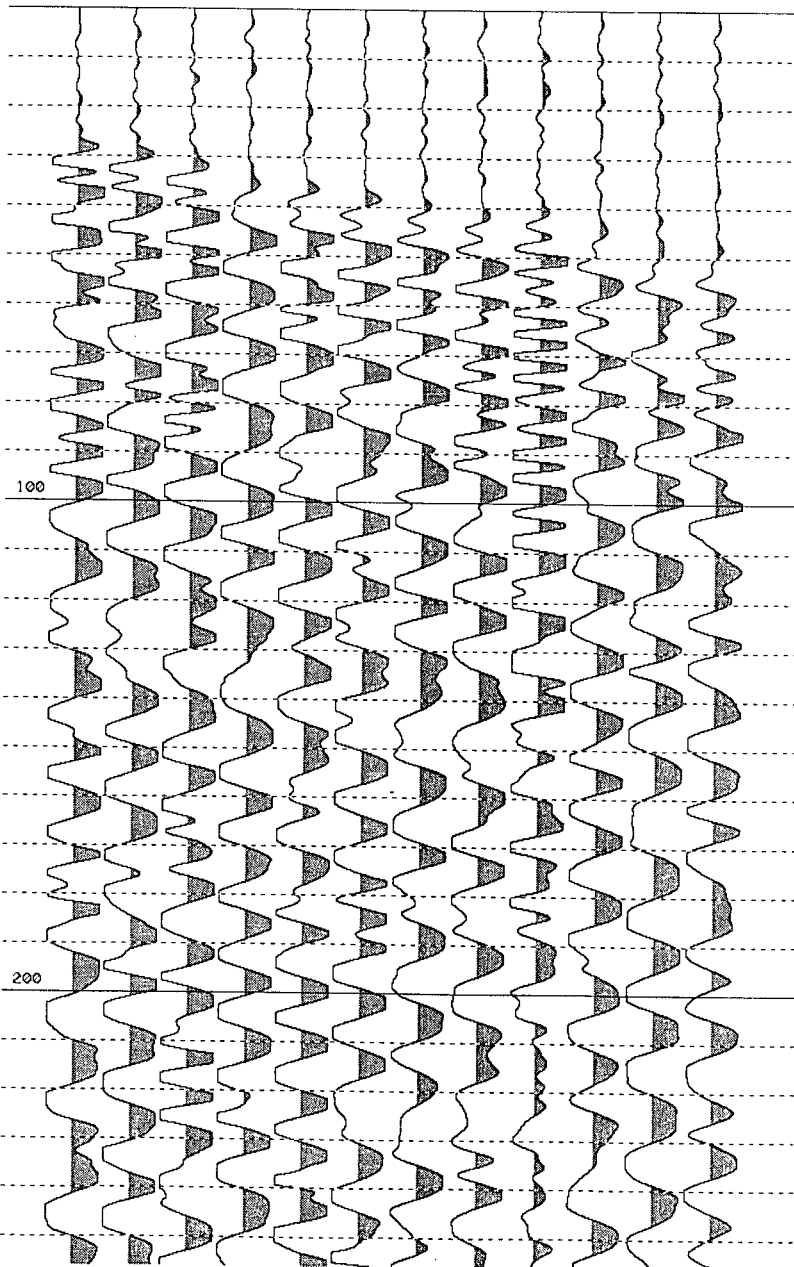
PHONE 12 LOC 300.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
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GEOMETRICS

SmartSeis

SAVED AS 0106-2.DAT

15:19:3923/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 300.00

PHONE 1 LOC 355.00

PHONE 12 LOC 300.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

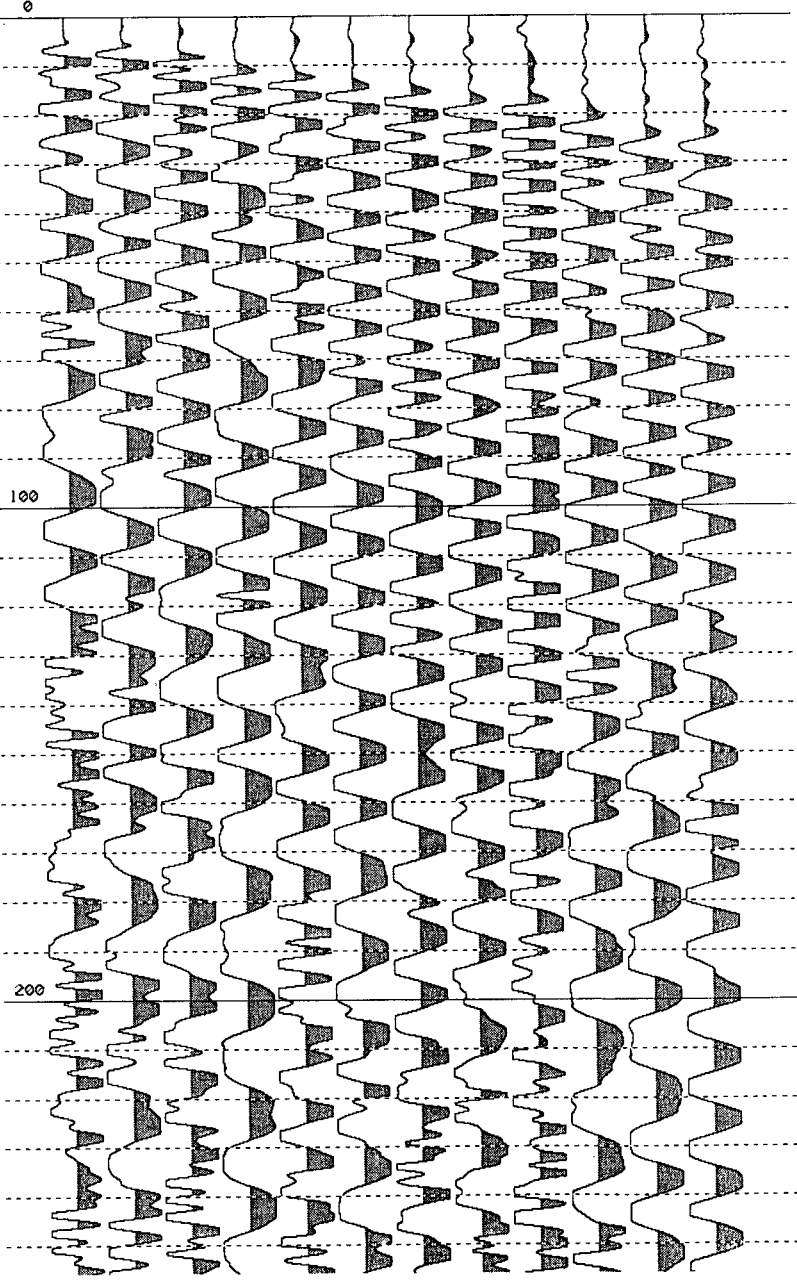
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0106-3.DAT

15:28:5123/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 327.50

PHONE 1 LOC 355.00

PHONE 12 LOC 300.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

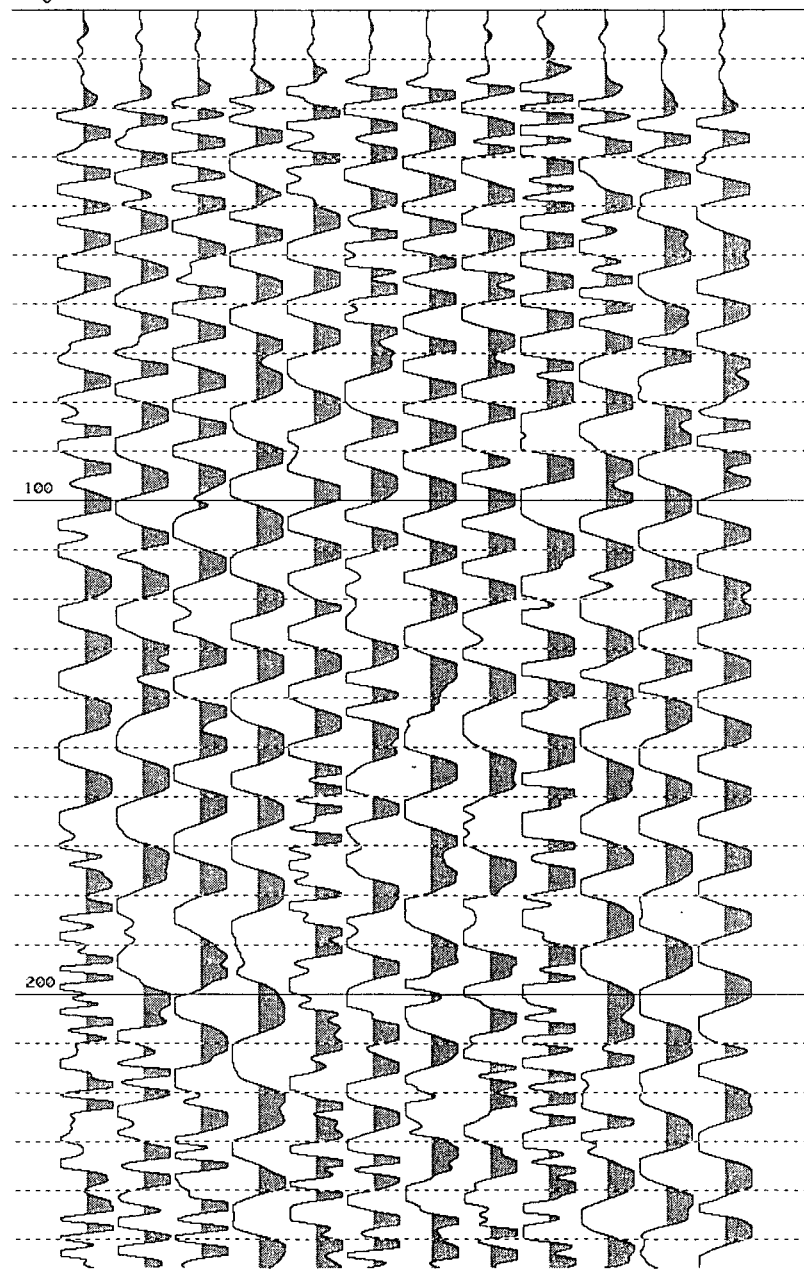
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0106-4.DAT

15:38:2823/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 355.00

PHONE 1 LOC 355.00

PHONE 12 LOC 300.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

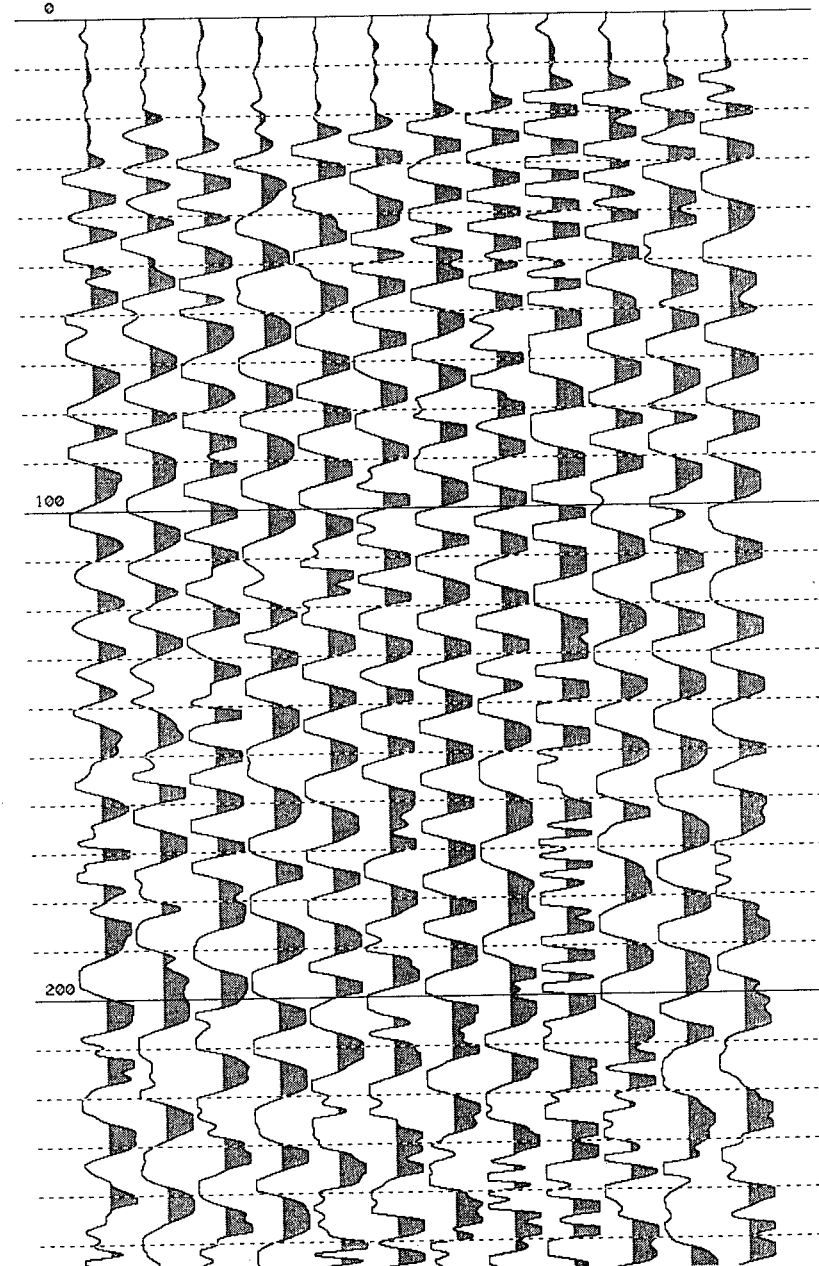
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0106-5.DAT

16:14:4423/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 415.00

PHONE 1 LOC 355.00

PHONE 12 LOC 300.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

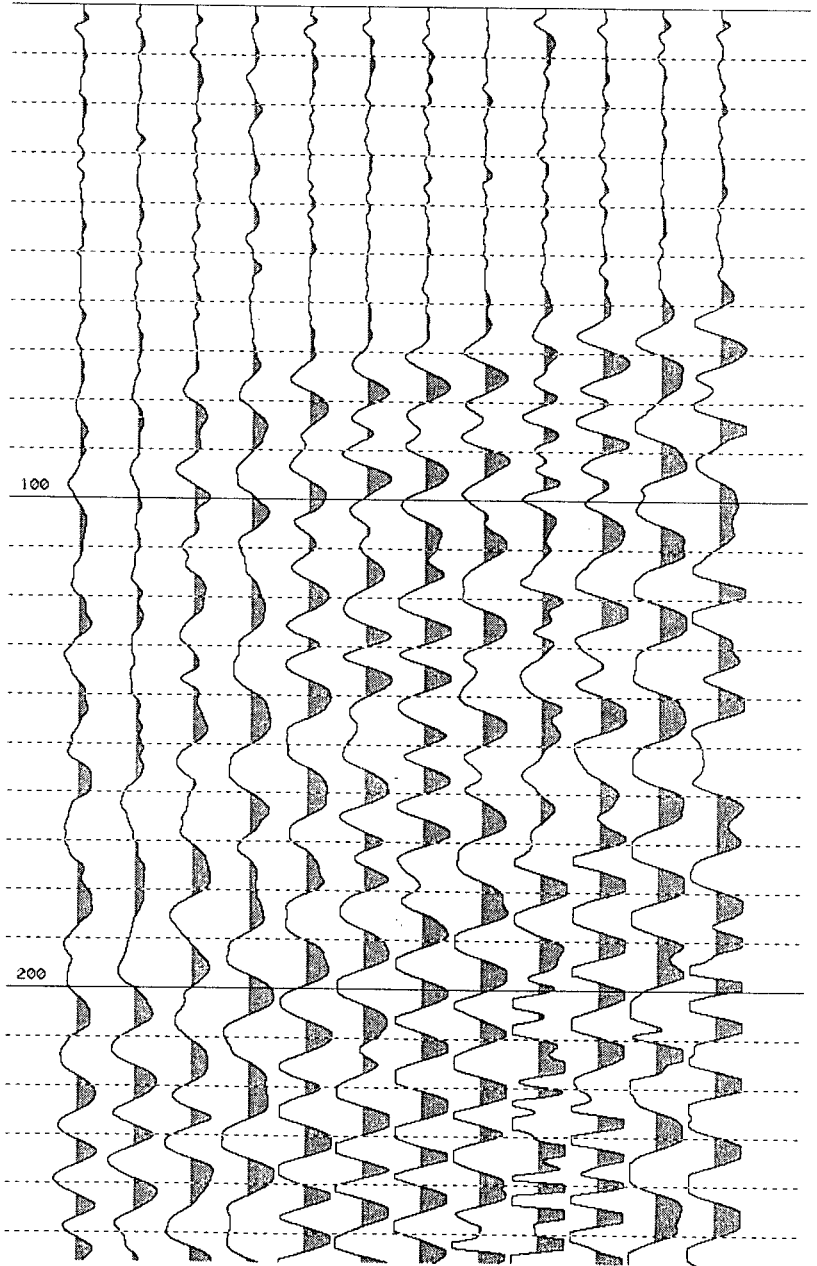
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

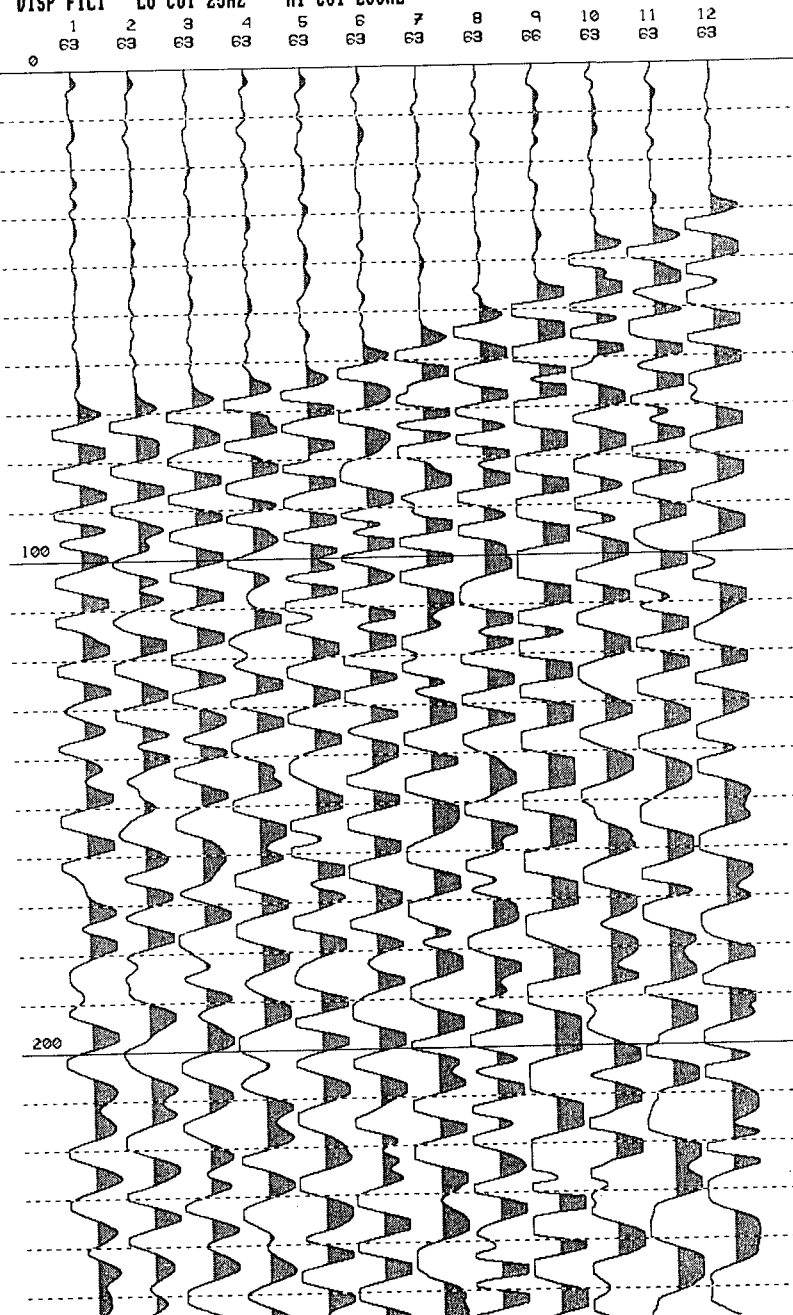
SAVED AS 0107-1.DAT
LINE NUMBER 1
SHOT LOC 300.10
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 415.00
RECORD LEN 256 MS
OUT HI CUT 250HZ

SmartSeis

18:41:4923/OCT/1995

PHONE 12 LOC 360.00
DELAY 0 MS
STACKS 1
AGC 50



GEOMETRICS

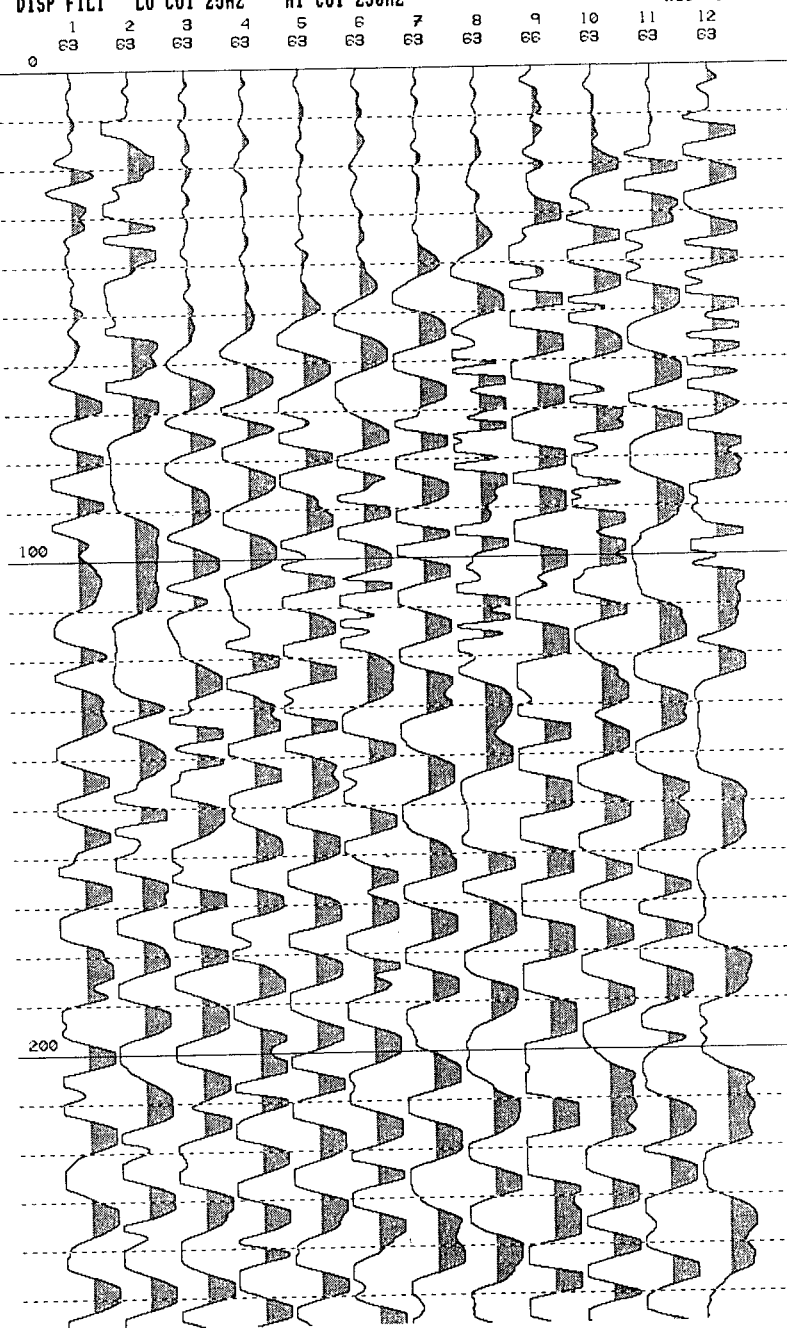
SAVED AS 0107-2.DAT
LINE NUMBER 1
SHOT LOC 360.00
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 415.00
RECORD LEN 256 MS
OUT HI CUT 250HZ

SmartSeis

18:52:1823/OCT/1995

PHONE 12 LOC 360.00
DELAY 0 MS
STACKS 1
AGC 50



GEOMETRICS

SmartSeis

SAVED AS 8107-3.DAT

19:00:4623/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 387.51

PHONE 1 LOC 415.00

PHONE 12 LOC 360.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

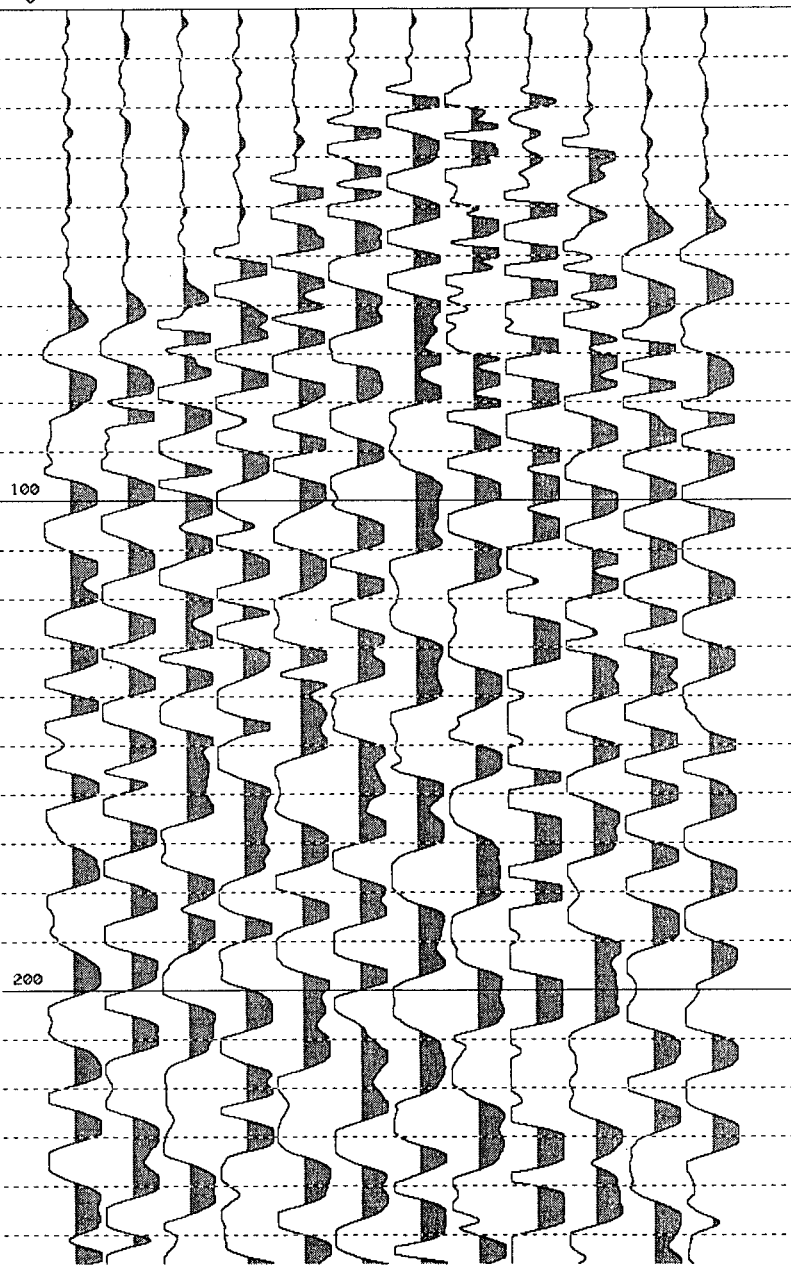
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 8107-4.DAT

19:10:3523/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 415.00

PHONE 1 LOC 415.00

PHONE 12 LOC 360.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

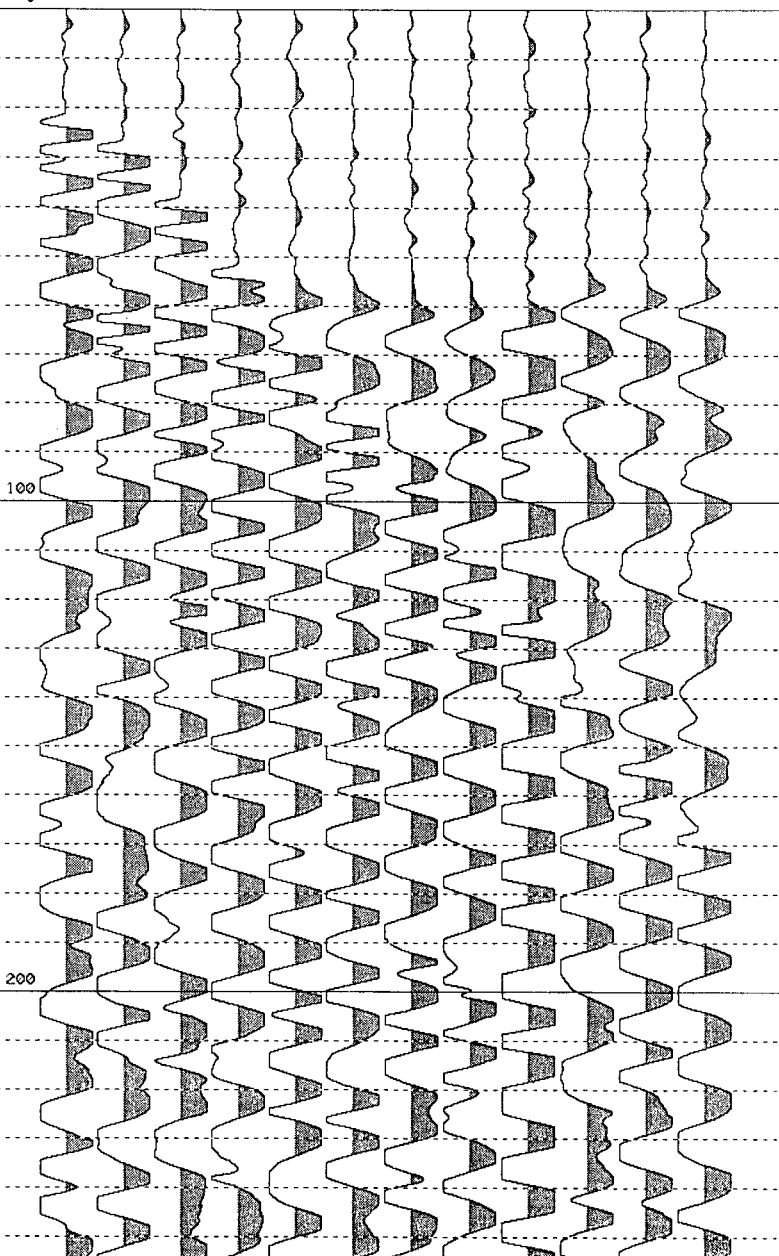
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0107-6.DAT

19:40:0623/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 475.01

PHONE 1 LOC 415.00

PHONE 12 LOC 360.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

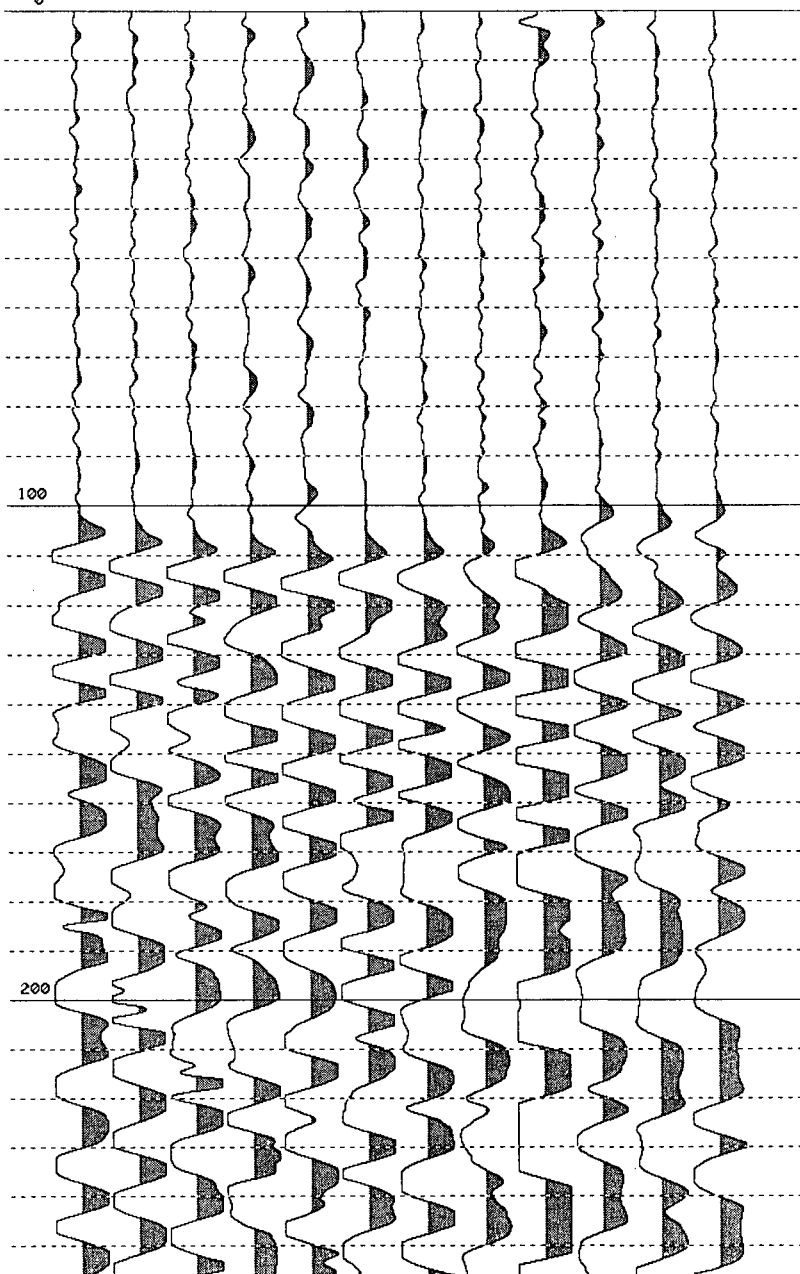
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0108-1.DAT

20:16:4023/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 360.00

PHONE 1 LOC 475.00

PHONE 12 LOC 420.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

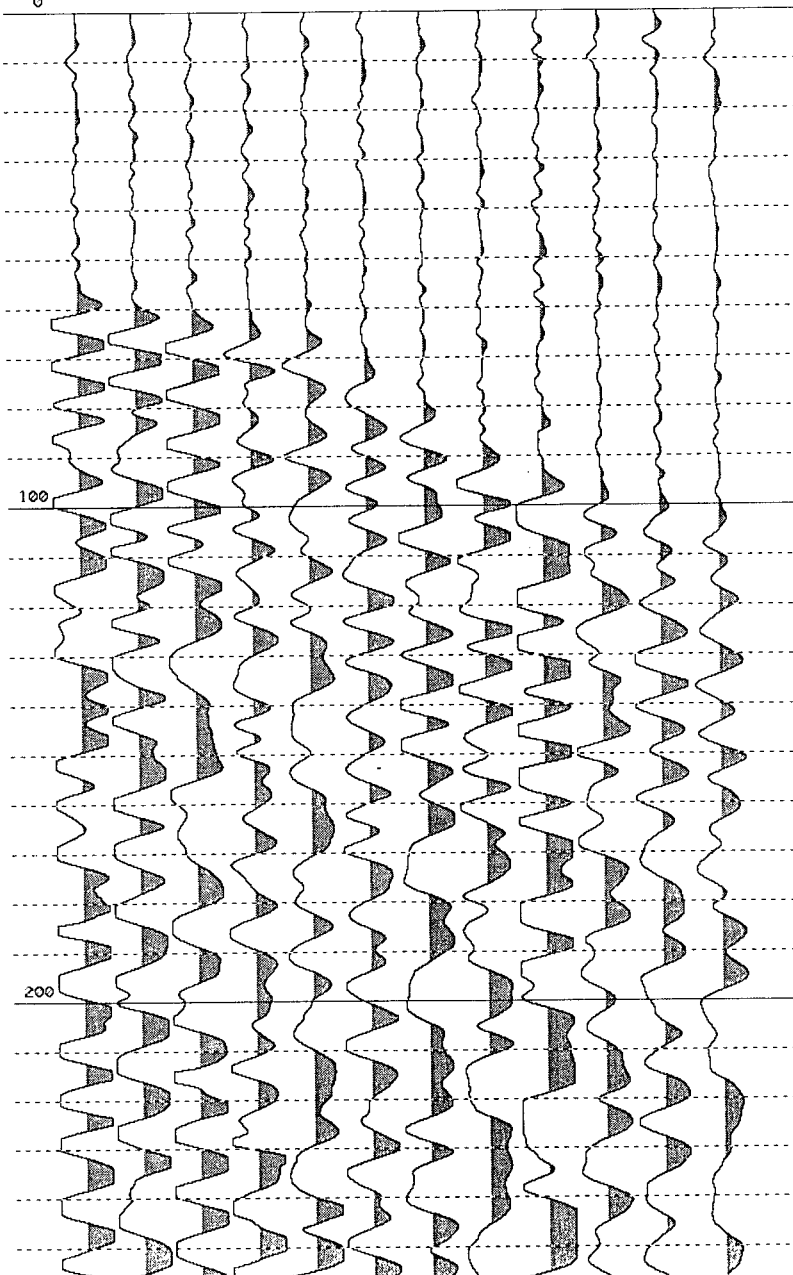
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0108-2.DAT

20:37:1423/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 420.01

PHONE 1 LOC 475.00

PHONE 12 LOC 420.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

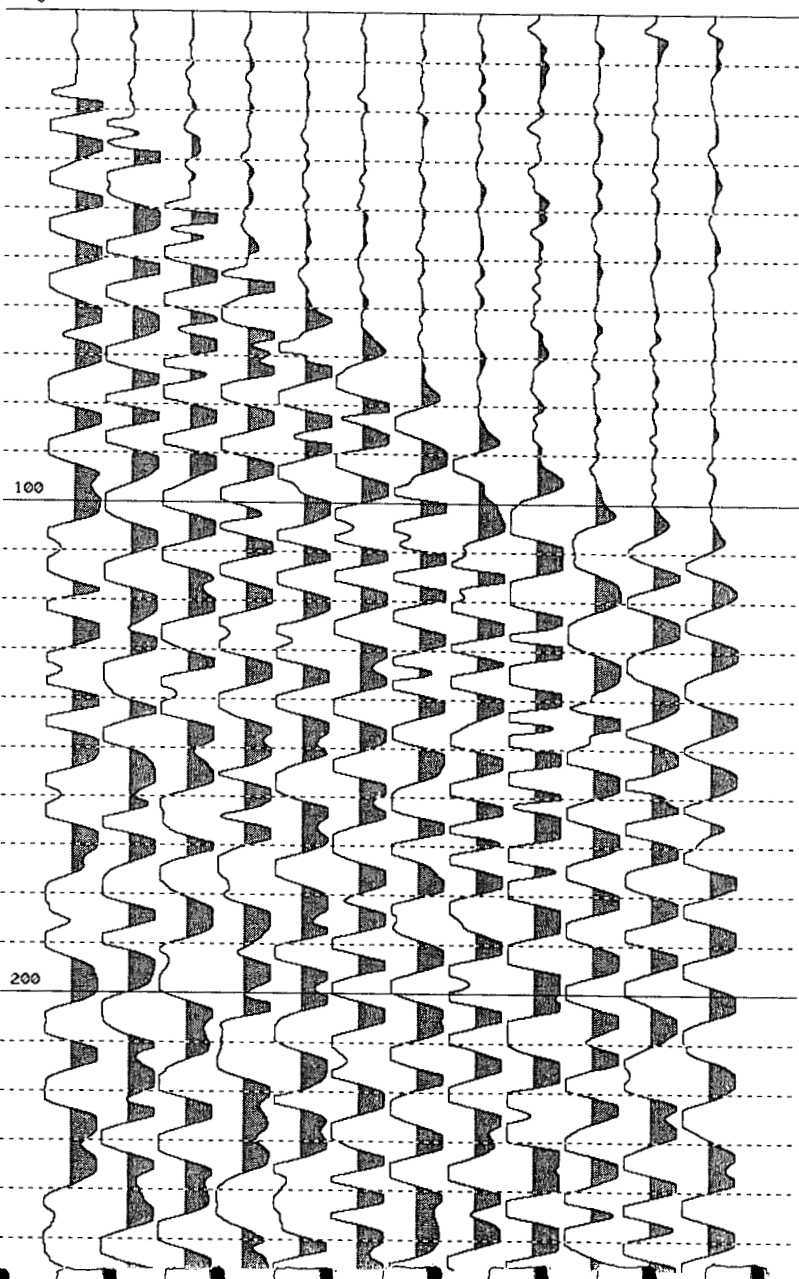
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

