

TEC-17



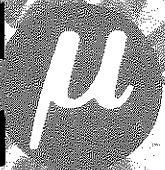
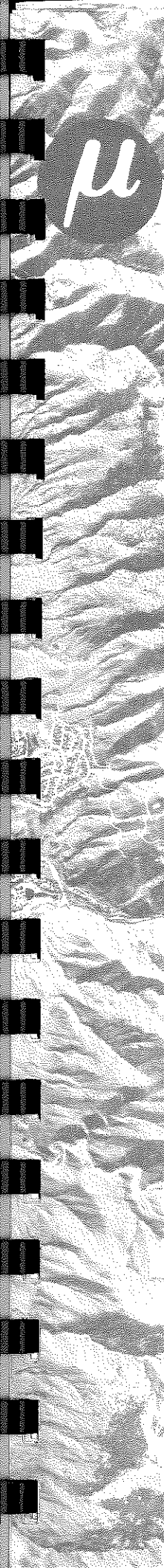
MICROGEOPHYSICS
CORPORATION

**ANIMAS, NEW MEXICO
SEISMIC INTERPRETATION**

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WEST 44TH AVENUE / WHEAT RIDGE, COLORADO 80033 / (303) 424-0499

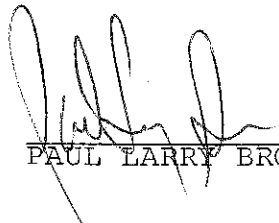
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MICROGEOPHYSICS CORPORATION

ANIMAS, NEW MEXICO SEISMIC INTERPRETATION

MARCH 12, 1981



PAUL LARRY BROWN

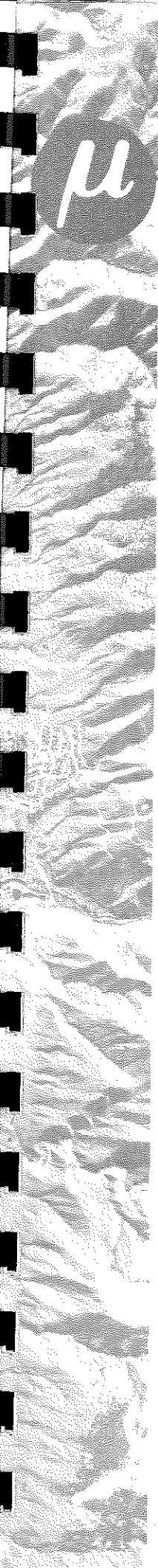


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1.0.0 INTRODUCTION

In the fall of 1980 MicroGeophysics was contracted to process and interpret a seismic section gathered in Animas County, New Mexico. See Index and Location Map Figure 1.

The data was collected by GSI. The prospect is named Pyramid and its original client was Cockrell. The data was collected 6/13/77.

The fault has a total offset of nearly 2000'. The interbasin formed to the east of the ridge is terminated further east by a thrust into the mountains. The data however is not of sufficient quality to determine the details of the structure on the far east side of the line.

