SECTION

DEPARTMENT OF MINES
SOUTH AUSTRALIA

R|B 71|127

GEOLOGICAL SURVEY

TARCOOLA-ALICE SPRINGS RAILWAY BALLAST SEISMIC SURVEY
REPORT NO. 2: ROBIN RISE TO MABEL CREEK

Client: COMMONWEALTH RAILWAYS

by

R.G. NELSON
GEOPHYSICIST
EXPLORATION GEOPHYSICS SECTION

Rept.Bk.No.71/127

12th August, 1971

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CURNAMONA AND MURLOOCOPPIE 1:250,000 sheet areas

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

D.M. No.506/71
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TARCOOLA-ALICE SPRINGS RAILWAY BALLAST SEISMIC SURVEY REPORT NO.2: ROBIN RISE TO MABEL CREEK CURNAMONA and MURLOOCOPPIE 1:250,000 sheet areas.

ABSTRACT

A shallow seismic refraction and ground magnetic survey of areas between Robin Rise and Mabel Creek was made in January, 1971. Regions of inferred near-surface crystalline basement outlined in this survey lie 5 miles south of Robin Rise, 20 miles south of Mabel Creek homestead and in areas immediately to the north of Mabel Creek homestead. Basement is equated with a high-speed refractor having a velocity of 18,000 feet/second. This has been confirmed on the so-called Coober Pedy Ridge by rotary drilling.

INTRODUCTION

The aims and scope of this survey were basically similar to those outlined by the author in a previous report on the Perfection Well area (Nelson, 1971). Target areas of presumed shallow basement, selected on the basis of previous seismic, aeromagnetic and gravity work, were investigated in finer detail in the hope that workable ballast sites for the proposed Tarcoola - Alice Springs standard gauge railway line could be found. The areas of interest are shown in Plan No. S.9387 (after Milton, 1969).

GEOLOGY

The Pre-Cambrian crystalline basement in this area forms part of the Gawler Craton (Thomson, 1970) of probable

Proterozoic (Carpentarian) age. Brown (op.cit.) has discussed this in terms of general basement trends and its approximate outlines are shown in Plan No. 71-665.

The Pre-cambrian basement is overlain by Palaeozoic (Permian) and Mesozoic sediments. The Permian sediments are confined to the deeper parts of basins and consist of carbonaceous and coaly shales (Lee, 1962).

The Mesozoic sediments are represented by fine to coarse fluviatile sands and gravels with some intercalated Permian sediments and by Lower Cretaceous shales.

According to Seeley (1959) silicification of Cretaceous shales occurred during the early and the late Pliocene with truncation of the resultant soils and shales in the intervening period. Present day soils depend for their character on the extent of truncation of the Cretaceous profiles.

Over tableland areas (preserved Pliocene topography) the soil is a deep reddish-brown clay with a surface covering of billy gibbers. Crabholes have developed and the soil contains heavy gypsum but no lime. A few sand dunes (derived entirely from Pliocene silicification) occur over these tableland clays. Some of these were noted on the U.S.D. line established on the Coober Pedy Ridge (see later). Crystalline gypsum sheets in bleached Cretaceous shales intersected while drilling shotholes in these areas indicate that the water table was much shallower until quite recently. The soil type over the tableland is known as Coober Pedy soil.

Further south where great truncation of the Pliocene topography has occurred the soil is sandy, the sand being derived from exposed fluviatile sandstones (Blythesdale Group) as well as from the Pliocene soils. Sandhills are numerous in this area. The

soil type here is known as Wirraminna soil.

Ker (op.cit) has discussed basin trends in the area. It is noteworthy that he pointed out that No. 8 bore at Mt. Penrhyn (see Plan No. 62-677), drilled to 148 feet, intersected granite at 25 feet. "Sabrina" bore, 10 miles north-east of Coober Pedy showed granite at 214 feet. Ker considered this information sufficient to outline this basin on its eastern and southern margins. See Plan No. 62-677 for a summary of borehole information in the region.

PHYSIOGRAPHY

The township of Coober Pedy lies on part of the Stuart Range escarpment. To the east of this escarpment lies the Lake Cadibarrawirracanna drainage system. To the west lies the Lakes Phillipson and Woorong drainage system. The Stuart Range hills are residual hills preserved from erosion by a thicker silicified capping.

Around Mabel Creek homestead are vast rolling plains 500 feet above mean sea level grading to flat tableland on the area to the south, which has been called the Coober Pedy Ridge area. Vegetation is sparse, consisting mostly of saltbush and bindyis.

Going south from the Coober Pedy Ridge along the Mabel Creek - Ingomar road one passes from Coober Pedy-type soil to Wirramina-type soil near Banjo Yard on Long Creek. Sand dunes start to predominate. These have a covering of dense mulga scrub, with extensive undergrowth. A string of claypans, loosely connected and ultimately forming the headwaters of Caringallana Creek, extends from Mt. Penrhyn to Arkeeta Dam. Access to this area is extremely difficult; it is also hard to position oneself accurately. The only major landmark in the area is at Robin Rise where a residual hill rises to about 100

feet above the general ground level.

PREVIOUS GEOPHYSICAL WORK

Reference is made to Milton (1969) who describes seismic refraction and reflection investigations made in 1964 and 1969 in the western Arcoaringa Basin of which this area is a part. These investigations showed basement at shallow depths in three places near the proposed track. They have been called:-

(1) the Kabel Creek basement high;

(2) the Coober Pedy Ridge;

(3) the Robin Rise basement high;

The seismic investigations are largely reinforced by the regional Bouguer gravity contours of the COOBER PEDY 1:250,000 sheet area, which show basement highs as gravity highs and depressions as gravity lows. } Tallaringa ?

The aeromagnetic maps for the Clarence and Phillipson 1:63,360 sheet areas show magnetic highs and steep gradients over the Coober Pedy Ridge. Aeromagnetic maps for the Kabel Creek and Robin Rise areas were not immediately available.

