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SML 177

EDIACARA MINERAL FIELD

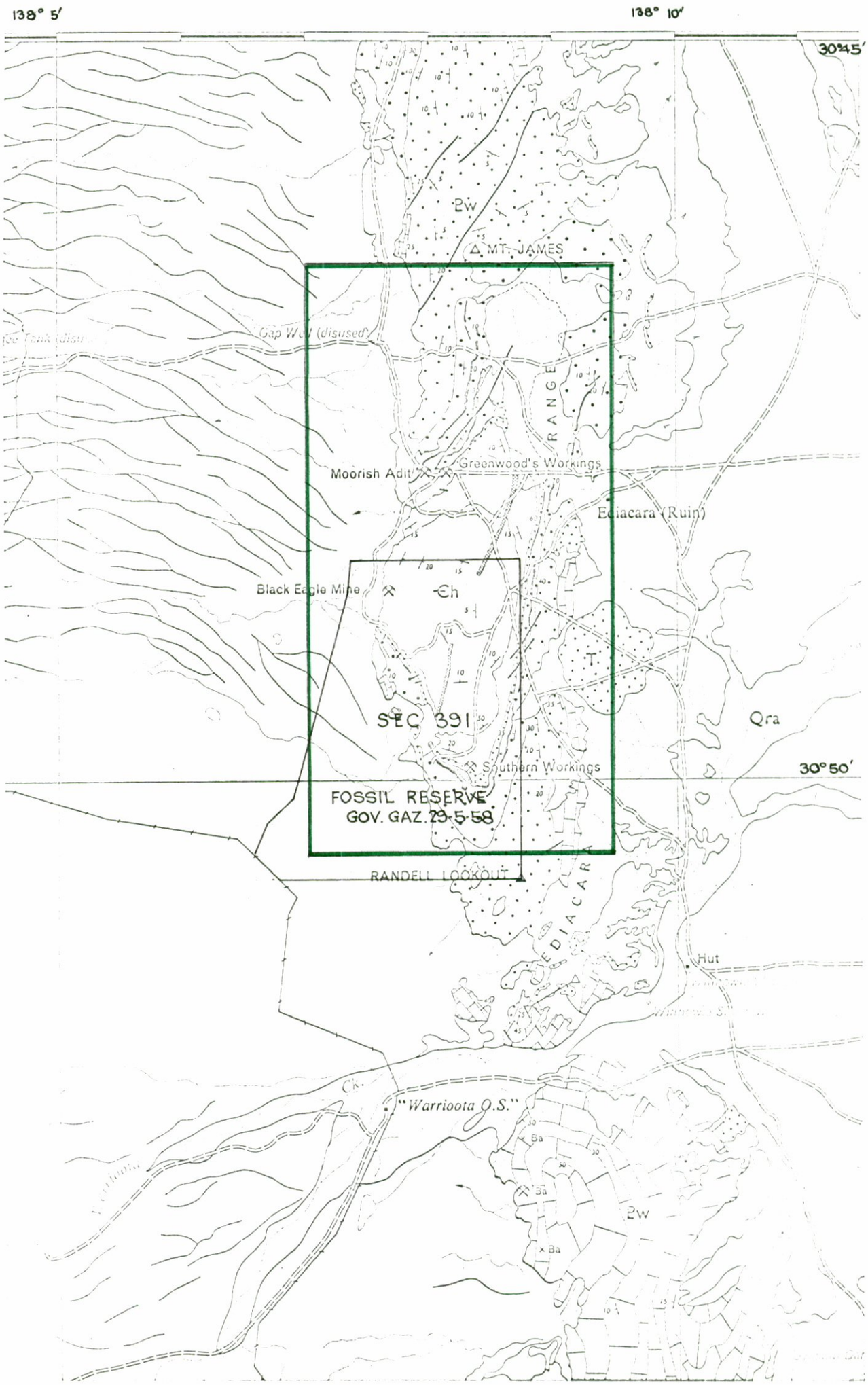
PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 11/3/1968 TO 14/1/1969

Submitted by
Trans Australian Explorations Pty Ltd
1968

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA



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D.M. 327/68

S.M.L. 177

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TENEMENT HOLDER: Trans. Australia Explorations Pty. Ltd

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AUSTRLAIAN EXPLORATIONS PTY. LTD , 1968
Report on Explorations of Special Mining Lease No. 177 Edicara, S.A. March- June, 1968 (pgs. 4-5)

GRANT, I.C., 1968
Progress report - SML 177 Edicara S.A. 11th June -11th September 1968. (No Plans) (pg. 6)

EADIE, E.N., 1968
An appraisal of the Induced polarisation survey of the Ediaaara Mineral Field, .S.A made By S.A. Dept, of Mines.
(No Plans) (pgs. 7-27)

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD , 1968
Final report Eduacara Mineral Field aS.M.L 177 S.A. (pgs. 28-52)

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Report On

EXPLORATION OF

SPECIAL MINING LEASE NO. 177

EDIACARA, S.A.

MARCH - JUNE, 1968.

18th June, 1968.

Trans Australian Explorations Pty. Ltd.

INTRODUCTION :

Special Mining Lease No. 177 was granted to Trans Australian Exploration Pty. Limited on March 11th, 1968. It comprises approximately 11 square miles at Ediacara, west of Beltana township and contains the ore deposits worked many years ago for lead, silver and copper.

In recent years, the area has been explored by the Department of Mines of South Australia, whose work included geophysical surveys and diamond drilling, and by Consolidated Zinc - Rio Tinto Australia, who put down a series of widely spaced drill holes to test for widespread mineralization over the general area.

EXPLORATION :

Trans Australian Exploration's activity on S.M.L. No. 177 for the three month period ending June 11th, has consisted of a review of all data available from the Mines Department records, and from C.R.A. reports. In particular, our chief geophysicist has made a complete re-evaluation of the results of the Induced Polarization surveys run by the Mines Department, including a replotting and re-contouring of the field data. This interpretation has disclosed a somewhat different picture of the location, grouping, and definition of anomalous areas. These results have been reviewed against existing geological information and a programme for further geological and geophysical field investigation has been prepared. Relocation of grid lines at Ediacara has been completed and the lines repegged where necessary.

Cores from several of the Ediacara drill holes have been inspected at the Mines Department's core library at Thebarton, and a large number of assays of remaining material from previously sampled intervals have been run for additional information on mineral content.

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ADELAIDE S.A. 5000
TELEPHONE 23 4277
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TRANS AUSTRALIAN EXPLORATIONS PTY LTD

7th October, 1968.

The Director,
Department of Mines of S.A.,
Box 38, Post Office,
Rundle Street,
Adelaide, S.A.

Dear Sir,

Progress Report - S.M.L. No. 177
Ediacara, South Australia.

During the period covered by this report, June 11th to September 11th 1968, exploration work on the Edicara Mineral Field held under Special Mining Licence No. 177 by Trans Australian Explorations continued as planned.

A detailed geological mapping programme was undertaken at a scale of 1 inch = 500 feet and completed by mid-August.

The re-appraisal of previous geophysical work by Mines Department personnel, recently completed by our geophysicist, suggested several check I.P. lines. These were run over the ground to provide additional evidence on the nature and intensity of the I.P. anomalies as interpreted. Results so far are satisfactory, although the anomalies in general appear to be of lesser magnitude than previously supposed.

Field crews were withdrawn from the area in September pending further evaluation of the work.

Trans Australian's expenditures on S.M.L. No. 177 for the period were approximately $9,700.00.

Yours very truly,
Trans Australian Explorations Pty. Ltd.

Ian C. Grant
Managing Director.

ICG:rg.

NOTED
Director of Mi

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MEMORANDUM TO: Mr. I.C. Grant, Managing Director, Trans Australian Explorations Pty. Ltd.

MEMORANDUM FROM: E.N. Eadie, Chief Geophysicist, McPhar Geophysics Pty. Limited.

SUBJECT: Induced polarization survey of the Ediacara Mineral Field, South Australia, made by the South Australian Department of Mines.

DATE: 17th June, 1968.

The Induced Polarization (I.P.) results obtained by the South Australian Department of Mines using 200 ft. spreads on the following lines at Ediacara have been reinterpreted by Trans Australian Explorations Pty. Limited.

Grid	Line	Range
Main	2000N	8W - 42E
	1000N	52W - 40E
	00	56W - 36E
	500S	48W - 12W
	1000S	72W - 34E
	1500S	54W - 14E
	2000S	72W - 34E
	2500S	39W - 11E
	3000S	74W - 32E
	3500S	37W - 13E
	4000S	60W - 32E
	4500S	17W - 19E

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Grid	Line	Range
Main	5000S	46W - 32E
	6000S	38W - 26E
	7000S	38W - 26E
	7500S	20W - 30E
	8000S	30W - 20E
	8500S	20W - 30E
A	20N	46W - 4E
	10N	42W - 8E
	00	42W - 8E
	10S	40W - 10E
B	10W	2S - 48N
	00	00 - 50N
	10E	2N - 52N

The reinterpretation by Trans Australian Explorations Pty. Ltd., revealed the following anomalies:-

Grid	Line	Anomaly Classification	Range
Main	2000N	Probable	18E - 19E
		Definite	19E - 22E
		Probable	22E - 26E
		Possible	30E - 32E
	1000N	Definite	35W - 31W
		Probable	18E - 22E
		Definite	24E - 26E
		Probable	32E - 34E----?
	00	Possible	50W - 48W---?
		Probable	40W - 39W
		Definite	39W - 37W
		Probable	37W - 34W

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Grid	Line	Anomaly Classification	Range		
Main	00	Probable	14E	-	18E
		Possible	19E	-	22E
		Probable	28E	-	30E---?
	500S	Definite	42W	-	39W---?
		Probable	39W	-	36W
	1000S	Probable	44W	-	42W
		Possible	42W	-	40W
		Possible	10E	-	13E
		Probable	24E	-	26E---?
	1500S	Definite	47W	-	43W
		Probable	43W	-	42W
		Probable	39W	-	35W
		Probable	27W	-	25W
		Possible	14W	-	12W
	2000S	Probable	44W	-	42W
		Definite	38W	-	36W
		Possible	19W	-	17W
		Probable	8E	-	10E
		Possible	10E	-	14E
		Probable	14E	-	16E
		Definite	24E	-	26E---?
	2500S	Possible	37W	-	35W---?
		Possible	1E	-	5E
	3000S	Probable	48W	-	46W
		Possible	14W	-	12W
		Definite	10E	-	12E
		Probable	12E	-	14E
		Definite	14E	-	18E
		Probable	18E	-	20E
	3500S	Possible	34W	-	32W---?
		Possible	14W	-	12W
		Possible	6E	-	9E---?

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Grid	Line	Anomaly Classification	Range.
Main	4000S	Possible	48W - 46W
		Probable	36W - 34W
		Definite	34W - 30W
		Probable	30W - 26W
		Possible	22W - 20W
		Possible	17W - 15W
		Possible	0 - 2E
		Definite	6E - 8E
		Possible	13E - 15E
	4500S	Definite	5E - 7E
		Possible	9E - 11E---?
	5000S	Definite	38W - 36W
		Definite	29W - 26W
		Possible	26W - 24W
		Probable	24W - 22W
		Definite	22W - 20W
		Probable	4E - 6E
	6000S	Probable	32W - 30W
		Probable	24W - 20W
		Possible	20W - 19W
		Probable	19W - 17W
		Definite	6E - 8E
		Probable	8E - 13E
		Possible	20E - 22E---?
	7000S	Definite	25W - 23W
		Probable	18W - 16W
		Definite	4E - 6E
		Probable	9E - 11E

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Grid	Line	Anomaly Classification	Range
Main	7500S	Probable	10W - 8W
		Possible	0 - 4E
		Possible	8E - 9E
		Probable	9E - 11E
		Possible	11E - 12E
		Probable	12E - 14E
	8000S	Possible	26W - 24W---?
		Possible	16W - 14W
		Probable	6E - 7E
		Definite	7E - 10E
	8500S	Possible	12W - 10W
		Probable	4E - 6E
A	20N	Definite	24W - 22W
		Possible	20W - 18W
	10N	Probable	22W - 19W
		Possible	16W - 14W
	00	Possible	28W - 26W
		Probable	22W - 21W
		Definite	21W - 18W
		Probable	13W - 11W
	10S	Probable	34W - 31W---?
		Definite	26W - 22W
		Probable	2W - 2E---?
B	10W	Possible	27N - 30N
	00	Probable	24N - 28N
		Possible	32N - 34N

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Grid	Line	Anomaly Classification	Range
B	10E	Probable	22N - 24N
		Definite	24N - 26N
		Probable	26N - 28N
		Definite	28N - 30N

The definite, probable and possible anomalies are shown by solid bars (——), dashes (----), and hatching (////) respectively on a grid plan of the Ediacara area.

The following is a line to line discussion of the anomalies:-

MAIN GRID.

Line 8500S -

This line is located at the southern end of the Ediacara basin.

A probable anomaly at depth was observed between 4E and 6E. The anomaly is strongest on the third and fourth separations.

An I.P. anomaly was not observed in the area of the Southern Workings which line 8500S crosses at about 5W. This suggests the absence of a significant occurrence of sulphides. According to Nixon (1964), a general outline of the stopes indicates a narrow ore body elongated in a N-S direction and dipping flatly to the north parallel to the bedding. Most of the ore mined was lead carbonate, although the lode was discovered by working slabs of malchite.

Line 8000S -

A strong definite anomaly at depth was observed between 7E and 10E. The anomaly is strongest on the fourth separation. This anomaly appears to occur in a similar geological environment to the anomaly observed to the south on line 8500S and probably corresponds to it. The anomaly occurs along the eastern edge of the Ediacara basin.

