1975/73

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RECORD 1975/73

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CARPENTARIA BASIN SEISMIC SURVEY

JULY-DECEMBER 1958

by

C.S. ROBERTSON & F.J. MOSS

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CARPENTARIA BASIN SEISMIC SURVEY

JULY-DECEMBER 1958

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SUMMARY

The Bureau of Mineral Resources carried out a seismic survey of four months' duration in the Carpentaria Basin, North Queensland, in the second half of 1958. A preliminary report on this survey was issued as Record 1959/4. A more comprehensive final report and a set of plates to accompany the report were subsequently prepared, but the text of the report was lost before it could be issued as a Record. As the detailed results of the survey are represented to a large degree in the set of plates prepared for the final report, these plates are presented in this Record. For a description of the survey the reader is referred to the preliminary report, Record 1959/4.

The survey showed that the Carpentaria Basin deepens gradually from the south, east, and west towards the southeastern corner of the Gulf of Carpentaria. The maximum thickness of sediments measured was about 1000 metres near Rutland Plains in the north of the survey area. It was found that gravity anomalies in the area do not correlate with basement relief.

1. FINAL RESULTS

Basement depth configuration of the area covered by the seismic survey is presented in Plate 2. This map is similar to Plate 2 of the preliminary report, (Robertson & Moss, 1959), but the basement depths on the later map differ slightly from those on the earlier one in some cases because depths were recalculated taking greater account of weathering and elevation corrections.

The results of the seismic reflection traverses are presented, as in the preliminary report, as hand-plotted reflection segments. Since the results were recorded only in wiggly-line form on photographic paper, corrected record sections are not available. Structural contours on two reflecting horizons are presented for reflection Traverses A to D in the Karumba area in Plates 9 and 10.

The principal contribution of this Record is the presentation in graphical form of the results of individual refraction profiles. The refraction plates show the uncorrected refraction arrival times picked from the records, the weathering and elevation corrections applied, the corrected times plotted against distances from shot-points, apparent and true refraction velocities, and the interpretation of the refraction results in plotted form. The interpretation procedures used were as described by Vale & Smith (1961). The plates were prepared in the early 1960s when imperial units were in common use. No conversions to SI units have been carried out in preparing this report.

Revised calculations made since the preliminary report was prepared do not affect the validity of the conclusions drawn in Record 1959/4.

Since this survey, further gravity, magnetic, and seismic surveys have been done in the area. Pinchin (1973) has reviewed all BMR and Commonwealth-subsidized geophysical operations and assessed the current knowledge of the Carpentaria Basin.

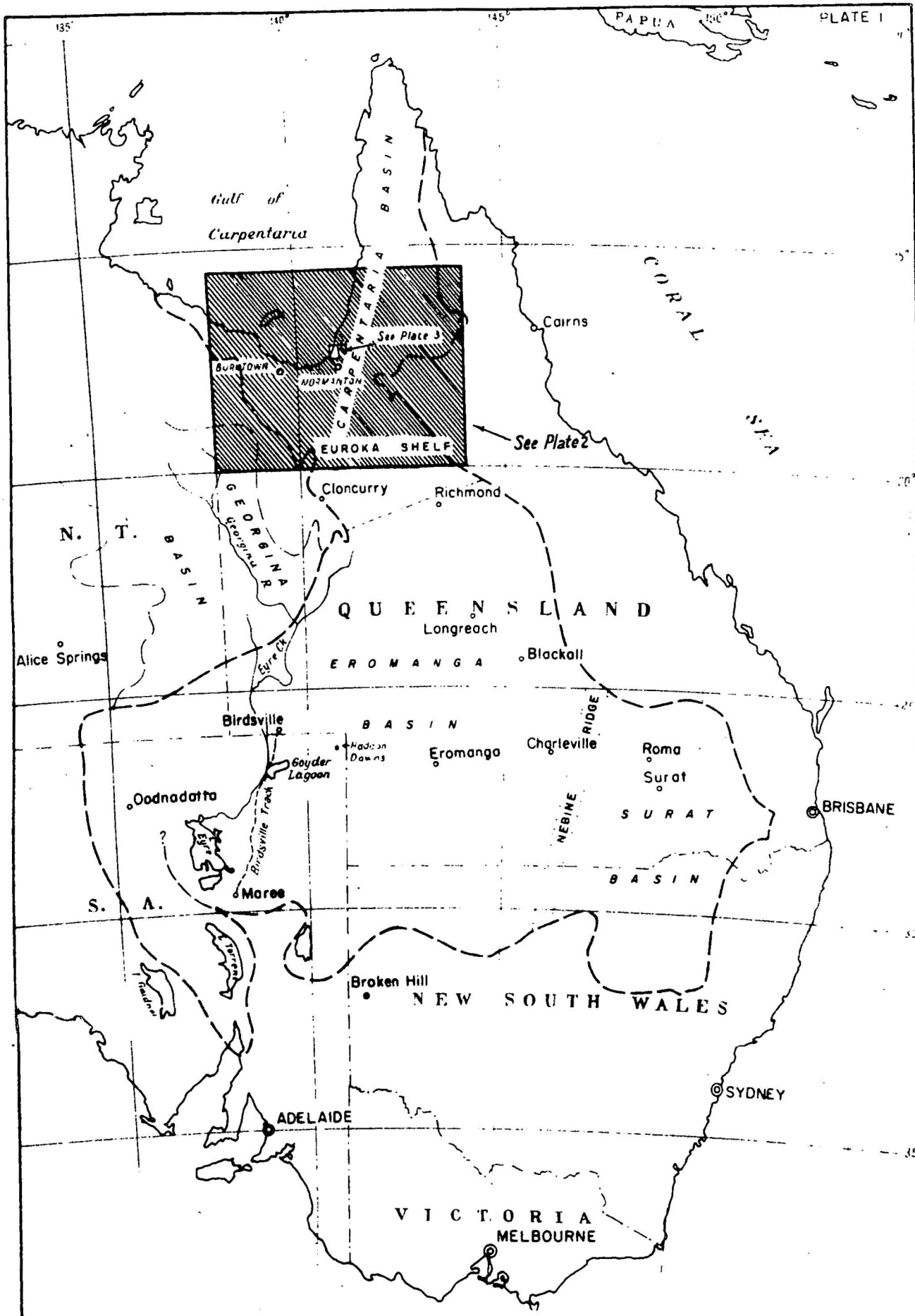
2. REFERENCES

PINCHIN, J., 1973 - A geophysical review of the Carpentaria, Laura, and Olive River Basins. Bur. Miner. Resour. Aust. Rec. 1973/132 (unpubl.).

ROBERTSON, C.S. & MOSS, F.J., 1959 - Preliminary report on a seismic survey in the Carpentaria Basin, Queensland, July-December 1958. Bur. Miner. Resour. Aust. Rec. 1959/4 (unpubl.).

VALE, K.R., & SMITH, E.R., 1961 - The "Depth probing" technique using seismic refraction methods. Bur. Miner. Resour. Aust. Rec. 1961/79 (unpubl.).

PLATE 1



SEISMIC SURVEY, CARPENTARIA BASIN, QUEENSLAND

LOCALITY MAP

LEGEND

Boundary of Great Artesian Basin

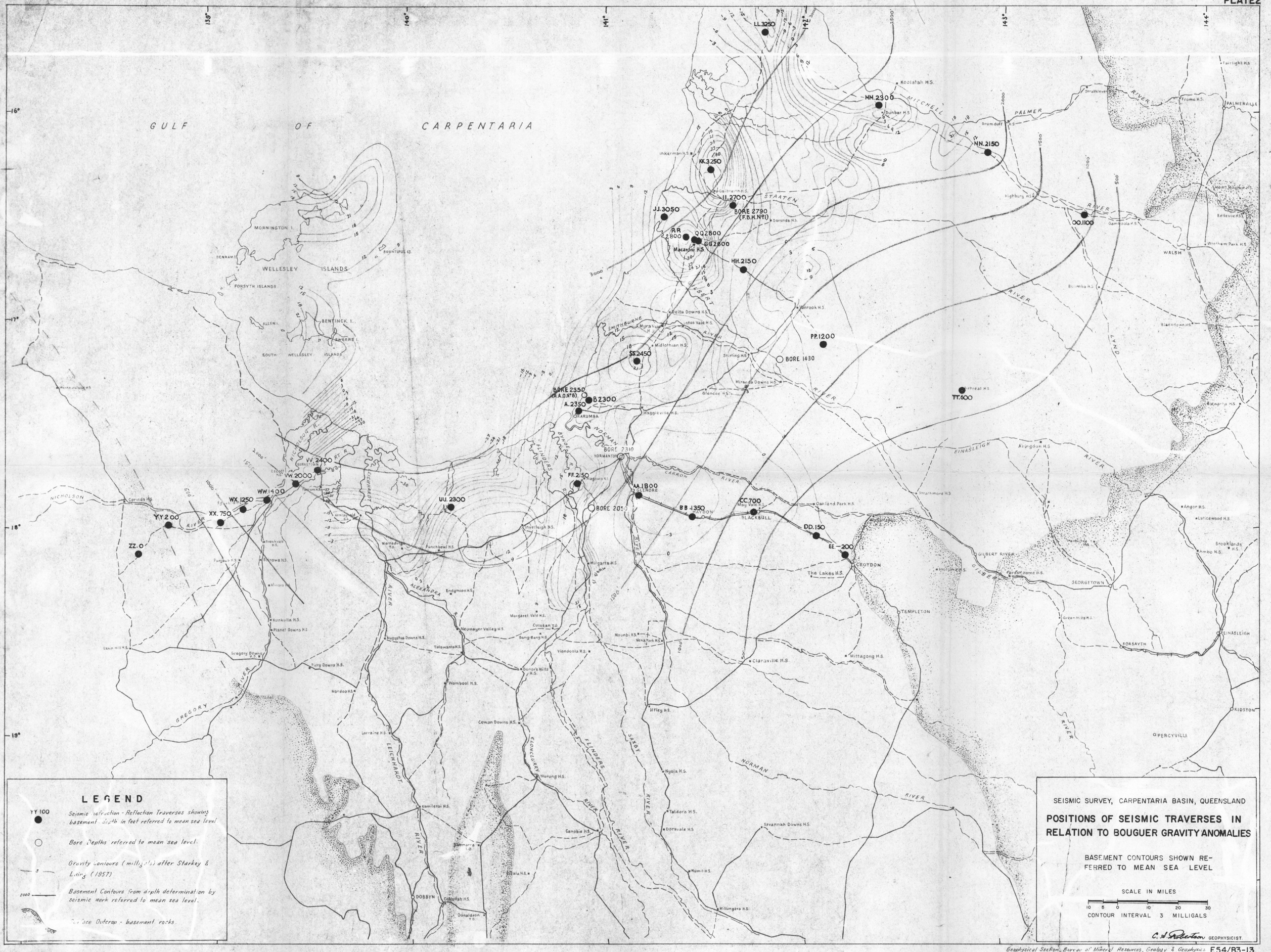
SCALE IN MILES

100 0 100 200 300

Record No. 1979/13 E 54/B3-12 (Ex G318-5)

TO ACCOMPANY RECORDS 1959, No. 4

PLATE2



LEGEND

YY.100 — Seismic Refraction - Reflection Traverses showing basement depth in feet referred to mean sea level

Bore Depths referred to mean sea level.

Gravity Contours (milligals) after Starkey & Laing (1957)

2000 — Basement Contours from depth determination by seismic work referred to mean sea level.

Surface Outcrop - basement rocks.

SEISMIC SURVEY, CARPENTARIA BASIN, QUEENSLAND

POSITIONS OF SEISMIC TRAVERSES IN RELATION TO BOUGUER GRAVITY ANOMALIES

BASEMENT CONTOURS SHOWN REFERRED TO MEAN SEA LEVEL

SCALE IN MILES

10 5 0 10 20 30

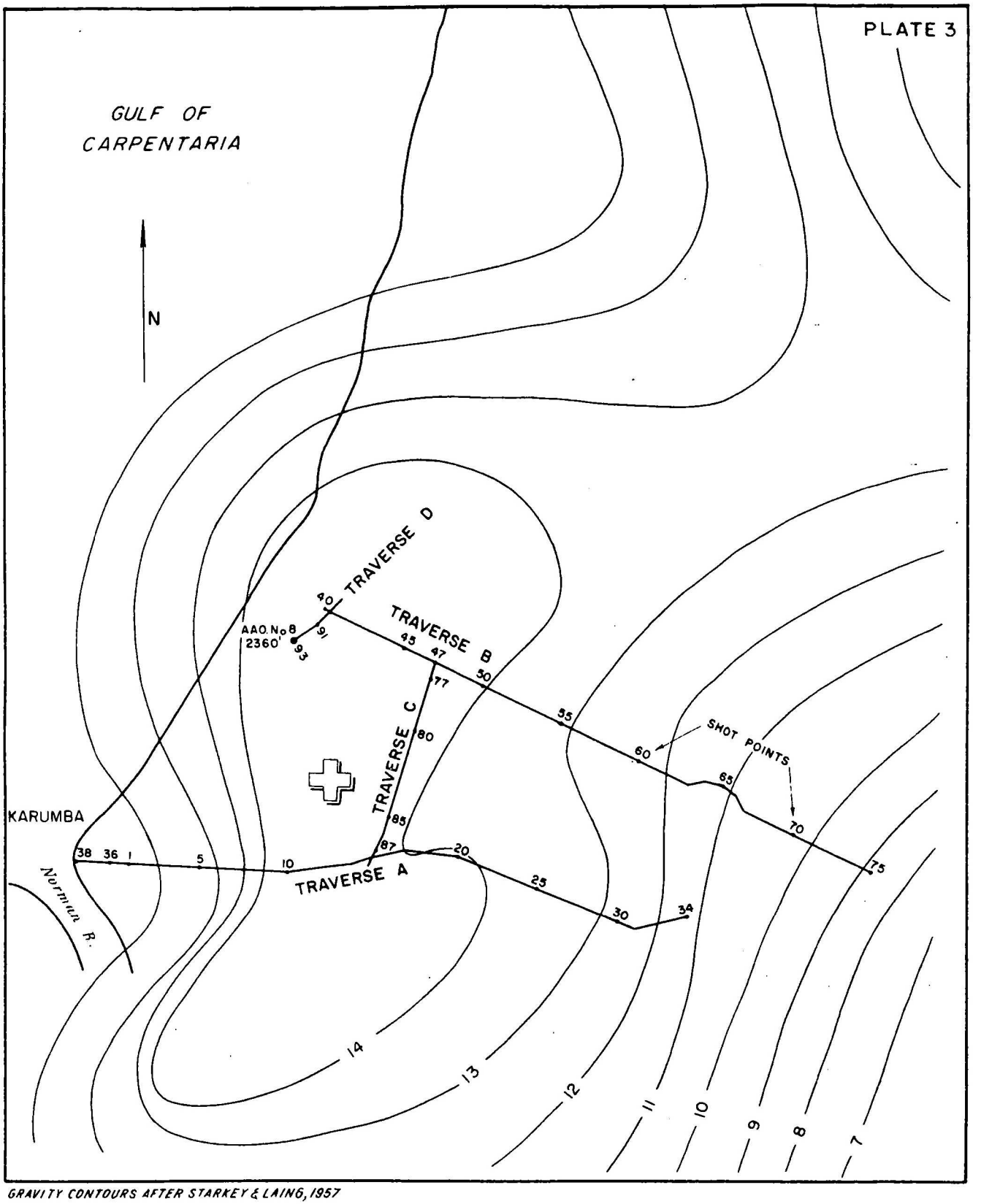
CONTOUR INTERVAL 3 MILLIGALS

C. A. Robertson GEOPHYSICIST.

Geophysical Section, Bureau of Mineral Resources, Geology & Geophysics E54/B3-13

Record No. 1975/73 TO ACCOMPANY RECORDS 1959, No. 4 (Ex G318-13)

PLATE 3



GRAVITY CONTOURS AFTER STARKEY & LAING, 1957

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

PLAN OF REFLECTION TRAVERSES - KARUMBA

SCALE IN MILES

2 1 0 2 4 6

CONTOUR INTERVAL 1 MILLIGAL

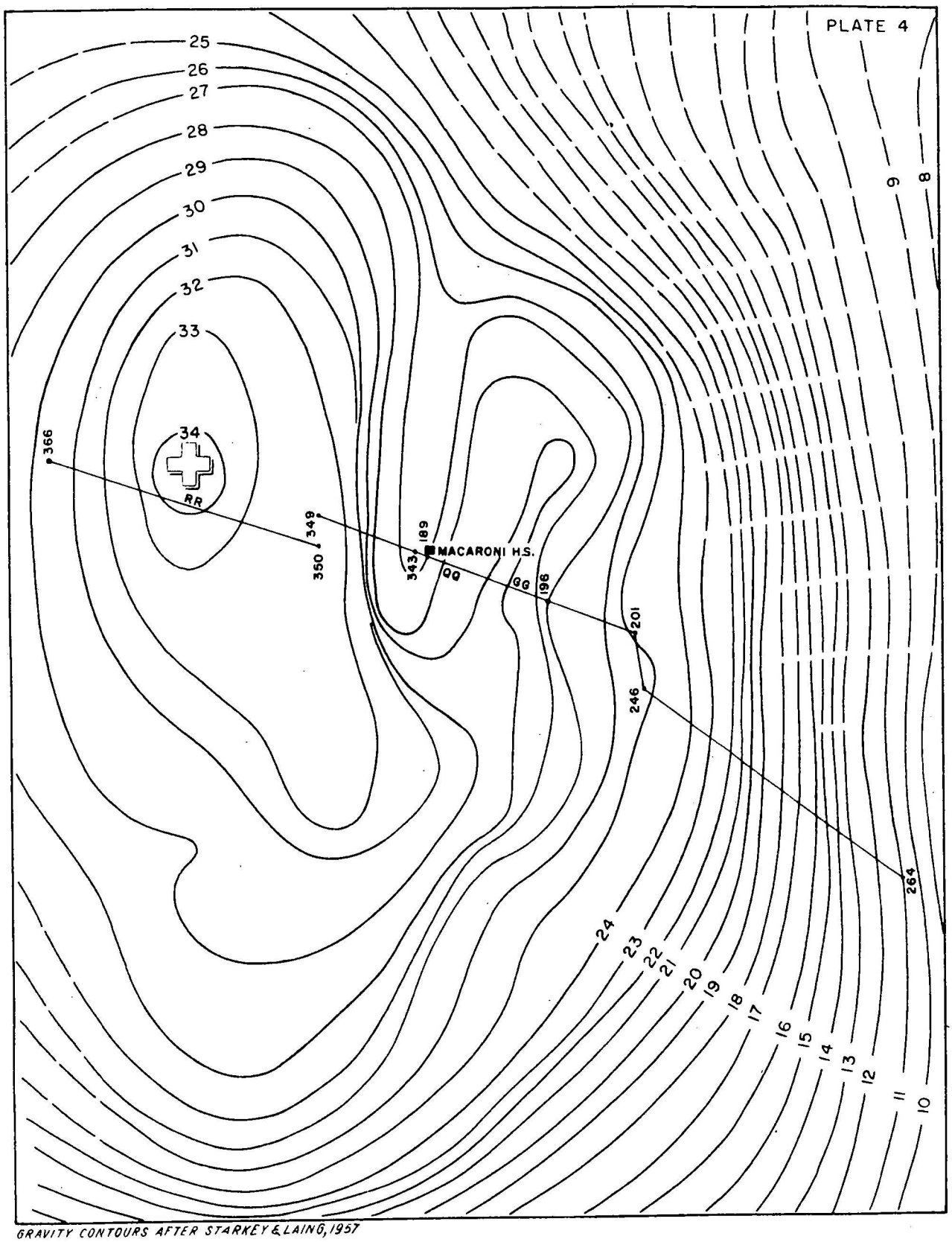
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GEOPHYSICIST