CAMP ARRANGEMENTS

Essentially the same equipment and personnel were used as in the Perfection Well area survey. The camp was based just off the Kabel Creek - Ingomar road about 15 miles south of Kabel Creek. This proved to be the predicted impact zone for missiles being launched in a programme conducted by the Weapons Research Establishment at Woomera. Discussions with security authorities at Woomera had been made before starting the survey and they had arranged for radio contact to be made daily. Only one firing was in fact made while the survey was in progress. All personnel were evacuated to Kabel Creek homestead shelters during this alert.

EQUIPMENT AND METHODS USED

The equipment used has been described previously in the Perfection Well area report (Nelson, 1971).

In general the same types of seismic spreads were used, although some fine weathering shots using 5 feet geophone spacing were also made to give more information on near-surface layers.

RESULTS

(1) Magnetic

The positions of ground magnetic traverses using an Elsec proton precession magnetometer are shown in Plan No. 71-689 and 71-690.

(a) Mabel Creek Area.

The magnetic field in the regions covered is generally quite uniform apart from from regional gradients and anomalies which, from their shape and amplitude characteristics, are undoubtedly from deepseated sources.

Seismic spreads DFW1, GPW1, NBW1 and GGA1/2 were laid down over the only noteworthy anomalies which might be ascribed to near-surface effects. However, no significant high speed refractors were recorded within the limits of spread size (and by implication within less than 400 feet from the ground surface).

(b) Coober Pedy Ridge.

A north-south traverse over the Coober Pedy Ridge revealed high magnetic values rising to a peak near CPA16 on the Coober Pedy Ridge (see Plan No. 71-687). This coincides very nearly with the peak of the basement high found by the seismic work.

A c

A cross-traverse over this and along the axis of the ridge defined by seismic results showed high magnetic values, but no high gradients which might indicate parts of basement nearer the surface.

(c) Robin Rise Area

The traverse continuing south of the Coober Pedy Ridge along the Mabel Creek - Ingomar road showed slowly descending magnetic values, regional in nature, but nothing that could be regarded as indicating shallow crystalline basement. This was so even over the seismically - defined basement high recorded south of Robin Rise. The inference is that the basement complex here is related more to the Perrection Hill granite than to the Coober Pedy Ridge basement, which from its apparent high magnetic susceptibility appears to be more basic in character.

(2) Seismic

Seismic records were timed to first breaks and the travel times were plotted in the form of time-distance curves. The information obtained in this way was solved for the thicknesses and speeds of the various layers by using a FORTRAN program (GRMPA) in conjunction with the State Government CDC3200 computer. In this program conventional algorithms for reducing seismic data are used (see for example Dobrin, 1960). The positions of seismic spreads are shown in Plan Nos. 71-689 and 71-690, and a list of the various spreads and their corresponding interpretations is given in Table I.

(a) Mabel Creek Area.

The refraction results in this area were most disappointing. The EWA line (see Plan No. 71-695) near Mabel Creek homestead

showed a refractor with a speed of about 10000 ft./sec. at a depth of around 300 feet. This may or may not be basement, but in any event it lies too deep for practical purposes.

Only be increasing the spread size to 2400 feet (as at JHA3 and JHA5) could a high-speed (17000 ft./sec.) refractor be detected. Here, however, this lay at depths of nearly 500 feet.

(b) Coober Pedy Ridge.

Seismic work defined the ridge quite adequately. Line CPA ran alongside the Mabel Creek-Ingomar road between shotpoints vw and VK (used in previous seismic surveys). The highest part of the ridge seemed to lie under CPA14. At this point a cross-line, CPB, was set up with lines CPC and CPD at right angles to this at each of its ends.

The axis of the ridge appeared to coincide with a line joining CPD6, CPA14, CPB7, and CPC2. This line runs roughly east-west, and served to guide the positioning of shotpoints LCW1/2/3, JAA1, RGA1, LKA1 and GTA1/2, which were set out on either side of line CPA. These shotpoints, lying within 5 mile limits on either side of the proposed track show that the sedimentary cover increases to the immediate east and west of line CPA. This is probably a function of increasing ground elevation.

Reciprocal refraction shooting and fine weathering shots were made in the vicinity of CPB7, which had proved to be the most favourable spot. These methods showed that basement was shallowest 100 feet west of CPB7, at a depth estimated to be 96 feet. However, the interpreted depth at CPB7 itself was 99 feet and so a rotary drill hole was put down at CPB7, continuing from the bottom of the original shothole. Weathered basement

was encountered at 104 feet, followed by fresh crystalline basement at 108 feet. See Plan No. S9388 for the log of this hole and Appendix E for a petrological description of the basement rock collected as a drill core.

(c) Robin Rise High.

Close study of the basement high recorded near Robin Rise and of the granite intersected at Mt. Penrhyn No. 8 bore reveals that they may form part of a ridge trending roughly east-west from about 6 miles south of Robin Rise.

The author and a crew of three made a cross-country traverse from Mt. Penrhyn No. 8 bore to Arkeeta Dam while a camp shift was being made from the Coober Pedy Ridge area to Perfection Well. Seismic shots made at MP1/2/3 and at RR1 using 35 feet geophone spacing showed that the granite here slopes gently from 40 feet at MP1 to 151 feet at RR1. The nature of the terrain and a lack of aerial photographs made the positioning of MP2 and MP3 difficult, so there is some doubt about their actual position. However, it is reasonably certain that they lie on the line shown.

CONCLUSIONS

Sedimentary cover at Mabel Creek seems to be of the order of at least 300 feet, even towards the heart of previously recorded gravity and seismic highs. This is undoubtedly due to the tableland characteristics of the terrain (little or no truncation of the Pliocene topography). There is little prospect of suitable ballast sites being discovered in this region.

The Coober Pedy Ridge has been defined reasonably well in the immediate vicinity of the proposed track. Whilst sedimentary cover may thin out further to the west, in this vicinity there seems little likelihood of finding basement at depths of less than about

100 feet.

The shots fired at the Robin Rise High were exploratory in nature. The existence of a ridge as proposed has not been proved without doubt. I feel that the area offers some prospects in the way of near-surface basement, but it will require a complete survey in itself to cover the area adequately. In view of the unrewarding aspect of the country the costs of such a survey may be prohibitive and were certainly beyond the scope of this survey.