The third and fourth separation readings at the western edge of the data plot indicate an anomaly of which the surface expression is probably west of about 24W. The I.P. results have not been extended sufficiently far west to fully outline

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this anomaly. A double setup using 200 ft. spreads centered at 24W should be surveyed to map this anomaly, which may well be of interest as high frequency effects and metals factors were observed on the third and fourth separations at the western edge of the data plot. The anomaly is west of the Pound sandstone - worm burrow beds contact.

Line 7500S -

A probable anomaly was observed at depth between 9E and 11E. The anomaly is strongest on the third and fourth separations and appears to correspond to the definite anomaly observed on line 8000S.

A study of the I.P. results suggests that the anomalies observed on line 8500S between 4E and 6E, on line 8000S between 6E and 10E and on line 7500S between 9E and 11E are due to a source at some depth striking east of north. The anomalies correspond to the eastern Pound sandstone - worm burrow beds contact shown on the geological plan prepared by C.R.A. suggesting that the source of the anomalies is at the contact or within the Pound sandstone.

The probable anomaly between 12E and 14E increases in strength with decreasing depth, and indicates a fairly shallow narrow source. A double setup using 100 ft. spreads centered at 13E would give information on the anomaly nearer the surface and determine the location of the source within narrower limits. The source appears to occur within the Pound sandstone.

A probable anomaly was observed at depth between 10W and 8W. The source appears to be within the dolomite. According to the C.R.A. geological plan, line 7500S in the area of the anomaly is roughly parallel to the contact between laminated algai dolomite and massive dolomite at the southern end of the basin. In view of this it may be desirable to survey a north-south line across the contact in the area of the anomaly.

A possible anomaly at depth was observed between 0 and 4E.

Line 7000S -

A definite shallow anomaly was observed between 4E and 6E, and a probable anomaly at greater depth was observed between 9E and 11E.

Between 25W and 23W a strong definite anomaly was observed. The anomaly was topped off using 200 ft. spreads. The geological plan indicates that the source of the anomaly is in Pound sandstone. Line 7500S has not been

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extended sufficiently far west to determine whether there is a corresponding anomaly to the south on line 7500S or whether the anomaly corresponds to the anomaly indicated on line 8000S between 26W and 24W. Line 7500S should be extended to the west.

A probable anomaly at depth was observed between 18W and 16W.

Line 6000S -

A strong shallow definite anomaly was observed between 6E and 8E, and should be followed up using shorter spreads to given information nearer the surface, and determine the location of the source more precisely. The source of the anomaly is probably in dolomite. A geological examination in the area of the anomaly may give some indication as to its source. The anomaly probably corresponds to that observed between 4E and 6E on line 7000S.

A fairly broad anomaly at depth was observed between 8E and 13E. This probably corresponds to the anomaly between 9E and 11E on line 7000S.

The anomalous zone between 6E and 13E is at the eastern edge of the basin.

A probable anomaly at some depth was observed between 24W and 20W. Although the anomaly has been topped off using 200 ft. spreads it is still evident on the first separation. It appears to correspond to the definite anomaly observed on line 7000S between 25W and 23W.

A deeper probable anomaly was observed between 19W and 17W and appears to correspond to the anomaly on line 7000S between 18W and 16W.

A probable anomaly at depth was observed between 32W and 30W, although the line was not extended sufficiently far west to map the anomaly nearer the surface. The anomaly is west of the Pound sandstone contact at the west of the basin.

Line 5000S -

A probable anomaly was observed at depth between 4E and 6E.

On the western side of the basin a strong definite anomaly was observed between 29W and 26W. Although the anomaly has been topped off using 200 ft. spreads, it is still strong on the first separation between 28W and 26W. The anomaly probably corresponds to that observed on line 6000S between 24W and 20W.

Diamond Drill Hole No. IP-1 drilled by the Department of Mines with the object of testing an I.P. anomaly was collared at 30.05W on line 5000S and drilled towards east at an angle of 60° to a depth of 619 ft. The reinterpretation of the I.P. results by Trans Australian has indicated a definite anomaly between 29W and 26W on line 5000S. It is unlikely that the hole drilled by the Mines Department was suitably positioned to test the source of this anomaly, particularly as the dip is towards east. This is supported by the fact that no mineralization was intersected in the hole which was in Pound quartzite throughout its length. The fact that the anomaly is sloping towards the west should not be taken to indicate that the source dips west. The source could probably be tested by means of a hole drilled west at 45° from 25W. However, before any further drilling is done, it would be desirable for the line to be resurveyed by I.P. in the area of the anomaly, and for parallel lines 250 ft. north and south of the anomaly to be surveyed also to give information on the strike of the source and to ensure that the anomaly being tested is not due to an off-end effect. It may also be desirable to survey the anomaly using 100 ft. spreads and possibly also 300 ft. spreads.

An anomaly at depth was observed between 24W and 20W, and probably corresponds to that observed on line 6000S between 19W and 17W. The anomaly is strongest at depth between 22W and 20W.

A definite anomaly at depth was observed between 38W and 36W. This anomaly appears to correspond to the probable anomaly observed on line 6000S between 32W and 30W. The geology in the area of these anomalies should be examined.

Line 4500S -

A moderately deep definite anomaly was observed between 5E and 7E on the eastern side of the basin. The anomaly occurs within the dolomite.

A possible anomaly is suggested east of 9E, at the eastern edge of the data plot. However, the line would need to be extended to confirm the existance or otherwise of an anomaly.

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The line has not been surveyed sufficiently far west to cross the western edge of the basin.

Line 4000S -

A moderately deep definite anomaly was observed between 6E and 8E, and probably corresponds to the definite anomaly observed on line 4500S between 5E and 7E. Both anomalies occur in dolomite and the surface expression of each corresponds to the massive dolomite - laminated algai dolomite contact shown on the C.R.A. geological plan.

The Mines Department diamond drilled a vertical hole E11 at 5E on line 4000S to a depth of 234 ft. This hole would not be expected to test the source of the definite anomaly between 5E and 7E. The hole intersected fractured, leached and weathered dolomite with some shales at 183 ft. No copper or lead mineralization was seen in the core.

The area of the definite anomalies observed at the eastern side of the basin between 5E and 7E on line 4500S and between 6E and 8E on line 4000S may be of interest and warrants further investigation. However, before any drilling is done the anomalies should be checked and possibly surveyed also using 300 ft. spreads.

A definite anomaly was observed between 34W and 30W. This forms part of an anomalous zone extending from 36W to 26W in which the anomalies probably correspond to those observed to the south in the zone between 30W and 20W on line 5000S. The zone is at the western side of the basin.

The Mines Department diamond drilled a vertical hole E10 at 30W on line 4000S to a depth of 247½ ft. This hole was in dolomite, and intersected an average of 0.29% copper between 100 ft. and 227½ ft., and an average of 0.57% lead between 80 - 247½ ft. The mineralization is consistent with the I.P. results, particularly as the dip is towards east.

An examination of the core from this hole as well as that from other holes at Ediacara, should be examined for the presence of sulphides other than those of copper and lead, particularly that of pyrite.

It would be desirable to do further I.P. in the area of the anomalous zone along the western side of the basin, particularly in the area of line 4000S where interesting mineralization was intersected. However, the anomalous zone was observed also on lines 5000S, 6000S and 7000S, and so extends for a considerable distance. The zone has not been tested by drilling south of line 4000S, and drill hole E10 on line 4000S is unlikely to have fully tested the anomalous zone on that line.

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Drill hole IP-1 was not suitably located to test the strong shallow anomaly within the zone on line 5000S.

The further I.P. work should be designed to check the results obtained by the Mines Department as well as to obtain additional information. The I.P. results of the Mines Department and the drilling results for hole E10 would suggest that further drilling will be warranted.

A possible anomaly at depth was observed between 48W and 46W west of the basin.

Several other possible anomalies at depth were observed on this line.

Line 3500S -

This line has not been extended sufficiently far either east or west to fully outline any northern continuation of the definite anomalies observed at the eastern and western sides of the basin on line 4000S. However, there is good indication of an anomaly building up at the eastern edge of the data plot, and this is probably a northern continuation of the definite anomalies observed at the eastern side of the basin on lines 4500S and 4000S, and also on line 3000S to the north. There is some suggestion of an anomaly building up at the western edge of the data plot and this may perhaps represent a northern continuation of the anomalous zone observed at the western side of the basin on line 4000S.

Line 3000S -

At the eastern side of the basin an anomaly at depth was observed between 10E and 12E. A study of the geological plan indicates that the anomaly occurs in dolomite and is in a similar geological environment to the definite anomalies observed on line 4500S between 5E and 7E and on line 4000S between 5E and 7E. However, the anomaly has been topped off to the extent of being absent on the first separation, and may possibly be due to an off-end effect.

An anomaly which increases in intensity with depth occurs further to the east. On the first separation the anomaly is located between 16E and 18E. It may be desirable to resurvey the complex anomalous zone extending between 10E and 20E.

At the west of the basin a probable anomaly at depth was observed between 48W and 46W.

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No I.P. anomaly was observed either in the area of vertical drill hole IP-2 located at 3.7W on line 3000S and drilled to test an assumed I.P. anomaly, or in the area of vertical drill hole E12 located at 5E on line 3000S.

According to Nixon, IP-2 did not intersect any identifiable mineralization, although Benlow refers to a weakly mineralized zone and the log of the hole given in Nixon's report indicates that some pyrite was seen along fractures. It would seem that the mineralization encountered in the hole is small. No mineralization was reported in drill hole E12, which was drilled in dolomite.

Drill hole E48 drilled by C.R.A. about 150 ft. south of 23W on line 3000S intersected only a trace of galena between 470 ft. and 530 ft. No I.P. anomaly was observed in the area of 23W on line 3000S.

There is no I.P. anomaly in the area of Mines Department drill hole E9 located at 40W on line 3000S. No mineralization was encountered in the hole.

Line 2500S -

This line does not extend sufficiently far either east or west to give information at the sides of the basin or detect any northern extension of the definite and probable anomalies observed on line 3000S.

A possible anomaly may be building up at the western edge of the data plot.

Line 2000S -

A definite anomaly at moderate depth was observed between 24E and 26E. The anomaly is about 500 ft. east of the Pound sandstone boundary on the eastern side of the basin. The line does not extend sufficiently far east to fully outline the anomaly. The anomaly could be checked and more fully mapped by means of a double set-up, using 200 ft. spreads centered at 25E. An anomaly was observed at depth on line 1000S between 24E and 26E and may be a northern continuation of the anomaly observed on line 2000S. It would be desirable to extend lines 1500S and 2500S to the east and to survey on each a double set-up using 200 ft. spreads centered at 25E to determine whether the anomaly extends north or south of line 2000S.

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A possible anomaly was observed at depth between 8E and 10E, and a possible shallow anomaly was observed between 14E and 16E. These anomalies probably correspond to the definite anomalies observed to the south on line 3000S.

A definite anomaly at depth was observed between 38W and 36W. The anomaly appears to correspond to the probable anomaly observed to the north on line 1500S between 39W and 35W to the east of the Black Eagle Mine.

A probable anomaly extending from near the surface to depth was observed between 44E and 42E. The anomaly appears to correspond to the strong definite anomaly observed at depth to the north on line 1500S between 47W and 43W.

Line 1500S -

This line does not extend far enough east to cover the eastern side of the basin.

A probable anomaly was observed at the west of the basin between 39W and 35W east of the Black Eagle Mine.

According to Nixon, the Black Eagle Mine was worked for copper which occurs mainly as the oxide or carbonate. Mines Department drill hole E7 was located 50 ft. south of 38W on line 1500S and drilled towards west at an angle of 70° to a depth of 315 ft. The hole intersected secondary lead and copper mineralization of significant grade between 135-290 ft. Copper averaging 0.65% over 55 ft. was intersected between 135-190 ft., and lead averaging 1.00% was intersected over 155 ft. from 135-290 ft. The hole is situated in the area of the Black Eagle Mine. Although the mineralization encountered during drilling is secondary, the drill hole is located within the anomalous I.P. zone.

A very strong definite anomaly at depth was observed between 47W and 43W to the west of the Black Eagle Mine.

Further investigation of the two anomalous zones at the western end of lines 1500S and 2000S appears warranted.

The correlation of these anomalous zones to the north of line 1500S is not clear, particularly in view of the results on line 1000S, although the resistivity patterns on lines 500S and 00 would suggest that the probable anomaly

on line 1500S between 39W and 35W may correspond to the definite anomaly on line 500S between 42W and 39W (and possibly further west) and to the definite anomaly on line 00 between 39W and 37W, and that the definite anomaly on line 1500S between 47W and 43W may correspond to the anomaly at depth building up on the western side of the data plot on line 00 west of 48W.

Line 1000S -

A probable anomaly was observed east of the basin between 24E and 26E. The resistivity pattern suggests this anomaly occurs in a similar environment to the definite anomaly on line 2000S between 24E and 26E and to the anomaly on line 00 between 28E and 30E.

At the west of the basin a probable anomaly was observed between 44W and 42W.

No anomaly was observed in the area of hole E50 drilled by C.R.A. about 100 ft. north of 51W on line 1000S. No mineralization was intersected in the hole.

Line 500S -

This line does not extend east of the centre of the basin.

A definite anomaly at depth occurs at the western edge of the data plot between 39W and 42W. The line should be extended to the west to outline this anomaly more fully and to determine whether there is an anomaly further west as indicated on line 00.

Line 00 -

An anomaly was observed at the eastern edge of the data plot between 28E and 30E. The line should be extended east to outline the anomaly more fully. The anomaly is east of the basin and appears to correspond to anomalies in a similar geological environment on adjacent lines 1000N and 1000S.