20:48:5123/OCT/1995

SAVED AS 0108-3.DAT

GROUP INTERVAL 5.00

LINE NUMBER 1

PHONE 1 LOC 475.00

PHONE 12 LOC 420.00

SHOT LOC 447.50

RECORD LEN 256 MS

DELAY 0 MS

SAMPLE INTERVAL 125 uS

OUT

STACKS 1

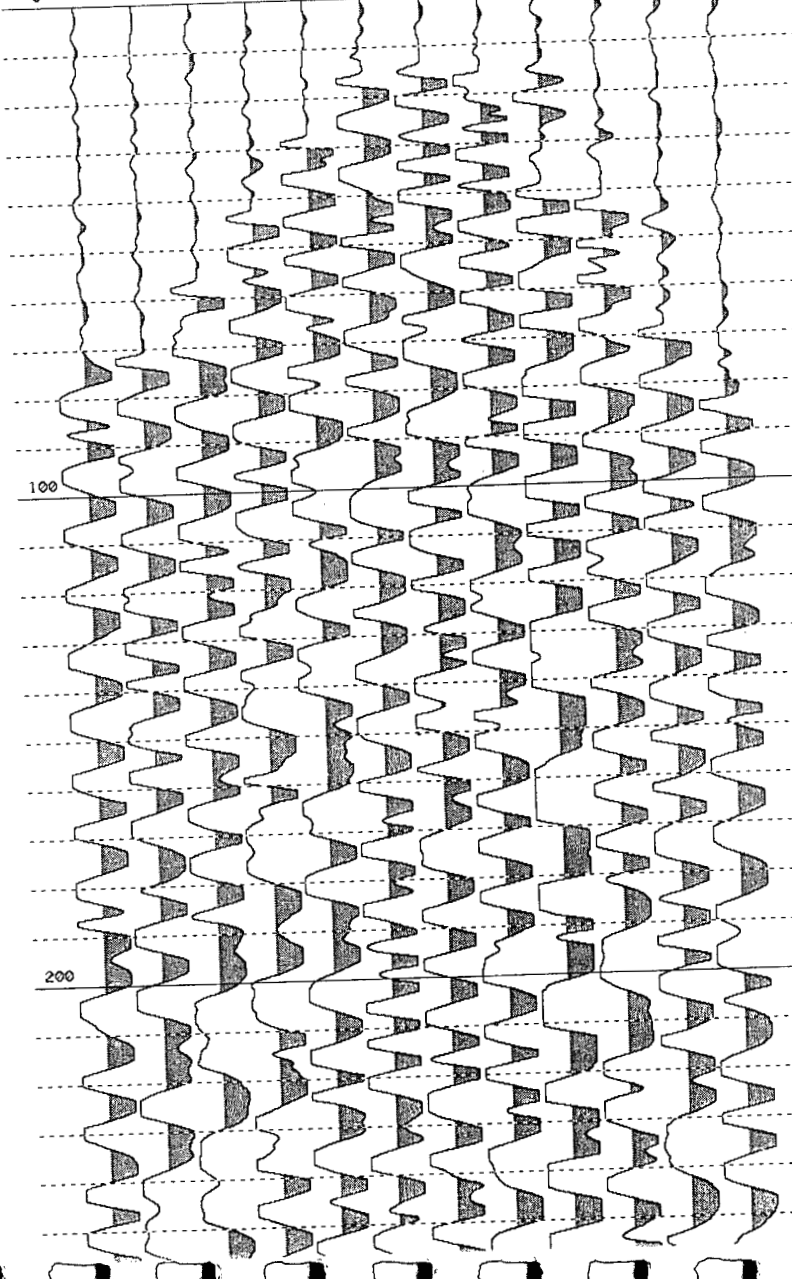
ACQ FILT OUT

HI CUT 250HZ

AGC 50

DISP FILT LO CUT 25HZ

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0108-4.DAT

20:57:1523/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 535.00

PHONE 1 LOC 475.00

PHONE 12 LOC 420.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

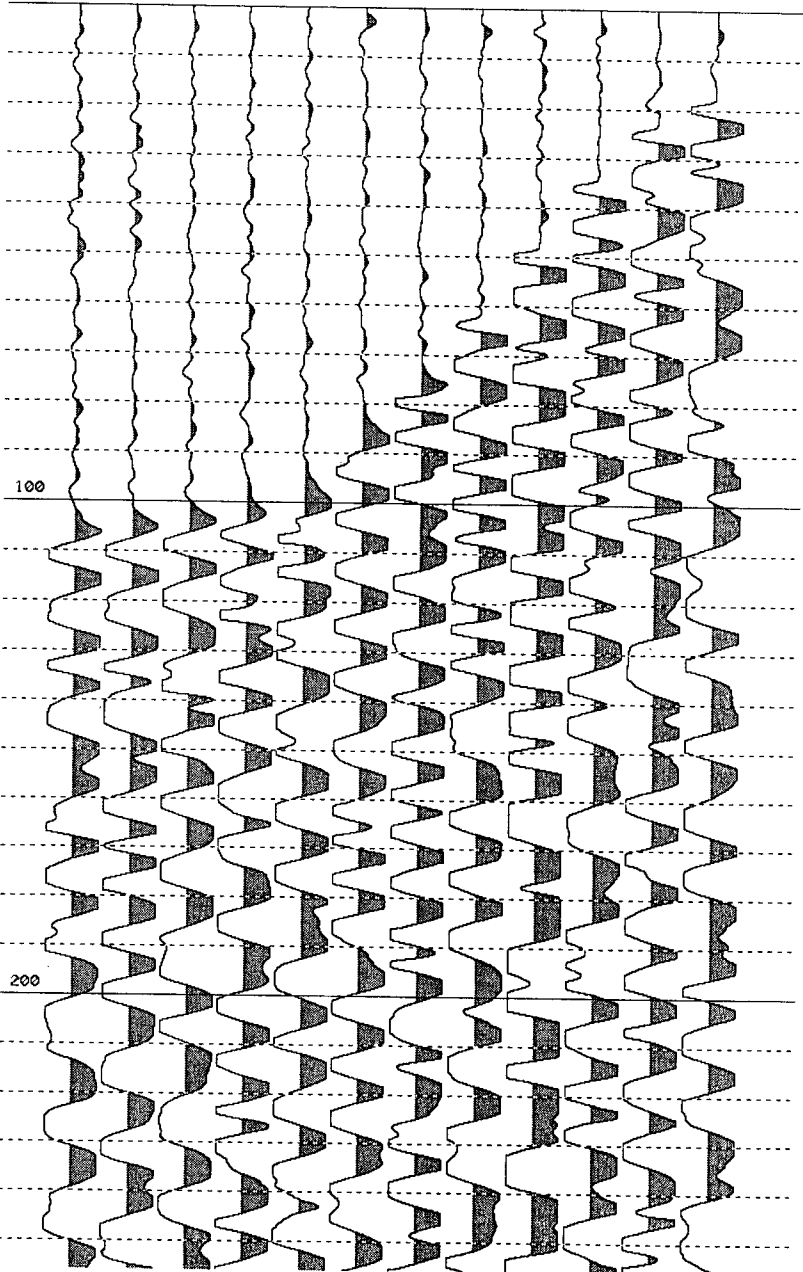
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0108-5.DAT

21:09:1123/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 535.00

PHONE 1 LOC 475.00

PHONE 12 LOC 420.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

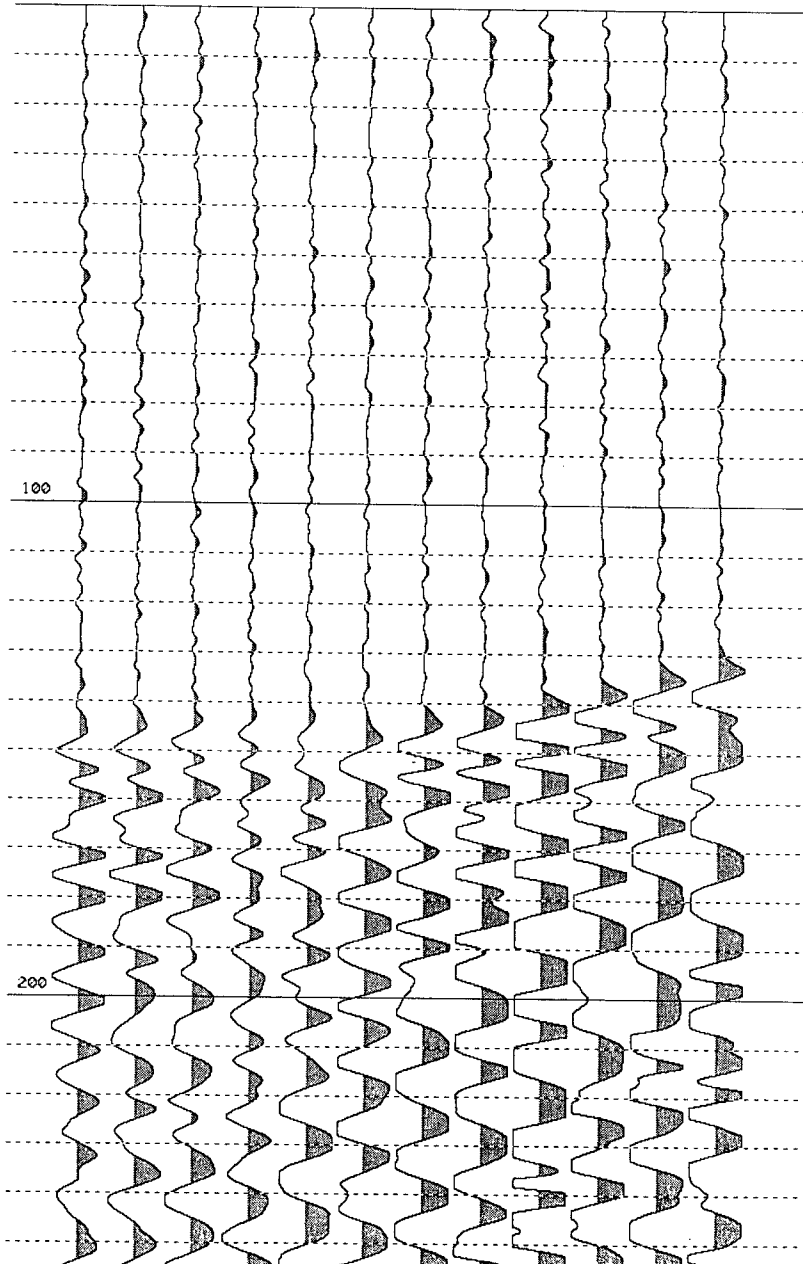
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	66	63	63	63



GEOMETRICS

SAVED AS 0109-1.DAT

LINE NUMBER 1

SHOT LOC 420.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 535.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

13:27:2624/OCT/1995

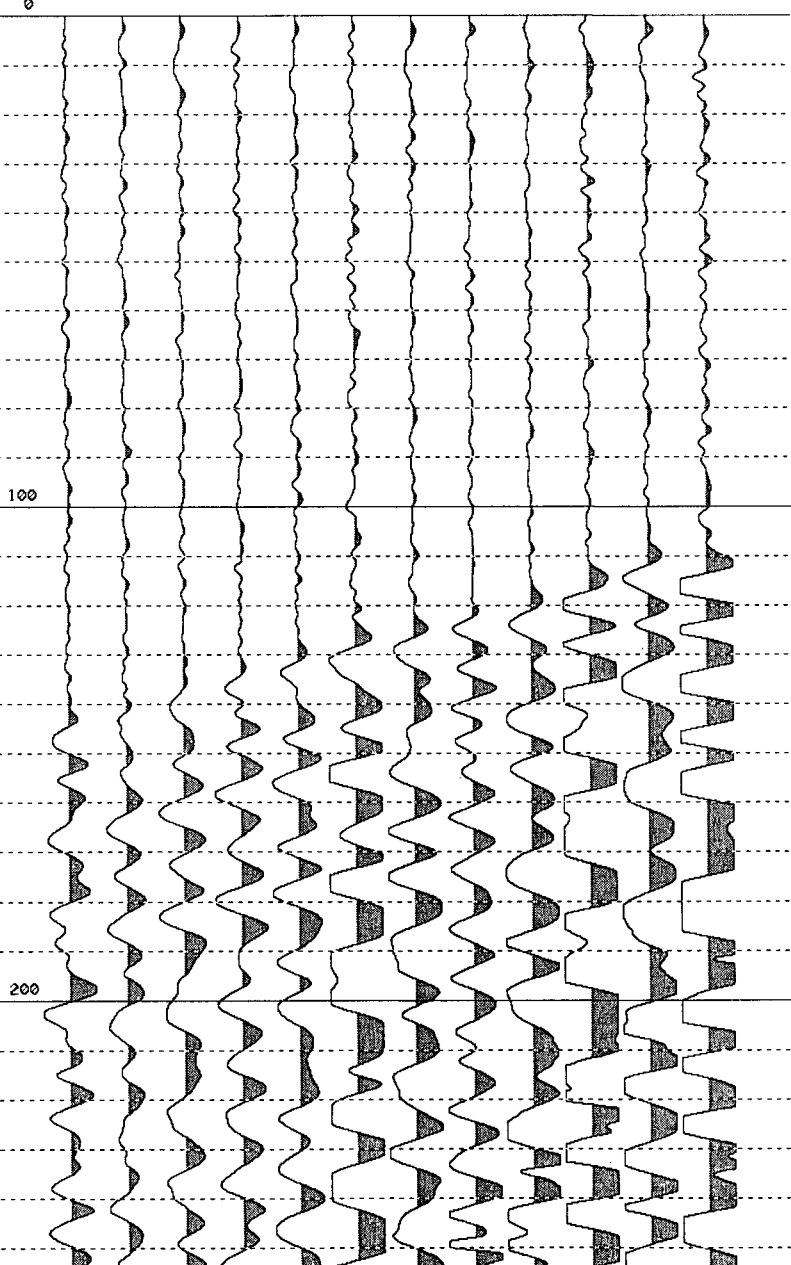
PHONE 12 LOC 480.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	66	63	63	63	66	63	66



GEOMETRICS

SAVED AS 0109-2.DAT

LINE NUMBER 1

SHOT LOC 480.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 535.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

13:35:3524/OCT/1995

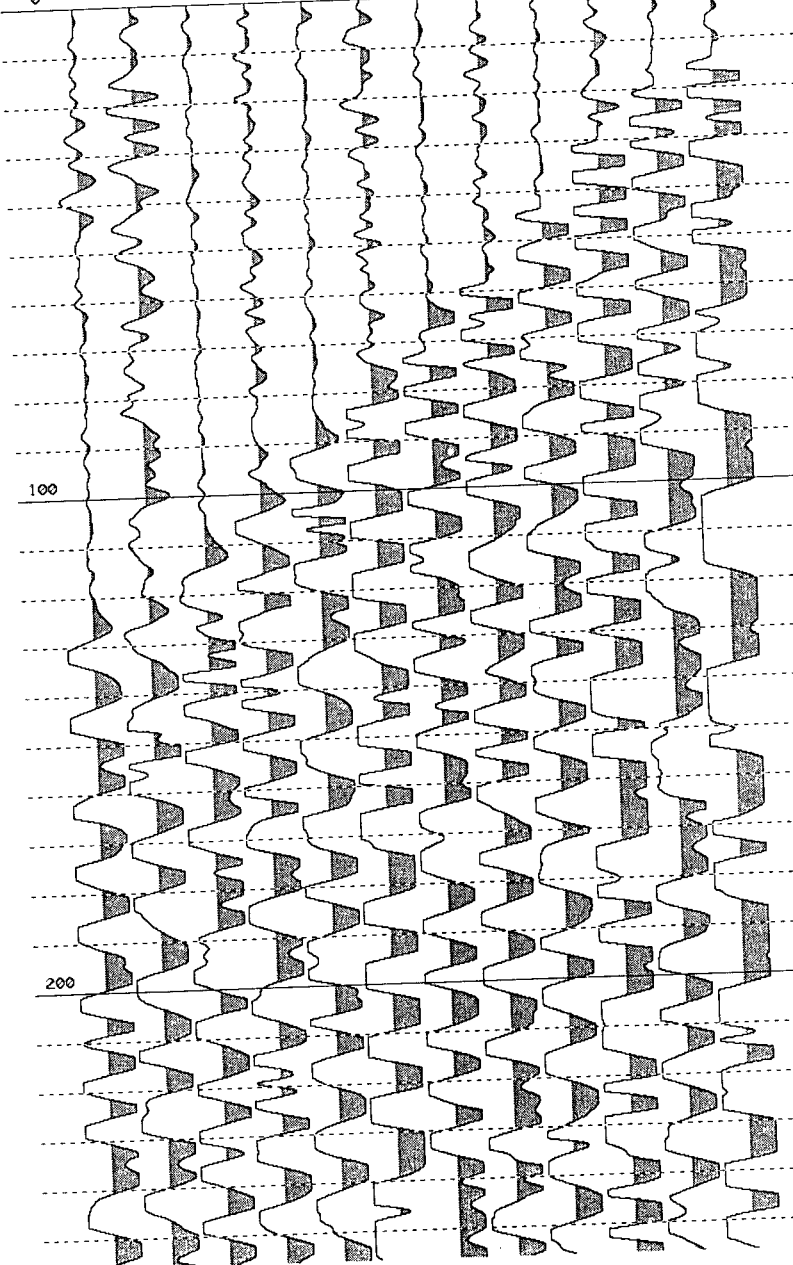
PHONE 12 LOC 480.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	66	63	63	63	66	63	66



GEOMETRICS

SmartSeis

SAVED AS 0109-3.DAT

13:42:4124/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 507.50

PHONE 1 LOC 535.00

PHONE 12 LOC 480.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

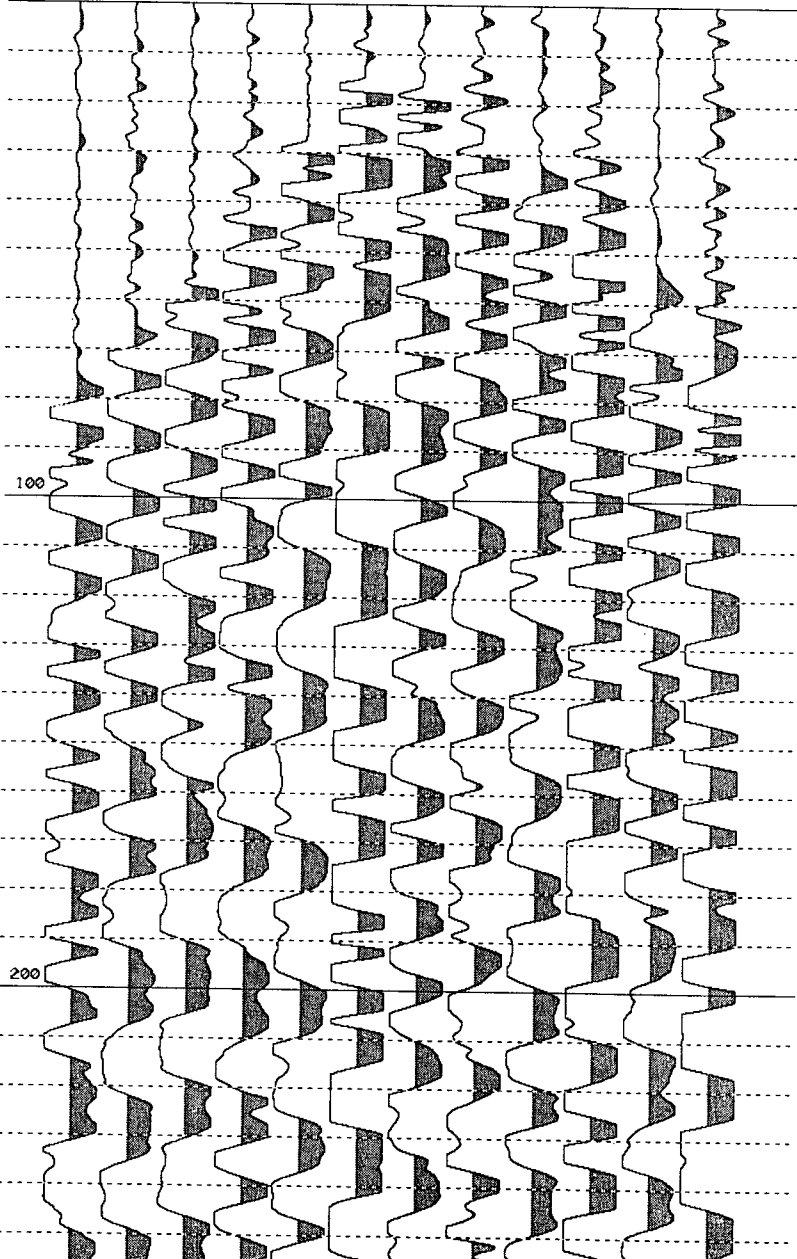
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	66	63	63	63	66	63	66



GEOMETRICS

SmartSeis

SAVED AS 0109-4.DAT

13:47:5624/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 535.00

PHONE 1 LOC 535.00

PHONE 12 LOC 480.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

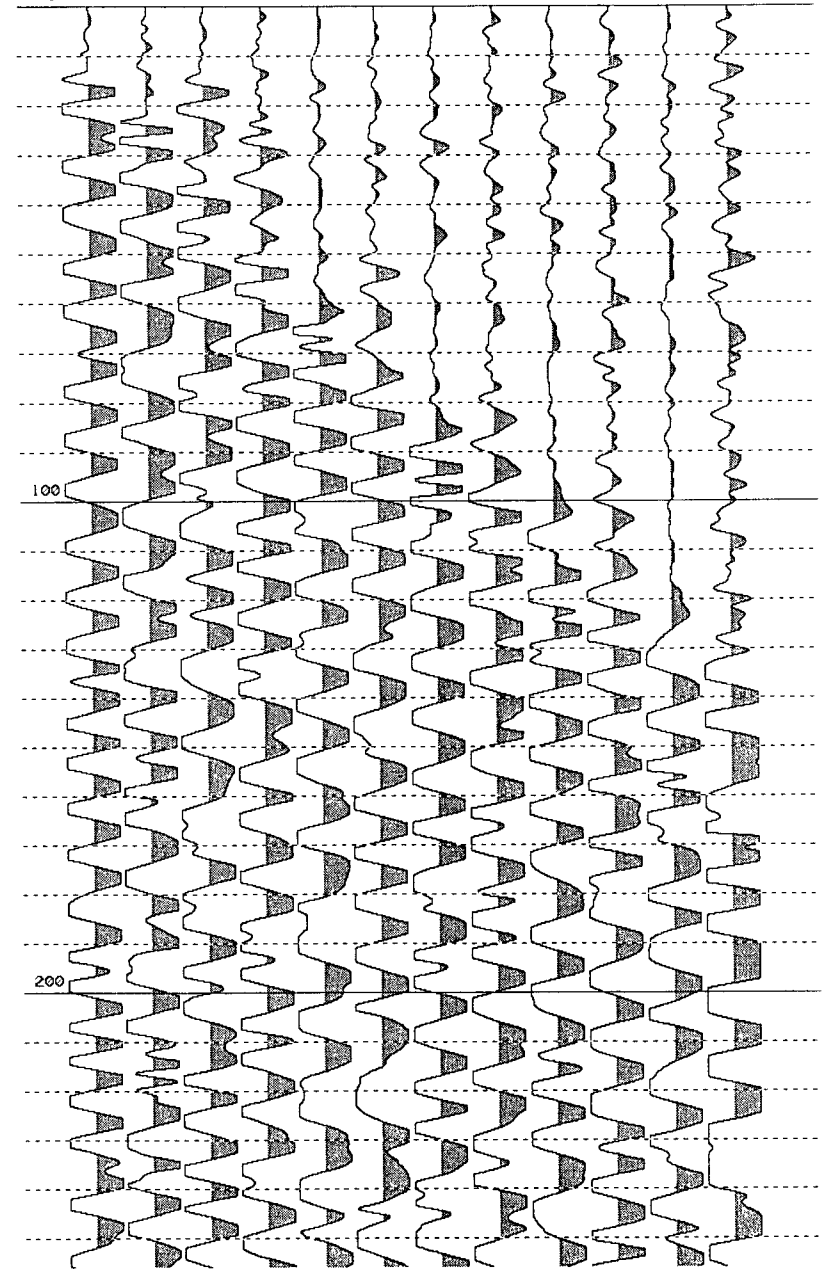
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	66



GEOMETRICS

SmartSeis

SAVED AS 0109-5.DAT

13:59:0124/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 595.00

PHONE 1 LOC 535.00

PHONE 12 LOC 480.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

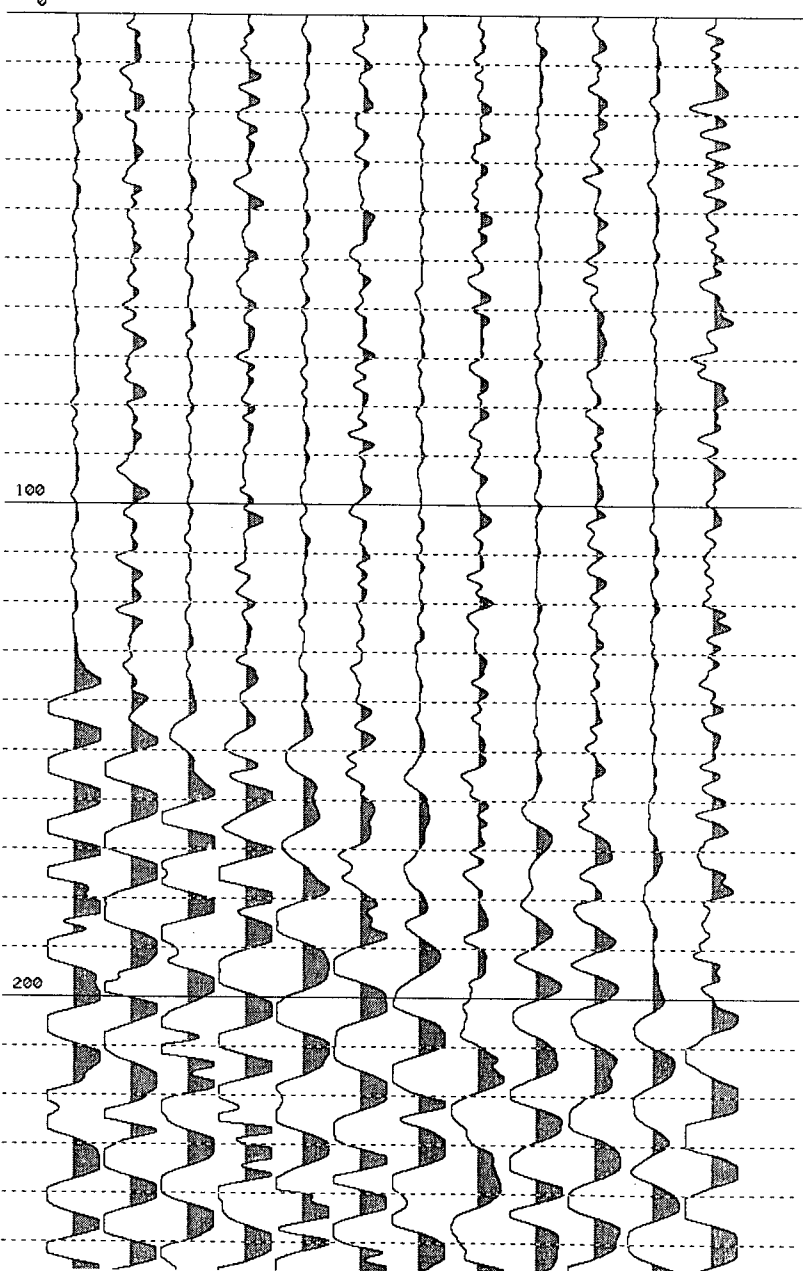
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	66



GEOMETRICS

SmartSeis
14:30:4024/OCT/1995

SAVED AS 0110-1.DAT

GROUP INTERVAL 5.00

LINE NUMBER 1

PHONE 1 LOC 595.00

PHONE 12 LOC 540.00

SHOT LOC 480.00

RECORD LEN 256 MS

DELAY 0 MS

SAMPLE INTERVAL 125 uS

OUT

STACKS 1

ACQ FILT OUT

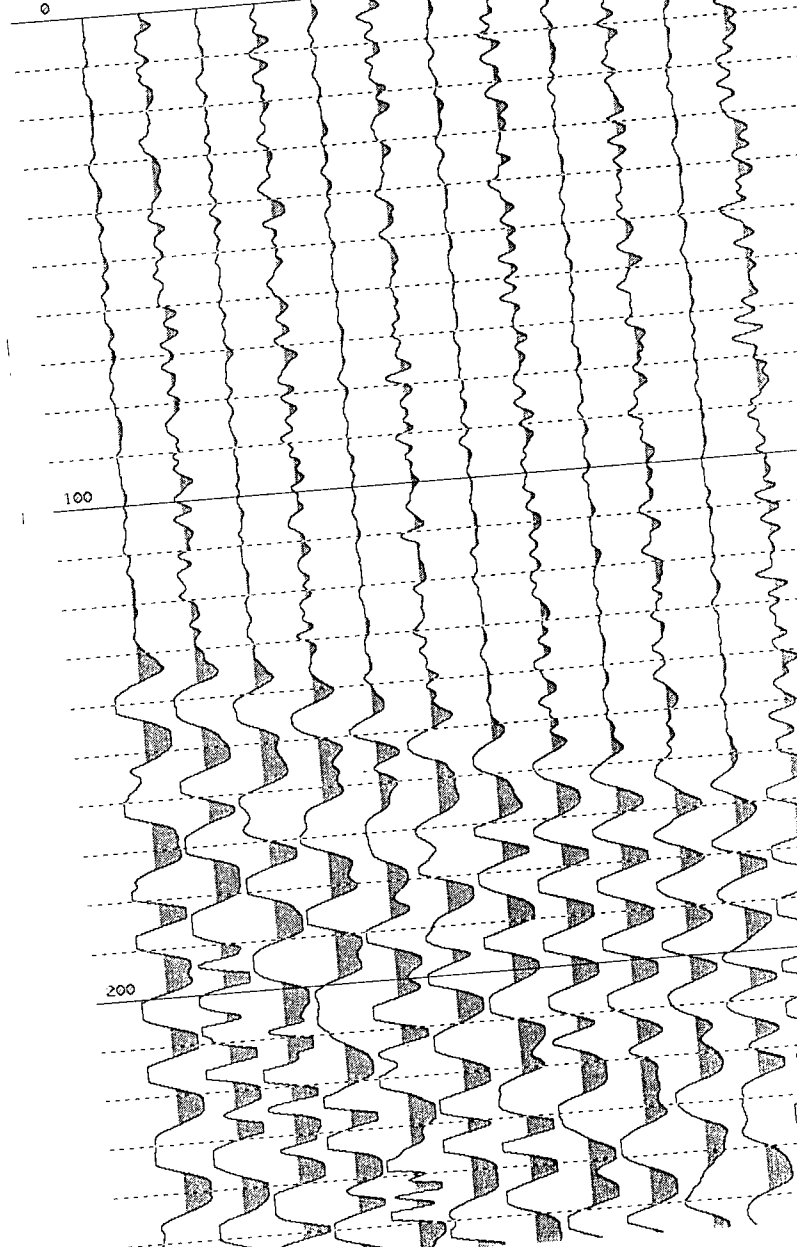
OUT

AGC 50

DISP FILT LO CUT 25HZ

HI CUT 250HZ

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	66



GEOMETRICS

SmartSeis

SAVED AS 0110-2.DAT

14:43:1424/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 540.00

PHONE 1 LOC 595.00

PHONE 12 LOC 540.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

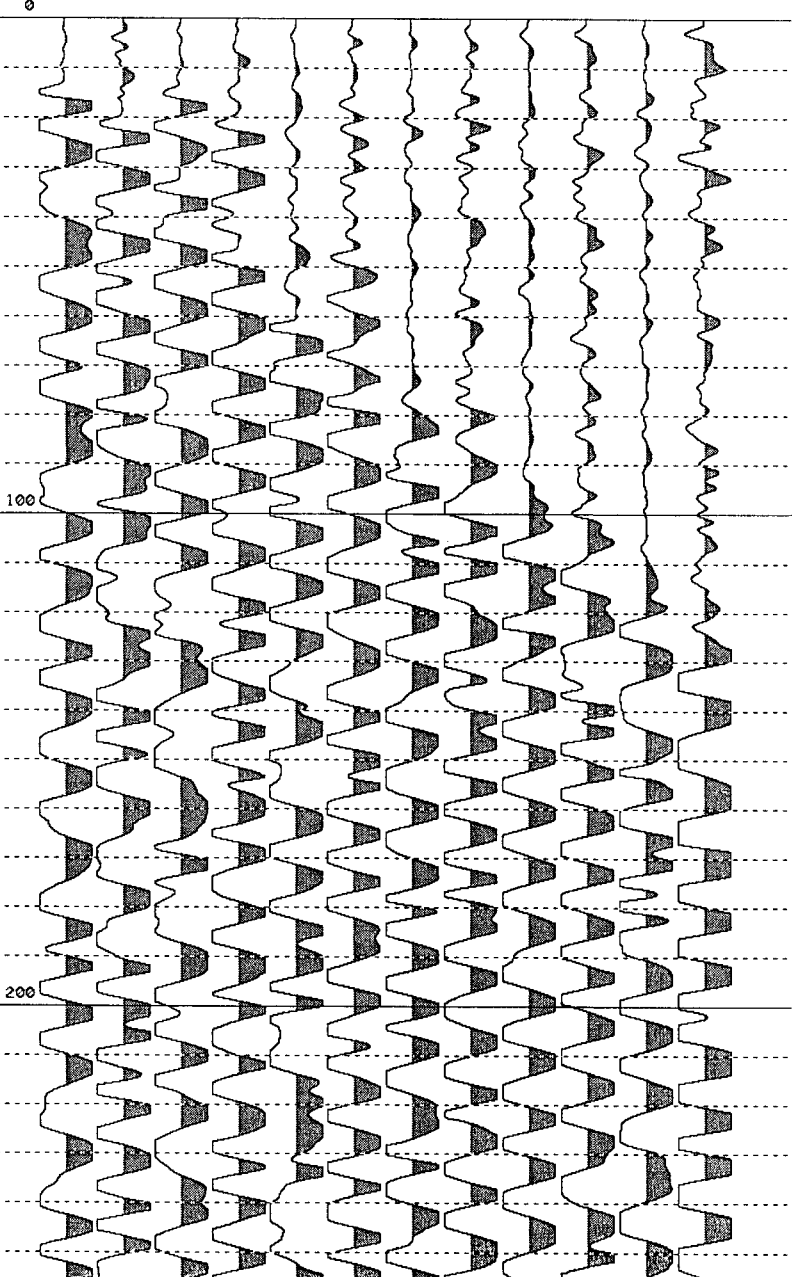
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	66



GEOMETRICS

SmartSeis
14:56:2324/OCT/1995

SAVED AS 0110-3.DAT

GROUP INTERVAL 5.00

LINE NUMBER 1

PHONE 1 LOC 595.00

PHONE 12 LOC 540.00

SHOT LOC 567.50

RECORD LEN 256 MS

DELAY 0 MS

SAMPLE INTERVAL 125 uS

OUT

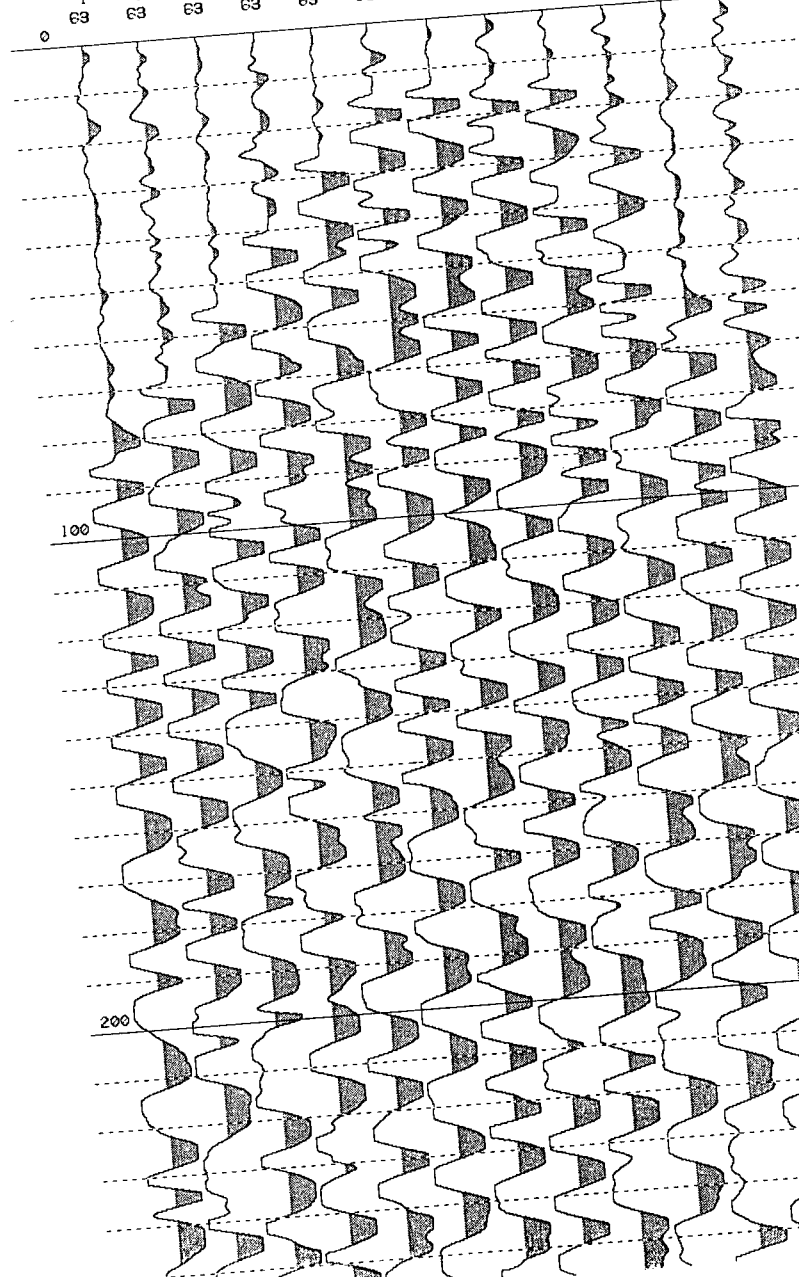
STACKS 1

ACQ FILT OUT

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0110-4.DAT

15:03:5324/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 595.00

PHONE 1 LOC 595.00

PHONE 12 LOC 540.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

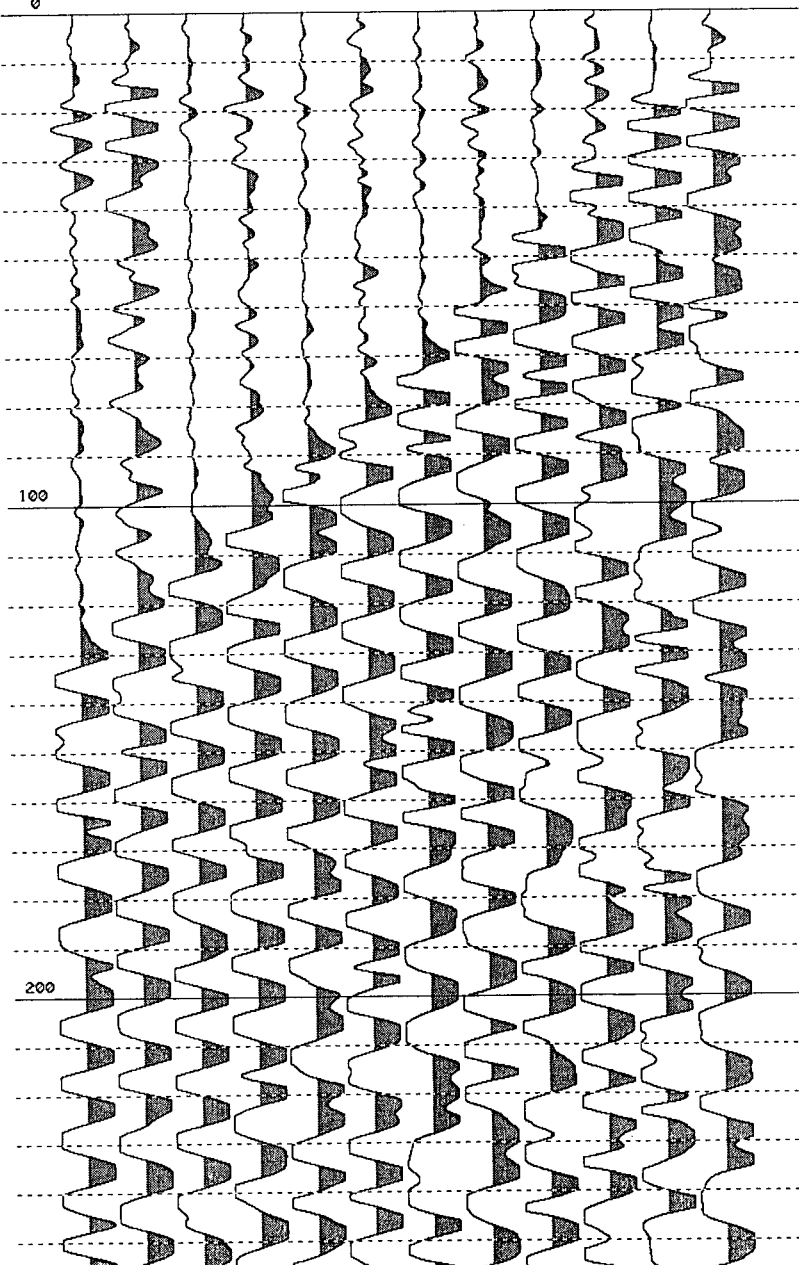
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0110-5.DAT