Prec Outcrop at Fitzgeralds Dam.

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RGN:JTS
12.8.71

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APPENDIX I

PETROGRAPHIC DESCRIPTION OF ROCK FROM COOBER PEDY BASEMENT RIDGE

Sample: P217/71 CPB7A: TS 26646 AMDEL REPORT NO. MP 4219/71

Location:

Coober Pedy 1:250,000 Sheet, grid ref. 236375. 25 miles S of Mabel Creek H.S. on Mabel Creek - Ingomar road, Bore hole to 108'.

Rock Name:

Metamorphic rock of adamellite composition.

Hand Specimen:

A dark, coarsely crystalline rock.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Quartz	10-15
Plagioclase	30
K-feldspar microperthite	45-50
Pyroxene	5
Hornblende	2-3
Opaques	2
Carbonate	2
Apatite	1

The rock consists of a mosaic of irregularly sized and shaped grains with weakly sutured margins. The grain size is quite variable ranging, for the felsic minerals, from 0.1 to 3mm. The ferromagnesian minerals show a similar size range but the average size is rather below that of the felsic minerals.

The dominant minerals are a K-feldspar microperthite - untwinned except for the exsolution beads or stringlets, and albite twinned plagioclase. Both feldspars have been subjected to later effects, and, though little altered, have been cracked and the cracks infilled with red-brown ?micaceous clay.

The plagioclase, which is near An_{10} in composition, has also been subjected to strain with the development of curved twin planes.

Signs of some lack of equilibrium are present, with unidentified, very thin reaction rims present in places between the feldspars or between the feldspars and quartz. There are small patches of myrmekitic or graphic intergrowths of quartz with feldspar.

These appear to have been either the product of local remelting, or a result of recrystallisation

of material previously granulated by stress. Both causes may have applied.

The ferromagnesian minerals are unusual in an acidic rock. The main ferromagnesian mineral has been a colourless clinopyroxene which is now highly altered and partly replaced by the same red-brown material (iddingsite or clay) noted earlier. Grains are anhedral but cleavage has been well developed. Alteration has taken place along the cleavage. Four grains are also colourless non pleochroic, but have straight extinction. These may represent orthopyroxene. A pleochroic brown, unaltered amphibole (hornblende) appears to be primary to the rock but there are, also, small patches of green amphibole derived from the clinopyroxene.

Rounded grains of apatite are present.

Some opaques are interstitial between felsic minerals; others are related to the ferromagnesian minerals. The opaques appear to be iron oxides.

This is a somewhat unusual rock. It is almost certainly a metamorphic rock of upper amphibole facies, but the original rock remains uncertain. It is indeed likely that this rock is from the local basement complex.

SHOTPOINT NO.	v_1	h_1	v_2	h_2	v_3	h_3	v_4	h_4	v_5	z
LWA 1	2290	28	4810	311	9090					339?
2	2560	56	5000	171	11110					227?
3	2000	29	5720	477	7730					506?
4	2430	25	3680	117	5110	259	9580			401?
5	3730	127	5240	294	10070					421?
6	1640	1	3540	199	6350	403	10600			603?
7	1700	5	3870	211	6960					*
8	1780	6	3800	188	6830					*
9	1900	12	5370	366	6310					*
10	1790	4	3940	185	6350					*
JHA 1	1800	15	4120	247	6370					*
2	1700	11	4200	234	5940					*
3A	1360	11	4090	287	7070					*
3B	2000	1	4270	492	17100					492
4	2250	4	3460	244	6990					*
5	2000	19	4200	462	16700					481
RNA 1	1350	11	4310	335	8400					346?
2	1700	31	5520							*
6	1750	6	4500							*
10	1700	14	4000	140	6670					*
14	1880	14	5710							*
GGA 1	1430	13	5880							*
2	875	7	5000							*
MBW 1	1350	4	5440							*
DFW 1	875	5	4380							*
GPW 1	1600	7	3680	11	4700	169	7290			187?

* Indicates depth to basement greater than 400 ft.

	DEPARTMENT OF MINES -- SOUTH AUSTRALIA	Scale:
Compiled: R.C.M.	SEISMIC REFRACTION TABLE	Date:
Drn. | Ckd.	v_i = velocity of i^{th} layer. ft./sec. h_i = thickness of i^{th} layer. ft. z_i = depth to bedrock (where applicable)	Drg. No. Table Ia.

1M—2.70 A1810

SHOTPOINT NO.	v_1	h_1	v_2	h_2	v_3	h_3	v_4	h_4	v_5	z
CPA1	2630	17	5090	243	19860					260
2	3000	12	5380	232	17300					245
3	1670	23	6020	260	14910					283
4	2140	9	5260	305	22590					314
5	1000	3	5550	325	21770					328
6	2500	1	5190	296	19470					297
7	2570	25	5500	267	10870					292
8	2000	6	5370	305	12310					311
9	2980	34	6270	238	8620					*
10	1880	6	3450	107	7090	252	16510			364
11	2110	13	6320	230	17170					250
12	1640	17	4420	142	17090					159
13	1700	22	4470	126	17690					148
14	1710	4	2930	132	18360					136
15	1900	18	3340	120	19200					138
16	1810	19	4500	147	15130					176
17	1800	12	4080	162	26000					174
18	1800	10	3850	136	17860					146
19	1600	10	2860	170	17860					180
20	1500	9	2740	188	17200					197
21	1700	10	3000	164	16700					174
22	1900	13	4000	150	15400					163
23	2000	29	4350	131	20000					160
CPB1	2830	33	5570	231	19580					264
2	2130	7	4800	212	17840					219
3	4880	21	7410	216	15390					237
4	3710	26	7240	165	17150					191
5	1420	32	4700	108	20870					140
6	1380	18	4720	148	20000					166
7	1600	7	4840	93	18160					100
8	2320	26	3620	112	20760					138
9	1840	20	5000	141	18180					161
10	2580	64	5600	173	18180					237

DEPARTMENT OF MINES — SOUTH AUSTRALIA

Compiled: R.G.N.