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TO ACCOMPANY RECORDS 1959, No. 4



GRAVITY CONTOURS AFTER STARKEY & LAING, 1957

Reflection Traverse G	s.p. 189 to s.p. 264
Refraction Traverse GG	s.p. 189 to s.p. 201
Refraction Traverse QQ	s.p. 349 to s.p. 196
Refraction Traverse RR	s.p. 366 to s.p. 350

C. S. Robertson

GEOPHYSICIST

PLAN OF REFLECTION AND REFRACTION TRAVERSES - MACARONI

SCALE IN MILES

2 0 2 4 6

CONTOUR INTERVAL 1 MILLIGAL

(Ex G318-53)

Record No 1975/73

E54/B3-15A

PLATE 6

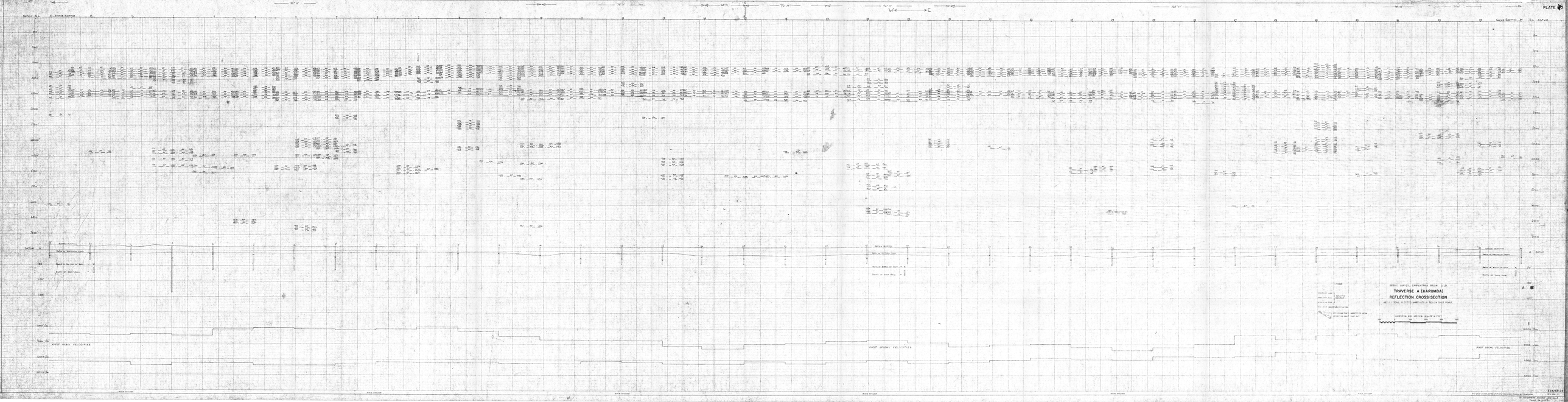

TRAVERSE A (KARUMBA)
REFLECTION CROSS-SECTION
REFLECTIONS PLOTTED UNMIGRATED BELOW SHOT POINT.
HORIZONTAL AND VERTICAL SCALES OF SECTION
INTERVAL VELOCITIES
RMS VELOCITIES
E3498-3

PLATE 6

198° 56'

193° 18'

S N

TRAVERSE A (P15)

TRAVERSE B

DATUM SL

87 86 85 84 83 82 81 80 79 78 77 474

SURFACE ELEVATION

SL DATUM

500'
1000'
1500'
2000'
2500'
3000'
3500'
4000'
4500'
5000'
5500'
6000'
6500'
7000'

DATUM 0

87 86 85 84 83 82 81 80 79 78 77 474

SURFACE ELEVATION

BASE OF WEATHERED LAYER

DEPTH OF BOTTOM OF SHOT

DEPTH OF SHOT HOLE

0 DATUM

50'
100'
150'

LEGEND

GOOD
FAIR
POOR
} REFLECTION ACCURACY

UNCERTAIN REFLECTION

REFLECTION TIMES CORRECTED TO DATUM

REFLECTION GRADE. (GABY 1947)

HORIZONTAL AND VERTICAL SCALES IN FEET

500 0 500 1000 1500 2000

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

TRAVERSE C (KARUMBA)

REFLECTION CROSS SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT

10000 '/sec

8000 '/sec

6000 '/sec

FIRST BREAK VELOCITIES

Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics

E54/B3-17

(Ex 6318-8)

PLATE 7

198°56'

TRAVERSE BEND

193°18'

S ◄——► N

DATUM S.L.

DRILL LOGS (DEPTH IN FEET)

SURFACE ELEVATION

87	86	85	84	83	82	81	80	79	78	77	47MS
0-28 BLUE CLAY 28-36 WHITE CLAY 36-44 GREY SANDY CLAY	0-10 BROWN CLAY, SEASHELLS 10-20 BLUE CLAY 20-44 BLUE, WHITE CLAY	0-25 BLUE CLAY 25-44 GREY CLAY	0-5 BROWN SANDY CLAY 5-20 BLUE CLAY 20-35 CLAY, MIXED SAND 35-44 WHITE CLAY	0-30 BLUE CLAY 30-44 GREY CLAY	0-30 BLUE CLAY 30-40 GREY CLAY 40-44 SAND	0-5 BROWN CLAY 5-15 BLUE CLAY 15-44 BROWN CLAY, SHALE	0-26 BLUE CLAY 26-44 GREY CLAY	0-10 BLUE CLAY, SEASHELL 10-20 BROWN CLAY, SHALE 20-30 WHITE SANDY CLAY 30-44 WATER SAND	0-31 BLUE CLAY 31-39 SANDY CLAY 39-44 SAND	0-26 BLUE CLAY 26-34 GREY CLAY 34-44 SAND	0-30 BLUE CLAY 30-44 SAND

CORRELATION HORIZON 'A'

CORRELATION HORIZON 'B'

DRILL LOGS (DEPTH IN FEET)

CORRELATION HORIZON 'A'

CORRELATION HORIZON 'B'

DATUM S.L.

500' 1000' 1500' 2000' 2500' 3000' 3500' 4000' 4500' 5000' 5500' 6000' 6500' 7000'

DATUM 0'

SURFACE ELEVATION

DEPTH OF WEATHERED LAYER

87	86	85	84	83	82	81	80	79	78	77	47MS

DEPTH OF BOTTOM OF SHOT ×

DEPTH OF SHOT HOLE ⌴

50' 100'

FIRST BREAK VELOCITIES

10000'/SEC

8000'/SEC

6000'/SEC

LEGEND

GOOD, FAIR, POOR — REFLECTION ACCURACY

UNCERTAIN REFLECTION

REFLECTION TIMES CORRECTED TO DATUM

REFLECTION GRADE (GARY 1947)

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

TRAVERSE C (KARUMBA)

REFLECTION CROSS-SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT

HORIZONTAL AND VERTICAL SCALES IN FEET

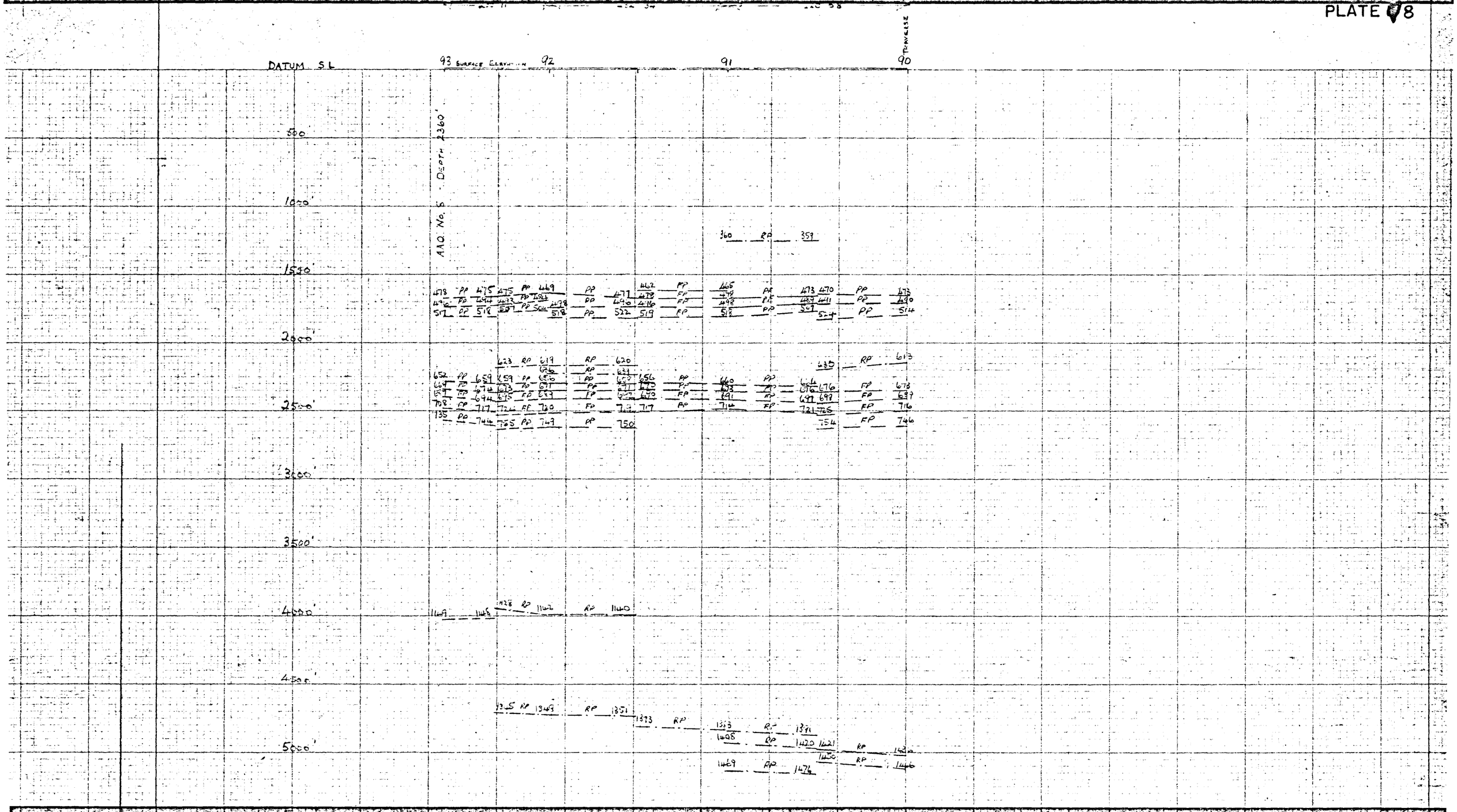
500 0 500 1000 1500 2000

E54/B3-24

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Record No. 1975/73

PLATE 8



SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD

TRAVERSE D (KARUMBA)

REFLECTION CROSS-SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT

HORIZONTAL AND VERTICAL SCALES IN FEET

500 0 500 1000 1500 2000

E54/83-18

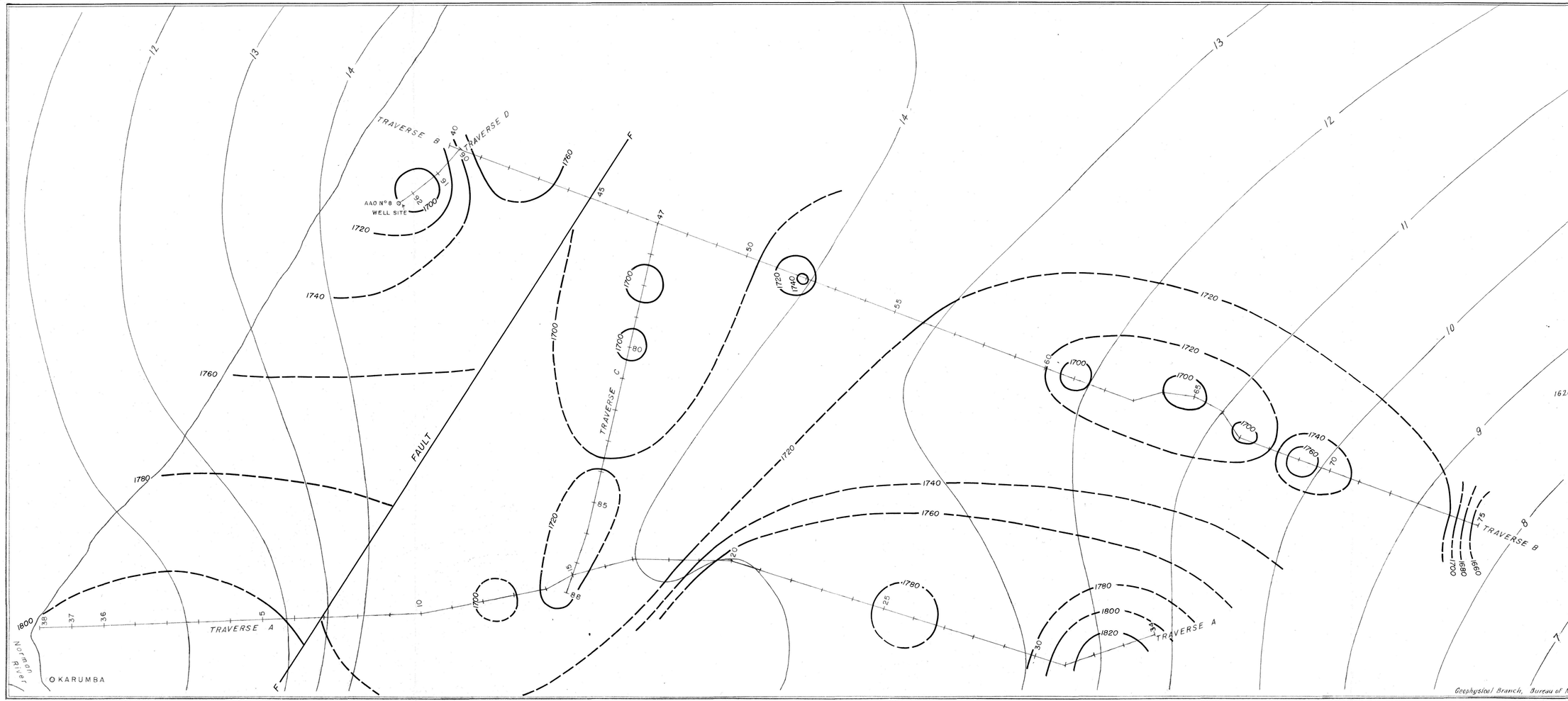
(Ex G318-3)

Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics.

Record No. 1975/73

TO ACCOMPANY RECORDS 1959, No. 4

PLATE 9



True North

C. J. Robertson
GEOPHYSICIST

LEGEND

- TRAVERSE
- 1620 — CORRELATION HORIZON CONTOUR (20 ft. interval)
- 14 — GRAVITY CONTOUR (milligals)

SCALE IN MILES
0 ½ 1½

SEISMIC SURVEY, CARPENTARIA BASIN, QUEENSLAND

STRUCTURAL CONTOURS ON CORRELATION HORIZON A

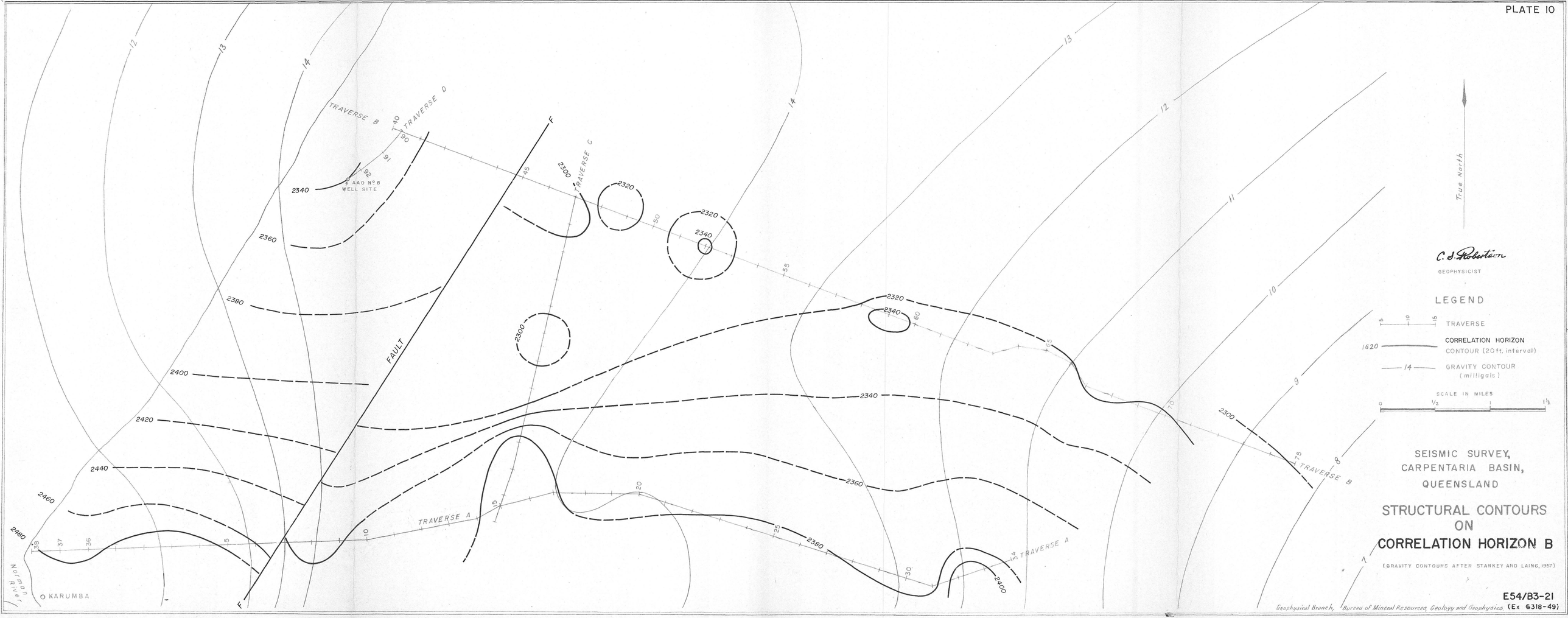
(GRAVITY CONTOURS AFTER STARKEY AND LAING, 1957)