LOCATION & INDEX MAP

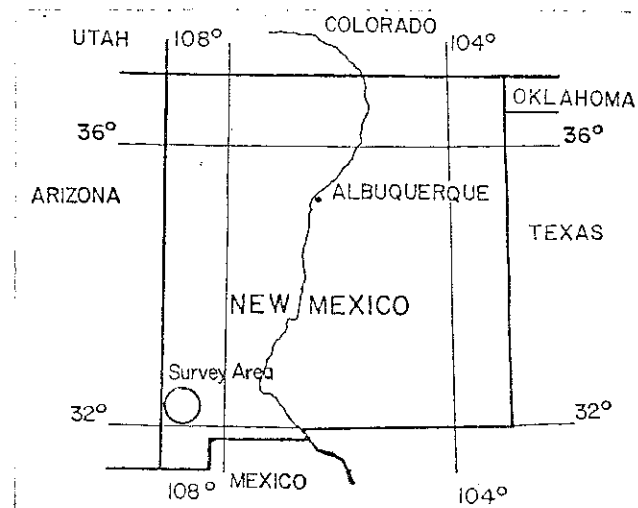
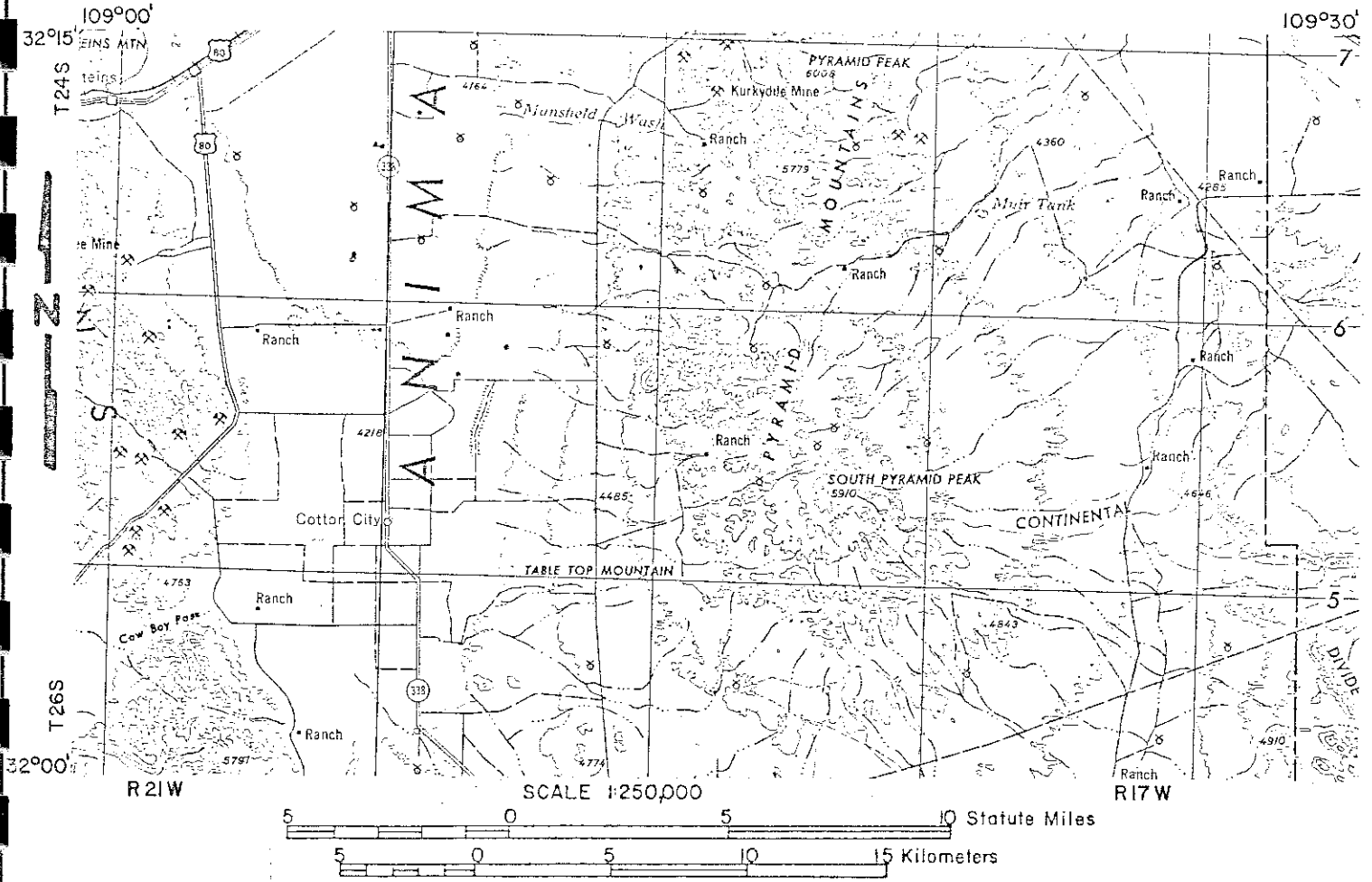


Figure 1.1

2.0.0 GEOLOGIC BACKGROUND

The location of the seismic east-west line is shown in Figure 2.1. The location of a well (the Cockrell well) is also shown. An outline of the lithology is shown from a depth of 2610' to 7390' from the Cockrell well, in Figure 2.2. A velocity log is also shown for this well in Figure 2.3.

The following paragraph is a summary of the geologic setting of the Animas seismic line.

The Animas Valley is an elongated north-south graben within the Basin and Range province. The valley is about 18 km wide and is flanked by the Peloncillo Mountains on the west and the Pyramid Mountains on the east.

The Peloncillo Mountains consist of Precambrian granite, Paleozoic and early Cretaceous sedimentary rocks, Tertiary intrusive rocks, and late Cretaceous and Tertiary volcanic rocks. The Basin and Range system of faults which bounds the Peloncillo Mountains horst block can be observed south of this area.

The Pyramid Mountains are a complex pile of volcanic and intrusive rocks. Part of the range is Cretaceous to late Tertiary volcanic rock, and some of the silicic volcanic rocks to be younger than Basin and Range faulting.