Drn. | Ckd.

SEISMIC REFRACTION TABLE

v_i = velocity of i^{th} layer.
h_i = thickness of i^{th} layer.
z = depth to bedrock (where applicable)

Scale:

Date:

Drg. No.

Table I b.

1M—2.70 A1810

SHOTPOINT NO.	v_1	h_1	v_2	h_2	v_3	h_3	v_4	h_4	v_5	z
CPB11	1860	30	7140	311	18000					341
CPC1	1410	17	5450	160	18100					177
2	2540	34	5440	140	16000					174
3	2750	17	3400	49	7020	251	17400			317
4	2190	19	3840	62	7410	177	12500			258
5	1450	9	3330	77	6670	382	17860			468
6	2480	13	3810	73	6500	337	15380			424
7	2130	17	2820	52	8100	197	13810			266
8	2130	16	2700	56	7700	236	19000			308
9	2000	14	3160	67	6850	310	17930			391
CPD1	2750	27	5720							*
2	3200	24	5680							*
3	2110	30	5680	366	15000					396
4	1750	14	5310	322	12500					336
5	2110	24	6680	274	22730					298
6	2430	11	6790	239	13080					250
7	3300	35	4760	142	18810					177
8	3400	31	5540	127	15530					158
9	2250	14	4500	171	20800					185
CPW1(+WSCP1-3)	530	2	1880	7	2500	3	3725	87	20660	99
2(+WSCP4-5)	530	2	1880	7	2500	10	3900	81	15000	100
JAA1	1500	8	4760	133	7140	113				*
GTA1	2270	11	3750	109	6780					
2	1500	8	3910	216	11486					224
RGA1	3030	67	7140							*
LKA1	1800	12	4060	62	6690	388	25000			452

DEPARTMENT OF MINES – SOUTH AUSTRALIA

Compiled: B.G.N.

Drn. | Ckd.

SEISMIC REFRACTION TABLE

v_i = velocity of i^{th} layer.
h_i = thickness of i^{th} layer.
z = depth to bedrock (where applicable)

Scale:

Date:

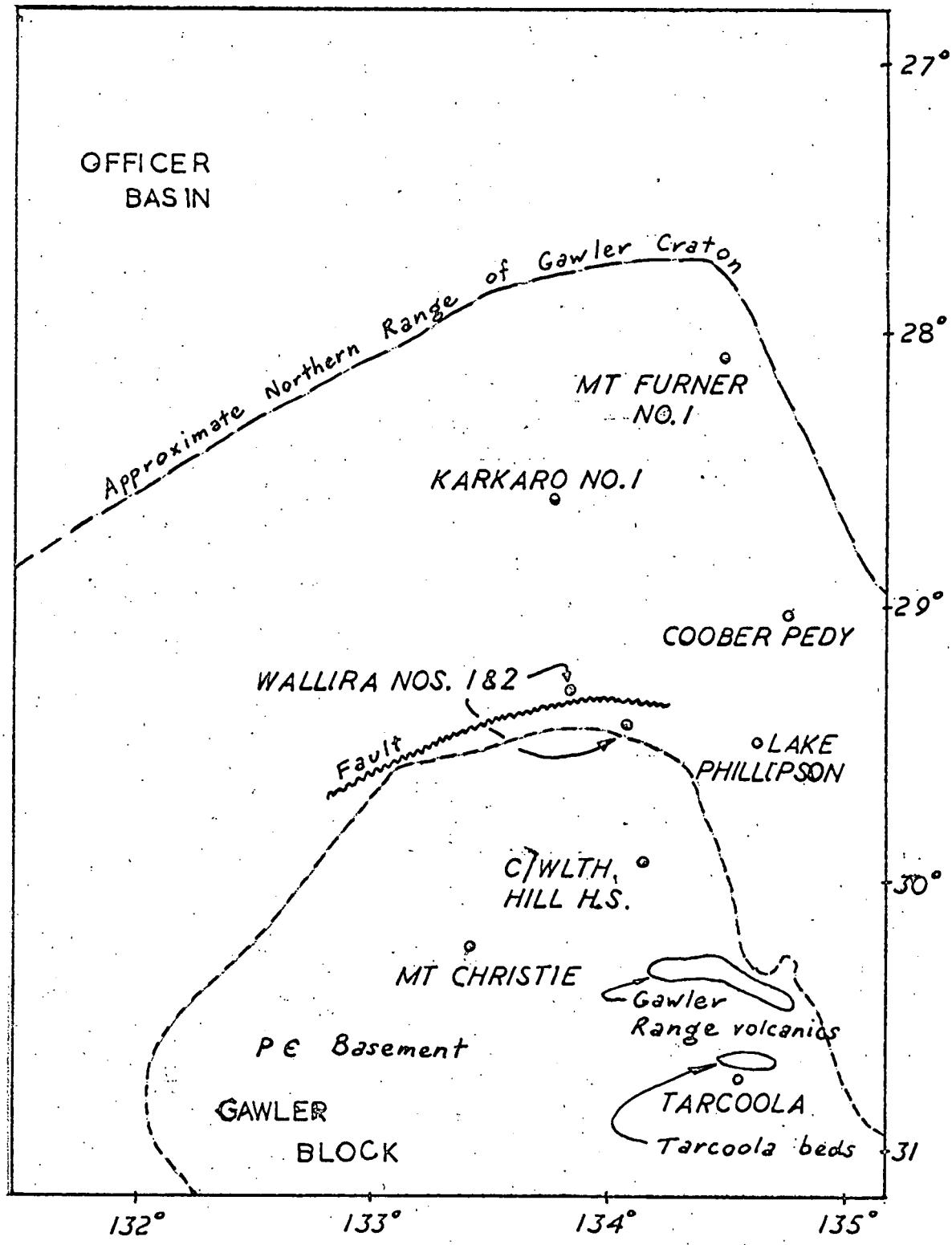
Drg. No.
Table Ic.

