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**REPROCESSED AND INTERPRETED SEISMIC REFLECTION DATA
FROM THE ARCTIC PLATFORM, PARRY ISLANDS FOLD BELT,
AND THE SVERDRUP BASIN ON EASTERN MELVILLE ISLAND,
CANADIAN ARCTIC ISLANDS: A study of geophysical data**

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Scale= 1:2,000,000

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Scale= 1:2,000,000

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Scale= 1:2,000,000

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Scale= 1:2,000,000

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Scale= 1:2,000,000

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Seismic profiles, migrated cross sections: 64 sheets

Seismic profiles, CMP stacked sections: 64 sheets

SEISMOLOGY OF MELVILLE ISLAND

ABSTRACT

Some 795 km of industry acquired 8 and 10 second reflection seismic data from Melville Island, Northwest Territories, have been reprocessed, migrated and interpreted. In addition, 71 km of 6 second two-way reflection profiles were similarly reprocessed to provide tie information. All the seismic lines are of excellent quality with many quasi-continuous reflecting horizons to depths of 25 km. This has made it possible to identify the main acoustic impedance and tectonic features through a thick section of the Precambrian Proterozoic.

A preliminary attempt has been made to identify the tops of the Cambrian, Proterozoic and Archean horizons on the basis of borehole information to Ordovician horizons, extrapolation to outcrop areas on Devon Island, northern Baffin Island, Boothia Peninsula and the lower Mackenzie River area, unconformities visible on the seismic reflection cross sections and other characteristics of seismic reflected data. The depth of the *Archean* crystalline basement appears at two-way travel times of at least 9 to 10 seconds or at depths of 25 to 28 km in the central part of Sabine Peninsula. On the Dundas Peninsula it appears to occur at two way travel times of 7 to 8 seconds or at depths of 20 to 22 km.

The top of the *Precambrian Proterozoic* is at about 13 to 15 km on the northern end of Sabine Peninsula as compared with the depth of 10 km on Dundas Peninsula. The *Proterozoic* succession is stratified, and tectonically complicated. The seismic reflection cross sections indicate a number of unconformities and some orogenic activity. Its average thickness is about 10 to 12 km corresponding to a two-way travel-time difference of 3.5 seconds. The top of the *Proterozoic* units is a characteristic unconformity.

The basal formations of the Phanerozoic sequence forms the next unit of intermediate depth, comprising of a well stratified, planar, sedimentary succession with several disconformities and minor unconformities. These are probably *Cambrian* and lower Ordovician strata with a thickness of about 5 km. Apart from a gentle folding, the *Cambrian* strata are practically undisturbed on the southern part of the Parry Island Fold Belt. However they underwent intensive deformation on the northern portion of the Parry Island Fold Belt and in the area belonging to the Sverdrup Basin.

The uppermost unit is series of Ordovician and Devonian strata separated from the intermediate unit by a major decollement zone, the Ordovician Bay Fjord formation. This unit dips north and thins on the Sabine Peninsula which is on the south-western margin of the Sverdrup Basin. The effects of the Upper Devonian Ellesmerian orogeny show up well on the seismic sections as a series of detachment faults and folds. On the Sabine Peninsula these rocks are covered by a sedimentary wedge of Carboniferous, Permian and Mesozoic formations.

PROJECT OBJECTIVES

Selected reflection seismic lines on Melville Island with two-way travel times of 8 or 10 seconds were acquired by the Geological Survey of Canada from Panarctic Oils Ltd. In addition there are several lines with only 6 seconds of two-way travel time. A portion of the available seismic data, consisting of 865.9 km, is to be reprocessed and interpreted with emphasis on the intermediate and deep horizons.

INTRODUCTION

Melville Island, a member of the Canadian Arctic Archipelago and the study area in particular, is located between latitudes 74° and 77° N, and longitudes 107° and 114° W (Figure 1). The area of the island extends into three adjacent tectonic provinces of Arctic Canada. The southernmost part (western Dundas Peninsula) belongs to the Arctic Platform. The central area of the island, a wide, east-west oriented zone, is part of the Parry Islands Fold Belt, also known as the *Franklinian Mobile Belt*. The northernmost extent of the Island, including Sabine Peninsula, is situated on the south-western flanks of the Sverdrup Basin.

The depth of the Precambrian (Archean?) crystalline basement under the sedimentary sequences of Melville Island is not yet known. The basement might be covered by a series of Precambrian and younger sedimentary units of a thickness reaching at least 10 km (Aitken et al, 1973; Balkwill and Fox, 1982; Fox, 1985). Their material might include clastics, dolomite, stromatolitic and argillaceous limestones, as well as gypsum-anhydrite formations.

A carbonate sequence from the early Cambrian is known on central Ellesmere Island with a thickness of 4 km. The oldest strata penetrated by drilling on Melville Island in the Parry Islands Fold Belt are of Early and Middle Ordovician, belonging to the Eleanor River Formation (Fox, 1985). Borehole data also confirmed the presence of Middle Ordovician evaporites (Bay Fjord Fm.), limestone, argillaceous limestone and dolomite (Thumb Mountain and Irene Bay formations). The Bay Fjord formation consists of 43% salt, 50% dolomite and 7% of salt with dolomite interbeds in a complete section of borehole Sabine Bay A-07. In several other boreholes its lateral stratigraphic equivalent is dolomite. The Thumb Mountain carbonate rocks are known in outcrop as well as from borehole records. In Sabine Bay A-07 their thickness is more than 800 m.

Silurian and lower Devonian limestones, dolomite and siltstone are also known on the Island. Their equivalent lateral shale formations are Cape Phillips (Silurian, lower Devonian), and Eids (Lower and Middle Devonian) A great mass of Middle and Late Devonian Strata, known as the 'Devonian Clastic Wedge', is a characteristic part of Melville Island geology (Embry and Klovan, 1976). Shale, siltstone and fine sandstone

(Blackley, Cape de Bray, Weatherall beds) and fine to medium grained sandstone with shale interbeds (Hecla Bay and Griper Bay Formations) form the clastic wedge. The top of the Devonian strata is everywhere a major unconformity. The Upper Devonian Ellesmerian Orogeny caused a series of detachment faults and folds in the Paleozoic strata.

Compressional fold structures can be seen also in the unconformably overlying Carboniferous strata (Canyon Fjord Fm.). Its cause, the lower Permian, post-Ellesmerian deformation, is referred to as the Melvillian Disturbance.

A Carboniferous rifting initiated the evolution of the northernmost tectonic province on Melville Island, the Sverdrup Basin. While the early Triassic sequence (Bjorne Formation) here is essentially non-marine, the Middle Triassic to Lower Jurassic strata consist of deltaic and non-marine clastics.

In the interpretation of seismic sections from Melville Island one has to expect a superposition of extensional and compressional tectonics which occurred at different times. In addition, there are diabase intrusives, evaporite diapirism, reefs and other carbonate buildups.

SEISMIC DATA PROCESSING

Selection of a processing company

To have the Melville Island seismic data processed we invited four processing companies to submit a proposal with respect to prices, time, along with information about technical facilities (software and hardware), personnel qualification, etc. Every one of the companies responded.

Our choice of companies to be invited to bid was based mainly on previous general information. Two of the companies, Western Geophysical Co. and Geophysical Services Inc., are wholly U.S. owned. They have excellent processing capabilities and own R+D personnel. Veritas Seismic Ltd. is fully Canadian owned with first class hardware and software capabilities. Their software was developed mainly by their own professionals. Veritas Seismic was the company that processed our seismic data for the former contract on Melville Island seismology. It was selected again on the basis of technical ability and price.

Parameters for seismic processing

As a basic step towards reduction of processing costs all lines have been resampled to 4 ms. The primary interest of reprocessing and interpretation was directed towards the intermediate and deep horizons. Below a two-way reflection time of about 4 seconds the amplitude response is significantly reduced for frequencies above 60 Hz. Thus, the appropriate lower Nyquist frequency (125 Hz) did not affect the quality of the corresponding part of the seismic sections.

The planned and executed schedule of *processing sequence* was as follows:

- (i) gain expansion:
 - spherical divergence correction applied in form of the function $Ate^{\frac{1}{2}}$;
- (ii) shot records displayed;
- (iii) geometry files;
- (iv) instrument and geophone dephasing;
- (v) deconvolution and bandpass filter analysis;
- (vi) deconvolution applied to the raw data;
- (vii) residual amplitude analysis and application;
- (viii) structure statics:
 - elevation corrected to sea level;
- (ix) automatic surface consistent statics;
- (x) shot records displayed with NMO;
- (xi) preliminary stack and display;
- (xii) velocity analysis;
- (xiii) NMO with spatial interpolation between controls;
- (xiv) first break mutes;
- (xv) correlation statics within CMP ensembles;
- (xvi) stack and common offset stack;
- (xvii) post stack deconvolution;
- (xviii) band pass filter analysis;
- (xix) bandpass filter;
- (xx) amplitude equalization;
- (xxi) complete display, fully annotated, and final magnetic tapes;
- (xxii) migration;
- (xxiii) display of migrated section, fully annotated

Filter analysis and application:

Bandpass filters with different parameters were applied on several lines after stacking in order to determine the suitable filter bandwidth. The test parameters included filters of 5/8 - 25/30, 5/8 - 30/40, 5/8-40/50, and 5/8-50/60 Hz. Due to the primary interest in deeper reflections the lower limit of the filters was not questionable. On the other hand, inspection of the test results showed, that the broadband filters gave the best results on the entire recorded time. Accordingly a broadband, 5/8-50/60 Hz, uniform filter was applied on the raw data. After the processing sequence the data were filtered again, in some cases this time with a time varying digital bandpass filter. Its parameters were 10/13-50/60 Hz on the upper parts (0-3500 ms) of the sections, and 5/7.5-50/60 Hz below this.

Deconvolution, spiking:

The effect of deconvolution proved to be satisfactory with one run, applied only on the raw data. The operator length was usually 120 ms. Three gates were used for design and the operators were applied appropriately in corresponding three overlapping windows. 5% prewhitening proved to be optimal.

Static corrections:

The elevation was corrected to the sea level. Two values were used for replacement velocity. In the northern area on Sabine Peninsula, where younger sediments constitute the uppermost layers it was 10,000 ft/s. Everywhere else 12,000 ft/s was applied for this purpose. The automatic surface consistent statics were based on the data-window between 3.0 to 6.0 seconds. The maximum shift allowed was 16 ms.

Velocity analysis and migration:

Decisions with respect to the applicable velocity functions for processing, migration and/or travel time-depth conversion were based on the velocity analysis of the seismic data and the low frequency interpretation of sonic log measurements in selected boreholes near the seismic lines. Velocity scan was carried out at every 200 or 400 common depth points, corresponding to 22000/44000 ft (6.7/13.5 km).

Based upon the velocity data and the preliminary stacked sections four section segments from the area were selected for a test migration procedure using a 45^o finite difference algorithm written by a Veritas software development group. Velocity functions were determined for the application of the test migration. The selected segments, representing data from different parts of the area, were:

Line 1786, CMP 800 - CMP 1783.

The interval velocity function was based upon the RMS velocity at CMP 1451.

Line 1141, entire length.

The interval velocity function was determined from the sonic log data of Beverly Inlet G-13.

Line 2145, entire length.

The interval velocity function was determined from the sonic log data of Sherard Bay F-34.

Line 1921, CMP 1250 - CMP 1800.

Velocity functions were given for both ends of the segment. At CMP 1250 the velocity function was based on the RMS spectra at CMP 1251, at CMP 1800 on the other hand, we used the sonic log of Sherard Bay F-34.

The line segments were migrated in three different runs. The input velocity functions for the three calculations were 100%, 80%, and 70% of the basic velocity data.

The results of the test migration were used to select velocity functions for the individual lines (Figure 2). Our proposed interval velocity data were calculated, upon consideration of additional seismic and geological information, by taking different fractions (70 - 100 %) of the original interval velocities mainly based on the following sources (for locations see enclosed map, Figure 5):

- A. Seismic velocity spectrum at CMP 1451 on Line 1768;
- B. Seismic velocity spectrum at CMP 1250 on Line 1921;
- Sonic log measurements in bore-holes:
- C. Panarctic et al. Beverly Inlet G-13;
- D. Texex King Point West B-53;
- E. Panarctic et al. Sabine Bay A-07;
- F. Panarctic et al. Sherard Bay F-34;
- G. Panarctic et al. Drake Point D-68;
- H. Panarctic et al. Chads Creek B-64.

A 45 degree finite difference algorithm was used for migration. The input velocity functions are listed in details in Appendix 2.

GRAVITY DATA PROCESSING

A Bouguer gravity map was compiled from available EMR and industry data (Figure 3). Interpolating and correcting the industrial data base involved a large amount of work but it allowed us to obtain detail in areas where the coverage from Canadian government sources was sparse. This map proved to be of use in obtaining general trends over Melville Island. The gravity data is also included on the migrated seismic sections together with the elevation of the surface.

INTERPRETATION OF THE SEISMIC SECTIONS

General technical remarks

The recorded field data for the sections are of very good quality. Large number of reflected events can be recognized at all depths. These signals are sometimes so strong on individual field records that they dominate over the naturally present noise arrivals.

The displays of the single records reveal the nature of the specific noise arrivals on Melville Island. *Surface waves* are rather strong. Their effect is obvious even on the stacked sections. The long offset, double split line-spread in the case of line 2144, for instance, is designed partly to overcome these difficulties. Due to the permafrost in the Arctic *ice-breaks* are present at random times on the records. This phenomenon is caused by delayed secondary strain release after shots. Fortunately, they can be spatially filtered out by the stacking procedure due to the randomness of occurrence. Some *amplifier* or *electrical discharge noise spikes* due to lightning also occurred. Their effect was eliminated by their *surgical removal* from the records before further processing took place. In general, the migrated sections are free from most of the disturbing effects described above. Higher stacking coverage and lower source sizes when the seismic data was acquired initially in the field, following modern exploration practice, would have brought even further improvement to the otherwise excellent quality sections.

Interpretation of the seismic sections was based mainly on the migrated version of the lines. Naturally, the basic, conventional stacked sections had to be continuously compared with them. Seismic stratigraphic information, especially the amplitude and reflection configuration related aspects of facies analysis which might serve as basis for stratum or formation identification, can be more readily obtained from the conventional stacked sections. On the other hand the migrated sections are best for studying the structural and tectonic characteristics, such as synclines and faults, due to compressional or extensional structural events. The conventional CMP seismic sections have complicated seismic images with diffraction arrivals in greater evidence which make interpretation difficult in areas where the acoustic impedance has abrupt discontinuities.

The seismic sections and the results of our seismic interpretation are displayed on 8.5" by 11" sheets for convenience in reading this report and for ease of duplication of an open file report. The correlated reflections are drawn on the attached line-diagrams. These have been generated with the help of an Adobe Illustrator algorithm on a Macintosh microcomputer using an Apple Laserwriter. The line diagrams show the main identified features which include stratum boundaries and possible fault traces. They are fitted to overlay the migrated seismic sections on a light table or when duplicated on transparent sheets. They may be spliced together to form long sections covering any part of the study area but slight mismatching will result due to

optical differences in duplicating hardware, etc. Wherever possible, the coded lines representing picked reflections are identified with a special system of shading. The legend for the code is shown in figure 8. The identification provides information according to our best knowledge about the particular boundary. The boundaries for the tops of the Cambrian, Proterozoic and Archean horizons are not based on well data or direct geological constraints and should be regarded as tentative geophysical interpretations.

In order to ensure uniquely determined horizontal positioning along the seismic cross sections a kilometer scale is attached to their upper part. Zero kilometers is assigned to the zero shotpoint locations. During the following discussion these kilometer rulers should be used for identification of horizontal positions. In cases where kilometer units are used to indicate vertical thickness or depth this distinction is expressed explicitly.

Remarks about the interpretation procedure

On the basis of seismic stratigraphic criteria the sections can be divided into three major distinctive depth zones. The uppermost one, which has been extensively explored by boreholes and seismic lines processed some years ago, bears most characteristically the main features of the tectonic provinces. Over the restricted extent of the Arctic platform on Western Dundas Peninsula (Lines **1168, 1169, 1862**) and in the Parry Island Fold Belt (seismic lines between **1171** and **TPC2**) this uppermost semi-horizontal zone contains the middle Ordovician to Devonian strata. In the Fold Belt the lowermost stratum belonging to this stratigraphically visible upper unit is the Bay Fjord formation, serving as a major decollement level. The structural forms of compressional tectonics are distinct above this level. North of line **TPC2**, on the southwestern margin of the Sverdrup Basin, this uppermost band of strata dips towards the north. It gives place to younger, Carboniferous, Permian and Mesozoic strata that take over the role of the uppermost zone. Thus, the Ordovician-Devonian succession becomes part of the second zone, constituting the formations of intermediate depth. Note that in accordance with the main purpose of the investigation, which is concentrated on the lower Paleozoic and Precambrian formations, the attached line drawings feature only general characteristics of the middle and upper Paleozoic and Mesozoic formations.

The middle zone in the first two tectonic provinces is distinct in appearance from both the upper and the lower parts. It consists of at least one seismic sequence on the Platform and in the Parry Island Fold Belt. The zone is approximately 5 km thick with an apparently parallel horizontal succession of strata. Closer examination, however, reveals that some reflected events represent surfaces with mild angular unconformity. Based on outcrop and borehole data from Devon Island the uppermost part of this middle sequence is most likely lower Ordovician. Since the Devon Island data indicate continuous sedimentation through the upper Cambrian and lower Ordovician boundary, no unconformity is expected. The horizon marked C1 has been chosen on the basis of extrapolation from Devon Island to be rather close to the top of the 'Cambrian' sequence. In the *Cambrian* succession another horizon labelled C2, and occasionally a third one, C3, was correlated over many lines. This band of seismic (and stratigraphic) events constitute the lower

part of the intermediate zone in the Sverdrup Basin area.

The lower limit of the Cambrian sequence has been chosen to be a well defined unconformity on the seismic reflection records. The 'lower Cambrian' reflections terminate on it in onlap and occasionally in downlap situation. Below this boundary the internal reflection configuration differs from those above. Lower frequency content, divergent/convergent and semi-parallel reflections are common. Erosional truncations expressed by toplap reflection terminations emphasize the boundary from below. Having no possibility for borehole identification these characteristics were used to determine the top of *Proterozoic* strata essentially on the entire study area. The appropriate code on the line-drawn sections for our interpretation of the top of the *Precambrian Proterozoic* rocks is Pr 1. The travel-time map of this reflector surface is presented on Figure 7. Again, it should be emphasized that there are no local outcrops or well information to substantiate independently this correlation. This surface has a general dip towards the north. It is tilted from 3.4 s on Dundas Peninsula to 5.2-5.4 seconds on the northern end of Sabine Peninsula. Due to the velocity distribution (See Figure 6) this corresponds to a real tilt from about 10 km depth on Dundas Peninsula to about 13 to 15 km depth on Sabine Peninsula. The average northward dip on the various lines varies from about 0.7° to 1.2° .

The internal stratified structure of the *Proterozoic* formations suggests that they consists of a thick sedimentary sequence. The thickness varies from at least 10 to 15 km. There are a large number of good reflecting horizons at depths of 10 to 25 km depth. The seismic images leave no doubt that the primary structure has been shaped by recurring phases of tectonic movement. Fractured zones show up with discontinuous gaps between longer continuous reflections. At least 3 major unconformities mark periods of erosion and tectonic disturbance. Intrusions, including sills, seem to cause localized *reflection crossings*. While having an overall view about the stratigraphic, depositional and tectonic trends in the *Proterozoic*, mapping a continuous surface would be more efficient on a dense seismic grid of lines. Still, based on general seismic stratigraphic appearance and similarities in geological setting, we marked the most prominent reflections and reflection fractions below the Phanerozoic section. In certain cases they are distinguished by identifiers as Pr 2, Pr 3, or Pr Unc., etc. The horizons can be followed consistently over short distances. Over long distances, of course, identification with the same code does not necessarily mean that the boundaries, represented by the reflections, are of the same age or formation. Rather, the same code indicates that, according to our inevitably subjective judgement, the overall geological situation or setting seems to be similar.

The lower boundary of this band of *Proterozoic* reflected energy can be seen on certain lines in the form of segmented, mostly horizontal or near horizontal, bands. These are situated near the bottom of the seismic sections and have very large amplitudes on the field records, as well as on the conventional CMP sections, indicating a profound change in acoustic impedance. The migrated sections also show them,

however, sometimes dimmed in nature due to the truncating behavior of the finite difference computer algorithm near data boundaries. These reflection fractions are marked with Ar(?) on the line sections, indicating that they may be the top of the *Archean* crystalline basement.

The Arctic Platform

The western part of lines **1168**, **1862** and the southern end of **1169** are on the Arctic Platform. The intermediate Zone 2 on these sections, consisting of horizontal, parallel reflections between $t_0 = 2.1$ s and 3.8 s, separates very visibly the upper and lower zones. The strong reflection at 2.1 s on the eastern end of line **1168** corresponds to the top of the Ordovician Bay Fjord formation. The westward continuation of this reflection is rather weak, changing in amplitude at the same locations where all the reflections above also change. Among these upper reflections the one at $t_0 = 1.5$ s is especially characteristic. Its corrugated appearance and the changes in thickness towards the east at the 7 km benchmark indicate that it is originated from the surface of a planar carbonate buildup. It can be correlated on line **1169** between 0 and 10 km, and on the entire length of line **1862**. Since the upper zone of the adjacent sections to the east show elements of intensive compressional tectonics as opposed to the horizontally layered stratigraphy here, this limit is indeed the boundary between the Arctic Platform and the Parry Island Fold Belt.

The difference between the two tectonic provinces is not at all apparent on the intermediate and deep parts of these sections. The continuity is virtually undisturbed. The vertical minor discontinuity on line **1168** is almost unrecognizable. It is probably the seismic image due to the changes associated with the edge of the upper carbonate buildup. The Proterozoic succession is divided by two prominent groups of strong reflectors, having rather transparent zones between them. They are denoted by the labels Pr 2 and Pr 3 and are tilted towards the eastern end of the section. Pr 3 dips from a depth of 14 km to about 17 km in a distance of 20 km. This corresponds to a dip of about 8.5° . There are two further unconformities beneath the major unconformity representing the top of the *Proterozoic* succession. These are recognized over widespread portion of the study area.

Line **1169** also shows Pr 2 and Pr 3 although with much less tilt. Locally, the resultant dip seems to be towards the northeast. These horizons are interrupted by several minor faults which apparently have not affected any of the strata above the level of the unconformity beneath the *Proterozoic* surface. These faults indicate definitely a period of extensional tectonics prior to some lower Paleozoic stage. The apparently horizontal appearance of Pr 2 and Pr 3 on line **1862** is due to the strike direction of the section. Between benchmarks 28 and 18 on Line **1862** the second internal unconformity seem to have truncated a minor

progradational sequence above Pr 3. Note that the dome shaped relief indicated by Pr 3 is imaged by a very weak reflector. It may not correlate to other segments labelled Pr 3 but may indicate the presence of a large intrusion. This portion of the section is rather transparent and corresponds to a local maximum on the Bouguer gravity map in this area. The nearly horizontal reflection segments at 7 seconds may be a part of the *Archean basement* (?).

The Parry Islands Fold Belt

The immediate continuation of lines 1168 and 1862 to the east are 1171 and 1768 respectively. The middle zone of lower Ordovician and Cambrian strata are planar in geometry with minor undulations. Some gentle undulations show up beneath the thrust structures of the upper decollement zone (Bay Fjord). These may indicate a mild response of the *Cambrian* sequences to the compressional forces. Since a minor effect of the undulation can be traced also through the *Precambrian* reflectors, this may be a processing artifact due to velocity pull-up under the upper thrust faults.

On the western end of both lines the first strong Proterozoic reflector, Pr 2, images a minor basin. Between $t_0 = 3.8$ s, the *Proterozoic* surface, and $t_0 = 5.0$ s, Pr 2, an undisturbed, parallel horizontally bedded, basin fill is indicated. The strong reflections, on the other hand, below and including Pr 2 seem to have originated from a series of parallel strata which, in turn, participated in a thick-skin tectonic event. Their repetitive sequence and some indications of internal translational surfaces suggest that the strata between Pr 2, Pr 2a, Pr 2b, Pr 2c and Pr 2d are the posterosional remnants of a large thrust-sheet. If this is true, thrusting must have occurred from the west. Note that the tectonically weakened strata fractured and must have been filled with sills, which partly explains some complicated wave images. It is interesting to note that the eastward continuation of this sequence indicates extensional rather than compressional tectonics. East of the horst-like structure at benchmark 23 of line 1768 and benchmark 32 of line 1171 a series of extensional type listric faults appear. Pr 3 serves as a decollement level. Note again the overall lower amplitude of the reflected energy on the eastern end of both lines.

Line 1770 is perpendicular to section numbers 1171 and 1768. Indications are that a large listric fault divides 1171 and 1768, which might explain some of the differences between the fault distribution of the two lines. Line 1770 also shows similar *Proterozoic* stratigraphy with strong reflectors identified as Pr 2 and Pr 3 and the unconformities. Fortunately this line was obtained closer to the main strike direction of the *Proterozoic* sequence.

Line 1138 is the eastward continuation of 1171. Under the planar *Cambrian* succession the *Proterozoic* unconformity surface shows up very distinctly. The *Precambrian* strata here display the effects of extensional tectonics. In addition to Pr 3 an erosional surface also serves as a decollement level.

Line 1762 traversed several folded structures of the upper zone. A large listric fault between benchmarks 10 and 15 km affected both *Proterozoic* and *Cambrian* strata. Its detachment level, Pr 5, is a spectacular unconformity. It seems to have been the margin of a small depression, which is about 10 km wide on this section, and which was filled from the south. Note the downlap reflection terminations south of the listric fault on the elevated portion of this unconformity. The depression is filled with fairly parallel strata. Their reflections terminate with onlap on the flanks of the small basin.

Line 1139 displays a listric fault. Pr 3 again is the detachment surface. The upward convexity of the strata on the downthrown side is probably due to the velocity pull-up originating from the thrust faulting on the upper level, rather than an indication of growth faulting. Some onlap reflection terminations show that Pr 3 here is also an unconformity. Some horizontal reflection segments at 7 seconds may be a part of the *Archean* basement.

Reflections from the *Proterozoic* on the northeast end of Line 1140 arrive with diminished energy. This may be due to scattering of energy by the thrust structure in the upper level but alternative explanations are more plausible. There are, first of all, other thrust structures which do not destroy completely the reflections from beneath. Furthermore, this transparent zone on the section coincides with a local gravity maximum. The cause may be an intrusive zone similar to the one mentioned in connection with line 1862.

At the beginning of line 1141 the direction of the long regional profile turns straight north. Pr 2 can still be identified with rather strong reflections. Strata between Pr 2 and Pr 1 are truncated by the unconformity surface which is interpreted to be the top of the *Proterozoic* succession.

TPC8, the northward continuation of the regional profile was recorded to only 6 seconds. Still it provides information about the uppermost 15 km of the crust. Between horizontal benchmarks 2 and 10 km the seismic image of a compressional structure can be seen. Its detachment level is probably identical with Pr 2, the uppermost strong reflector beneath the *Proterozoic* surface. The fractures affected the oldest *Ordovician*, all the *Cambrian* and the youngest *Precambrian* strata.

Line 1190 was measured on the flanks of several compressional structures. Accordingly, elastic sidewaves play a significant role in shaping the seismic section. Between benchmarks 10 and 25 km the repetition of strata originates from traversing a thrust structure in the strike direction. The middle zone, consisting of lower *Ordovician* and *Cambrian* strata, is also involved in compressional tectonic movement. The unconformity at the top of the *Proterozoic* succession serves as a decollement level. There is another unconformity identified between reflector C1 and C2. This truncates a progradational sequence between

benchmarks 20 and 33 km. The unconformity beneath the *Proterozoic* surface is nearly conformable with the strata below. Reflections, i.e. strata boundaries, terminate on this unconformity from above with downlap on the western side and with onlap on the eastern end of the section. An interesting feature is an erosional basin near benchmark 27 km. The dome shaped structure below this feature might be a reflection pattern from sidewaves since no gravity anomaly is associated with it.

Line **TPC7**, another 6 second profile, features many folds and thrust faults in the upper section. The thrust fault at benchmark 18 km is the location of borehole Texex King Point West B-53. The decollement level of this structure is Bay Fjord formation. Another system of thrust faults appears on the northern end of the section. Its decollement zone is in the *Cambrian* strata. Several faults having compressional origin affected the upper part of the *Proterozoic* succession, as well.

Line **TPC2** ensures the continuity between the lines of the Parry Island Fold Belt and the lines obtained in the Sverdrup Basin. It also shows some interesting features. All of its faults seem to have an extensional origin. In the *Proterozoic* section Pr 2 serves as an unconformity for the successive reflections from above.

The southern flank of the Sverdrup Basin (Sabine Peninsula)

Line **1921** traverses the southernmost margin of the Sverdrup Basin. The uppermost zone is interrupted by a half graben between horizontal benchmarks 17 and 23 km on the seismic sections. The lower *Ordovician* and *Cambrian* sequences, which thin towards the north, have such compressional features as thrusts, folds and duplication of sequences of strata. The decollement level is in the *Proterozoic* at Pr 1. The surfaces of these thrust sheets provided another surface for translational motion. Around benchmark 20 km a 'V' shaped system of faults embraces a compressionally shaped semiparallel series of strata. Their identification is rather difficult but their thickness is at least 6 km. At the southern end of the line the lower *Ordovician* and *Cambrian* strata have a thickness of only about 4 km. Thus, the top of the 'V' shaped fill must contain some other, middle and upper *Ordovician* and possibly *Devonian* strata.

North of benchmark 30 the original dual upper zones constitute the middle zone in the Sverdrup Basin tectonic province. Permian, Triassic and Jurassic wedge shaped strata occupy the upper part of the section. Since the top of the *Proterozoic* is dipping more gently than the uppermost strata, the combined thickness of the *Cambrian*, *Ordovician* and *Devonian* strata seems to decrease. While identification of the Permian boundaries from above and identification of the top of the *Proterozoic* from the bottom poses no problem, there is very little information with regard to the changes in ratio of thickness of the strata mentioned. A long thrust fault reaching from the deeper *Proterozoic* to the Permian terminates the southern part of the section. Another compressional unit towards the north, displayed in full on lines **2674** and

1920, has a boundary, a terminating fault at benchmark 51 km on this line. This fault also affected strata between the *Proterozoic* and the early Permian. The *Proterozoic* surface is very well identifiable. Beneath Pr 1 there are numerous reflections. The line diagrams just emphasize a few of them.

The southern flank of the Sverdrup Basin on Sabine Peninsula will be discussed in the following paragraphs based on three different transects. The common southern part is line 1921 in every case. The continuation to the north can be examined on the basis of lines 1179 and 1180, or on a semi-parallel profile on line 2674. The third profile is line 1920, a continuation of 1921 in northwestern direction.

Lines 1179 and 1180 give the direct continuation of line 1921 towards the north. Their most prominent feature is the display of a basin in the second intermediate zone. It is bounded by a large fault and several accompanying faults on line 1921 from the south and a series of listric faults at benchmark 10-20 on line 1180 from the north. The extent of the basin in this cross section is about 50 km. The youngest strata affected by any of the faults in the basin are Permian. On the lower extent the top of the *Proterozoic* unconformity, Pr 1, seems to be the main decollement level. However, the southern limiting fault is detached below the *Proterozoic* surface (see line 1921). At least on the level of Pr 1 it shows certain compressional features, although the upper, younger strata are virtually discontinuous as a result of extensional movements. The northern limiting fault on line 1180 shows explicitly extensional features. There are indications in the younger strata that this is a growth fault. Note that just below the northern series of southward dipping listric faults another fault of rather low angle is present. It is likely of compressional origin. In the upper half of the basin succession on line 1179 there is another detachment level. No well control is available to identify this boundary. However, provided it was also developed here with the evaporites, this might be identical with the Ordovician Bay Fjord level. Accepting that the Permian Belcher Channel is well defined above, the Devonian formations have to be less than about 2 km thick in this area. They must be even thinner, if present at all, at the northern end of line 1180. Note some anomalous reflection configurations near benchmark 10 suggesting the presence of local carbonate buildups.

The uppermost zone of the sections consists of a northward dipping wedge shaped unit of Permian and Mesozoic strata. There is no evidence for any major tectonic disturbance. This unit developed as a result of the differential subsidence on the southern margin of the Sverdrup Basin in a period of thermal relaxation.

The general appearance of the other alternative profile, line 2674, is naturally the same. The differences are mostly due to the changing distance and angle between the lines (1179, 1180 and 2674) discussed previously. The compressional structure of the upper *Proterozoic* sequence is imaged more clearly.

Pr 1, the unconformity surface of the *Proterozoic* section, is steeper towards the north on this line indicating that the track of this section is closer to the true dip.

The northwest branch from line 1921 is given by line 1920. A remarkable difference is that the

previously delineated basin is bounded by two major listric faults. However, they are a straight continuation of Precambrian faults. On the level of the *Proterozoic* surface they both indicate thrusting. The second, smaller fault on the southeast end of the basin (benchmark 20 km) and the faults at benchmark 50 km between $t_0 = 2s$ and $4s$ also display compressional features. The other faults inside the basin indicate explicitly extensional tectonics. The upper detachment level, presumably the Bay Fjord or its equivalent, is less emphasized on this section.

The uppermost zone is the same as the previously discussed Permian and Mesozoic margin. The reflection from top of the Permian Van Hauen and the Troid Fjord diverge near benchmark 10 to 15 indicating a wedge shaped thickening of the Troid Fjord formation towards the north and the northwest. The lower zone of the section shows the *Proterozoic* internal structure below the basin. This reflections from the *Proterozoic* indicate compressional tectonics. The thrust feature at benchmark 17 km and $t_0 = 6 s$ can be correlated on lines **2144** and **2674** as well. On line **2144** it is at benchmark 7 km and $t_0 = 6.5 s$. On line **2674**, on the other hand, it is at benchmark 9 km at $t_0 = 6.4 s$. These sections indicate that thrusting was from the north. The trends of the basin structure and faults have independent characteristics from the trend associated with this thrust sheet.

A grid of two-way 10 second reflection lines, **2144**, **2145** and **2146**, connects the two previous profiles and provide some very valuable penetration to greater depths. Note that their vertical scale on the displays is different from the rest of the lines in order to accommodate the entire recording time to 10 seconds. Line **2144** is parallel with line **1920**. The type of faults indicate a certain mixture of compressional and extensional characteristics. Although identification of the reflections from and between the tectonic units is rather difficult, the compressional, thrust, positions of the layers seem to be more or less restricted to the strata below the *Proterozoic* surface. The strong package of reflections at the 9 second level indicate a rather flat, eroded surface. It is most likely an indication of an eroded *Archean* crystalline basement complex.

Lines **2145** and **2146** are close to the strike direction. Some discontinuous reflections on line **2145** indicate that a faulted zone might separate lines **2144** and **1920**. The flat reflection segments at 9 seconds may show the position of the crystalline basement. Line **2146** helps to identify some reflectors as the seismic image of unconformities.

Any tectonic models will have to explain the evidence for both compressional and extensional features in a dynamic context. This procedure might need additional geophysical data, including the interactive modelling of gravity data. Some of the gravity anomalies are discordant with the seismic structure of the middle and upper crust and indicate that they must be modelled as density variations in the lower crust or upper mantle. Based on the data on Sabine Peninsula several versions of a tectonic model might be developed. Here we refer only to some of the possible mechanisms. One of the main points is to explain the

co-existing extensional and compressional features in the central basin of Sabine Peninsula. It is possible that a mild compressional period before the end of the Proterozoic created a fractured zone, the outline of the future basin. After the Cambrian period, most likely in connection with rifting of the Sverdrup Basin, an extensional sub-basin developed. The appropriate major displacement zones preferred lines of weakness on former faults. Otherwise the structure of the basin is that of a characteristic rifted depression. It is interesting to note that the central part of the basin coincides with a relative maximum on the gravity map.

CONCLUSIONS

More than 870 km of 6, 8 and 10 second reflection seismic lines have been reprocessed, migrated and interpreted. Their excellent quality made it possible to identify the main stratigraphic and tectonic features along a regional cross section on the eastern part of Melville Island.

The bottom of the whole succession seem to be the *Archean* basement. The strong but scattered reflected energy from 7 to 8 seconds point to a rather flat, eroded surface at a depth of about 20 to 22 km. The depth of the *Archean* basement reaches at least 25 to 28 km in the central part of Sabine Peninsula.

The *Archean* reflectors are covered by a stratified, tectonically disturbed unit consisting of *Proterozoic* sequences. Its average thickness is about 10 to 12 km corresponding to a two-way travel-time difference of 3.5 seconds. The top of the *Proterozoic* succession is a characteristic unconformity and is at about 13 to 15 km on the northern end of Sabine Peninsula as compared with the depth of 10 km on Dundas Peninsula. The *Proterozoic* succession is stratified, and tectonically complicated. The reflections indicate a number of unconformities. These strata were deformed partly before the end of the Proterozoic. Eastward thrusting on Dundas Peninsula and southward compression on central Sabine Peninsula probably preceded a period of dominantly extensional tectonics. The upper part of the *Proterozoic* was affected by the tectonic movements of post-Proterozoic times. Both the *Archean* basement and the top of the *Proterozoic* dip to the north.

The next unit, of intermediate depth, comprises a well stratified, planar sedimentary succession with widespread disconformities and minor unconformities. These are probably *Cambrian* and lower *Ordovician* strata with a thickness of about 5 km. Apart from a gentle folding, the *Cambrian* strata are practically undisturbed on the southern part of the Parry Island Fold Belt. However, they underwent intensive tectonic activity on the northern portion of the Perry Island Fold Belt and in the area belonging to the Sverdrup Basin. On Sabine Peninsula a mild compressional period before the end of the Proterozoic might have created a fractured zone, where later an extensional basin developed. The upper *Proterozoic*, *Cambrian*, *Ordovician* and *Devonian* strata participated in the rifting events of the Sverdrup Basin. As a result an uplifted area with compressional features is situated at the boundary between the Parry Islands Foldbelt and the Sverdrup Basin.

On the Sabine Peninsula a rifted subbasin displaying mainly extensional tectonics developed most likely in close connection with the origin of the Sverdrup Basin.

The uppermost unit in much of the area is a series of Ordovician and Devonian strata which has been involved in a major period of orogenesis and is separated from the intermediate unit by a major decollement zone, the Ordovician Bay Fjord formation. The south-western margin of the Sverdrup Basin may be seen on the Sabine Peninsula. Here the uppermost two units thin and dip towards the north. They are covered on the Sabine Peninsula by a sedimentary wedge of Carboniferous, Permian and Mesozoic formations.

RECOMMENDATIONS

The present study has indicated that much valuable information can be obtained about the Precambrian Era in the Arctic basin with seismic reflection studies. At some time in the future LITHOPROBE type studies should be conducted in the area to probe the full extent of the crystalline basement in the lower crust and the attitude of the mantle. Before this is undertaken much more can be done in the study of the seismic sections made available by the reprocessing in this contract. In addition other geophysical information including the available gravity and magnetic may be used in conjunction with the seismic sections to study the third dimension below Melville Island.

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Appendix 1: Table of lines with field parameters

Line-yr.	(1) ¹	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	stns	mi	km
1138-73	73	48	5280	880	220	6	2	8.0	288	11.1	17.8
1139-73	91	48	5500	880	220	6	2	8.0	360	15.0	24.0
1140-73	107	48	5280	880	220	6	2	8.0	424	17.4	28.3
1141-73	83	48	5500	880	220	6	2	8.0	328	13.7	21.9
1168-73	80	48	5280	880	220	6	2	8.0	316	13.1	21.0
1169-73	143	48	5280	880	220	6	2	8.0	568	23.7	37.9
1171-73 ³	233	48	5280	880	220	6	2	8.0	928	38.0	60.8
1179-74	164	48	6765	495	165	8	2	8.0	489	15.3	24.5
1180-74 ²	300	48	6765	(2)	165	(2)	2	8.0	712	23.4	37.4
1190-73	290	48	5500	880	220	6	2	8.0	1156	48.0	76.8
1762-75	168	48	550	880	220	6	2	8.0	668	27.8	44.5
1768-75	221	48	5500	880	220	6	2	8.0	880	36.2	57.9
1770-73	182	48	5500	880	220	6	2	8.0	724	30.2	48.3
1862-75	136	48	5500	880	220	6	2	8.0	540	23.0	36.8
1920-76S	215	48	5500	440	220	12	2	8.0	428	17.8	28.5
1920-76N	262	48	11440	440	220	12	2	8.0	522	21.8	34.9
1921-76S	277	48	5500	440	220	12	2	8.0	552	23.0	36.8
1921-76N	328	48	9900	220	220	24	2	8.0	328	13.7	21.9
2144-76 ³	167	48	11440	440	220	12	2	10.0	332	13.9	22.2
2145-76	175	48	11440	440	220	12	2	10.0	348	14.5	23.2
2146-76	181	48	11440	440	220	12	2	10.0	360	15.0	24.0
2674-81S	116	96	10780	880	220	12	2	8.0	460	19.1	30.6
2674-81N	131	96	10780	880	220	12	2	8.0	520	21.7	34.7
TPC2-73	67	48	5280	880	220	6	2	6.0	368	15.5	24.8
TPC7-73	108	48	5280	880	220	6	2	6.0	428	17.8	28.5
TPC8-73	67	48	5280	880	220	6	2	6.0	264	11.2	17.9
TOTAL :										540.9	865.9

(1) number of shotpoints

(2) a - number of traces/record
b - far-trace offset (feet)

(3) shotpoint spacing (feet)

(4) station spacing (feet)

(5) CMP fold

(6) sampling interval (milliseconds)

(7) record length (seconds)

¹ working tapes 9T, 6250 bpi, demultiplexed, SEG-Y format.

² shotpoint spacing and CMP fold vary 495'/330' and 8/12 respectively

³ reprocessed in phase I, February 1987

Appendix 2

Detailed list of the input velocity functions applied for migration of the seismic lines (time in milliseconds, interval velocity in m/s):

Total length of lines

1862, 1168, 1169, 1768, 1770, 1762, 1138:

Based upon the velocity spectra at CMP 1451 on Line 1768 (Dundas Peninsula):

Time	Int.Vel.
0	9300
1300	11850
1600	14960
2000	16400
2800	15400
8000	

Total length of lines

1139, 1140, 1141, TPC8, TPC7, TPC2

Based upon the sonic log data from Beverly Inlet G-13

Time	Int.Vel.
0	9300
210	10000
630	8750
860	10780
1100	9300
1430	10800
1700	15400
8000	

Total length of line **1190**

Based upon the sonic log data from Sabine Bay A-07

Time	Int. Vel.
0	
	8800
1000	
	10150
1300	
	14550
2200	
	15400
8000	

Line **1921**

At **CMP 1 and CMP 1250** (constant function between them):

Based upon the velocity spectra at **CMP 1250** on Line 1921:

Time	Int. Vel.
0	
	10600
800	
	10300
1100	
	11200
1500	
	14450
2700	
	15400
8000	

At **CMP 1818** (northern end of the section):

Based upon the sonic log data from Sherard Bay F-34

Time	Int. Vel.
0	
	8550
900	
	11250
1600	
	10850
2100	
	12200
2800	
	15400
8000	

Total length of lines

2145, 2146, 1179

Based upon the sonic log data from Sherard Bay F-34

Time	Int. Vel.
0	
	8550
900	
	11250
1600	
	10850
2100	
	12200
2800	
	15400
8000	

Line **2674**

At **CMP 1** (southern end of the line):

Based upon the velocity spectra at **CMP 1250** on Line 1921:

Time	Int. Vel.
0	
	10600
800	
	10300
1100	
	11200
1500	
	14450
2700	
	15400
8000	

At **CMP 1300** and **CMP 2028** (constant function between them,
on the northern end of the line):

Based upon the sonic log data from Drake Point D-68

Time	Int. Vel.
0	
	8870
900	
	11500
2550	
	14000
3000	
	15400
8000	

Line **1920**

At **CMP 1** (south-eastern end of the line):

Based upon the velocity spectra at **CMP 1250** on Line 1921:

Time	Int. Vel.
0	10600
800	10300
1100	11200
1500	14450
2700	15400
8000	

At **CMP 905** (approximate intersection with line 2145):

Based upon the sonic log data from Sherard Bay F-34

Time	Int. Vel.
0	8550
900	11250
1600	10850
2100	12200
2800	15400
8000	

At **CMP 1625** and **CMP 1926** (constant function between them, north-western end of the line):

Based upon the sonic log data from Chads Creek B-64

Time	Int. Vel.
0	7680
600	9450
1000	12100
1500	14500
2000	11800
2600	15400
8000	

Total length of line **1180**

Based upon the sonic log data from Drake Point D-68

Time	Int. Vel.
0	8870
900	11500
2550	14000
3000	15400
8000	

Appendix 3

Velocity data from sonic log measurements in selected boreholes:

Drake-Point D-68 $\Delta h = 44.2$ m $\Delta t_0 = 0.025$ s

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		3000		
900	1300	3900	2900	3000
2550	4600	4750	3600	3690
2900	5450		3760	4200

Sherard Bay F-34 $\Delta h = 72.0$ m $\Delta t_0 = 0.041$ s

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		2900		
900	1260	3800	2800	2900
1600	2580	4700	3220	3320
2100	3670	5300	3500	3700
2800	5550		4000	4160

Winter-Harbour No. 1 A-09 $\Delta h = / 27.4 \text{ m}$ $\Delta t_0 = 0.013 \text{ s}$

t_0 (ms)	h (m)	v_{int} (m/s)
0	0	
		3581
750	1341	3810
1310	2408	4694
1530	2926	5547
1750	3536	6767
1850	3810	

King Point West B-53 $\Delta h = 236.8 \text{ m}$ $\Delta t_0 = 0.125 \text{ s}$

t_0 (ms)	h (m)	v_{int} (m/s)
0	0	
		3139
100	152	3597
300	518	3962
510	945	6096
840	1951	5547
980	2347	6096
1040	2530	5547
1100	2697	6767
1320	3109	

Sabine Bay A-07 $\Delta h = 147.5 \text{ m}$ $\Delta t_0 = 0.077 \text{ s}$

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		3350		
1000	1680		3350	3350
		4420		
1280	2286		3570	3610
		6340		
2190	5180		4730	4930

Beverly Inlet G-13 $\Delta h = 179.0 \text{ m}$ $\Delta t_0 = 0.094 \text{ s}$

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		4060		
210	430		4060	4060
		4350		
630	1340		4250	4257
		3810		
856	1770		4140	4140
		4700		
1069	2270		4250	4260
		6100		
1103	2680		4860	4502
		4060		
1433	3350		4680	4410
		4700		
1693	3960		4680	4455
		6800		
1721	4054		4710	4500

Dundas N-82 $\Delta h = 228.0$ m $\Delta t_0 = 0.121$ s

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		4000		
1375	2750		4000	4000
		4760		
1460	2950		4040	4050
		6700		
1475	3500		4750	4090
		5600		
1490	3950		5300	4105
		7150		
1500	4100		5470	4130

Marryatt K-71 $\Delta h = 90.5$ m $\Delta t_0 = 0.044$ s

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		2600		
700	980		2800	2600
		3400		
1100	1650		3000	2900
		4200		
2600	4700		3600	3700
		5000		
2900	5450		3750	3870

Weatherall O-10 $\Delta h = 157.9$ m $\Delta t_0 = 0.084$ s

t_0 (ms)	h (m)	v_{int} (m/s)
0	0	
		3050
220	335	3810
490	853	4054
700	1280	5852
980	2103	5090
1060	2286	

Chads Creek B-64 $\Delta h = 79.9$ m $\Delta t_0 = 0.047$ s

t_0 (ms)	h (m)	v_{int} (m/s)	v_{av} (m/s)	v_{RMS} (m/s)
0	0			
		2600		
600	800	3200	2700	2600
1000	1430	4100	2900	2850
1500	2440	4900	3250	3320
2000	3640	4000	3650	3780
2400	4470	5000	3720	3820
2600				3920

MELVILLE ISLAND

Scale = 1 : 2,000,000

Reflection travel times Top of the 'Proterozoic' events

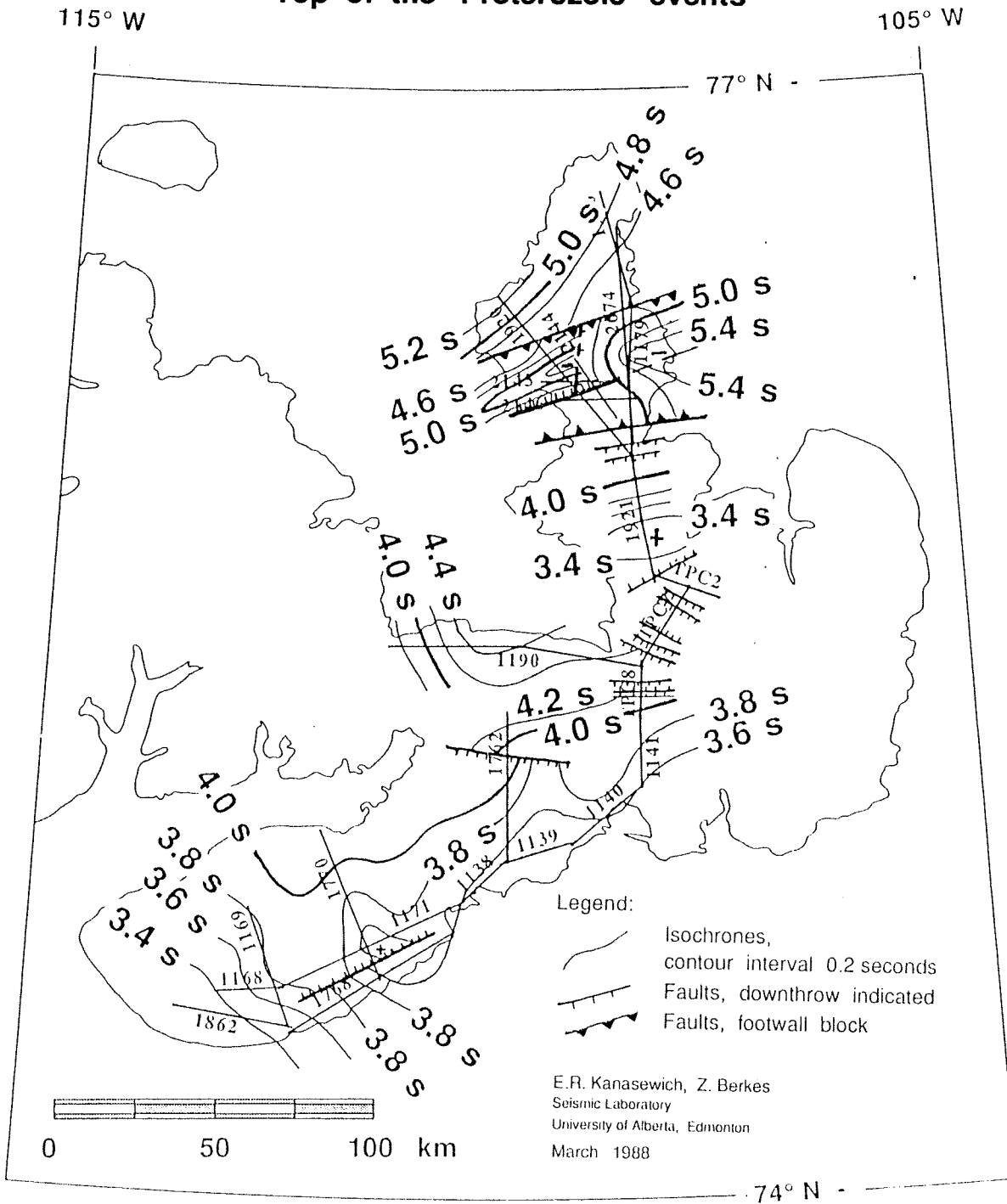


Figure 7

Figure 8. Code to Seismic Reflection Horizons on Melville Island

Period and Formation	Code	Symbol	Period and Formation	Code	Symbol
Cretaceous					
Christopher: Cr-Ch	5% 0.6 Solid	.....	Isachsen Cr : Is	5% 1.0 Solid	.....
Jurassic					
Mould Bay: J MB	5% 2 Solid	.....	Shei Point: J SP	60% 1 Solid	.....
Triassic					
Bjorne: Tr Bj	60% 2 Solid	.....	Tr 2	5% 2 Solid	.....
Permian					
Trold Fiord: P TF	40% 4 Solid	.....	Degerbois: P De	100% 0.0 Solid	.....
Belcher Channel : P BC	40% 2 Solid	.....	Van Hauen: P VH	40% 3 Solid	.....
Carboniferous					
Devonian					
Beverly Inlet: D BI	5% 0.6 Dash 5 2	.....	Weatherall: D We	5% 1 Dash 5 2	.....
Cape de Bray: D CdB	60% 0.6 Dash 5 2	.....	Blue Bjord: D BF	60% 1 Dash 5 2	.....
Eids, D 1 : D Ei	60% 2 Dash 5 2	.....	Reef	5% 4 Dash 5 2	.....
Ordovician					
Irene Bay: Or IB	5% 3 Dash 5 2	.....	Thumb Mt Or TM	40% 2 Dash 5 2	.....
Bay Fjord: Or BF	40% 3 Dash 5 2	.....	Eleanor R.:Or ER	5% 4 Dash 5 2	.....
Or 2	5% 3 Dash 5 2	.....	Or 3	5% 4 Dash 5 2	.....
Cambrian					
Camb 1 C1	60% 3 Dash 3 2	.....	C 2	60% 2 Dash 3 2	.....
C3	60% 1 Dash 3 2	.....	C 4	60% 0.6 Dash 3 2	.....
Precambrian Proterozoic					
PC Unc Pr1	60% 4 Solid	.....	PC Pr2	60% 3 Solid	.....
PC Pr3	60% 2 Solid	.....	PC Pr4	60% 1 Solid	.....
Unconformity 2	40% 3 Dash 5 7 R	.....	Unconformity 3	60% 3 Dash 5 7 R	.....
ARCHEAN (Crystalline Basement?)?					
Ar	40% 4 Dash 7 5	.....	Ar 2	40% 3 Dash 7 5	.....
Faults		100 % 1 Solid			

Arctic Canada

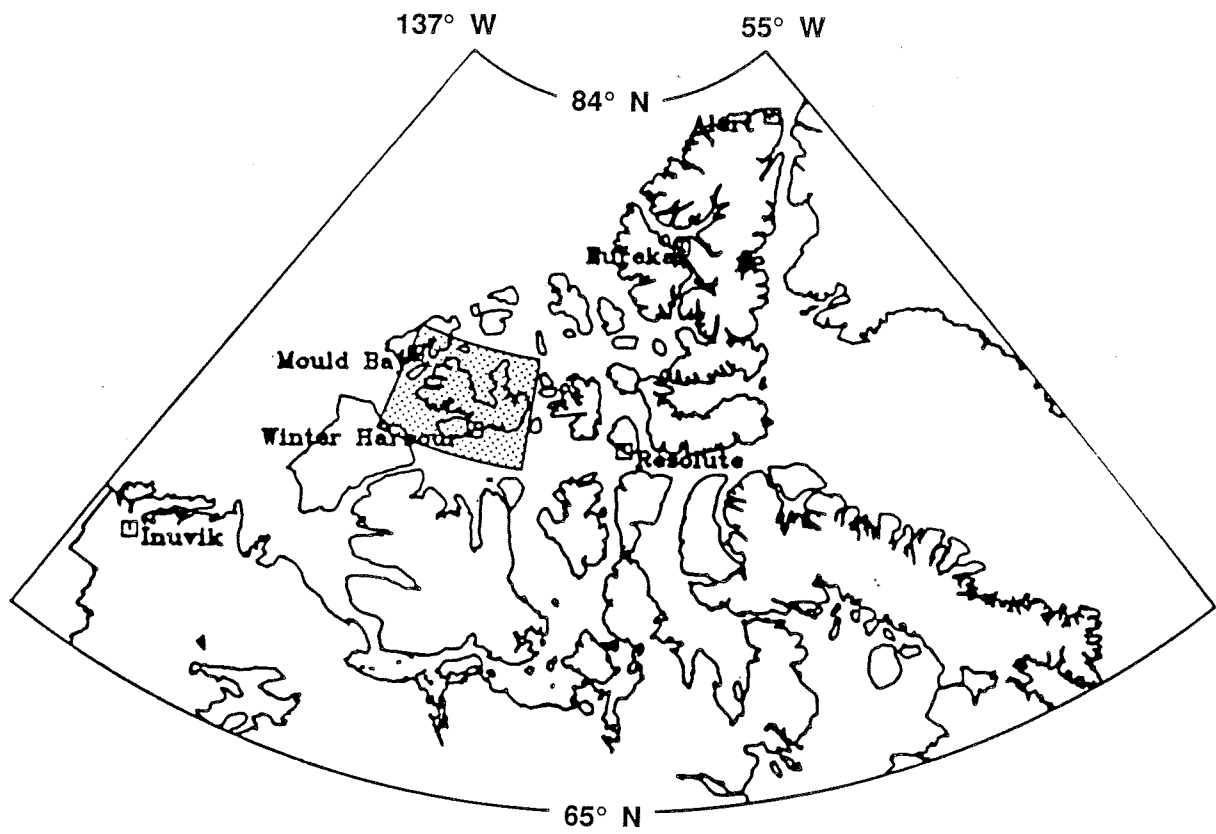


Figure 1

MELVILLE ISLAND

Scale = 1 : 2,000,000

Location map of seismic lines

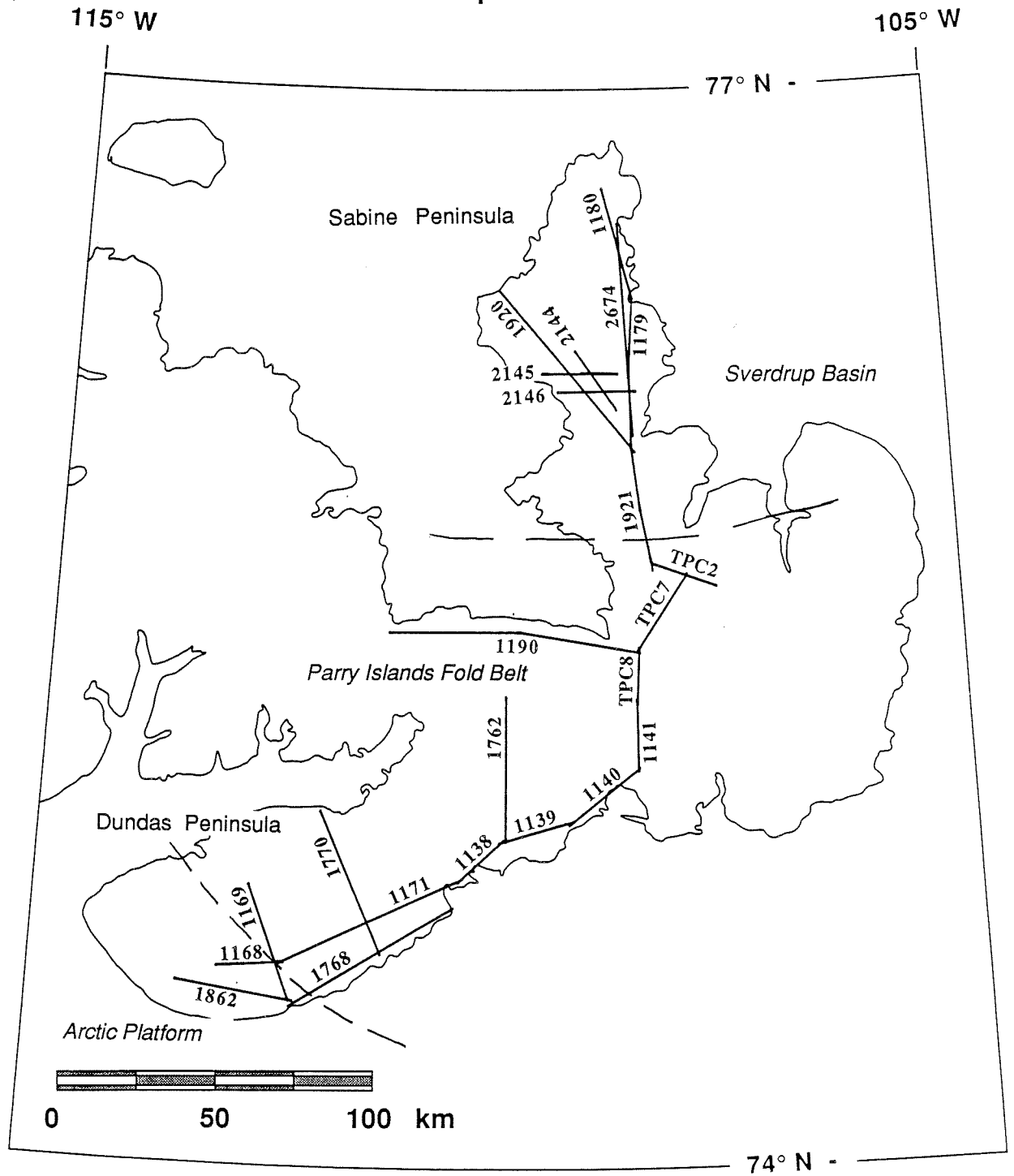


Figure 2

Melville Island

Bouguer anomaly gravity map

August 1987



E.R. Kanasewich, Z. Berkes and C. McCloughan
 Seismic Laboratory, Geophysics
 Department of Physics, University of Alberta
 Edmonton, Alberta

Data from
 Department of Energy, Mines and Resources
 &
 Panarctic Oils, Ltd.

Contour interval: 2.0 mGal (20 μs^{-2})

- gravity low
- gravity high
- seismic line

Station locations with accuracy of data:

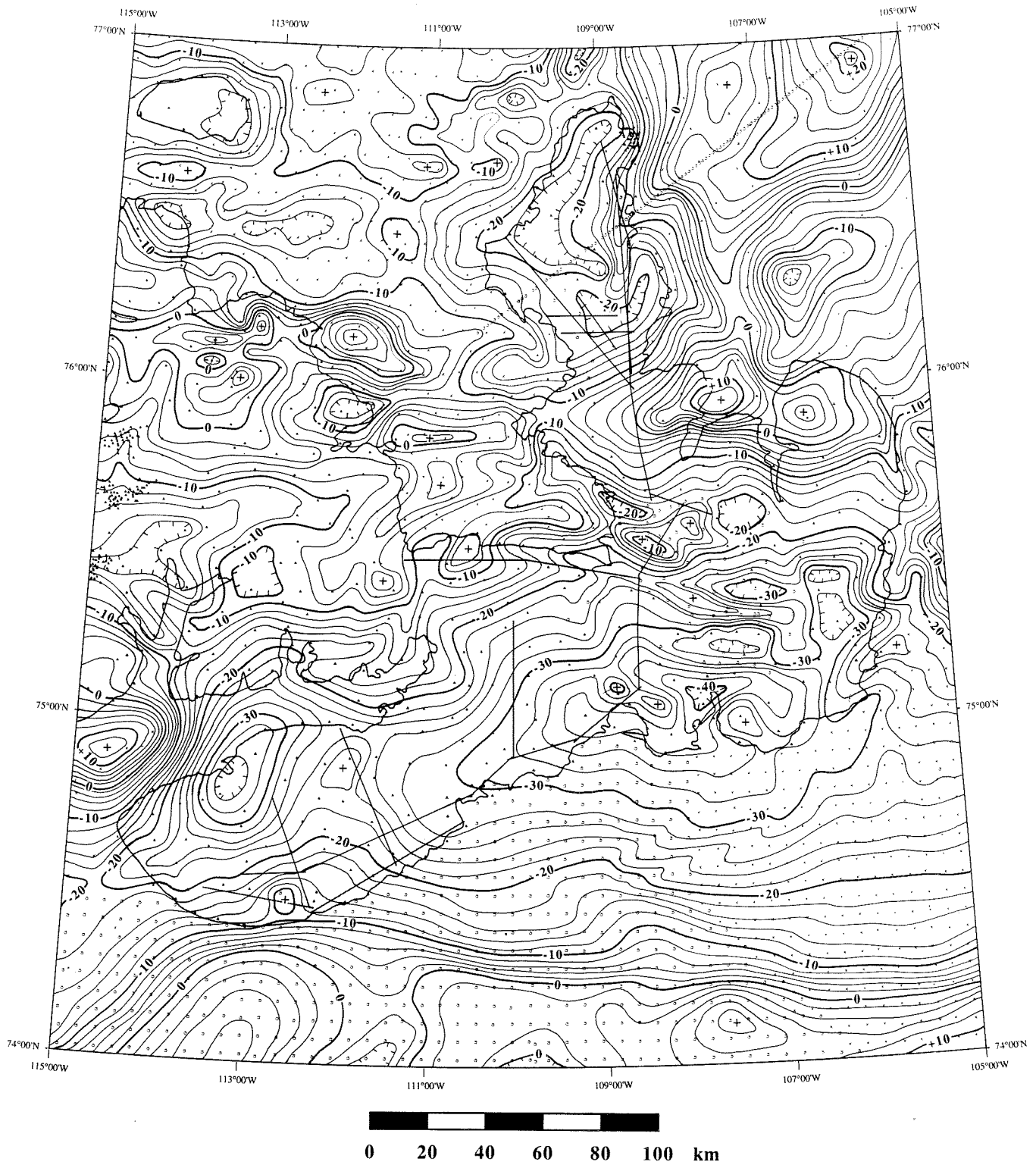
- x ± 1 mGal
- Δ ± 3 mGal
- o unknown

37

Melville Island

Bouguer anomaly gravity map

August 1987



E.R. Kanasevich and Z. Berkes
 Seismic Laboratory, Geophysics
 Department of Physics, University of Alberta
 Edmonton, Alberta

Data from
 Department of Energy, Mines and Resources
 &
 Panarctic Oils, Ltd.

Contour interval: 2.0 mGal ($20 \mu\text{ms}^{-2}$)
 gravity low
 gravity high
 seismic line

Station locations with accuracy of data:
 x ± 1 mGal
 Δ ± 3 mGal
 o unknown

Figure 4

MELVILLE ISLAND

Scale = 1 : 2,000,000

Location map of seismic lines
and main velocity information

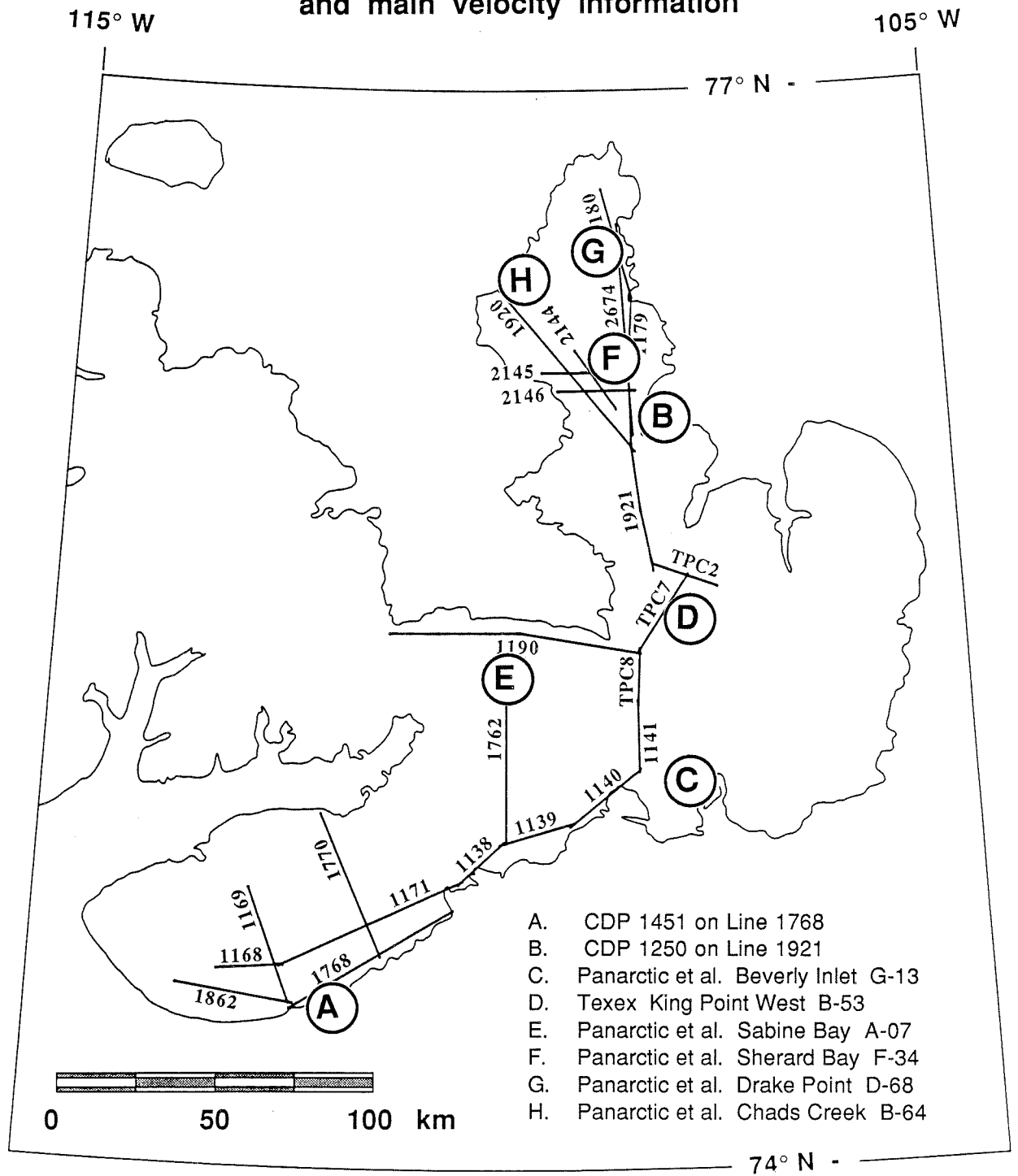


Figure 5

MELVILLE ISLAND

Scale = 1 : 2,000,000

Two-way travel-time isochrones
at constant depth of 5 km

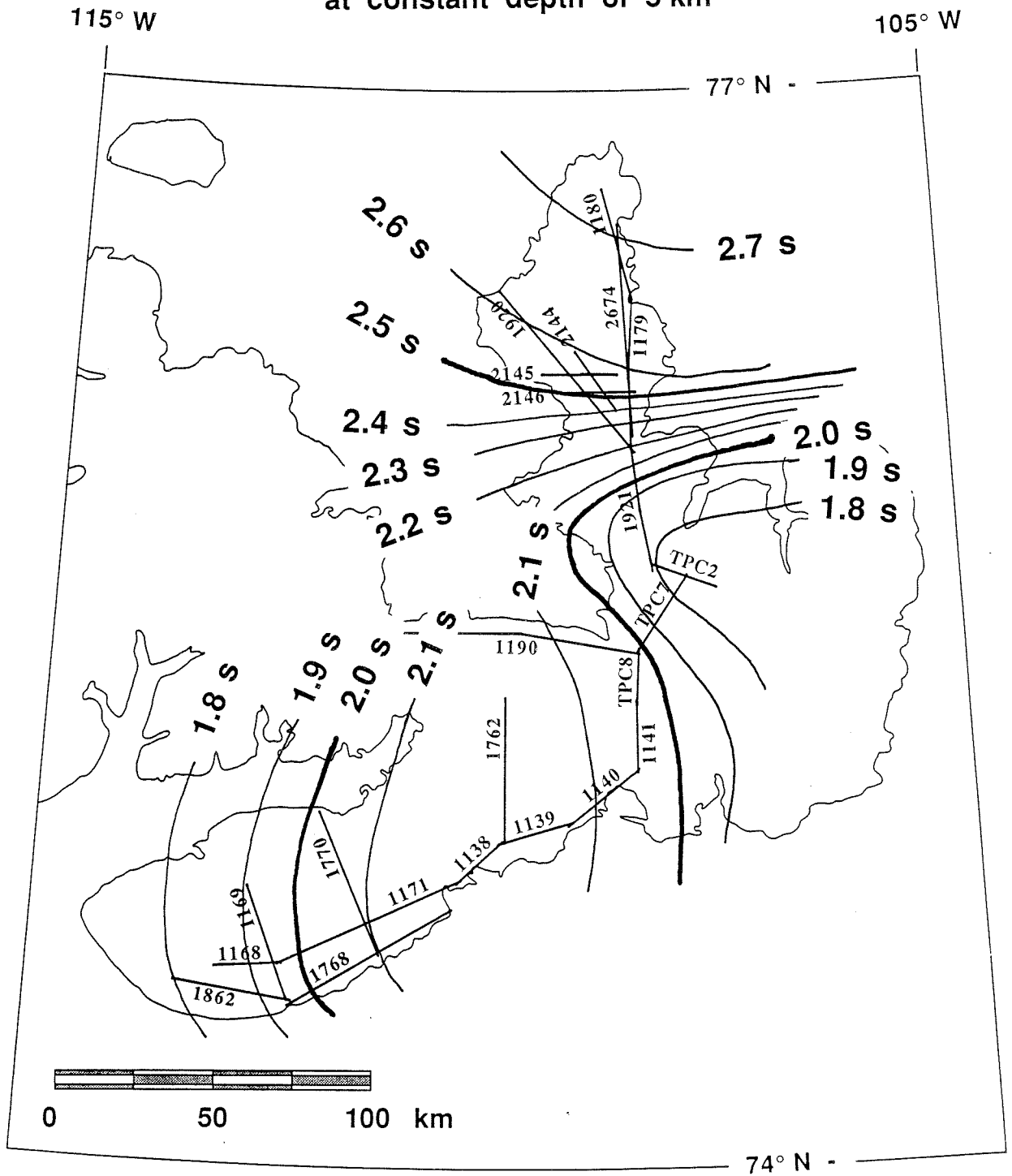
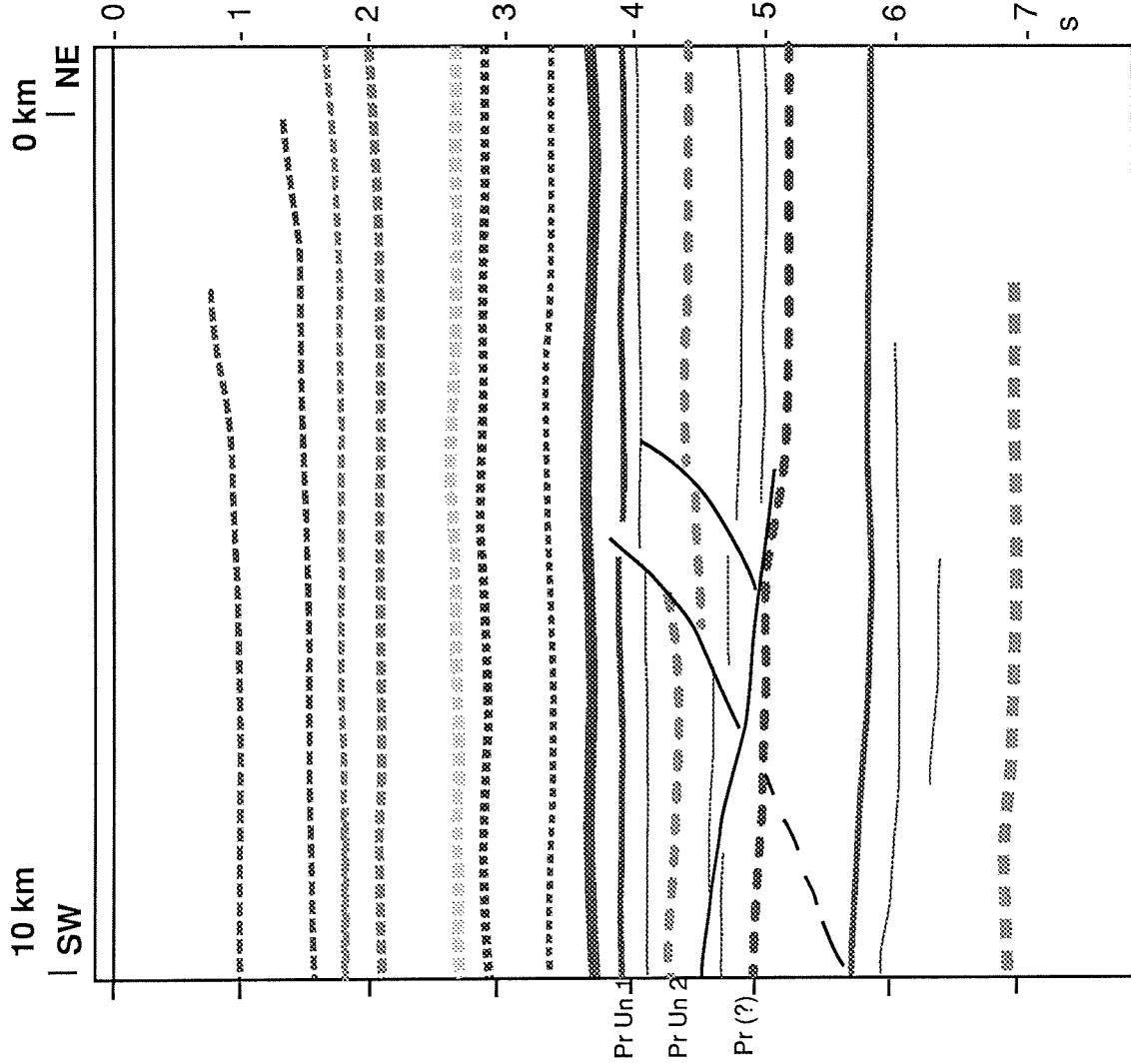
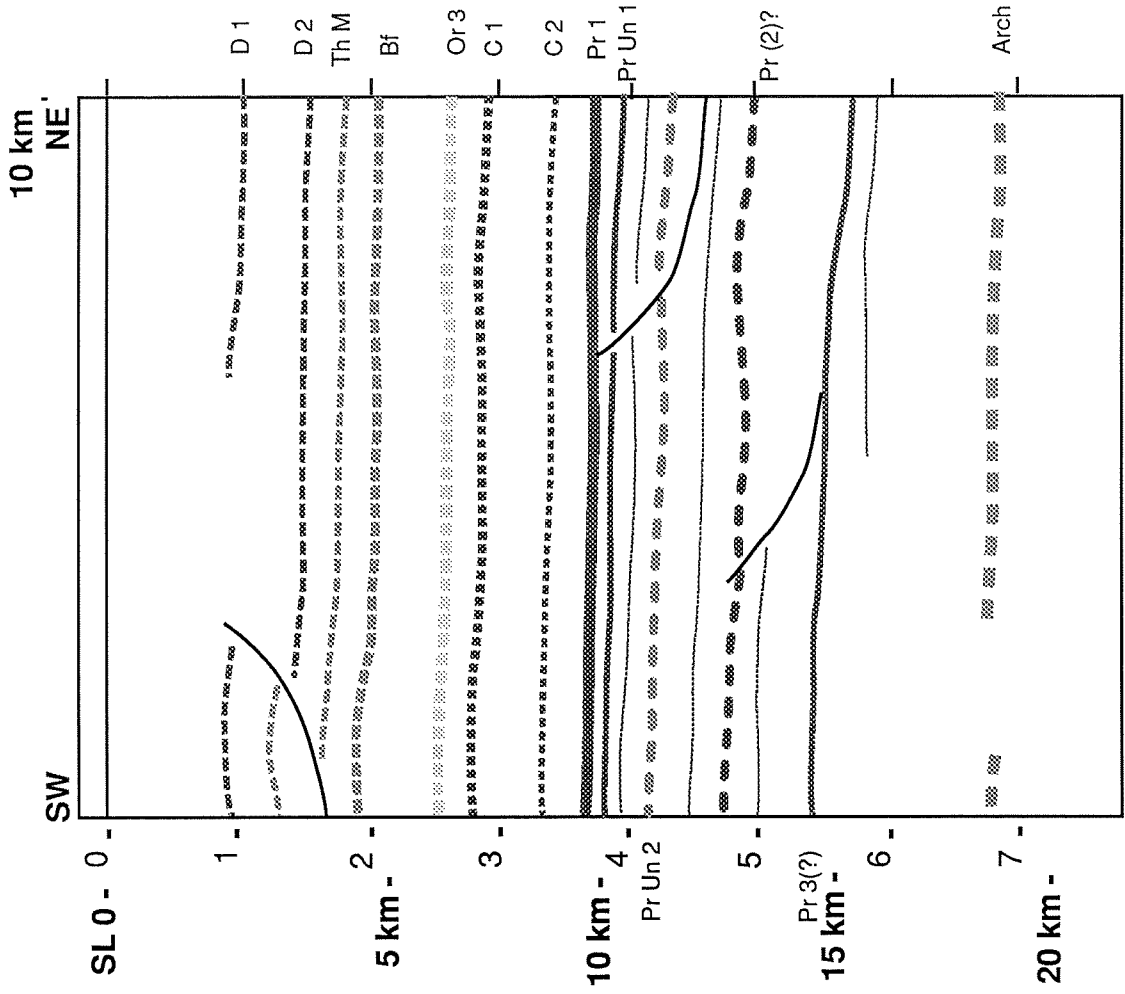


Figure 6



Melville Is. Line 1138/1

U of A - zb/erk



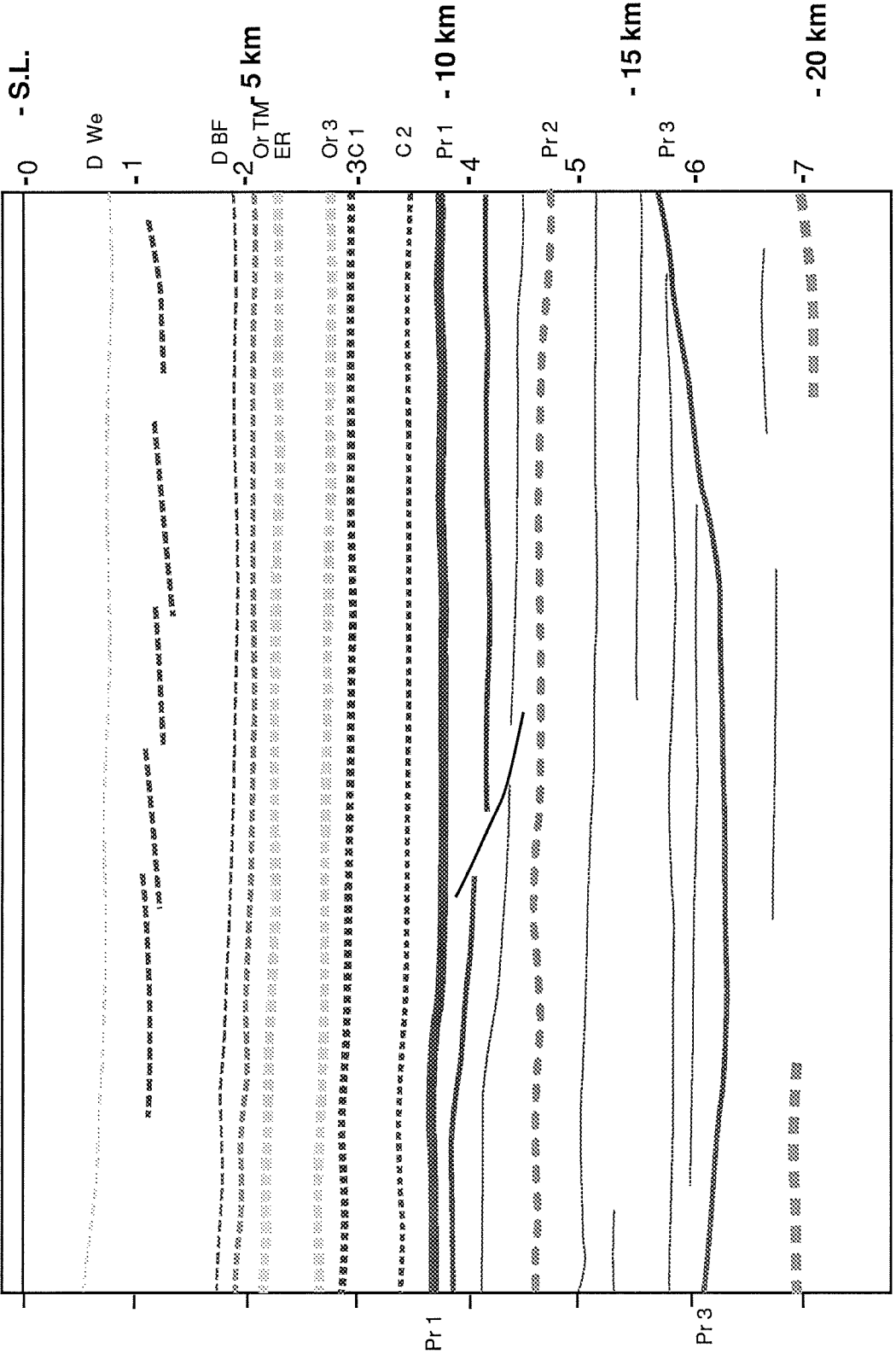
Melville Is. Line 1138/2 U of A - zb/erk

10 km

0 km

W

E



Melville Is. Line 1139/1

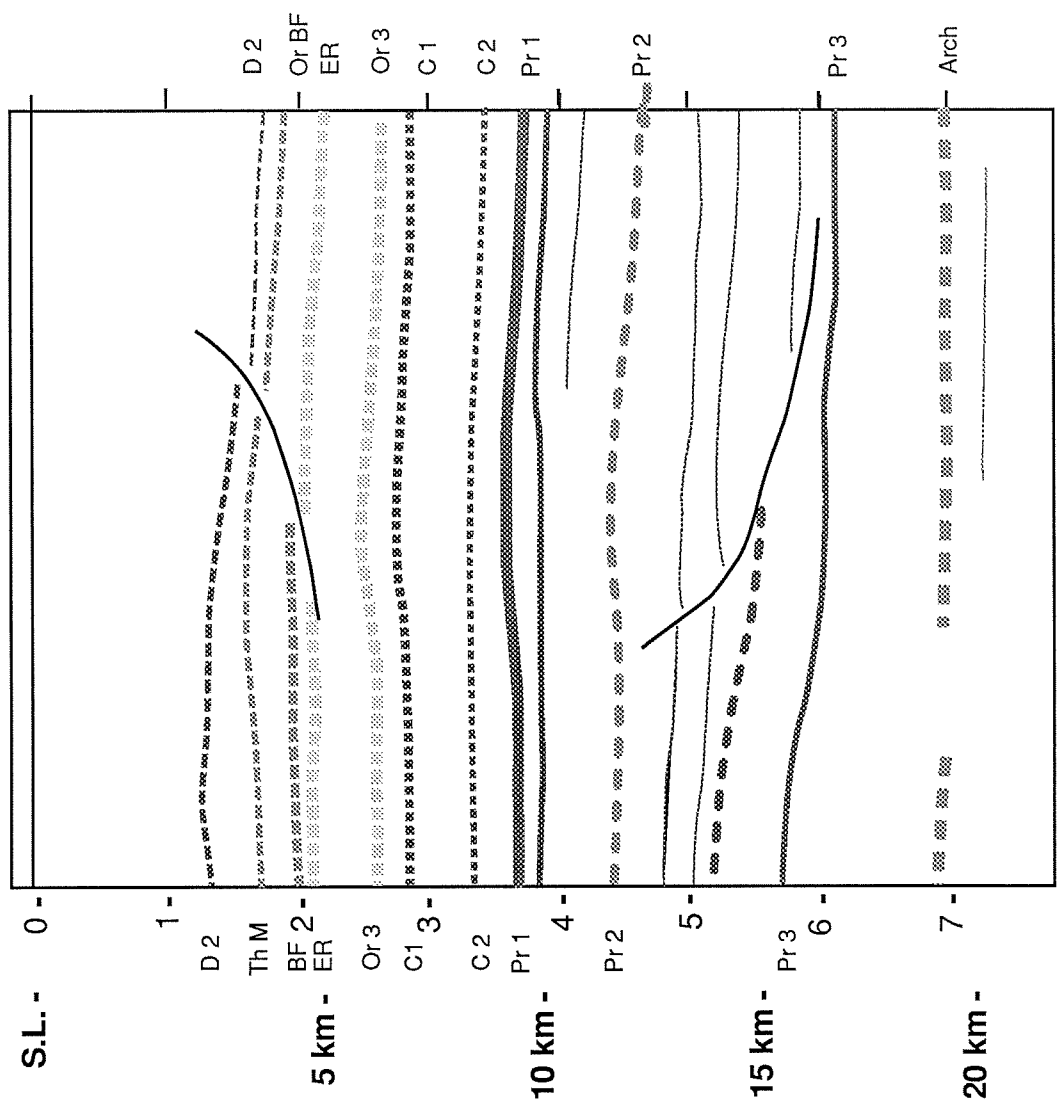
U of A - zb/erik



20 km

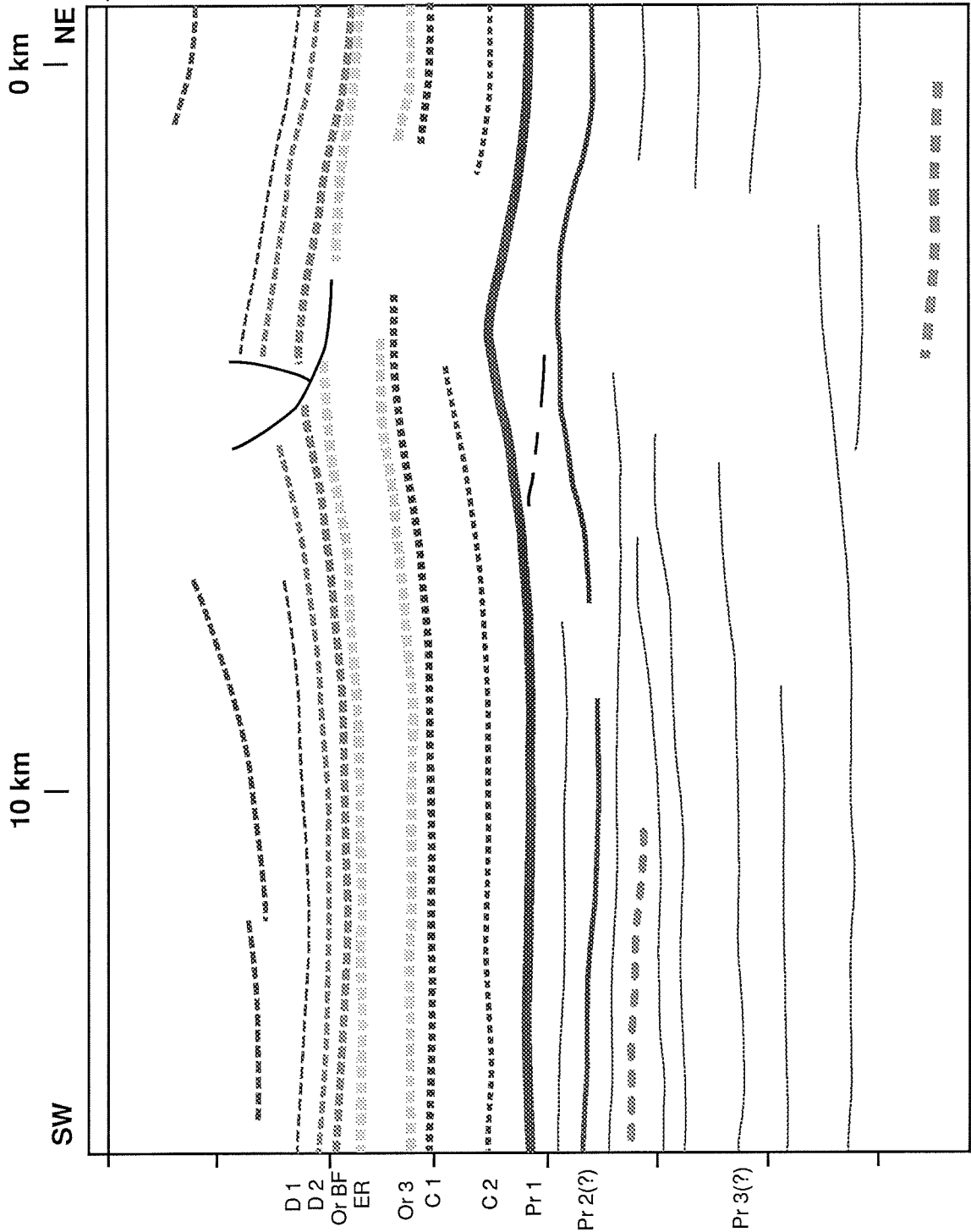
E

W



Melville Is. Line 1139/2

U of A - zb/erk



U of A -zb/erik

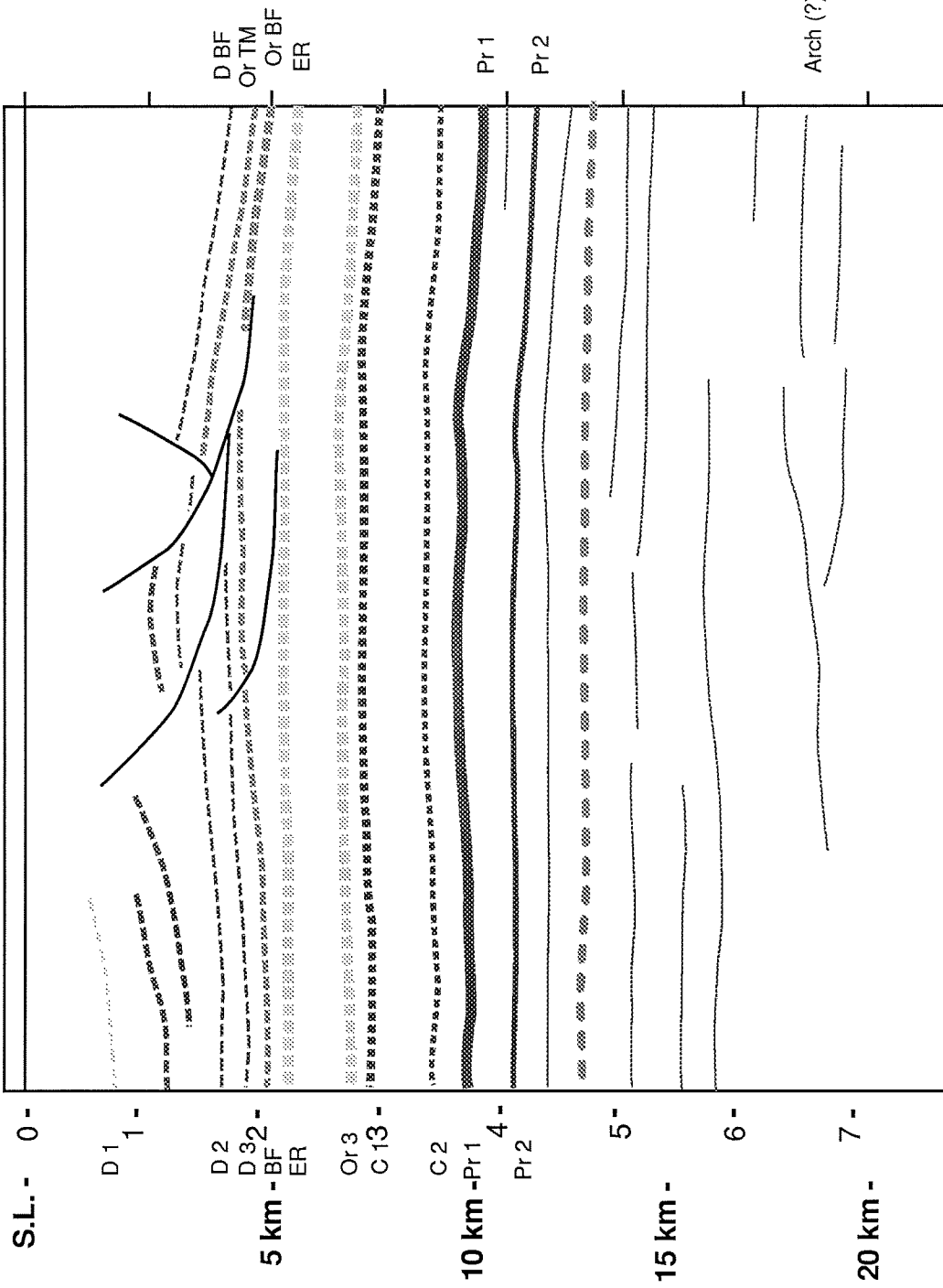
Melville Is. Line 1140/1



20 km

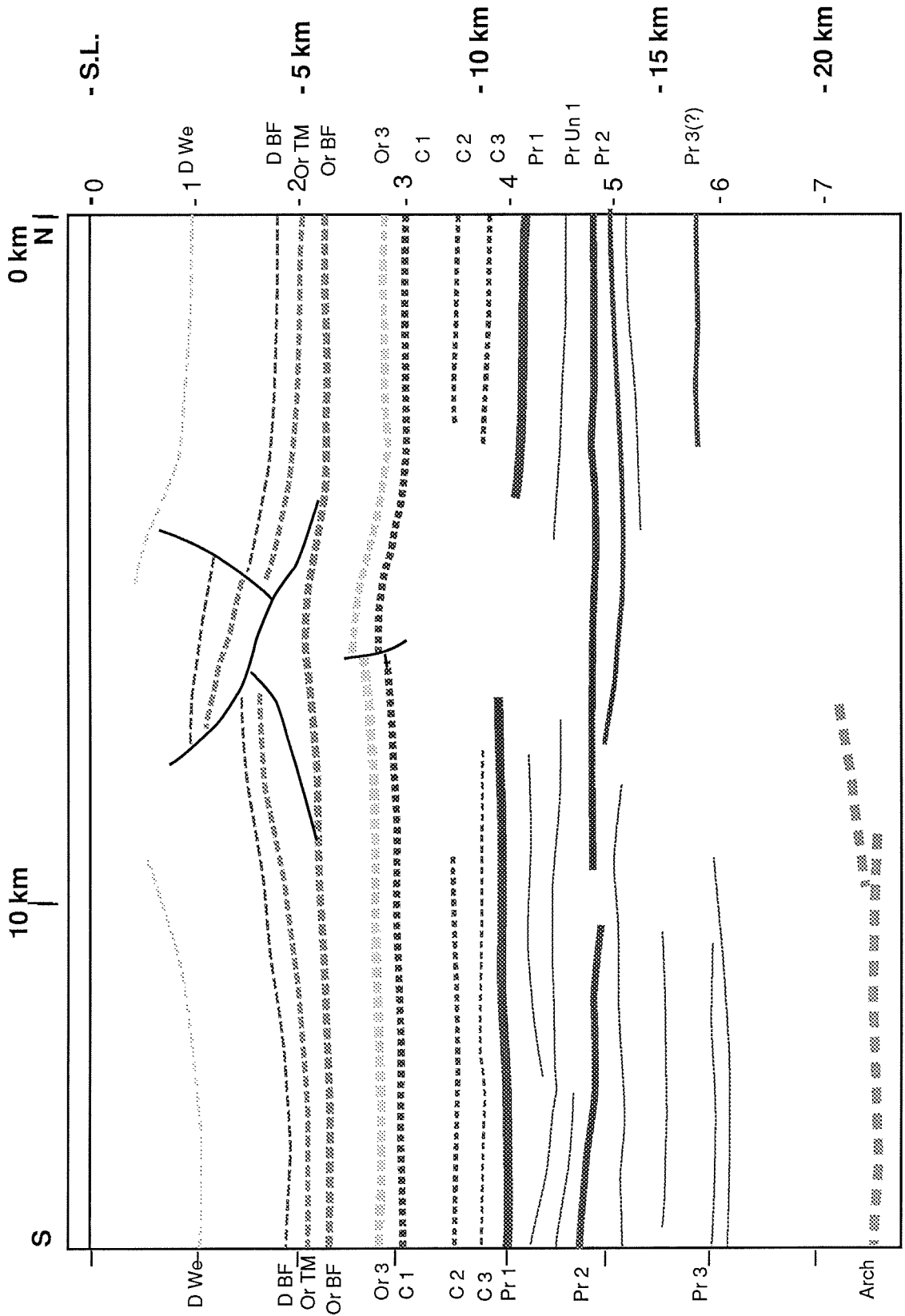
NE

SW



Melville Is. Line 1140/2

U of A - zb/erik

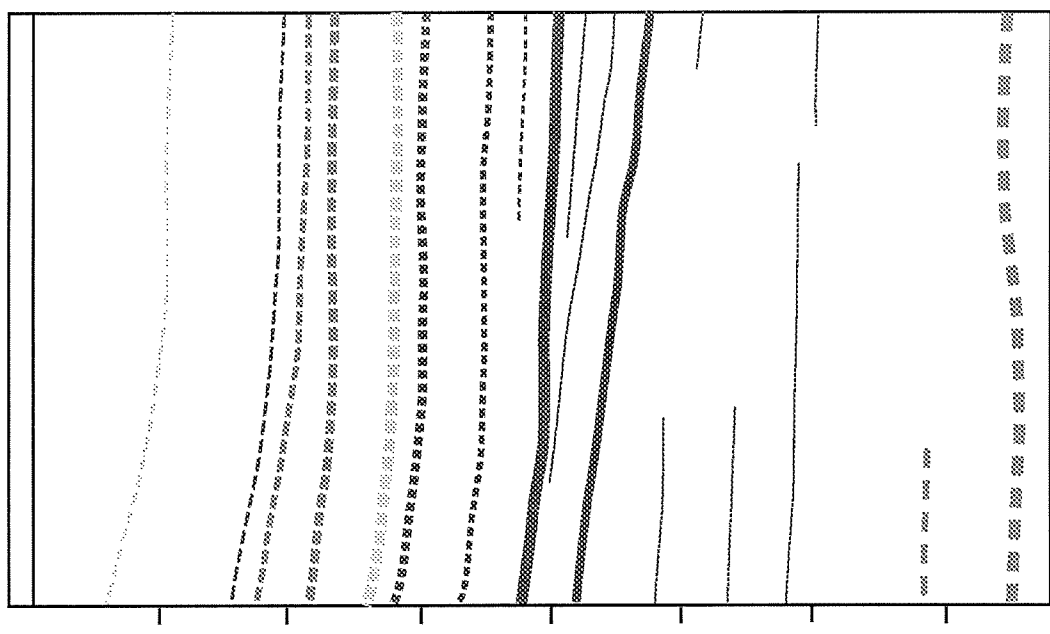


U of A - zb/erik

Melville Is. Line 1141/1

20 km

N



S.L. -

5 km -

10 km -

15 km -

20 km -

Melville Is. Line 1141/2

U of A - zbl/erk

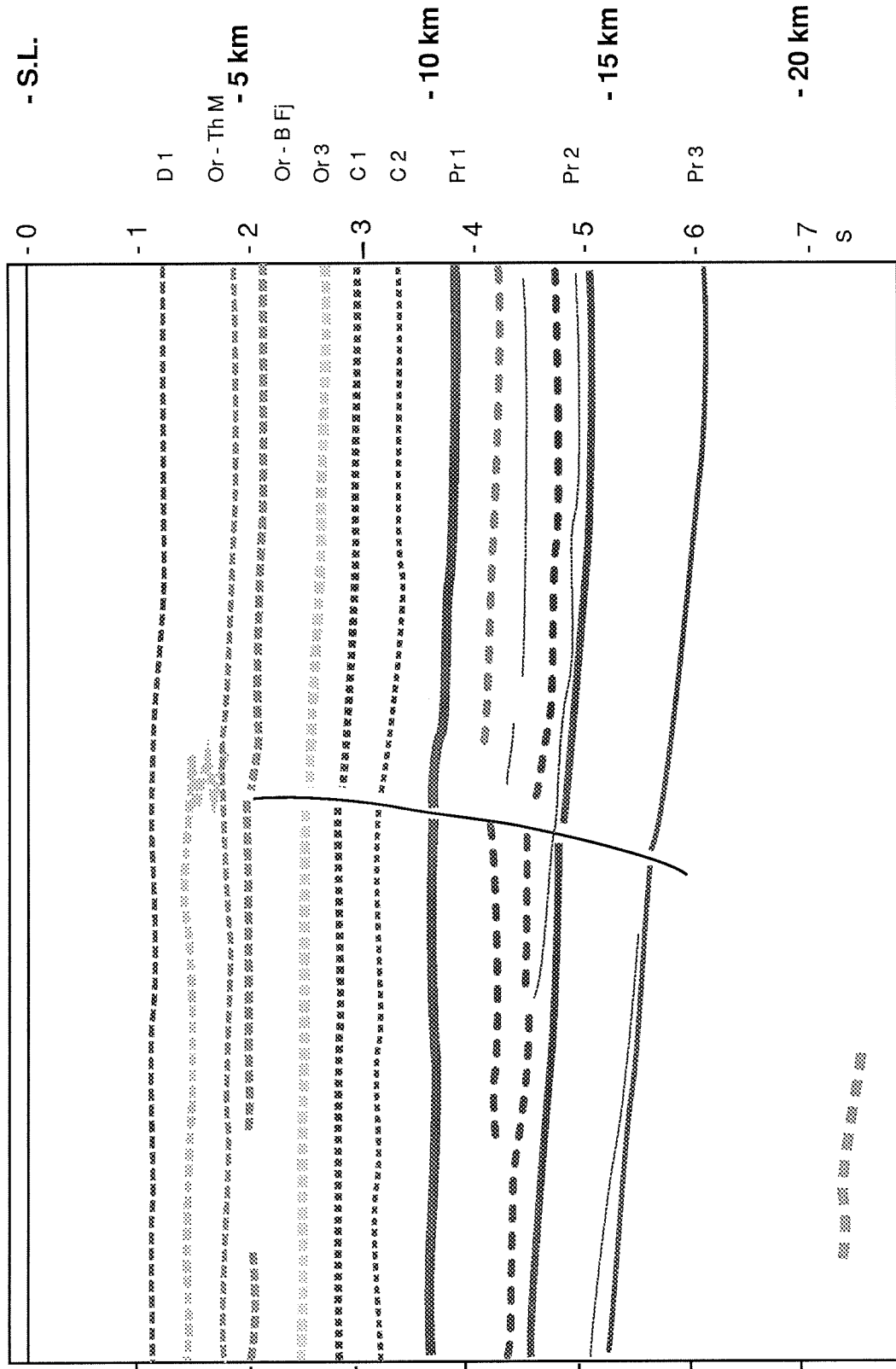


0 km

10 km

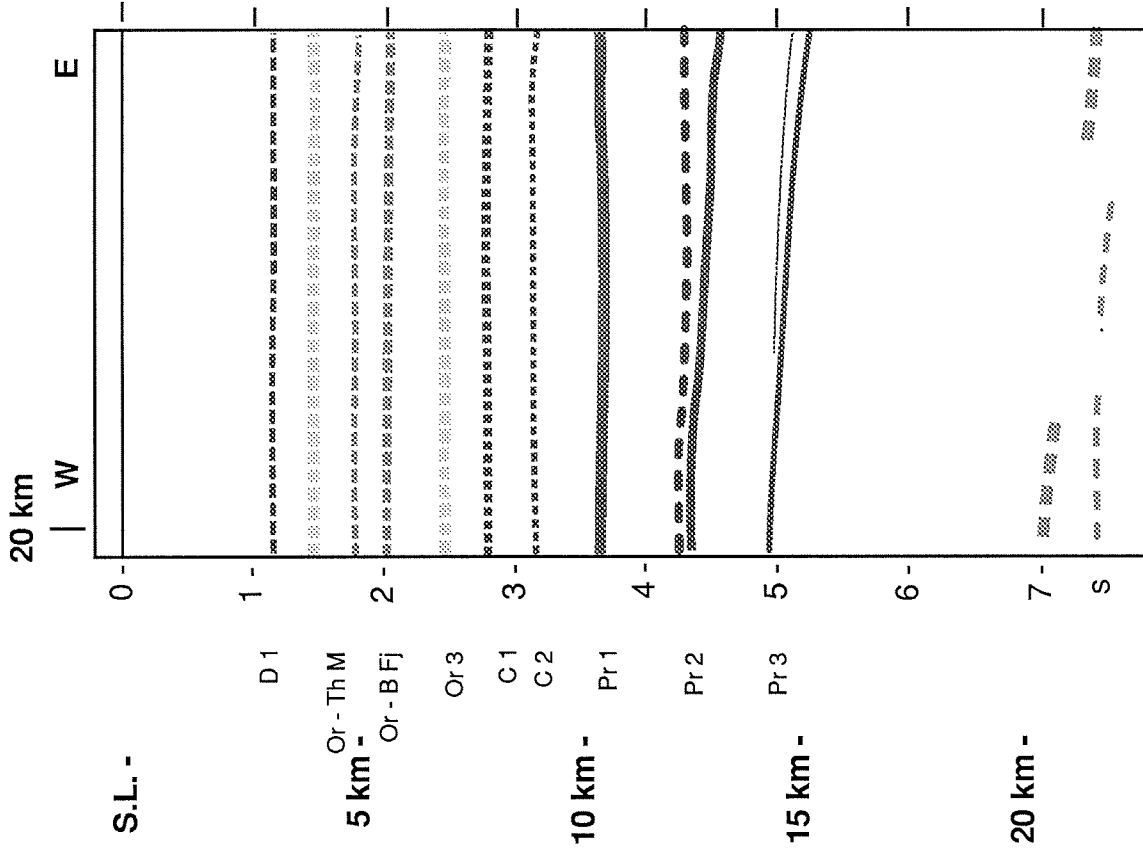
W

E



U of A - zb/erk

Melville Is. Line 1168 / 1

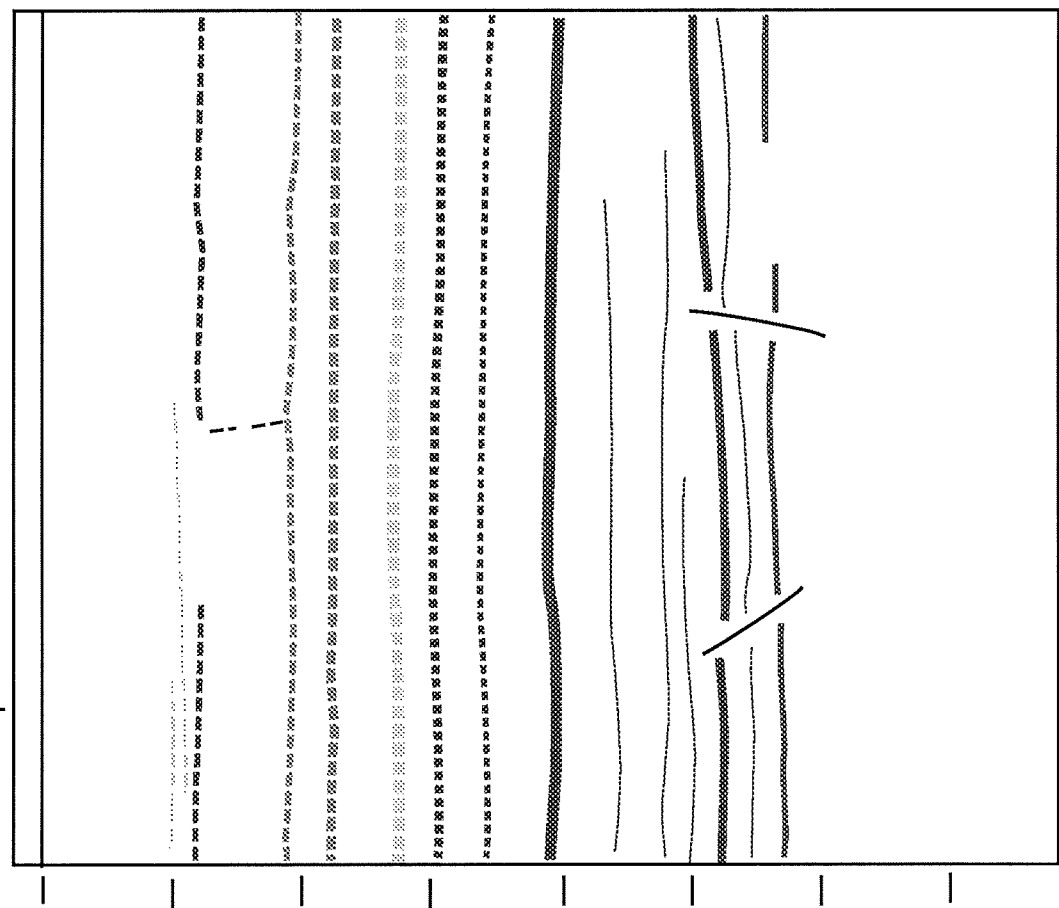


Melville Is. Line 1168 / 2 U of A - zberik



NW

30 km



- 0 - S.L.