E54/B3-20

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TO ACCOMPANY RECORDS 1959, No.
Record No. 1975/73

PLATE 10



C. S. Robertson

GEOPHYSICIST

LEGEND

TRAVERSE

1620 CORRELATION HORIZON CONTOUR (20 ft. interval)

14 GRAVITY CONTOUR (milligals)

SCALE IN MILES

0 ½ 1 1½

SEISMIC SURVEY, CARPENTARIA BASIN, QUEENSLAND

STRUCTURAL CONTOURS ON CORRELATION HORIZON B

(GRAVITY CONTOURS AFTER STARKEY AND LAING, 1957)

E54/B3-21

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex 6318-49)

TO ACCOMPANY RECORDS 1959, No.
Record No. 1975/73

PLATE II

TRAVERSE BEARING 111° N

S.P.37
0-20 GREY CLAY, SEA SHELL
20-44 GREY WHITE CLAY

DRILL LOGS

S.P. 7
0-40 GREY CLAY
40-65 WATER SAND
65-130 NO CUTTINGS
130-150 GRANITE GRIT

S.P. 14
0-10 GREY CLAY, SEA SHELL
10-20 GREY CLAY
20-30 WHITE SANDY CLAY
30-55 WATER SAND

S.P. 14
DEPTH 82/96 - CHARGE 2×35LB

	4										6										8				
t_c	1318	1306	1296	1290	1267	1259	1247	1236	1227	1219	1205	1197			1159	1146	1135	1129	1119	1096	1086	1081	1071	1055	1043	1035	1022
W_c	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6
E_c	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
t_c	1327	1315	1305	1299	1276	1268	1256	1245	1236	1228	1214	1206	1194		1168	1155	1144	1138	1128	1105	1095	1090	1080	1064	1052	1044	1031

V = 14500

V = 18500

V = 18200

V = 19350

S.P 37
DEPTH 92/102 - CHARGE 2×25LB

	5										7										9				
t_c	1265	1278	1293	1296		1321	1334	1346	1350	1359	1374	1394		1215	1232	1236	1247	1256	1256	1276	1283	1296	1302	1320	1332	
W_c	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	4	6	6	6	6	6	6
E_c	-5	-5	-5	-5	-5	-5	-5	-5	-6	-6	-6	-6	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
t_c	1272	1284	1298	1302	1314	1327	1340	1352	1356	1365	1380	1400	1419	1221	1238	1242	1253	1262	1262	1282	1289	1302	1308	1326	1338	1339

UNCORRECTED TIMES

V = 10300

V = 9400

TIME DIFFERENTIALS IN MILLISECONDS

+150 / 0 / -50

SP37 SP34 SP1 SP2 S.P.3 SP4 SP5 S.P.6 SP7 SP8 S.P.9 SP10 S.P.11 S.P.12 SP13 SP14

4 5 6 7 8 9

MILLISECONDS

DEPTH IN FEET

0 1000 2000 3000

V = 1000'/sec

FAULT

V = 18,650'/sec

REFRACTION PROFILE ON TRAVERSE A-KARUMBA

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300

Record No. 1975/73 E54/B3-22

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-14)

BRITISH MADE

PLATE 12

DRILL LOGS

S.P.33
0-23 CLAY
23-30 WHITE SANDY CLAY
30-58 WATER SAND

S.P.36
0-22 BLUE CLAY
22-40 WHITE CLAY
40-51 WATER SAND

S.P.39
0-10 GREY CLAY
10-30 BLUE CLAY
30-59 BLUE CLAY & GRAVEL

S.P.43
0-30 GREY CLAY
30-34 WATER SAND

S.P.46
0-20 BROWN GREY CLAY
20-35 BROWN SAND CLAY
35-58 WATER SAND

S.P.49
0-24 BROWN CLAY
24-36 GREY CLAY
36-54 SAND

S.P.52
0-5 BROWN CLAY
5-20 GREY CLAY
20-30 WHITE CLAY
30-58 WATER SAND

S.P. 59
DEPTH 96/97 - CHARGE 3 × 50 LB

S.P. 56
DEPTH 78/91 - CHARGE 2×50 LB

S.P. 53
DEPTH 35/62 - CHARGE 2× 30 LB

S.P. 61
DEPTH 70/123 - CHARGE 30 LB

S.P. 43
DEPTH 36/65 - CHARGE 1 × 35 LB
2 × 30 LB

S.P. 46
DEPTH 30/65 - CHARGE 100 LB

S.P. 40
DEPTH 66/47 - CHARGE 2×30 LB

S.P. 37
DEPTH 30/124 - CHARGE 30 LB

TRAVERSE BEARING 86° N

V1 = 1870 ft/sec
V2 = 4350 ft/sec
V3 = 6250 ft/sec
V4 = 7500 ft/sec
V5 = 14250 ft/sec
V6 = 19400 ft/sec
V7 = 19860 ft/sec

MILLISECONDS

TIME DIFFERENTIALS IN MILLISECONDS

DEPTH IN FEET

HORIZONTAL SCALE 1100' = 1 INCH

REFRACTION PROFILE ON TRAVERSE B - KARUMBA

HORIZONTAL SCALE IN FEET

Record No. 1975/75
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics
E54/83-23
(Ex 6318-15)

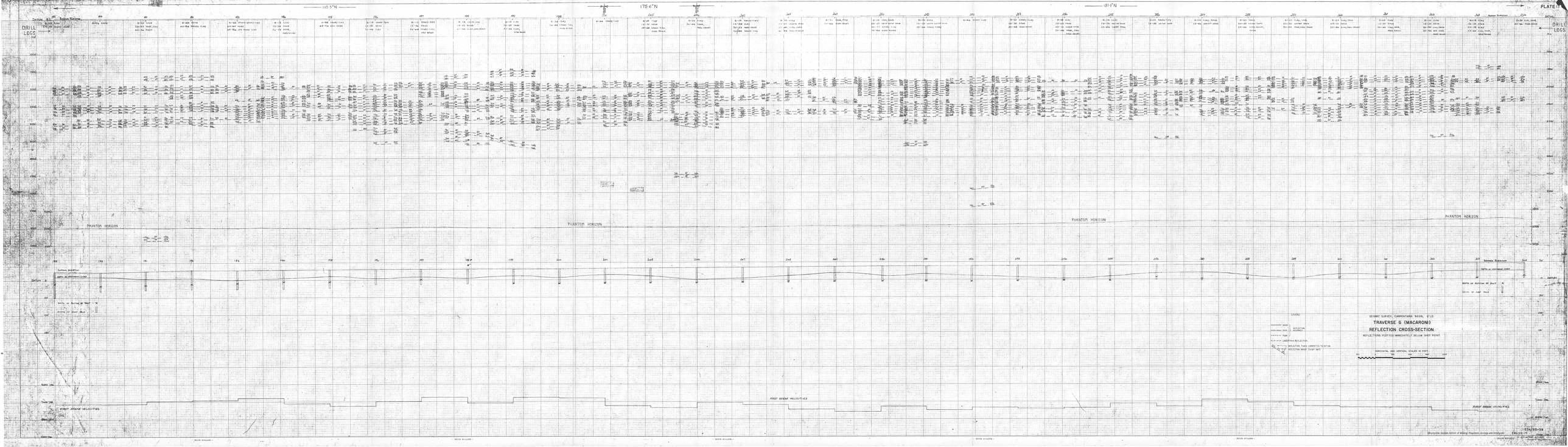

PLATE 6
DRILL LOGS
115 S°N
175 E°N
131 F°N
PHANTOM HORIZON
PHANTOM HORIZON
PHANTOM HORIZON
FIRST BREAK VELOCITIES
FIRST BREAK VELOCITIES
FIRST BREAK VELOCITIES
SEISMIC SURVEY, CARPENTARIA BASIN, N.T.
TRAVERSE G (MACARONI)
REFLECTION CROSS-SECTION
REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT
HORIZONTAL AND VERTICAL SCALES IN FEET
0
500
1000
1500
LEGEND
REFLECTION
REFLECTION TIMES CORRECTED TO DATUM
REFLECTION BELOW FLOAT DATE
254/03-59
Shirley Baker School of Mining, Economic Geology and Geophysics
Sydney

PLATE 14

F.B.H. No.1 Bore
Wyaaba Creek

S.P. LOG | RES. LOG

NW — 106·0°N — SE

F.B.H. No.1 BORE (75' North of S.P.)

S.L. (DATUM)

LITHOLOGY (GENERALISED - F.B.H. No.1)

- MAINLY SAND WITH CLAY AND GRAVEL
- MUDSTONE AND SANDSTONE
- MAINLY SHALE WITH SANDSTONE DOLOMITE AND LIMESTONE
- MAINLY SHALE WITH SILTSTONE
- SANDSTONE AND CONGLOMERATE & GABBRO?

SURFACE ELEVATION
BASE OF WEATHERED LAYER
DEPTH OF BOTTOM OF SHOT
DEPTH OF SHOT HOLE

LEGEND

- GOOD, FAIR, POOR — REFLECTION ACCURACY
- UNCERTAIN REFLECTION
- REFLECTION TIMES CORRECTED TO DATUM
- REFLECTION GRADE (GABY 1967)

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

TRAVERSE I (WYAABA)

REFLECTION CROSS-SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT.

HORIZONTAL AND VERTICAL SCALES IN FEET

FIRST BREAK VELOCITIES

E54/83-58
(EXG 318-12)

Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics.

TO ACCOMPANY RECORDS 1959 No.4
Record No 1975/73

BRITISH MADE

PLATE 15

154°N

SURFACE ELEVATION

314	313	312	311
0-35 CLAY 35-44 SAND	0-25 CLAY 25-44 SAND, HARD BANDS	0-10 CLAY 10-44 SAND	0-26 CLAY 26-44 SAND, HARD BANDS

DATUM

DRILL LOGS

500'

1000'

1500'

2000'

2500'

3000'

294 RP 234

345 PP 334
374 PP 358
403 PP 390

RP 329
RP 354
RP 386 390 RP 356
413 RP 415 RP 414
438 RP 435

260 PP 361
240 PP 377
319 PP 305
240 RP 329

496 RP 500
517 RP 525
549 RP 518
575 RP 542
RP 573
602

RP 535 543 RP 517
RP 576
RP 602

517 RP 517
543 RP 529 522
569 PP 575 582
533 PP 604 606

503
PP 577
PP 582
PP 579
RP 604

680 PP 687 694
703 PP 708 716
740
765

RP 690
FP 708
FP 736
FP 767

PP 679 676
FP 699 699
FP 727 722
FP 759 753

FP 684
FP 700
FP 725
FP 752

PP 674
FF 691 693
FF 717 716
FF 744

PP 698
FP 718

100'
50'
DATUM 0'

SURFACE ELEVATION

DEPTH OF WEATHERED LAYER

DEPTH OF BOTTOM OF SHOT

DEPTH OF SHOT HOLE

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

TRAVERSE M (DUMBAR)

REFLECTION CROSS-SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT

GOOD
FAIR } REFLECTION ACCURACY
POOR
UNCERTAIN REFLECTION
REFLECTION TIMES CORRECTED TO DATUM
REFLECTION GRADE (GABY 1947)

HORIZONTAL AND VERTICAL SCALES IN FEET

500 0 500 1000 1500 2000

8000'/SEC
7000'/SEC
6000'/SEC
5000'/SEC

FIRST BREAK VELOCITIES

E54/B3-19
EX(G318-20)

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

TO ACCOMPANY RECORDS 1959 No.4
Record No. 1975/73

PLATE 16

62° N

SP436 — Surface Elevation — 435 — 434 — 433 — 432 — 431

DATUM 0

DRILL LOGS

0-40 CLAY
40-54 SAND

0-54 CLAY

0-54 CLAY

0-44 CLAY

0-54 CLAY

0-25 CLAY
25-30 HARD BANDS
30-64 CLAY

DRILL LOGS

500'
1000'
1500'
2000'
2550'

FIRST BREAK VELOCITIES

6000 ft/sec

5000 ft/sec

100'
50'
0 DATUM
50'
100'

436 — 435 — 434 — 433 — 432 — 431

SURFACE ELEVATION

DEPTH OF WEATHERED LAYER

DEPTH OF BOTTOM OF SHOT X

DEPTH OF SHOT HOLE

LEGEND

GOOD
FAIR
POOR
} REFLECTION ACCURACY

UNCERTAIN REFLECTION

REFLECTION TIMES CORRECTED TO DATUM

379 PP 383 — REFLECTION BRADE (BABY 1947)

SEISMIC SURVEY, CARPENTARIA BASIN, Q'LD.

TRAVERSE W (GREGORY RIVER)
REFLECTION CROSS-SECTION

REFLECTIONS PLOTTED IMMEDIATELY BELOW SHOT POINT

HORIZONTAL AND VERTICAL SCALES IN FEET

500 0 500 1000 1500 2000

Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics

E54/B3-27
(Ex G318-9)

TO ACCOMPANY RECORD 1959 No. 4
Record No. 1975/73

PLATE 17

TRAVERSE BEARING 111°N

DRILL LOGS

S.P. 95

0-42 SILICIFIED SHALE, BRECCIA
42-76 WHITE CLAY
76-105 GREY CLAY

S.P. 103

0-12 CLAY
12-23 SAND
23-44 SILICIFIED SHALE, BRECCIA

S.P. 110

0-30 SILICIFIED SHALE
30-50 HARD SHALE
50-84 CLAY, HARD BANDS

S.P. 110

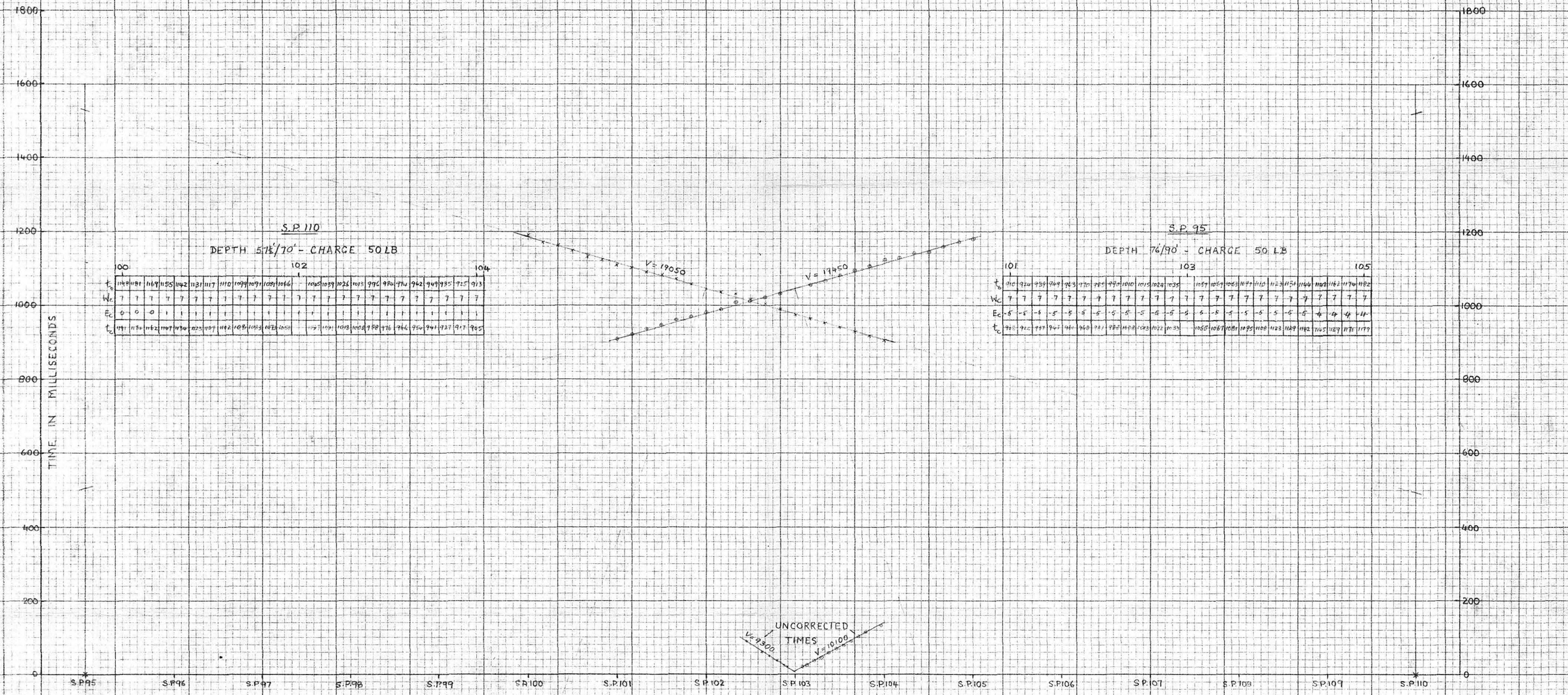
DEPTH 57½'/70' - CHARGE 50 LB

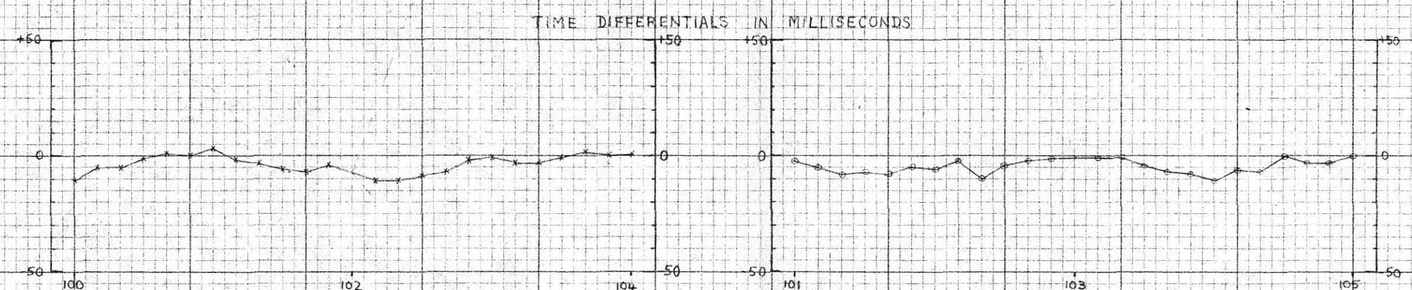
	100											102													104
t_o	1149	1181	1169	1155	1142	1131	1117	1110	1099	1097	1091	1089	1066	-	1065	1059	1026	1013	996	980	974	962	949	935	925	913
W_c	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
E_c	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
t_c	1191	1174	1162	1147	1130	1125	1107	1102	1089	1087	1083	1078	1068	-	1057	1051	1018	1003	988	976	966	954	941	927	917	905