1M—2.70 A1810

SHOTPOINT NO.	v_1	h_1	v_2	h_2	v_3	h_3	v_4	h_4	v_5	z
LCW1	1000	6	4550	85	7000					*
2	1350	6	3700	57	7300					*
3	1350	6	3730	69	7000					*
MP 1	1100	6	4200	40	18400					46
2	1160	15	6100	137	13000					152
3	1030	14	5830	126	17100					140
RR1	1000	7	3700	60	6200	84	19000			151

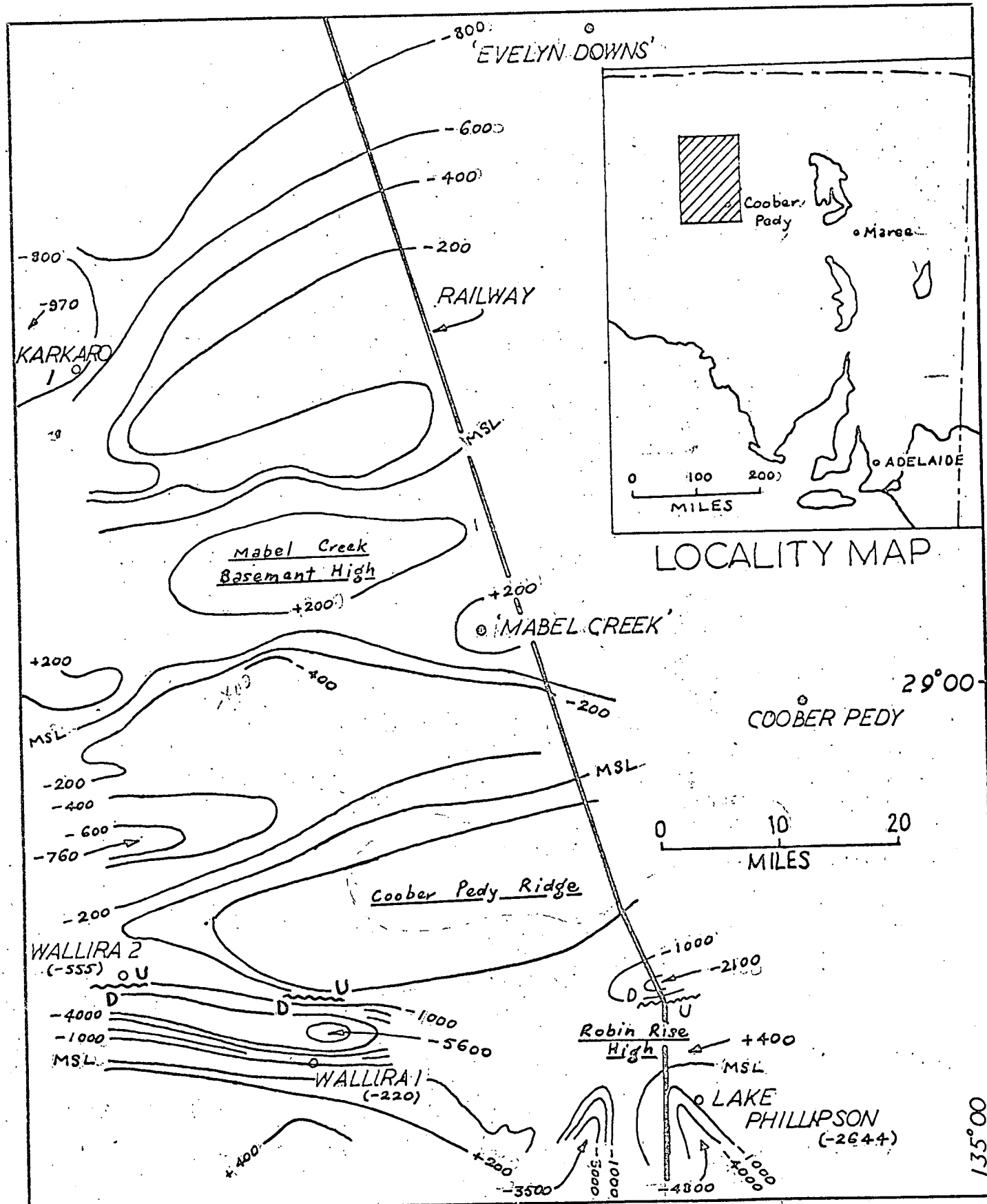
	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale:
Compiled: R.G.N.	SEISMIC REFRACTION TABLE	Date:
Drn. | Ckd.	v_i = velocity of i^{th} layer. h_i = thickness of i^{th} layer. z = depth to bedrock (where applicable)	Drg. No. Table Id.