- 1 D - Eids

- 2 - 5 km
Or - Th M
Or - B Fj

Or3

- 3 C 1

- 4 - 10 km
C2
Pr 1

Pr 2

- 5 - 15 km
Pr 3

- 6

- 7 - 20 km

S

Melville Is. Line 1169 / 1

U of A - zb/erk



10 km

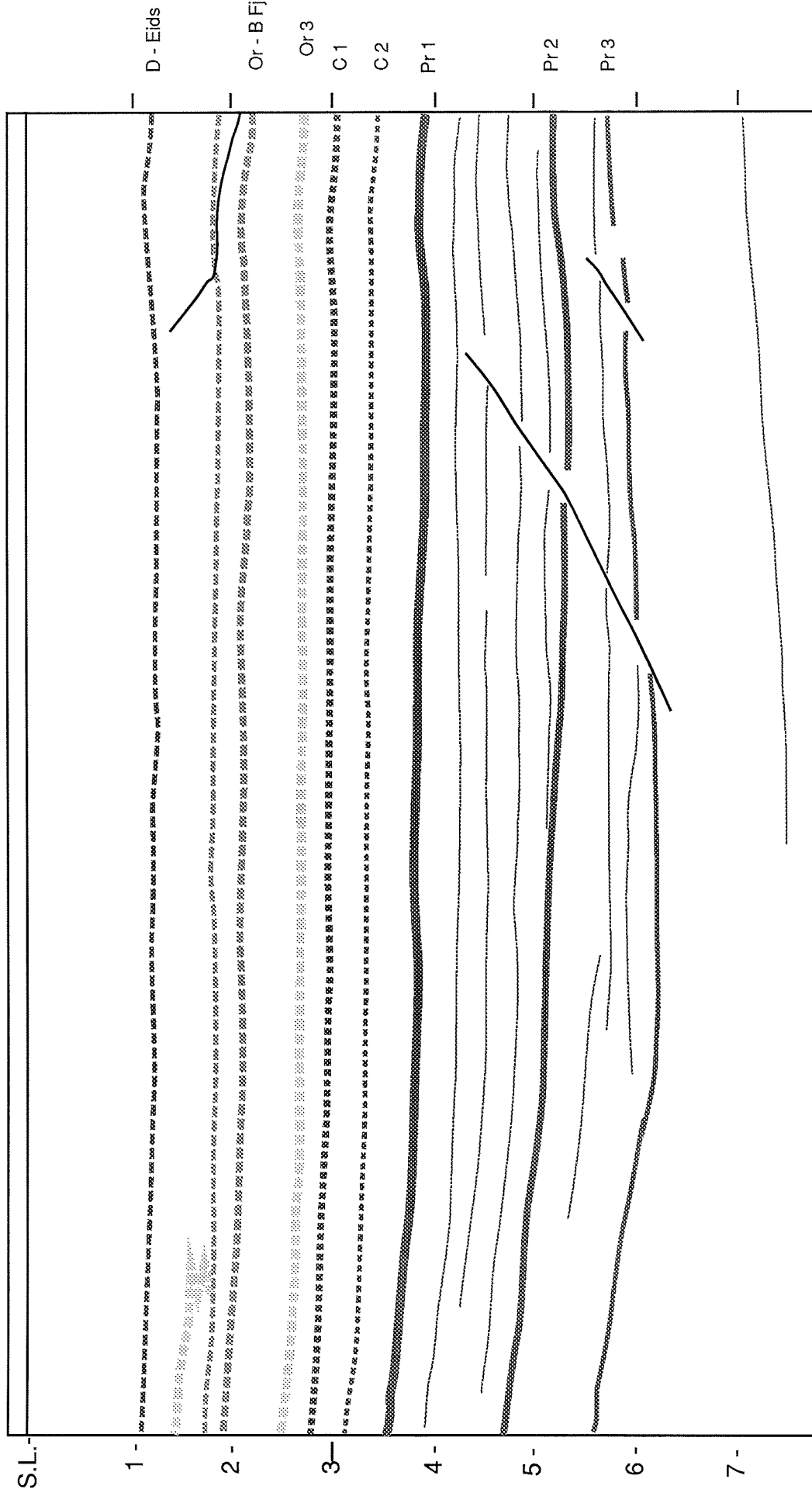


20 km



NW

SE



U of A - zb/erk

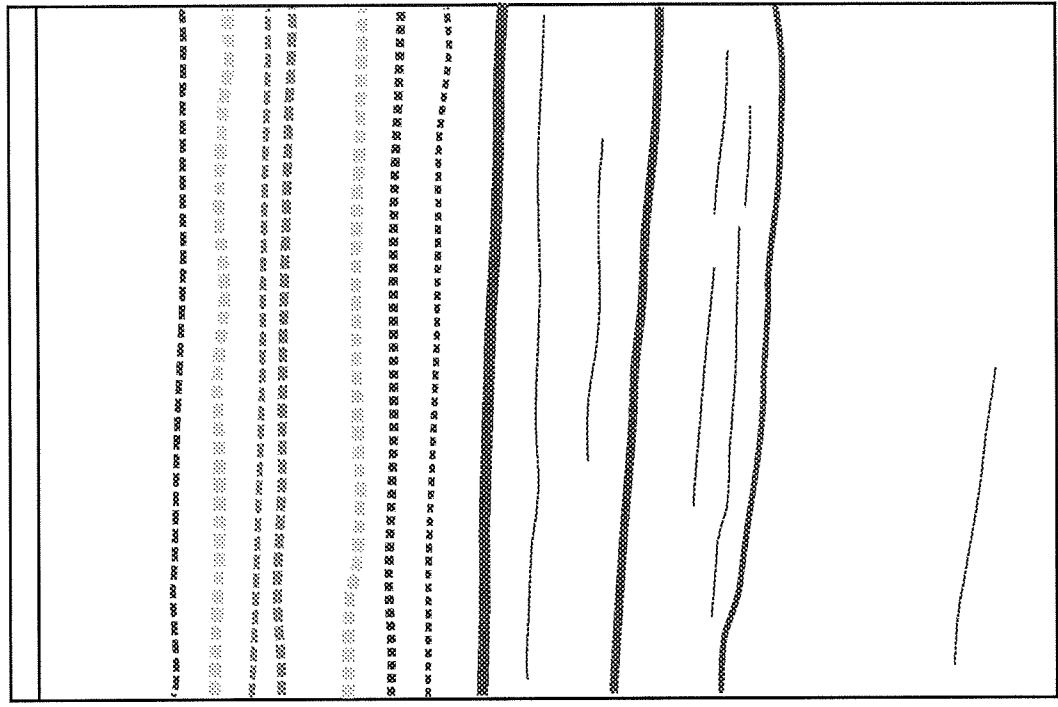
Melville Is. Line 1169 / 2



0 km

SE

NW



S.L. -

D - Eids

Or - Th M

5 km - Or - B Fj

Or 3

C 1

C 2

Pr 1

10 km -

Pr 2

15 km - Pr 3

20 km -

Melville Is. Line 1169 / 3

U of A - zb/erk

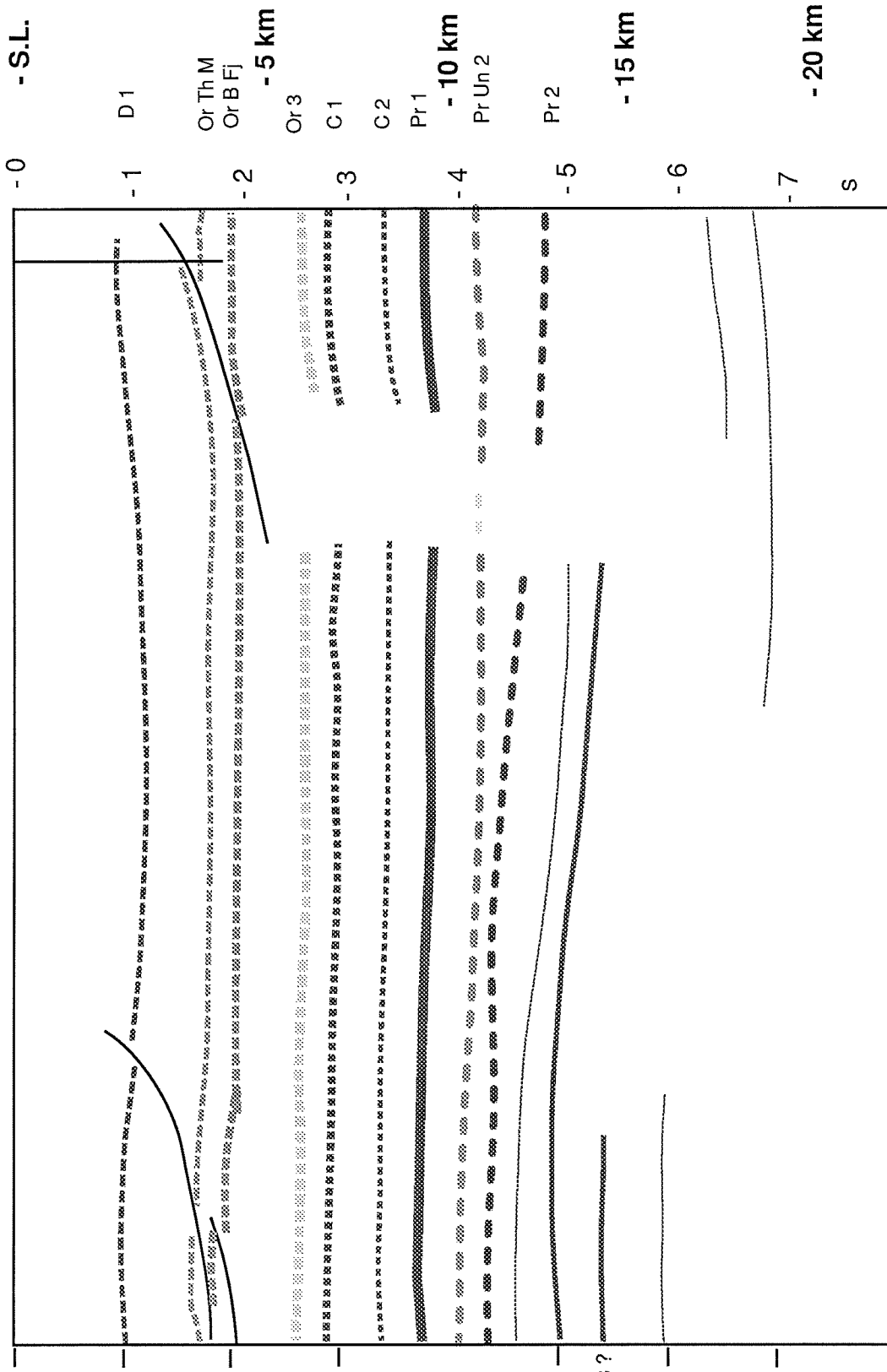


10 km

0 km

SW

NE



-0 -S.L.

D1

Or Th M
Or B Fj

-5 km

Or 3

C1

C2

Pr 1

-10 km

Pr Un 2

Pr 2

-15 km

-6

-7

S

Pr 3?

Melville Is. Line 1171 / 1

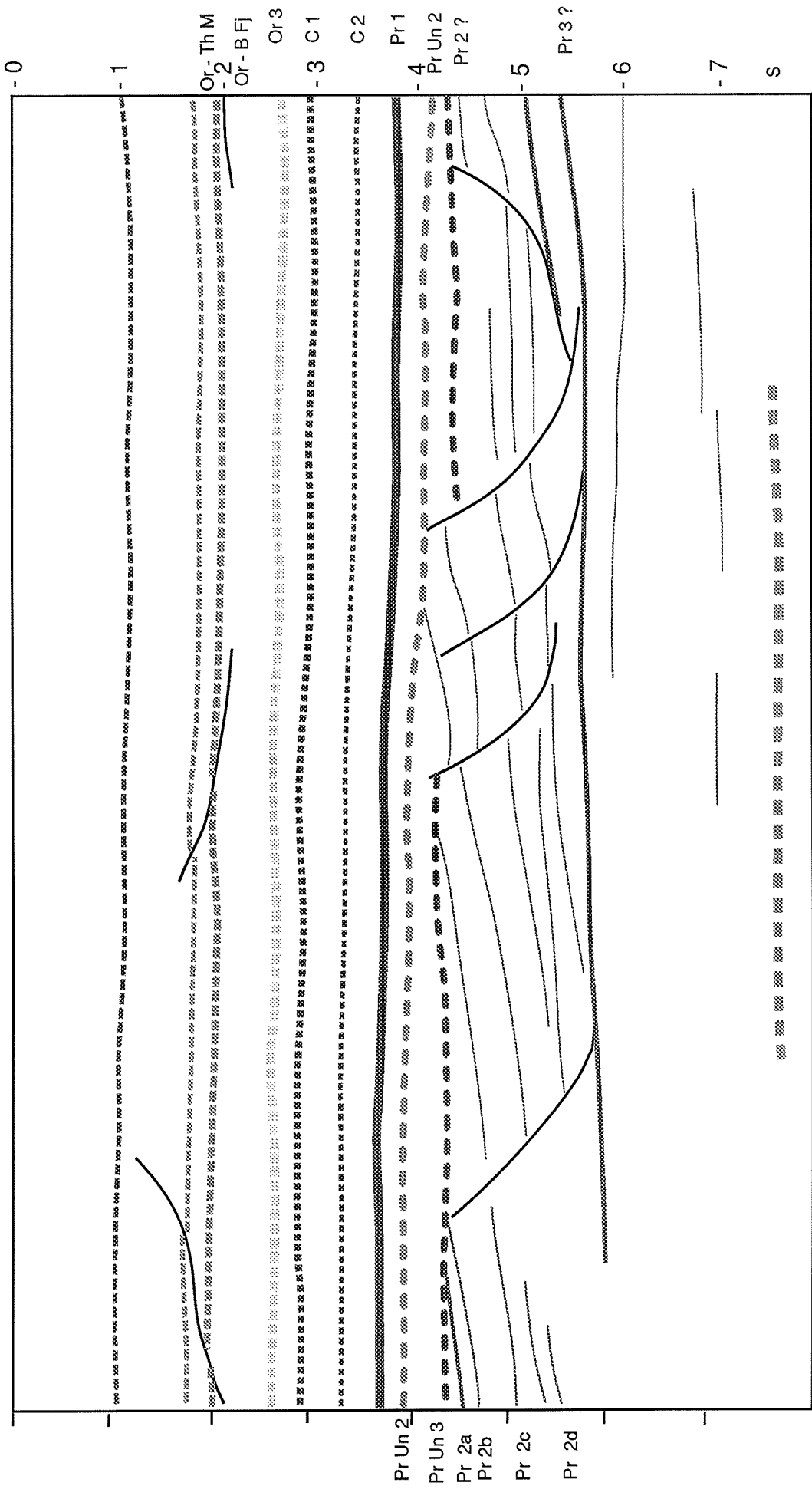
U of A - zb/eik

30 km

20 km

SW

NE



Melville Is. Line 1171 / 2

U of A - zb/erk



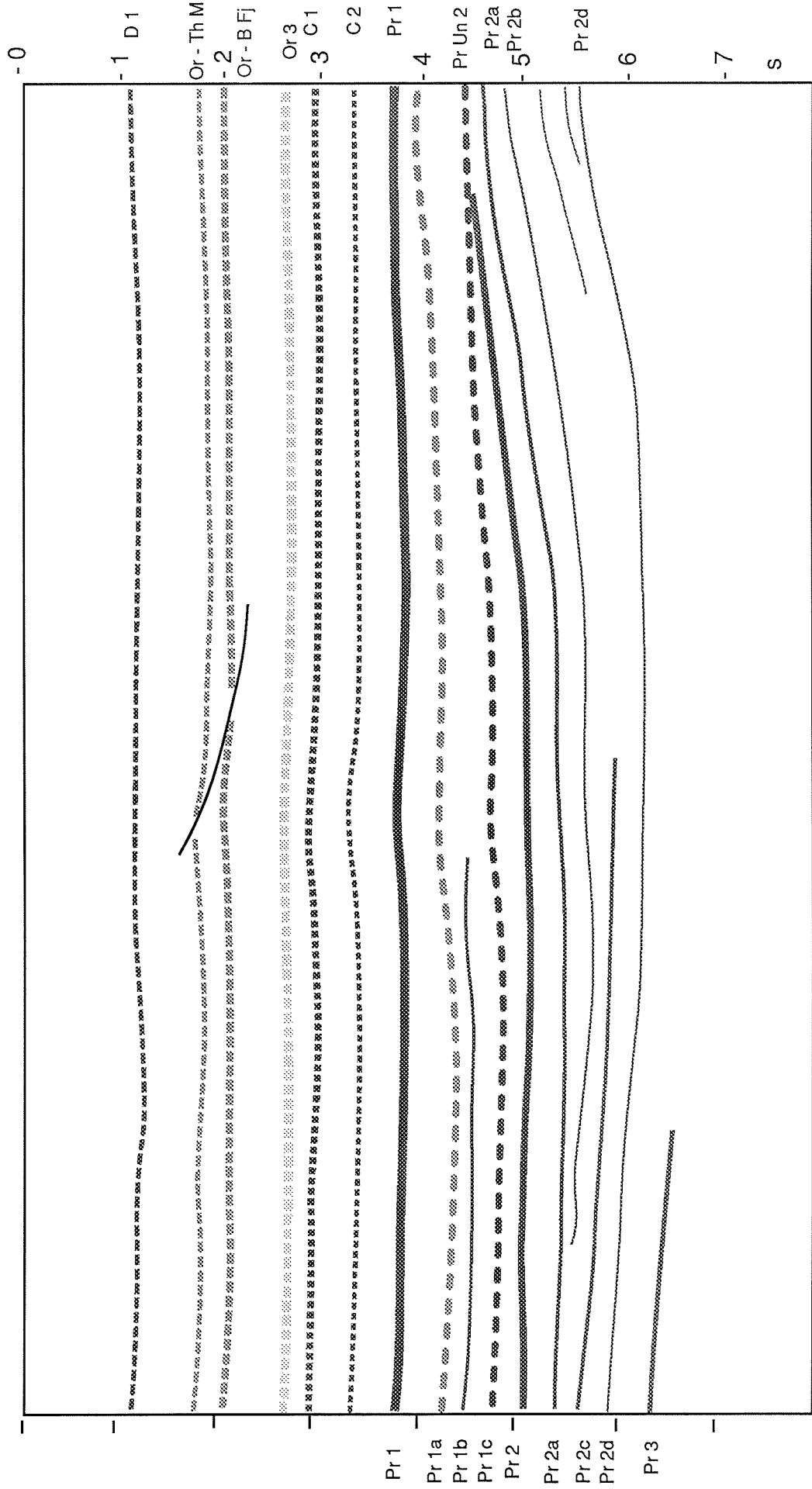
50 km

40 km

SW



NE



U of A - zb/erk

Melville Is. Line 1171 / 3

60 km

NE

SW

S.L. - 0

1 - D 1

Or - Th M
5 km - Or - B Fj

Or 3

C 1

C 2

10 km - Pr 1

Pr 1b

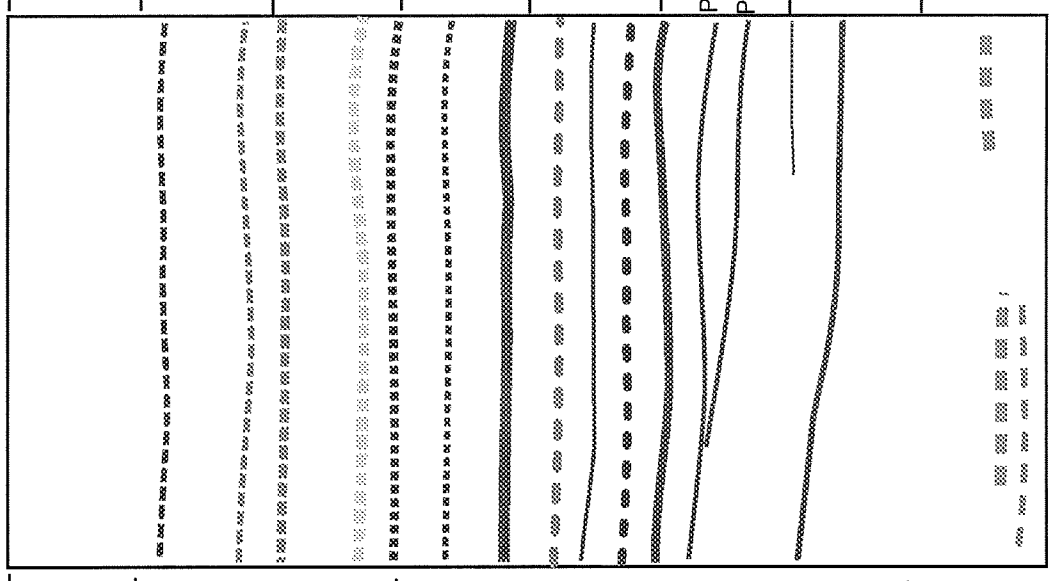
Pr Un 2

Pr 2
15 km - Pr 2a

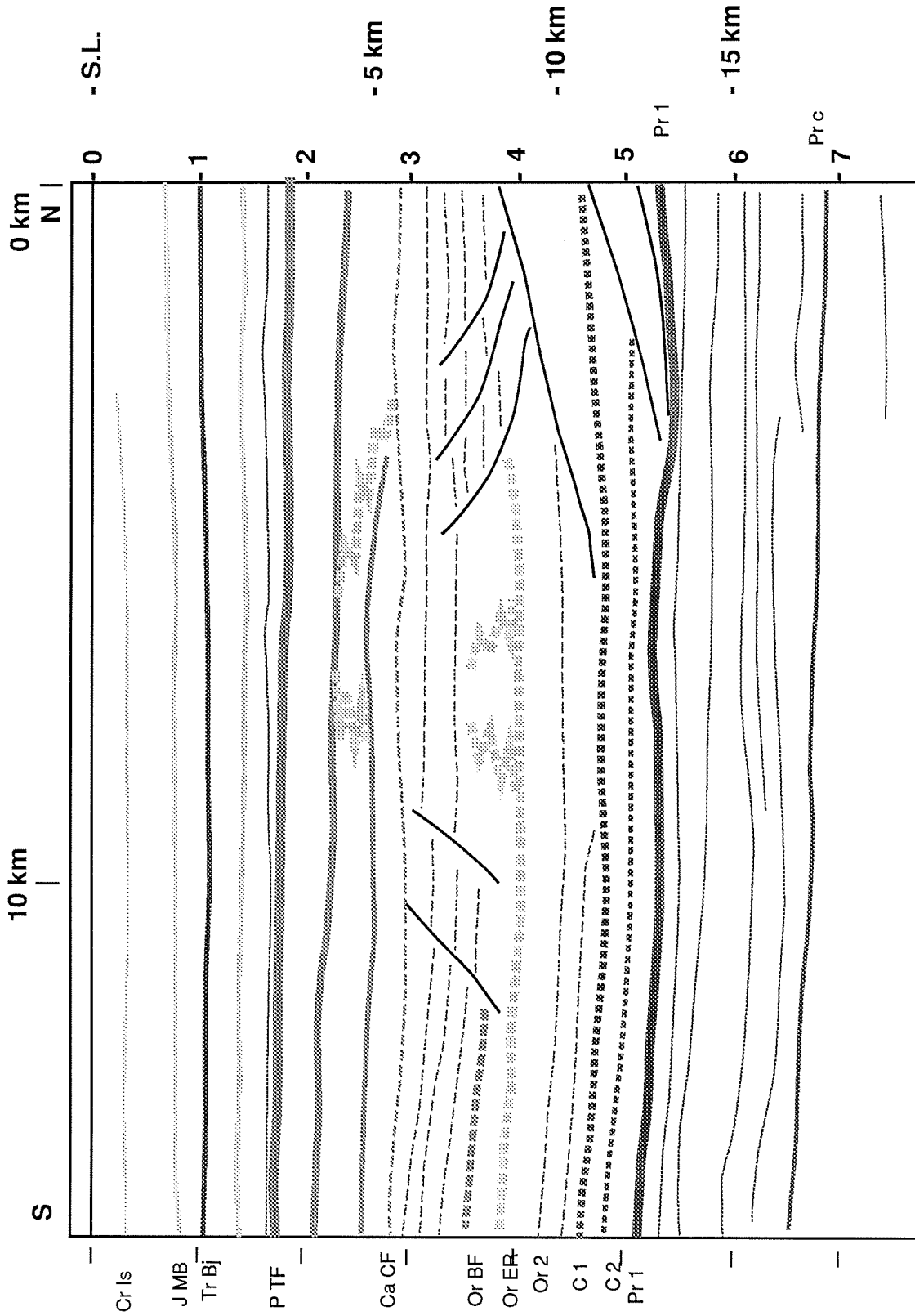
Pr 3

7 - 20 km -

S

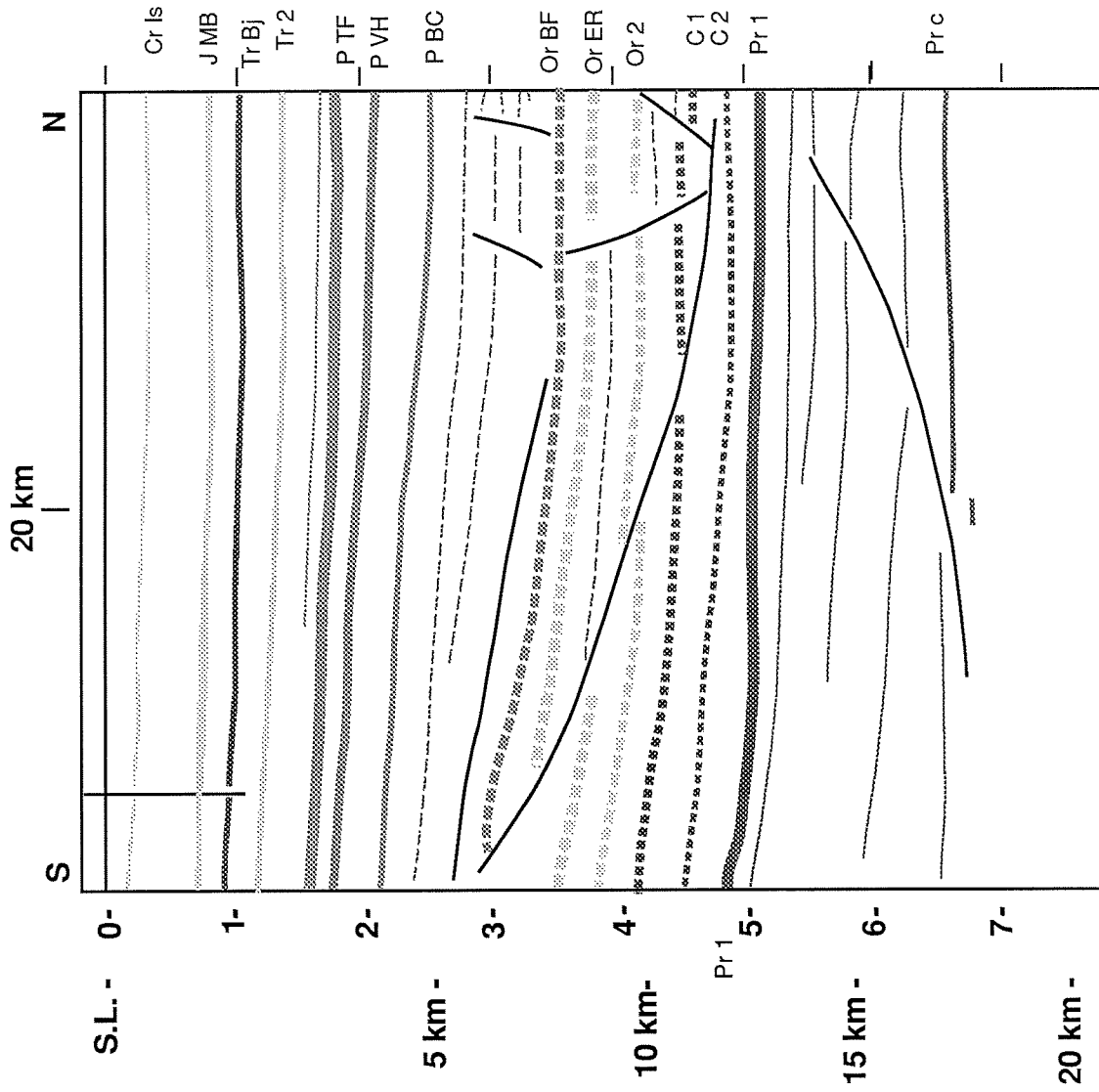


Melville Is. Line 1171 / 4 U of A - zb/erk



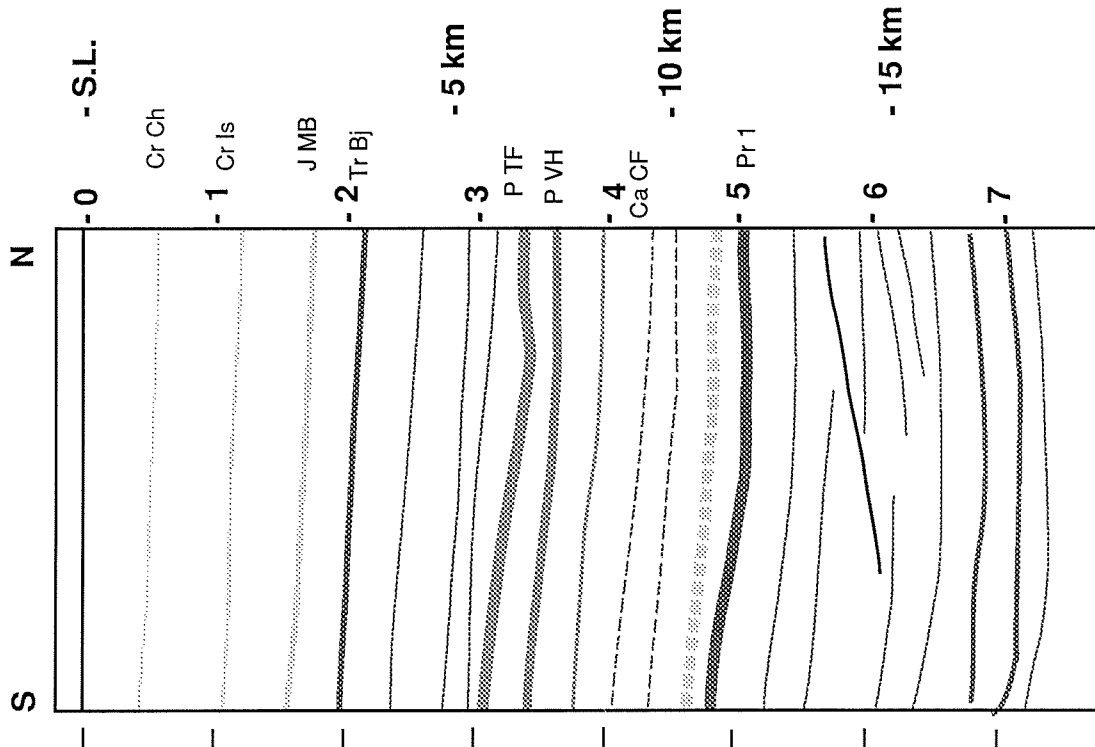
Melville Is. Line 1179/1

U of A - zb/erk

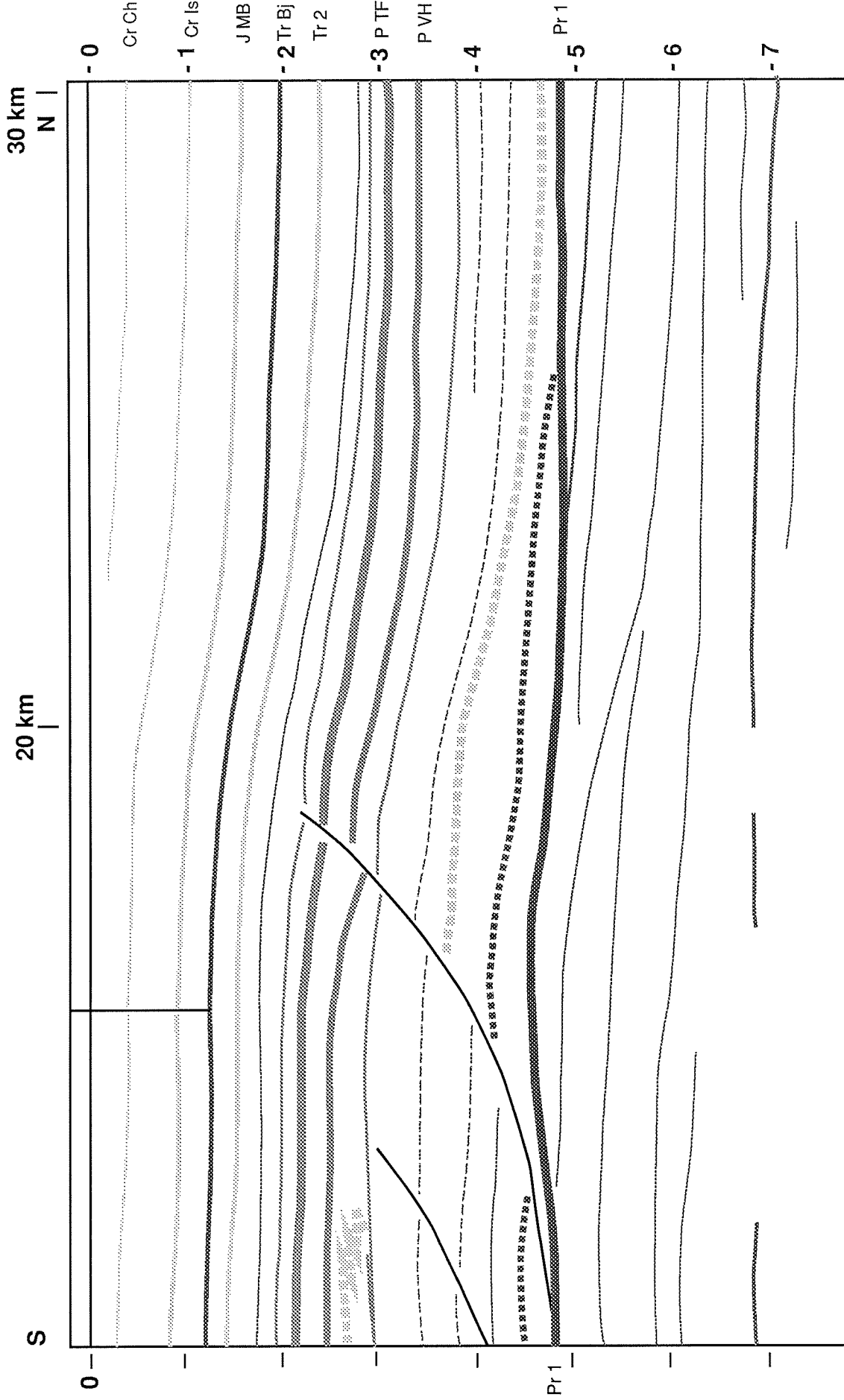


Melville Is. Line 1179/2

U of A - zb/erk

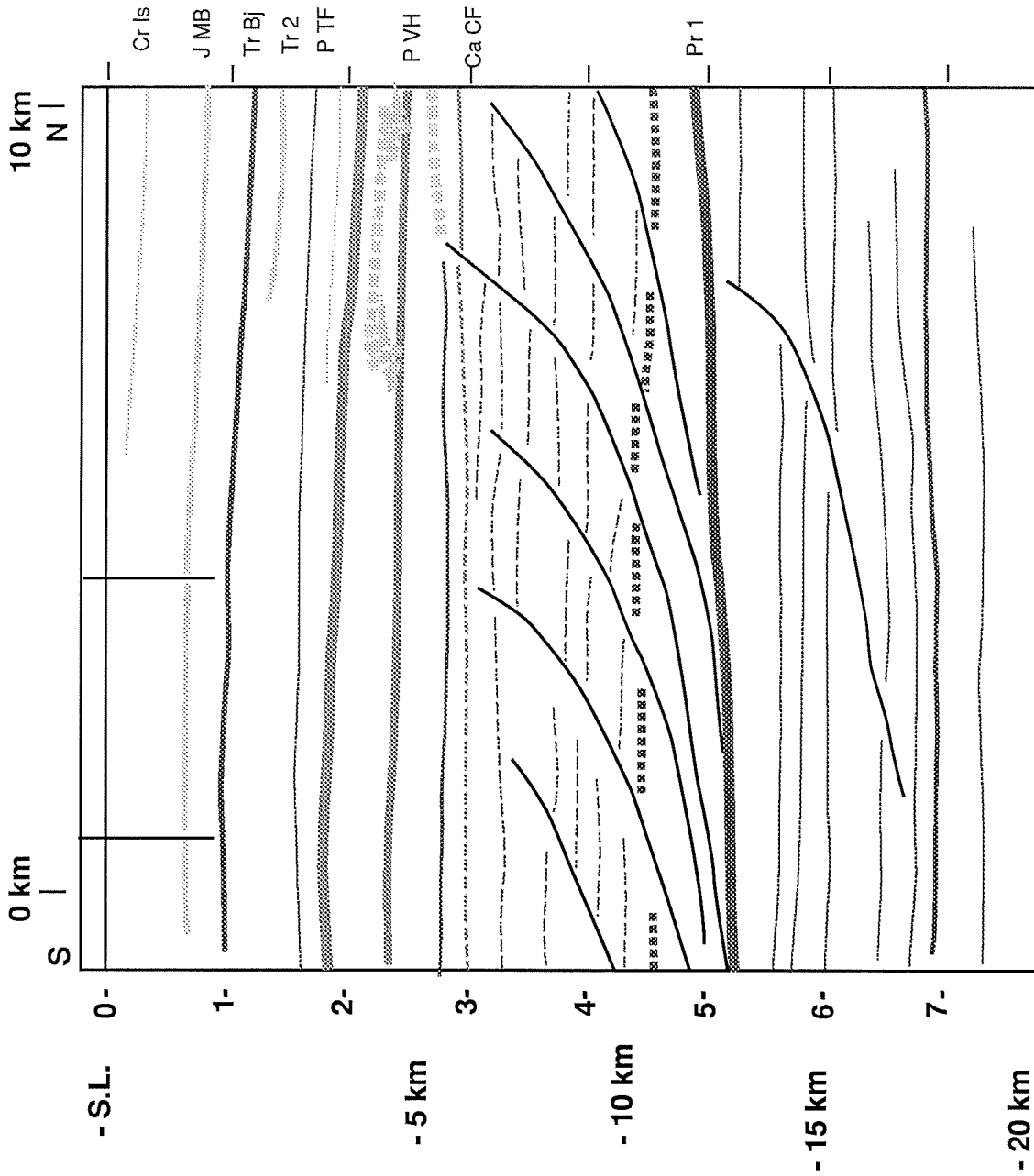


Melville Is. Line 1180/1 U of A - zb/erk



U of A - zb/erik

Melville Is. Line 1180/2



Melville Is. Line 1180/3

U of A - zb/erk

10 km

0 km

E

E

0 - S.L.