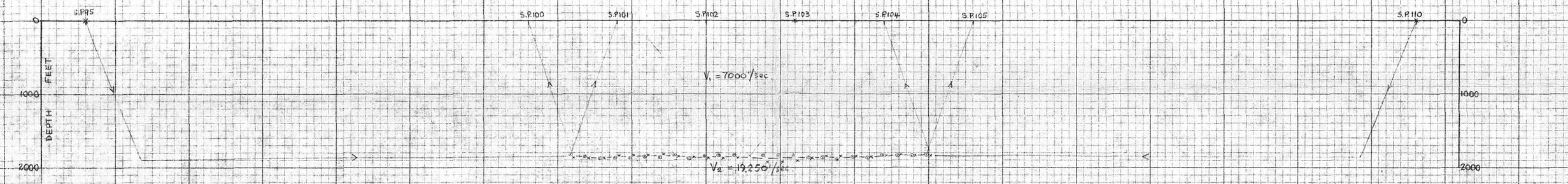
S.P. 95

DEPTH 76/90' - CHARGE 50 LB

	101					103																			105
t_o	910	924	939	949	963	970	989	990	1010	1015	1024	1035	-	1059	1064	1063	1094	1110	1123	1134	1144	1158	1162	1174	1182
W_c	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
E_c	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-6	-5	-6	-5	-5	-5	-5	-5	-6	-5	-4	-4	-4	-4
t_c	905	919	934	944	958	965	984	985	1005	1010	1019	1030	-	1055	1058	1058	1089	1105	1118	1129	1139	1152	1158	1170	1178







REFRACTION PROFILE AA-GLENORE

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73 E54/B3-28
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.
(EX G 318-36)

TRAVERSE BEARING 111°N

DRILL LOGS

S.P. 113

0-8	SAND
8-32	SANDY CLAY
32-50	CLAY, SOFT SANDSTONE
50-80	CLAY
80-105	SAND, SOFT SANDSTONE

S.P. 121

0-21	SANDY CLAY
21-32	CLAY
32-44	SAND, HARD BANDS

S.P. 128

0-30	SANDY CLAY
30-70	CLAY, HARD BANDS
70-105	SAND, HARD BANDS

S.P. 128

DEPTH 90'/100' - CHARGE 35 LB

t_o	1012	1015	-	1013	1031	1022	1007	995	982	966	956	942		922	911	901	891	881	867	857	847	832	822	815	800
W_c	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
E_c	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
t_c	1049	1038	-	1057	1057	998	983	971	958	942	931	917		897	884	874	866	855	842	834	823	810	797	788	775

S.P. 113.

DEPTH 65'/77' - CHARGE 45 LB

t_o	796	801	813	827	837	849	863	874	883	892	902	913		930	947	954	970	981	994	1004	1020	1031	1042		1062
W_c	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
E_c	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
t_c	766	772	787	801	811	823	837	847	857	866	876	887		910	921	931	944	955	963	980	994	1005	1016		1036

REFRACTION PROFILE BB - HAYDON

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73 E54/B3-29

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (EX G318-35)

TRAVERSE BEARING 84·2°N

DRILL LOGS

S.P. 132
0-50 SAND
50-105 SANDY CLAY

S.P. 136
0-50 CLAY, HARD BANDS
50-105 SANDY CLAY

S.P. 135
0-46 SANDY CLAY
46-87 SANDY CLAY

S.P. 139
0-44 SAND

S.P. 140
0-10 SAND
10-85 SANDY CLAY

S.P. 142
0-105 SANDY CLAY

S.P. 146
0-10 CLAY
10-46 SANDY CLAY, HARD BANDS
46-63 CLAY, HARD BANDS
63-85 SAND, HARD BANDS

S.P. 136
DEPTH 101/103' - CHARGE 5 LB

| | | |

PLATE 20

DRILL LOGS

S.P. 154

0-30 CLAY
30-75 SANDY CLAY, HARD SANDS
75-85 SAND, HARD BANDS

S.P. 157

0-65 CLAY, HARD BANDS

S.P. 160

CLAY, HARD BANDS
SAND, HARD BANDS
SANDY CLAY

TRAVERSE BEARING 115·3°N

S.P. 160

DEPTH 87/92' - CHARGE 20 LB.

| | | |

PLATE 21

TRAVERSE BEARING 148°N

DRILL LOGS

S.P. 167.

0-46 CLAY, HARD BANDS
46-62 SAND
62-100 SANDY CLAY.

S.P. 170

0-44 CLAY, HARD BANDS

S.P. 173

0-12 SAND
12-18 HARD BASEMENT ROCK

S.P.173

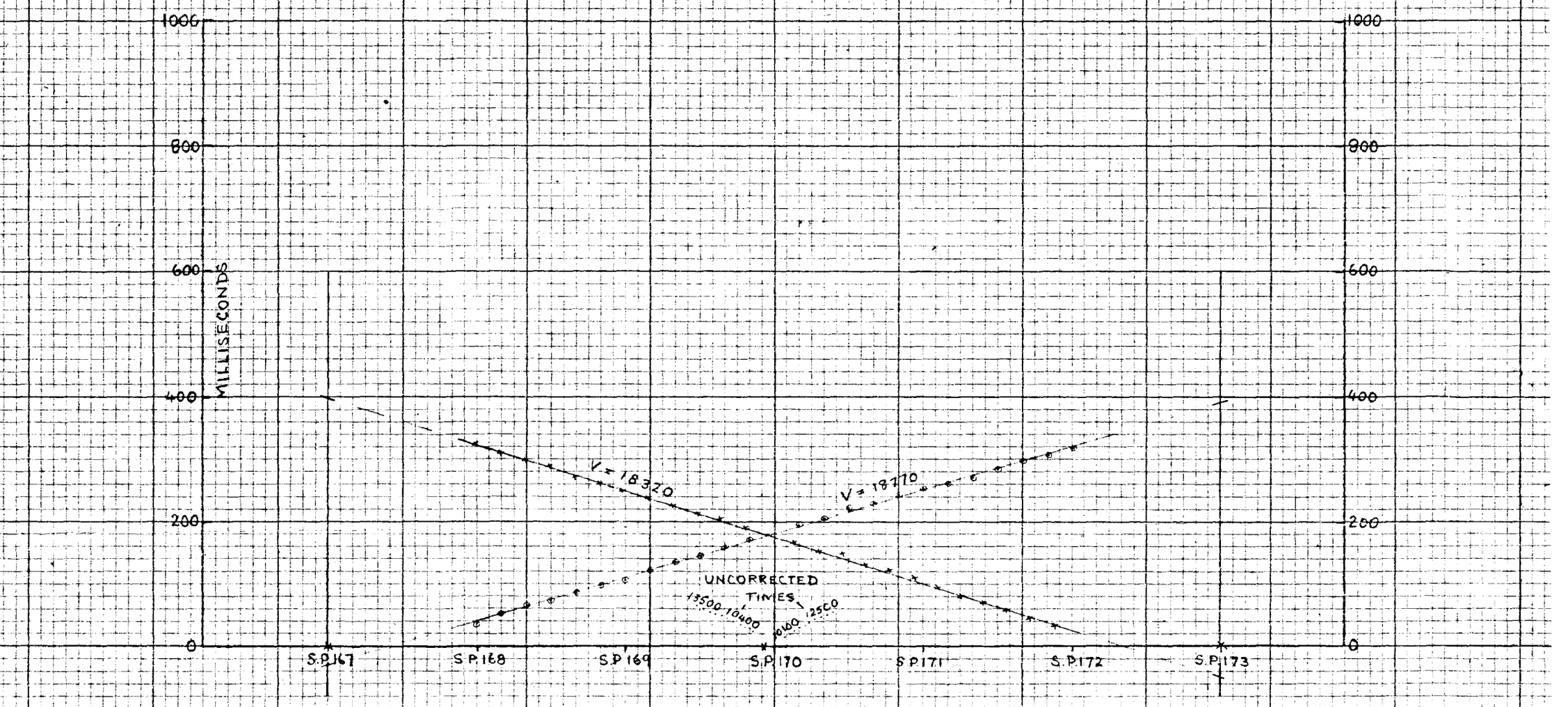
DEPTH 28/36 - CHARGE 20 LB.

t_o	92	107	119	129	140	153	161	177	190	200	213	226		250	260	277	285	298	310	316	327	340	353	362	375
w_c	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	52	52	51	51	51	51	51	51	51	51	51	51	51	51	51	51	52	52	52	52	52	52	52	52	52
t_c	34	61	64	74	85	96	106	122	135	145	158	171		195	206	221	239	242	264	242	271	294	297	306	319

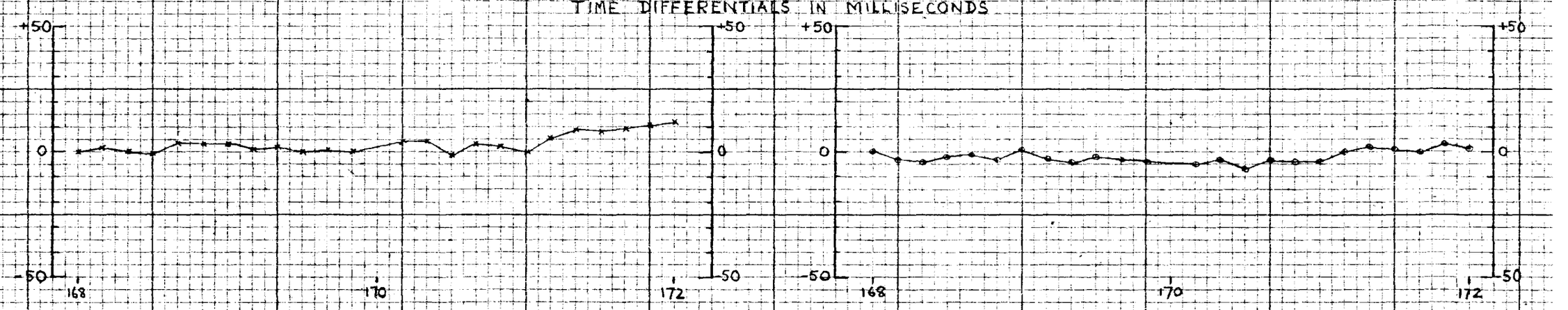
S.P167

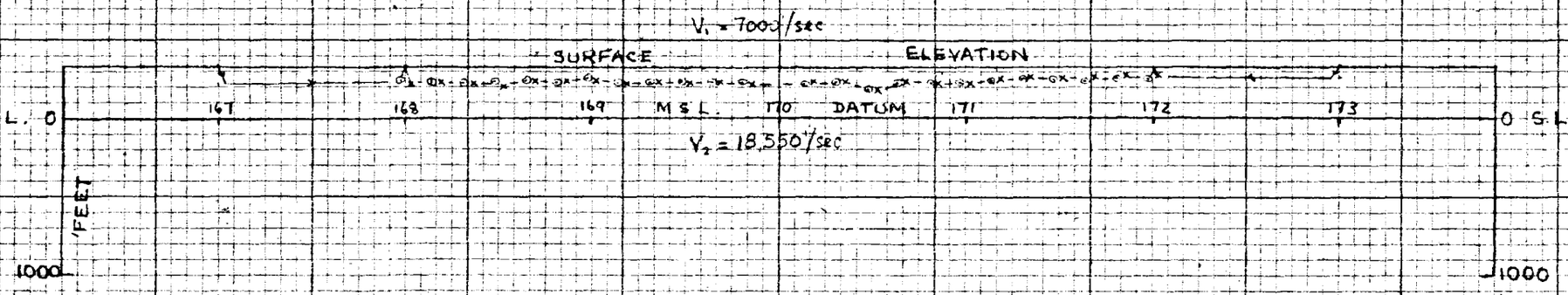
DEPTH 22½/25 - CHARGE 10 LB.

t_o	380	366	356	344	328	317	305	295	282	272	259	248		221	210	204	188	178	168	151	137	127	115	102	90
w_c	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	53	53	53	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53	53	53	53	53	53	53
t_c	323	309	299	283	272	261	249	237	226	216	203	192		164	153	147	131	121	111	94	80	70	58	45	33



TIME DIFFERENTIALS IN MILLISECONDS





REFRACTION PROFILE EE - CROYDON

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

- BRITISH MADE -

Record No. 1975/73 E54/B3-3
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (EX G318-38

PLATE 22

DRILL LOGS

S.P. 188

0-16 CLAY
16-50 CLAY, SAND
50-165 CLAY, HARD BANDS

S.P. 182

0-30 CLAY
30-54 CLAY, SOFT SANDSTONE

S.P. 176

0-10 GREY CLAY
10-30 YELLOW CLAY
30-70 GREY CLAY
70-165 BLACK SHALE

TRAVERSE BEARING 55° N

S.P. 176

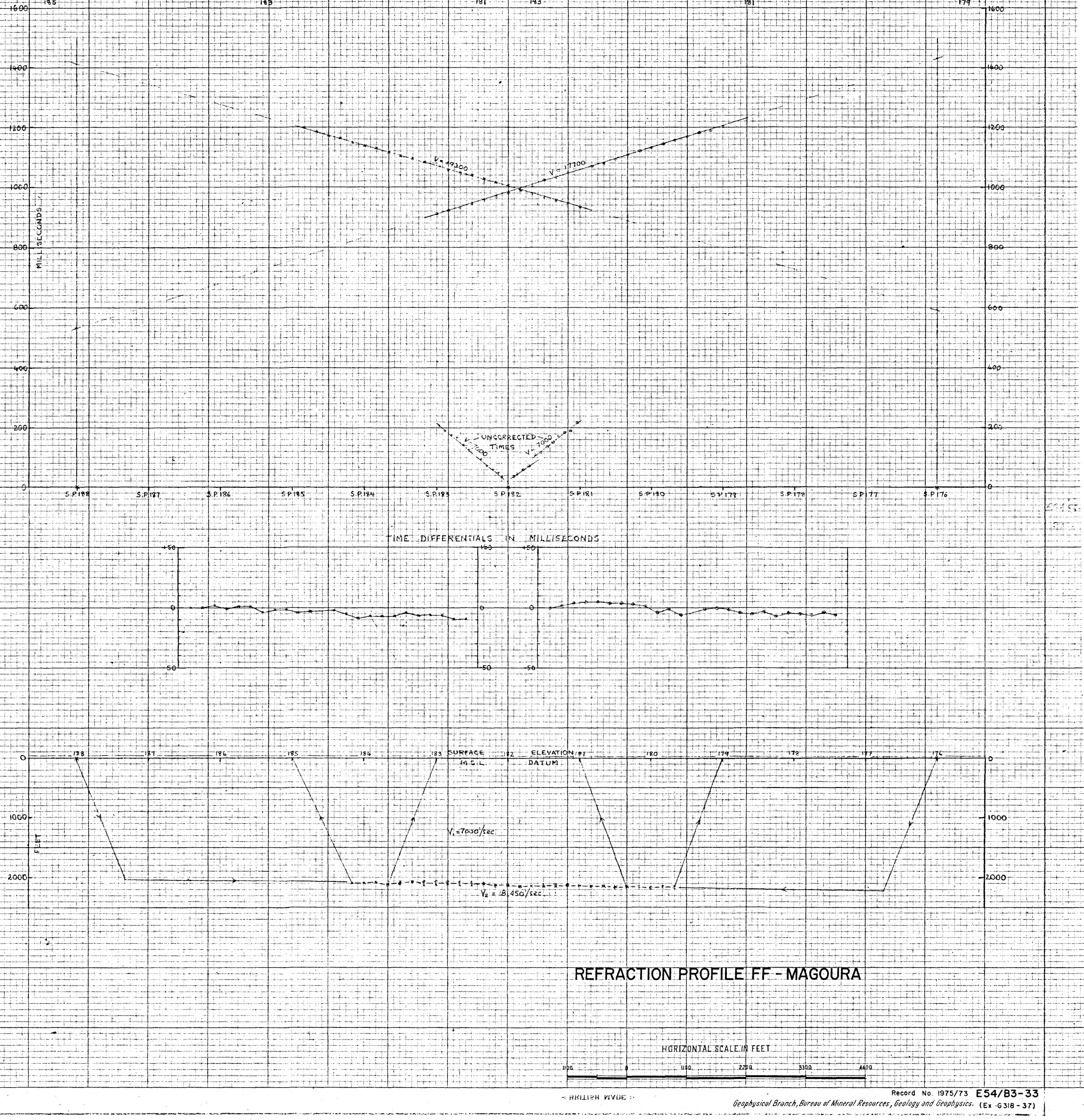
DEPTH 65½' - CHARGE 70 LB

t_o	x	1208	1196	1182	1173	1159	1147	1140	1126	1115	1108	1092		1067	1058	1049	1036	1024	1012	997	987	975	964	955	943
W_c	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15
E_c	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
t_c	x	1199	1187	1173	1164	1150	1138	1131	1117	1106	1096	1083		1058	1049	1040	1027	1015	1003	988	978	966	955	946	934
	185												183											181	

S.P. 188

DEPTH 72/84½' - CHARGE 50 LB

t_o	1121	932	942	953	965	978	990	1003	1015	1033	1042	1059		1078	1089	1102	1117	1130	1140	1156	1165	1177	1191	1200	1214
W_c	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-16	-16	-16	-15	-15	-15	-15
E_c	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
t_c	912	922	932	943	955	968	980	993	1005	1023	1032	1049		1068	1079	1092	1107	1120	1130	1146	1155	1167	1181	1190	1204
	183												181											179	



TIME DIFFERENTIALS IN MILLISECONDS

REFRACTION PROFILE FF - MAGOURA

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

- BRITISH MADE -

Record No. 1975/73 E54/B3-33
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex -G318 - 37)

TRAVERSE BEARING 115·5° N

DRILL LOGS

S.P. 349

0-30	SANDY CLAY
30-60	SAND
60-80	RED SAND

S.P. 189

0-65	SAND
65-75	SANDY CLAY

S.P. 195

0-10	SANDY CLAY
10-20	SAND
20-45	CLAY, SAND
45-54	RED SAND

S.P. 196

0-10	SANDY CLAY
10-30	SAND
30-44	CLAY

S.P. 201

0-36	CLAY, SAND
36-63	CLAY
63-78	SAND
78-110	SANDY CLAY
110-130	SAND
130-158	SANDY CLAY

S.P. 349

DEPTH 95'/103' - CHARGES 2 × 20 LB.