LINE LOCATION MAP

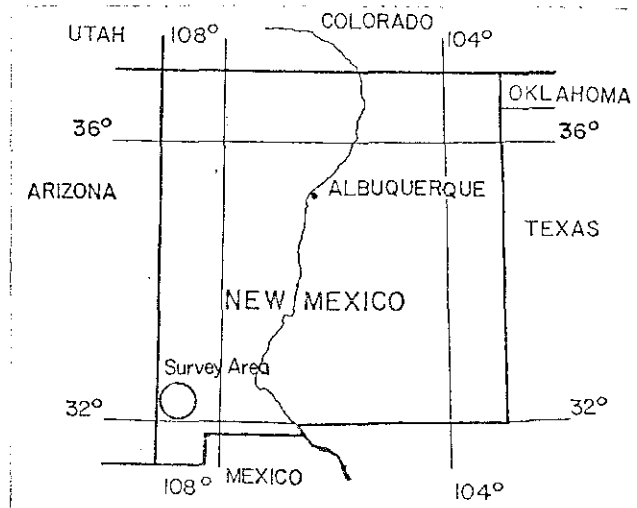
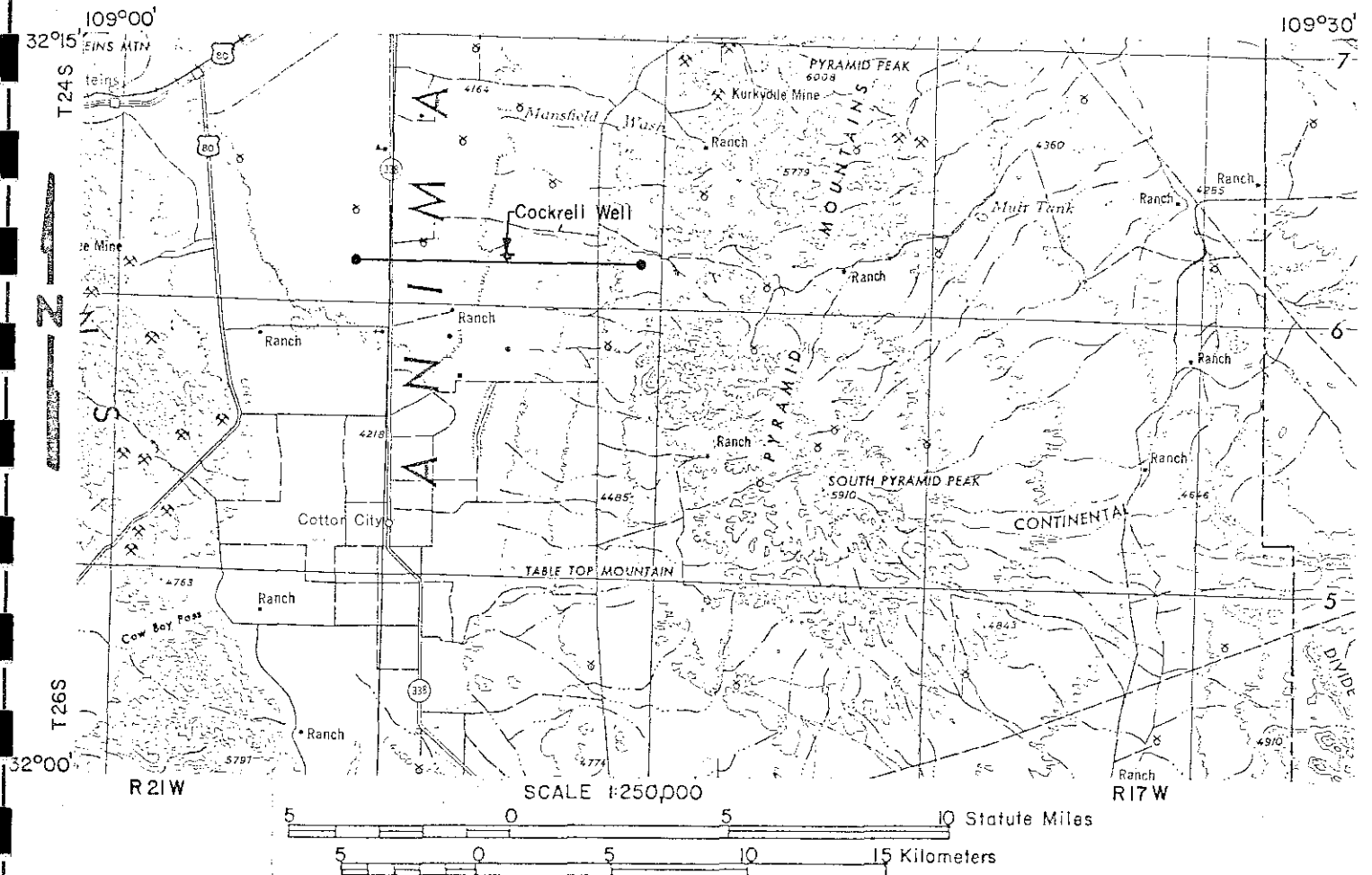