D We

1

D BF
Or TM
Or BF

2 Or ER - 5 km

Or 3

C 1

C 2

C 3 - 10 km

4 Pr 1

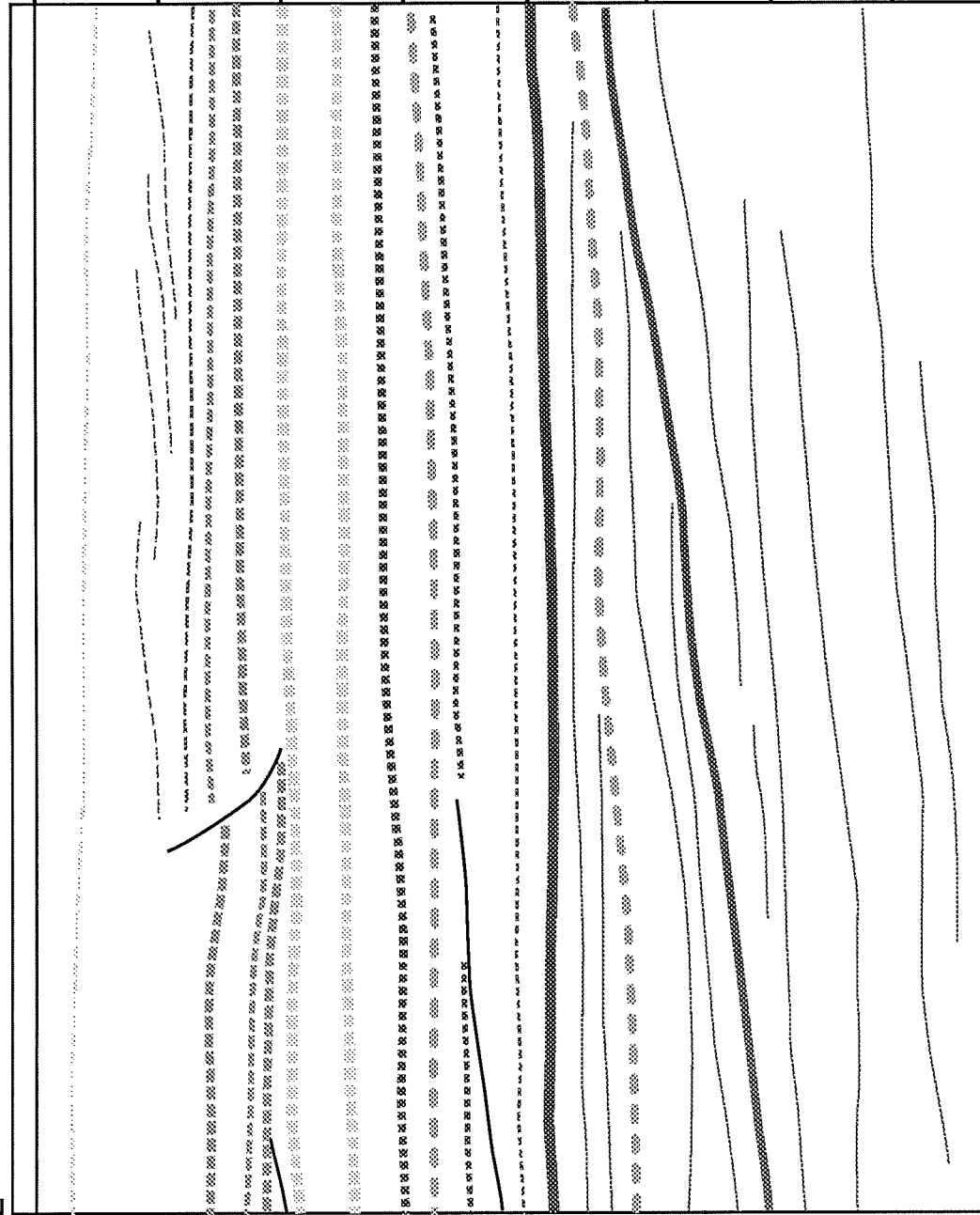
Pr 2

5

- 15 km

6

7 - 20 km



U of A - zb/erk

Melville Is. Line 1190/1

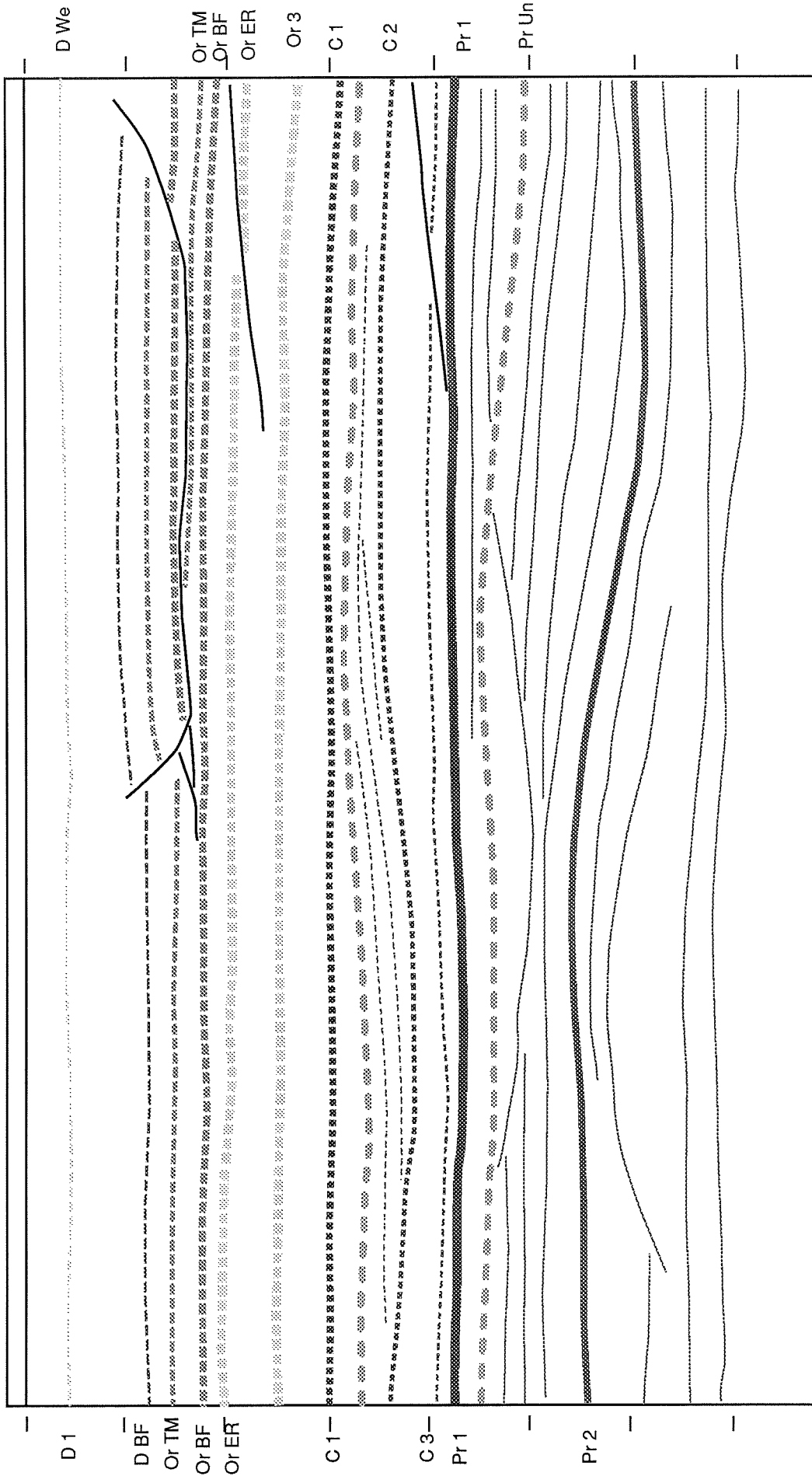


30 km

20 km

W

E



Melville Is. Line 1190/2

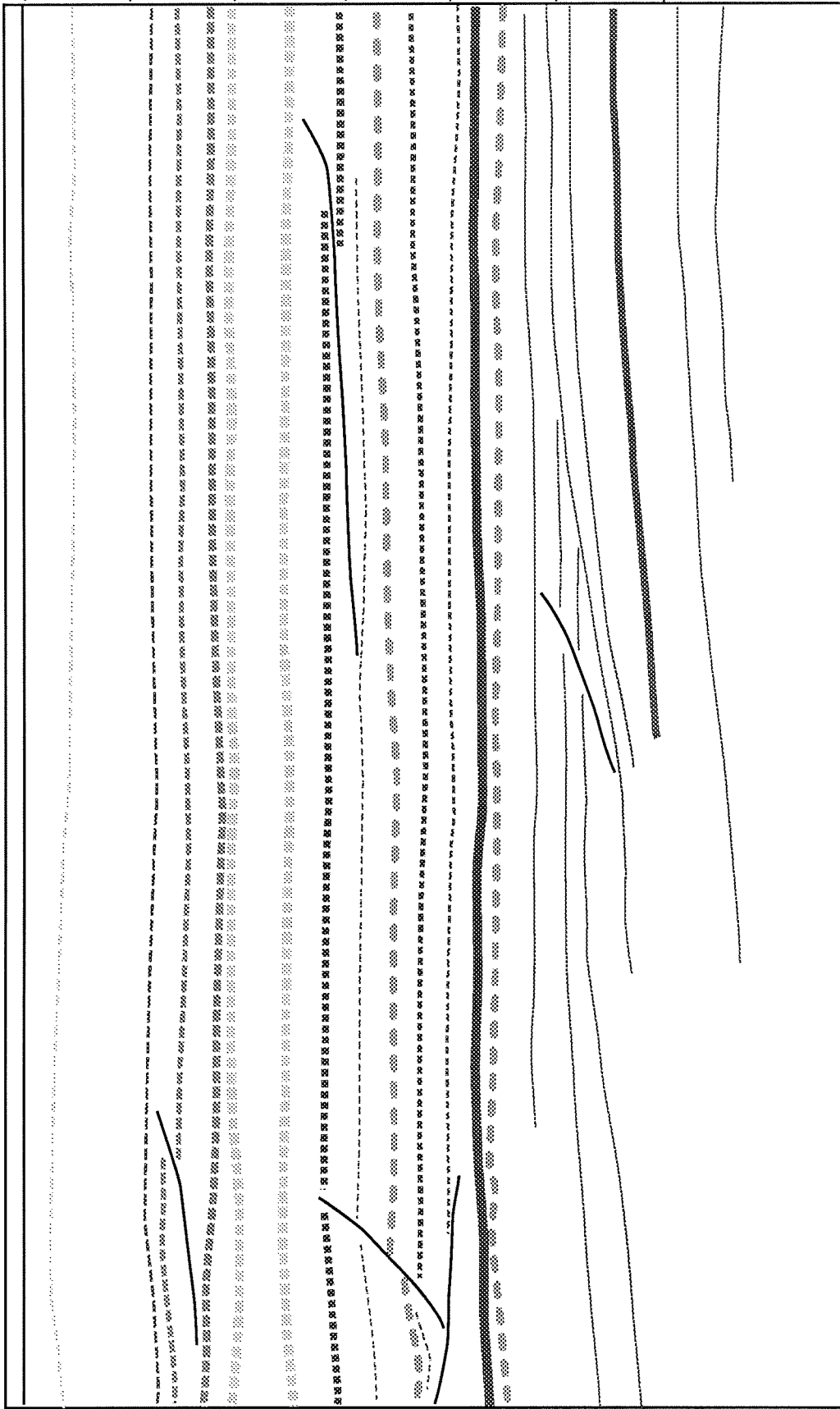
U of A - zb/erk

50 km

40 km

W

E



TM
Or BF
ER

C 1

Pr 1

D We

D BF

Or TM

Or BF

Or ER

Or 3

C 1

C Un

C 2

Pr 1

Melville Is. Line 1190/3

U of A - zb/erk

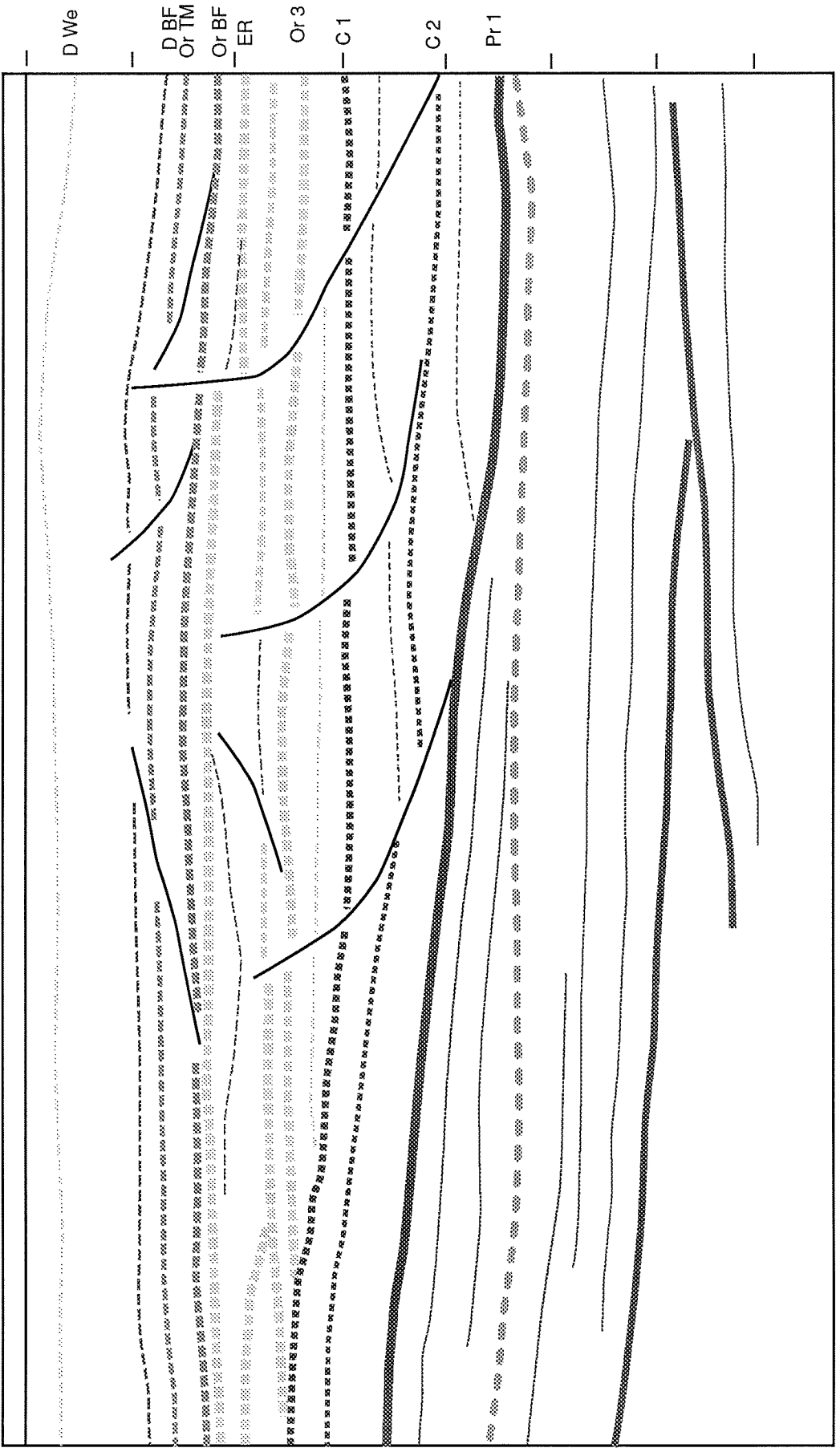


70 km

60 km

W

E



D We

D BF
Or TM

Or BF
ER

Or 3

C 1

C 2

Pr 1

D BF
TM
Or BF

ER

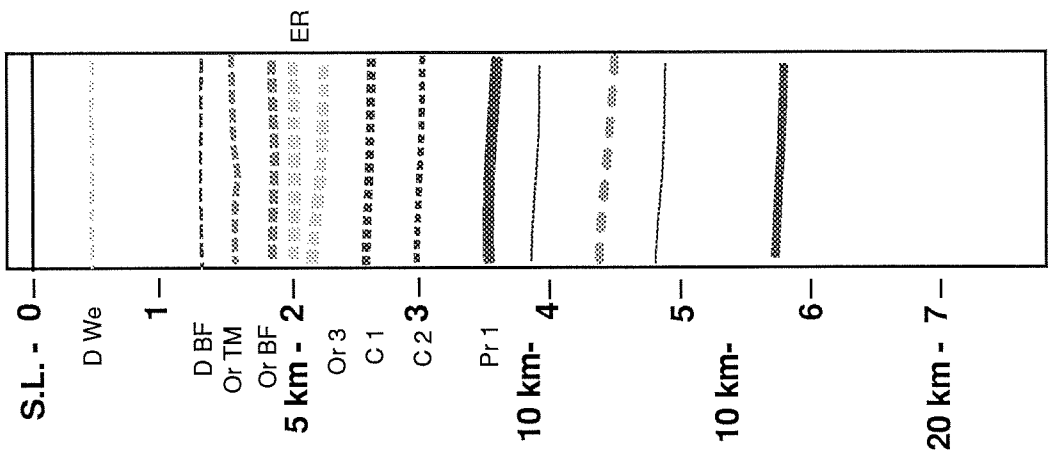
C 1

C 2

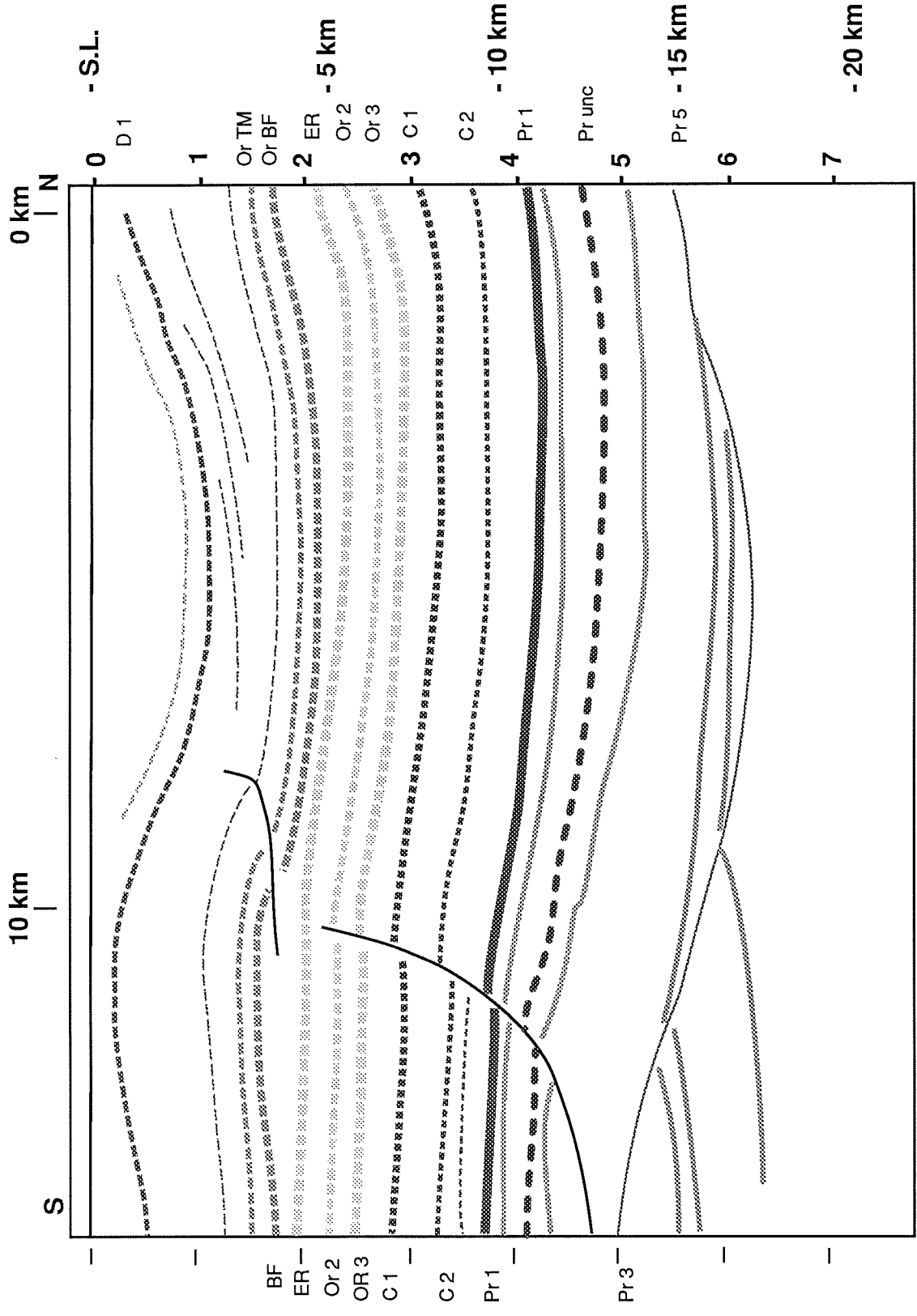
Pr 1

Melville Is. Line 1190/4

U of A - zb/lerk



Melville Is. Line 1190/5



U of A - zb/erk

Melville Is. Line 1762/1

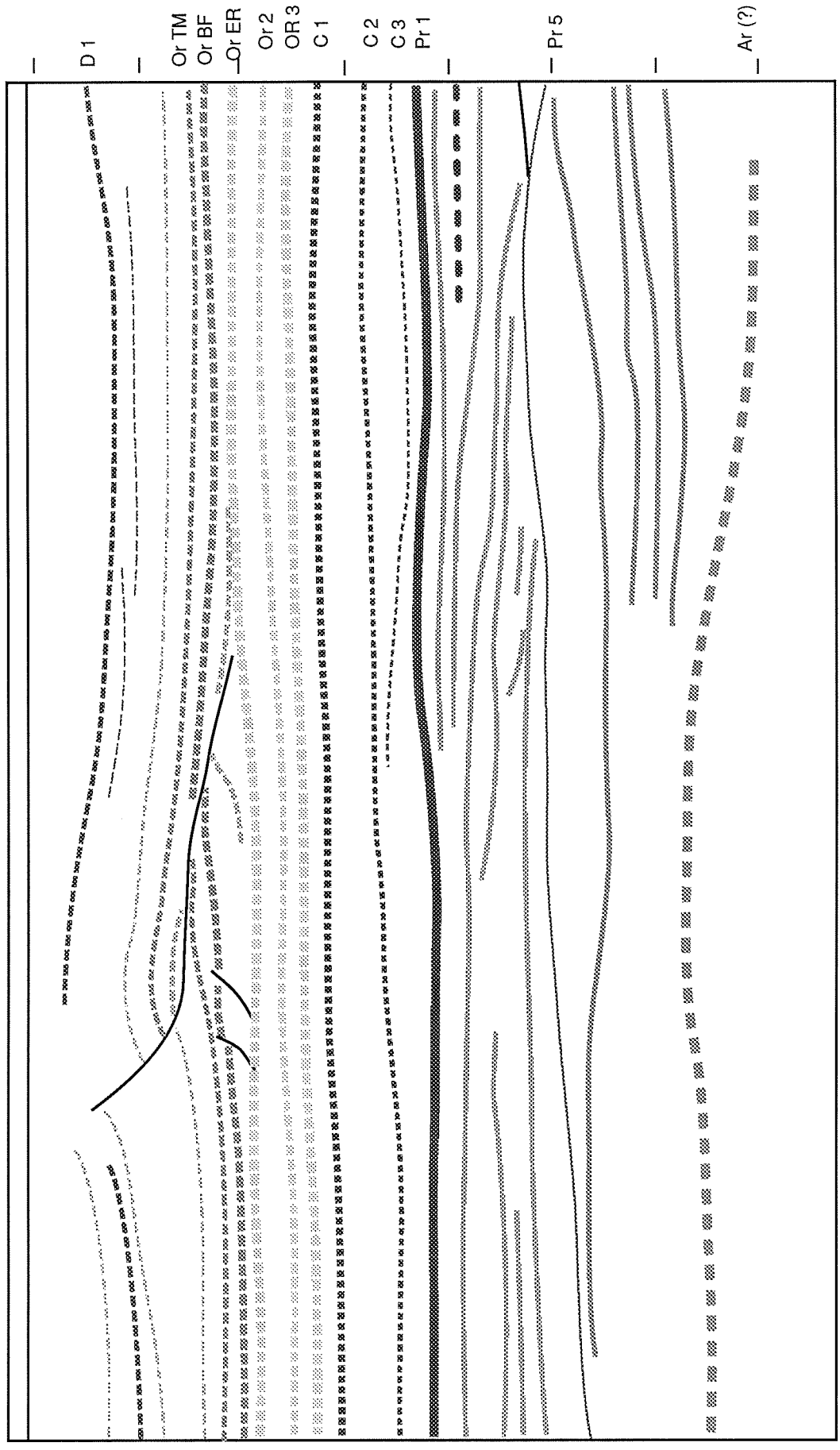


20 km

30 km

N

S

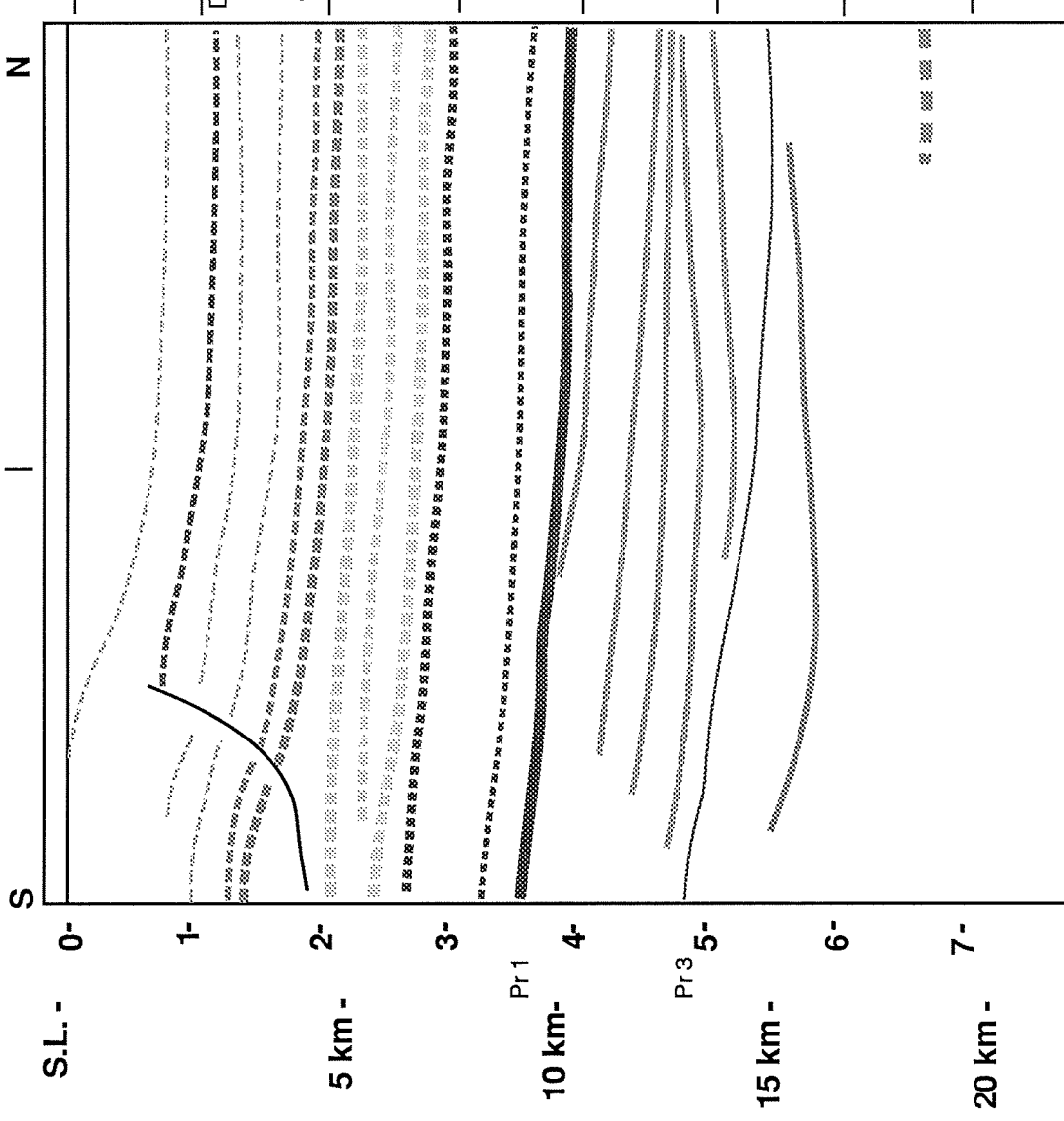


Melville Is. Line 1762/2

U of A - zb/erik

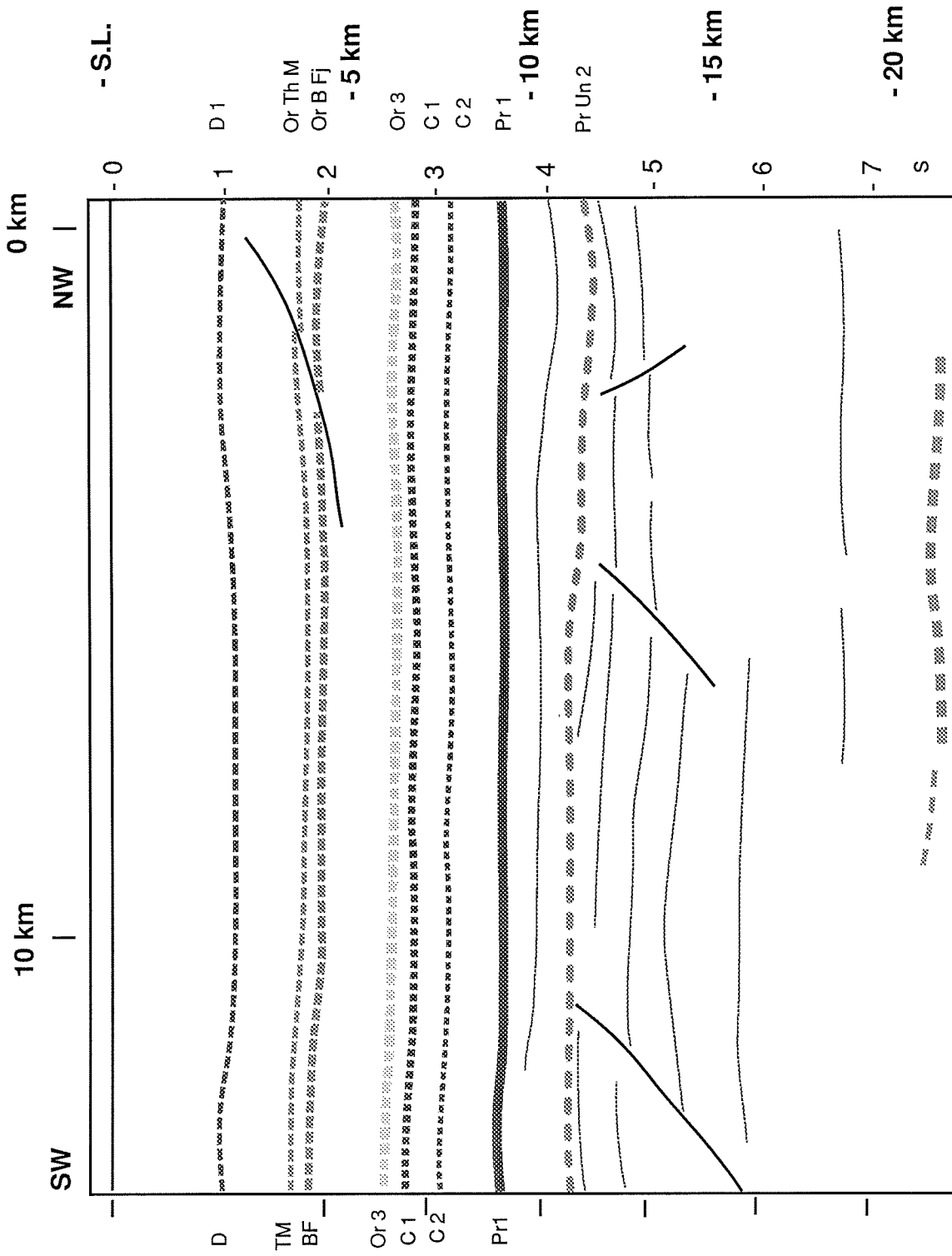


40 km



Melville Is. Line 1762/3

U of A - zb/erk



U of A - zb/erik

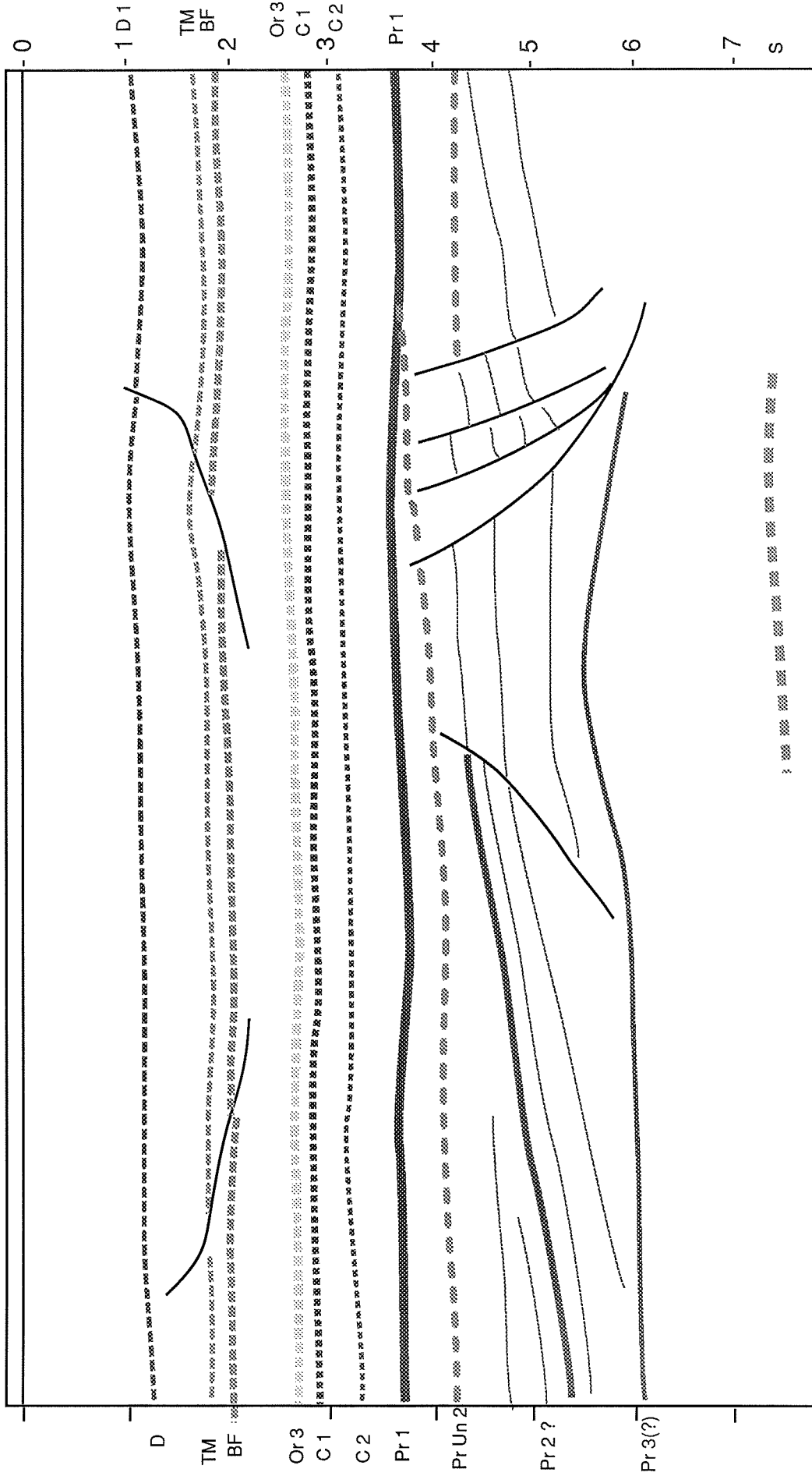
Melville Is. Line 1768 / 1

30 km

20 km

SW

NE



Melville Is. Line 1768 / 2

U of A - zb/erk

50 km

40 km

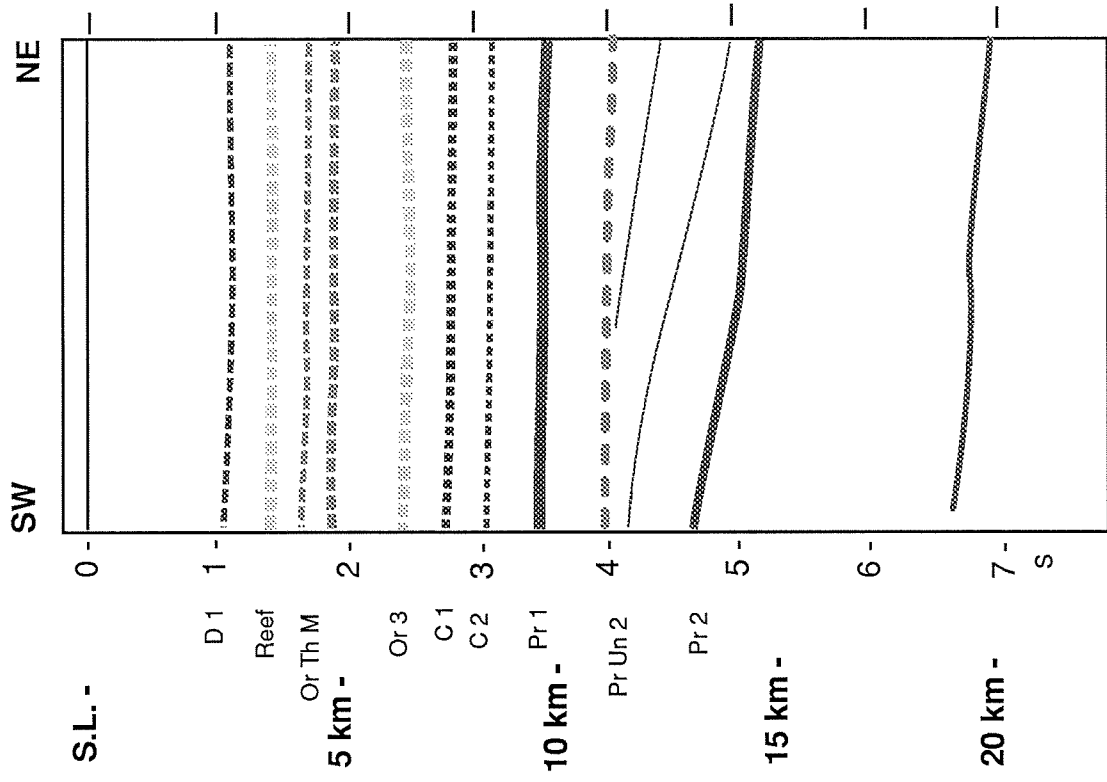
SW

NE



Melville Is. Line 1768 / 3

U of A - zb/erk



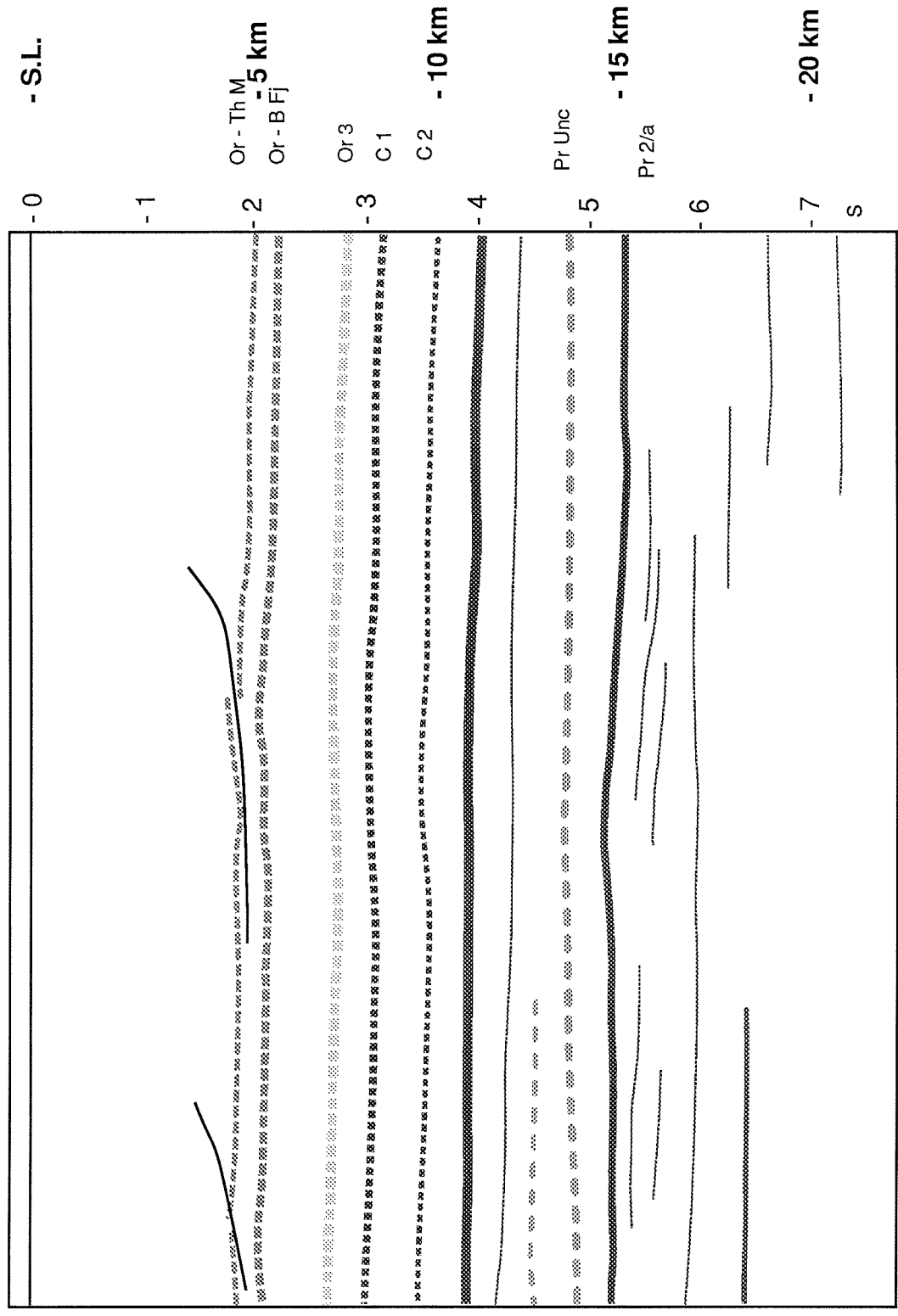
Melville Is. Line 1768 / 4



40 km

SE

NW



Or 3
C 2
Pr 1

U of A - zb/erk

Melville Is. Line 1770 / 1

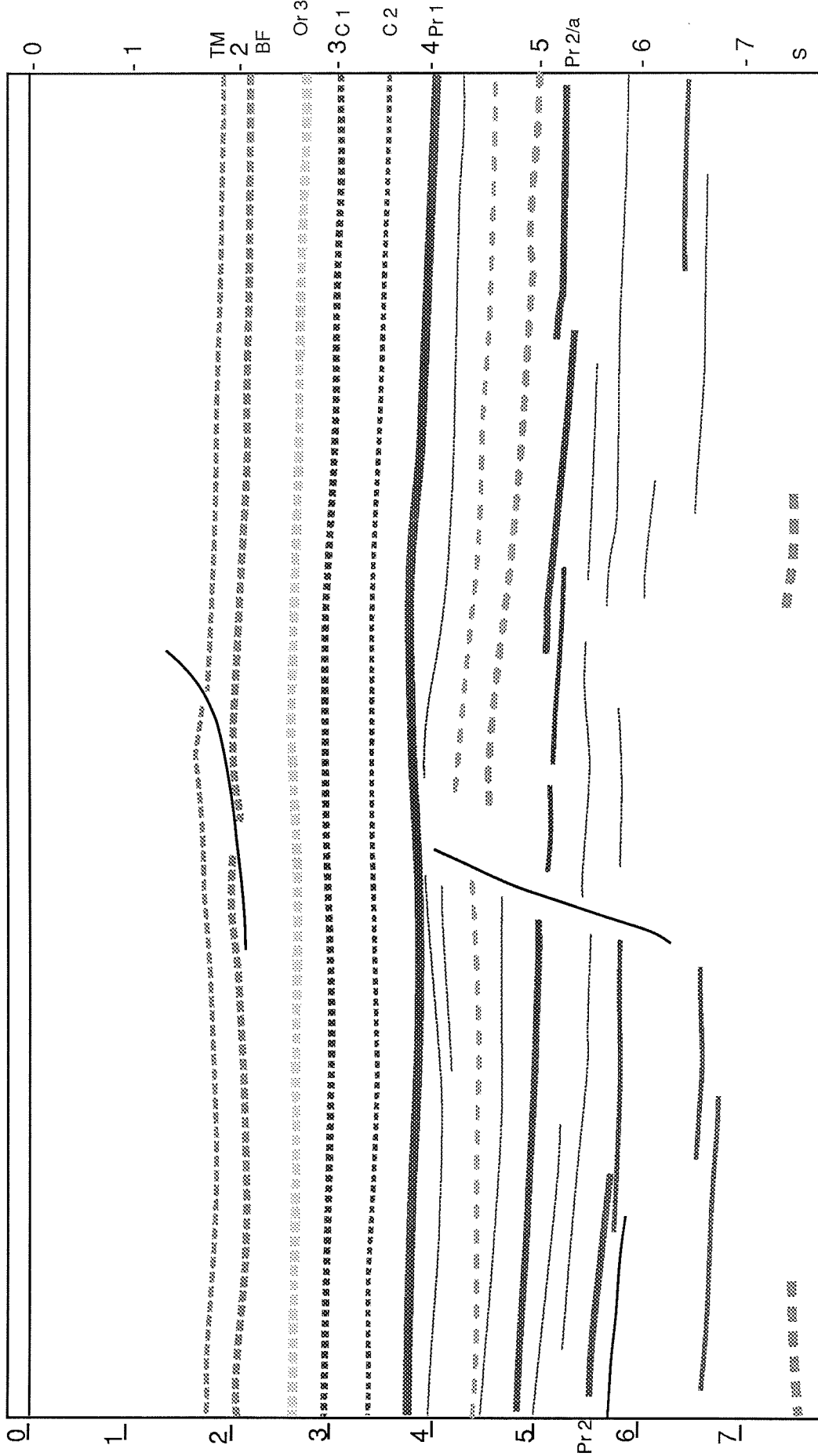
20 km

30 km

SE

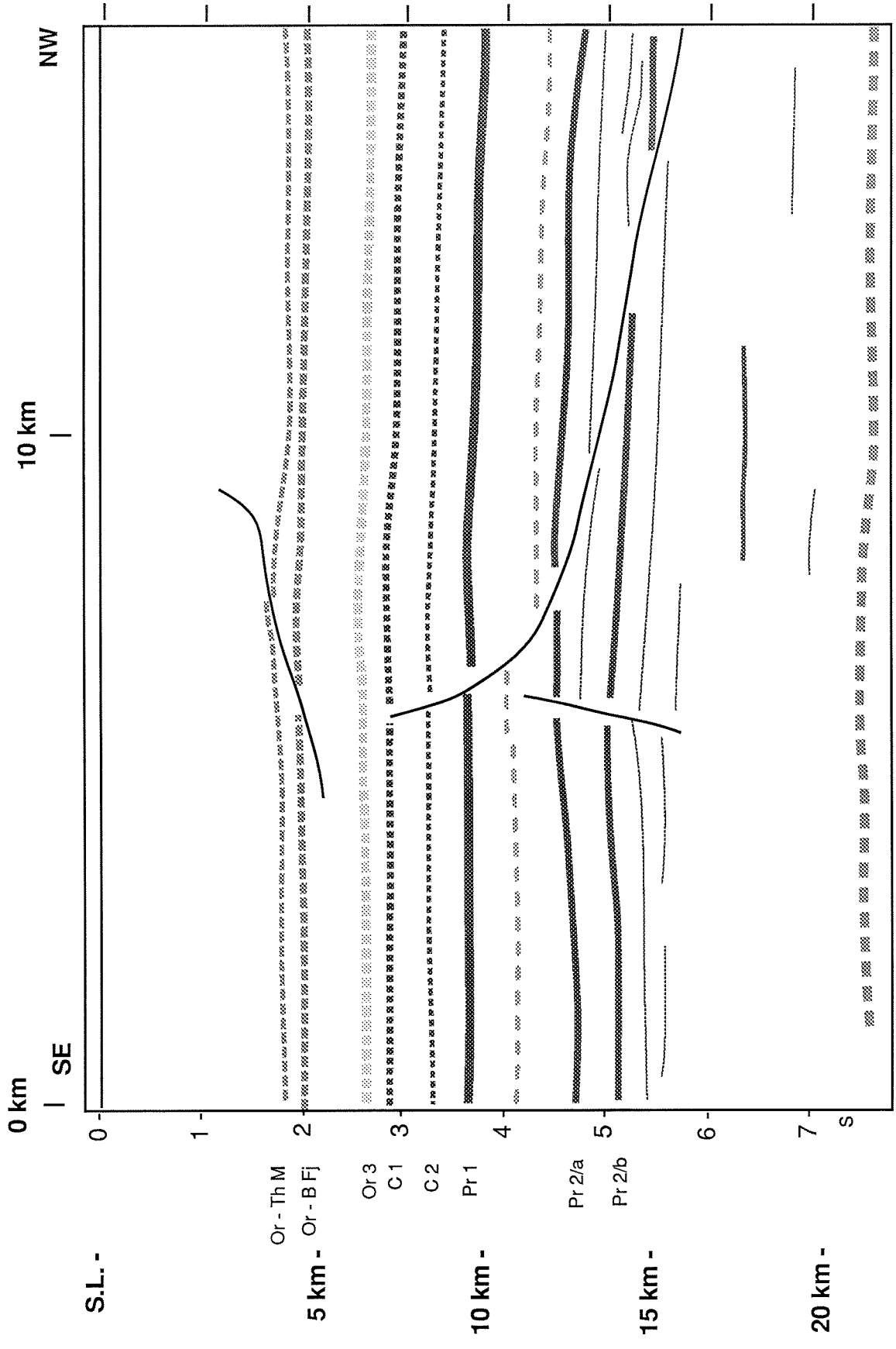


NW



Melville Is. Line 1770 / 2

U of A - zb/erik



Melville Is. Line 1770 / 3

U of A - zb/erk

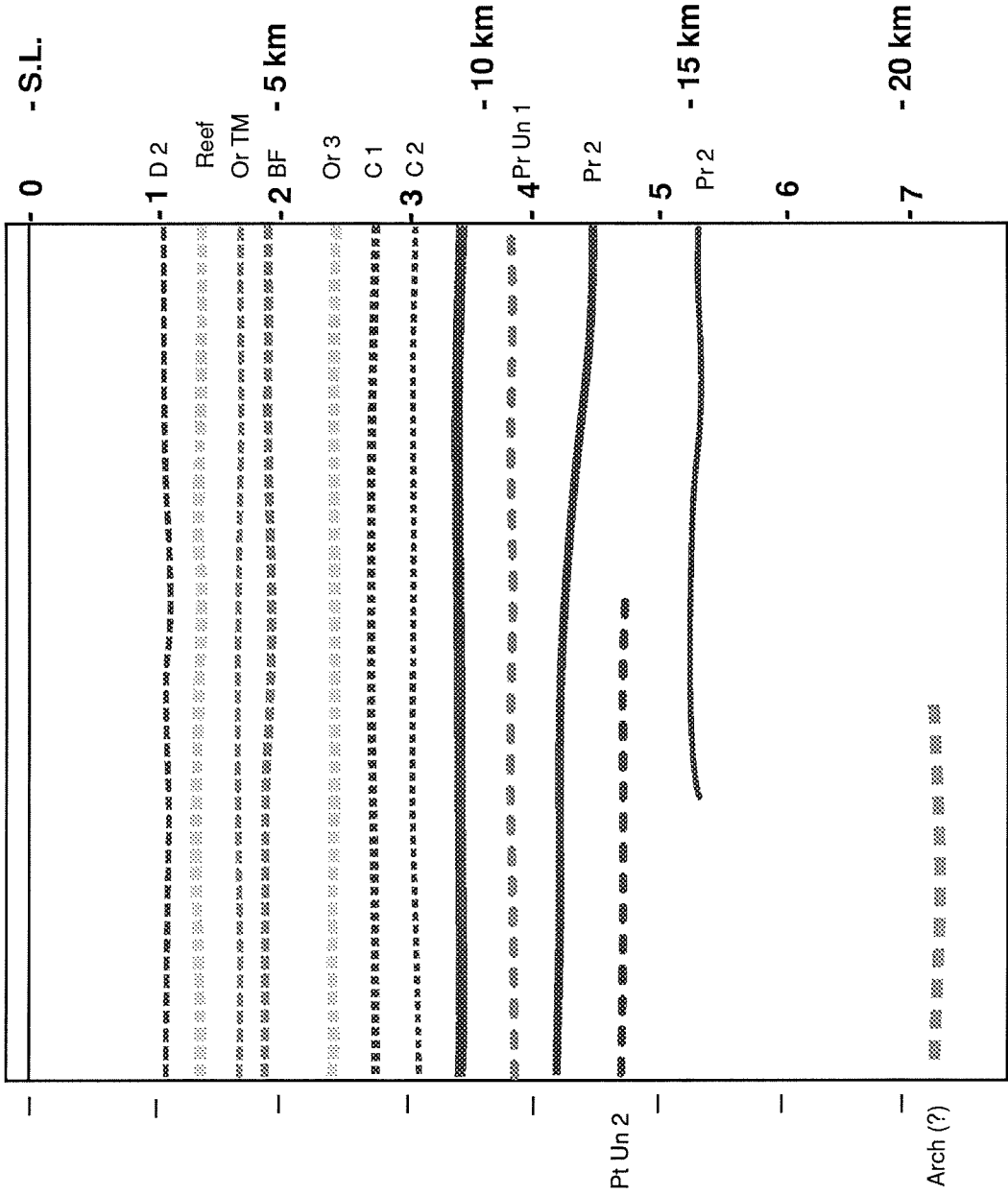


10 km

E |

0 km

E |



Melville Is. Line 1862/1

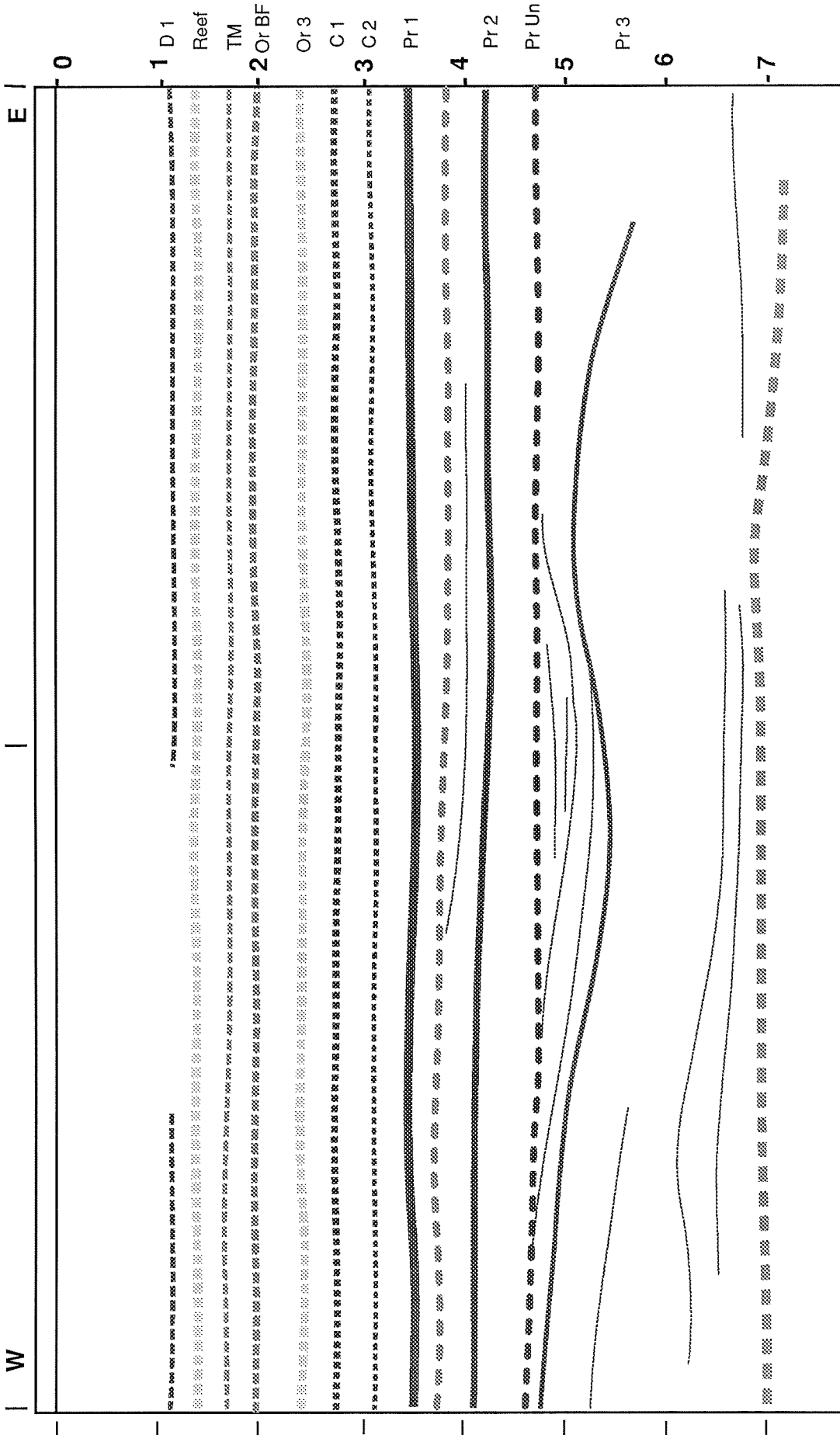
U of A - zb/erk



30 km
W

20 km

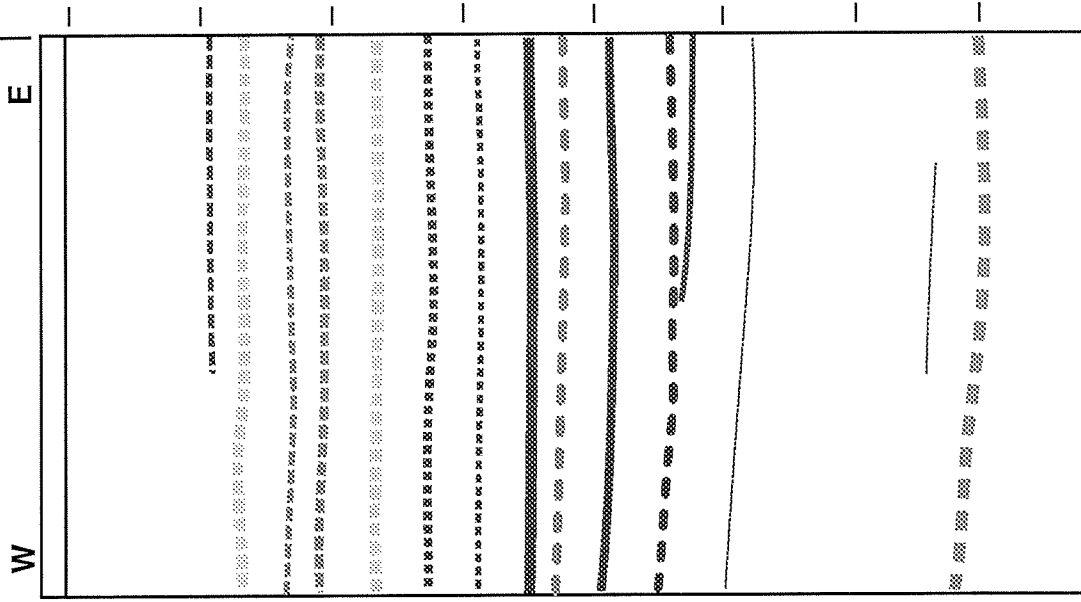
10 km
E



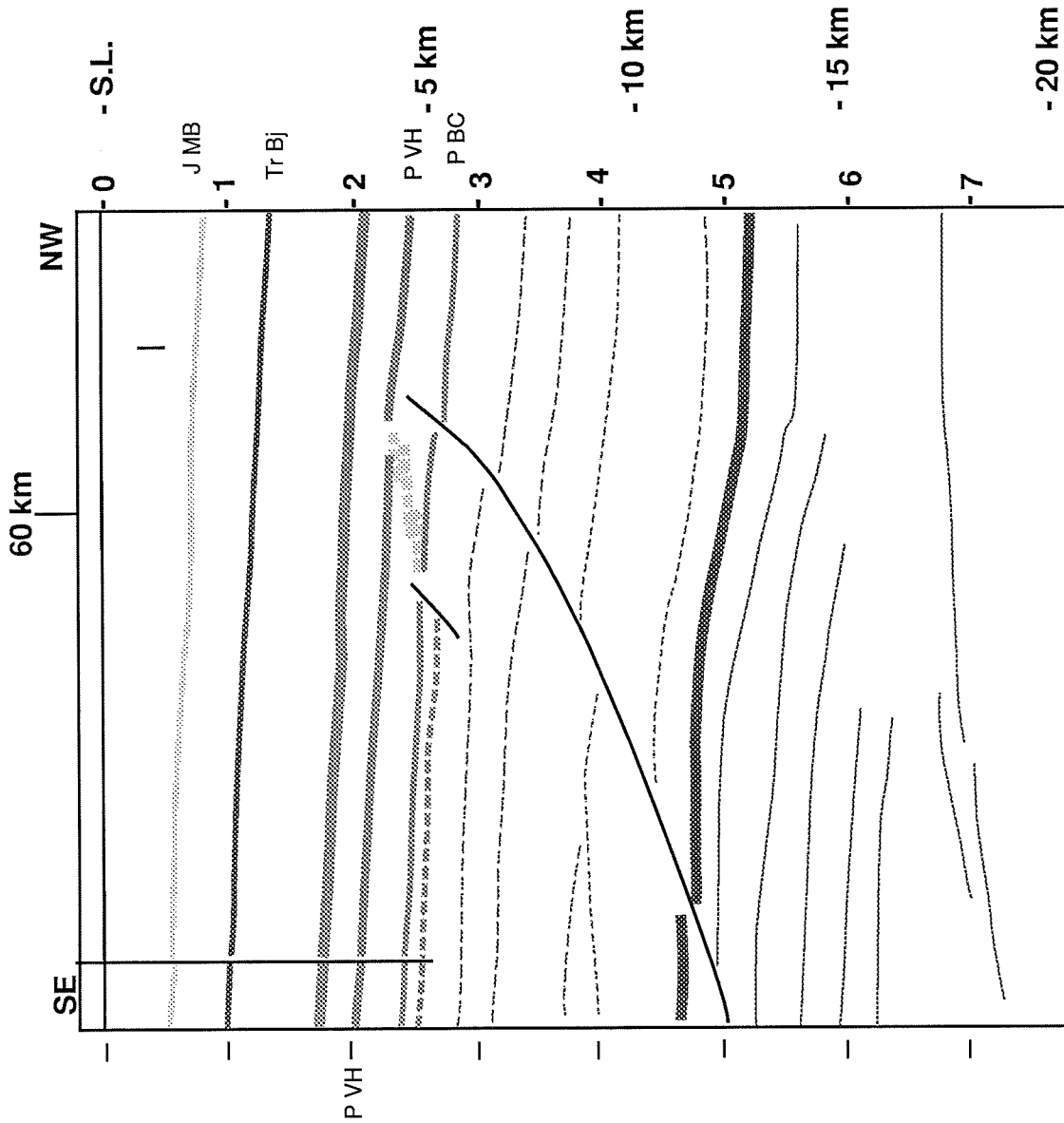
Melville Is. Line 1862/2

U of A - zb/erk

30 km



Melville Is. Line 1862 / 3 U of A - zb/erk



U of A - zb/erik

Melville Is. Line 1920/1

50 km

40 km

NW

SE



U of A - zb/erk

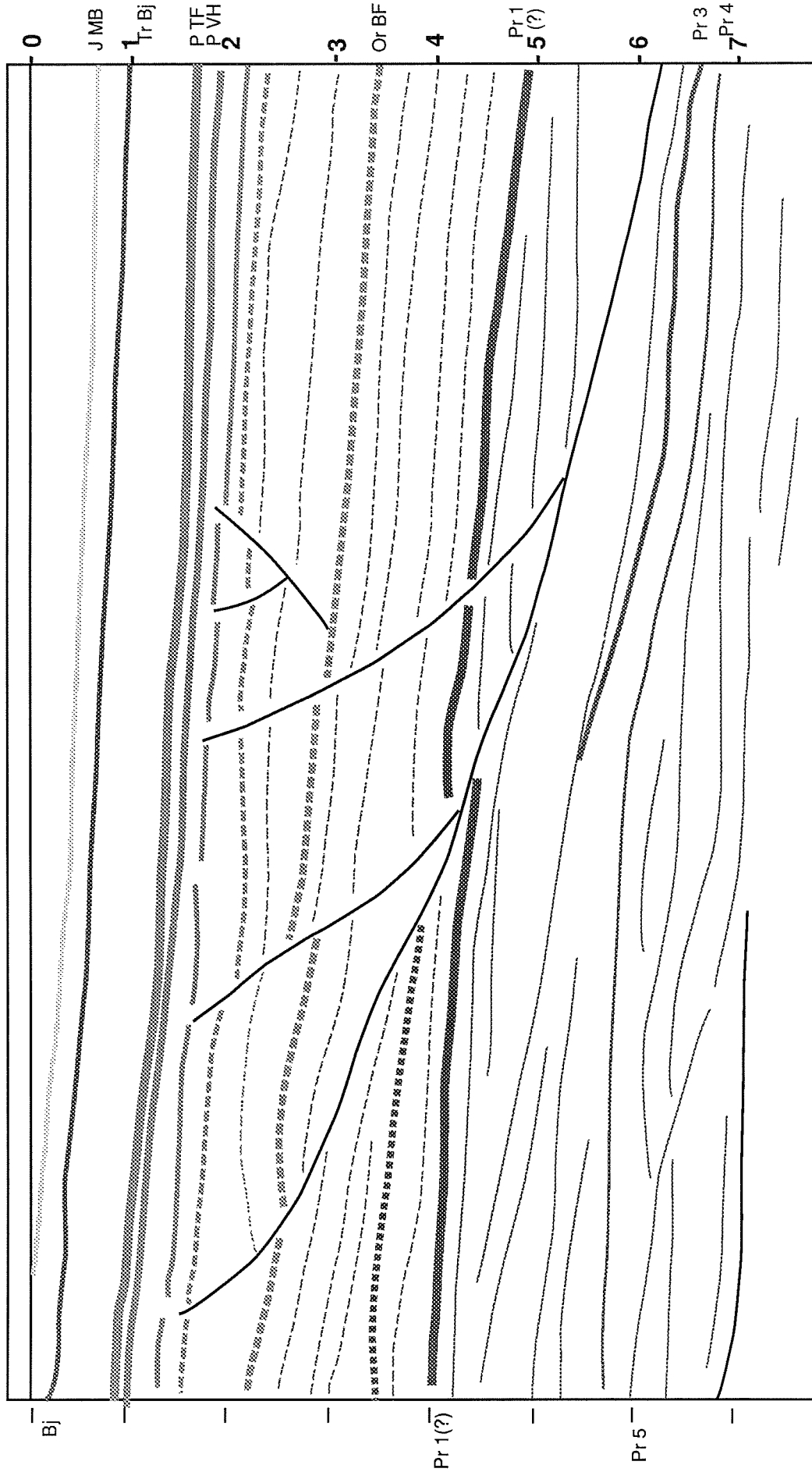
Melville Is. Line 1920/2

20 km

30 km

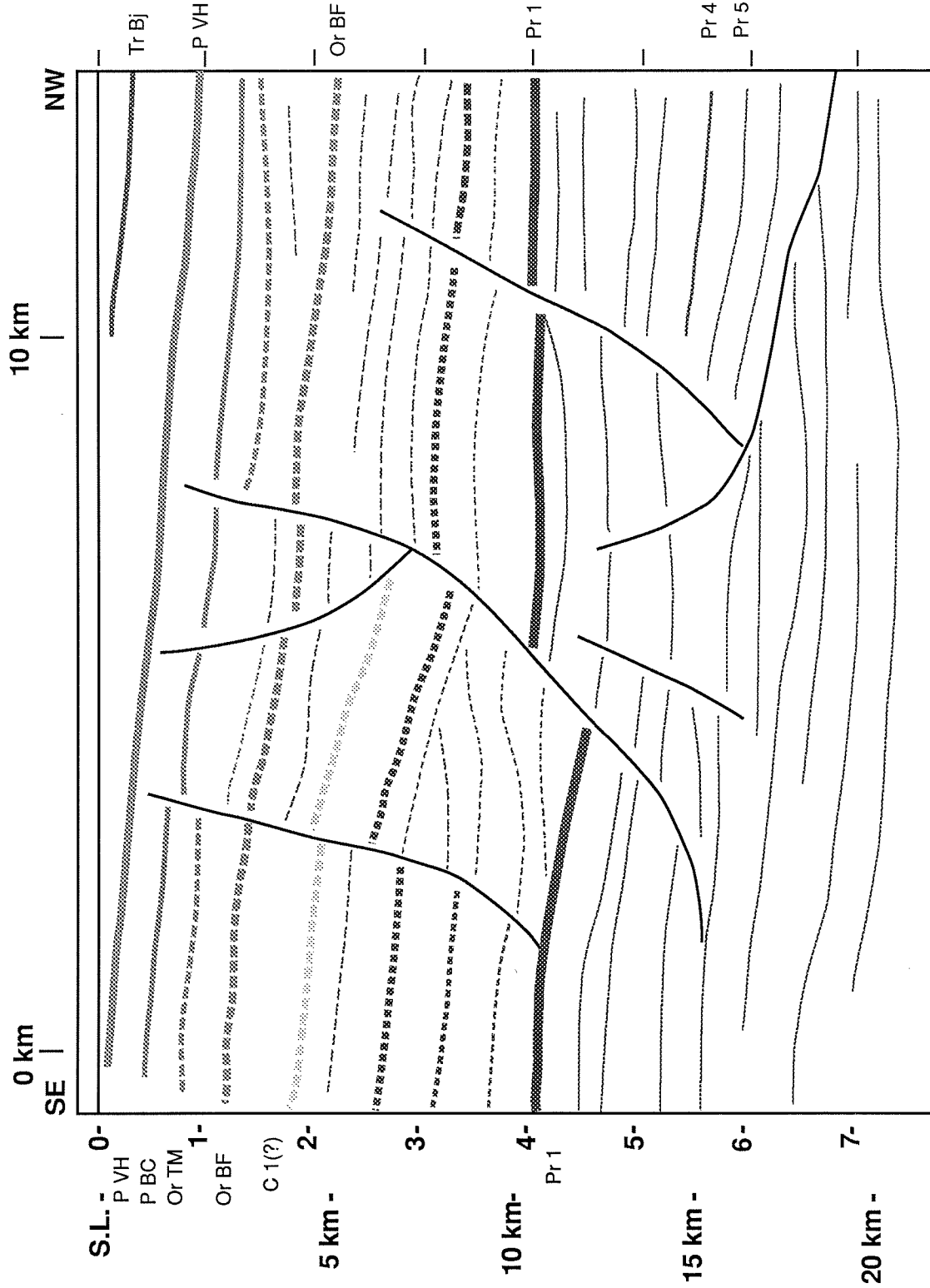
SE

NW



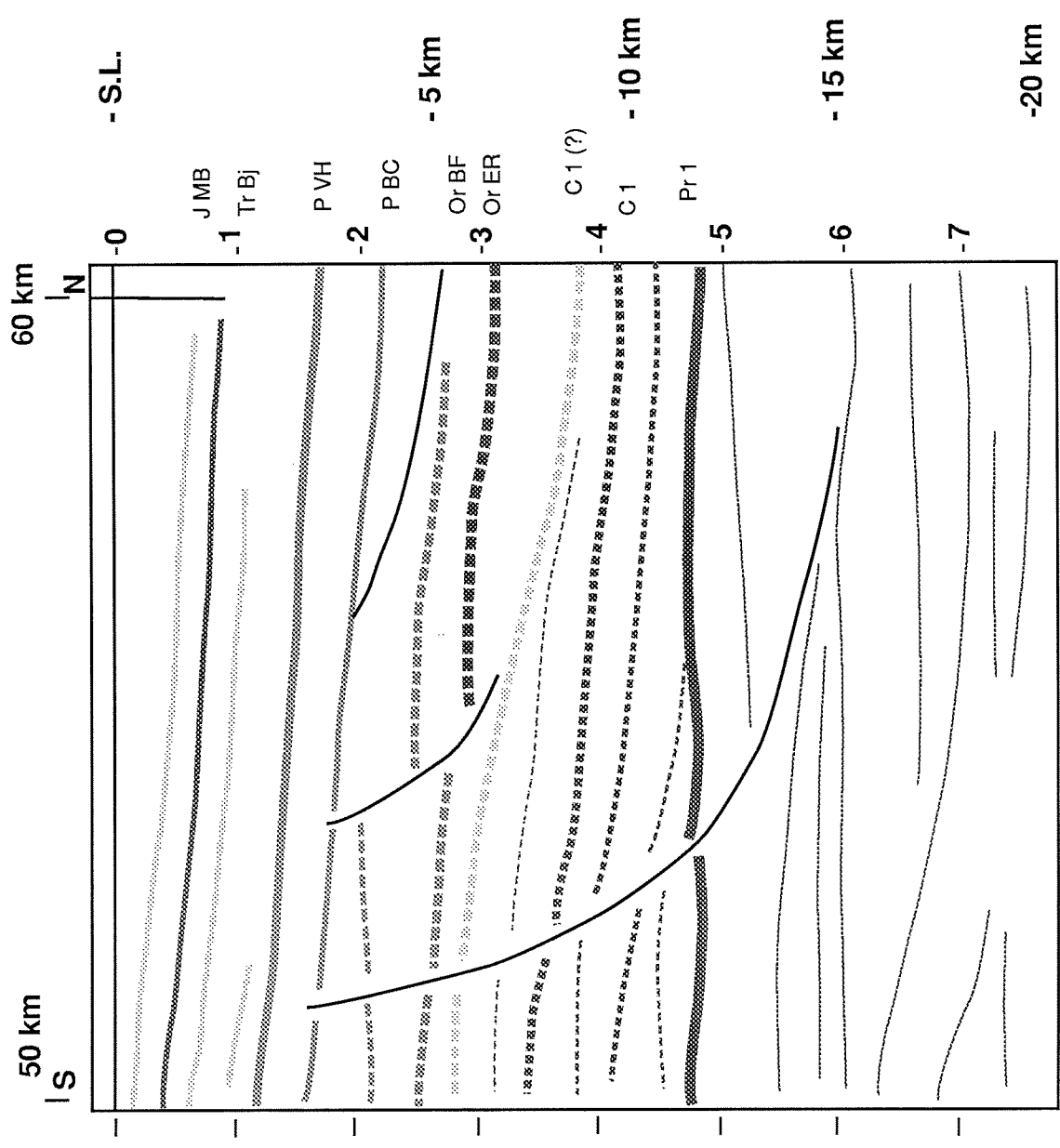
Melville Is. Line 1920/3

U of A - zb/erk



Melville Is. Line 1920/4

U of A - zb/erik



Melville Is. Line 1921/1

U of A - zb/erk



1920

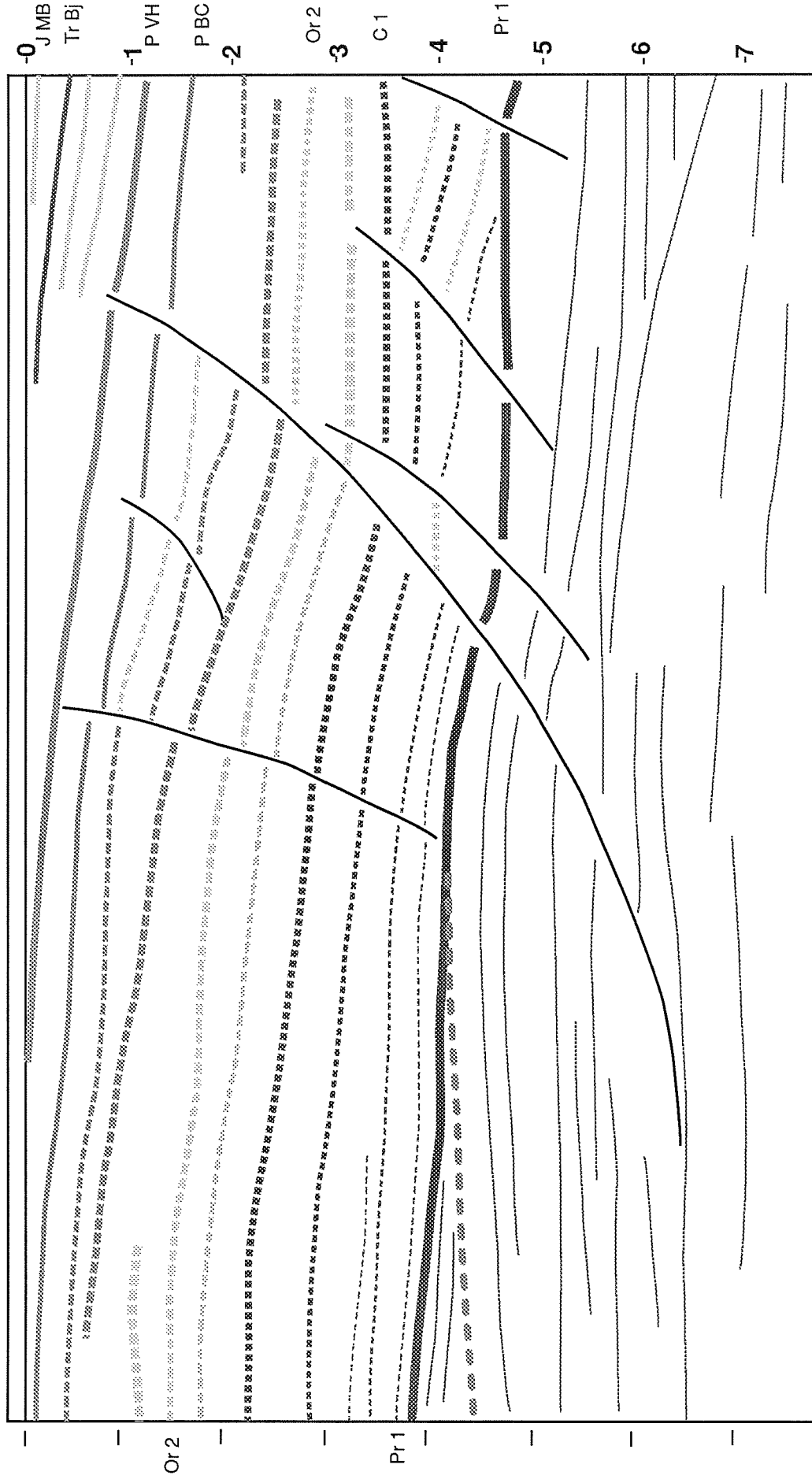
40 km

2674

30 km

S

N



Melville Is. Line 1921/2

U of A - zb/erk

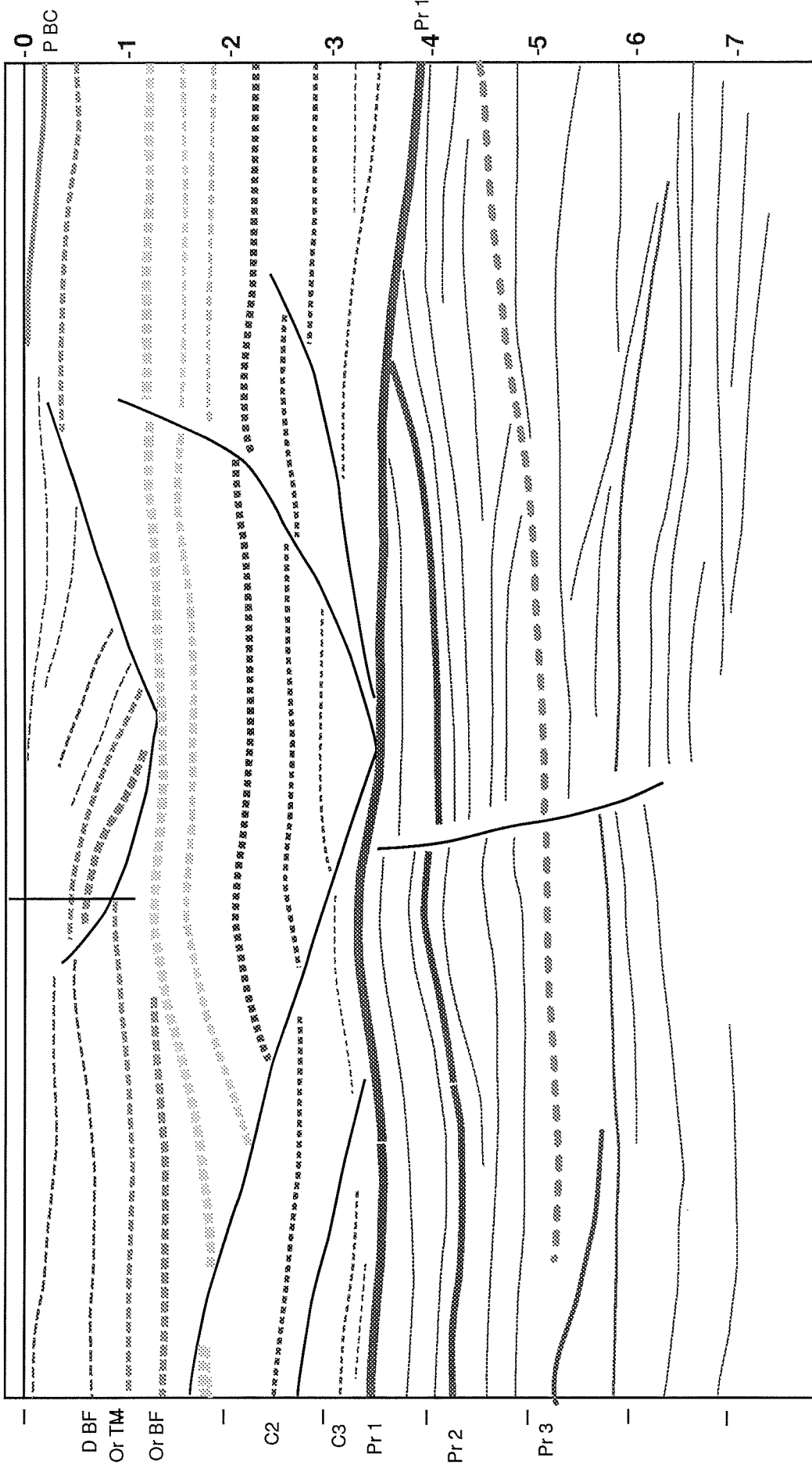


10 km

S

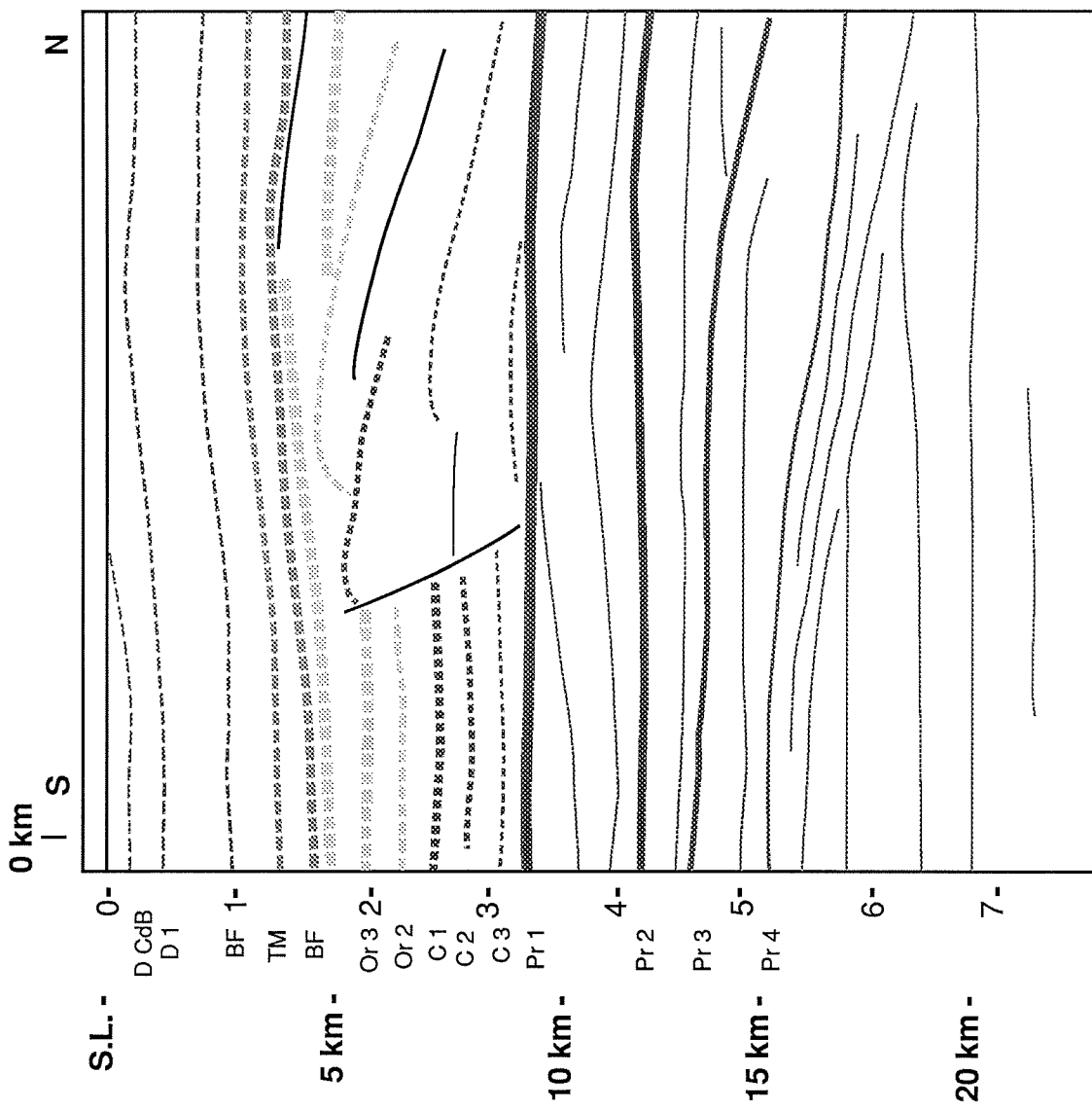
Weath 0-10 20 km

N



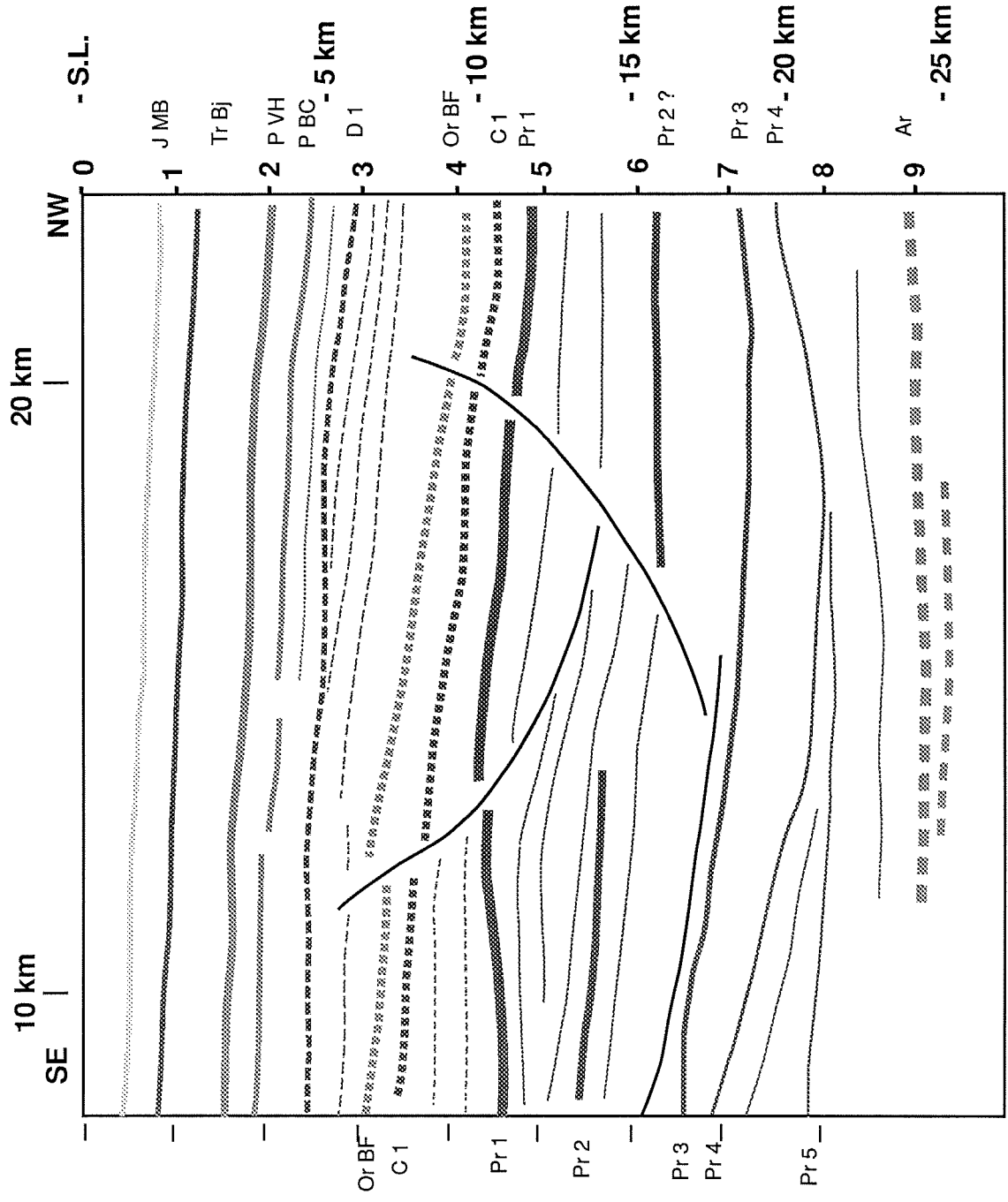
Melville Is. Line 1921/3

U of A - zb/erik



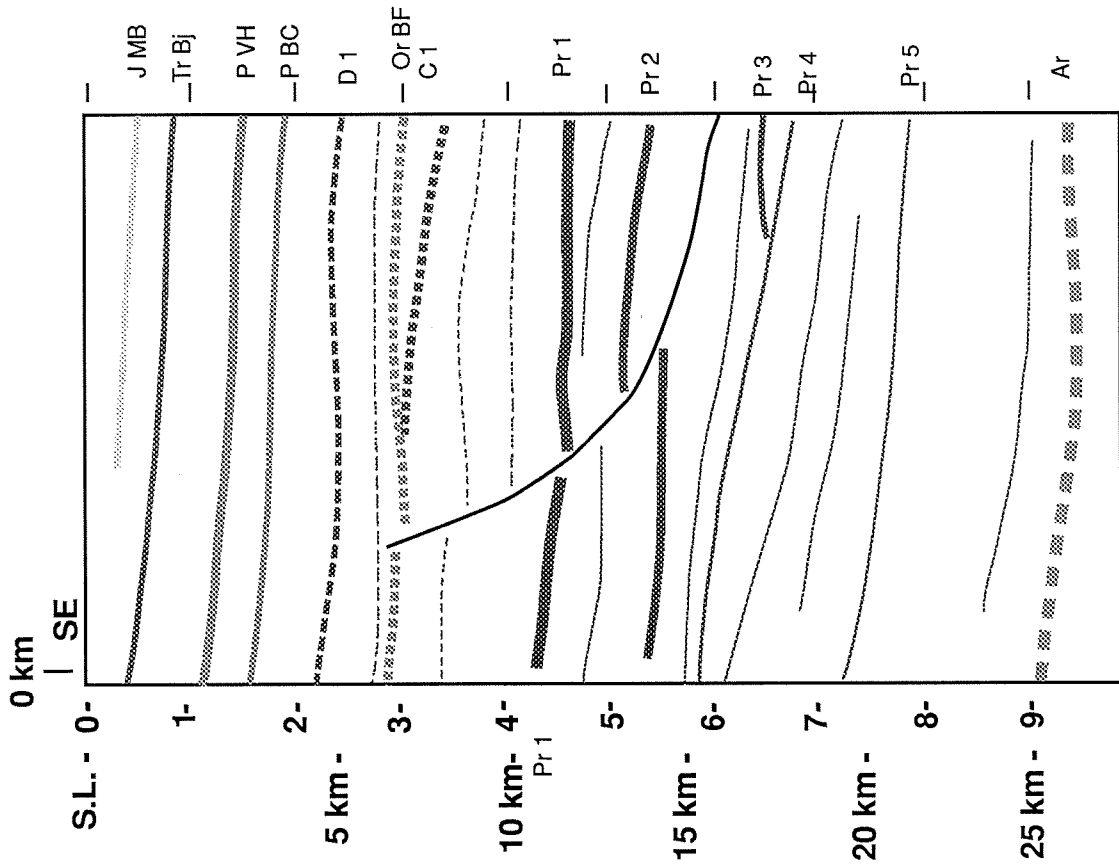
Melville Is. Line 1921/4

U of A - zb/erk

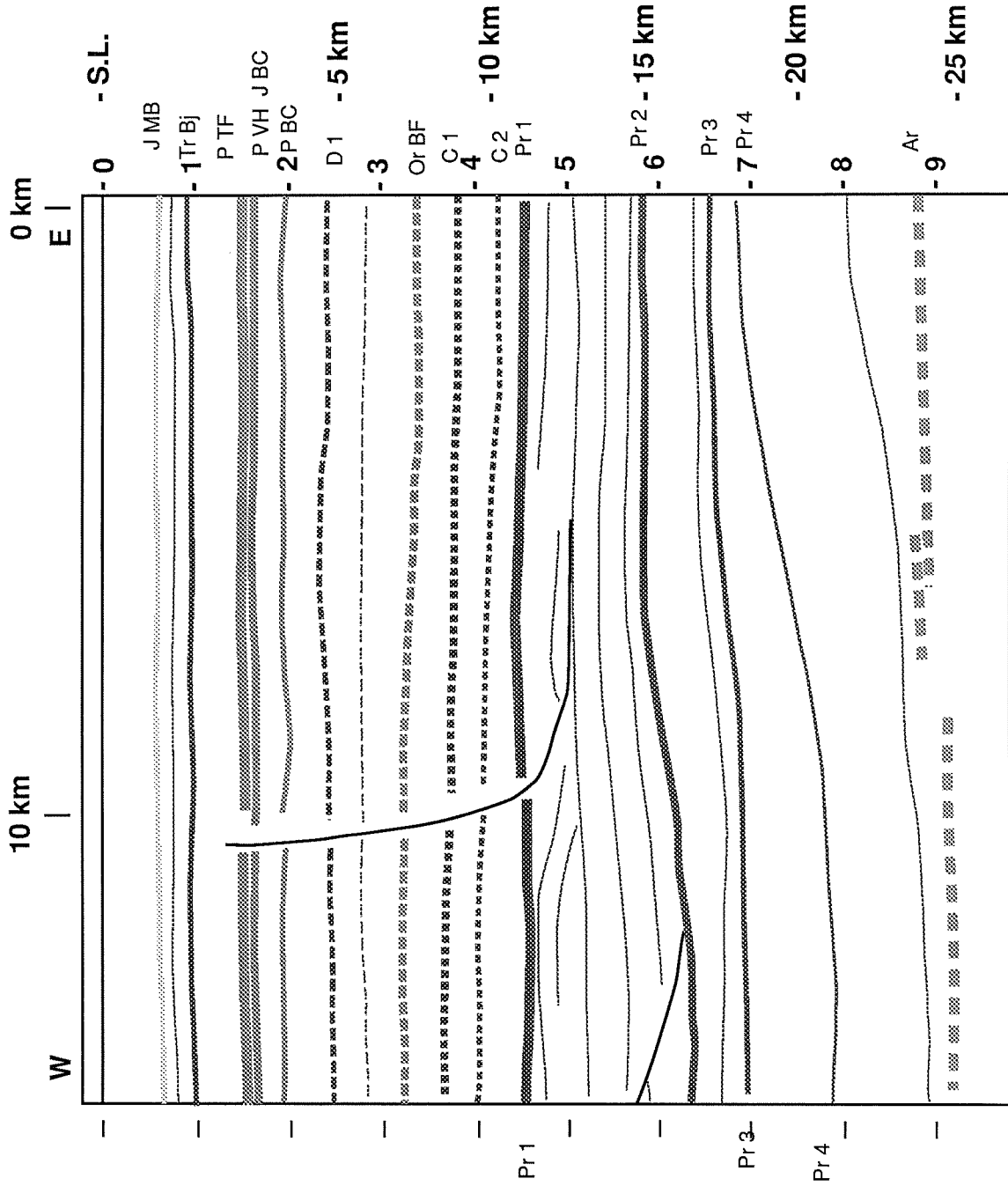


U of A - zb/erk

Melville Is. Line 2144/1

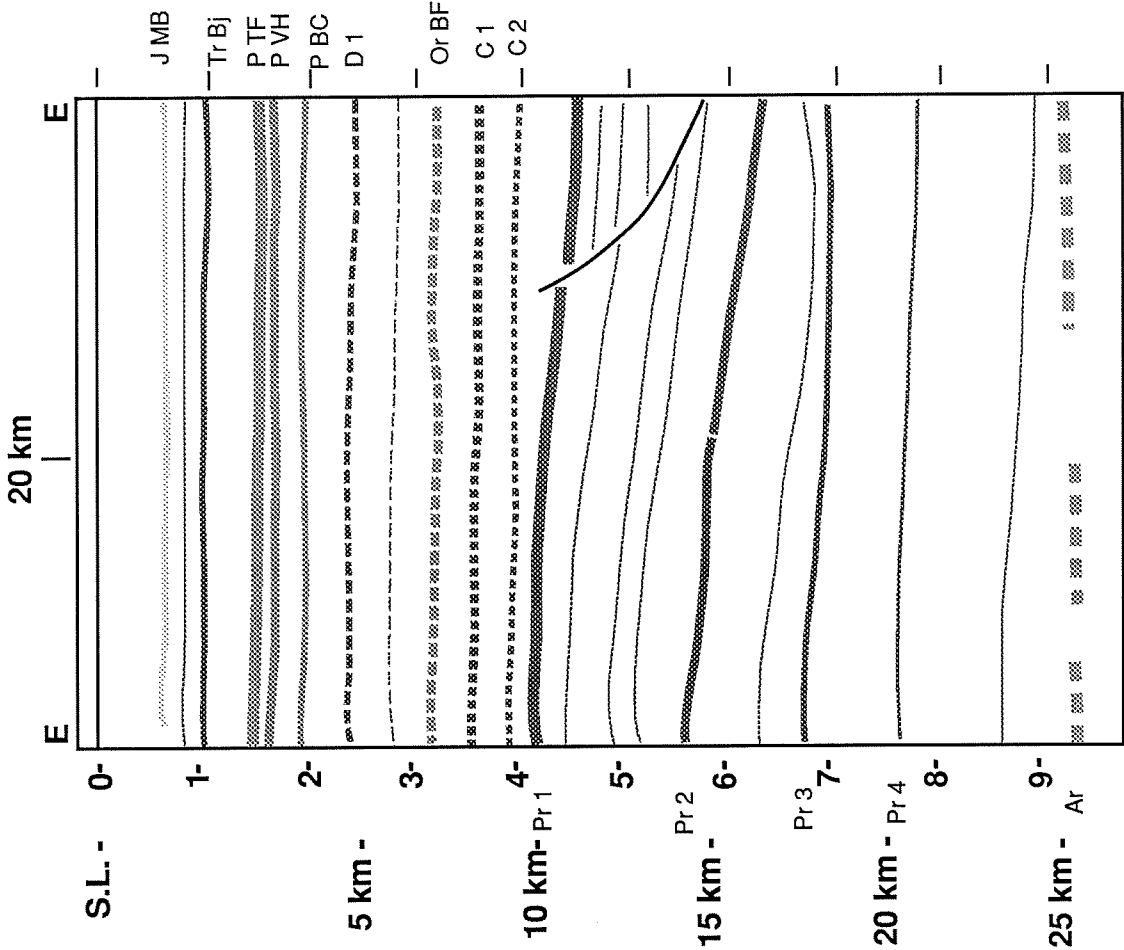


Melville Is. Line 2144/2 U of A - zb/erk

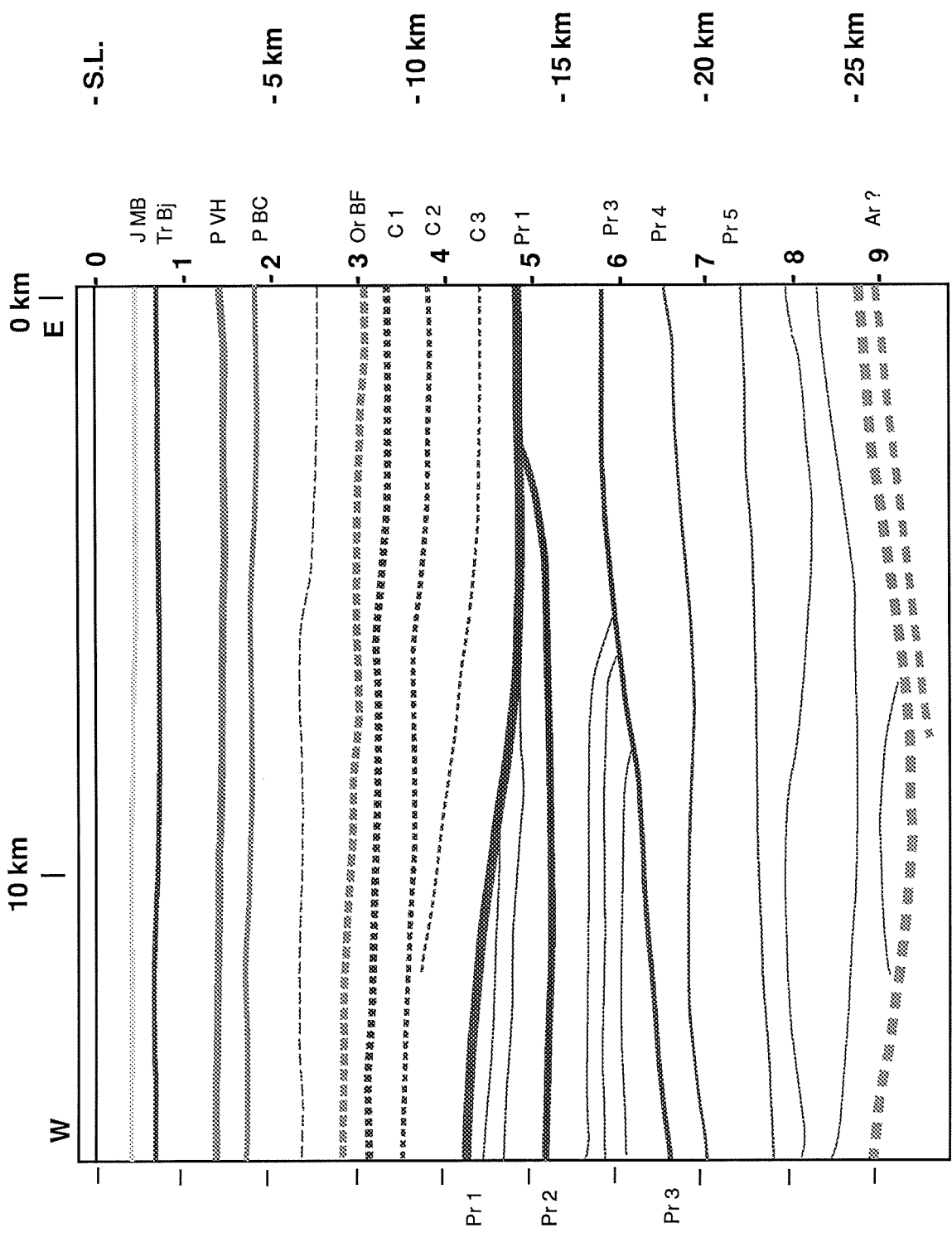


U of A - zb/erk

Melville Is. Line 2145/1

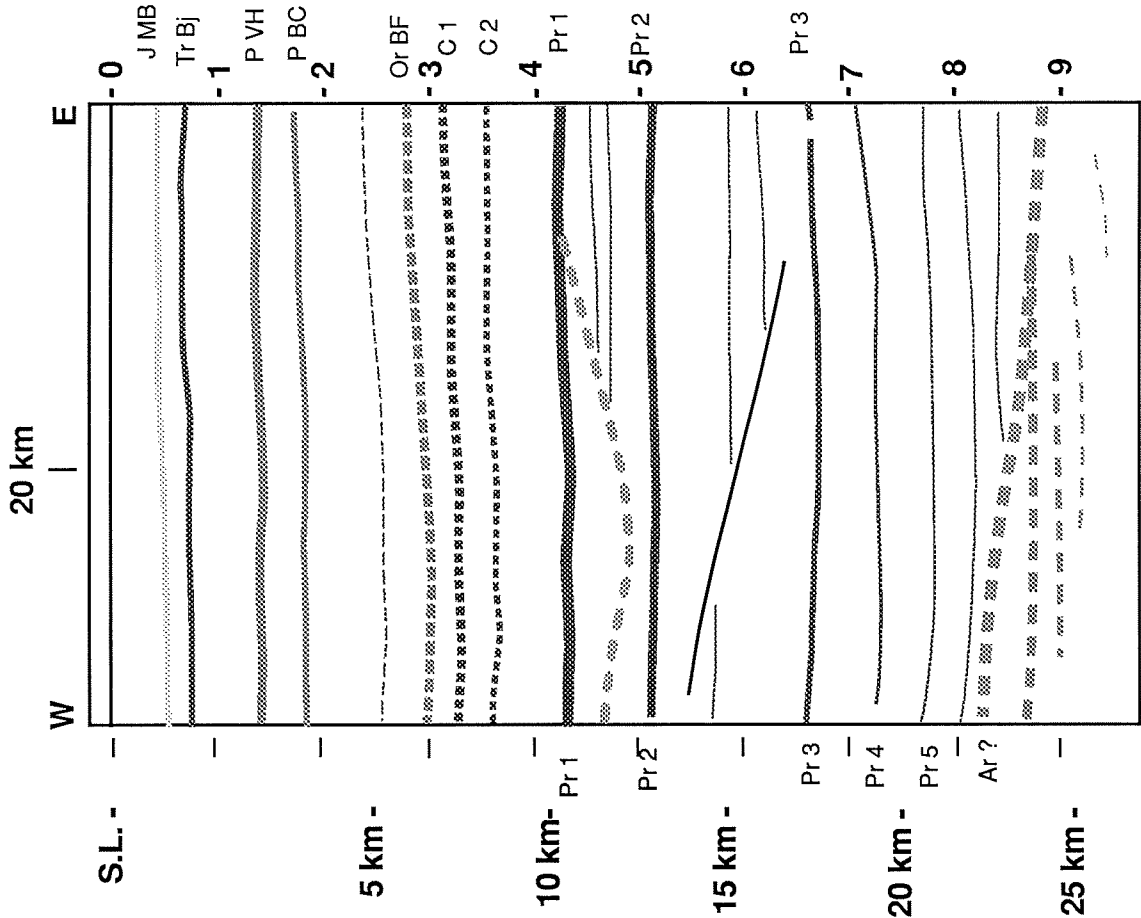


Melville Is. Line 2145/2 U of A - zb/erk

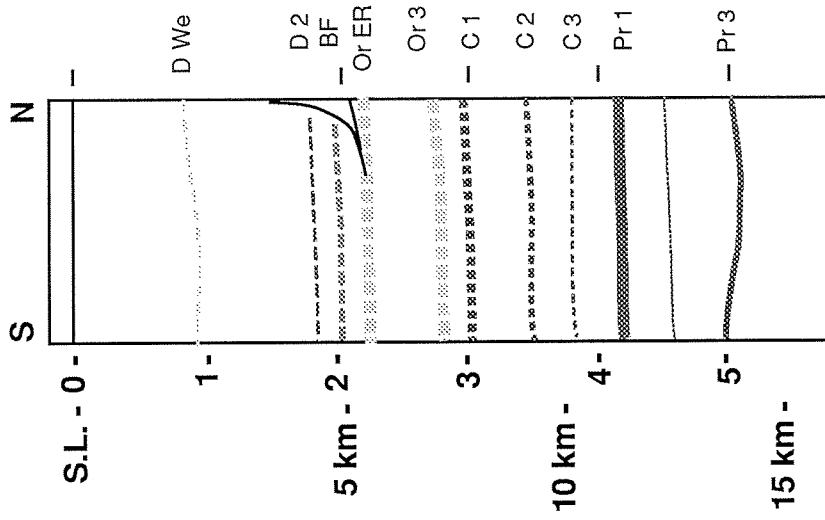


U of A - zb/erk

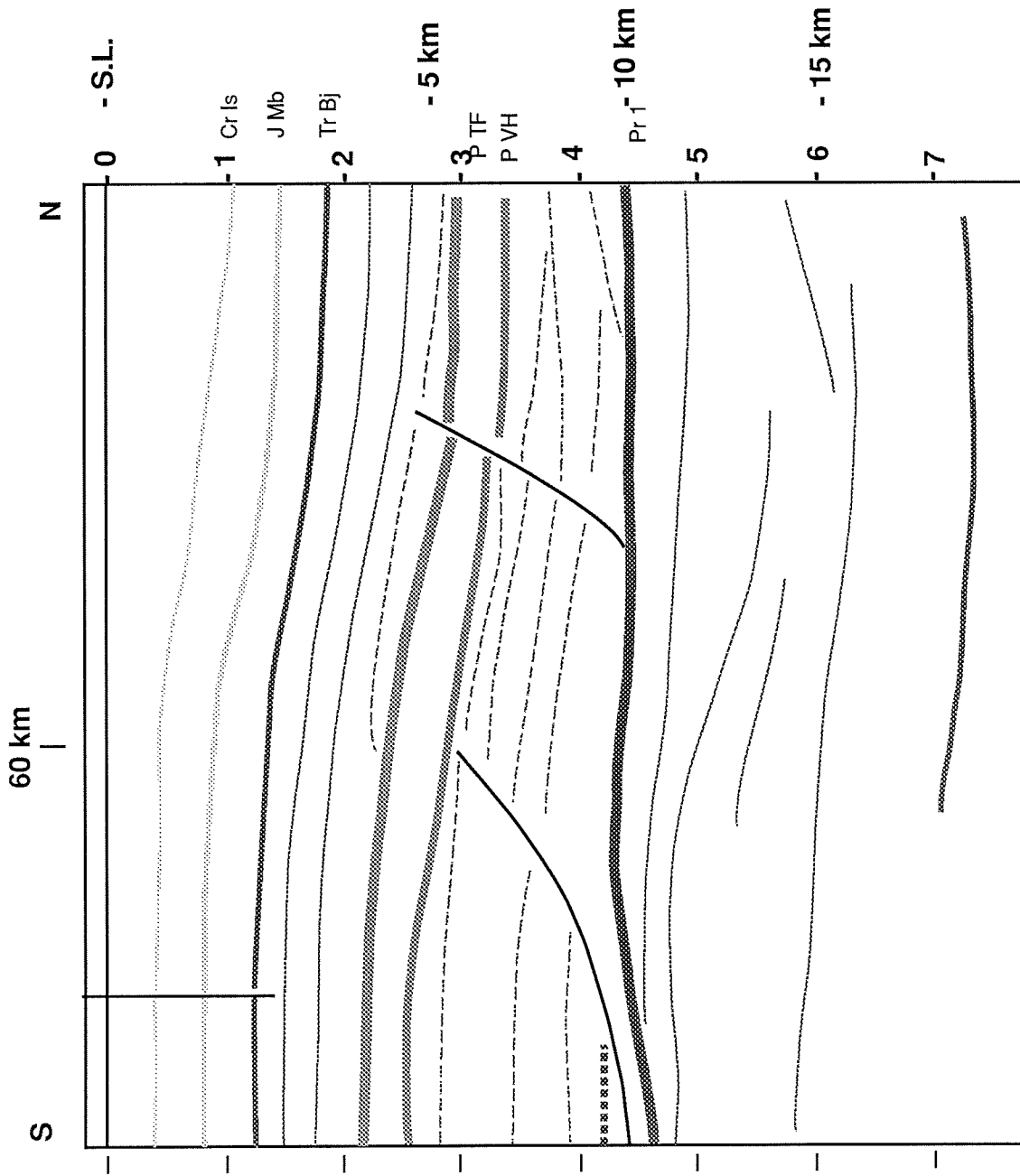
Melville Is. Line 2146/1



Melville Is. Line 2146/2 U of A - zb/erk



M. TPC 8/2



U of A - zb.erk

Melville Is. Line 2674/1

40 km

50 km

S

N



Melville Is. Line 2674/2

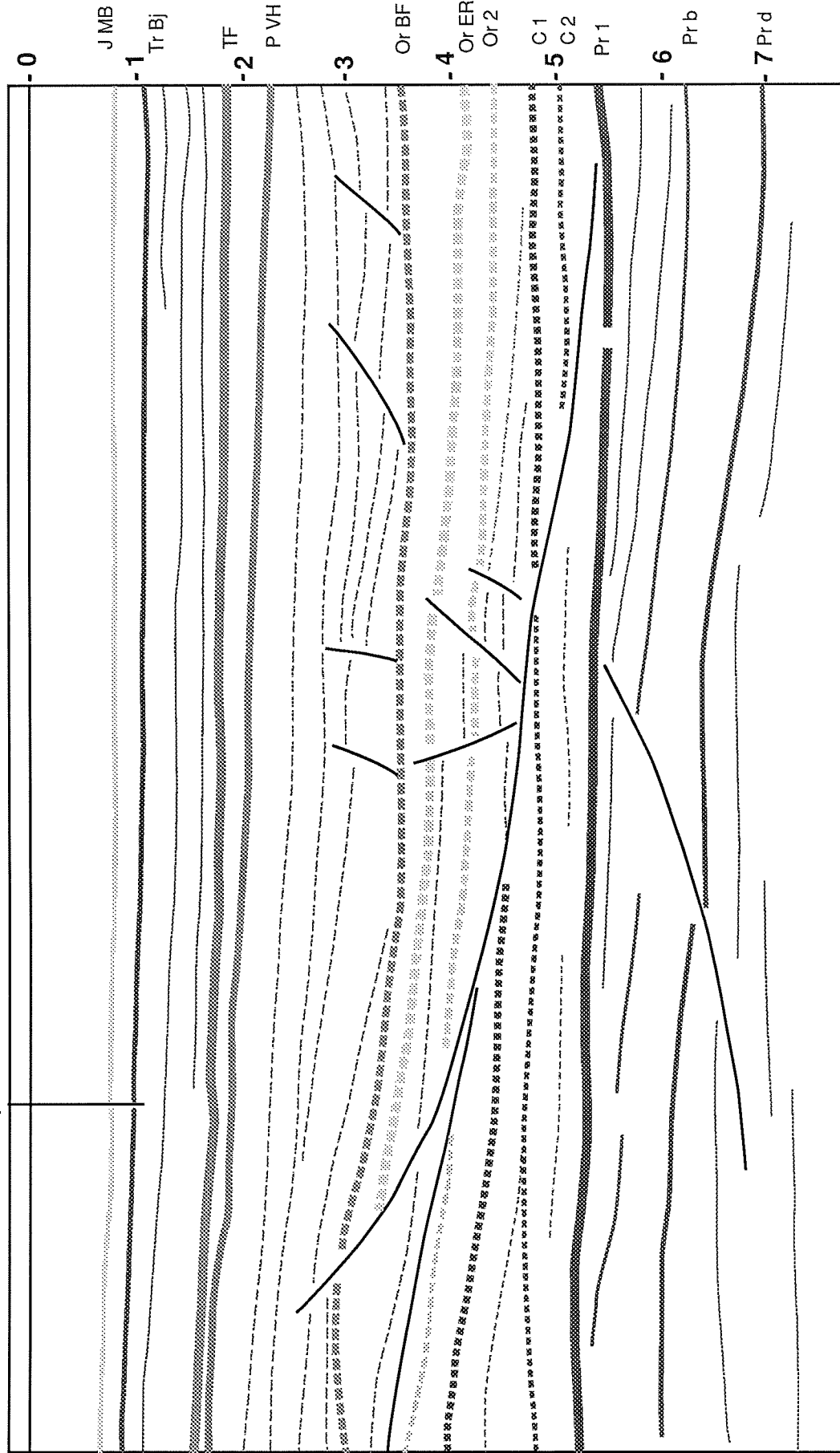
U of A - zb/erk

20 km

30 km

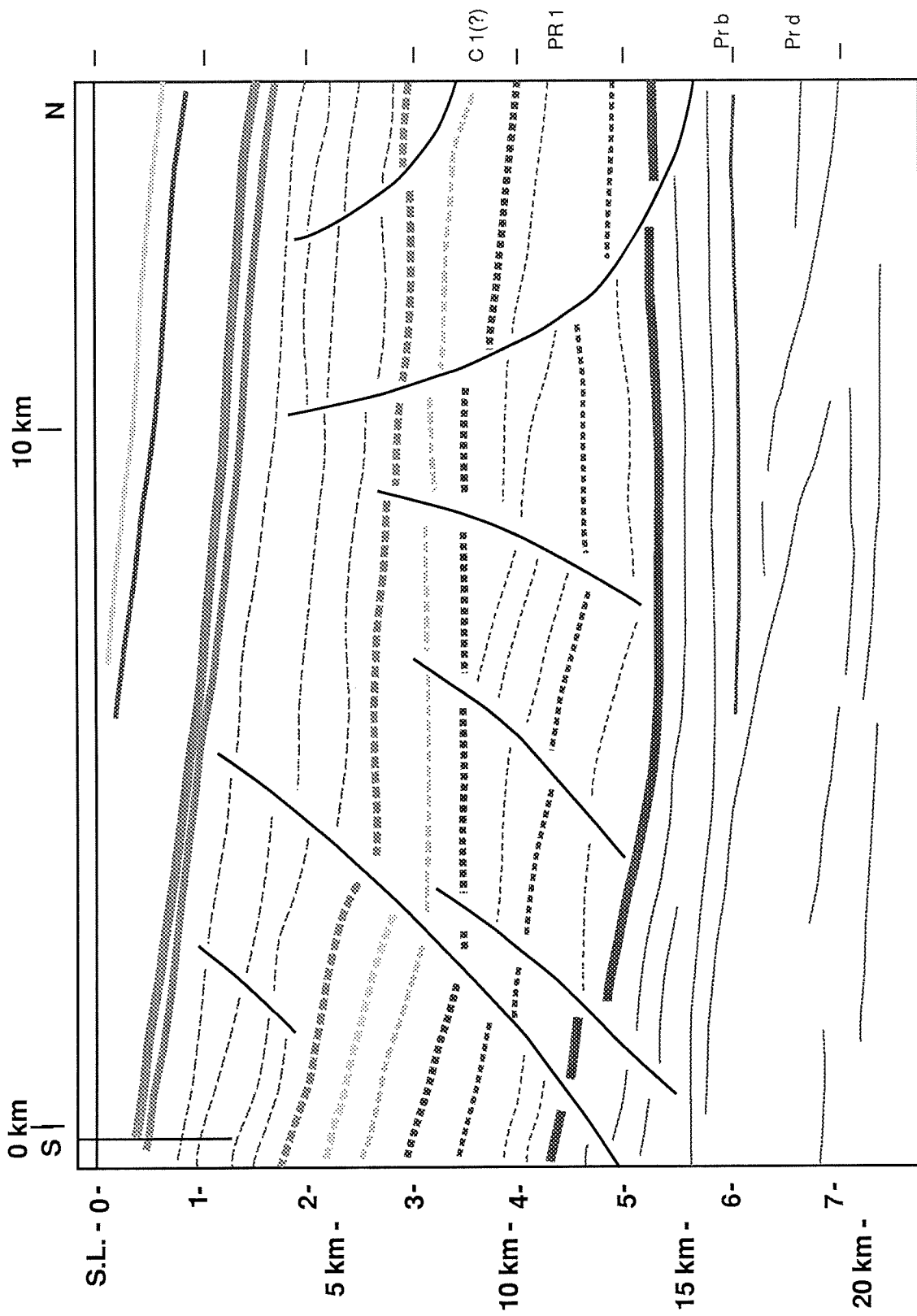
S

N



Melville Is. Line 2674/3

U of A - zb/erik

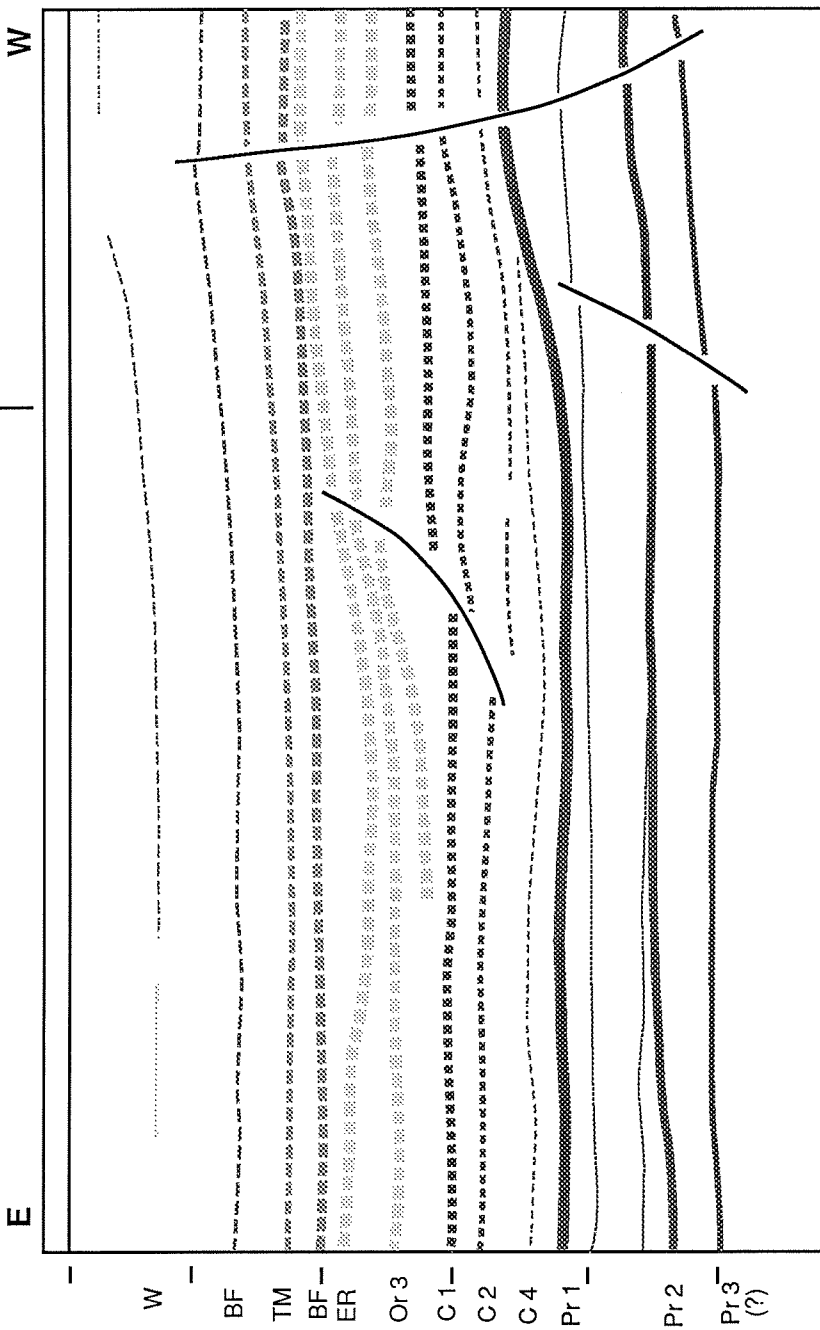


Melville Is. Line 2674/4

U of A - zb/erk



20 km

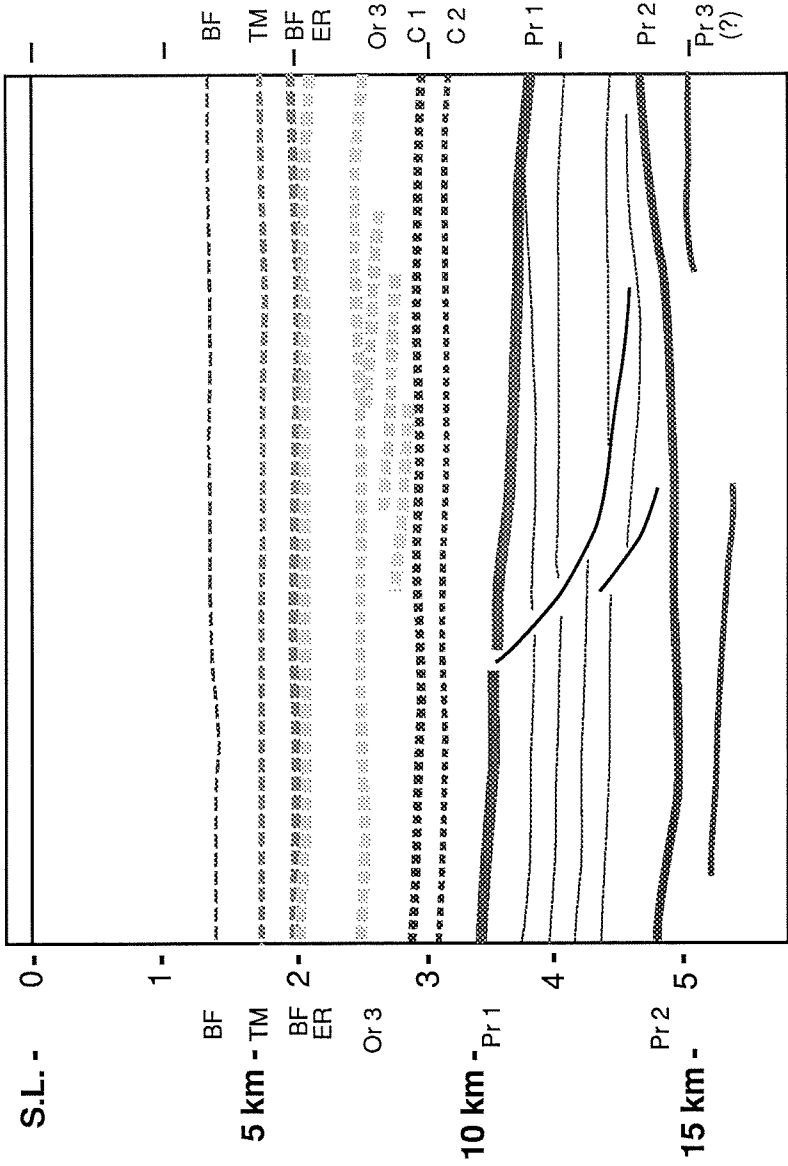


U of A - zb/erik

Melville Is. Line TPC2/1

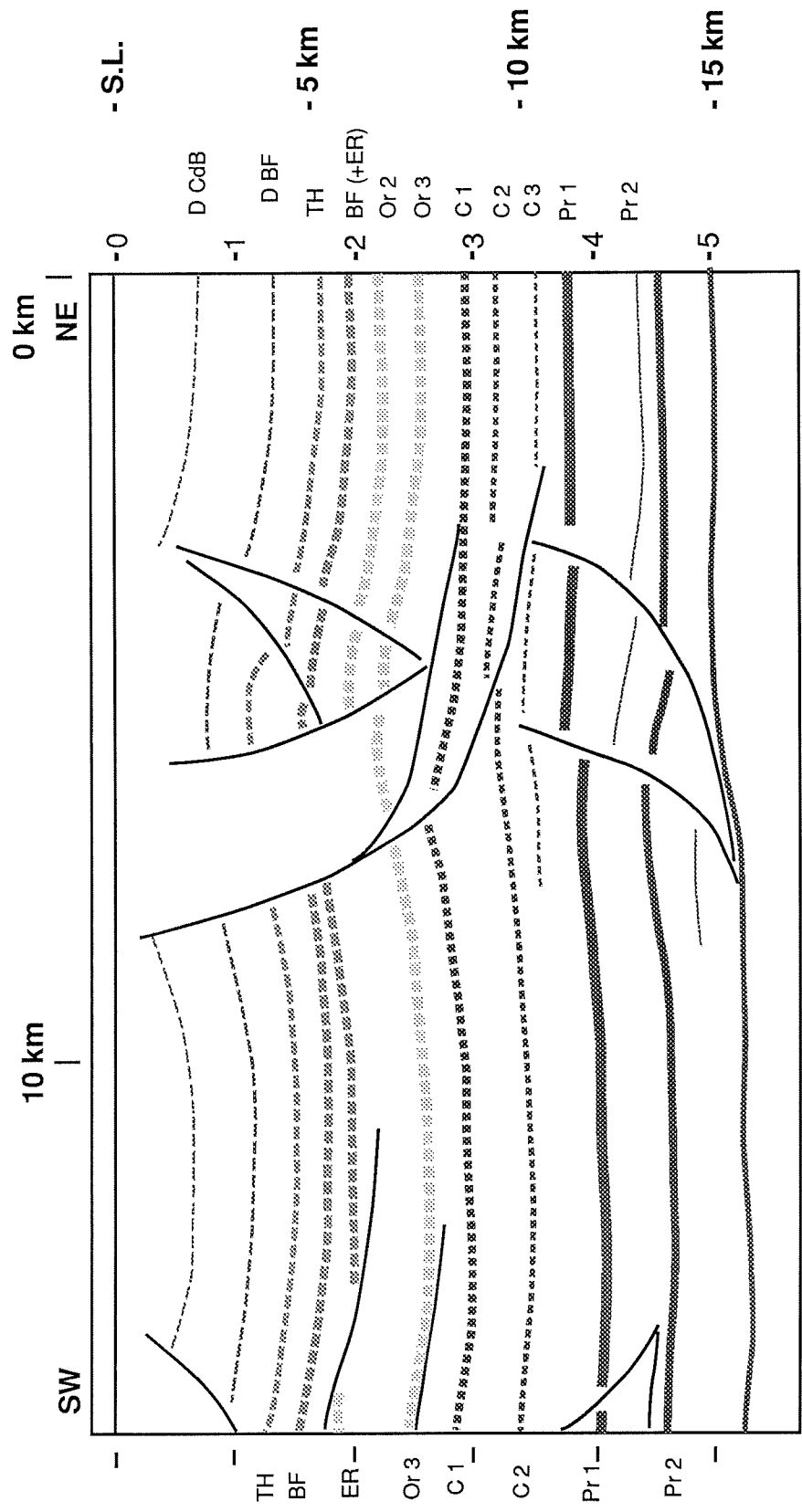


0 km | E
10 km



Melville Is. Line TPC2/2

U of A - zb/erk



Melville Is. Line TPC7/1

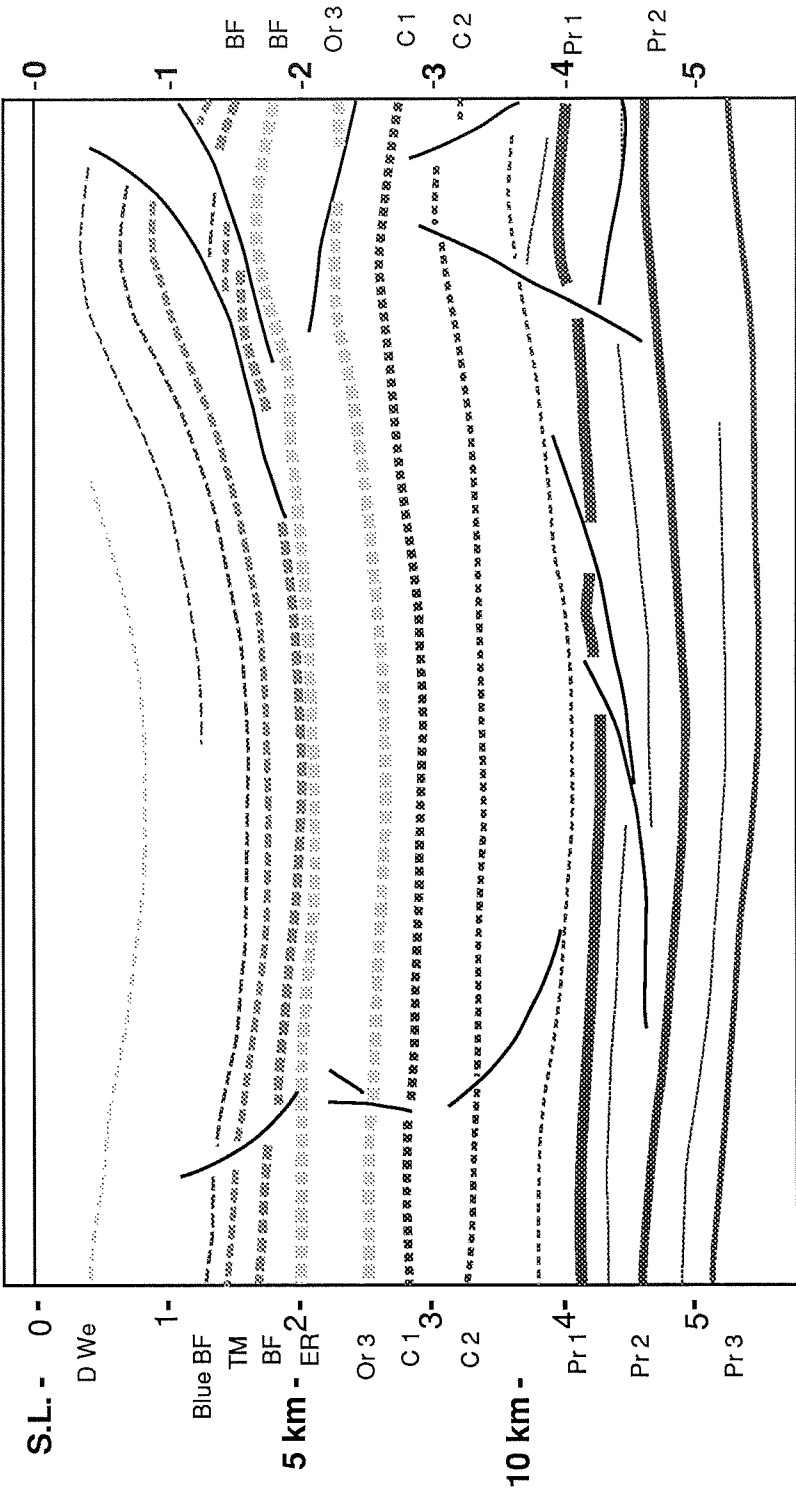
U of A - zb/erk



20 km

SW

NE



Melville Is. Line TPC7/2

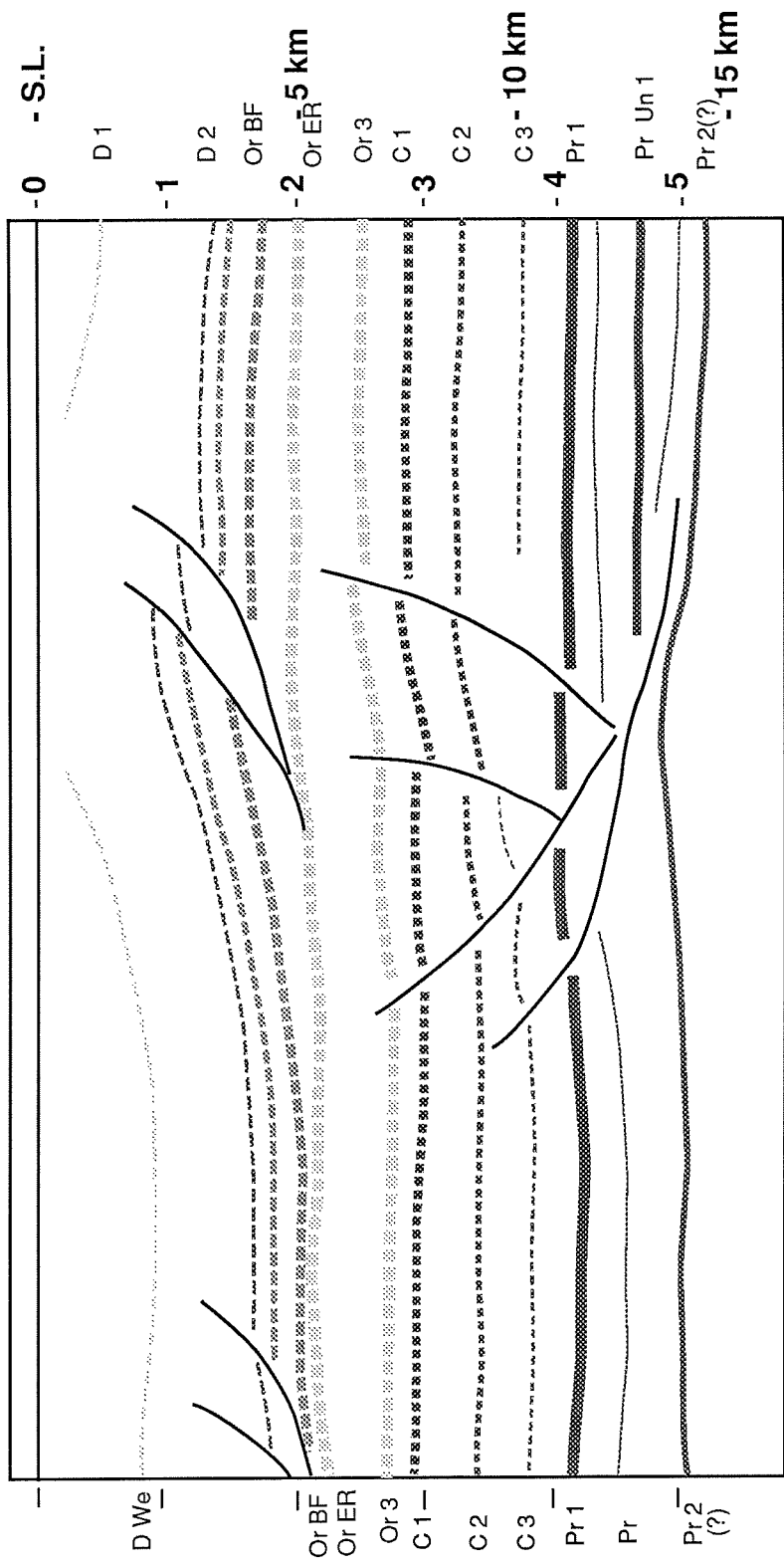
U of A - zb/erk



0 km
N |

10 km
|

S

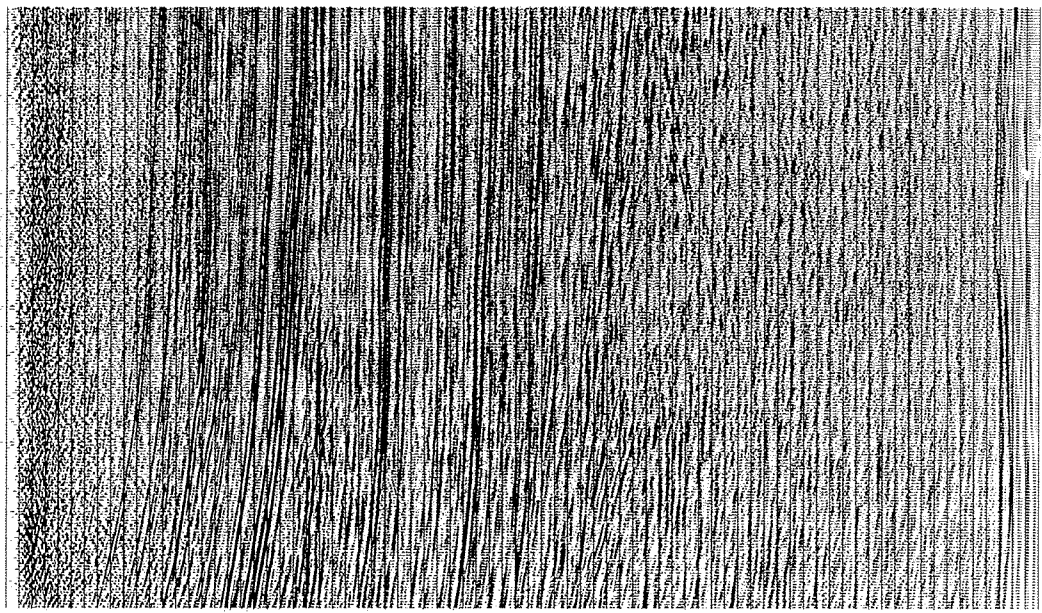


Melville Is. Line TPC-8/1

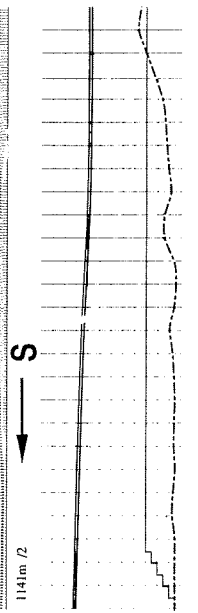
U of A - zb/erik

Line 1140

APPROX. REFLECT. DEPTH TIME
 320 312 300 288 272 256 240 224 208



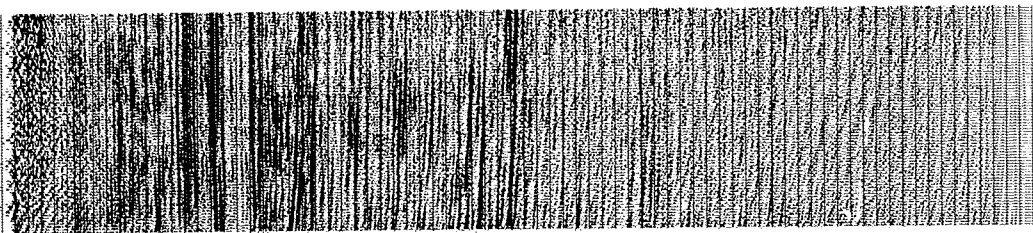
S.L. - 0.0 s -
 1.0 s -
 5 km - 2.0 s -
 3.0 s -
 10 km - 4.0 s -
 5.0 s -
 15 km - 6.0 s -
 20 km - 7.0 s -



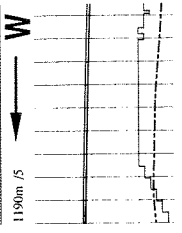
S E G
 24 - 300 m - -28 mgal -
 18 - 200 m - -34 mgal -
 12 - 100 m - -40 mgal -
 6 - S.L. - -46 mgal -
 0 - S.L. - -52 mgal -

1152 1144 1136 1128 1120

APPROX. REFL. DEPTH TIME



S. L. - 0.0 s -
 1.0 s -
 5 km - 2.0 s -
 3.0 s -
 10 km - 4.0 s -
 5.0 s -
 15 km - 6.0 s -
 20 km - 7.0 s -



S E G
 24 - 300 m - 0 mgal -
 18 - 200 m - 6 mgal -
 12 - 100 m - 12 mgal -
 6 - S. L. - 18 mgal -
 0 - -24 mgal -

MELVILLE ISLAND, CANADA
Line No.: 1762

Migrated Seismic Reflection Section

APPROX.
DEPTH

0 km
1.5
2.1
3.2
4.4
5.5
6.5
7.2
8.0
9.0
1.00
1.10
1.22
1.32
10 km
1.45
1.55
1.66
1.72
1.80
1.87
1.94
2.02
2.12

-0.0 s - S.L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

-6.0 s

-7.0 s

-20 km

Processed by:
Ventas Seismic Ltd., Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: April 1975
Source interval: 880 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:

Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Decompression: 12000 ft/s
Operator length: 120 ms
Prewhitening: 5 %
Filter: time varying digital bandpass: 10/13.5/60 Hz;
3500-8000 ms; 57.5-5060 Hz.

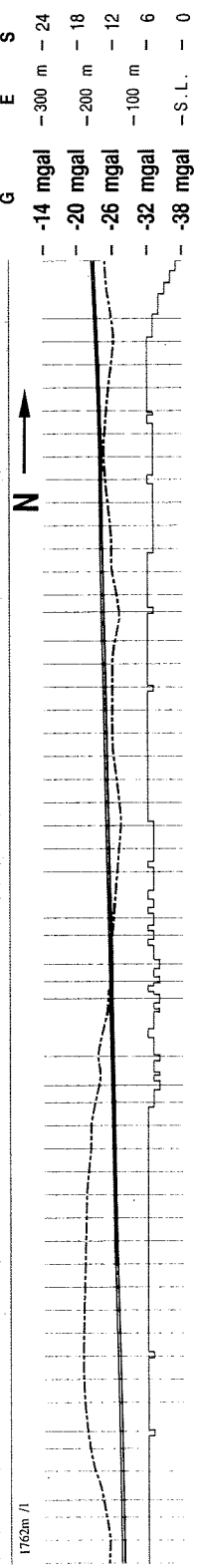
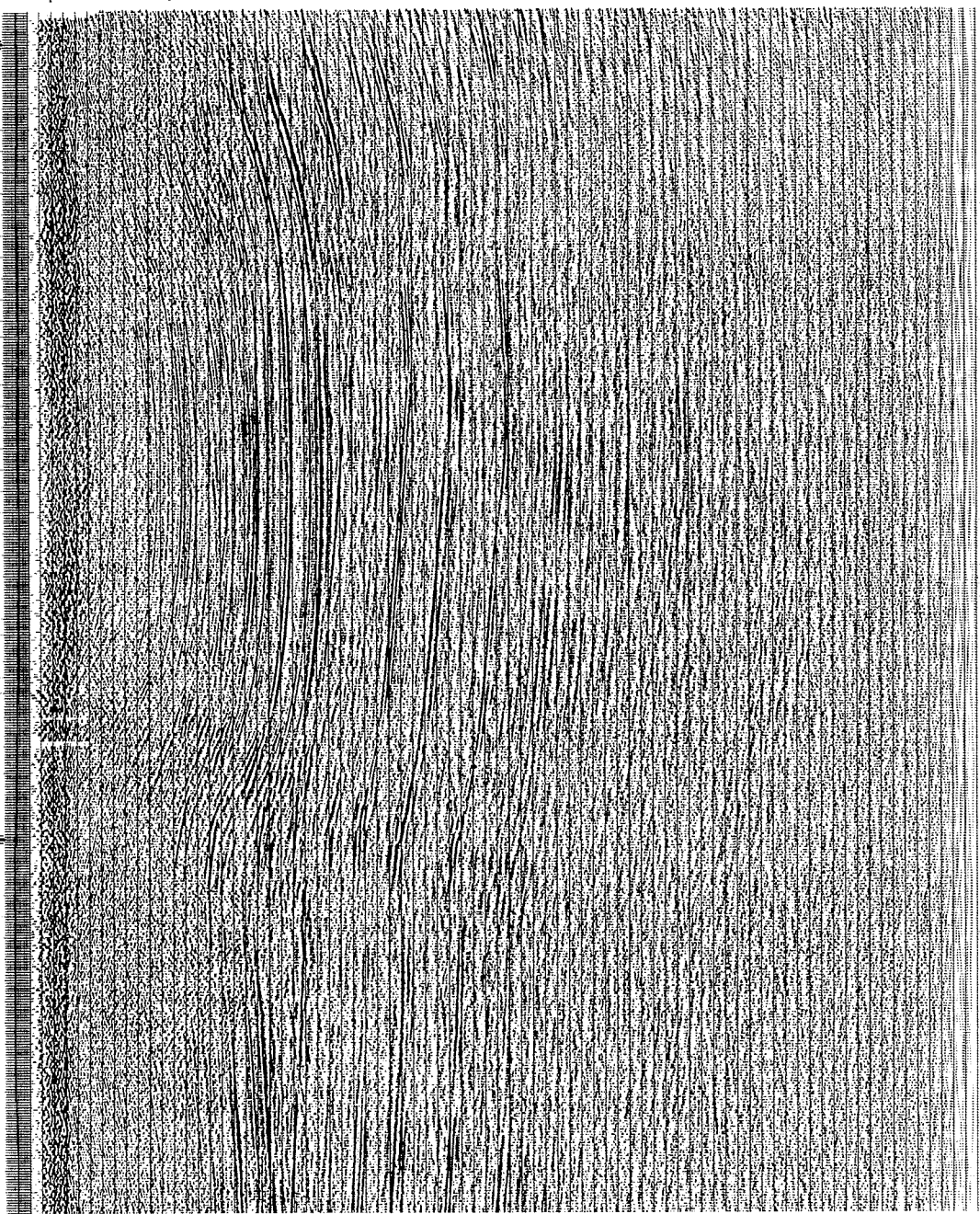
G: Bouguer gravity anomaly

E: Elevation

S: Stacking fold

Interpretation:

E.R. Kanisewich and Z. Berkis
University of Alberta, Edmonton, March 1988

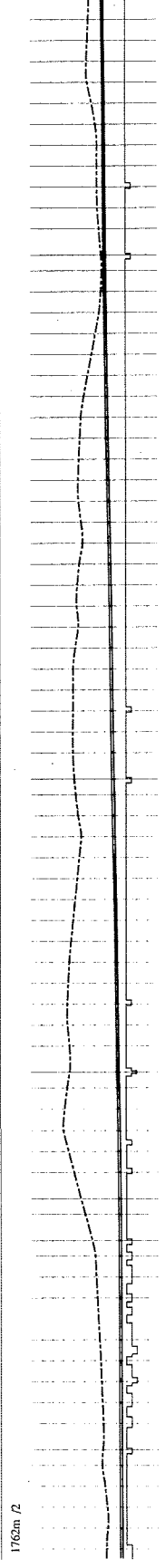
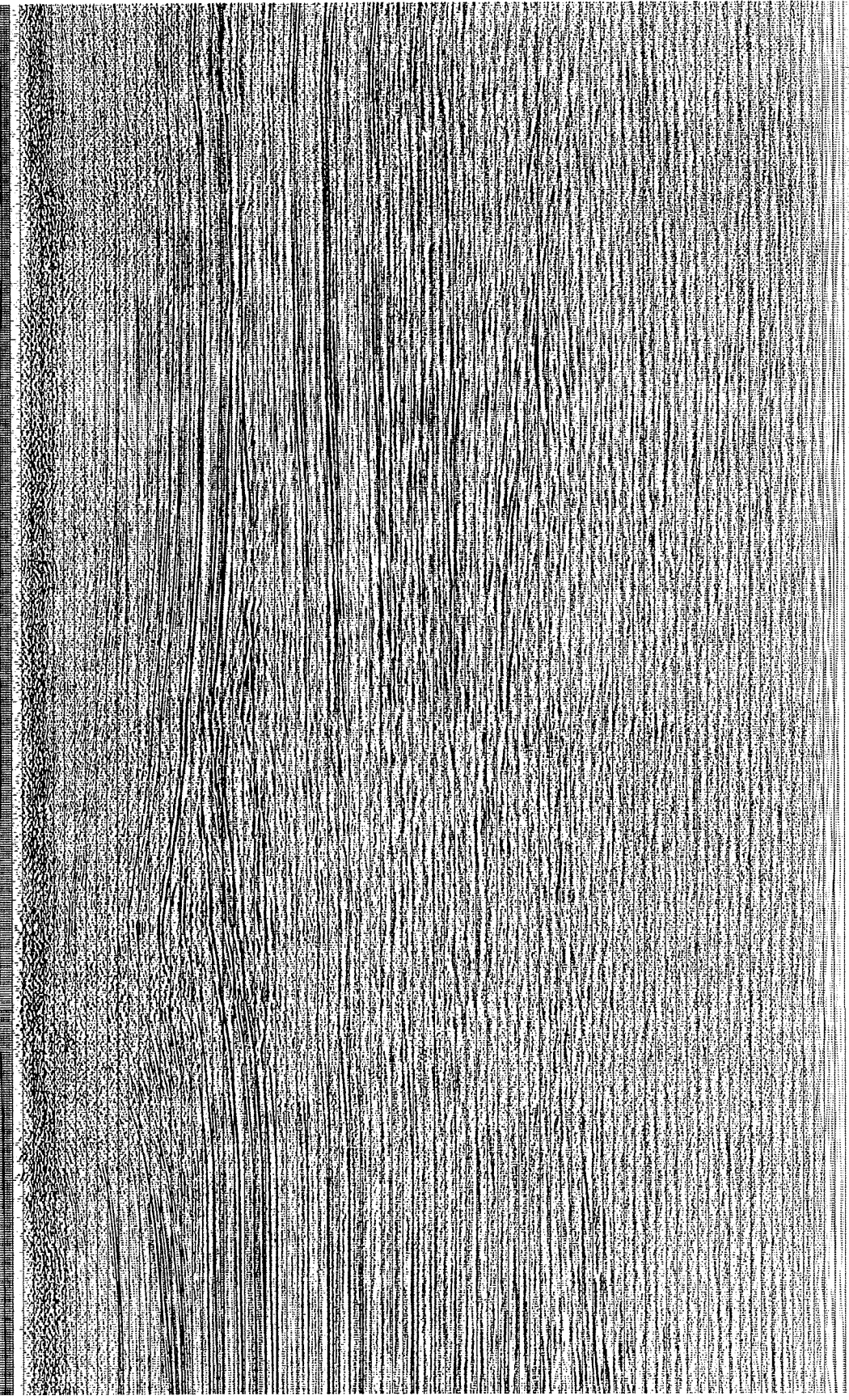


1762m / 1

510 500 480 460 440 420 400 380 360 340 320 310 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20

30 km

20 km



1762m / 2

MELVILLE ISLAND, CANADA

Line No.: 1138

Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

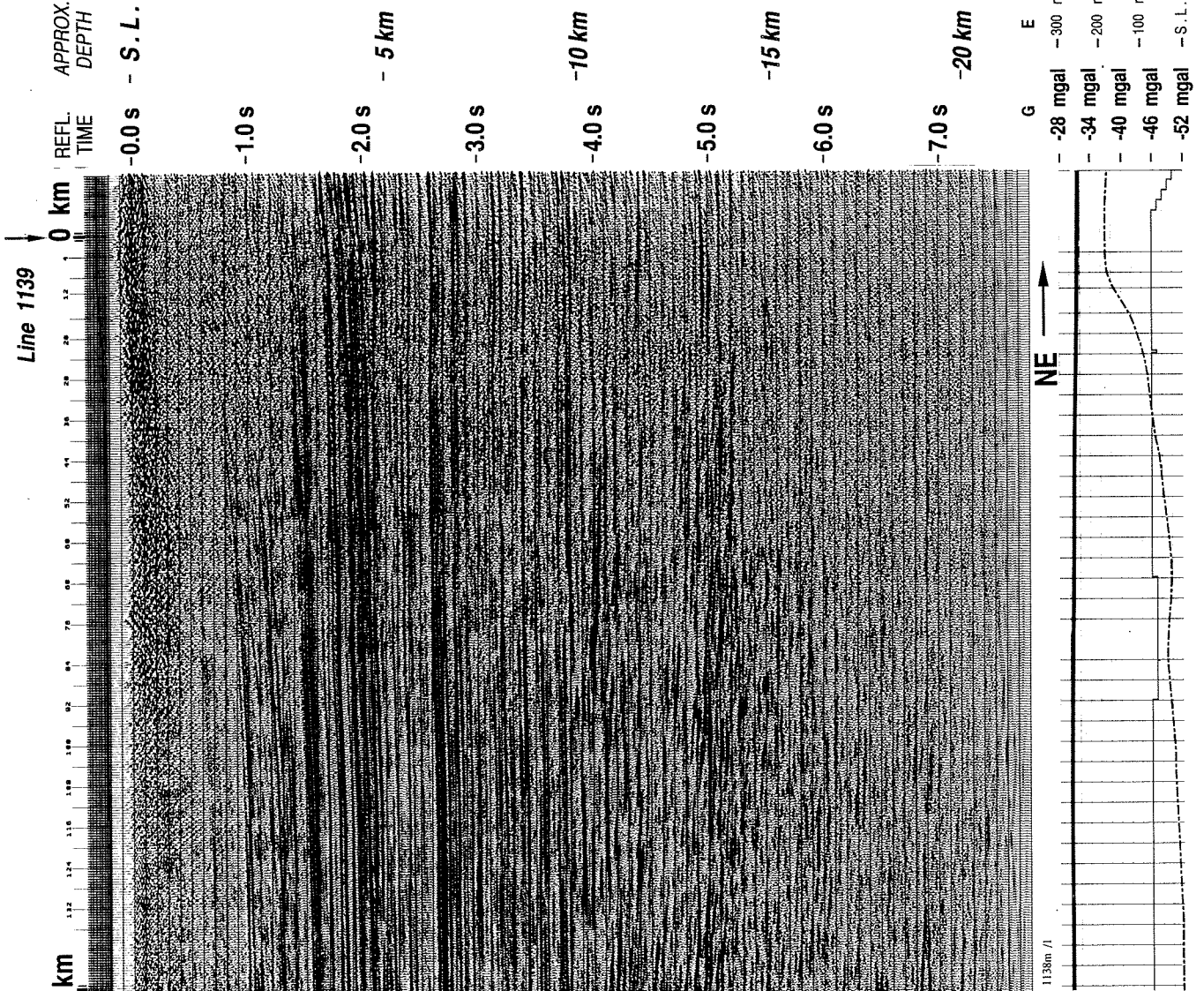
Field parameters:
Date shot: May 1973
Source interval: 600 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Sea level Datum: 12000 ft
Replacement velocity: 1200 m/s
Deconvolution Operator length: 120 ms
Filtering: 5 %
Line varying digital bandpass: 0-3500 ms; 10/13-50/60 Hz; 3500-8000 ms; 5/7.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:

E.R. Kauschevich and Z. Benkes
University of Alberta, Edmonton, March 1988





Winter Harbour No.1

Line 1171

APPROX. REFLECT. DEPTH TIME

S.L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

10 km - 4.0 s -

5.0 s -

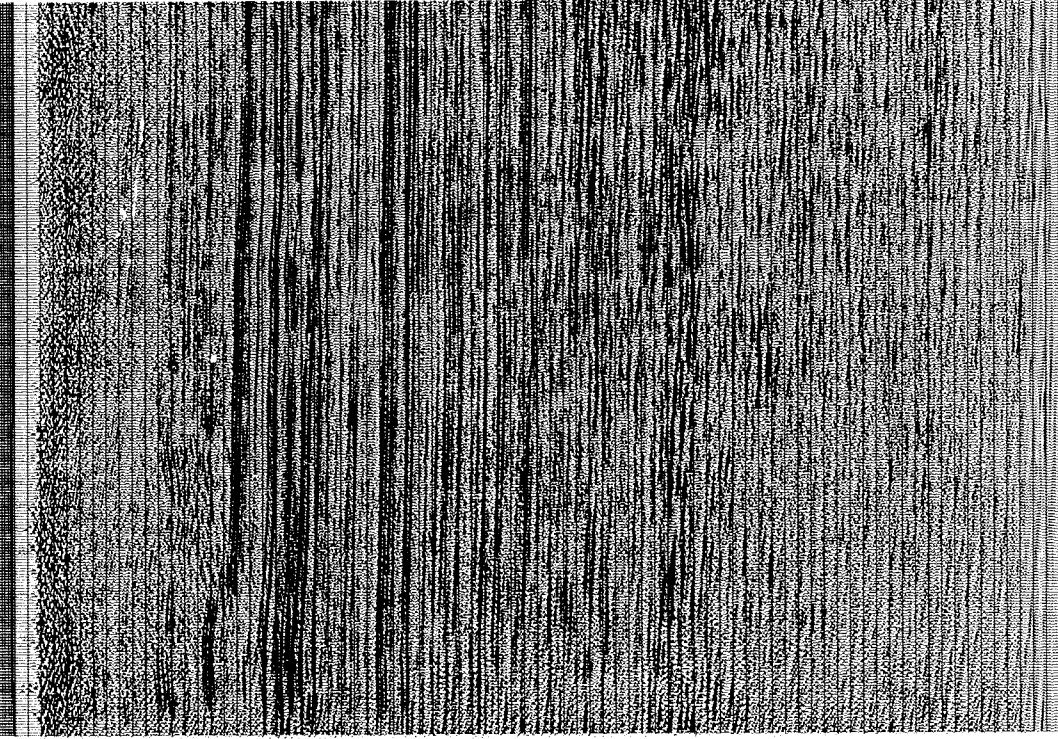
6.0 s -

7.0 s -

20 km -

10

270 268 266 264 262 260 258 256 254 252 250 248 246 244 242 240 238 236 234 232 230 228 226 224 222 220 218 216 214 212 210 208 206 204 202 200 198 196 194 192 190 188 186 184 182 180 178 176 174 172 170 168 166 164 162 160 158 156 154 152 150 148 146 144 142 140 138 136 134 132 130 128 126 124 122 120 118 116 114 112 110 108 106 104 102 100 98 96 94 92 90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0



1138m / 2

SW

S	E	G
24 - 300 m -	-28 mgal	-
18 - 200 m -	-34 mgal	-
12 - 100 m -	-40 mgal	-
6 - S.L. -	-46 mgal	-
0 - S.L. -	-52 mgal	-

Line 1140

0 km

10 km

2 264 1306 1388 1470 1552 1634 1716 1798 1880 1962 2044 2126 2208 2290 2372 2454

REFL. TIME
-0.0 s
-1.0 s
-2.0 s
-3.0 s
-4.0 s
-5.0 s
-6.0 s
-7.0 s

APPROX. DEPTH
- 5 km
- 10 km
- 15 km
- 20 km

MELVILLE ISLAND, CANADA
Line No.: 1139
Migrated Seismic Reflection Section

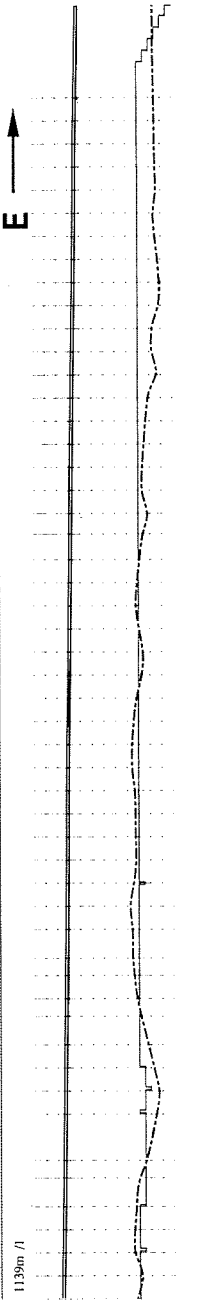
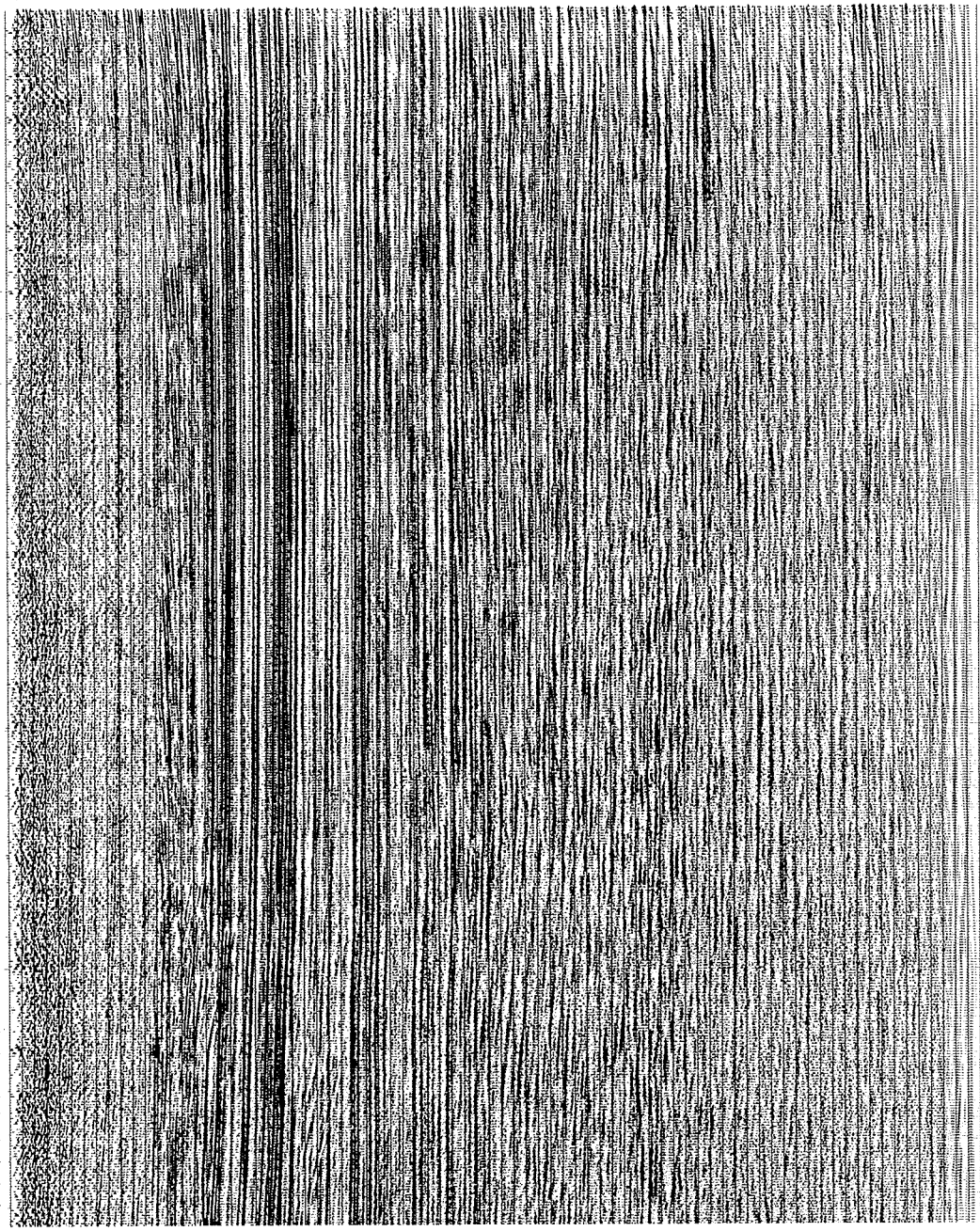
Processed by:
Veritas Seismic Ltd., Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: May 1973
Source interval: 880 ft
Geophone group interval: 220 ft
Speed distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 f/s
Deconvolution
Operator length: 120 ms
Preshwhitening: 5 %
Filter: time varying digital bandpass:
0.3500 ms: 10/15-50/60 Hz;
3500-8000 ms: 5/7.5-50/60 Hz.