| | | |

PLATE 24

DRILL LOGS

S.P 202

0-13	SAND
13-46	WATER SAND
46-65	SAND, CLAY
65-93	SAND, HARD BANDS
93-105	SAND, CLAY

S.P 208

0-9	CLAY
9-23	WATER SAND
23-31	SAND, CLAY
31-44	WATER SANDS

S.P 214

0-13	CLAY
13-46	WATER SAND
46-65	SAND, CLAY BANDS
65-78	CLAY, SAND
78-105	SAND, CLAY

TRAVERSE BEARING 112·5° N

S.P 214

DEPTH 87'/92' - CHARGE 20 LB.

t_o	919	938	951	965	975	988	1003	1022	1029	1037	1056	1062		x	1107	1115	1132	1139	1153	1164	1169	1191	1192	1205	1218
W_c	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2
E_c	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
t_c	900	919	932	946	956	969	984	993	1010	1018	1031	1043		1073	1088	1096	1113	1119	1134	1145	1150	1162	1178	1181	1199

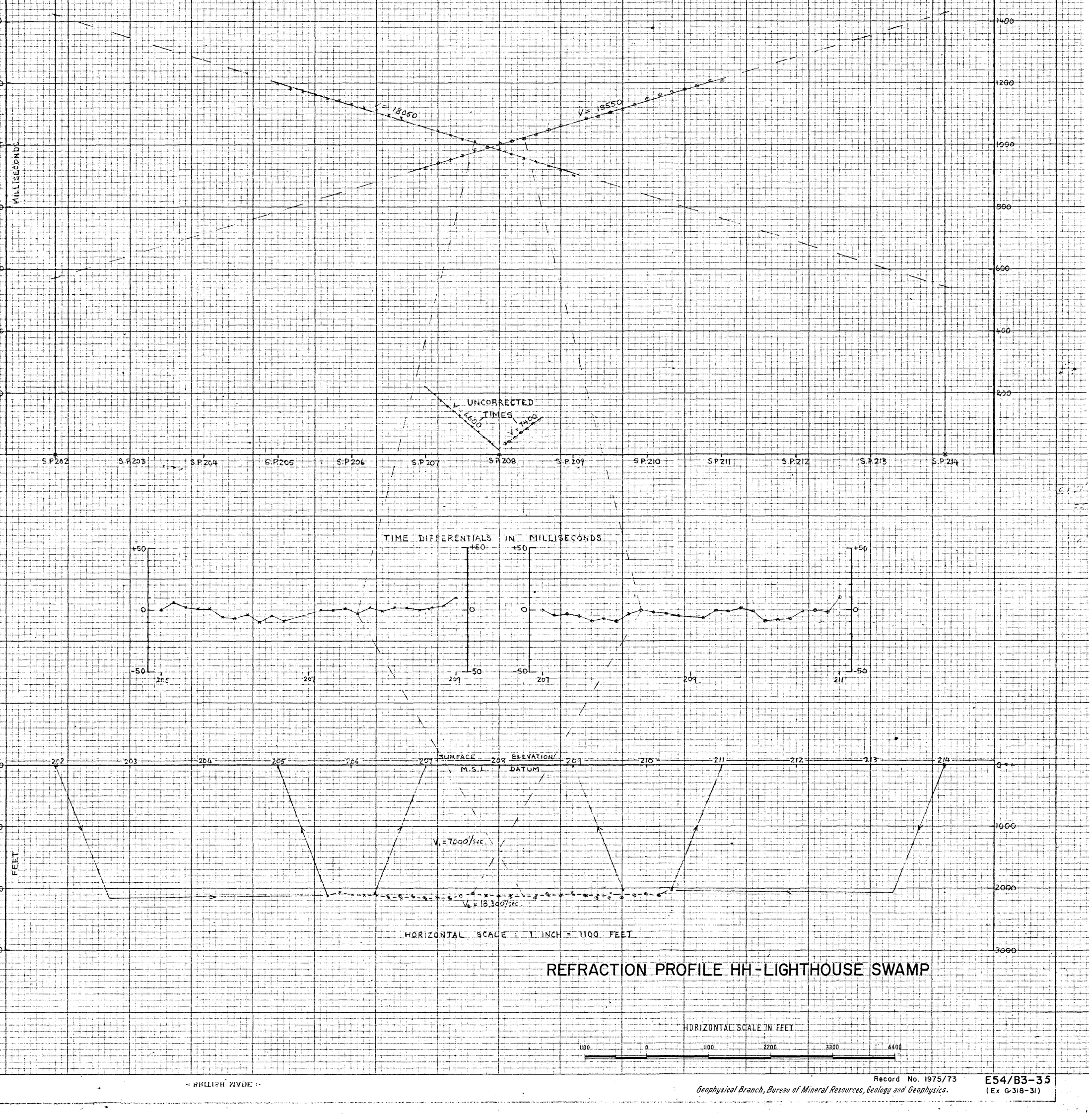
205 207 209

S.P 202

DEPTH 92'/97' - CHARGE 20 LB.

t_o	941	957	968	982	998	1008	1022	1028	1037	1051	1064	1079		1104	1110	1123	1132	1147	1167	1178	1190	1196	1207	1228	1221
W_c	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2
E_c	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
t_c	941	957	968	982	998	1008	1022	1028	1037	1051	1064	1079		1104	1110	1123	1132	1147	1167	1178	1190	1196	1207	1228	1221

207 209 211



REFRACTION PROFILE HH - LIGHTHOUSE SWAMP

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.

E54/B3-35
(Ex G318-31)

BRITISH MADE

PLATE 25

DRILL LOGS

S.P. 215

0-30 CLAY
30-65 SANDY CLAY, HARD BANDS
65-105 SAND, HARD BANDS

S.P. 221

0-10 CLAY
10-21 SAND
21-34 CLAY, HARD BANDS
34-74 SAND

S.P. 227

0-10 GREY CLAY
10-33 WHITE CLAY
33-80 SANDY CLAY, HARD BANDS
80-105 CLAY

TRAVERSE BEARING 107°N

S.P 227A

DEPTH 95'/105' - CHARGE 90 LB.

| | | |

PLATE 26

S.P.228

0 - 25 BOULDER CLAY
25-41 SAND
44 - 55 CLAY, HARD BOULDERS
55 - 76 SAND
76 - 108 SAND & CLAY, HARD BOULDERS

DRILL LOGS

S.P.236

0 - 32 CLAY
32 - 44 SANDSTONE RANGE

S.P.244

0 - 21 BOULDER CLAY
21 - 43 CLAY
43 - 65 SANDY CLAY
65 - 76 SAND, HARD BOULDERS
76 - 105 SANDY CLAY, HARD BOULDERS

S.P 244

DEPTH 60'/80' - CHARGE 80 LB

t_o	1625	1611	1597	1585	1566	1552	1541	1527	1512	1500	1376	1477		1456	1027	1402	1415	1405	1378	1326	1371	1353	1340	1329	1316
W	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	-4	-4	-4	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
t_c	1616	1602	1588	1568	1550	1537	1546	1532	1517	1501	1441	1468		1447	1008	1393	1406	1396	1369	1317	1362	1344	1331	1320	1307

233 235 237

S.P226

DEPTH 55'/95' - CHARGE 90 LB

t_o	x	1625	1589	1609	1621	1600	1614	1586	1602	1587	1570	1552	1543		1513	1566	1582	1598	1607	1620	1616	1607	1604	1618	1649
W		6	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	--	--	--	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
t_c	x	1615	1585	1609	1617	1596	1610	1582	1598	1583	1566	1548	1539	1531	1509	1562	1578	1594	1603	1616	1612	1603	1600	1614	1645

235 237 239

TRAVERSE BEARING 17°-5"N

V = 17450

V = 15500

V = 7000

V = 16300

UNCORRECTED TIMES

V = 1700

V = 7000

REFRACTION PROFILE JJ-WOCKERNACKER DAM

HORIZONTAL SCALE IN FEET

100 0 1100 2200 3300 4400

MILLISECONDS

S.P.228 S.P.229 S.P.230 S.P.231 S.P.232 S.P.233 S.P.234 S.P.235 S.P.236 S.P.237 S.P.238 S.P.239 S.P.240 S.P.241 S.P.242 S.P.243 S.P.244

+50 0 -50

228 229 230 231 232 233 234 235 SURFACE 236 ELEVATION 237 238 239 240 241 242 243 244

M.S.L. DATUM

S.L. 0 1000 2000 3000 4000 S.L.

FEET

V = 7000 ft/sec

V_2 = 16300 ft/sec

Record No. 1975/73
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

E54/B3-37

PLATE 27

S.P. 279B
0-23 CLAY
23-68 SAND
68-75 CLAY
75-105 SANDY CLAY

S.P. 265
0-26 CLAY
26-31 SAND
31-105 SANDY CLAY

TRAVERSE BEARINGS 25·8°N

S.P. 279B
DEPTH 90/102 - CHARGE 1X40 LB
1 X 30 LB

S.P. 265
DEPTH 80/100 - CHARGE 80LB

V = 22500
V = 15800
V = 9160
V = 6000

L.S. VELOC = 9160 f/s
L.S. VELOC = 15800 f/s

UNCORRECTED TIMES

MILLISECONDS

TIME DIFFERENTIALS IN MILLISECONDS

SURFACE ELEVATION M.S.L. DATUM

V = 7900 f/s

FAULT

V = 13500 f/s

FEET

DEPTH

REFRACTION PROFILE KK-GALBRAITH

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73 E54/83-38
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-29)

PLATE 28

S.P. 283B

0-20' CLAY
20-50 SANDY CLAY
52-65 WATER SAND
65-90 SANDY CLAY

DRILL LOGS
S.P. 287

0-16 CLAY
16-32 SAND
32-47 SANDY CLAY

S.P. 294

0-10 CLAY
10-40 CLAY SAND
40-50 SAND
50-80 CLAY
80-100 CLAY SAND

S.P 294

DEPTH 43/57' - CHARGE 2 × 40 LB

t_0	1504	1534	1528	1529	1517	1499	1490	1460	1470	1455	1446	1454	-	1410	1400	1397	1374	1364	1335	1293	1273	1237	1229	1179	1178
W	13	13	13	13	13	13	13	13	13	13	13	13	-	13	13	13	13	13	14	11	11	14	14	16	16
E_c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-	-1	-1	-1	-1	-1	-	-	-	-	-	-	-
t_c	1550	1540	1514	1540	1504	1485	1476	1446	1458	1444	1434	1420	-	1376	1386	1335	1360	1360	1317	1287	1267	1222	1193	1163	1133

284 — 286 — 288

S.P 280B

DEPTH 70'/100' - CHARGES { 30 LB / 70 LB

t_0	-	×	1465	1470	1495	1505	1518	1529	1544	1551	1559	1561		1573	1606	1615	1621	1647	1654	1667	1683	1689	1705	1713	1736
W	13	13	13	13	13	13	13	13	13	13	13	14	13	13	13	13	13	13	13	13	13	13	14	14	15
E_c	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-	-3	-3	-3	-3	-3	-3	-3	-3	-3	-2	-3	-3
t_c	-	×	1435	1468	1488	1496	1508	1519	1536	1541	1547	1549		1583	1595	1605	1620	1629	1643	1659	1673	1678	1686	1703	1716

286 — 288 — 290

TRAVERSE BEARING 248°N

V = 18800

V = 16250

V = 7100

UNCORRECTED TIMES V = 7300 / V = 7060

TIME DIFFERENTIALS IN MILLISECONDS

MILLISECONDS

FEET

S.L. 0

SURFACE ELEVATION - M.S.L. DATUM

V_1 = 7000'/sec

V_2 = 18,600'/sec

S.P.280B S.P.280A S.P.280 S.P.281 S.P.282 S.P.283 S.P.284 S.P.285 S.P.286 S.P.287 S.P.288 S.P.289 S.P.290 S.P.291 S.P.292 S.P.293 S.P.294

REFRACTION PROFILE LL-RUTLAND PLAINS

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

- BRITISH MADE -

Record No. 1975/73 E54/B3-39
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex 6318-27)

TRAVERSE BEARINGS 154°N

DRILL LOGS

S.P. 320

0-20 CLAY
20-40 SANDY CLAY
40-60 COARSE SAND
60-75 SANDY CLAY
75-85 SANDY CLAY

S.P. 314

0-35, CLAY, HARD BANDS
35-++ SAND

S.P. 308

0-30 CLAY
30-54 SANDY CLAY
54-70 SAND
70-105 SANDY CLAY

S.P 308

DEPTH 90'/105' - CHARGES 2 × 150 LB

t_c	1264	1254	1242	1229	1217	1210	1199	1184	1175	1168	1156	×	—	1150	1124	1110	1100	1070	1060	1028	981	940	914	895	874
W_c	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	19	17	17	19	19	19	17
E_c	13	13	13	13	13	13	13	14	14	13	13	13	14	13	13	15	13	13	–	–	–	–	–	–	–
t_c	1264	1254	1242	1229	1217	1210	1199	1184	1175	1168	1156	×	—	1150	1124	1110	1100	1070	1060	1028	981	940	914	895	874

S.P 320

DEPTH 60/75' - CHARGES 2 × 50 LB

t_c	×	930	901	914	913	1009	1017	×	1042	1041	1044	1094	—	1107	1128	1141	1148	1163	1179	1191	1205	1213	1221	1232	1247
W_c	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
E_c	17	17	19	17	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
t_c	×	930	901	914	913	1009	1017	×	1042	1041	1044	1094	—	1107	1128	1141	1148	1163	1179	1191	1205	1213	1221	1232	1247

PLATE 30

S.P. 321 B

0-23 CLAY
23-76 SANDSTONE
76-95 CLAY
95-105 SAND

DRILL LOGS

S.P. 326

0-20 CLAY
20-30 CLAY, SAND
30 5/4 SANDY CLAY

S.P. 331

0-10 CLAY
10-65 SAND

TRAVERSE BEARING 110·5° N

S.P. 331

DEPTH 43/45' - CHARGES 2 x 5 LB

t_o	1174	1165	1153	1157	1123	1103	1047	1038	1016	1000	1114	1052		1146	1124	1077	1045	975	947	923	903	881	870		
W_c	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
E_c	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	—	—	—	—	—	—		
t_c	1161	1097	1086	1064	1050	1035	1074	1045	1001	971	984	939		1161	1116	1047	1040	1001	960	936	916	894	883		

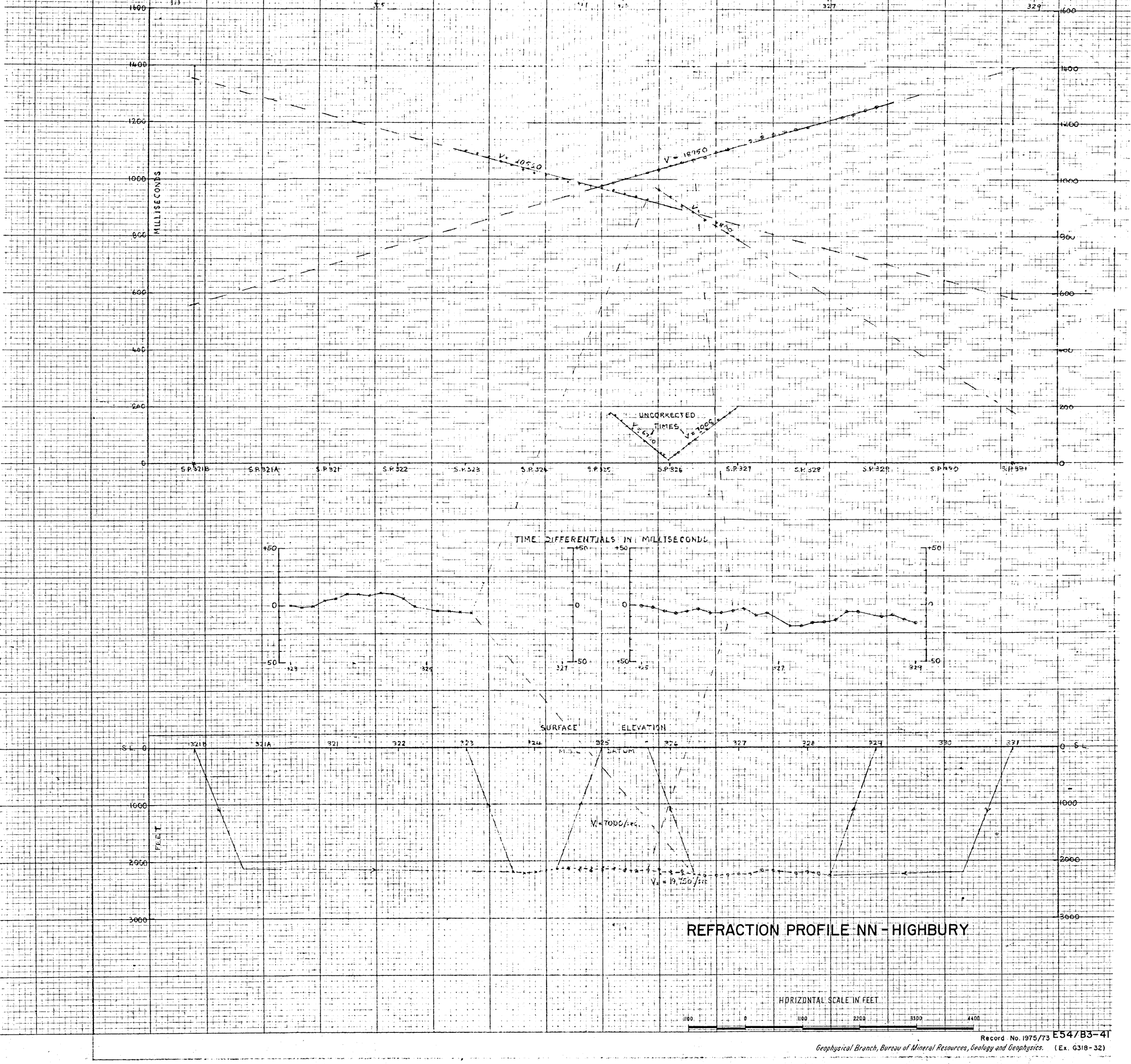
323 325 327

S.P. 321 B

DEPTH 88/104' - CHARGE 40 LB.

t_o	1049	1032	1041	1014	1004	1018	1113	1124	1155	1162	1159	1169		1234	1213	1222	1232	1241	1246	1258	x	1285	1294	1307	1323
W_c	—	—	—	—	—	—	5	13	13	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
E_c	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	52	52	52	52	52
t_c	998	981	990	963	953	967	1062	1073	1104	1111	1108	1118		1183	1162	1171	1181	1190	1195	1207	x	1234	1243	1256	1272

327 329



REFRACTION PROFILE NN - HIGHBURY

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73 E54/B3-41

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex. 6318-32)