An anomaly extending from near the surface to depth was observed between 14E and 18E. The anomaly is strongest at depth. Between 19E and 22E a possible anomaly is indicated at depth. These anomalies appear to correspond to anomalies observed to the north on line 1000N.

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C.R.A. vertical drill holes E43 and E42 were located at about 1E and 12E on line 00. There are no I.P. anomalies in the area of these holes. No mineralization was encountered in E43 and only a trace of Galena was found between 244-304 ft. in E42 which is about 200 ft. west of the probable anomaly between 14E and 18E. Mines Department drill hole E39 is located about 100 ft. north of 16W on line 00. The hole intersected very low grade lead mineralization extending between 220 ft. and 562 ft. Within the zone relatively higher grade lead mineralization averaging 1.05% lead occurred between 512-532 ft. No I.P. anomaly was observed in the area of the hole.

A definite anomaly at depth was observed between 39W and 37W, and an anomaly at depth appears to be building up west of 48W.

Line 1000N -

An anomaly was observed at the eastern edge of the data plot between 32E and 34E. The line should be extended to outline this anomaly more fully. The anomaly is east of the basin.

A strong definite anomaly was observed between 24E and 26E. The anomaly has been largely topped off on the first separation. A corresponding anomaly, although not as strong, was observed on lines 2000N and 00 to the north and south. The anomaly on line 1000N should be resurveyed using 200 ft. spreads and also surveyed using 300 ft. and 100 ft. spreads. No testing of this anomalous zone has been done. If an anomaly of interest is confirmed, it would be desirable to survey parallel lines adjacent to the anomaly at 500N and 1500N to confirm the continuity of the zone and to ensure that the anomaly is not due to an off-end effect. The lines should be sufficiently long to cover also, the anomalies to the east and west at the eastern side of the basin.

An anomaly was observed between 18E and 22E. Although the anomaly is still evident on the first separation, it has been topped off. This anomaly is separated from the anomaly between 24E and 26E by a zone of high resistivity. The anomaly appears to extend to the north and south and correspond to the anomaly on line 00 between 14E and 18E and to the anomaly on line 2000N between 18E and 22E. This anomalous zone has not been tested. However, the anomalies should be confirmed before any testing is done.

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At the western side of the basin a definite anomaly at depth was observed between 35W and 31W. This anomaly appears to correspond to the anomaly observed between 39W and 37W on line 00. Line 2000N has not been extended sufficiently far west to determine whether the anomaly extends to the north.

Mines Department drill hole E21 is located at 34.5W on line 1000N and was drilled vertically to a depth of 385½ ft. The drill hole is in the area of the anomaly. No mineralization of economic significance was encountered in the hole, although analysis revealed anomalous values of copper, lead and zinc. Crystals and nodules of pyrite are reported to occur along the length of the core between 275-355 ft. The core should be examined to determine whether the amount of pyrite present could be sufficient to explain the anomaly, although this would not necessarily mean the absence of economic mineralization within the area.

Although the correlation of anomalies at the west of the basin between 1500S and 1000N indicated by the resistivity patterns is as described, a line of anomalies striking slightly east of north is indicated on the plan. The line extends from the anomaly between 47W and 43W on line 1500S to the anomaly between 35W and 31W on line 1000N. The western extensions suggested on lines 500S, 00 and 1000N will confirm whether the correlation suggested by the resistivity pattern is correct and determine whether there is a continuous line of anomalies striking slightly west of north from that between 44W and 42W on line 2000S to that indicated west of 48W on line 00 and possibly further north.

Line 2000N -

This line does not extend sufficiently far west to cover the western side of the basin.

An anomalous zone was observed between 18E and 26E. The anomalies within this zone appear to correspond to the anomalies observed to the south on line 1000N. A definite anomaly, which increases in strength with depth, was observed within the zone between 19E and 22E.

No anomaly was observed in the area of C.R.A. drill hole E44 located at about 10.5E on line 2000N. No mineralization was intersected in the hole.

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GRID A.

The baseline of Grid A is NE-SW and the traverses NW-SE. Lines NE of the zero line are described as N and those SW of the zero line asS. Stations NW of the baseline are designated W and those SE of the baseline E.

In the following discussion, grid co-ordinates and directions are used.

Line 10S -

At about 10W the line passes about 100 ft. S of the collar of Mines Department drill hole E6, about 300 ft. S of E14, and about 100 ft. N of E13, and at about 8W passes about 200 ft. S of E17 and about 150 ft. N of E15. Drill holes E14, E13, E17 and E15 were drilled vertically.

Drill hole E6 was collared about 100 ft. N of 10W on line 10S. The hole was drilled W at an angle of 75° to a depth of 216 ft. The direction of drilling is roughly parallel to line 10S. Significant lead mineralization averaging 1.56% between 0 - 130¼ ft. including 2.03% between 0-99 ft. and 7.27% between 23½ - 38½ ft. was intersected in the hole. Quite high silver values were also encountered. According to the drill bg, scattered galena was found between 0-45 ft. and galena was found throughout the length of the core between 45-107 ft. as scattered crystals or occupying openings along fractures. No pyrite was reported, but it would be desirable to examine the core to determine whether other sulphides are encountered.

In vertical drill hole E13, located 200-250 ft. S of E6, 0.92% lead was found between 37-80 ft. including 2.08% lead between 58-63 ft., and 2.63% lead between 76-80 ft. According to the drill log, scattered galena mineralization was found between 52-94 ft. No galena mineralization was seen between 94-122 ft, but pyrite is evident, usually disseminated along the core but sometimes occurring in clusters. Pyrite is abundent in some zones between 122-163 ft.

No I.P. anomaly was observed by the Mines Department on line 10S where it passes between drill holes E6 and E13. The I.P. results in this area should be checked.

Interesting lead mineralization was also observed in drill holes E14, E15 and E17. The core from these holes should also be examined.

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Further I.P. is recommended in the area of holes E6, E13, E14, E15 and E17, and should include 200 ft. spreads to provide a check on the results obtained by the Mines Department, and 100 ft. spreads to give information at shallower depths.

An anomaly at depth was observed between 2W and 2E. Mines Department vertical drill hole E32 is located at about 00 on this line. The hole was drilled to a depth of 463 ft. and intersected an average of 0.91% lead between 270-345 ft, including an average of 2.2% lead between 325-345 ft. Galena and pyrite were intersected in the hole, galena being noted from 156 ft., and pyrite from 286½ ft. The hole was stopped in quartzite of the Pound Formation. The mineralization intersected would appear to explain the anomaly.

A definite anomaly at depth was observed between 26W and 22W. This anomaly occurs to the west of the Gap Creek Fault, and is south along the fault from Morish's workings. Morish's adit is located in Cambrian carbonates on the western side of the Gap Creek Fault. Nixon infers that production from Morish's workings must have been small and suggests that most of the workings were of an exploratory nature. The anomaly is at depth and is in an interesting geological environment. Further investigation of the anomaly is warranted. The line should be resurveyed in the area of the anomaly and parallel lines 500 ft. north and south should be surveyed adjacent to the anomaly. The parallel line to the north would pass over Morish's workings.

At the western edge of the data plot, an anomaly appears to be building up between 31W and 34W. The line would need to be extended to the west to map the anomaly more fully.

Line 00 -

A definite anomaly extending from near the surface to depth was observed between 21W and 18W. The anomaly is strongest at depth. The surface projection of the anomaly is in the area of worm burrow beds - transition shales at the north west of the basin. The anomaly is east of the Gap Creek Fault. A geological examination in the area of the anomaly may give some indication of its source. The anomaly appears to correspond with the probable anomaly on line 10N between 22W and 19W and to the definite anomaly on line 20N between 24W and 22W, and each occurs in a similar geological environment. On lines 10N and 20N the anomaly appears to be topped off to a greater extent than on line 00. These anomalies have not been tested by drilling.

A probable anomaly at depth was observed between 13W and 11W. Mines Department vertical drill hole E23 is located slightly to the north

of the line about 10W. The hole was drilled to a depth of 253 ft. and intersected an average of 0.99% lead between 10-70 ft.

A possible anomaly at depth was observed between 28W and 26W.

Line 10N -

A probable anomaly at depth was observed between 22W and 19W, and a possible anomaly between 16W and 14W.

The Greenwood Workings are located about mid-way between lines 00 and 10N at about 14W. According to Nixon, Greenwood Workings are the most important of the workings at Ediacara. The ore mined was rich and appears to have been mainly galena and cerussite. Production from Greenwoods Workings is estimated at 8,800 tons averaging 31% lead and 9 oz. per ton silver over an average thickness of 2.4 ft. The probable anomaly at depth between 13W and 11W on line 00 is possibly associated with the extension of Greenwoods to the south. It would be desirable to do further I.P. in the area of Greenwoods.

Line 20N -

A definite anomaly at depth was observed between 24W and 22W. This probably corresponds to the anomalies observed to the south between 22W and 19W on line 10N and between 21W and 18W on line 00. These anomalies occur in a similar geological environment. It would be desirable to resurvey line 20N in the area of the anomaly, and to survey new lines to the north to determine how far the anomaly extends northwards, and whether it increases or decreases in strength in this direction.

A possible shallow anomaly was indicated between 20W and 18W.

GRID B

The baseline of Grid B is NW-SE and the traverses NE-SW. Lines NW and SE of the baseline are described as W and E. Stations NE and SW of the baseline are designated N and S.

In the following discussion grid co-ordinates and directions are used.

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Line 10E -

A strong shallow definite anomaly extending to depth was observed between 24N and 26N. This should be followed up using shorter spreads to determine the location of the source within narrower limits and to give information nearer the surface. A geological examination in the area of the anomaly should be made.

A shallow definite anomaly was observed between 28N and 30N. This forms part of an anomalous zone extending from 22N to 30N. The zone probably corresponds to the anomalous zone observed geographically south between 18E and 26E on line 2000N of the Main Grid. The whole of the zone between 22N and 30N on line 10E should be surveyed using 100 ft. spreads, preferably after resurveying using 200 ft. spreads.

C.R.A. drill hole E44 is located at about 13N on line 10E. No mineralization was intersected in the hole and no I.P. anomaly was observed.

Line 00 -

A probable shallow anomaly was observed between 24N and 28N and a possible anomaly indicated at depth between 32N and 34N.

Mines Department vertical drill hole E35 is located at about 10N on line 00. This hole was drilled to a depth of 326 ft. and intersected 0.86% lead between 30-110 ft. including 2.52% lead between 30-60 ft. An I.P. anomaly was not observed. The lateral extent of the mineralization is not known.

Line 10W -

A possible anomaly is indicated between 27N and 30N.

Mines Department drill holes E3 and E18 are located at about 17.5N and 16N on line 10W and drill holes E19 and E20 are located about 100 ft. and 150 ft. grid east of 16.5N and 17.5N. Hole E3 was drilled at an angle of 80° and E18, E19 and E20 were drilled vertically. Hole E3 intersected rich copper and silver mineralization near the surface averaging 12.48% copper and 8 oz. 17 dwt. silver per ton between 6-12 ft. All the ore mineralswere of secondary origin. An average of 1.43% lead was also intersected between 6 - 12 ft.

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Holes E18, E19 and E20 were each drilled to a depth between 50 - 55 ft. Some relatively low grade copper, lead and silver mineralization was intersected in these holes. An I.P. anomaly was not observed in the area of these drill holes. However, the mineralization is probably mainly secondary as in E3 and would not be expected to give rise to an I.P. anomaly.

Mines Department drill hole E4 is located at about 12N on line 10W. Only minor indications of mineralization were found in the hole, and no I.P. anomaly was observed.

Vertical drill hole E23 of the Mines Department is located at about 0.5N on line 10W. This hole intersected 0.99% lead between 10-70 ft., but is located too far south on the line for an anomaly to be observed. It would be desirable to extend this line to the south to determine whether an anomaly is obtained either with 200 ft. or 100 ft. spreads.

Specific recommendations for further I.P. work at Ediacara will be given ina separate memorandum.

E.N. EADIE.

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FINAL REPORT

EDIACARA MINERAL FIELD

S.M.L. No. 177

South Australia

SUMMARY :

Special Mining Lease No. 177 covers the Ediacara Mineral Field, 400 miles north of Adelaide in the State of South Australia. The mineralization occurs in a small structural basin of Cambrian dolomites (Ajax Limestone), and underlying shale and sandstone (Parachilna Formation), extending meridionally over a total length of 25,000 feet and a maximum width of 6,500 feet. This basin is a remnant of a much more extensive sedimentary basin and has a maximum thickness of dolomites of the order of 900 feet with underlying Cambrian sandstone varying from 10'-259' thick.

Mineralization consists of galena in Mississippi Valley type deposits in the lower 300'-400' of the dolomites, accompanied by lesser pyrite and scarce chalcopyrite, and oxidised copper and lead in the Parachilna Formation with abundant manganese in outcrop.

Analysis of the results of extensive I.P. surveys by the South Australian Department of Mines have shown numerous anomalies, a number of which have been confirmed as valid, but of lesser magnitude by limited check I.P. surveys by McPhar Geophysics Pty. Limited.

There is evidence of copper mineralization associated with the I.P. anomalies, but the Company has not received the necessary encouragement from the recent work to consider drilling the existing anomalies.

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The following maps are also included in this report:-

Geological Map of Ediacara Basin - Scale 1" = 500'

N-S Cross sections of Ediacara Basin - Scale 1" = 500'

E-W Cross sections of Ediacara Basin - Scale 1" = 500'

INTRODUCTION :

This report records and discusses exploration and investigation of Special Mining Lease No. 177, in the State of South Australia, by Trans Australian Explorations Pty. Ltd. Exploration and investigation has consisted of:-

1. A review of all previous investigation and exploration results.

2. A concurrent analysis of the results of I.P. surveys conducted over the area by the South Australian Department of Mines.