Figure 2.1

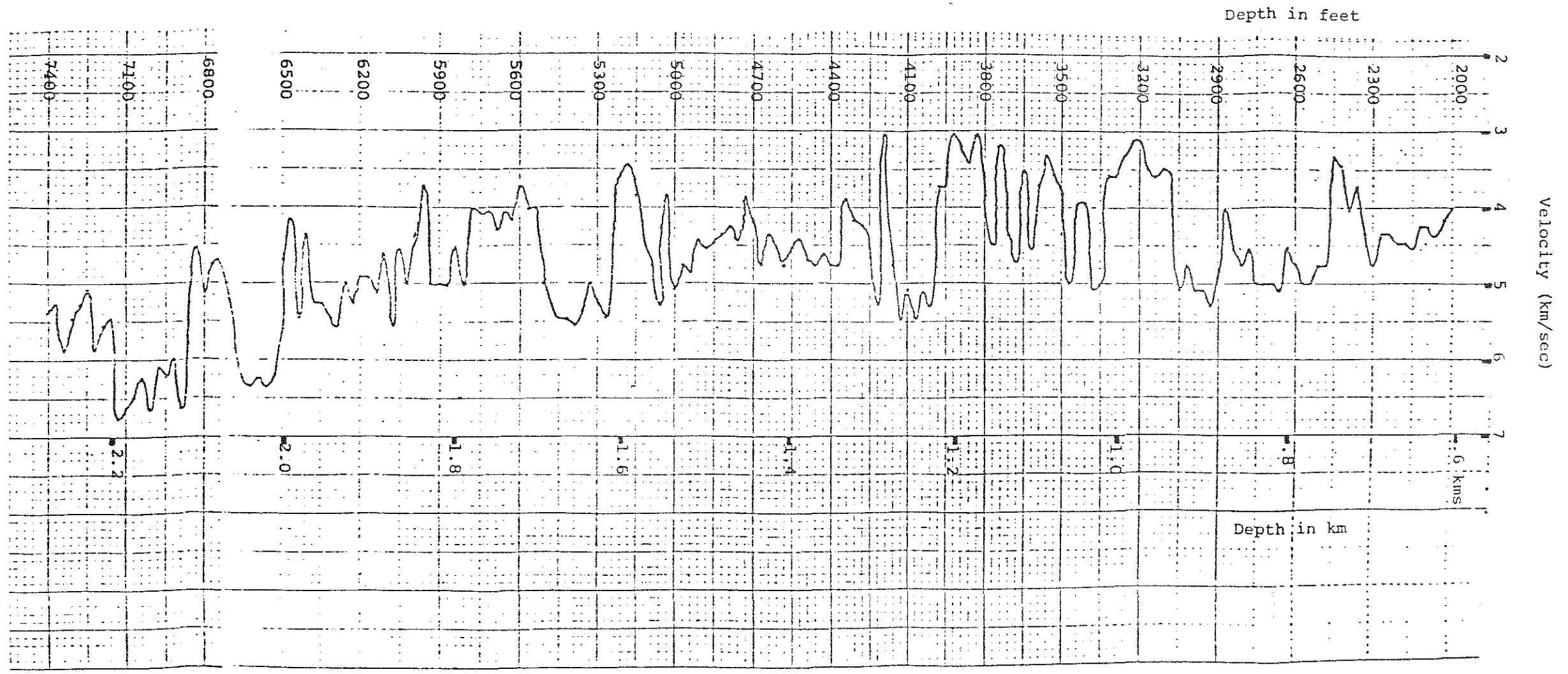


FIGURE 2.3

The description log of the Cockrell Corporation No. 1 Federal Pyramid oil test well 245 19W31.230 (after Summer 1976) is as follows:

<u>Depth</u>	<u>Description</u>
0-576	Valley fill
576-1766	Volcanic Rock
1766-2173	Paleozoic Rock
2173-2254	Precambrian Rock

3.0.0 PROCESSING

A summary of the processing is shown in the following:

Processing Steps:

- 1) Format conversion
- 2) Quality control of shot records and shot/trace editing.
- 3) Generation of stacking chart and resequence in CDP gathers domain.
- 4) Velocity analysis on a suite of 20 CDP gathers
 - a. Auto mute @ 0.3 sec. ramp
 - b. Deconvolution: no additive noise; spiking decon. 100msec. operator.
 - c. Filter 10-45 HZ
 - d. Time variant scaling. AGC with 500 msec. gate.
 - e. CDP gathers moved out with a suite of velocities ranging from 5000 to 17,000 ft/sec. and displayed as constant velocity stacks.
 - f. Picking of stacking velocity function.
- 5) Velocity from (4e) applied to entire line
 → BRUTE STACK
- 6) Analysis of Brute Stack and detailed velocity analysis on entire line as in (4e).
- 7) Application of detailed velocities and residual static analysis.
- 8) Stack with removal of residual statics
- 9) Wave equation Migration

The following information is the processing information:

RECORD LENGTH = 4000 MSEC SAMPLE INTERVAL = 8 MSEC SAMPLES/TRACE = 500

PROCESS 1 = ISEX

INPUT SEG-EXCHANGE
 DATA FORMAT = 32 BIT FLOATING POINT
 LOGICAL TAPE UNIT (INPUT) = 1
 TAPE DENSITY = 1600 BPI

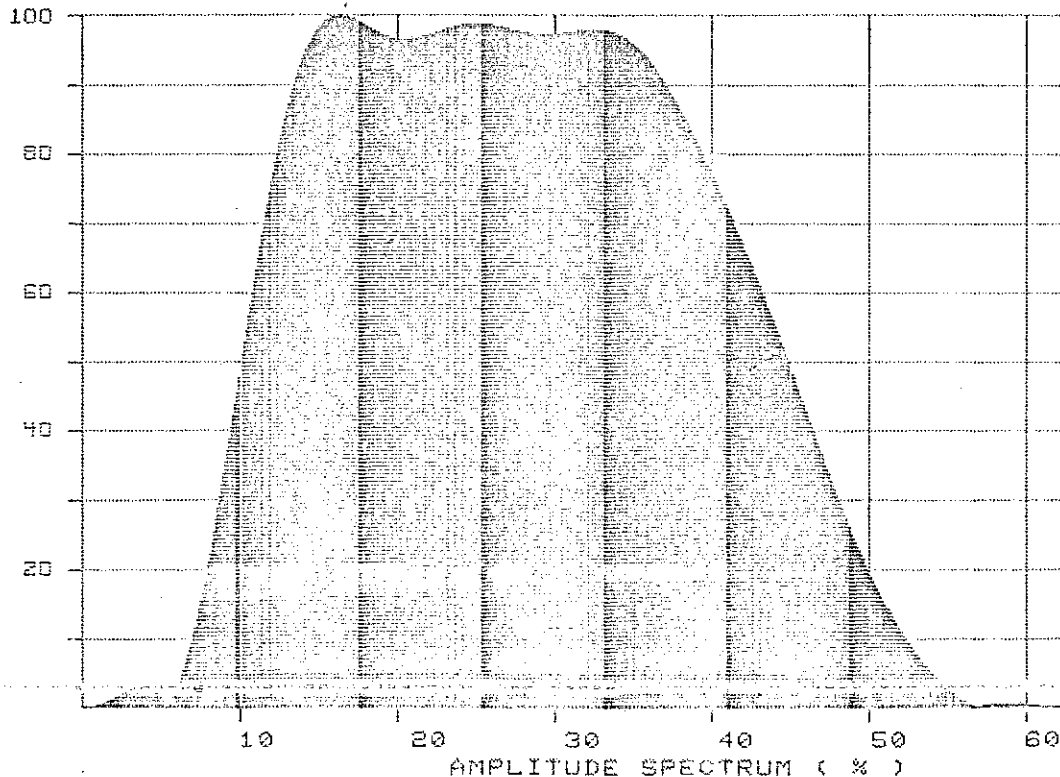
PROCESS 2 = DCON

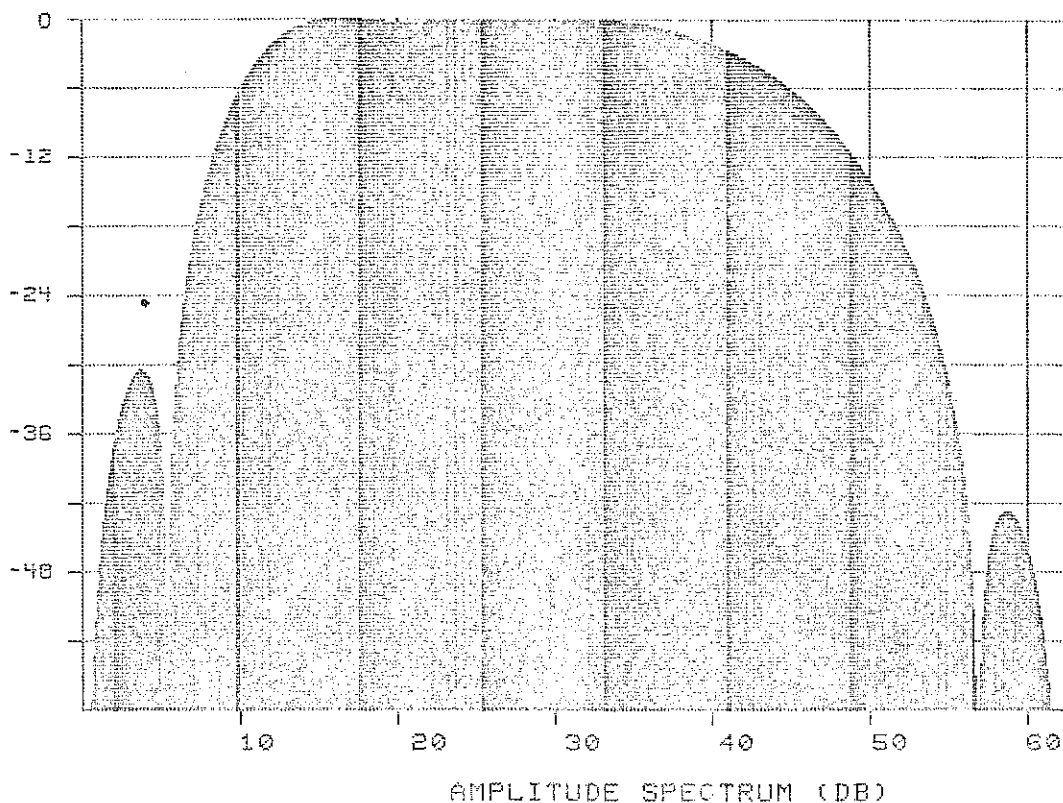
DECONVOLUTION
 TIME-INVARIANT DECONVOLUTION
 HAMMING SMOOTHING OF AUTOCORRELATIONS
 SOLUTION TYPE IS SPIKING
 DESIGN WINDOW
 OPERATOR LENGTH = 200 MSEC
 PREWHITENING PERCENTAGE = 0