DRILL LOGS

S.P. 332

0-8 CLAY
8-50 SAND
50-106 CLAY

S.P. 337

0-32 SAND

S.P. 342

0-20 CLAY
20-44 SAND
44-70 CLAY
70-105 SANDY CLAY

S.P. 342 C

0-50 CLAY
50-78 SANDSTONE
78-90 SANDY CLAY
90-105 CLAY

TRAVERSE BEARING 133° N

S.P. 342

DEPTH 89'/105' - CHARGE 40 LB

| | | |

PLATE 32

TRAVERSE BEARING 95.5°N

DRILL LOGS

S.P. 296

0-5	CLAY
5-45	SAND
45-105	SAND, CLAY

S.P. 301

0-16	CLAY
16-36	SAND
36-44	SANDY CLAY, HARDBANDS

S.P. 306

0-20	CLAY
20-30	PINK CLAY
30-40	SAND
40-55	CLAY SAND
55-105	SANDY CLAY

S.P. 306

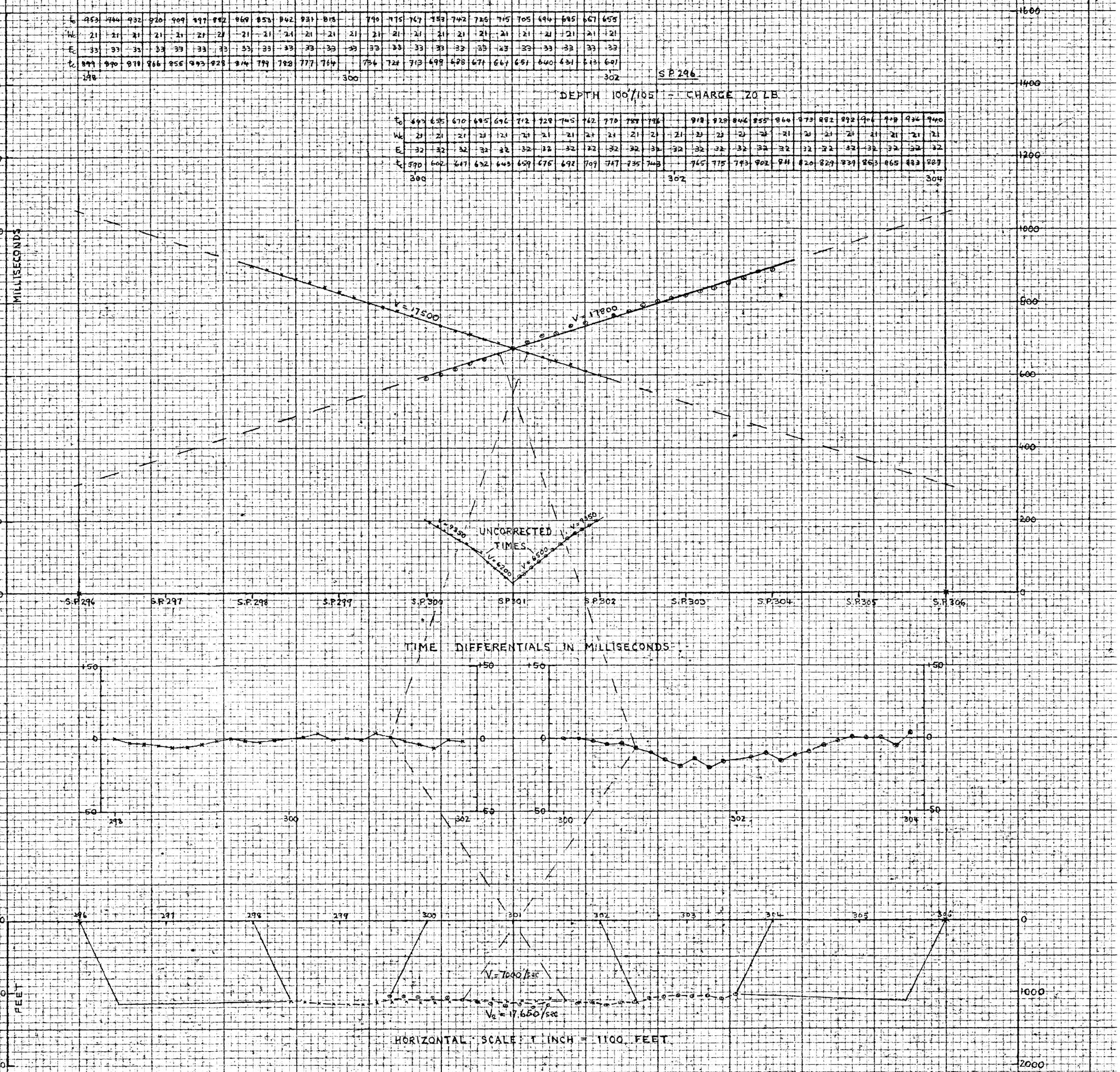
DEPTH 98'/104" - CHARGE 50 LB.

t_o	953	944	932	920	909	897	882	868	853	842	831	818		790	775	767	753	742	725	715	705	694	685	667	655
W_t	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
E_c	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
t_c	899	890	878	866	856	843	828	814	799	788	777	764		736	721	713	699	688	671	661	651	640	631	613	601
	298												300											302	

S.P. 296

DEPTH 100'/105" - CHARGE 20 LB.

t_o	643	655	670	685	696	712	729	745	762	779	788	796		818	828	846	855	864	873	882	892	906	918	936	940
W_t	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
E_c	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
t_c	590	602	647	632	643	659	676	692	709	747	735	743		745	775	793	802	841	820	829	839	863	865	883	887
	300												302											304	



REFRACTION PROFILE PP - VANROOK

HORIZONTAL SCALE IN FEET

-1100 0 1100 2200 3300 4400

BRITISH HYDE

Record No. 1975/73
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.

E54/B3-43
(Ex G318-26)

PLATE 33

S.P. 366

0-20 CLAY
20-40 SAND
40-60 CLAY
60-80 SANDY CLAY, HARD BANDS
80-105 SANDY CLAY

TRAVERSE BEARING 113·5°N

DRILL LOGS

S.P. 358

0-38 CLAY
38-40 HARD SANDS
40-84 SANDY CLAY

S.P. 350

0-26 CLAY
26-60 SAND
60-83 SANDY CLAY
83-106 CLAY, HARD BANDS

S.P 350

DEPTH 103/105' - CHARGES 2 × 5 LB

T	1594	1566	1558	1546	1521	1519	1525	1498	1471	1457	1465	1429		1417	1385	1373	1358	1366	1330	1314	1292	1251	1213	1185	1154
W	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
t_c	1589	1561	1553	1541	1516	1514	1520	1493	1466	1452	1460	1424	1412	1412	1380	1368	1353	1361	1325	1309	1287	1246	1208	1180	1149

361 357 357

S.P 361

DEPTH 79'/103' - CHARGES 1 × 40 LB.
1 × 30 LB.

t_o	1594	1572	1564	1552	1527	1525	1531	1504	1477	1463	1471	1435	1423	1423	1391	1379	1364	1372	1336	1320	1298	1257	1219	1191	1160
W	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
t_c	1589	1567	1559	1547	1522	1520	1526	1499	1472	1458	1466	1430	1418	1418	1386	1374	1359	1367	1331	1315	1293	1252	1214	1186	1155

357 357 355

V = 17300

V = 15650

V = 1400

MILLISECONDS

1600 1400 1200 1000 800 600 400 200

1600 1400 1200 1000 800 600 400 200

S.P.366 S.P.365 S.P.364 S.P.363 S.P.362 S.P.361 S.P.360 S.P.359 S.P.358 S.P.357 S.P.356 S.P.355 S.P.354 S.P.353 S.P.352 S.P.351 S.P.350

TIME DIFFERENTIALS IN MILLISECONDS

+50 0 -50

361 357 357 357 355

REFRACTION PROFILE RR-MACARONI

HORIZONTAL SCALE IN FEET

100 0 100 2200 3300 4400

SURFACE ELEVATION 357 FEET N.S.L. DATUM

FEET

0 1000 2000 3000

366 365 364 363 362 361 360 359 358 357 356 355 354 353 352 351 350

$V_1 = 7000$ f/sec.

$V_2 = 17,500$ f/sec.

Record No. 1975/73 E54/B3-44 (Ex G318-21)
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.

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PLATE 34

TRAVERSE BEARING 107·7°N

S.P. 382
0-6D CLAY
6D-30 SOFT SANDSTONE

DR[illegible] [illegible]

S.P. 374
[illegible] CLAY
33-35 SAND
35-45 CLAY

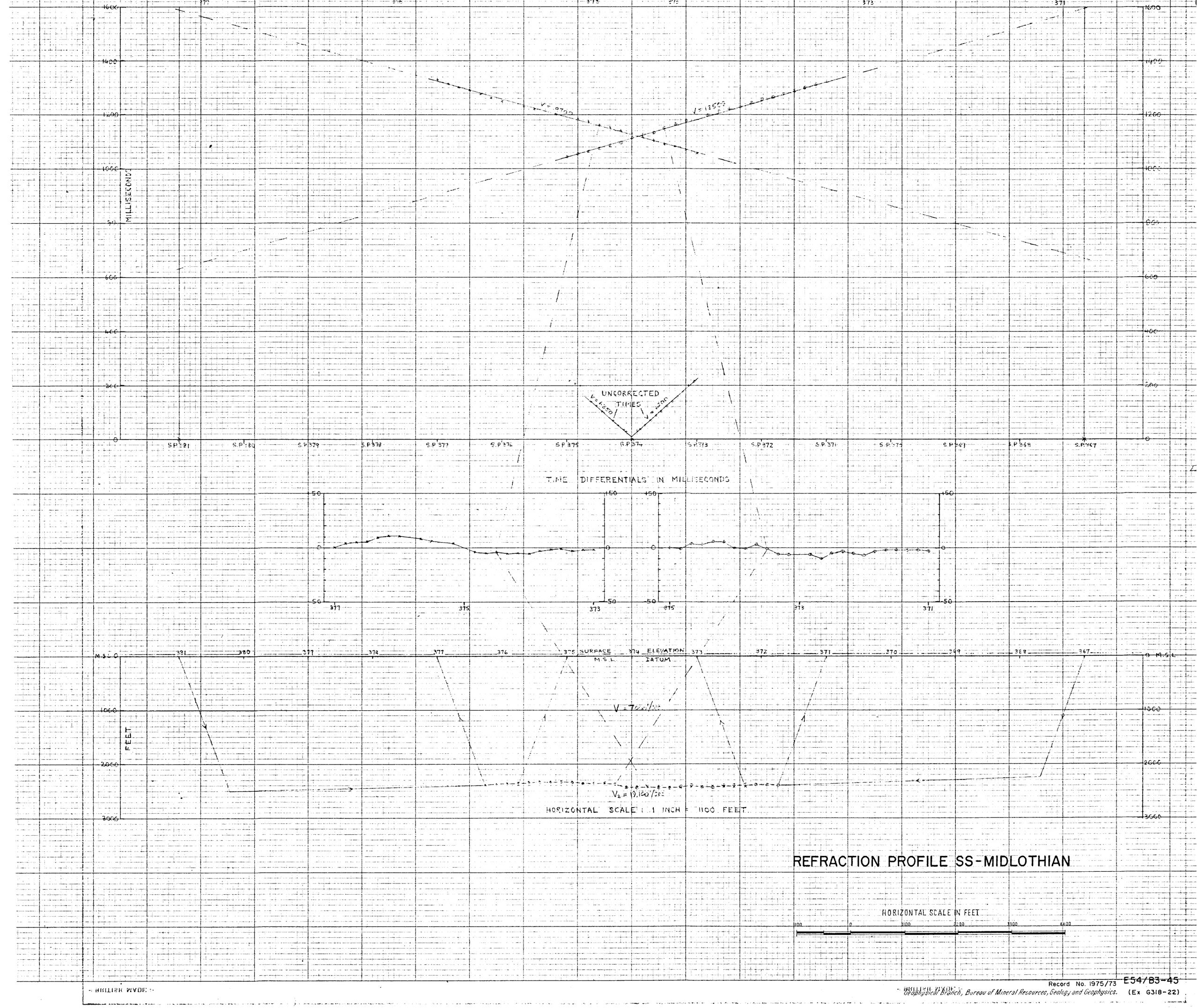
S.P. 382
0-6D CLAY
6D-50 SAND
50-55 SANDY CLAY

S.P. 367
DEPTH 92/100' - CHARGES 2 × 20 LB

t_c	1336	1321	1308	1296	1287	1276	1258	×	1236	1247	×	1296	×	1141	1181	1168	1159	1146	1136	1122	1109	1096	1087	1074	1065
W_c	4	4	8	4	4	8	8	8	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
E_c	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
t_c	1334	1315	1302	1292	1275	1262	1256	×	1229	1221	×	1209	×	1185	1175	1162	1151	1140	1130	1116	1103	1090	1081	1069	1057

S.P. 381
DEPTH 87'/103' - CHARGE 40 LB

t_c	1055	1069	1070	1082	1091	1102	1120	1132	1140	1155	1171	1187	-	1206	1220	1228	1237	1251	1264	1271	1281	1290	1305	1317	1327
W_c	4	4	8	8	8	8	4	8	8	8	4	8	8	8	8	8	8	8	8	8	8	8	8	4	4
E_c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
t_c	1040	1054	1063	1075	1084	1095	1113	1125	1133	1148	1164	1176	-	1199	1214	1221	1230	1244	1257	1264	1275	1287	1295	1310	1322



REFRACTION PROFILE SS-MIDLOTHIAN

HORIZONTAL SCALE IN FEET

100 0 1100 2200 3300 4400

- BRITISH MADE -

Record No. 1975/73 E54/B3-45
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-22)

PLATE 35

REFRACTION PROFILE TT - RETREAT

TRAVERSE BEARING 120°S°N

DRILL LOGS

S.P 393

0-10' SAND
10-30' CLAY
30-60' CLAY, HARD BANDS
60-105' SAND

S.P 387

0-5' SAND
5'-20' CLAY + SANDSTONE
20-40' CLAY
40'-54' CLAY, HARD SANDSTONE

S.P 382

0-4' SAND
4-16' CONGLOMERATE
16'-36' SOFT SANDSTONE
36'-74' SANDY CLAY
74'-85' SAND
85'-105' CLAY

S.P 382

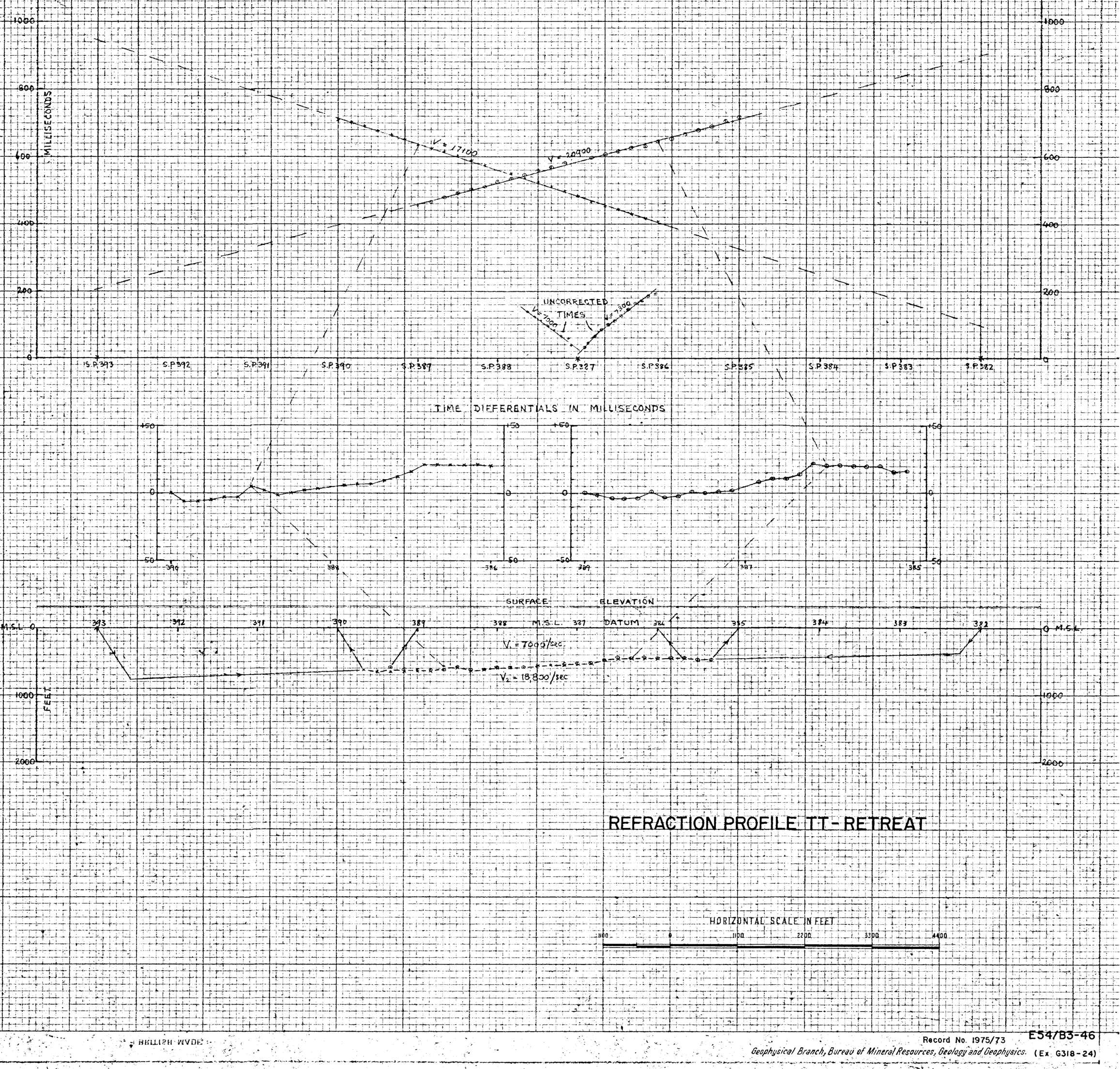
DEPTH 95'/105' - CHARGE 30 LB

t_o	740	734	728	720	716	706	696	687	677	666	662	652	649	633	620	608	594	579	564	547	535	523	512	500	489
W_c	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
E_c	70	70	70	70	70	71	71	71	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	70	70
t_c	708	702	697	679	664	653	633	624	616	603	589	576		550	537	524	512	497	482	465	453	441	430	418	407
	390												389												386

S.P 393

DEPTH 96'/100' - CHARGES 2 x 10 LB

t_o	537	550	564	576	587	594	610	621	630	641	652	663		680	690	700	709	713	726	737	749	761	773	789	801
W_c	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
E_c	72	72	72	72	72	72	72	72	72	71	71	71	71	71	72	71	71	71	71	71	71	71	71	71	71
t_c	453	466	480	492	503	510	526	537	546	558	569	580		597	606	617	626	630	643	654	667	679	690	704	718
	389												387												385



HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

Record No. 1975/73
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-24)
E54/B3-46

TRAVERSE BEARING 103.3°N

S.P.394

DEPTH 71/95' - CHARGE 60 LB

| | | |

TRAVERSE BEARING 58.5°N

DRILL LOGS

S.P. 425

0-20	CLAY
20-35	SAND
35-70	SANDY CLAY
70-105	CLAY

S.P. 418

0-20	CLAY
20-30	SAND
30-44	SANDY CLAY

S.P. 411

0-20	CLAY
20-40	SAND
40-105	CLAY

S.P. 411

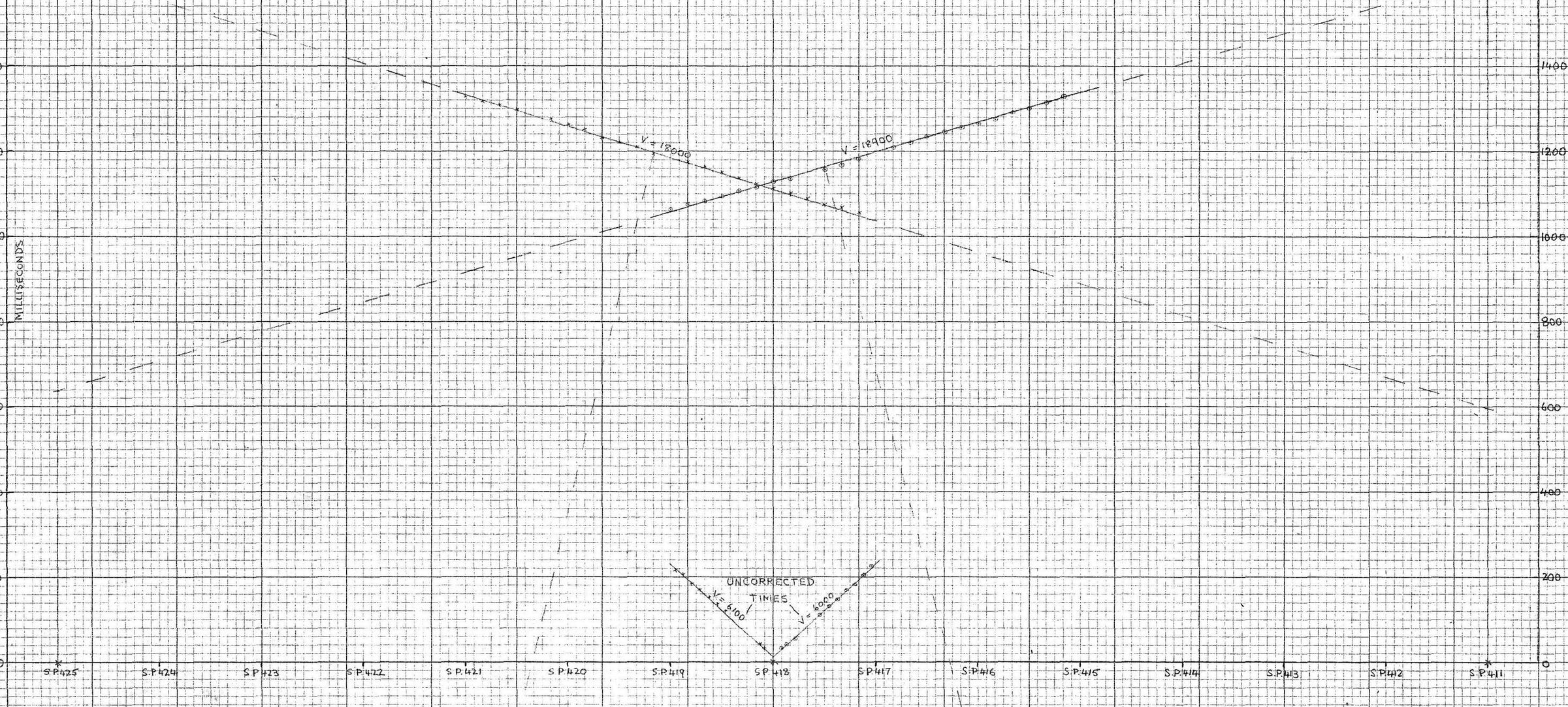
DEPTH 75'/105' - CHARGE 75 LB.

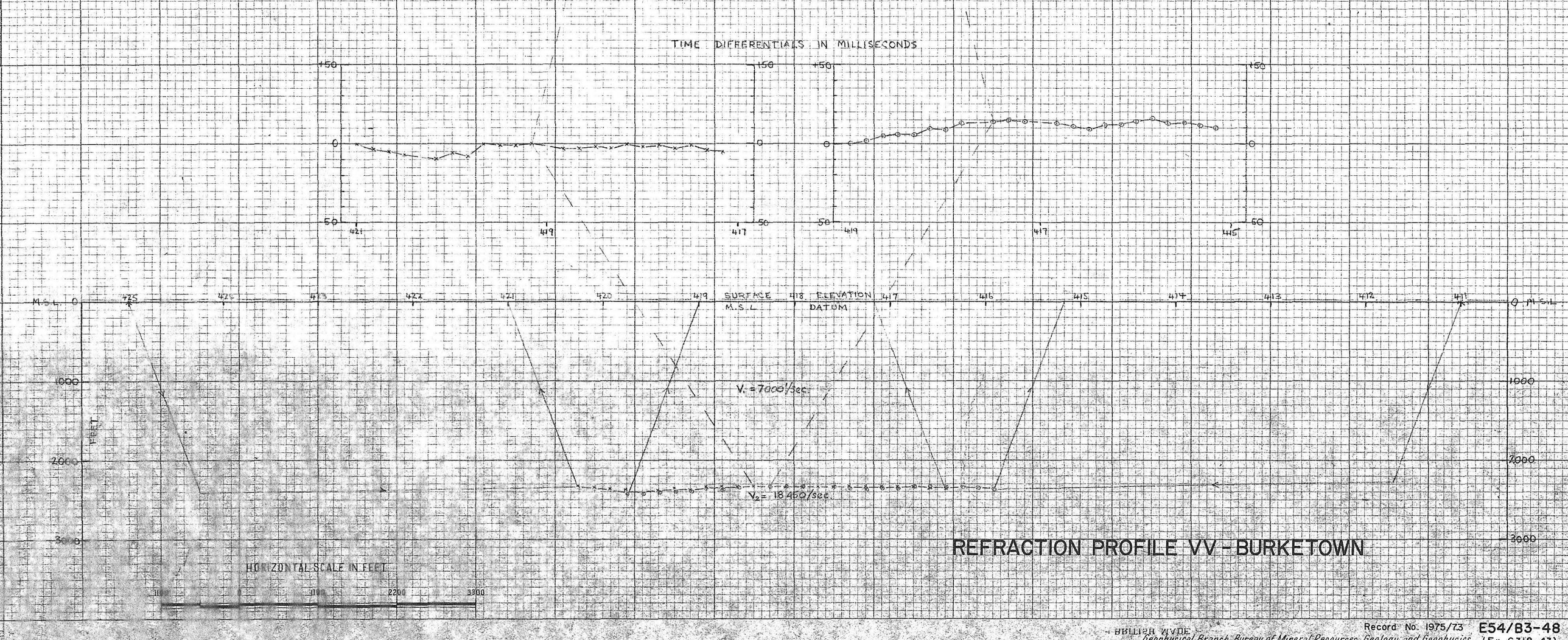
t_o	1329	1320	1310	1300	x	1277	1263	1255	1250	1242	1230	1197		1176	1164	1151	1140	1125	1115	1102	1092	1078	1069	1056	x
W_c	10	10	10	10	10	10	10	10	10	10	10	10		10	10	10	10	10	10	10	10	10	10	10	10
E_c	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9		-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
t_c	1320	1311	1301	1291	x	1268	1254	1246	1241	1233	1221	1188		1167	1155	1142	1131	1116	1106	1093	1083	1069	1060	1047	x
	421												419												417

S.P. 425

DEPTH 85'/105' - CHARGE 50 LB.

t_o	1081	1077	1076	1097	1109	1117	1136	1138	x	1160	1171	1154		1249	1223	1237	1246	1251	1267	1277	1292	1304	1317	1331	x
W_c	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
E_c	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
t_c	1065	1061	1060	1081	1093	1101	1120	1122	x	1144	1155	1138	1153	1233	1207	1221	1230	1235	1251	1261	1276	1288	1301	1315	x
	419												417												415





REFRACTION PROFILE VV - BURKETOWN

Record No. 1975/73 E54/B3-48
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-43)

TRAVERSE BEARING 620°N

DRILL LOGS

S.P. 440

0-20 CLAY
20-40 SAND
40-50 SANDY CLAY
50-105 CLAY

S.P. 437

0-20 CLAY
20-80 CLAY
80-85 HARD BANDS
85-105 CLAY

S.P. 433

0-44 CLAY

S.P. 429

0-50 CLAY
50-54 HARD BAND
54-105 CLAY

S.P. 426

0-20 CLAY
20-35 SAND
35-80 YELLOW CLAY
80-105 GREY CLAY

S.P. 426

DEPTH 85'/105' - CHARGE 50 LB

t_o	x	x	1137	1127	1117	1099	x	1075	1061	1054	1040	1029	–	1010	993	988	969	959	944	929	916	904	890	876	865
W_c	18	18	18	18	17	17	17	17	17	17	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
E_c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
t_c	x	x	1115	1108	1099	1081	1067	1057	1043	1036	1021	1010	–	991	974	964	950	940	926	910	897	885	871	857	846

436 434 432

S.P. 429

DEPTH 89'/105' - CHARGE 40 LB

t_o	862	850	833	825	815	806	793	780	766	752	744	730	–	702	686	670	x	640	630 593	559	547	522	507	478	464
W_c	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17 23	23	23	23	23	23	23
E_c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1 0	0	0	0	0	0	0
t_c	844	832	815	867	797	788	775	762	748	734	726	712	–	684	668	652	x	622	612 579	536	520	479	464	450	424

435 433 431

S.P. 440

DEPTH 75'/105' - CHARGE 75 LB

t_o	840	855	874	891	905	x	943	954	966	982	995	1006		1034	1044	1058	1072	1085	1097	1107	1124	1133	x	1158	1175
W_c	17	17	17	17	17	17	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
E_c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
t_c	822	837	856	873	887	x	924	935	947	963	976	987		1015	1025	1039	1053	1066	1078	1088	1105	1114	x	1137	1156

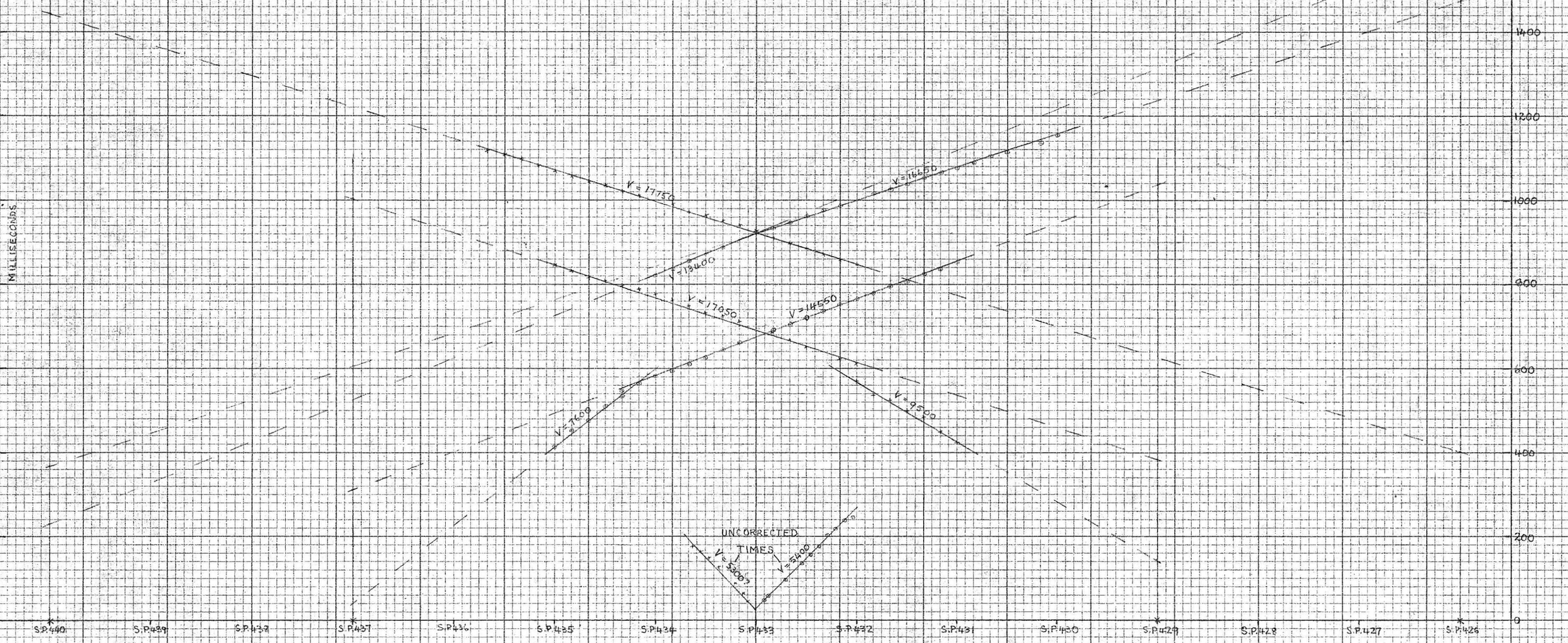
434 432 430

S.P. 437

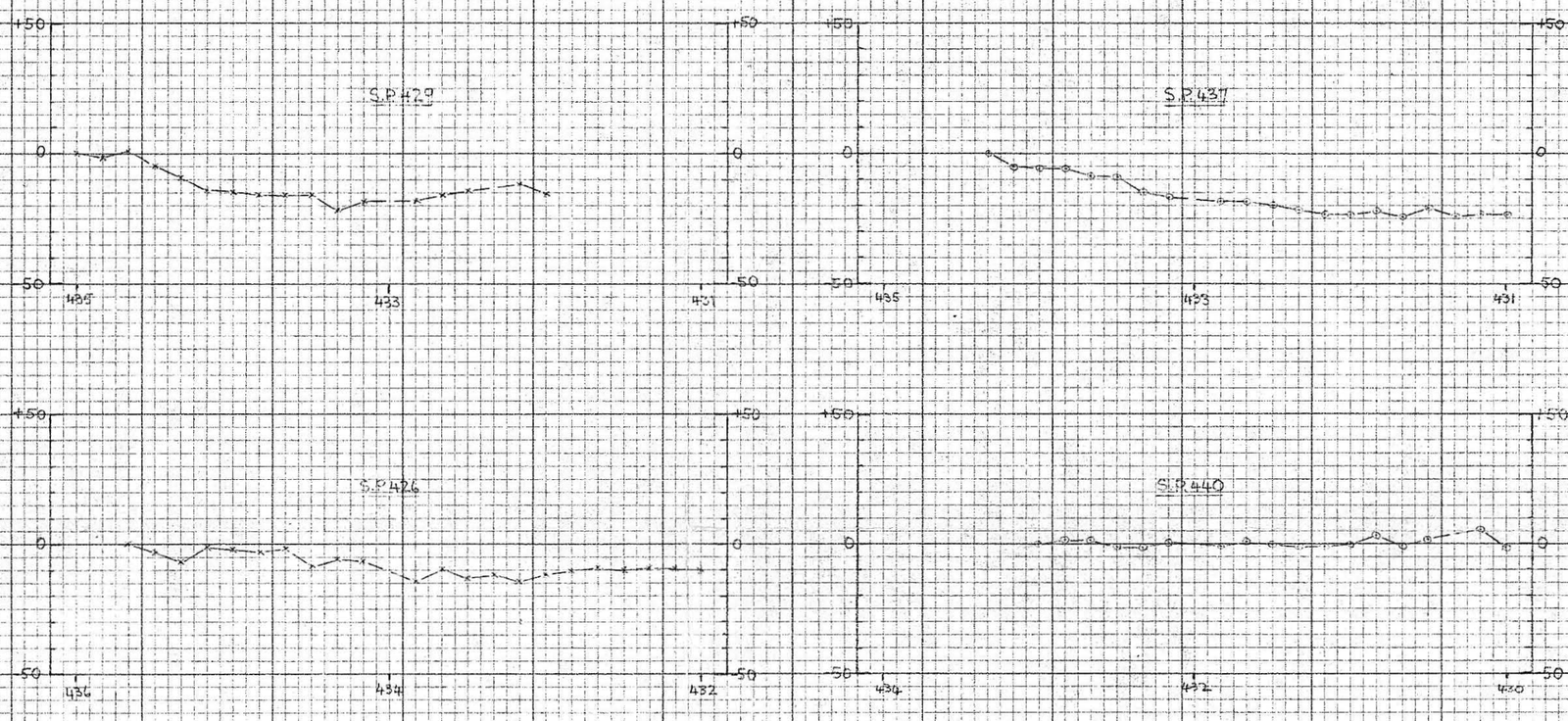
DEPTH 87'/103' - CHARGE 40 LB

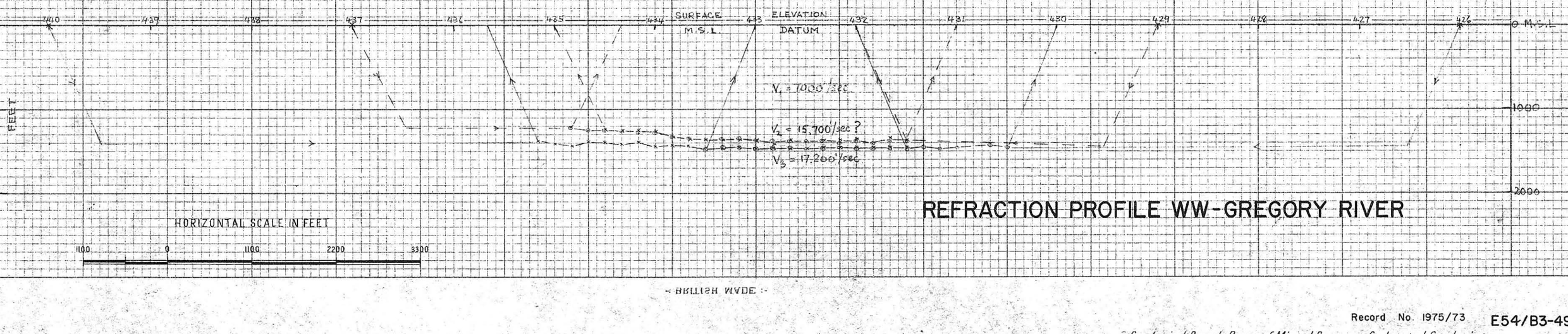
t_o	438	475	600	583	556 567	586	601	615	631	646	666	682	–	711	725	741	757	772	786	799	815	826	843	856	870
W_c	23	23	23	23	23 17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
E_c	0	0	0	0	0 3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
t_c	415	452	477	510	539 447	566	581	595	611	626	646	662	–	691	705	721	737	752	766	779	795	806	823	836	850