1M—2.70 A1810



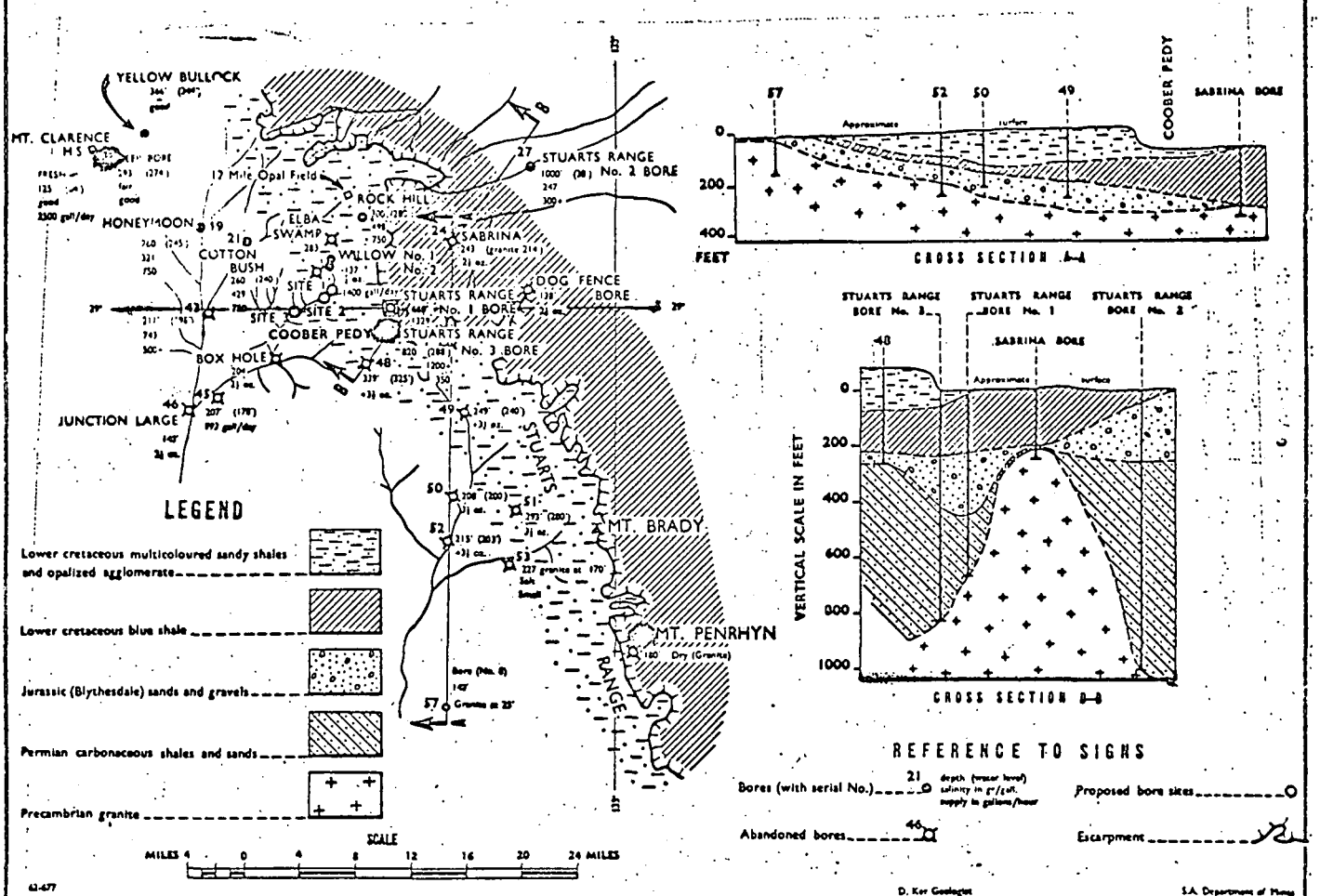
	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale: As shown
Compiled: R.G.N.	GENERAL BASEMENT TRENDS	Date: 6-6-71.
Drn. | Ckd.		Drg. No. 71-686 Bb

1M—2.70 A1810



	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale: As shown
Compiled: R.G.N.	SEISMIC DEPTHS TO BASEMENT IN FEET WITH RESPECT TO MEAN SEA LEVEL	Date: 1-6-71
Drn. | Ckd.		Drg. No. S9387

1M—2.70 A1810



	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale: As shown
Compiled: R.G.N.	BOREHOLE INFORMATION	Date: 6-6-71
Drn. | Ckd.		Drg. No. 62-677

1M—2,70 A1810

DEPTH		DESCRIPTION
From	To	
0'0"	10'0"	Brown silty soil with occasional silcrete pebbles. Silcrete pebbles particularly abundant from 8'0" to 10'0".
10'0"	15'0"	Brown soil with abundant rounded pebbles up to 1½" diameter, consisting of white silcrete, brown jasper and mottled white and red jasper.
15'0"	20'0"	As above.
20'0"	25'0"	As above.
25'0"	33'0"	No sample.
33'6"	34'8"	SILICIFIED SANDSTONE. Fine to medium grained sandstone with fine light brown clayey matrix and quartz grains up to 2mms. diameter. Quartz grains subrounded to angular. Irregular patchy silicification decreases with depth.
34'8"	35'6"	Lost core.
35'6"	37'0"	SANDSTONE. Fairly well indurated sandstone with subrounded to angular quartz grains up to 4mms. diameter set in fine reddish-brown ferruginous silty matrix.
37'0"	38'0"	Lost core.
38'0"	40'0"	CONGLOMERATE SANDSTONE. Rounded to subangular quartz grains ranging in size up to 5mms. diameter set in fine brown ferruginous silty matrix.
40'0"	45'0"	CONGLOMERATE SANDSTONE. As above but with slight increase in average size of quartz grains.
45'0"	50'0"	CONGLOMERATE SANDSTONE. Subrounded to angular quartz grains in fine pale brown silty matrix.
50'0"	55'0"	CONGLOMERATE SANDSTONE. As above.
55'0"	60'0"	CONGLOMERATE SANDSTONE. Subrounded to angular quartz grains 1mm. to 5mms. diameter set in fine pale brown silty matrix. Minor feldspar grains.
60'0"	62'0"	CONGLOMERATE SANDSTONE. As above.
62'0"	65'0"	Grey slightly silty clay with 5% subrounded to angular quartz grains ½-2mms. in diameter.
65'0"	70'0"	Grey slightly silty clay - as above.
70'0"	73'0"	Grey slightly silty clay - as above.

	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale:
Compiled: A.M.P.	LOG OF HOLE DRILLED AT CPB7.	Date: 10-8-71.
Drn. | Ckd.		Drg. No. S9388.

1M—2,70 A1810

DEPTH From	DEPTH To	DESCRIPTION
73'0"	75'0"	CONGLOMERATE SANDSTONE. Subrounded to angular quartz grains up to 6mms. diameter, with occasional rounded to subangular feldspar grains up to 3mms. diameter in fine light brown silty clayey matrix.
75'0"	80'0"	CONGLOMERATE SANDSTONE. As above.
80'0"	84'0"	CONGLOMERATE SANDSTONE. As above.
84'0"	85'0"	Blue-grey to pale grey silty clay with fine quartz grains and small fragments of weathered quartz-feldspar rock.
85'0"	90'0"	Blue-grey to pale grey silty clay - as above.
90'0"	95'0"	Blue-grey to pale grey silty clay - as above.
95'0"	100'0"	Blue-grey to pale grey silty clay - as above.
100'0"	104'0"	Blue-grey to pale grey silty clay - as above but with increase in content of quartz grains to 40% near base of interval.
104'0"	108'0"	Weathered Feldspar-Quartz-Pyroxene-Hornblende rock. Medium-grained tomcoarse-grained.
108'0"	112'6"	Feldspar-Quartz-Pyroxene-Hornblende rock. Dark, coarsely crystalline metamorphic rock of adamellite composition. AMDEL Report No. MP/4219/71.
		E.O.H. 112'6".