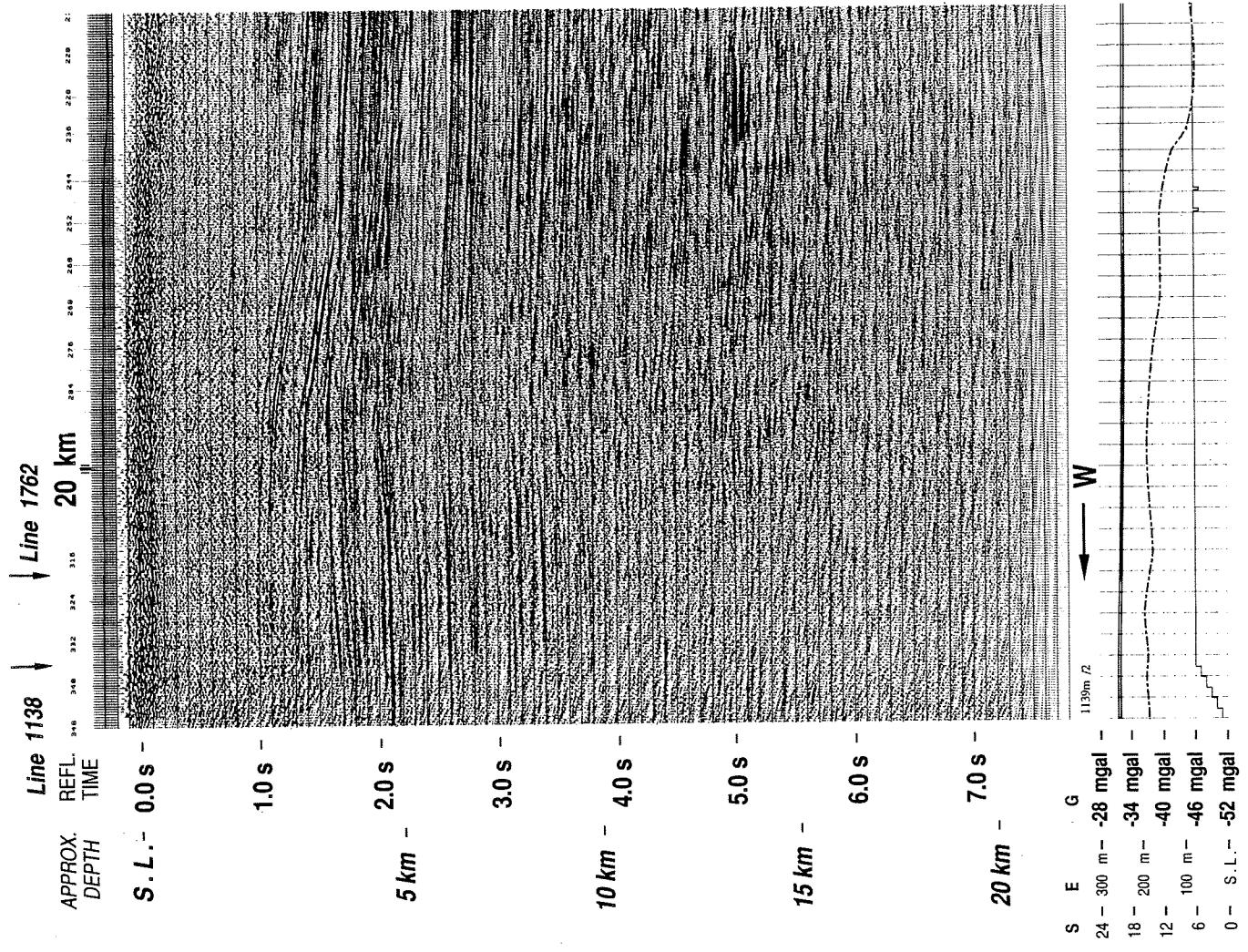
G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:
E.R. Kanuswich and Z. Berkes
University of Alberta, Edmonton, March 1988



1139m / 1

G E S
-28 mgal -300 m -24
-34 mgal -200 m -18
-40 mgal -100 m -12
-46 mgal -6
-52 mgal -S.L. -0



Line 1138 Line 1762
 ↓ ↓
 20 km

REFL. TIME
 APPROX. DEPTH

S.L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

5 km -

10 km -

15 km -

20 km -

S E G
 24 - 300 m - -28 mgal -
 18 - 200 m - -34 mgal -
 12 - 100 m - -40 mgal -
 6 - S.L. - -46 mgal -
 0 - S.L. - -52 mgal -

MELVILLE ISLAND, CANADA
 Line No.: 1140
 Migrated Seismic Reflection Section

Processed by:
 Wessex Seismic Ltd., Calgary, July 1987
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date rec: May 1973
 Shot point: 200
 Geographic group name: 5386-226-SP-226-5260 ft
 Speed of sound: 5386-226-SP-226-5260 ft

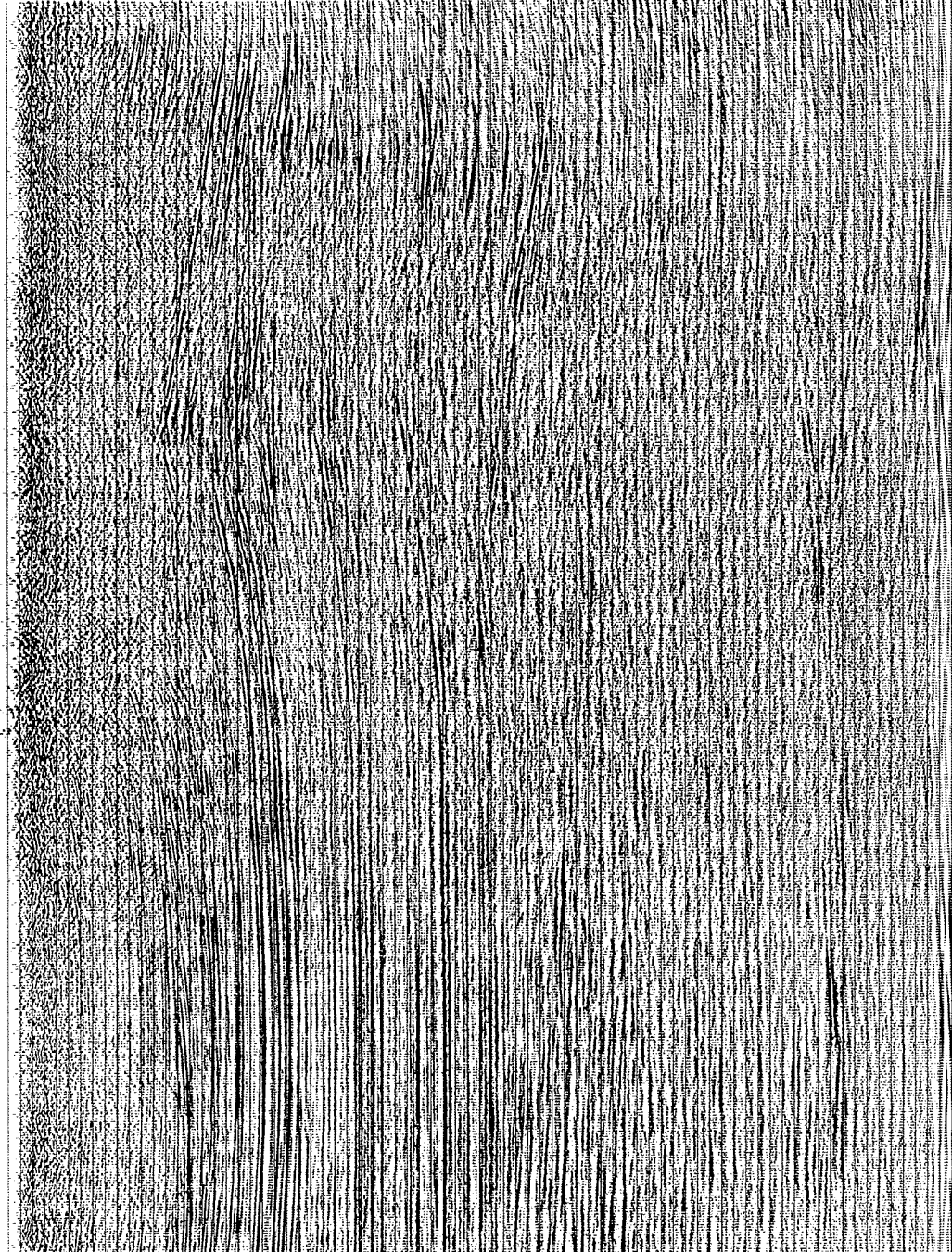
Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Dip correction: 12000 ft
 Dip correction: none
 Operator length: 120 ms
 Filter: 5 %
 Filter: 5 %
 Time varying signal gain: 1000 Hz
 Gain: 2000 Hz
 Gain: 500-2000 Hz: 27.5-5260 Hz

Interpretation:
 E: Evaporite
 S: Shaling bed
 G: Gravelly quartz anomaly

EA Kosowatz and J. Bohlen
 University of Alberta, Edmonton, March 1988

REFL. TIME
 -0.0 s - S.L.
 -1.0 s
 -2.0 s - 5 km
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s -20 km

Line 1141
 0 km
 10 km
 228 212 204 196 188 180 172 164 156 148 140 132 124 116 108 100 92 84 76 68 60 52 44 36 28 20 12 4

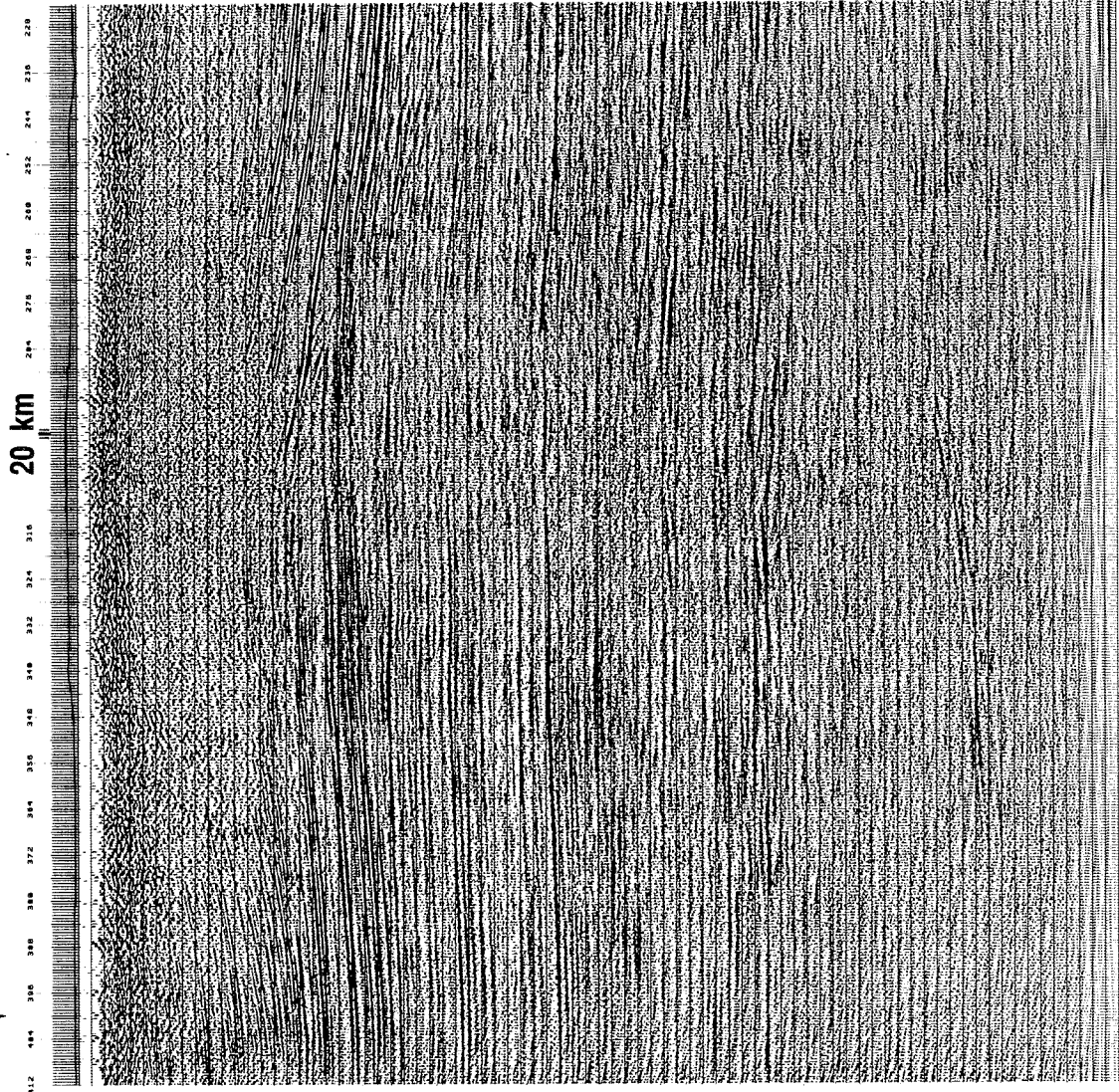


G E S
 -28 mgal -300 m -24
 -34 mgal -200 m -18
 -40 mgal -100 m -12
 -46 mgal -6
 -52 mgal -S.L. -0

NE →

1140m / 1

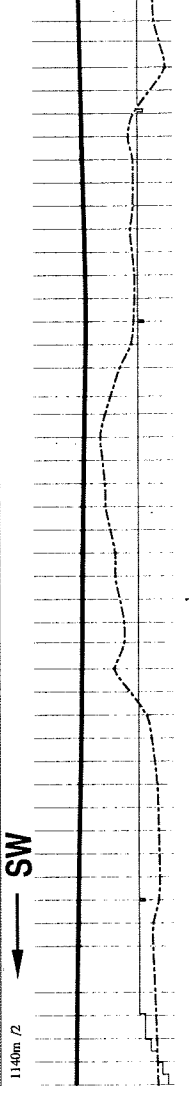
Line 1139



APPROX. DEPTH
REFL. TIME

0.0 s -
1.0 s -
2.0 s -
3.0 s -
4.0 s -
5.0 s -
6.0 s -
7.0 s -

5 km -
10 km -
15 km -
20 km -



S E G
24 - 300 m - -28 mgal -
18 - 200 m - -34 mgal -
12 - 100 m - -40 mgal -
6 - S.L. - -46 mgal -
0 - S.L. - -52 mgal -

MELVILLE ISLAND, CANADA
Line No.: 1168
Migrated Seismic Reflection Section

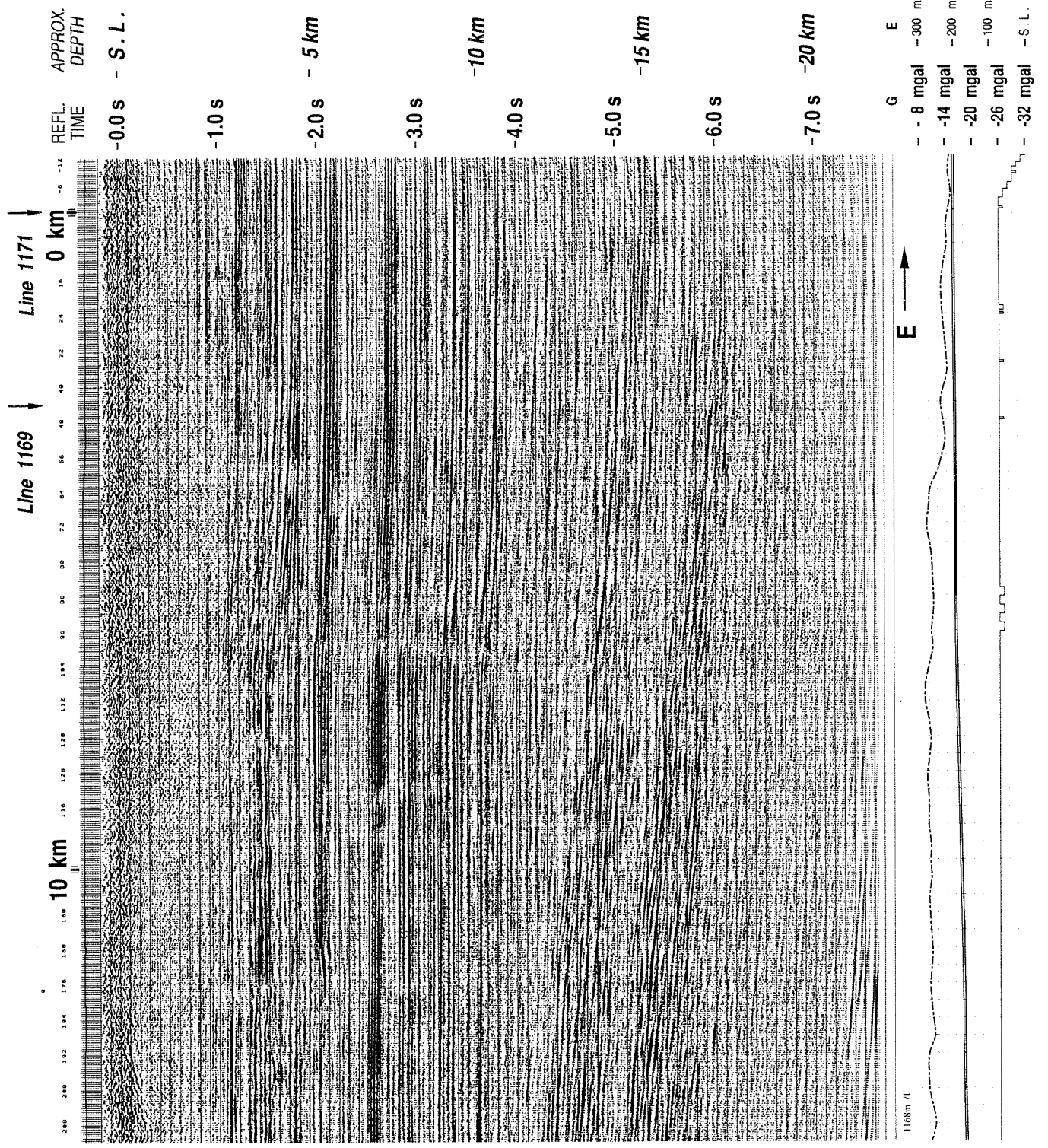
Processed by:
Veritas Seismic Ltd., Calgary, July 1987
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: May 1973
Source interval: 800 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

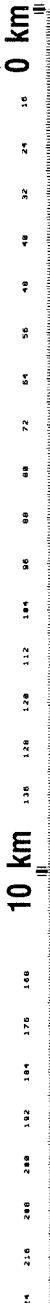
Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Dewar length: 120 ms
Core length: 5 %
Prewhitening:
Filter:
Line varying digital bandpass: 10/13-50/60 Hz;
0-3500 ms; 3500-8000 ms; 57.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Seafloor

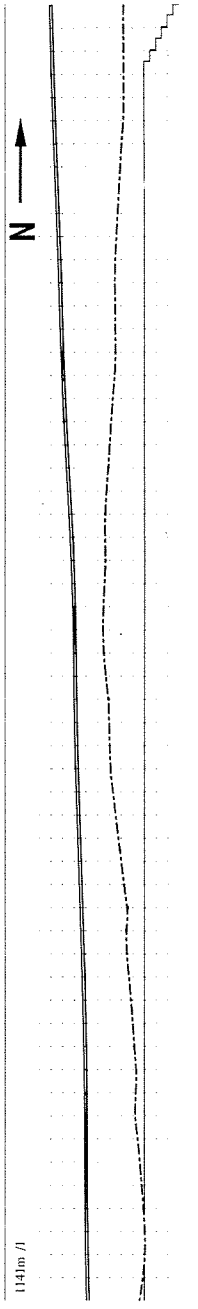
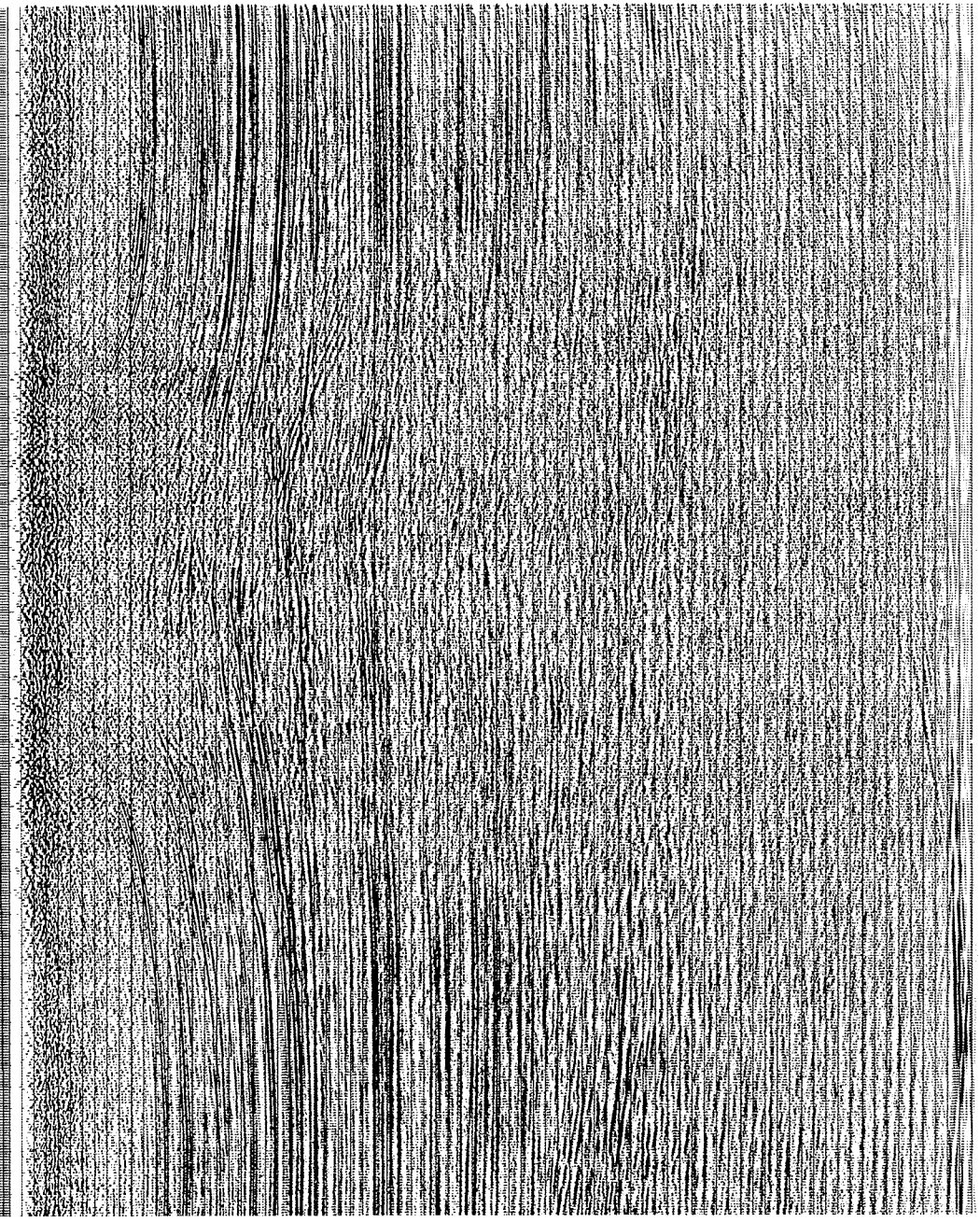
Interpretation:
E.R. Kanasewich and Z. Benkes
University of Alberta, Edmonton, March 1988



Line TPC8 ↓



APPROX. DEPTH
-0.0 s - S.L.
-1.0 s
-2.0 s - 5 km
-3.0 s
-4.0 s
-5.0 s
-6.0 s
-7.0 s -20 km



MELVILLE ISLAND, CANADA
Line No.: 1141
Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

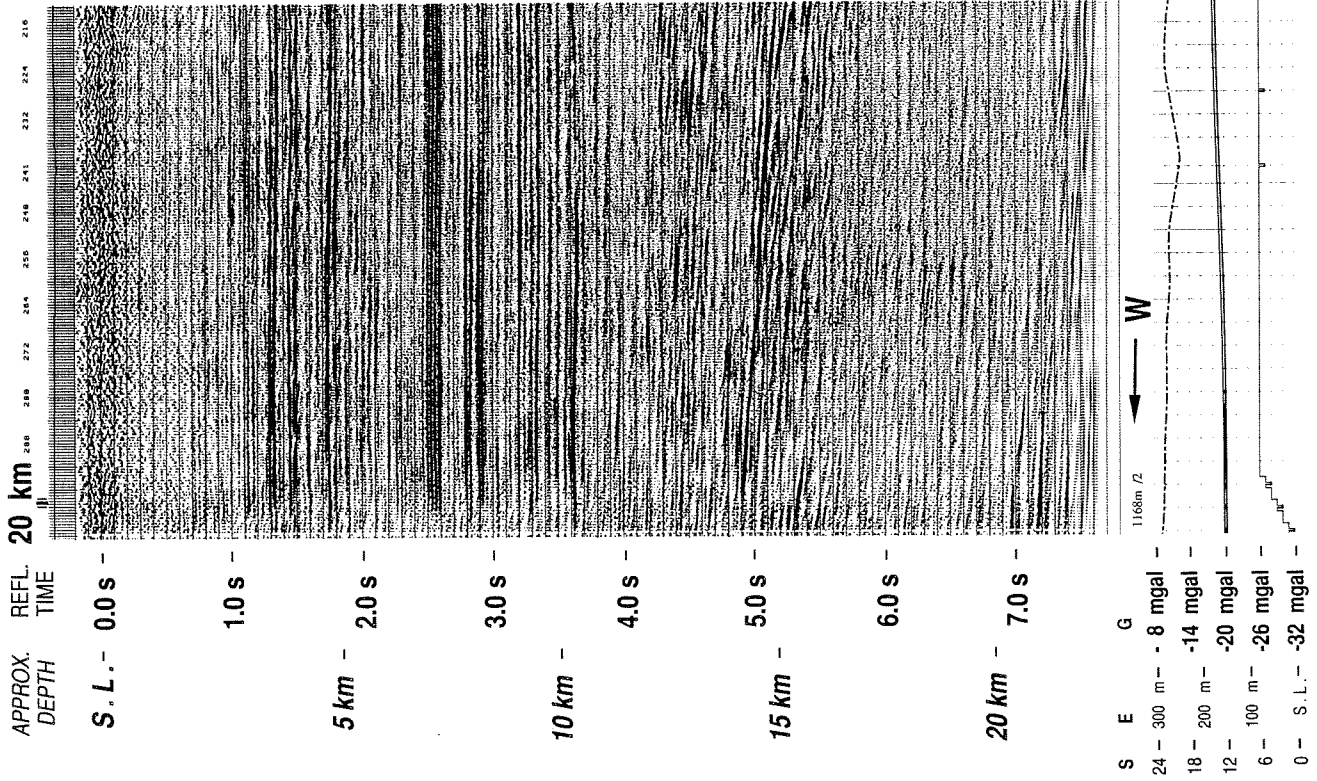
Field parameters:
Date shot: May 1973
Source interval: 880 ft
Geophone group interval: 220 ft
Spread distance: 5280 220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Filter whitening: 5 %
Time varying digital bandpass: 0-3500 ms: 10/13-50/60 Hz;
3500-8000 ms: 57.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:
E.R. Kanasich and Z. Benkes
University of Alberta, Edmonton, March 1988

1141m / 1



MELVILLE ISLAND, CANADA
Line No.: 1169
Migrated Seismic Reflection Section

Processed by
 Veritas Seismic Ltd, Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: May 1973
 Source interval: 80 ft
 Repetition group interval: 5280-220-SP-220-5280 ft
 Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
 Sample rate: 4 ms
 Gain: 12000 f/s
 Filter: 5%
 Prewhitening: 5%
 time varying digital bandpass:
 0-3500 ms: 10/13-50/60 Hz.
 3500-8000 ms: 5/7.5-50/60 Hz.

G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking field

Interpretation:
 E.R. Kanaszewich and Z. Berkes
 University of Alberta, Edmonton, March 1988

REFL. TIME
 APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

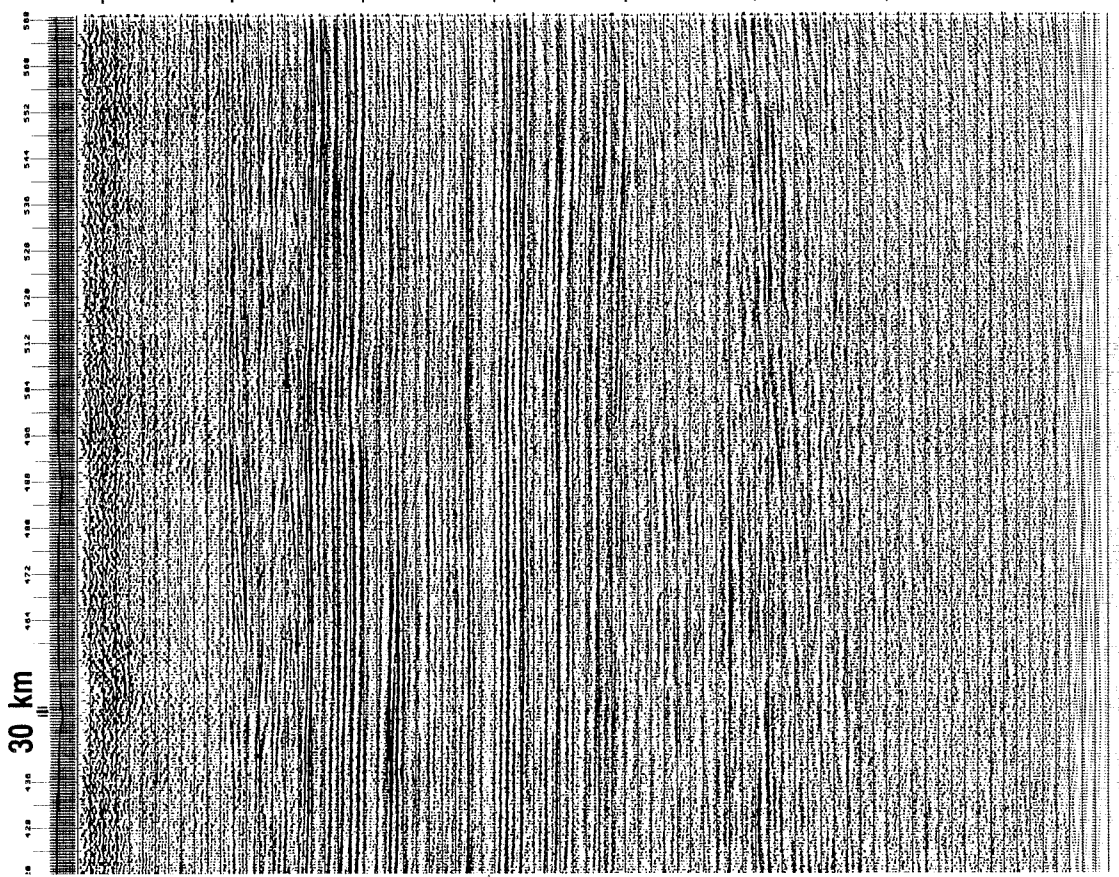
-3.0 s

-4.0 s -10 km

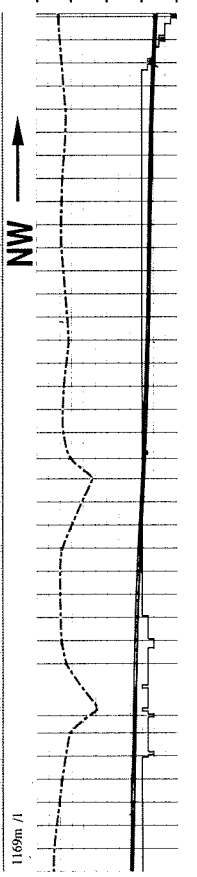
-5.0 s -15 km

-6.0 s

-7.0 s -20 km



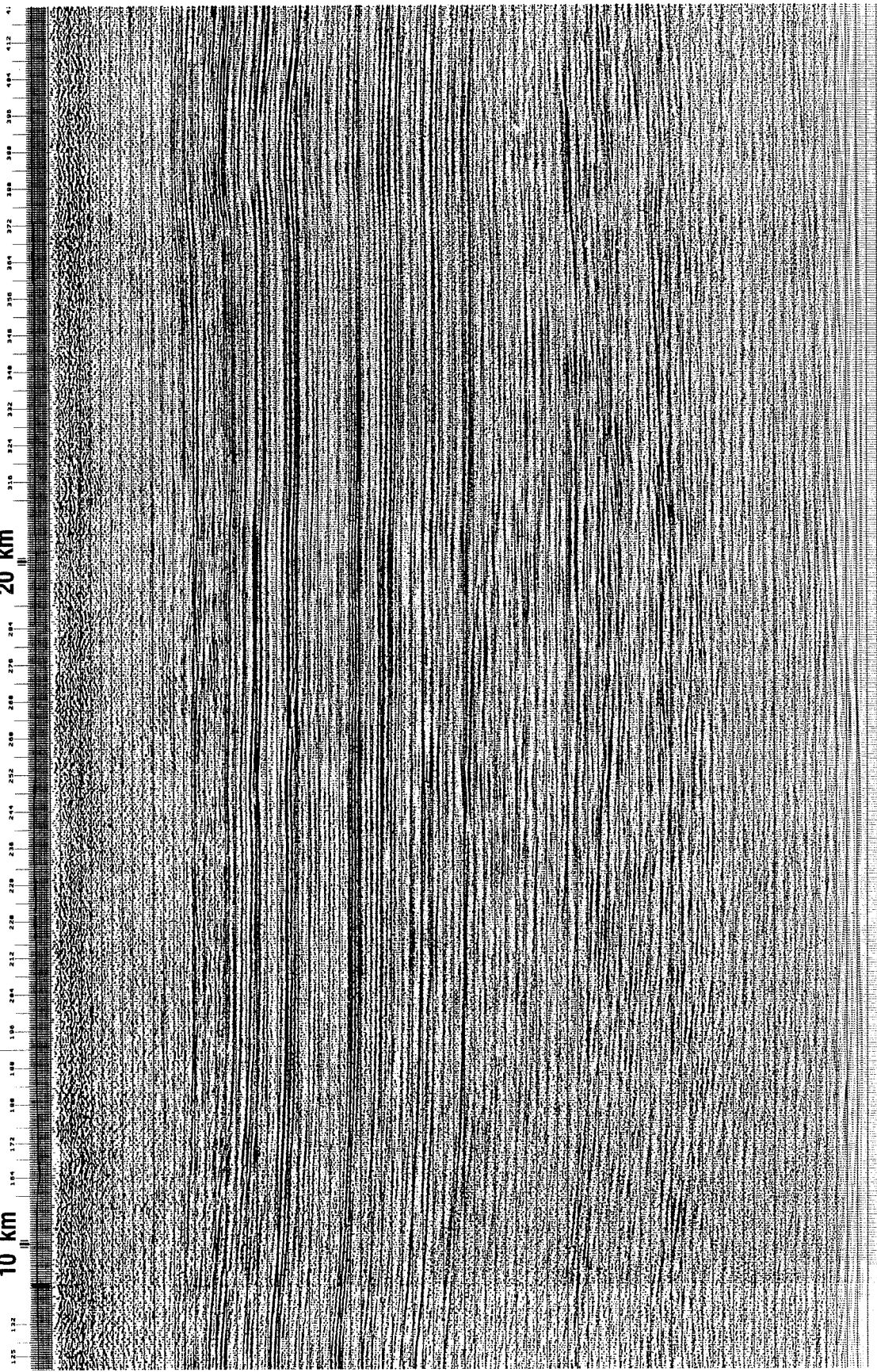
G	E	S
- 8 mgal	-300 m	- 24
-14 mgal	-200 m	- 18
-20 mgal	-100 m	- 12
-26 mgal	- 6	- 6
-32 mgal	-S.L.	- 0



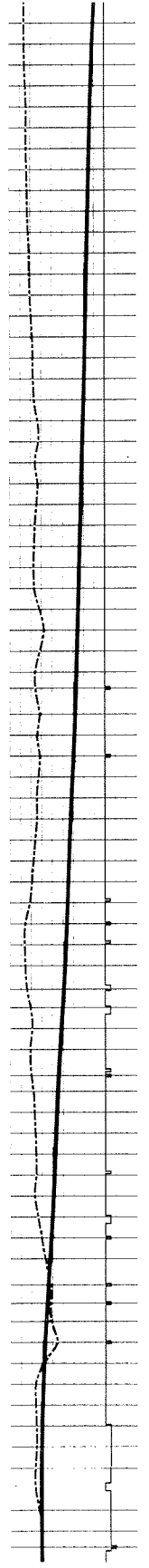
Line 1168

10 km

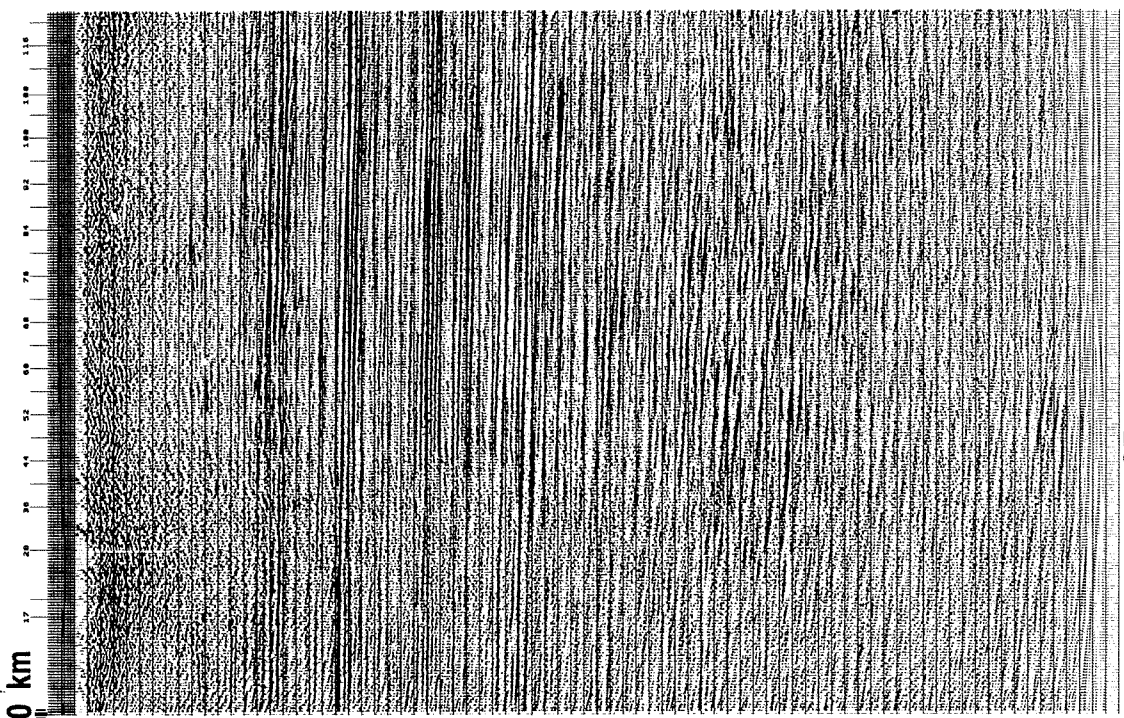
20 km



1168m 2



Line 1862



APPROX. DEPTH

0 km

REFL. TIME

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

10 km -

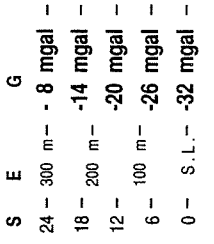
4.0 s -

5.0 s -

15 km -

6.0 s -

20 km - 7.0 s -



S E G

24 - 300 m - - 8 mgal -

18 - 200 m - - 14 mgal -

12 - - - 20 mgal -

6 - 100 m - - 26 mgal -

0 - S.L. - - 32 mgal -

1169m/β

SE

Winter Harbour No.1



Line 1138

MELVILLE ISLAND, CANADA
Line No.: 1171
Migrated Seismic Reflection Section

Processed by:
Versis Seismic Ltd., Calgary, February 1987
Seismic Laboratory of the University of Alberta

Field parameters:
Date: May 1979
Source: 180
Shotpoint interval: 200 ft
Shotpoint group interval: 5000 ft
Shotpoint group interval: 5000 ft
Shotpoint interval: 200 ft
Shotpoint group interval: 5000 ft

Processing parameters:
Sample rate: 4 ms
Filter: 120 Hz
Filter: 1%
Line using digital addresses:
00000000 to 00000000 Hz

Interpretation:
G: Boulder gravity anomaly
E: Elevation
S: Seafloor

University of Alberta, Edmonton, March 1988

REFL. TIME

-0.0 s

-1.0 s

-2.0 s

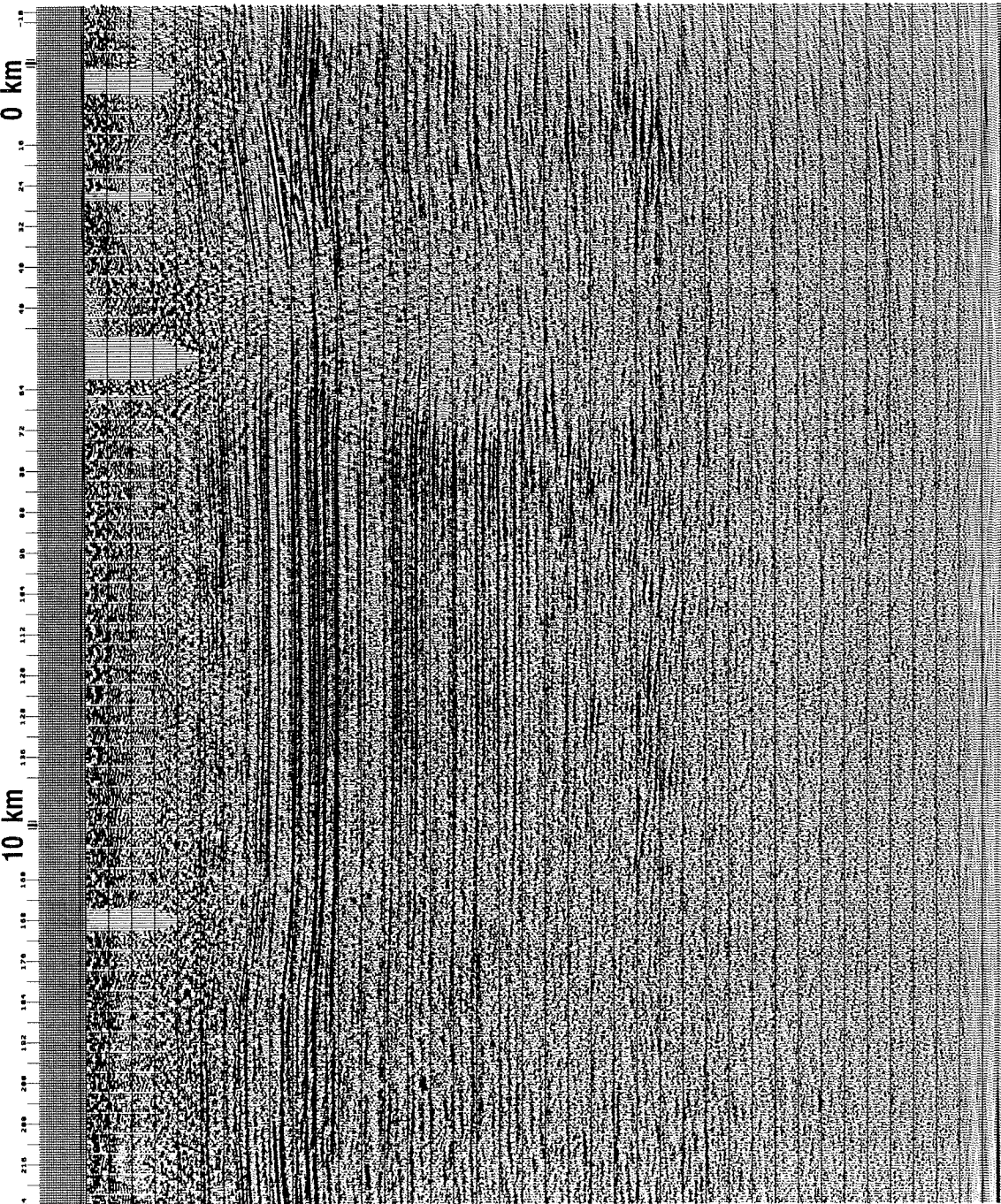
-3.0 s

-4.0 s

-5.0 s

-6.0 s

-7.0 s



10 km

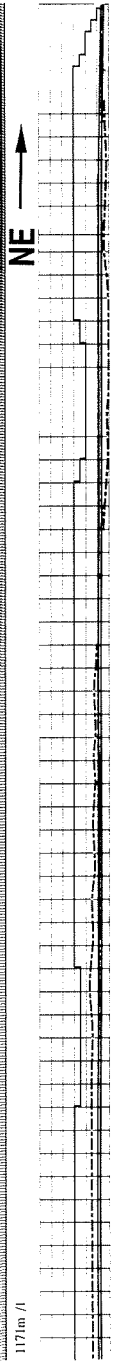
0 km

11

14

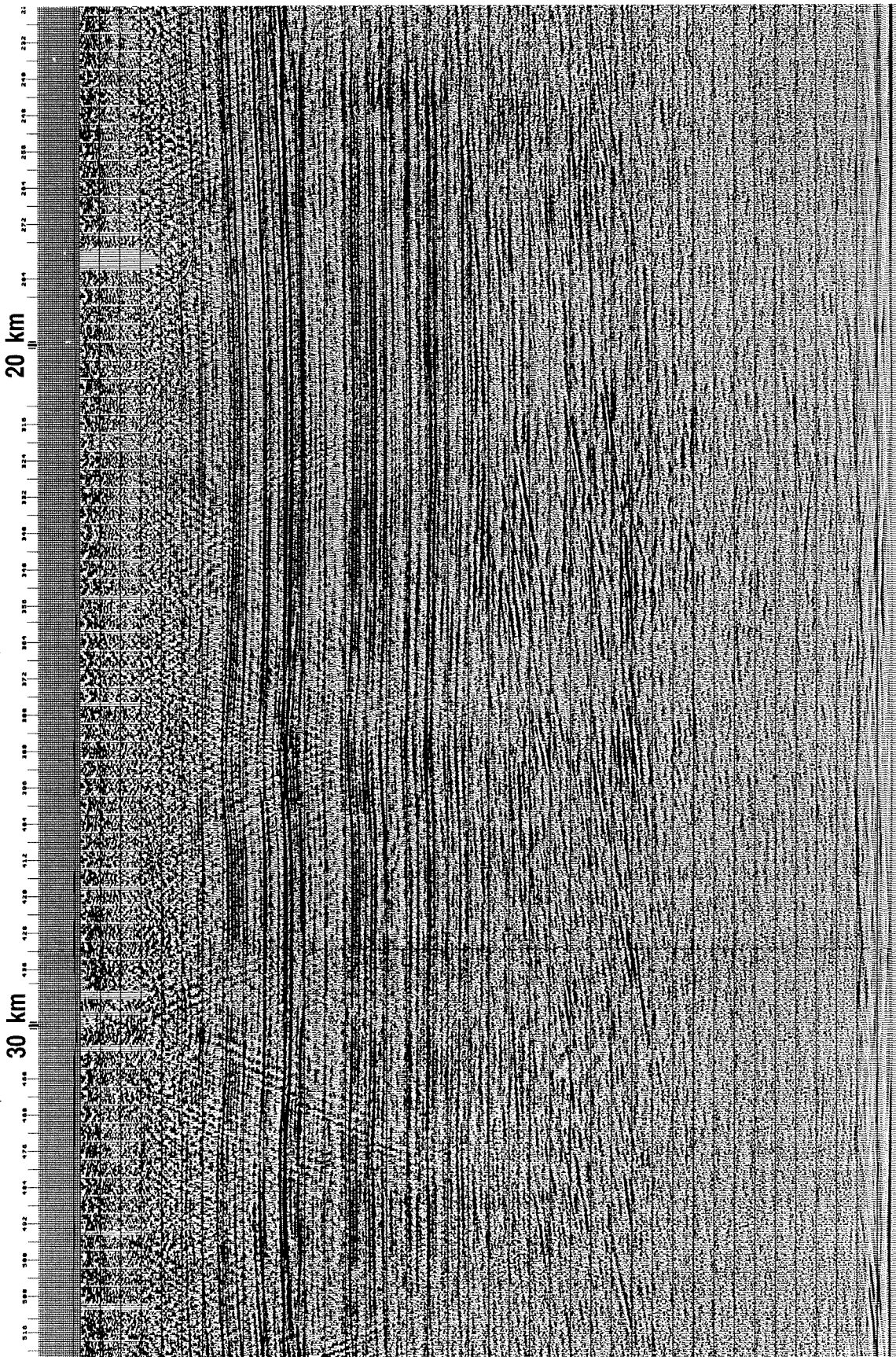
1171m / ft

NE



G E S
- 8 mgal -300 m -12
-20 mgal -150 m - 6
-32 mgal -S.L. - 0

Line 1770 ↓

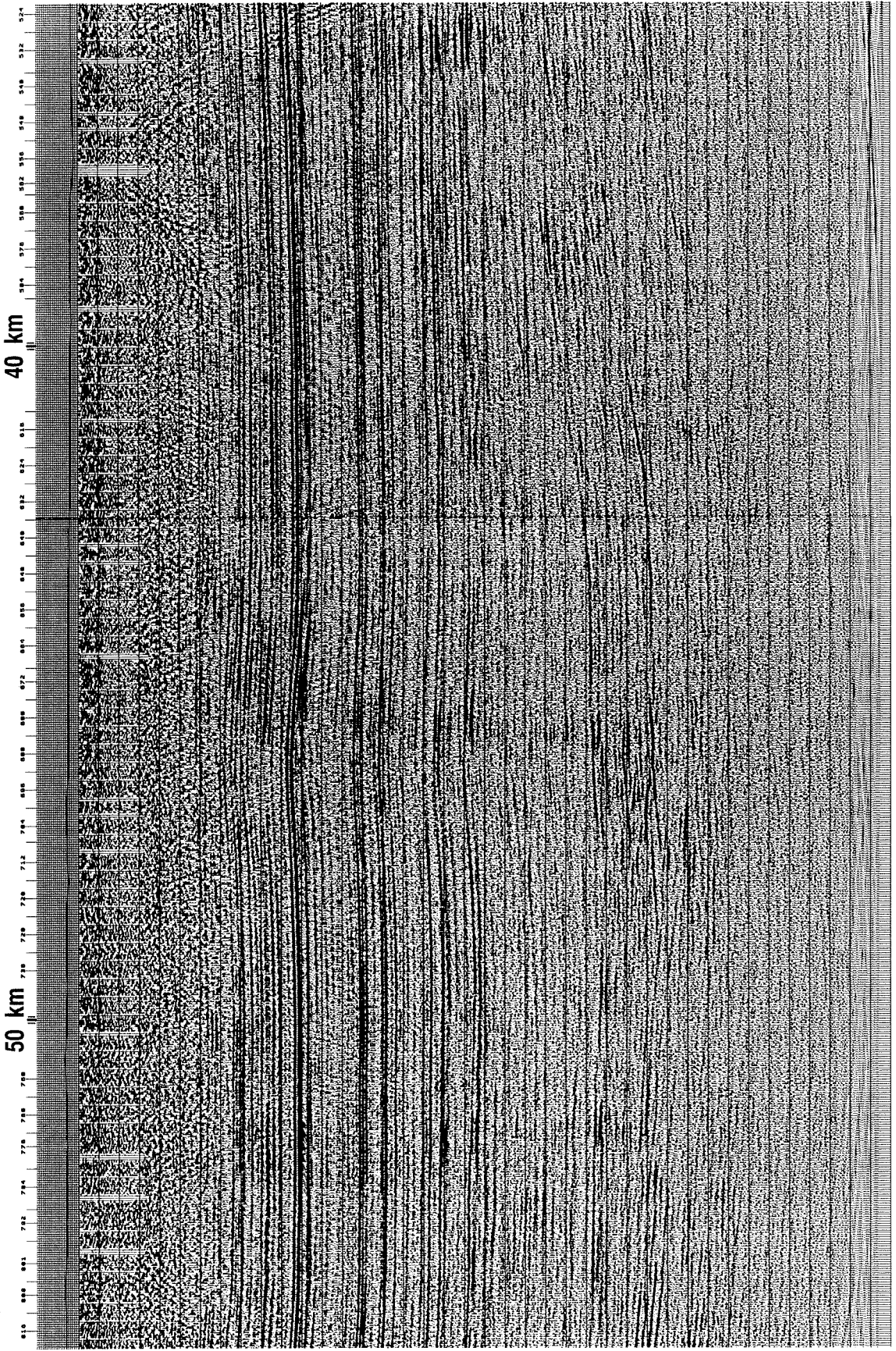


30 km

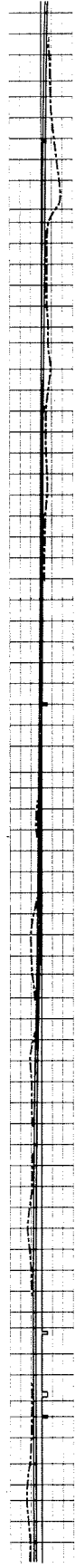
20 km

110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230 232

117m / 2



117m β



Line 1168

APPROX. REEL.
DEPTH TIME

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

10 km -

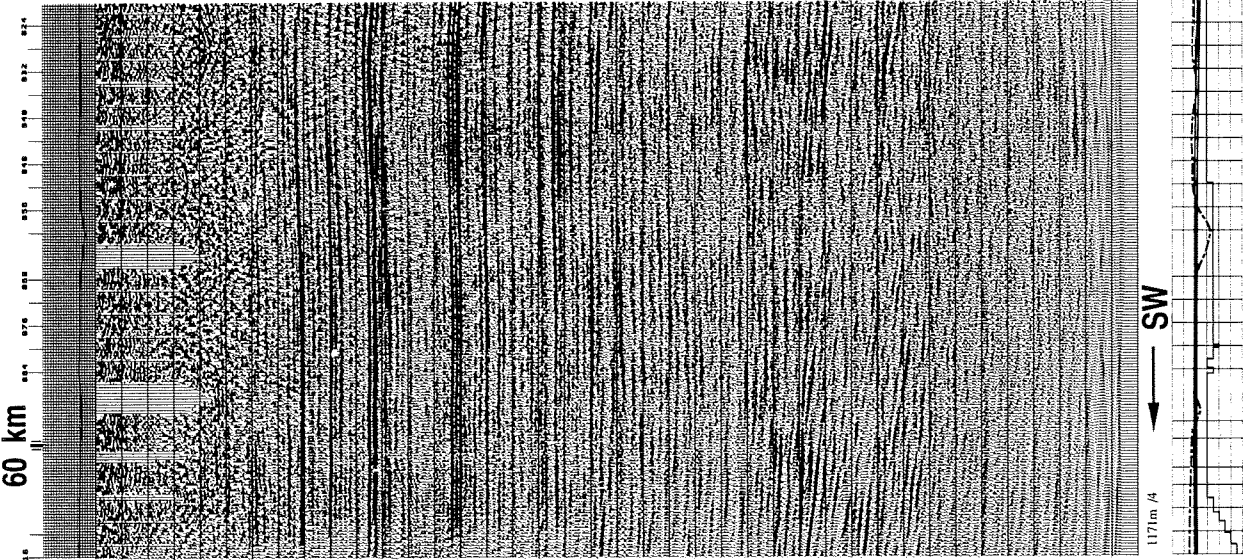
4.0 s -

5.0 s -

15 km -

6.0 s -

20 km - 7.0 s -



S E G

12 - 300 m - 8 mgal -

6 - 150 m - 20 mgal -

0 - S.L. - 32 mgal -

Drake F-16



REFL. TIME
APPROX. DEPTH

MELVILLE ISLAND, CANADA
Line No.: 1179
Migrated Seismic Reflection Section

-0.0 s - S.L.

-1.0 s

-2.0 s

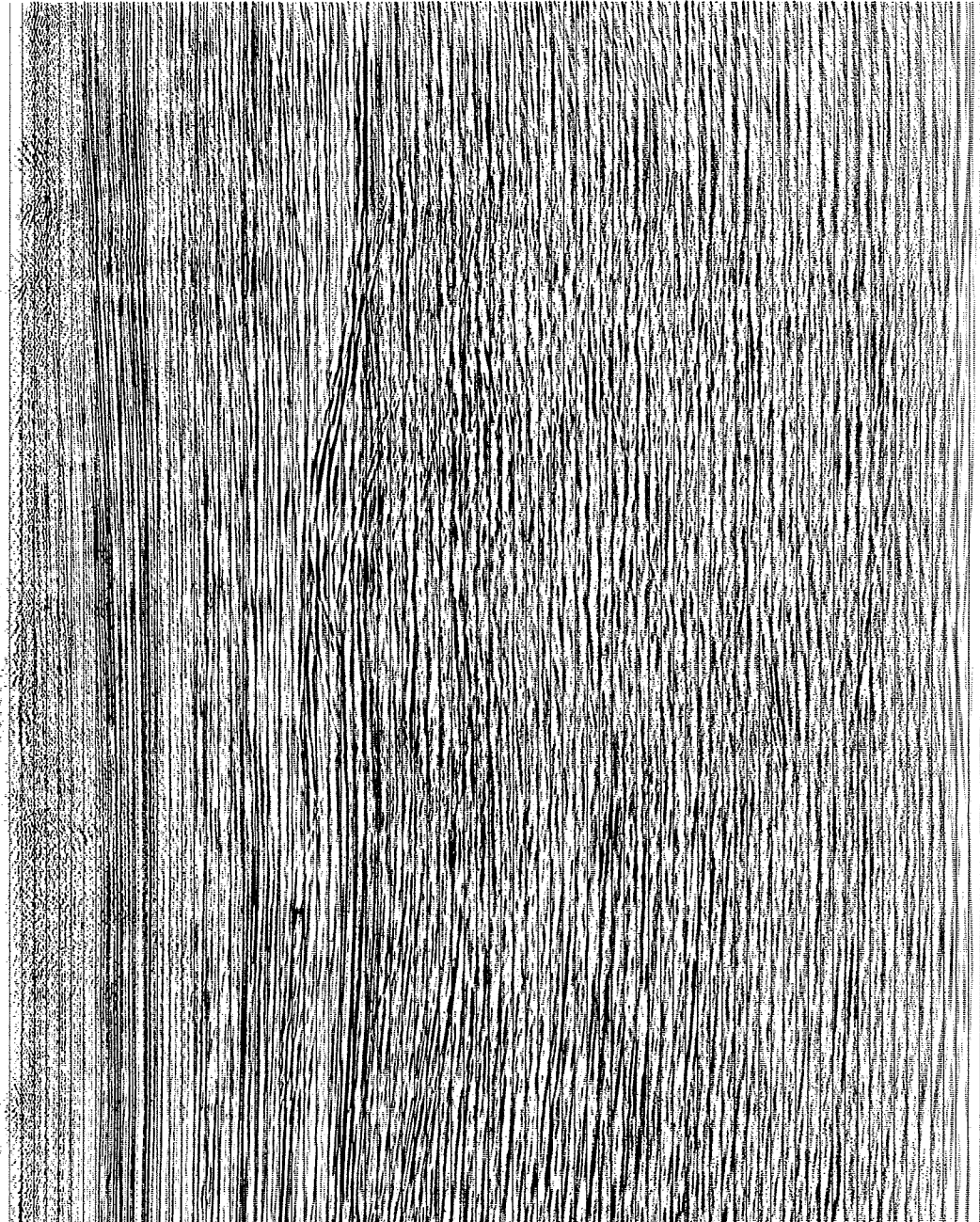
-3.0 s

-4.0 s

-5.0 s

-6.0 s -15 km

-7.0 s



-20 km
- 8 mgal
-14 mgal
-20 mgal
-26 mgal
-32 mgal

G E S
-300 m -24
-200 m -18
-100 m -12
-S.L. - 0

1179m /1

Processed by:
Veritas Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: October 1973
Source interval: 485 ft
Geophone group interval: 165 ft
Spread distance: 1485-330-SP-330-6765 ft

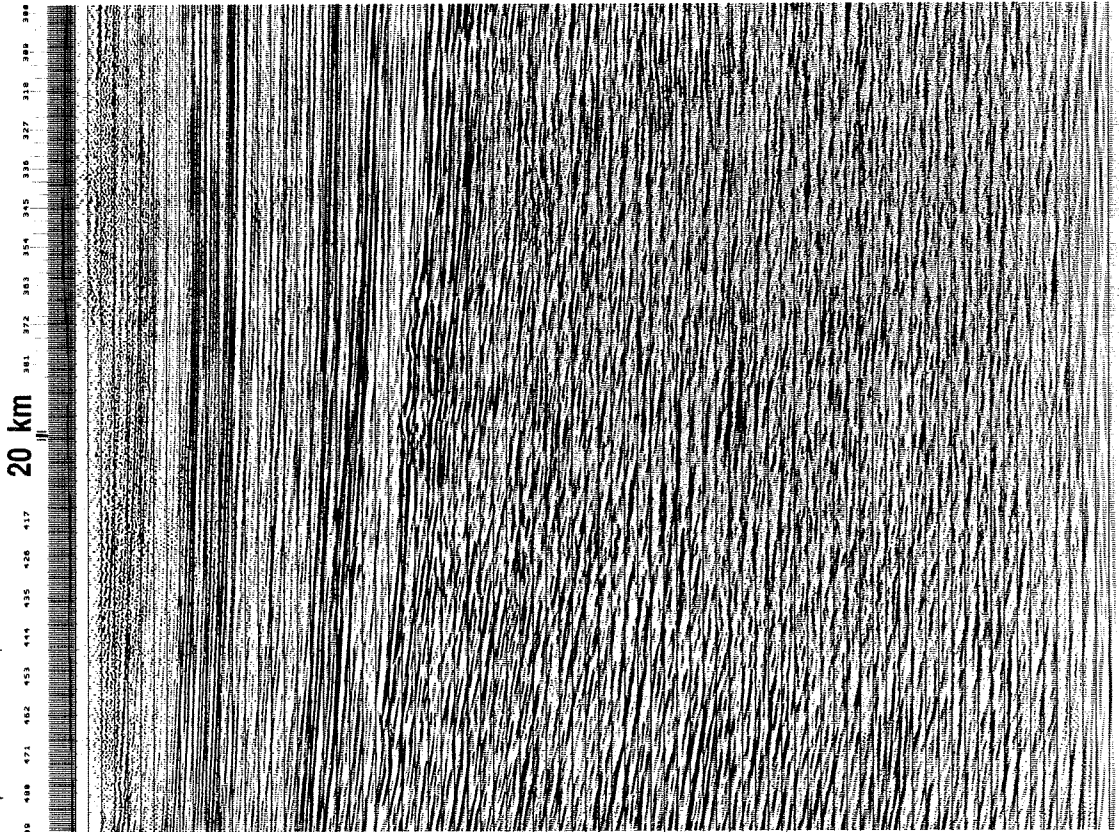
Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 10000 ft/s
Deconvolution
Operator length: 120 ms
Filter whitening: 5 %
Time varying digital bandpass:
0-3500 ms: 10/19-50/60 Hz.
3500-8000 ms: 57.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

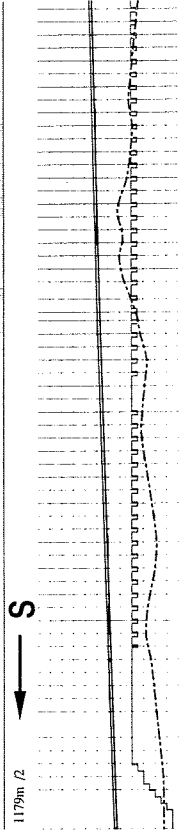
Interpretation:
E.R. Kovachewich and Z. Berkes
University of Alberta, Edmonton, March 1988

Sherard Bay F-14

Line 1921 ↓ Line 2674



REFL. TIME
 APPROX. DEPTH
 S. L. - 0.0 s -
 1.0 s -
 2.0 s -
 3.0 s -
 4.0 s -
 5.0 s -
 6.0 s -
 7.0 s -
 20 km -



S E G
 24 - 300 m - - 8 mgal -
 18 - 200 m - - 14 mgal -
 12 - 100 m - - 20 mgal -
 6 - S. L. - - 26 mgal -
 0 - S. L. - - 32 mgal -

MELVILLE ISLAND, CANADA

Line No.: 1180

Migrated Seismic Reflection Section

Processed by:
 Ventas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: October 1973
 Source interval: 495 ft
 Geophone group interval: 165 ft
 Spread distance: 1485-330-330-6765 ft

Processing parameters:

Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 10000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter:
 time varying digital bandpass: 10/13-50/60 Hz;
 0-3500 ms; 577.5-50860 Hz;
 3300-8000 ms; 577.5-50860 Hz.

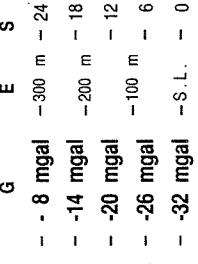
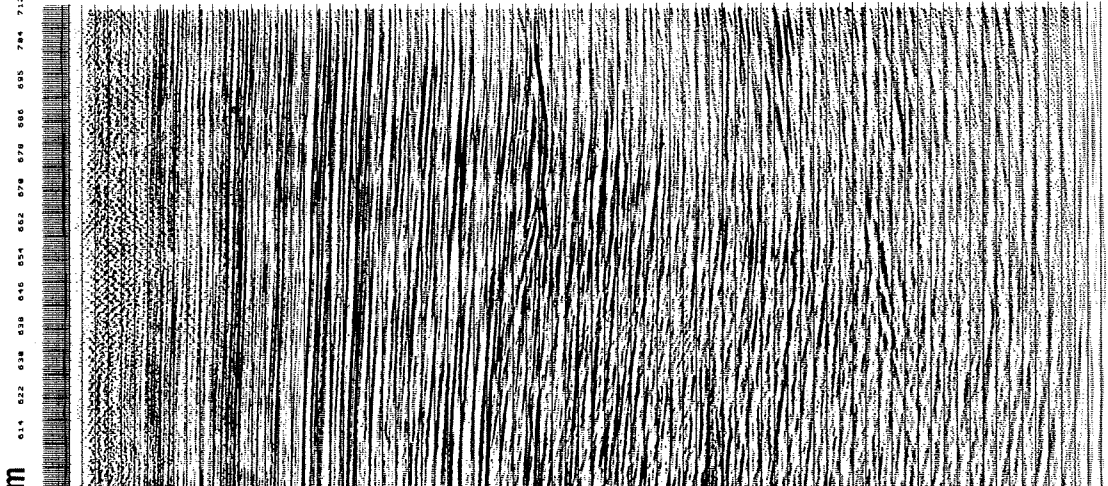
G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking fold

Interpretation:

E.R. Kanawich and Z. Berkes
 University of Alberta, Edmonton, March 1988

REFL. TIME
 APPROX. DEPTH

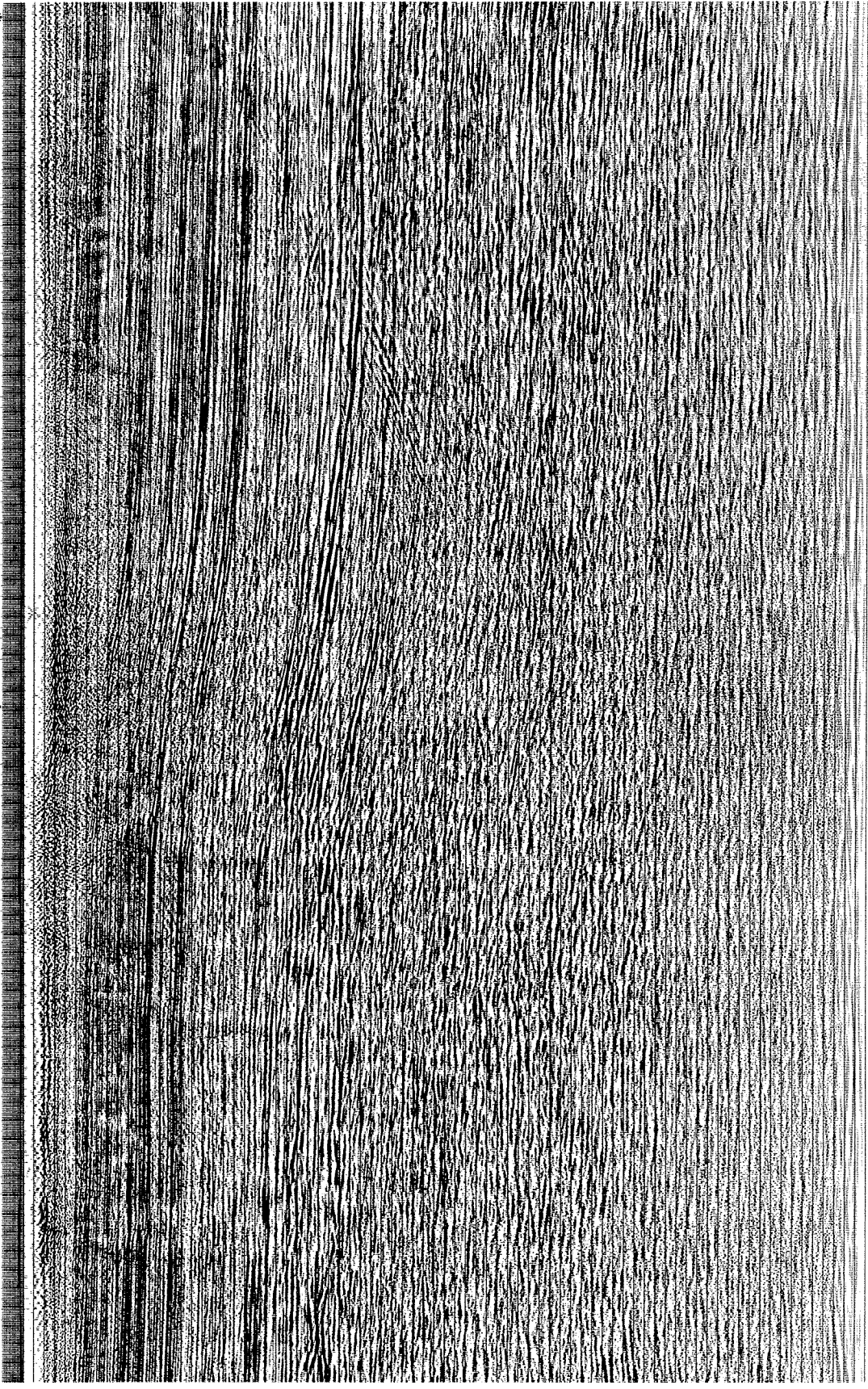
-0.0 s - S.L.
 -1.0 s
 -2.0 s
 -3.0 s - 5 km
 -4.0 s - 10 km
 -5.0 s
 -6.0 s - 15 km
 -7.0 s



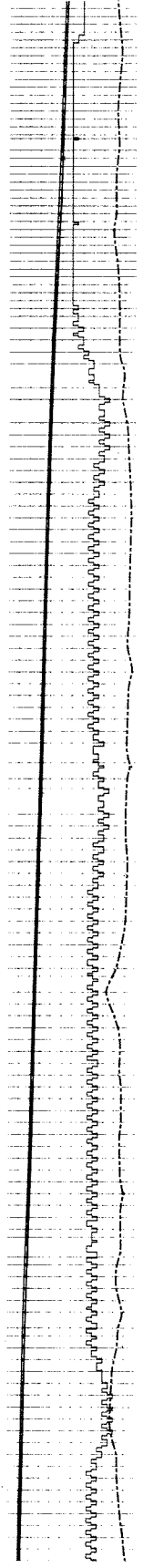


Line 2674 ↓ Collingwood K-33

n 223 232 241 250 259 268 277 287 295 304 313 322 331 340 350 357 376 20 km 418 427 436 445 454 463 472 482 490 500 508 517 526 534 542 550 559 568 574 582 30 k



1180m / 2





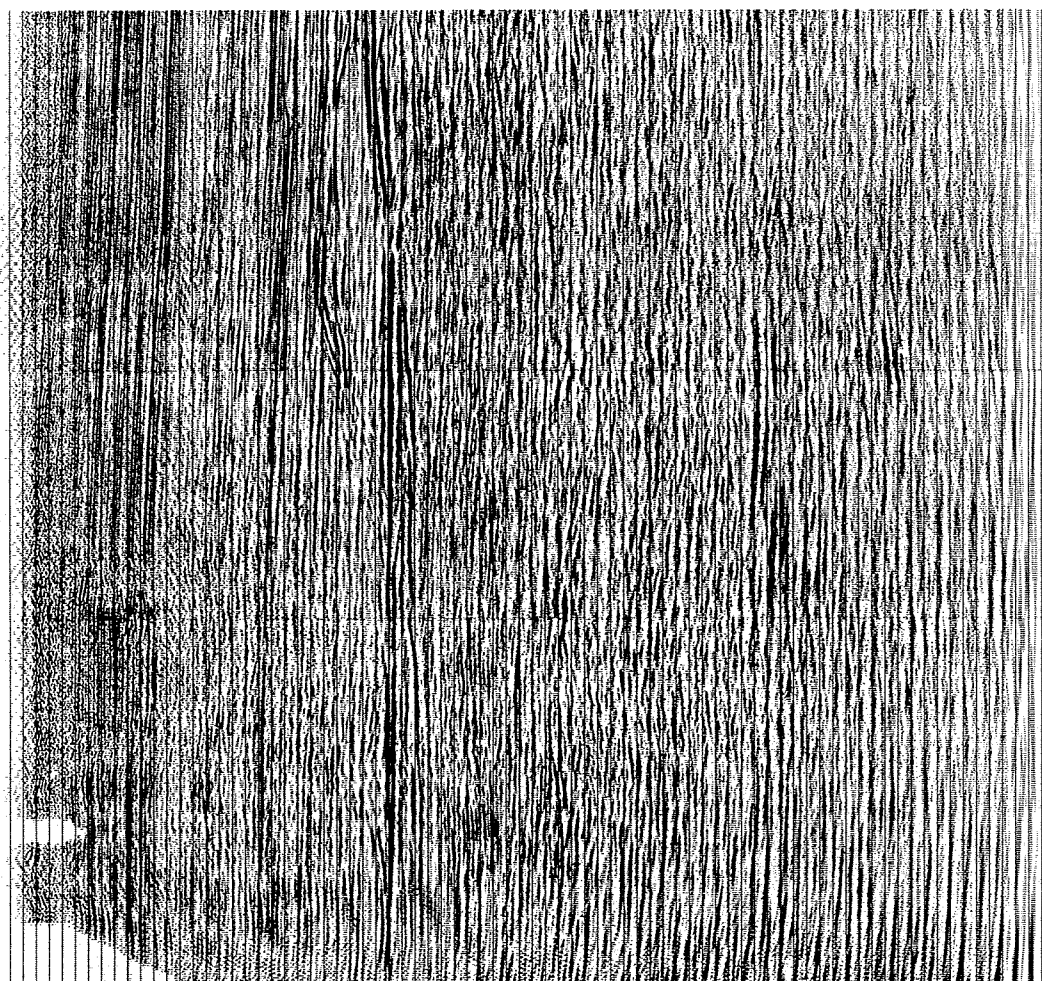
Drake F-16 Drake E-78

0 km 10 km

APPROX. DEPTH

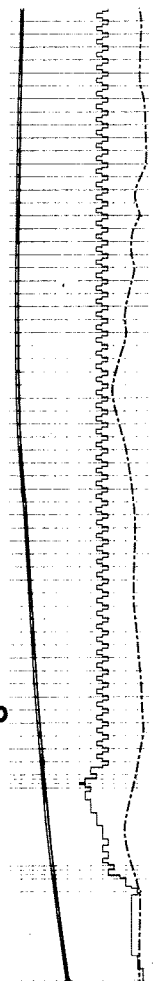
REFL. TIME

S. L. - 0.0 s -
 1.0 s -
 2.0 s -
 3.0 s -
 4.0 s -
 5.0 s -
 6.0 s -
 7.0 s -



20 km -
 S E G
 24 - 300 m - 8 mgal -
 18 - 200 m - -14 mgal -
 12 - 100 m - -20 mgal -
 6 - S. L. - -26 mgal -
 0 - S. L. - -32 mgal -

1180m / 3



MELVILLE ISLAND, CANADA

Line No.: 1190

Migrated Seismic Reflection Section

Processed by:
Ventus Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: November 1973
Source interval: 880 ft
Geophone group interval: 5280-220-SP-220-5280 ft
Spread distance:

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Filtering: 5 %
Filter: time varying digital bandpass: 10/13-50/60 Hz;
3500-8000 ms: 5/7.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:
E.R. Kanasich and Z. Bekker
University of Alberta, Edmonton, March 1988

REFL. TIME
APPROX. DEPTH

-0.0 s - S. L.

-1.0 s

-2.0 s - 5 km

-3.0 s

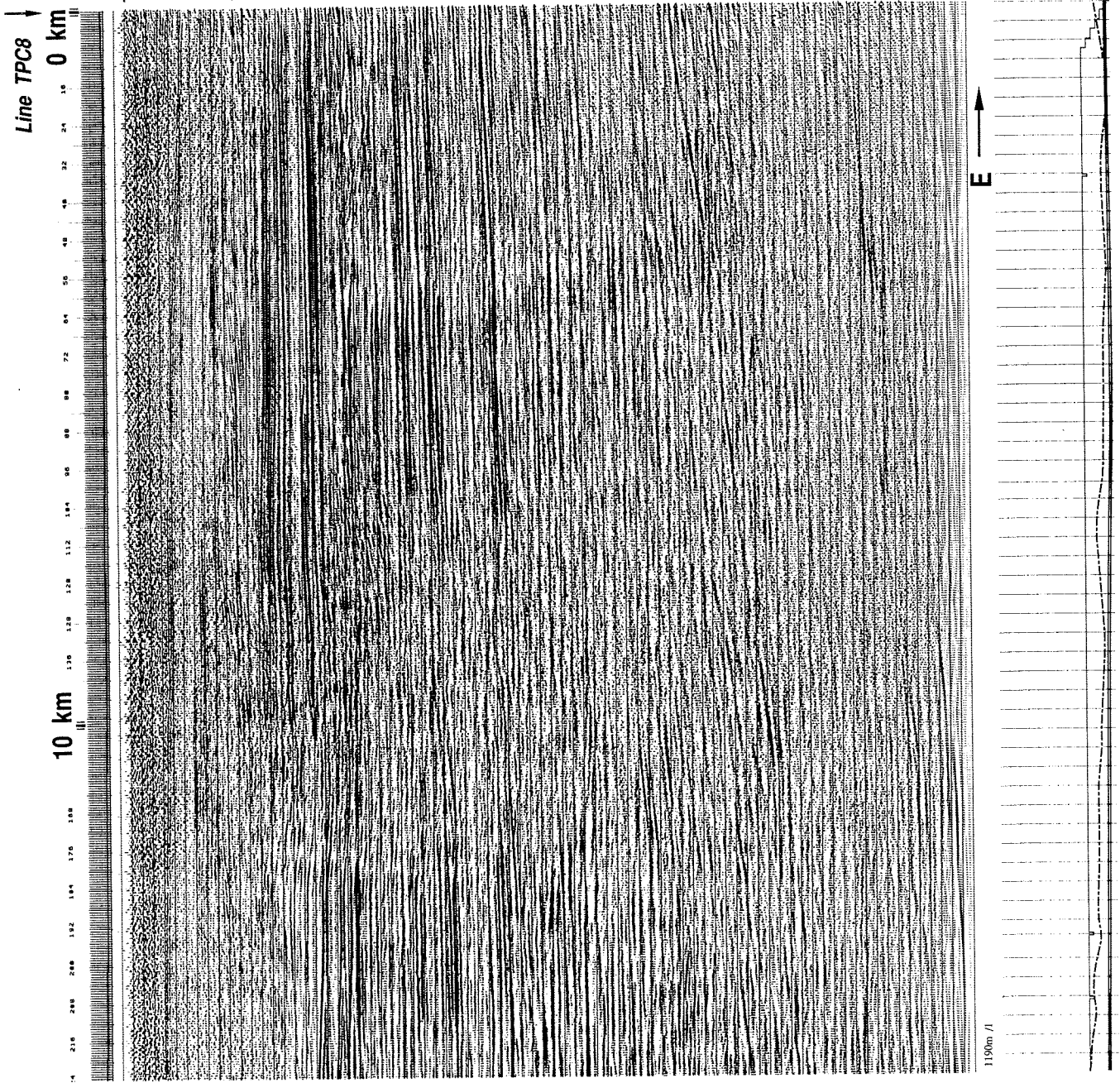
-4.0 s

-5.0 s

-6.0 s

-7.0 s -20 km

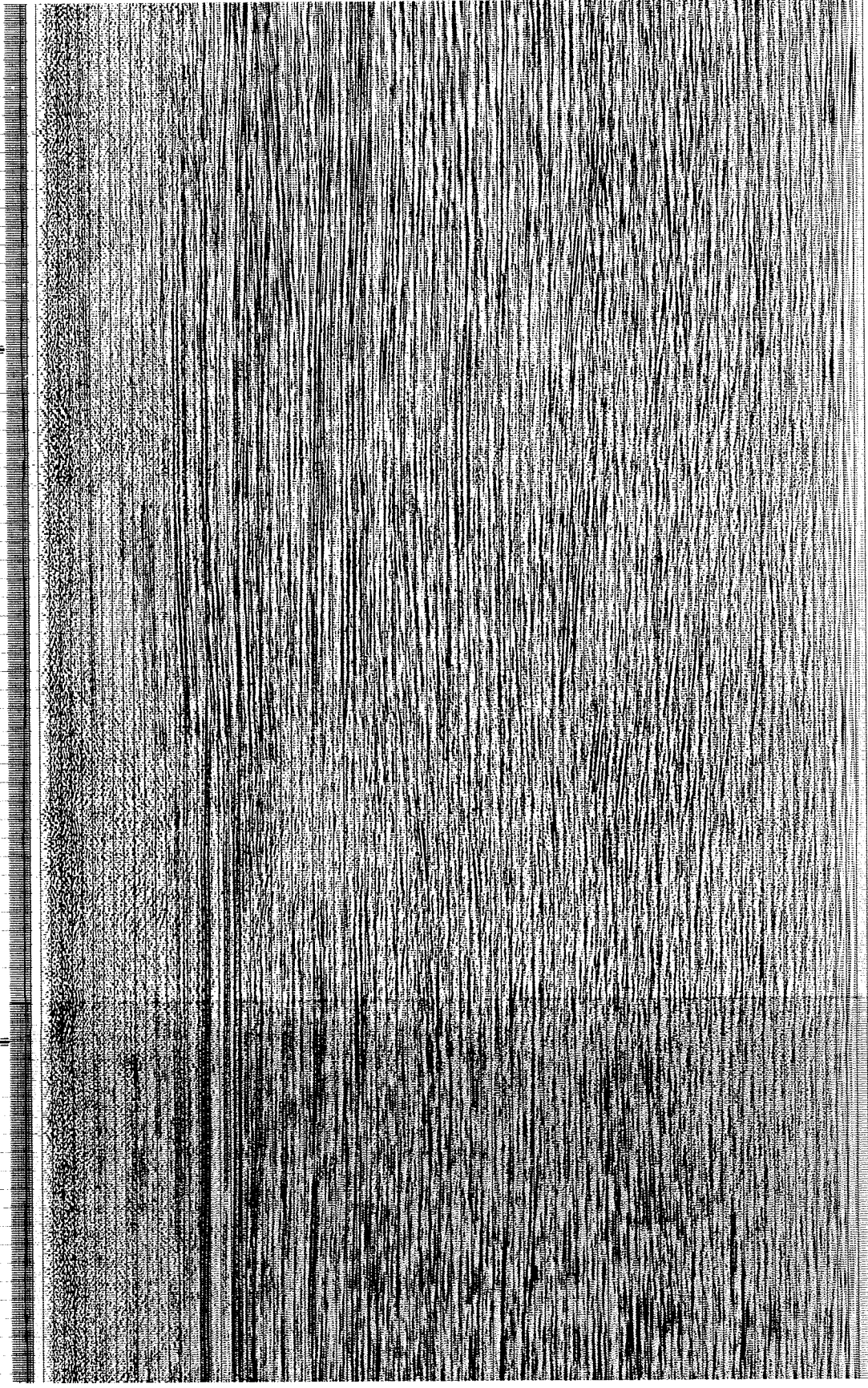
G E S
- 0 mgal -300 m -24
- 6 mgal -200 m -18
- 12 mgal -100 m -12
- 18 mgal -S. L. -6
- 24 mgal -S. L. -0



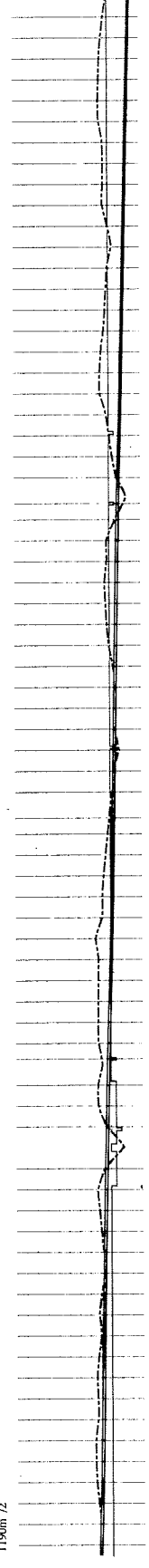
20 km

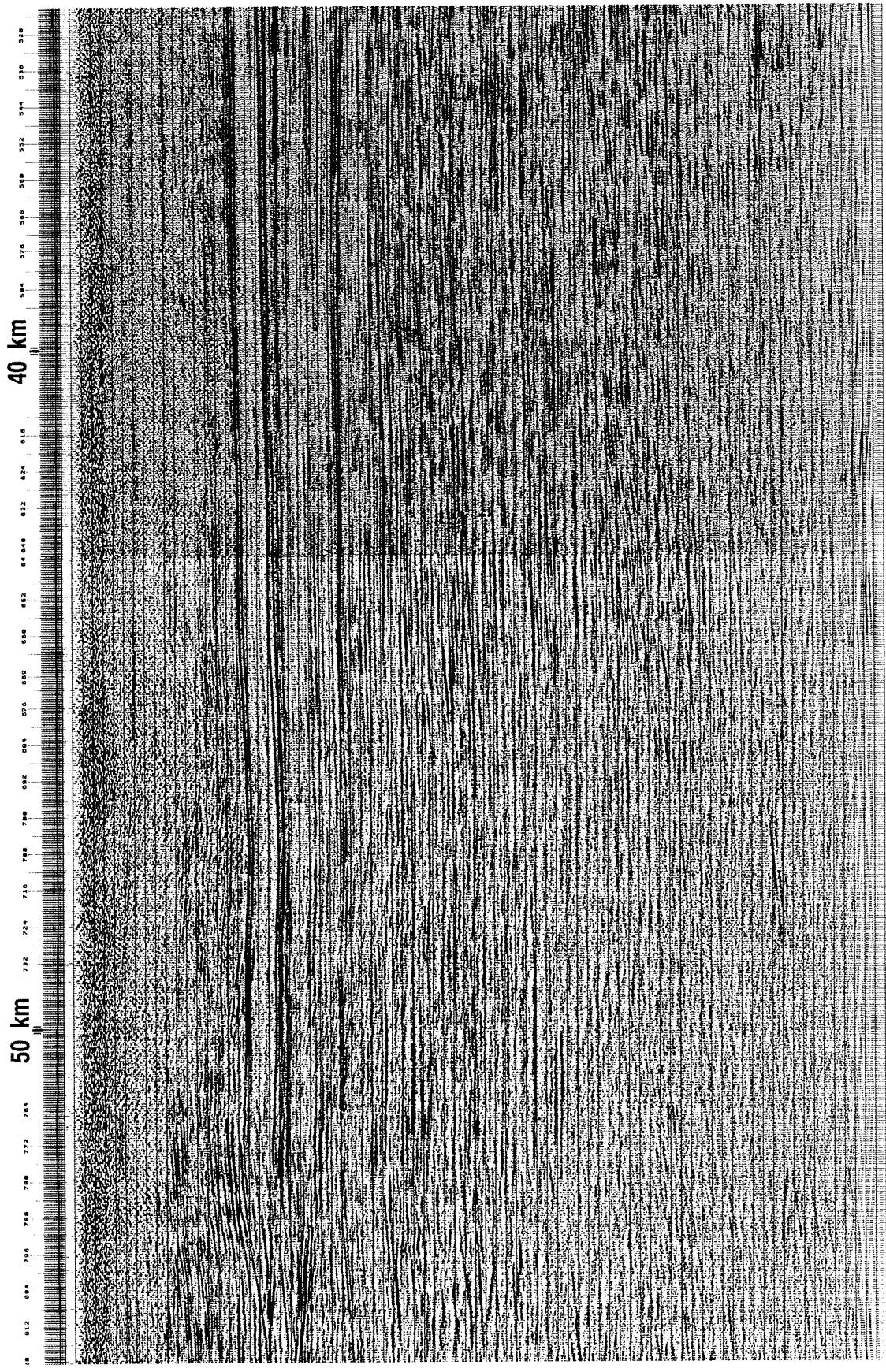
30 km

520 512 504 496 488 480 472 464 456 448 440 432 424 416 408 400 392 384 376 368 360 352 344 336 328 320 312 304 296 288 280 272 264 256 248 240 232 224

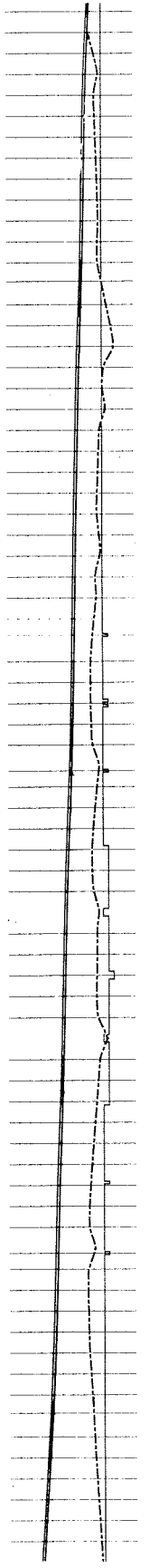


1190m / 2



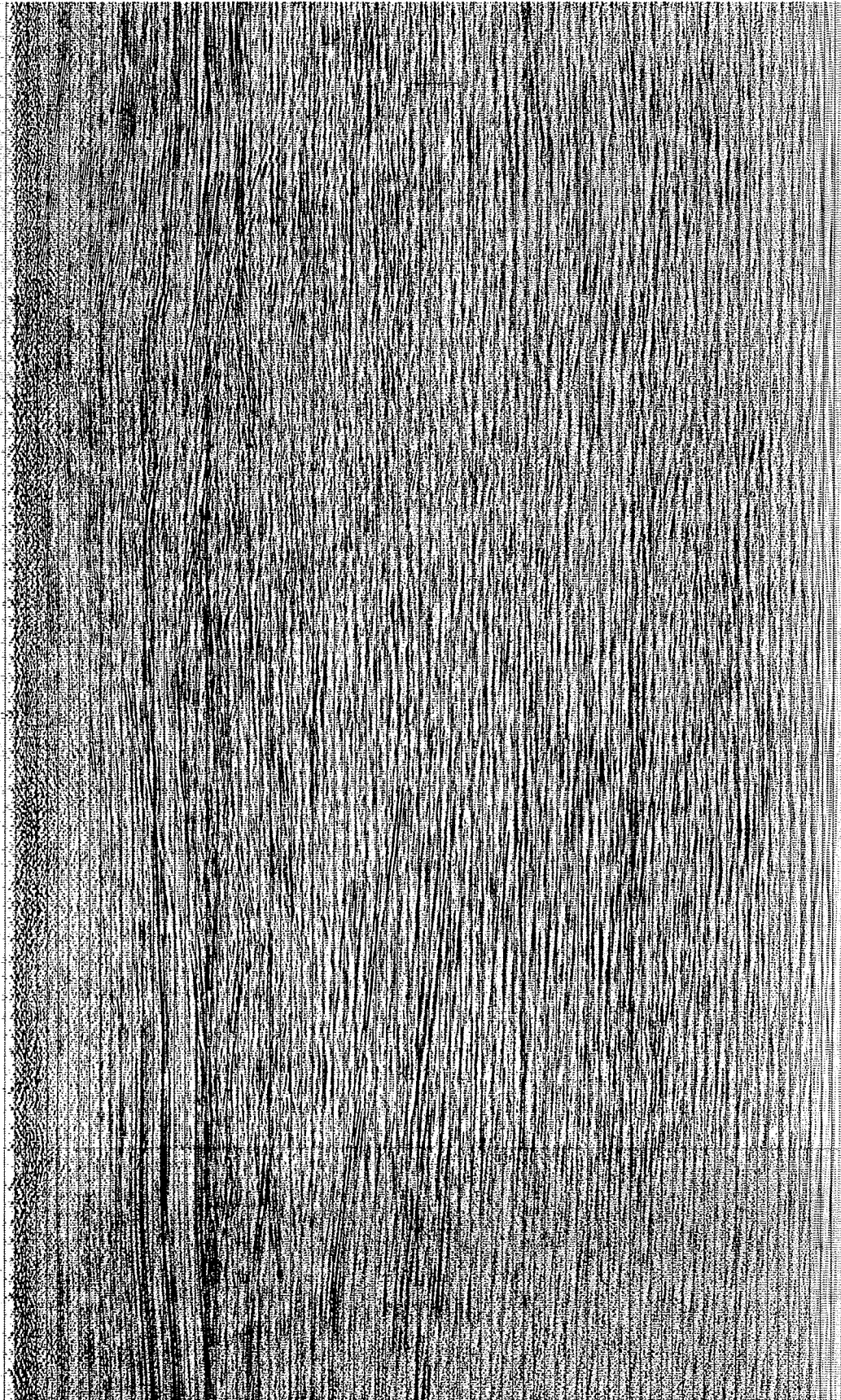


190m / 3

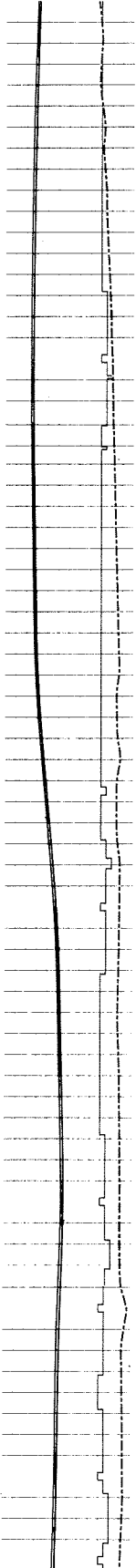


60 km

1112 1194 1800 1808 1808 1872 1808 1852 1844 1836 1828 1828 1828 1884 1884 888 888 888 872 864 856 848 848 832 824 816 808 800 884 876 868 860 852 844 836 828 820 0

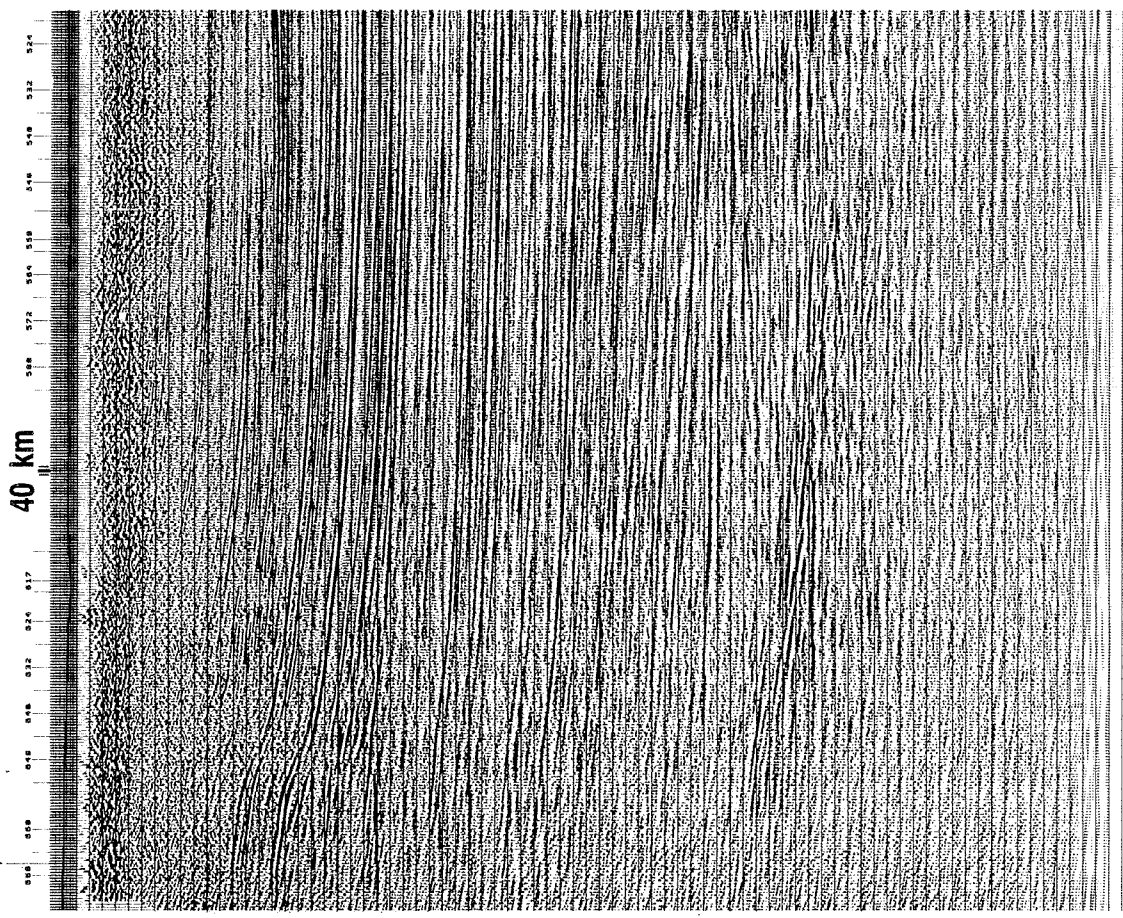


1190m /4





Line 1139



APPROX. REFL. TIME
DEPTH

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -
10 km -

5.0 s -

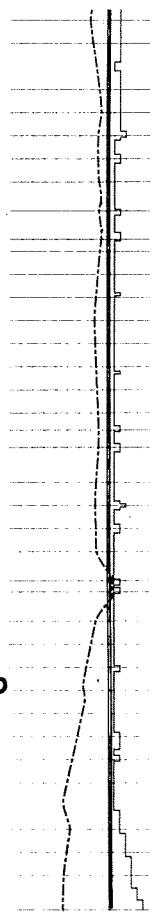
6.0 s -

7.0 s -

20 km -

S	E	G
24	300 m	-14 mgal
18	200 m	-20 mgal
12		-26 mgal
6	100 m	-32 mgal
0	S. L.	-38 mgal

1762m β



MELVILLE ISLAND, CANADA
Line No.: 1768
Migrated Seismic Reflection Section

Processed by:
 Veritas Seismic Ltd. Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

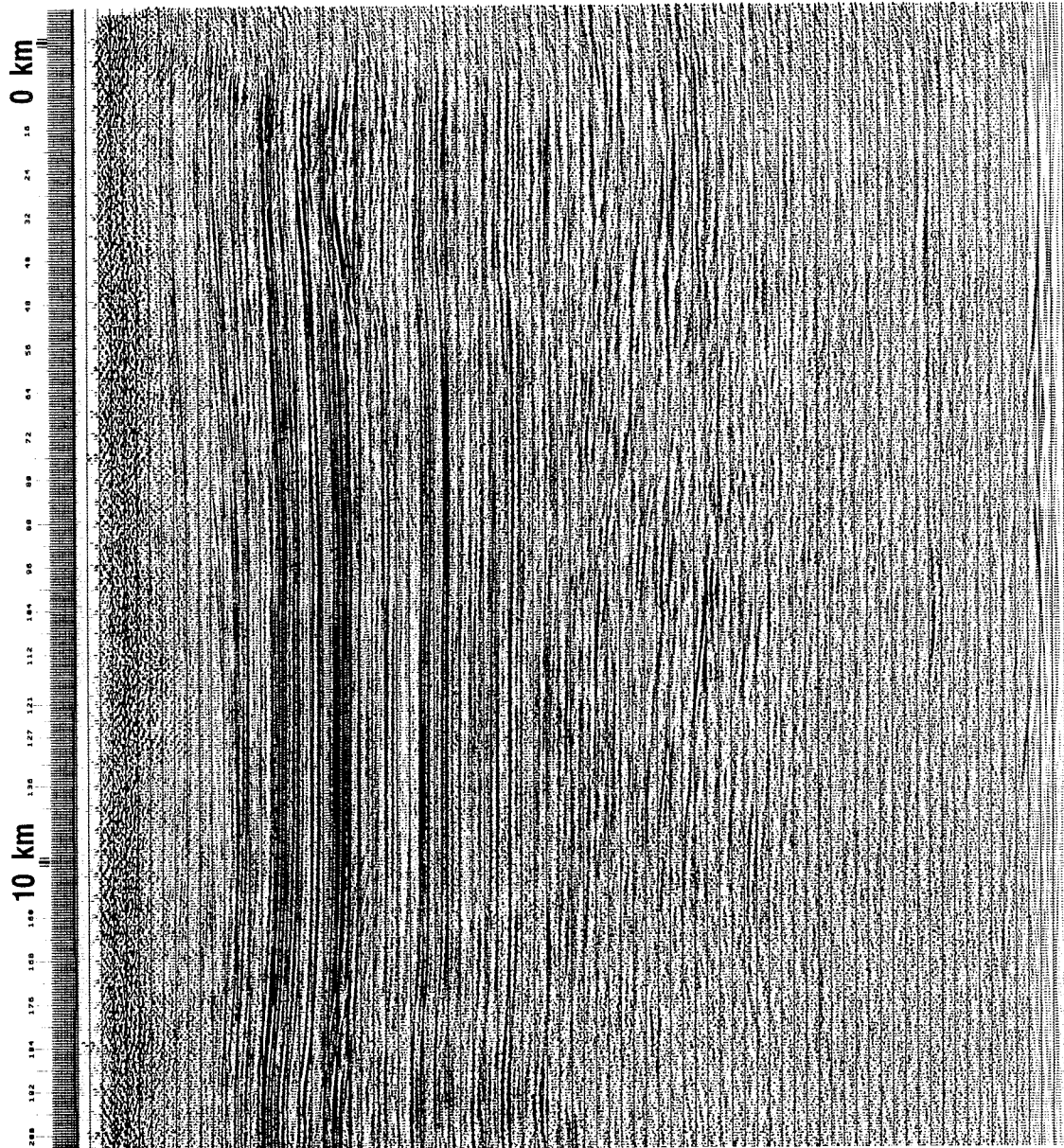
Field parameters:
 Date shot: April 1975
 Source interval: 880 ft
 Geophone group interval: 220 ft
 Spread distance: 5280-220 SP-220 5280 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 12000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter: time varying digital bandpass: 1019.50160 Hz.
 0.3500 ms: 3500-8000 ms: 577.5-50160 Hz.