15:12:3124/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 655.00

PHONE 1 LOC 595.00

PHONE 12 LOC 540.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

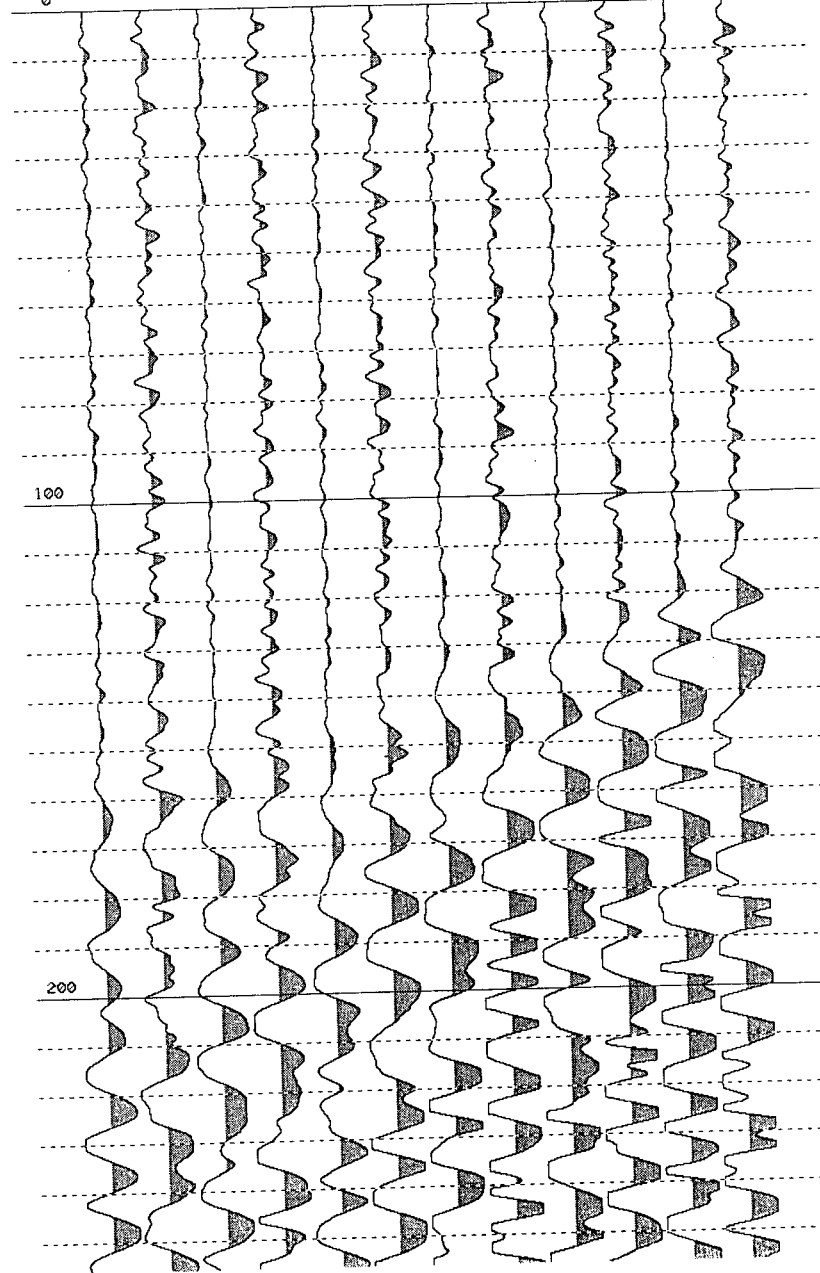
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0111-1.DAT

16:41:5424/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 540.00

PHONE 1 LOC 655.00

PHONE 12 LOC 600.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

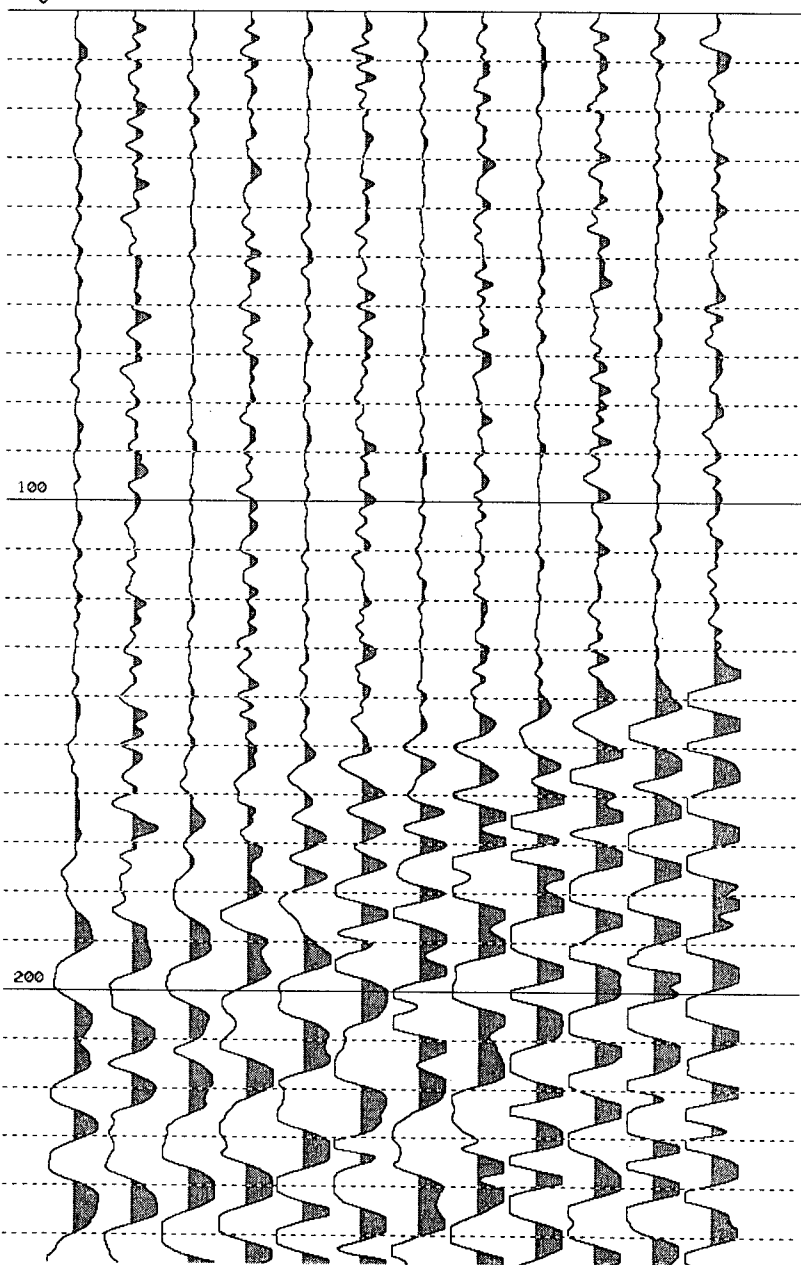
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0111-2.DAT

17:17:5724/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 600.00

PHONE 1 LOC 655.00

PHONE 12 LOC 600.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

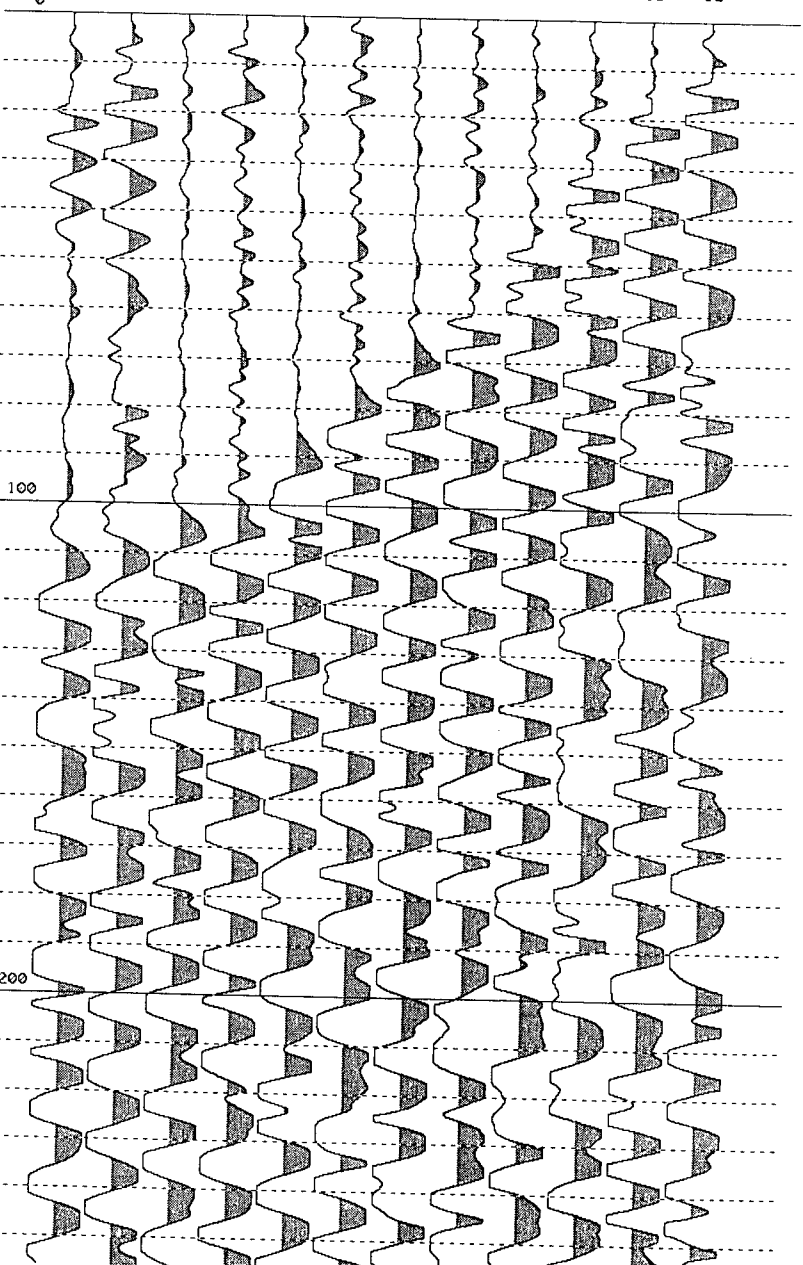
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0111-3.DAT

17:23:1824/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 627.50

PHONE 1 LOC 655.00

PHONE 12 LOC 600.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

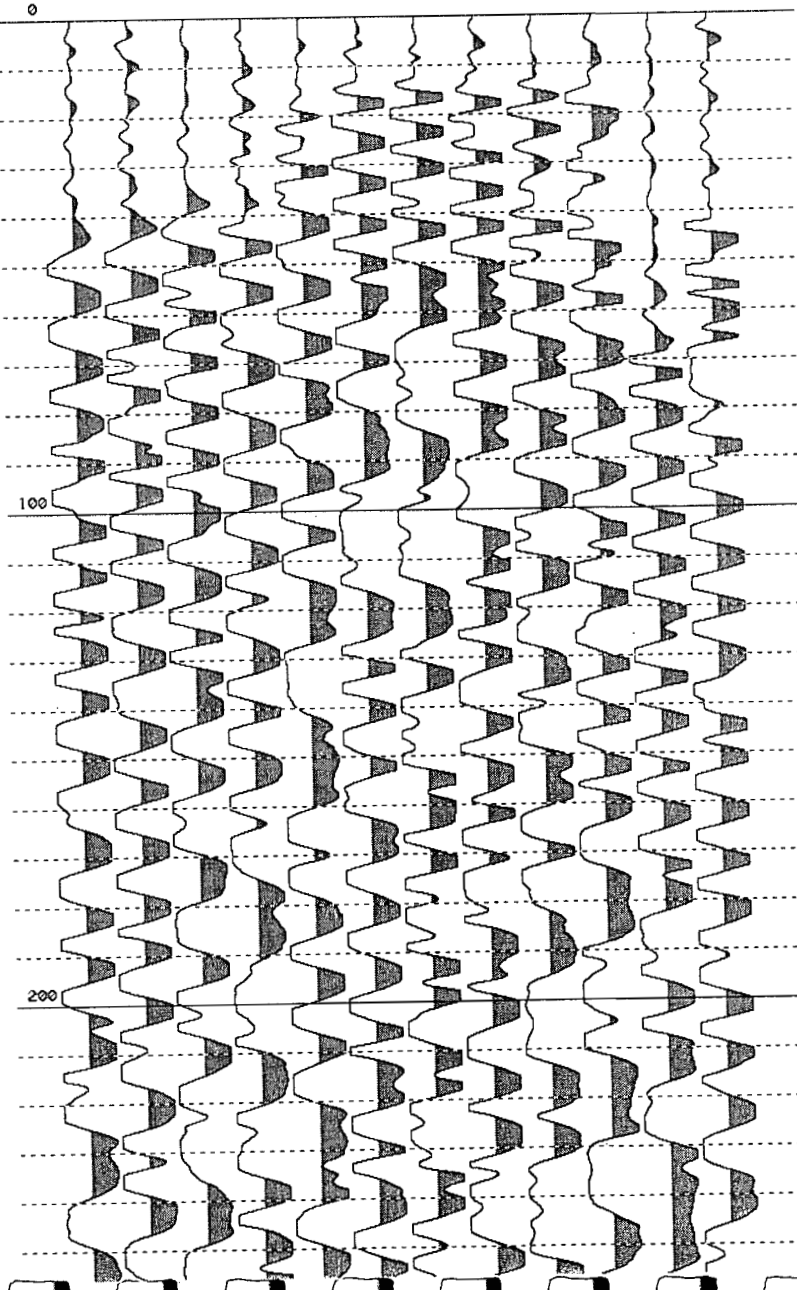
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0111-4.DAT

17:37:1924/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 655.00

PHONE 1 LOC 655.00

PHONE 12 LOC 600.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

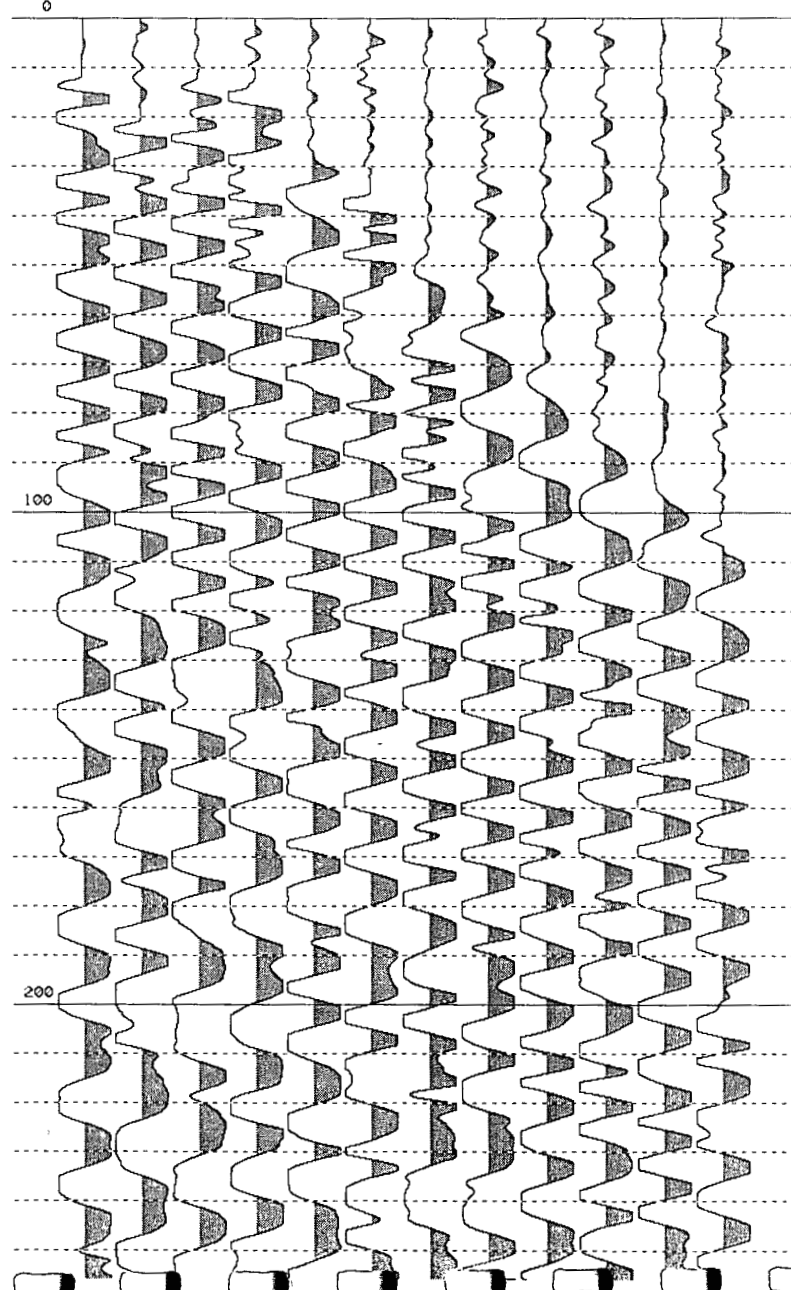
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



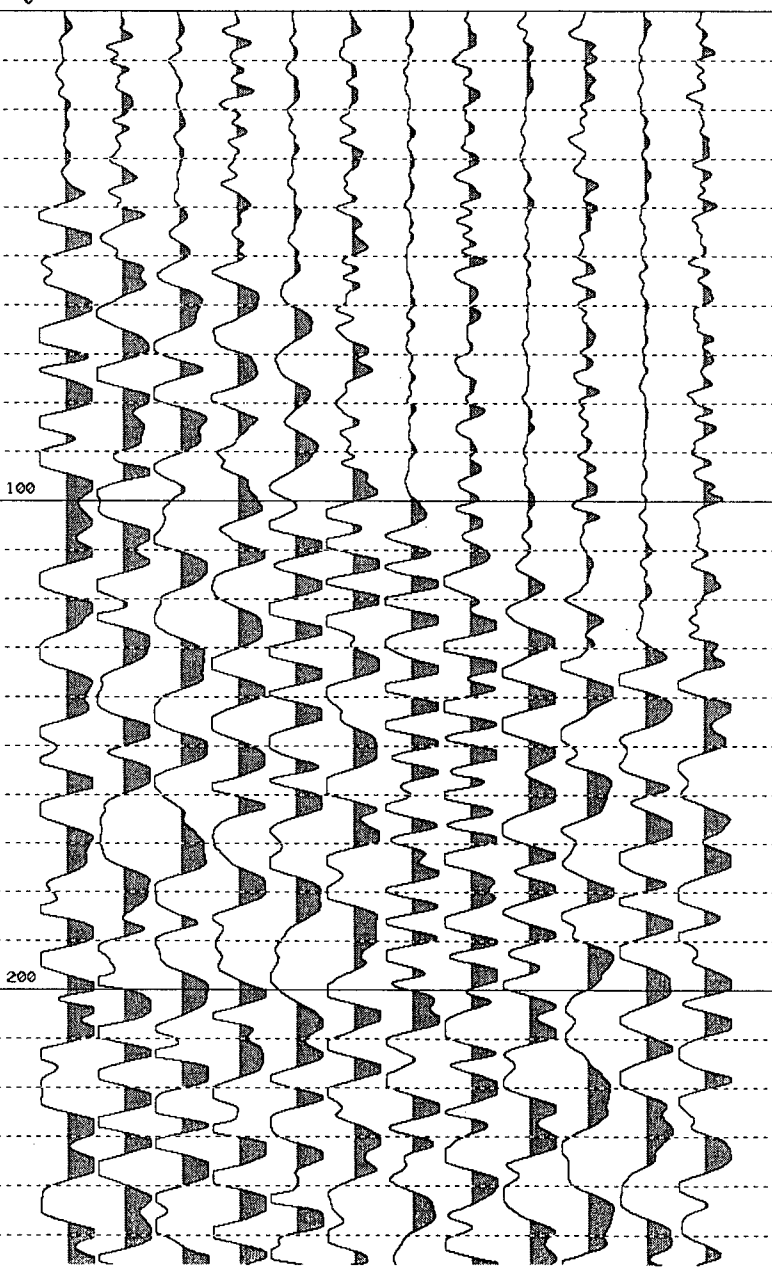
GEOMETRICS

SmartSeis

SAVED AS 0111-5.DAT
 LINE NUMBER 1
 SHOT LOC 715.00
 SAMPLE INTERVAL 125 uS
 ACQ FILT OUT
 DISP FILT LO CUT 25HZ HI CUT 250HZ
 GROUP INTERVAL 5.00
 PHONE 1 LOC 655.00
 RECORD LEN 256 MS
 PHONE 12 LOC 600.00
 DELAY 0 MS
 STACKS 2
 AGC 50

17:56:3124/OCT/1995

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



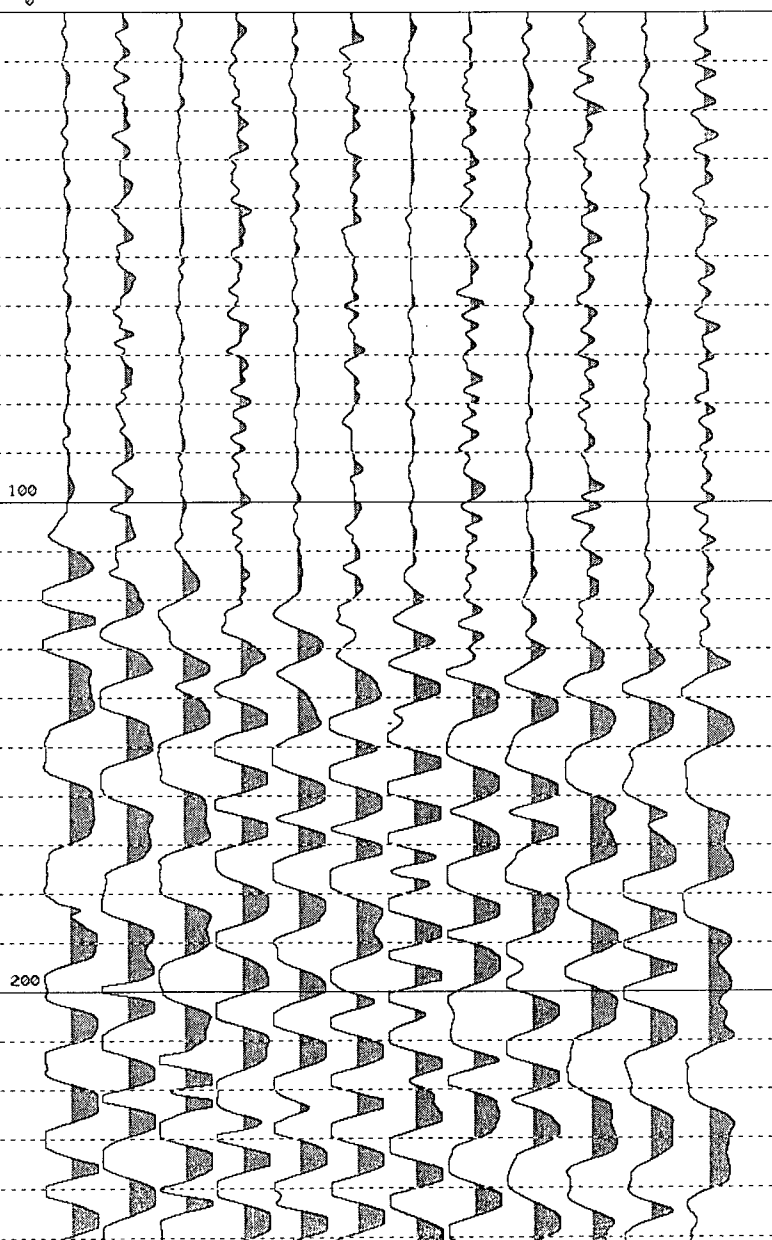
GEOMETRICS

SmartSeis

SAVED AS 0112-1.DAT
 LINE NUMBER 1
 SHOT LOC 600.00
 SAMPLE INTERVAL 125 uS
 ACQ FILT OUT
 DISP FILT LO CUT 25HZ HI CUT 250HZ
 GROUP INTERVAL 5.00
 PHONE 1 LOC 715.00
 RECORD LEN 256 MS
 PHONE 12 LOC 660.00
 DELAY 0 MS
 STACKS 1
 AGC 50

18:33:4324/OCT/1995

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0112-2.DAT

18:42:2524/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 660.00

PHONE 1 LOC 715.00

PHONE 12 LOC 660.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

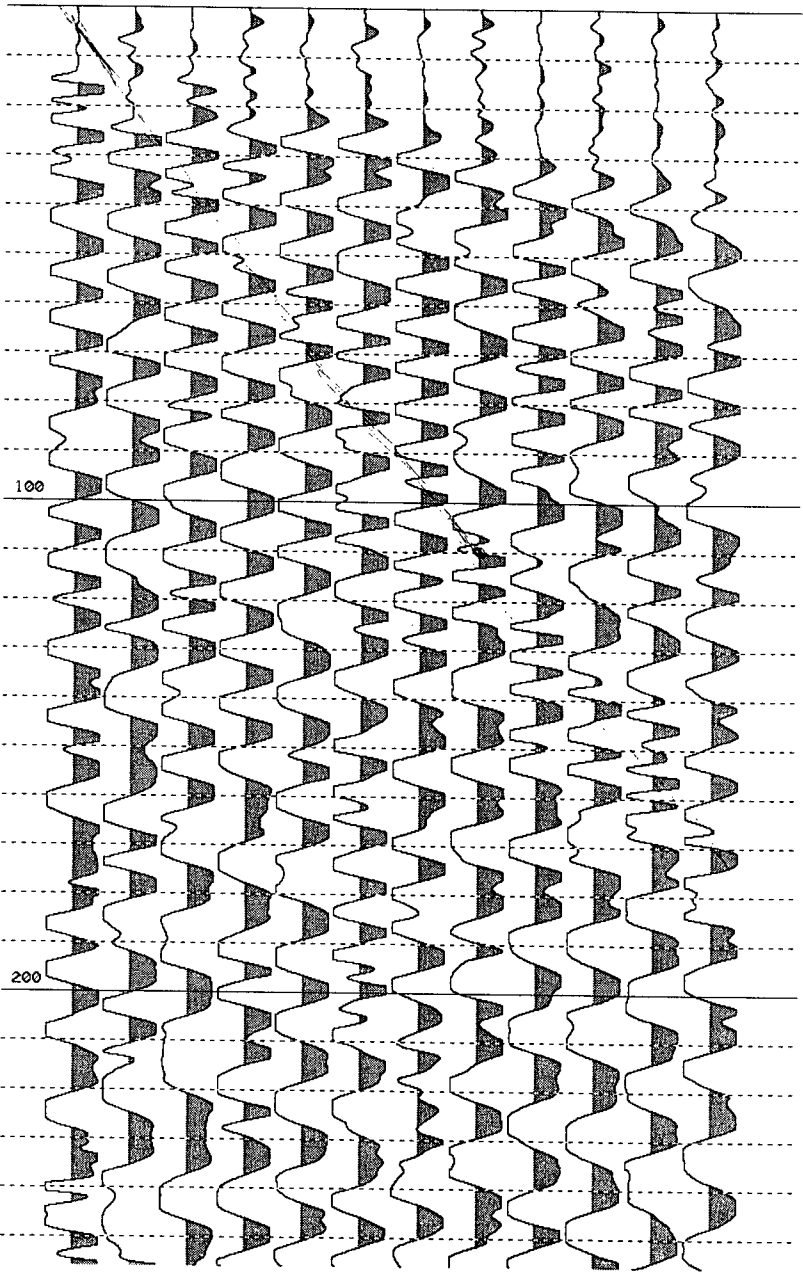
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
63	63	63	63	63	63	63	63	63	63	63	63



GEOMETRICS

SmartSeis

SAVED AS 0112-3.DAT

19:40:1324/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 717.50

PHONE 1 LOC 745.00

PHONE 12 LOC 690.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

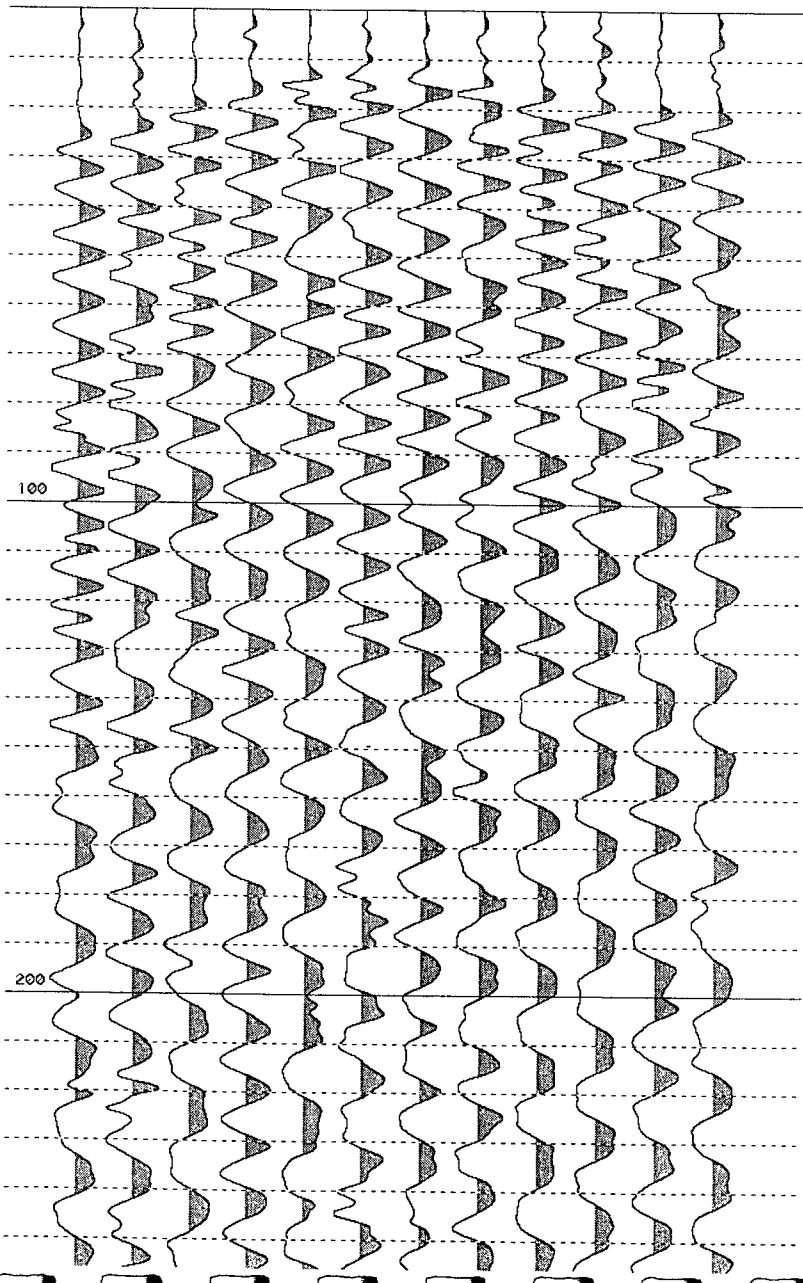
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

READ FROM 0112-4.DAT

LINE NUMBER 1

SHOT LOC 775.00

SAMPLE INTERVAL 125 uS

ACQ FILT LO CUT 0HZ

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 775.00

RECORD LEN 256 MS

NOTCH 0HZ

HI CUT 250HZ

SmartSeis

20:05:2024/OCT/1995

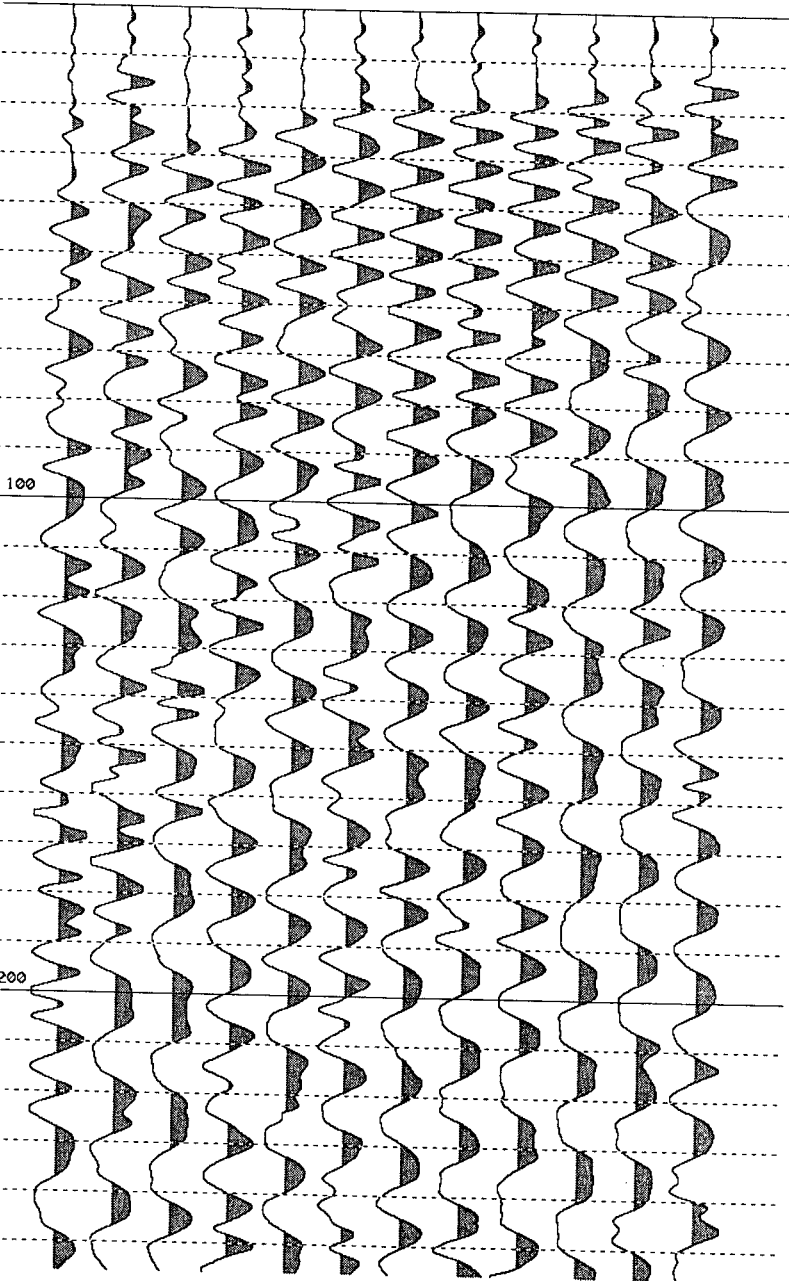
PHONE 12 LOC 720.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

SAVED AS 0112-5.DAT

LINE NUMBER 1

SHOT LOC 835.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 775.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

20:34:3424/OCT/1995

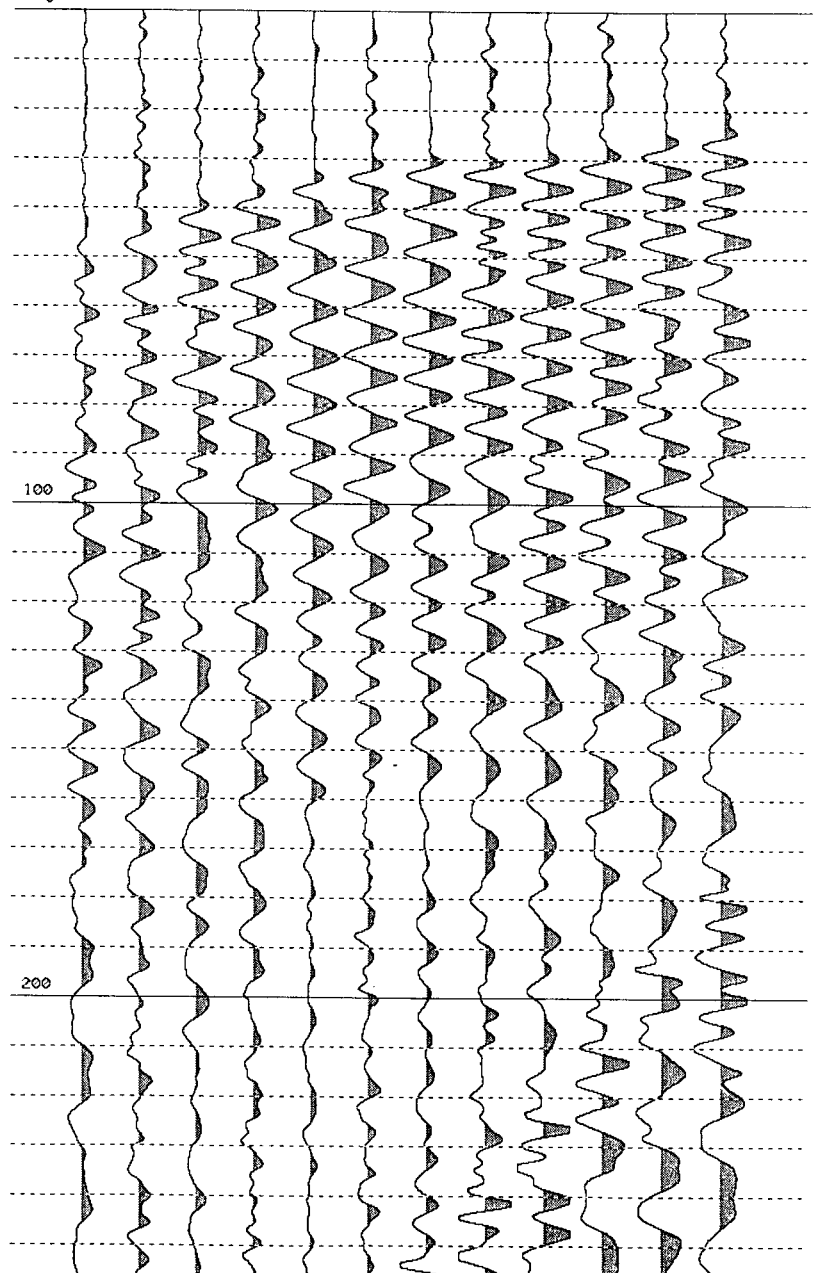
PHONE 12 LOC 720.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0113-1.DAT

13:47:2925/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 660.00

PHONE 1 LOC 775.00

PHONE 12 LOC 720.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60

GEOMETRICS

SmartSeis

SAVED AS 0113-2.DAT

13:54:5225/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 720.00

PHONE 1 LOC 775.00

PHONE 12 LOC 720.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

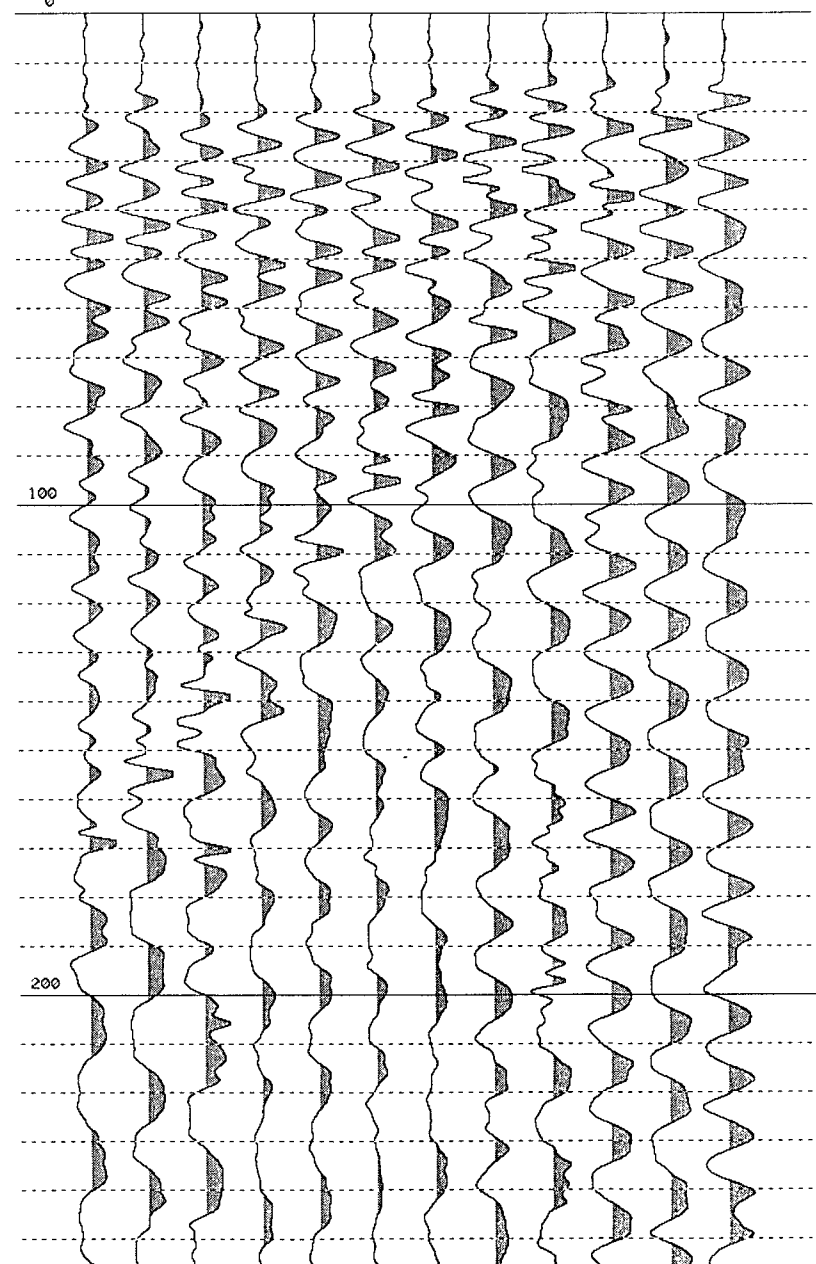
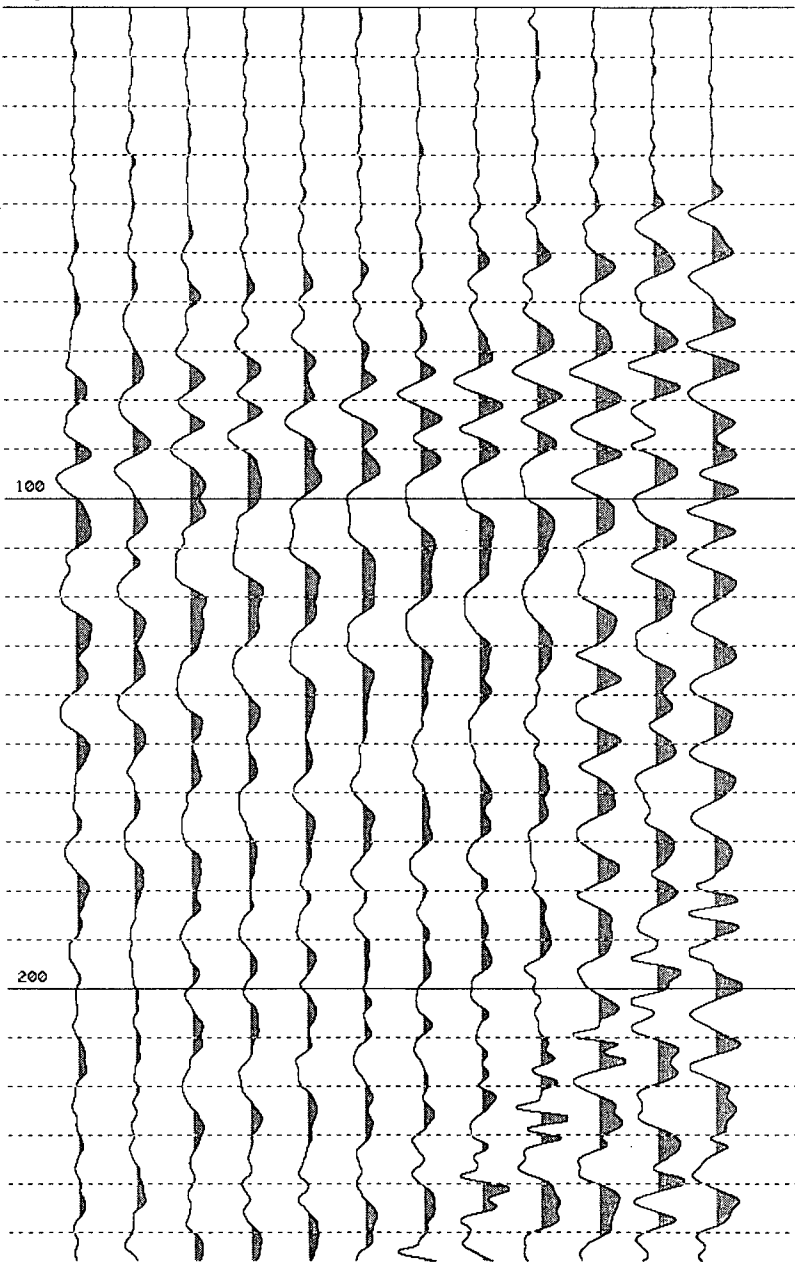
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