435 433 431



TIME DIFFERENTIALS IN MILLISECONDS





HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300

REFRACTION PROFILE WW-GREGORY RIVER

- BRITISH MADE -

Record No. 1975/73 E54/B3-49
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-44)

TRAVERSE BEARING 82·0° N

DRILL LOGS

S.P.448

0-10 SANDSTONE
10-44 CLAY

S.P 455

0-20 CLAY
20-40 SAND
40-80 CLAY
80-90 GRAVEL
90-105 CLAY

S.P 441

0-20 SANDY CLAY
20-50 CLAY
50-80 GRAVEL

S.P 441

DEPTH 54'/70' — CHARGE 80 LB.

t_o	1000	985	974	—	950	937	925	910	900	886	875	860	—	838	826	811	796	786	775	761	752	745	733	720	709
W_c	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16
E_c	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17	+17
t_c	967	952	941	—	917	904	892	877	867	853	842	827	—	805	793	778	763	753	742	728	719	712	700	687	669

451 449 447

S.P 455

DEPTH 72'/100' — CHARGE 75 LB.

t_o	—	690	703	715	727	740	753	767	780	792	809	815	—	845	857	872	—	897	912	924	—	953	963	982	993
W_c	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16
E_c	+15	+15	+15	+15	+15	+15	+15	+15	+15	+15	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14	+14
t_c	—	659	672	684	696	709	722	736	749	761	779	785	—	815	827	842	—	867	882	894	—	923	938	952	963

449 447 445

Record No. 1975/73

E54/B3-50
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-46)

PLATE 40

TRAVERSE BEARING 72.0°N

DRILL LOGS

S.P. 467

0-20	SANDSTONE
20-80	CLAY
80-105	SHALE

S.P. 463

0-20	SANDSTONE
20-30	SANDSTONE, CLAY
30-44	CLAY

S.P. 459

0-10	SANDSTONE
10-20	YELLOW CLAY
20-50	GREY CLAY
50-105	SHALE

S.P. 459

DEPTH 81'/101' — CHARGE 50 LB.

t_o	—	543	530	514	501	485	474	456	445	430	416	402	—	376	364	354	343	—	310	298	285	269	252	236	225
W_c	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
E_c	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
t_c	—	515	500	484	471	455	444	426	415	400	386	372	—	346	334	324	313	—	280	268	255	239	222	206	195

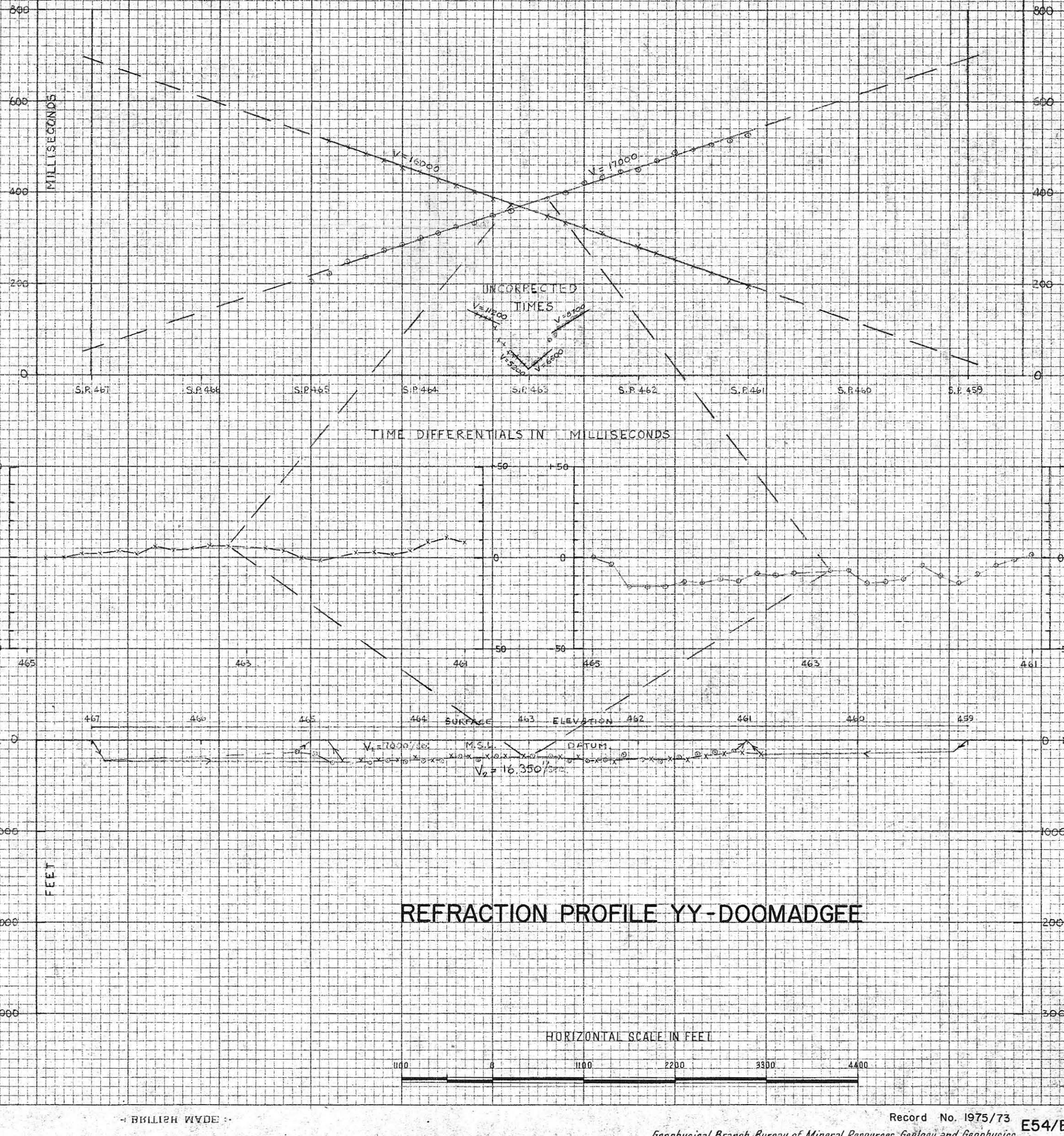
465 463 461

S.P. 467

DEPTH 84'/104' — CHARGE 50 LB.

t_o	233	250	276	289	303	313	328	339	354	362	378	389	—	415	429	449	462	475	479	499	517	524	533	544	555
W_c	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
E_c	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
t_c	204	221	247	260	274	284	299	310	325	333	349	360	—	386	400	420	433	446	450	470	488	495	504	515	526

465 463 461



REFRACTION PROFILE YY-DOOMADGEE

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

BRITISH MADE

Record No. 1975/73

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.

E54/B3-51
(Ex G318-47)

PLATE 41

TRAVERSE BEARING 87.7°N

DRILL LOGS

S.P. 471

0-10 BLUE CLAY
10-20 YELLOW CLAY
60-62 HARD BANDS
62-105 SHALE

S.P. 475

0-20 CLAY
20-44 CLAY

S.P. 479

0-20 SANDSTONE
20-60 CLAY
60-62 HARD BANDS
64-105 CLAY

S.P. 479
DEPTH 82'/102' — CHARGE 50LB.

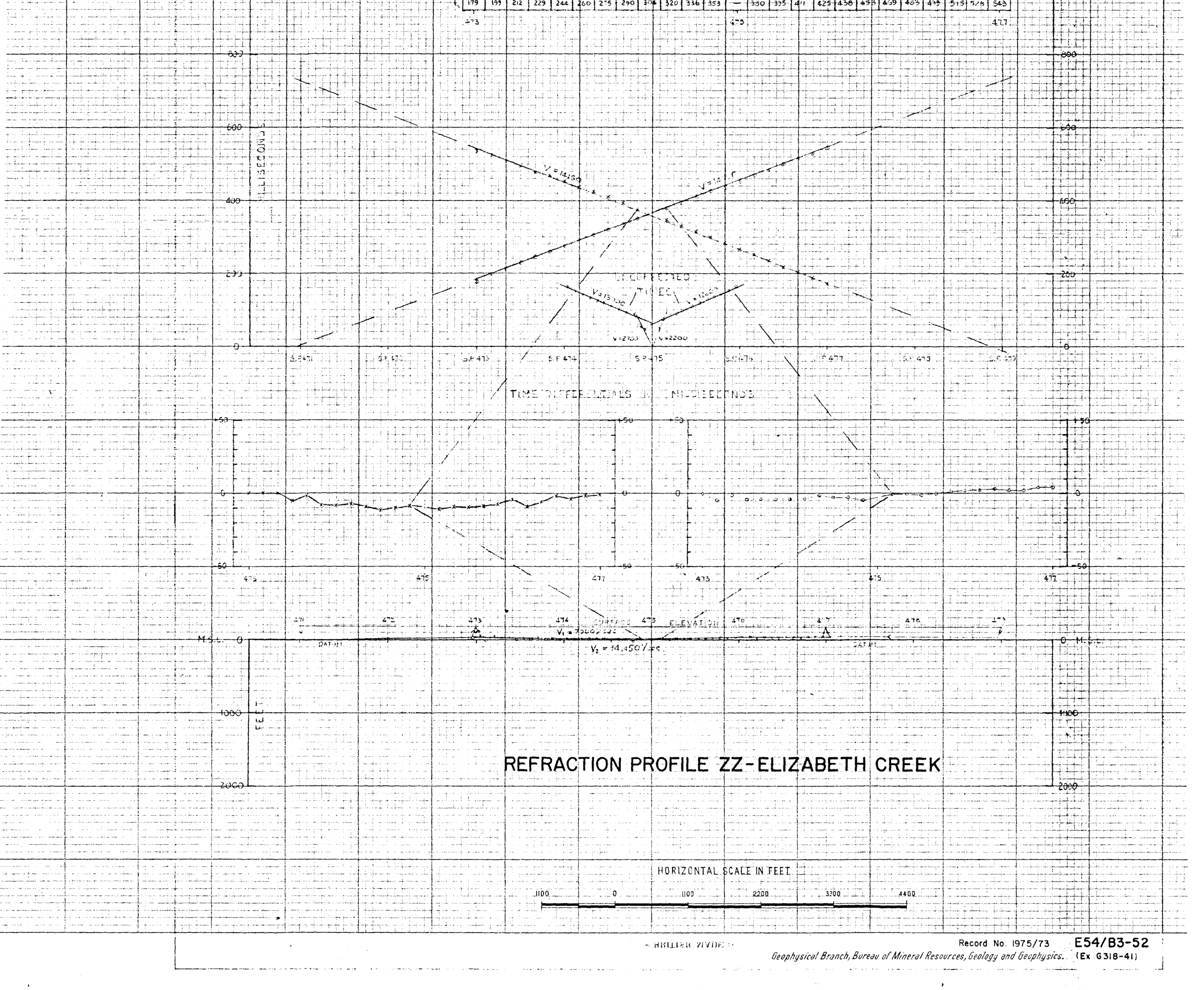
t_o	608	591	575	565	547	537	522	506	491	479	462	445	—	417	400	385	368	353	334	322	305	286	272	255	239
W	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
t_c	538	523	507	497	479	469	454	438	423	411	394	377	—	349	332	317	300	285	266	254	237	218	204	187	171

473 475 477

S.P. 471
DEPTH 68'/105' — CHARGE 5.5LB.

t_o	249	268	282	299	314	330	345	360	374	390	406	423	—	450	465	481	495	508	523	539	553	569	585	598	613
W	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E_c	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
t_c	179	199	212	229	244	260	275	290	304	320	336	353	—	330	335	411	425	438	453	469	483	499	515	528	543

473 475 477



REFRACTION PROFILE ZZ-ELIZABETH CREEK

HORIZONTAL SCALE IN FEET

1100 0 1100 2200 3300 4400

- BRITISH WIDE -

Record No. 1975/73 E54/B3-52

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-41)

PLATE 42

TRAVERSE BEARING 55·5°N

DRILL LOGS

S.P. 493
0-20 CLAY
20-40 SAND
40-65 GRAVEL

S.P. 487
0-44 CLAY

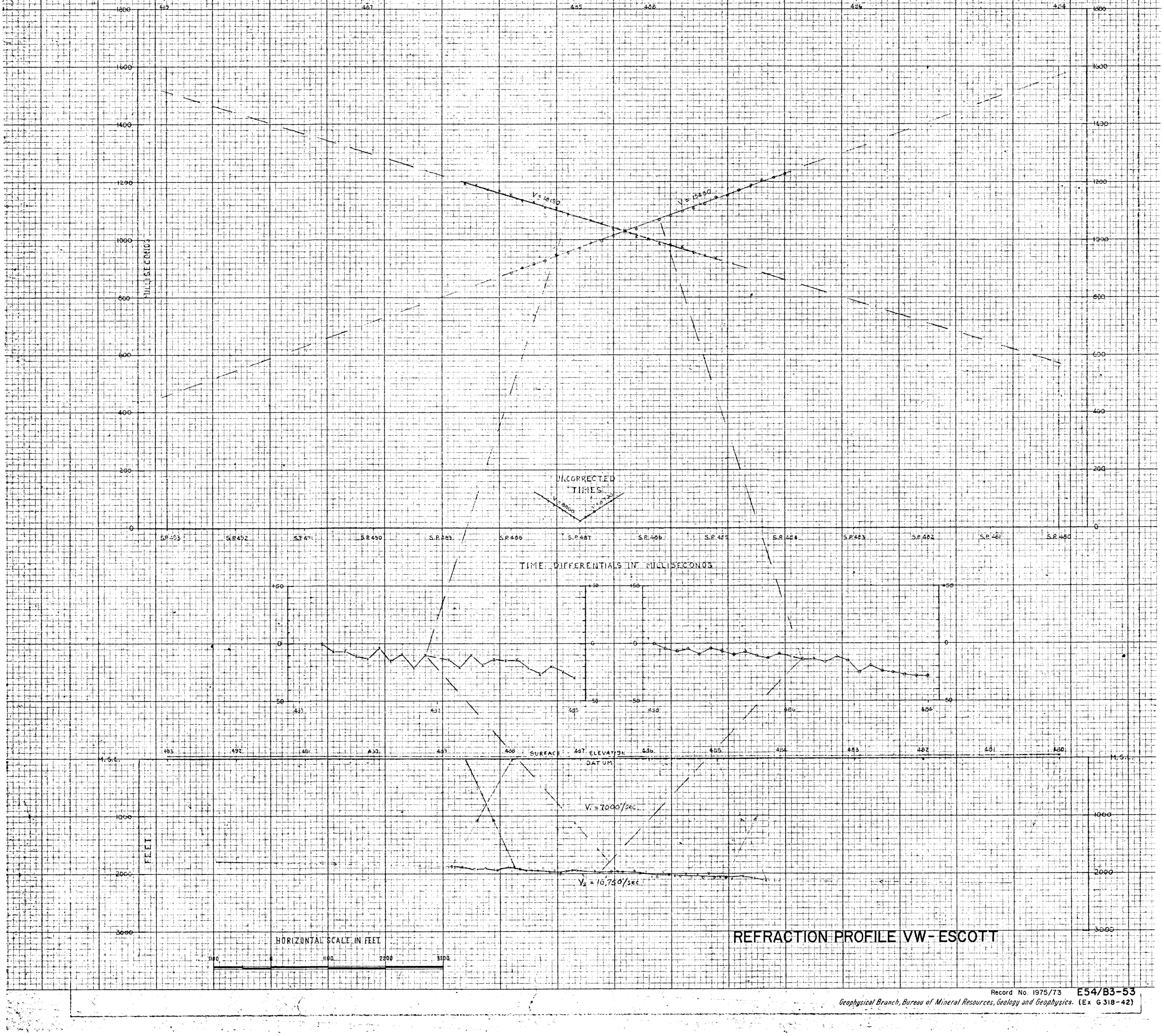
S.P. 480
0-10 CLAY
10-40 SAND
40-85 LIMESTONE
85-105 CLAY

S.P. 480
DEPTH 82'/102' — CHARGE 50LB

t_o	—	—	1264	1238	1184	1176	1165	1142	1140	1121	1120	1096	—	1073	1067	1044	1038	1021	1009	995	990	981	961	953	944
W	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
E	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3
t_c	—	—	1198	1189	1175	1167	1156	1133	1131	1112	1111	1087	—	1064	1056	1035	1029	1012	1000	986	981	972	952	944	935
	493												487											485	

S.P. 493
DEPTH 40'/63' — CHARGE 100LB

t_o	900	917	933	944	961	970	986	1002	1012	1029	1044	1054	—	1084	1097	1113	1122	1138	1161	1169	1187	1201	1217	1230	1243
W	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
E	+3	+3	+3	+3	+3	+3	+3	+3	+2	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3
t_c	885	902	918	929	946	955	971	987	997	1014	1029	1039	—	1069	1052	1038	1107	1123	1145	1154	1172	1186	1202	1215	1228
	488												486											484	



REFRACTION PROFILE VW-ESCOTT

Record No. 1975/73 E54/B3-53
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G 318-42)

PLATE 43

TRAVERSE BEARING 75°N

S.P.507
0-60 CLAY
60-75 WATER SAND
75-105 CLAY

DRILL LOGS
S.P.500
0-40 CLAY
40-54 SAND

SP 494
0-60 CLAY
60-65 HARD BANDS
65-105 CLAY

S.P. 494
DEPTH 75/105' — CHARGE 75LB.

t_o	1036	—	1006	993	980	968	951	939	929	911	899	885	—	856	842	827	815	807	791	779	766	750	734	721	710
W_t	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
E_c	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
t_c	1026	—	996	983	970	959	944	928	919	901	889	875	—	846	832	817	804	797	781	769	756	740	724	711	700

533 501 435

S.P. 507
DEPTH 74'/104' — CHARGE 75 LB.

t_o	736	745	753	770	789	805	815	824	843	859	874	884	—	907	920	933	949	963	980	994	—	1020	1030	1047	—
W_t	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
E_c	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
t_c	724	733	747	758	777	793	803	812	831	847	862	873	—	895	908	921	937	951	968	982	—	1005	1018	1035	—

502 500 452

REFRACTION PROFILE WX-EGILABRIA

Record No. 1975/73 E54/B3-54
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. (Ex G318-45)