3. Geological mapping on aerial photographs enlarged to a scale 1" = 200'.

4. Check I.P. surveys over certain of the original Department of Mines I.P. survey lines.

5. Some additional I.P. work to further define the anomalies found by the South Australian Department of Mines surveys and confirmed by check I.P. surveys.

Special Mining Lease No. 177 of $11\frac{1}{4}$ square miles covers a small abandoned mining district known variously as the Ediacara Mining Field, or the Ediacara Mineral Field. Lead minerals were found here in the year 1888, and oxidised lead ore was mined intermittently from this time up to about 1945. Copper minerals were probably discovered at the same time, but the first mention of copper is in 1908. Recorded production figures for the mineral field are as follows:-

Copper

36.63 tons metal from 264 tons ore.

Lead

8,800 tons containing 31% lead and 9 oz. silver
15,000 tons containing 12% lead and 1 oz. silver.

As with all South Australian mineral fields operating before 1920, production records are very unreliable. However, production of both copper and lead ore was unlikely to have been greater than double the recorded figures. Hence it can be seen that the mineral field yielded only a very small tonnage of copper and lead ore.

The mineralization occurs in the central and lowest portion of a short low range of hills, which reaches a maximum elevation of approximately 800 feet above sea level at Randell's Lookout to the south, and at Mt. James to the north. The central mineralised part of the range is 50'-100' above the surrounding plains and 250'-350' above sea level.

REGIONAL GEOLOGY :

The regional geological setting of the Ediacara Mineral Field is shown on the Beltana Sheet of the 1 Mile Series, Geological Atlas of South Australia. The mineral field is practically confined to a small outlier of Cambrian rocks, 3 miles long by 1 mile wide, in an elongated outcrop of Upper Proterozoic rocks, 24 miles long by a maximum of 4 miles wide, which itself is an inlier completely surrounded by Quarternary alluvium and wind blown sands with some Pleistocene limestone overlying unconsolidated Tertiary fresh water lacustrine sediments.

The sediments exposed in the Mt. James - Randell's Lookout - Ediacara inlier (excluding post-Cambrian rocks) consist of dolomites, sandstones, shales and shaley dolomites and dolomitic shales arranged in the following stratigraphic order:-

STRATIGRAPHIC COLUMN

			Estimated Thickness
CAINOZOIC	QUARTERNARY	RECENT	Lake deposits, gypseous clays, silts and saline quartz sands. Alluvium of drainage channels and flood plains. Scree and outwash gravels piedmont deposits of red clays and sandy clays. Sand sheets and dunes	+ 300'
			DISCONFORMITY	
		PLEISTOCENE?	High level piedmont gravels semi-consolidated with gypseous and calcareous cement.	10' - 40'
			DISCONFORMITY	
			NILPENA LIMESTONE	10' - 20'
			White friable rock limestone with ? Coxiella Fauna	
			UNNAMED	
	TERTIARY?		Greenish clays in creek banks west side Ediacara dolomitic plateau	+ 20'
			Silcrete Laterite, ? red sandstone between Morish Adit and Black Eagle Workings.	+ 10'
			UNCONFORMITY	
			AJAX LIMESTONE.	

(Stratigraphic Column cont).

				Estimated Thickness
PALAEOZOIC	LOWER CAMBRIAN	HAWKER GROUP	Cross bedded sandy dolomite passing laterally and vertically into algal and oolitic dolomite. Overlain by cherty dolomite with Archaecyatha.	+ 900' (Eroded top)
			PARACHILNA FORMATION Argillaceous sandstone and shale with limestone lenses. Worm burrow beds at base	10' - 268' ?
			POUND QUARTZITE Massive to flaggy white orthoquartzite with ripple marks clay galls and heavy mineral laminations, EDIACARA FAUNA near top. Lower part feldspathic buff sandstone in thin flags interbedded cross bedded red sandstones and siltstones	200' - 500'
UPPER PROTEROZOIC	MARINOAN	WILPENA GROUP	WONOKA FORMATION Thin interbedded blue grey and greenish dolomite and siltstone with flute casts and ripple marks, some reddish siltstone interbeds.	+ 800' (1500' near Mt. Michael) (Base not seen at Ediacara)

Although the inlier is geographically and geologically isolated from comparable rocks both to the east and west, it is situated approximately straddling the hinge line between the stable shelf environment to the west and the mio-geosynclinal environment to the east. In lithological characteristics the rocks have similarities with their counterparts in the Adelaide geosyncline to the east and to their shelf equivalent to the west.

Structurally, the rocks are only mildly disturbed, maximum dips are in the Proterozoic rocks at the western edge of the inlier and are of the order of 30° to 35°. At this point, the rocks are close to the presumed position of the postulated Ediacara Fault, a major structure interpreted chiefly from aeromagnetic data and the presence of the Lake Torrens sunkland to the west. The equally abrupt contact between the Proterozoic rocks and the younger unconsolidated sediments of the Beltana Sub-basin (Beltana 1 mile sheet) at the eastern edge of the inlier is interpreted as a normal unconformable sedimentary contact.

MINERALIZATION :

Mineralization observable in outcrop consists of galena confined to the lower one third of the Cambrian dolomite sequence, i.e. the so-called Sandy Dolomites. Copper carbonates in the Parachilna Formation and very minor malachite staining in the massive upper unit of the Pound Sandstone, barite in the Parachilna Formation, and manganese and limonite in brecciated chert lenses at the top of the Parachilna Formation and in the lower ten to twenty feet of the Sandy Dolomites. Lead values are anomalous throughout the entire dolomite sequence and a notable increase in barite was detected by spectrographic analysis of drill core samples in the Parachilna Formation. Pyrite and chalcopyrite have been logged in the drill cores in the dolomite beds, and covellite too was observed in association with cerussite and anglesite in the zone of oxidation within the dolomites. Minerals identified at Ediacara include calcite, gypsum, dolomite, barite, barito-calcite, quartz, cerargyrite (AgCl), galena (PbS), cerussite ($PbCO_3$), anglesite ($PbSO_4$), lanarkite (Pb_2SO_5), phosgenite ($(PbCl)_2CO_3$), covellite (CuS), melaconite (CuO), connellite (probably $CuSO_4.2CuCl_2\ 19Cu(OH)_2H_2O$), malachite ($CuCO_3.Cu(OH)_2$), ?lampadite (cuprous manganese 4-18 percent Cu), psilomelane and pyrolusite (MnO_2), lead (cobaltiferous), pyrite (FeS_2). The main ore minerals seen in the three largest workings are cerussite and malachite.

Strong oxidised copper mineralization was intersected at shallow depth in drill hole E.3 and confirmed in drill holes E18, E19 and E20, and a shaft sunk in their vicinity. Copper mineralization was intersected at 6'6" depth in E3, but no sign of copper mineralization could be observed on the surface at this point. Traces of malachite can be seen in shallow workings in the Parachilna Formation from the Black Eagle Workings southwards along the periphery of the Cambrian Basin,and all the way around to the Southeastern Gossans the malachite is associated with manganiferous iron oxides or gypsum. A likely explanation for this outcropping malachite mineralization is concentration within the zone of

weathering of the oxidation products of small traces of copper in pyritiferous Parachilna Formation beds.

Nixon (op. cit.) has noted concentrations of galena mineralization within lenses of breccia in the dolomites which he has referred to as slump brecciation. He has also pointed out the resemblance of the galena mineralization to the Mississippi Valley type mineralization in similar dolomites in Missouri and Tennessee, and it seems that most of the lead mineralisation at Ediacara at least is stratiform in nature if not in origin. Stratiform pyrite mineralization also occurs in the Parachilna Formation in the dolomite sequence.

As demonstrated by drill hole exploration to date, the mineralization is not uniformly spread throughout the area of the Cambrian dolomites, although galena mineralization is noted throughout the entire basin. The strongest lead mineralization is in the northwestern sector of the basin in the vicinity of Greenwood's Workings and the other workings in this area. Relatively high grade lead mineralization in thin beds was mined in the south-western sector of the basin, but limited drilling has failed to find extensions of this high grade mineralization or any bodies of lower grade mineralization comparable to those proved by drill holes E5, E6, E13, E14, E15, E17 and E23 in the northwestern sector of the basin. The eastern edge of the basin also seems to be relatively low in lead mineralization.

Summarizing, the distribution of mineralization in the Ediacara Mineral Field is firstly, that it is concentrated in the Cambrian rocks. Secondly, the silver-lead mineralization is distributed non-uniformly throughout the basin, with the bulk being in the northwestern sector and lesser quantities throughout the western half south to the termination of the Cambrian outcrop.

The vertical distribution of the lead mineralization is also non-uniform within the Cambrian sediments. Some traces of lead have been found

in the Parachilna Formation but the main lead mineralization is concentrated within the bottom 300' to 400' of the Cambrian dolomite sequence, particularly in the beds which have been mapped as sandy dolomites and laminated algal dolomites in outcrop.

Less is known about the distribution of copper mineralization within the Cambrian Basin. Secondary copper mineralization is widespread in outcrop in the Parachilna Formation and has been intersected in drill holes both in the Parachilna Formation and in the sandy and algal dolomites. Sparse chalcopyrite has been reported from drill holes, with insufficient information available to adequately determine its distribution. There is some indication however, that the section of the Cambrian Basin below grid line 3000 is a preferred area for stratiform copper mineralization.

No positive identification of high temperature hydrothermal mineralization has been made in the Ediacara Mineral Field. The presence of barite bodies and of barite associated with higher copper and lead values, and with fault zones (Morish Adit, Broadhurst op. cit. p101) could be taken as evidence of at least medium to low temperature hydrothermal mineralization.

CURRENT EXPLORATION AND INVESTIGATION :

Geological investigations made by and on behalf of Trans Australian Explorations Pty. Ltd., consisted of a thorough scrutiny and analysis of all existing information on the Ediacara Mineral Field to determine any aspects of the mineralization which may have been missed by previous investigators. This analysis was followed by geological remapping using the 1" = 200' scale aerial photographs as a base. The purpose of the mapping was twofold:

1. To determine the significance of geological features which were visible in the field, but which were not shown on existing maps.
2. To provide an up to date base map from which to determine the significance of the Induced Polarisation anomalies.

The geological office studies and field work have revealed a number of significant facts regarding mineralization in relation to geology. Practically all the anomalous copper values are associated with high barium values and the majority seem to be in the southern half of the field below grid line 3000S, with the exception of a northerly extension up along the western side of the Cambrian Basin as far as the Black Eagle Copper Workings. This is the part of the Cambrian Basin in which there is the strongest evidence of preconsolidation slumping involving the upper units of the Pound Sandstone and the lower units of the Cambrian sequence at least as high up in the stratigraphic succession as the sandy dolomites. The mapping also showed that certain of the features associated with preconsolidation slumping occur at a consistent stratigraphic zone approximately 100' thick straddling the contact between the Parachilna Formation and the overlying sandy cross-bedded dolomite, that it is about this level at which the carbonate copper deposits occur in outcrop at least.

Induced Polarization survey s in the field were preceded by an analysis of the mass of I.P. data accumulated by the Geophysical Section, South Australian Department of Mines. A number of anomalies from this data were

determined and an interesting feature is that the majority appear to be concentrated around the periphery of the Cambrian basin. The surface projection of the anomalies is consistently over the outcrops of the Parachilna Formation. Certain of the anomalies were chosen for checking. Most of the anomalies thus checked were confirmed at a much weaker magnitude and some additional detailing was done. The results of the I.P. work are shown in graphic form on the attached geological map.

ASSESSMENT OF EXPLORATION PROSPECTS :

In his summary report, Nixon estimated the following reserves:- 620,000 tons of ore with a lead grade of 2.1% over a thickness of 20 feet. This reserve was in the vicinity of drill holes E6, E13, E17, E18 and E23 in the north-western sector of the basin. He also estimated 17,500,000 tons of ore with a total thickness of 52 feet averaging 1.13% lead in the same general area and 31,800,000 tons of ore with a total thickness of 58 feet and a grade averaging of 0.9% lead. No silver grades are estimated by Nixon, but approximately $\frac{3}{4}$ oz. could be allotted to the 620,000 tons reserve and 0.4 oz. to the 17,500,000 ton reserve. C.R.A's inferred reserves are as follows:-

i) in the laminated algal dolomites:
12,000,000 tons averaging 0.84% lead.

ii) in the sandy cross-bedded dolomites:
17,000,000 tons averaging 1.23% lead

giving a total of 29,000,000 tons averaging 0.99% lead;

iii) 1,200,000 tons averaging 2.24% lead as an enriched zone within the 17,000,000 tons of reserves in the sandy crossbedded dolomites.

Again no silver values are given.

The geophysical work has indicated that the higher grade enriched zones may be perhaps determined by I.P. surveys as weak anomalies. Similar small bodies to that occurring in drill hole E6 might thus be detected by a more intensive I.P. survey over the basin. The present minimum spacing of I.P. lines is 500 feet in a zone extending from grid 00 to grid line 5000 South. Apart from McPhar's check lines all the work on these I.P. lines was done by the South Australian Department of Mines at 200 foot electrode spacing.

As regards the presence of very large tonnages of low grade silver-lead ore, C.R.A. concluded that it was unlikely as a result of their testing. However, in the northwestern sector of the basin in the area bounded by a line extending from drill hole E10 through E24 to E35 and the western boundary of the Cambrian Basin, a substantial mass of mineralized dolomite might be expected with a grade of 0.7% lead and $\frac{1}{2}$oz. silver to the short ton. This body of mineralized dolomites would extend from the surface of over 600 feet in the deeper eastern part of the area so delineated. The body of mineralized dolomites could have within it enriched zones such as that cut in drill hole E6 and E13. This grade of material even considering the possibility of encountering enriched zones in the course of mining is not presently of commercial interest.