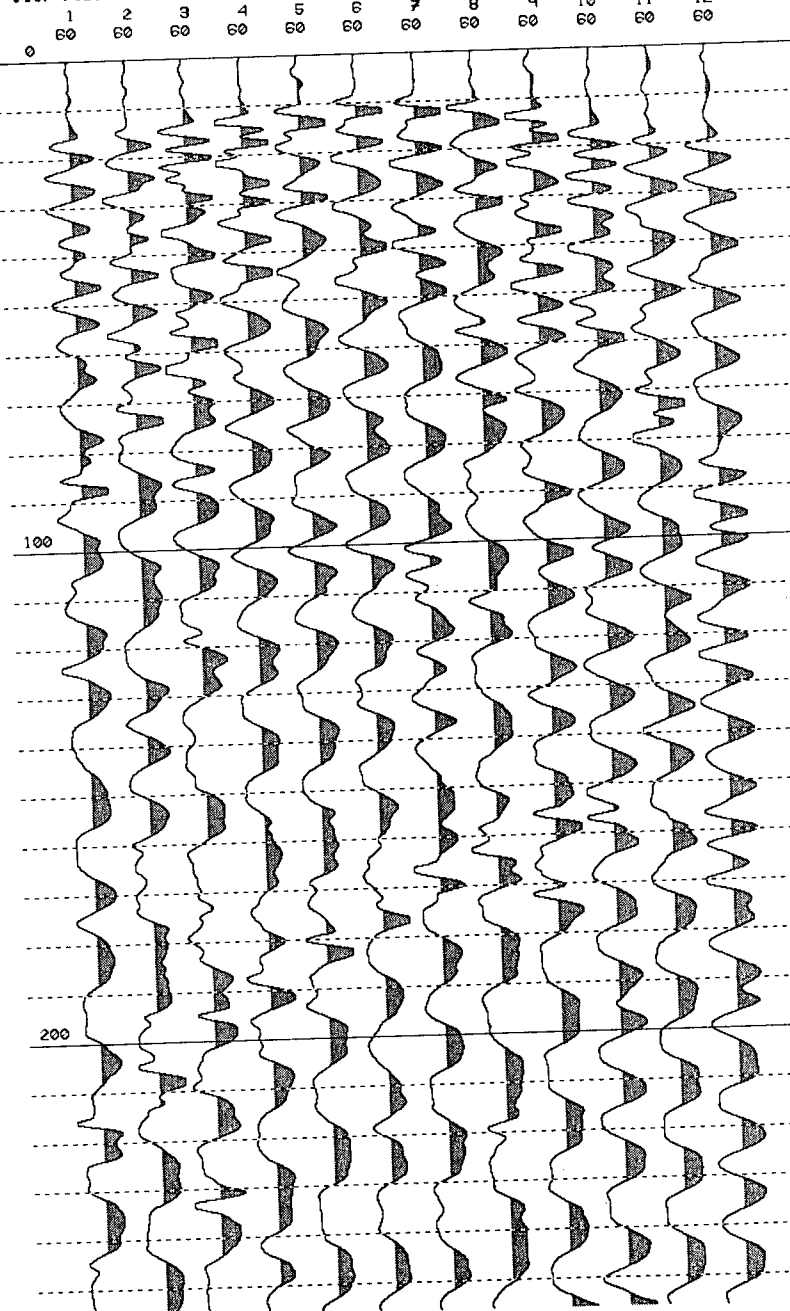
GEOMETRICS

SmartSeis

SAVED AS 0113-3.DAT
LINE NUMBER 1
SHOT LOC 747.50
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 720.00
RECORD LEN 256 MS

14:11:4125/OCT/1995
PHONE 12 LOC 775.00
DELAY 0 MS
STACKS 2
AGC 50



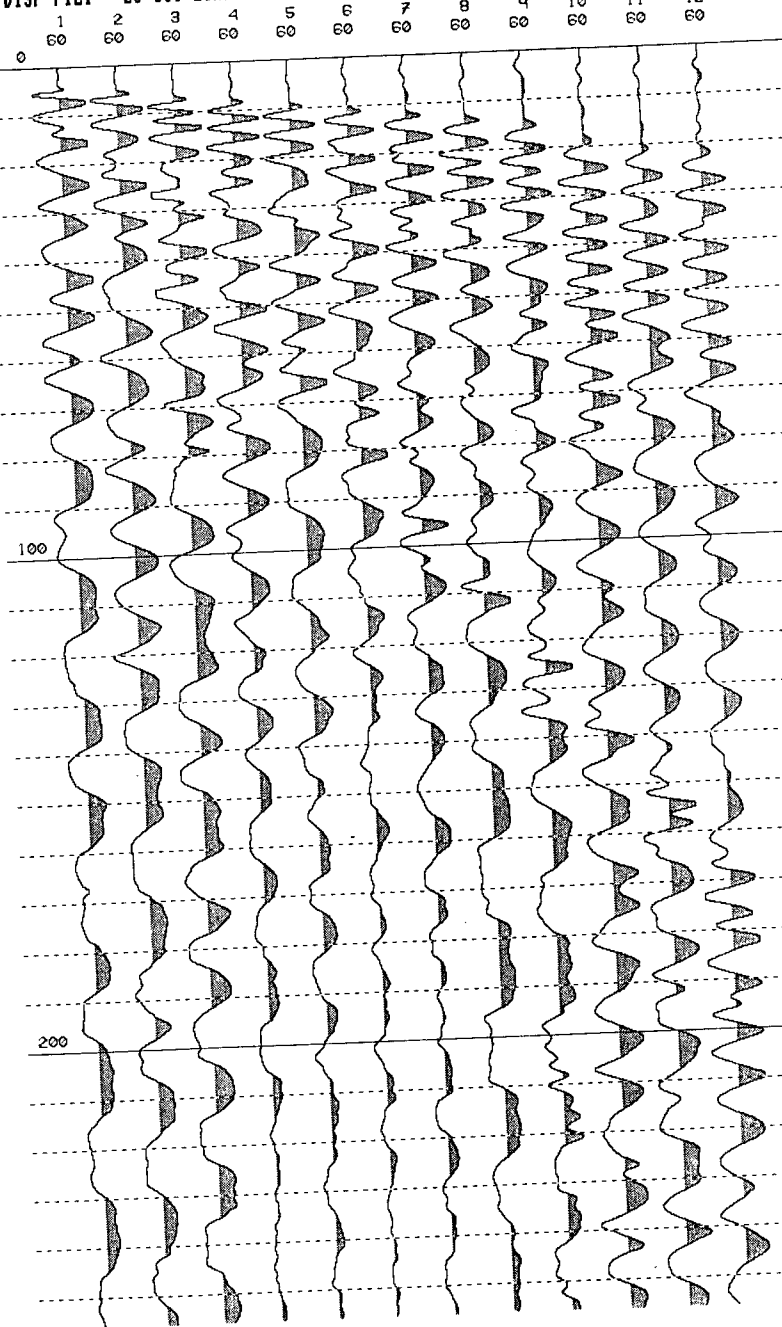
GEOMETRICS

SmartSeis

SAVED AS 0113-4.DAT
LINE NUMBER 1
SHOT LOC 775.00
SAMPLE INTERVAL 125 uS
ACQ FILT OUT
DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00
PHONE 1 LOC 720.00
RECORD LEN 256 MS

14:34:1725/OCT/1995
PHONE 12 LOC 775.00
DELAY 0 MS
STACKS 1
AGC 50



GEOMETRICS

SAVED AS 0113-5.DAT

LINE NUMBER 1

SHOT LOC 835.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 775.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

15:56:0825/OCT/1995

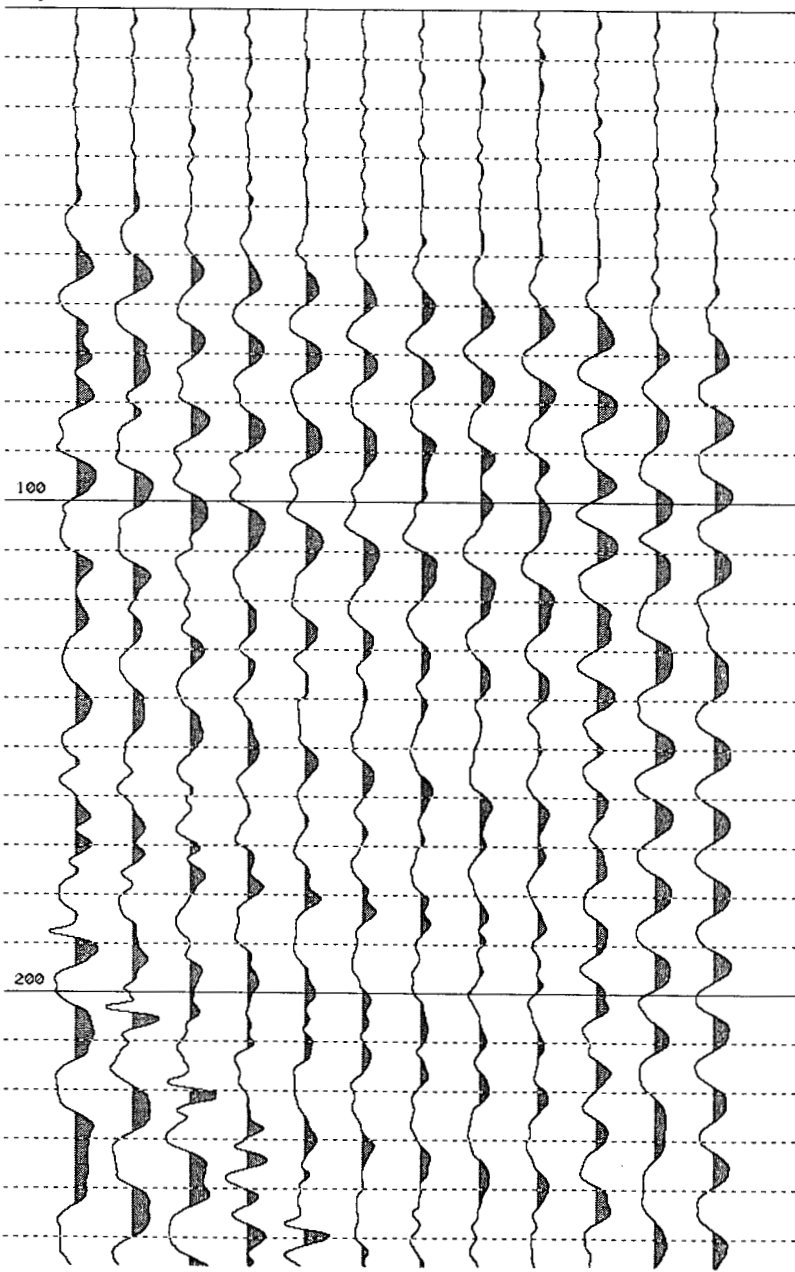
PHONE 12 LOC 720.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

SAVED AS 0114-1.DAT

LINE NUMBER 1

SHOT LOC 720.00

SAMPLE INTERVAL 125 uS

ACQ FILT OUT

DISP FILT LO CUT 25HZ

GROUP INTERVAL 5.00

PHONE 1 LOC 780.00

RECORD LEN 256 MS

OUT

HI CUT 250HZ

SmartSeis

17:34:0625/OCT/1995

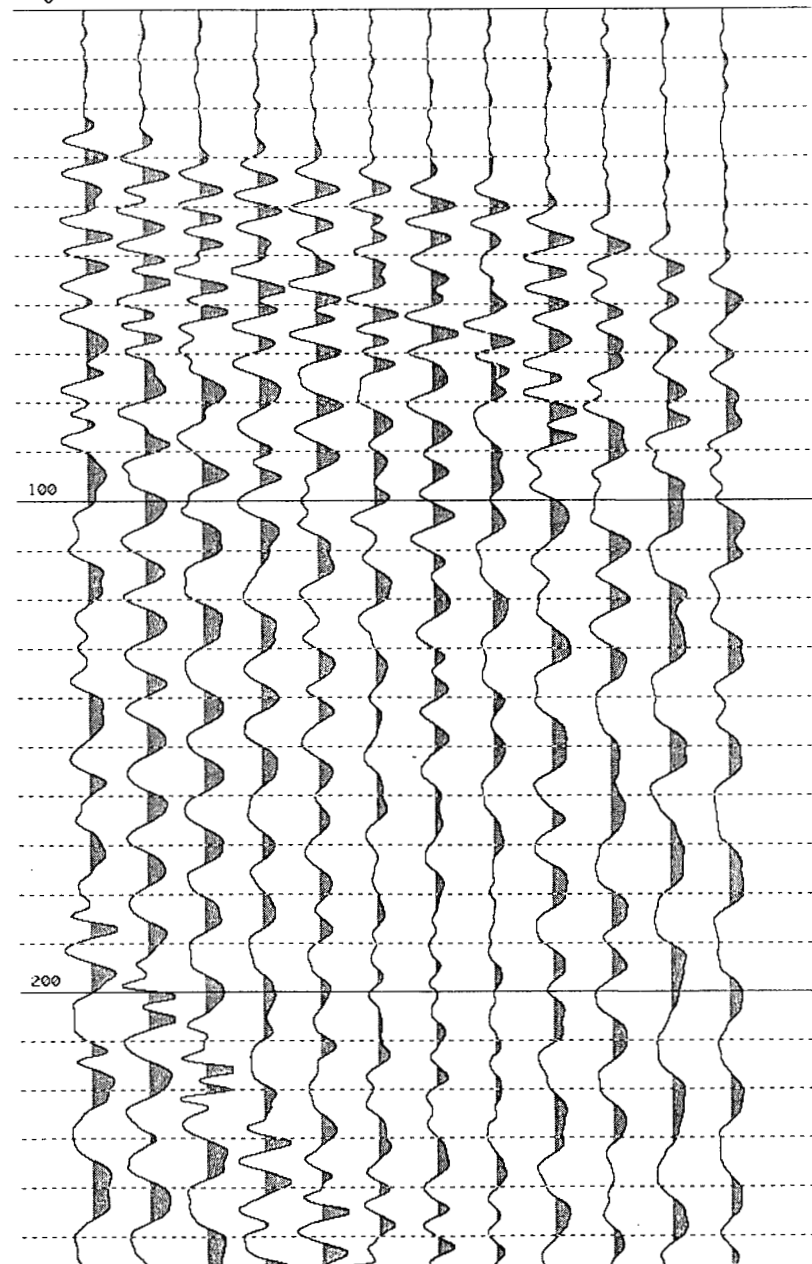
PHONE 12 LOC 835.00

DELAY 0 MS

STACKS 1

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0114-2.DAT

17:46:1025/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 700.00

PHONE 1 LOC 700.00

PHONE 12 LOC 835.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

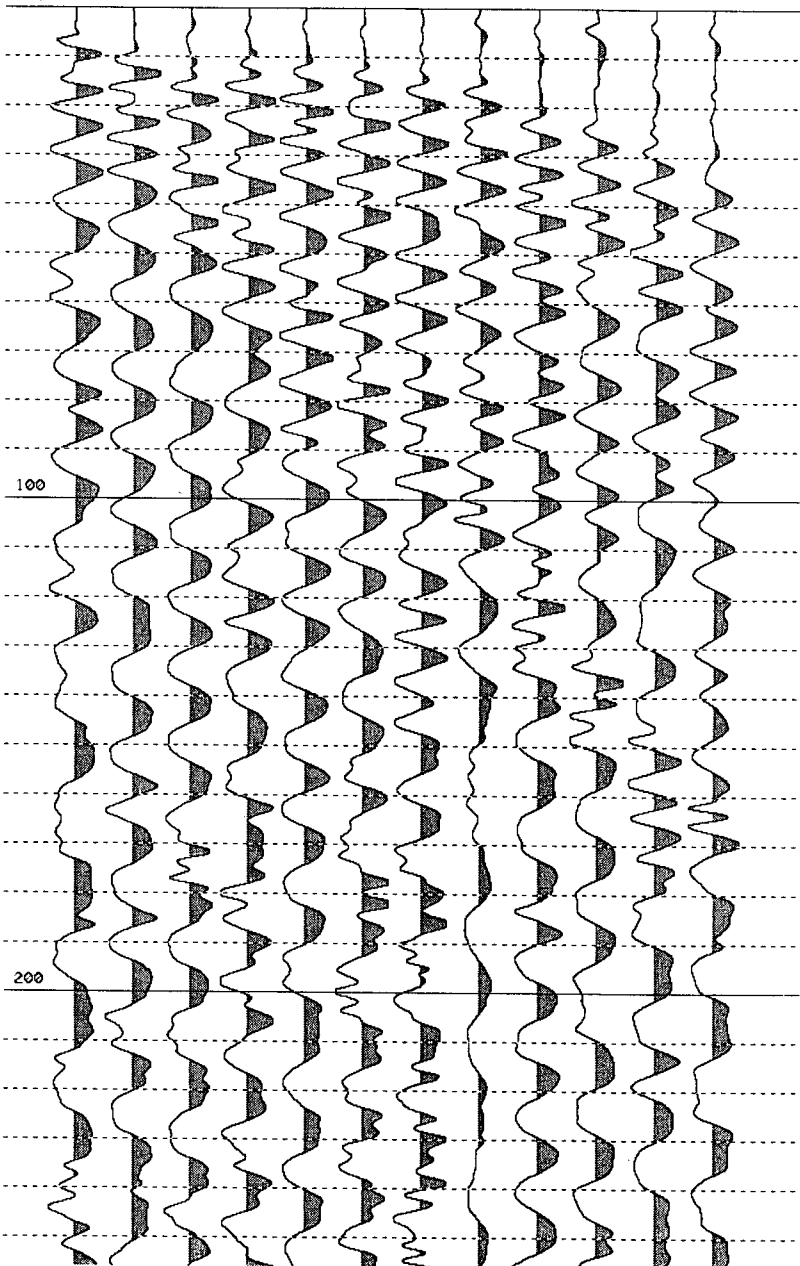
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
60	60	60	60	60	60	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0114-3.DAT

18:23:2525/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 807.50

PHONE 1 LOC 700.00

PHONE 12 LOC 835.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

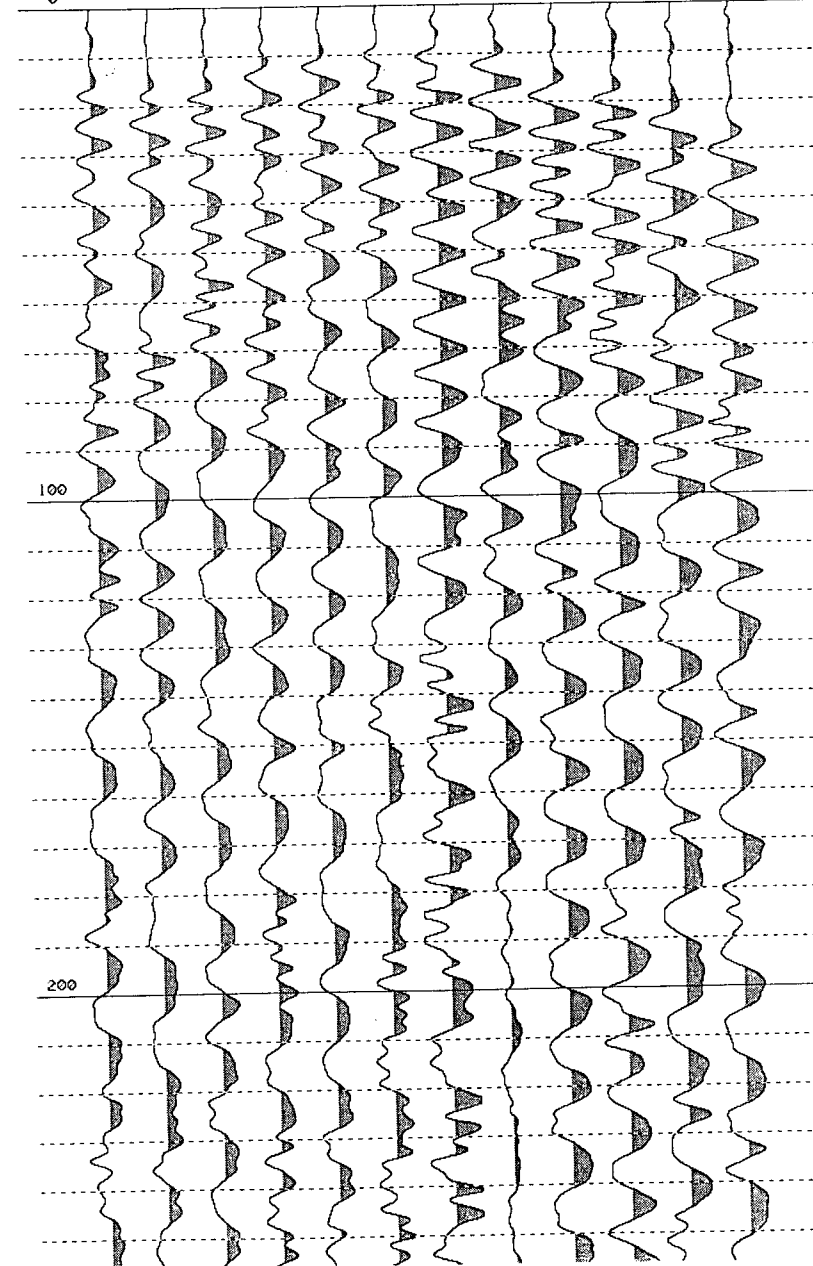
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	57	57	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0114-4.DAT

18:45:4025/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 835.00

PHONE 1 LOC 780.00

PHONE 12 LOC 835.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

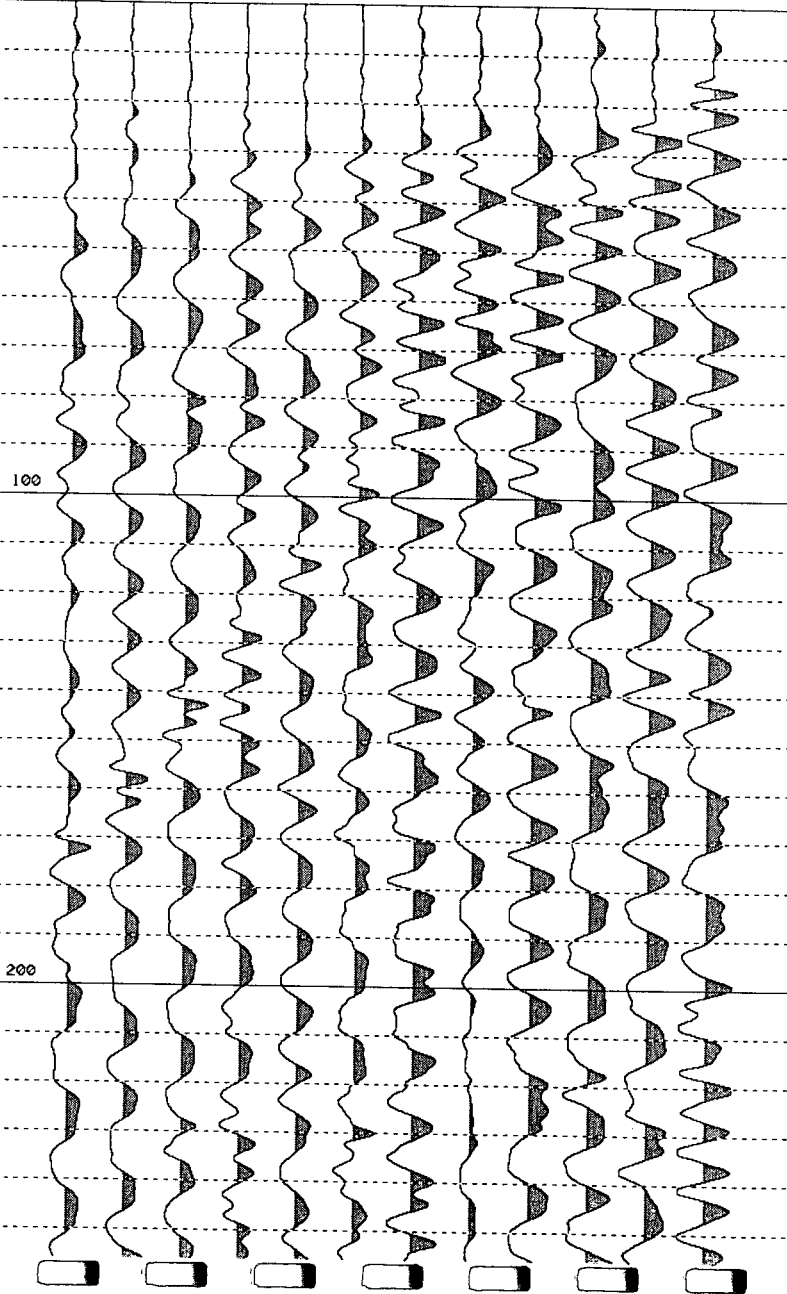
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	57	57	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0114-5.DAT

19:12:5925/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 895.00

PHONE 1 LOC 780.00

PHONE 12 LOC 835.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

OUT

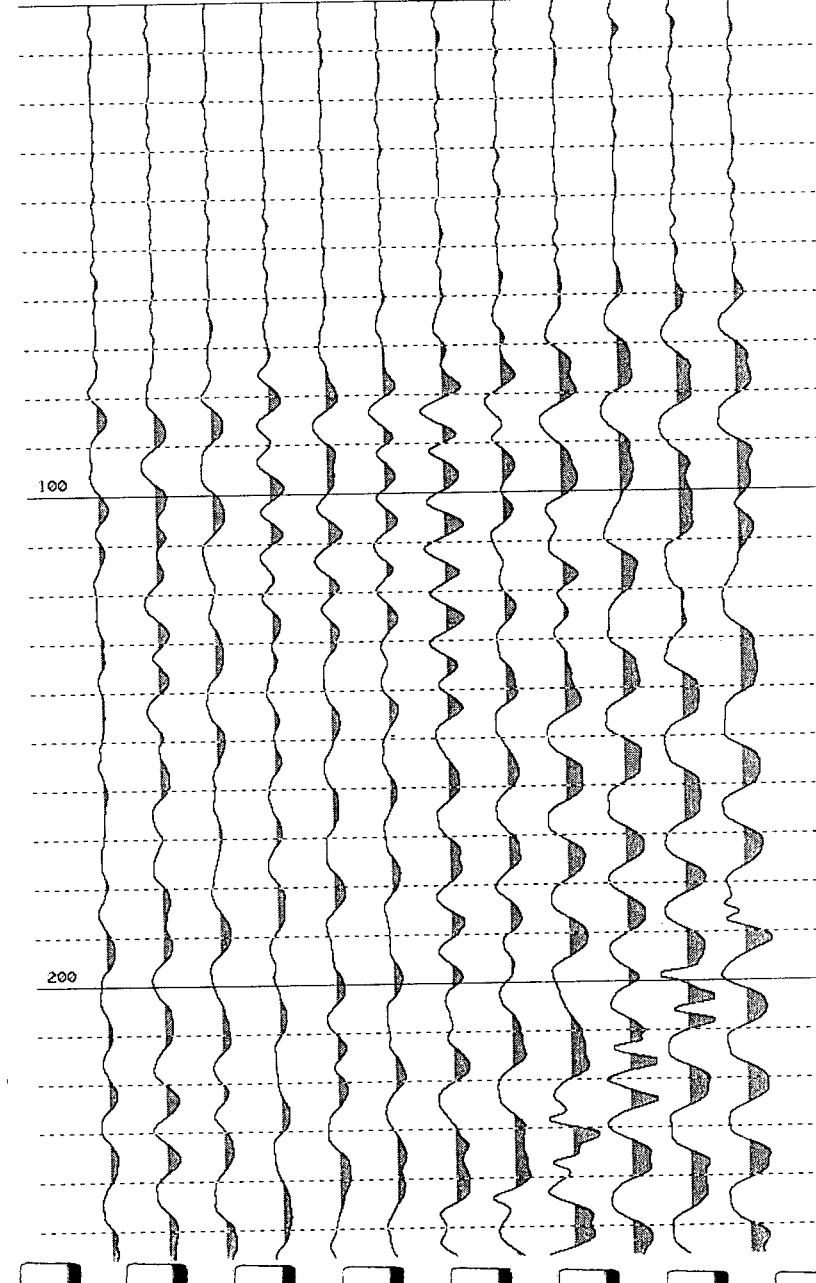
STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50

1	2	3	4	5	6	7	8	9	10	11	12
57	57	57	57	57	57	60	60	60	60	60	60



GEOMETRICS

SmartSeis

SAVED AS 0115-1.DAT

20:15:2425/OCT/1995

LINE NUMBER 1

GROUP INTERVAL 5.00

SHOT LOC 895.00

PHONE 1 LOC 840.00

PHONE 12 LOC 895.00

SAMPLE INTERVAL 125 uS

RECORD LEN 256 MS

DELAY 0 MS

ACQ FILT OUT

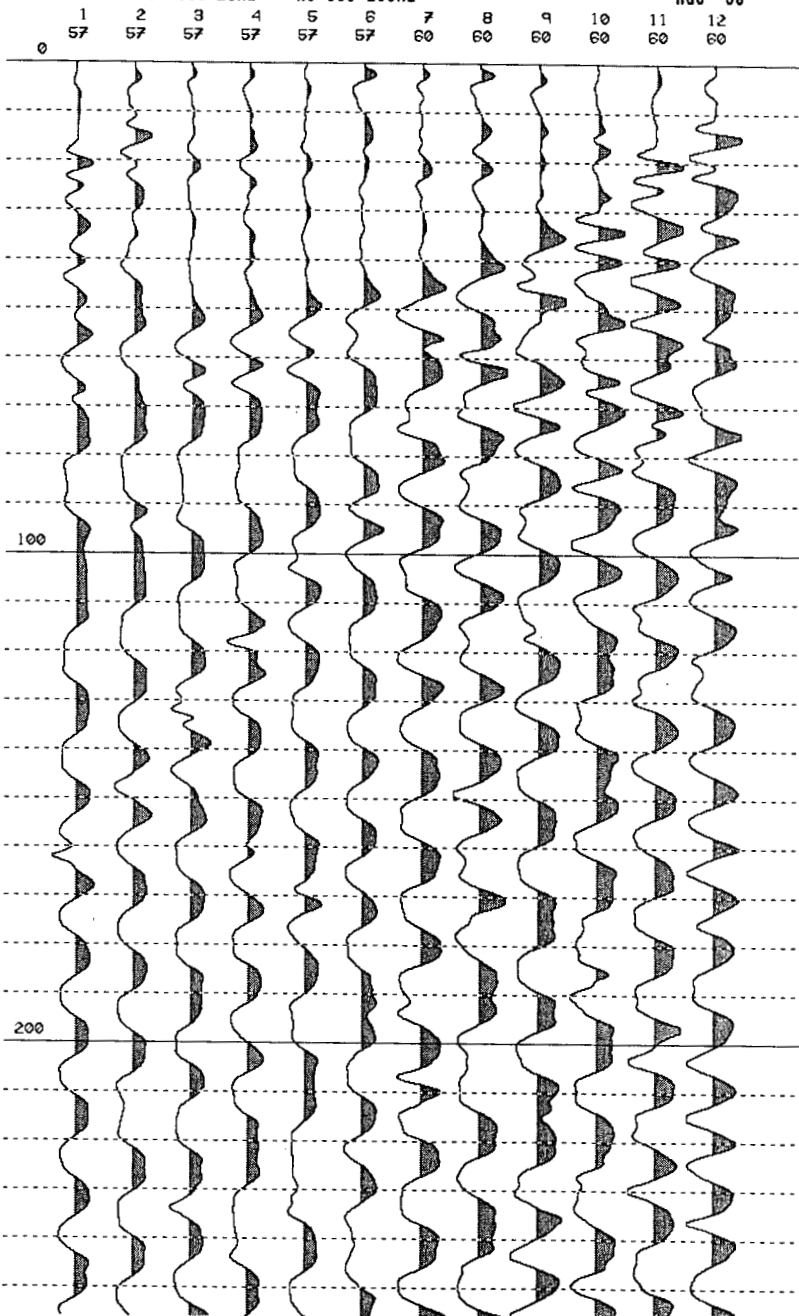
OUT

STACKS 1

DISP FILT LO CUT 25HZ

HI CUT 250HZ

AGC 50



Appendix E. First Arrivals

INPUT DATA FILE for L1-B1F.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B1F.SIP

Duncan Creek Placer Seismic - Line 1 - Block 1 (Spreads 1-4)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL	PLOT CONTROL		T O		
P	E	a	Elev	Horiz	Time	Pt 1	Pt 2	Elevations		r f L		
r	x	y	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim	TLim	e P p
d	i	r	---	---	---	---	---	---	---	---	---	---
s	t	s	---	---	---	---	---	---	---	---	---	---
3	6	3	0.0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0 0 0
						0.0	0.0					

SHOTPOINT AND GEOPHONE DATA

Spread A, 4 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	101.0	0.0	5.0	0.0	0.0	0.0	1
B	100.0	25.7	5.0	0.0	0.0	0.0	0
C	99.8	52.8	5.0	0.0	0.0	0.0	2
D	99.3	109.3	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D
1	101.0	0.0	0.0	12.00 1	24.50 232.750 2	61.00 3	
2	100.7	4.5	0.0	17.25 2	21.25 231.870 2	60.50 3	
3	100.3	9.0	0.0	19.00 2	19.00 232.750 2	58.75 3	
4	100.0	13.5	0.0	27.00 2	18.50 230.600 2	56.87 3	
5	100.0	18.3	0.0	32.00 2	8.00 229.750 2	53.50 3	
6	100.0	23.2	0.0	35.25 2	6.50 126.500 2	54.12 2	
7	99.9	28.1	0.0	35.50 2	5.00 123.250 2	50.25 2	
8	99.9	32.9	0.0	46.00 2	7.25 221.750 2	48.87 2	
9	99.9	37.9	0.0	48.50 2	18.50 218.120 2	48.25 2	
10	99.9	42.9	0.0	47.50 2	25.75 214.500 2	41.37 2	
11	99.8	47.8	0.0	48.25 2	30.50 2 5.125 2	39.25 2	
12	99.8	52.8	0.0	51.75 2	36.50 2 3.375 1	37.87 2	

SHOTPOINT AND GEOPHONE DATA

Spread B, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	101.0	0.0	5.0	0.0	0.0	0.0	0
B	100.0	57.0	5.0	0.0	0.0	0.0	1
C	99.2	84.5	5.0	0.0	0.0	0.0	0
D	99.3	109.3	5.0	0.0	0.0	0.0	2
E	112.0	164.5	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
1	100.0	57.0	0.0	51.25	2 4.500	121.370	238.250	2 56.75
2	99.9	62.1	0.0	55.87	212.000	218.000	234.870	2 54.25
3	99.7	67.2	0.0	58.25	214.870	213.620	231.620	2 51.50
4	99.6	72.3	0.0	58.25	216.870	2 8.875	227.370	2 48.25
5	99.4	77.4	0.0	61.50	218.750	2 5.625	224.120	2 44.50
6	99.3	82.0	0.0	64.62	220.120	2 4.625	120.750	2 41.50
7	99.2	86.6	0.0	67.12	221.870	2 4.500	116.120	2 40.37
8	99.0	91.2	0.0	71.25	325.000	2 6.875	214.120	2 38.50
9	101.0	95.9	0.0	72.00	328.250	2 8.250	211.000	2 37.12
10	99.5	100.1	0.0	74.12	330.500	213.250	2 9.250	2 35.50
11	99.4	104.7	0.0	75.00	332.750	216.370	2 4.625	2 33.25
12	99.3	109.3	0.0	76.00	335.250	219.250	2 4.500	1 30.62

SHOTPOINT AND GEOPHONE DATA

Spread C, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	100.0	57.0	5.0	0.0	0.0	0.0	0
B	99.1	113.9	5.0	0.0	0.0	0.0	1
C	104.7	140.4	5.0	0.0	0.0	0.0	0
D	112.0	164.5	5.0	0.0	0.0	0.0	2
E	127.7	218.7	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
				-----L	-----L	-----L	-----L	-----L
1	99.1	113.9	0.0	40.00 2	3.625 130.000	225.250 2	54.60 3	
2	100.2	118.7	0.0	41.87 2	7.875 231.400	224.250 2	52.00 3	
3	101.3	123.5	0.0	47.25	215.500 230.300	223.500 2	50.37 3	
4	102.3	128.3	0.0	55.00	219.250 232.000	223.870 2	50.87 3	
5	103.4	133.1	0.0	55.25	220.370 219.800	120.000 2	47.50 2	
6	104.5	137.9	0.0	57.00	324.500 2 7.500	119.500 2	47.12 2	
7	105.5	142.7	0.0	58.25	328.000 2 7.000	114.620 2	42.50 2	
8	106.6	147.5	0.0	59.37	329.000 214.400	111.620 2	39.37 2	
9	107.7	152.3	0.0	62.37	334.120 221.000	213.370 2	39.37 2	
10	109.1	156.3	0.0	63.62	334.250 225.800	211.500 2	37.50 2	
11	110.6	160.4	0.0	62.37	333.000 225.500	2 6.125 2	34.62 2	
12	112.0	164.5	0.0	59.80	330.000 227.130	2 1.375 1	26.50 2	

INPUT DATA FILE for L1-B2F.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B2F.SIP

Duncan Creek Placer Seismic - Line 1 - Block 2 (Spread 4-8)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL	PLOT CONTROL		T O
p	E	a	Elev	Horiz	Time	Pt 1	Pt 2	Elevations		r f L
r	x	y	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim TLim e P p
d	i	r								c S i
s	t	s								- - -
2	6	3	0.0	0.0	0.0	0.0	0.0	0	0	0.5 10.0 0 0 0
						0.0	0.0			

SHOTPOINT AND GEOPHONE DATA

Spread A, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
---	---	---	---	---	---	---	---
A	99.1	113.9	5.0	0.0	0.0	0.0	0
B	113.0	169.2	5.0	0.0	0.0	0.0	1
C	120.5	194.1	5.0	0.0	0.0	0.0	0
D	127.7	218.7	5.0	0.0	0.0	0.0	2
E	145.0	281.0	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
---	---	---	---	-----L	-----L	-----L	-----L	-----L
1	113.0	169.2	0.0	23.50	2 4.750	112.000	225.370	3 46.00 3
2	114.1	174.0	0.0	28.62	210.000	214.870	227.000	3 47.00 3
3	115.1	178.7	0.0	32.37	211.000	214.120	226.000	3 45.00 3
4	116.2	183.5	0.0	31.12	212.100	2 8.000	220.370	2 40.87 2
5	118.0	187.6	0.0	33.75	213.620	2 7.875	220.370	2 41.50 2
6	119.8	191.7	0.0	32.87	212.500	2 3.625	116.120	2 37.62 2
7	121.2	196.1	0.0	34.25	214.750	2 4.625	114.620	2 35.75 2
8	122.5	200.5	0.0	36.37	216.000	2 6.125	212.620	2 33.37 2
9	123.9	204.9	0.0	40.12	319.500	3 8.800	211.250	2 32.50 2
10	125.2	209.5	0.0	40.25	320.000	3 9.000	2 9.375	2 28.62 2
11	126.5	214.1	0.0	42.00	321.620	311.700	2 8.125	2 27.00 2
12	127.7	218.7	0.0	42.75	322.500	313.120	2 6.875	1 26.25 2

SHOTPOINT AND GEOPHONE DATA

 Spread B, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
---	----	-----	-----	-----	-----	-----	-----
A	113.0	164.5	5.0	0.0	0.0	0.0	0
B	128.7	222.5	5.0	0.0	0.0	0.0	1
C	136.8	249.6	5.0	0.0	0.0	0.0	0
D	145.0	277.8	5.0	0.0	0.0	0.0	2
E	154.2	337.6	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
---	----	-----	---	-----L	-----L	-----L	-----L	-----L
1	128.7	222.5	0.0	25.87 2	2.625 1	20.12	223.620 3	46.00 3
2	130.6	227.5	0.0	30.87 2	4.125 2	18.80	221.500 3	45.50 3
3	130.6	232.4	0.0	34.00 2	6.375 2	19.80	221.370 3	45.00 3
4	132.2	237.4	0.0	35.00	318.000 2	21.50	222.500 3	42.25 2
5	134.1	242.4	0.0	34.75	318.500 2	15.12	219.800 3	39.50 2
6	136.1	247.4	0.0	37.12	320.120 2	11.62	119.500 2	38.87 2
7	137.8	252.2	0.0	41.62	324.120 2	11.50	119.000 2	40.12 2
8	139.6	257.0	0.0	44.00	327.500 3	21.87	218.500 2	40.12 2
9	141.4	262.0	0.0	44.50	328.870 3	25.75	216.250 2	36.87 2
10	142.5	267.0	0.0	39.50	323.620 3	21.37 2	9.250 2	30.25 2
11	143.6	272.0	0.0	40.75	325.370 3	23.00 2	5.875 2	26.25 2
12	145.0	277.8	0.0	42.00	325.500 3	23.25 2	4.750 1	24.37 2