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale:
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134° 30'

APPROXIMATE ROUTE OF PROPOSED RAILWAY TRACK

Russel Bore

Broken Bit Bore

VERMIN PROOF FENCE

No. 5 Bore

DFW

MAGNETOMETER TRAVERSES

GG LINE

STUART

No. 2 Bore

WCW1

No. 1 Bore

RNA LINE

JHA LINE

Middle Bore

NOTE: SHOTHOLES DRILLED TO AVERAGE DEPTH OF 30 FT.

"Mount Clarence"

Yellow Bullock Bore

Shellpatch Bore

Ordnidgidinny Bore

VERMIN PROOF FENCE

Sputnik Bore

Stuart Range Bore No 2 (Drowned)

GPW

Junction Bore

LWA LINE

No 4 Bore

Honeymoon Bore

Cottonbush Bore

Rock Hill Bore

Alpha Swamp Bore

No 1 Willow Bore

No 2 Willow Bore

Patrina Bore

Dog Fence Bore

Stuart Range Bore No 1

Four Mile Bore

MBW

Mabel Creek

HIGHWAY

Southern Cross Bore

Salty Holes

MABEL CREEK

ALGEBULLCULLIA

29°00'

134° 30'

28°45'

LEGEND

Road
Track
Fence
Bore
Homestead

SCALE IN MILES

SCALE IN KILOMETRES

DEPARTMENT OF MINES — SOUTH AUSTRALIA

TARCOOLA – ALICE SPRINGS RAILWAY
BALLAST SEISMIC SURVEY

	GEOLOGIST	Drn RN	SCALE AS SHOWN
		Tcd SLT	71-690
Director of Mines	SENIOR GEOLOGIST	Chd	
		Eng	DATE: 6 JULY 1971

134°30'

29°00'

29°15'

30°30'

Ping Pong Bore

Harbour Bore (Disused)

Cleanskin Bore

Coronation Bore

VY

TWENTY MILE WATERHOLE

CPA1

GTA1/2

JAA1

RGA1

LKA1

CPB11

CPB1

CPC1

LCW1

LCW

CPD1

APPROXIMATE ROUTE OF PROPOSED RAILWAY TRACK

COOBER PEDY

Bore No 4

STUART HIGHWAY

Bore No 1

Bore No 2

RANKINS DAM

ROBIN RISE

GELIGNITE DAM

GEORGES HOLE DAM

MT PENRHYN DAM

Bore No 18

Bore No 15

Bore No 3

MAGNETOMETER TRAVERSE

RR1

MP1

MP2

MP3

NO 8 BORE

FITZGERALDS DAM

ARKEETA CLAYPANS

Lake P 100 Bore

ARKEETA DAM T.V.