SPACE-VARIANT PARAMETERS DEFINED AT 1 CDP
 CDP 50
 AUTOCORRELATION START TIME 400
 STEPOUT SLOPE (MSEC/100) 0
 AUTOCORRELATION END TIME 1700
 STEPOUT SLOPE (MSEC/100) 0

PROCESS 3 = FILT

TIME DOMAIN FILTERING
 TIME-INVARIANT FILTERING
 TYPE IS BAND PASS
 LENGTH = 200 MSEC (27 POINTS)
 LOW CUT FREQUENCY = 10
 ROLL-OFF LENGTH = 10
 HIGH CUT FREQUENCY = 45
 ROLL-OFF LENGTH = 25





PROCESS 4 = SCAL

AUTOMATIC GAIN CONTROL (AGC)
 ROOT MEAN SQUARE (RMS) ALGORITHM
 ZERO DISCRIMINANT OPTION WITH ABOVE.
 SCALE FACTOR APPLIED AT THE CENTER OF TIME WINDOW
 WINDOW SIZE 500 MSEC
 REFERENCE MEAN = 4000

PROCESS 5 = VSCN

VELOCITY SCAN

FIRST INITIAL VELOCITY = 5000
 FIRST VELOCITY INCREMENT = 250
 FIRST FINAL VELOCITY = 8000

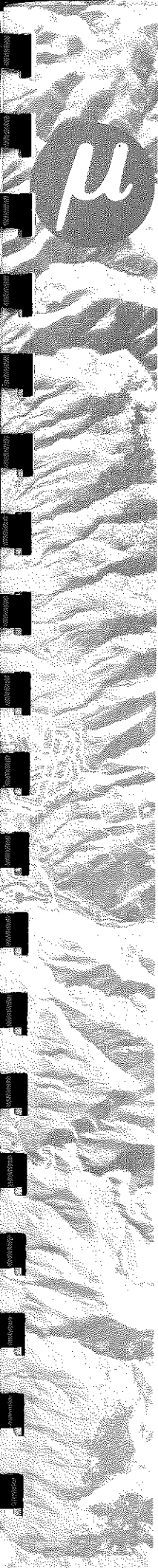
SECOND INITIAL VELOCITY = 8000
 SECOND VELOCITY INCREMENT = 500
 SECOND FINAL VELOCITY = 21000

OUTPUT WILL BE CDP STACKED

OUTPUT SEG-EXCHANGE

DATA FORMAT = 32 BIT FLOATING POINT
 LOGICAL TAPE UNIT (OUTPUT) = 2
 TAPE DENSITY = 1600 BPI

NO VELOCITY FUNCTIONS DEFINED




The following table lists the initial velocities and the final stacked velocity for the west end of the line to the east end of the line. An explanation of our entry is shown on the figure.

	input velocity feet per second											
	time in milliseconds											
	0	1	250	500	700	1000	1500	2000	3000	4000	5000	6000
1	VELF 0	10000	250	11000	700	12000	940	13000	1030	14000	1175	15000
	VELF 1215	10000	1650	17000	2500	20000						
	10359	10677	10992	11306	11617	11850	11866	12082	12296	12510		
	12724	13036	13142	13359	14716	15084	15451	15817	16183	16549		
	21702	20093	20681	21269	21857	22445	23033	23621	24209	24797		
	19709	19915	20121	20327	20533	20739	20945	21151	21357	21563		
	23894	24193	24492	24791	25089	25387	25685	25983	26281	26579		
	26875	27172										
2	VELF 0	3500	100	9000	200	10000	300	11000	540	12000	825	13000
	VELF 1060	14000	1300	15000	1640	16000	1880	17000	2500	20000		
	8749	9243	10423	11363	12293	13219	12331	12712	13090	13466		
	13241	13868	14181	14493	14804	15114	15423	15732	16041	16350		
	17381	17884	18047	18409	18770	19131	19491	19852	20213	20574		
	19372	19693	19893	20153	21930	22295	22658	23021	23384	23747		
	24099	25405	25812	26217	26623	27028	27434	27839	28244	28649		
	29054	29458										
	* VELF 210	1										
3	VELF 0	7000	450	8000	860	9000	1270	10000	1480	11000	1720	13000
	VELF 1870	14000	2025	15000	2170	16000	2300	17000	2500	20000		
	7111	7331	7550	7768	7984	8199	8413	8626	8838	9173		
	9408	9849	9877	10110	10342	10573	10804	10996	11031	11096		
	11441	11845	11849	12052	12255	12458	12661	12864	13067	13270		
	19959	20000	21953	22046	22739	22833	23526	23620	24313	24407		
	26883	23019	25884	25882	26339	31677	32549	32767	32767	32767		
	32767	32767										
	* VELF 250	1										
4	VELF 0	5200	450	6000	630	7000	850	8000	1220	10000	1475	11000
	VELF 1590	13000	1215	15000	2170	17000	2500	19000				
	5283	5485	5640	5813	5986	6158	6329	6499	6668	6837		
	6669	6836	6999	7149	7298	7447	7596	7745	7894	8043		
	13088	13488	13905	14343	14781	14982	14871	15024	15377	15729		
	24272	25456	26633	24888	25757	25626	27494	22634	23072	23509		
	23947	24984	24820	25257	25694	27194	27691	28187	28684	29181		
	29677	30174										
	* VELF 297	1										
5	VELF 0	5000	165	5300	400	6000	500	7000	650	8000	900	9000
	VELF 1100	10000	1350	11000	1585	14000	1920	17000	2500	20000		
	5066	5199	5330	5463	5596	5729	5862	5995	6128	6261		
	10077	10688	11254	11837	12419	11178	11597	11995	12349	12696		
	13331	14271	13915	13614	13912	14211	14509	14806	15104	15402		
	24773	25921	26868	23615	24265	24915	25565	26215	26865	27515		
	28165	28103	28579	27055	27530	28005	28482	28957	29433	29908		
	30383	30858										