G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking fold

Interpretation:
 E.R. Kanasevich and Z. Berkus
 University of Alberta, Edmonton, March 1988

REFL. TIME
 APPROX. DEPTH
 -0.0 s - S.L.
 -1.0 s
 -2.0 s - 5 km
 -3.0 s
 -4.0 s -10 km
 -5.0 s
 -6.0 s -15 km
 -7.0 s -20 km



G E S
 - - 8 mgal -300 m - 24
 - -14 mgal -200 m - 18
 - -20 mgal -100 m - 12
 - -26 mgal -6
 - -32 mgal -S.L. - 0

NE →

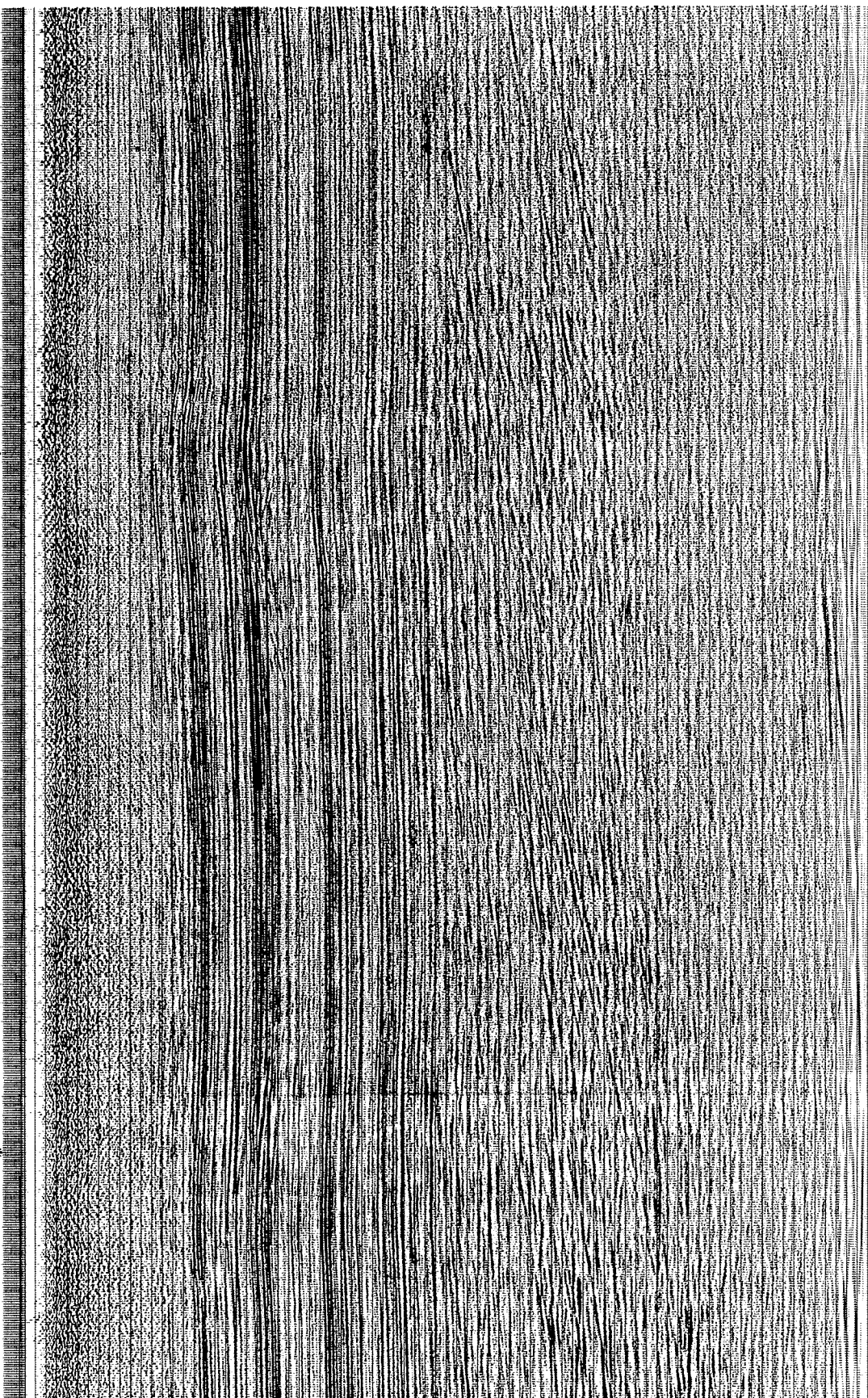
1768m / 1

Line 1770

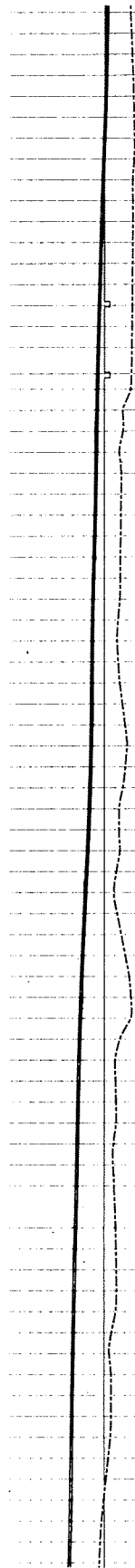
30 km

20 km

408 408 472 484 494 504 510 524 532 544 552 560 568 576 584 592 600 608 616 624 632 644 652 660 668 676 684 692 700 708 716 724 732 740 748 756 764 772 780 788 796 804 812 820 828 836 844 852 860 868 876 884 892 900 908 916 924 932 940 948 956 964 972 980 988 996 1000



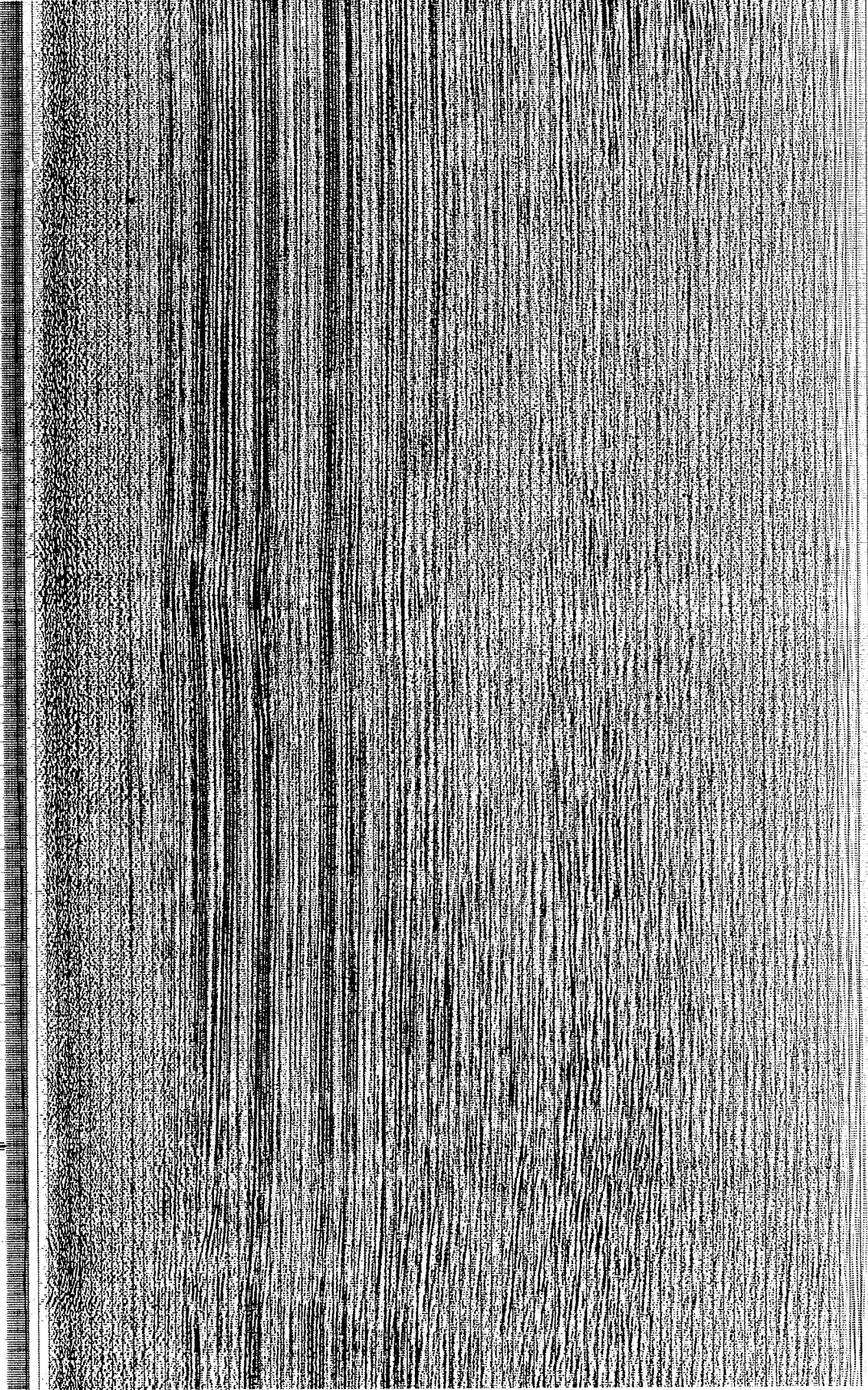
1768m / 2



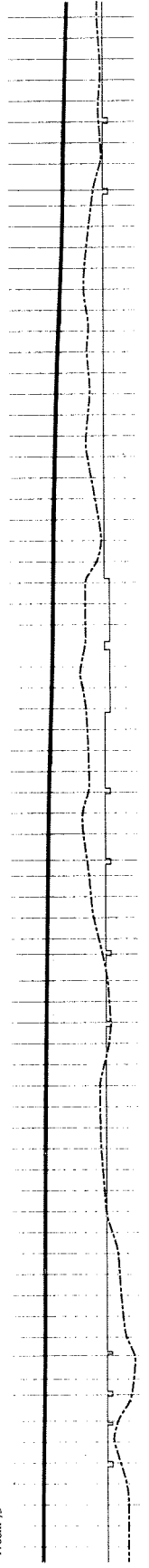
768 766 764 762 760 758 756 754 752 750 748 746 744 742 740 738 736 734 732 730 728 726 724 722 720 718 716 714 712 710 708 706 704 702 700 698 696 694 692 690 688 686 684 682 680 678 676 674 672 670 668 666 664 662 660 658 656 654 652 650 648 646 644 642 640 638 636 634 632 630 628 626 624 622 620 618 616 614 612 610 608 606 604 602 600 598 596 594 592 590 588 586 584 582 580 578 576 574 572 570 568 566 564 562 560 558 556 554 552 550 548 546 544 542 540 538 536 534 532 530 528 526 524 522 520 518 516 514 512 510 508 506 504 502 500 498 496 494 492 490 488 486 484 482 480 478 476 474 472 470 468 466 464 462 460 458 456 454 452 450 448 446 444 442 440 438 436 434 432 430 428 426 424 422 420 418 416 414 412 410 408 406 404 402 400 398 396 394 392 390 388 386 384 382 380 378 376 374 372 370 368 366 364 362 360 358 356 354 352 350 348 346 344 342 340 338 336 334 332 330 328 326 324 322 320 318 316 314 312 310 308 306 304 302 300 298 296 294 292 290 288 286 284 282 280 278 276 274 272 270 268 266 264 262 260 258 256 254 252 250 248 246 244 242 240 238 236 234 232 230 228 226 224 222 220 218 216 214 212 210 208 206 204 202 200 198 196 194 192 190 188 186 184 182 180 178 176 174 172 170 168 166 164 162 160 158 156 154 152 150 148 146 144 142 140 138 136 134 132 130 128 126 124 122 120 118 116 114 112 110 108 106 104 102 100 98 96 94 92 90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

40 km

50 km



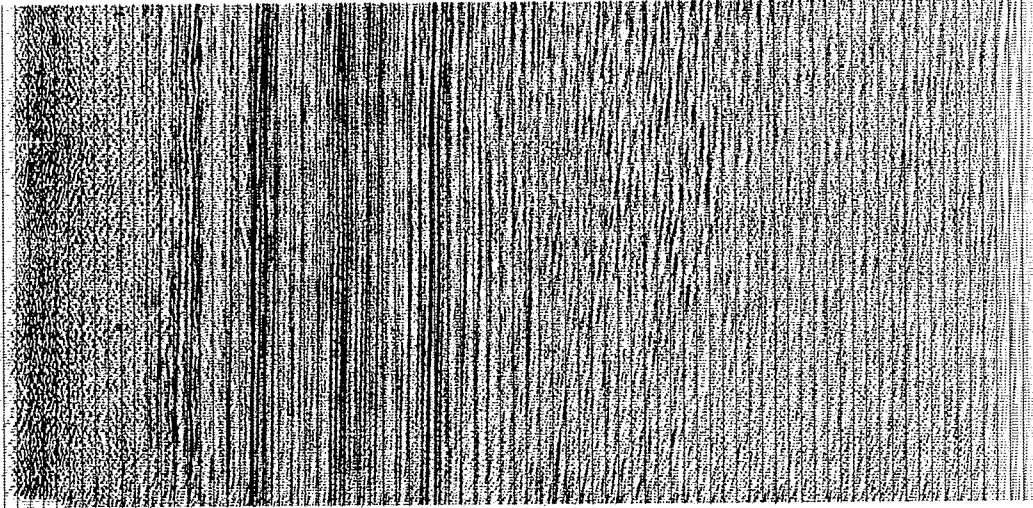
1768m / β



APPROX. REFLECT. DEPTH TIME

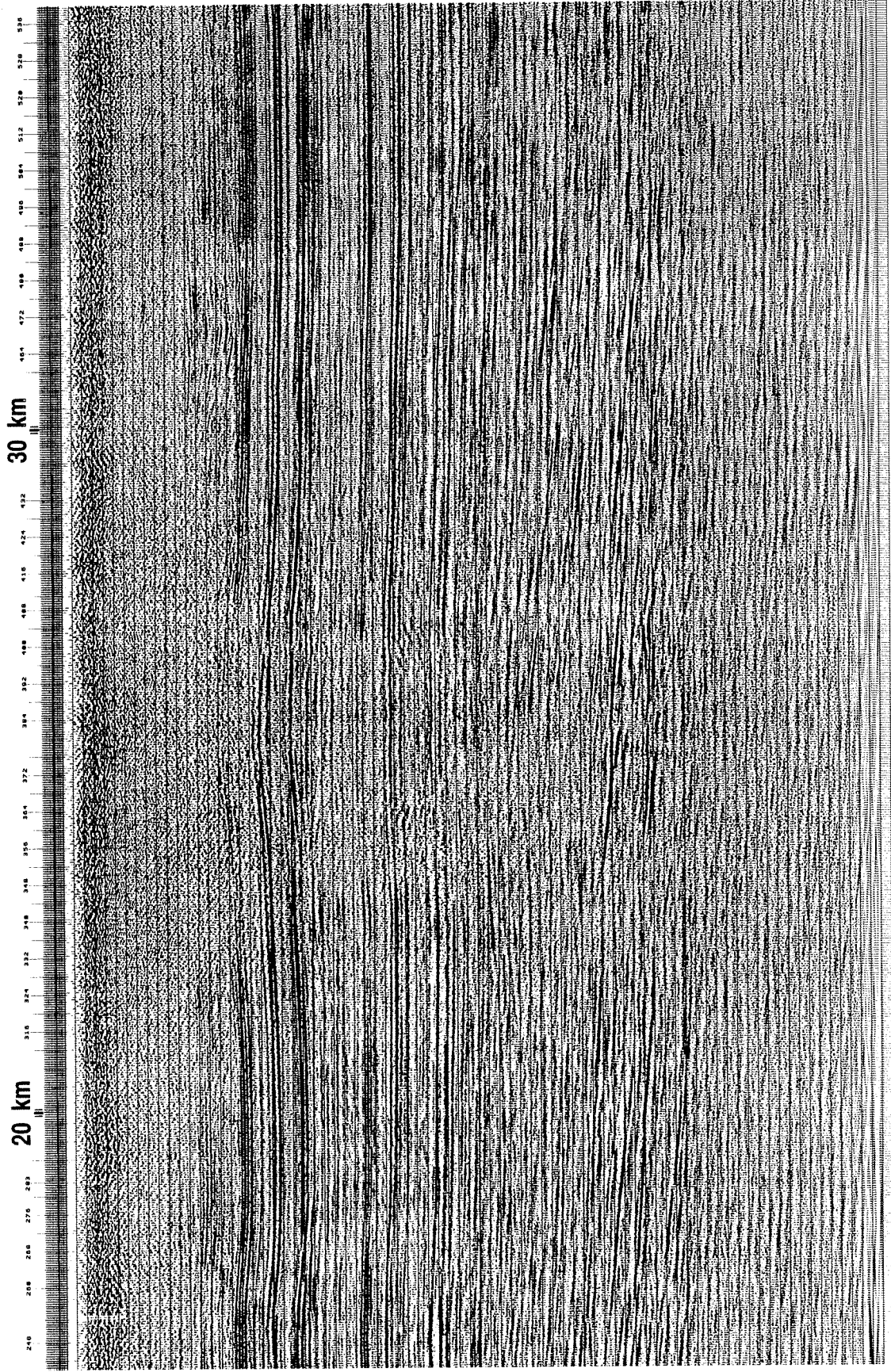
S.L. - 0.0 s -
1.0 s -
5 km - 2.0 s -
3.0 s -
10 km - 4.0 s -
15 km - 5.0 s -
6.0 s -
20 km - 7.0 s -

076 080 084 088 092 096 100 104 108 112 116



S E G
24 - 300 m - - 8 mgal -
18 - 200 m - -14 mgal -
12 - 100 m - -20 mgal -
6 - S.L. - -26 mgal -
0 - S.L. - -32 mgal -

1768m/A
SW



1770m /2

MELVILLE ISLAND, CANADA

Line No.: 1770

Migrated Seismic Reflection Section

APPROX. DEPTH
REFL. TIME



-0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

-3.0 s

-4.0 s

-5.0 s

-6.0 s

-7.0 s -20 km

Processed by:
Veritas Seismic Ltd, Calgary, July, 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: April 1975
Source: 680 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:

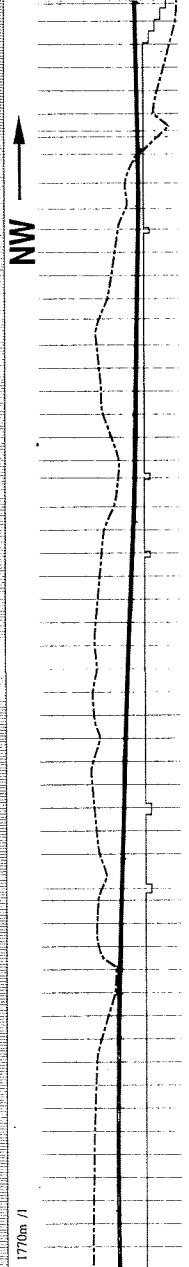
Sample rate: 4 ms
Sea level: 12000 fms
Reduction velocity: 12000 fms
Decomposition: 120 ms
Operator length: 5 %
Filter: time varying digital bandpass:
0-3500 ms: 1015-5060 Hz;
3500-6000 ms: 575-5060 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:

E.R. Kansewisch and Z. Bekas
University of Alberta, Edmonton, March 1988

G E S
- 8 mgal -300 m -24
-14 mgal -200 m -18
-20 mgal -100 m -12
-26 mgal -6
-32 mgal -S.L. -0



1770m /1

Line 1171

0 km 10 km

Line 1768

0 km

15 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100 104 108 112 116 120 124 128 132 136 140 144 148 152 156 160 164 168 172 176 180 184 188 192 196 200 204 208 212 216 220 224 228 232 236 240

APPROX. DEPTH

REFL. TIME

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

5 km -

10 km -

15 km -

20 km -

S E G

24 - 300 m - 8 mgal -

18 - 200 m - 14 mgal -

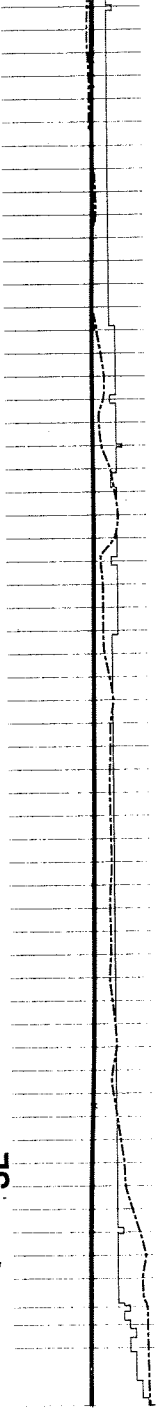
12 - 100 m - 20 mgal -

6 - S.L. - 26 mgal -

0 - S.L. - 32 mgal -

SE

1770m / 3



MELVILLE ISLAND, CANADA

Line No.: 1862

Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:

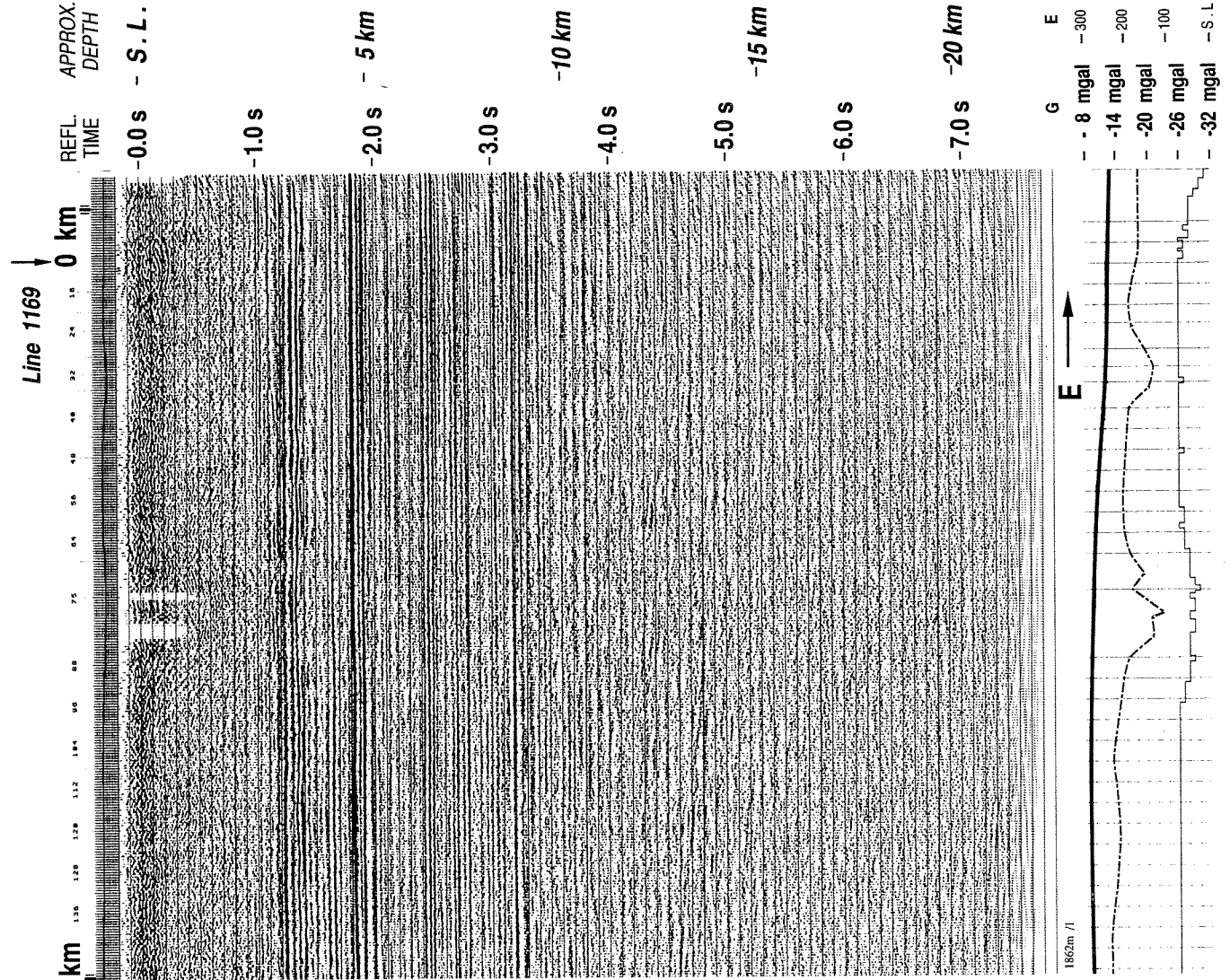
Date shot: April, 1975
Source interval: 800 ft
Geophone group interval: 220 ft
Spread distance: 5290-220-SP-220-5290 ft

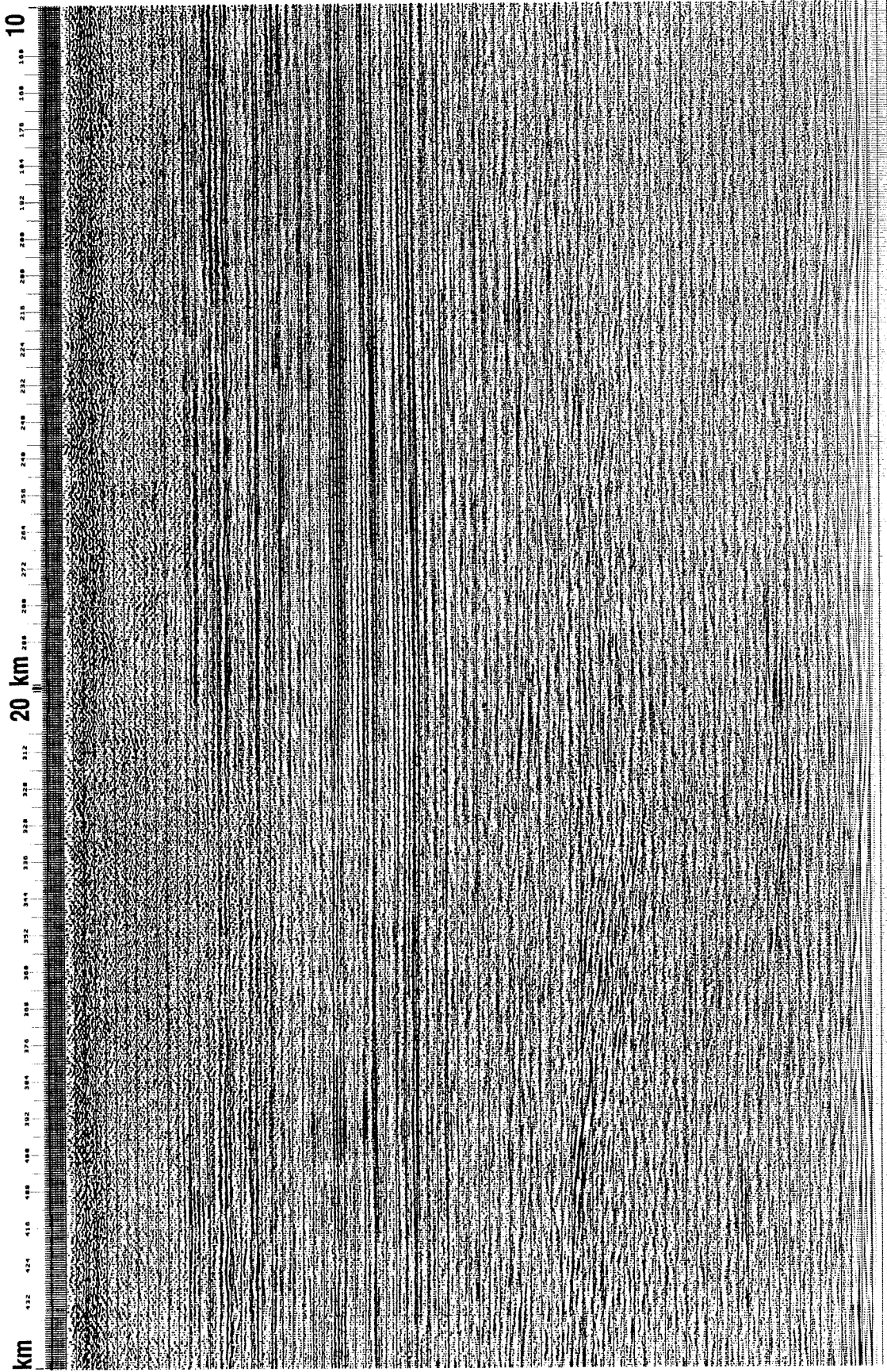
Processing parameters:

Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Deconvolution
Operator length: 120 ms
Pretwhitening: 5 %
Filter: time varying digital bandpass:
Low cut-off: 10/13.50/60 Hz;
High cut-off: 5500-8000 ms; 57.5-50/60 Hz

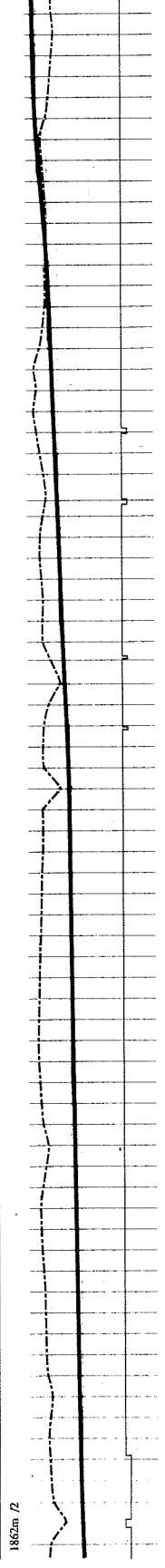
Interpretation:

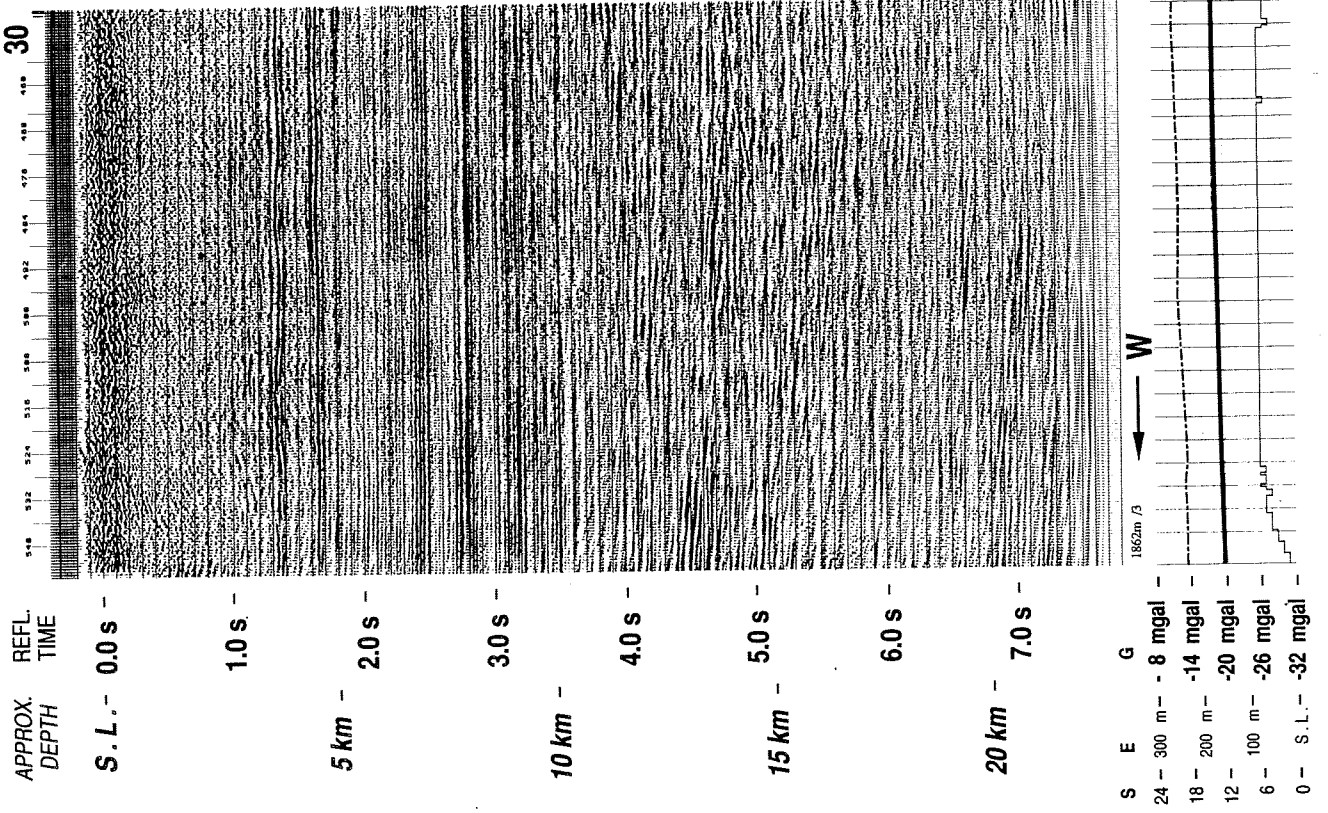
G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold
E.R. Kanasewich and Z. Berkas
University of Alberta, Edmonton, March 1988





km 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244 246 248 250 252 254 256 258 260 262 264 266 268 270 272 274 276 278 280 282 284 286 288 290 292 294 296 298 300 302 304 306 308 310 312 314 316 318 320 322 324 326 328 330 332 334 336 338 340 342 344 346 348 350 352 354 356 358 360 362 364 366 368 370 372 374 376 378 380 382 384 386 388 390 392 394 396 398 400 402 404 406 408 410 412 414 416 418 420 422 424 426 428 430 432 434 436 438 440 442 444 446 448 450 452 454 456 458 460 462 464 466 468 470 472 474 476 478 480 482 484 486 488 490 492 494 496 498 500 502 504 506 508 510 512 514 516 518 520 522 524 526 528 530 532 534 536 538 540 542 544 546 548 550 552 554 556 558 560 562 564 566 568 570 572 574 576 578 580 582 584 586 588 590 592 594 596 598 600 602 604 606 608 610 612 614 616 618 620 622 624 626 628 630 632 634 636 638 640 642 644 646 648 650 652 654 656 658 660 662 664 666 668 670 672 674 676 678 680 682 684 686 688 690 692 694 696 698 700 702 704 706 708 710 712 714 716 718 720 722 724 726 728 730 732 734 736 738 740 742 744 746 748 750 752 754 756 758 760 762 764 766 768 770 772 774 776 778 780 782 784 786 788 790 792 794 796 798 800 802 804 806 808 810 812 814 816 818 820 822 824 826 828 830 832 834 836 838 840 842 844 846 848 850 852 854 856 858 860 862 864 866 868 870 872 874 876 878 880 882 884 886 888 890 892 894 896 898 900 902 904 906 908 910 912 914 916 918 920 922 924 926 928 930 932 934 936 938 940 942 944 946 948 950 952 954 956 958 960 962 964 966 968 970 972 974 976 978 980 982 984 986 988 990 992 994 996 998 1000





APPROX. DEPTH

516 518 520 522 524 526 528 530 532 534 536 538 540 542 544 546 548 30

S. L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

4.0 s -

15 km - 5.0 s -

6.0 s -

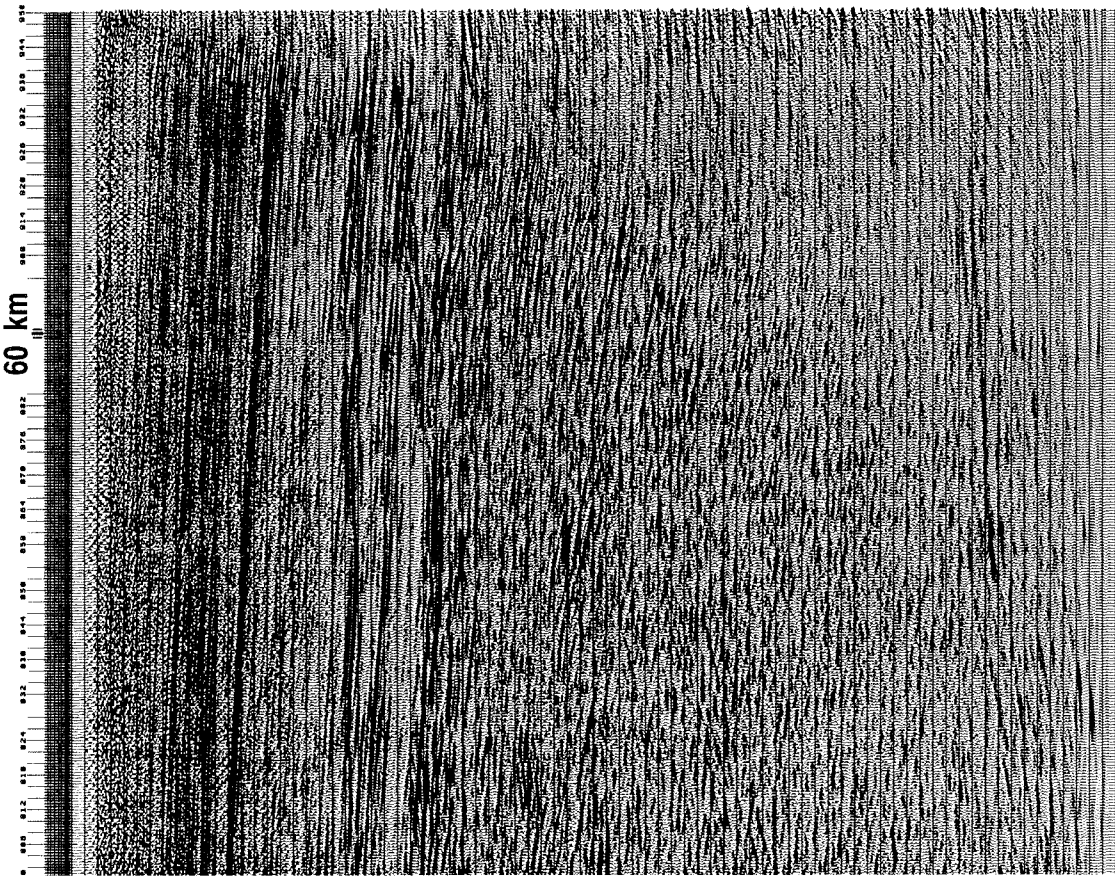
20 km - 7.0 s -

S E G
 24 - 300 m - - 8 mgal -
 18 - 200 m - -14 mgal -
 12 - 100 m - -20 mgal -
 6 - 0 m - -26 mgal -
 0 - S. L. - -32 mgal -

1862m / s

W

Chads Creek B-64



MELVILLE ISLAND, CANADA
Line No.: 1920
Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd., Calgary, July 1997
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: October 1975
Source interval: 440 ft
Geophone group interval: 220 ft
Spread distance: 5500-440 SF-440-5500 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Convolution length: 120 ms
Prewhitening: 5 %
Filter: time-varying digital bandpass: 10/13-50/60 Hz;
3500-8000 ms: 5/7.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:
E.R. Kanasewich and Z. Berkas
University of Alberta, Edmonton, March 1988

APPROX. DEPTH

-0.0 s - S. L.

-1.0 s

-2.0 s

-3.0 s

- 5 km

-4.0 s

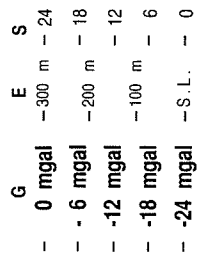
-10 km

-5.0 s

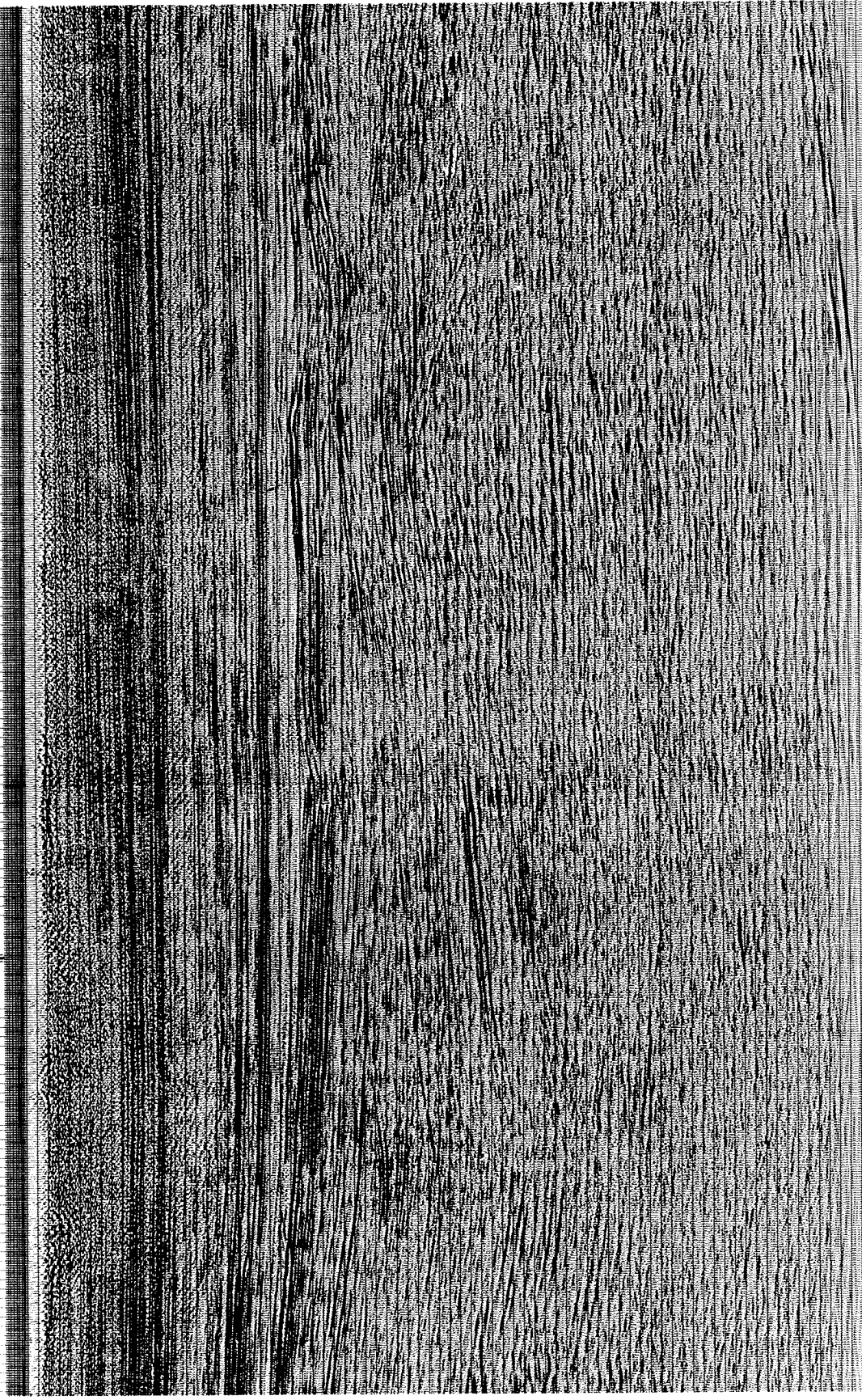
-6.0 s -15 km

-7.0 s

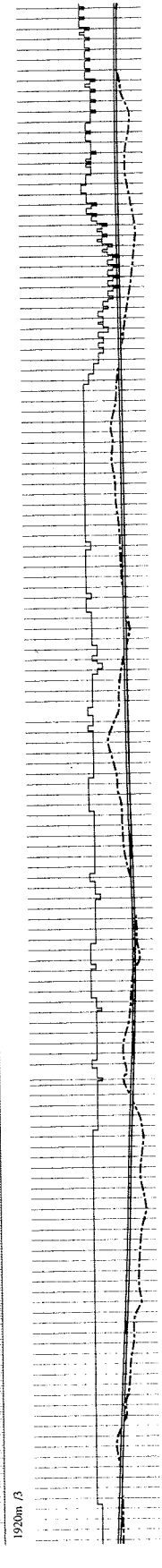
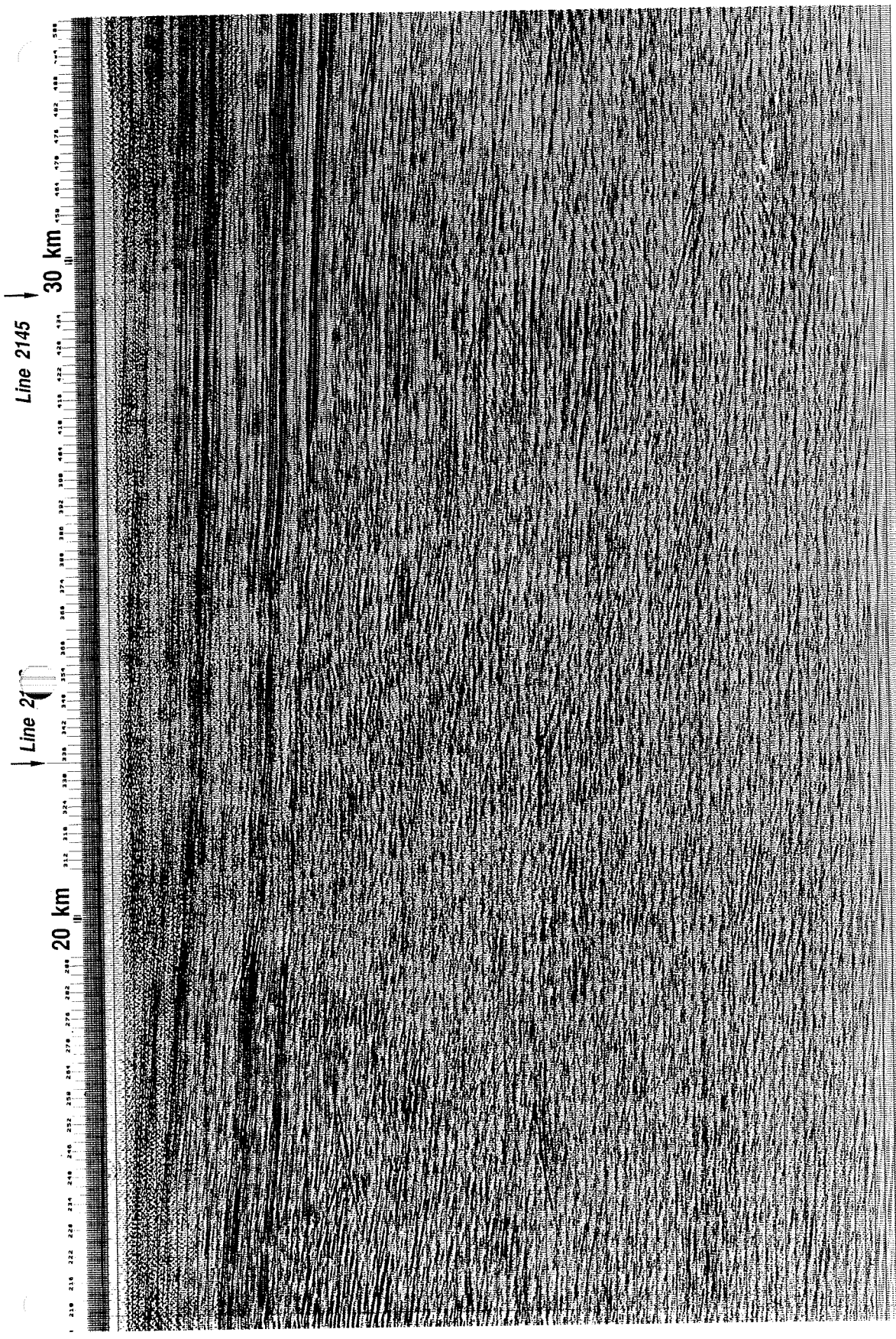
-20 km



50 km 40 km



1930m / 2





Line 1921

0 km 10 km

0 12 24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216

APPROX. DEPTH

REFL. TIME

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

10 km -

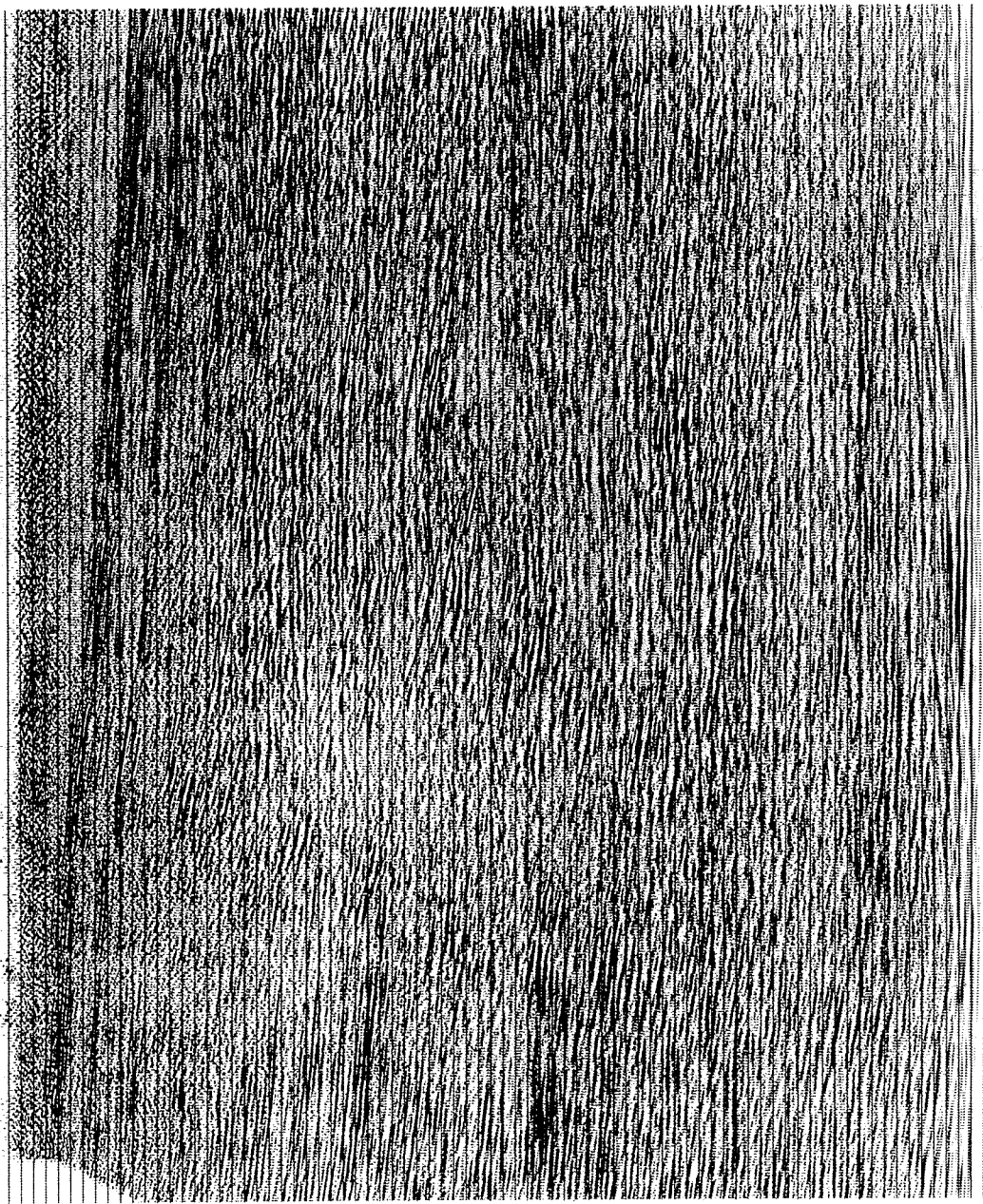
5.0 s -

6.0 s -

7.0 s -

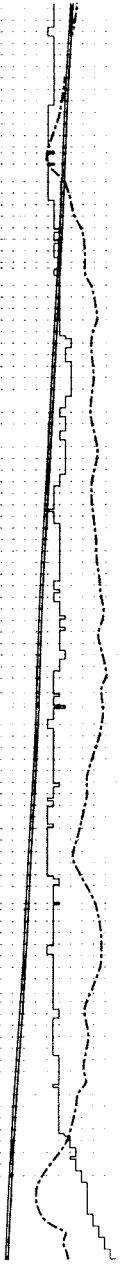
20 km -

S	E	G
24	- 300 m -	0 mgal -
18	- 200 m -	- 6 mgal -
12	- 100 m -	-12 mgal -
6	- 0 m -	-18 mgal -
0	- S. L. -	-24 mgal -



SE

1920m / 4





Sherard Bay F-14

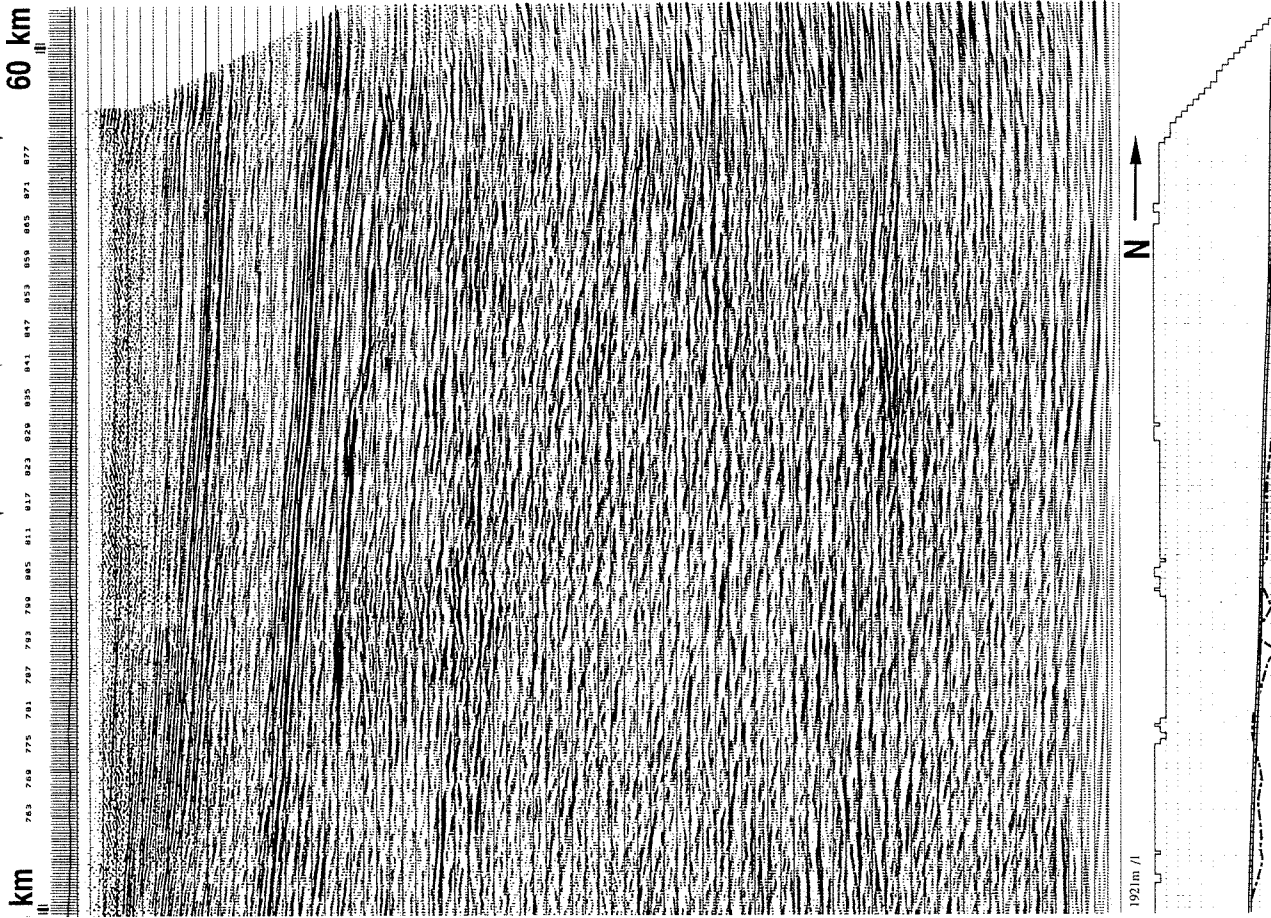
Line 1179

Line 2146

60 km

763 760 775 781 787 793 799 805 811 817 823 829 835 841 847 853 859 865 871 877

km



REFL. TIME APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

-6.0 s

-7.0 s

-20 km

G	E	S
- 0 mgal	-300 m	- 24
- 6 mgal	-200 m	- 18
-12 mgal	-100 m	- 12
-18 mgal	- 6	- 6
-24 mgal	-S.L.	- 0

MELVILLE ISLAND, CANADA
Line No.: 1921

Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: October, 1975
Source interval: 44.0 ft
Geophone group interval: 220 ft
Spread distance: 5500-440-SP-440-5500 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Deconvolution
Operator length: 12v, ms
Prewitening: 5 %
Filter: time varying digital bandpass:

1013.5060 Hz;
3500-8000 ms; 57.5-5060 Hz

G: Bouguer gravity anomaly
E: Elevation
S: Stacking odd

Interpretation:
E.R. Kanasewich and Z. Berkes
University of Alberta, Edmonton, March 1988

1921m / 1



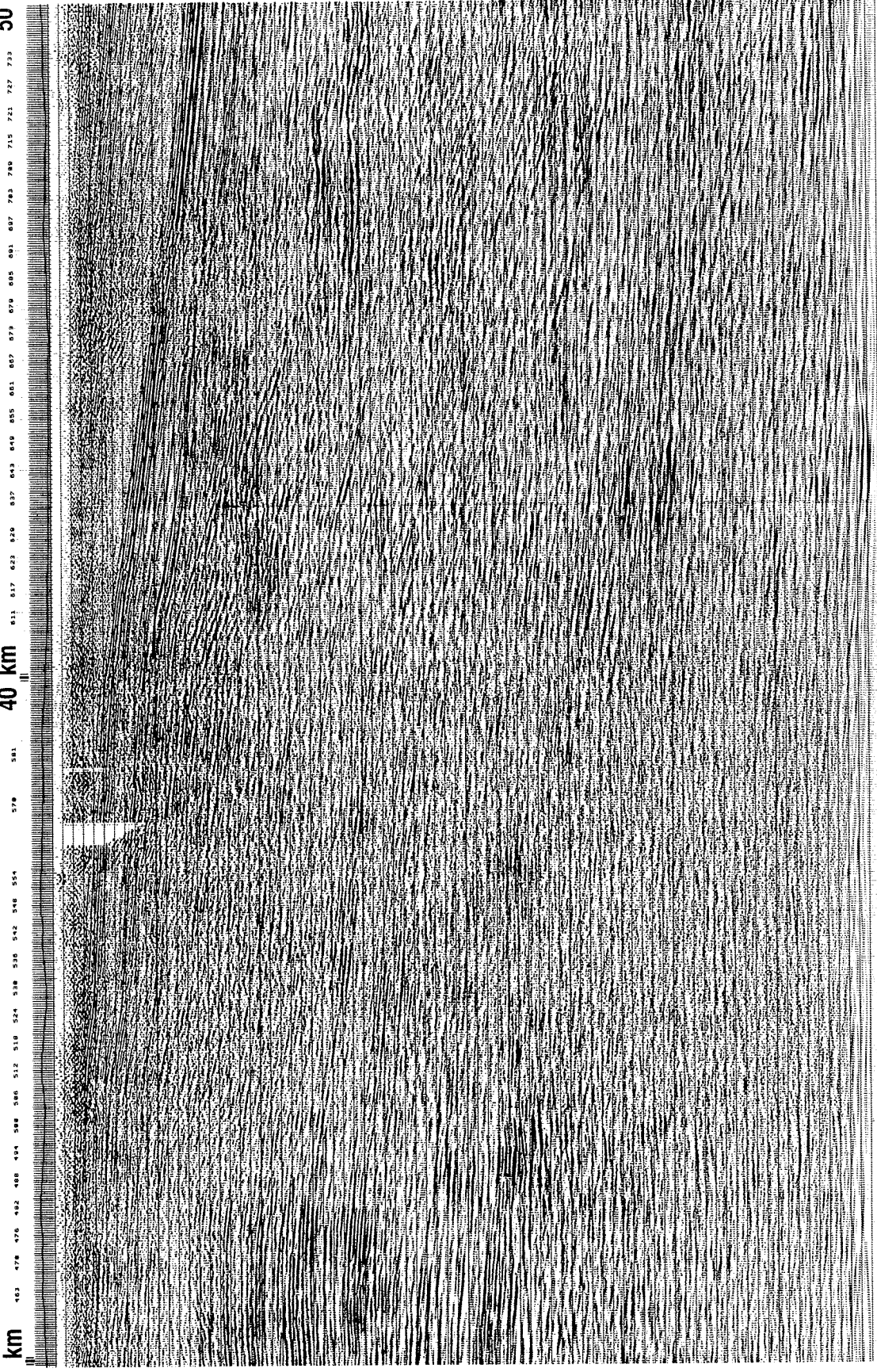
50

733 727 725 715 705 695 685 677 673 670 668 661 657 653 648 645 637 633 628 626 617 611

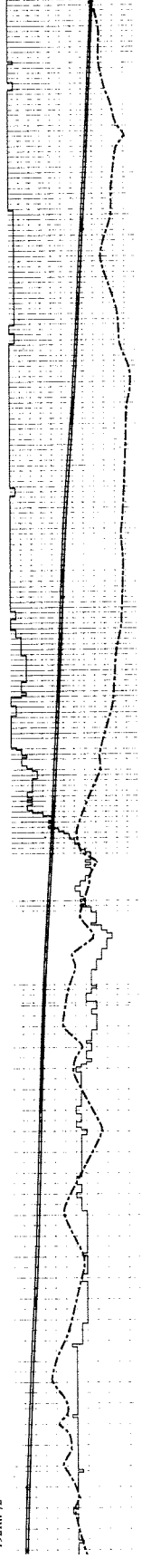
40 km

km

Line 1920 ↓




1921m / 2



150

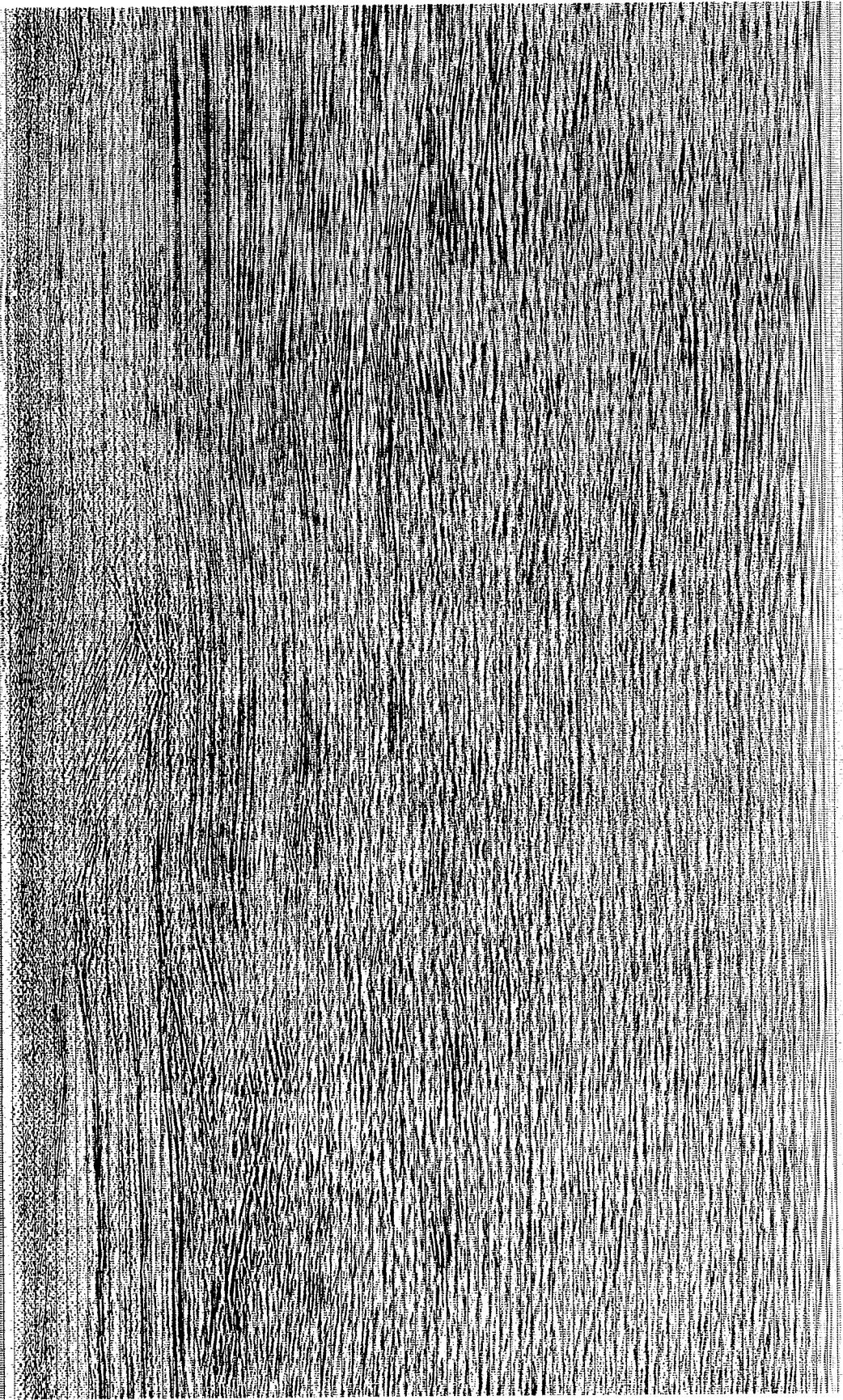


Weatherall O-10 

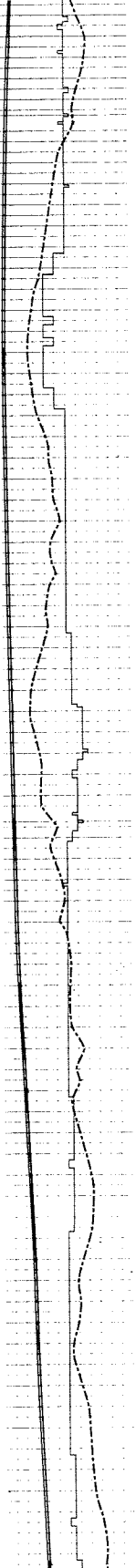
30

km 184 178 176 172 168 164 200 200 212 218 224 230 236 242 248 254 260 266 272 278 284 290 296 302 308 314 320 326 332 338 344 350 356 362 368 374 380 386 392 398 404 410 416 422 428

20 km



1921m / 3





Line TPC2

0 km 10

1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5 19.0 19.5 20.0 20.5 21.0 21.5 22.0 22.5 23.0 23.5 24.0 24.5 25.0 25.5 26.0 26.5 27.0 27.5 28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0 37.5 38.0 38.5 39.0 39.5 40.0 40.5 41.0 41.5 42.0 42.5 43.0 43.5 44.0 44.5 45.0 45.5 46.0 46.5 47.0 47.5 48.0 48.5 49.0 49.5 50.0 50.5 51.0 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0 55.5 56.0 56.5 57.0 57.5 58.0 58.5 59.0 59.5 60.0 60.5 61.0 61.5 62.0 62.5 63.0 63.5 64.0 64.5 65.0 65.5 66.0 66.5 67.0 67.5 68.0 68.5 69.0 69.5 70.0 70.5 71.0 71.5 72.0 72.5 73.0 73.5 74.0 74.5 75.0 75.5 76.0 76.5 77.0 77.5 78.0 78.5 79.0 79.5 80.0 80.5 81.0 81.5 82.0 82.5 83.0 83.5 84.0 84.5 85.0 85.5 86.0 86.5 87.0 87.5 88.0 88.5 89.0 89.5 90.0 90.5 91.0 91.5 92.0 92.5 93.0 93.5 94.0 94.5 95.0 95.5 96.0 96.5 97.0 97.5 98.0 98.5 99.0 99.5 100.0

APPROX. DEPTH
REFL. TIME

S. L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

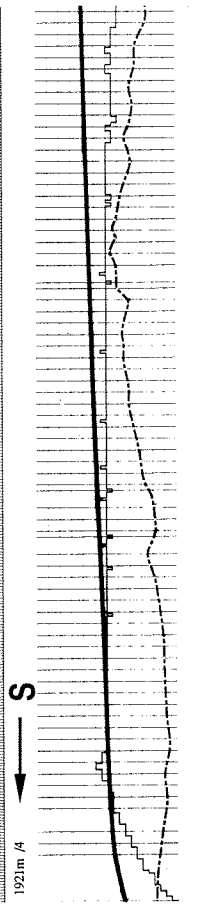
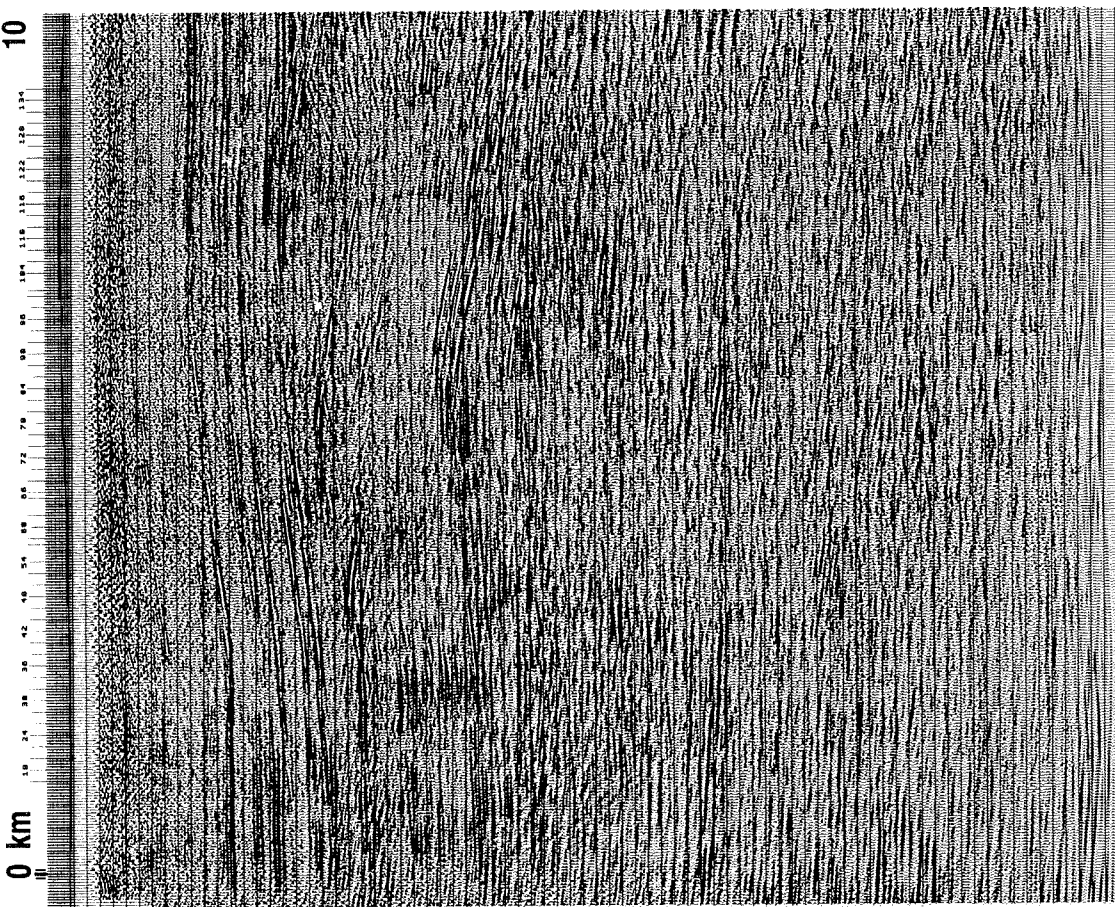
4.0 s -

15 km - 5.0 s -

6.0 s -

20 km - 7.0 s -

S	E	G
24	- 300 m -	0 mgal
18	- 200 m -	- 6 mgal
12	- 100 m -	-12 mgal
6	- S. L. -	-18 mgal
0	- S. L. -	-24 mgal



1921m / A

S

Line 2145

MELVILLE ISLAND, CANADA
Line No.: 2144

Migrated Seismic Reflection Section

REFL. TIME
APPROX. DEPTH

-0.0 s - S.L.

Field parameters:

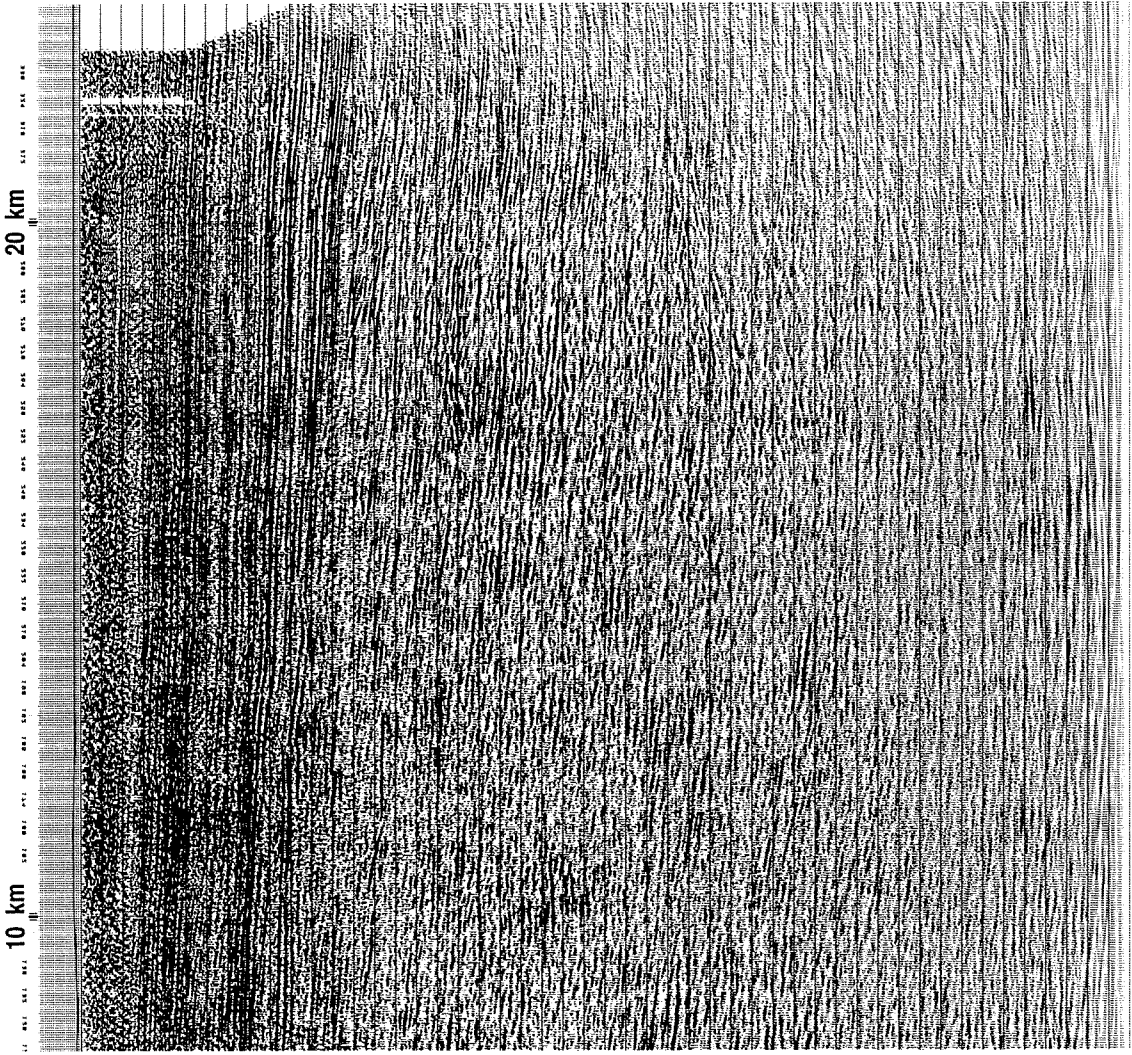
Date shot: March 1976
Source interval: 440 ft
Geophone group interval: 220 ft
Spread distance: 1500-440 SP-440-1320, 3520-11220 ft

Processing parameters:

Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 1000 ft/s
Operator length: 120 ms
Prewhitening: 5 %
Filter: time varying digital bandpass: 0-10000 ms, 57.5-5000 Hz

Interpretation:

E.R. Kanasewich and Z. Bekeas
University of Alberta, Edmonton, March 1988



2144m / l

NW →

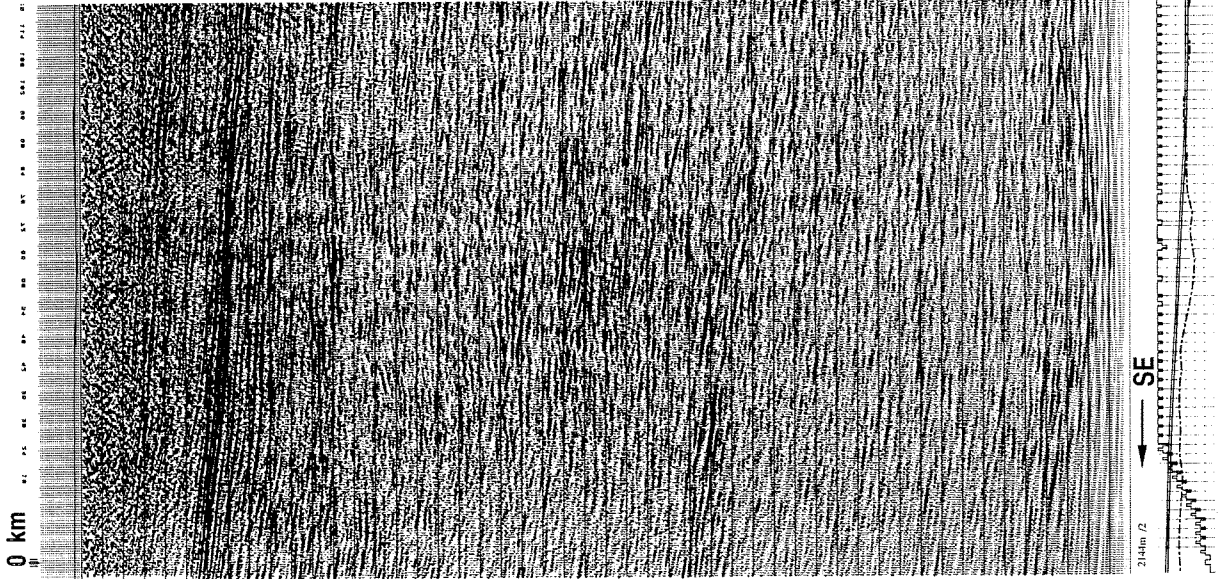
G E S

- - 14 mgal - 150 m - 12

- - 20 mgal - 75 m - 6

- - 26 mgal - S.L. - 0

Line 2146 ↓



APPROX. REFL. TIME
DEPTH

S.L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

8.0 s -

9.0 s -

5 km -

20 km -

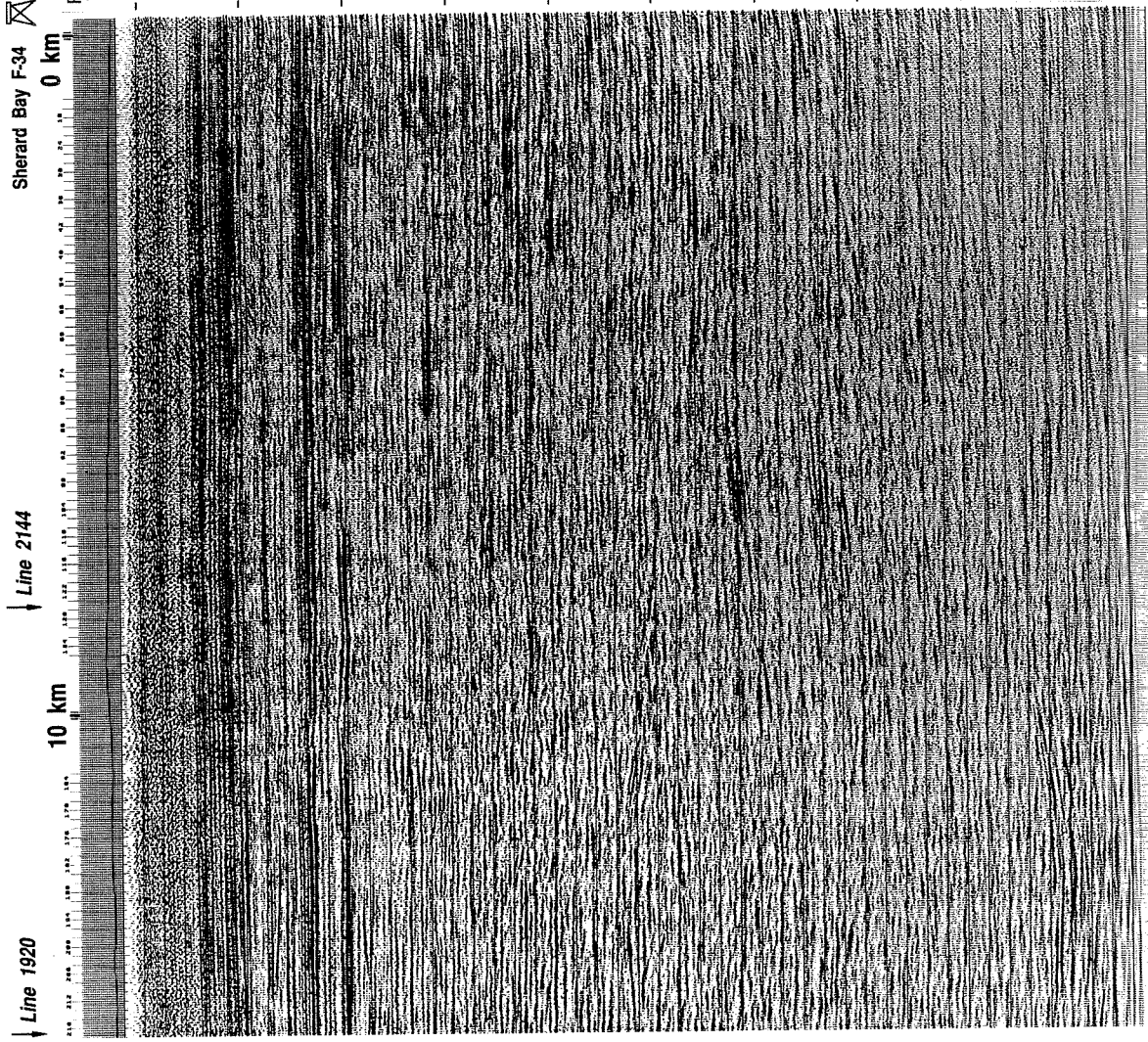
S E G

12 - 150 m - -14 mgal -

6 - 75 m - -20 mgal -

0 - S.L. - -26 mgal -

Sherard Bay F-34
 Line 2144
 Line 1920



APPROX. DEPTH
 REFLECTOR TIME
 -0.0 s - S.L.
 -1.0 s
 -2.0 s
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s
 -8.0 s
 -9.0 s

0 km
 10 km
 20 km
 25 km

MELVILLE ISLAND, CANADA
 Line No.: 2145
 Migrated Seismic Reflection Section

Processed by:
 Ventas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

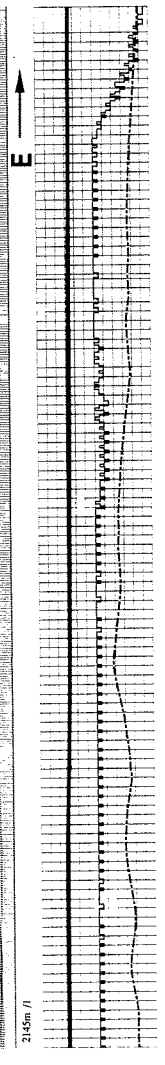
Field parameters:
 Date shot: March 1976
 Source interval: 440 ft
 Geophone group interval: 220 ft
 Spread distance: 1540-440-SP-440-11440 ft

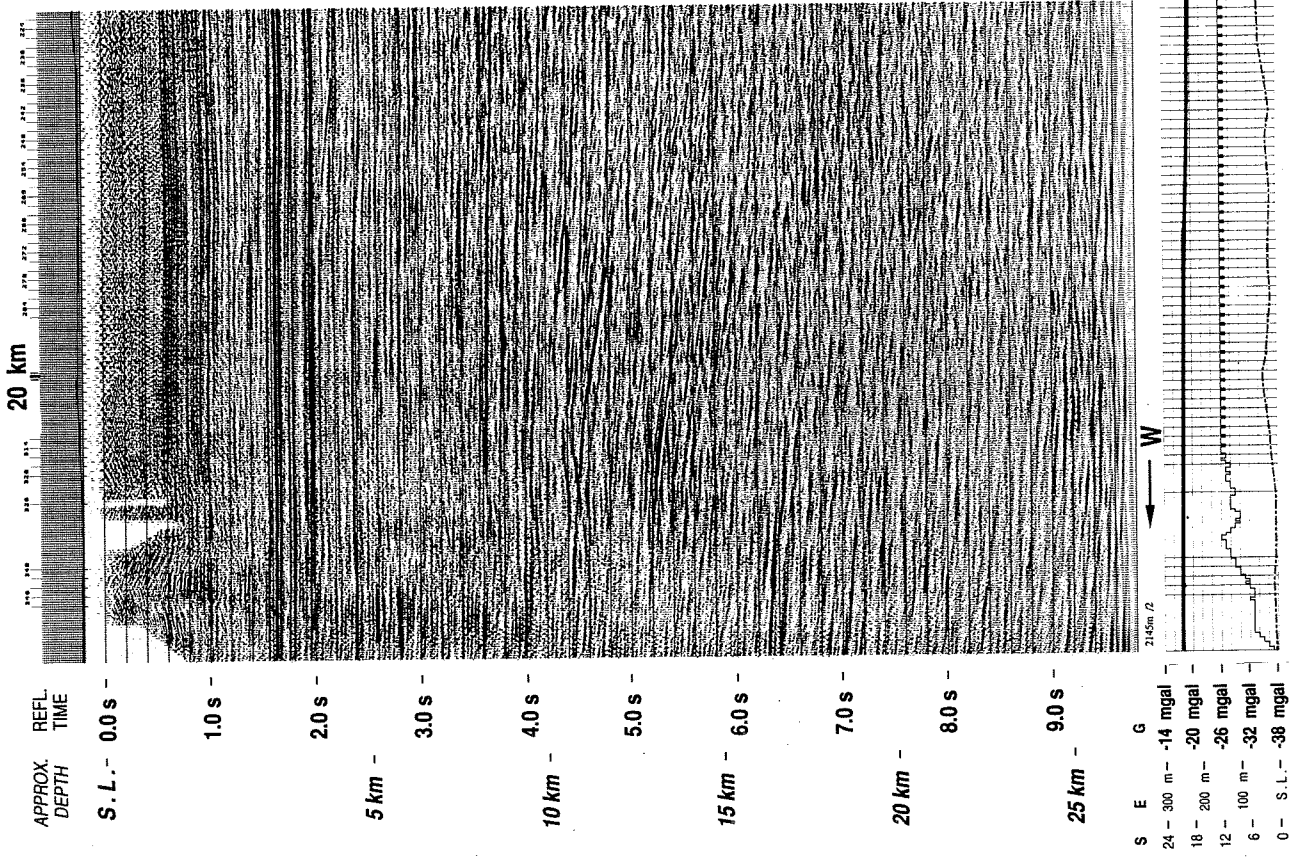
Processing parameters:
 Sample rate: 4 ms
 Displacement: Sea level
 Replacement velocity: 10000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter: finite varying digital bandpass:
 0-3500 ms: 1013-5060 Hz;
 3500-10000 ms: 57.5-5060 Hz.

G: Bouguer gravity anomaly
 E: Elevation
 S: Seabed fold

Interpretation:
 E.R. Kanasevich and Z. Berkas
 University of Alberta, Edmonton, March 1988

G E S
 -14 mgal -300 m -24
 -20 mgal -200 m -18
 -26 mgal -100 m -12
 -32 mgal -0 m -6
 -38 mgal -S.L. -0





APPROX. DEPTH
REFL. TIME

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

8.0 s -

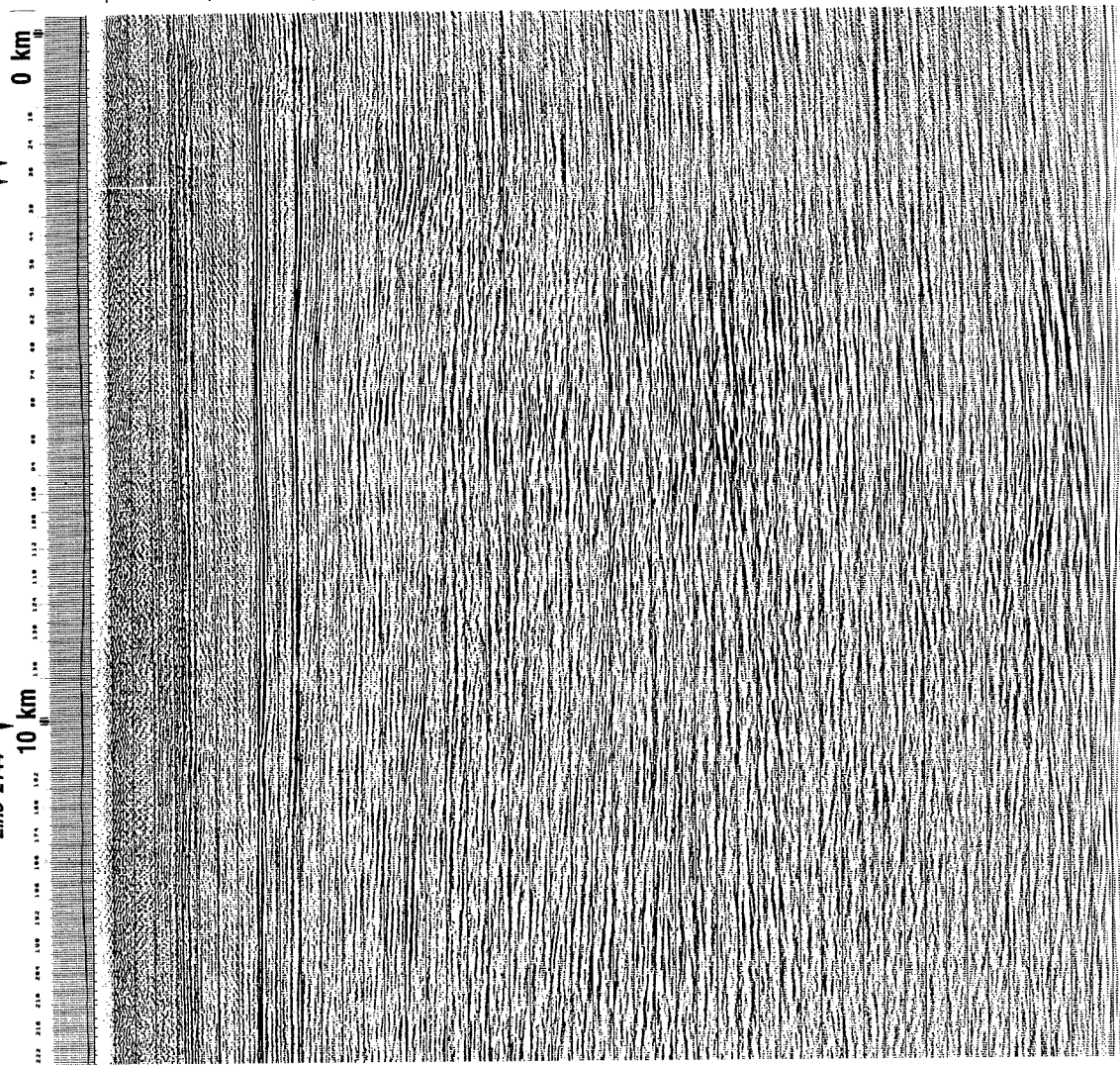
9.0 s -

S E G
 24 - 300 m - -14 mgal
 18 - 200 m - -20 mgal
 12 - 100 m - -26 mgal
 6 - S.L. - -32 mgal
 0 - S.L. - -38 mgal

Line 2144

Line 1921

Line 2674



APPROX. MELVILLE ISLAND, CANADA
 DEPTH Line No.: 2146
 Migrated Seismic Reflection Section

Processed by:
 Veritas Seismic Ltd, Calgary, July 1987
 and
 Scientific Laboratory of the University of Alberta

Field parameters:
 Date shot: March 1976
 Shot point: 440
 Grouping interval: 220 ft
 Spread distance: 1540-440-SP-440-11460 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 10000 ft/s
 Decimation: 120 ms
 Operator length: 5 %
 Filter: time varying digital bandpass: 10/13-50/60 Hz;
 9500-10000 ms; 97.5-3000 Hz.