Another prospect for economic mineralization is the possibility of occurrence of a stratiform copper deposit in the lower units of the dolomite succession or in the Parachilna Formation in the southern part of the Ediacara Mineral Field. The so-called South-West and South-East Gossans have been attributed to oxidation of sulphides in the Parachilna Formation (Transition Shales of Broadhurst and earlier workers).

A fourth deposit for economic mineralization in the Ediacara Mineral Field is the possiblity of low temperature or medium temperature hydro-

thermal ore deposits localised along faults or fault zones. The only direct evidence of such hydrothermal mineral deposits are in the barite lenses or veins mapped in outcrops by Duncan recently and in the Morish Workings by Broadhurst in 1947. In each place where barite has been located, an I.P. anomaly is situated above it. However, drilling under these circumstances without further surface evidence is not considered to have sufficient economic justification.

CONCLUSIONS :

It is true that there are probably in the Cambrian Basin, prospects for primary copper mineralization in considerable quantity, although the results of the recent assessment of the area have not provided the necessary encouragement to indicate advanced stage exploration, particularly diamond drilling.

REFERENCES :

The major published reports are as follows:-

Benlow, J.C.	1965	Geophysical Investigation over the Ediacara Mineral Field, Preliminary Report. S.A. Mines Dept. Mining Review No. 118 pp. 95-105
	1965	Ediacara Mineral Field, Recommendations for Prelimonary drilling of geophysical results. Ibid, pp. 106-115
Broadhurst, E.	1947	Ediacara Silver-Lead Field S.A. Mines Dept. Mining Review No. 84 pp. 87-105
Nixon, L.G.B.	1963	The Ediacara Mineral Field. Proc. Aust. Inst. of Min. Met. 206, pp. 94-112
	1967	Ediacara Mineral Field, Summary Report, S.A. Mines Dept. Mining Review No. 120 pp. 7-24
Sheridan, G.D.	1967	Beneficiation tests on Silver-Lead Ore from Ediacara S.A. Mines Dept. Mining Review No. 120 pp. 25-37

As well as the published reports there are a number of unpublished reports. Comprehensive reference lists to these reports are given in the above published reports by Broadhurst and Nixon.

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The major unpublished reports are as follows:-

Carruthers, D.S & McKenzie, D.H.	1962	The Ediacara Mineral Field Report to Conzinc Riotinto of Australia Ltd.
Eadie, E.N.	1968	Induced Polarization Survey of the Ediacara Mineral Field, South Australia made by the S.A. Dept. of Mines. Report to Trans Australian Explorations Pty. Ltd.
Gustafson, J.K.	1938	Memorandum to A.J. Keast Esq., and H.J.C. Connolly Esq. Report to Austral Development Ltd.
McQueen, A.F.	1967	Notes on Results of Drilling the Ediacara Structure, South Australia. Report to C.R.A. Explorations Pty. Ltd.
Nixon, L.G.	1964	Summary Report on Ediacara Mineral Field S.A. Mines Dept. Unpub. Report Report Book 58/135, G.S. No. 2881

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E D I A C A R A .

Samples for Silver Assays :

HOLE	DEPTH INTERVAL			SAMPLE NO.	
E4	11' 8"	-	20' 6"	A1720/62	NOT AVAILABLE
	20' 6"	-	27' 3"	A1721/62	
	27' 3"	-	32' 3"	A1722/62	
E5	115' 6"	-	126' 6"	A1819/62	*
	126' 6"	-	130' 0"	A1820/62	*
	130' 0"	-	133' 9"	A1821/62	*
	133' 9"	-	141' 2"	A1822/62	*
	141' 2"	-	152' 10"	1823/62	*
	152' 10"	-	164' 2"	24/62	
	164' 2"	-	175' 10"	1825/62	
E7	135'	-	140'	2553/62	
	140'	-	145'	A2554/62	
	145'	-	150'	A2555/62	
	150'	-	155'	2556/62	
	155'	-	160'	A2557/62	
	160'	-	165'	A2558/62	
	165'	-	170'	A2559/62	
	170'	-	175'	A2560/62	
	175'	-	180'	A2561/62	
	180'	-	185'	A2562/62	
	185'	-	190'	A2563/62	
				A2564/62	
E8				A2630/62	*
				A2631/62	*
				A2632/62	*
			130'	A2633/62	*
	130'			A2634/62	
	140'			A2635/62	
	150'			A2636/62	
	160'				
	170'				

.../...

W. JOHNSON & ASSOCIATES PTY. LTD.

046

HOLE	DEPTH INTERVAL	SAMPLE NO.
E9	10' - 24'	A2638/62 *
	24' - 54'	A2641/62 *
	54' - 64'	A2642/62*
	104' - 114'	A2647/62 *
E10	80' - 90'	A2602/62 *
	90' - 100'	A2603/62 *
	100' - 110'	A2604/62
	110' - 120'	A2605/62
	120' - 130'	A2606/62
	130' - 140'	A2607/62
	140' - 150'	A2608/62 *
	150' - 159' 6"	A2609/62 *
	172' 8" - 177' 8"	A2610/62 *
	187' - 197'	A2611/62 *
	197' - 207'	A2612/62
	207' - 217' 6"	A2613/62
	217' 6" - 227' 6"	A2614/62
	227' 6" - 237' 6"	A2615/62
	237' 6" - 247' 6"	A2616/62
E13	52' - 100'	A2355/62 - A2368/62 incl.
E14	100' - 105'	A2535/62 *+
E15	80' - 150'	A3230/62 - A3236/62 incl. A3233/62 check lead value.
E17	100' - 110'	A3254/62 *+
	160' - 170'	A3260/62 *+
E18	0' - 52'	A2957/62 - A2963/62 incl.
	25' - 30'	A2961/62 *+
E19	0' - 47'	A2964/62 - A2968/62 incl.
E20	15' - 29'	A2667/62 - A2680/62 incl.

make composite by bulking portion of each sample and assay for silver, lead, copper and zinc.

.../...

HOLE	DEPTH INTERVAL	SAMPLE NO.
E21	230' - 240'	A3309/62 +
E23	30' - 99' 9"	NOT AVAILABLE A3330/62 - A3336/62 incl.
E35	30' - 150'	A3932/62 - A3943/62 incl. A3933/62 *
SHAFT D1	73' - 153'	A3076/62 - A3083/62 incl.

---

* Assay for copper.

+ Assay for lead.

GEOCHEMICAL LABORATORY

PHAR

253 SOU[illegible]ACE
ADELAIDE, S.A.
048 PHONE: 23 2915
CABLE: "PHARCEO"
ADELAIDE

Samples from: TRANS AUSTRALIAN EXPLORATION. SHEET No. 1.

Area: REF.NO.2948.

Samples of:

Date 10/5/68

ENV 992/2

RESULTS OF ANALYSIS

SAMPLES ARE RETAINED FOR SIX MONTHS PRIOR TO DISPOSAL, UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY HAVE BEEN RECEIVED.

HOLE	Sample Number	Depth	Cu, ppm	Pb, ppm	Zn, ppm	Ni, ppm	Mo, ppm	Sn, ppm	Ag, ppm.
ES	A1819	115'6"- 126'6"	210	9000					10
	20	126'6" - 136'0"	260	6500					10
	1	130'0"-133'9"	280	20000					10
	2	133'9"-141'2"	130	5000					10
V	3	141'2"-152'10"	30	5000					10
	4	152'10"-164'2"	140	2500					10
	A1825	164'2"-175'10"	120	1000					5
E7	A2553	135'- 140'		260					10
	4	140 - 145'		740					5
	5	145 - 150'		2500					5
	6	150 - 155'		2400					5
	7	155 - 160'		1200					5
	8	160 - 165'		1400					5
	9	165 - 170'		1600					2
	60	170 - 175'		1700					2
V	1	175 - 180'		2400					5
	2	180 - 185'		1900					5
	3	185 - 190'		1900					5
	A2564	190 - 205'		12000					5
E8	A2626		200	360					2
	7		320	1800					2
	8		190	1000					2
	9		270	870					2
	30		390	260					2
	1			40					2
	2			55					2
	3			[20					2
	4			[20					2
	5			[20					2
	A2636			[20					2
	A2638			210					2
	41			390					2
	42			120					2
	A2647			620					2
	A2602		460	640					5
	3		250	2000					[illegible]
	4			4900					[illegible]
	5			4400					[illegible]
	6			2200					[illegible]
	7			3800					2
	8		220	890					[illegible]
	9		400	1500					[illegible]
	10		260	6400					[illegible]
	1		360	2200					[illegible]
	2			18000					10
	3			14000					10
	4			6400					5
	5			6200					5
	A2616			3800					~~10~~ < 2
	A2355			910					2

Cu, Pb, Ag by A.A.S. following hot 25% HNO_3 leach for 1 hour on 0.25 gm. sample.

Signed .....

McPHAR

GEOCHEMICAL LABORATORY

253 SOUTH TERRACE
ADELAIDE, S.A.
PHONE: 23 2915
CABLE: "PHARGEO"
ADELAIDE

049

Samples from: TRANS AUSTRALIAN EXPLORATION. SHEET No. 2.

Area: REF.NO.2948.

Samples of:

Date 10/5/68

RESULTS OF ANALYSIS

SAMPLES ARE RETAINED FOR SIX MONTHS PRIOR TO DISPOSAL, UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY HAVE BEEN RECEIVED.

Sample Number	Cu, ppm	Pb, ppm	Zn, ppm	Ni, ppm	Mo, ppm	Sn, ppm	Ag, ppm.
A2356		4800					5
7		7400					5
8		8200					10
9		6000					5
60		22000					10
1		1800					5
2		2800					10
3		2700					10
4		30000					5
5		1600					5
6		7500					10
7		13000					5
A2368		2200					5
A2535	95	5100					10
A3230		8100					10
1		27000					10
2		17000					10
3		12000					10
4		22000					10
5		64000					10
36		16000					10
54	140	16000					10
A3260	160	18000					10
A2957		370					5
8		2200					5
[illegible]		3400					[illegible]
60		8500					5
1	15000	11000					5
2		870					5
3		500					10
4		1600					5
5		2600					10
6		3700					5
7		2900					10
A2968		1700					5
A2667		[20					[2
8		[20					[2
9		[20					[2
70		[20					[2
1		[20					[2
2		[20					[2
3		[20					[2
4		[20					[2
5		[20					[2
6		[20					[2
7		55					[2
8		[20					[2
9		[20					[2
A2680		[20					[2
A3309	85	5100					5

Signed.....

.....

Lamson Paragon Ltd.
SCA 92408

McPHAR

GEOCHEMICAL LABORATORY

253 SOUTH TERRACE
ADELAIDE, S.A.
PHONE: 23 2915
CABLE: "PHARGEO"
ADELAIDE

050

Samples from: TRANS AUSTRALIAN EXPLORATION. SHEET No. 3.

Area: REF.NO.2948.

Samples of:

Date 10/5/68

RESULTS OF ANALYSIS

SAMPLES ARE RETAINED FOR SIX MONTHS PRIOR TO DISPOSAL, UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY HAVE BEEN RECEIVED.

Sample Number	Cu, ppm	Pb, ppm	Zn, ppm	Ni, ppm	Mo, ppm	Sn, ppm	Ag, ppm.
A3932		7200					5
3	280	42000					5
4		20000					10
5		2000					5
6		5600					10
7		3300					5
8		3300					5
9		1400					5
40		2200					5
1		3400					10
2		3400					10
A3943		1300					10
A3076		8000					5
7		8200					5
8		5600					5
9		4800					5
80		6000					10
1		6900					10
2		47000					5
A3083		33000					20

Signed .....

.....

Lamson Paragon Ltd.
SCA 92408

McPHAR

GEOCHEMICAL LABORATORY

051

253 SOUTH TERRACE
ADELAIDE, S.A.
PHONE: 23 2915
CABLE: "PHARGEO"
ADELAIDE

Samples from: TRANS AUSTRALIAN EXPLORATION. SHEET No. 1.

Area: REF.NO.2948.

Samples of: Date 10/5/68

RESULTS OF ~~ANALYSIS~~ ASSAYS

SAMPLES ARE RETAINED FOR SIX MONTHS PRIOR TO DISPOSAL, UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY HAVE BEEN RECEIVED.

Sample Number	Cu, ppm	Pb, ppm	Zn, ppm	Ni, ppm	Mo, ppm	Sn, ppm	Ag, ppm.
A18821							190
2564							5
2627		0.28%					[2
2628		0.21%					[2
2602							[2
3							[2
4							2
2605							[2
2606							2
2607							[2
2610							2
1							[2
2							10
3							20
4							[5
5							5
2616							[2
2355							2
6							[5
7							[5
8							20
9							5
60							15
1							2
2							5
3							5
4							30
5							[2
6							10
7							5
2368							2
2535							25
3233		0.98%					10
3254		1.25%					120
3260		1.40%					40
2961	1.37%	1.00%					30
2966							370
3309		0.52%					5
3932							[2
3933							10
4							10
5							[2
6							10
7							5
8							5
9							5
40							5
1							10
2							5
3943							5

Cu, Pb, Ag, by A.A.S. following ~~hot~~ ~~2%~~ HCl leach and HNO_3 in latter stages on 1.0gm. sample.

Signed Lynette Ballard

McPHAR

GEOCHEMICAL LABORATORY

253 SOUTH TERRACE
ADELAIDE, S.A.
PHONE: 23 2915
CABLE: "PHARGEO"
ADELAIDE

052

Samples from: TRANS AUSTRALIAN EXPLORATION. SHEET No. 2.