WAVE EQUATION MIGRATION 1 west end
 SAMPLE RATE IS 8 MS 3 middle
 TRACE LENGTH IS 2496 MS.
 LAYER THICKNESS IS 48 MS 5 east end
 TRACE SEPERATION IS 110.

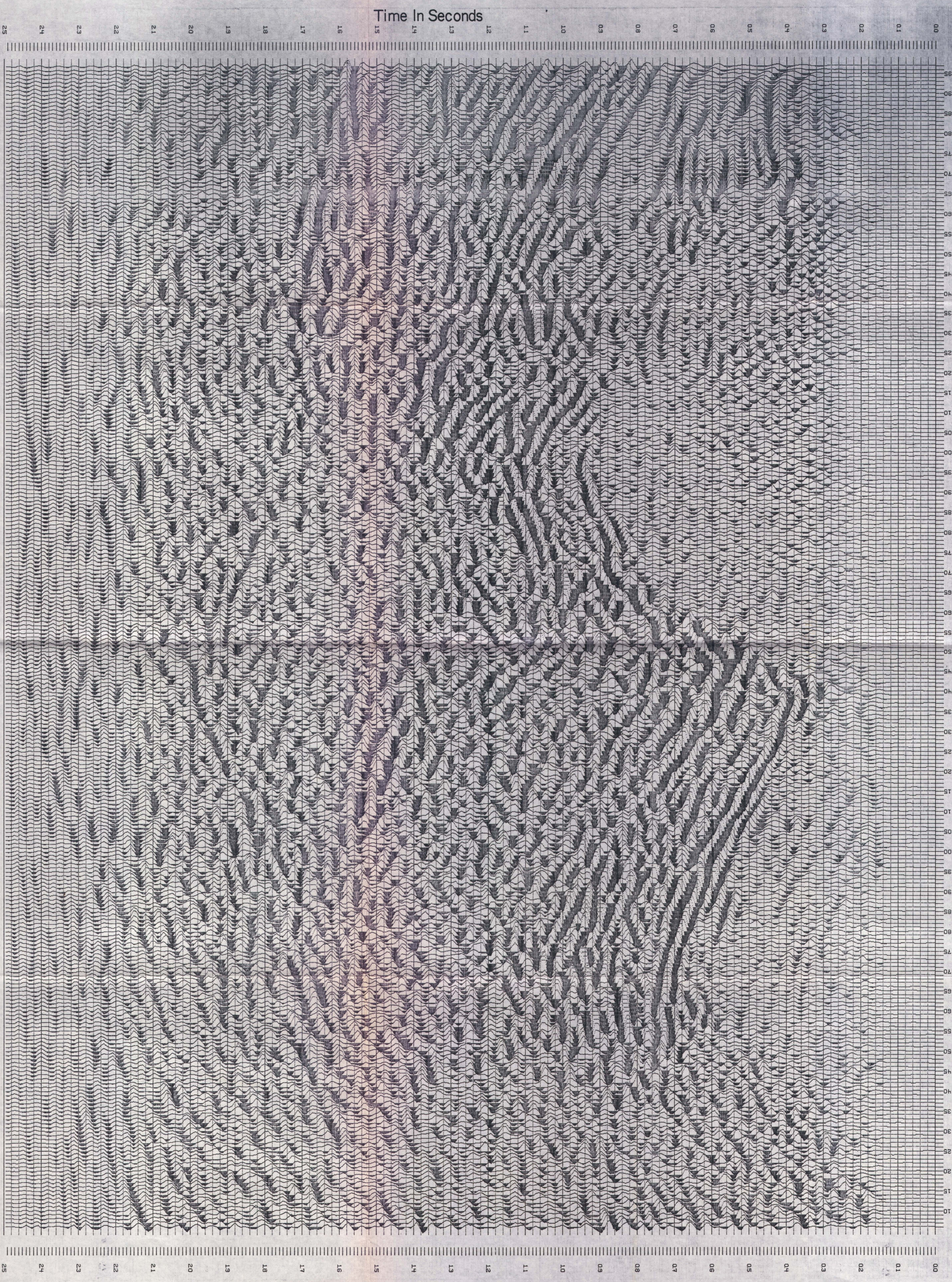
DATA FROM 0 MS. TO 2496 MS. WILL BE MIGRATED
 MIGRATION WILL BE THROUGH LAYERS 1 (0 MS.) TO 52 (2496 MS.)