G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking field

Interpretation:
 E.R. Kasanovich and Z. Baskas
 University of Alberta, Edmonton, March 1988

REFL TIME
 -0.0 s - S.L.
 -1.0 s
 -2.0 s
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s
 -8.0 s
 -9.0 s

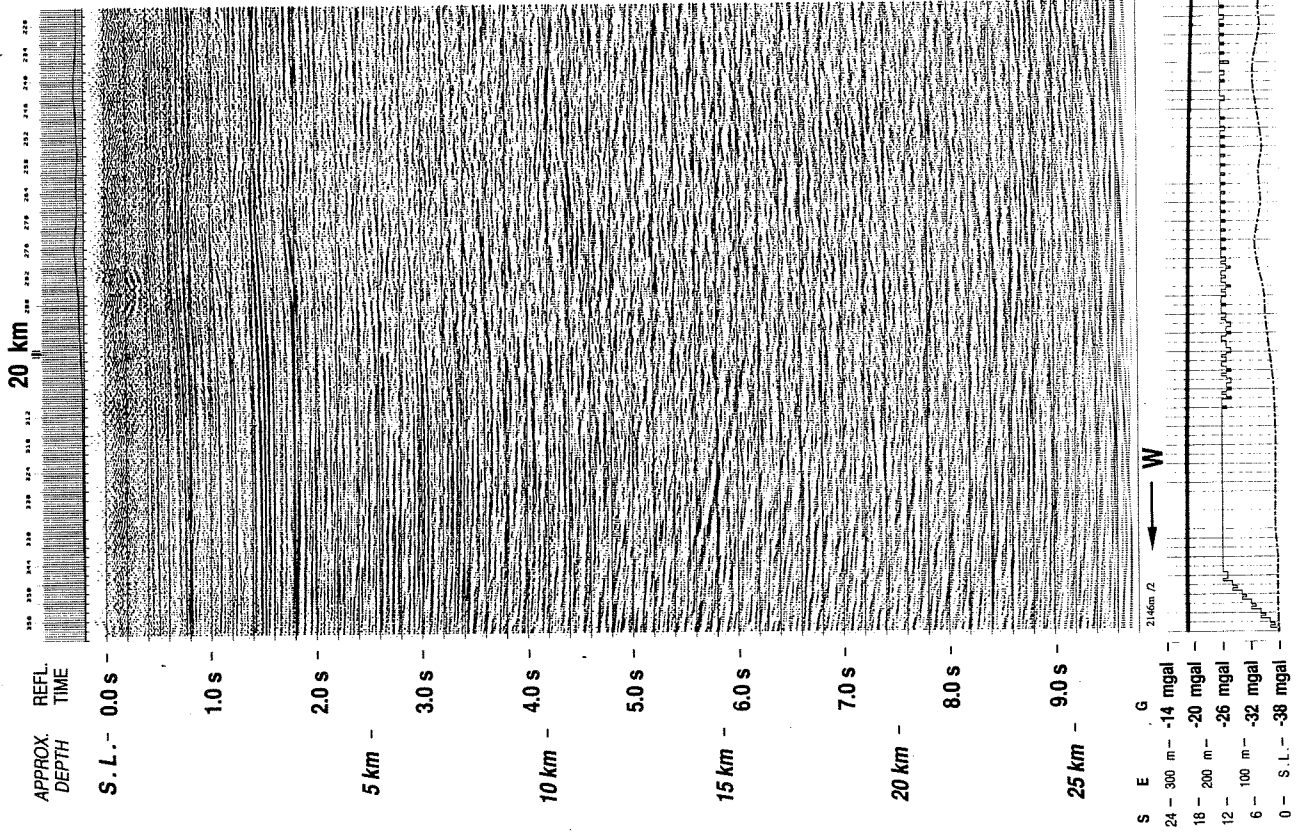
APPROX. DEPTH
 -5 km
 -10 km
 -15 km
 -20 km
 -25 km

G E S
 -14 mgal -300 m -24
 -20 mgal -200 m -18
 -26 mgal -100 m -12
 -32 mgal -6
 -38 mgal -S.L. -0

2146m / 1

(5)

Line 1920



REFL. TIME

APPROX. DEPTH

0.0 s

1.0 s

2.0 s

3.0 s

4.0 s

5.0 s

6.0 s

7.0 s

8.0 s

9.0 s

0 km

5 km

10 km

15 km

20 km

25 km

S E G

24 - 300 m -14 mgal

18 - 200 m -20 mgal

12 - 100 m -26 mgal

6 - S.L. -32 mgal

0 - S.L. -38 mgal

W

2146m/2

Collingwood K-33

024 032 040 048 056 064 072 080 088 096 104 112 120 128 136 144 152 160 168 176 184 192 200 208 216 224 232 240 248 256 264 272 280 288 296 304 312 320 328 336 344 352 360 368 376 384 392 400 408 416 424 432 440 448 456 464 472 480 488 496 504 512 520 528 536 544 552 560 568 576 584 592 600

REFL. TIME
APPROX. DEPTH

-0.0 s - S. L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

-6.0 s -15 km

-7.0 s

MELVILLE ISLAND, CANADA

Line No.: 2674

Migrated Seismic Reflection Section

Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: September, 1981
Survey name: 2674
Geophone group interval: 67 m
Spread distance: 3283-134-SP-134-3283 m

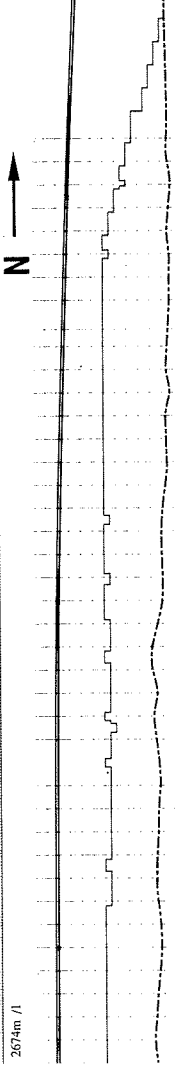
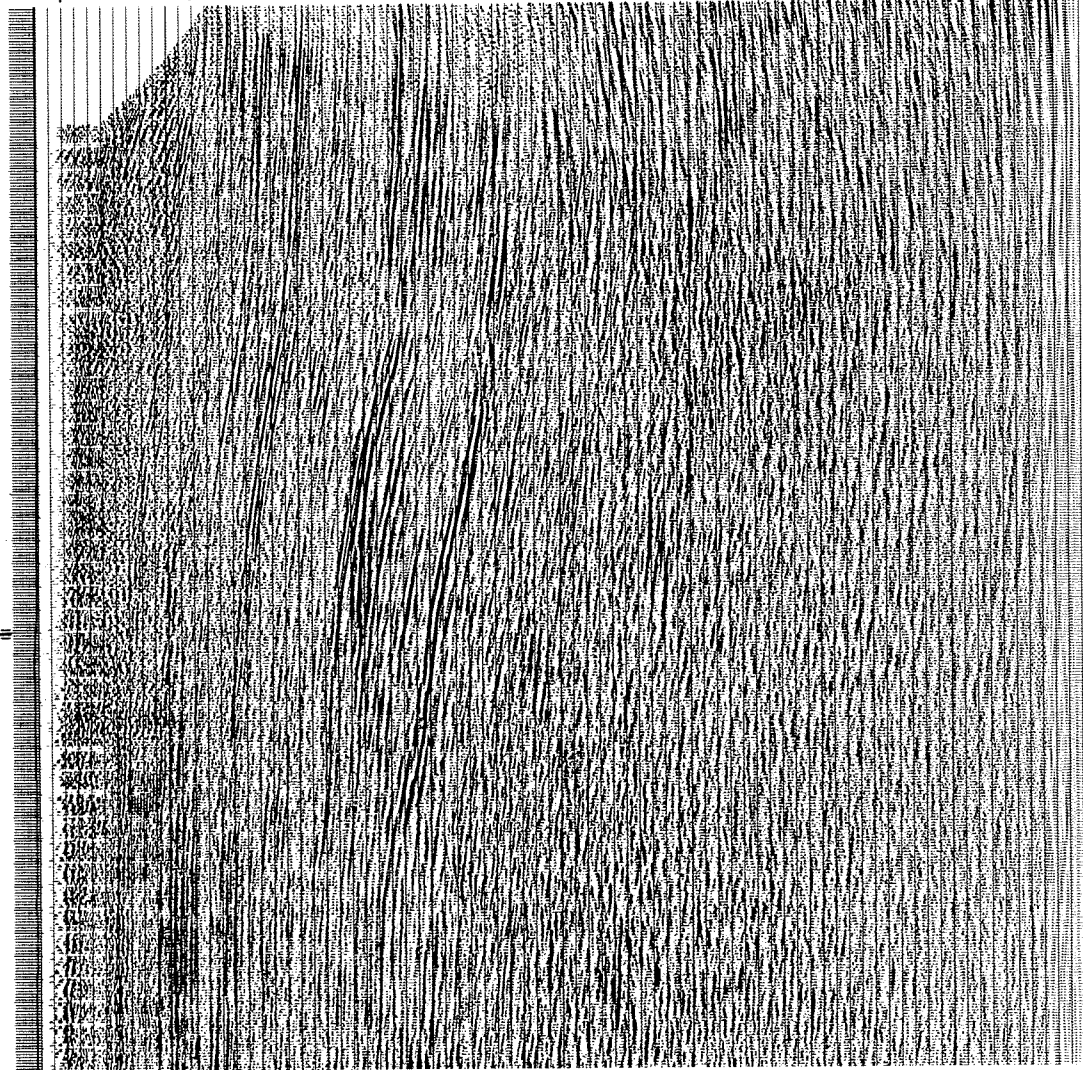
Processing parameters:
Sample rate: 4 ms
Depth: Sea level
Replacement velocity: 10000 ft/s
Decomposition
Operator length: 120 ms
Prewhitening: 5 %
Filter:

time varying digital bandpass:
0-3500 ms: 10/13-50/60 Hz;
3500-8000 ms: 57.5-50/60 Hz.

G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold

Interpretation:

E.R. Kansewicz and Z. Benkes
University of Alberta, Edmonton, March 1988



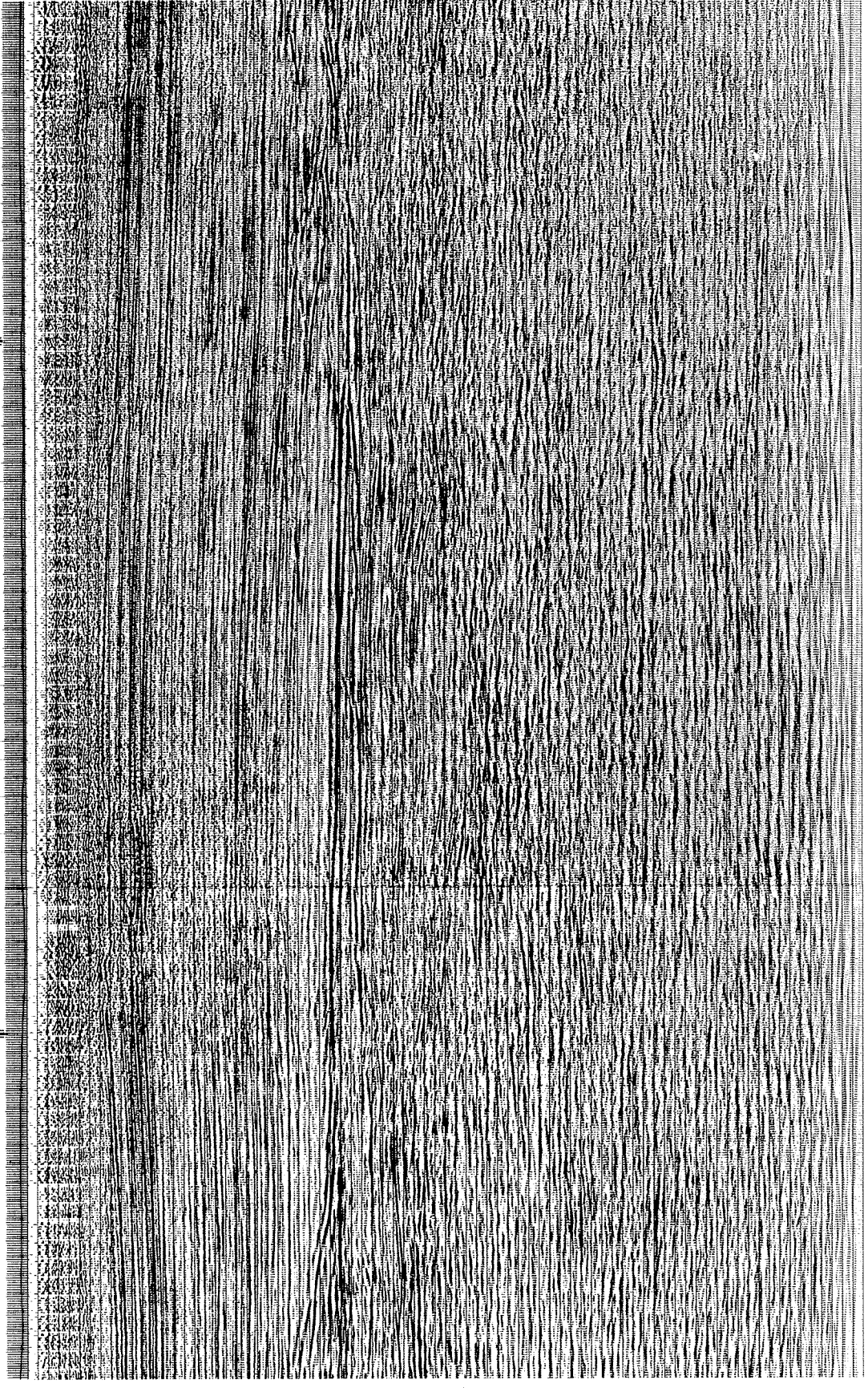
2674m / 1

Line 1180

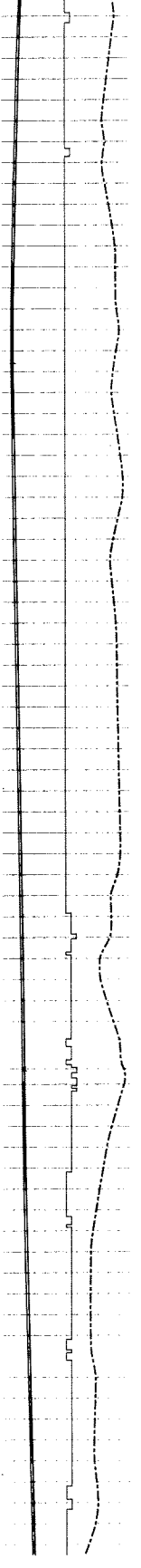
528 536 544 552 564 572 588 612 624 632 648 656 664 672 688 696 704 712 728 736 744 752 760 768 776 784 792 800 808 816

40 km

50 km



267km / 2



Line 1179

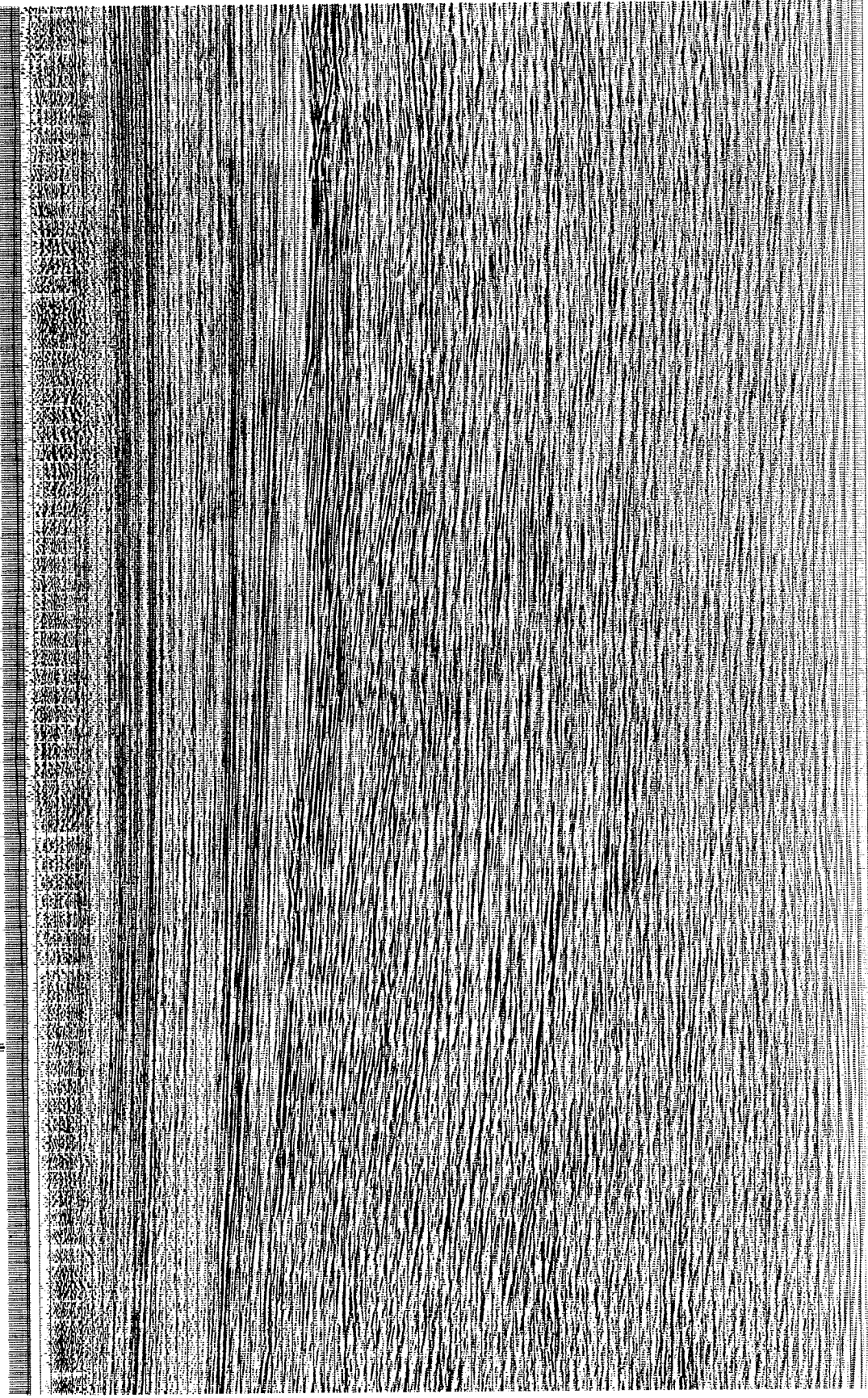


Sherard Bay F-14

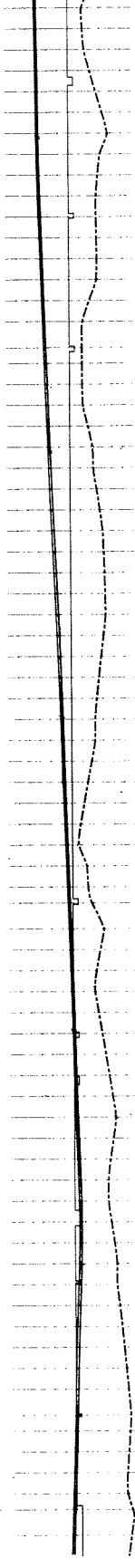
20 km

30 km

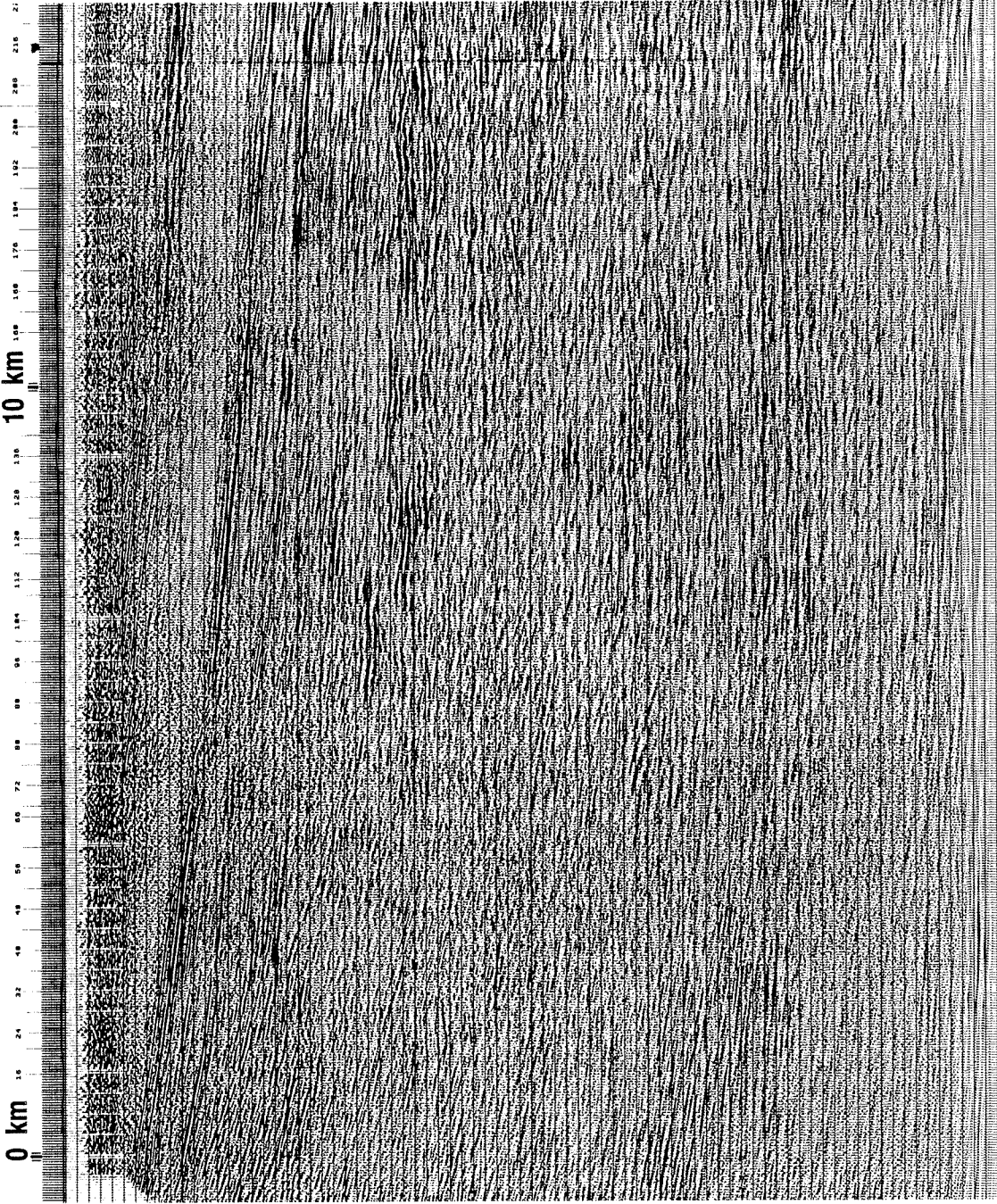
233 248 240 256 264 272 280 312 320 328 336 344 352 360 368 376 384 392 400 408 416 424 432 464 472 480 488 496 504 512 520



2674m β



Line 2146



APPROX. DEPTH
S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

20 km -

5 km -

15 km -

S E G

24 - 300 m - - 8 mgal

18 - 200 m - -14 mgal

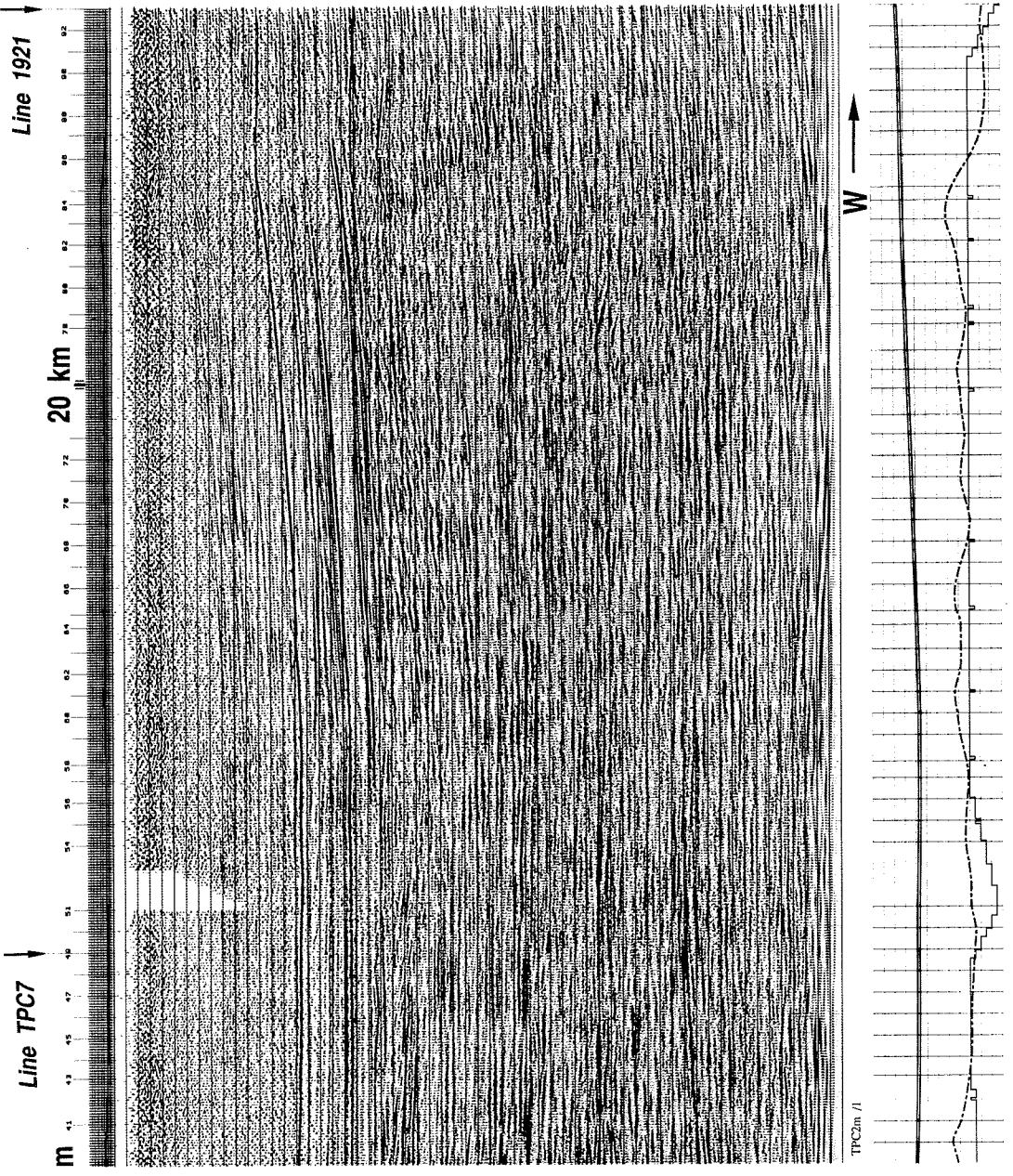
12 - 100 m - -20 mgal

6 - S.L. - -26 mgal

0 - S.L. - -32 mgal

20 km / 4

← S



MELVILLE ISLAND, CANADA
 Line No.: TPC-2
 Migrated Seismic Reflection Section

Processed by:
 Veritas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: April 1979
 Source interval: 880 ft
 Geophone group interval: 220 ft
 Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 12000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter, time varying digital bandpass:

40-100 ms: 10/13-5/860 Hz;
 350-600 ms: 5/7.5-5/860 Hz.

G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking fold

Interpretation:
 E.R. Kanusewich and Z. Berkas
 University of Alberta, Edmonton, March 1988

REFL. TIME
 APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

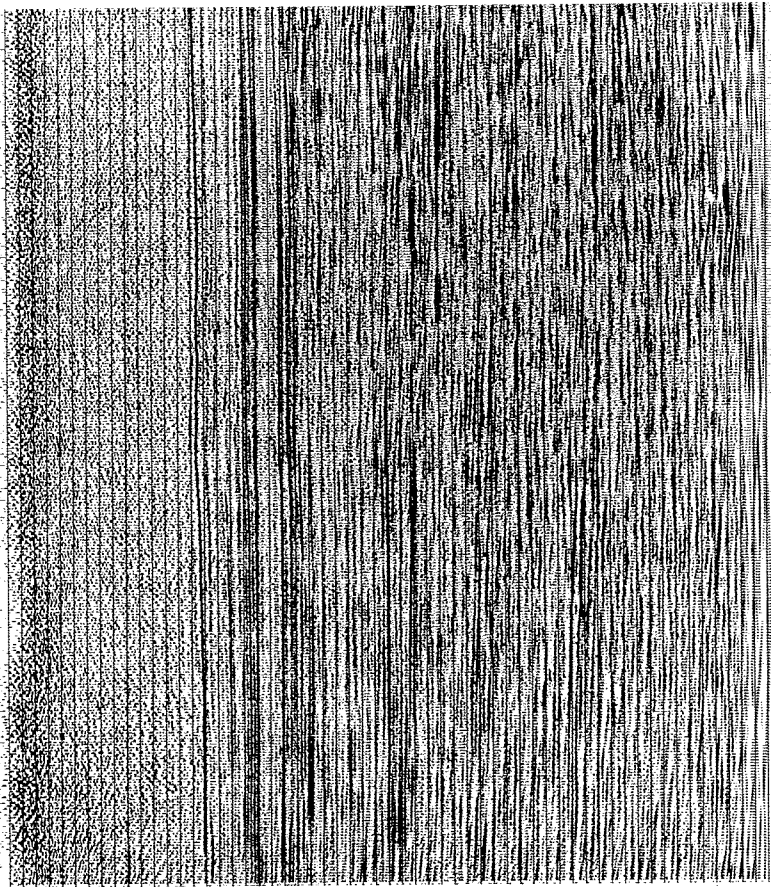
-3.0 s

-4.0 s -10 km

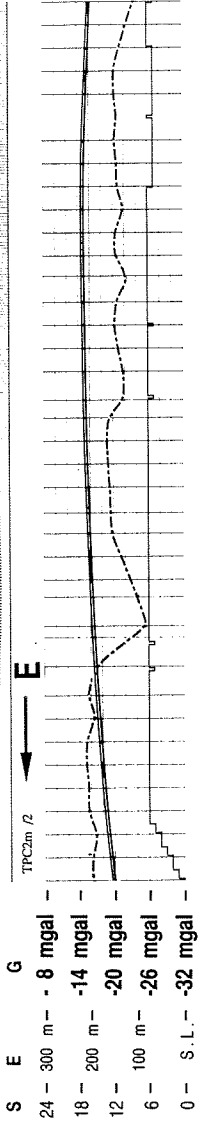
-5.0 s -15 km

G	E	S
- 8 mgal	-300 m	- 24
-14 mgal	-200 m	- 18
-20 mgal	-100 m	- 12
-26 mgal	- 6	- 6
-32 mgal	- S.L.	- 0

APPROX. DEPTH 0 km 10 km
REFL. TIME



S. L. - 0.0 s -
1.0 s -
2.0 s -
3.0 s -
4.0 s -
5.0 s -
5 km -
10 km -
15 km -



MELVILLE ISLAND, CANADA
Line No.: TPC-7
Migrated Seismic Reflection Section

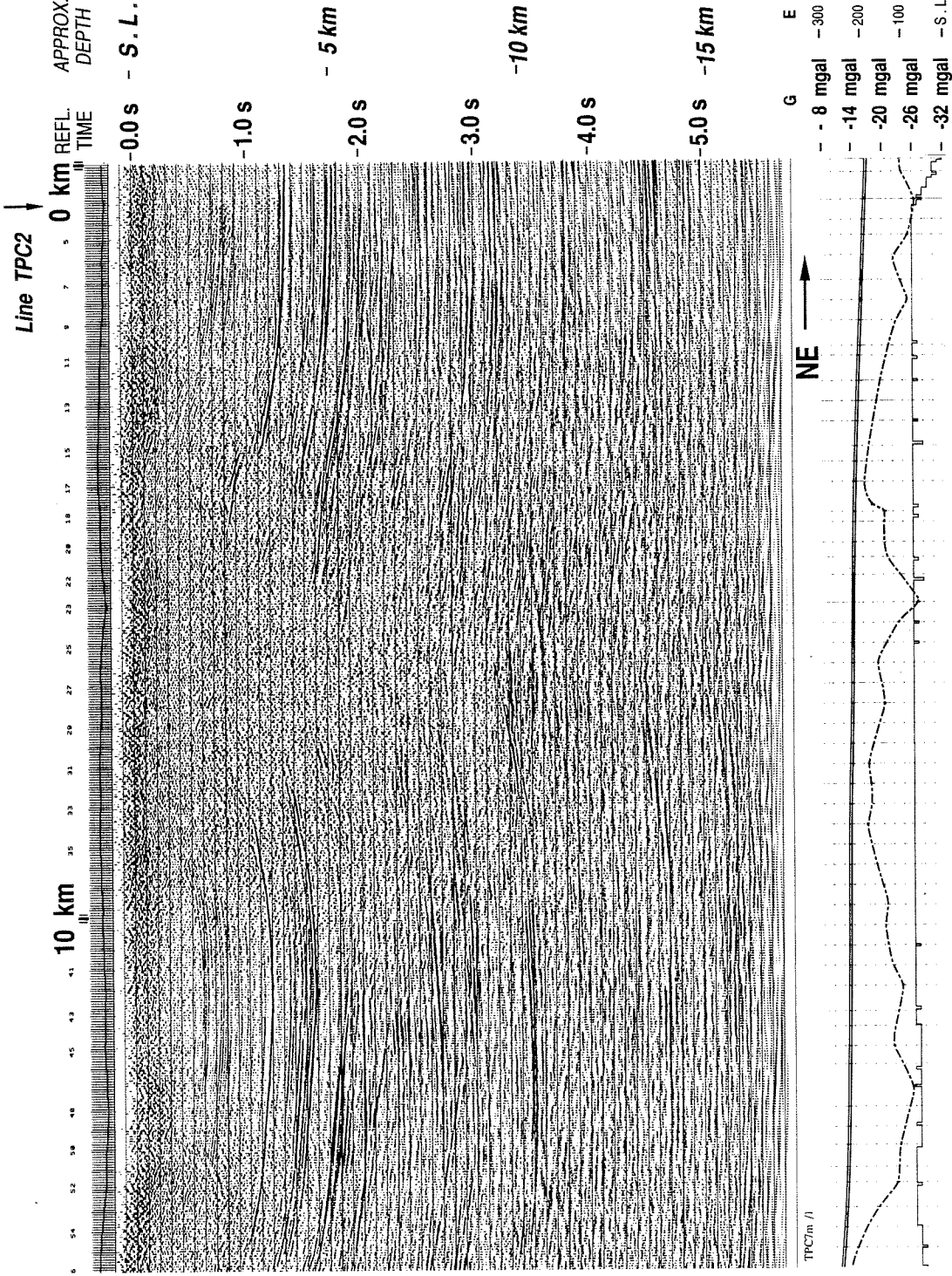
Processed by:
 Veritas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: April 1973
 Source interval: 880 ft
 Geophone group interval: 120 ft
 Spread distance: 5260-220-SP-220-5260 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 12000 ft/s
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter: time varying digital bandpass:
 0-3500 ms: 10/13-50/60 Hz.
 3500-6000 ms: 57.5-50/60 Hz.

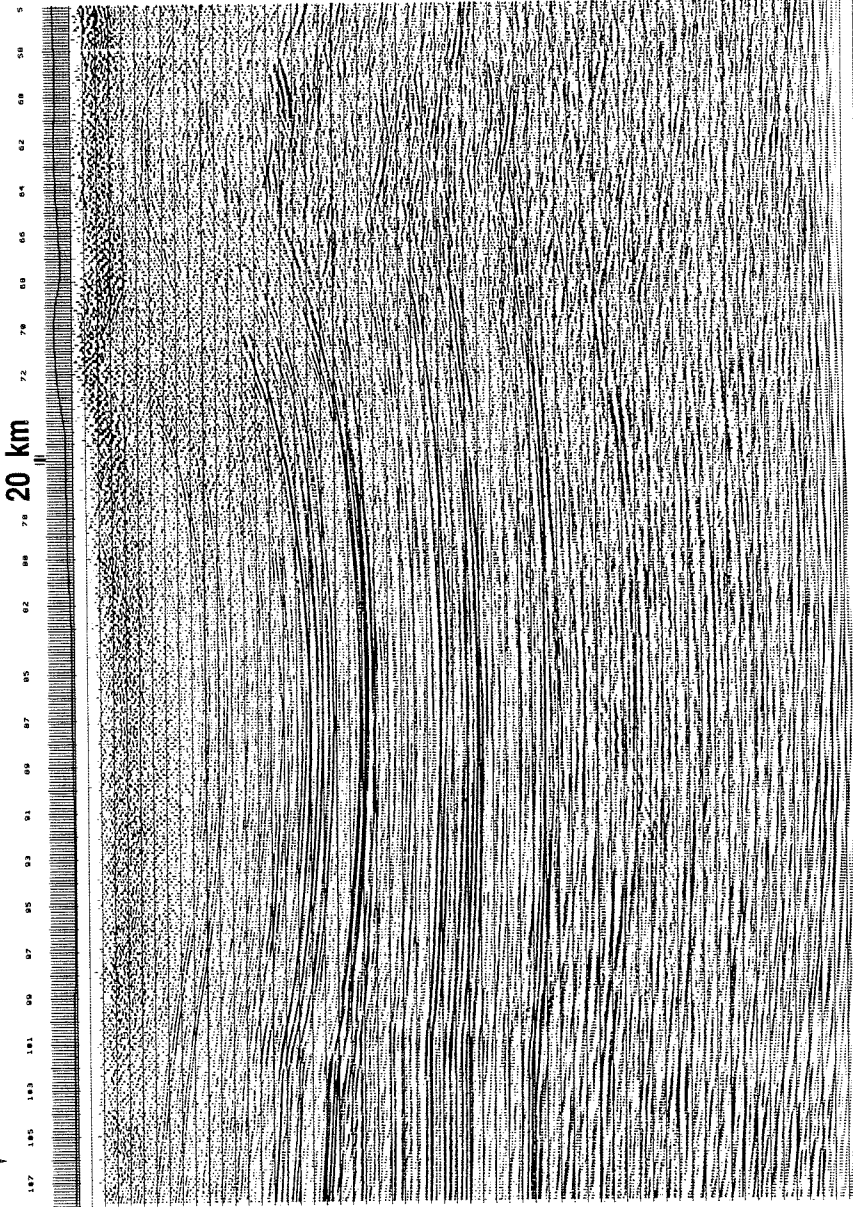
G: Bouguer gravity anomaly
 E: Elevation
 S: Stacking fold

Interpretation:
 E.R. Kanarschwich and Z. Berkes
 University of Alberta, Edmonton, March 1988

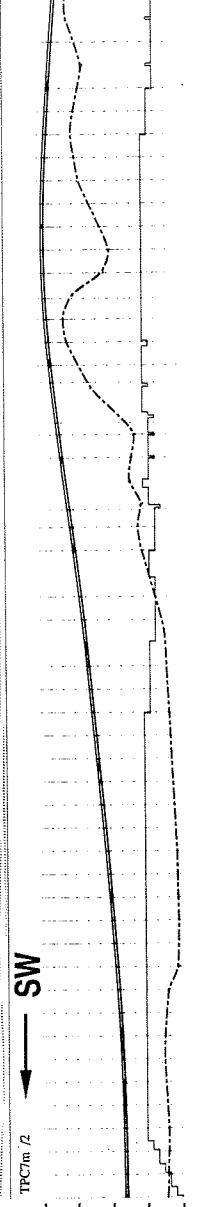


King Point West B-53

Line TPC8



APPROX. DEPTH
 S. L. - 0.0 s -
 1.0 s -
 5 km - 2.0 s -
 3.0 s -
 4.0 s -
 5.0 s -
 10 km -
 15 km -



DEPTH
 24 - 300 m - 8 mgal
 18 - 200 m - -14 mgal
 12 - 100 m - -20 mgal
 6 - S.L. - -26 mgal
 0 - S.L. - -32 mgal

Line 1190 Line TPC7

APPROX. DEPTH

REFL. TIME

0 km

10 km

20 km

30 km

40 km

50 km

60 km

70 km

80 km

90 km

100 km

110 km

120 km

130 km

140 km

150 km

160 km

-0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

-3.0 s

-4.0 s

-5.0 s

-10 km

-15 km

G

E S

-14 mgal

-20 mgal

-26 mgal

-32 mgal

-38 mgal

-300 m

-200 m

-100 m

-S.L.

0

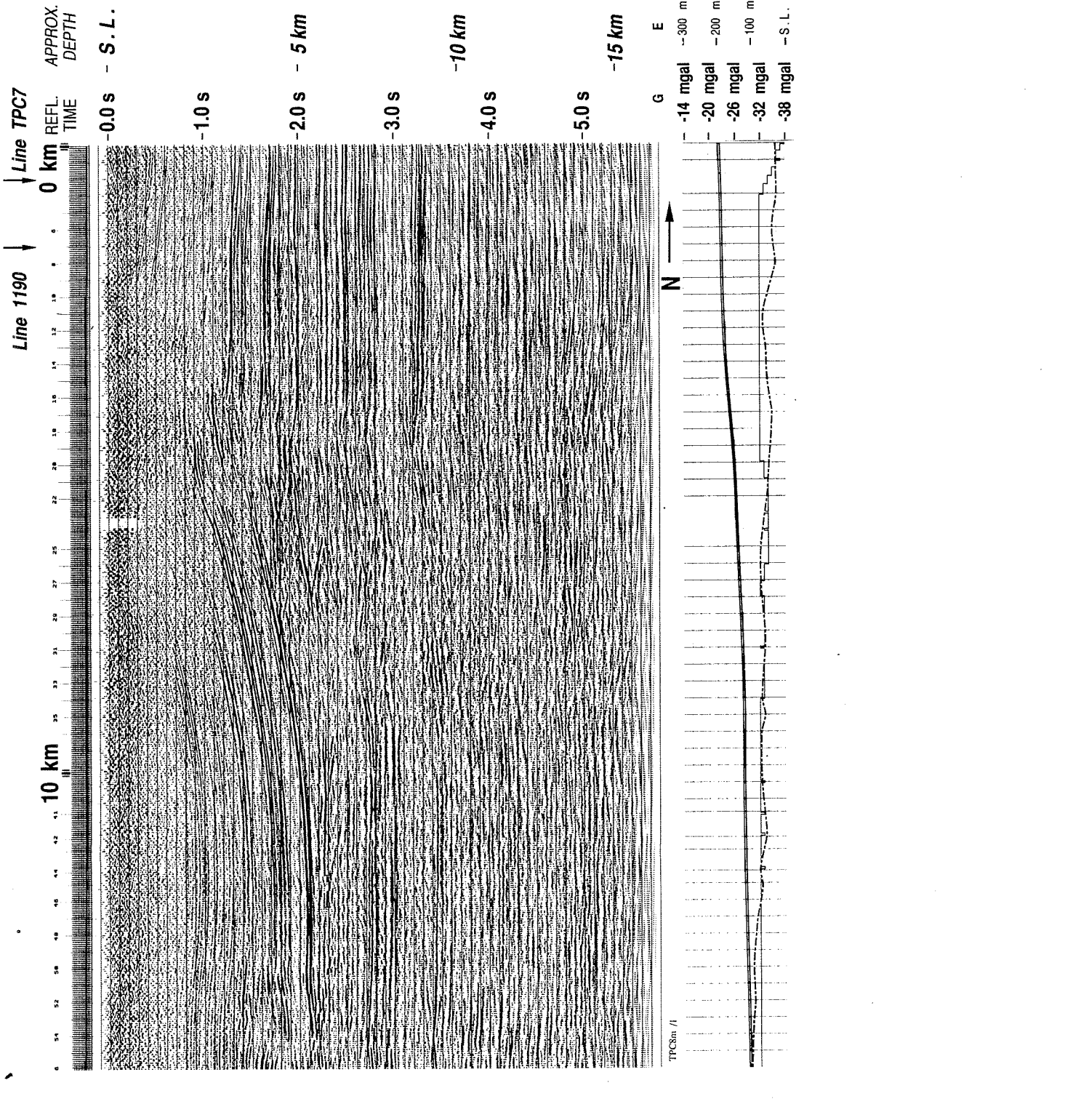
Processed by:
Veritas Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: April 1973
Shot ID: 1190
Source interval: 200 ft
Spreed interval: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Sigs level: 12000 ffs
Resampling velocity: 12000 ffs
Decomposition: 120 ms
Operator length: 5 %
Filter: time varying digital bandpass: 10/15-50/60 Hz;
0-3500 ms; 57.5-50/60 Hz.

Interpretation:
E.R. Kansewicz and Z. Berkas
University of Alberta, Edmonton, March 1988

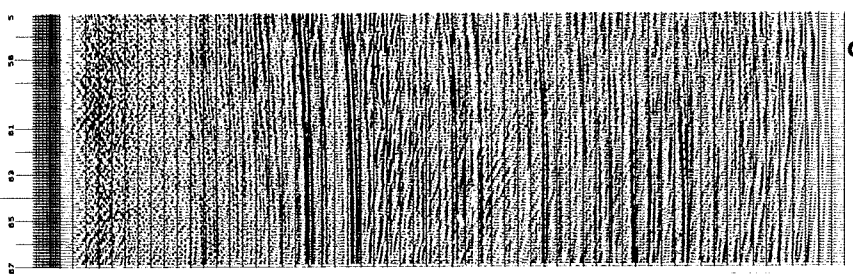
G: Bouguer gravity anomaly
E: Elevation
S: Stacking fold



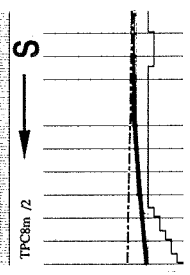
Line 1141

APPROX. DEPTH
REFL. TIME

S. L. - 0.0 s -
1.0 s -
5 km - 2.0 s -
3.0 s -
10 km - 4.0 s -
5.0 s -
15 km -



S E G
24 - 300 m - -14 mgal
18 - 200 m - -20 mgal
12 - 100 m - -26 mgal
6 - S. L. - -32 mgal
0 - S. L. - -38 mgal



MELVILLE ISLAND, CANADA

Line No.: 1138

Seismic Reflection CMP Section

Processed by:
Venitas Seismic Ltd., Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: May 1973
Source interval: 880 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

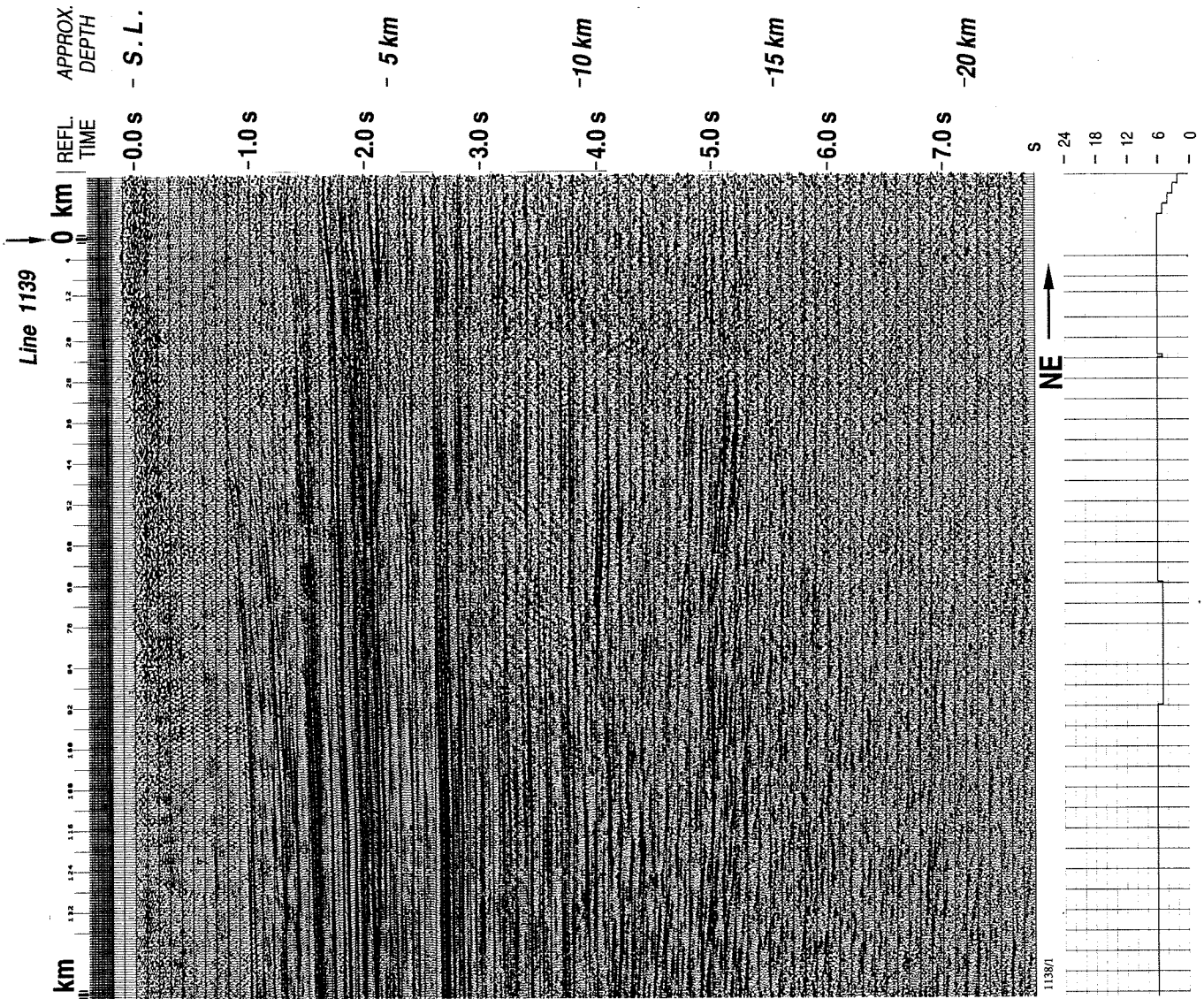
Processing parameters:

Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Deconvolution
Operator length: 120 ms
Prewhitening: 5 %
Time varying digital bandpass:
0-3500 ms: 10/13-50/60 Hz;
3500-8000 ms: 57.5-50/60 Hz.

S: Stacking fold 4-4

Interpretation:

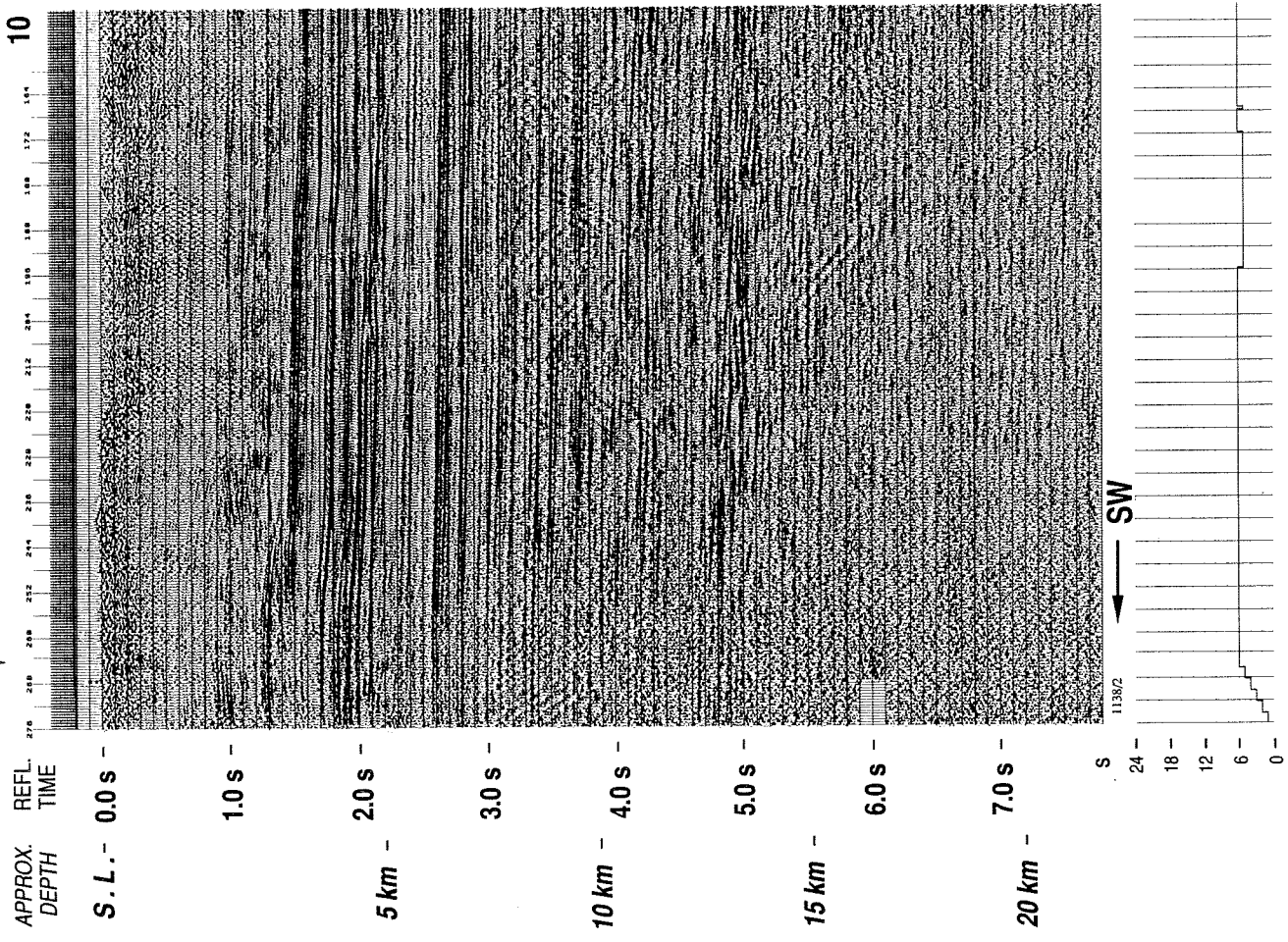
E.R. Kanasevich and Z. Benkes
University of Alberta, Edmonton, March 1988





Winter Harbour No.1

Line 1171



Line 1140



MELVILLE ISLAND, CANADA
 Line No.: 1139
 Seismic Reflection CMP Section

Processed by:
 Veritas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: May 1979
 Source interval: 880 ft
 Geophone group interval: 220 ft
 Spread distance: 5200-220-SP-220-5280 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 12000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter, time varying digital bandpass:
 0.3500 ms: 1013.5060 Hz.
 3500.0000 ms: 57.55060 Hz.

S: Stacking fold

Interpretation:
 E.R. Kanasewich and Z. Berkas
 University of Alberta, Edmonton, March 1988

REFL. TIME
 APPROX. DEPTH
 -0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

-3.0 s

-4.0 s

-5.0 s

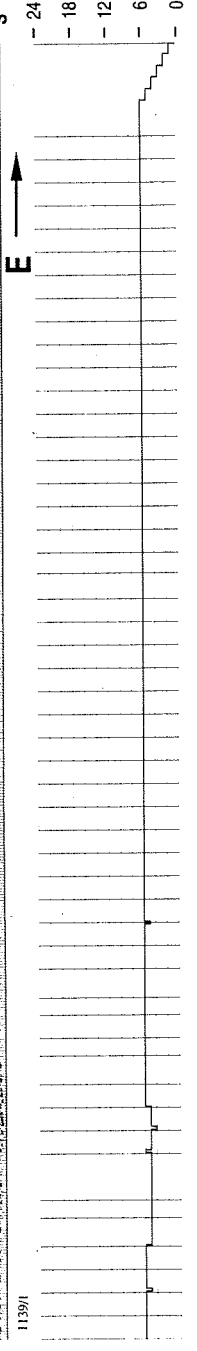
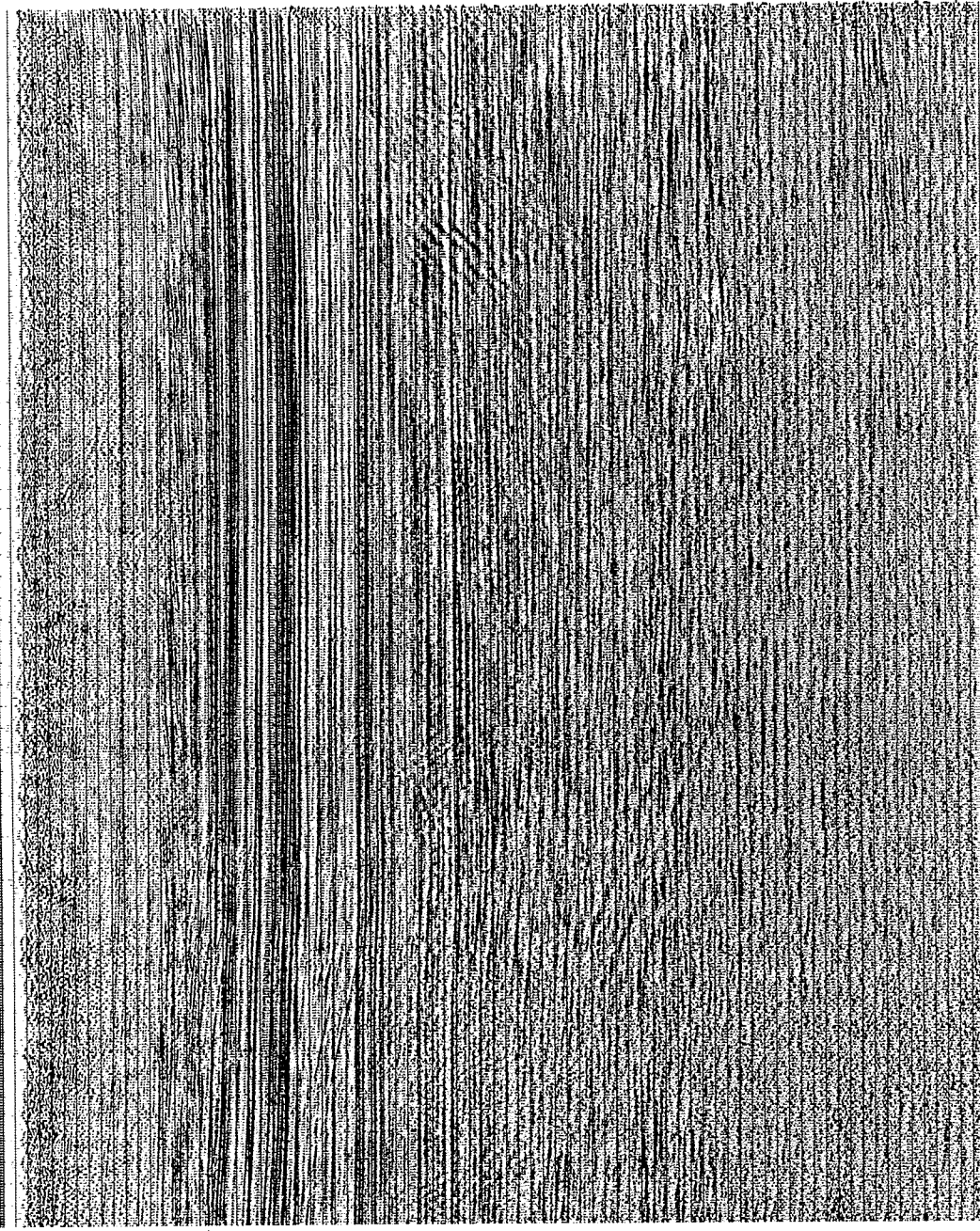
-6.0 s

-7.0 s

-10 km

-15 km

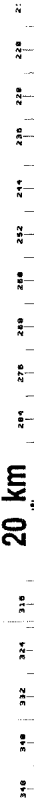
-20 km



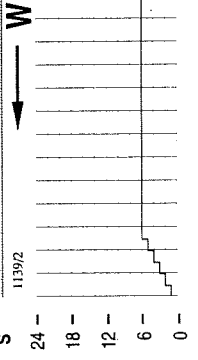
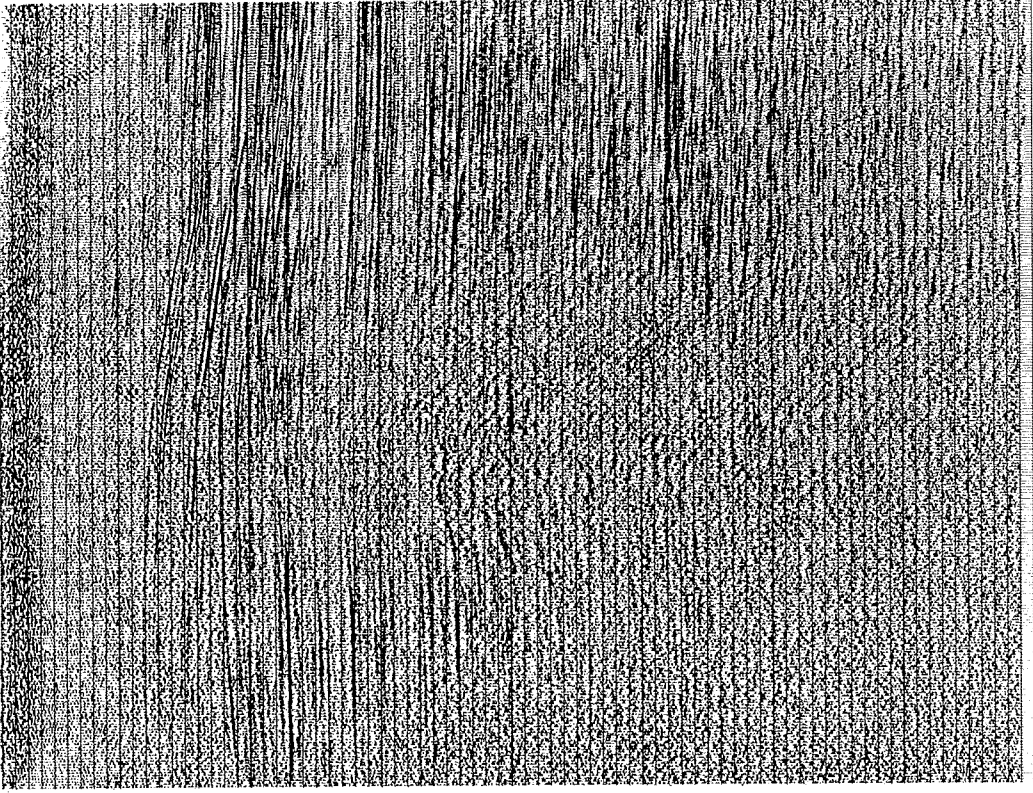
Line 1138 Line 1762

APPROX. REFLECT. DEPTH TIME

20 km



S. L. - 0.0 s -
1.0 s -
2.0 s -
3.0 s -
4.0 s -
5.0 s -
6.0 s -
7.0 s -
5 km -
10 km -
15 km -
20 km -



MELVILLE ISLAND, CANADA
 Line No.: 1140
 Seismic Reflection CMP Section

Processed by:
 Veritas Seismic Ltd., Calgary, July 1987
 Seismic Laboratory of The University of Alberta

Field parameters:
 Date: May 1973
 Area: 680 ft
 Source brand: 220 ft
 Geophone group interval: 500-220 ft
 Spread interval: 500-220 ft

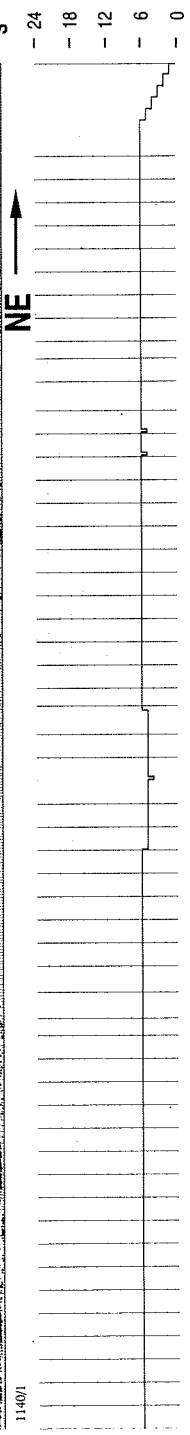
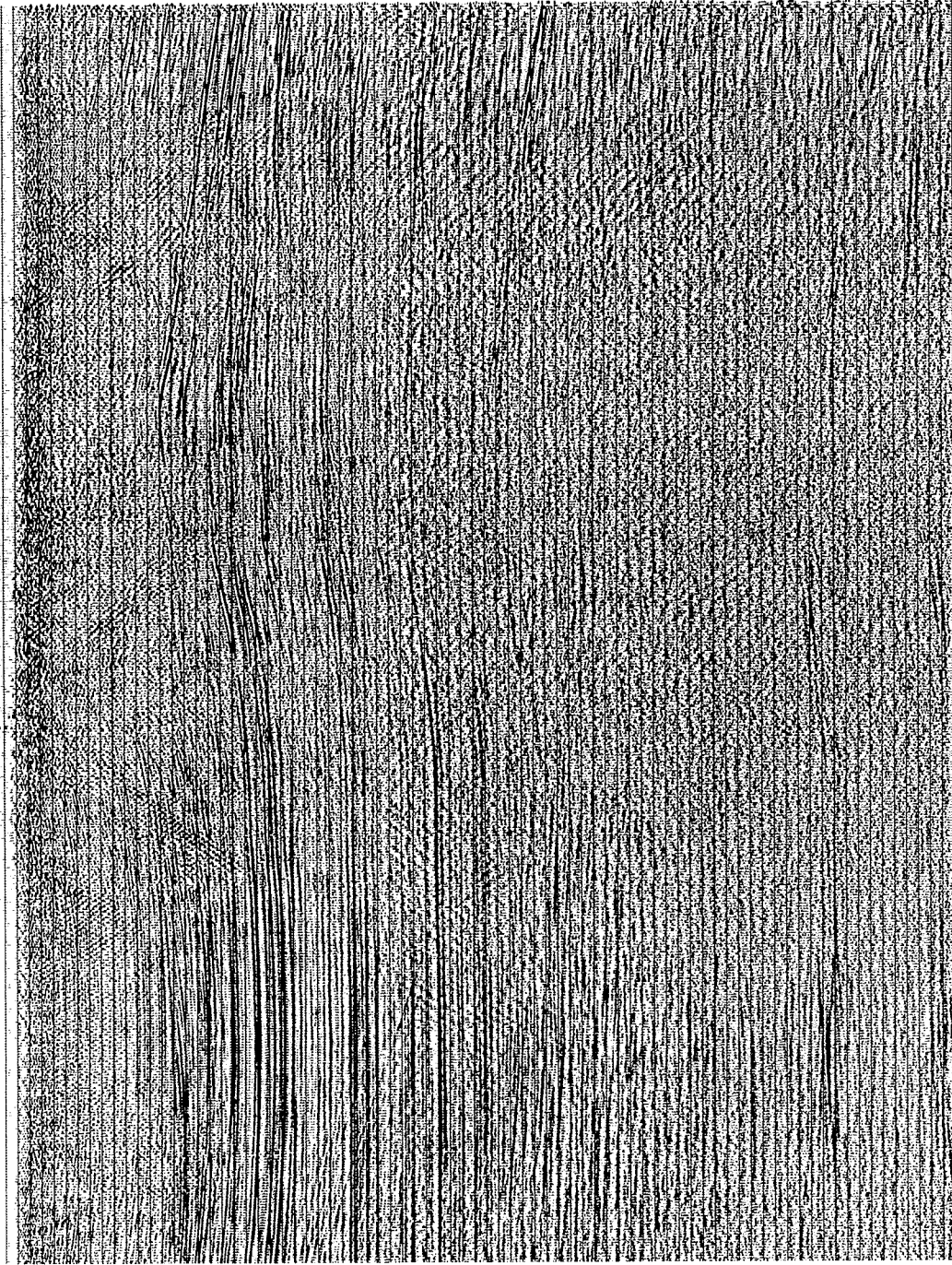
Processing parameters:
 Sample rate: 4 ms
 Gain: 1000
 Dominant velocity: 1300 m/s
 Dip correction: 10%
 Operator: [unclear]
 Filter: [unclear]

Time varying gain function:
 0.5000 ms: 0.13-5.000 Hz
 500.0000 ms: 0.13-5.000 Hz

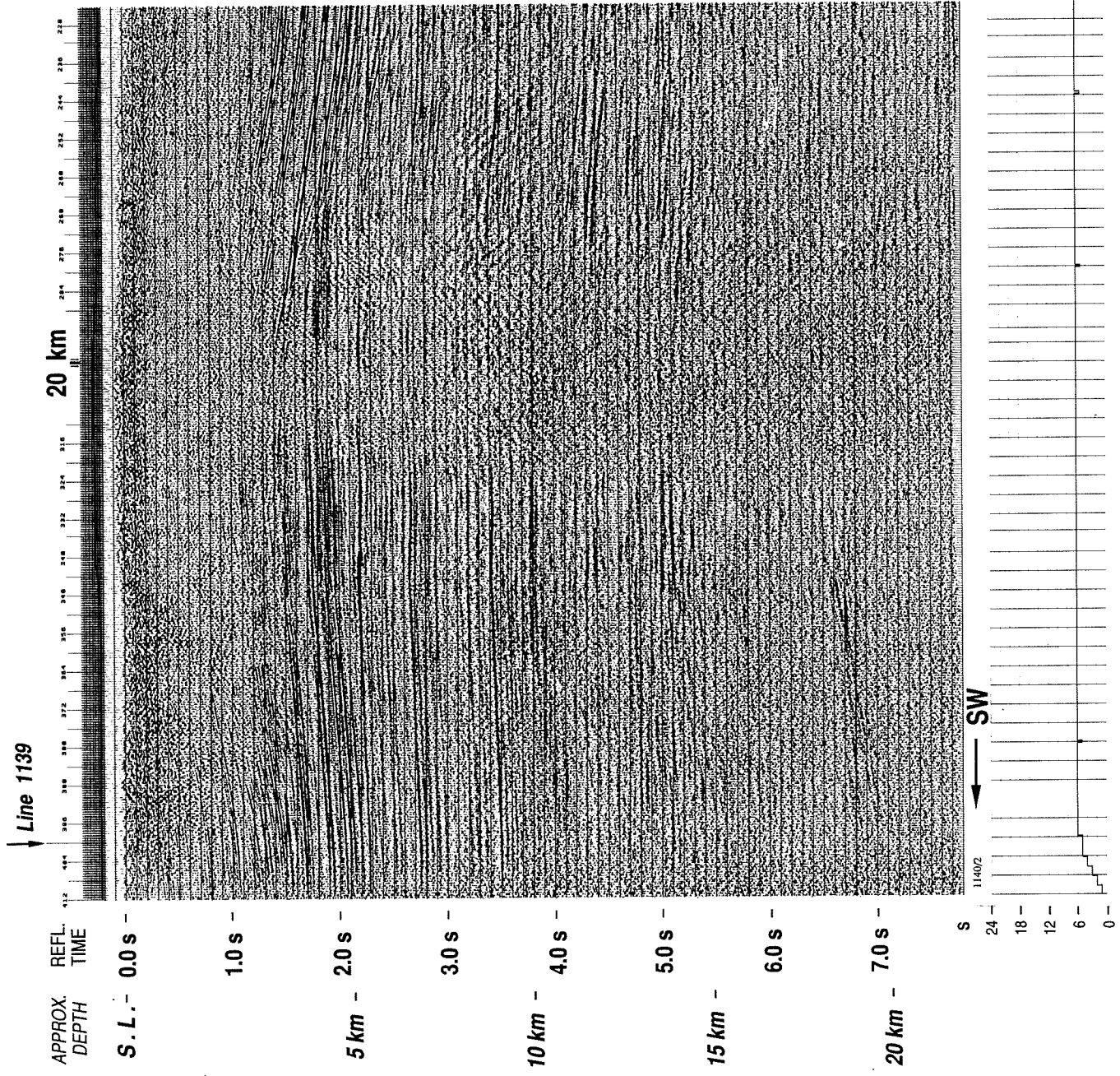
S. Stokely Ltd.
 Interpretation:
 E.R. Katsenwach and Z. Bekas
 University of Alberta, Edmonton, March 1988

REFL. TIME
 -0.0 s - S.L.
 -1.0 s
 -2.0 s - 5 km
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s -20 km

Line 1141
 0 km
 10 km
 200 212 224 236 248 260 272 284 296 308 320 332 344 356 368 380 392 404 416 428 440 452 464 476 488 500 512 524 536 548 560 572 584 596 608 620 632 644 656 668 680 692 704 716 728 740 752 764 776 788 800 812 824 836 848 860 872 884 896 908 920 932 944 956 968 980 992 1004 1016 1028 1040 1052 1064 1076 1088 1100 1112 1124 1136 1148 1160 1172 1184 1196 1208 1220 1232 1244 1256 1268 1280 1292 1304 1316 1328 1340 1352 1364 1376 1388 1400 1412 1424 1436 1448 1460 1472 1484 1496 1508 1520 1532 1544 1556 1568 1580 1592 1604 1616 1628 1640 1652 1664 1676 1688 1700 1712 1724 1736 1748 1760 1772 1784 1796 1808 1820 1832 1844 1856 1868 1880 1892 1904 1916 1928 1940 1952 1964 1976 1988 2000 2012 2024 2036 2048 2060 2072 2084 2096 2108 2120 2132 2144 2156 2168 2180 2192 2204 2216 2228 2240 2252 2264 2276 2288 2300 2312 2324 2336 2348 2360 2372 2384 2396 2408 2420 2432 2444 2456 2468 2480 2492 2504 2516 2528 2540 2552 2564 2576 2588 2600 2612 2624 2636 2648 2660 2672 2684 2696 2708 2720 2732 2744 2756 2768 2780 2792 2804 2816 2828 2840 2852 2864 2876 2888 2900 2912 2924 2936 2948 2960 2972 2984 2996 3008 3020 3032 3044 3056 3068 3080 3092 3104 3116 3128 3140 3152 3164 3176 3188 3200 3212 3224 3236 3248 3260 3272 3284 3296 3308 3320 3332 3344 3356 3368 3380 3392 3404 3416 3428 3440 3452 3464 3476 3488 3500 3512 3524 3536 3548 3560 3572 3584 3596 3608 3620 3632 3644 3656 3668 3680 3692 3704 3716 3728 3740 3752 3764 3776 3788 3800 3812 3824 3836 3848 3860 3872 3884 3896 3908 3920 3932 3944 3956 3968 3980 3992 4004 4016 4028 4040 4052 4064 4076 4088 4100 4112 4124 4136 4148 4160 4172 4184 4196 4208 4220 4232 4244 4256 4268 4280 4292 4304 4316 4328 4340 4352 4364 4376 4388 4400 4412 4424 4436 4448 4460 4472 4484 4496 4508 4520 4532 4544 4556 4568 4580 4592 4604 4616 4628 4640 4652 4664 4676 4688 4700 4712 4724 4736 4748 4760 4772 4784 4796 4808 4820 4832 4844 4856 4868 4880 4892 4904 4916 4928 4940 4952 4964 4976 4988 5000

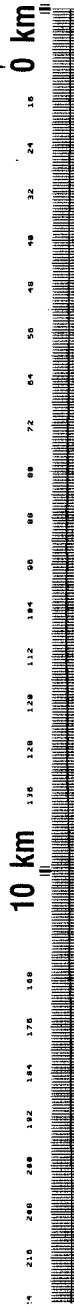


1140/1





Line TPC8



MELVILLE ISLAND, CANADA
Line No.: 1141
Seismic Reflection CMP Section

REFL. TIME
APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s - 5 km

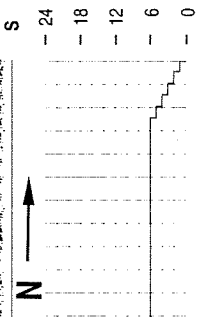
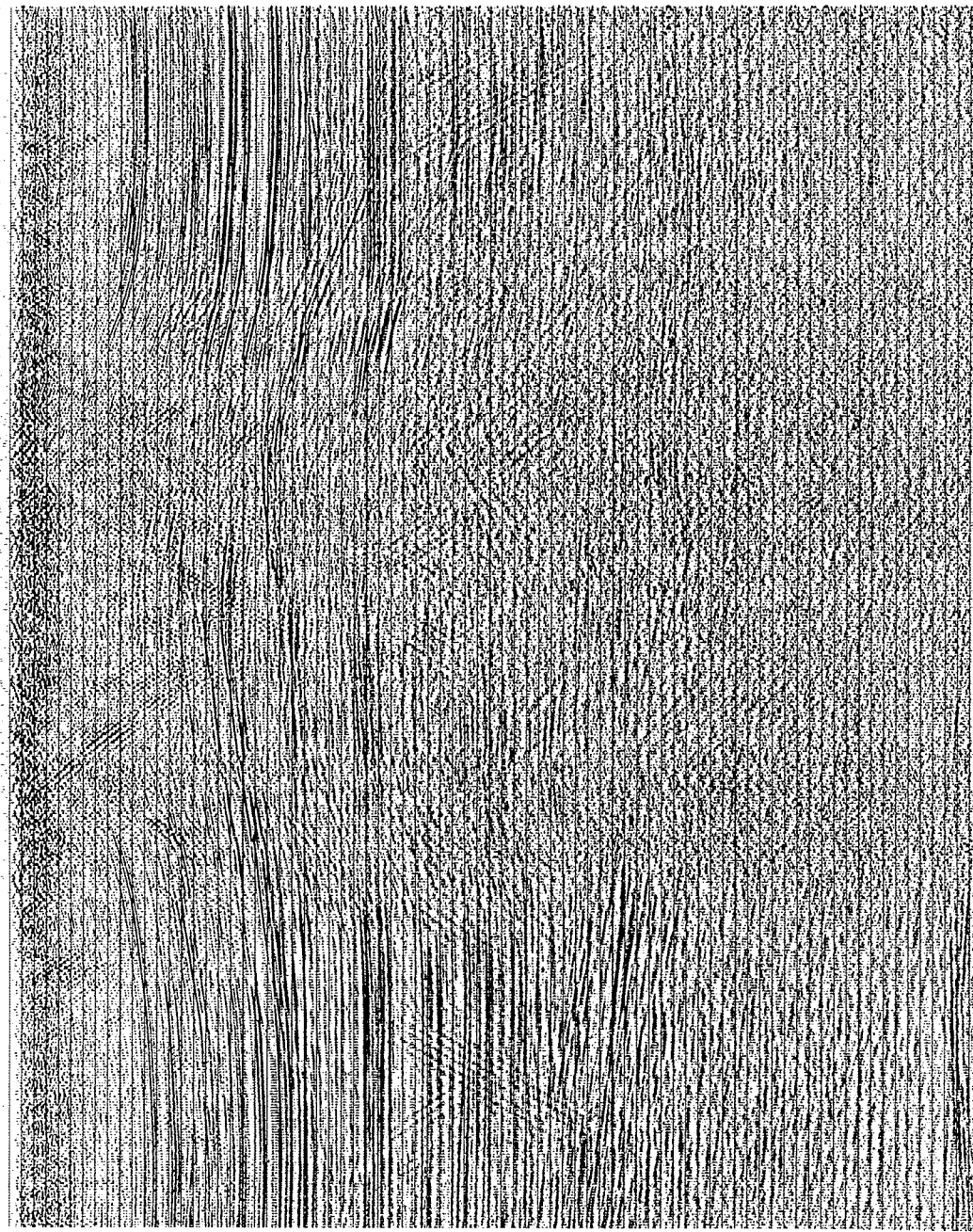
-3.0 s

-4.0 s -10 km

-5.0 s

-6.0 s -15 km

-7.0 s -20 km



Processed by:
Veritas Seismic Ltd., Calgary, July 1997
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: May 1973
Source interval: 800 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Deconvolution
Operator length: 120 ms
Prewhitening: 5 %
Filter: time varying digital bandpass:

0-3500 ms: 10/15-50/60 Hz;
3500-8000 ms: 5/7.5-50/60 Hz.

S: Stacking fold 2.0

Interpretation:

E.R. Kanasevich and Z. Berkes
University of Alberta, Edmonton, March 1988

1141/1

541

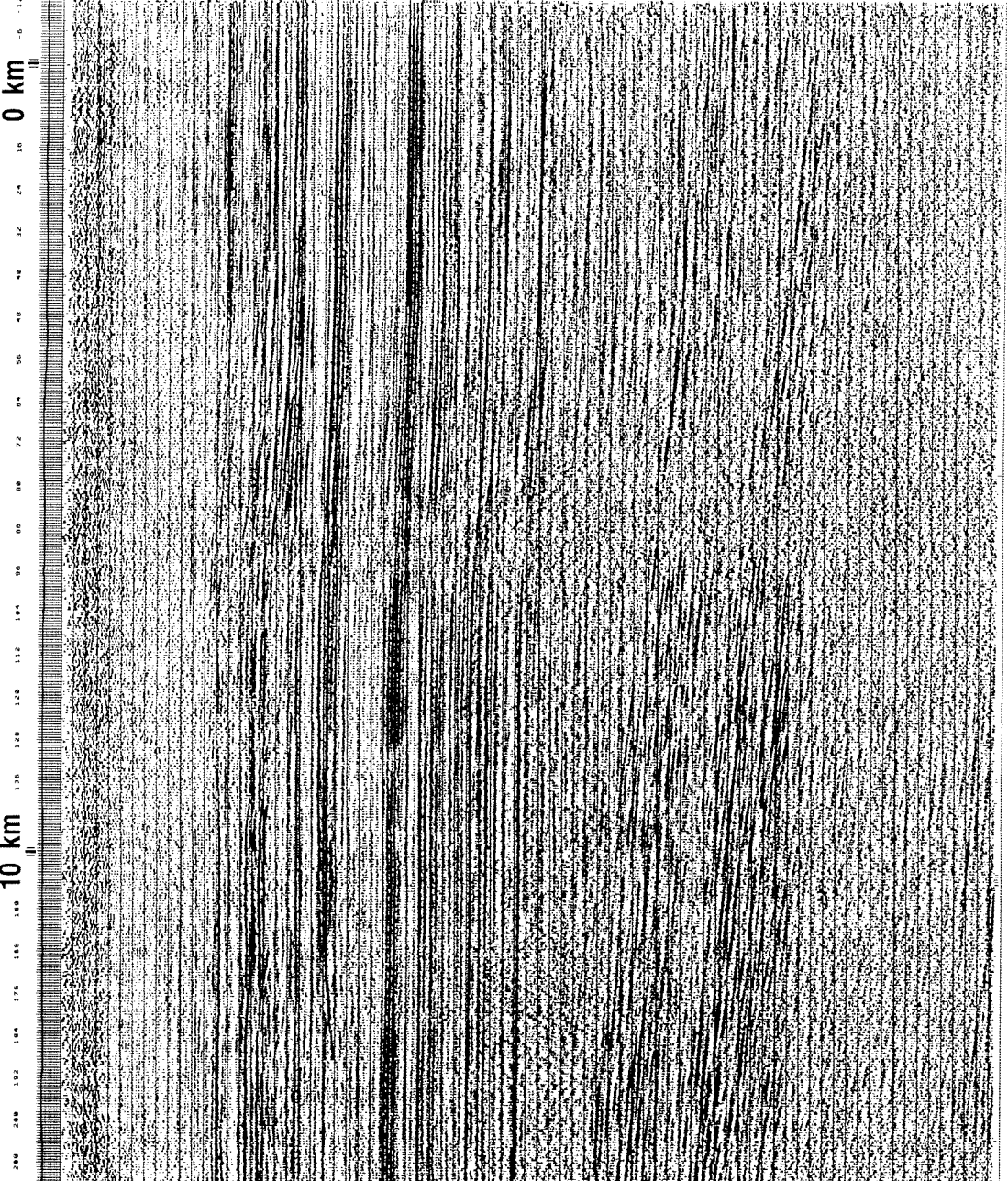


Line 1169 ↓ Line 1171 ↓

2000 1920 1840 1760 1680 1600 1520 1440 1360 1280 1200 1120 1040 960 880 800 720 640 560 480 400 320 240 160 80 0 km

REFL. TIME APPROX. DEPTH

-0.0 s - S. L.
-1.0 s
-2.0 s - 5 km
-3.0 s
-4.0 s
-5.0 s -15 km
-6.0 s
-7.0 s -20 km



S
-24
-18
-12
-6
-0

E →

MELVILLE ISLAND, CANADA
Line No.: 1168
Seismic Reflection CMP Section

Processed by:
Ventus Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: May 1973
Survey: 4
Geophone group interval: 200 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Prewhitening: 5 %
Filter: time varying digital, bandpass: 0-350 ms, 1073-5060 Hz;
3500-6000 ms, 573-5060 Hz.

S: Stacking fold 4x
Interpretation:
E. R. Kanarovich and Z. Bekes
University of Alberta, Edmonton, March 1988

1168/1

Line 1140

APPROX. DEPTH 20 km

REFL. TIME

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

10 km -

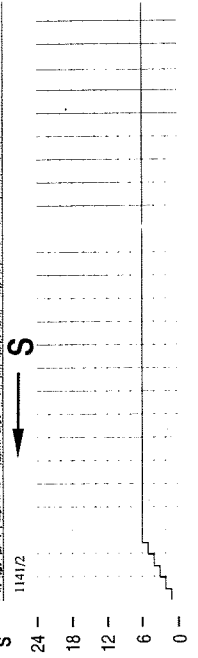
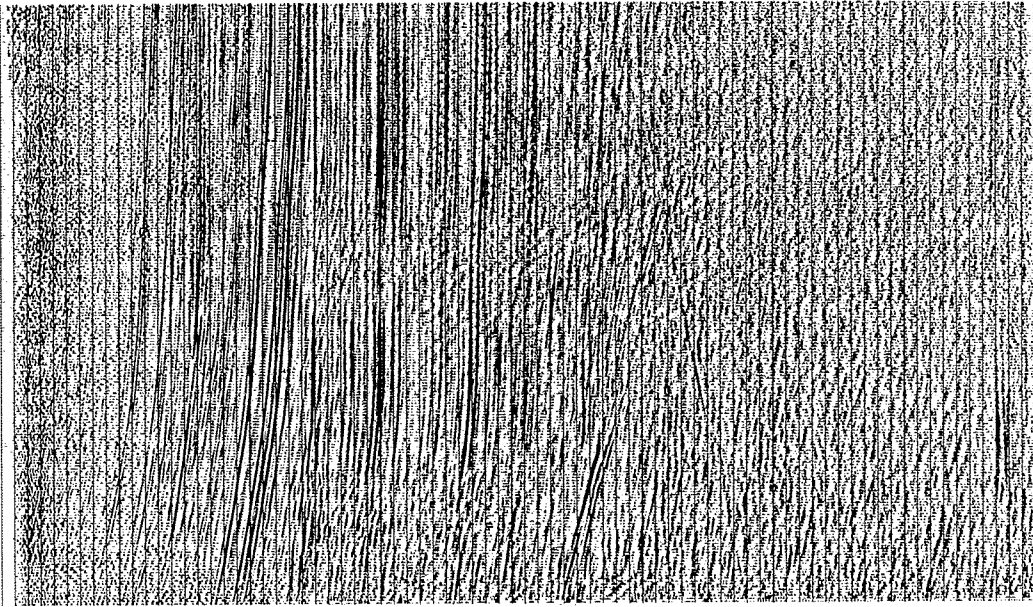
4.0 s -

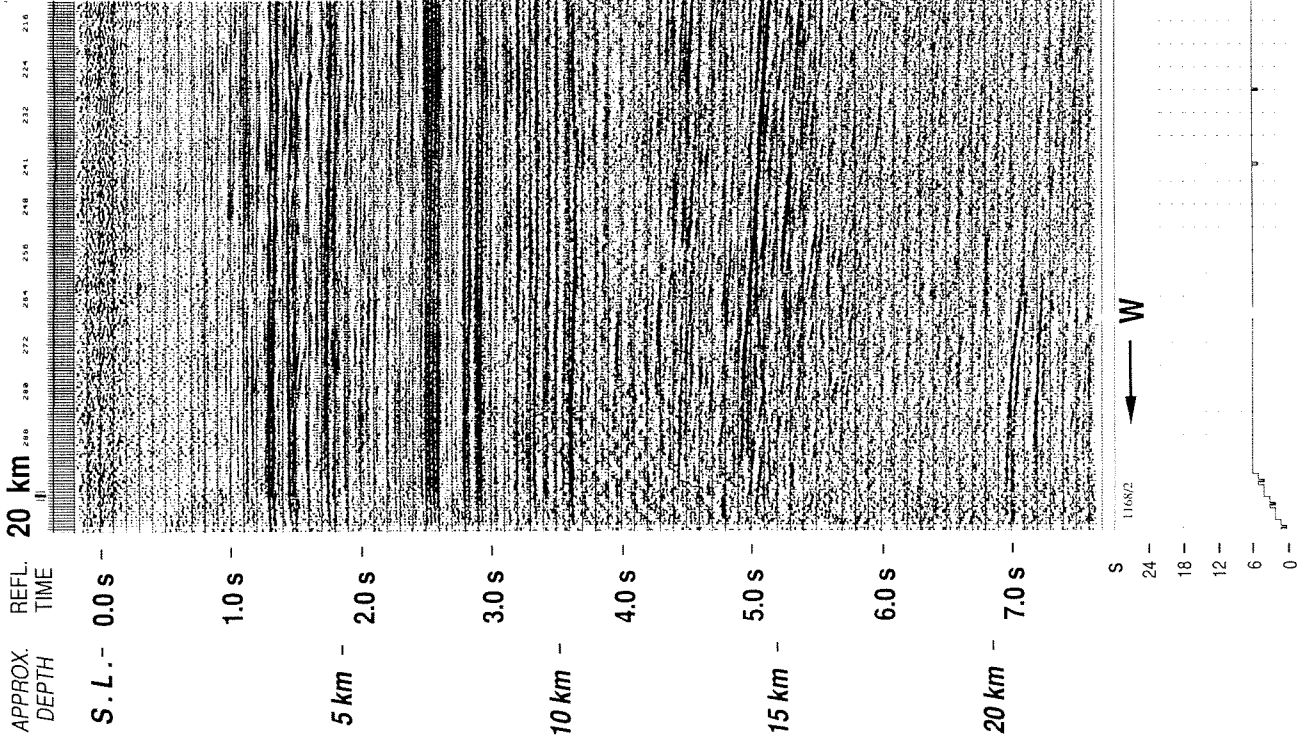
5.0 s -

15 km -

6.0 s -

20 km - 7.0 s -





MELVILLE ISLAND, CANADA

Line No.: 1169

Seismic Reflection CMP Section

Processed by
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: May 1973
Source interval: 20 ft
Group interval: 20 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:

Sample rate: 4 ms
Sea level: 1200 ft
Replacement velocity: 1200 ft/s
Decomposition: 120 ms
Operator length: 5 %
Prewhitening: Filler,
line varying digital bandpass:
0.3500 ms: 10/13.5060 Hz.
3500-6000 ms: 5/7.5-5060 Hz.

S: Stacking fold

Interpretation:

E.B. Kanazewich and Z. Berkes
University of Alberta, Edmonton, March 1988

REFL. TIME
APPROX. DEPTH

-0.0 s - S. L.