INPUT DATA FILE for L1-B3F.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B3F.SIP

Duncan Creek Placer Seismic - Line 1 - Block 3 (Spread 6)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL	PLOT CONTROL		T O		
p	E	a	Elev	Horiz	Time	Pt 1	Pt 2	Elevations		r f L		
d	i	r	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim	TLim	e P p
s	t	s	---	---	---	---	---	---	---	---	---	---
1	6	3	0.0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0 0 0
						0.0	0.0					

SHOTPOINT AND GEOPHONE DATA

Spread A, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	128.7	222.5	5.0	0.0	0.0	0.0	0
B	145.0	285.4	5.0	0.0	0.0	0.0	1
C	151.0	312.0	5.0	0.0	0.0	0.0	0
D	154.1	340.6	5.0	0.0	0.0	0.0	2
E	171.8	398.1	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
				-----L	-----L	-----L	-----L	-----L
1	145.0	285.4	0.0	25.25 2	3.625 116.620	224.000 3	72.00 3	
2	146.2	290.3	0.0	26.37 2	5.125 216.000	222.200 3	71.25 3	
3	147.0	295.1	0.0	28.75 2	6.000 213.370	221.750 3	70.75 3	
4	147.9	300.0	0.0	31.50 2	8.000 2 9.375	222.620 2	69.12 3	
5	148.8	304.8	0.0	32.87 210.620	212.250	220.500 2	65.25 2	
6	149.6	309.6	0.0	35.00 211.870	210.500	118.500 2	63.50 2	
7	150.5	314.4	0.0	37.25 212.370	210.500	116.370 2	63.75 2	
8	151.4	319.2	0.0	38.37 214.620	210.250	215.500 2	60.50 2	
9	152.1	324.5	0.0	39.87 214.750	214.500	211.870 2	55.37 2	
10	152.8	329.9	0.0	42.37 217.120	213.120	210.750 2	56.25 2	
11	153.5	335.2	0.0	50.75 320.620	314.620	212.250 2	57.00 2	
12	154.2	340.6	0.0	50.87 320.750	315.120	2 8.125 1	53.12 2	

INPUT DATA FILE for L1-B4A.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B4A.SIP

Duncan Creek Placer Seismic - Line 1 - Block 4a (Spread 7)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL		PLOT CONTROL		T O		
p	E	a	Elev	Horiz	Time	Pt 1	Pt 2	Elevations		r f L			
r	x	y	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim	TLim	a f D	
d	i	r	-----	-----	-----	-----	-----	-----	-----	-----	-----	c S i	
s	t	s	r	r	col	-----	-----	-----	-----	-----	-----	e P p	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
1	6	3	0	0.0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0 0 0
						0.0	0.0						

SHOTPOINT AND GEOPHONE DATA

Spread A, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
---	----	-----	-----	-----	-----	-----	-----
A	145.0	285.4	5.0	0.0	0.0	0.0	0
B	155.1	347.1	5.0	0.0	0.0	0.0	1
C	163.4	372.0	5.0	0.0	0.0	0.0	0
D	171.8	398.1	5.0	0.0	0.0	0.0	2
E	174.4	457.4	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
---	----	-----	---	-----L	-----L	-----L	-----L	-----L
1	155.1	347.1	0.0	25.62 2	8.375 1	39.12 2	52.00 3	96.50 3
2	156.1	352.0	0.0	31.50 2	14.370 2	38.37 2	54.50 3	100.00 3
3	157.1	357.0	0.0	33.00 2	16.120 2	36.25 2	52.12 3	97.25 3
4	158.9	361.2	0.0	42.62 2	25.620 2	30.62 2	56.50 3	102.60 3
5	160.7	365.4	0.0	47.12 2	32.500 2	19.25 2	57.50 3	103.60 3
6	162.4	369.6	0.0	51.25 2	35.750 2	13.75 1	56.62 3	103.30 3
7	164.4	374.2	0.0	54.75 2	41.370 2	19.37 1	55.12 3	103.30 3
8	166.4	378.9	0.0	59.75 2	44.500 2	31.50 2	53.87 3	105.60 3
9	168.3	383.5	0.0	61.37 2	45.750 2	44.75 2	50.12 3	103.70 3
10	170.3	388.1	0.0	63.37 2	48.250 2	54.50 2	36.25 3	104.20 3
11	171.0	393.1	0.0	64.62 3	51.500 3	57.37 3	25.12 3	102.00 3
12	171.8	398.1	0.0	66.25 3	51.750 3	57.87 3	19.00 3	100.50 3

INPUT DATA FILE for L1-B4B.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B4B.SIP

Duncan Creek Placer Seismic - Line 1 - Block 4b (Spread 8-11)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL	PLOT CONTROL			T O		
p	E	a	O										r f L
r	x	y	v	Elev	Horiz	Time	Pt 1	Pt 2	Elevations			a f D	
d	i	r	e	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim	TLim	e P p
s	t	s	r										c S i
-	-	-	-	-----	-----	-----	-----	-----	-----	-----	-----	-----	- - -
4	6	3	0	0.0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0 0 0
							0.0	0.0					

SHOTPOINT AND GEOPHONE DATA

Spread A, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	155.1	347.1	5.0	0.0	0.0	0.0	0
B	172.5	403.1	5.0	0.0	0.0	0.0	1
C	173.2	430.8	5.0	0.0	0.0	0.0	0
D	174.4	457.4	5.0	0.0	0.0	0.0	2
E	175.4	517.5	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
				-----L	-----L	-----L	-----L	-----L
1	172.5	403.1	0.0	55.50 2	13.37 1	67.50 2	101.60 3	140.8 3
2	172.7	408.3	0.0	57.37 2	20.62 1	65.37 2	99.87 3	140.5 3
3	172.9	413.6	0.0	58.62 2	35.37 1	54.37 1	99.00 3	138.5 3
4	173.2	418.8	0.0	60.75 2	50.00 1	40.62 1	98.00 3	139.0 3
5	173.2	423.6	0.0	63.12 2	56.75 2	24.37 1	92.87 2	140.2 3
6	173.2	428.4	0.0	67.37 2	63.12 2	13.50 1	81.50 2	142.7 3
7	173.3	433.1	0.0	76.87 2	73.00 2	11.12 1	70.75 2	139.2 3
8	173.3	437.9	0.0	84.62 2	80.25 2	14.37 1	59.62 2	138.2 3
9	173.6	443.3	0.0	91.00 3	89.87 2	34.62 1	46.62 2	135.3 3
10	173.9	448.6	0.0	93.62 3	96.87 3	39.87 1	33.00 1	133.1 3
11	174.2	453.0	0.0	95.62 3	99.25 3	66.87 1	21.62 1	129.8 3
12	174.4	457.4	0.0	99.00 3	103.00 3	77.00 2	15.87 1	128.2 3

SHOTPOINT AND GEOPHONE DATA

Spread B, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	172.5	403.1	5.0	0.0	0.0	0.0	0
B	174.3	461.7	5.0	0.0	0.0	0.0	0
C	174.6	490.7	5.0	0.0	0.0	0.0	0
D	175.4	517.5	5.0	0.0	0.0	0.0	0
E	178.3	576.2	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
				L	L	L	L	L
1	174.3	463.0	0.0	106.7 2	11.62 1	66.87 2	2116.10 3	157.0 3
2	173.2	468.8	0.0	106.6 3	18.00 1	52.12 2	2111.60 3	155.0 3
3	173.8	473.7	0.0	110.0 3	28.87 1	42.50 2	2100.10 2	152.0 3
4	174.3	478.6	0.0	114.2 3	40.37 1	30.25 2	95.12 2	151.5 3
5	174.4	483.4	0.0	116.8 3	53.12 1	25.50 2	89.62 2	145.2 3
6	174.5	488.2	0.0	120.0 3	60.00 2	14.87 1	79.25 2	143.5 3
7	174.6	493.0	0.0	121.8 3	71.87 2	12.62 1	69.87 2	143.0 3
8	174.8	497.8	0.0	126.2 3	83.00 2	26.37 1	55.25 2	141.1 3
9	174.9	502.7	0.0	128.8 3	96.62 2	40.62 1	43.00 2	138.3 3
10	175.1	507.6	0.0	130.2 3	105.80 2	52.62 2	31.87 1	136.3 3
11	175.2	512.6	0.0	136.2 3	116.30 2	63.62 2	17.87 1	138.1 3
12	175.4	517.5	0.0	138.7 3	120.30 3	74.37 2	10.75 1	129.7 2

SHOTPOINT AND GEOPHONE DATA

Spread C, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	174.3	461.7	5.0	0.0	0.0	0.0	0
B	175.6	522.4	5.0	0.0	0.0	0.0	0
C	177.6	549.7	5.0	0.0	0.0	0.0	0
D	178.3	576.2	5.0	0.0	0.0	0.0	0
E	179.0	635.0	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
---	---	---	---	-----L	-----L	-----L	-----L	-----L
1	175.6	522.4	0.0	127.3 2	8.375 1	75.12	2124.60 2	159.1 3
2	176.0	527.3	0.0	129.1	311.250 2	64.37	2113.10 2	156.2 3
3	176.5	532.1	0.0	131.0	314.370 2	52.62	2105.30 2	154.8 3
4	176.9	537.0	0.0	136.5	321.620 2	39.00	1 95.62 2	155.2 3
5	177.2	542.1	0.0	139.5	335.870 2	23.75	1 89.37 2	151.8 3
6	177.5	547.3	0.0	142.6	344.750 2	13.00	1 76.00 2	151.3 3
7	177.7	552.4	0.0	146.1	363.500 2	12.00	1 65.62 2	148.7 3
8	178.0	557.5	0.0	149.7	370.870 2	18.87	1 53.12 1	146.2 3
9	178.1	562.2	0.0	151.0	381.500 2	33.37	1 40.37 1	141.7 2
10	178.2	566.9	0.0	152.1	398.000 2	48.00	2 29.00 1	135.6 2
11	178.2	571.5	0.0	156.3	3106.80 2	54.00	2 15.37 1	125.1 2
12	178.3	576.2	0.0	157.6	3118.50 2	67.37	2 10.75 1	117.0 2

SHOTPOINT AND GEOPHONE DATA

Spread D, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
---	---	---	---	---	---	---	---
A	175.6	522.4	5.0	0.0	0.0	0.0	0
B	178.4	580.2	5.0	0.0	0.0	0.0	0
C	178.8	607.6	5.0	0.0	0.0	0.0	0
D	179.0	635.0	5.0	0.0	0.0	0.0	0
E	178.1	694.6	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
---	---	---	---	-----L	-----L	-----L	-----L	-----L
1	178.4	580.2	0.0	129.2 2	10.37 1	70.00	295.120	2128.00 3
2	178.5	585.2	0.0	134.1 3	16.25 1	59.62	281.370	2123.00 3
3	178.6	590.2	0.0	135.5 3	28.62 1	50.37	277.000	2118.00 3
4	178.6	595.2	0.0	136.6 3	43.87 1	36.37	164.120	2110.00 2
5	178.7	600.1	0.0	140.6 3	58.12 1	22.50	156.370	2104.00 2
6	178.8	605.1	0.0	141.7 3	63.50 2	11.50	145.120	2 91.00 2
7	178.9	610.1	0.0	144.8 3	73.00 2	11.75	133.750	2 75.00 2
8	179.0	615.1	0.0	146.2 3	82.87 2	17.87	128.250	2 60.00 2
9	179.0	620.1	0.0	148.3 3	95.87 3	35.25	124.500	2 49.50 2
10	179.0	625.8	0.0	147.2 3	95.00 3	33.25	218.500	2 42.30 2
11	179.0	630.5	0.0	149.1 3	98.62 3	37.62	217.620	1 36.70 2
12	179.0	635.0	0.0	147.6 3	99.00 3	39.50	2 9.875 1	33.87 2

INPUT DATA FILE for L1-B5.SIP

TITLE FOR SIPT2/SIPLUS INPUT DATA SET for L1-B5.SIP

Duncan Creek Placer Seismic - Line 1 - Block 5 (Spreads 12-14)

PROGRAM CONTROL DATA

S	L	V	PRINTER PLOT SCALES			DATUM	CONTROL	PLOT CONTROL		T O		
p	E	a	Elev	Horiz	Time	Pt 1	Pt 2	Elevations		r f L		
d	i	r	m/col	m/row	ms/col	Elev/X	Elev/X	Top	Bottom	BLim	TLim	e P p
s	t	s	r									
3	6	2	0	0.0	0.0	0.0	0.0	0	0	0.5	10.0	0 0 0
						0.0	0.0					

SHOTPOINT AND GEOPHONE DATA

Spread A, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	178.4	580.2	5.0	0.0	0.0	0.0	0
B	178.6	640.0	5.0	0.0	0.0	0.0	1
C	177.6	667.7	5.0	0.0	0.0	0.0	0
D	178.1	694.6	5.0	0.0	0.0	0.0	2
E	180.2	752.2	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
1	178.6	640.0	0.0	93.37 1	9.500	119.800	232.120 2	41.87 2
2	178.4	645.1	0.0	102.70 1	115.500	219.000	230.370 2	40.50 2
3	178.2	650.1	0.0	109.20 1	116.500	216.000	225.370 2	35.75 2
4	178.0	655.1	0.0	112.00 1	219.600	212.800	221.370 2	33.50 2
5	177.8	660.1	0.0	111.10 1	218.500	211.620	219.750 2	29.75 2
6	177.6	665.2	0.0	114.50 1	219.120 2	7.125	117.370 2	28.37 2
7	177.7	670.1	0.0	116.50 1	222.370 2	8.375	116.750 2	27.00 2
8	177.8	675.0	0.0	123.10 1	225.750	211.620	216.620 2	27.87 2
9	177.9	679.9	0.0	126.50 1	227.250	213.500	215.620 2	26.50 2
10	177.9	684.8	0.0	128.30 1	230.620	216.600	214.800 2	26.25 2
11	178.0	689.7	0.0	128.50 1	231.000	218.700	211.900 2	23.25 2
12	178.1	694.6	0.0	128.20 1	233.870	221.200	2 8.875 1	21.50 2

SHOTPOINT AND GEOPHONE DATA

Spread B, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	178.6	640.0	5.0	0.0	0.0	0.0	0
B	178.2	698.4	5.0	0.0	0.0	0.0	1
C	179.2	725.5	5.0	0.0	0.0	0.0	0
D	180.2	752.2	5.0	0.0	0.0	0.0	2
E	183.7	813.8	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
1	178.2	698.4	0.0	33.87 2	8.00	115.370	219.000 2	51.00 2
2	178.4	703.3	0.0	36.12 2	11.00	215.120	219.120 2	50.37 2
3	178.7	708.2	0.0	37.25 2	15.00	212.370	216.120 2	48.62 2
4	179.0	713.0	0.0	36.37 2	15.25 2	9.250	212.870 2	46.87 2
5	179.0	717.9	0.0	38.37 2	16.50 2	7.750	211.500 2	43.75 2
6	179.2	722.9	0.0	38.50 2	15.50 2	7.250	110.250 2	43.37 2
7	179.3	727.9	0.0	41.62 2	16.25 2	5.875 1	8.375 2	40.87 2
8	179.4	732.9	0.0	42.50 2	17.75 2	8.250 2	7.750 2	39.00 2
9	179.6	737.9	0.0	43.87 2	18.50 2	7.625 2	6.625 2	38.25 2
10	179.8	742.7	0.0	43.00 2	20.00	210.120 2	5.625 2	36.25 2
11	180.0	747.4	0.0	45.87 2	20.50	212.500 2	4.500 2	35.62 2
12	180.2	752.2	0.0	46.50 2	21.00	212.500 2	3.375 1	34.50 2

SHOTPOINT AND GEOPHONE DATA

Spread C, 5 SP's, 12 Geo's, X-Shift = 0.0, X-True = 1, Units: Meters.

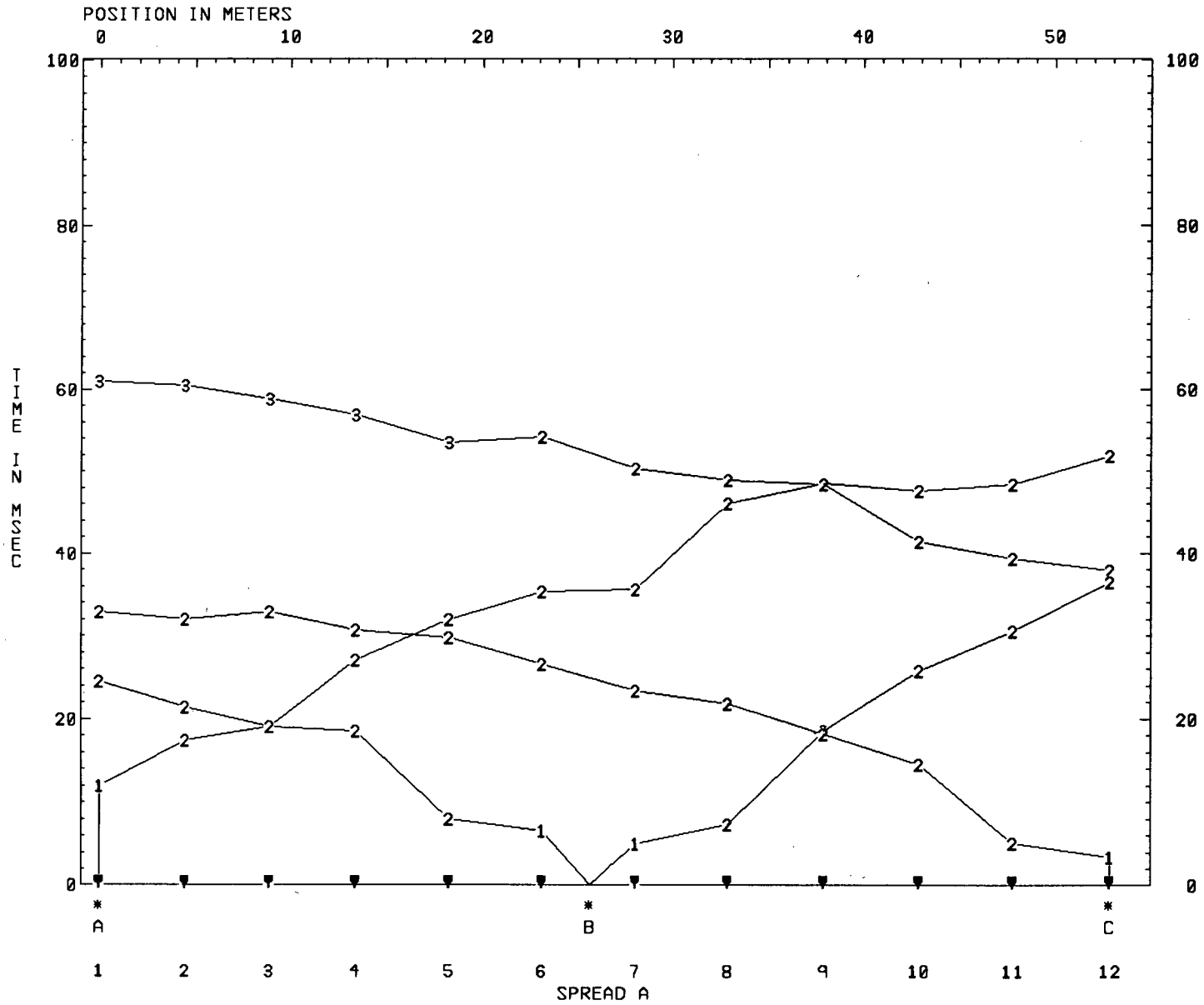
SP	Elev	X-Loc	Y-Loc	Depth	Uphole T	Fudge T	End SP
A	178.2	698.4	5.0	0.0	0.0	0.0	0
B	180.5	757.9	5.0	0.0	0.0	0.0	1
C	181.7	785.2	5.0	0.0	0.0	0.0	0
D	183.7	813.8	5.0	0.0	0.0	0.0	2
E	188.8	872.7	5.0	0.0	0.0	0.0	0

ARRIVAL TIMES AND LAYERS REPRESENTED

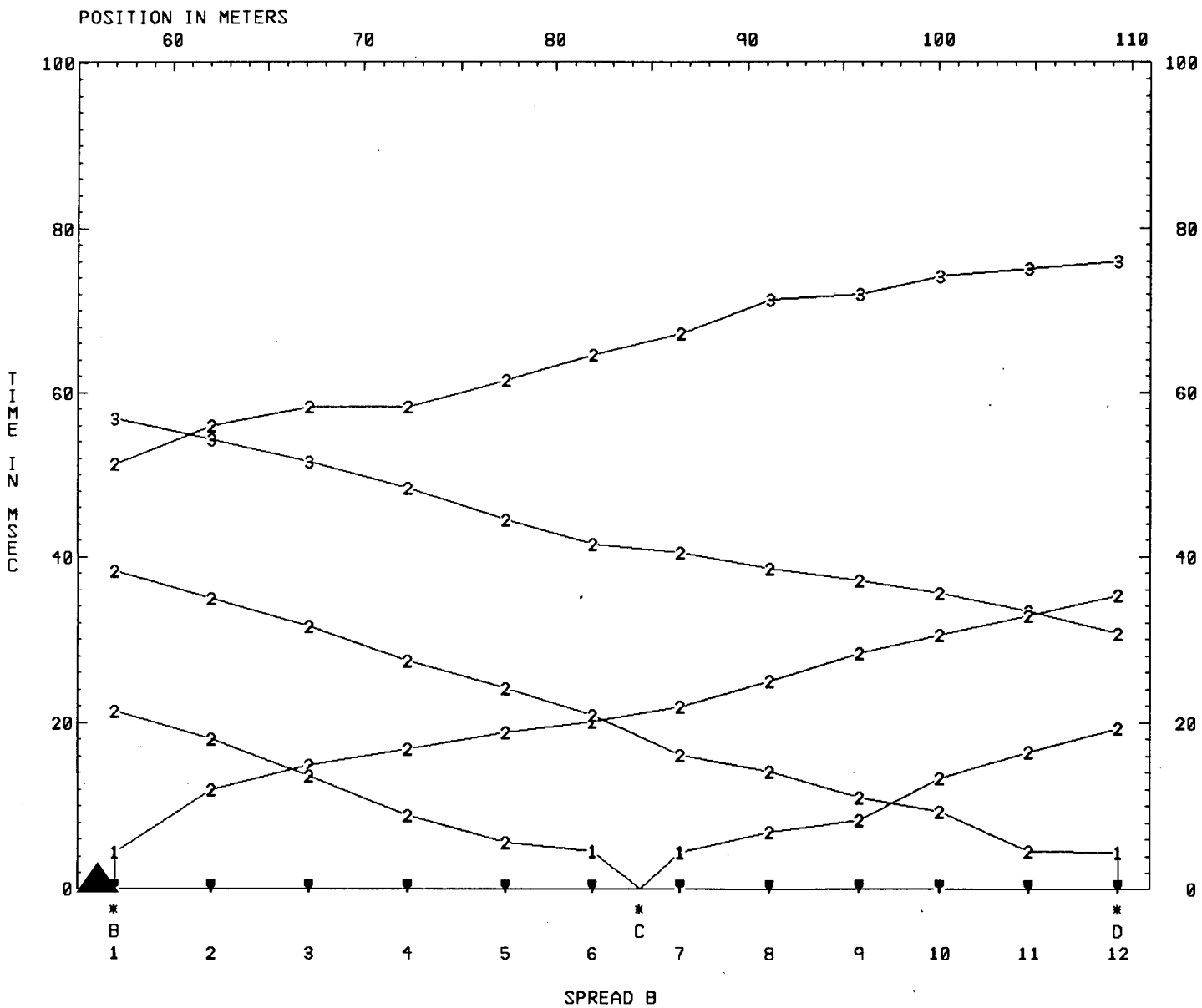
Geo	Elev	X-Loc	Y	SP A	SP B	SP C	SP D	SP E
				-----L	-----L	-----L	-----L	-----L
1	180.5	757.9	0.0	20.00 2	3.750 111.750 2	31.12 2	68.87 2	
2	180.4	762.0	0.0	23.37 2	6.125 213.500 2	32.25 2	69.00 2	
3	180.4	767.0	0.0	26.75 2	8.875 212.870 2	32.25 2	68.62 2	
4	181.3	772.0	0.0	27.00 2	8.750 2 8.750 2	28.37 2	65.37 2	
5	181.7	777.9	0.0	27.12 2	8.125 2 8.250 2	25.62 2	60.12 2	
6	182.0	782.8	0.0	30.12 2	9.750 2 6.500 1	24.87 2	57.87 2	
7	182.3	787.7	0.0	31.25 2	211.870 2 7.000 1	24.25 2	58.20 2	
8	182.6	792.6	0.0	31.00 2	214.500 2 9.000 2	25.25 2	57.25 2	
9	182.9	797.9	0.0	34.75 2	217.500 212.000 2	27.62 2	58.50 2	
10	183.2	803.2	0.0	38.62 2	221.620 215.250 2	24.00 1	56.87 2	
11	183.4	808.5	0.0	41.62 2	224.750 217.870 2	20.00 1	58.25 2	
12	183.7	813.8	0.0	45.12 2	228.750 222.250 2	11.87 1	58.37 2	

Appendix F. T-X Plots

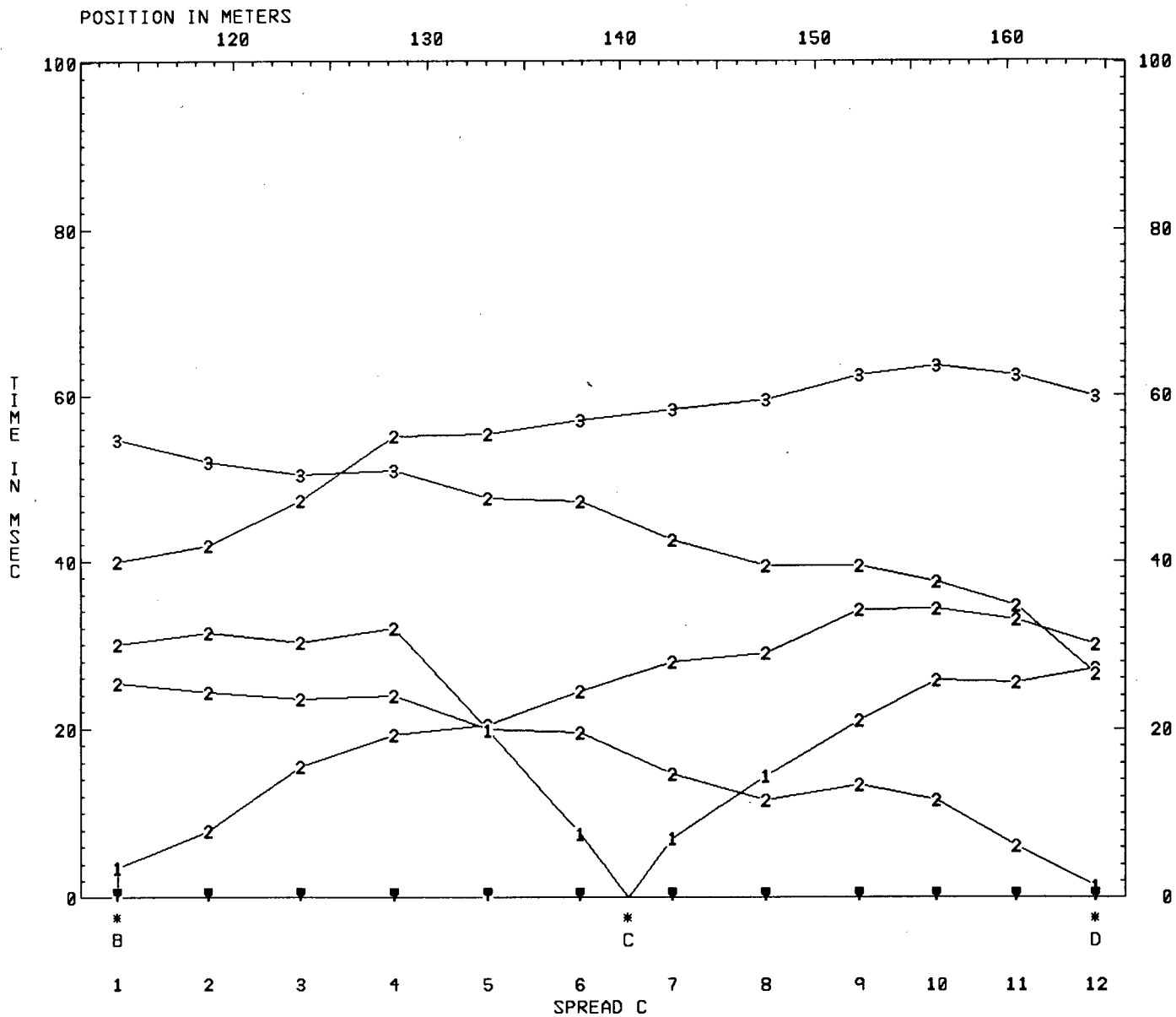
FILE L1-B1F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4) - RAW ARRIVAL TIMES



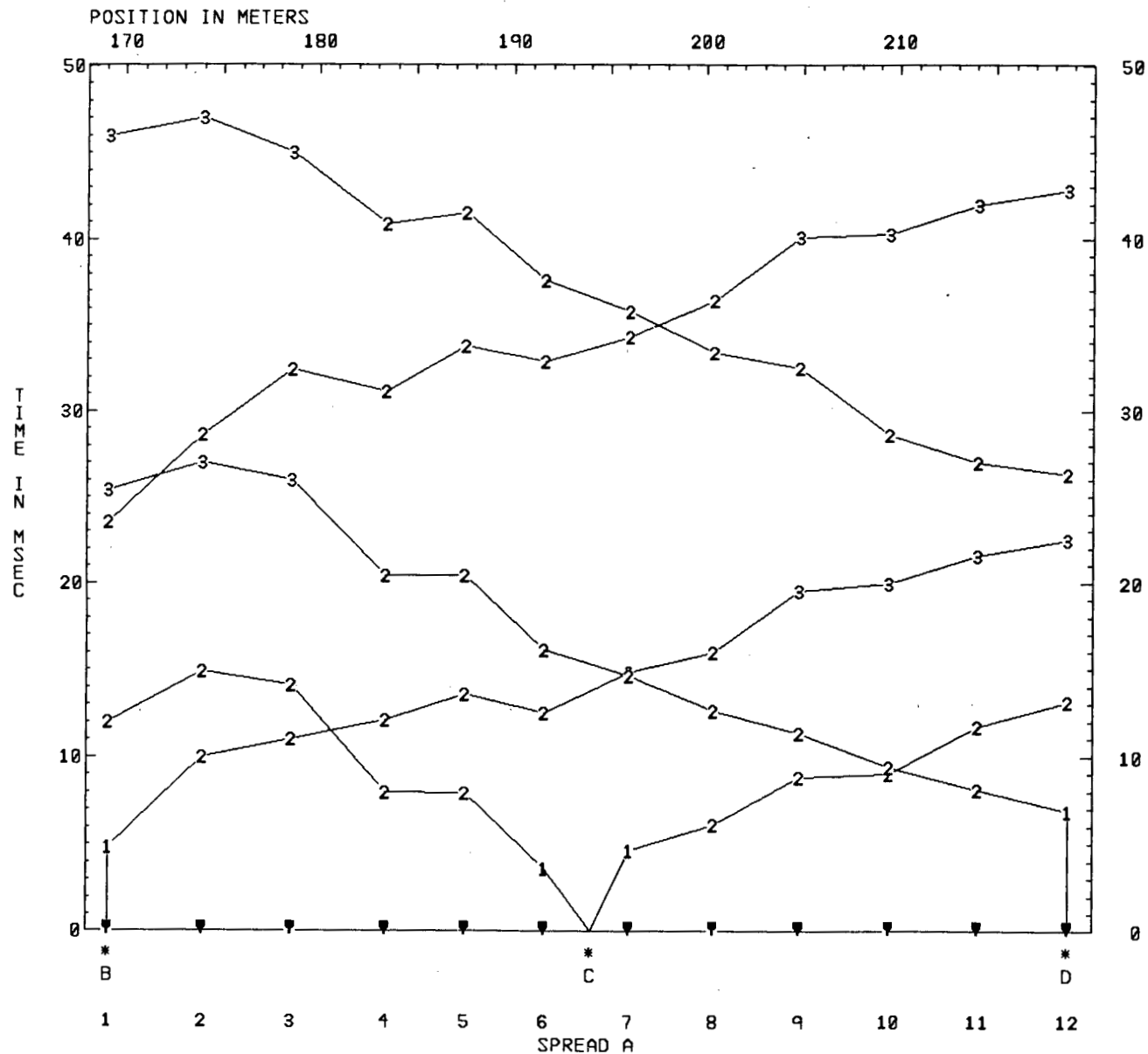
FILE L1-B1F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4) - RAW ARRIVAL TIMES



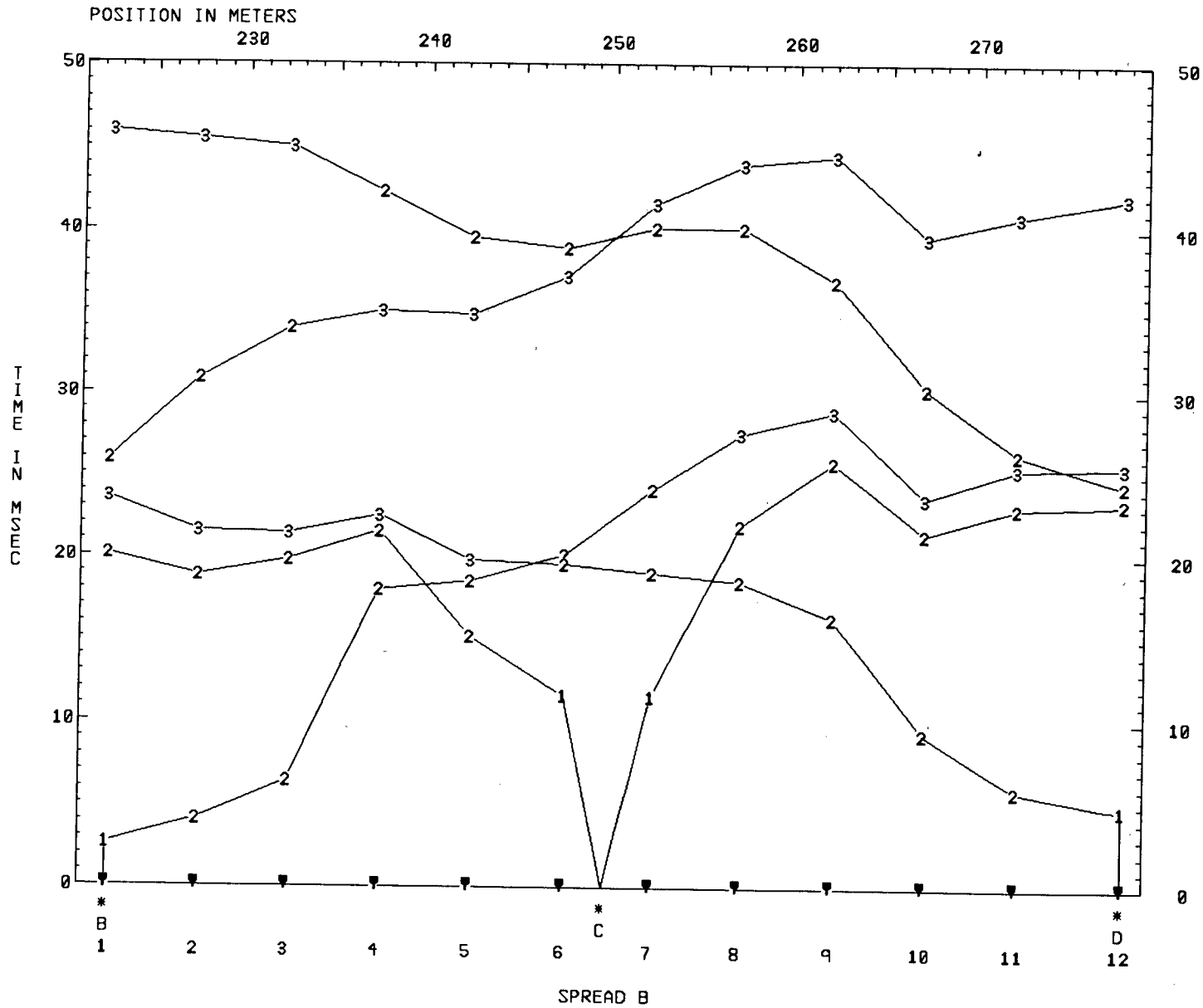
FILE L1-B1F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4) - RAW ARRIVAL TIMES



FILE L1-B2F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 2 (SPREAD 4-8) - RAW ARRIVAL TIMES



FILE L1-B2F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 2 (SPREAD 4-8) - RAW ARRIVAL TIMES



FILE L1-B3F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 3 (SPREAD 6) - RAW ARRIVAL TIMES