Area: REF.NO.2948.

Samples of:

Date 20/5/68

RESULTS OF ANALYSIS ASSAYS

SAMPLES ARE RETAINED FOR SIX MONTHS PRIOR TO DISPOSAL, UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY HAVE BEEN RECEIVED.

Sample Number		Cu, ppm	Pb, ppm	Zn, ppm	Ni, ppm	Mo, ppm	Sn, ppm	Ag, ppm.
A3076								20
7								15
								15
								10
								5
								5
								10
								10

ENV 892

EDIACARA

REFERENCE

CAINOZOIC — TERTIARY — PLEISTOCENE — RECENT

- Alluvium of drainage channels and flood plains.
- OWG — Outwash gravels and scree around basin edges.
- Ls — Buff and greenish sandy, glauconitic coxiella limestone.
- Rs — Red and white medium grained friable sandstone.

PALAEOZOIC — CAMBRIAN — LOWER — HAWKER GROUP

- D2 — AJAX LIMESTONE FORMATION. Massive buff dolomite, medium bedded at base and containing lenses of light grey chert (ch.) frequently brecciated with manganese matrix (char.). Contains sandstone slump rolls at base (Sr.).
- D1 — Sandy cross bedded buff dolomite with interbeds of calcareous sandstone and non-arenaceous dolomite and some light grey generally brecciated chert.
- Ts — PARACHILNA FORMATION. White, yellow, grey, brown, brick and purplish red thinly bedded strongly weathered shales with white medium grained friable sandstone interbeds and lenses of black manganiferous material. Thin (3 ft.) pale green medium grained sandstone containing worm burrows and tracks.

UPPER PROTEROZOIC — ADELAIDE SYSTEM — MARINOAN — WILPENA GROUP

- W.b.h — POUND SANDSTONE. Massive white to thinly bedded friable sandstone exhibiting strong cross-bedding, abundant oscillation and interference ripples, scour and fill structures, clay gall pits and becoming reddish towards the bottom. Some well silicified lenses at very top and jelly fish horizon in upper part.
- P.s.s.
- D0. — WONOKA FORMATION. Dark grey medium bedded fine grained dolomites with dark red shale interbeds.

Geological Boundaries — Observed
Faults — Observed; Inferred
Crushed zone
Bedding — Inclined; Horizontal
Tracks
Creeks
Diamond Drill Holes — E 45
Mine workings
Prospect — X
Barium — Ba
Copper — Cu
Lead — Pb
Manganese — Mn

AUSTRAL DEVELOPMENT DRILL HOLES (BROADHURST) 1947 D.D. 1-12, 2-11, 3-6.

S.A. MINES DEPARTMENT DRILL HOLES (NIXON) 1961-1963 E1-E39, IP1, IP2.

C.R.A. DRILL HOLES (Mc. QUEEN) 1965/1966 E40-E50

N

Magnetic Declination approximately 8° east

I.P. RESULTS REFERENCE

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE —— 100
PROBABLE – – – 200 } Electrode Spacings
POSSIBLE · · · 300

1. Mc PHARS INTERPRETATION OF S.A. MINES DEPT. FIELD WORK BELOW I.P. GRID LINES (ALL AT 200' ELECTRODE SPACING)

2. Mc PHARS JUNE-JULY I.P. SURVEY RESULTS ABOVE I.P. GRID LINES

SCALE

500 0 500 1000 1500 2000 FEET

TRANS AUST. EXPL. PTY. LTD.

GEOLOGY OF EDIACARA MINERAL FIELD.

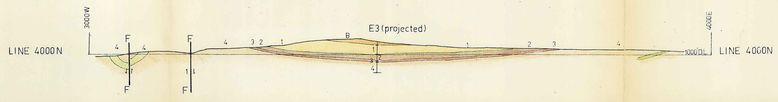
BELTANA SOUTH AUSTRALIA.

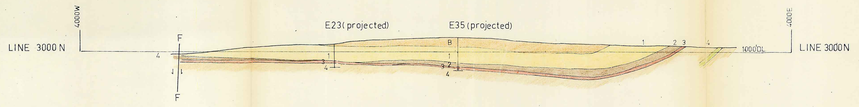
SCALE	GEOLOGY AND DRAFTING	DWG. NO.
1 INCH = 500 FEET	BY N. DUNCAN JULY 1968	S.A.

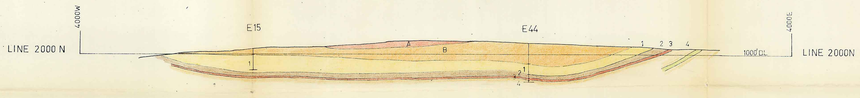
Base Map after S.A. Dept. of Mines.

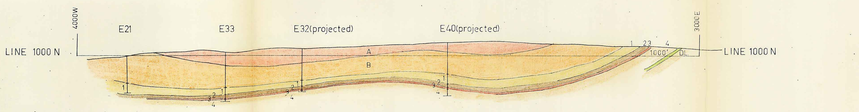
[redacted]

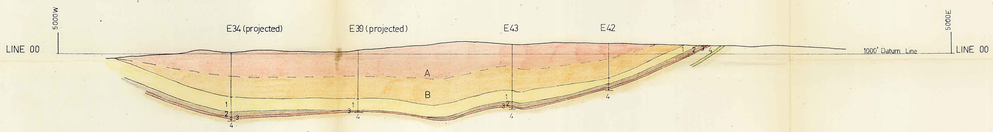
ENV 892-1

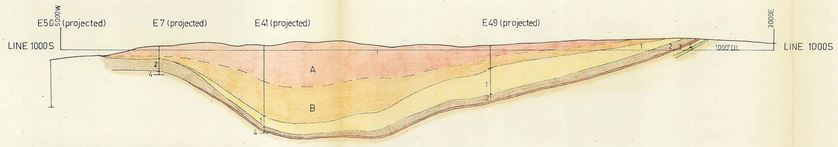


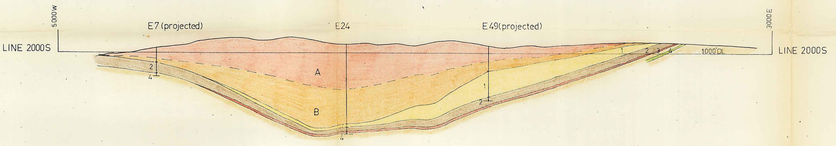


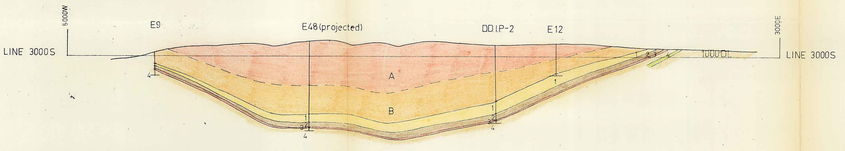


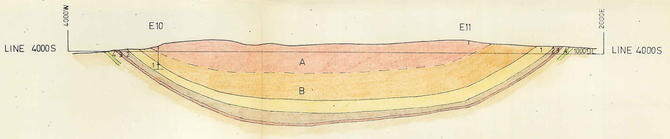


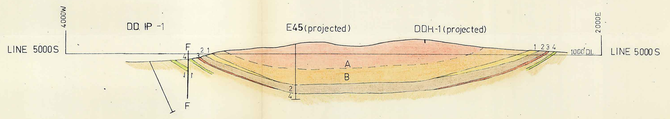


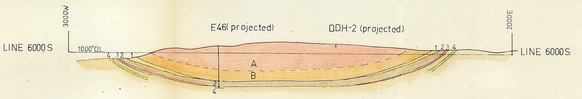


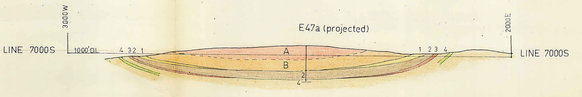


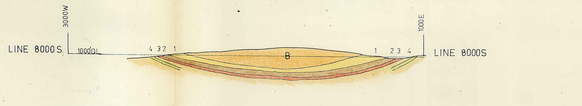


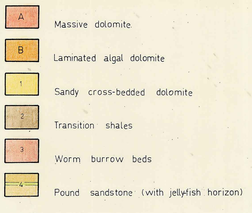












TRANS AUST. EXPL. PTY. LTD.

E-W CROSS-SECTIONS OF EDIACARA MINERAL FIELD.

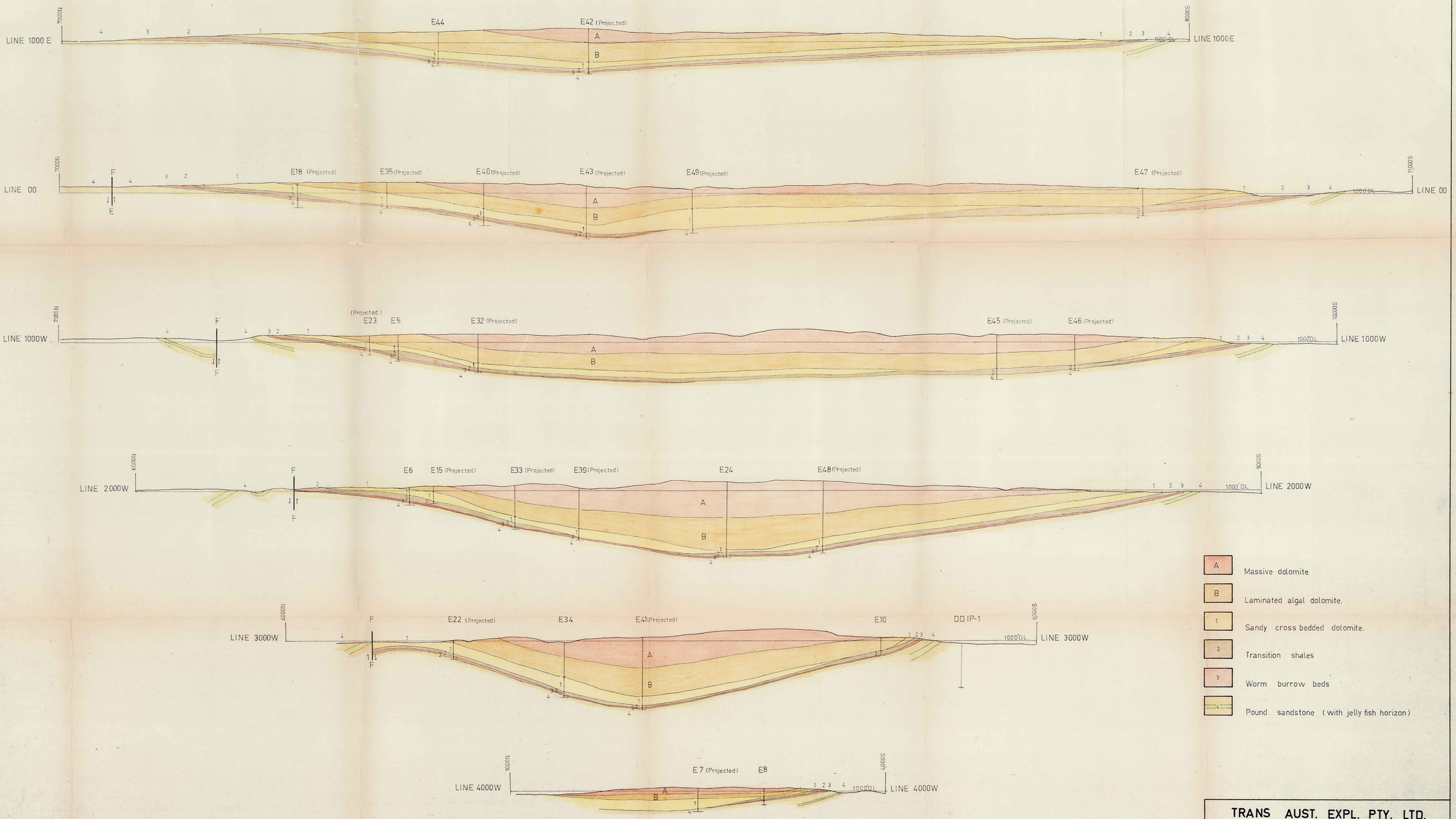
BELTANA SOUTH AUST.

SCALE		DWG. NO.
1 INCH = 500 FEET		S.A.