-1.0 s

-2.0 s - 5 km

-3.0 s

-10 km

-4.0 s

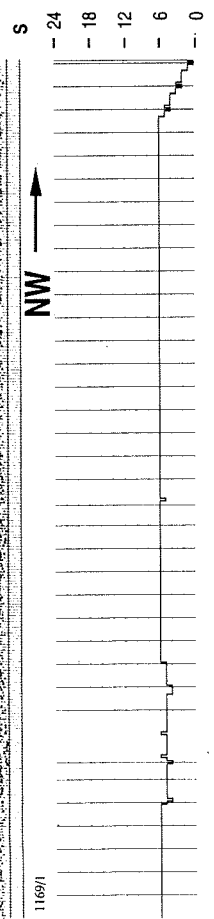
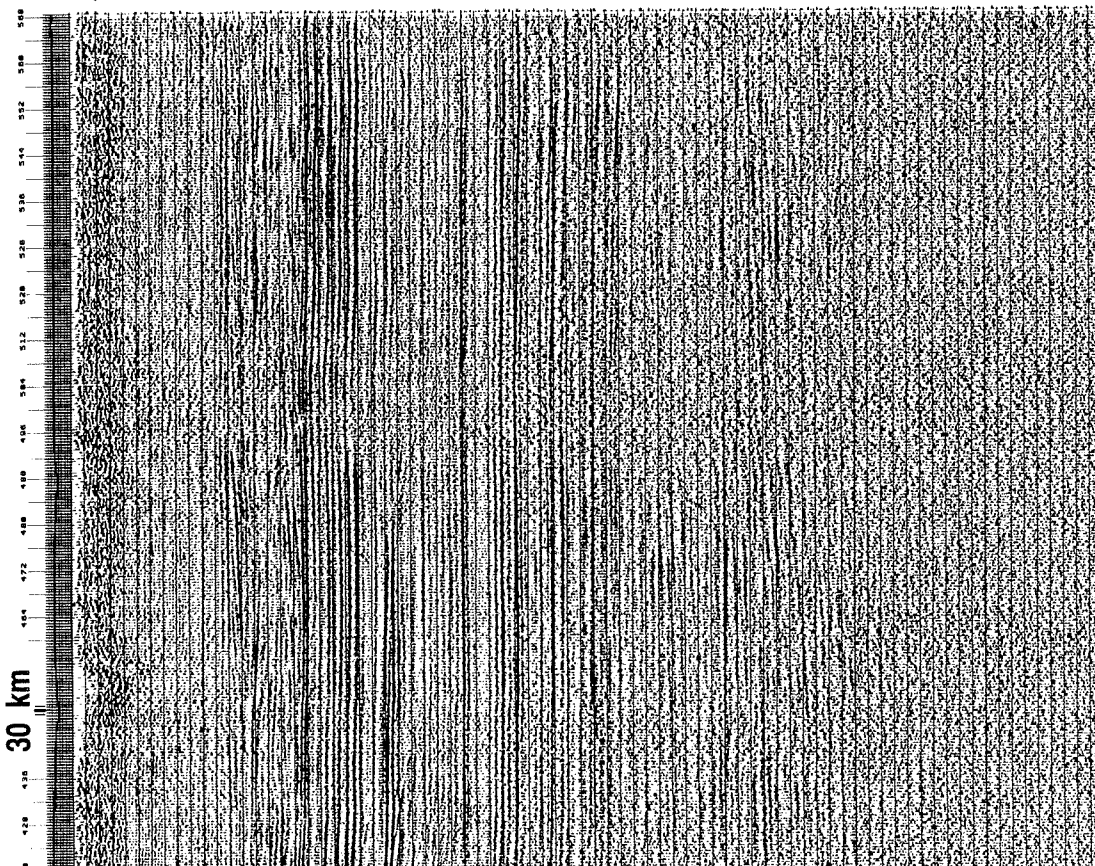
-5.0 s

-15 km

-6.0 s

-20 km

-7.0 s

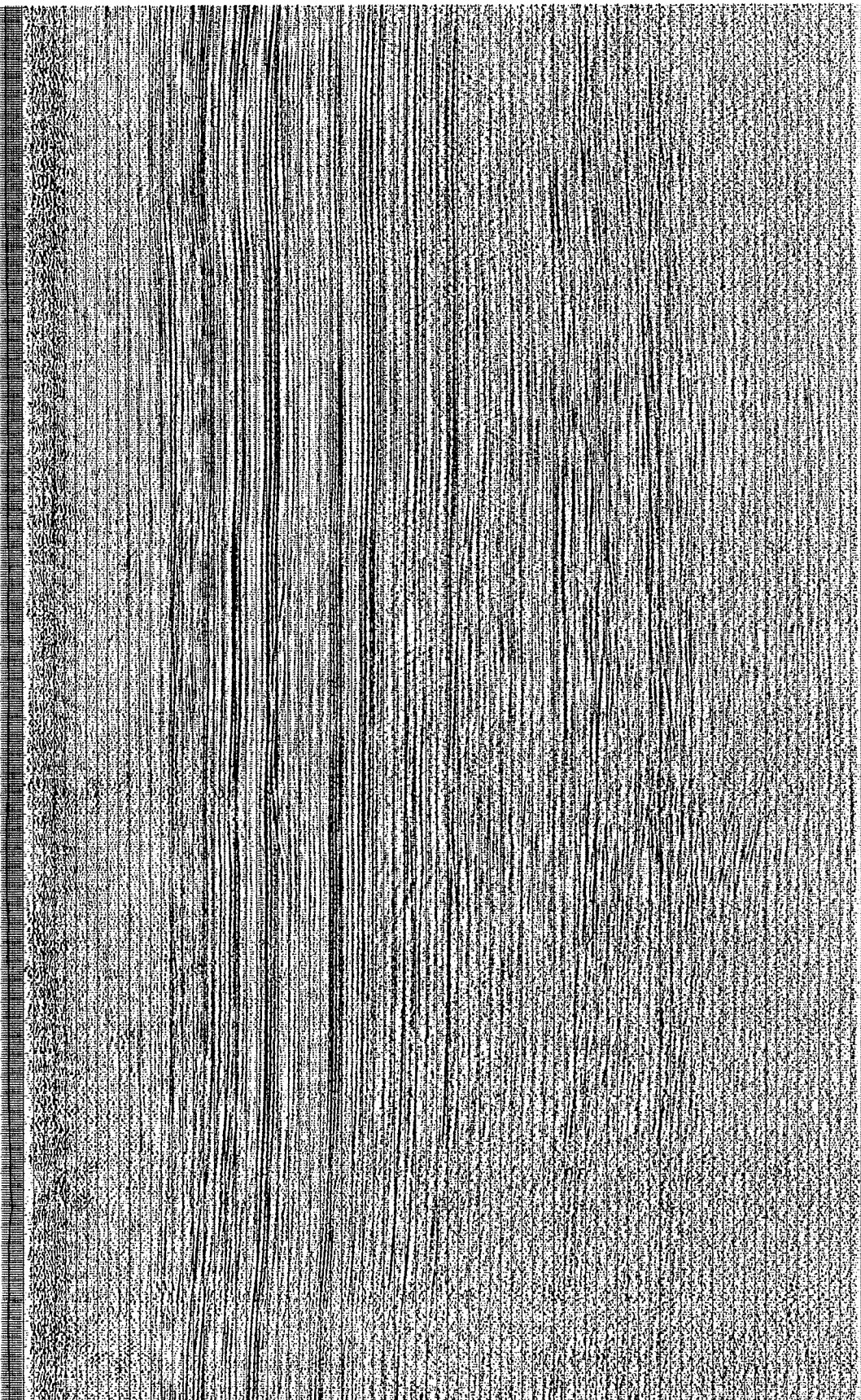


Line 1168 ↓

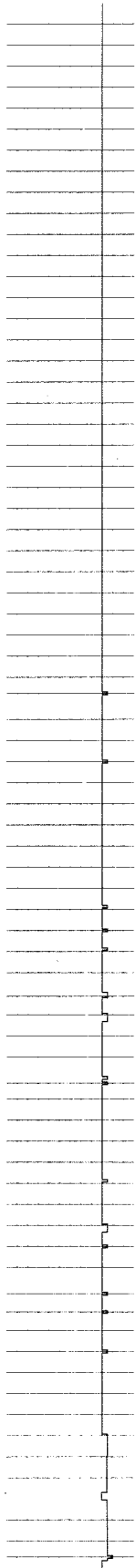
10 km

20 km

125 132 154 172 188 196 204 212 220 228 236 244 252 260 276 284 300 308 316 324 332 340 348 356 364 372 380 388 396 404 412 41



1169/2



Line 1862

APPROX. DEPTH
REFL. TIME

0 km
1.7
2.6
3.6
4.6
5.2
6.0
6.6
7.6
8.6
9.2
10.0
10.6
11.0

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

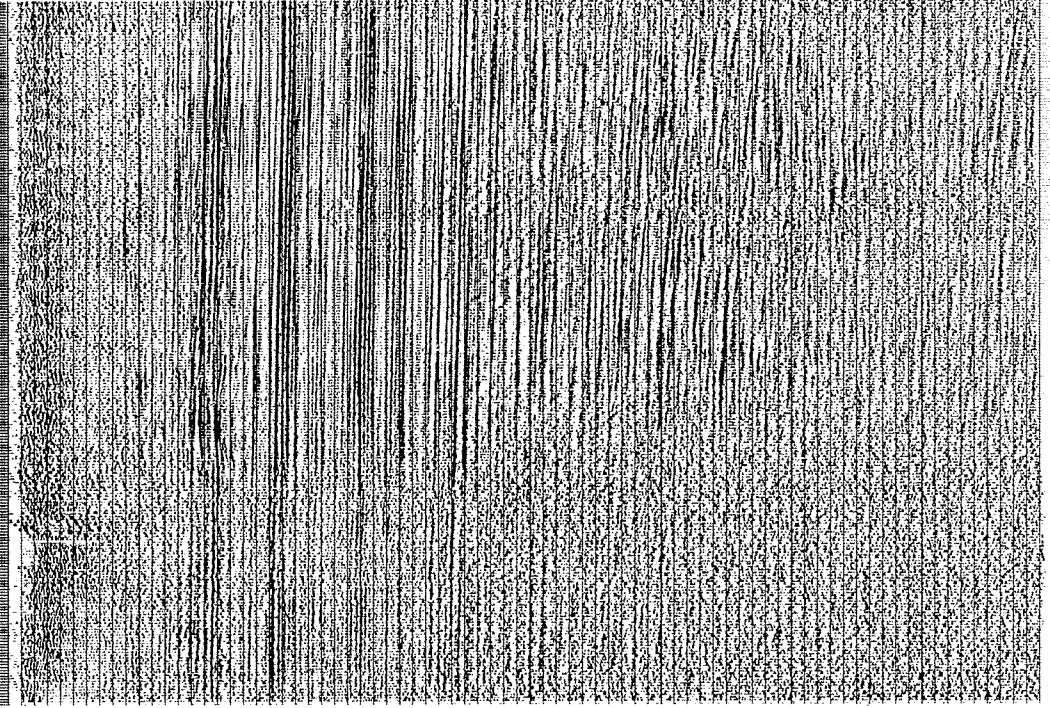
3.0 s -

4.0 s -

5.0 s -

6.0 s -

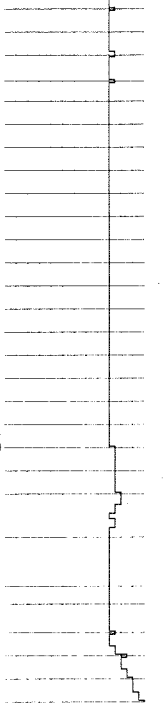
20 km - 7.0 s -



S 11693

24 -
18 -
12 -
6 -
0 -

SE ←



Winter Harbour No.1

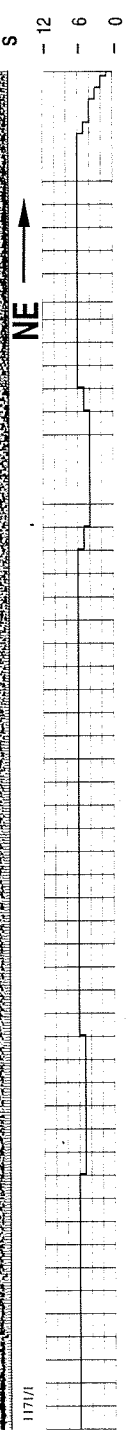
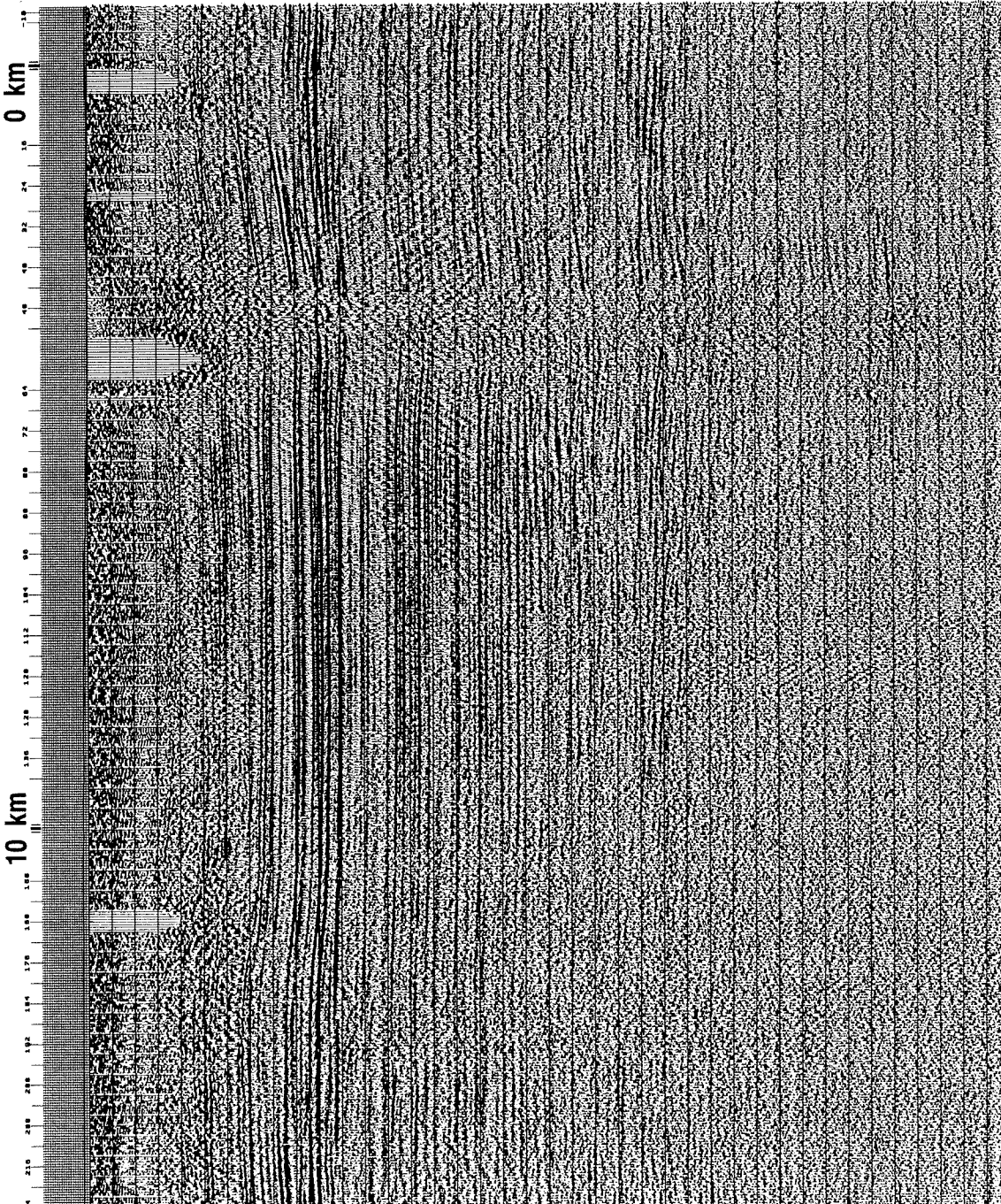


Line 1138

MELVILLE ISLAND, CANADA
Line No.: 1171
Seismic Reflection CIP Section

APPROX. DEPTH
REFL. TIME

- S.L. -
-0.0 s
-1.0 s
-2.0 s
-3.0 s
-4.0 s
-5.0 s
-6.0 s
-7.0 s
-20 km



Processed by:
Wessex Seismic Ltd. Calgary, February 1987
Seismic Laboratory of the University of Alberta

Field parameters:
Date: May 1979
Site area: 200 x 200 ft
Geophone group interval: 200 ft
Spread distance: 5000-2250 ft @ 0.5170 ft

Processing parameters:
Sample rate: 4 ms
Duration: Sea level
Decompression: 10000 lbs
Operator velocity: 1000 ft/s
Operator length: 100 ms
Filter: 1 %
Wave velocity: 1900 m/s
Wave velocity digital bandwidth: 0.000 m/s - 575.5600 Hz

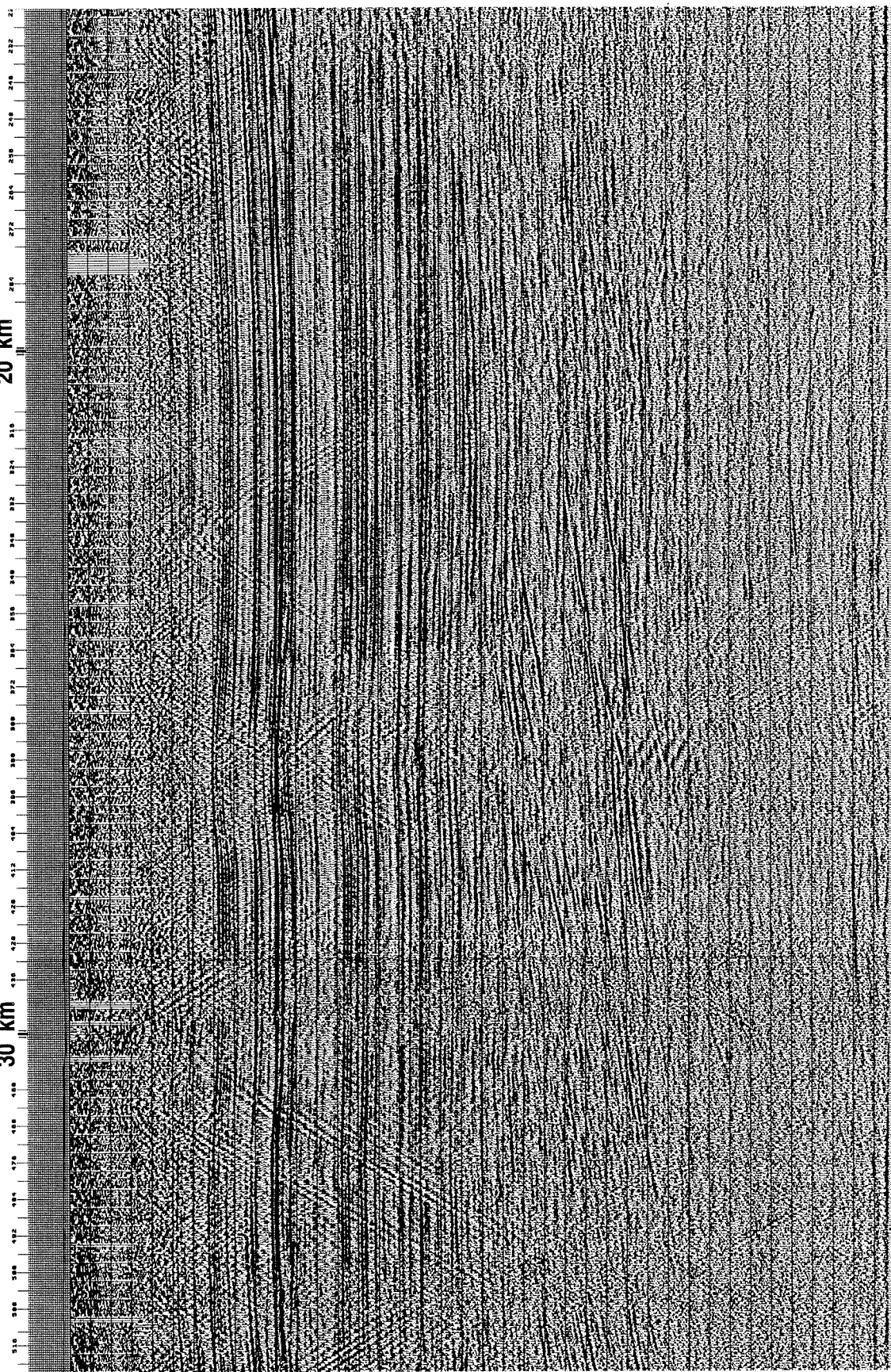
S: Seabed bed
Interpretation:
E.R. McMechan and J. Reiter
University of Alberta, Edmonton, March 1988

1171

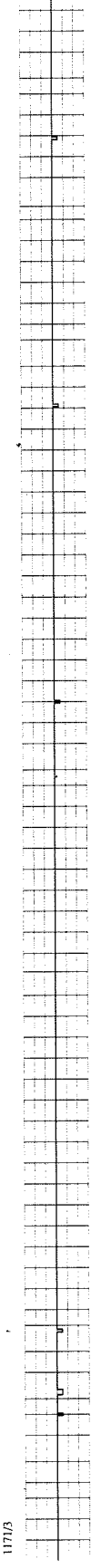
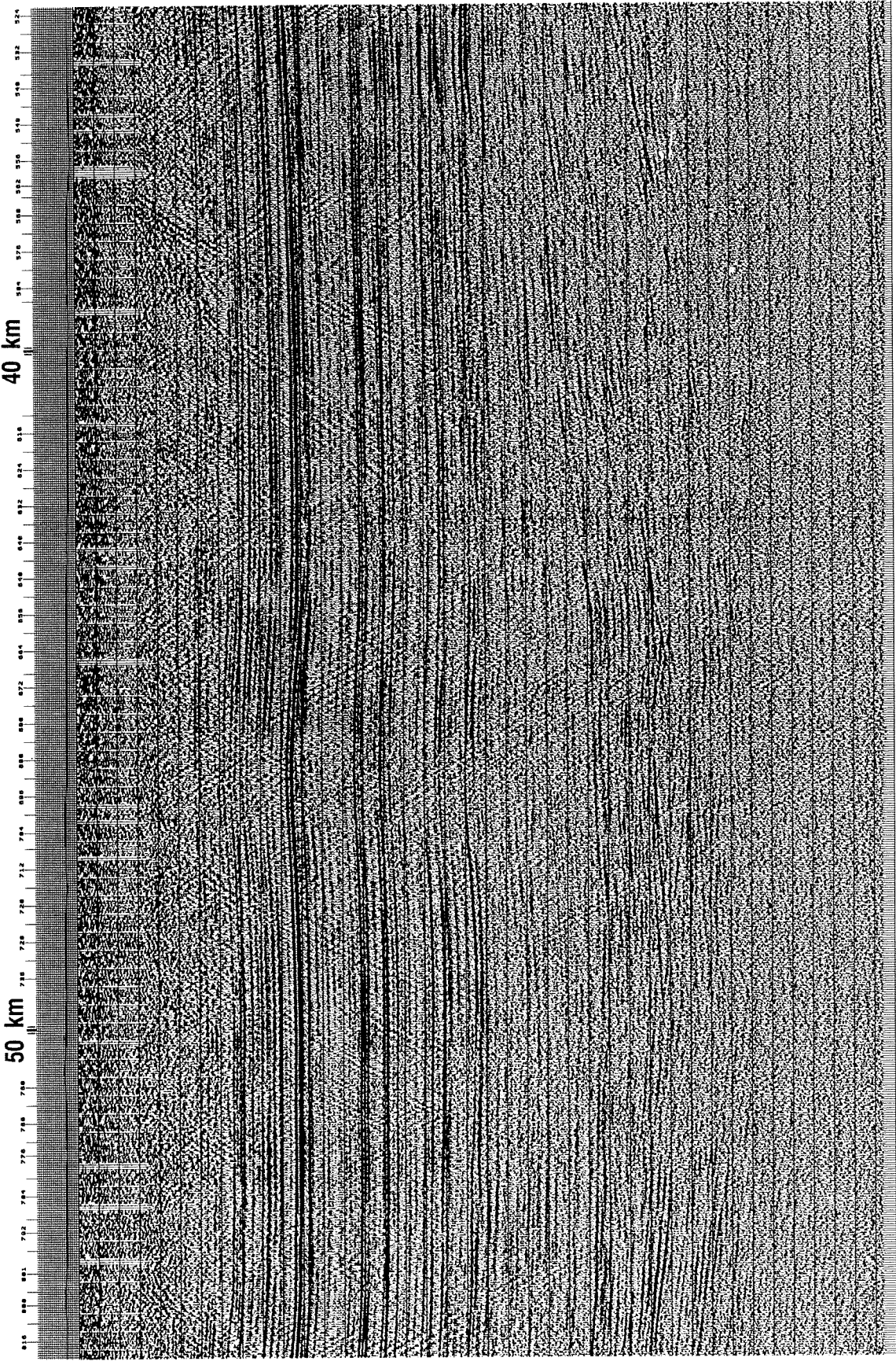
Line 1770 ↓

30 km

20 km

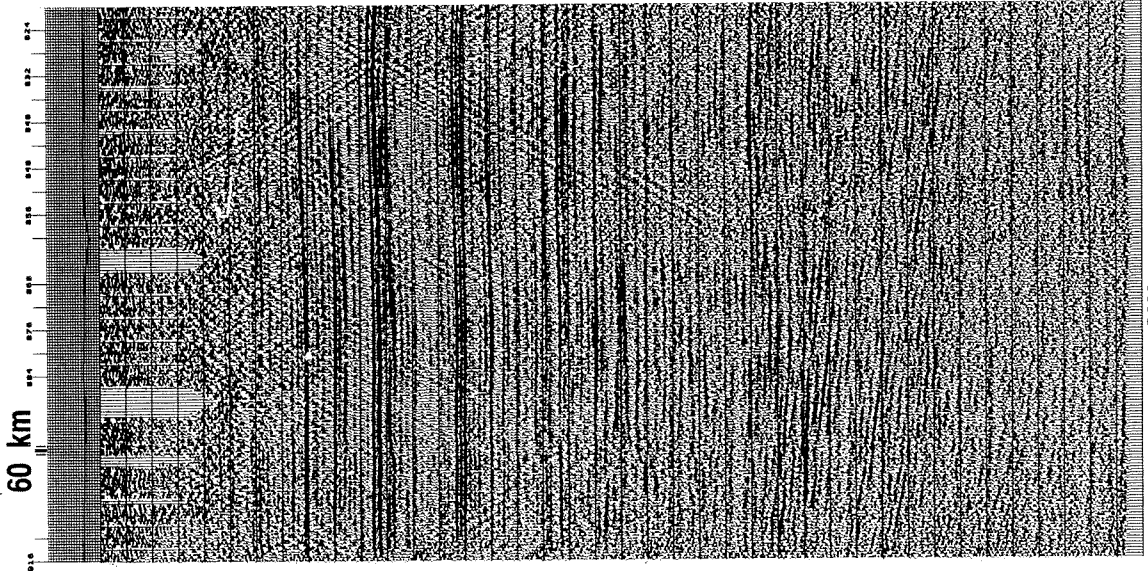


117/2



11713

Line 1168



APPROX. DEPTH

S. L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

20 km - 7.0 s -

S 1171/4 12 6 0

SW



Drake F-16



REFL. TIME 0 km

33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

10 km

201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300

APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s

-3.0 s

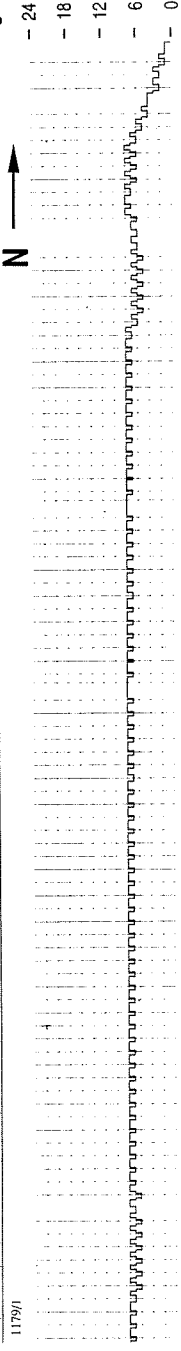
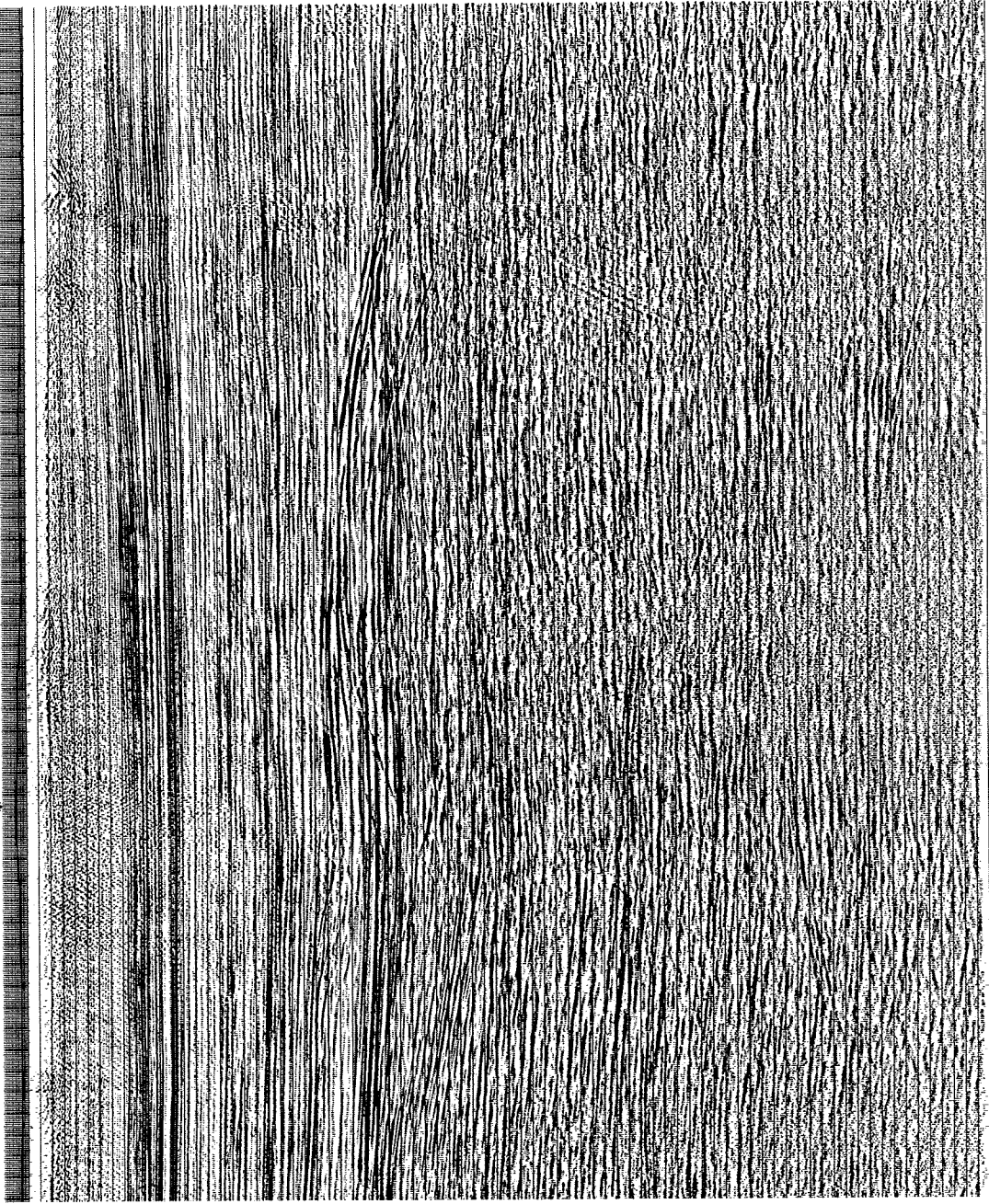
-4.0 s

-5.0 s

-6.0 s -15 km

-7.0 s

-20 km



MELVILLE ISLAND, CANADA
Line No.: 1179
Seismic Reflection CMP Section

Processed by:
Veritas Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: October 1979
Shot point: 435 ft
Geophone group interval: 165 ft
Spread distance: 1485.330-330-6765 ft

Processing parameters:
Sample rate: 4 ms
Bin width: 5 m
Stacking velocity: 10000 ft/s
Dip correction: 120 ms
Operator length: 5 %
Filter: time varying digital bandpass: 0-3500 ms; 10/13-50/60 Hz; 350-6000 ms; 57.3-50/60 Hz.

S: Stacking fold
Interpretation:
E.R. Kanasewich and Z. Berkas
University of Alberta, Edmonton, March 1988



Sherard Bay F-14

Line 1921 Line 2674

400 408 471 482 493 495 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

APPROX. DEPTH
REFL. TIME

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

4.0 s -

5.0 s -

6.0 s -

7.0 s -

S

5 km -

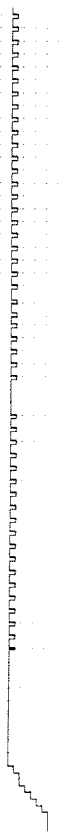
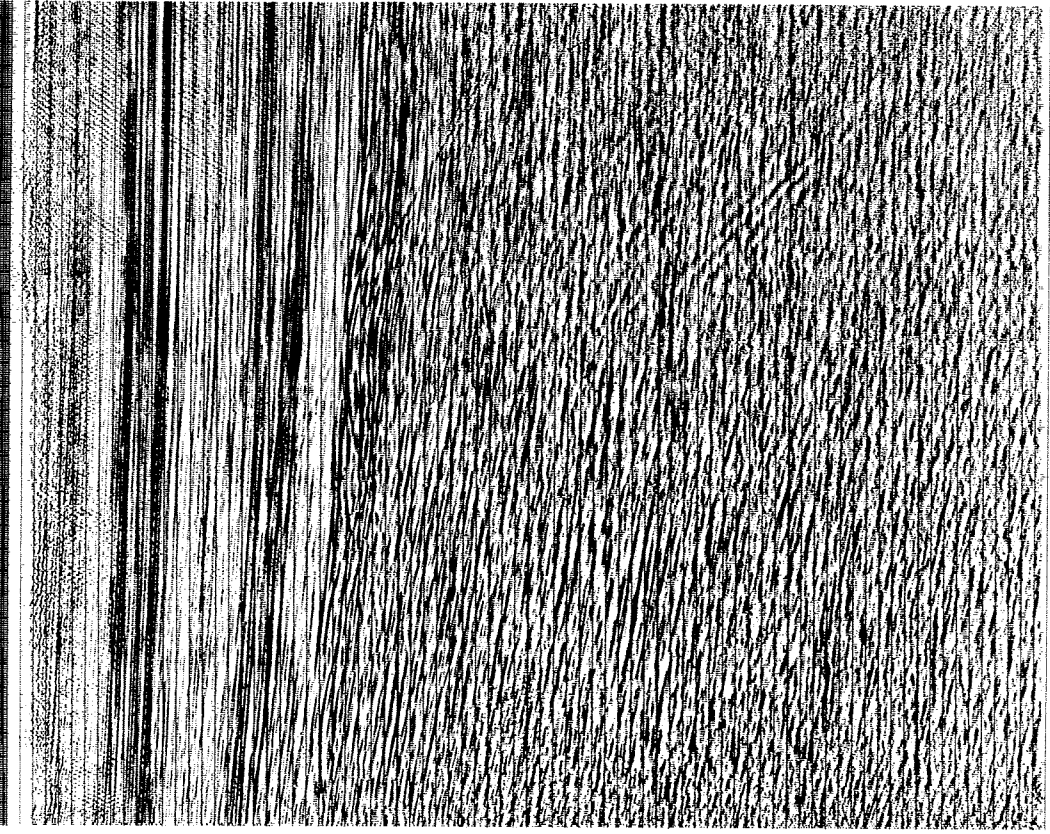
10 km -

15 km -

20 km -

1179/2
S ← S

24 -
18 -
12 -
6 -
0 -



MELVILLE ISLAND, CANADA
Line No.: 1180
Seismic Reflection CMP Section

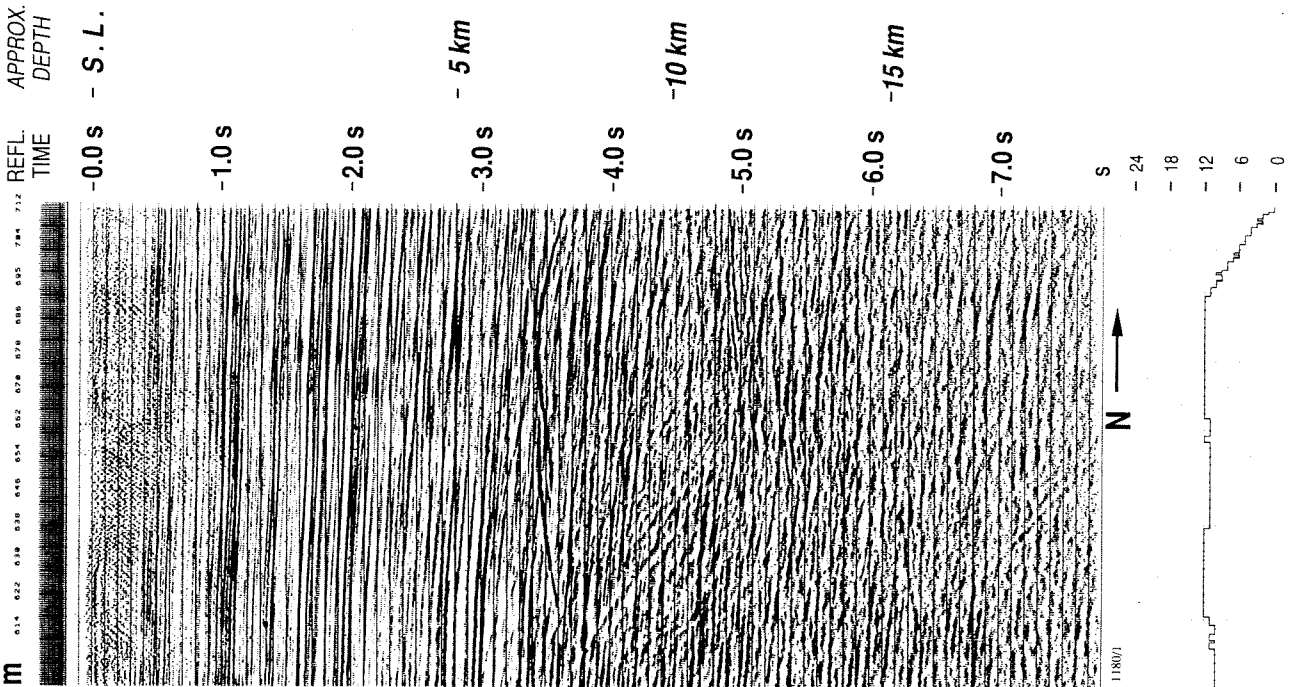
Processed by:
 Veritas Seismic Ltd, Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: October 1979
 Shot point: 485 ft
 Geophone group interval: 185 ft
 Spread distance: 1485-330-SP-330-6765 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 10000 ft/s
 Deconvolution:
 Operator length: 120 ms
 Prewhitening: 5 %
 Filter:
 time varying digital bandpass: 10/15-50/60 Hz;
 0-3500 ms; 3500-6000 ms; 57.5-5060 Hz.

S: Stacking fold 2x

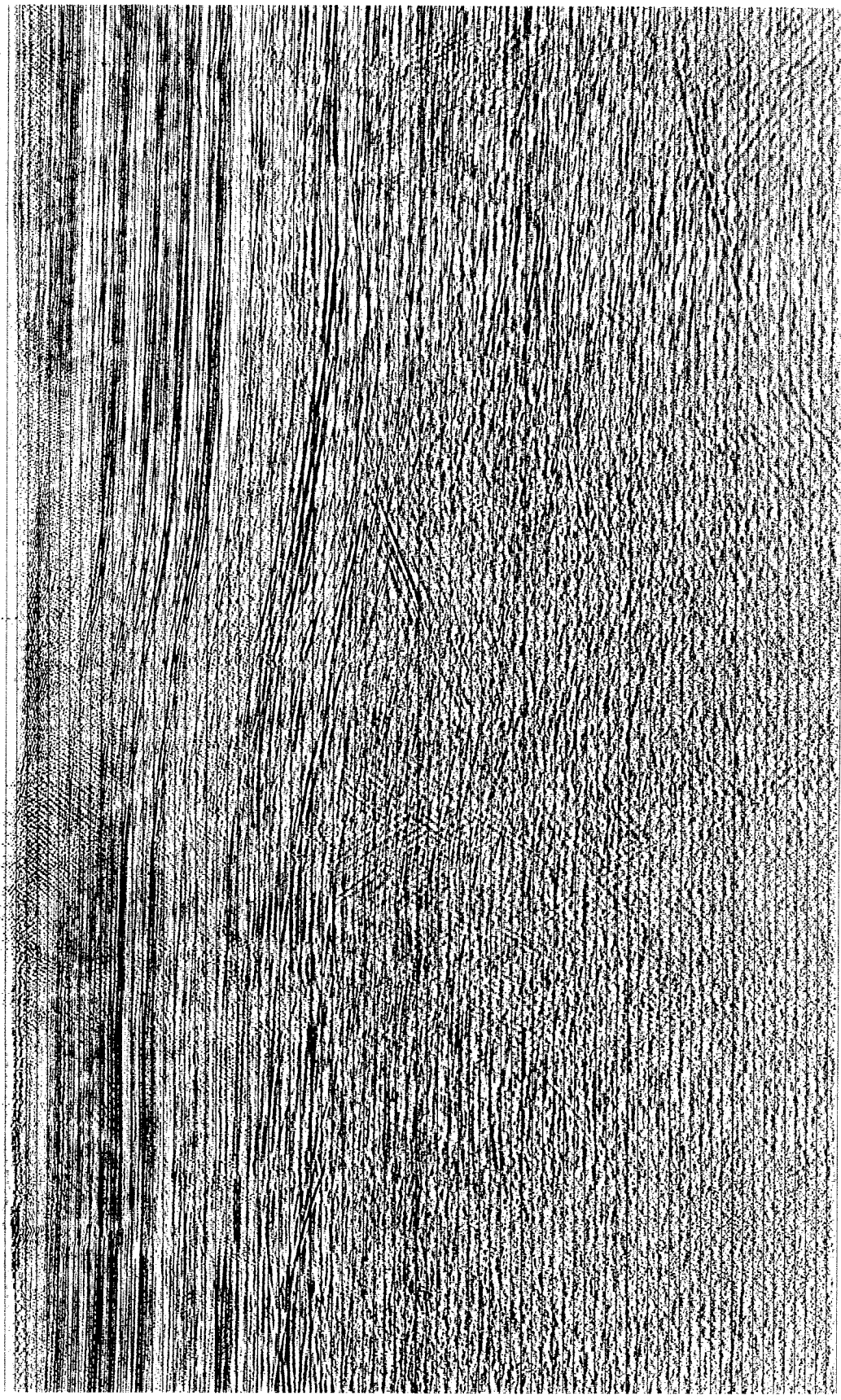
Interpretation:
 E.R. Kunasevich and Z. Berkes
 University of Alberta, Edmonton, March 1988





Line 2674 ↓ Collingwood K-33

223 212 241 258 258 268 277 287 295 304 313 322 331 340 350 358 367 376 20 km 410 427 436 445 454 463 472 481 490 499 508 517 526 534 542 550 558 566 574 582 30 k



1180/2



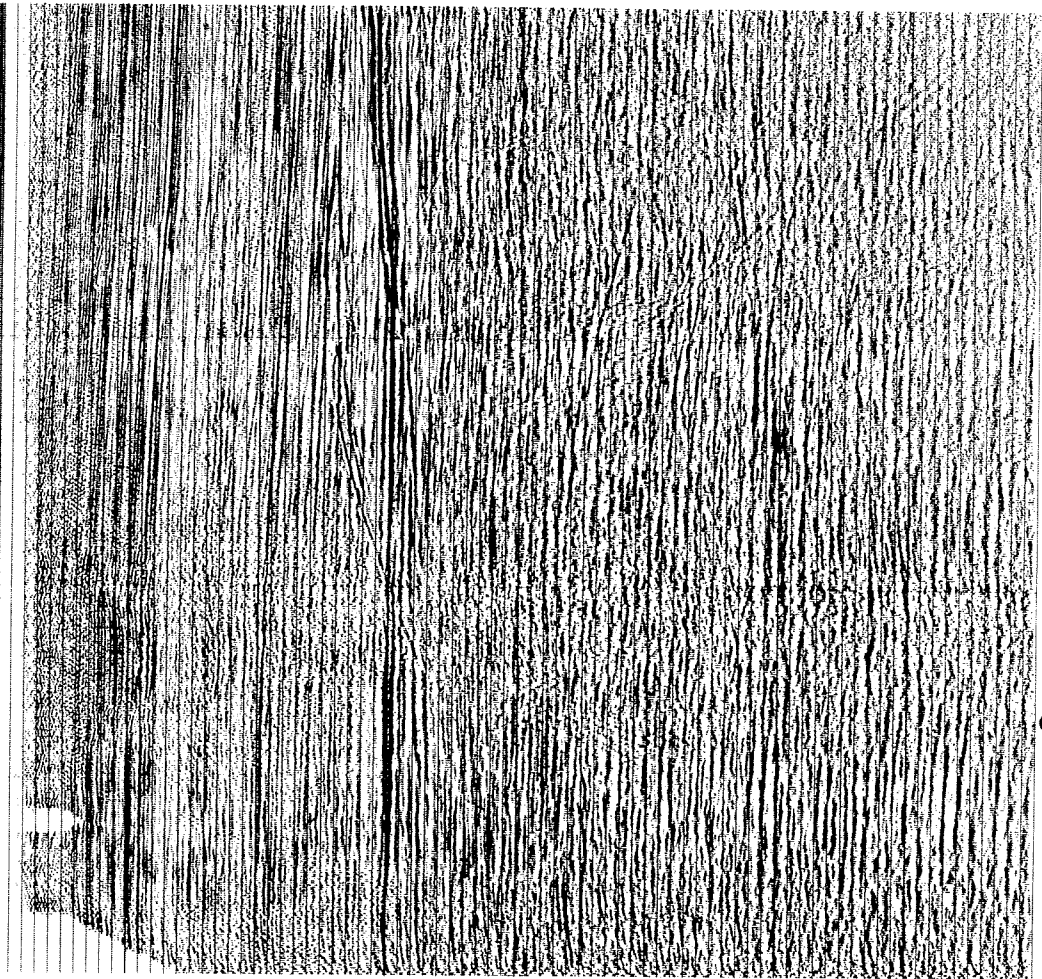


Drake F-16 Drake E-78

0 km 10 km

APPROX. DEPTH

REFL. TIME

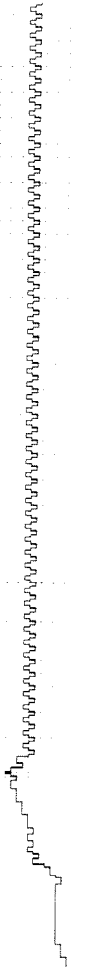


S. L. - 0.0 s - 1.0 s - 2.0 s - 3.0 s - 4.0 s - 5.0 s - 6.0 s - 7.0 s - 20 km -

← S

118003

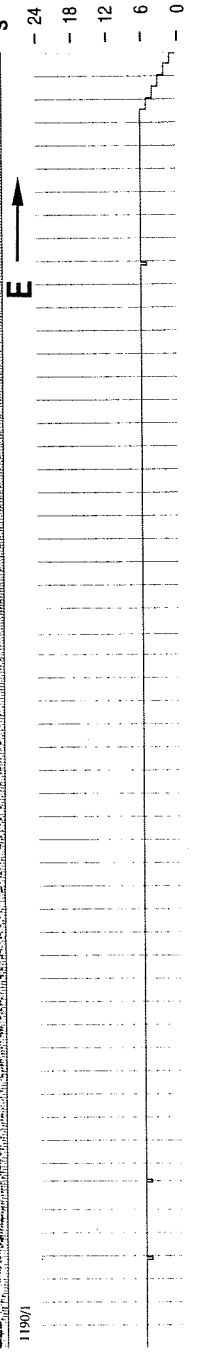
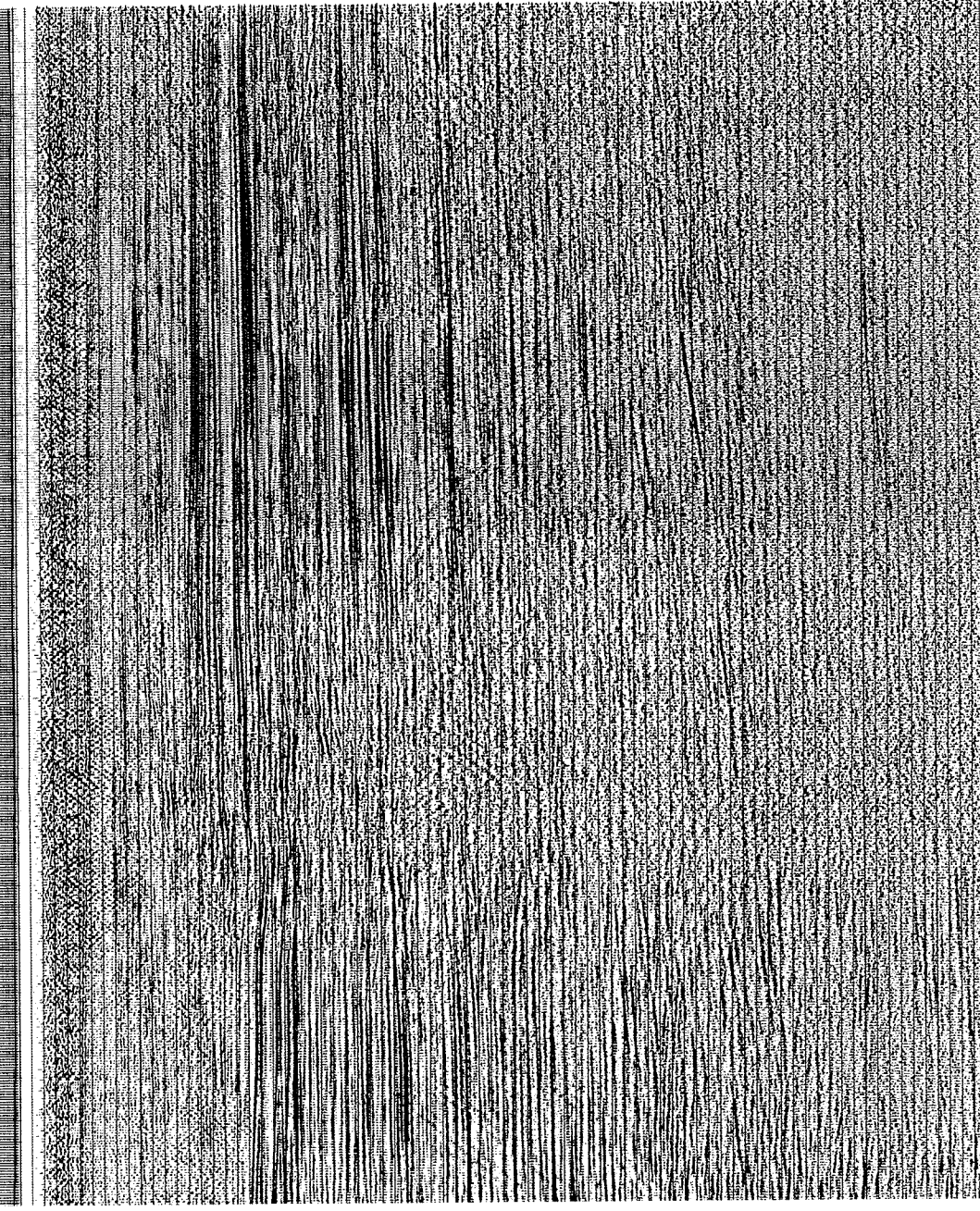
24 - 18 - 12 - 6 - 0 -



Line TPC8 ↓

14 21.0 20.0 2.00 1.82 1.64 1.46 1.28 1.10 1.12 1.04 0.86 0.68 0.50 0.32 0.14 0 km

APPROX. DEPTH
REFL. TIME
-0.0 s - S.L.
-1.0 s
-2.0 s - 5 km
-3.0 s
-4.0 s
-5.0 s
-6.0 s
-7.0 s -20 km



MELVILLE ISLAND, CANADA
Line No.: 1190
Seismic Reflection CMP Section

Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: November 1979
Shot interval: 60 s
Geophone group interval: 220 ft
Spread distance: 5200-220.SP-220-5200 ft

Processing parameters:
Sample rate: 4 ms
Dial: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Prewhitening: 5 %
Filter:
Time varying digital bandpass: 0-3500 ms; 10713-5060 Hz;
5000-9000 ms; 57.5-5060 Hz.

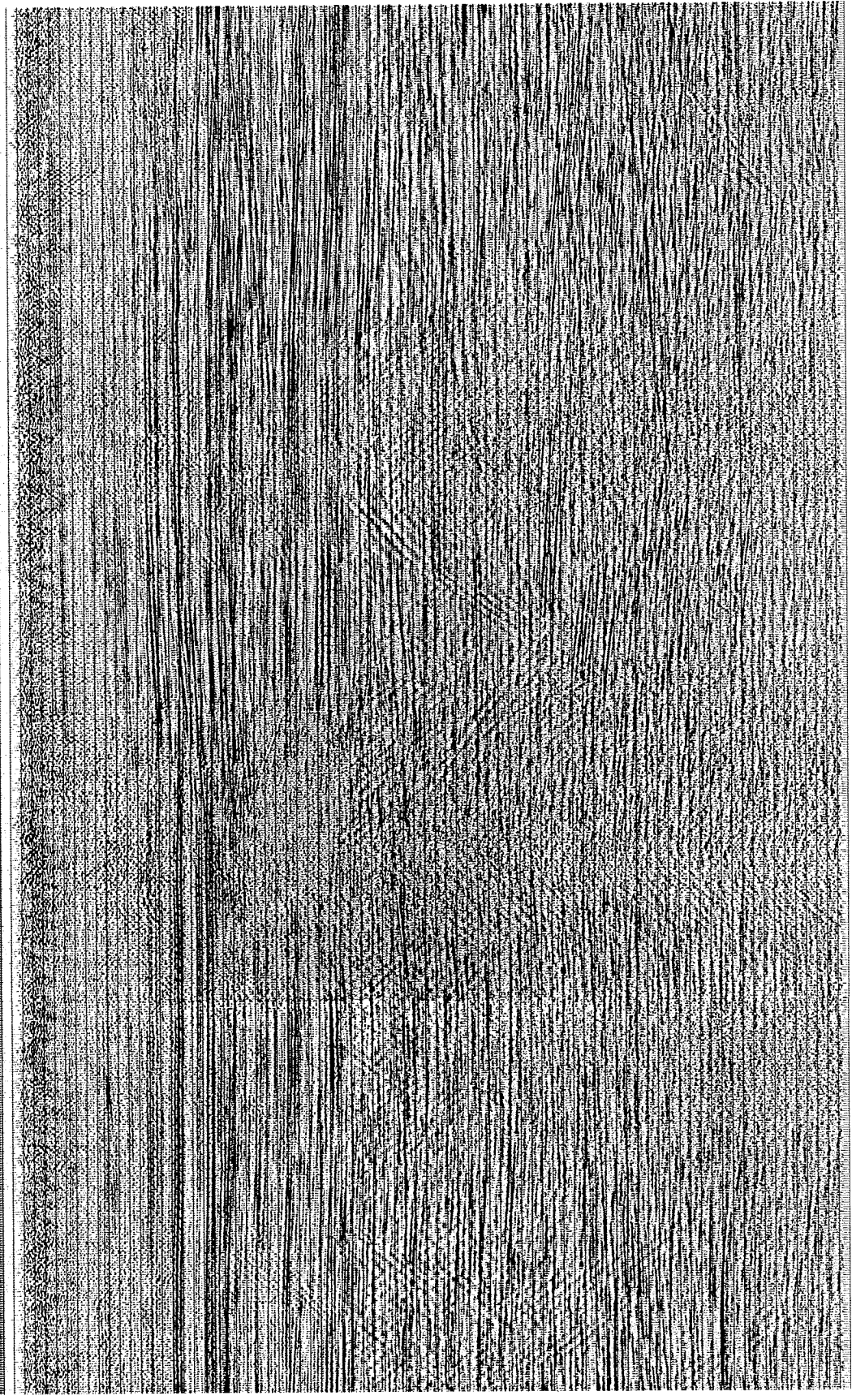
S: Standing fold

Interpretation:
E.R. Kosowich and Z. Boakes
University of Alberta, Edmonton, March 1988

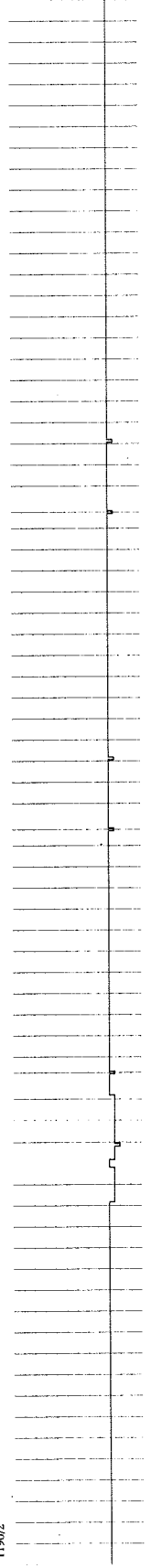
20 km

30 km

10 512 500 480 460 440 420 400 380 360 340 320 300 280 260 240 220 20



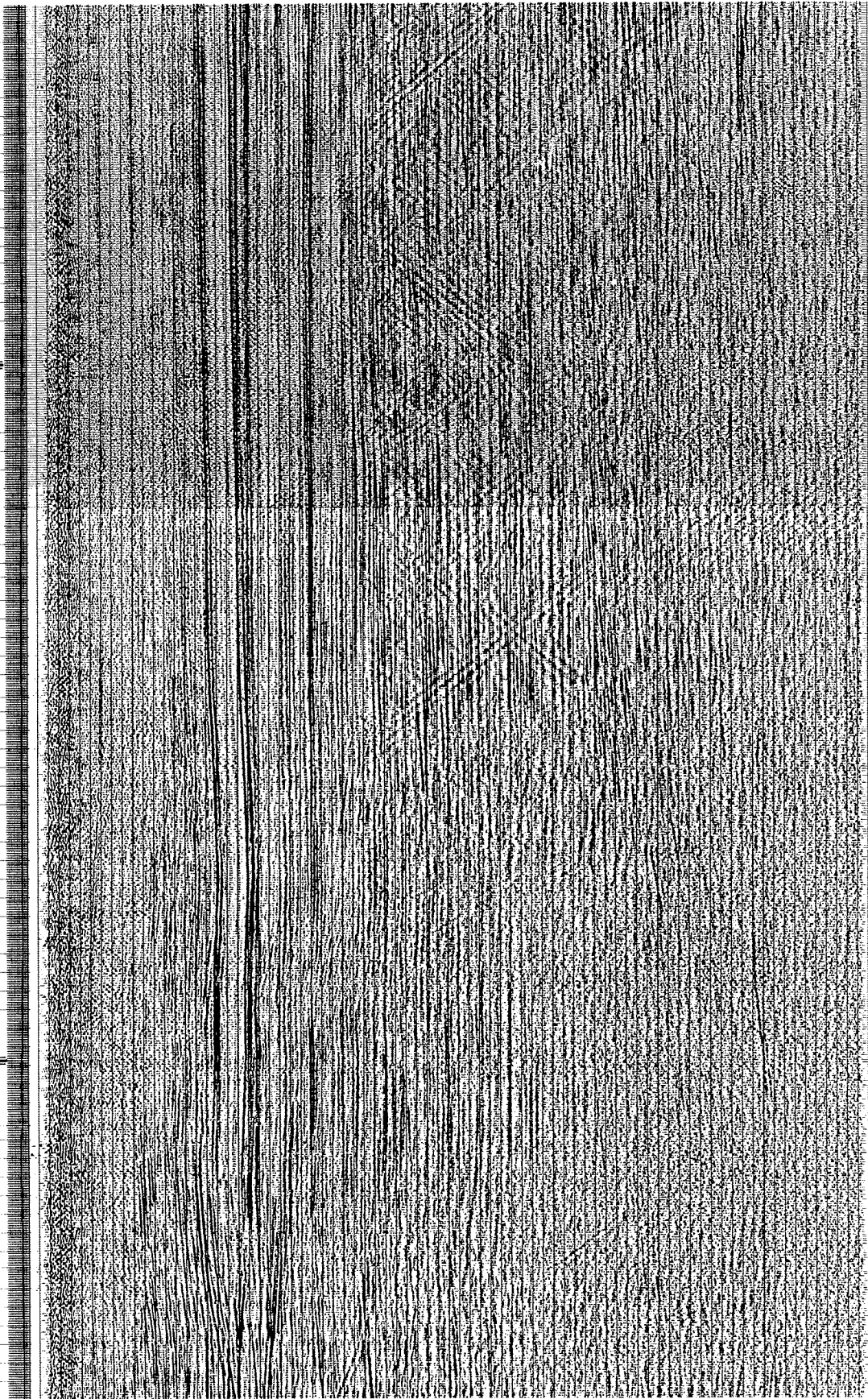
11907



40 km

50 km

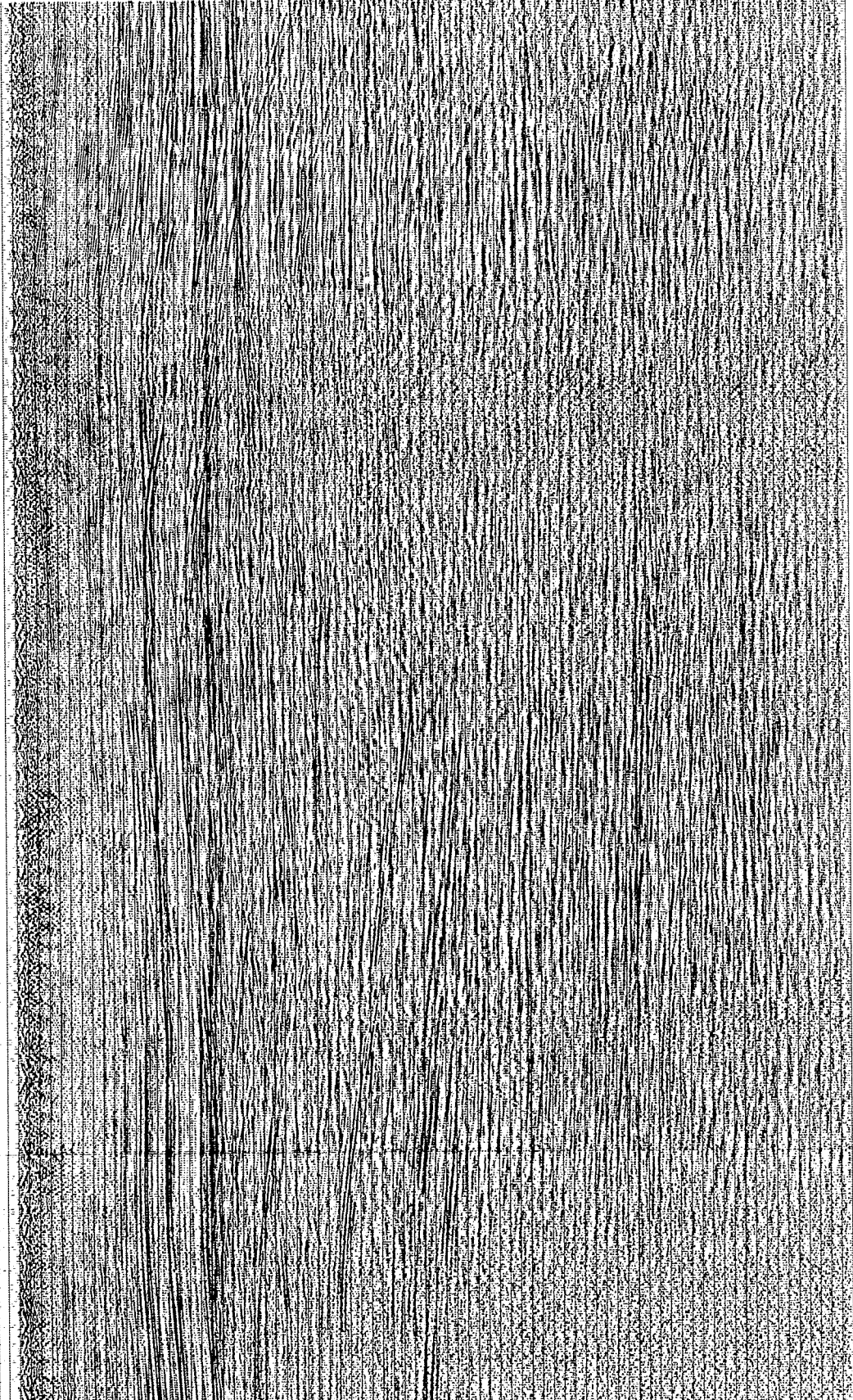
710 712 714 716 718 720 722 724 726 728 730 732 734 736 738 740 742 744 746 748 750 752 754 756 758 760 762 764 766 768 770 772 774



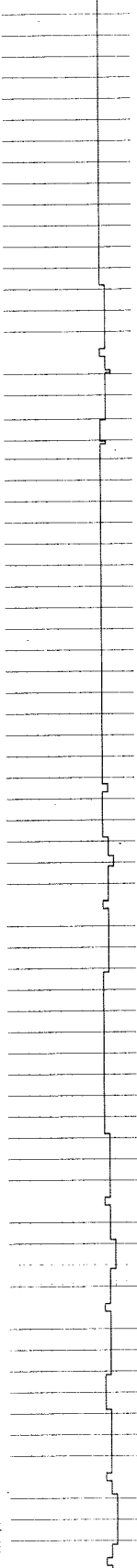
11907

1112 1194 1200 1208 1212 1218 1224 1230 1236 1242 1248 1254 1260 1266 1272 1278 1284 1290 1296 1302 1308 1314 1320 1326 1332 1338 1344 1350 1356 1362 1368 1374 1380 1386 1392 1398 1404 1410 1416 1422 1428 1434 1440 1446 1452 1458 1464 1470 1476 1482 1488 1494 1500 1506 1512 1518 1524 1530 1536 1542 1548 1554 1560 1566 1572 1578 1584 1590 1596 1602 1608 1614 1620 1626 1632 1638 1644 1650 1656 1662 1668 1674 1680 1686 1692 1698 1704 1710 1716 1722 1728 1734 1740 1746 1752 1758 1764 1770 1776 1782 1788 1794 1800 1806 1812 1818 1824 1830 1836 1842 1848 1854 1860 1866 1872 1878 1884 1890 1896 1902 1908 1914 1920 1926 1932 1938 1944 1950 1956 1962 1968 1974 1980 1986 1992 1998 2004 2010 2016 2022 2028 2034 2040 2046 2052 2058 2064 2070 2076 2082 2088 2094 2100 2106 2112 2118 2124 2130 2136 2142 2148 2154 2160 2166 2172 2178 2184 2190 2196 2202 2208 2214 2220 2226 2232 2238 2244 2250 2256 2262 2268 2274 2280 2286 2292 2298 2304 2310 2316 2322 2328 2334 2340 2346 2352 2358 2364 2370 2376 2382 2388 2394 2400 2406 2412 2418 2424 2430 2436 2442 2448 2454 2460 2466 2472 2478 2484 2490 2496 2502 2508 2514 2520 2526 2532 2538 2544 2550 2556 2562 2568 2574 2580 2586 2592 2598 2604 2610 2616 2622 2628 2634 2640 2646 2652 2658 2664 2670 2676 2682 2688 2694 2700 2706 2712 2718 2724 2730 2736 2742 2748 2754 2760 2766 2772 2778 2784 2790 2796 2802 2808 2814 2820 2826 2832 2838 2844 2850 2856 2862 2868 2874 2880 2886 2892 2898 2904 2910 2916 2922 2928 2934 2940 2946 2952 2958 2964 2970 2976 2982 2988 2994 3000

60 km

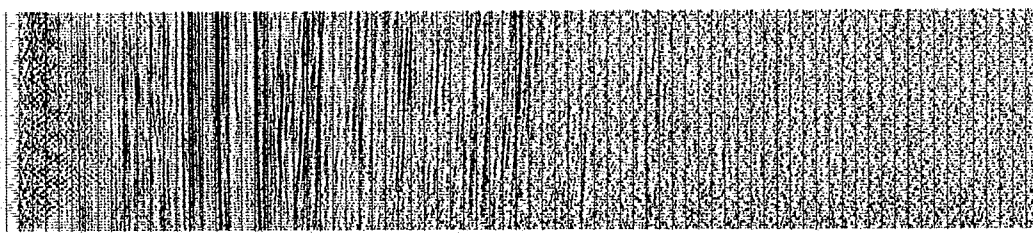


119074

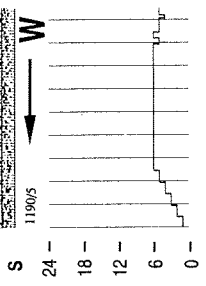


APPROX. DEPTH
REFL. TIME

1122 1144 1136 1128 1124



S. L. - 0.0 s -
1.0 s -
5 km - 2.0 s -
3.0 s -
10 km - 4.0 s -
15 km - 5.0 s -
6.0 s -
20 km - 7.0 s -



MELVILLE ISLAND, CANADA
Line No.: 1762
Seismic Reflection CMP Section

Processed by:
 Venas Seismic Ltd. Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: April 1975
 Source interval: 880 ft
 Geophone group interval: 440 ft
 Spread distance: 5280-220 SP-220-5280 ft

Processing parameters:
 Sample rate: 4 ms
 Output level: 12000 f/s
 Replacement velocity: 12000 f/s
 Deconvolution: 120 ms
 Operator length: 5 %
 Prewhitening: 5 %
 Filter: time varying digital bandpass:
 0-3000 ms, 1013-5060 Hz,
 3500-6000 ms, 57.5-5060 Hz.

S: Stacking fold: ∞
Interpretation:
 E.R. Kasasewich and Z. Berkec
 University of Alberta, Edmonton, March 1988

REFL. TIME

-0.0 s - S. L.

-1.0 s

-2.0 s

- 5 km

-3.0 s

-10 km

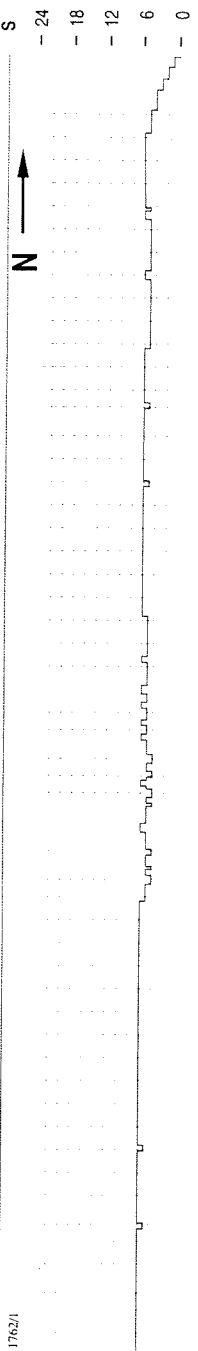
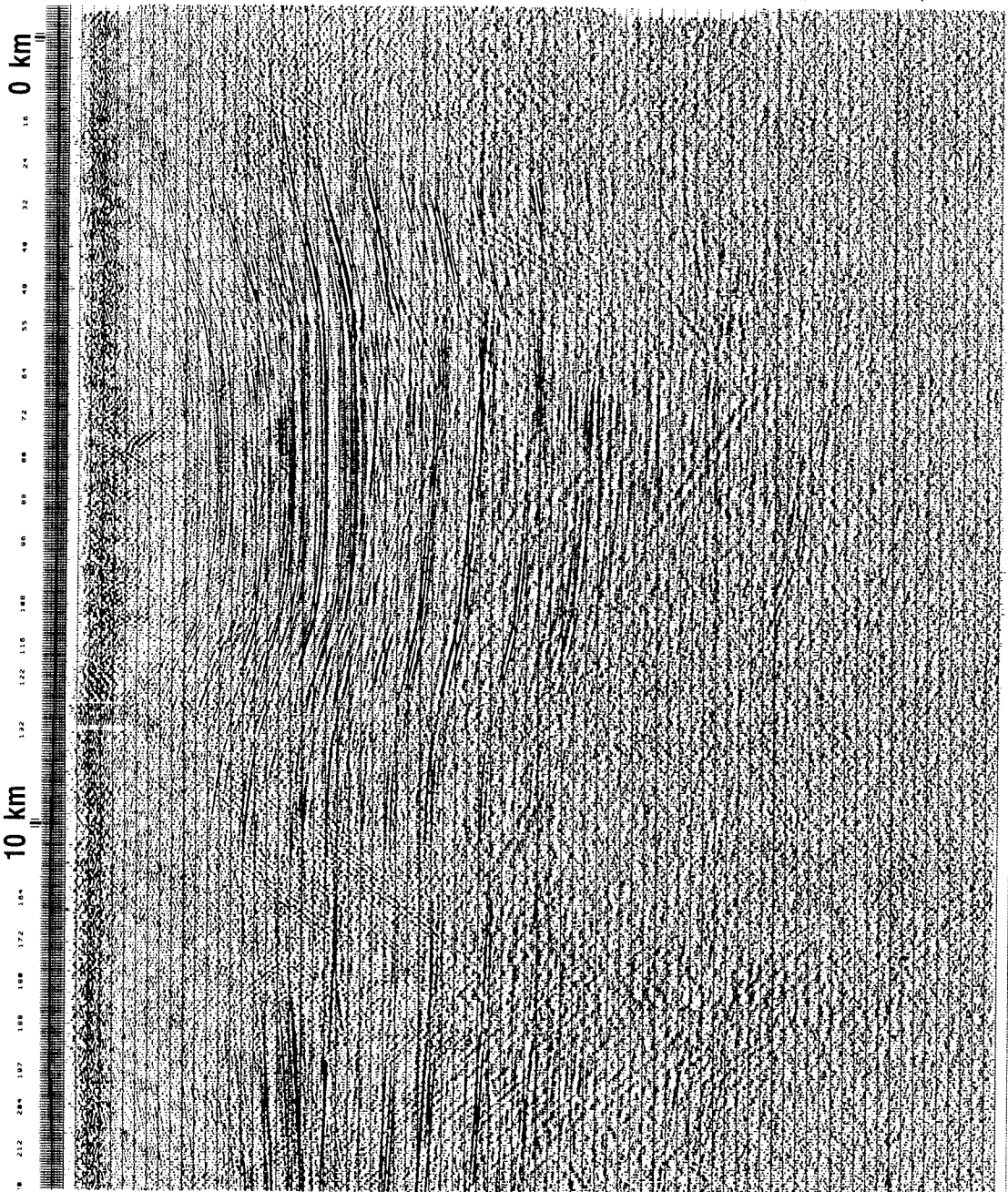
-5.0 s

-15 km

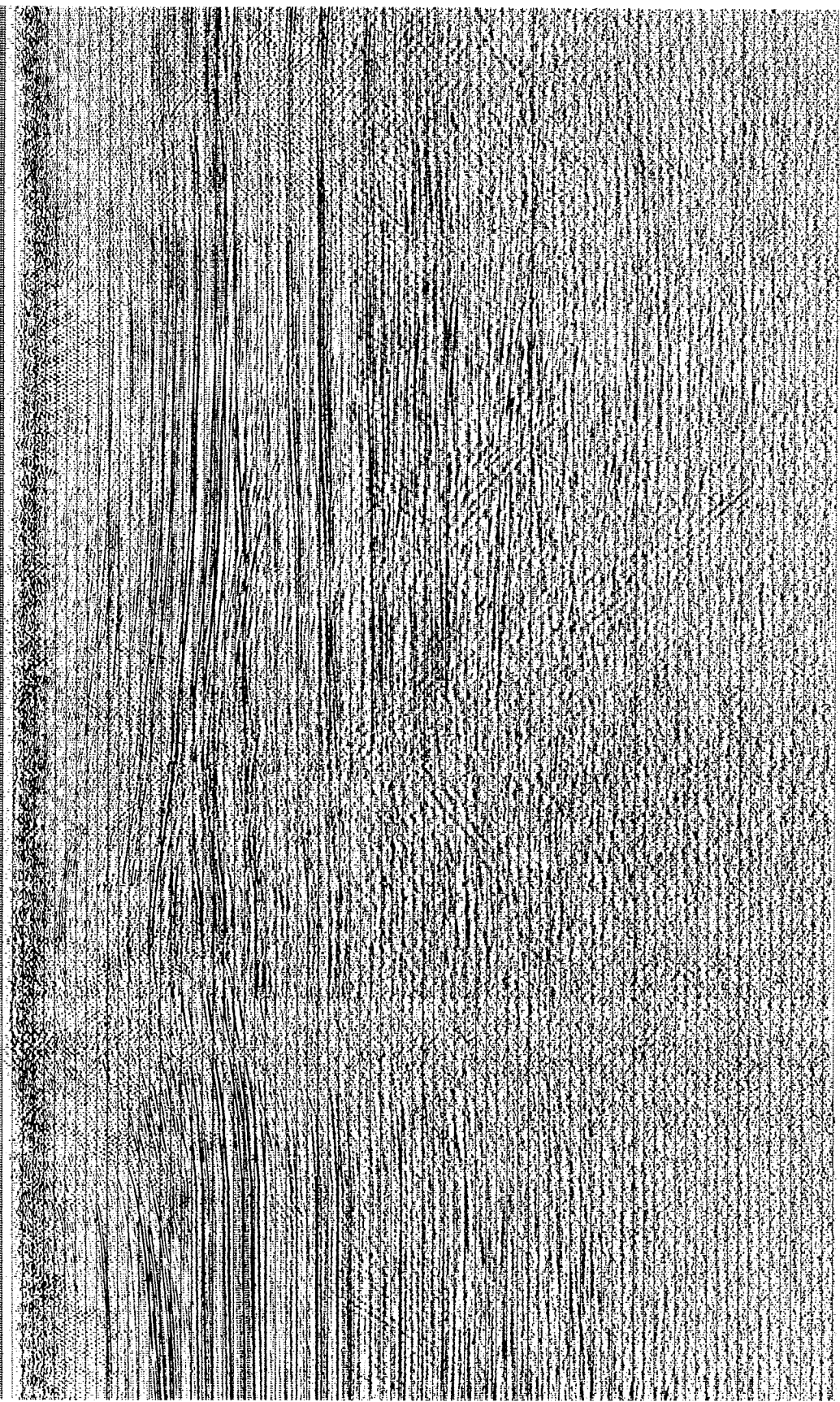
-6.0 s

-7.0 s

-20 km



510 500 500 492 484 476 468 460 452 444 436 428 420 412 404 396 388 380 372 364 356 348 340 332 324 316 20 km 284 276 268 260 252 244 236 228 2



17622



Line 1139

600 608 616 624 632 640 648 656 664 672 680 688 696 704 712 720 728 736 744 752 760 768 776 784 792 800 808 816 824 832 840 848 856 864 872 880 888 896 904 912 920 928 936 944 952 960 968 976 984 992 1000

40 km

APPROX. REFLECT. DEPTH TIME

S. L. - 0.0 s -

1.0 s -

2.0 s -

3.0 s -

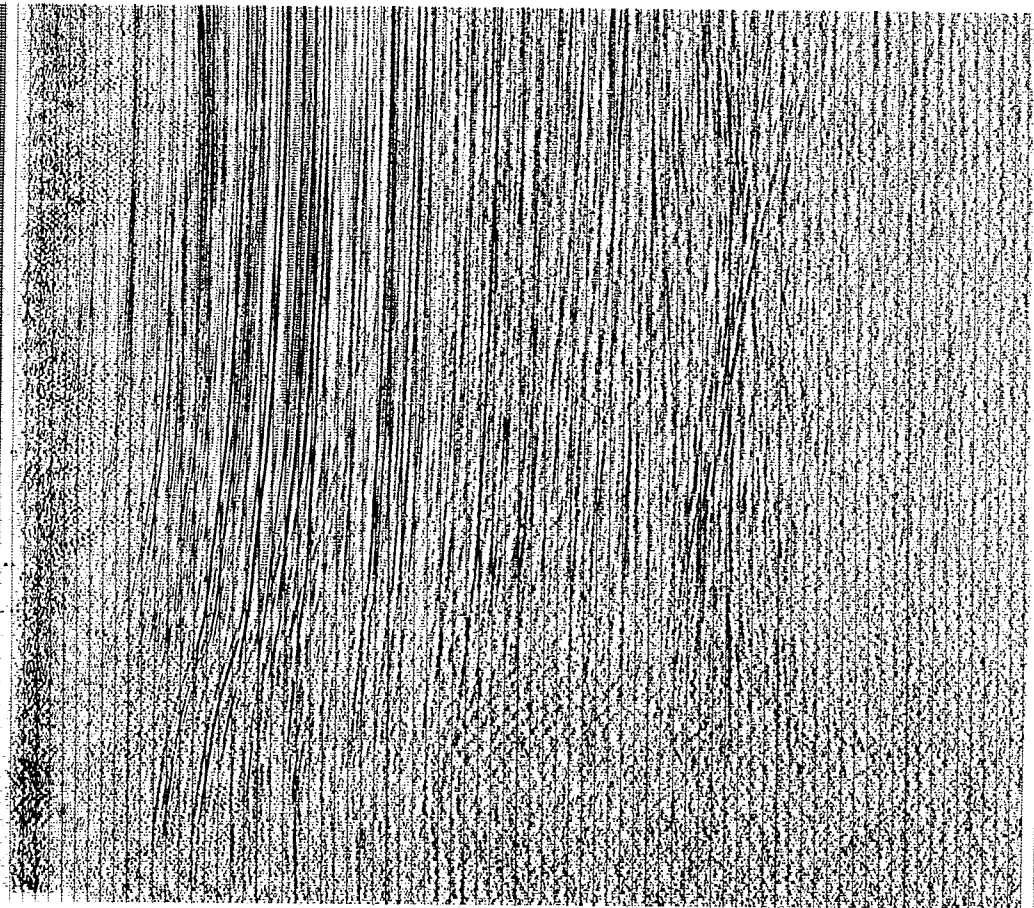
10 km - 4.0 s -

5.0 s -

6.0 s -

7.0 s -

20 km -



S ← S

1763/3

S 24 -

18 -

12 -

6 -

0 -

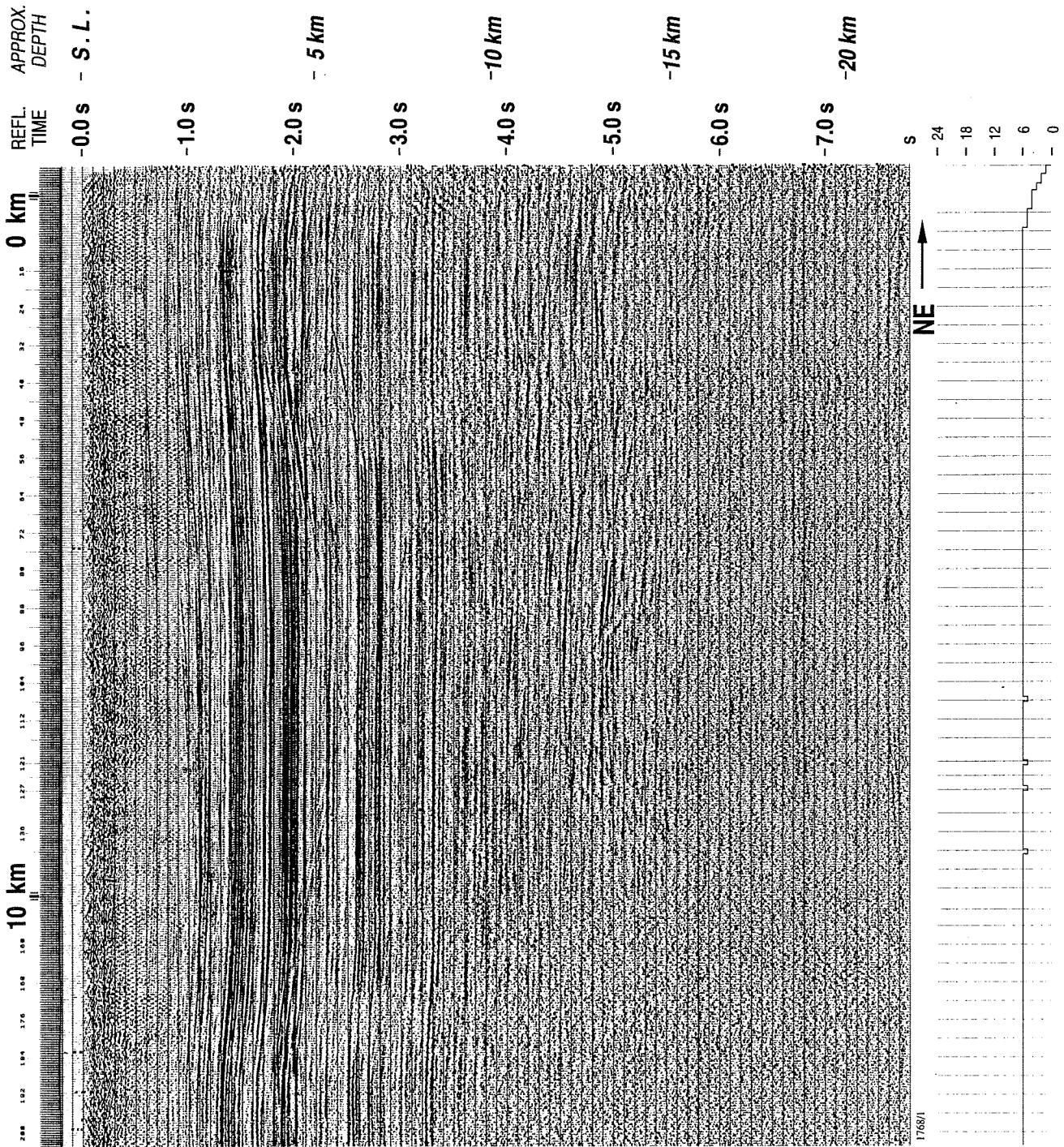
MELVILLE ISLAND, CANADA
Line No.: 1768
Seismic Reflection CMP Section

Processed by:
 Veritas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

Field parameters:
 Date shot: April 1975
 Source interval: 880 ft
 Geophone group interval: 220 ft
 Spread distance: 5280-228-SP-220-5280 ft

Processing parameters:
 Sample rate: 4 ms
 Datum: Sea level
 Replacement velocity: 12000 ft/s
 Deconvolution
 Operator length: 120 ms
 Prewitening: 5 %
 Filter, time varying digital bandpass:
 0-3500 ms, 10/13-50/60 Hz;
 3500-8000 ms, 5/7.5-50/60 Hz.

S: Stacking fold 300
Interpretation:
 E.R. Karasewich and Z. Berkus
 University of Alberta, Edmonton, March 1988

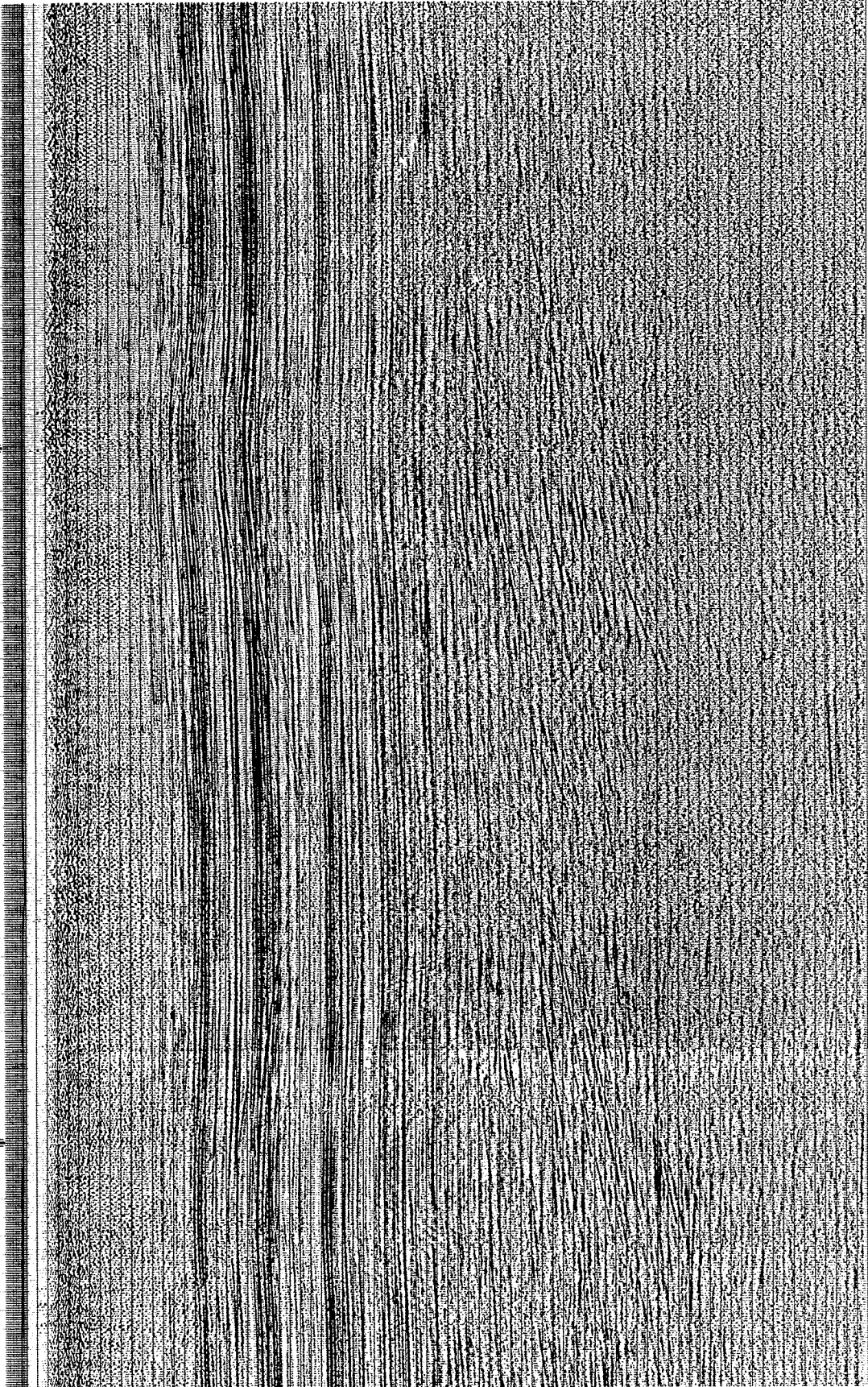


Line 1770

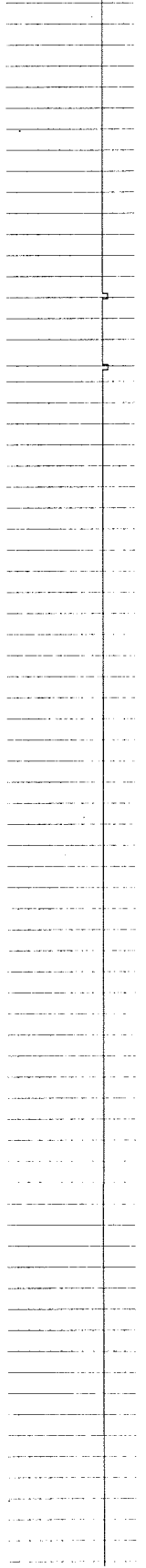
30 km

20 km

450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200



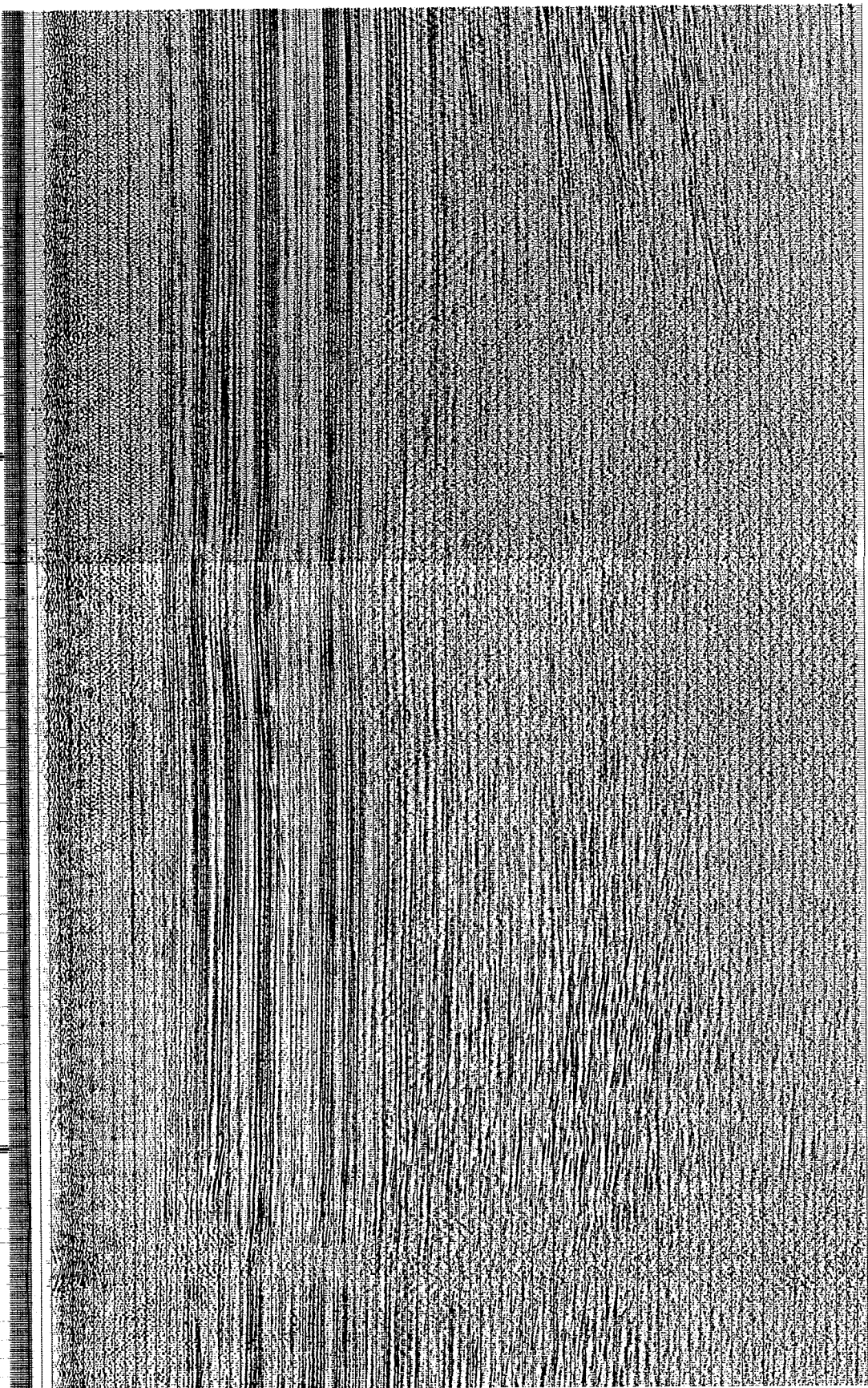
1768/2



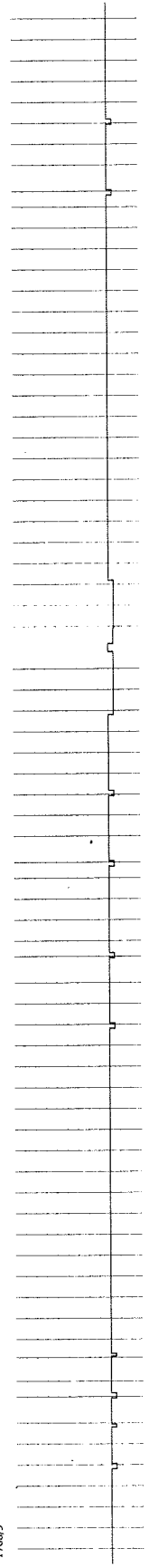
760 760 760 772 784 796 808 820 832 844 856 868 880 892 904 916 928 940 952 964 976 988 1000 1012 1024 1036 1048 1060 1072 1084 1096 1108 1120 1132 1144 1156 1168 1180 1192 1204 1216 1228 1240 1252 1264 1276 1288 1300 1312 1324 1336 1348 1360 1372 1384 1396 1408 1420 1432 1444 1456 1468 1480 1492 1504 1516 1528 1540 1552 1564 1576 1588 1600 1612 1624 1636 1648 1660 1672 1684 1696 1708 1720 1732 1744 1756 1768 1780 1792 1804 1816 1828 1840 1852 1864 1876 1888 1900 1912 1924 1936 1948 1960 1972 1984 1996 2008 2020 2032 2044 2056 2068 2080 2092 2104 2116 2128 2140 2152 2164 2176 2188 2200 2212 2224 2236 2248 2260 2272 2284 2296 2308 2320 2332 2344 2356 2368 2380 2392 2404 2416 2428 2440 2452 2464 2476 2488 2500 2512 2524 2536 2548 2560 2572 2584 2596 2608 2620 2632 2644 2656 2668 2680 2692 2704 2716 2728 2740 2752 2764 2776 2788 2800 2812 2824 2836 2848 2860 2872 2884 2896 2908 2920 2932 2944 2956 2968 2980 2992 3004 3016 3028 3040 3052 3064 3076 3088 3100 3112 3124 3136 3148 3160 3172 3184 3196 3208 3220 3232 3244 3256 3268 3280 3292 3304 3316 3328 3340 3352 3364 3376 3388 3400 3412 3424 3436 3448 3460 3472 3484 3496 3508 3520 3532 3544 3556 3568 3580 3592 3604 3616 3628 3640 3652 3664 3676 3688 3700 3712 3724 3736 3748 3760 3772 3784 3796 3808 3820 3832 3844 3856 3868 3880 3892 3904 3916 3928 3940 3952 3964 3976 3988 4000 4012 4024 4036 4048 4060 4072 4084 4096 4108 4120 4132 4144 4156 4168 4180 4192 4204 4216 4228 4240 4252 4264 4276 4288 4300 4312 4324 4336 4348 4360 4372 4384 4396 4408 4420 4432 4444 4456 4468 4480 4492 4504 4516 4528 4540 4552 4564 4576 4588 4600 4612 4624 4636 4648 4660 4672 4684 4696 4708 4720 4732 4744 4756 4768 4780 4792 4804 4816 4828 4840 4852 4864 4876 4888 4900 4912 4924 4936 4948 4960 4972 4984 4996 5008 5020 5032 5044 5056 5068 5080 5092 5104 5116 5128 5140 5152 5164 5176 5188 5200 5212 5224 5236 5248 5260 5272 5284 5296 5308 5320 5332 5344 5356 5368 5380 5392 5404 5416 5428 5440 5452 5464 5476 5488 5500 5512 5524 5536 5548 5560 5572 5584 5596 5608 5620 5632 5644 5656 5668 5680 5692 5704 5716 5728 5740 5752 5764 5776 5788 5800 5812 5824 5836 5848 5860 5872 5884 5896 5908 5920 5932 5944 5956 5968 5980 5992 6004 6016 6028 6040 6052 6064 6076 6088 6100 6112 6124 6136 6148 6160 6172 6184 6196 6208 6220 6232 6244 6256 6268 6280 6292 6304 6316 6328 6340 6352 6364 6376 6388 6400 6412 6424 6436 6448 6460 6472 6484 6496 6508 6520 6532 6544 6556 6568 6580 6592 6604 6616 6628 6640 6652 6664 6676 6688 6700 6712 6724 6736 6748 6760 6772 6784 6796 6808 6820 6832 6844 6856 6868 6880 6892 6904 6916 6928 6940 6952 6964 6976 6988 7000 7012 7024 7036 7048 7060 7072 7084 7096 7108 7120 7132 7144 7156 7168 7180 7192 7204 7216 7228 7240 7252 7264 7276 7288 7300 7312 7324 7336 7348 7360 7372 7384 7396 7408 7420 7432 7444 7456 7468 7480 7492 7504 7516 7528 7540 7552 7564 7576 7588 7600 7612 7624 7636 7648 7660 7672 7684 7696 7708 7720 7732 7744 7756 7768 7780 7792 7804 7816 7828 7840 7852 7864 7876 7888 7900 7912 7924 7936 7948 7960 7972 7984 7996 8008 8020 8032 8044 8056 8068 8080 8092 8104 8116 8128 8140 8152 8164 8176 8188 8200 8212 8224 8236 8248 8260 8272 8284 8296 8308 8320 8332 8344 8356 8368 8380 8392 8404 8416 8428 8440 8452 8464 8476 8488 8500 8512 8524 8536 8548 8560 8572 8584 8596 8608 8620 8632 8644 8656 8668 8680 8692 8704 8716 8728 8740 8752 8764 8776 8788 8800 8812 8824 8836 8848 8860 8872 8884 8896 8908 8920 8932 8944 8956 8968 8980 8992 9004 9016 9028 9040 9052 9064 9076 9088 9100 9112 9124 9136 9148 9160 9172 9184 9196 9208 9220 9232 9244 9256 9268 9280 9292 9304 9316 9328 9340 9352 9364 9376 9388 9400 9412 9424 9436 9448 9460 9472 9484 9496 9508 9520 9532 9544 9556 9568 9580 9592 9604 9616 9628 9640 9652 9664 9676 9688 9700 9712 9724 9736 9748 9760 9772 9784 9796 9808 9820 9832 9844 9856 9868 9880 9892 9904 9916 9928 9940 9952 9964 9976 9988 10000

40 km

50 km



17683



APPROX. DEPTH
REFL. TIME

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

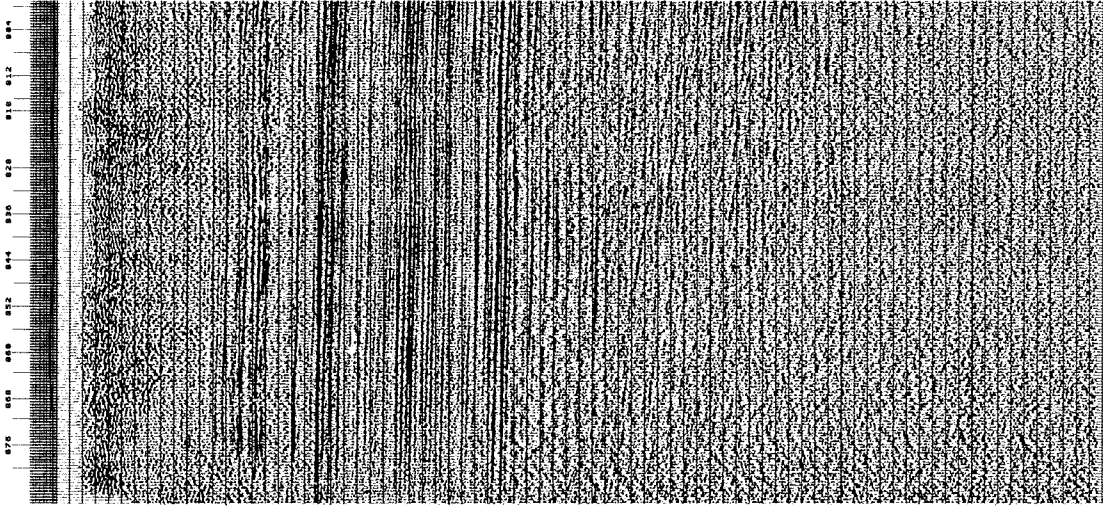
3.0 s -

4.0 s -

5.0 s -

6.0 s -

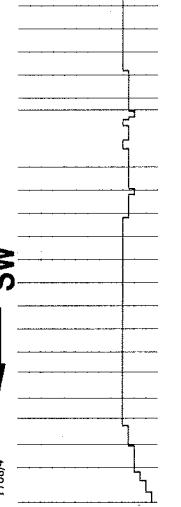
20 km - 7.0 s -



S
24
18
12
6
0

SW

1768/4



MELVILLE ISLAND, CANADA
 Line No.: 1770
 Seismic Reflection CMP Section

APPROX. DEPTH
 REFL. TIME
 -0.0 s - S.L.

Processed by:
 Veritas Seismic Ltd. Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

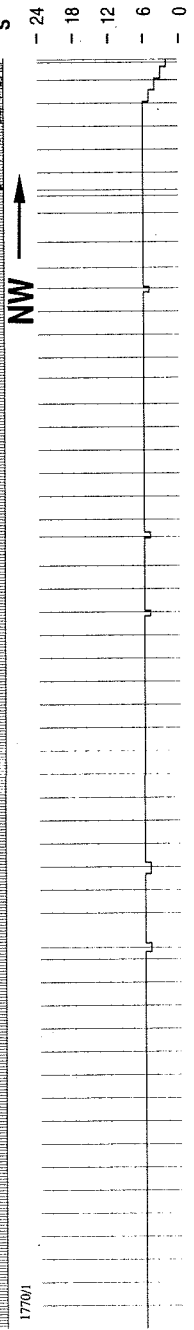
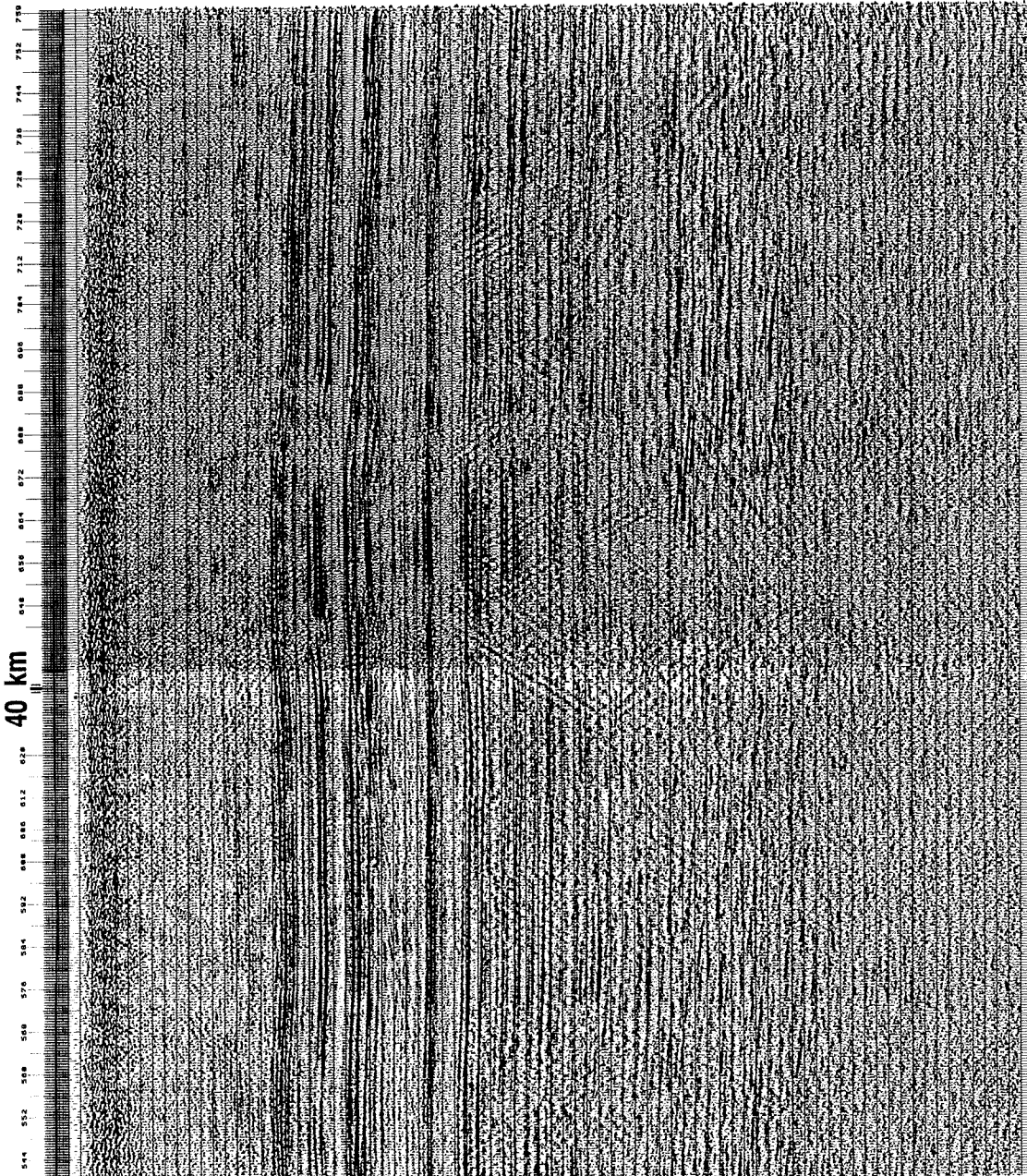
Field parameters:
 Date shot: April 1975
 Source interval: 20 ft
 Receiver group interval: 20 ft
 Spread distance: 5280-220-SP-220-5280 ft

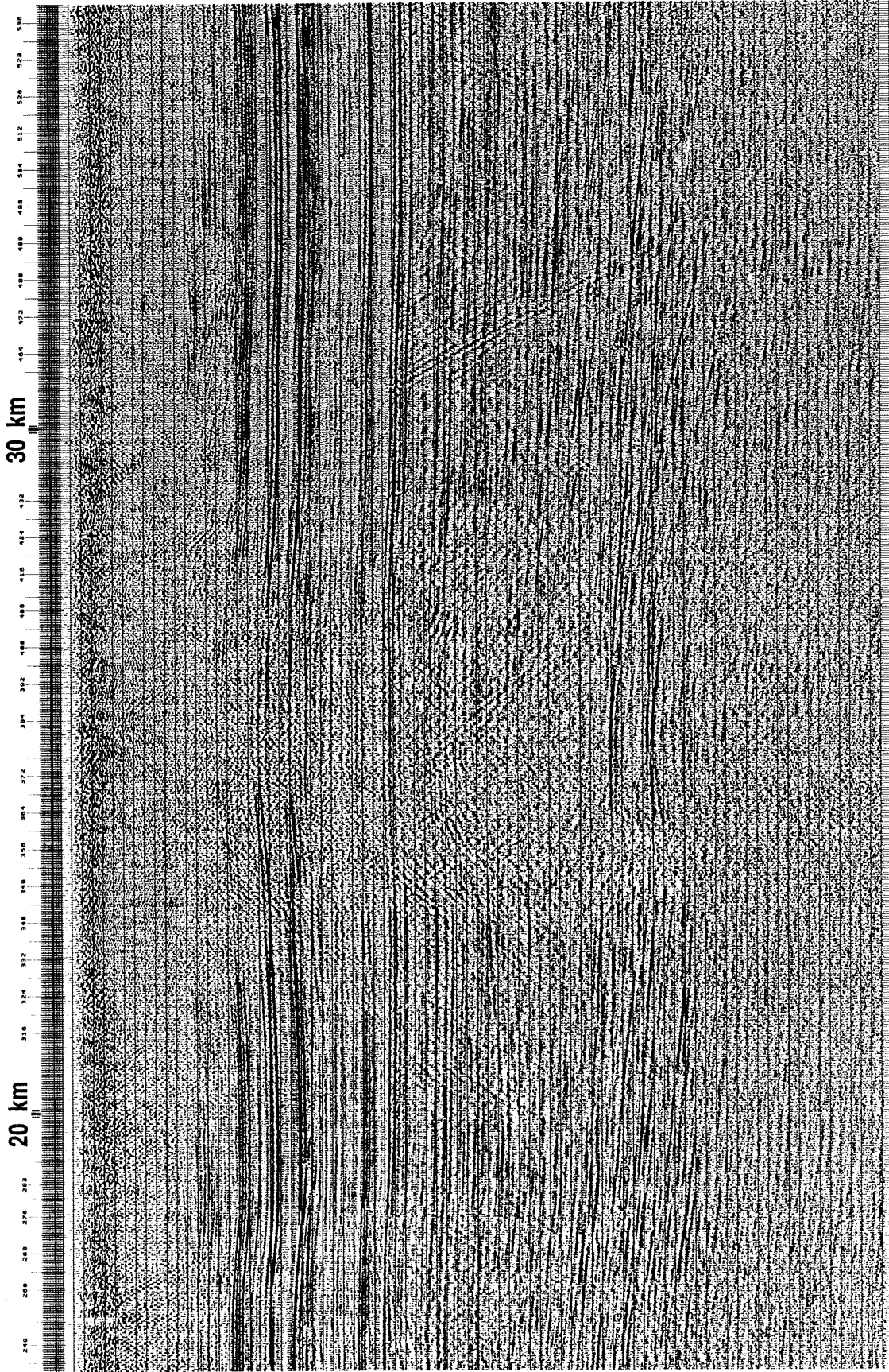
Processing parameters:
 Sample rate: 4 ms
 Stack level: 12000 ft/s
 Dominant velocity: 12000 ft/s
 Decimation: 120 ms
 Operator length: 5 %
 Filter: time varying digital bandpass:
 0-3500 ms; 57.5-5080 Hz.
 3500-8000 ms; 57.5-5080 Hz.

S: Stacking fold 2x

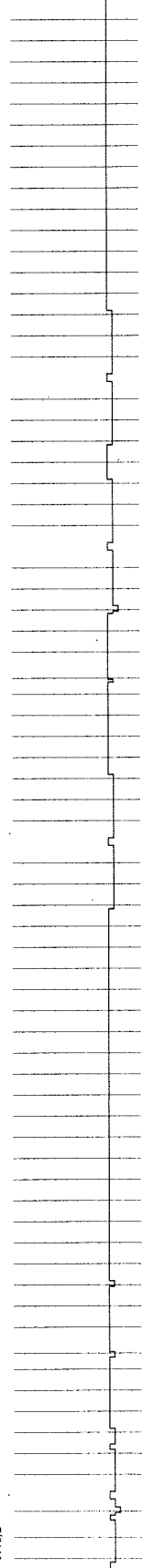
Interpretation:
 E.R. Kanasich and Z. Benkes
 University of Alberta, Edmonton, March 1988

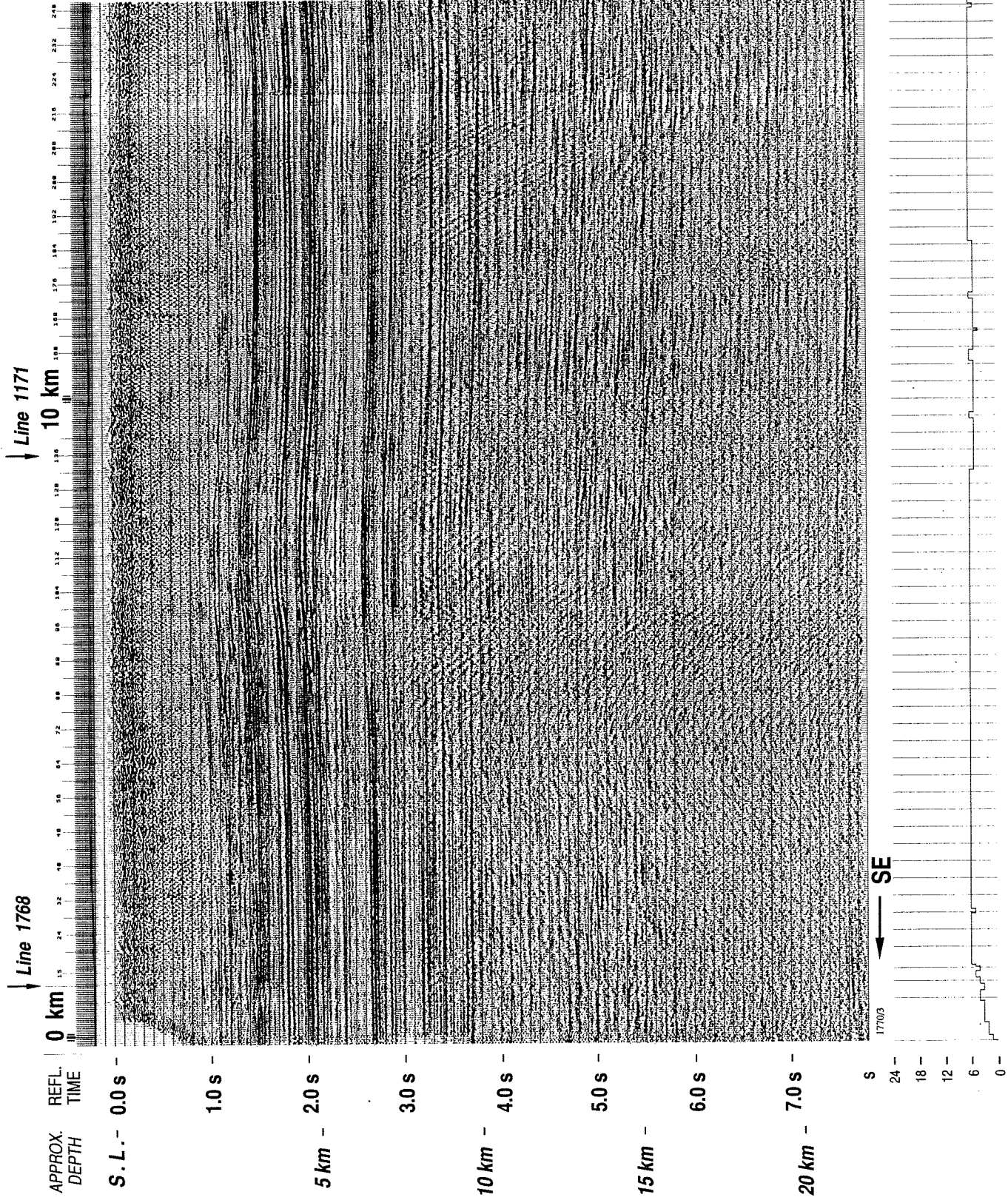
-1.0 s
 -2.0 s - 5 km
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s -20 km





17702





205

MELVILLE ISLAND, CANADA

Line No.: 1862

Seismic Reflection CMP Section

Processed by:
Veritas Seismic Ltd., Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: April 1975
Source interval: 800 ft
Geophone group interval: 200 ft
Spread distance: 5280-220-SP-200-5280 ft

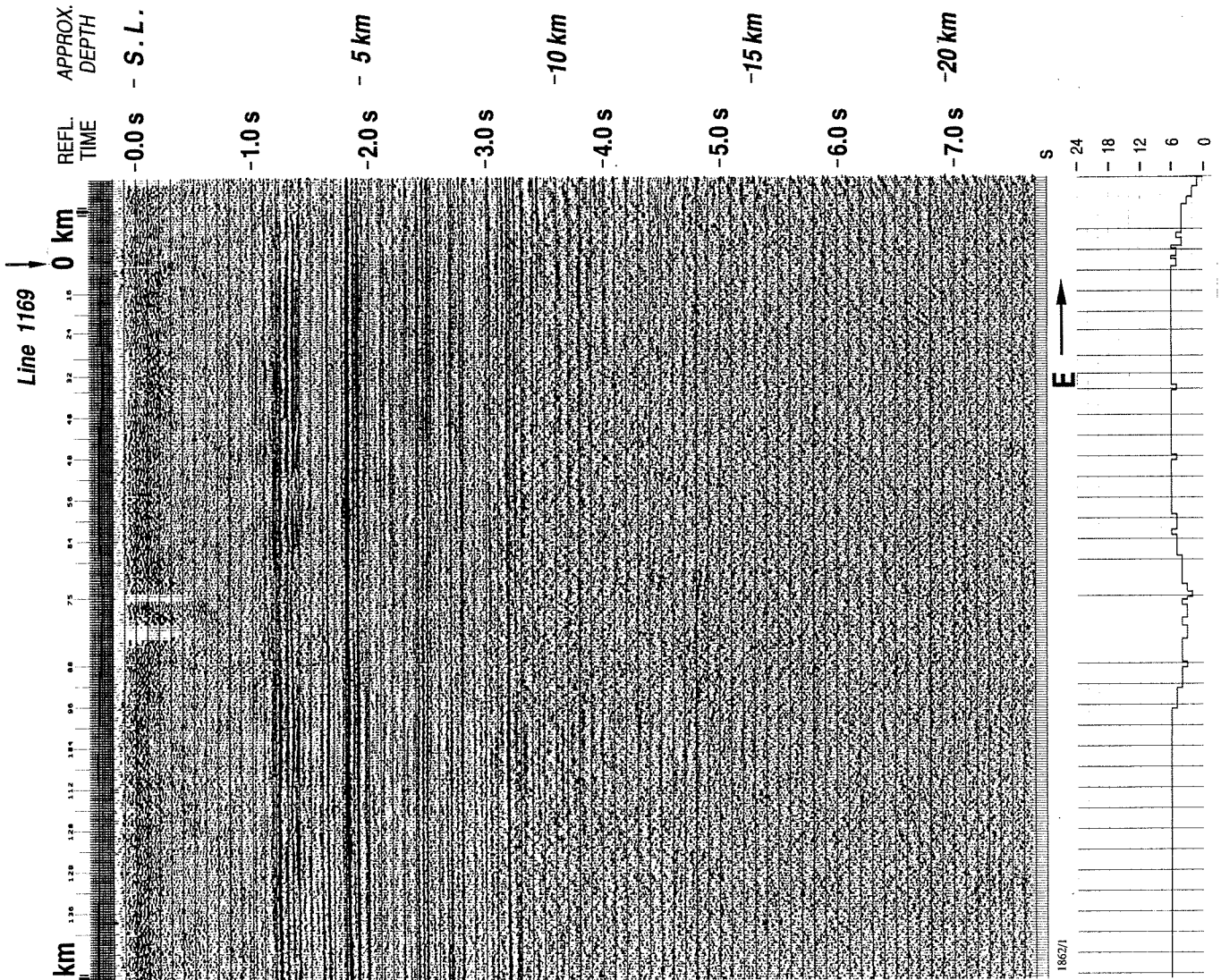
Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Filter: 5 %
time varying digital bandpass:

0-3500 ms: 10/13-50/60 Hz;
3500-8000 ms: 57.5-50/60 Hz.