PHILLIPSON

COOBER PEDY

LEGEND

Road

Track

Fence

Bore

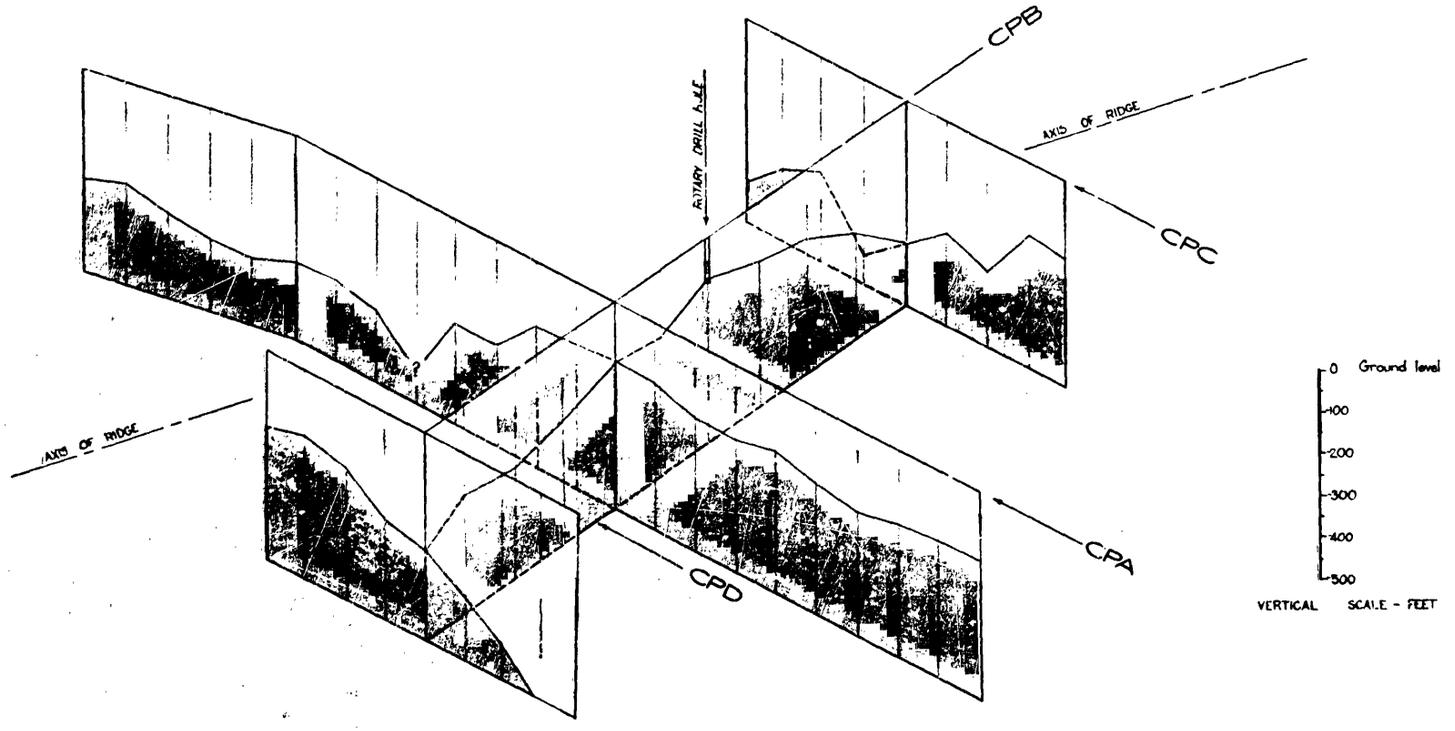
SCALE IN MILES

SCALE IN KILOMETRES

DEPARTMENT OF MINES — SOUTH AUSTRALIA

TARCOOLA - ALICE SPRINGS RAILWAY
BALLAST SEISMIC SURVEY

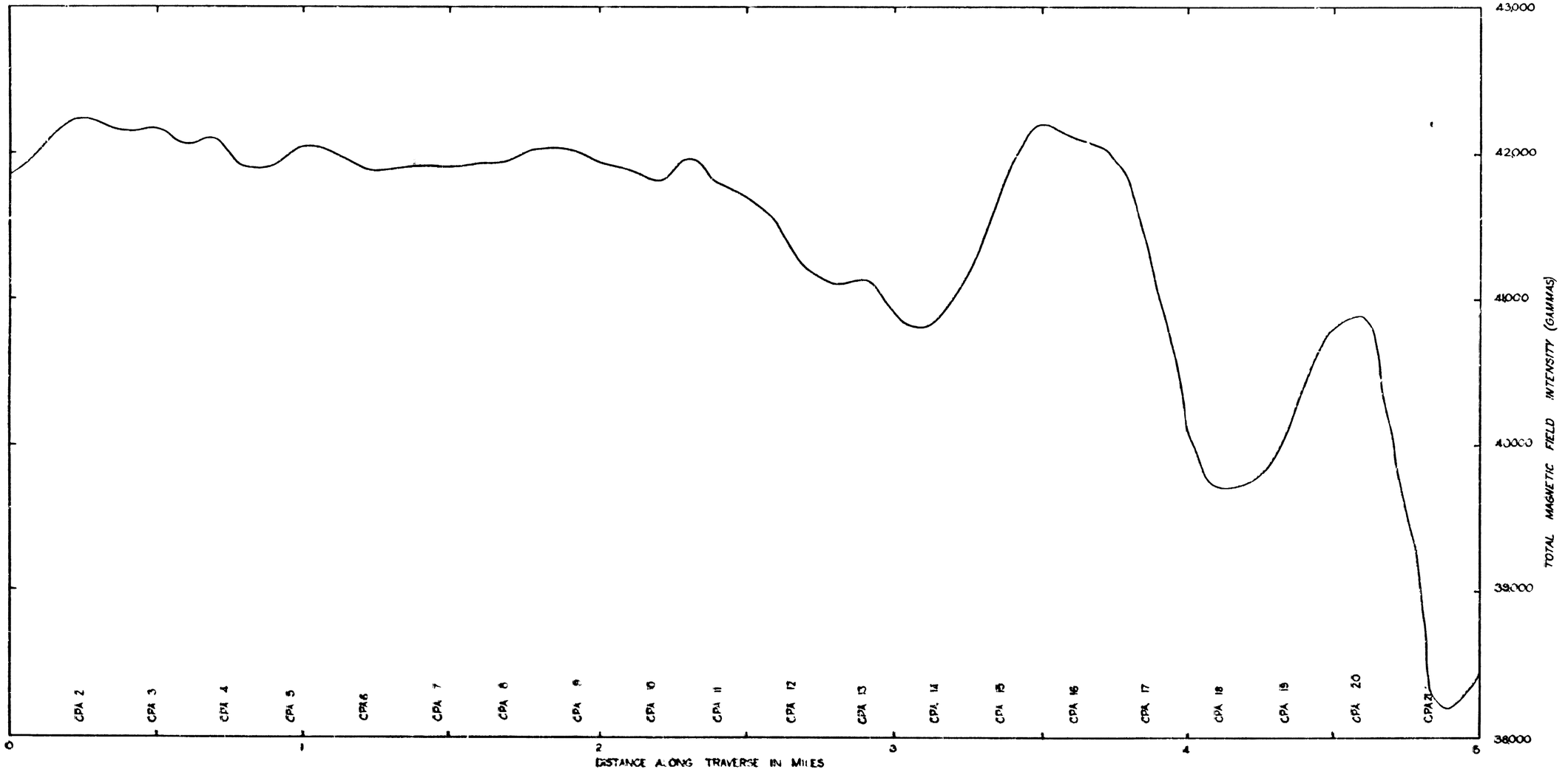
	GEOLOGIST	DRN RN	SCALE AS SHOWN
		SLT	71 - 689
Department of Mines	SENIOR GEOLOGIST		DATE 6 JULY 1971



DEPARTMENT OF MINES – SOUTH AUSTRALIA

COOBER PEDY RIDGE
DEPTHS TO BASEMENT

GEOPHYSICAL SECTION	GEOPHYSICIST	Drn. R.G.N	SCALE: AS SHOWN
		Tcd. S.J.C	71-688 Bb
Director of Mines		Chd.	
		Exd.	DATE: 7th SEPT 1971



FOR LOCATION OF LINE CPA SEE PLAN 71-689

DEPARTMENT OF MINES — SOUTH AUSTRALIA

COOBER PEDY RIDGE
MAGNETIC TRAVERSE

GEOPHYSICAL SECTION	GEOPHYSICIST	Drn. R.G.N.	SCALE: AS SHOWN
		Tod. S.J.C.	71-687 Bb
Director of Mines		Chd.	
		Encl.	DATE: 8 SEPT 1971