POSITION IN METERS

290

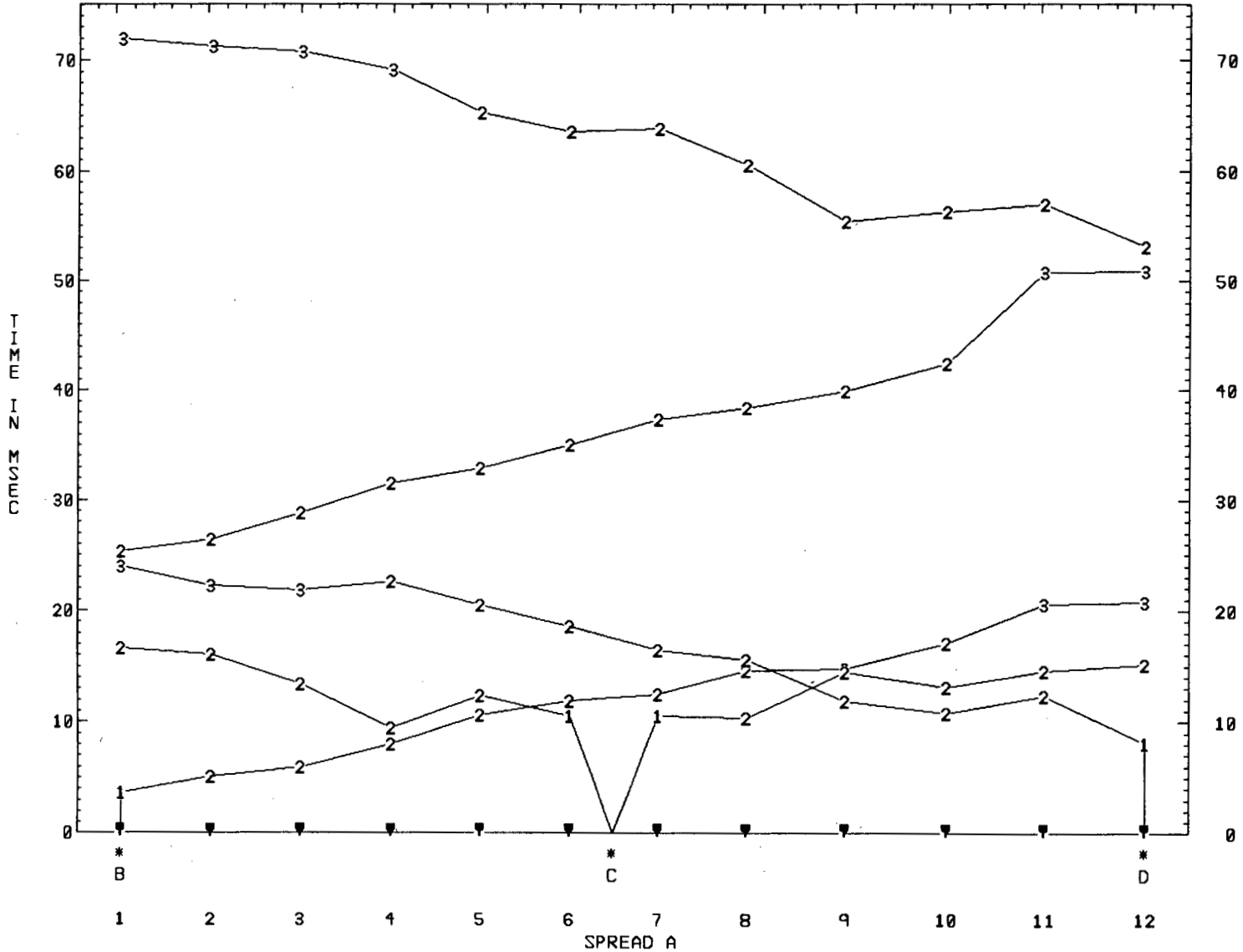
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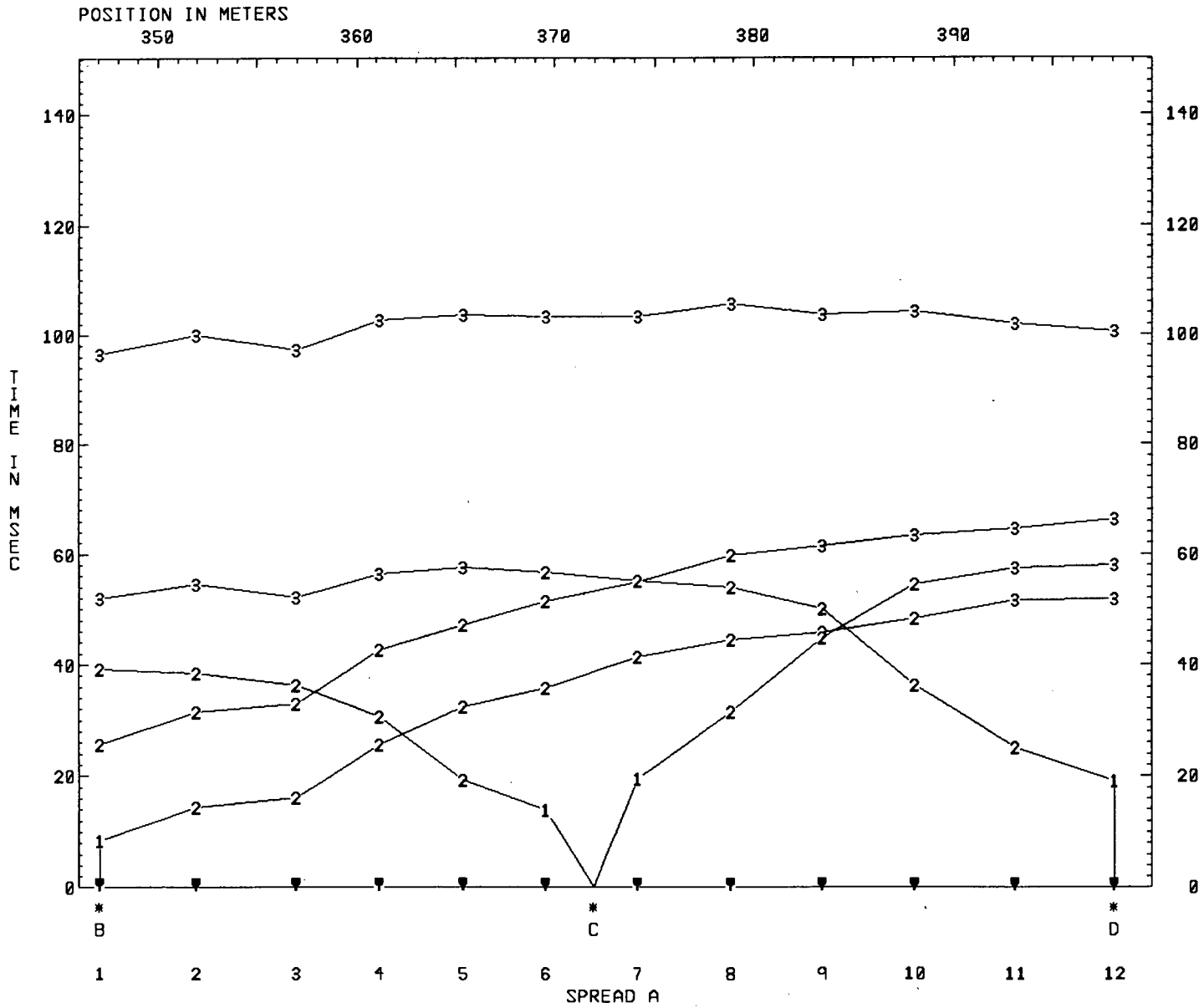
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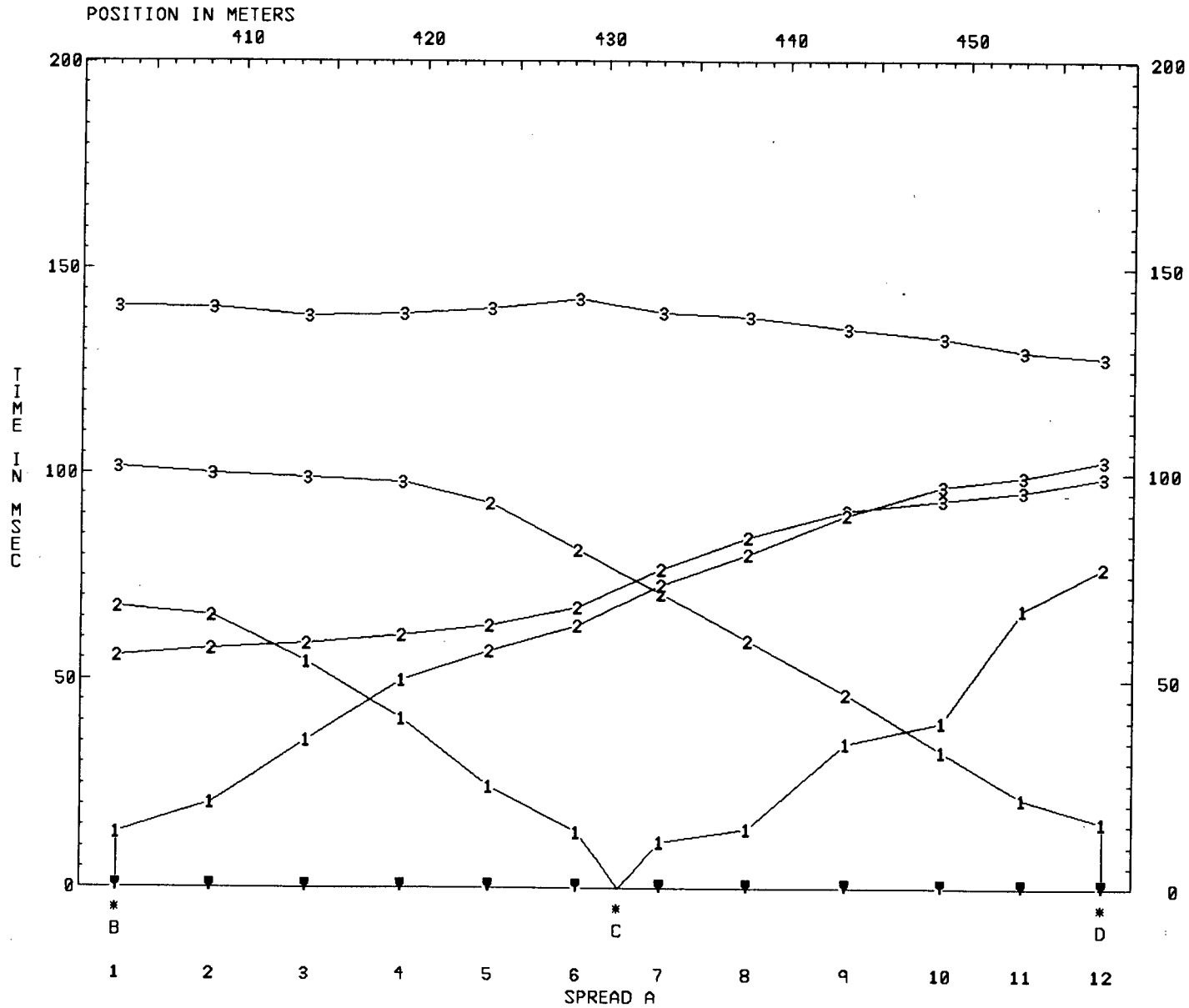
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FILE L1-B4A.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4A (SPREAD 7) - RAW ARRIVAL TIMES

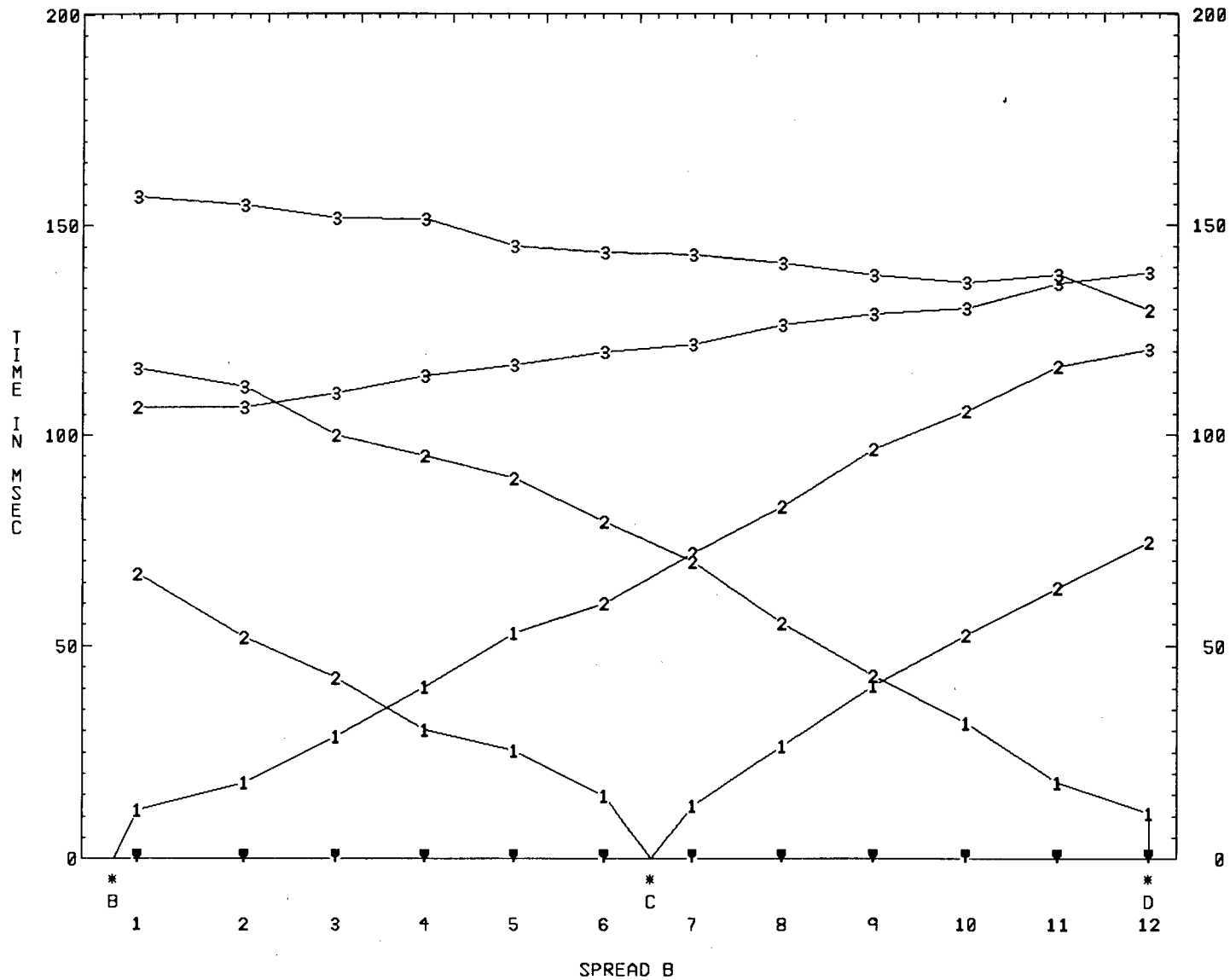


FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11) - RAW ARRIVAL TIMES

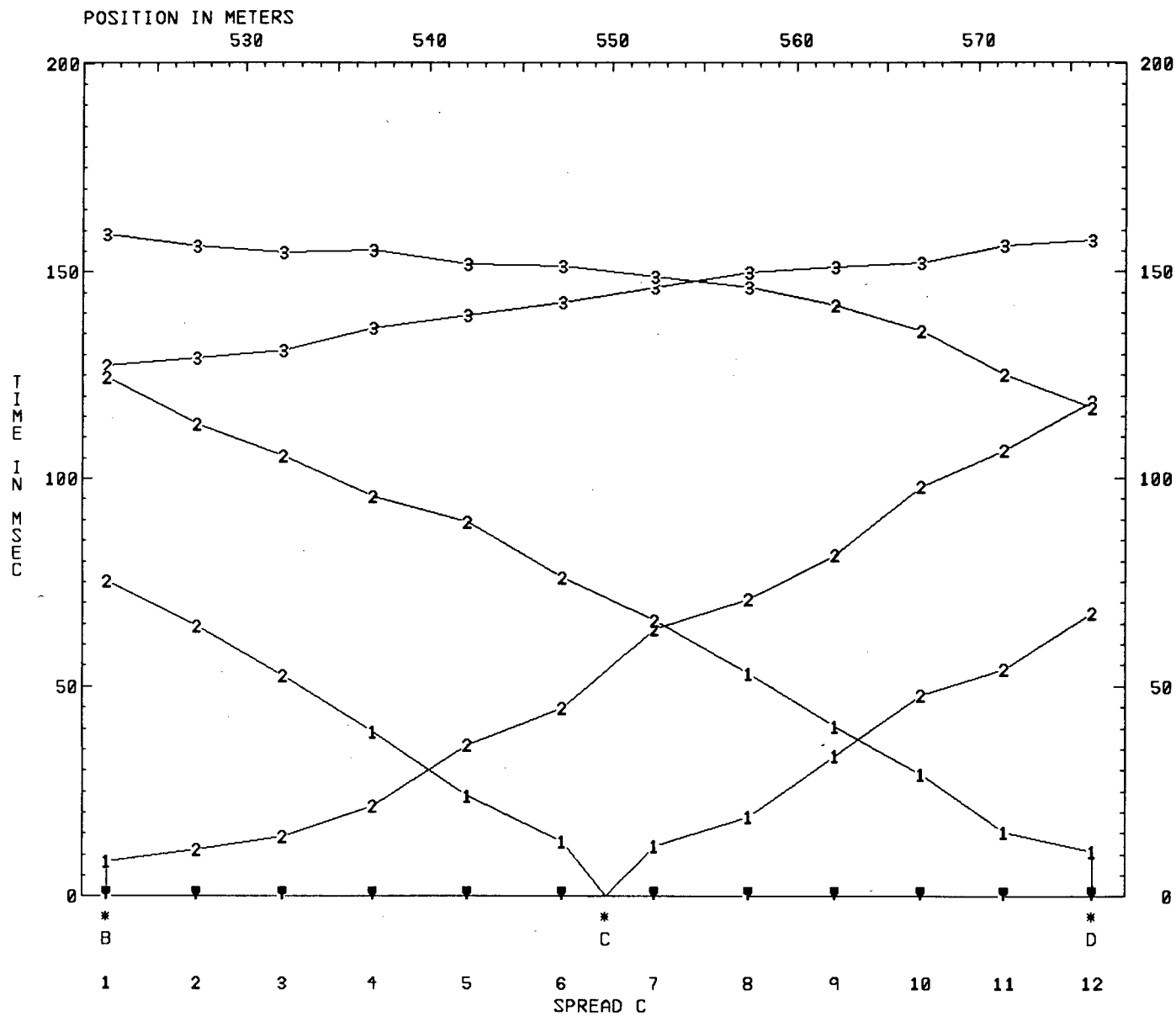


FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11) - RAW ARRIVAL TIMES

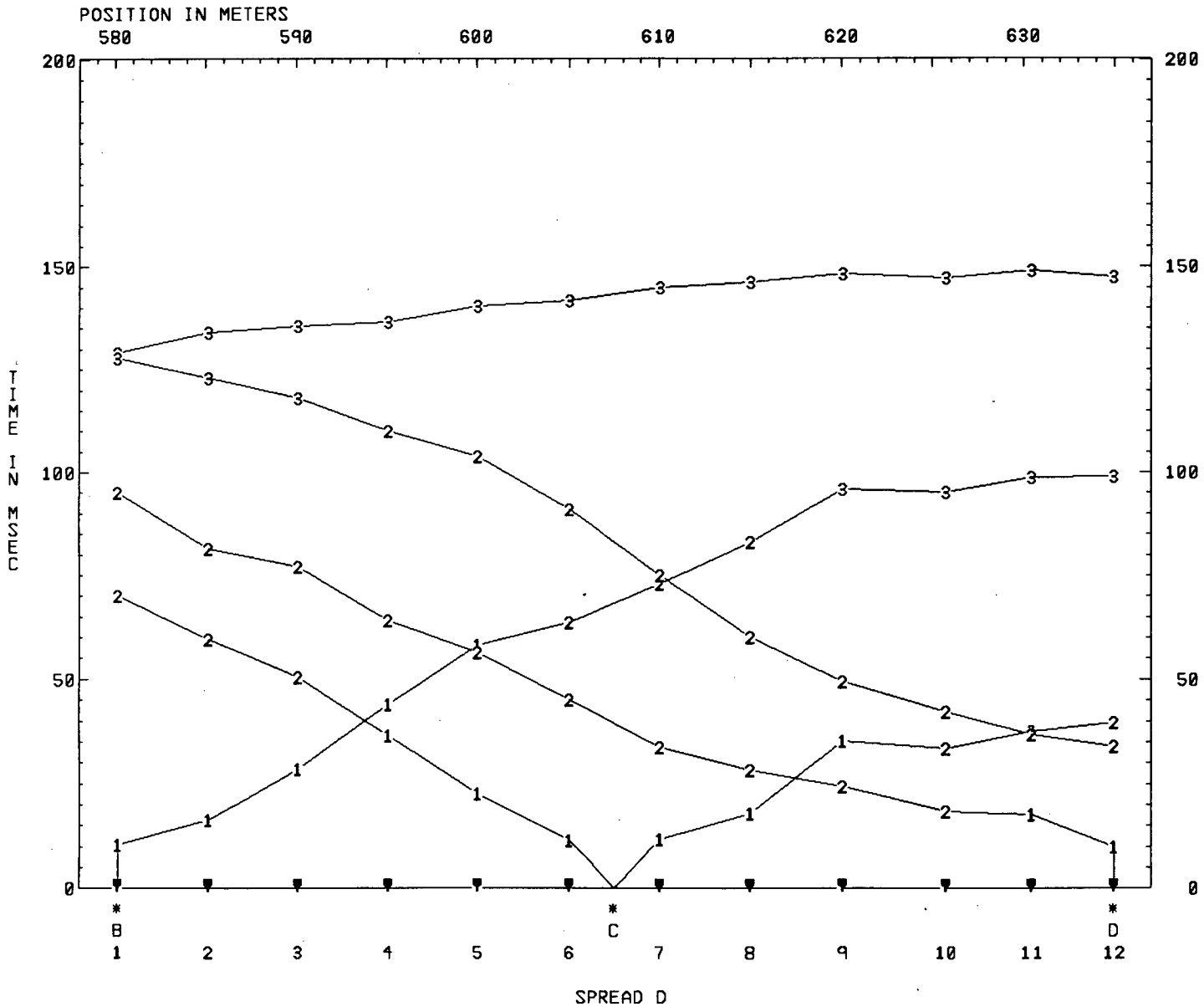
POSITION IN METERS
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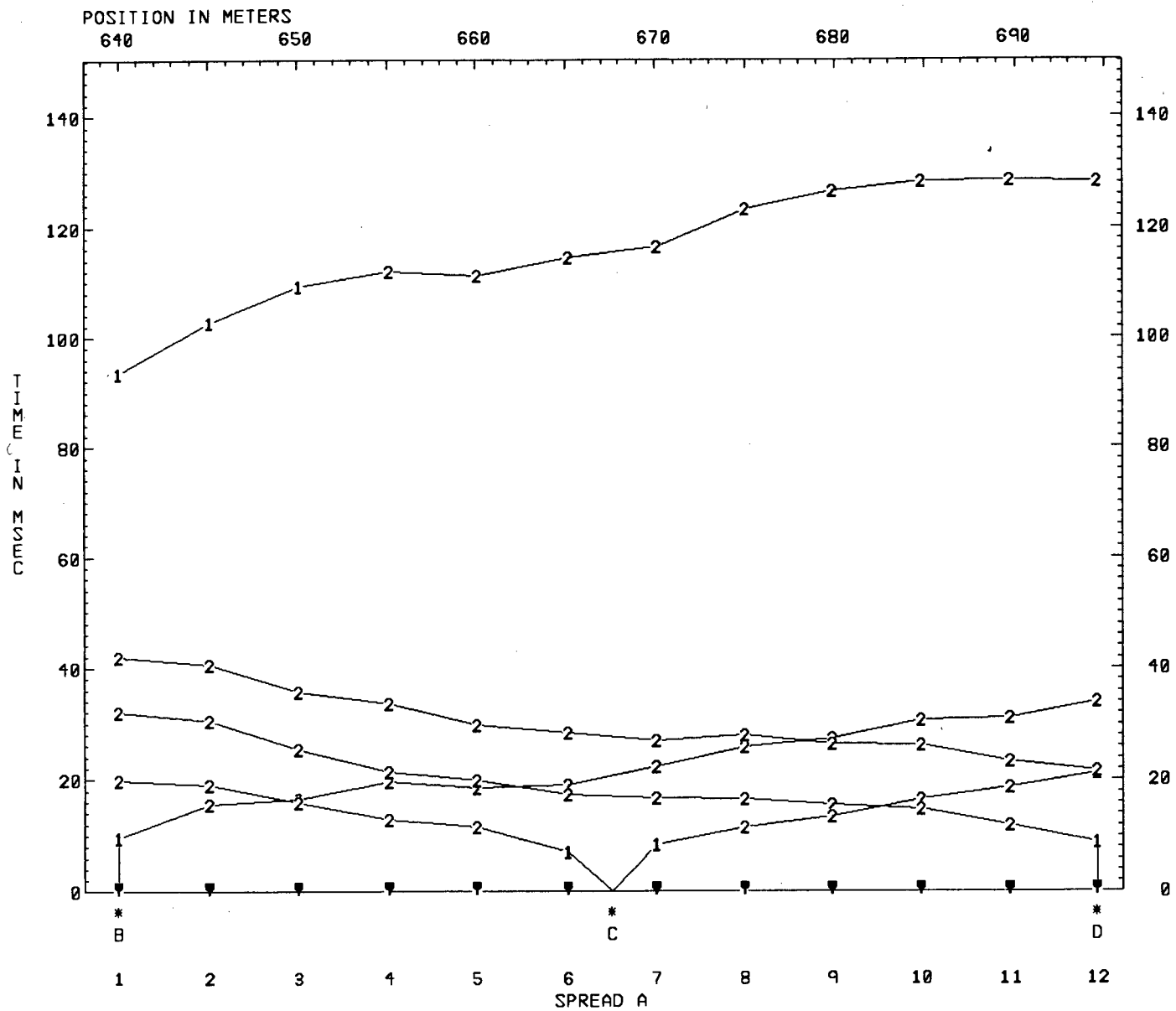
FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11) - RAW ARRIVAL TIMES



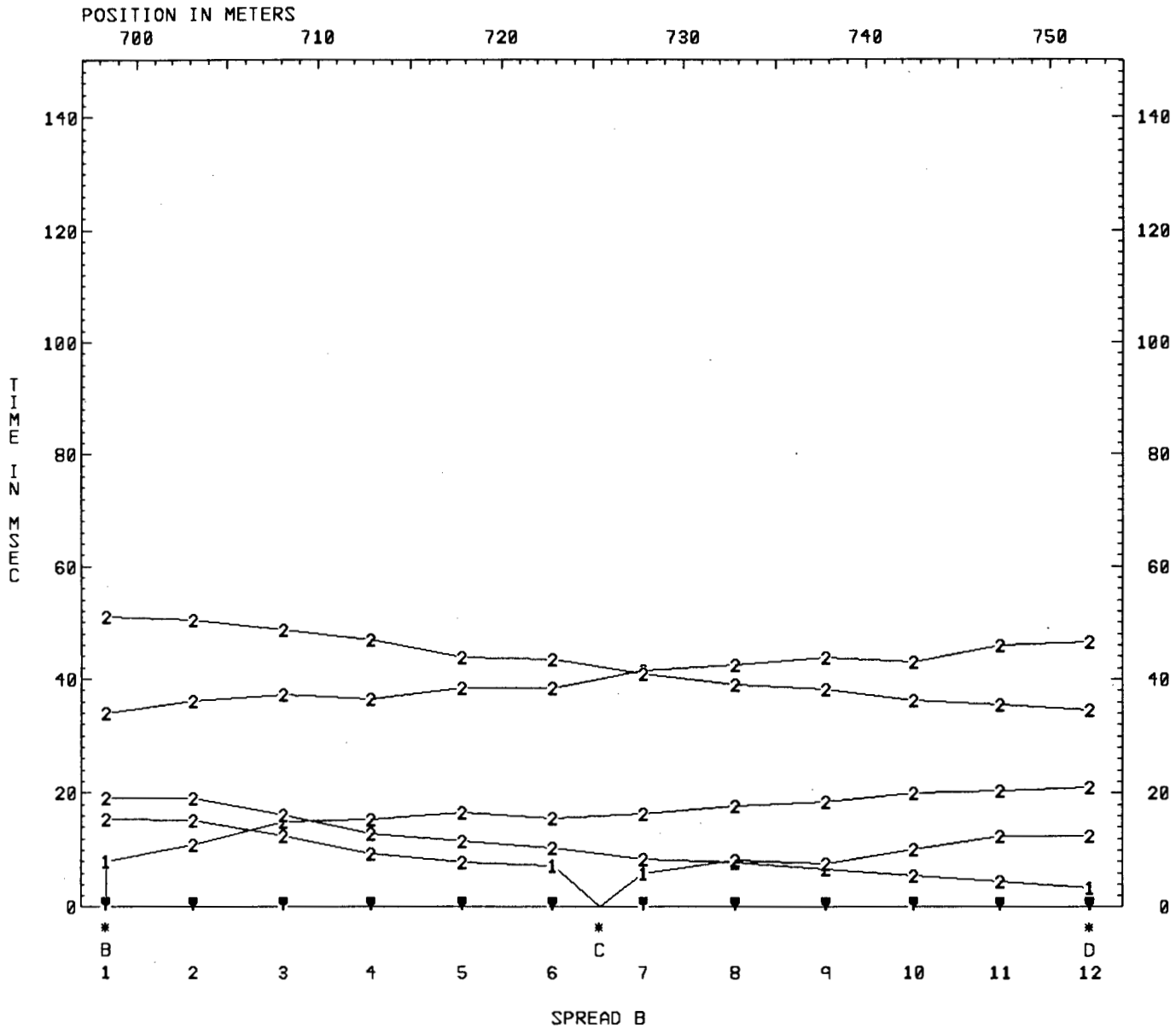
FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11) - RAW ARRIVAL TIMES



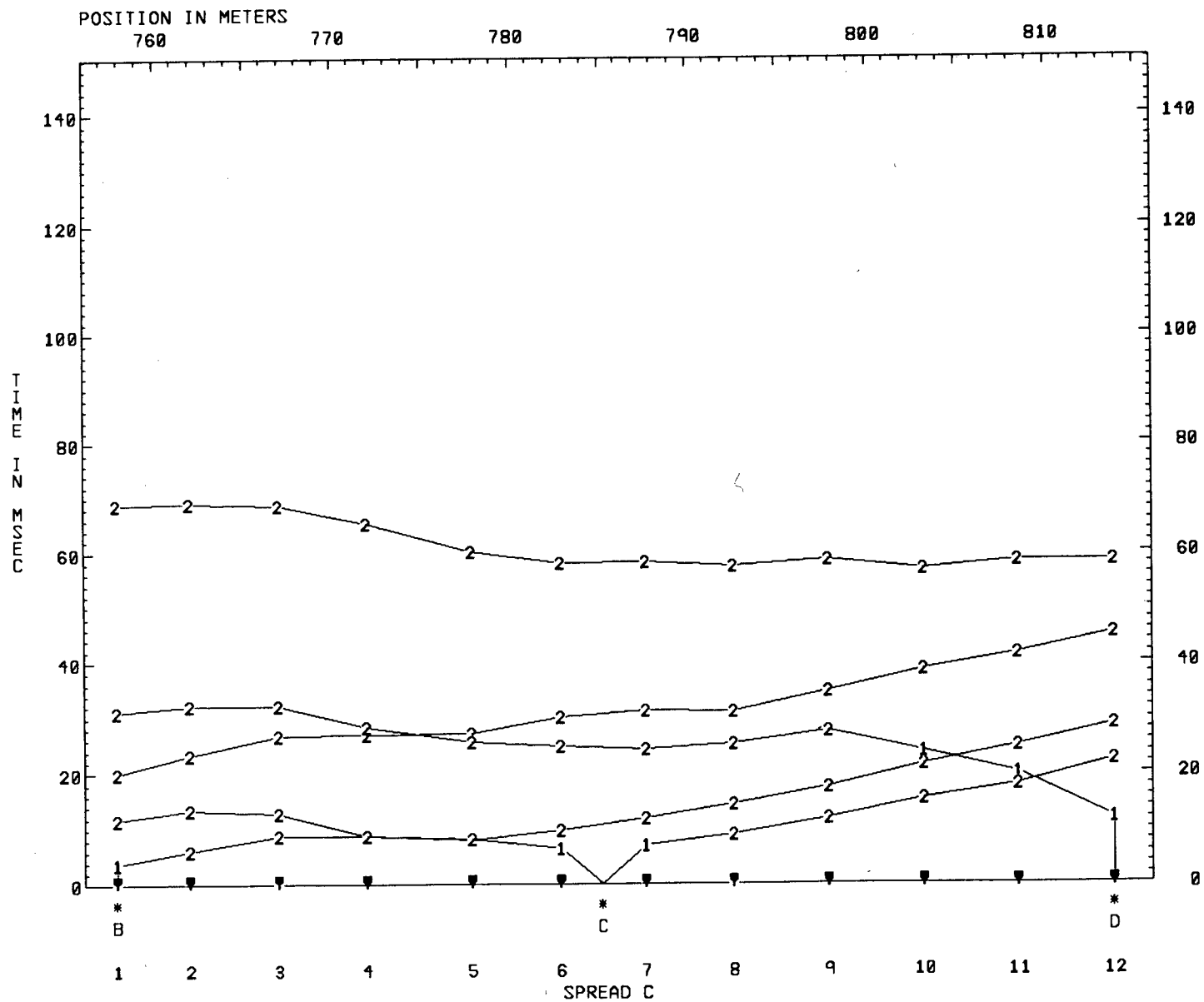
FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14) - RAW ARRIVAL TIMES



FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14) - RAW ARRIVAL TIMES



FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14) - RAW ARRIVAL TIMES



Appendix G. Inversion model listings

VELOCITY ANALYSIS TABLES for L1-B1F.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	A	1	5.0	417	
					417
	B	6	5.6	860	
	B	7	5.5	1109	
					985
	C	12	5.0	1481	
					1481

Spread B	SP	Geo	DD	V	Avg V
	B	1	5.0	1111	
					1111
	C	6	5.6	1209	
	C	7	5.4	1205	
					1207
	D	12	5.0	1111	
					1111

Spread C	SP	Geo	DD	V	Avg V
	B	1	5.0	1379	
					1379
	C	5	8.9	452	
	C	6	5.6	746	
	C	7	5.6	794	
	C	8	8.9	617	
					652
	D	12	5.0	3636	
					3636

Wtd Avg Velocity computed for Layer 1 = 1152

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
		1209	3.8	1 5	A	2 12	15.1	1319	1319	15.1	11	
		1862	8.2	1 11	B	8 12	-3.2	670	862	0.3	10	
		1761	5.1	6 12	C				1862	8.2	11	
					D				1761	5.1	7	
									Avg =	1308	for	39 Pts

Spread B

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	1 7	23.9	2029	2029	23.9	7	
			B	2 12	8.2	1985	1985	8.2	11	
1190	-1.8	1 5	C	8 12	-0.2	1284	1235	-1.0	10	
1382	0.5	1 11	D				1382	0.5	11	
2264	5.8	4 12	E				2264	5.8	9	
							Avg =	1654	for	48 Pts

Spread C

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	1 5	-12.7	1101	1101	-12.7	5	
			B	2 12	9.9	1968	1968	9.9	11	
9716	33.0	1 4	C	9 12	16.5	2309	3731	24.7	8	
2498	6.2	1 11	D				2498	6.2	11	
1749	-2.1	5 12	E				1749	-2.1	8	
							Avg =	2023	for	43 Pts

Avg of all regression velocities: 1623 for 130 points in Layer 2.

Layer 2 Velocity computed by Hobson-Overton method

Spread A

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err	Geo	Std Err at geophones Err	Geo	Err	Geo	Err	Geo
A B	2 5	900	10.1	2.647	-3.027	4	2.671	5	2.592	2	-2.236	3
A C	2 11	1418	13.0	1.979	-3.109	7	-2.928	3	-2.632	10	2.252	8
A D	6 12	1777	17.7	2.142	3.816	8	-2.704	7	-1.720	12	1.625	10
B C	8 11	701	2.7	0.927	1.267	9	-1.213	10	-0.451	8	0.397	11
B D	8 12	953	31.6	2.245	3.867	10	-2.364	12	-2.063	8	0.627	11
			Avg =	1259	for	30 Pts						

Spread B

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err	Geo	Std Err at geophones Err	Geo	Err	Geo	Err	Geo
A C	1 5	1562	12.0	0.724	1.010	3	-0.858	1	0.676	2	-0.592	4
A D	1 7	1621	10.6	1.001	-1.363	4	1.287	2	1.252	7	-1.119	5
A E	4 7	1666	23.0	0.736	1.017	6	-0.822	7	-0.565	4	0.370	5
B C	2 5	1467	5.3	0.578	0.685	4	-0.606	5	-0.539	2	0.460	3
B D	2 11	1636	1.8	0.638	1.179	11	-1.028	6	0.711	4	-0.651	10
B E	4 12	2069	6.1	0.491	-0.857	7	0.642	12	0.635	6	0.624	5
C D	8 11	1275	-0.1	0.942	-1.248	9	0.998	8	0.819	11	-0.568	10
C E	8 12	1641	7.6	0.931	-1.724	9	1.111	8	0.225	12	0.221	10
			Avg =	1666	for	48 Pts						

Spread C		V	Avg TdSP	Std Err Overall	4 Highest		Std Err at geophones		Err Geo		Err Geo	
SPs	Geos				Err	Geo	Err	Geo	Err	Geo	Err	Geo
A C	1 4	2100	-5.8	1.584	-2.375	2	1.727	1	1.099	4	-0.451	3
A D	1 5	1776	11.0	1.034	-1.427	2	1.184	4	1.150	1	-0.752	3
B C	2 4	1675	-13.0	1.626	2.299	3	-1.173	2	-1.126	4		
B D	2 11	1936	7.0	1.619	2.928	7	-2.456	2	1.952	8	-1.746	10
B E	5 12	2161	6.3	1.659	2.220	9	-2.044	11	2.017	7	-1.630	5
C D	9 11	1314	8.3	0.340	0.481	10	-0.243	11	-0.237	9		
C E	9 12	1417	21.2	1.470	-2.437	11	1.285	12	1.015	10	0.137	9

Avg = 1853 for 37 Pts

Avg of all Hobson-Overton velocities: 1620 for 115 points in Layer 2.

Wtd Avg Velocity computed for Layer 2 = 1621

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
V	Ti										
2439	17.0	1	5	D				2439	17.0	5	
								Avg =	2439	for	5 Pts

Spread B		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
V	Ti										
1920	0.4	1	3	A E	8 12	45.8	3605	3605	45.8	5	
								Avg =	2713	for	8 Pts

Spread C		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
V	Ti										
3824	25.4	1	4	A E	6 12	44.2	5858	5858	44.2	7	
								Avg =	4908	for	11 Pts

Avg of all regression velocities: 3315 for 24 points in Layer 3.

Layer 3 Velocity computed by Hobson-Overton method

Not enough points.

Wtd Avg Velocity computed for Layer 3 = 3315

DEPTH MODEL TABLES for L1-B1F.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
A	0.0	101.0	0.8	100.2	27.8	73.2
B	25.7	100.0	8.7	91.3	24.2	75.8
C	52.8	99.8	8.8	91.0	28.0	71.8

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	0.0	101.0	0.8	100.2	27.8	73.2
2	4.5	100.7	2.3	98.4	27.3	73.4
3	9.0	100.3	6.4	93.9	26.7	73.6
4	13.5	100.0	8.3	91.7	26.2	73.8
5	18.3	100.0	10.5	89.5	25.9	74.1
6	23.2	100.0	9.4	90.6	24.9	75.1
7	28.1	99.9	8.1	91.8	23.4	76.5
8	32.9	99.9	6.6	93.3	23.1	76.8
9	37.9	99.9	7.1	92.8	24.4	75.5
10	42.9	99.9	6.6	93.3	25.6	74.3
11	47.8	99.8	7.5	92.3	26.7	73.1
12	52.8	99.8	8.8	91.0	28.0	71.8

Spread B Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	57.0	100.0	9.4	90.6	29.2	70.8
C	84.5	99.2	10.7	88.5	29.3	69.9
D	109.3	99.3	11.4	87.9	21.6	77.7

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	57.0	100.0	9.4	90.6	29.2	70.8
2	62.1	99.9	9.2	90.7	30.4	69.5
3	67.2	99.7	9.4	90.3	31.4	68.3
4	72.3	99.6	9.7	89.9	31.2	68.4
5	77.4	99.4	9.8	89.6	30.9	68.5
6	82.0	99.3	10.0	89.3	29.8	69.5
7	86.6	99.2	11.4	87.8	28.9	70.3
8	91.2	99.0	12.2	86.8	27.8	71.2
9	95.9	101.0	14.9	86.1	26.9	74.1
10	100.1	99.5	14.1	85.4	21.3	78.2
11	104.7	99.4	12.8	86.6	21.4	78.0
12	109.3	99.3	11.4	87.9	21.6	77.7

Spread C Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	113.9	99.1	10.2	88.9	21.6	77.5
C	140.4	104.7	5.6	99.1	21.3	83.4
D	164.5	112.0	2.4	109.6	20.7	91.3

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	113.9	99.1	10.2	88.9	21.6	77.5
2	118.7	100.2	10.8	89.4	23.0	77.2
3	123.5	101.3	11.4	89.9	24.3	77.0
4	128.3	102.3	10.4	91.9	25.6	76.7
5	133.1	103.4	8.6	94.8	23.3	80.1
6	137.9	104.5	7.3	97.2	21.6	82.9
7	142.7	105.5	4.6	100.9	21.7	83.8
8	147.5	106.6	4.0	102.6	21.4	85.2
9	152.3	107.7	3.1	104.6	20.5	87.2
10	156.3	109.1	2.3	106.8	18.2	90.9
11	160.4	110.6	2.1	108.5	19.5	91.1
12	164.5	112.0	2.4	109.6	20.7	91.3

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1152	1621	
Horizontal		1621	3315

Spread B	Layer 1	Layer 2	Layer 3
Vertical	1152	1621	
Horizontal		1621	3315

Spread C	Layer 1	Layer 2	Layer 3
Vertical	1152	1621	
Horizontal		1621	3315

VELOCITY ANALYSIS TABLES for L1-B2F.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	B	1	5.0	1053	1053
	C	6	5.6	1542	
	C	7	5.4	1174	1358
	D	12	5.0	727	
					727

Spread B	SP	Geo	DD	V	Avg V
	B	1	5.0	1905	1905
	C	6	5.5	474	
	C	7	5.7	498	486
	D	12	5.0	1053	
					1053

Wtd Avg Velocity computed for Layer 1 = 1053

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A		Geos		<-SP->	Geos		Ti	V	Avg V	Avg Ti	Pts
V	Ti										
				A	1	8	8.3	3164	3164	8.3	8
				B	2	8	8.6	4706	4706	8.6	7
3019	5.7	1	5	C	8	12	3.3	2645	2820	4.5	10
2344	4.8	4	11	D					2344	4.8	8
2251	-3.4	4	12	E					2251	-3.4	9
									Avg = 2805	for	42 Pts

Spread B		Geos		<-SP->	Geos		Ti	V	Avg V	Avg Ti	Pts
V	Ti										
				A	1	3	-23.0	1229	1229	-23.0	3
				B	2	7	-0.3	1220	1220	-0.3	6
6655	16.2	1	5	C	8	12	23.0	1293649	13243	19.6	10
1732	3.4	6	11	D					1732	3.4	6
2359	0.7	4	12	E					2359	0.7	9
									Avg = 2209	for	34 Pts

Avg of all regression velocities: 2503 for 76 points in Layer 2.

Layer 2 Velocity computed by Hobson-Overton method

Spread A		V	Avg TdSP	Std Err Overall	4 Highest		Std Err at		geophones				
SPs	Geos				Err	Geo	Err	Geo	Err	Geo	Err	Geo	
A	C	1 5	2433	-1.9	0.640	-0.985	2	0.754	1	0.621	4	-0.348	3
A	D	4 8	2775	-2.0	0.324	-0.449	7	0.412	8	0.310	4	-0.236	5
A	E	4 8	2837	0.1	0.596	0.748	8	0.709	4	-0.526	6	-0.523	7
B	C	2 5	2204	1.2	1.155	-1.558	3	1.521	4	0.563	2	-0.526	5
B	D	4 8	2931	-1.5	0.531	0.746	4	-0.681	5	-0.521	6	0.319	8
B	E	4 8	2999	-1.1	0.836	1.147	4	-1.010	6	-0.852	5	0.655	8
C	D	8 11	2674	-2.1	0.466	0.651	9	-0.594	10	-0.243	8	0.186	11
C	E	8 12	2511	3.0	0.526	0.844	11	-0.723	12	0.260	10	-0.247	8

Avg = 2683 for 38 Pts

Spread B		V	Avg TdSP	Std Err Overall	4 Highest		Std Err at		geophones				
SPs	Geos				Err	Geo	Err	Geo	Err	Geo	Err	Geo	
A	C	1 3	2321	-7.3	0.858	1.212	2	-0.645	3	-0.567	1		
B	C	2 5	1463	-5.4	1.679	-2.760	3	1.778	2	0.544	5	0.438	4
B	D	6 7	2226	3.1	0.000	-0.000	6	0.000	7				
B	E	4 7	3831	-1.5	0.212	0.351	5	-0.185	4	-0.148	6	-0.018	7
C	D	8 11	2191	9.7	0.697	1.108	9	-0.671	10	-0.511	8	0.075	11
C	E	8 12	2471	12.7	1.286	1.589	9	-1.493	8	1.367	11	-1.270	12

Avg = 2442 for 22 Pts

Avg of all Hobson-Overton velocities: 2594 for 60 points in Layer 2.