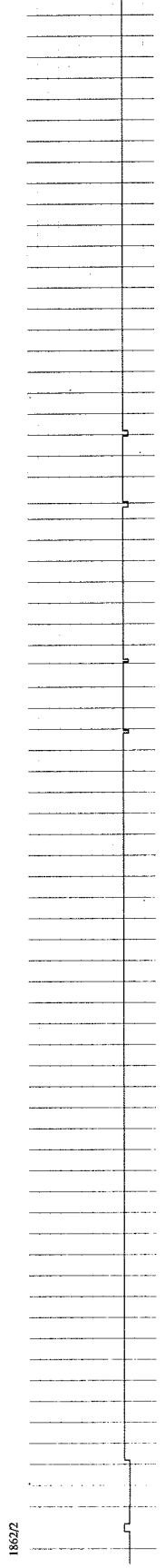
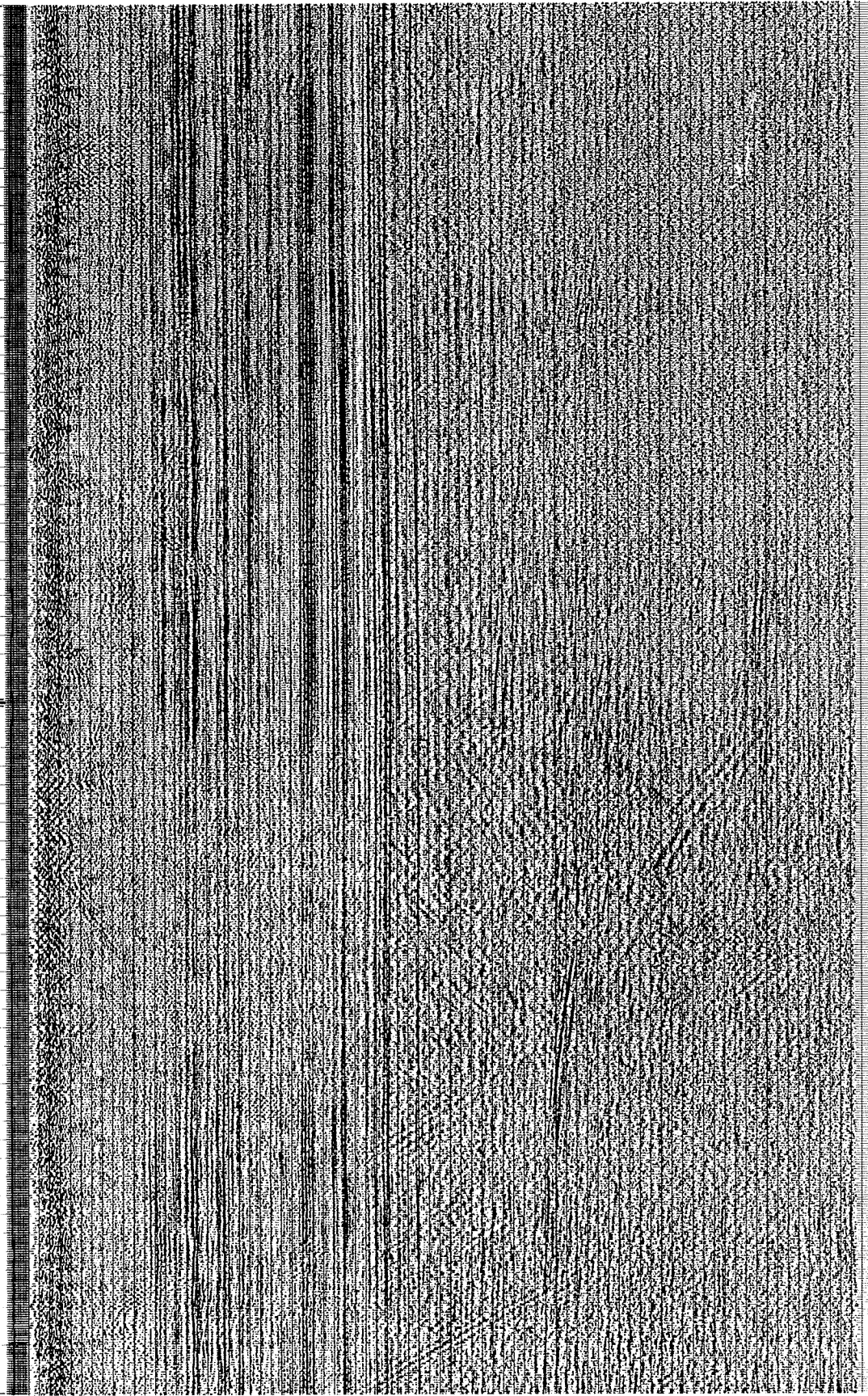
S: Stacking fold

Interpretation:

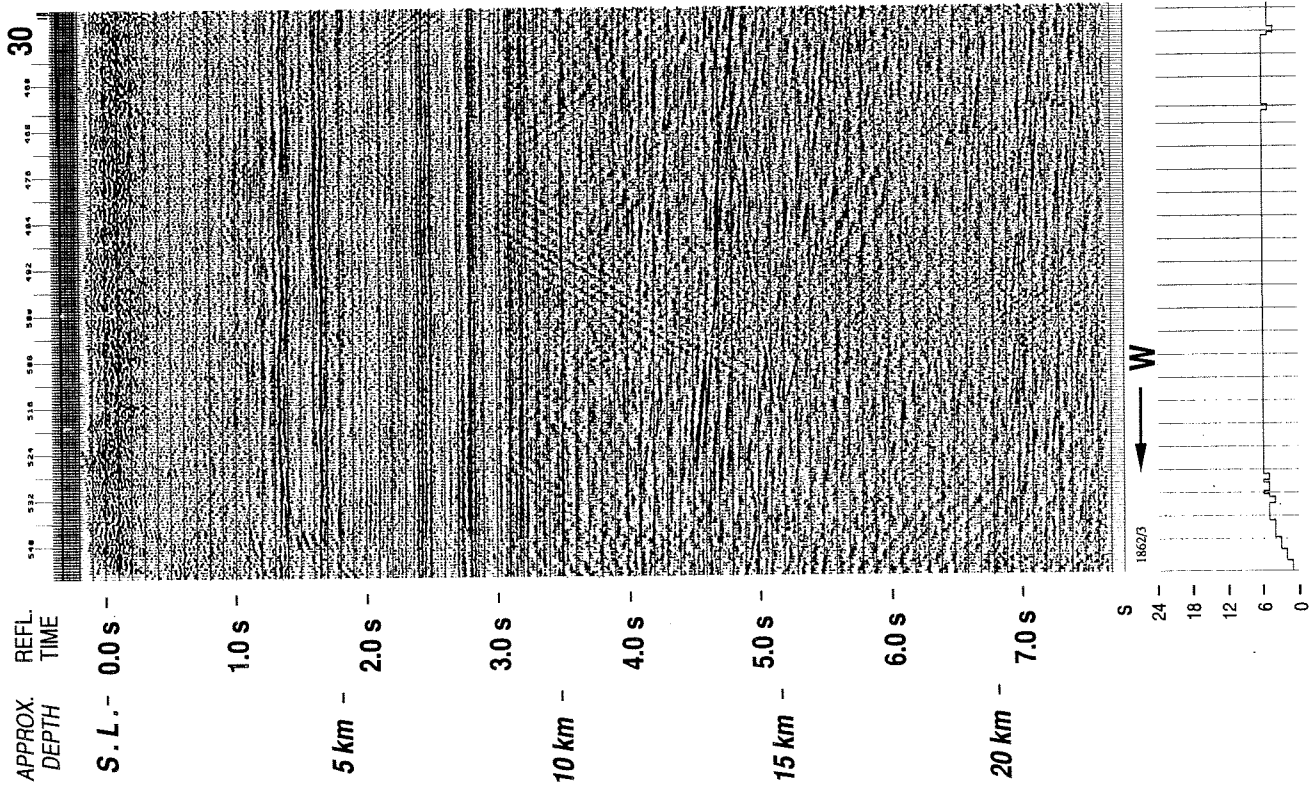
E.R. Kasaswich and Z. Berkes
University of Alberta, Edmonton, March 1988



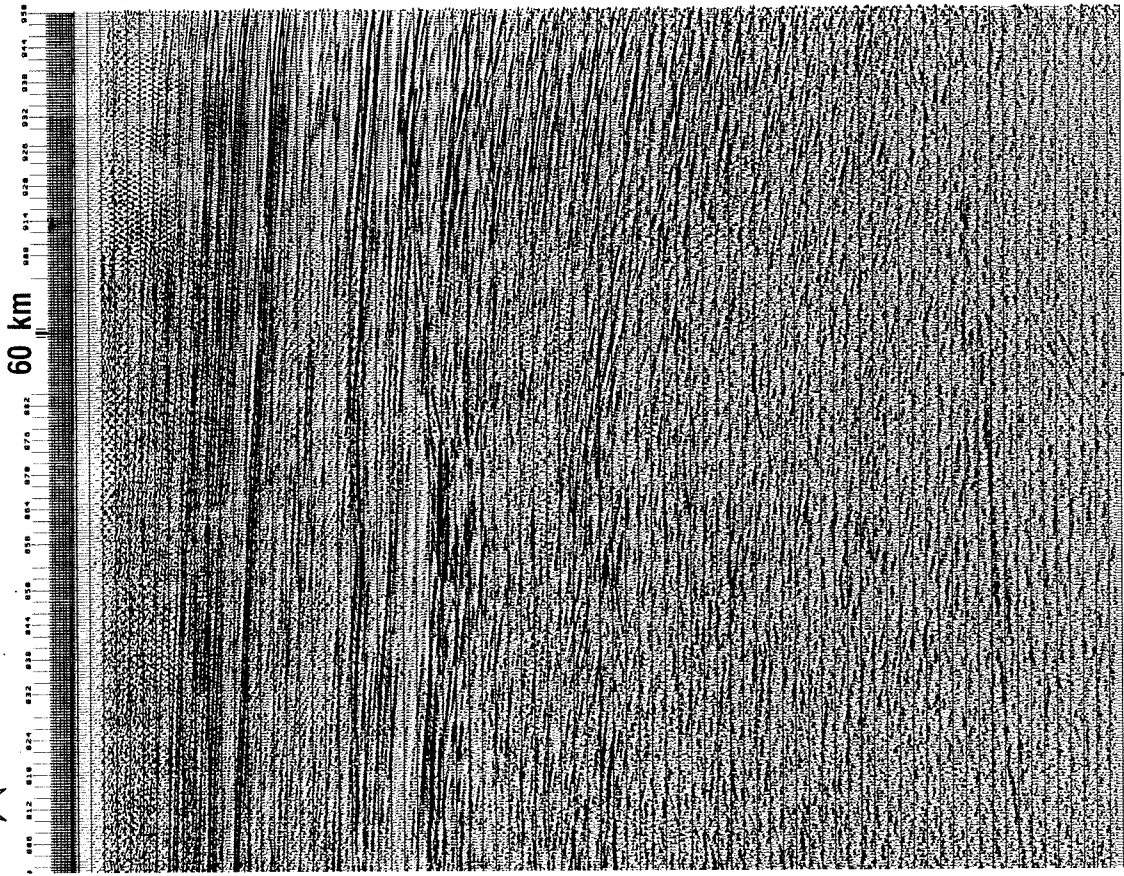
km 432 434 436 438 440 442 444 446 448 450 452 454 456 458 460 462 464 466 468 470 472 474 476 478 480 482 484 486 488 490 492 494 496 498 500 20 km 10



18672



Chads Creek B-64



MELVILLE ISLAND, CANADA
 Line No.: 1920
 Seismic Reflection CMP Section

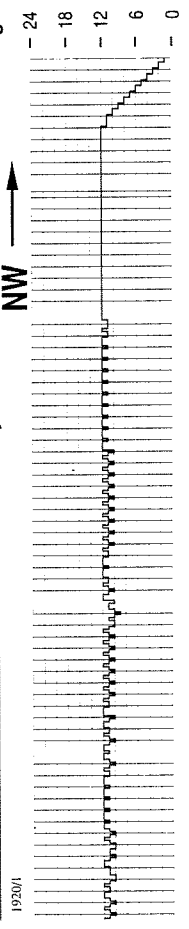
Processed by:
 Venitas Seismic Ltd., Calgary, July 1987
 and
 Seismic Laboratory of the University of Alberta

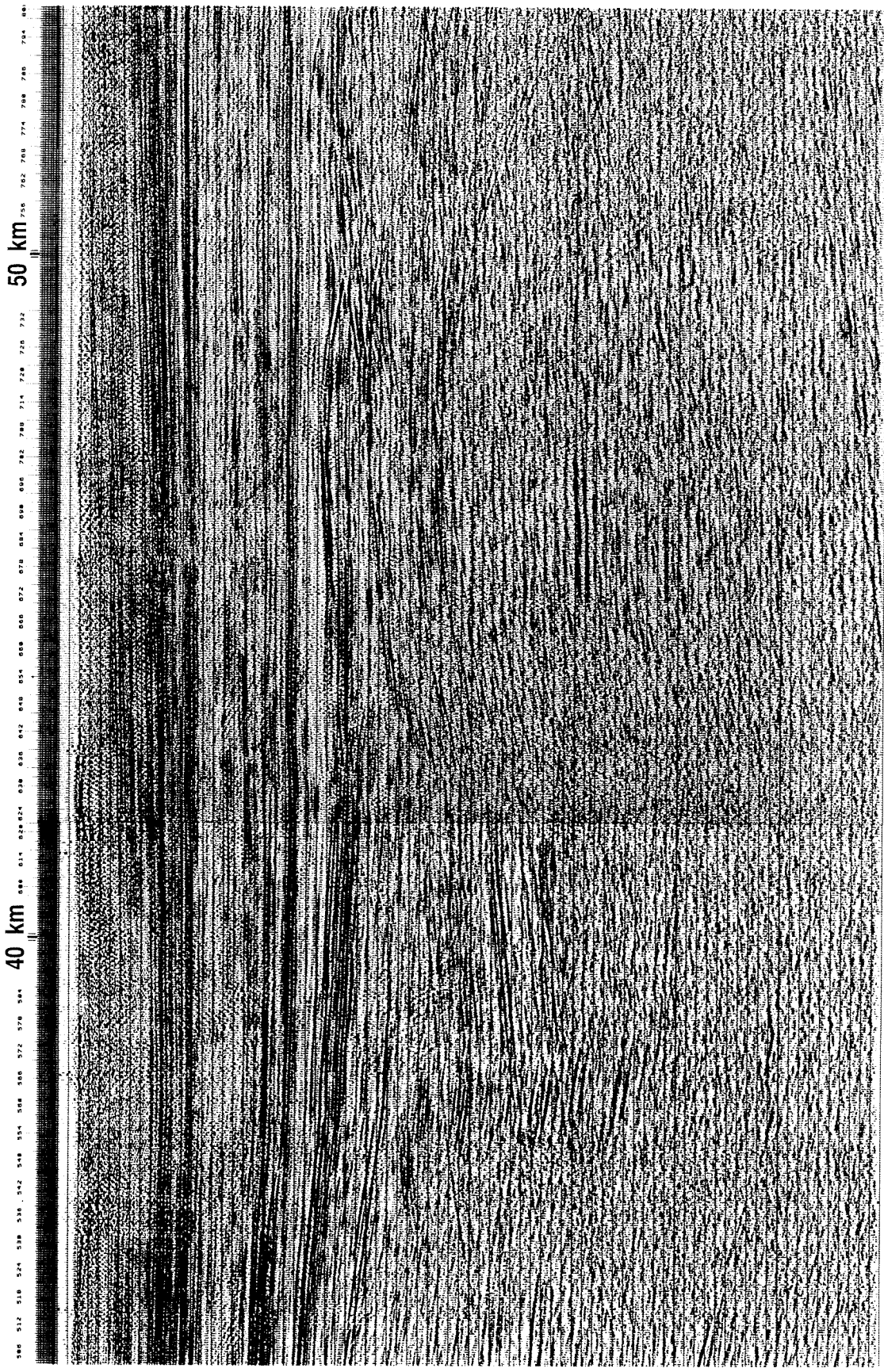
Field parameters:
 Date shot: October 1975
 Source interval: 440 ft
 Geophone group interval: 220 ft
 Spread distance: 5500-440-SP-440-3500 ft

Processing parameters:
 Sample rate: 4 ms
 Sea level Datum: 12000 ffs
 Replacement velocity: 1200 m/s
 Decomposition: 120 ms
 Operator length: 5 %
 Prewhitening:
 Filter: line varying digital bandpass:
 0-3500 ms: 10/13-50/60 Hz;
 3500-8000 ms: 57.5-50/60 Hz.

S: Stacking fold
 Interpretation:
 E.R. Kanasewich and Z. Berkes
 University of Alberta, Edmonton, March 1988

APPROX. DEPTH:
 -0.0 s - S.L.
 -1.0 s
 -2.0 s
 -3.0 s
 -4.0 s
 -5.0 s
 -6.0 s
 -7.0 s
 -20 km





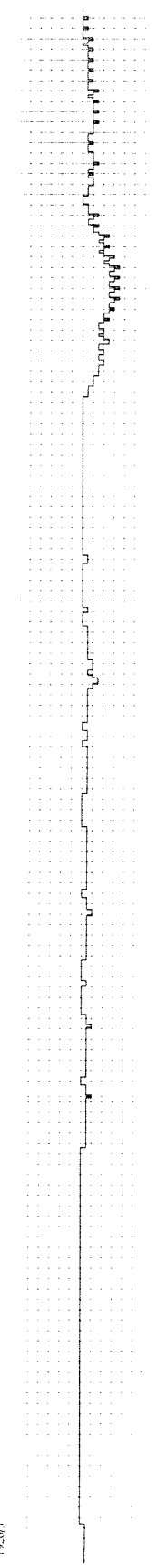
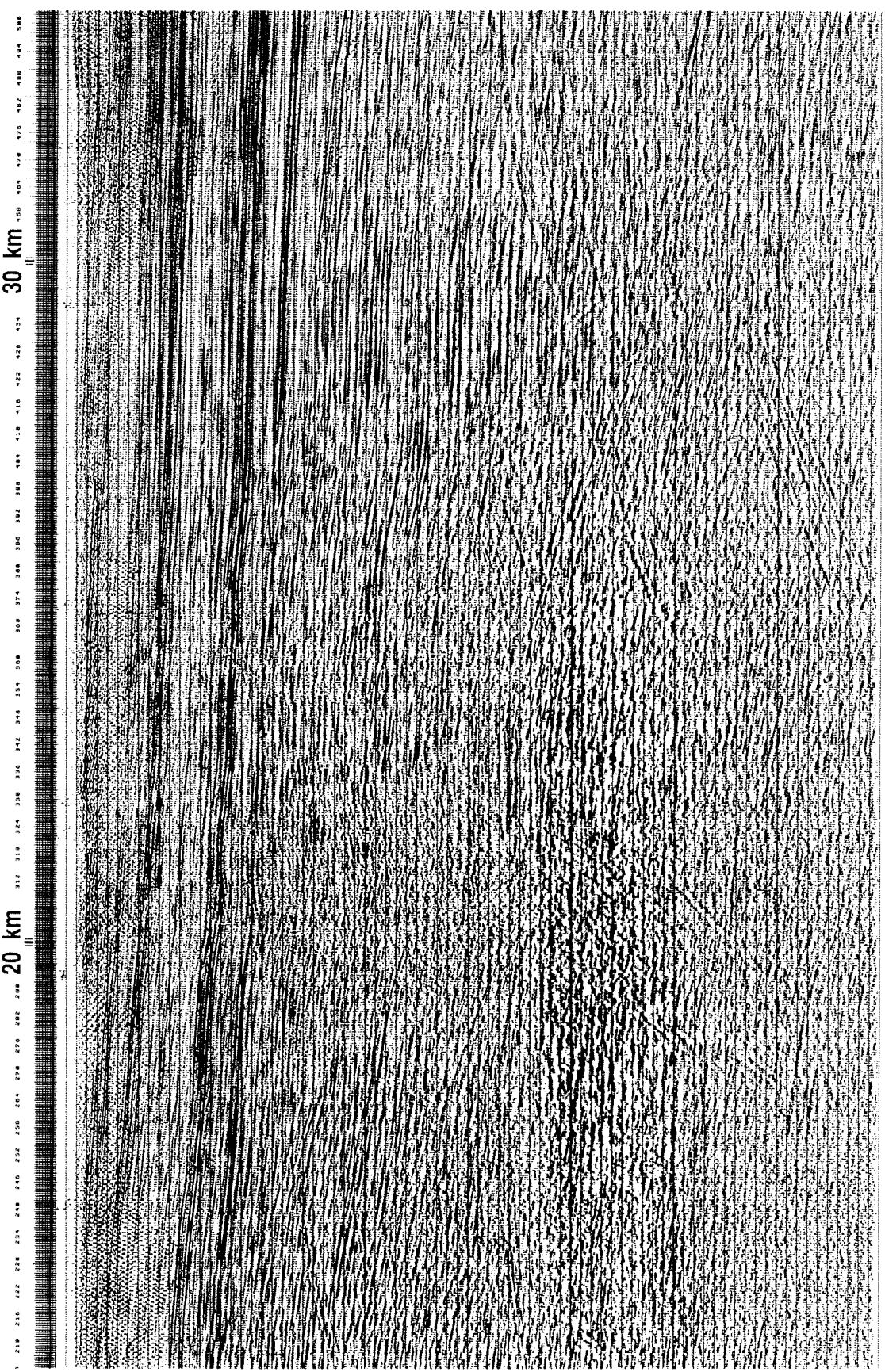
40 km

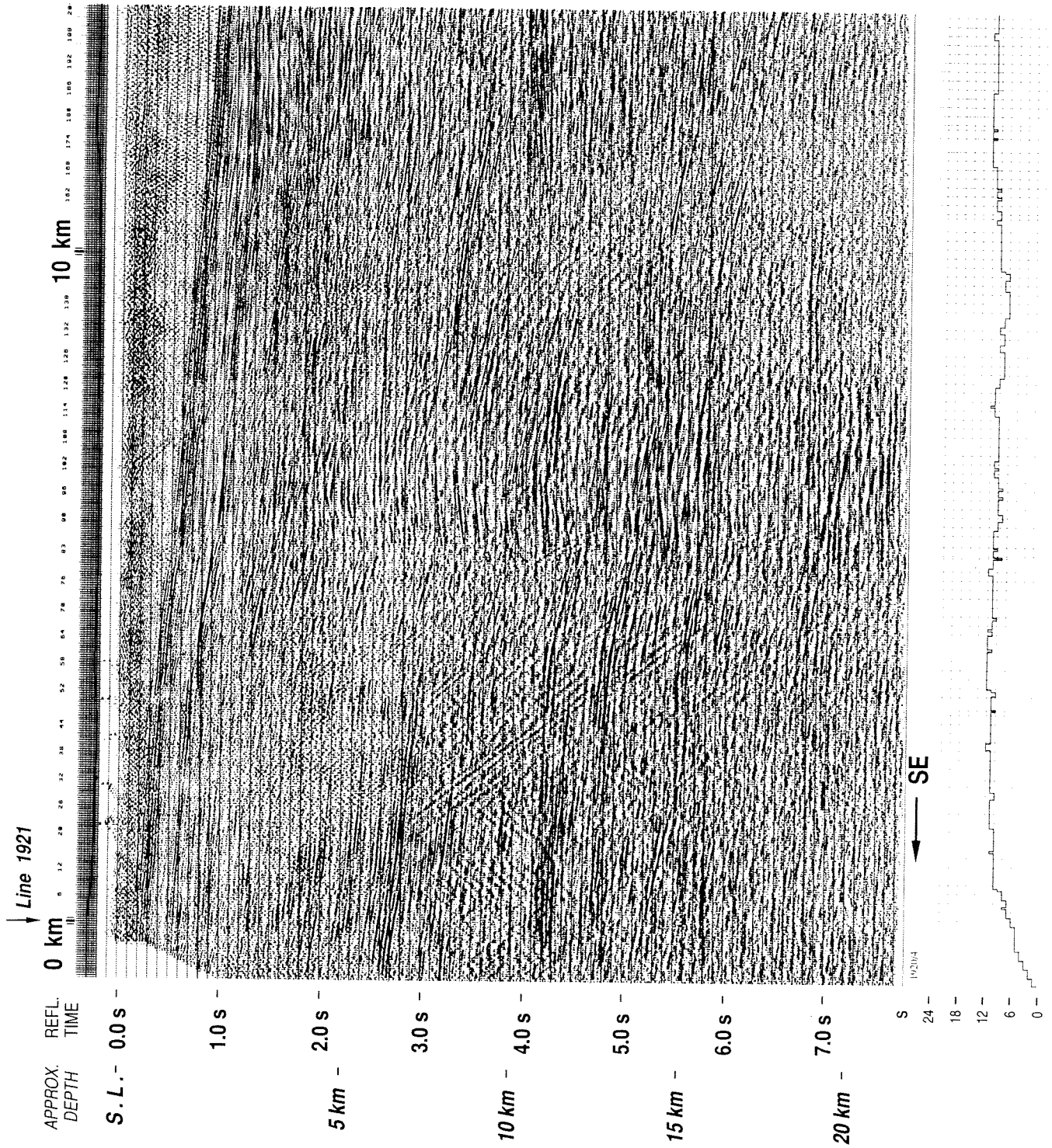
50 km

500 512 518 524 530 536 542 548 554 560 566 572 578 584 590 596 602 608 614 620 626 632 638 644 650 656 662 668 674 680 686 692 698 704

102302

Line 2146 ↓ Line 2145 ↓
30 km 20 km







Sherard Bay F-14

Line 1179

60 km

REFL. TIME

APPROX. DEPTH

-0.0 s - S.L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

-6.0 s

-7.0 s

-20 km

763 760 775 781 787 793 799 805 811 817 823 829 835 841 847 853 859 865 871 877

km

1921/1

N

S

-24

-18

-12

-6

0

Seismic Reflection CMP Section

MELVILLE ISLAND, CANADA

Line No.: 1921

Processed by:

Ventus Seismic Ltd., Calgary, July 1987

and

Seismic Laboratory of the University of Alberta

Field parameters:

Date shot: October 1975

Source interval: 410 ft

Geophone group interval: 220 ft

Spread distance: 5500-440 SP-40-5500 ft

Processing parameters:

Sample rate: 4 ms

Datum: Sea level

Replacement velocity: 12000 ft/s

Deconvolution

Operator length: 120 ms

Prewhitening: 5 %

Filter, time varying digital bandpass:

0.05 Hz - 1013.5000 Hz

3500.0000 ms - 5715.5000 Hz

S: Stacking fold: 4x4

Interpretation:

E.R. Kanasewich and Z. Berkas

University of Alberta, Edmonton, March 1988

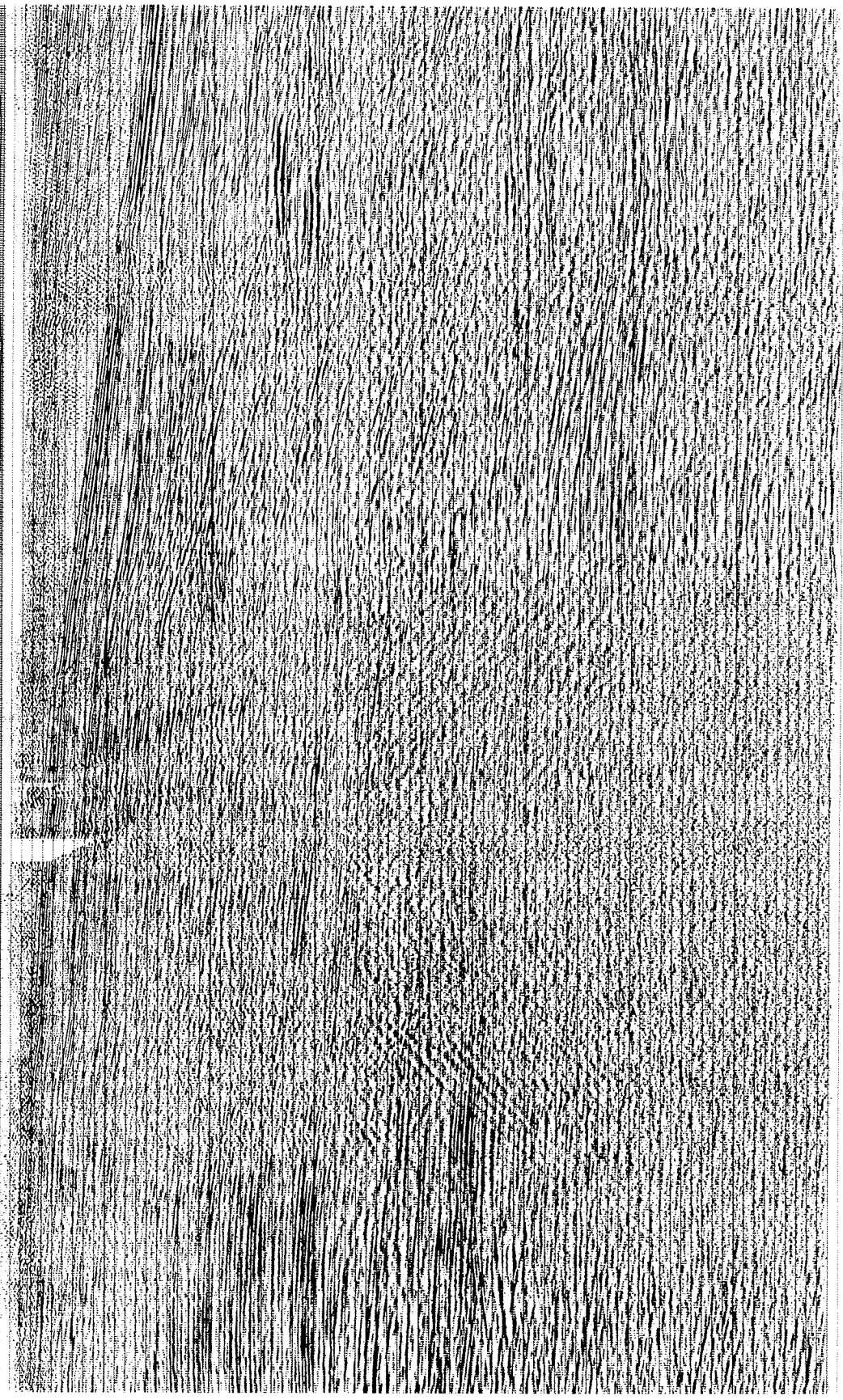
50

40 km

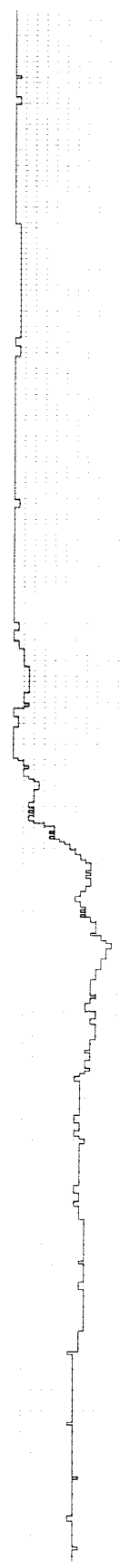
km

Line 1920 ↓

463 478 476 482 488 494 500 506 512 518 524 530 536 542 548 554 578 584 590 596 602 608 614 620 626 632 638 644 650 656 662 668 674 680 686 692 698 704 710 716 722 728 734



1921/2



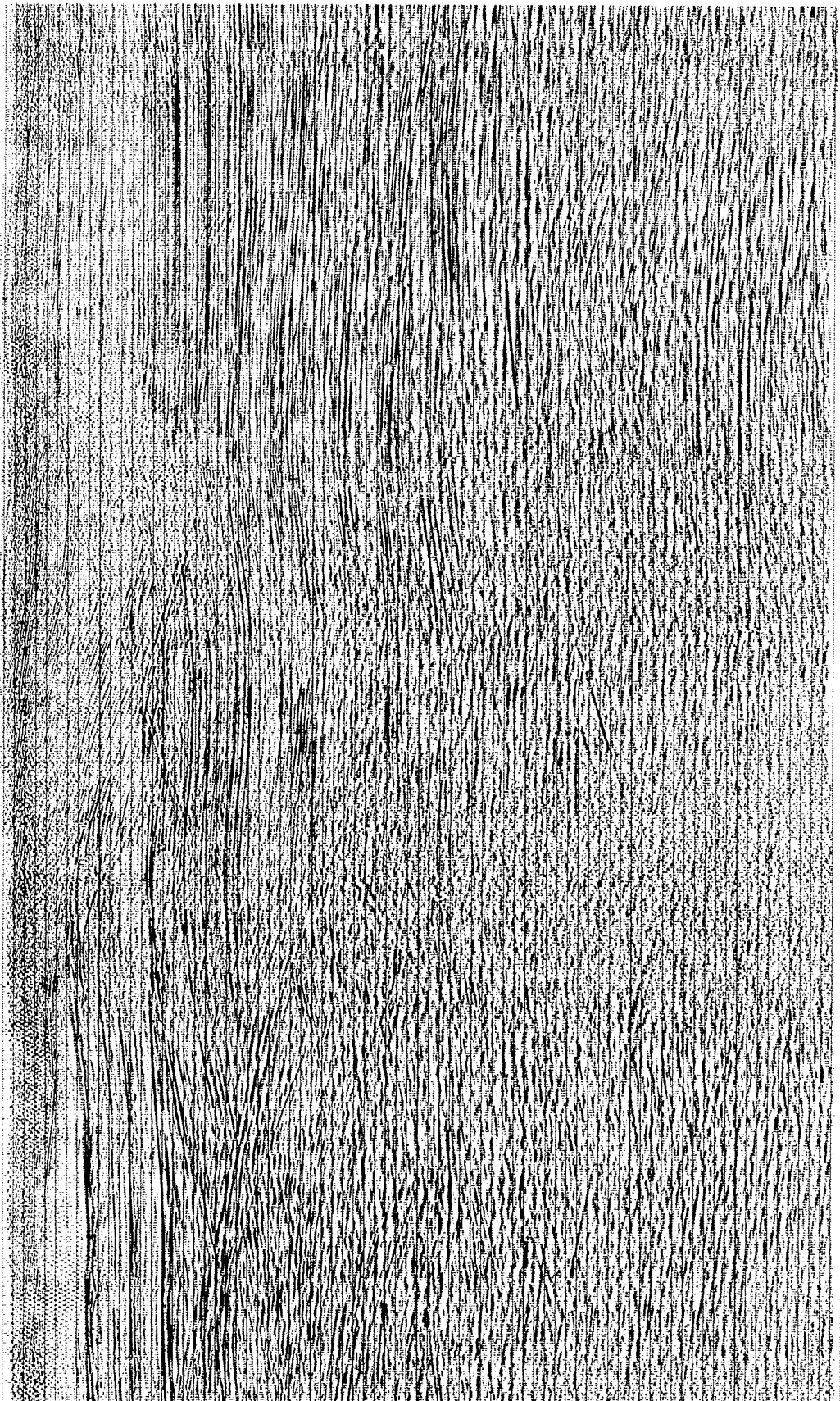


Weatherall O-10



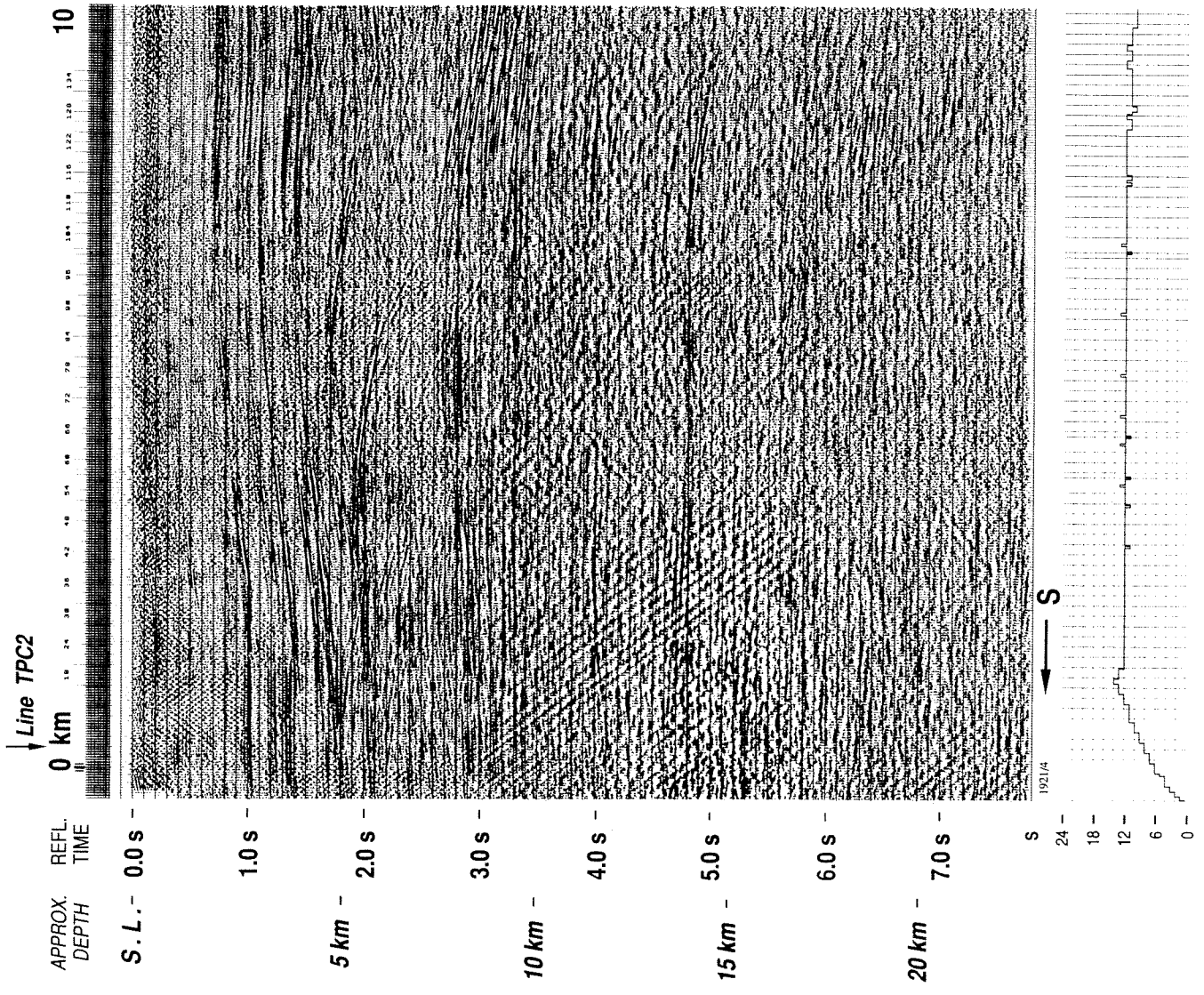
km 164 176 182 188 194 200 206 212 218 224 230 236 242 248 254 260 266 272 278 284 290 296 302 308 314 320 326 332 338 344 350 356 362 368 374 380 386 392 398 404 410 416 422 428 432 30

20 km



1921/3

512



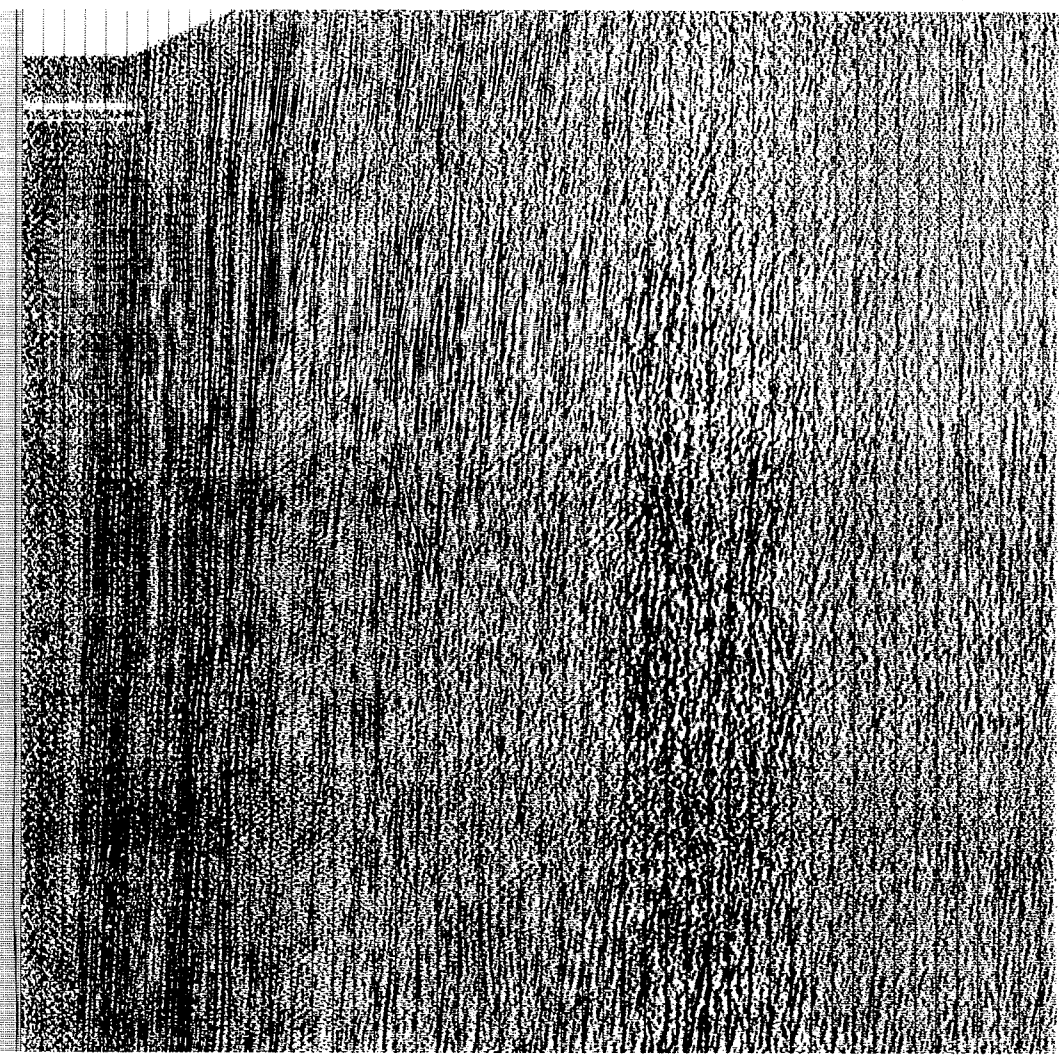
Line 2145

10 km

20 km

APPROX. DEPTH

REFL. TIME



MELVILLE ISLAND, CANADA

Line No.: 2144

Seismic Reflection CMP Section

Processed by:
Venås, Seismic Ltd., Calgary, February 1987
Seismic Laboratory of the University of Alberta

Field parameters:
Date: March 1976
Source interval: 20 m
Geophone group interval: 20 ft
Spread distance: 1500-440 SP-440 (320, 3500-11200 ft)

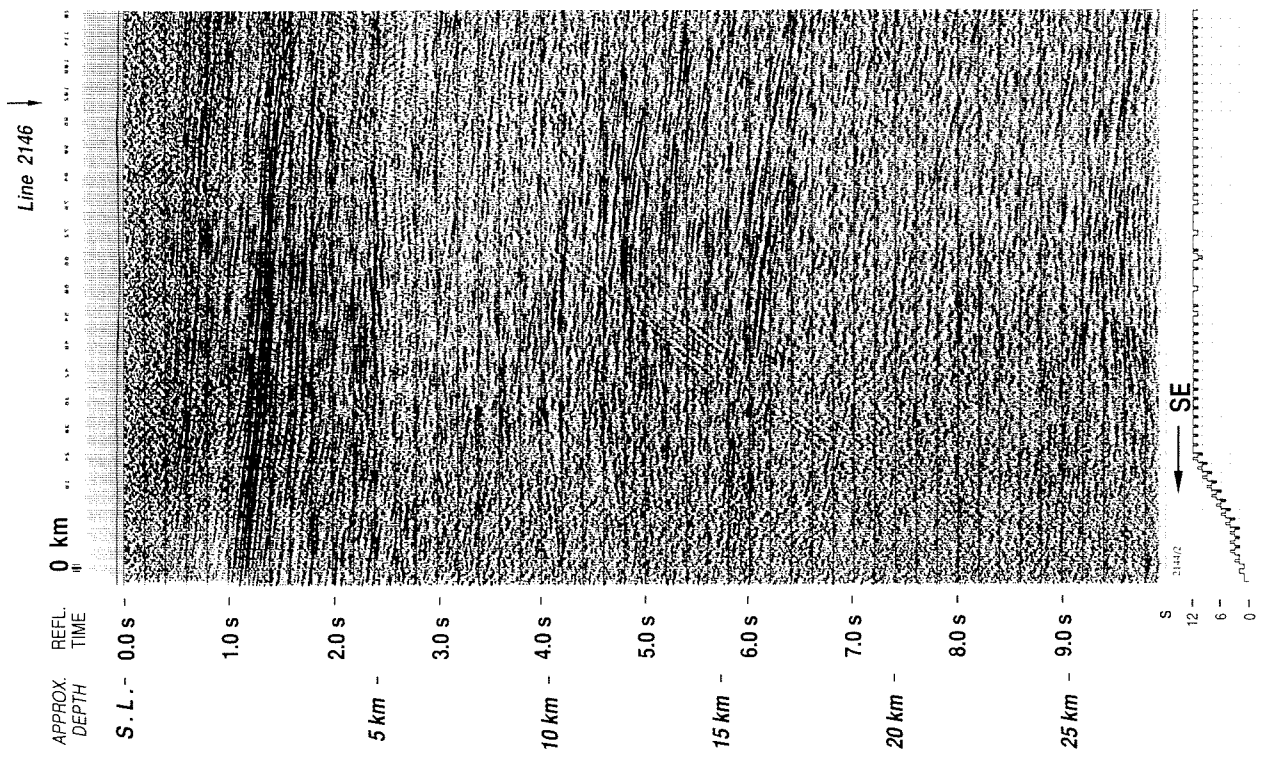
Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 10000 ft/s
Decompression: 120 ms
Operator length: 5 %
Filtering: time varying digital bandpass:
0-10000 ms, 577.5-5060 Hz

S. Stacking fold 2.5x

Interpretation:
E.R. Kanasewich and Z. Benkes
University of Alberta, Edmonton, March 1988

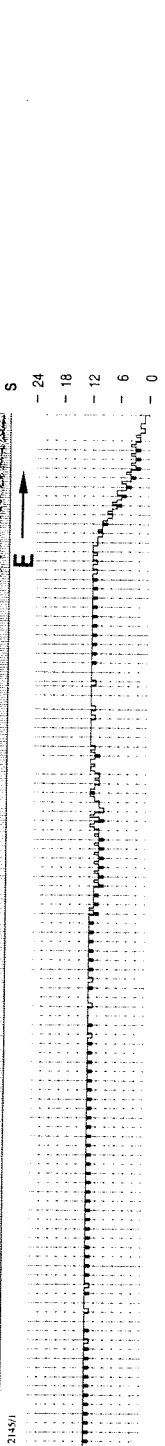
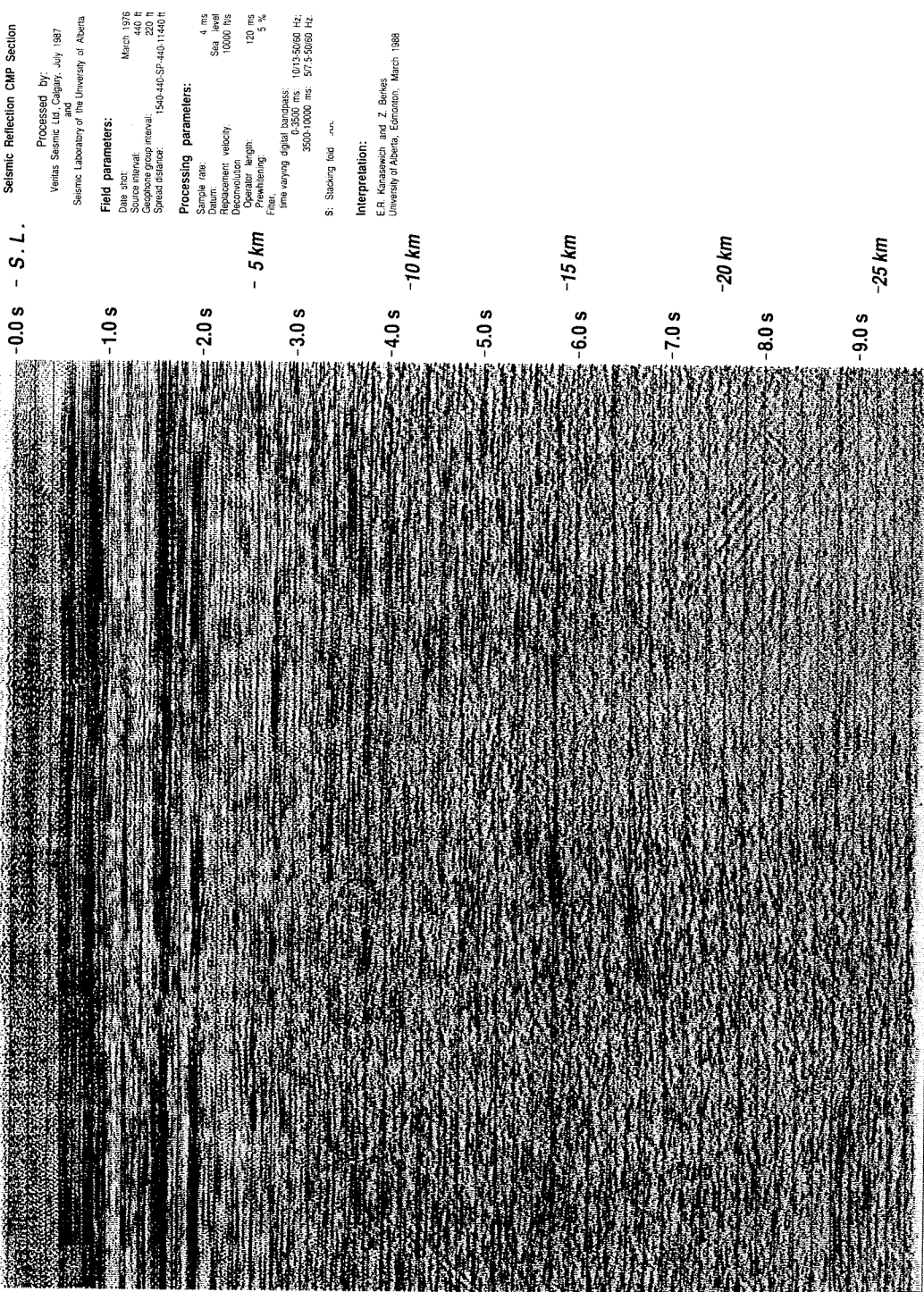
S
- 12
- 6
- 0

NW



Line 1920 10 km Line 2144 Sherard Bay F-34

APPROX. DEPTH REF. TIME 0 km



MELVILLE ISLAND, CANADA
Line No.: 2145
Seismic Reflection CMP Section

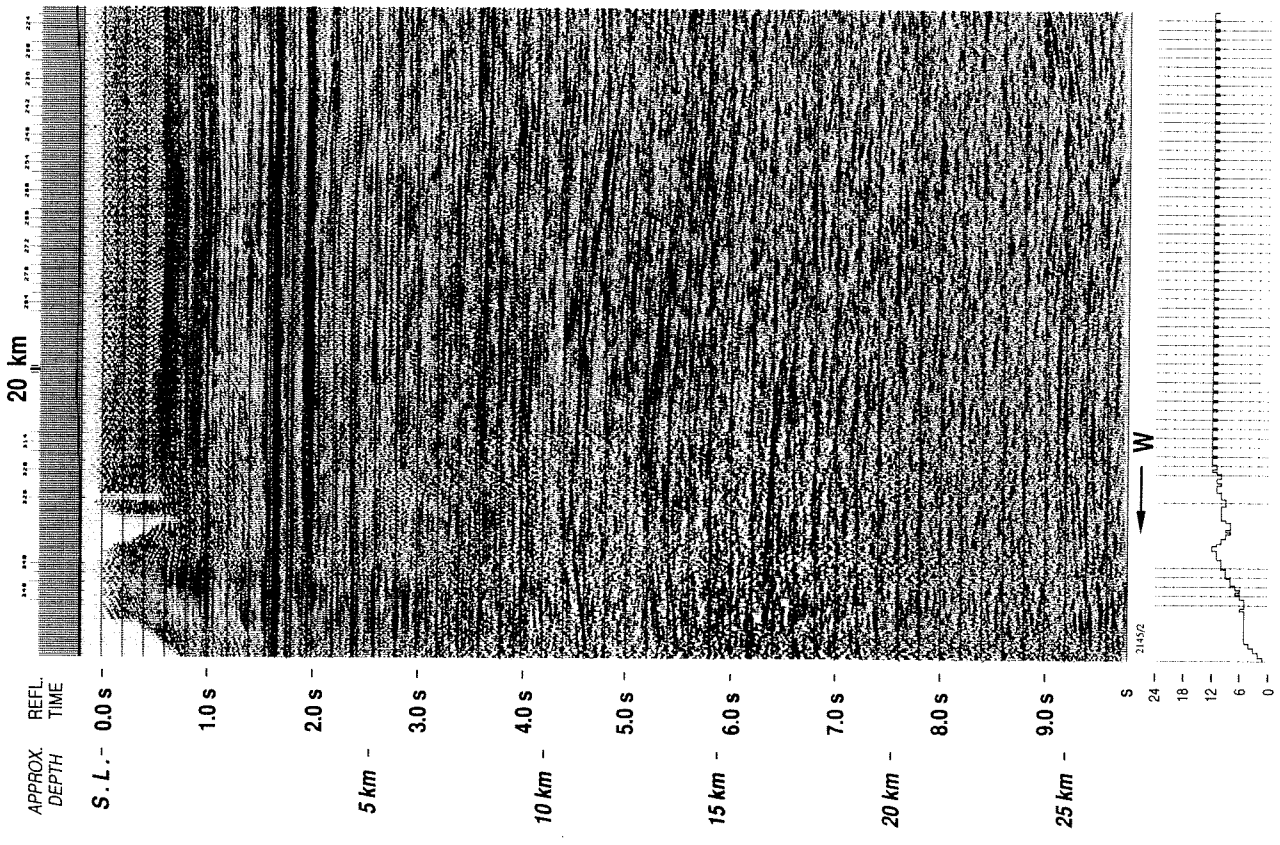
Processed by:
Veritas Seismic Ltd., Calgary, July 1987
Seismic Laboratory of the University of Alberta

Field parameters:
Date acct: March 1976
Source interval: 4.0 s
Geophone group interval: 220 ft
Spread distance: 1540-440-SF-440-1140 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 16000 ft/s
Operator length: 120 ms
Prewhitening: 5 %
Filter:

time varying digital bandpass:
0-3500 ms, 10-15-5000 Hz;
3500-10000 ms, 5-15-5000 Hz

S: Stacking fold 4
Interpretation:
E.F. Kanasewich and Z. Benkes
University of Alberta, Edmonton, March 1988



Line 2144 ↓ 10 km ↓ Line 1921 ↓ Line 2674 ↓

REFL. TIME
APPROX. DEPTH
Line No.: 2146
Seismic Reflection CMP Section

-0.0 s - S. L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

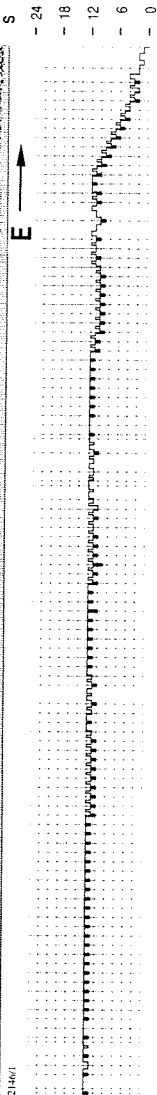
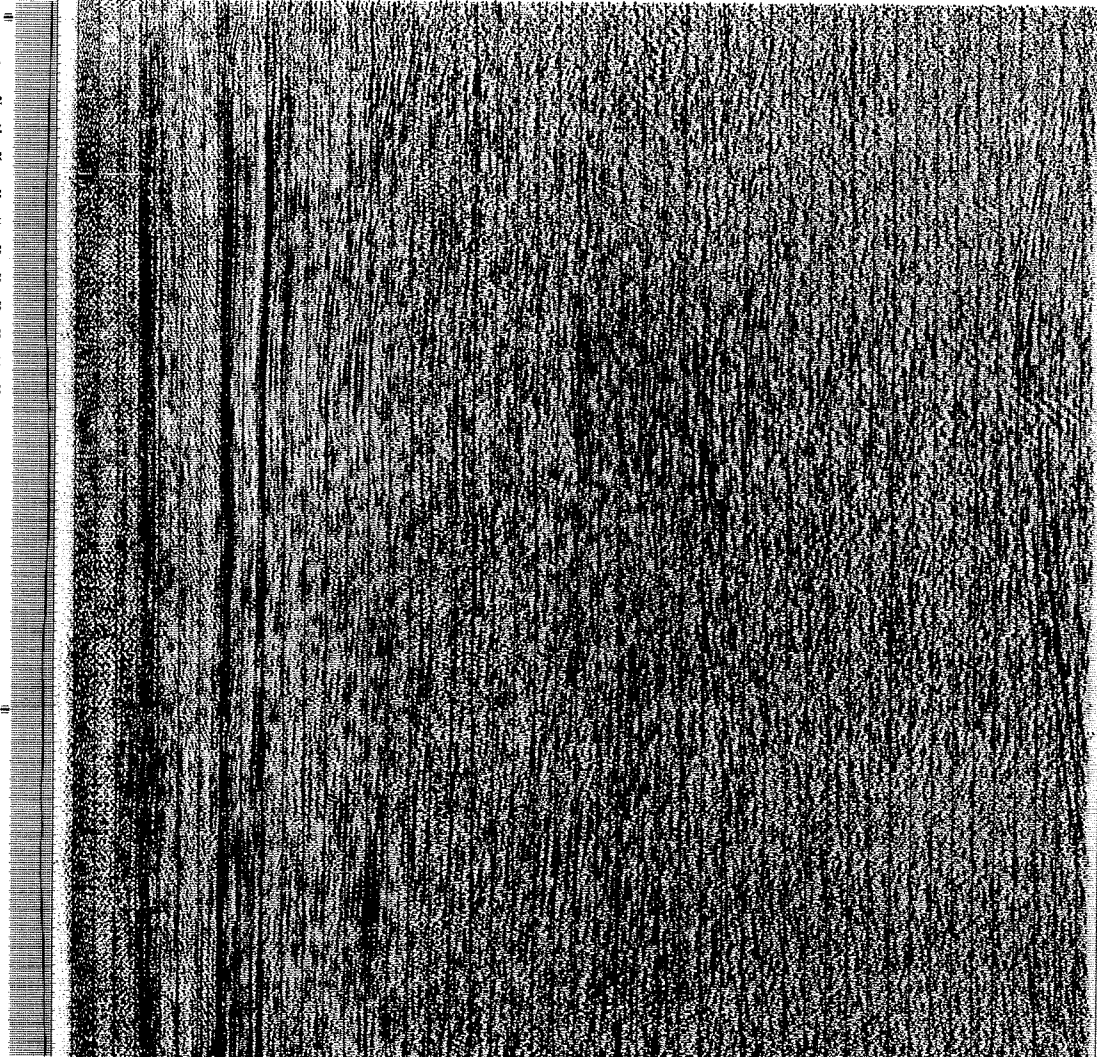
-6.0 s

-7.0 s

-8.0 s

-9.0 s

-25 km



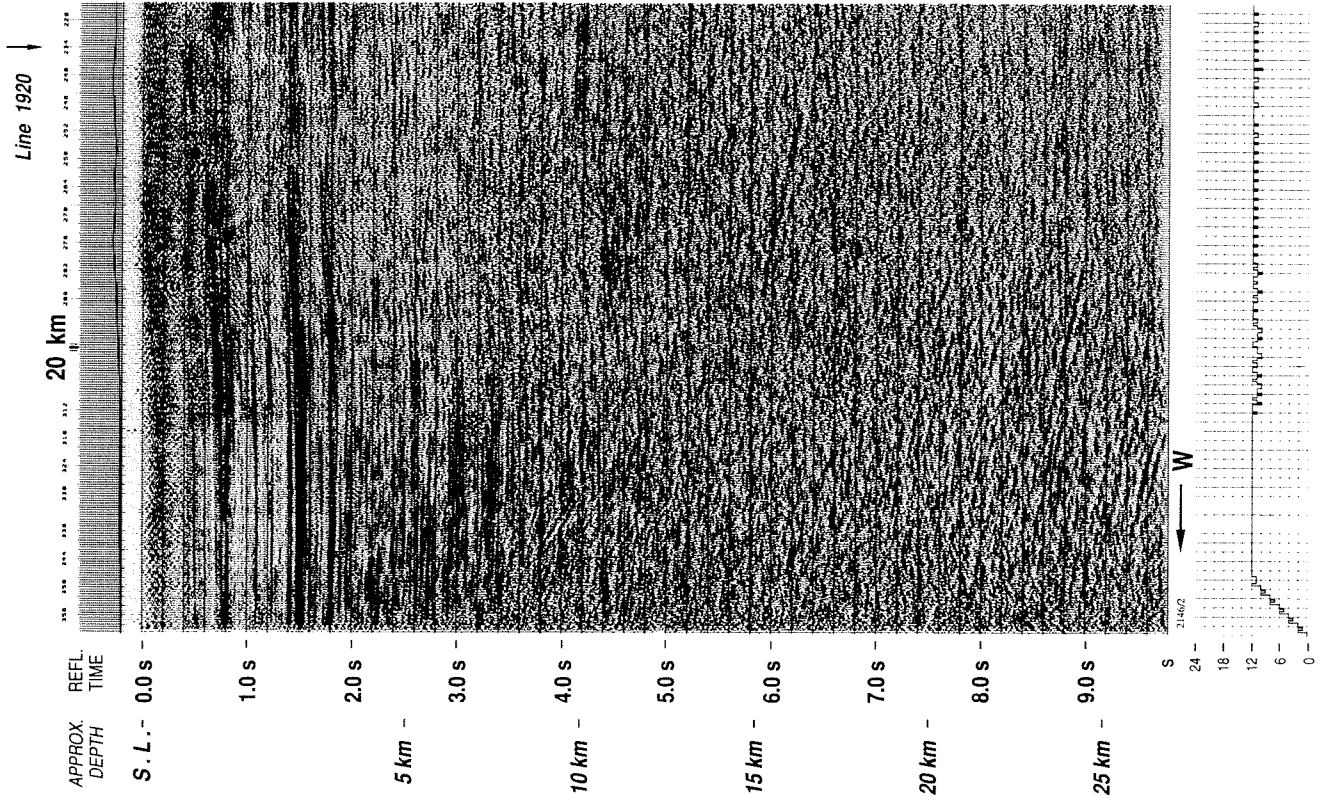
Processed by:
Veritas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: March 1976
Source interval: 440 ft
Geophone group interval: 220 ft
Spread distance: 1540-440 SP-440-11440 ft

Processing parameters:
Sample rate: 4 ms
Data length: 5000 ft
Replacement velocity: 10000 ft/s
Decomposition: 120 ms
Operator length: 5 %
Filter: Prewhitening
Time varying digital bandpass:
0-5200 ms: 1013-5060 Hz
3500-10000 ms: 57.5-5060 Hz

S: Stacking fold
Interpretation:
E.R. Kovasovich and Z. Becker
University of Alberta, Edmonton, March 1988

21461



Collingwood K-33

60 km

924 932 940 948 956 964 972 980 988 996 004 012 020 028 036 044 052 060 068 076 084 092 100

MELVILLE ISLAND, CANADA

Line No.: 2674

Seismic Reflection CMP Section

REFL. TIME

APPROX. DEPTH

-0.0 s - S. L.

-1.0 s

-2.0 s

-3.0 s

-4.0 s

-5.0 s

-6.0 s -15 km

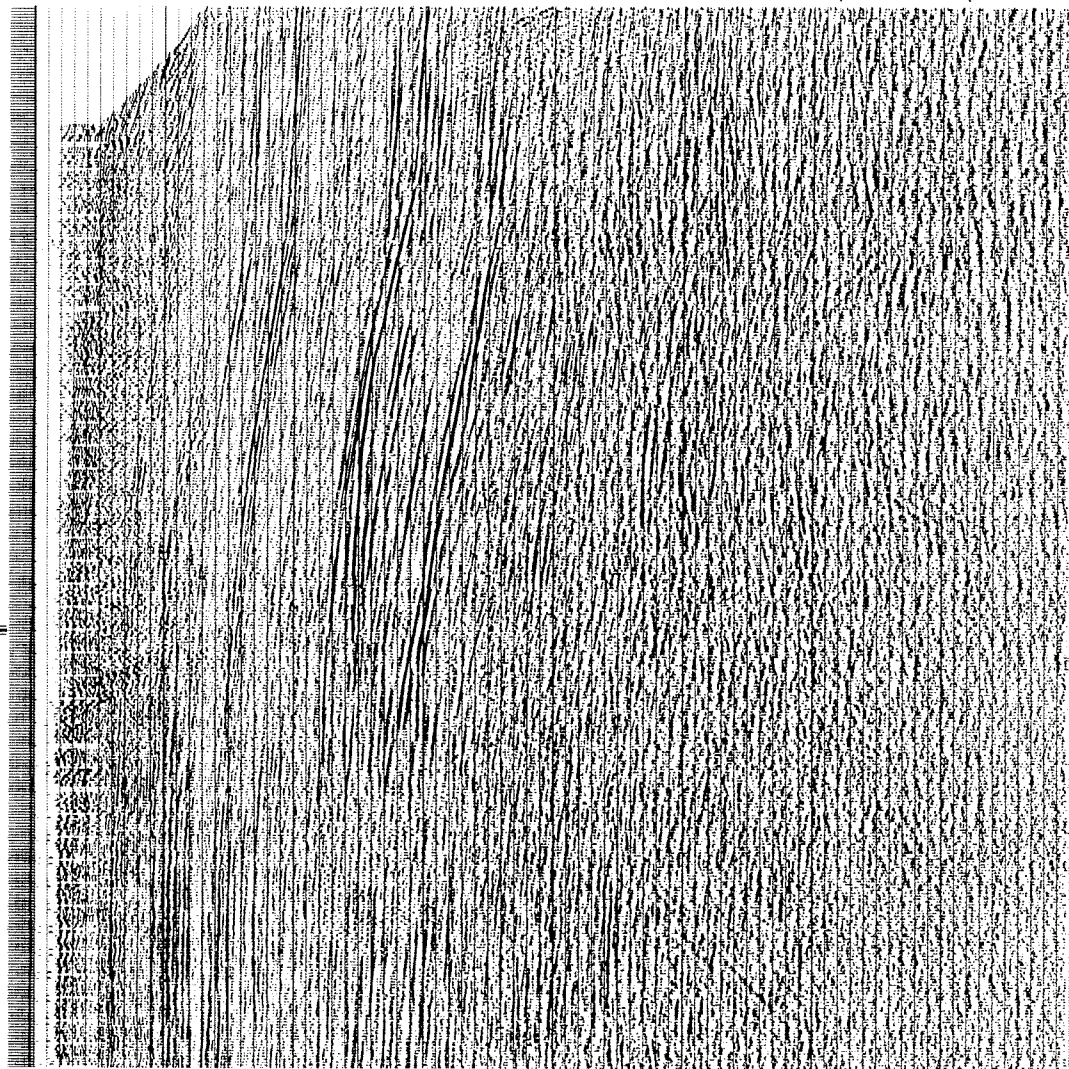
-7.0 s

Processed by:
Ventus Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: September 1981
Source interval: 268 m
Geophone group interval: 67 m
Spread distance: 3283-134-SP-134-3283 m

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 10000 f/s
Deconvolution
Operator length: 120 ms
Prewhitening: 5 %
Filter: time varying digital bandpass:
40-600 ms, 10/13,50/60 Hz;
350-6000 ms, 5/7.5-50/60 Hz.
S: Stacking fold 10

Interpretation:
E.R. Kanasewich and Z. Berkas
University of Alberta, Edmonton, March 1988



S
- 24
- 18
- 12
- 6
- 0

N

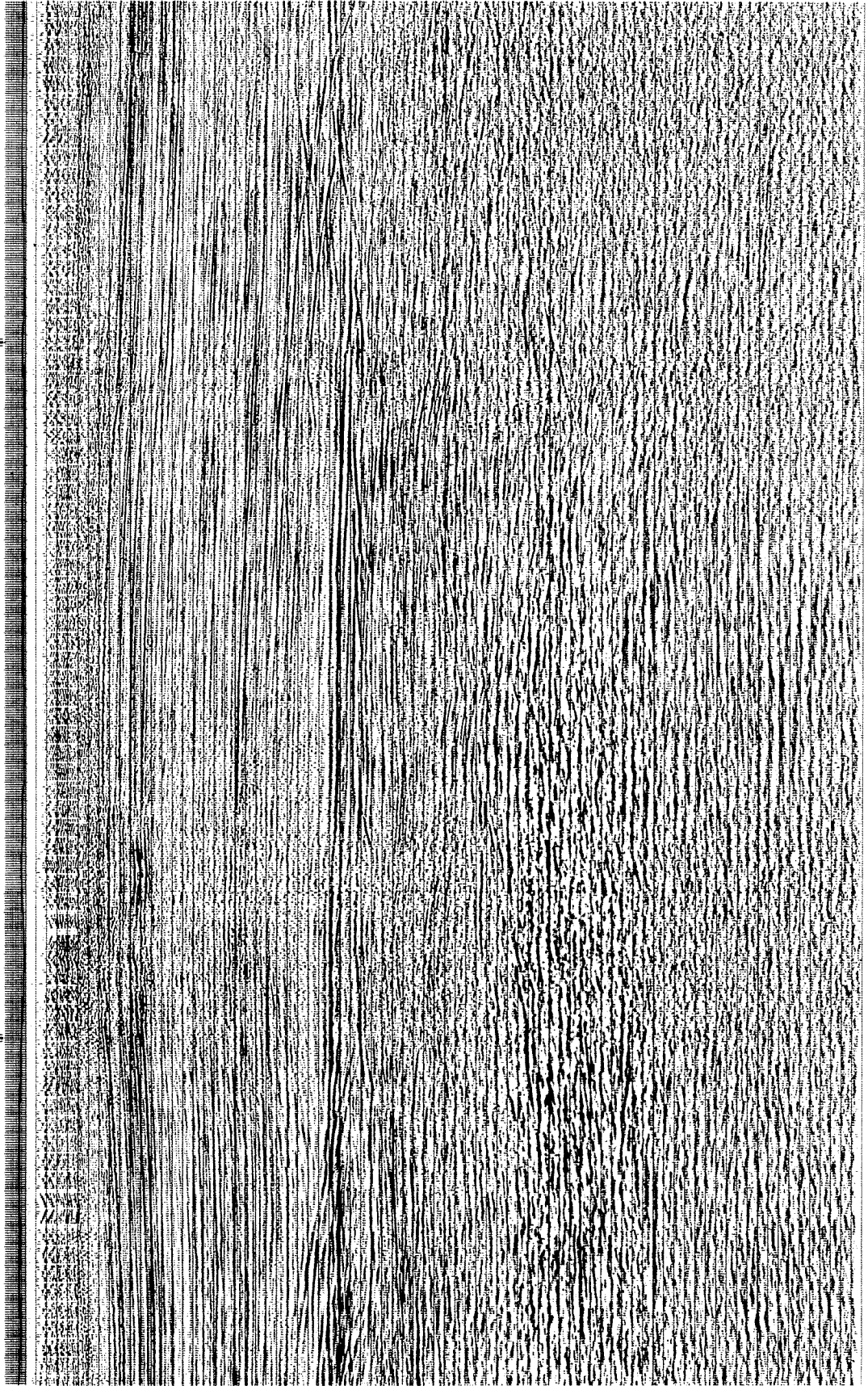
2674/1

Line 1180 ↓

528 536 544 552 560 572 588 600 612 624 632 640 648 656 664 672 688 700 712 728 736 744 752 760 768 776 784 792 800 808 816

50 km

40 km



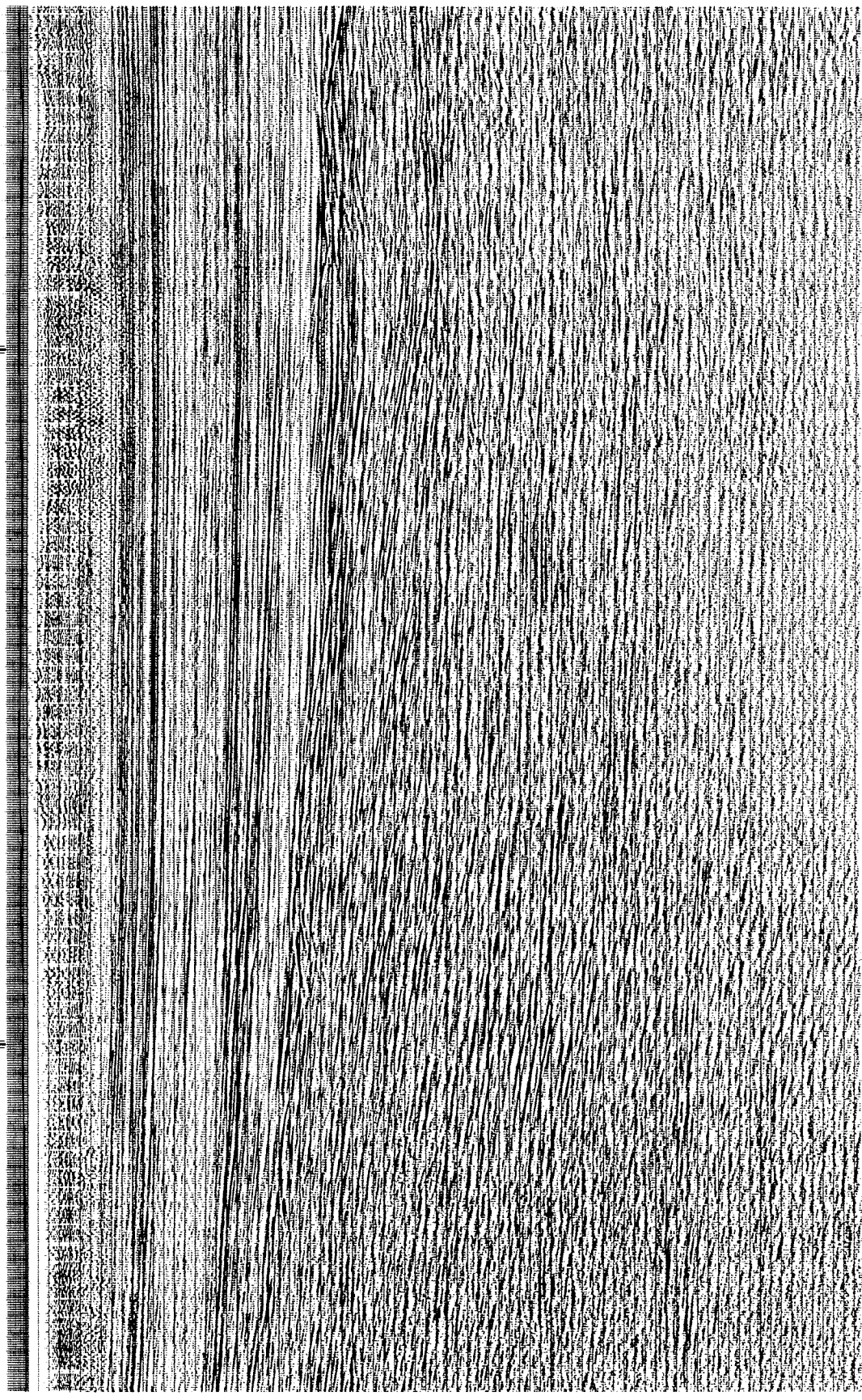
2614/2

Line 1179 ↓ Sherard Bay F-14

20 km

30 km

232 248 248 256 264 272 288 300 308 312 320 328 336 344 352 360 368 376 384 392 400 408 416 424 432 440 448 456 464 472 480 488 496 504 512 520



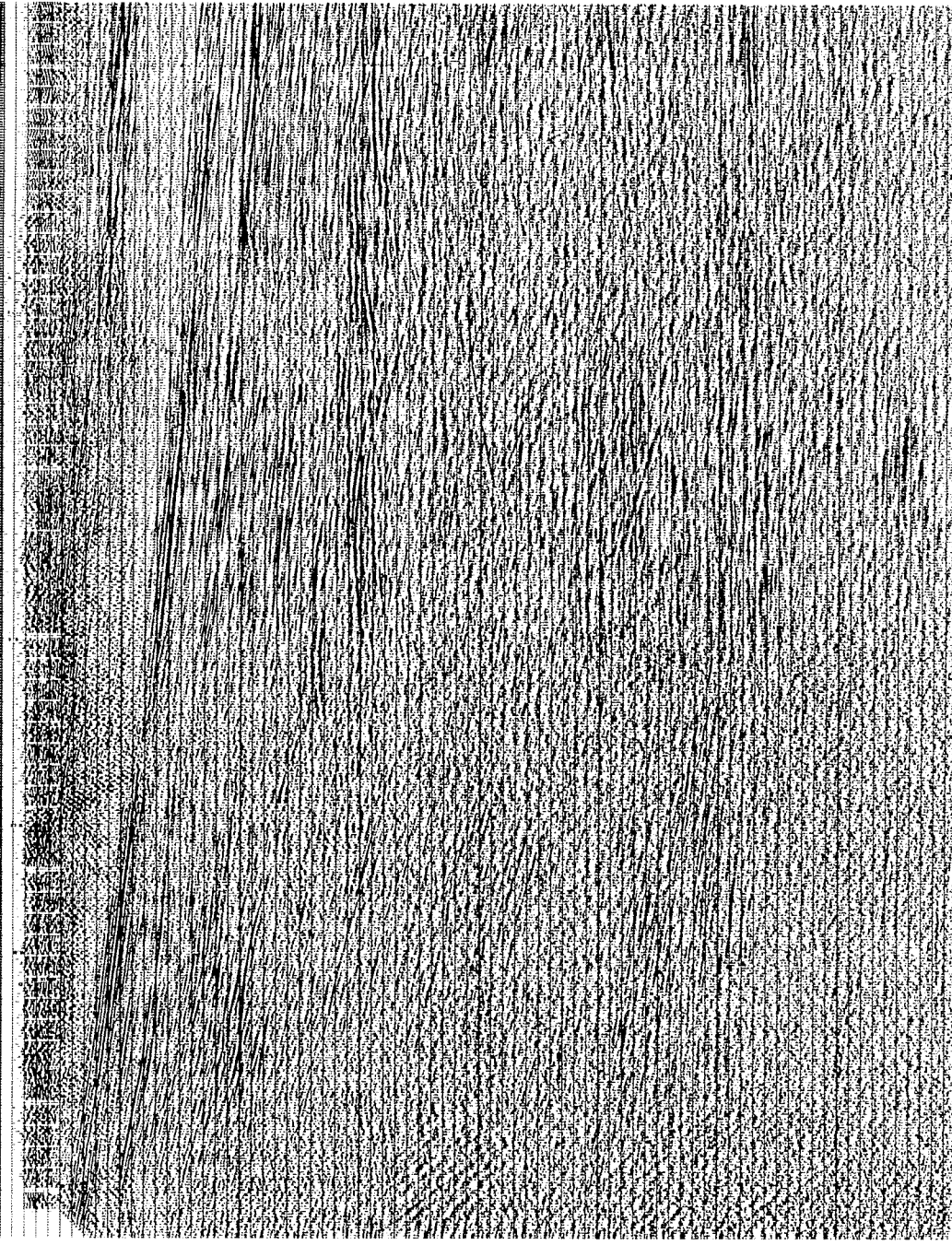
26740

Line 2146



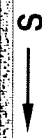
0 km 10 km 20 km 210

APPROX. DEPTH
S. L. - 0.0 s



1.0 s
2.0 s
3.0 s
4.0 s
5.0 s
6.0 s
7.0 s
5 km
10 km
15 km
20 km

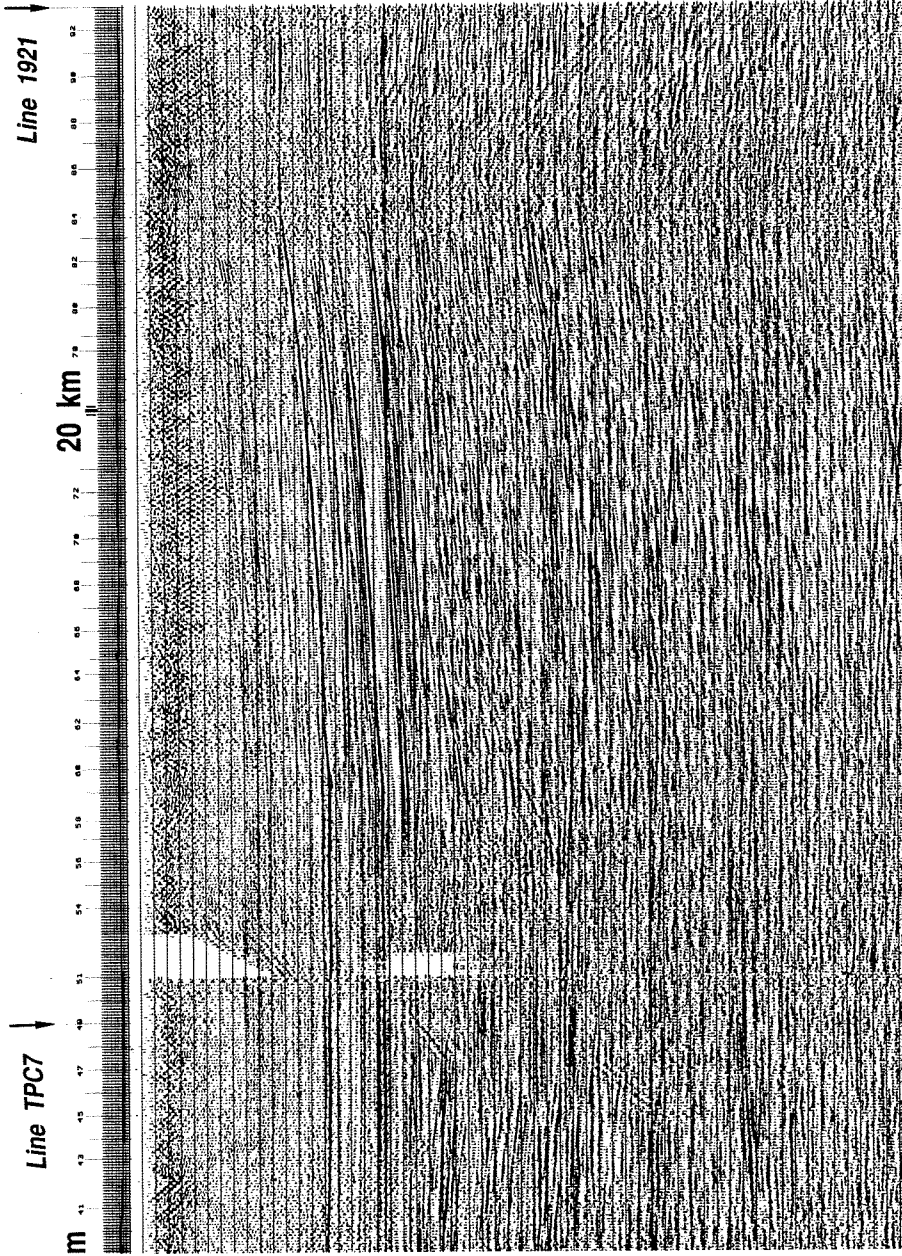
S 2674/4



24 -
18 -
12 -
6 -
0 -

Line TPC7
Line 1921
MELVILLE ISLAND, CANADA
Line No.: TPC-2
Seismic Reflection CMP Section

REFL. TIME
APPROX. DEPTH
-0.0 s - S.L.



Processed by:
Ventus Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: April 1973
Well name: 860 ft
Geophone group interval: 220 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Dip: Sea level
Replacement velocity: 12000 ft/s
Decomposition
Operator length: 120 ms
Pretwhitening: 5 %
Filter, line varying digital bandpass:
0.3500 ms: 0.013-50.00 Hz
3500-6000 ms: 3.713-30.00 Hz

S: Stacking fold

Interpretation:
E.R. Kanazewich and Z. Barkas
University of Alberta, Edmonton, March 1988

-1.0 s

-2.0 s

-3.0 s

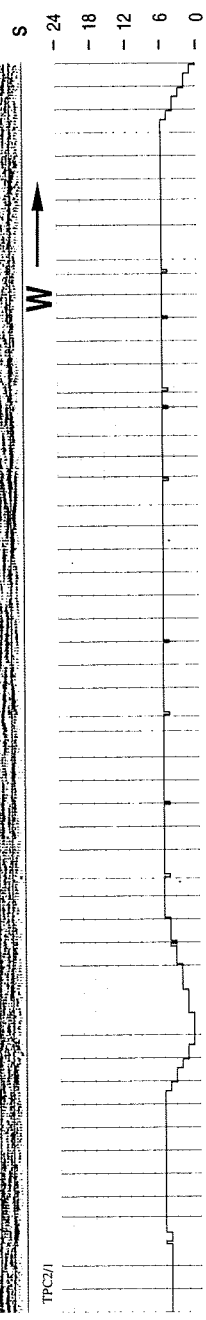
-4.0 s

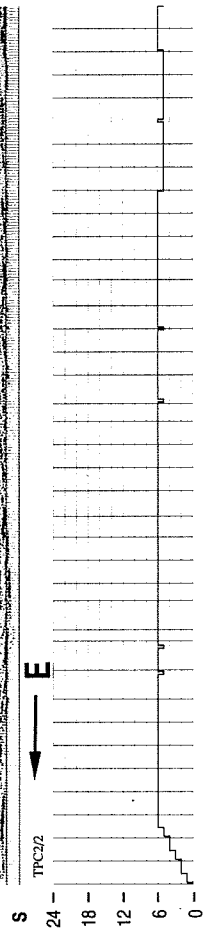
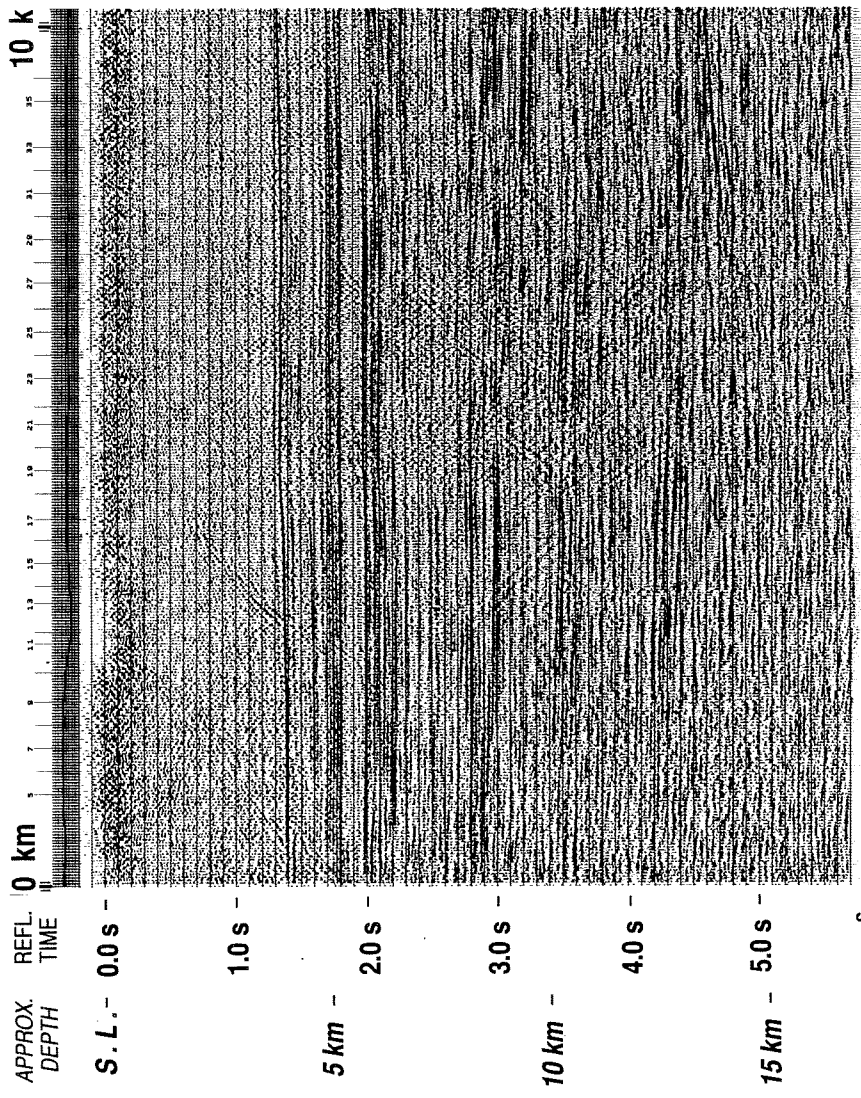
-5.0 s

-5 km

-10 km

-15 km





MELVILLE ISLAND, CANADA

Line No.: TPC-7

Seismic Reflection CMP Section

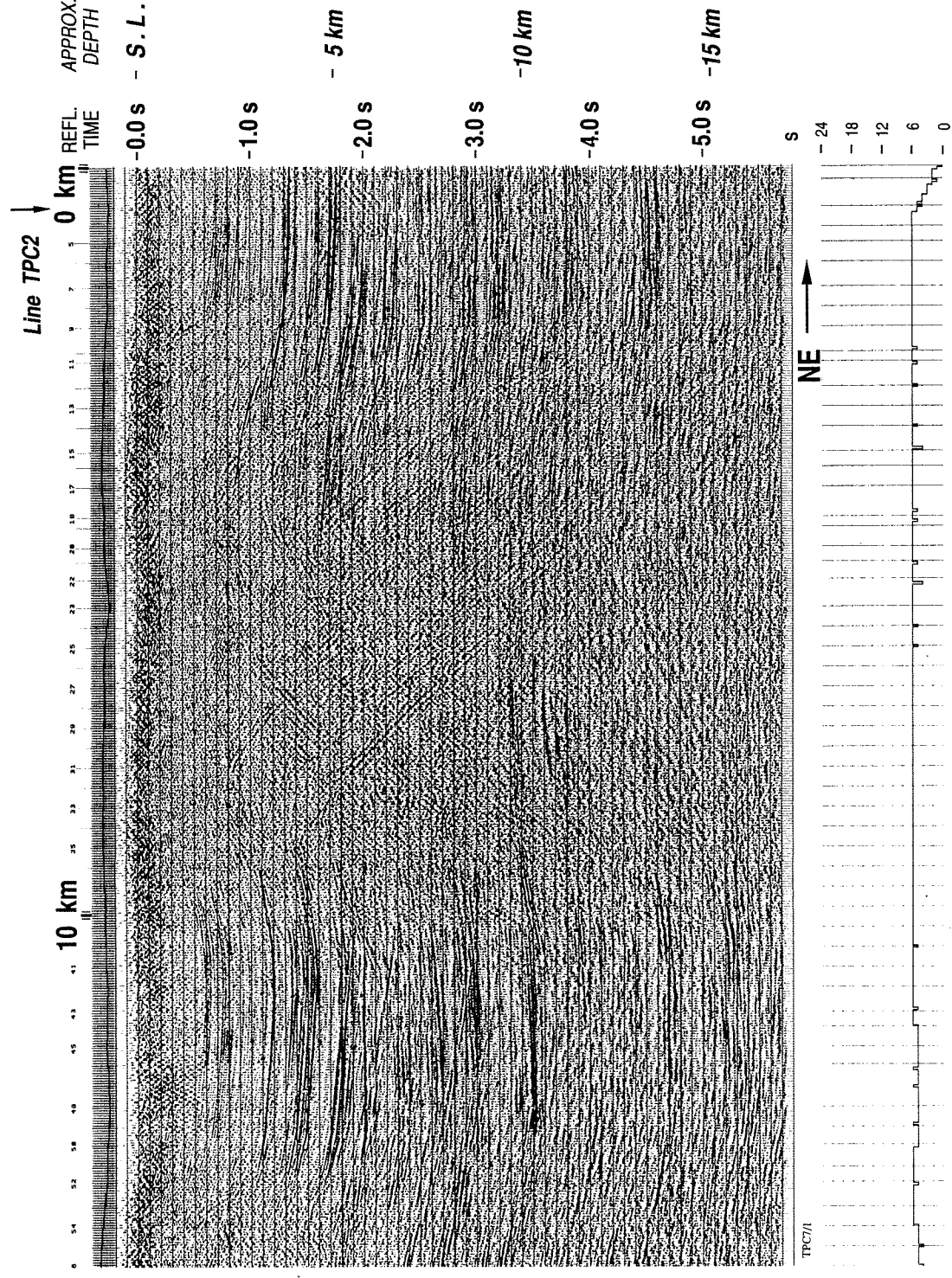
Processed by:
Venhas Seismic Ltd, Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: April 1973
Source interval: 800 ft
Geophone group interval: 200 ft
Spread distance: 5280-220-SP-220-5280 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Replacement velocity: 12000 ft/s
Deconvolution
Operator length: 120 ms
Filtering: 5 %
Filter: line varying digital bandpass:
0-3500 ms: 10/13-50/60 Hz;
3500-6000 ms: 5/7.5-50/60 Hz.

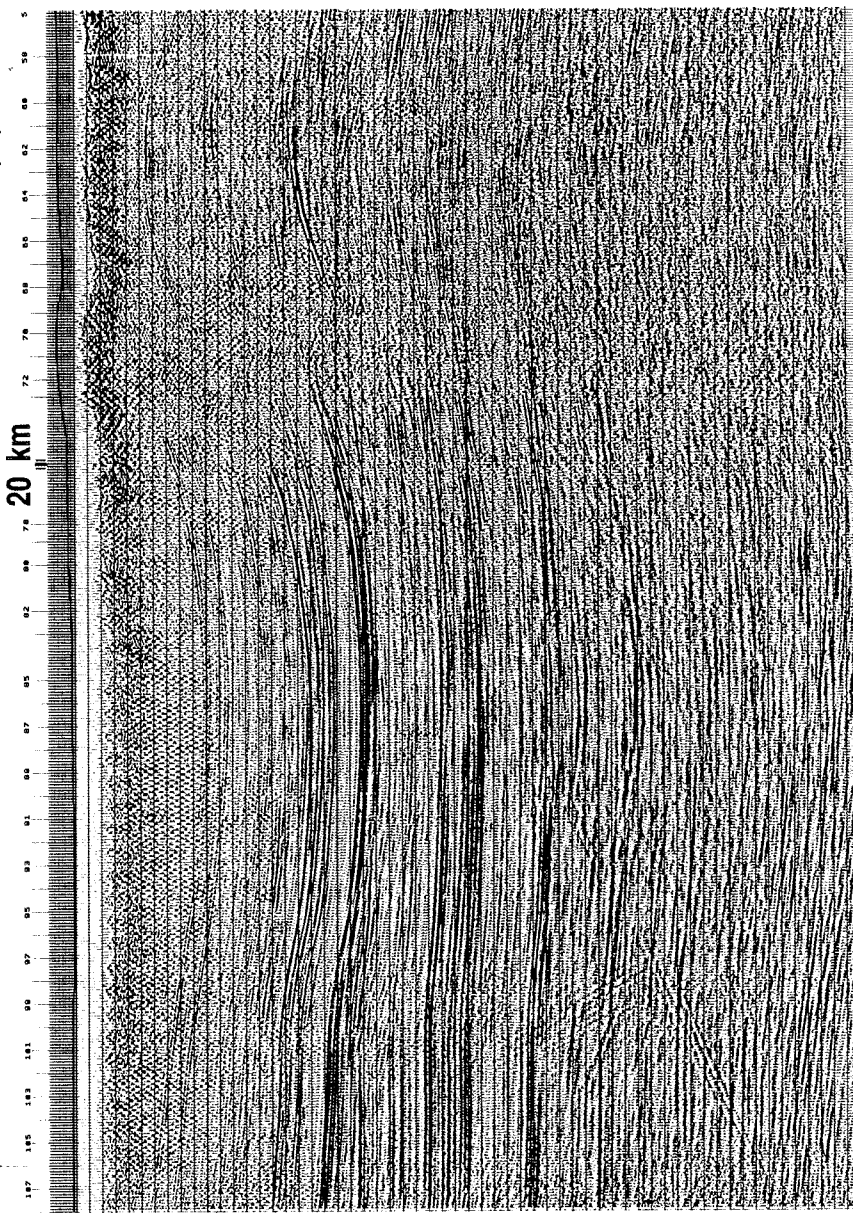
S: Stacking fold 1.0

Interpretation:
E.R. Kanasevich and Z. Barkes
University of Alberta, Edmonton, March 1988



King Point West B-53

Line TPC8



APPROX. DEPTH
REFL. TIME

S.L. - 0.0 s -

1.0 s -

5 km - 2.0 s -

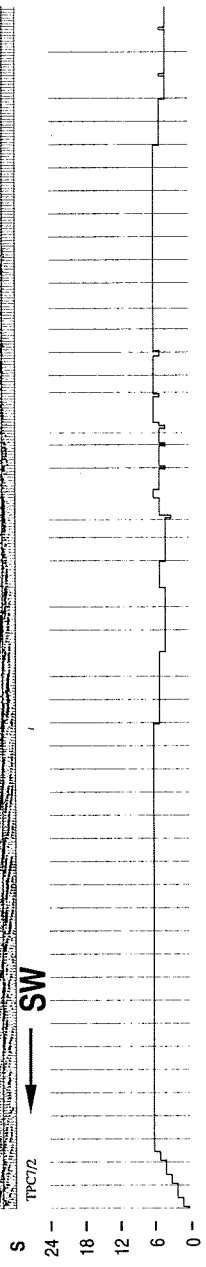
3.0 s -

4.0 s -

5.0 s -

10 km -

15 km -



Line 1190
Line TPC7
APPROX. MELVILLE ISLAND, CANADA
Line No.: TPC-8
Seismic Reflection CMP Section



Processed by:
Veritas Seismic Ltd. Calgary, July 1987
and
Seismic Laboratory of the University of Alberta

Field parameters:
Date shot: April 1973
Source interval: 800 ft
Geophone group interval: 220 ft
Spread distance: 5200-220-SP-220-3200 ft

Processing parameters:
Sample rate: 4 ms
Datum: Sea level
Reservoir velocity: 12000 ft/s
Decimation: 120 ms
Operator length: 5 %
Filter: 5 %
Time varying digital bandpass: 0-3500 ms; 10/13-50/60 Hz; 3500-6000 ms; 57/5-50/60 Hz.

S: Stacking fold

Interpretation:
E.R. Kanasewich and Z. Bekas
University of Alberta, Edmonton, March 1988