MIGRATION OF PANEL 1
 768 TRACES ARE MIGRATED
 THROUGH 52 LAYERS



4.0.0 RESULTS

The results of processing are shown on two plates. One is a simple playback section. The other is an interpreted section. Two interfaces are shown on the interpreted section; one, the shallowest, is the paleozoic boundary, the second and deepest is the precambrian. Depths at the stacked velocity points are shown. The depths in the basin are shown at 7,000' near the center of the basin and 6,000' near the eastern boundary of the line. Several depths were picked from the Cockrell well near the large displacement fault.

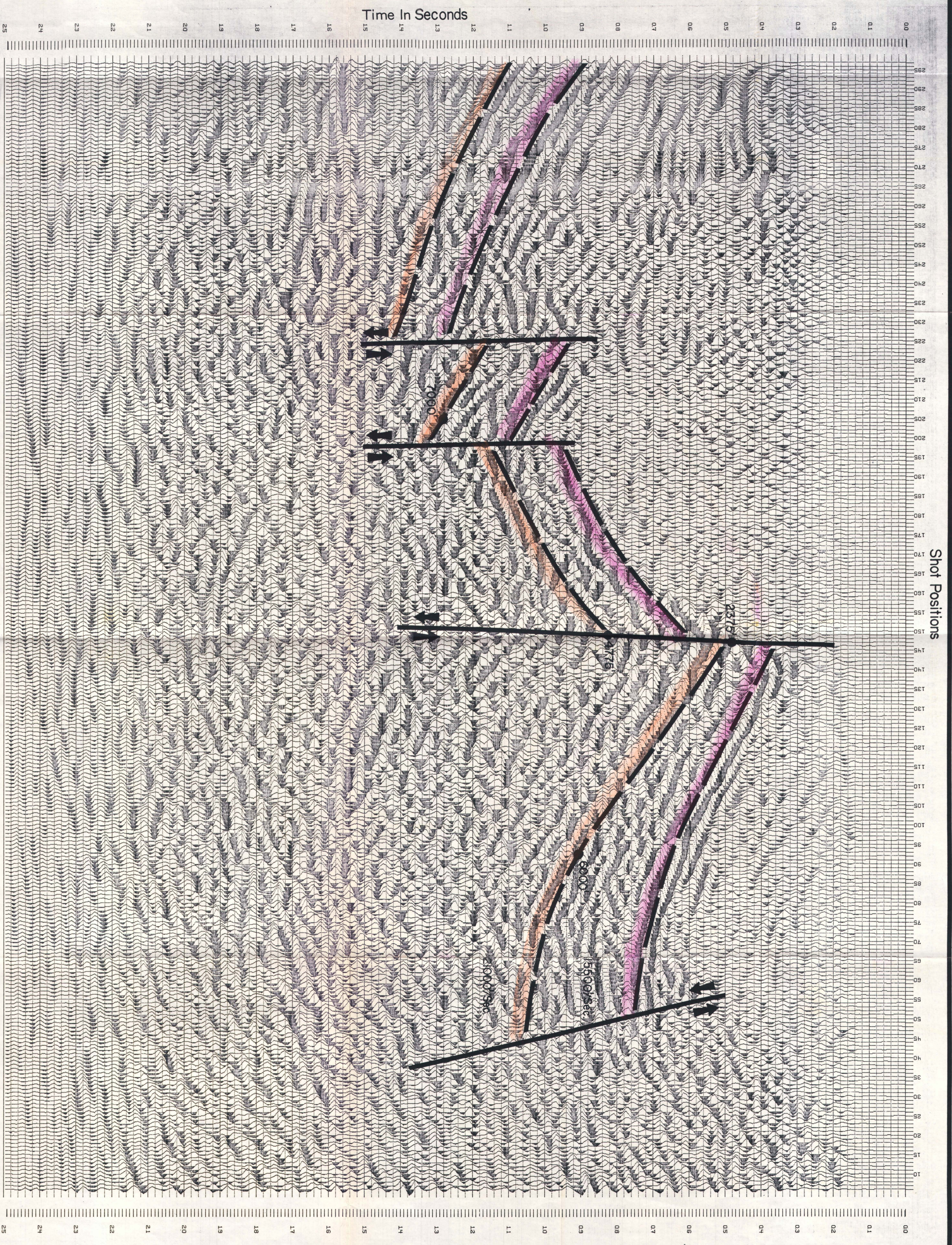


Shot Positions

Time In Seconds

Horizontal Scale
3000 Feet

Animas Seismic Line · Plate I
MICROGEOPHYSICS CORPORATION



Horizontal Scale
3000 Feet