Wtd Avg Velocity computed for Layer 2 = 2559

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
V	Ti											
						A	9 12	20.7	4944	20.7	4	
						B	9 12	10.9	4463	10.9	4	
15020	29.3			1 3		D			15020	29.3	3	
9826	34.7			1 3		E			9826	34.7	3	
									Avg =	6334	for	14 Pts

Spread B

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	4 12	23.5	5863	5863	23.5	9	
			B	8 12	32.7	7188	7188	32.7	5	
7594	15.5	1 5	D				7594	15.5	5	
10075	34.3	1 3	E				10075	34.3	3	
							Avg =	6903	for	22 Pts

Avg of all regression velocities: 6670 for 36 points in Layer 3.

Layer 3 Velocity computed by Hobson-Overton method

Spread B	Avg	Std Err	4 Highest	Std Err at	geophones			
SPs Geos	V	TdSP Overall	Err Geo	Err Geo	Err Geo	Err Geo	Err Geo	Err Geo
A D 4 5	4329	4.9 0.000	0.000 4	-0.000	5			
Avg = 4329 for 2 Pts								

Avg of all Hobson-Overton velocities: 4329 for 2 points in Layer 3.

Wtd Avg Velocity computed for Layer 3 = 6436

DEPTH MODEL TABLES for L1-B2F.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	169.2	113.0	0.0	113.0	18.9	94.1
C	194.1	120.5	3.1	117.4	27.9	92.6
D	218.7	127.7	1.8	125.9	15.9	111.8

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	169.2	113.0	0.0	113.0	18.9	94.1
2	174.0	114.1	2.5	111.6	18.6	95.5
3	178.7	115.1	3.5	111.6	25.3	89.8
4	183.5	116.2	2.9	113.3	26.8	89.4
5	187.6	118.0	3.5	114.5	27.3	90.7
6	191.7	119.8	3.6	116.2	27.8	92.0
7	196.1	121.2	2.8	118.4	28.1	93.1
8	200.5	122.5	2.6	119.9	22.2	100.3
9	204.9	123.9	3.2	120.7	16.9	107.0
10	209.5	125.2	3.1	122.1	13.2	112.0
11	214.1	126.5	2.6	123.9	14.6	111.9
12	218.7	127.7	1.8	125.9	15.9	111.8

Spread B Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	222.5	128.7	1.3	127.4	16.9	111.8
C	249.6	136.8	8.3	128.5	24.1	112.7
D	277.8	145.0	1.2	143.8	13.4	131.6

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	222.5	128.7	1.3	127.4	16.9	111.8
2	227.5	130.6	2.7	127.9	19.1	111.5
3	232.4	130.6	5.5	125.1	19.5	111.1
4	237.4	132.2	7.4	124.8	20.8	111.4
5	242.4	134.1	7.6	126.5	21.9	112.2
6	247.4	136.1	8.0	128.1	23.5	112.6
7	252.2	137.8	8.9	128.9	24.9	112.9
8	257.0	139.6	9.7	129.9	26.0	113.6
9	262.0	141.4	9.5	131.9	24.9	116.5
10	267.0	142.5	6.6	135.9	22.4	120.1
11	272.0	143.6	3.3	140.3	17.7	125.9
12	277.8	145.0	1.2	143.8	13.4	131.6

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	1053	2559	
Horizontal		2559	6436

Spread B	Layer 1	Layer 2	Layer 3
Vertical	1053	2559	
Horizontal		2559	6436

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	11 12	48.2	45224	45224	48.2	2
			B	11 12	19.4	41672	41672	19.4	2
4362	10.9	1 3	D				4362	10.9	3
5406	50.7	1 4	E				5406	50.7	4

Avg = 7237 for 11 Pts

Layer 3 Velocity computed by Hobson-Overton method

Not enough points.

Wtd Avg Velocity computed for Layer 3 = 7237

DEPTH MODEL TABLES for L1-B3F.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	285.4	145.0	1.1	143.9	18.7	126.3
C	312.0	151.0	4.0	147.0	24.9	126.1
D	340.6	154.1	2.2	151.9	13.5	140.6

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	285.4	145.0	1.1	143.9	18.7	126.3
2	290.3	146.2	1.7	144.5	19.1	127.1
3	295.1	147.0	1.6	145.4	22.9	124.1
4	300.0	147.9	2.2	145.7	23.9	124.0
5	304.8	148.8	2.9	145.9	25.3	123.5
6	309.6	149.6	3.1	146.5	24.7	124.9
7	314.4	150.5	3.1	147.4	23.3	127.2
8	319.2	151.4	2.8	148.6	21.8	129.6
9	324.5	152.1	2.2	149.9	18.7	133.4
10	329.9	152.8	2.4	150.4	15.4	137.4
11	335.2	153.5	2.9	150.6	13.4	140.1
12	340.6	154.2	2.3	151.9	13.6	140.6

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	767	3097	
Horizontal		3097	7237

VELOCITY ANALYSIS TABLES for L1-B4A.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	B	1	5.0	597	
					597
	C	6	5.6	410	
	C	7	5.6	287	
					348
	D	12	5.0	263	
					263

Wtd Avg Velocity computed for Layer 1 = 389

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A	V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts		
				A	1 8	-40.1	953	953	-40.1	8		
				B	2 10	9.7	1034	1034	9.7	9		
971	14.8	1	5	C	8 10	9.7	400	633	12.2	8		
763	22.0	6	11	D				763	22.0	6		
								Avg =	824	for	31	Pts

Layer 2 Velocity computed by Hobson-Overton method

Spread A	SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err	Highest Geo	Std Err at geophones	Err Geo	Err Geo	Err Geo	Err Geo	
A C	1	5	922	-56.4	4.413	-7.316	3	5.143	5	3.875	1	-1.542	4
A D	6	8	1758	-37.2	0.274	-0.388	7	0.196	6	0.193	8		
B C	2	5	682	-6.5	3.973	-5.208	3	4.190	2	3.505	5	-2.487	4
B D	6	10	1302	-17.5	3.142	-4.663	9	4.401	10	-2.243	8	1.461	6
C D	8	10	454	1.9	1.493	-2.112	9	1.063	8	1.049	10		
			Avg =	1024	for	20	Pts						

Wtd Avg Velocity computed for Layer 2 = 937

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	9 12	29.5	3148	3148	29.5	4	
			B	11 12	49.0	19888	19888	49.0	2	
			C	11 12	55.0	9785	9785	55.0	2	
3703	66.5	1 5	D			3703	3703	66.5	5	
11243	109.5	1 12	E			11243	11243	109.5	12	
							Avg =	6261	for	25 Pts

Layer 3 Velocity computed by Hobson-Overton method

Spread A		Avg		Std Err		4 Highest		Std Err at geophones		Err Geo		Err Geo	
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo	
A E	9 12	3581	-50.3	0.450	-0.703	10	0.494	9	0.265	12	-0.056	11	
B E	11 12	5707	-47.8	0.000	0.000	11	-0.000	12					
C E	11 12	4955	-36.2	0.000	0.000	12	-0.000	11					
		Avg =	4456	for	8	Pts							

wtd Avg Velocity computed for Layer 3 = 5556

DEPTH MODEL TABLES for L1-B4A.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	347.1	155.1	1.2	153.9	12.0	143.1
C	372.0	163.4	2.8	160.6	20.6	142.8
D	398.1	171.8	4.2	167.6	21.4	150.4

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	347.1	155.1	1.2	153.9	12.0	143.1
2	352.0	156.1	1.2	154.9	11.2	144.9
3	357.0	157.1	0.6	156.5	13.8	143.3
4	361.2	158.9	2.1	156.8	16.4	142.5
5	365.4	160.7	2.3	158.4	19.0	141.7
6	369.6	162.4	2.5	159.9	20.1	142.3
7	374.2	164.4	3.2	161.2	21.1	143.3
8	378.9	166.4	4.7	161.7	21.8	144.6
9	383.5	168.3	5.9	162.4	22.2	146.1
10	388.1	170.3	7.3	163.0	22.5	147.8
11	393.1	171.0	5.7	165.3	21.7	149.3
12	398.1	171.8	4.2	167.6	21.2	150.6

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	389	937	
Horizontal		937	5556

VELOCITY ANALYSIS TABLES for L1-B4B.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	B	1	5.0	374	
	B	2	7.2	350	
	B	3	11.6	329	
	B	4	16.5	330	
					346
	C	3	17.9	329	
	C	4	13.0	320	
	C	5	8.8	360	
	C	6	5.5	411	
	C	7	5.5	495	
	C	8	8.7	604	
	C	9	13.5	389	
	C	10	18.5	464	
	C	11	22.8	341	
					413
	D	10	10.1	307	
	D	11	6.7	308	
	D	12	5.0	315	
					310

Spread B	SP	Geo	DD	V	Avg V
	B	1	5.2	445	
	B	2	8.8	486	
	B	3	13.0	451	
	B	4	17.6	437	
	B	5	22.3	419	
					447
	C	4	13.1	433	
	C	5	8.9	347	
	C	6	5.6	376	
	C	7	5.5	436	
	C	8	8.7	329	
	C	9	13.0	320	
					374
	D	10	11.1	348	
	D	11	7.0	392	
	D	12	5.0	465	
					402

Spread B

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			B	6 11	-2.4	427	427	-2.4	6	
426	0.3	1 3	C	10 12	12.9	443	434	6.6	6	
491	15.3	3 9	D				491	15.3	7	
							Avg =	451	for	19 Pts

Spread C

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			B	2 12	-11.6	420	420	-11.6	11	
422	9.4	1 3	C	10 12	8.4	467	443	8.9	6	
520	20.0	1 7	D				520	20.0	7	
549	9.7	9 12	E				549	9.7	4	
							Avg =	463	for	28 Pts

Spread D

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			B	6 8	13.6	509	509	13.6	3	
497	13.7	1 3	C	10 12	20.5	1433	738	17.1	6	
567	-5.4	1 10	D				567	-5.4	10	
478	-99.4	4 12	E				478	-99.4	9	
							Avg =	555	for	28 Pts

Avg of all regression velocities: 525 for 95 points in Layer 2.

Layer 2 Velocity computed by Hobson-Overton method

Spread A

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err Geo	Std Err at geophones Err Geo	Err Geo	Err Geo	Err Geo
A C	1 2	2531	-24.1	0.000	0.000	1	-0.000	2	
A D	5 8	505	-119.1	1.117	-1.832	6	1.162	5	0.507 8 0.163 7
B D	5 9	485	-9.8	0.661	-1.039	6	0.655	5	0.524 7 -0.513 8
		Avg =	864	for	11 Pts				

Spread B

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err Geo	Std Err at geophones Err Geo	Err Geo	Err Geo	Err Geo
B D	6 9	388	-13.4	1.205	-1.793	7	1.322	6	0.841 9 -0.369 8
		Avg =	388	for	4 Pts				

Spread C				Avg	Std Err	4 Highest		Std Err at		geophones			
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo	
B C	2 3	579	-25.5	0.000	0.000	3	-0.000	2					
B D	2 7	486	-20.7	4.173	5.928	7	5.643	2	-3.815	4	-3.799	5	
B E	9 12	454	12.9	0.775	1.140	10	-0.848	9	-0.561	12	0.269	11	
C E	10 12	482	16.1	1.050	-1.484	11	0.752	10	0.732	12			
Avg =		489 for 15 Pts											

Spread D				Avg	Std Err	4 Highest		Std Err at		geophones			
SPs	Geos	V	TdSP	Overall	Err	Geo	Err	Geo	Err	Geo	Err	Geo	
B D	6 8	542	28.4	1.289	1.823	7	-0.912	8	-0.911	6			
B E	6 8	394	135.7	0.162	0.228	7	-0.114	6	-0.114	8			
C E	10 12	1234	32.4	1.172	1.658	11	-0.845	12	-0.813	10			
Avg =		723 for 9 Pts											

Avg of all Hobson-Overton velocities: 639 for 39 points in Layer 2.

Wtd Avg Velocity computed for Layer 2 = 576

Layer 3 Velocity computed by regression of raw uncorrected arrivals

Spread A		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
					A	9 12	36.0	1790	1790	36.0	4	
					B	10 12	64.6	1430	1430	64.6	3	
4469	89.2	1	4		D			4469	4469	89.2	4	
4715	118.7	1	12		E			4715	4715	118.7	12	
Avg =									2959		for	23 Pts

Spread B		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
					A	2 12	64.7	1554	1554	64.7	11	
1274	73.1	1	2		D			1274	1274	73.1	2	
2303	107.2	1	11		E			2303	2303	107.2	11	
Avg =									1788		for	24 Pts

Spread C		V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
					A	2 12	91.0	1687	1687	91.0	11	
2974	120.8	1	8		E			2974	2974	120.8	8	
Avg =									2063		for	19 Pts

Spread D

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts
			A	2 12	115.2	3175	3175	115.2	11
			B	9 12	84.7	3869	3869	84.7	4
999	13.4	1 3	E				999	13.4	3
Avg =							2400	for	18 Pts

Avg of all regression velocities: 2216 for 84 points in Layer 3.

Layer 3 Velocity computed by Hobson-Overton method

Spread A		V		Avg TdSP	Std Err Overall	4 Highest Err Geo		Std Err at geophones Err Geo		Err Geo	
SPs	Geos										
A E	9 12	1843	-57.5	0.346	-0.554	10	0.350	9	0.218	12	-0.013 11
B E	10 12	1591	-21.5	0.077	0.109	11	-0.055	12	-0.055	10	
Avg =		1735	for	7 Pts							

Spread B		V		Avg TdSP	Std Err Overall	4 Highest Err Geo		Std Err at geophones Err Geo		Err Geo	
SPs	Geos										
A E	2 11	1877	-24.3	1.551	2.619	5	2.413	6	-1.946	11	-1.822 2
Avg =		1877	for	10 Pts							

Spread C		V		Avg TdSP	Std Err Overall	4 Highest Err Geo		Std Err at geophones Err Geo		Err Geo	
SPs	Geos										
A E	2 8	1961	-6.6	0.731	-1.043	6	0.952	2	0.762	8	0.657 5
Avg =		1961	for	7 Pts							

Spread D		V		Avg TdSP	Std Err Overall	4 Highest Err Geo		Std Err at geophones Err Geo		Err Geo	
SPs	Geos										
A E	2 3	1559	40.9	0.000	0.000	2	-0.000	3			
Avg =		1559	for	2 Pts							

Avg of all Hobson-Overton velocities: 1837 for 26 points in Layer 3.

Wtd Avg Velocity computed for Layer 3 = 2071

VELOCITY ANALYSIS TABLES for L1-B5.SIP

Layer 1 Velocity from direct arrivals

Spread A	SP	Geo	DD	V	Avg V
	A	1	60.0	643	
	A	2	65.1	634	
	A	3	70.1	642	
					639
	B	1	5.0	526	
					526
	C	6	5.6	785	
	C	7	5.5	662	
					723
	D	12	5.0	563	
					563

Spread B	SP	Geo	DD	V	Avg V
	B	1	5.0	625	
					625
	C	6	5.6	777	
	C	7	5.5	944	
					861
	D	12	5.0	1481	
					1481

Spread C	SP	Geo	DD	V	Avg V
	B	1	5.0	1333	
					1333
	C	6	5.6	855	
	C	7	5.6	803	
					829
	D	10	11.7	489	
	D	11	7.3	365	
	D	12	5.0	421	
					425

Wtd Avg Velocity computed for Layer 1 = 738

Layer 2 Velocity computed by regression of raw uncorrected arrivals

Spread A		Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
				A	4 12	71.3	1911	71.3	9	
				B	2 12	11.7	2554	11.7	11	
2117	7.1	1 5		C	8 12	6.9	1905	7.0	10	
2577	8.5	1 11		D			2577	8.5	11	
2896	0.9	1 12		E			2896	0.9	12	
							Avg =	2364	for	53 Pts

Spread B

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	1 12	20.8	4382	4382	20.8	12	
			B	2 12	11.7	5702	5702	11.7	11	
2196	3.7	1 5	C	8 12	4.9	3409	2671	4.3	10	
3119	1.5	1 11	D				3119	1.5	11	
3044	13.2	1 12	E				3044	13.2	12	
							Avg =	3526	for	56 Pts

Spread C

V	Ti	Geos	<-SP->	Geos	Ti	V	Avg V	Avg Ti	Pts	
			A	1 12	-2.8	2547	2547	-2.8	12	
			B	2 12	1.3	2302	2302	1.3	11	
3949	6.3	1 5	C	8 12	3.2	1558	2234	4.7	10	
5457	21.2	1 9	D				5457	21.2	9	
4348	41.2	1 12	E				4348	41.2	12	
							Avg =	2939	for	54 Pts

Avg of all regression velocities: 2876 for 163 points in Layer 2.

Layer 2 Velocity computed by Hobson-Overton method

Spread A

SPs	Geos	V	Avg TdSP	Std Err Overall	4 Highest Err Geo	Std Err at geophones Err Geo	Err Geo	Err Geo	Err Geo	Err Geo
A D	4 11	2381	74.1	1.227	1.733 4	-1.724 5	-1.657 7	1.382 9		
A E	4 12	2602	87.2	1.264	2.341 9	-2.233 12	1.330 8	-1.120 5		
B C	2 5	2467	3.6	1.372	2.257 4	-1.422 5	-0.596 2	-0.239 3		
B D	2 11	2729	3.5	1.446	3.508 4	-2.737 2	-0.895 9	0.450 5		
B E	2 12	2818	12.9	1.118	-2.395 2	2.050 4	1.223 5	0.825 7		
C D	8 11	2291	-0.6	0.563	-0.600 10	0.581 11	0.543 8	-0.523 9		
C E	8 12	2359	12.3	0.473	-0.841 10	0.502 8	0.322 12	0.176 11		
		Avg =	2580	for	51 Pts					

Spread B		V	Avg TdSP	Std Err Overall	4 Highest		Std Err at		geophones			
SPs	Geos				Err	Geo	Err	Geo	Err	Geo	Err	Geo
A C	1 5	3124	8.4	0.321	-0.404	2	0.390	3	-0.360	4	0.198	1
A D	1 11	3660	14.2	0.967	-1.942	10	1.814	7	-1.069	2	0.860	5
A E	1 12	3593	-1.2	0.960	-1.561	4	-1.433	6	1.409	7	1.380	8
B C	2 5	2134	4.5	1.082	1.456	3	-1.187	2	-0.882	5	0.613	4
B D	2 11	4035	6.3	1.645	-3.965	2	2.304	5	2.049	4	0.833	3
B E	2 12	3932	-10.3	1.256	-2.690	2	2.376	5	-1.210	12	0.857	10
C D	8 11	3430	2.8	0.877	-1.256	9	0.937	8	0.693	11	-0.374	10
C E	8 12	3747	-12.3	0.945	-1.614	9	0.930	11	0.779	8	-0.483	12

Avg = 3606 for 62 Pts

Spread C		V	Avg TdSP	Std Err Overall	4 Highest		Std Err at		geophones			
SPs	Geos				Err	Geo	Err	Geo	Err	Geo	Err	Geo
A C	1 5	3307	-1.4	0.963	1.642	4	-1.116	5	-0.797	2	0.240	3
A D	1 9	4071	-10.5	1.797	-2.770	9	2.686	6	2.044	7	-1.589	8
A E	1 12	3213	-29.8	1.578	3.834	6	-1.788	1	1.635	5	1.583	7
B C	2 5	3832	-2.0	1.162	1.790	4	-1.191	5	-0.845	2	0.247	3
B D	2 9	4212	-14.2	0.883	-1.563	9	-1.097	2	1.017	4	0.934	7
B E	2 12	3089	-28.4	0.730	1.313	6	-1.291	9	1.039	10	-0.629	11
C D	8 9	15632	-15.4	0.000	0.000	8	-0.000	9				
C E	8 12	3401	-27.6	0.726	0.994	10	-0.847	9	-0.834	11	0.350	8

Avg = 3982 for 56 Pts

Avg of all Hobson-Overton velocities: 3421 for 169 points in Layer 2.

Wtd Avg Velocity computed for Layer 2 = 3244

DEPTH MODEL TABLES for L1-B5.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
B	640.0	178.6	5.8	172.8
C	667.7	177.6	3.9	173.7
D	694.6	178.1	4.8	173.3

Geo	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
1	640.0	178.6	5.8	172.8
2	645.1	178.4	5.8	172.6
3	650.1	178.2	5.2	173.0
4	655.1	178.0	4.5	173.5
5	660.1	177.8	3.7	174.1
6	665.2	177.6	3.5	174.1
7	670.1	177.7	4.4	173.3
8	675.0	177.8	5.8	172.0
9	679.9	177.9	6.6	171.3
10	684.8	177.9	6.5	171.4
11	689.7	178.0	5.8	172.2
12	694.6	178.1	4.8	173.3

Spread B Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
B	698.4	178.2	3.7	174.5
C	725.5	179.2	1.4	177.8
D	752.2	180.2	0.4	179.8

Geo	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
1	698.4	178.2	3.7	174.5
2	703.3	178.4	3.3	175.1
3	708.2	178.7	3.0	175.7
4	713.0	179.0	2.3	176.7
5	717.9	179.0	1.9	177.1
6	722.9	179.2	1.5	177.7
7	727.9	179.3	1.4	177.9
8	732.9	179.4	1.4	178.0
9	737.9	179.6	1.1	178.5
10	742.7	179.8	1.0	178.8
11	747.4	180.0	1.2	178.8
12	752.2	180.2	0.4	179.8

Spread C Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
B	757.9	180.5	2.2	178.3
C	785.2	181.7	2.2	179.5
D	813.8	183.7	7.7	176.0

Geo	Surface		Layer 2	
	X-Loc	Elev	Depth	Elev
1	757.9	180.5	2.2	178.3
2	762.0	180.4	3.2	177.2
3	767.0	180.4	3.6	176.8
4	772.0	181.3	3.4	177.9
5	777.9	181.7	2.3	179.4
6	782.8	182.0	2.5	179.5
7	787.7	182.3	2.8	179.5
8	792.6	182.6	3.6	179.0
9	797.9	182.9	4.9	178.0
10	803.2	183.2	5.8	177.4
11	808.5	183.4	6.7	176.7
12	813.8	183.7	7.7	176.0

Velocities used to formulate the Depth Model

Spread A	Layer 1		Layer 2	
	Vertical	738		
Horizontal			3244	

Spread B	Layer 1		Layer 2	
	Vertical	738		
Horizontal			3244	

Spread C	Layer 1		Layer 2	
	Vertical	738		
Horizontal			3244	

DEPTH MODEL TABLES for L1-B4B.SIP

Spread A Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	403.1	172.5	0.2	172.3	18.9	153.6
C	430.8	173.2	3.2	170.0	22.0	151.2
D	457.4	174.4	8.4	166.0	23.0	151.4

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	403.1	172.5	0.2	172.3	18.9	153.6
2	408.3	172.7	4.0	168.7	18.9	153.8
3	413.6	172.9	4.7	168.2	18.3	154.6
4	418.8	173.2	5.5	167.7	18.8	154.4
5	423.6	173.2	3.3	169.9	20.2	153.0
6	428.4	173.2	2.8	170.4	21.6	151.6
7	433.1	173.3	3.6	169.7	22.5	150.8
8	437.9	173.3	4.9	168.4	22.6	150.7
9	443.3	173.6	6.8	166.8	22.4	151.2
10	448.6	173.9	8.6	165.3	22.5	151.4
11	453.0	174.2	8.7	165.5	22.7	151.5
12	457.4	174.4	8.4	166.0	23.0	151.4

Spread B Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	461.7	174.3	7.8	166.5	23.1	151.2
C	490.7	174.6	10.7	163.9	23.4	151.2
D	517.5	175.4	2.3	173.1	27.1	148.3

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	463.0	174.3	7.6	166.7	23.2	151.1
2	468.8	173.2	5.8	167.4	22.3	150.9
3	473.7	173.8	7.3	166.5	23.2	150.6
4	478.6	174.3	8.7	165.6	23.7	150.6
5	483.4	174.4	9.6	164.8	23.7	150.7
6	488.2	174.5	9.8	164.7	23.5	151.0
7	493.0	174.6	11.3	163.3	23.2	151.4
8	497.8	174.8	12.7	162.1	23.4	151.4
9	502.7	174.9	12.8	162.1	24.2	150.7
10	507.6	175.1	10.1	165.0	25.2	149.9
11	512.6	175.2	6.8	168.4	26.4	148.8
12	517.5	175.4	2.3	173.1	27.1	148.3

Spread C Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	522.4	175.6	1.5	174.1	27.8	147.8
C	549.7	177.6	5.5	172.1	31.8	145.8
D	576.2	178.3	3.5	174.8	28.2	150.1

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	522.4	175.6	1.5	174.1	27.8	147.8
2	527.3	176.0	2.8	173.2	28.7	147.3
3	532.1	176.5	3.8	172.7	29.3	147.2
4	537.0	176.9	4.7	172.2	30.6	146.3
5	542.1	177.2	5.5	171.7	31.5	145.7
6	547.3	177.5	5.1	172.4	31.8	145.7
7	552.4	177.7	6.1	171.6	31.8	145.9
8	557.5	178.0	7.4	170.6	31.8	146.2
9	562.2	178.1	6.6	171.5	31.5	146.6
10	566.9	178.2	5.8	172.4	30.9	147.3
11	571.5	178.2	5.0	173.2	29.9	148.3
12	576.2	178.3	3.5	174.8	28.2	150.1

Spread D Depth and Elev of layers directly beneath SPs and Geos

SP	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
B	580.2	178.4	1.3	177.1	26.8	151.6
C	607.6	178.8	2.8	176.0	22.1	156.7
D	635.0	179.0	0.5	178.5	19.9	159.1

Geo	Surface		Layer 2		Layer 3	
	X-Loc	Elev	Depth	Elev	Depth	Elev
1	580.2	178.4	1.3	177.1	26.8	151.6
2	585.2	178.5	3.1	175.4	25.0	153.5
3	590.2	178.6	4.0	174.6	23.2	155.4
4	595.2	178.6	3.5	175.1	23.3	155.3
5	600.1	178.7	3.3	175.4	23.4	155.3
6	605.1	178.8	3.2	175.6	23.0	155.8
7	610.1	178.9	2.6	176.3	21.3	157.6
8	615.1	179.0	1.6	177.4	19.7	159.3
9	620.1	179.0	0.5	178.5	18.1	160.9
10	625.8	179.0	0.5	178.5	17.7	161.3
11	630.5	179.0	0.6	178.4	20.1	158.9
12	635.0	179.0	0.5	178.5	19.9	159.1

Velocities used to formulate the Depth Model

Spread A	Layer 1	Layer 2	Layer 3
Vertical	407	576	
Horizontal		576	2071

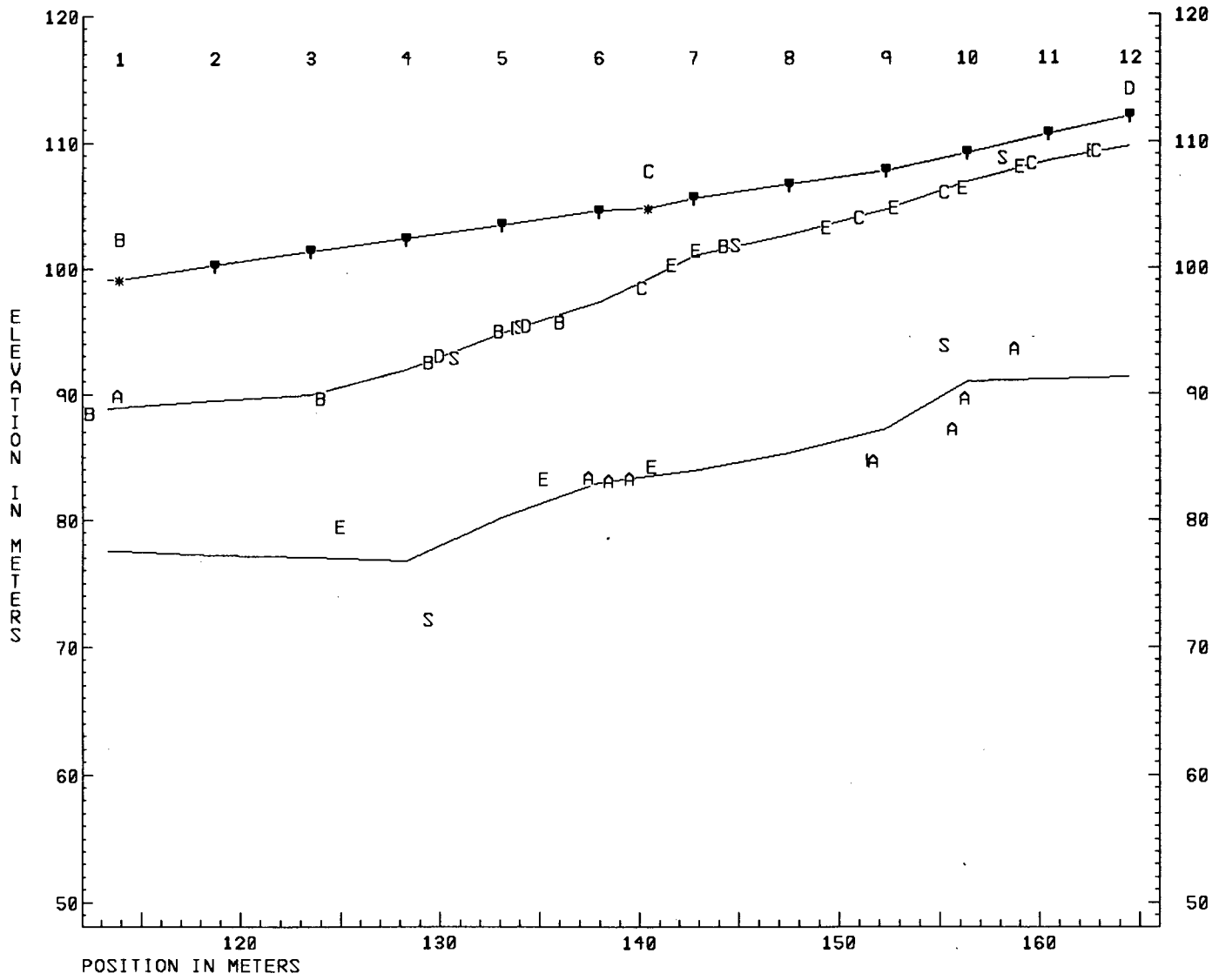
Spread B	Layer 1	Layer 2	Layer 3
Vertical	407	576	
Horizontal		576	2071

Spread C	Layer 1	Layer 2	Layer 3
Vertical	407	576	
Horizontal		576	2071

Spread D	Layer 1	Layer 2	Layer 3
Vertical	407	576	
Horizontal		576	2071

Appendix H. Inversion model plots

FILE TEMP5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4)
 SPREAD C

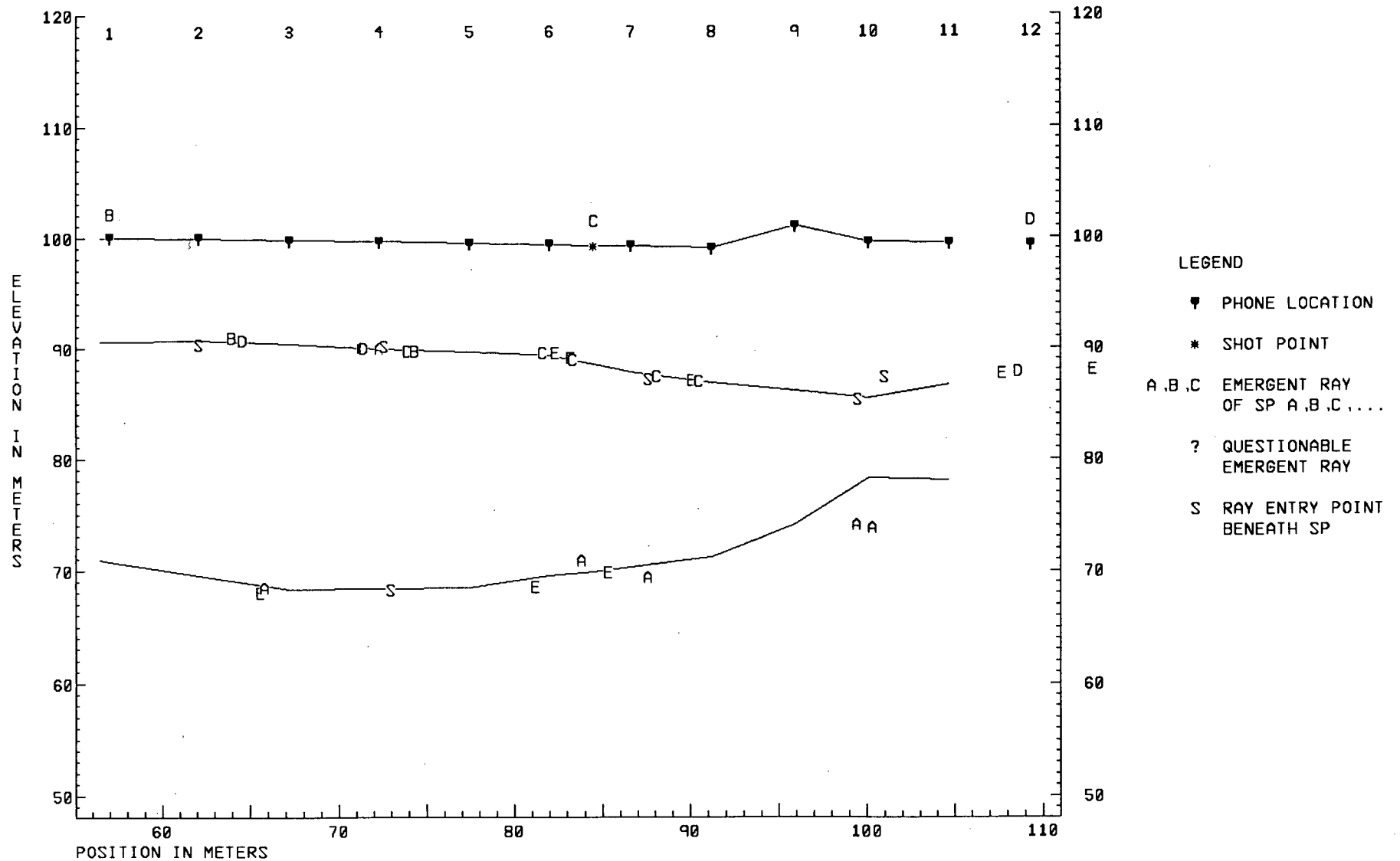


LEGEND

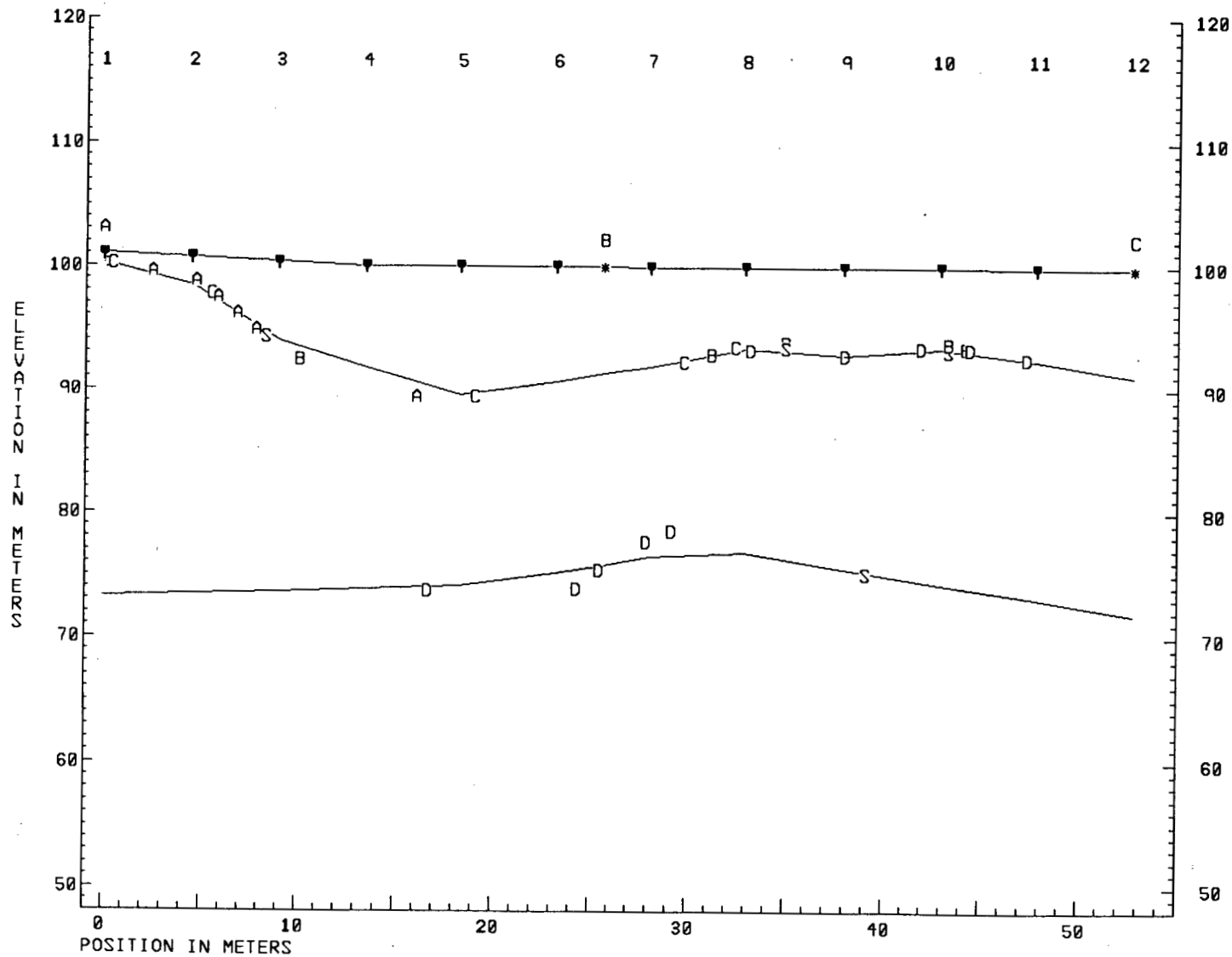
- ▼ PHONE LOCATION
- * SHOT POINT
- A, B, C EMERGENT RAY OF SP A, B, C, ...
- ? QUESTIONABLE EMERGENT RAY
- S RAY ENTRY POINT BENEATH SP



FILE TEMPS.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4)
 SPREAD B



FILE TEMP5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 1 (SPREADS 1-4)
 SPREAD A

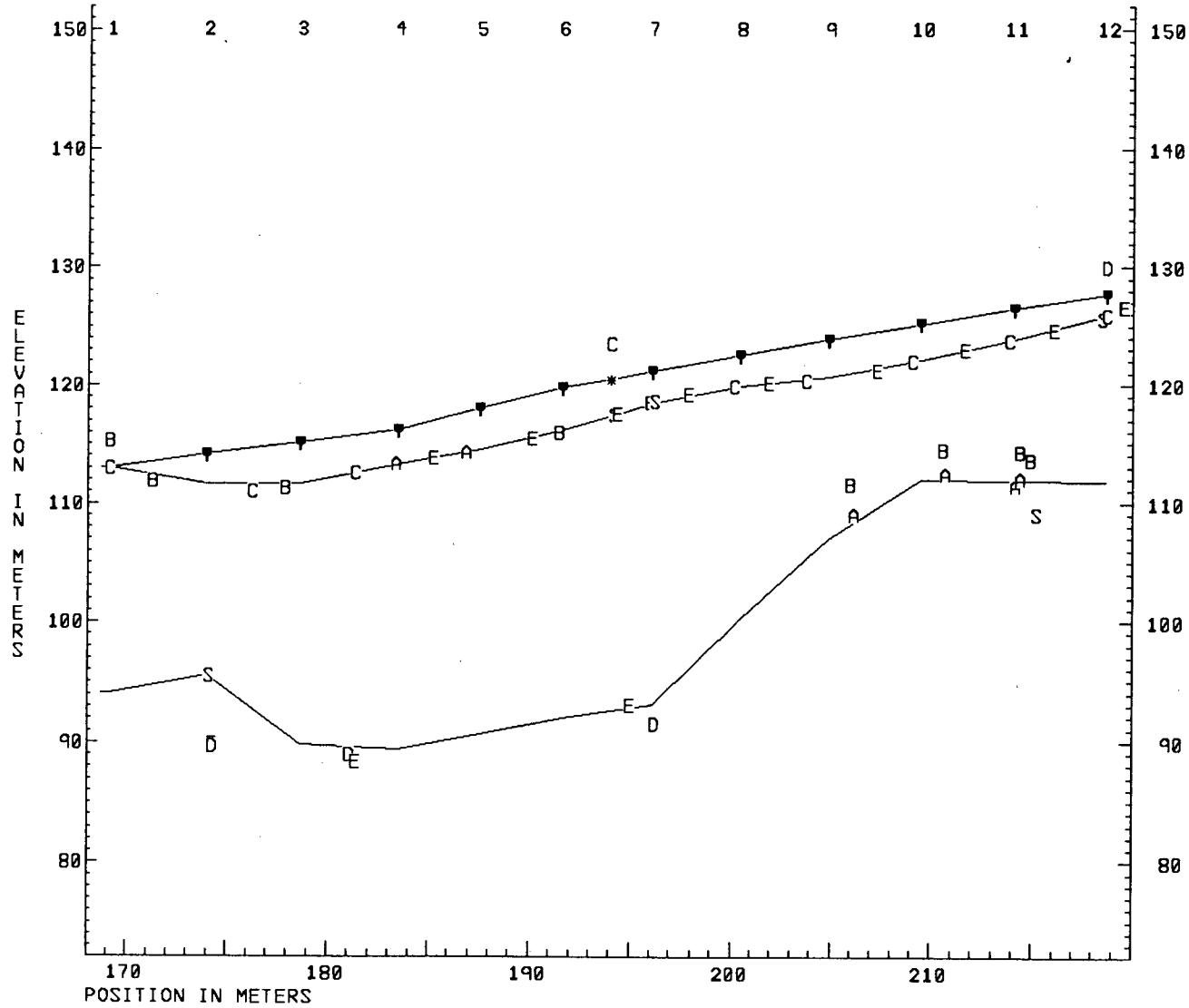


LEGEND

- ▼ PHONE LOCATION
- * SHOT POINT
- A, B, C EMERGENT RAY OF SP A, B, C, ...
- ? QUESTIONABLE EMERGENT RAY
- S RAY ENTRY POINT BENEATH SP