ENV 892

J.I.D. May 1968

ENV 892-3



- A — Massive dolomite.
- B — Laminated algal dolomite.
- 1 — Sandy cross bedded dolomite.
- 2 — Transition shales
- 3 — Worm burrow beds
- 4 — Pound sandstone (with jelly fish horizon)

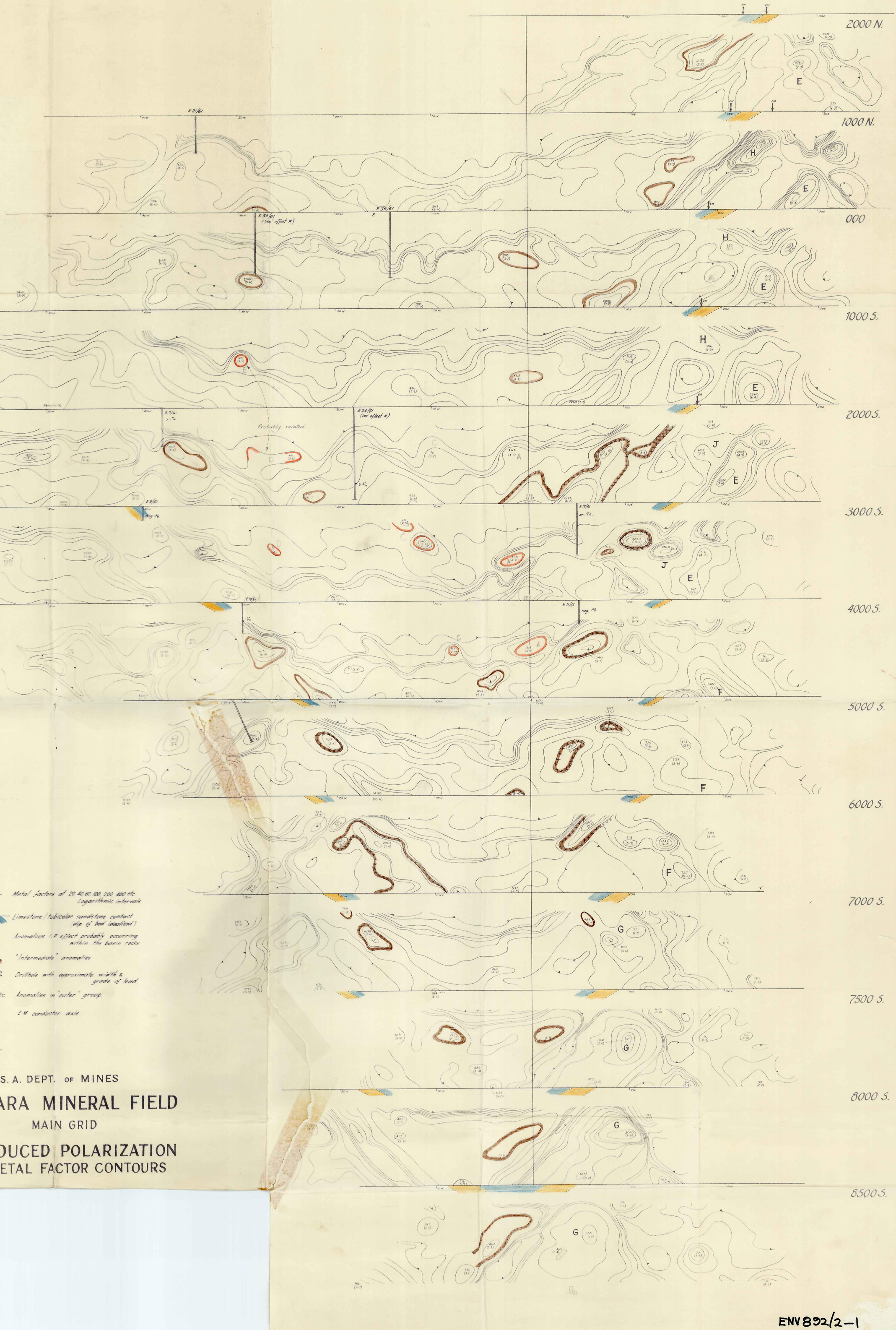
TRANS AUST. EXPL. PTY. LTD.

N-S CROSS-SECTIONS OF EDIACARA
MINERAL FIELD
BELTANA SOUTH AUST

SCALE		DWG. NO.
1 INCH = 500 FEET		S.A.

ENV 892-3

ND May 1968



Metal factors at 20 40 60 100 200 400 etc. (logarithmic intervals)

Limestone / tubicolar sandstone contact (dip of bed idealized)

Anomalous I.P effect probably occurring within the basin rocks

"Intermediate" anomalies

Drillhole with approximate width x grade of lead

G,F etc Anomalies in "outer" group.

EM conductor axis

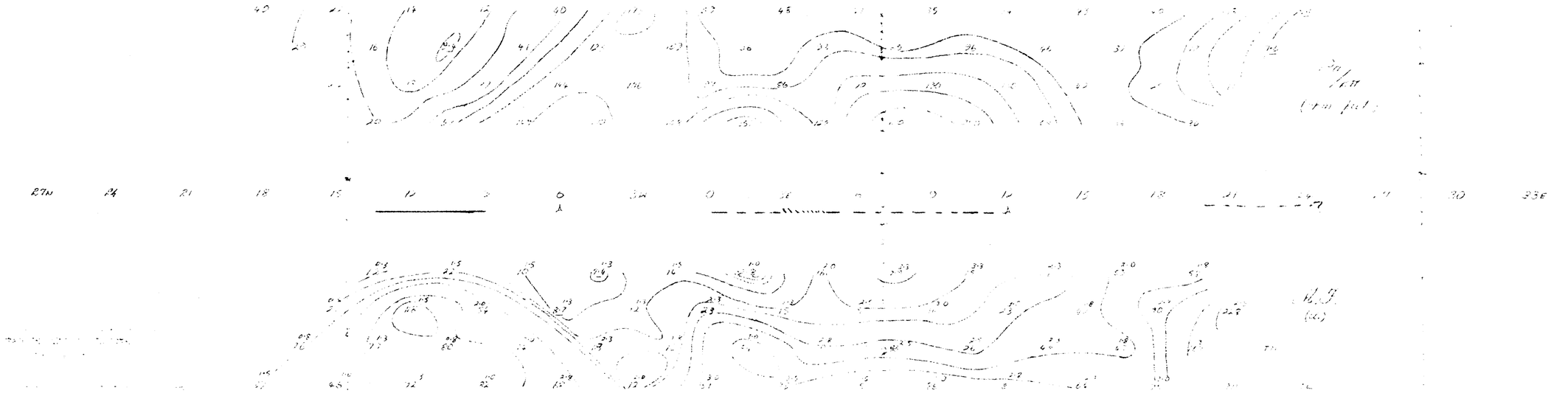
S. A. DEPT. OF MINES

EDIACARA MINERAL FIELD

MAIN GRID

INDUCED POLARIZATION
METAL FACTOR CONTOURS

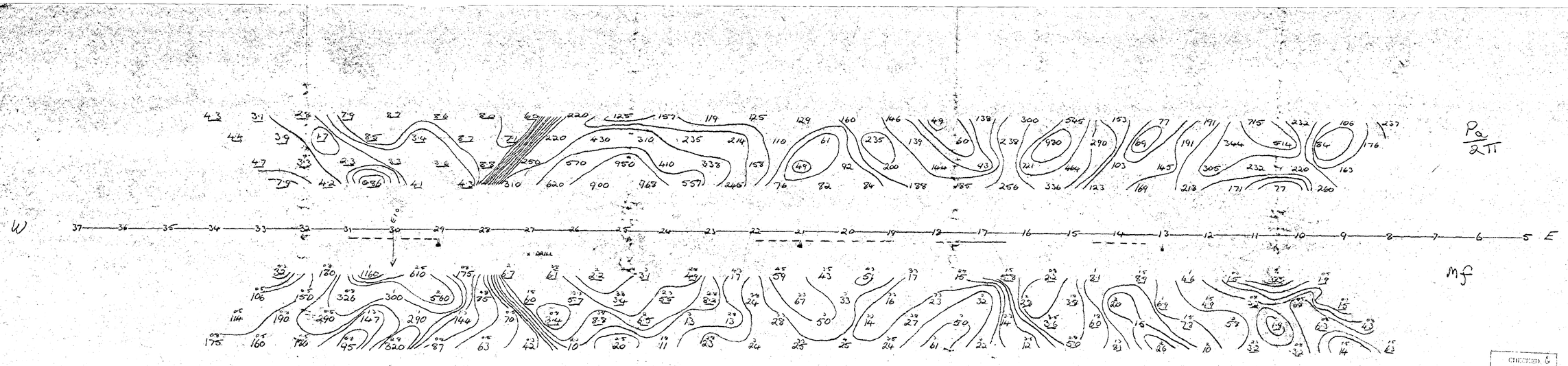
ENV 892/2-1



-6 AUG 1968

CLIENT	T.A.E.
LINE	10.S. GRID. A.
AREA	EDIACARA
SPREAD	300'
UNIT	R·S K.V.H.
FREQ'S	0·3 & R·S cps.
ELECT'S	SINGLE AIRFOIL.
DATE	30·7·68

E.E.K.



30 JUL 1968

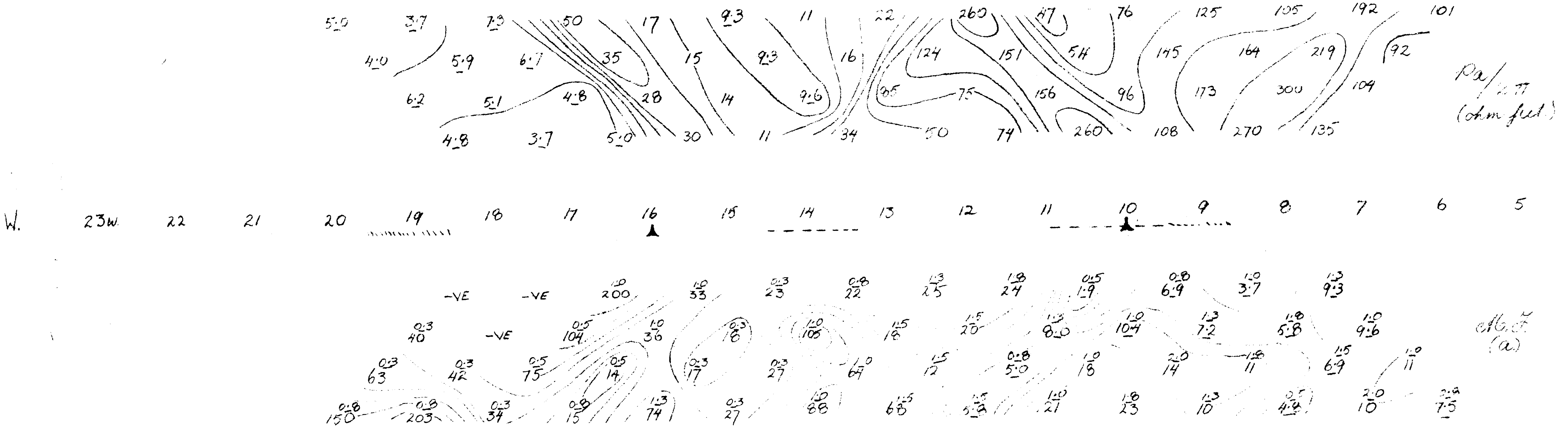
MINSAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

Client: TRANS AUST EX EDIACARA

Area	MAIN GRID
Line	4000 S
Spread	100 ft
Freq	2.5 + 0.3 cps
Electrodes	Alfoil
Plotted by	G. MARCUS
Checked by	D.W.
Date	28.7.68

CHECKED & NOT YET APPROVED FOR DISTRIBUTION

ENV 892/2-3

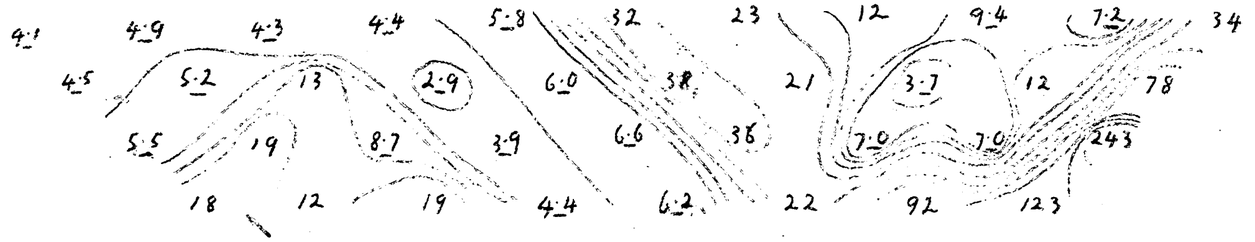


8 AUG 1968

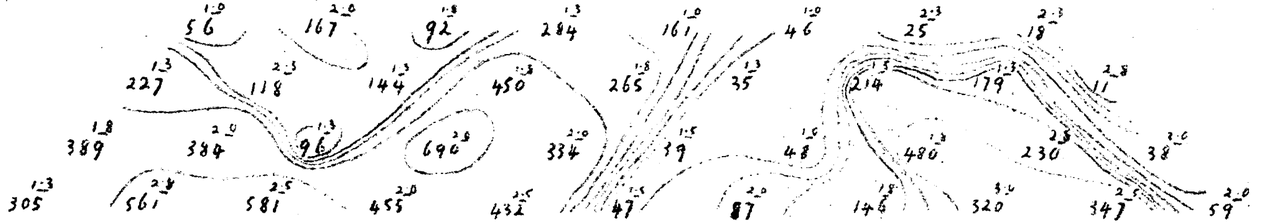
CLIENT	T.A.E.
AREA	EDIACARA
LINE	10S. GRID A.
SPREAD	100'
UNIT	2·5 K.V.A.
FREQ'S.	SINGLE ALFDIC
ELECTRODES	0·3 & 2·5 c.p.s.
DATE	31·7·68

D. E. h.

ENV 892/2-4



W56 53 50 47 44 41 38 35 32 29 26 23 20 17 14 11 8W



M.F

CLIENT:- T.A.E.
AREA :- EDIACARA MAIN GRID.
LINE :- 4000 S.
SPREAD:- 300 FT.
ELECTRODES:- SINGLE ALFOIL
FREQS :- 2·5 + 0·3 C.P.S.
DATE:- 3·8·68.
DRAWN BY:- B. CAMBRIDGE.
CHKD. BY.

ENV892/2-5

CLIENT: TAS

AREA: EDIACARA

LINE: 10 S GRID N

STATION: 200'

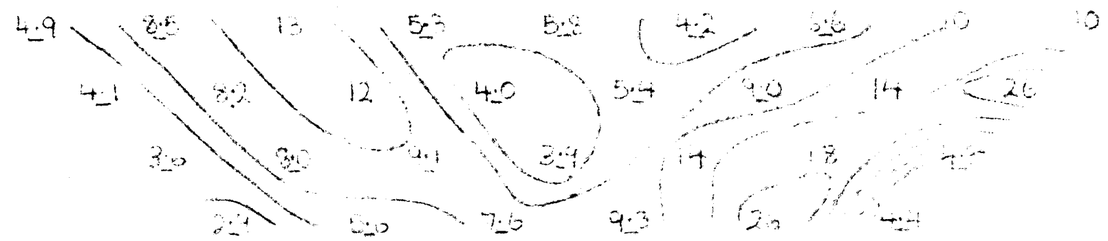
COIL: 0·3 + 2·5 cps

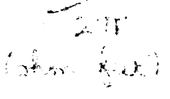
TYPE: SINGLE

PLOTTED BY: D.E.W.

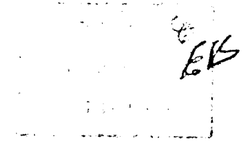
CHECKED BY: D.E.W.

DATE: 1-8-68





W 37 35 33 31 29 27 25 23 21 19 17 15 13 11 W



ENV 892/2-6

McPHAR GEOPHYSICS PTY. LTD.

CLIENT: T.R.E.

AREA: EDIACARA

LINE: 35005 MAIN GRID

STATION: 300'

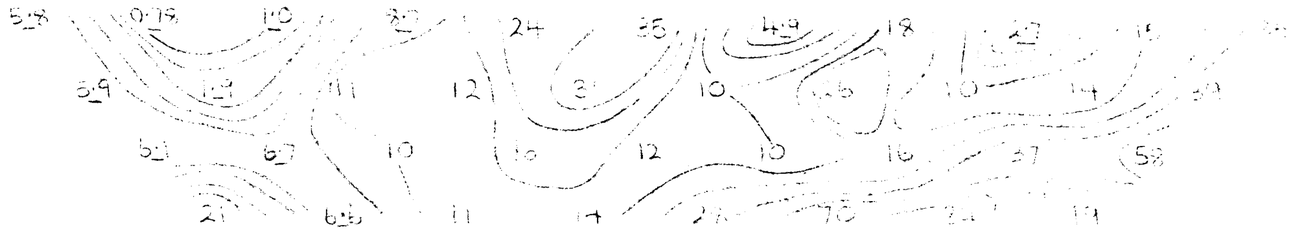
RANGE: 2·5 + 0·3 cps

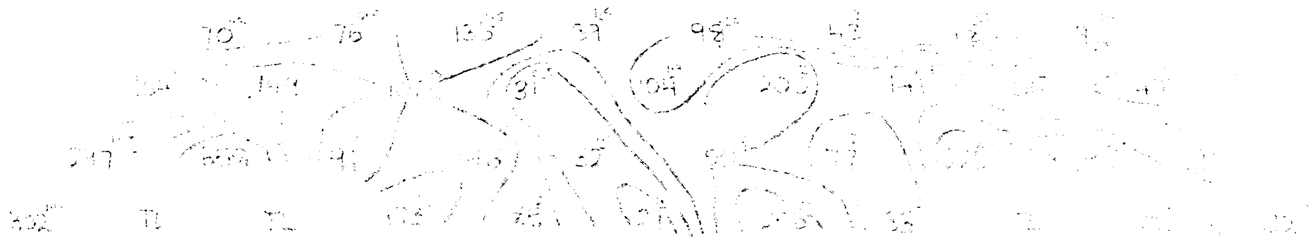
EQUIPMENT: SINGLE FOIL

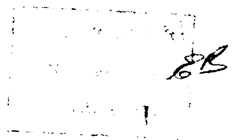
PLOTTED BY: D.E.H.

CHECKED BY:

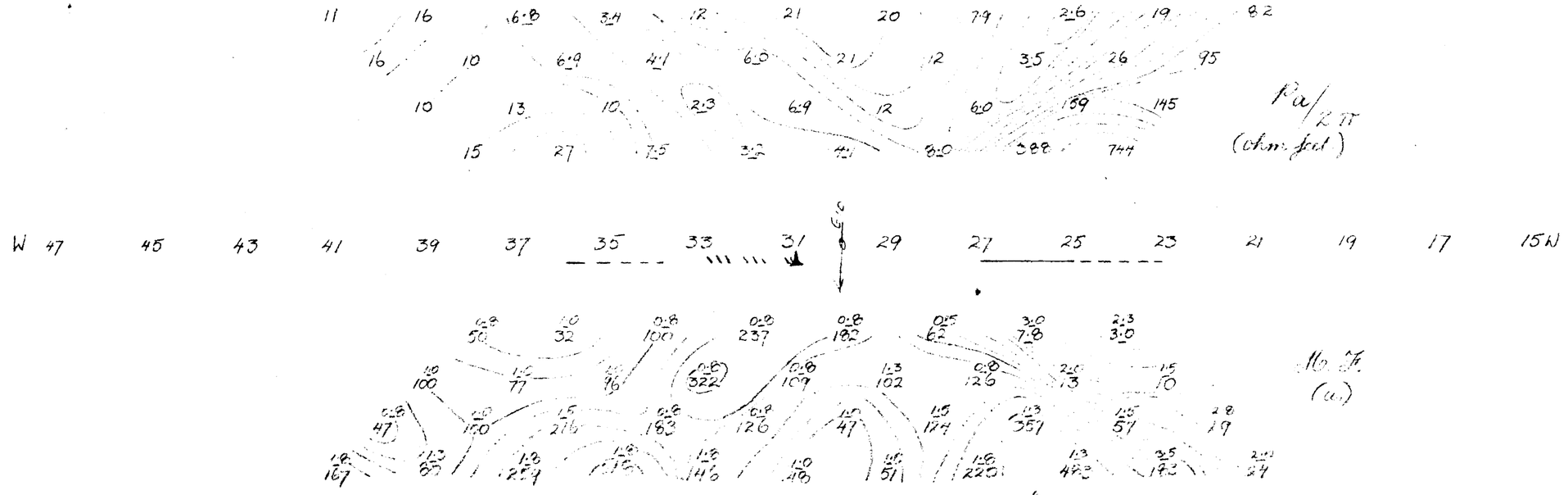
DATE: 5-8-68







ENN 892/2-7

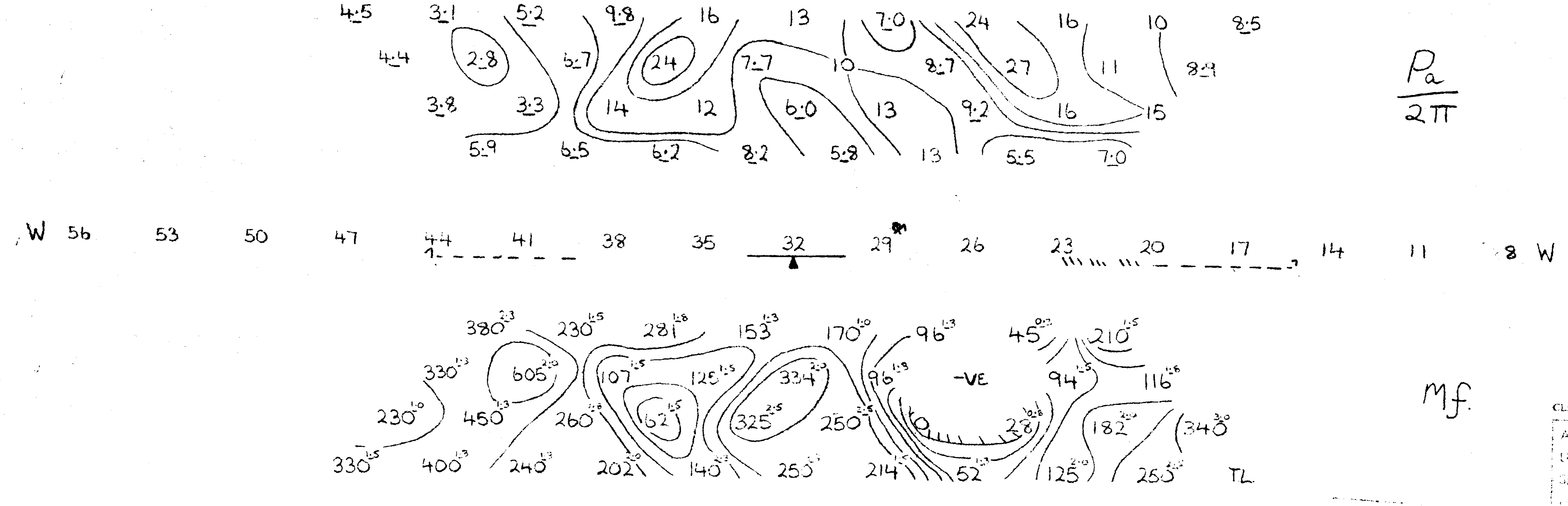


CLIENT : T.R.E.
AREA : EDIMCARA
LINE : 40003 MAIN GRID
SPREAD : 200'
UNIT : 2·5 M.U.H.
FREQ'S : 0·3 & 2·5 C.P.S.
DATE : 3·6·68

E.W.

E.W.

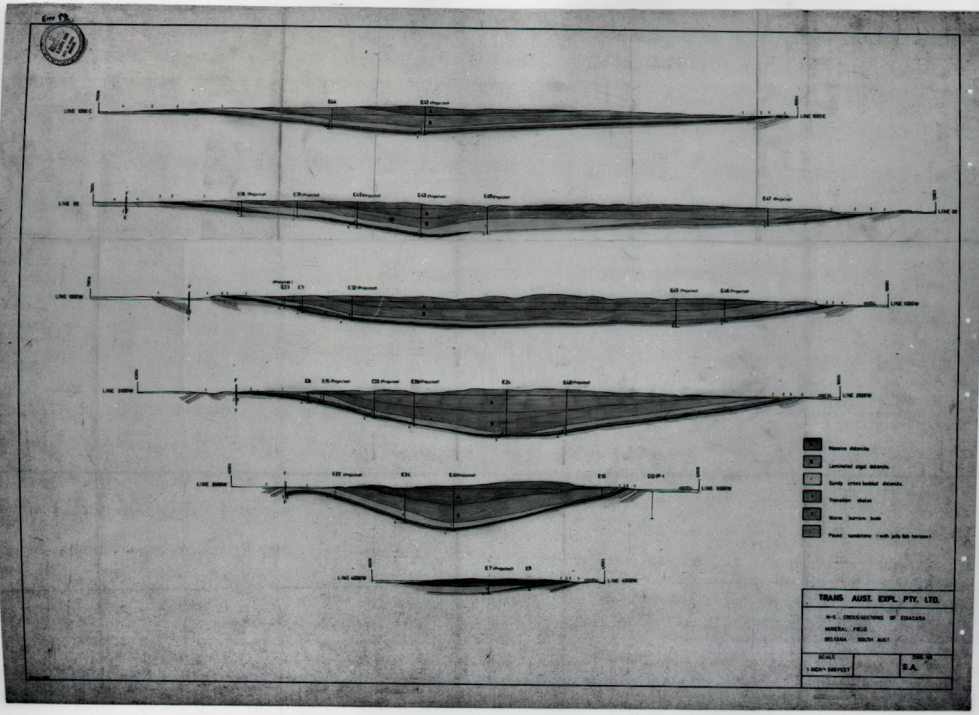
ENV 892/2-8

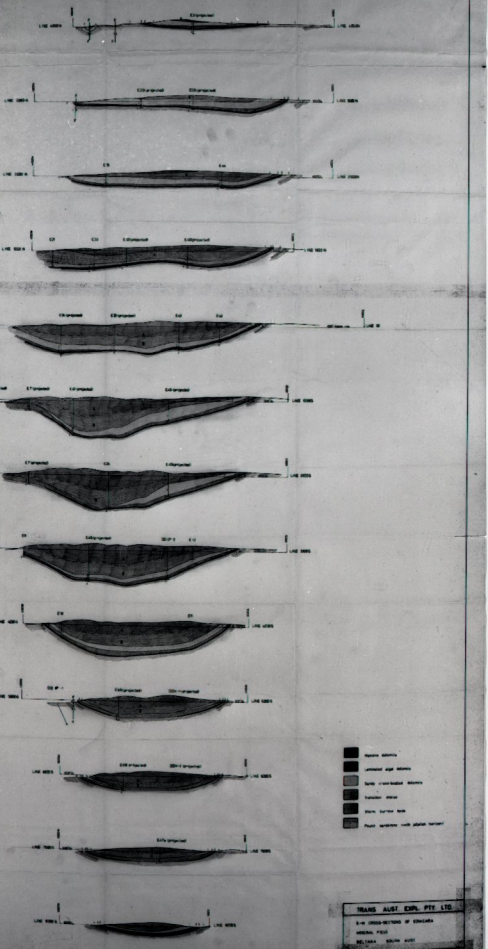


McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

CLIENT: T.A.E.
Area: MAIN GRID
Line: 4500
Spread: 300ft
2·5 → 0·3
1 ALFOIL
G MARCUS
D.W.
Date 4-8-68

ENV 99?/? 9


LINE 1000 E
LINE 1000 E
LINE 00
LINE 00
LINE 1000 W
LINE 1000 W
LINE 2000 W
LINE 2000 W
LINE 3000 W
LINE 3000 W
LINE 4000 W
LINE 4000 W
Massive dolomite
Laminated algal dolomite
Sandy cross bedded dolomite
Transition shales
Worm burrow beds
Fluvial sandstone (with jelly fish horizon)
TRANS AUST. EXPL. PTY. LTD.
N-S CROSS-SECTIONS OF EDIACARA
MINERAL FIELD
SOUTH AUST.
SCALE
1 INCH = 500 FEET
DWG. No
S.A.


TRANS AUST. EXPL. PTY. LTD.