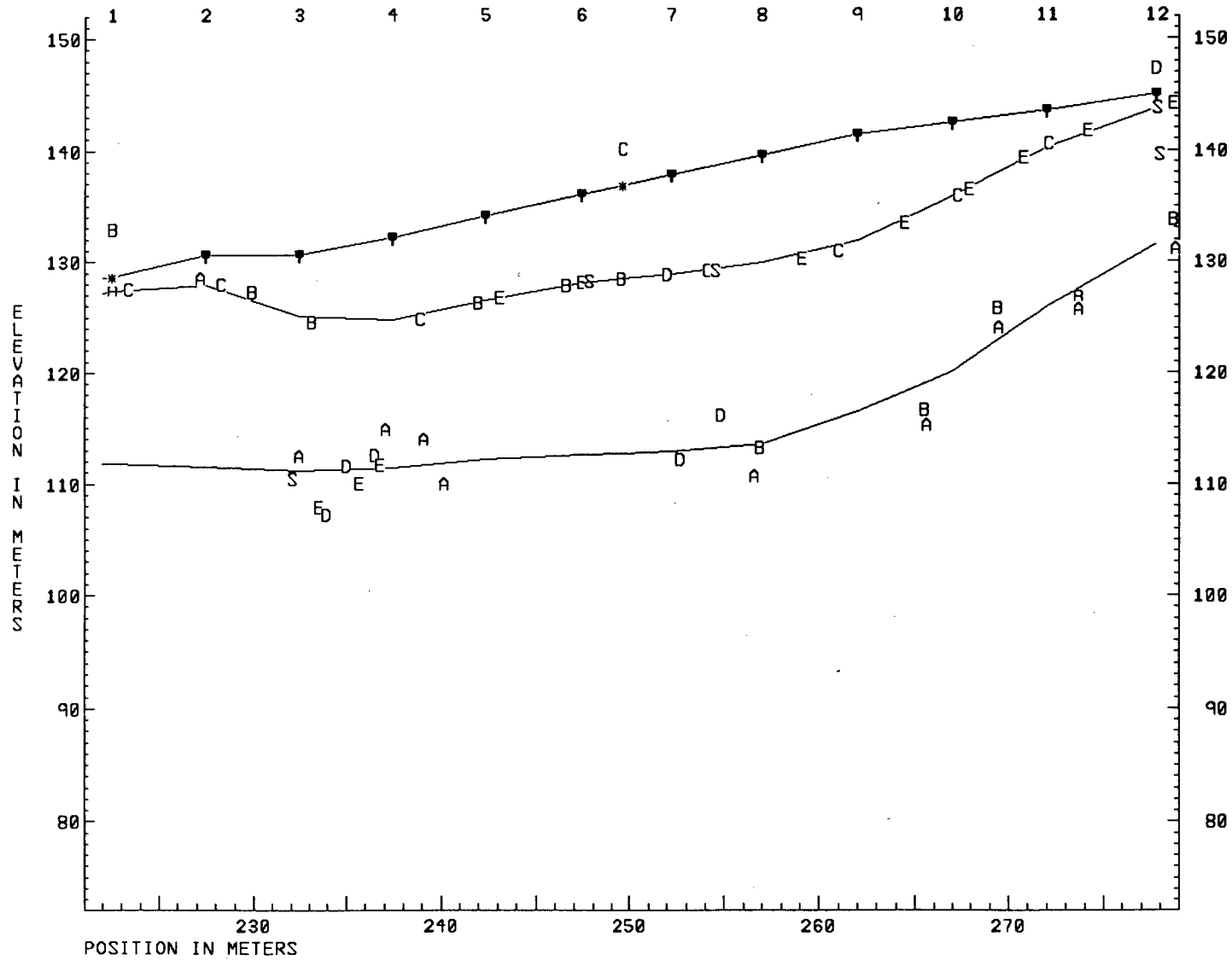
FILE L1-B2F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 2 (SPREAD 4-8)
 SPREAD A



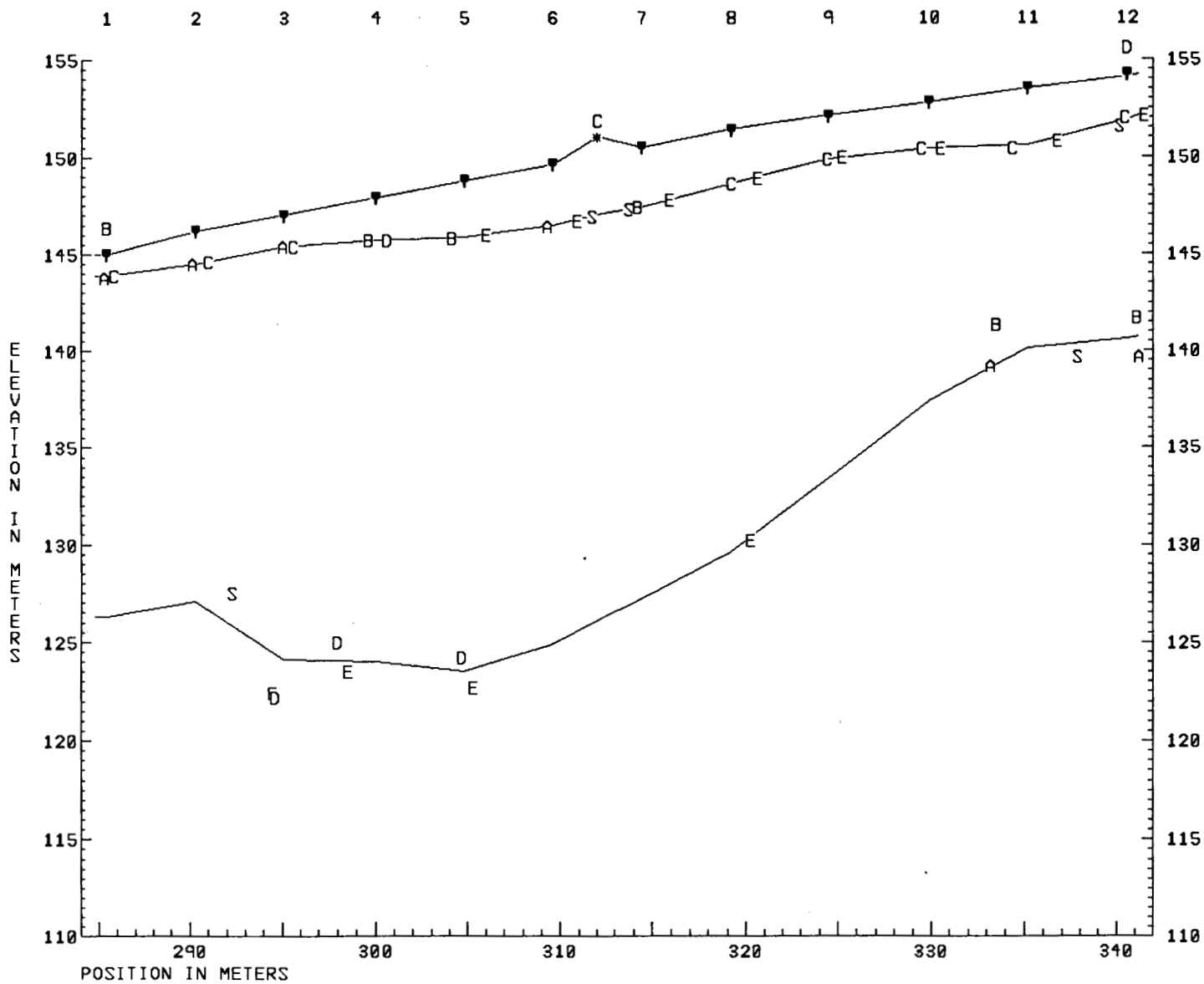
- LEGEND
- ▼ PHONE LOCATION
 - * SHOT POINT
 - A, B, C EMERGENT RAY OF SP A, B, C, ...
 - ? QUESTIONABLE EMERGENT RAY
 - S RAY ENTRY POINT BENEATH SP



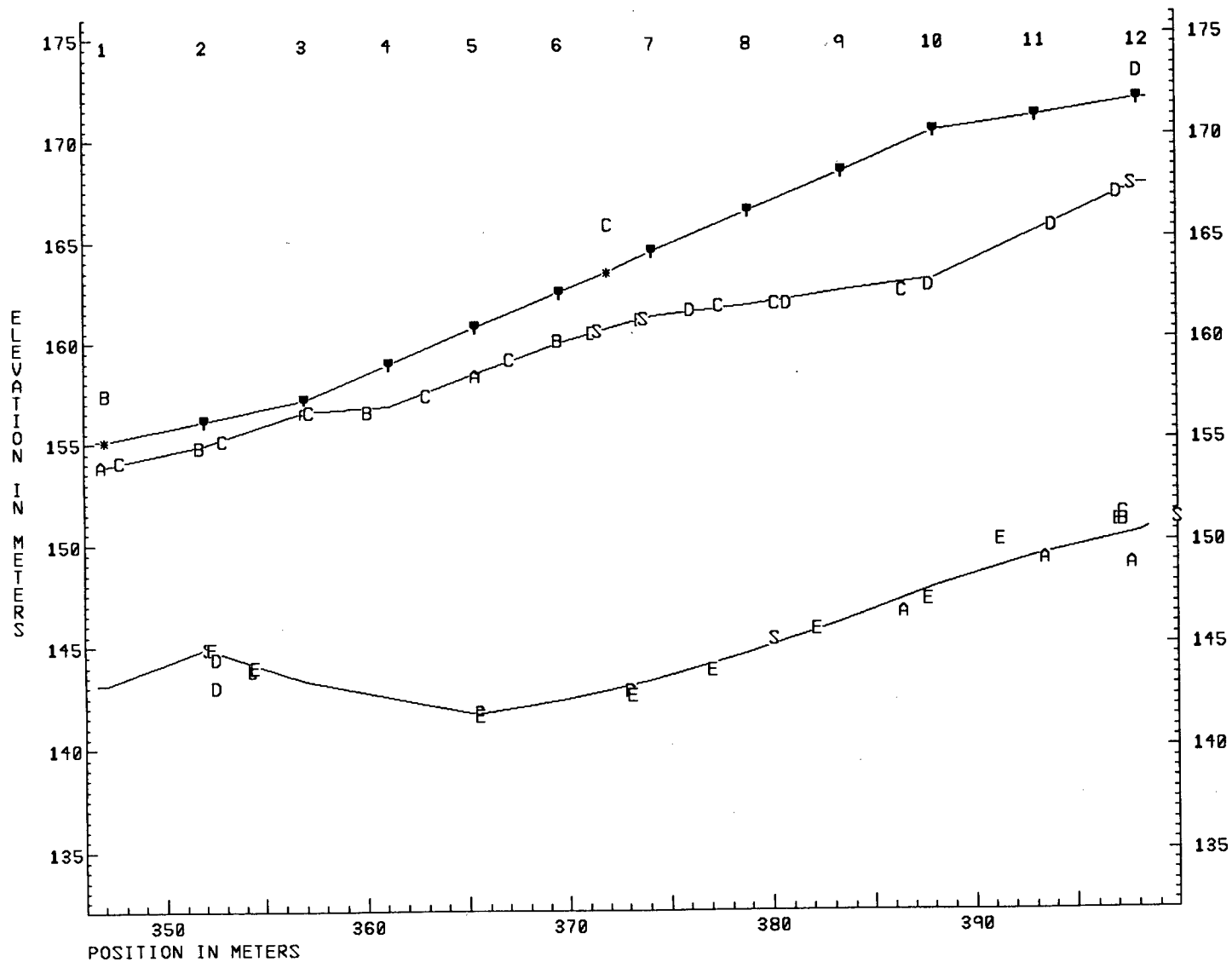
FILE L1-B2F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 2 (SPREAD 4-8)
 SPREAD B



FILE L1-B3F.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 3 (SPREAD 6)
 SPREAD A



FILE L1-B4A.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4A (SPREAD 7)
 SPREAD A

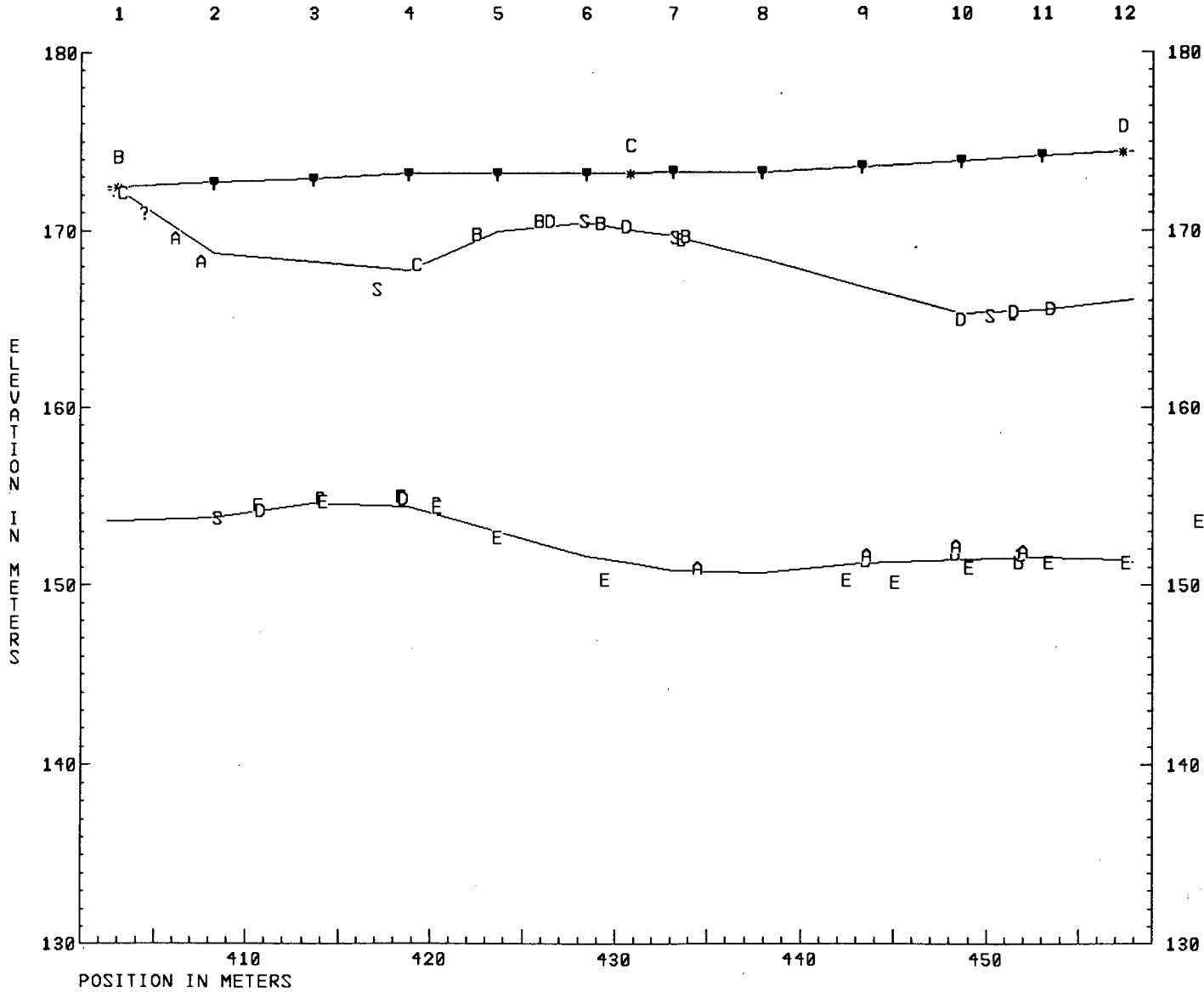


LEGEND

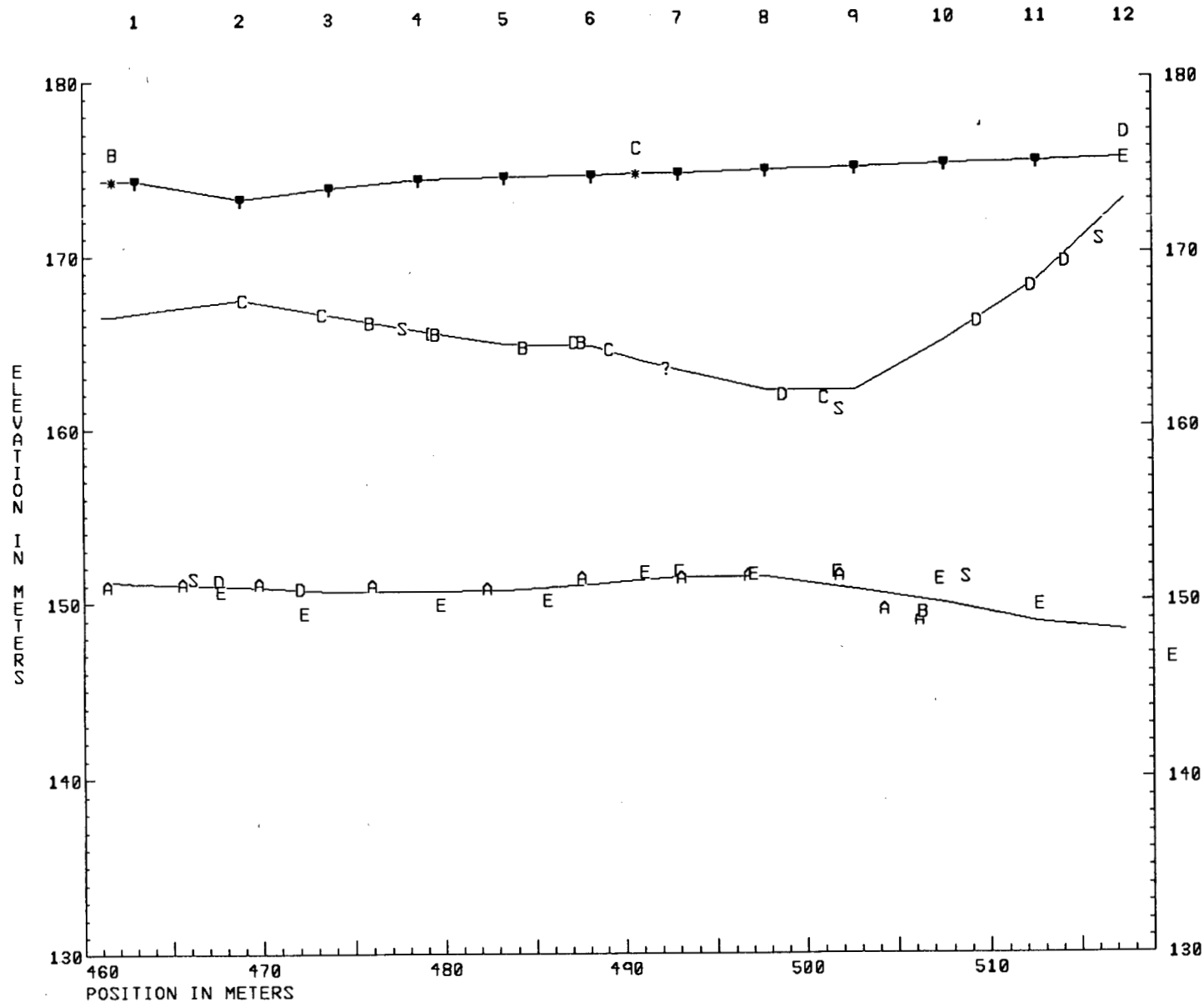
- ▼ PHONE LOCATION
- * SHOT POINT
- A, B, C EMERGENT RAY OF SP A, B, C,
- ? QUESTIONABLE EMERGENT RAY
- S RAY ENTRY POINT BENEATH SP



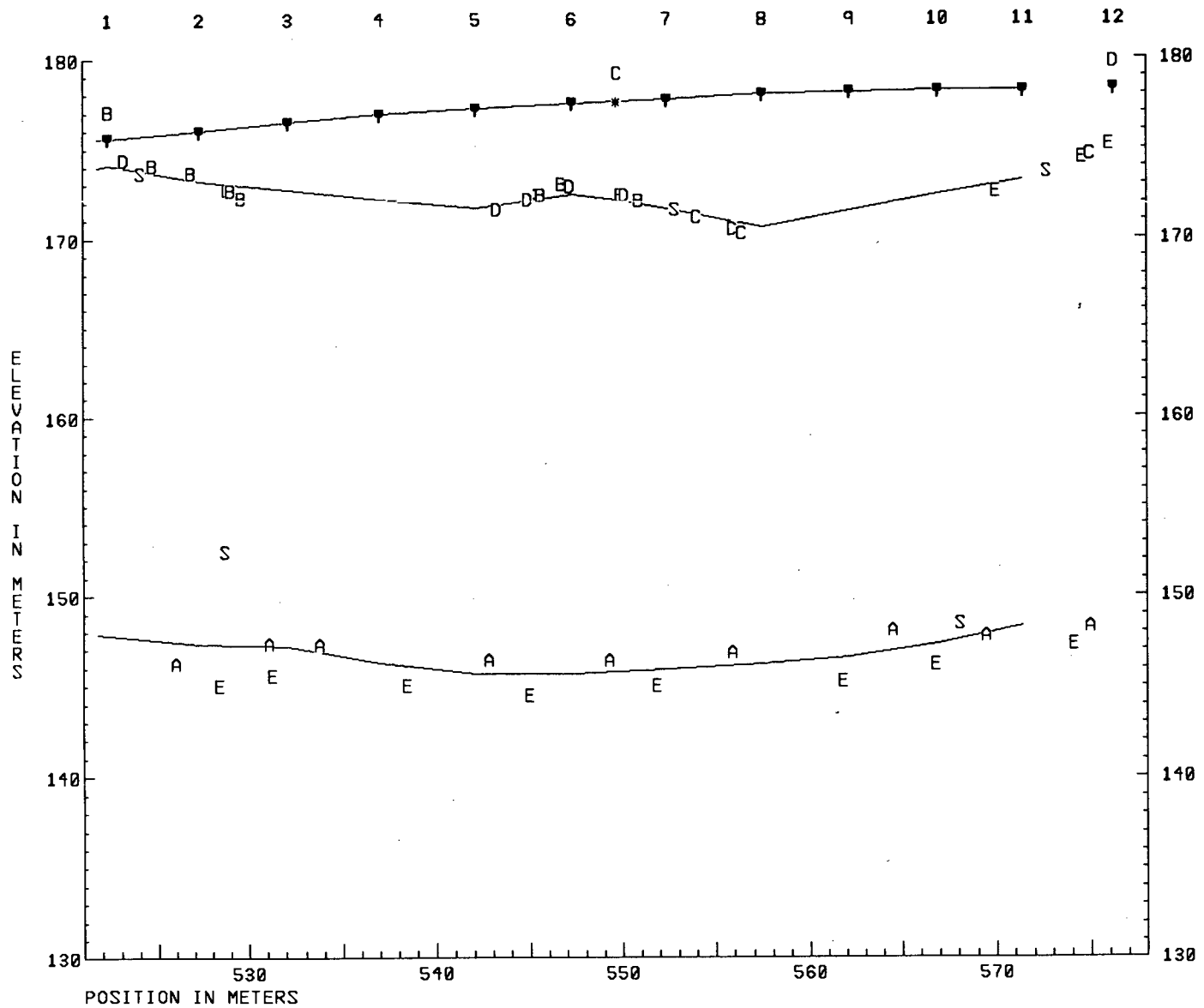
FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11)
 SPREAD A



FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11)
 SPREAD B



FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11)
 SPREAD C

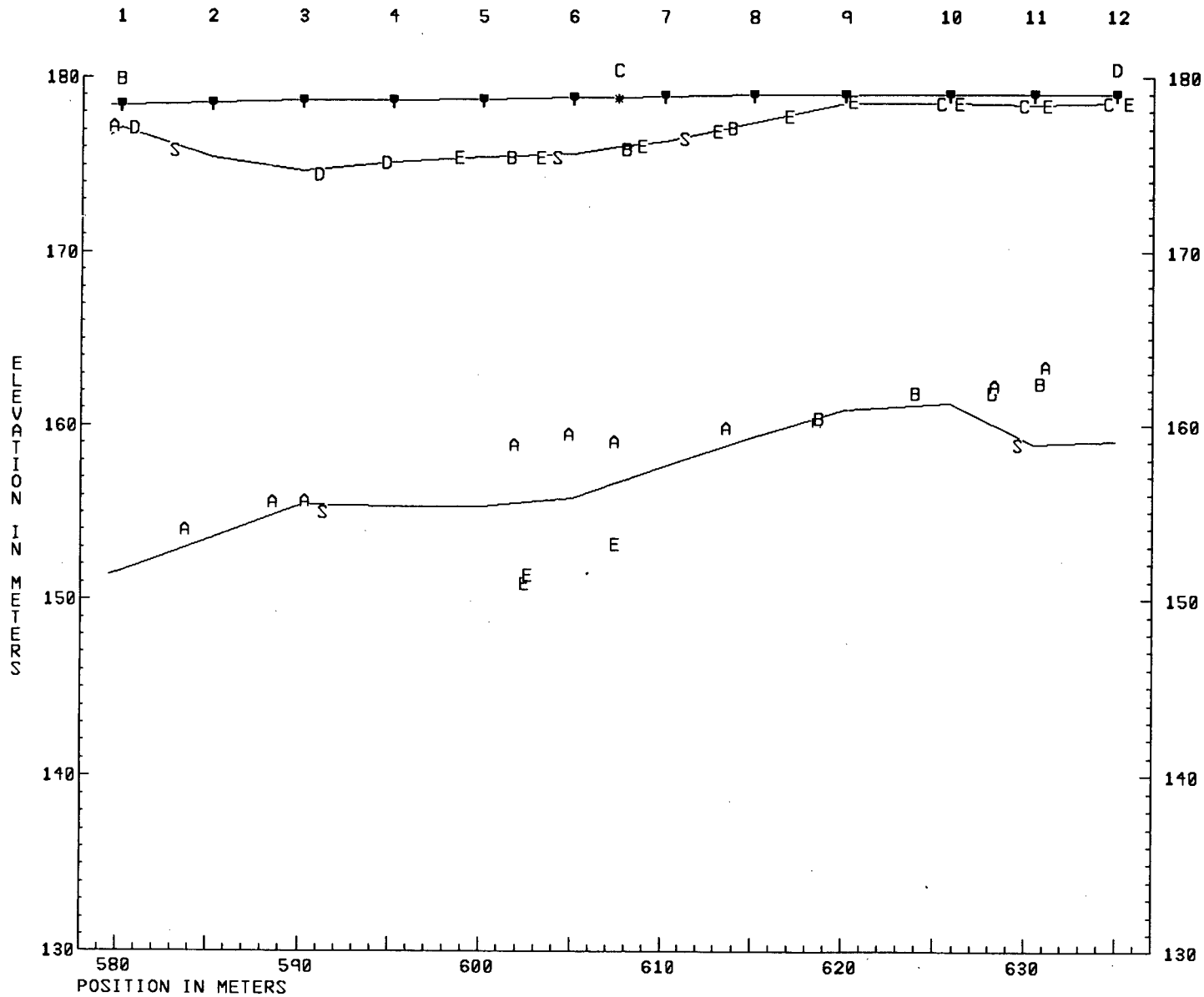


LEGEND

- ▼ PHONE LOCATION
- * SHOT POINT
- A,B,C EMERGENT RAY OF SP A,B,C,....
- ? QUESTIONABLE EMERGENT RAY
- S RAY ENTRY POINT BENEATH SP



FILE L1-B4B.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 4B (SPREAD 8-11)
 SPREAD D



LEGEND

▼ PHONE LOCATION

* SHOT POINT

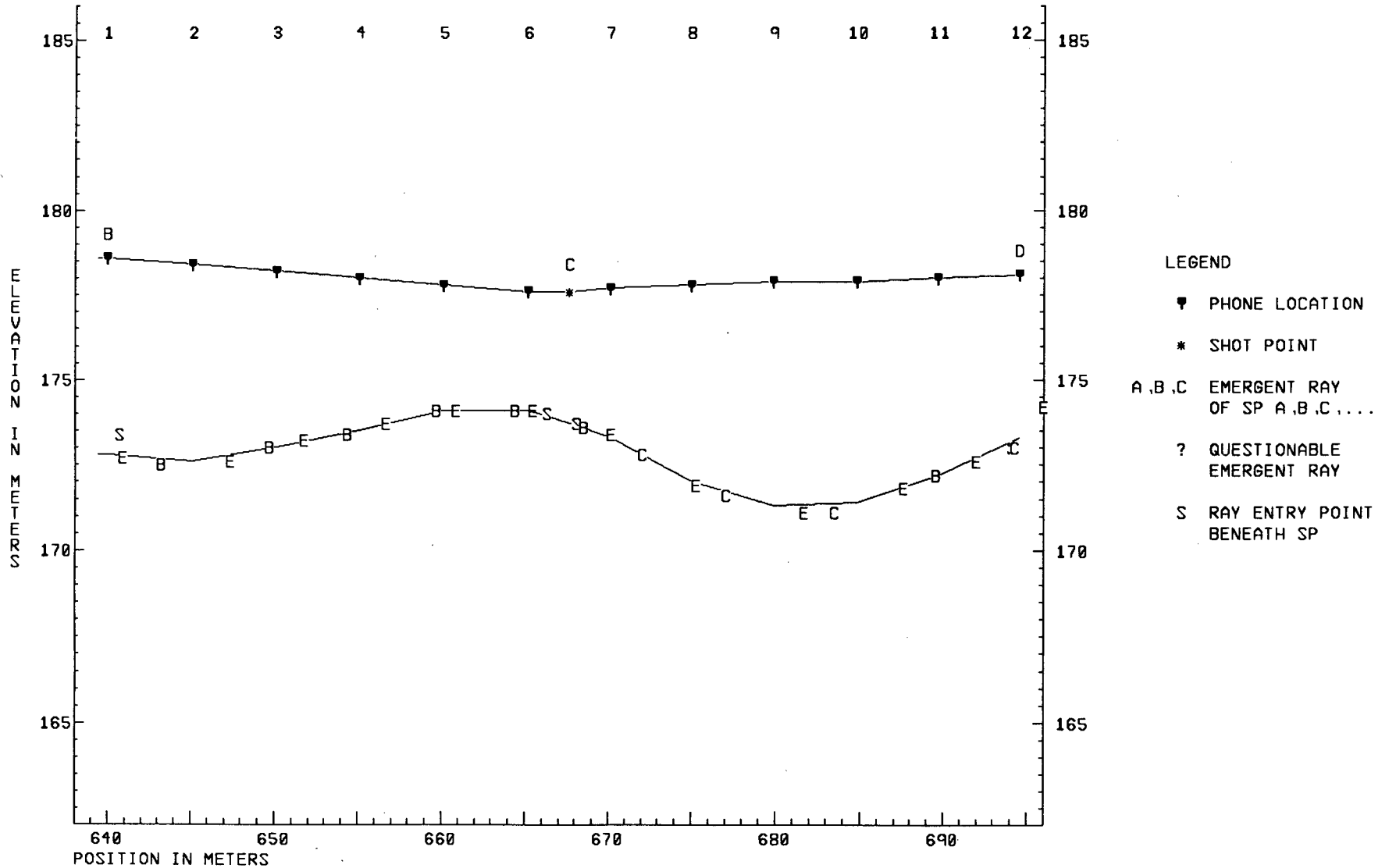
A,B,C EMERGENT RAY
 OF SP A,B,C,....

? QUESTIONABLE
 EMERGENT RAY

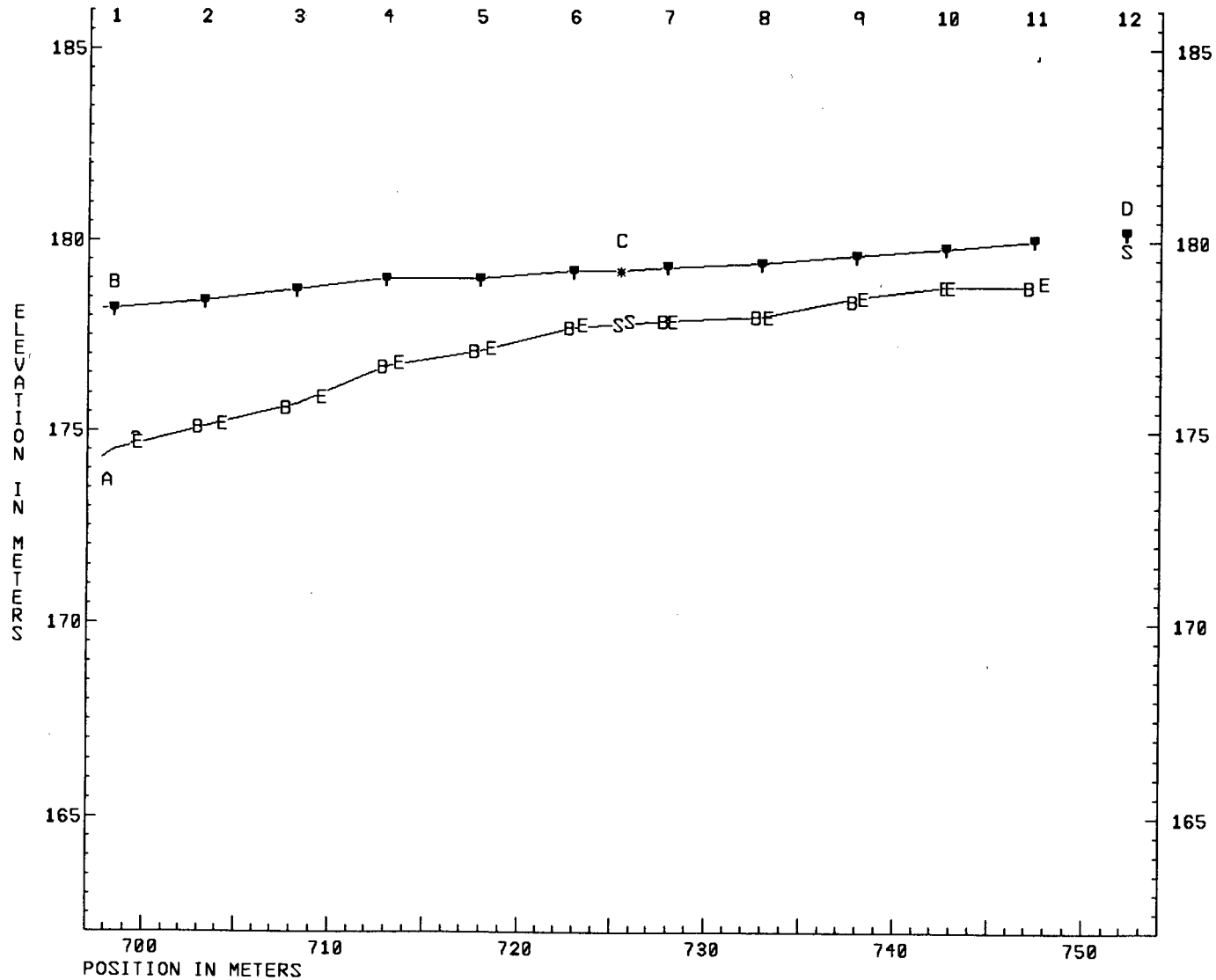
S RAY ENTRY POINT
 BENEATH SP



FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14)
 SPREAD A



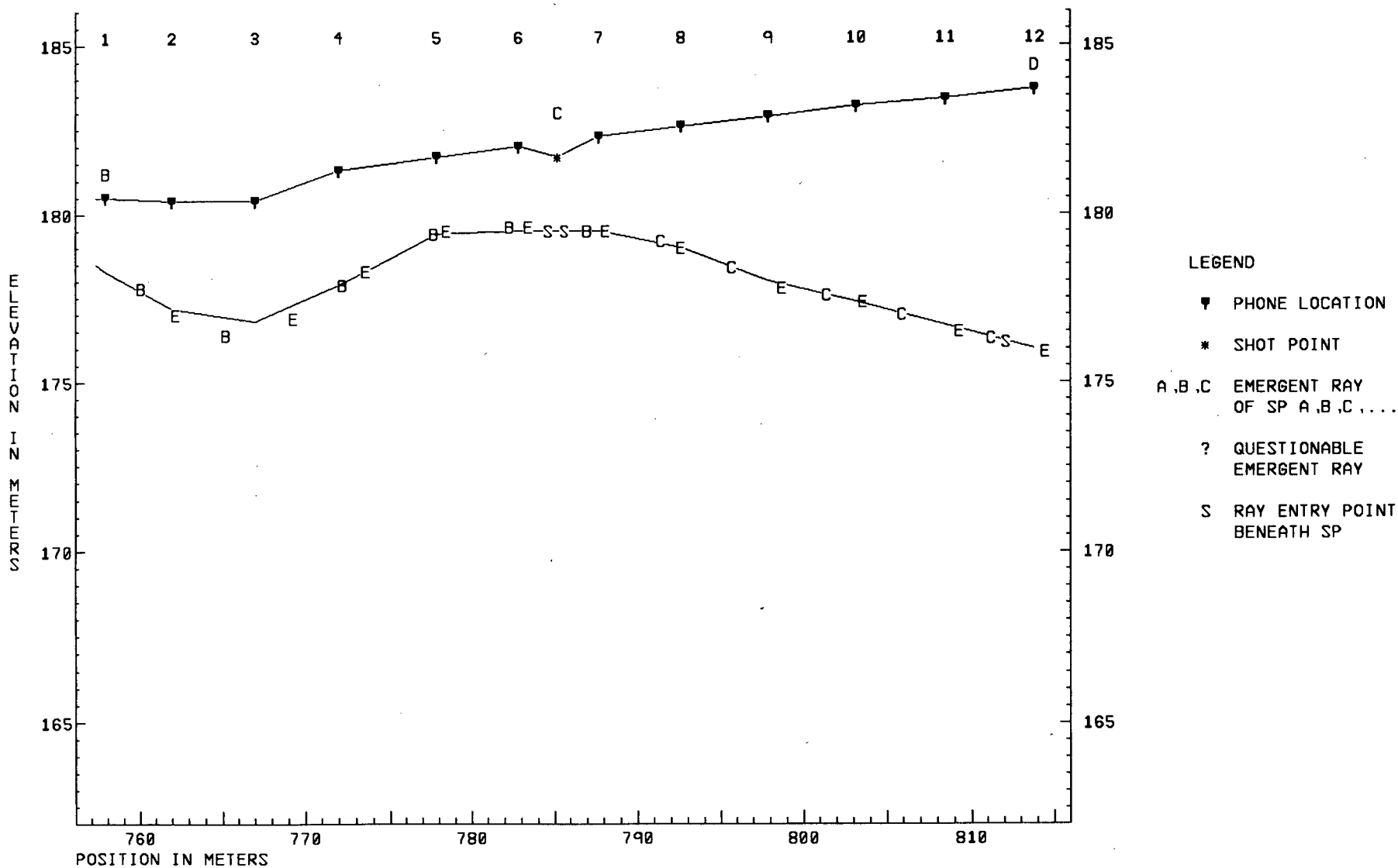
FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14)
 SPREAD B

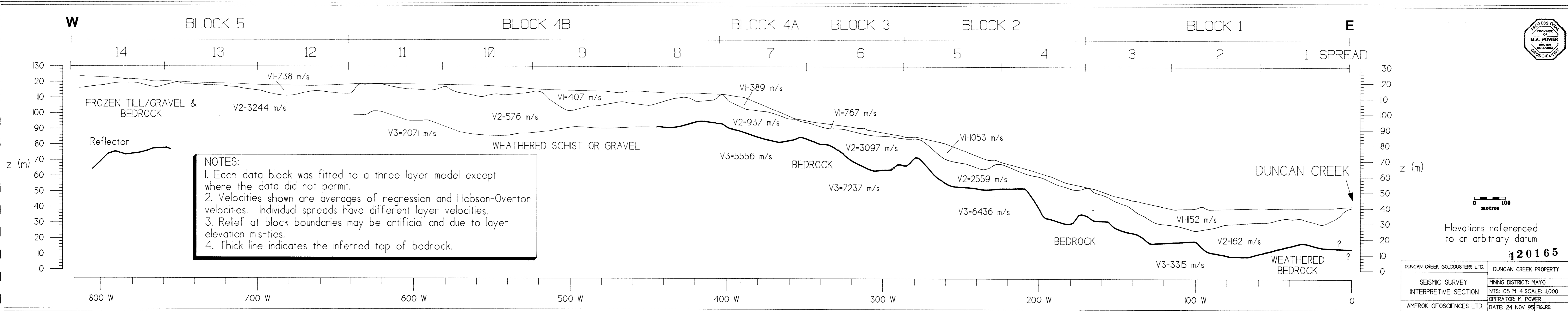


- LEGEND
- ▼ PHONE LOCATION
 - * SHOT POINT
 - A,B,C EMERGENT RAY OF SP A,B,C,....
 - ? QUESTIONABLE EMERGENT RAY
 - S RAY ENTRY POINT BENEATH SP



FILE L1-B5.SIP
 DUNCAN CREEK PLACER SEISMIC - LINE 1 - BLOCK 5 (SPREADS 12-14)
 SPREAD C





NOTES:
 1. Each data block was fitted to a three layer model except where the data did not permit.
 2. Velocities shown are averages of regression and Hobson-Overton velocities. Individual spreads have different layer velocities.
 3. Relief at block boundaries may be artificial and due to layer elevation mis-ties.
 4. Thick line indicates the inferred top of bedrock.

DUNCAN CREEK GOLDDUSTERS LTD.	DUNCAN CREEK PROPERTY
SEISMIC SURVEY INTERPRETIVE SECTION	MINING DISTRICT: MAYO NTS: 105 M 14 SCALE: 1:1000
AMEROK GEOSCIENCES LTD.	OPERATOR: M. POWER DATE: 24 NOV 95
	FIGURE: