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SML 269; ML 3371

DOME ROCK MINE AREA

EXPLORATION PROGRESS REPORTS FOR THE PERIOD 16/1/69 TO 15/1/71

Submitted by

Trans Australian Explorations Pty Ltd
1970

Enquiries: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

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

PRIMARY INDUSTRIES AND RESOURCES SA

ENVELOPE 1085

TENEMENT: SML 269; Dome Rock, South Australia.

TENEMENT HOLDER: Trans Australian Explorations Pty Ltd (operator), Dome Rock Pty Ltd.

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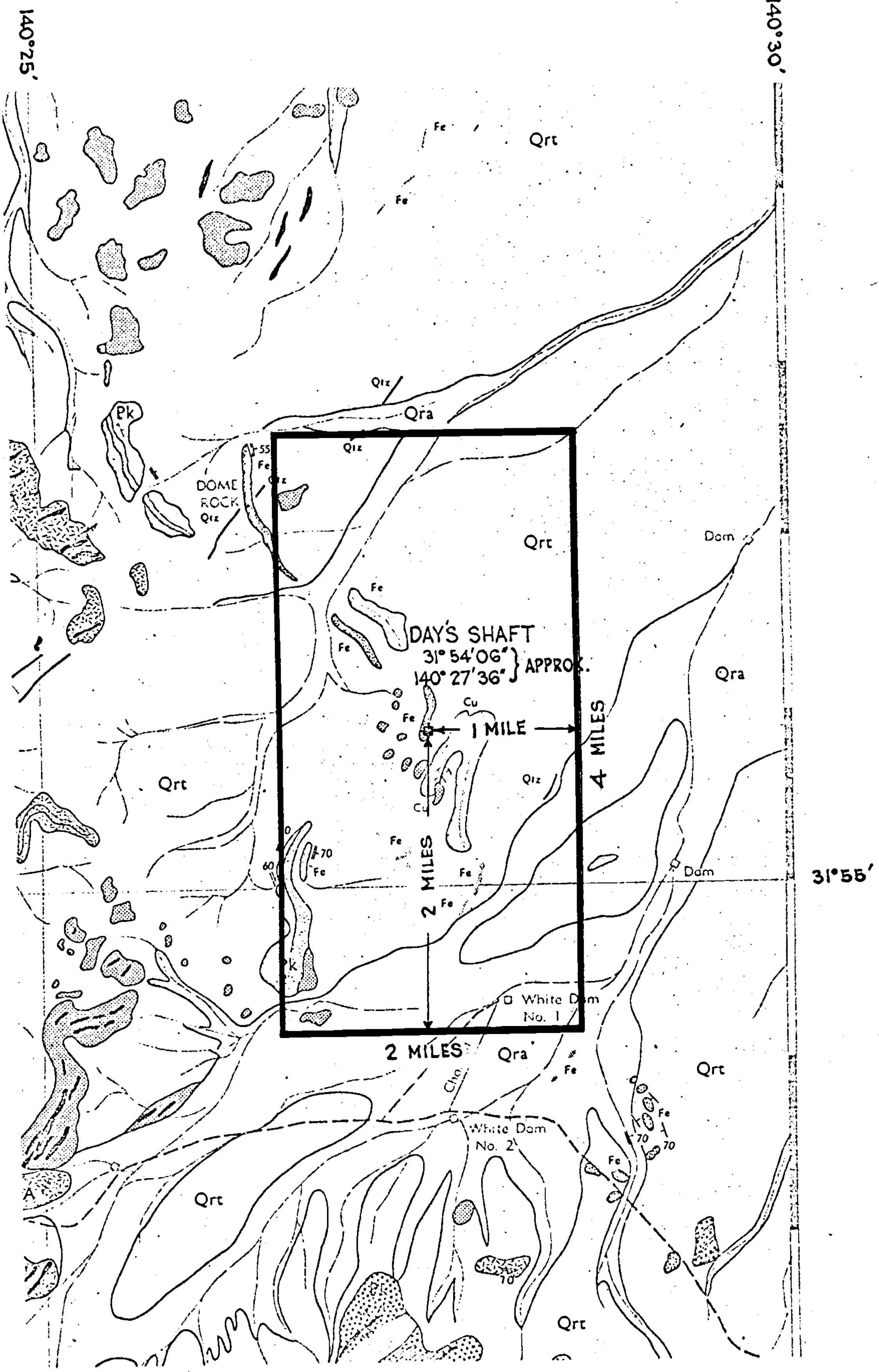

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LESSEE : TRANS AUSTRALIAN EXPLORATIONS
PTY. LTD. & DOME ROCK PTY. LTD.

DOCKET D.M. 207/69 AREA 8 SQ MILES

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LOCALITY DOME ROCK

S.M.L. No. **269** EXPIRY DATE 15·1·71

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CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'AMDEL' ADELAIDE

03

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: MP 3/359/0
YOUR REFERENCE:

22nd January, 1969.

Trans-Australian-Explorations Pty Ltd,
208 Hutt Street,
ADELAIDE, S.A. 5000

Attention: Mr C.M. Horn.

REPORT MP 2319-69

YOUR REFERENCE:	Order of the 19th December, 1968.
MATERIAL:	Seven rock specimens.
LOCALITY:	Olary province.
IDENTIFICATION:	DRM - 27, 28, 34, 35 and 37. EDA - 9 and 10.
DATE RECEIVED:	20/12/68
WORK REQUIRED:	Petrological examination.

X-ray diffraction by: J.F. Riley.

Electron probe microanalysis by: P.K. Schultz.

Investigation and Report by: A.H. Spry and R. Davy.

Manager, Exploration Services: A.H. Spry.

for P. Dixon
Acting Director.

SEVEN METAMORPHIC ROCKS

INTRODUCTION

The rocks are a complex suite whose inter-relations are not clear. Numbers 22374, 22375 and 22378 are metamorphosed sediments of low to medium grade although the nature of the metamorphism is not clear. The general granular textures suggest thermal metamorphism but a weak foliation is present in 22378 and so there may have been low-stress regional metamorphism. Numbers 22374 and 22375 were probably cherts (limy or ferruginous) and 22378 a ferruginous pelite.

Number 22377 more closely resembles an igneous rock but even this has metamorphic affinities and could be a meta-igneous or meta-sedimentary rock.

Numbers 22379 and 22380 are very unusual calc-silicate rocks which resemble high-grade, thermally metamorphosed skarns.

The rocks appear to range from rather low to high grade and from thermal to regional metamorphic and any relationships between the members of the group as a whole are not apparent.

Sample: DRM 27: TS 22374. Pit

Hand Specimen:

A fine grained greyish-green crystalline rock with irregular compositional layering outlined by green minerals. Actinolite and minor malachite are visible in cracks and joints. The rock is cut by tiny faults.

Thin Section:

An optical estimate of the constituents gives the following:

	%	
Quartz Plagioclase	80-90	Approximately equal proportions
Diopside	5-7	
Actinolite	5-7	
Sphene	4	
Apatite	1 to 1	
Opaques	Trace	
Malachite	Trace	

A fine grained granoblastic rock consisting mainly of a mosaic of small (average 0.02 mm) quartz and plagioclase (albite-oligoclase) crystals with layers of coarser pale green actinolite (0.04-0.5 mm) and of lesser small diopside crystals. Sphene is disseminated through the rock as idioblastic, xenoblastic and spongy crystals. Pale green chlorite is present.

The amphibole occurs in two forms: as major large, early-formed, weakly coloured actinolite and as minor late, colourless tremolite needles growing in and around early actinolite and diopside.

The ferromagnesian is mainly actinolite in some layers, diopside in others, and a mixture of both in some.

The rock has a granular texture but has several distinct planar features. The oldest is the compositional layering which is presumably sedimentary bedding. The youngest consists of separate widely spaced shears along which actinolite has crystallized. The malachite is later than this structure. There are vague signs of a metamorphic foliation intermediate in age between these bedding and the actinolite foliation.

History:

The rock is a metamorphosed sediment which was originally rich in quartz with a little carbonate and clay. The metamorphism was not accompanied by strong deformation and the rock might be a low to medium grade hornfels. Apart from the presence of amphibole it resembles a granulite but might be a low to medium grade, low stress regional metamorphic.

The small grain size and richness in quartz suggests a chert. There are possible affinities with hematite cherts, or those associated with limestones.

Sample: DRM 28; TS 22375: PS 12333.

Rock Name:
Meta-chert.

Hand Specimen:
A very fine grained pinkish-grey crystalline rock with lenticular layers of dark green ferromagnesian minerals.

Thin Section:
An optical estimate of the constituents gives the following:

	%
Quartz Albite - oligoclase	80
Pyroxene	15
Actinolite	5
Sphene	7
Opaques	25
Apatite	Trace

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The rock consists of a fine grained granoblastic aggregate of quartz and lesser feldspar with irregular layers of pyroxene, opaque or amphibole (apparently marking original bedding).
The main ferromagnesian is a dark green pyroxene which is probably near hedenbergite in composition. An electron probe microanalysis was made to see whether the colour was due to nickel; negative results were obtained for nickel, chromium, copper and uranium; positive results were obtained for iron (abundant) and sodium. The pyroxene is partly altered to a pale, fibrous tremolite which forms intergrowths or parallel crystals outlining a weak foliation perpendicular to the layering.

Sporadic large crystals of green actinolite associated with the pyroxene may be an alteration product or may be primary.
Sphene is a prominent accessory, mainly as abundant inclusions in the ferromagnesian minerals.
Apatite occurs as abundant scattered small crystals.
The opaque mineral which forms lenses along (?) bedding is magnetite.

History:

The rock was originally a sediment rich in silicon and iron with minor lime and magnesia. The small grain size suggests that it was a chert, possibly a hematite chert. The metamorphism is of low to moderate grade with low stress. It could be thermal but is possibly low-stress regional.

Sample: DRM 34: TS 22376.

Rock Name:

Supergene-modified cupriferous rock.

Hand Specimen:

A dark brown fine grained rock with visible malachite and chrysocolla.

Thin Section:

An optical estimate of the constituents gives the following:

	%	
Limonite	20-60	
Malachite) Chrysocolla)	0-10	110 %
?Stilbite	40-80	

A hydrothermally altered rock composed largely of sheaf-like or tabular zeolite. Around each grain and along most cleavage lines limonite has been deposited. The rest of the rock consists of limonite, very fine grained or prismatic malachite, and chrysocolla (the latter nearly colourless and fibrous to micaceous). The limonite is partly granular and partly colloform. The yellow material visible in the hand specimen is an intimate mixture of chrysocolla, malachite and limonite.

No trace of the original rock remains. All minerals present are thought to be of secondary origin.
The presence of stilbite was confirmed by x-ray diffraction.
The grain size is variable. The sheaf like masses of stilbite are up to 5-6 mm diameter.
The most common grain size is under 1 mm and the chrysocolla, malachite, and limonite are all very fine grained.

Sample: DRM 35: TS 22377.

Rock Name:
Garnet granodiorite.

Hand Specimen:
A coarse grained granitic rock of saccharoidal appearance. It contains visible muscovite and prominant grains of a translucent pale green mineral. Quartz crystals line the site of a former vug.

Thin Section:
An optical estimate of the constituents gives the following:

	%
Quartz	40-50
Oligoclase (andesine)	50-60
Garnet	1
Muscovite	3
Tremolite	1
Microcline	1
Apatite	Trace

100 %

A medium grained granular rock (average grain size 0.6 - 1.3 mm) mainly composed of an irregular mosaic of quartz and plagioclase (oligoclase near andesine in composition). A few euhedral colourless garnets are present. Other garnets are corroded, others are partly replaced by a very slightly pleochroic mica near muscovite, and others are probably wholly replaced by mica. Mica also occurs sporadically throughout the rock. The feldspar contains small needles of ?tremolite and small grains of sericitic mica. Quartz tends to be undulose and strained. The crystals in the rock are mostly anhedral with some very ragged margins. The feldspar albite-twins are often distorted and indicate stress after or during crystallisation. The garnet has crystallized at an early stage in the history of the rock and might be due to contamination.

History:

A granite with a complex history involving possibly early contamination and late stress. It might not be igneous and the presence of garnet suggests that it could be metamorphic in origin (the twinning in the plagioclase appears to be entirely on the Albite Law; the Carlsbad Law, which is so typical of igneous rocks of this composition, is lacking).

<u>Sample: DRM 37: TS 22378</u>.

Hand Specimen:

A massive grey, fine grained argillite with finely laminated bedding along which the rock cleaves. A very weak tectonic cleavage occurs at about 70° to the bedding.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Quartz, feldspar	75-85
Biotite	10
Opaques	5
Muscovite	2
Rutile	1
Apatite	Trace

The rock consists of a fine granular mosaic of quartz and possibly feldspar with abundant disseminated tiny grains of opaque minerals. A pale biotite (pleochroic from colourless to pale brown) forms flakes along the bedding with a small proportion of sub-parallel blebs outlining the weak cleavage visible in the thin section.

Some aggregates of flakes are nearly colourless and appear to be muscovite. Rutile is recognisable as a tiny grain. The abundant opaque mineral was not identified with certainty; it is probably magnetite but hematite is possible with graphite another possibility.

History:

A very low grade, regionally metamorphosed pelite which was originally rich in either graphite or hematite.

Sample: EDA 9: TS 22379.

Rock Name:

Calc-silicate rock (skarn).

Hand Specimen:

A coarse grained rock with small patches of brown and green mineral in a predominantly white matrix. The rock resembles a gabbro in general appearance.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Calcite	40-70
K-feldspar	10
Pyroxene	20-30
Altered mineral	20
? Garnet	Trace
Monazite	Trace
Sphene	Trace

The rock is coarse grained and irregularly textured. It consists of a granoblastic aggregate of interlocking white crystals enclosing large poikiloblastic porphyroblasts of pyroxene, small rounded crystals of (?)K-feldspar and pseudomorphs of an unknown lath-like mineral.
The rock is cut by a parallel series of cracks which cut across all the non-carbonate minerals and which are filled with fibrous calcite. Calcite appears to have crystallized later than most minerals and, in part, has a replacive aspect.

The pseudomorphs have a sub-idioblastic shape and are now composed of a parallel fibrous aggregate of calcite, opaque mineral and an unknown isotropic mineral which might be chloritic or opaline. The original mineral is also not known but might have been wollastonite.
The colourless mineral stains for K-feldspar but has a very low 2 v (negative) and appears to be sanidine.

History:

The origin and history of the rock are in doubt but it is clearly a very unusual and complex rock. It is metamorphic and resembles a high grade calc-silicate hornfels. However it could possibly be a highly altered and carbonated igneous rock.

Sample: EDA 10: TS 22380.

Rock Name:

Calc-silicate rock.

Hand Specimen:

A coarse, irregularly textured pale grey rock of igneous aspect with aggregates of dark ferromagnesian mineral.

Thin Section:

An optical estimate of the constituents gives the following:

	%
K-feldspar	20-25
Pyroxene	40
Wollastonite	35
Vesuvianite	5
Calcite	5
Sphene	2
Granularite	Trace

A coarse, iregularly textured rock whose texture is dominated by granular microcline (about 1 mm across) with aggregates of randomly oriented wollastonite (up to 2 mm long) and poikiloblastic green pyroxenes up to 6 mm across. The vesuvianite is colourless, full of tiny inclusions, and it mainly occurs within aggregates of pyroxene.

Fine grained aggregates of microcline with minor garnet (?grossularite) occur between the larger crystals and appear to be due to early intergranular cataclasis. The clinopyroxene is greenish in colour and is probably hedenbergite. Some has a pronounced diallagic parting. Post-crystallization deformation has produced cracks. The presence of wollastonite was confirmed by x-ray diffraction. Attempts to confirm grossularite in this way failed because of the small amounts present. The calcite was confirmed (as was the wollastonite) by staining tests.

History:

The rock is almost certainly metamorphic despite its igneous appearance because of the presence of wollastonite and garnet. The original rock was probably a sediment rich in lime but the rock now resembles some skarns and has possibly been metasomatized. The metamorphism is of high grade and is probably thermal.

ENV 1085.

208 HUTT STREET
ADELAIDE S.A. 5001

POSTAL ADDRESS:
BOX 309 B, G.P.O. ADELAIDE 5001

TELEPHONES 23 4527, 23 4277
CABLE "TRANSAUSTEX"

TRANS AUSTRALIAN EXPLORATIONS PTY LTD

8th July, 1969.

The Director,
Department of Mines,
169 Rundle Street,
ADELAIDE. S.A.5000.

Dear Sir,

Re : Special Mining Lease 269
Progress Report
January 30th 1969 - July 30th 1969.

General :

Special Mining Lease 269 was granted jointly to Trans Australian Explorations Pty.Ltd., and Dome Rock Pty.Ltd., in January 1969. The area covered by the S.M.L. is 8 square miles.

Details of exploration activities during the first 6 months are discussed in this report. The first 6 months of operations carried out on S.M.L. 269 included geological mapping, costeaning, sampling, auger drilling and geophysical prospecting.

Geological Mapping :

Detailed mapping was carried out around the Dome Rock mine area following the pegging of a grid extending 1200' north and south of Meehan Shaft.

This grid was later extended to cover the entire S.M.L. and Geological mapping was carried out over the S.M.L., at a scale of 1" = 400'.

Geochemical Sampling :

A shallow auger drilling programme was commenced over the mine area and extended to some selected lines on the grid outside the area of the workings. A total of 7,576 feet of auger drilling was completed and 800 soil samples analysed.

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Approximately 3,500 feet of costeans were excavated and all trenches were channel sampled. A total of 300 rock samples and channel samples have been analysed.

Geophysical :

A magnetometer survey was conducted over the entire S.M.L. with lines 1,200 feet apart. This was run to assist the geological mapping and interpretation of the Induced Polarization survey.

An Induced Polarization (I.P.) Survey was commenced in March and completed at the end of April. The survey covered 20.25 line miles. The main lines surveyed with I.P. were 12S, 8S, 4S, 00, 4N, 8N, 12N and 16N. Other selected lines were also surveyed.

Scintillometer readings were taken on lines 12S to 12N extending 1,000 feet either side of the baseline.

Several trial lines using Electromagnetics were undertaken but as an Electromagnetics survey was undertaken in 1960 by the S.A. Mines Department, the survey was limited.

Compilation of all results has been completed and they are now being assessed. Work on S.M.L. 269 is being supervised by staff of Trans Australian Explorations Pty.Ltd., with geochemical analytical work and geophysical work being done under contract to McPhar Geophysics Pty.Ltd., of Adelaide. Auger drilling and costeaning was carried out by contractors.

Yours very truly,
Trans Australian Explorations Pty.Ltd.

Ian C. Grant
Managing Director.

ICG;ejl

ENV 1055

CABLE ADDRESS
"PHARGEO"
ADELAIDE

McPHAR GEOPHYSICS

PTY. LTD.
INCORPORATED IN VICTORIA
50 MARY STREET, UNLEY. S.A. 5061
Postal Address:
P.O. Box 42, UNLEY 5061

TELEPHONE
72 2133

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MINERALOGICAL REPORT NO. 16

by I.R. PONTIFEX   3rd June, 1969

TO: The General Manager,
Trans Australian Explorations
208 Hutt Street,
ADELAIDE   S.A. 5000

Your Reference: Letter by C. Horn dated 11.4.69

Material: Rock samples (18)

Identification: DRM 160 to DRM 190

Work Requested: Petrographic description and identification of opaque minerals which may affect I.P. Also comment on the genesis, similarities and dissimilarities of rocks in the suite.

Sections: The 18 thin sections and 13 polished sections, and the specimens, are retained at our laboratory.

SUMMARY

Ten of the rocks in this suite of samples have basically the same essential mineralogy and therefore probably have a similar petrogenetic significance. Nos. DRM 160, 161, 164, 170, 171, 172, 173, 185, 185A and 187, are essentially quartzose granulitic siltstones or hornfels. They were probably originally quartz, and quartz felspar siltstones which have been metamorphosed by predominantly thermal, or contact metamorphism. Pressure has developed an incipient foliation in some rocks which commonly cuts across the bedding. These do show some difference. No. 164 contains sillimanite indicating a relatively higher degree of thermal metamorphism; nos. 171, 172 and 173 contain calc silicate bands indicating the presence of limestone or dolomite in the original rocks. Nos. 160, 161, 164, 170, 185 and 187 have been ?kaolinised either during metamorphism or during a later event of metasomatism. Many of this group also contain epigenetic aplitic veins which may have derived from the aplitic pegmatite of DRM 167 and 168. This same granite may be responsible for the argillitisation.

Samples Nos. 162 and 189 are in some respects similar. Both appear to be essentially coarse grained metaquartzites; 162 has been invaded by limonite, 189 has been recrystallised with iron oxides apparently preferentially associated with the second generation quartz.

DRM 167 is believed to be an igneous, pegmatic-aplitic-granite bearing a trace of garnet, DRM 168 is an aplitic, tourmaline-bearing pegmatite. The tourmaline in DRM 179 (a quartz-muscovite-graphite schist.), is interpreted to be of metasomatic origin and may be related to these aplitic intrusives.

DRM 165 in its present form is extensively leached and bleached. It appears that this rock has either not been metamorphosed, and is a leached argillaceous siltstone, or alternatively that it has been intensely kaolinised.

The graphite bearing samples, notably 164, 174, 179, tend also to contain micas and are more schistose than the relatively dense, massive hornfels group. They appear to have suffered mainly thermal metamorphism but pressure has also influenced their formation.

Graphite is the mineral likely to have a greater effect on I.P. than any other mineral in these rocks. This occurs in essential to subordinate abundance in at least three specimens. Hematite, generally after magnetite occurs in several specimens, generally associated with calc-silicate bands in the hornfels group where it forms ~~generally~~ less than 5% of the rock. Minor pyrite and a trace of chalcopyrite was present in two or three sections. Rutile is ubiquitous, particularly in the granoblastic siltstones or hornfels group of rocks where it is most likely a metamorphic or metasomatic product. This mineral is however a non-conductor.

DRM 160

Rock Name: Altered Quartz-plagioclase granulitic siltstone.

Components, showing approximate abundance

Quartz	40-50%
Plagioclase	30-40%
"clay mineral"	7-10%
Potash felspar	? 5-7%
Rutile	2-3%
Tourmaline	trace

This is a fine grained granoblastic rock which has a micro-hornfels texture, average grain size is 0.1 mm. In thin section the quartz and plagioclase grains are seen to be equidimensional, and intimately intergrown to form a homogeneous mosaic. The plagioclase has an albite-oligoclase composition. R.I. differences and cross hatch twinning suggests some potash felspar is present but is is difficult to accurately estimate its abundance.

Very fine, slender, asbestiform crystals are distributed through the quartz-felspar aggregate. These occur more or less between the quartz grains and they have a common orientation. These crystals generally have a very low birefringence, low relief, and are rather clouded. Their positive identity was not confirmed but is almost certain that they are a clay mineral, probably formed by the alteration of a pre-existing mica.

Many of the quartz and felspar grains are slightly elongated with their long axis roughly parallel to the length of the prismatic grains, this plane is believed to be primary bedding. The concentration of this clay mineral varies; this produces a compositional banding seen in hand specimen this is believed to be alteration banding. The bedding plane is at right angles to this compositional banding.

A thin vein of secondary calcite cuts the rock, this mineral also coats the outside of the specimen. Accessory tourmaline grains, 0.1 mm across are scattered. These appear to be detrital grains.

Opaque, (or semi opaque) grains of rutile up to 0.15 mm across are scattered through the rock, these are slightly more abundant in darker bands where they may form 3-4%. The rutile is almost invariably altered to and partly coated by leucoxene.

Three minute grains of pyrite and a trace of hematite (far less than 1%) are scattered through the rock. No other opaque minerals were recognised in polished section.

Genesis

This rock was originally a sericitic-quartz-plagioclase siltstone. The original bedding is rather obscure in hand specimen but it is represented in thin section by the common alignment of

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Genesis (cont'd)

altered mica grains and slightly elongated, quartz and felspar. A moderate grade of probable contact metamorphism produced the fine granoblastic texture. This also possibly caused the argillitisation of the pre-existing mica, and the compositional banding, (seen as light and dark bands in the specimen) of variable clay and to a lesser degree rutile, cutting at 90° to the bedding. Alternatively this alteration could have been caused by hydrothermal agencies, bleaching and leaching the rock subsequent to metamorphism.

DRM 161

Rock Name Altered quartz - plagioclase granulite siltstone.

Components

Components	Quartz	70%
	Plagioclase	15%
	"clay mineral"	3-5%
	Muscovite	2-3%
	Microcline	2-3%
	Tourmaline	minor accessory
	Rutile	2-3%
	Graphite	accessory
	Limonite	accessory

This is a fine grained (silt size) rock, variations in the grain size of quartz and felspar from 0.05 mm to 0.3 mm delineate primary sedimentary bedding. A micro granoblastic texture is superimposed on this structure.

Quartz grains form most of the rock aggregate, anhedral, equidimentional plagioclase grains are ubiquitous through this aggregate

Short prisms of a probable secondary clay mineral are restricted to several very thin beds through the section. They are oriented in the plane of the bedding, and are notably cloudy, commonly with dust like opaques.

Discontinuous bands, up to 1 mm thick contain relatively coarse grained aggregates of plagioclase, and quartz, subordinate microcline, muscovite and an amorphous cloudy green mineral, also accessory euhedral tourmaline, rutile. Mostly these bands are roughly parallel to the bedding but they also cut obliquely to it. The green mineral was analysed for trace elements and found to be anomalously high in copper. It is interpreted to be malachite.

Rutile, in small subhedral grains is scattered through some bands, largely altered to leucoxene. In the vein-like bands cellular limonite is accompanied by an amorphous dark green ?stained alteration product or clay mineral of unknown identity. A veneer of limonite surrounds some grains in isolated areas in the rock. Small localised areas containing disseminated graphite were also seen in polished section. All of these essentially opaque minerals, (conductors which may affect I.P. to variable degrees, together form a maximum of 5% of the section. No other opaque minerals were recognised in polished section.

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Genesis

As for DRM 160 this rock was originally a siltstone, but of slightly more variable composition. It has suffered probably low to moderately grade contact metamorphism (similar to that of DRM 160) to produce its micro hornfels texture. The micas may have been altered to clay at this time or during subsequent metasomatism. The veins of quartz - felspar and associated minerals which do not occur in DRM 161 have probably been introduced, perhaps during metamorphism, or during a subsequent period of metasomatic alteration.

DRM 162

rock name   Siliceous limonite.

This rock consists almost entirely of quartz and limonite. The limonite occurs in irregular concentric and colloform bands. In part of the section, nearer to the inside of the specimen, a highly intricate, irregular network of limonite vein lets cut through a granoblastic quartz aggregate. These cut through individual quartz grains, not along intergranular boundaries. Commonly the limonite consists of an intricate mesh structure of interlocking rods which grow into the quartz and appear to be superimposed on the quartz grains. The quartz has not grown in sympathy with the limonite but appears to be invaded and replaced by these iron hydroxides.

In the outer part of the specimen quartz and limonite have developed simultaneously, forming a silica-iron rich crust to the rock.

Most of the quartz in this rock is interpreted to be indigenous, forming originally a meta quartzite. It has been invaded and larely replaced by limonite. The limonite may have been introduced, from an external source, or it may also be inherent to the original rock, occuring originally as disseminated iron oxides or possibly sulphides. There is no positive indication of the origin of the limonite.

Geochemical Analysis

This sample was analysed on the A.A.S. in an attempt to determine if the limonite is derived from a mineral or mineral aggregate of possible economic importance. Anomalously high amounts of Cu are present in the specimen, suggesting that chalcopyrite may have contributed to the formation of the limonite.

The results of the analysis in ppm are:

Cu	Pb	Zn	Ni	Co
1600	40	90	80	130

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DRM 164

Rock Name — Altered quartz - sillimanite - graphite schist.

Components:

Quartz	40%
Sillimanite	15-20%
Clay mineral (unidentified)	20-25%
Graphite	10-15%
Plagioclase	5-7%
Microcline	3%
Limonite	5-7%
?leucoxenised rutile	accessory

This rock has a fairly prominant schistose texture, it is fine grained (average grain size 0.02 mm), and consists mainly of interfingering wavy lamellae and fine lenses of predominantly quartz, sillimanite, graphite, and an undetermined clay mineral.

The quartz grains form most of the rock matrix, these are slightly elongated parallel to the foliation. Slight variation in their grain size indicates that the bedding is coincident with the foliation. Fine prismatic crystals of sillimanite occur independently through the quartz matrix, and in aggregates strung out along a band parallel to the foliation. These are generally colourless and have a very low birefringence, where they are cloudy and altered to ? clay minerals, they have a brownish colour and a moderately high birefringence. Interculated with the quartz-sillimanite bands are wavy lenses and streaks of an amorphous, cloudy, dense aggregate of an extremely fine material. This component mineral has an extremely low birefringence to isotropic and is believed to be a clay mineral of unknown identity. In places this invades some larger sillimanite sheaths.

Minute flakes of graphite (average 0.01 mm) are disseminated through the rock. These have a general random orientation, they are associated with the quartz, sillimanite and clay, and they are slightly more concentrated in some bands, and streaks along the foliation plane.

Veins of up to 0.5 mm wide cut the rock. These mostly follow the schistocity but also cut across this; they consists of relatively coarse allotriomorphic, plagioclase, subordinate quartz and ?leucoxenised rutile. Relatively coarse sillimanite has developed near the margins of these veins.

Opaque grains, slightly larger than the matrix size are scattered through the rock. These are skeletal and consist almost completely of limonite, apparently after hematite. They are associatec in places with a grey-pale green clay-like ? alteration product (simila to that in 161 found to be malachite).

Genesis

This is a clayey, graphitic quartz siltstone which has been

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Genesis (cont'd)

metamorphosed under moderately high pressures and high temperatures, Possibly a period of regional metamorphism, followed by thermal (contact) metamorphism. The intercalated clay rich bands may have developed during a subsequent period of metasomatism.

The abundant graphite in this rock would strongly effect I.P.

Because of the relatively abundant limonite boxworks, pockets of clay minerals and associated greenish staining, the sample was analysed by A.A.S. The results of the analysis in ppm are:

Cu	Pb	Zn	Ni	Co.
420	20	30	30	30

DRM 165

Rock Name : Altered clayey-siltstone

This rock ~~is~~ shows a prominant compositional banding which is exaggerated in hand specimen by variations in colour from one band to another. In thin section the rock is seen to consist of intercalated bands of mainly silt size quartz grains and clay. The quartz grains have an average size of 0.05 mm, they form an aggregate with a clayey matrix. Limonite commonly stains the matrix, occuring along intergranular contacts of the quartz grains.

The clay rich bands are the lighter coloured bands seen in the hand specimen. This consists of dense mesh work of largely amorphous material of very low birefringence to isotropic and is interpreted to be a clay of the kaolin group. In some areas the bands consist of randomly oriented, wavy plate-lets which form an extremely fine mosaic. In some bands these are oriented at right angles to the bedding, suggesting a weakly developed metamorphic foliation in this plane. The clay contains minor scattered silt-size quartz grains. The contact between the silt and clay bands is gradational.

Excluding the limonite this rock contains negligible ore (or opaque) minerals. This rock is essentially a clayey siltstone. It has a leached, bleached appearance and has considerable interstitial space, indicating that some of the original sedimentary material has been removed. Limonite has been introduced, along the relatively more porous bands. The origin of the limonite is not abvious from the examination of this rock. The clay is either mostly an original sedimentary product, or it could possibly be the product of completely kaolinised felspar bands of the type found in DRM 161.

DRM 167

Rock Name: Pegmatitic, aplitic granite.

Components:

Quartz	30%
Plagioclase	20%
Microcline inc. perthite	40%
Muscovite	10%
Garnet	Minor accessory

This rock consists of coarse grained, allotriomorphic granular aggregate of quartz, microcline, plagioclase and subordinate muscovite. The plagioclase has an albite-oligoclase composition.

A poorly defined band, with boundaries grading into the enclosing aggregate consists of very coarse grained aggregate of microcline, microcline - microperthite, quartz and minor plagioclase.

Three small subhedral grains of garnet up to 0.5 mm across occur in the section. The felspars show the effect of very incipient saussuratisation. Cloudy ? kaolin, very rare dust like opaques, and scattered flakes of fine sericite occur in some felspar laths.

No other opaque minerals are present.

Genesis

This is believed to be a true igneous granite, or pegmatitic aplite. Generally muscovite is considered to be unstable at the pressures and temperatures of metamorphism at which K felspar develops. Also K felspar in high grade metamorphic rocks is typically associated by high temperature metamorphic ~~rocks~~ minerals such as sillimanite. Perthite, while found in metamorphic pegmatites is generally typical of granitic (igneous) pegmatites. The garnet may have resulted by the contamination of the intrusive granite by argillaceous impurities.

DRM 168

Rock Type: Aplitic tourmaline bearing pegmatite

Components:

Quartz	30%
Plagioclase	40%
Microcline incld. perthite	20%
Tourmaline	5-7%
Garnet	1-2%

This rock consists of a very coarse grained allotriomorphic granular aggregate of mainly quartz and felspar. It contains more plagioclase than DRM 167 and less microcline and microcline-perthite.

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DRM 168 (Cont'd)

Also the intergranular contacts are more sutured in this rock (168) many of the plagioclase grains have been "bent", others have been fractured, the adjacent fragments slightly displaced and recrystallised in situ. The coarse quartz grains are stressed and a second generation of small amounts of quartz (probably recrystallised) has formed along some boundaries of the larger grains. As in 167 the felspar is weakly saussuratised.

Mid-blue, pleochroic tourmaline prisms are scattered through the rock, most commonly associated with quartz.

Small grains of garnet commonly in small patches occur through the rock, these have no specific associations. Some are enclosed in large allotriomorphic quartz grains.

There are no minerals present which would effect I.P.

Genesis

As for DRM 167 this pegmatite is considered to be of intrusive (igneous) origin.

DRM 170

Rock Name: Quartz - plagioclase granulitic siltstone.

Components:		
	Quartz	65%
	Muscovite	5-7%
	Plagioclase	10%
	?Kaolin	10-15%
	Rutile	5-7%

This is a fine grained (siltsize) rock, it has a granulitic, (micro hornfels) texture. Most of the rock consists of a homogeneous mosaic of quartz, with intergrown, subordinate, scattered, equidimensional, plagioclase. Flakes of muscovite of the quartz grain size are distributed at random through the rock. Small lenses or blebs measuring 0.2 mm x 0.1 mm consist of several allotriomorphic quartz grains.

The boundaries of some quartz grains and the interstices between them in places contain minute prisms, rod-like and fibrous wisps of ? kaolin. This is too fine to positively identify.

Subhedral grains of rutile up to 0.3 mm across occur in scattered clumps. These form the dark spots seen in hand specimen.

Irregular patches and veins contain limonite, which commonly lines cavities enclosing a fine network of limonite. There is no indication of the pre-existing mineral.

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DRM 170 (cont'd)

No graphite, or any other minerals likely to effect I.P. (except rutile to a minor degree), was recognised in polished section. Malachite and ? tenorite occur in slip planes in hand specimen.

Genesis

This rock has essentially the same mineralogy and texture as DRM 160, 161, and has also the same history of formation.

DRM 171

Rock Name: - Quartz - plagioclase - calc silicate hornfels.

Components:

Quartz	50-60%
Plagioclase	10-15%
Actinolite - tremolite	7-10%
Chlorite	10%
Diopside	10-15%
Epidote	accessory
Sphene	3-5%
Apatite	accessory
Rütile	accessory
Microcline	accessory
? garnet	accessory
Hematite (after magnetite)	accessory

Most of this rock consists of a dense fine grained (silt size) mosaic of quartz, small variation in the grain size delineates the original sedimentary bedding. Equidimensional plagioclase forms about 10% of this mosaic. Grains of diopside, short, prisms of actinolite, euhedral grains of apatite and sphene are randomly scattered through this quartz - plagioclase aggregate.

Irregular patches and veins which cut both across and along the bedding; these contain relatively coarse grained aggregates of most of the minerals listed above.

Diopside commonly forms poikilitic crystals and is generally replaced by randomly oriented actinolite - tremolite fibrous aggregates Coarse subhedral sphene occurs in patches and with minor epidote is associated with these amphiboles. Wavey lenses of chlorite are also associated with the amphiboles, replacing them.

Scattered euhedral grains of a pale yellow, isotropic mineral with high relief also accompany these calc-silicates. These are probably garnet but the pale yellow colour is anomalous and the identity was not confirmed.

Irregular and subhedral grains of titaniferous magnetite also occur in the calc-silicate mineral aggregate. These are largely replaced by hematite. Other grains of the same size, and have a

DRM 171 (Cont'd)

general distribution through the rock consist entirely of hematite, and also of rutile. Apart from these very small amounts of metallic minerals there is no other mineral in the rock which would effect I.P.

Genesis

This rock was originally a felspathic quartz siltstone containing minor calcareous interbeds and a patchy calcareous silty matrix. Its present mineralogy was probably produced by contact metamorphism of this original rock. This specimen is essentially the same as DRM 170 and DRM 160 and 161 except that in its original form it contained calcareous material.

I.P. Effect

The hematite after magnetite would be a conductor and therefore would produce an I.P. effect.

DRM 172

Rock name: Quartz - plagioclase - calc silicate hornfels.

Components:	Quartz	70%
	Plagioclase	10%
	Diopside	3-5%
	Actinolite -tremolite	5%
	Sphene	2-3%
	Apatite	2-3%
	Chlorite	accessory
	Hematite	3-5%

Most of this rock consists of equidimensional silt size quartz and subordinate plagioclase which forms a granoblastic or micro - hornfels texture. Lamellae and lenses of slightly coarser grain size (0.05 mm) than the general aggregate delineate the original sedimentary bedding.

Thus matrix contains thin bands and streaks conformable to the bedding, and coarser irregular veins and masses cutting across it. These contain relatively coarse grained diopside which is largely, and completely replaced by actinolite - tremolite. Minor chlorite may have derived from the subsequent alteration of actinolite. Also in these bands are ragged, drawn out skeletal opaque grains associated commonly with equally irregular grains of sphene; scattered euhedral apatite and relatively coarse allotriomorphic aggregates of quartz and plagioclase. Minor amounts of independent prisms of actinolite, opaques and apatite are also scattered through the quartz mosaic.

The opaque minerals in the calc silicate bands are hematite, almost certainly a titanium rich variety - titan-hematite. This is

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weakly magnetic suggesting that it may have derived from a titaniferous magnetite. The hematite contains minute oriented inclusions of ilmenite

Finer grains of hematite, down to dust size are also ubiquitous through the quartz aggregate, outside of these bands.

Genesis

This rock is very similar to and has essentially the same history of formation as DRM 171. The hematite (after magnetite) in this rock would effect I.P.

DRM 173

Rock Name: Quartz calc-silicate hornfels

Components:

Quartz	60%
Plagioclase	3-5%
Diopside	10-15%
Actinolite -tremolite	10-15%
Sphene	3-5%
Apatite	2-3%
Chlorite	accessory
Hematite (after magnetite)	5%

The texture, mineral composition, and mineral associations, in this rock are the same as in DRM 172, with the exception that the proportions of thecomponent minerals are slightly different. The yellow amorphous looking patches seen in hand specimen in the calc silicate bands consist of alteration products after sphene.

Hematite, after magnetite and containing extremely fine oriented inclusions of ilmenite form up to 5% of the section examined and these would effect I.P.

The history of formation of this rock is the same as for DRM 172 (and DRM 171).

DRM 174

Rock Name: Graphitic - muscovite quartz slatey hornfels

Components:

Quartz	45%
Muscovite	15%
Graphite	35%
Rutile	5%

This is a very fine grained rock, average grain size 0.015 mm: it has a homogeneous composition. In hand specimen a prominant parting plane is seen.

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DRM 174 (cont'd)

The rock consists almost entirely of a fine mosaic of quartz with an incipient granoblastic texture, subordinate randomly oriented muscovite, and ubiquitous, disseminated graphite.

The graphite occurs as minute, rods, flakes and grains, occuring as discrete particles, average size 0.005 mm. Commonly these form along intergranular boundaries of quartz.

Scattered patches and lenses 0.35 mm x 0.15 mm contain small rounded grains of rutile.

Narrow stringers of quartz cut the rock.

Genesis

This rock was originally a sericitic, graphitic quartz siltstone. A period of metamorphism of moderately high temperature and moderate pressure produced its present micro granoblastic texture, and cleavage plane.

I.P. Effect

The abundance and ubiquitous distribution of graphite would have a very strong effect on I.P.

DRM 179

Rock Name: Tourmalinised, quartz-muscovite-graphite-schist.

Components:

Quartz	50%
Muscovite	20-25%
Graphite	7-10%
Tourmaline	5-7%
Clay mineral	7-10%
Rutile	accessory
Hematite	3-5%

This rock is fine grained, (average 0.03 mm) and it has a schistose texture. It consists mostly of a matrix of quartz and muscovite which contains abundant disseminated graphite, and lesser interstitial clay.

The quartz grains are slightly elongated, their long axes parallel to the schistocity. Muscovite flakes are commonly oriented, also parallel to the schistocity plane. Slight variations in the grain size and concentration of these minerals reflects probable sedimentary bedding. Very fine elongate lenses of unidentified clay mineral form an integral part of the matrix between the muscovite and quartz grains. These are commonly stained with limonite.

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DRM 179 (cont'd)

Idiomorphic porphyroblasts of yellowish brown tourmaline are distributed through the rock, these tend to be localised in clumps, but they also occur independently. These measure up to 3mm long and 0.5 mm in section. The matrix enclosing these grains may be slightly buckled and contain a relatively greater amount of sericite. Most tourmaline grains lie in the plane of the schistocity, some lie across this. The matrix does not generally wrap around these porphyrobasts, there are no pressure shadows. Some tourmaline contains bleb like inclusions of apatite and rarely of rutile.

Small grains of rutile, and larger ragged grains of hematite and associated limonite are scattered through the matrix.

Genesis

This is a graphitic sericitic, possibly argillaceous quartz siltstone which has been subjected to predominately pressure metamorphism. Metasomatism, responsible for the formation of the tourmaline, may have accompanied the metamorphism or occurred subsequent to it.

The alternative mode of origin of the tourmaline could be that it was originally detrital, or that it derived by the metamorphism of sedimentary borates. These however are not considered likely.

I.P. Effect

The graphite, and to a lesser extent the iron oxides in this rock would produce an effect on I.P.

DRM 185

Rock Name: Kaolinised, quartz - chlorite hornfels.

Components:		
	Quartz	70%
	Chlorite, Kaolinite	10-15%
	Muscovite	2-3%
	Plagioclase	3-5%
	Rutile	3-5%
	Apatite	accessory

This rock consists mainly of a fine (siltsize) granoblastic aggregate of quartz. The original sedimentary bedding is just discernable macroscopically. Minute, (0.05 mm x 0.01 mm), scale to flake like individual grains of very pale green ? chlorite are scattered through this aggregate, most are associated with - partially replaced by probable kaolinite. These have a common parallelism, oriented at about 60^{o} to the bedding. ?Kaolinite also commonly occurs along intergranular boundaries of quartz.

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DRM 185 (cont'd)

Individual muscovite flakes are scattered. Most of the 'opaque' spots seen in hand specimen consist of individual, and small clumps of very fine rutile grains. These are extensively altered to leucoxene. Limonite staining is common. Crystals of malachite are associated with black rather powdery areas of ? tenorite, along fractures and small vugs in the hand specimen.

Genesis

This rock was originally a clayey and, or chloritic siltstone. Its present granoblastic texture derived larely by moderate thermal metamorphism, and the orientation of the chlorite obliquely to the bedding must have involved some pressure probably at the same time. It appears that subsequent to metamorphism the rock has suffered incipient kadinisation. Malachite associated with clayey rugs and bands in the hand specimen suggests a genetic relationship between kaolinisation and copper mineralisation.

The essential mineralogy of this rock is similar to DRM 160, 161 and 170. It is also similar to 171, 172 and 173 with the exception that these three rocks contain calc silicates and associate sphene etc. The abundance of graphite in 174 distinguishes this rock (185) from 174.

DRM 185A

Rock Name: Quartz - biotite hornfels.

Components:

	Quartz	65-70%
	Biotite	10-12%
	Plagioclase	5-7%
	Rutile	2-3%
	Microcline	2-3%
	Tourmaline	1-2%
	Apatite	1-2%
	Limonite	1-2%
?	Chalcopyrite	rare trace

This rock consists mainly of a fine grained (silt size) mosaic of quartz which has a granoblastic texture, some grains slightly elongated. Slight variations in grain size delineate fine sedimentary beds, seen in hand specimen. Fine flakes of pale brown biotite are scattered through part of this aggregate, these have a common parallelism, oriented at about 90° to the bedding, although the biotite is relatively concentrated in some sedimentary bands.

In the more prominant (sedimentary bands) the biotite is accompanied by the quartz matrix and also by scattered fine euhedral crystals of tourmaline, (up to 0.5 mm across), apatite. Leucoxenised rutile grains, generally elongated and parallel to the biotite are

DRM 185A (cont'd)

ubiquitous, slightly more abundant in the bands. Parts of some bands contain relatively coarse (compared with the matrix) plagioclase, microcline and perthite. Flakes of altered muscovite occur in similar bands in part of the specimen not sectioned.

Limonite typically occurs along intergranular boundaries in these bands, small cellular pockets of limonite also occur along these. Minute subrounded grains of probable chalcopyrite rarely occur in these bands, these were too fine to positively identify optically.

Genesis

This rock was originally a siltstone. As in most of the hornfels rocks previously described, the granoblastic texture of the rock was produced by predominantly thermal metamorphism, some pressure however was also involved to produce the common alignment of the biotite and rutile at right angles to the bedding.

The banding seen in this hand specimen is basically sedimentary however their mineralogical differentiation is probably not completely due to original variations in the composition of the sediments. Most likely metasomatism has taken place along some bedding planes and is responsible for the formation of tourmaline, apatite, rutile, coarse potash felspar. The fact that minute grains of ? chalcopyrite rarely occurs in these bands suggests a genetic relationship between mineralisation and a period of metasomatism which followed the metamorphism.

The rock is basically similar to DRM 185. This specimen (185A) however has apparently had material introduced to it, also its main micaceous component is biotite rather thanchlorite. Also 185A does not appear to have been kaolinised as has 185. In 185A, ? chalcopyrite is probably present, whereas in 185 only secondary copper mineralisation (malachite) was recognised.

DRM 187

Rock Name: Altered Quartz hornfels.

Components:		
	Quartz	70%
	Kaolin	10-15%
	Apatite	3-5%
	Rutile	2-3%
	Chlorite	2-3%
	Pyrite	1-2%

Most of this rock consists of a siltsize granoblastic aggregate of quartz. Abundant irregular patches, commonly clot-like and typically about 0.1 mm across are scattered through this matrix, they consist almost certainly of kaolinite. Kaolinite, or an amorphous looking clay also occurs along intergranular boundaries and in intersticies of the quartz aggregate. In the larger clots, the clay mineral is associated with relatively coarsely crystalline, allotriomorphic aggregates of quartz up to 4 mm in maximum dimension,

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DRM 187 (cont'd)

the component grains are dusty to cloudy and have highly sutured contacts. Subhedral grains of pyrite are also associted with these patches this is commonly altered to limonite. The margins of these aggregates grade imperceptibly into the enclosing fine quartz matrix. Thin veins of the same composition cut the rock, these also contain pyrite. A second type of clot, or porphyroblastic inclusion consists of a granoblastic aggregate of clear quartz up to 1.5 mm slightly coarser grained than the matrix, and typically studded with numerous rutile grains. The rutile is characteristically leucoxinised.

Small euhedral apatite grains and lesser flakes and shreds of chlorite are scattered through the rock.

Genesis

The typical micro hornfels texture, and the composition of most of this rock indicates that it is a quartz siltstone which has been thermally metamorphosed to a hornfels. This could have been by contact metamorphism. The clots of coarse quartz and kaolin may represent heterogenetics of the original sediment, or together with the veins through the rock, it may be due to metasomatic alteration, which accompanied, or followed the metamorphism. It is significant that the pyrite mineralisation is associated withthese.

Basically this rock is similar to DRM 185 and 171, although the porphyroblastic type inclusions are peculiar only to 187. Kaolin does occur, and probably developed at a similar time of the formation in 185 as in this rock 187. The presence of calc silicate minerals makes 171 different from both 187 and 185.

DRM 189

This rock consists of an allotriomorphic granular aggregate of quartz. Grains forming most of the aggregate generally measure up to 2mm, the intergranular boundaries are typically highly sutured and marked by finer grained allotriomorphic quartz.

The coarser grains contain cloudy and dust like opaque inclusions and show strong undulose extinction. The finer grained quartz is very clear, has sharp extinction, commonly it forms veins which cut the coarser quartz. This is a second generation quartz probably derived by recrystallisation of the larger primary quartz or possibly it was introduced from a separate source.

Micaceous hematite and massive granular hematite is associated with the second generation quartz. Individual rosets or spheres of hematite made up of radiating fibres grow together in patches and form bands. Scattered, euhedral crystals of pyrite also tend to be associated with the finer grained quartz, interstitial to the coarser quartz.

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Genesis

This could be a meta quartzite invaded by a second generation quartz carrying iron oxides and pyrite. Alternatively all the quartz could have a common origin. Recrystallisation in-situ possibly developed a later interstital differentiate and the minor metallic minerals segregated during the recrystallisation.

Geochemical Analysis

This sample was analysed by A.A.S. to detect anomalously high amounts of economically significant metals not recognised in mineral form. The results in ppm are:

Cu	Pb	Zn	Ni	Co
370	20	15	130	20

DRM 190

Rock Name: Diopside - microcline granulitic schist.

Components:

Diopside	50%
Microcline- perthite	45%
Plagioclase	5%
Apatite	2-3%
Sphene	minor accessory
Opaques	minor accessory

This is a grey-green, coarse to medium grained rock which macroscopically is seen to have a crude metamorphic foliation. In section, xenoblastic to poikiloblastic, pale green to colourless diopside is intimately intergrown with felspar. The diopside contains abundant inclusions of felspar and apatite.

The felspar is mostly microcline with subordinate perthite; it forms a granuloblastic to xenoblastic aggregate with the felspar. It is generally cloudy showing partial alteration to clay minerals and sericite. Apatite inclusions are common in the felspar. Plagioclase, in smaller grains than the potash felspar is randomly scattered through the aggregate. Several scattered subhedral grains of sphene also occur in this section. Several opaque grains have skeletal outlines, their identity was not established but their very low abundance (<½%) makes it unlikely thatthey would have any significant effect on I.

Genesis

Diopside is typically formed by the thermal metamorphism of siliceous dolomites. Potash felspar is a stable produce of high grade thermal metamorphism. Their association suggest that this rock derived

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DRM 190 (cont'd)

by the fairly high grade thermal metamorphism of a siliceous, dolomitic argillite. It may be a high-grade, thermally metamorphosed skarn.

I.R. Pontifex.

I.R. PONTIFEX

IRP/BA

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Report On

DOME ROCK COPPER PROSPECT

South Australia

SUMMARY STAGES 1, 11 & 111 RESULTS

by C.M.Horn - Senior Geologist
N.Duncan - Geologist.

Report No. DRM 2.
July, 1969.

TRANS AUSTRALIAN EXPLORATIONS PTY.LTD.

INDEX

List of Plans

SUMMARY

The initial phases of the exploration programme at Dome Rock have been completed. This report summarises exploratory work carried out within S.M.L. 269, jointly held by Trans Australian Explorations Pty.Ltd., and Dome Rock Pty., and also within Mineral Lease (M.L.) 3371 held by Dome Rock Pty. and optioned to Trans Australian.

Special Mining Lease (S.M.L.) 269 comprising 8 square miles, is located 60 miles west of Broken Hill and 26 miles north of Olary. The lease includes the workings of the Dome Rock Copper mine.

The area of interest is within a complex of Archean metamorphic rocks (Willyama Complex), intruded by undifferentiated granitic rocks of Proterozoic-Archean age.

Syndicate Members have on file an earlier report (DRM 1) and a regional geological plan of the Olary Province that were forwarded at the time of our recommendation to conclude an option agreement with Dome Rock Pty., for the exploration of the area.

Exploration activities have included geological mapping, costeaning, auger drilling, magnetometer survey, Induced Polarization survey and rock geochemistry. Since the commencement of operations in January, 1969 a total of $24,000 has been spent on the property. A stage has been reached where exploratory drilling is necessary in order to evaluate fully the potential of this property.

A recommendation for the drilling of three diamond drill holes is appended to this report together with an estimated cost for the initial drilling programme of 2,100 feet.

1. INTRODUCTION.

In January 1969 Trans Australian Explorations commenced operations around the Dome Rock mine, South Australia. The main exploration target is copper, but moderately high silver, cobalt and nickel have been noted in some samples from the area and a minor occurrence of scheelite has been mapped.

Mining operations at the Dome Rock mine have been on a small scale in the past. To the end of 1940 production had yielded 126 tons of copper from dressed ore having an average grade of 20% Cu. In 1967 a small leaching plant was installed which uses the pregnant water from the mine shaft. Production is currently about 1 or 2 tons of copper cement per month running close to 70% Cu.

In preparation for exploration a baseline striking 025° was laid out and cross lines put in at 400 foot intervals over a strike length of 2,400 feet. Later this grid was extended to cover the entire S.M.L.

Detailed geological mapping of the mine area was followed by further geological mapping of the S.M.L. on a scale of 1" = 400'. A geochemical auger drilling programme was commenced in late January and was followed by an Induced Polarization survey. A magnetometer survey was carried out over the whole of the S.M.L. to assist the geological mapping.

The results of this exploration are discussed in this report.

2. GEOGRAPHY.

Dome Rock mine is located approximately 60 miles west of Broken Hill and 20 miles north by station track from the village of Mingary on the main Adelaide-Broken Hill highway. The property lies on Boolcoomata Station. Access to the property is good.

Topographically the area is of low relief with a poorly developed internal drainage system. Rainfall in the district averages between 5 - 10 inches per year with the result that the country is covered by saltbush and occassional low scrub and is used solely for grazing purposes.

3. LEASE POSITION.

The eight square mile Special Mining Lease No.269 was acquired jointly with Dome Rock Pty.Ltd. in January 1969. It covers an area identical to the earlier lease held by Dome Rock Pty. but for purposes of dealing on the area with Dome Rock Pty. on an option basis the ground first had to be re-issued in the joint names of Trans Australian and Dome Rock Pty.Ltd. A separate 40 acre Mining Lease ML 3371, held by Dome Rock lies within the S.M.L. and is included in our agreement with Dome Rock. The S.M.L. is valid until January 1971 and extensions beyond that time are negotiable with the Government.

Briefly our arrangement with Dome Rock is in the form of an option on all minerals discovered on the S.M.L. or the Mining Lease. It has a maximum term of one year renewable for a further two years upon the annual payment for the second and third years of $2,000. for each year. The final purchase price payable upon our exercising the option is $350,000 less monies paid earlier to Dome Rock for renewals.

4. GEOLOGY.

4.1. REGIONAL SETTING.

The area investigated lies in the NE sector of the Olary Province and is within the Archaeozoic, Willyama Complex.

The complex itself includes metasediments - schists, calc-silicates, quartzites, arkoses and banded iron formations; acidic rocks, namely granites and gneisses of both igneous and anatectic origin, and numerous pegmatite swarms. An unconformity separates this crystalline basement from the Upper Proterozoic sediments which are found dominantly along the southern edge and show little metamorphism.

Granitic and gneissic intrusions are a characteristic feature of the Willyama complex together with its great diversity of mineralization.

Structurally the province is located at the north-east end of the Mount Lofty - Olary Arc stretching from Kangaroo Island to Broken Hill. This tectonic unit is the direct result of a folding process which commenced in Pre-Cambrian times and continued with alternating phases of activity and quiescence into Early Palaeozoic times.

According to the S.A. Department of Mines, "tectonic study of the Olary Province has shown that the folding of the area is due to a deep-seated orogenic process, each phase of which affected the whole stratigraphic column beyond any observable depth. Thus the Archaean metasediments, after having been deformed with their suite of granitic rocks during the Pre-Cambrian orogeny,have also been compressed and forced to rise during the Early Palaeozoic cycle, for they emerge at present on large eliptical cores regularly circumscribed by the basal sediments of the Proterozoic, Adelaide System".

In summary, it can be stated that the structural outlines of the Olary Province consist of a set of regional folds having an east-northeast orientation, crossed at a high angle by a set of parallel axial flexures orientated north-west. These are clearly an effect of the unequal behaviour of complex tectonic bodies during compressional phases and reflect the different degree of competency, rigidity and volume of rocks involved.

4.2. STRATIGRAPHY.

The main rock types found within S.M.L. 269 are schists, quartzite bands and minor hornfels together with scattered pegmatites and granitic bodies. These metasediments have been tentatively correlated with the "Ethiunda calc-silicate group" by the S.A. Department of Mines.

Outcrop in the area examined is sparse and generally overlain by a thin veneer (5'-10') of reddish, residual or alluviul clayey sand of recent deposition.

The proposed stratigraphic succession from oldest to the youngest formation is as follows :-

PROPOSED STRATIGRAPHIC SEQUENCE

PROTEROZOIC – ARCHAEN (Undifferentiated) — GRANITIC – ROCKS

Ap	Light coloured medium to coarse-grained aplitic granite & pegmatite
Ag1	Pale-pinkish coarse-grained garnetiferous granodiorite
Ag	Pale-pinkish coarse-grained granite.

ARCHAEN – METASEDIMENTS — WILLYAMA – COMPLEX

h	Grey to fawn & buff, fine to medium-grained mica schists (strongly kaolinized in vicinity of mine workings) with some diopsidic hornfels.
As7	
As6	Pyritic horizons heavily iron-stained in surface exposures
c c	Light grey medium-grained chiastolite schist.
As5	Dominantly grey to grey-green & brown medium-grained mica shists locally tourmalinised adjacent to granites
h h	Low grade fine-grained, dark grey, graphitic slightly pyritic hornfels developed in mine area. +
As4	White to brownish fine to medium-grained pyritic ocassionally micaceous quartzite heavily fractured & iron stained in part
	Grey-green to brown fine to medium-grained mica schist
	Brownish fine-grained more friable quartzite
c c	Grey fine to medium-grained chiastolite schist
	Greenish grey to reddish quartzite with black hematite bands. +
As3	Grey, brownish & mauve fine to medium-grained mica schists with few thin white fine-grained sandstone interbeds
h h	Diopsidi hornfels.
As2	Greyish quartzite with bands of hematite & magnetite. +
	Brownish, fine-grained flaggy quartzite
	Greyish to brownish fine-grained flaggy quartzite
As1	Brownish, grey to grey-green & purplish medium-grained mica schist
	White fine-grained quartzite with thin hematite bands +

4.3 DISTRIBUTION & DESCRIPTION OF ROCKS.

(A) ARCHAEAN METASEDIMENTS.

As1 Unit.

The oldest recognised unit (As1) consists dominantly of a brownish to greyish, grey-green and purplish fine to medium-grained mica schist with interbeds of a white to pale brownish sandstone. Out-crop of this unit is confined to the extreme south west side of the S.M.L. Only isolated outcrop of thin sandstone bands and associated float is found to the north.

The schist exhibits a well developed schistosity and in some localities a secondary cleavage has resulted in chevron folding. In the southern area of outcrop the unit has been considerably disturbed probably due to faulting and granitic intrusion. At the top, the schist is medium-grained with the development of a lenticular brownish fine-grained well cemented micaceous sandstone.

The sandstone appears to vary greatly in thickness but its lithology remains constant. At times the sandstone carries thin bands of a few millimeters thick of a fine grained black sand (90% hematite and 10% magnetite) highlighting bedding and occasional micro cross-bedding. The enclosing rock appears more cherty in character and contains neglible copper.

As2 Unit

The schist is directly overlain by a zone of banded iron formation of varying widths up to 100 feet. This consists of greyish quartzite with a variable quantity of hematite and magnetite arranged in parallel bands indicating the original bedding. The hematite-magnetite content varies in the individual bands, the margins of which appear to be gradational. Medium to coarse anhedral to subhedral grains of magnetite and hematite are fairly common. Several analyses reveal negligible copper content in this unit. 44

Because of its petrological characteristics, this band forms prominent and characteristic outcrops in the area and provides an excellent marker bed. Like the unit below (As 1) the banded iron formation is only recognised on the western side of the area and no trace of outcrop is seen on the east. It has been correlated with other occurrences within the Olary Province by the S.A. Department of Mines and is tentatively equated with the Banded Iron Formation in the Broken Hill area to the east.

As 3 Unit

Above this band and occurring on both the eastern and western sides of the area are a group of fine to medium grained schists (As 3), varying greatly in colour, but usually grey, brown or mauve. Chiastolite porphyroblasts up to 4" long and 3/4" diameter are developed in the schist and form abundant widespread float to the NE of the mine area and over a limited area west of the mine.

Within this schist unit are scattered outcrops of fine-grained quartz plagioclase calc-silicate hornfels, containing up to 5% hematite (after magnetite) concentrated in the calc-silicate bands. Coarse grained diopside occurs in bands more or less parallel to the bedding and is largely replaced by actinolite-tremolite which in turn shows replacement by chlorite.

A mile to the SE of the mine, pits have been sunk on a malachite-stained calc-silicate.

1,600' W of the mine workings on line 12S is a dark grey finegrained hornfel lacking in many of the calc-silicate minerals. Several pits and trenches have been sunk on a band of brown crypto-crystalline quartzite in this area, that contains small irregular pockets of limonite-hematite and is stained with malachite and chrysocolla. An analysis of this rock gave 0.87% Cu.

Located near the top of the unit is a 50 foot wide band of a greenish - grey to reddish quartzite with fine anhedral grains of hematite and magnetite. The hematite-magnetite unit contains numerous small cavities frequently stained with limonite occasionally associated with a pale green mineral, probably malachite. A sample yielded 490 ppm Cu and 2 ppm Ag. This band is only recognised in the SW of the area. 45

As 4 Unit

Stratigraphically above the As3 unit is a schist and quartzite unit (As4), which has a maximum thickness of 600 feet.

Within this unit are two quartzite bands which are white to brown in colour, fine-grained and well cemented. Each band is about 100 feet wide. The lower band is less resistant, rarely outcrops, and is only recognised in the western part of the area.

The upper quartzite band can be followed northwest from the mine area and in the vicinity of 24N - 32W is found to be strongly fractured and iron stained. Samples from several localities in this band reveal the presence of fine euhedral pyrite grains. A petrographic examination of sample DRM 189 (from 28N - 52W) reveals the presence of secondary quartz carrying iron oxides and pyrite. Analysis gave 460 ppm Cu in this sample. Other samples from this band gave up to 0.1% Cu.

Auger drilling on lines 12N @ 10W - 15W and 16N @ 14W to 20W has revealed a zone of kaolin extending about 100 feet either side of the upper quartzite band. At 26N - 52W both the upper and lower quartzite bands are faulted and close to the fault an exploratory shaft and several trenches have been sunk on a copper stained red chert band associated with the quartzite. At this locality and along the northern edge of the quartzite outcrop is a small area with abundant float of diopside with actinolite alteration.

In the vicinity of 40N - 84W and 60N 50W the unit is again obvious as a brownish fine to medium grained micaceous, somewhat friable, sandstone which has a maximum width of 200 feet.

To the south in the vicinity of 36S - 00 the band is more typically dark grey-green hornfels with a scattering of calc-silicate minerals and disseminated hematite, surface samples reveal a few small pyrite crystals. In the vicinity of 68S 10E are scattered outcrops of a white fine-grained thinly bedded sandstone which is thought to be an equivalent of As4 but is open to speculation due to lack of continuous outcrop and characteristic lithology.

Separating the two quartzite bands of unit As 4 is a grey-green to brown schist which is seen as calc-silicate hornfels from auger drill holes on line 36S. This schist also underlies the quartzite bands.

As5 Unit.

As 5 overlies As4 and consists of schist with hornfels developed in the mine area. The schists are mainly grey-green to brown in colour with a well developed schistosity. Northwest of the mine area the schist is chiastolite and andalusite bearing.

The mine area itself is located in an altered quartz-plagioclase grannular siltstone which exhibits a micro-hornfels texture. A number of thin sections of this material has revealed a trace of pyrite and a little hematite often associated with traces of malachite. These siltstones are slightly carbonaceous but one sample (DRM 174) carries 35% graphite. The graphite occurs as minute flakes and grains which average in size from 0.005 mm to 0.01 mm disseminated through the rocks with a tendency to concentrate in some bands, in streaks along the foliation plane and along intergranular boundaries of quartz.

The siltstones and schists of the mine area characteristically contain up to 7% rutile which has been invariably altered to leucoxene.

Included within these siltstones are several white, frequently malachite stained highly siliceous bands rarely more than 5' in width which have been identified as quartz-chlorite and quartz-biotite hornfels. The malachite staining is associated with clayey vughs and bands which suggests a genetic relationship between the areas of kaolinization and copper mineralization. In sample DRM. 185a (quartz-biotite hornfels) minute subrounded grains of chalcopyrite associated with intergranular cellular limonite were observed in the thin section. The presence of chalcopyrite also suggests a genetic relationship between mineralization and a period of metasomatism which followed the metamorphism. Similar siliceous bands are found between 16N and 24N to the north of the mine area within the schists and here also they are copper stained.

A sample (DRM.164) taken northeast of Crawford Shaft is an altered quartz-sillimanite-graphite schist. The rock consists mainly of inter-fingering wavy lamallae and fine lenses of quartz, sillimanite (15% - 20%), graphite (10% - 15%) and an undetermined clay mineral. The presence of sillimanite indicates metamorphism under moderately high pressures and high temperatures.

Also interbedded amongst the siltstones and schists is a calcareous phase represented along the granodiorite contact as a diopside-microcline granulitic schist (DRM.190) composed of 50% diopside, 45% microcline-perthite, 5% plagioclase, with sphene and apatite accessories. The mineral assemblage suggests deriviation by fairly high grade thermal metamorphism of a siliceous-dolomitic argillite. The siltstones and schists show an increasing grade of metamorphism from east to west, well illustrated on line 00. This appears to signify an increasing grade of thermal (contact) metamorphism.

As6 Unit.

Lying above the schist is an "ironstone gossan" unit (As6) averaging 20' in width and consisting of two main bands 3-4 feet in width and generally 10' apart. Between and on either side of these bands is a zone of kaolin which extends up to 30' beyond the "ironstone gossan" unit. Several other "ironstone gossan" bands are observed but they do not appear very continuous, unlike the two main bands which can be traced over considerable distances. The unit forms very prominent and characteristic outcrops in the area and defines the syncline which is the main structural feature of the area.

A few samples have revealed the presence of pyrite and it is believed that these bands were originally pyrite -rich horizons occurring as interbeds among the original shales and slates. In the vicinity of the mine, the band carries notable quantities of copper but away from the mine area it carries much less. Silver values, however, are consistently high and are rarely below 4 ppm.

Mapping along the western limb of the syncline revealed the presence of a number of small scale faults in the mine area which appear to have a radial pattern.

As7 Unit.

The youngest Archaean unit recognised occupies the syncline outlined by the "ironstone gossan" formation and is a grey to brown and mauve mica schist, strongly kaolinized and bleached, especially to the east of the mine workings.

Southwards, several isolated outcrops of diopside hornfels are encountered, one in the vicinity of line 44S being associated with malachite staining. Petrographic work indicates scattered malachite in shears and suggests that it represents a recent intrusion into a line of weakness.

(B) GRANITES - GRANODIORITES - PEGMATITES :

(i) Granites, Granodiorites.

A small granite pluton is located in the southwestern part of the area and is elongated along a fault line. This fault is supported by data from the magnetometer survey carried out in conjunction with mapping. The granite itself is pale-pinkish in colour, coarse-grained and is somewhat weathered in outcrop.

Adjacent to and west of the mine area is a limited outcrop of pale pinkish coarse-grained garnetiferous granodiorite (Ag1). Petrographic work reveals 1% garnet present, largely corroded and replaced by pleochroic muscovite and scarce tremolite. The rock (Ag1) has had a probable history of early contamination indicated by presence of garnet. This is somewhat substantiated by the presence of skarn type material in the vicinity of 4S, 5W (DRM 190).

A similar lens-like body with an almost identical petrology lies a little to the north except that there is a difference in feldspar assemblage; the rock containing 20% plagioclase (of albite-oligoclase composition) and 40% microcline with some perthite. One sample of this material carries 5% - 7% tourmaline.

(ii) Pegmatites

Numerous small intrusive lenses of aplitic granite and pegmatite (Ap) are scattered throughout the area. Most are medium- to coarse-grained, pinkish in colour and, like the garnet granodiorite, show no wall rock alteration indicating a low temperature emplacement. Several of these bodies in the vicinity of the mine workings are observed to carry up to 10% tourmaline. Analysis by AAS on several of these granites has revealed no significant copper content, however, a light coloured medium-grained aplite on the eastern flank of the banded iron formation (As2) just outside S.M.L. 269 on 32N yielded 200 ppm Copper. Also scattered throughout the area, especially in the northern half, are numerous small barren quartz reefs and auger drilling adjacent to a number of these revealed a halo of kaolinization.

Zones of kaolinization are fairly common in the area and are possibly the result of metasomatic activity during or after the period of granite intrusion. An extensive zone is found on both sides of the syncline formed by the "ironstone gossan". These zones are up to 30 feet in width and are always associated with this band. Generally the kaolin carries low copper values. A zone of kaolinization extending northwards from the nose of the syncline has copper values on the order of 100 - 200 ppm. Augering revealed another zone of kaolinization either side of the quartzite band (As4) in the vicinity of 16N - 17W, but this contains negligible copper values. In the northern half of the syncline, the sediments lying above the "ironstone gossan" have been strongly kaolinized but carry no significant copper mineralization.

The origin and time of emplacement of these granitic bodies is unknown. They may have been derived from anatectic granites but this has not occurred in-situ, indicated by the sharp wall rock contact with the surrounding metasediments. The results of petrographic examination are not conclusive; one sample of garnitiferous granodiorite (DRM 35) examined by AMDEL, S.A. is suggested as having a metamorphic origin because of the nature of the plagioclase twinning. However, two samples of aplitic granite (DRM 167, 168) examined by the petrographic department of McPhar Geophysics have typical igneous characteristics.

4. 4 STRUCTURAL GEOLOGY.

A detailed structural analysis of the area is extremely difficult because of two main factors, lack of outcrops and lack of bedding or bedding features. From the limited information available it is thought that the metasediments become younger eastwards. The distribution of units especially in the southern part of the area indicate a complicated structural environment.

(a) Folding

The dominant structure in the area is an overturned, isoclinal fold plunging at a moderate angle to the south (f1). The fold is well defined by the ironstone gossan band east of the mine workings. Northwest of the workings there is evidence of secondary folding along an east-west axis (f2). This secondary fold appears to plunge to the east.

Evidence from the southern part of the area suggests a small anticlinal ridge parallel to the main f1 fold axis and situated west of it.

A third set of small folds, f3, are evident in the As2 banded iron formation and in the hornfels of the mine area where they plunge at 70° - 80° to the northeast. Movement on the strongly kaolinized As5 hornfels has probably affected this fold pattern and it is believed that the concentration of copper in the Meehan and Day shaft areas is associated with these folds.

Numerous small overturned drag folds striking 210° and plunging steeply south southwest can be recognized in the mine workings. These folds are also overturned toward the west.

The direction of strike of the well-developed schistosity, 010 - 030°, in the lease area suggests that it developed simultaneously with the generation of the f1 folding.

(b) Faulting.

Faulting in the area is classified as major (F1) and minor (F2) and these are in a general way evident on the plot of magnetometer data. With one exception the F1 faults lie in the southern part of the area where they form an intersecting pattern, striking 075° and 115°.

The F2 faults show a roughly radial arrangement and are readily observed in the ironstone gossan band on the western limb of the syncline. The origin and the significance of this radial arrangement of F2 faults is not known, but they may be connected with the f2 fold generation.

The structure in the southwest part of the lease has been further complicated by the intrusion of granite and granite pegmatite, and is still not fully understood.

In general the quartzites are strongly fractured with the fractures showing no observable strike pattern. In the hornfels well-developed schistosity is present in the lower-grade rock but is absent in the higher-grade hornfels.

4.5. MINERALIZATION.

The copper mineralization in the area appears to have its distribution directly controlled by the hornfels, in particular by the quartz-chlorite, quartz-biotite and similar highly siliceous hornfels. The results from the geochemical augering programme reveal the strong association between copper mineralization and hornfels especially in the mine area from line 12N to line 12S where it occurs over a width of 300ft-400ft. The mineralization observed outside the mine area is also associated with this rock type, and is confined to the As3 and As5 schist-hornfels units. The exact nature of this relationship is not known but the chemical composition and/or the grain size may be a determining factor in controlling the mineralization. The mineralization outside the mine area takes the form of malachite and chrysocolla stainings and coatings along cracks and fractures in the As3 and As5 rocks but no visible sulphide mineralization was noted in direct association.

However in the mine area chalcopyrite was detected in a sample of a quartz-biotite hornfels (DRM 185a) during petrological examination, and a genetic relationship between mineralization and a period of metasomatism which followed the metamorphism has been suggested. The As3 and As5 rocks observed in trenches and pits frequently reveal an aureole of moderate kaolinization and silicification (giving the dark grey hornfels a bleached and porcelainic character) extending up to 5ft. either side of them. It appears from this evidence that these highly siliceous bands were preferentially attacked during metasomatism.

This is further supported by the underground mapping of Dickinson (S.A. Dept. of Mines 1941) who found that the Meehan's shaft ore body lay "on a slate/sandstone contact on the axial plane of a drag fold which pitches nearly vertical". The "slate/sandstone" contact referred to by Dickinson is obviously the contact between the dark grey hornfels and white quartz biotite or chlorite hornfels. He observed that the "ore minerals replace the country rock, in most cases a fine-grained sandstone on a slate-sandstone contact". The zone of oxidation extends to approximately 200' where sulphides become rapidly dominant. The mineral assemblage of the oxidised zone is composed mainly of chalcocite, tenorite and cuprite with subordinate malachite and olivenite. The olivenite is very abundant at the surface as a lemon-yellow powder occuring over a wide area but appears to be most frequent in close proximity to the zone of kaolinization on the eastern side of the mine workings. A little chrysocolla is also present at and near the surface. Gypsum also occurs within the kaolinized zones.

The sulphide ores consist of chalcopyrite and pyrite which according to Dickinson bear a ratio of four to one.

In Day Shaft the ore body, although of a more continuous character, has a width and mineral assemblage comparable to Meehan's. Like Meehan's it has structural control, but has no apparent mineralogical control as it conformably follows the bedding planes in the dark grey fine grained hornfels bulging in the vicinity of drag folds or faults. The ore body dips approximately 60°SE and is surrounded by a bleached halo 2ft - 3ft in width. The footwall is extremely talcy and is strongly slickensided.

These observations would seem to indicate that the copper mineralization is controlled primarily by a favourable rock type with structural control responsible for concentrating the ore into bodies of economic importance.

The abundant kaolin, seen especially in the mine area and associated with the "ironstone-gossan" bands (As6), is probably the result of metasomatic activity which followed the intrusion of the granite. The outcrops of barren quartz lenses and associated kaolin aureoles probably also represent this phase of activity. As a general rule the zones of kaolinization are lacking significant copper values, possibly due to leaching, however in the kaolin zone immediately north of the syncline formed by the As6 unit significant copper values detected during the augering programme do exist but they do not persist further northwards.

The origin of the copper is not known, but the nature of enclosing hornfelsic rocks indicate an environment in which syngenetic copper could form. Analyses on hornfels apparently unaffected by the metasomatism reveal significant quantities of copper (frequently as high as 0.1% Cu). Petrological descriptions of these rocks do not reveal any visible copper mineralization, although copper could well occur amongst the fine grained black opaques as chalcocite and escape undetected.

5. EXPLORATION.

5. 1. GENERAL.

A systematic approach was made to the prospecting of S.M.L. 269. A grid was pegged over the entire S.M.L. using 400 ft. line spacing. Detailed geological mapping in the mine area was followed by auger sampling. The results of the auger sampling together with trench sampling suggested a possible wide zone of mineralization. This zone on the surface is strongly kaolinised with minor copper staining in places.

Because of the considerable depth of weathering and oxidation - in Day Shaft the oxidised zone extends to about 200' in depth, it was decided to proceed with an induced polarization (I.P.) survey. An orientation survey was first run on line 8S using 300', 200', 100' and 50' electrode spreads. It was found that the 200' spreads gave the more conclusive results so that most of the remaining lines of the survey were covered using this electrode spacing. Some lines were detailed using either 100' or 50' electrode spreads.

A total of 7,576 feet of shallow auger drilling has been completed and 800 soil samples analysed. During the soil sampling programme approximately 3,500 ft. of costeans were excavated and channel sampled, the samples being analysed geochemically for Cu and various other selected elements. A considerable number of rock samples were also collected during the geological mapping and these were analysed geochemically. Some of the rock types were examined petrographically.

Geological mapping was extended to cover the entire S.M.L. and at the same time a magnetometer survey, using a McPhar M700 Flux Gate Magnetometer, was undertaken. Scintillometer readings were taken on lines 12S to 12N extending 1,000 feet either side of the baseline. A trial line using a McPhar Reconnaissance Electromagnetic Unit (R.E.M.) was run as a check on the I.P. results. Several possible E.M. conductors were located within the zone of the I.P. and geochemical anomaly on Line 00.

Results of the above programme have been most encouraging and are considered worthy of testing by means of a diamond drilling programme.

5.2. GEOLOGICAL MAPPING.

The Geology is discussed in detail in Section 4 of this report. For the most part, rock exposures are rather limited so that an adequate picture was rarely obtained of the geological environment in which the lodes and mineralization are developed. Day shaft is accessible and was examined and sampled. An attempt was made to examine the workings of Meehan shaft but because of the dangerous condition of this shaft no underground mapping was carried out.

The mapping of the S.M.L. was done at a scale of 1" = 400' to assist in the interpretation of the geochemical and geophysical surveys and to delineate the extent of the mine rocks. Structural interpretation is difficult and at this stage has not been completely resolved. The proposed drilling is expected to provide further information which will assist in interpreting the structure.

5. 3. GEOCHEMICAL SURVEY.

5.3. (1) Methods   Late in January, 1969 a power augering programme was commenced. This entailed boring into, or close to bedrock and collecting of a sample which was almost certainly a residual soil sample.

Auger sampling was considered the most reliable means of geochemical prospecting because much of the overburden in the area is transported. Anomalous values arise because of mechanical dispersion. These are usually surface anomalies and are not detected in the subsurface samples. At the commencement of the auger drilling programme Line 00 from 1E to 41E was sampled on the surface as well as at depth in order to test the effects of the overburden. Results are shown in the following table :

TABLE 2.

COMPARISONS

DOME ROCK S.A.

Check Analysis of Soil Samples.

Sample No,	McPhar A.A.S. analysis Power Auger Samples		AMDEL Spectrographic Fower Auger Samples		McPhar A.A.S. analysis Surface Soil Samples	
	Depth	Cu. ppm	Depth	Cu ppm.	Depth	Cu. ppm
00-1E	3'0"	1900	3' 0"	1000	0' - 6"	1100
2E	22' 0"	50	22' 0"	120	"	90
3E	23' 0"	25	23' 0"	30	"	80
4E	21' 0"	35	21' 0"	60	"	60
5E	11' 0"	10	11' 0"	50	"	65
6E	19' 0"	10	19' 0"	30	"	50
7E	30' 0"	10	30' 0"	30	"	55
8E	25' 0"	5	25' 0"	10	"	35
9E	17' 0"	10	17' 0"	3	"	50
10E	25' 0"	10	25' 0"	150	"	40
11E	25' 0"	25	25' 0"	120	"	30
12E	25' 0"	30	25' 0"	100	"	30
13E	11' 0"	60	11' 0"	150	"	20
14	8' 0"	130	8" 0"	80	"	25
15	16' 0"	75	16' 0"	120	"	60
16	13' 0"	50	13' 0"	50	"	25
17	20' 0"	30	20' 0"	80	"	25
18	20' 0"	20	20' 0"	60	"	20
19	20' 0"	25	20' 0"	50	"	25
20	20' 0"	30	20' 0"	40	"	15
21	20' 0"	20	20' 0"	40	"	15
22	30' 0"	20	30' 0"	40	"	10
23	16" 0"	20	16' 0"	30	"	10

TABLE 2. Contd.

Sample No.	McPhar A.A.S. analysis Power Auger Samples		AMDEL Spectrographic Power Auger Samples		McPhar A.A.S. analys Surface Soil Samples	
	Depth	Cu. ppm	Depth	Cu.ppm	Depth	Cu. ppm
24	20' 0"	35	20' 0"	60	0 - 6"	10
25	20' 0"	25	20' 0"	30	"	15
26	20' 0"	15	20' 0"	40	"	25
27	15' 0"	30	15' 0"	40	"	20
28	11' 0"	25	11' 0"	40	"	25
29	6' 0"	20	6' 0"	20	"	25
30	6' 0"	45	6' 0"	30	"	40
31	11' 0"	80	11' 0"	80	"	35
32	15' 0"	50	15' 0"	50	"	30
33	11' 0"	35	11' 0"	60	"	35
34	12' 0"	60	12' 0"	40	"	40
35	19' 0"	25	19' 0"	20	"	45
36	20' 0"	20	20' 0"	40	"	40
37	11' 0"	20	11' 0"	50	"	35
38	14' 0"	30	14' 0"	30	"	50
39	43' 0"	25	43' 0"	30	"	330
40	23' 0"	10	23' 0"	40	"	120
41 E	50' 0"	30	50' 0"	30	"	90

The field procedures for the auger sampling programme were straight forward. The sample was collected from the bottom of the auger flights after they had been pulled up. It was then placed in a pre-numbered calico bag which was forwarded to McPhar Geochemical laboratories for analysis. Notes on the colour, soil type, rock chip content and the probable geology were made on steriotyped field sheets which were filled out in duplicate.

The sample interval was generally 100 feet except in a few instances where sampling was impractical or where the interval was narrowed to 25 feet to better delineate the anomaly. Line interval was usually 400 feet.

All samples were prepared for analysis at the McPhar Laboratories. They were then analysed for Cu using Atomic Absorption spectrophotometry. Some batches of samples were sent to the Australian Mineral Development Laboratories and analysed by emission spectrography for Cu, Pb, Zn, Sn, Cd, Bi, Ag, Au, Ga, Ge, As, Sb, Co, Ni, Cr, V, W, Mo, Mn, Ta, Nb, Be, Th, Pt, Pd, Os, Ir, Rh and Ru. Some of the anomalously high Mo, W and Bi results were later checked and confirmed by McPhar. A comparison of McPhar and AMDEL results is shown in the following table.

TABLE 3.

DOME ROCK S.A.

Comparison of AMDEL & McPHAR Results.

	Cu AMDEL	Cu McPHAR	Mo AMDEL	Mo McPHAR	As AMDEL	As McPHAR	W AMDEL	W McPHAR	Bi AMDEL	Bi McPHAR	Co AMDEL	Co McPHAR
$12^N - 01^E$	400	590	30	10	1000	1000	50	2	3	20	300	50
$- 12^E$	8000	8500	40	10	6000	1000	50	2	3	20	1000	800
$- 03^E$	300	780	10	10	1000	1000	50	5	1	20	300	200
$- 04^E$	400	160	3	5	3000	1000	50	2	3	20	300	260
-05^E	1000	200	500	60	1000	300	50	10	1	40	200	60
$- 06^E$	200	120	100	40	400	200	700	240	30	40	30	40
$- 07^E$	400	60	3	10	400	120	50	100	15	20	50	30
$- 08^E$	500	60	50	10	800	600	50	10	100	200	10	40
$- 09^E$	400	130	50	60	500	300	100	100	2	45	10	50
$12^N - 10^E$	400	70	10	10	2000	1000	50	70	1	20	10	15
$24^N - 05^E$	60	25	3	2	2	50	50	10	-	-	10	5
$- 04^E$	120	40	5	2	110	50	100	50	-	-	10	5
$- 03^E$	200	120	5	2	30	50	50	2	-	-	70	15
$- 02^E$	200	160	3	2	50	50	50	2	-	-	30	10

TABLE 3. (Contd.)

DOME ROCK S.A.

	Cu AMDEL	Cu McPHAR	Mo AMDEL	Mo McPHAR	As AMDEL	As McPHAR	W AMDEL	W McPHAR	Bi AMDEL	Bi McPHAR	Co AMDEL	Co McPHAR
$24^{N}-01^{E}$	100	20	30	2	2	50	50	10	-	-	100	30
$24^{N}-00^{E}$	120	70	3	2	90	80	50	2	-	-	70	5
$8^{N}-03^{E}$	400	320	3	2	3000	1000	-	-	1	20	-	-
-04^{E}	150	35	40	2	150	300	-	-	15	20	-	-
-05^{E}	50	15	3	2	50	2	-	-	1	20	-	-
-06^{E}	70	30	20	2	50	10	-	-	1	20	-	-
-07^{E}	120	15	50	2	50	10	-	-	200	20	-	-
-08^{E}	100	15	20	5	50	30	-	-	1	20	-	-
-09^{E}	60	10	3	2	50	2	-	-	40	20	-	-
$8^{N}-10^{E}$	400	140	300	70	400	300	-	-	1	30	-	-
$00-15^{E}$	50	25	30	2	50	35	50	2	60	20	-	-
$00-14^{E}$	120	60	5	2	100	100	50	2	10	20	-	-

A total of 787 auger holes were drilled to an average depth of 10 feet.

5. 3. (2) Results and Presentation. All samples were analysed for copper (Cu) and the results were plotted on a grid plan using the same scale as the geological plan, 1" = 400 feet. There were clearly two distinct populations of values in the results and on this clear cut division a threshold value of 100 ppm Cu was established.

Two types of anomalies were located :

(a) Anomalies with values well above threshold and assumed to be due entirely to copper mineralization.

(b) Anomalies which are fractionally above threshold, due to factors which have increased the high background values e.g. concentration of elements within an Fe or Mn enriched environment.

Plate 3 shows the results of the Geochemical Auger survey. The broad anomalies with peaks have been shown by the crosshatching of the varying intensities. The values below threshold were divided into low and high background 0-50 ppm and 51-100 ppm respectively. Values between 1-5 x threshold are classed as possibly anomalous while over 5 x threshold they are probably anomalous.

The main anomaly extends from about 14S to 16N and varies in width from 100' to 400'. It has a peak value of 9,800 ppm (0.98% Cu) with values of 7,500 8,500 2,800 and 1,400 common. The eastern edge of this anomaly is the "Ironstone Gossan" formation (As 6). This geochemical anomaly shows very good correlation with the Induced Polarization anomalies.

A second and much weaker geochemical anomaly is located on lines 00 and 4N at about 7E and extends north to line 16N at approximately 17E. This anomaly adheres closely to Unit As4. To assess fully the value of this anomaly further auger sampling is necessary. It appears at this stage that it is derived from a rather narrow source. The source, however, does appear continuous. A peak value of 1,700 ppm (0.17% Cu) does give this anomaly some potential.

Several other geochemical anomalies have been located but only a limited amount of follow up has been done and none of them warrant testing as yet. Should the drill holes of the proposed programme intersect ore grade mineralization these other anomalies can then be considered to hold potential.

5. 4. Geophysical Surveys. In March 1969, an induced polarization and resistivity survey was commenced by McPhar Geophysics Pty.Ltd., and was completed in April, 1969. During this survey a total of 20.5 line miles was surveyed excluding any detailed work.

Recordings were taken on the following lines, however, only the data plots for the lines where drilling is proposed accompany this report (See Plates 8-12 inclusive.)

TABLE 4 (Contd.)

Line	Electrode Intervals	From	To.
24N	200'	68W	36W
40N	200'	96W	26E
44S	200'	10W	22E
40S	200'	14W	32E
36S	200'	50W	92E
8S	200'	24W	24E
8S	300'	26W	22E
8S	50'	3W	4E
00	200'	76W	52E

All the anomalies located during this survey are shown superimposed on the geochemical results, (plate 3). Definite probable and possible I.P. anomalies are shown by solid, broken and dashed lines respectively. All lines from 12S to 12N within the zone outlined by the geochemical anomaly produced I.P. anomalies.

Minerals noted within this area which might give I.P. effects are pyrite, chalcopyrite, chalcocite, arsenopyrite, magnetite and graphite.. Within the area of the main geochemical anomaly (12S to 16N centred along the baseline) there is no magnetic anomaly so that it is unlikely that the I.P. effects have been caused by magnetite. Some samples which were examined petrographically contained varying and sometimes considerable amounts of graphite, e.g. (DRM 174 35% graphite).

Anomalies located on 12S, 8S, 00, 12N and 16N only will be discussed in this report as these are directly concerned with the proposed drilling programme.

Line 12S (Plate 10).

An apparently broad zone extends from 8W - 2E and appears to have a rather deep source. Only 200ft. spreads were run on this line. This is a strong I.P. anomaly but is only supported by a geochemical anomaly between 00 and 3.5E. It seems likely that most of the I.P. effects are due to either pyrite or graphite although there are possibly anomalous Cu values at 2E, 3E, and 6E.

Line 8S (Plate 11).

This line passes close to Day shaft where the zone of oxidation is known to extend to 200ft in depth. This line was surveyed using 300', 200', 100' and 50' electrode spreads. There are anomalous I.P. effects in the vicinity of the mine workings.

The 300' and 200' spreads were rechecked on this line and similar results obtained. A definite I.P. anomaly between 2W and 1E can be equated with the geochemical anomaly although the geochemical sampling has been limited because of the mine workings.

A small, weak geochemical anomaly between 6 Wand 7.5W has a coincident I.P. anomaly. This anomaly can be traced through as far as line 16N and is thought to be associated with unit As 4.

Line 00. - (Plate 8)

A strong I.P. anomaly from 2W - 2E corresponds to a probable geochemical anomaly. The geological structure here is considered very favourable for the deposition of ore and geochemical sampling supports a broad zone. The trench between 0.5E and 1.3E indicated 0.68% Cu over 84'6". Possible E.M. conductors have been located at 1E and 2E.

A second definite I.P. anomaly is located between 12W and 8W and this has a deep source. Both these anomalies indicate a rather shallow zone of oxidation although the abundance of chalcocite in the oxidised zone probably effectively masks this.

Line 12N. (Plate 9).

Again the anomaly is strong and probably deep. The best Metal Factors are on the n-4 recording. The anomaly is located between 2E and 4E on the 200' spreads with probable anomalies from 1W and 2E and 4E to 6E. On the 100' spreads the anomaly is from 2E to 3E with probable anomalies from 1.5E to 2E and 3E to 3.5E.

A possible anomaly having its surface projection between 4E and 5E has a weak coincident geochemical anomaly. The drill hole designed for this line should test this I.P. anomaly which appears to be due to the "ironstone gossan" band.

Line 16N. (Plate 12.)

Two definite I.P. anomalies were located using 200' spreads. Both these coincide with geochemical anomalies. A definite anomaly is located between 3E and 7E with probable anomalies from 0 to 3E and 7E - 9E. This anomaly indicates a possible broad source and is confirmed by a broad geochemical anomaly. It may be due entirely to the effects of the "ironstone gossan" band which forms the nose of a syncline near this locality. This anomaly could probably be best tested by a number of rotary percussion drill holes.

A second definite anomaly located between 20W and 16W is flanked by probable anomalies. A peak geochemical value of 1,000 ppm (0.1% Cu) was located in the auger drilling. Further followup work is necessary on this anomaly which is thought to coincide with Unit As 4.

6. DISCUSSION.

Results so far obtained indicate the presence of broad zones of mineralization within a sequence of schists, hornfels, sandstones and chert bands. The geochemical results appear to have been more useful than the induced polarization survey in indicating the limits of the zones of copper mineralization.

It may be possible to drill on geological information and geochemical anomalies once a "cut off" value has been evaluated. The source of the main anomaly appears to be the siliceous hornfels which has a normal threshold. The high Cu values obtained from samples of the "ironstone gossan" unit (As 6) are probably due to enrichment of Cu within an iron-rich environment i.e. to say the gossan band has acted as a precipitating agent mopping up any free copper ions. Silver values are also high within this unit.

Correlation of induced polarization and magnetometer data suggests the I.P. anomalies are caused by sulphide mineralization rather than the magnetic minerals, magnetite or pyrrhotite. The anomalies over the workings are strong and definite and other such anomalies along strike may also be correlated with mineralization.

8. REFERENCES :

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Department of Mines, S.A. "Electromagnetic Survey - Dome Rock Mine Area" D.M. 246/60. 1961.
by E. Moorcroft.

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"Part 11 - The Dome Rock Copper Mine"
by S.B. Dickinson.

Hawkes, H.E. and Webb, J.S. "Geochemistry in Mineral Exploration"
September, 1965.

APPENDIX

RECOMMENDATION FOR PRELIMINARY DIAMOND DRILLING PROGRAMME

DOME ROCK PROSPECT. S.A.

23rd July, 1969.

RECOMMENDATION FOR DIAMOND DRILLING.

The next stage in the Dome Rock exploration programme is diamond drilling. Three locations, in order of importance, have been chosen and these are listed below. Angle diamond drill holes are considered the best means of testing the geophysical and coincident geochemical anomalies and providing as much geological information as possible. It is important to gain structural information at this stage in order to determine the nature of the deposit.

Drill Hole Locations :

DDH - DRM No. 1.

This hole is to be located on Line 00 and collared at approximately 3E. With a 45^{o} depression the hole should pass well below the old workings of Meehan shaft. It is designed to test the I.P. anomaly and coincident geochemical anomaly. Two possible E.M. conductors were also located within the zone that will be tested.

DDH - DRM No.2.

Depressed at 50^{o} and located on Line 12N at 6E this hole should intersect the target area approximately 300 feet below Stn. 3E. This will test a strong geophysical anomaly between 2E - 4E with coincident high geochemical values. (8,500 ppm 0.85% Cu). This location is close to the nose of the supposed syncline and is well away from any old mine workings.

DDH - DRM No.3.

A strong I.P. anomaly is located between 0.5W and 2E on line 12S and the third hole is designed to test this anomaly and the coincident geochemical anomaly. This hole will be collared at about 4E and depressed @ 45°. The highest geochemical value is 9,800 ppm (0.98% Cu), and is located at 2E. Much of the I.P. effects may be due to graphite, thus the hole has been designed to best test the geochemical anomaly as well.

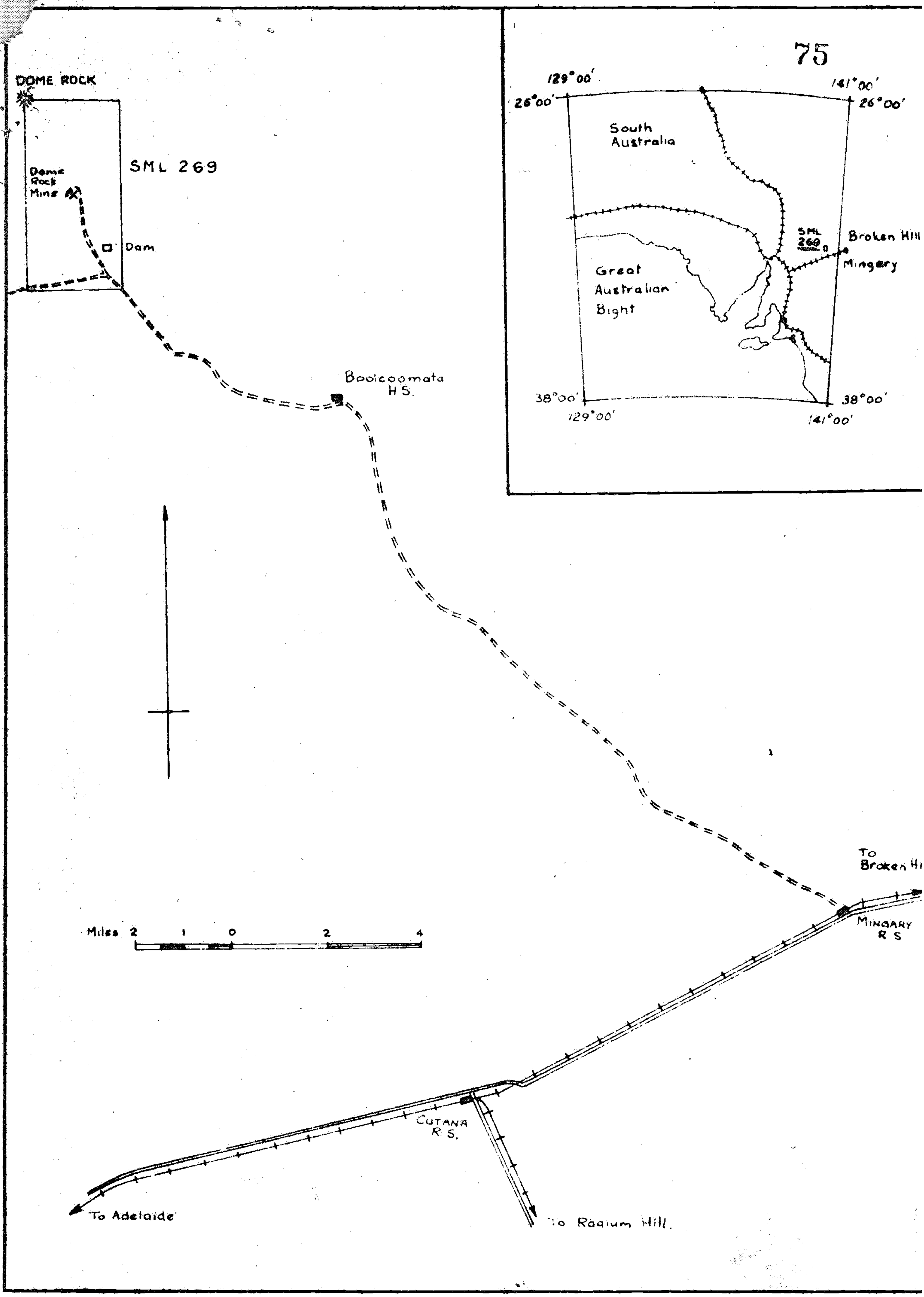

75
DOME ROCK
SML 269
Dome Rock Mine
Dam
Boolcoomata H.S.
129°00'
141°00'
26°00'
26°00'
South Australia
SML 269
Broken Hill
Mingary
Great Australian Bight
38°00'
38°00'
129°00'
141°00'
Miles 2 1 0 2 4
To Broken Hi
MINGARY R.S.
CUTANA R.S.
To Adelaide
To Radium Hill

PLATE 1

PROPOSED STRATIGRAPHIC SEQUENCE

PROTEROZOIC – ARCHAEN (Undifferentiated) — GRANITIC – ROCKS

Ap	Light coloured medium to coarse-grained aplitic granite & pegmatite.
Ag1	Pale-pinkish coarse-grained garnetiferous granodiorite.
Ag	Pale-pinkish coarse-grained granite

ARCHAEN – METASEDIMENTS — WILLYAMA – COMPLEX

h, As7	Grey to fawn & buff, fine to medium-grained mica schists (strongly kaolinized in vicinity of mine workings) with some diopsidic hornfels
As6	Pyritic horizons heavily iron-stained in surface exposures.
c c	Light grey medium-grained chiastolite schist
As5	Dominantly grey to grey-green & brown medium-grained mica shists locally tourmalinised adjacent to granites
h h	Low grade fine-grained, dark grey, graphitic slightly pyritic hornfels developed in mine area.
	White to brownish fine to medium-grained pyritic ocassionally micaceous quartzite heavily fractured & iron stained in part
As4	Grey-green to brown fine to medium-grained mica schist.
	Brownish fine-grained more friable quartzite
c c	Grey fine to medium-grained chiastolite schist
	Greenish grey to reddish quartzite with black hematite bands.
As3	Grey, brownish & mauve fine to medium-grained mica schists with few thin white fine-grained sandstone interbeds.
h h	Diopsidic hornfels.
As2	Greyish quartzite with bands of hematite & magnetite
	Brownish, fine-grained flaggy quartzite
	Greyish to brownish fine-grained flaggy quartzite
As1	Brownish, grey to grey-green & purplish medium-grained mica schist
	White fine-grained quartzite with thin hematite bands.

LEGEND

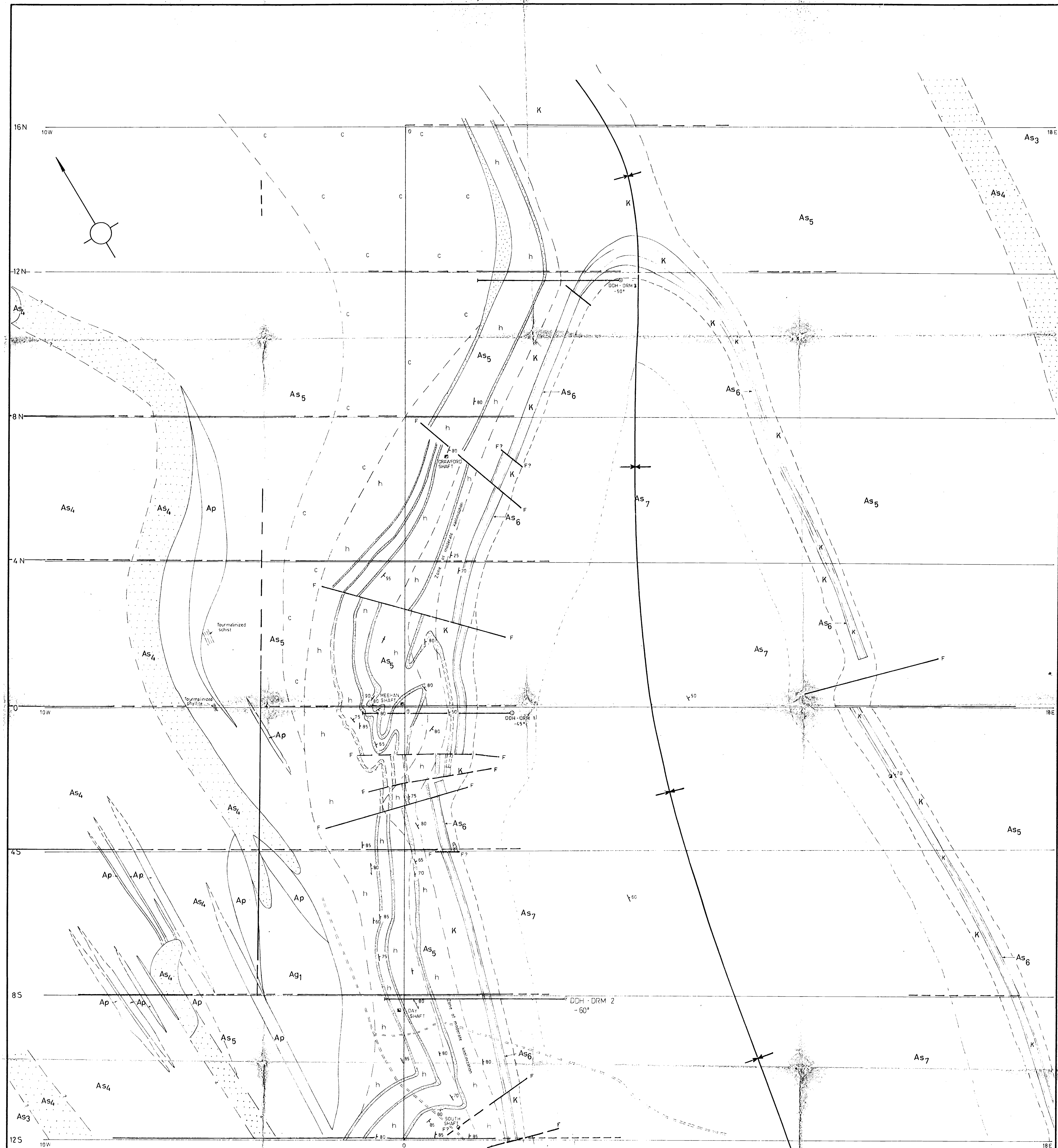
Geological boundary	Observed.	
	Inferred on basis of float.	
	Inferred	
Fault	Observed	F
	Inferred	F
Quartz outcrop		Qtz
Zone of Kaolin		K
Syncline		
Anticline		
Bedding	Strike and dip	60
	Vertical	
Schistosity		80°
Shaft		
Pit or trench		
Copper occurence.		Cu
Track		
Rock sample locations (Petrological description)		x 171
Proposed diamond drill hole locations and projections.		DDH – DRM 3
Rotary Percussion Holes (Drilled 1968)		RPH A – F
Rotary Percussion Holes (Drilled August – September 1969)		RPH 1 – 7

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.		
SML 269. DOME ROCK. Sth AUSTRALIA. GEOLOGICAL INTERPRETATION MAP.		
GEOLOGY BY	N. DUNCAN APRIL 69	DWG. No. SA - 9a
DRAWN BY	E. J. PARHAM 20·5·69	
REVISED		
SCALE	1 inch = 400 feet.	

ENV 1085
ENV 1085 - 1

PLATE 2


24N
12N
00
12S
24S
36S
48S
60S
72S
84S
96S
108S
72N
60N
48N
36N
24N
12N
00
12S
24S
RESULTS IN PPM.
0 - 50
51 - 100
101 - 500
500 - OVER
Surface Projection of I.P. Anomaly on 200ft. spreads, unless otherwise stated
Definite
Probable
Possible
400 200 0 200 400 800 1600 feet
TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.
SML 269. DOME ROCK Sth AUSTRALIA.
GEOCHEMICAL & GEOPHYSICAL ANOMALIES.
CONTOURED BY R. HORN & N. DUNCAN.
DRAWN BY K. RUDZINSKAS 11-6-69
REVISED
SCALE 1 inch = 400 feet.
DWG NO.
SA-12
PLATE 3
ENV 1085
ENV 1085 - 2



STRATIGRAPHIC COLUMN

PROTEROZOIC — ARCHAEN (Undifferentiated) — GRANITIC — ROCKS

Ap	Light coloured medium to coarse - grained aplitic granite & pegmatite
Ag	Pale - pinkish coarse - grained granite.

ARCHAEN — METASEDIMENTS — WILLYAMA — COMPLEX

As7 (h)	Grey to fawn & buff, fine to medium - grained mica schists (strongly kaolinized in vicinity of mine workings) with some diopsidic hornfels
As6	Pyritic horizons heavily iron - stained in surface exposures
As5 (c c)	Light grey medium - grained chiastolite schist
As5	Dominantly grey to grey - green & brown medium - grained mica shists locally tourmalinised adjacent to granites.
As5 (h)	Low grade fine - grained, dark grey, graphitic slightly pyritic hornfels with siliceous bands.
As4	White to brownish fine to medium - grained pyritic ocassionally micaceous quartzite heavily fractured & iron stained in part
As4	Grey - green to brown fine to medium - grained mica schist
As4	Brownish fine - grained more friable quartzite
As3 (c c)	Grey fine to medium - grained chiastolite schist.
As3	Greenish grey to reddish quartzite with black hematite bands
As3	Grey, brownish & mauve fine to medium - grained mica schists with few thin white fine - grained sandstone interbeds
As3 (h h)	Diopsidic hornfels.

LEGEND

Geological boundary	Observed / Inferred	
Fault	Observed / Inferred	F — F; F(?) — F(?)
Kaolin zone		K
Strike & dip of bedding		60
Shistosity		80
Shaft		
Track		
Syncline		
Surface projection I.P. Anomaly (on 200ft. spreads)	Definite / Inferred	
Proposed diamond drill hole locations and projections		DDH - DRM1 -45°

100 50 100 200 300 400 500 feet.

ENV 1085

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SML 269. DOME ROCK. Sth AUSTRALIA.
GEOLOGICAL MAP - MINE AREA

GEOLOGY BY	R.W. FIDLER JAN. '69	DWG. No.
DRAWN BY	K. RUDZINSKAS 14 · 5 · 69	SA - 10
REVISED	N. DUNCAN. APRIL '69	
SCALE	1 inch = 100 feet.	

ENV 1085 - 3

PLATE 4

Contours at 100 gamma intervals up to 1000 gammas then at 500 gamma intervals respectively.

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD

SML 269. DOME ROCK. Sth AUSTRALIA

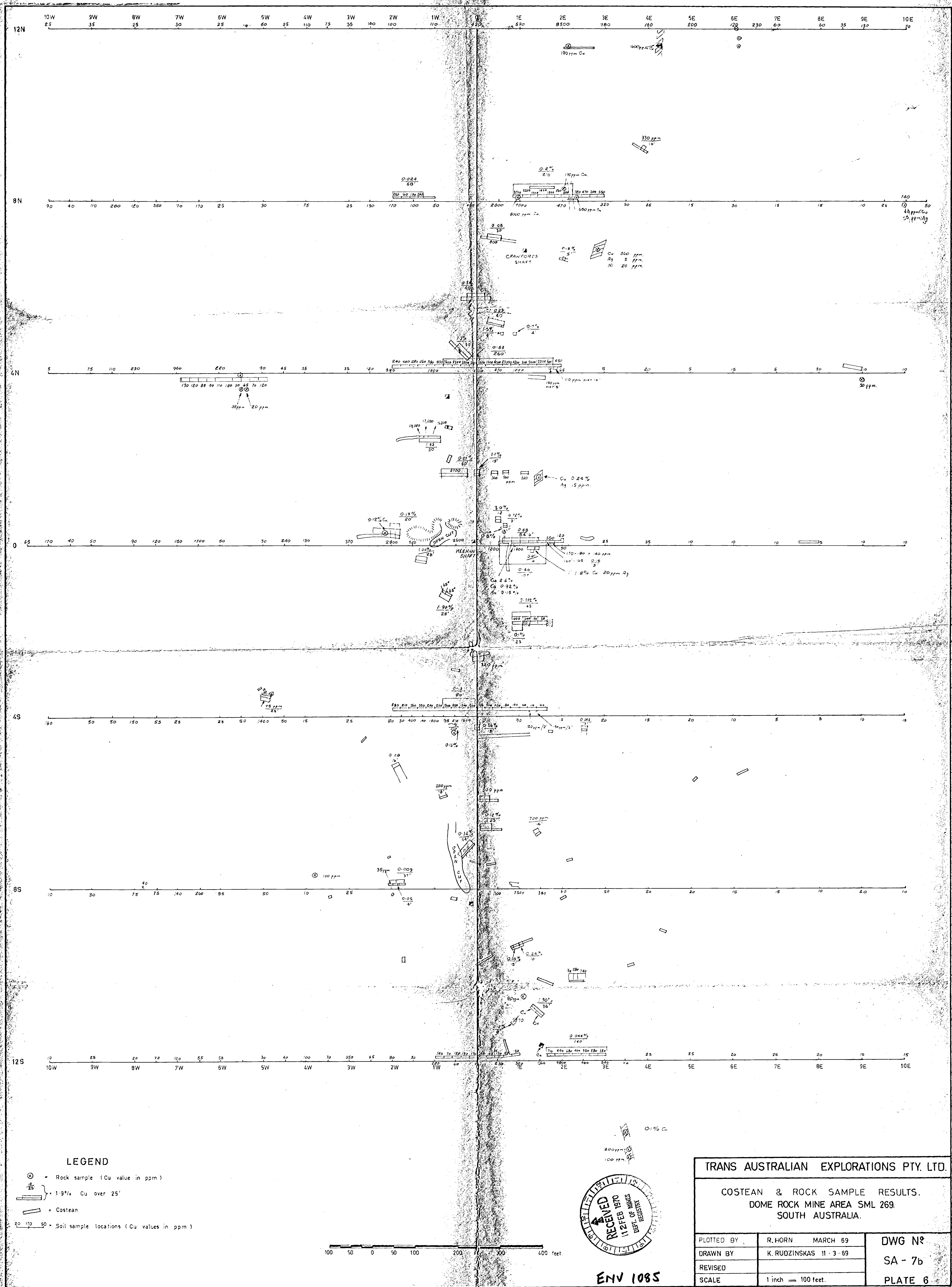
MAGNETOMETER SURVEY.

CONTOURS OF VERTICAL MAGNETIC INTENSITY

SURVEY BY	J. F. STAFFORD APRIL 69	DWG NO.
DRAWN BY	K. RUDZINSKAS 28·5·69	SA-11
REVISED		
SCALE	1 inch = 400 feet	

ENV 1085 - 4

PLATE 5


12N
8N
4N
0
4S
8S
12S
10W
9W
8W
7W
6W
5W
4W
3W
2W
1W
1E
2E
3E
4E
5E
6E
7E
8E
9E
10E
CRAWFORDS SHAFT
MEEHAN SHAFT
OPEN CUT
LEGEND
⊗ - Rock sample (Cu value in ppm)
1·9% Cu over 25'
- Costean
- Soil sample locations (Cu values in ppm)
100 50 0 50 100 200 300 400 feet
RECEIVED 11 FEB 1970 DEPT. OF MINES REGISTRY
ENV 1085
TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.
COSTEAN & ROCK SAMPLE RESULTS.
DOME ROCK MINE AREA SML 269.
SOUTH AUSTRALIA.
PLOTTED BY R. HORN MARCH 69
DRAWN BY K. RUDZINSKAS 11·3·69
REVISED
SCALE 1 inch = 100 feet.
DWG No SA - 7b
PLATE 6

ENV 1085 — 5

Surface projection of I.P. anomoly on 200' spreads unless otherwise stated. Definite Probable

100 50 0 50 100 200 300 400 feet.

ENV 10 5

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.

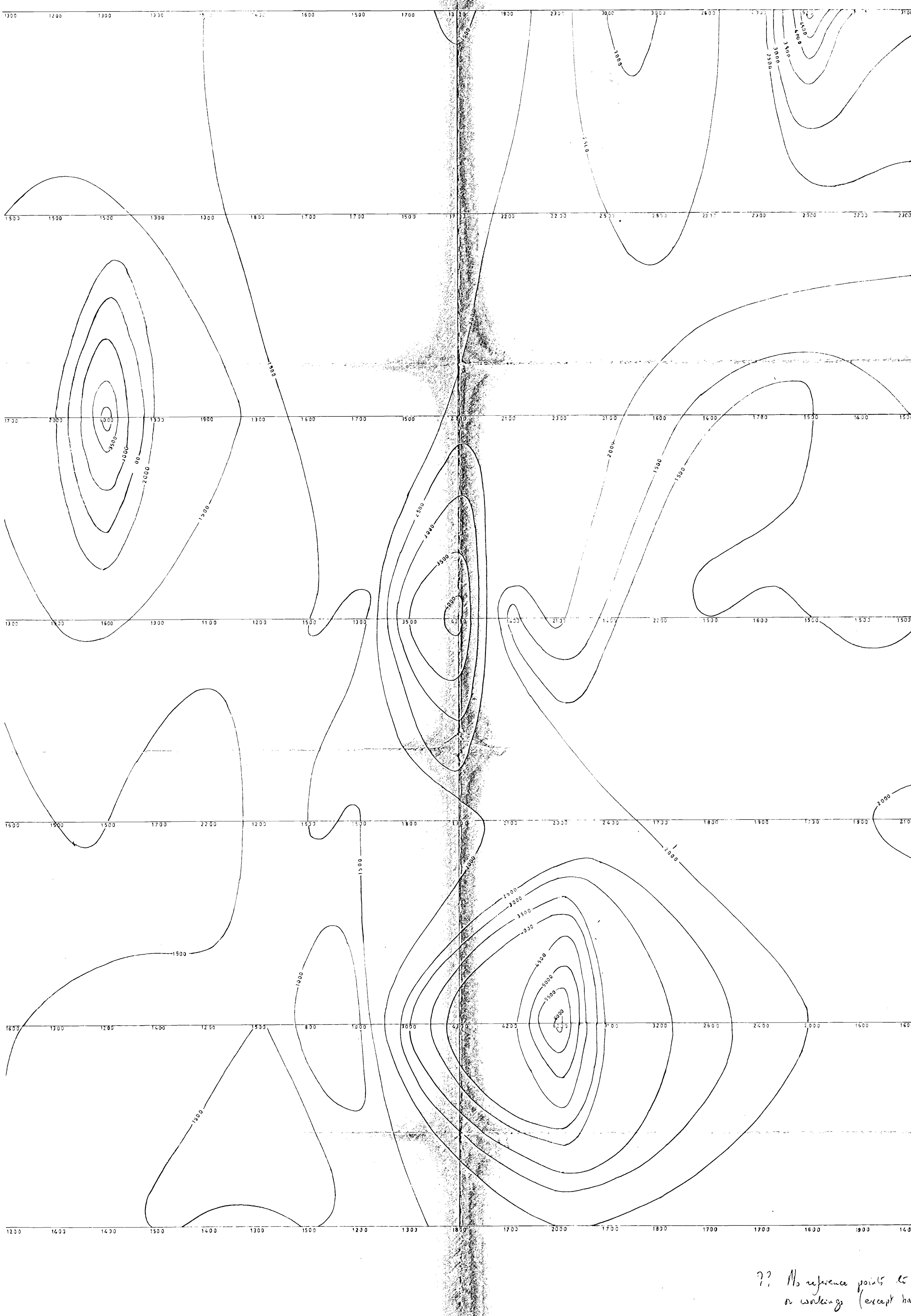
SML 269 DOME ROCK Sth AUSTRALIA.

ELECTROMAGNETIC SURVEY — MINE AREA.

CONTOURS BY	S.A. DEPT. MINES 3 · 6 · 60	DWG Nº
DRAWN BY	K. RUDZINSKAS 30 · 6 · 69	SA-13
REVISED		
SCALE	1 inch — 100 feet.	

ENV 1085 - 6

PLATE 7



?? No reference points to grid or workings (except baseline)

p. 14 Survey 12S to 12N extend 1000ft each side

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.

SML 269. DOME ROCK Sth AUSTRALIA.

SCINTILLOMETER SURVEY
MINE – AREA

CONTOURS BY	R.W. FIDLER. JAN 1969	DWG No
DRAWN BY	B. REBULI 14 · 2 · 69	SA - 6
REVISED		
SCALE	1 inch = 100 feet	

ENV 1085

PROPOSED STRATIGRAPHIC SEQUENCE

PROTEROZOIC – ARCHAEN	Ap	[illegible] coarse-grained aplitic granite & pegmatite
	Ag	Pale-pinkish coarse grained garnetiferous granodiorite?
	Ag	Pale pinkish coarse grained granite
ARCHAEN — METASEDIMENTS (WILLYAMA)	h / As7	Grey to fawn & buff fine to medium-grained mica schists (strongly kaolinized in vicinity of mine workings) with some diopsidic hornfels
	As6	Pyritic horizons heavily iron-stained [illegible] surface exposure
		Light grey medium-grained [illegible] schist
	As5	Dominantly grey to grey-green & brown [illegible] grained mica schists locally [illegible] adjacent to granites
		Low grade fine-grained dark grey [illegible] pyritic hornfels developed [illegible] area
		White to brownish fine to medium-grained pyritic occasionally micaceous metaquartzite heavily fractured & iron stained in part
	As4	Grey-green to brown fine to medium-grained mica schist
		Brownish fine-grained mere friable [illegible]
		Grey fine to medium-grained chiastolite schist
	As3	Greenish grey to reddish metaquartzite with black hematite bands
		Grey brownish & mauve fine to medium-grained mica schists with few thin white fine-grained [illegible] interbeds
	h	Diopsidic hornfels
	As2	Greyish metaquartzite with bands of hematite & magnetite
		Brownish fine-grained flaggy metaquartzite
		Greyish to brownish fine-grained flaggy metaquartzite
	As1	Brownish grey to grey-green & purplish to medium-grained mica schist
		White fine-grained metaquartzite with thin hematite bands

LEGEND

Geollogical boundary observed.	
Quairtz outcrop.	Qtz
Zone of Kolin.	K
Bedding Strike and dip	60
Vertical	
Schistosity	80°
Shaft	
Pit or trench	
Copper occurance.	Cu
Track	

TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.		
SML 269. DOME ROCK. Sth AUSTRALIA. GEOLOGICAL OUTCROP MAP.		
GEOLOGY BY	N. DUNCAN APRIL 69	DWG. No. SA - 9
DRAWN BY	E. J. PARHAM. 20 · 5 · 69	
REVISED		
SCALE	1 inch ⟹ 400 feet.	

ENV 1085-8

76 1085

REPORT ON
DIAMOND DRILLING PROGRAMME
AT
DOME ROCK COPPER PROSPECT
SOUTH AUSTRALIA

By : C.M. Horn

Report No. DRM 3
December, 1969.

Trans Australian Explorations Pty. Limited.

INDEX

SUMMARY:

The three Diamond Drill holes recommended in report No. DRM 2 were completed in December, 1969, and this report summarises the results of the drilling programme. A total of 2061 feet of core drilling was completed without encountering significant concentrations of copper mineralization, although sulphide mineralization was abundant throughout the core.

Syndicate Members have on file earlier Reports (DRM 1 & DRM 2) outlining and summarising Trans Australian's exploration activities and results. In these reports the Geology, Geography, Geochemical and Geophysical results were discussed and no further mention of this will be made in this report.

The results of the drilling programme are on the plans accompanying this report. (DWG No. SA 15, 16, and 17). Also accompanying this report are Summary Drill Record Sheets.

REPORT ON DOME ROCK DRILLING

INTRODUCTION.

The three diamond drill holes proposed for the initial phase of our Dome Rock drilling programme have now been completed. They were drilled to test the possibility of extended low grade copper reserves in the vicinity of the Dome Rock mine and were spaced at 800 foot intervals along the most favourable belt of mineralization, as outlined by earlier geophysical and geochemical surveys. Basic statistics with reference to maps contained in our Report DRM 2 on the Dome Rock Prospect are as follows.

Hole No.	Location	Bearing	Angle	Total Depth.
DDH1/69	Line 00 3E	295M	-55°	648 feet 196.4 m
DDH2/69	Line 8S 4.5E	295M	-60°	766 feet 232 m
DDH3/69	Line 12N 6E	295M	-50°	647 feet 196 m

It will be noted that the holes were drilled in a different order to that outlined in our recommendation and that the location of the southern most hole was moved from line 12S to line 8S because of a suspected fault at the former location. The holes were also steepened a few degrees after consultation with drilling engineers familiar with the area to allow for increased rate of flattening.

DRILLING REPORT.

1. Operations.

Drilling conditions in all but the last hole proved difficult to an extreme, with caving, broken ground and continuous water loss contributing to the frequent delays. Our actual time on site was extended by approximately two months because of these factors.

An F30 Mindrill rig was used by the contractor and wireline equipment was used wherever possible. All core recovered was laid in galvanised trays and is now in storage with the S.A. Department of Mines. Sludge samples were retained where practical when core recovery was nil.

2. Geology.

With minor variations within the individual units, the sections penetrated in the three holes are quite similar. An upper purplish buff, fine-grained, ferruginized sandstone overlies the conspicuous cellular, dark brown ironstone gossan horizon in holes 1 and 2. Hole number 3 was collared in the ironstone outcrop and traversed 165 feet of this material before entering the underlying rock, indicating that this hole is collared near the nose of the major fold structure.

Underlying the ironstone gossan is a thick section of light or dark grey, largely siliceous hornfelsic rocks, that in places contain a high content of calcite and related carbonates. These rocks, which attain a thickness of approximately 370 feet in DDH2, carry most of the more massive sulphide mineralization. The two rock units are separated in DDH 2 and DDH 3 by a zone of fine, clayey siltstone. The hornfels is underlain by a black micaceous, graphitic and pyritic schist that in DDH 3 contains several prominent chiastolite-bearing horizons. In DDH 2 a second band of hornfels was encountered in the final 85 feet of the hole.

Small, infrequent pegmatites occur at intervals in the deeper horizons and one or two narrow fault zones are present in DDH 2. The faults appear minor and are not correlateable.

3. Mineralization.

Sulphide mineralization is common throughout the fresh rock section and from the limonitic appearance of the weathered upper sequences is present in these horizons as well. Sulphides are predominantly pyrite and arsenopyrite occuring as stringers, blebs and disseminations in the hornfels and elsewhere as interfolial coatings or stringers. A small percentage of pyrrhotite, estimated at 2 to 3 percent of total sulphides, was noted in the lower hornfels unit in DDH 2. Chalcopyrite is present as an occasional trace only.

A greater quantity of sulphides occurs in holes DDH1 and DDH2 where upwards of 10% pyrite-arsenopyrite is observed over relatively narrow intervals of 2 to 3 feet. In general the better mineralized horizons carry up to five percent sulphides with the pyritic schistose rocks containing about 1 or 2 percent.

4. Copper Content

Core was sampled at roughly 5 foot intervals over most of DDH 1 and over all likely horizons in DDH 2 and 3. All samples were analysed by AAS for copper and a large percentage of samples were run for cobalt as rather high levels of cobalt are reported for pyrite found in this area. Early samples from DDH 1 were also run for lead and zinc and selected samples were analysed for silver (ironstone in DDH 1) and arsenic.

Distribution of the copper content of the section penetrated is best appreciated from an inspection of the accompanying drill hole sections. In general copper values are weak and only in isolated instances does the content reach 0.5%. Values through the better mineralized sections range between 1000 and 4000 ppm with the majority of the sections showing values below these figures.

Isolated cobalt values to 8000 ppm were recorded from cobaltiferous pyrite zones in DDH 2 and one or two high values were noted from DDH 1.

Silver to 15 ppm was present in the ironstone gossan horizon in DDH 1.

CONCLUSIONS.

We consider that the three drill holes now completed on the Dome Rock property have provided an adequate test of the most favourable zone of mineralization that lies along the strike on the old highgrade workings. All holes have traversed the sections beneath the massive high grade lenses for a distance sufficient to determine the possibility of any widespread disseminated ore zones associated with these lenses.

Mineralization in the form of pyrite, arsenopyrite and pyrrhotite occurs in these rocks in adequate quantity to account for the pronounced IP anomalies. Copper content of the core is disappointing in the light of the soil geochemical values obtained and this is best explained as due to intensive dispersion from the relatively narrow, shallow high grade sources.

page...5/

It is surprising that no downward expression of the old lodes was encountered. All evidence points to the shallow irregular nature of these deposits.

RECOMMENDATIONS :

Further diamond drilling of this prospect is not recommended. The origin of the massive, ferruginous gossan-like band encountered in all holes has not been explained and there remains a distinct possibility that the ironstone results from leaching of a high sulphide-bearing zone. This might or might not be of economic interest in itself although lack of any degree of secondary copper mineralization suggests that the zone is not high in that element. Under the circumstances we do not believe that further drilling to test this horizon is warranted. Trans Australian Explorations has renewed its option on the property for a further one year period. At our next meeting of the Board of Control all aspects of the Dome Rock programme will be presented and a decision on the future of this property will be taken there.

Several other I.P. anomalies with coincident geochemical anomalies were located in the earlier exploration e.g. between Lines 00 and 12N located at approximately 7E - 8E. The geochemical expression is not as strong as the area around the old mine workings and therefore no recommendation to drill this anomaly will be made.

3 W
2 W
1 W
00
1 E
2 E
3 E
4 E
MEEHAN SHAFT
Dump
OPEN CUT
Trench
IRONSTONE
TRENCH
Micaceous Schist
Tourmalinised Schist
Siliceous Hornfels
Ironstone
White Siliceous Hornfels
Dip of Bedding at Surface
Purple Sandstone
Micaceous Schist (Phyllite)
Ironstone Development
Kaolinised and Talcose
Black Siliceous Hornfels
White Siliceous Hornfels
White Siliceous Hornfels with Calc-Silicate Bands
Ironstained Fault
Heavily Chloritized and Brecciated Fault
Dark Grey Siliceous Hornfels
White Siliceous Hornfels
Core Angle of i.e. Angle Between Bedding and Core Axis
Dark Grey Siliceous Hornfels
Aplite
Fault
Pegmatite
Micaceous Schist (Graphitic)
Dark Grey Graphitic Siliceous Hornfels
Pegmatite
Fault Breccia
0.20% 30'
0.36% 45'
0.43% 15'
0.26% 23' 4" (2600 ppm)
0.24% 23' 6" (2324 ppm)
0.60% 3' 0"
0.23% 2' 0"
0.16% 3' 0"
Cobalt
LEGEND
Micaceous Schist (Phyllite)
Purple Sandstone
Ironstone (Gossan)
White Siliceous Hornfels with actinolite
Grey to Black Siliceous Hornfels with Calc Silicate Bands
Micaceous Graphitic Schist
Pegmatites (includes aplites & griesens)
Fault Zone
Core Angle i.e. angle between bedding and Core Axis
CORE SAMPLE VALUES IN PARTS PER MILLION
ENV 1085
TRANS AUSTRALIAN EXPLORATION LTD.
SML 259. DOME ROCK. S. AUSTRALIA.
DIAMOND DRILL HOLE SECTION
DDH 1/69
GEOLOGY BY C M HORN
DRAWN BY K RUDZINSKAS 17 11 69
REVISED
SCALE 1 inch = 20 feet
DWG. No. SA-15
RECEIVED 20 APR 1970 DEPT. OF MINES
ENV. 1085 - 9

TRANS AUSTRALIAN EXPLORATION PTY. LTD.

SML 269 DOME ROCK. STH. AUSTRALIA.

DIAMOND DRILL HOLE SECTION

DDH 2/69

GEOLOGY BY	C. M. HORN
DRAWN BY	C. CLIFFE 10.12.69
REVISED	

DWG. No. SA-16


110
420
390
8500
790
160
200
120
230
60
60
1W
0
1E
2E
3E
4E
5E
6E
7E
8E
IRONSTONE GOSSAN
IRONSTONE GOSSAN
Micaceous Schist with Chiastolites
Micaceous Schist
Micaceous Schist with some Chiastolites
Black Graphitic Hornfels
White Siliceous Hornfels
Light Grey to White Siliceous Hornfels
Pegmatite
Black Graphitic Hornfels
White Siliceous Hornfels
Black Graphitic Hornfels
Micaceous Schist
Micaceous Schist with some Chiastolites
Sample Missing
Micaceous Schist
Slightly Siliceous in parts
Minor Pyrite Throughout
Minor Chalcopyrite
Micaceous Schist with some Chiastolites
600'
500'
200'
647'
LEGEND
Micaceous Schist (Phyllite)
Purple Sandstone
Ironstone (Gossan)
White Siliceous Hornfels with actinolite
Grey to Black Siliceous Hornfels with Calc Silicate Bands
Micaceous Graphitic Schist
Pegmatites (includes aplites & griesens)
Fault Zone
Core Angle i.e. angle between bedding and Core Axis
RECEIVED 20 APR 1970 DEPT. OF MINES REGISTRY
ENV 1085
TRANS AUSTRALIAN EXPLORATIONS PTY. LTD.
SML 269 DOME ROCK. Sth. AUSTRALIA.
DIAMOND DRILL HOLE SECTION
DDH 3/69
GEOLOGY BY C.M. HORN
DRAWN BY C. CLIFFE
REVISED
SCALE 1 inch = 20 feet
DWG. No. SA-17
GEOCHEMICAL SOIL SAMPLE VALUES
IN PARTS PER MILLION

ENV 1085 - 11

207
69

VII

000083

208 HUTT STREET
ADELAIDE S.A. 5001

POSTAL ADDRESS:
BOX 309 B, G.P.O. ADELAIDE 5001

TELEPHONES 23 4527, 23 4277
CABLE "TRANSAUSTEX"

TRANS AUSTRALIAN EXPLORATIONS PTY LTD

CHIEF CLERK
11 FEB 1970
DEPT. OF MINES
ADELAIDE

5th February, 1970.

The Director,
The Department of Mines,
169 Rundle Street,
ADELAIDE. S.A. 5000.

Dear Sir,

Re : 6 Month report SML 269
July 1st 1969 - December 31st, 1969.

General :

S.M.L. No. 269 was issued jointly to Trans Australian Explorations Pty. Limited and Dome Rock Pty. Limited on January 14th, 1969. It comprises 8 square miles and lies north of Mingary in Olary Province approximately 70 miles west of Broken Hill.

Exploration :

Following a review of our early exploration programme on this lease, that included comprehensive geological mapping, geochemical auger drilling and geophysical surveys - magnetometer, scintillometer, I.P. and electromagnetics, the decision was taken to carry out a 3-hole diamond drilling programme as the next stage in the investigation of the area. This programme was designed to test the main area of anomalies running roughly north-south through the vicinity of the old mine workings and extending beyond them to the north and south. This programme was begun on September 14th and was concluded on December 12th, 1969. A total of 2061 feet were drilled in the three holes, made up of DDH No.1/69 - 648.0 feet; DDH No.2/69 766.0 feet and DDH No.3/69 647.0 feet.

Final results of this drilling programme are in the process of evaluation and our decision on future exploration of SML No.269 will depend largely on the outcome of this work.

page...2/

Geological, geochemical and geophysical maps prepared on this prospect to the present time are enclosed, as are data plots of I.P. data.

Expenditures for S.M.L. No.269 for the period are :-

Staff Geologists Salaries	3858.09
Labour Wages	689.00
Field Supplies	487.64
Camp Accommodation and Supplies	1068.45
Petrol, Oil and Vehicle Repairs	386.80
Vehicle Rental	502.68
Travel Charges	141.75
Drafting Charges	330.82
Geochemical and Analytical	646.08
Diamond Drilling Charges	16318.60
Miscellaneous Expenses	90.35
	$ 24520.26

Yours very truly,
Trans Australian Explorations Pty. Limited.

Ian C. Grant,
Managing Director.

Director

29 APR 1969

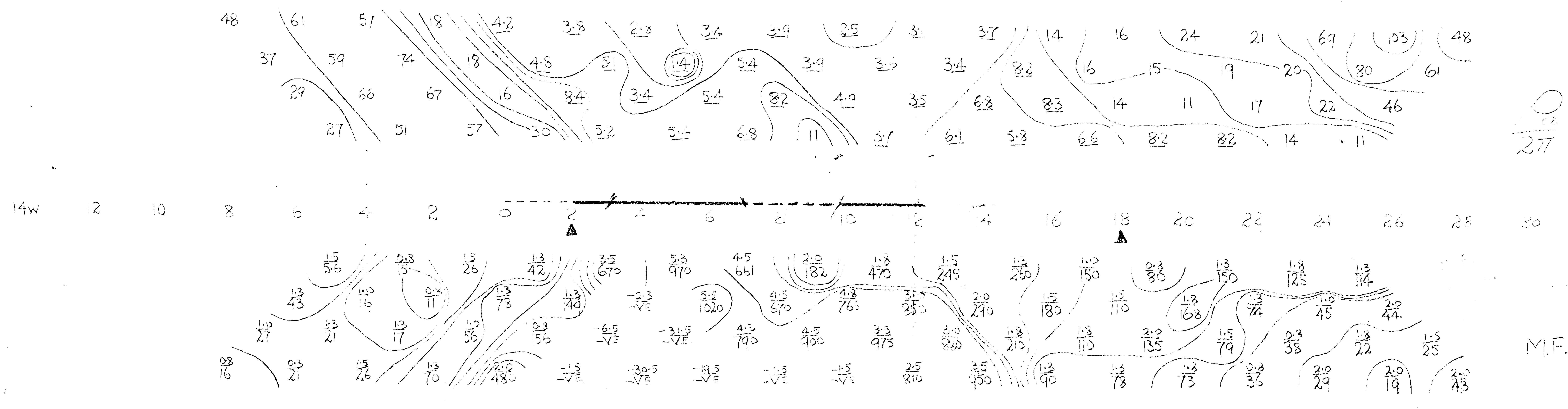
McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

Client: THE

Area: DOME ROCK
Line: 44S
Spread: 200'
Freq: 2.5 0.3
Electrodes: SINGLE FOIL
Plotted by: B STACEY
Checked by: G MARCUS
Date: 22-4-69

Interpretation: J.F.Stafford

ENV 1085-12



MCPHAR GEOPHYSICS PTY. LTD.

Client: TAE
Area: Dome Rock
Line: 40 S
Spacing: 200'
Freq: 2.5 0.3
Single Foil
B. Stacey
J. F. Stafford
20-4-69

Interpretation: J.F. Stafford

ENV 1085-13

23 APR 1969

McPHAR [illegible]PHYSICS PTY. LTD.

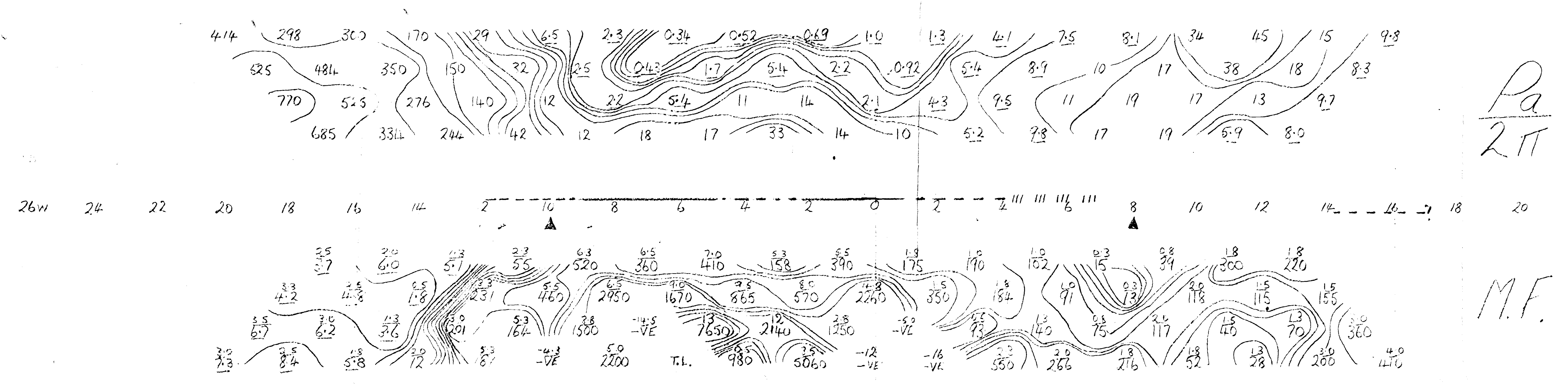
I.P. SURVEY

CLIENT: T.A.E.

Area:	DOME ROCK
Line:	36 SOUTH
Spread:	200 FT.
Freq.:	2.5, 0.3
Electrodes:	SINGLE FOIL
Plotted by:	GM / MRA
Checked by:	GM
Date:	17-4-69

Interpretation: J.F. Stafford

ENV 1085 - 14



28 APR 1969
McPHAR GEOPHYSICS PTY. LTD.

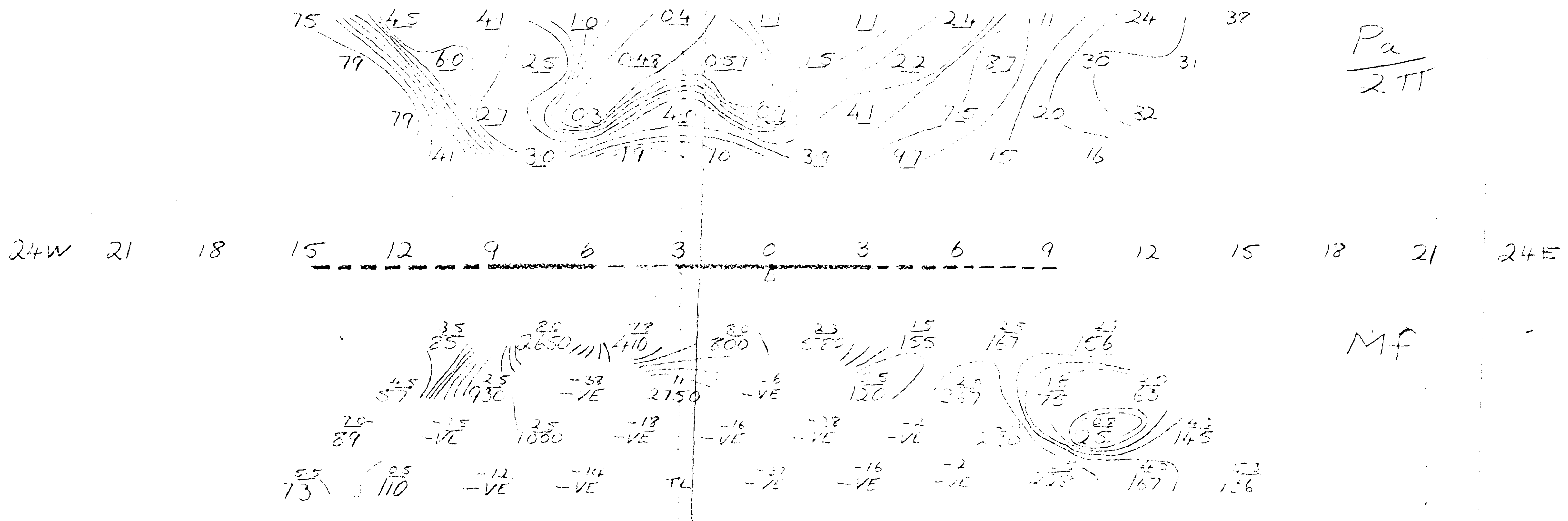
Client	T.A.E.
Area:	DOME ROCK
Line:	8 SOUTH
Spread:	200 FT
Freq:	2.5 - 0.3
Electrodes:	SPIDER (4 ALFOIL)
Plotted by:	MRA
Checked by:	J. F. Stafford
Date:	21-4-69

Interpretation: J. F. Stafford

McPHAR GEOPHYSICS PTY. LTD.

Client	
Area:	
Line:	
Spread:	
Freq:	
Electrodes:	
Plotted by:	
Checked by:	
Date:	

ENV 1085 -15

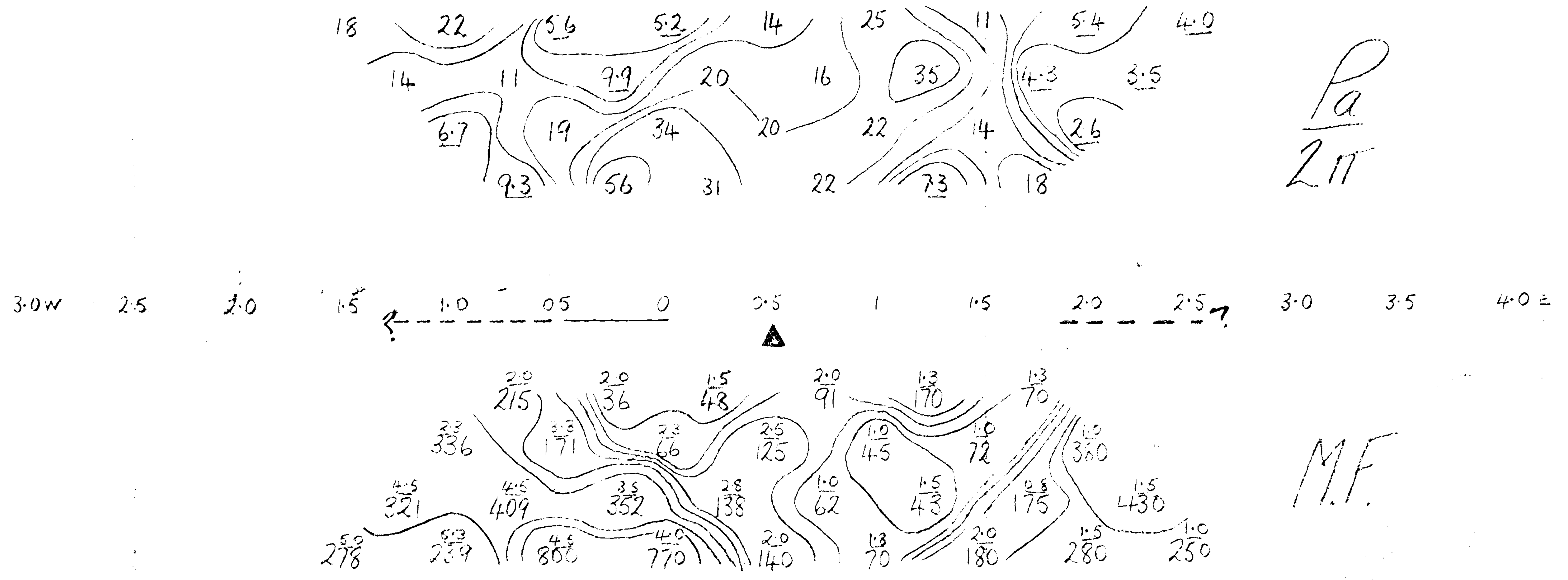


McPHAR GEOPHYSICS PTY. LTD
I.P. SURVEY

Client: TAE
Area: DOME ROCK
Line: 8S
Spread: 300 ft
Freq: 2.5 + 0.3
Electrodes: Spider
Plotted by: G. MARCUS
Checked by: J.F. Stafford
Date: 22-4-69

Interpretation: J.F. Stafford

ENV 1085 -16

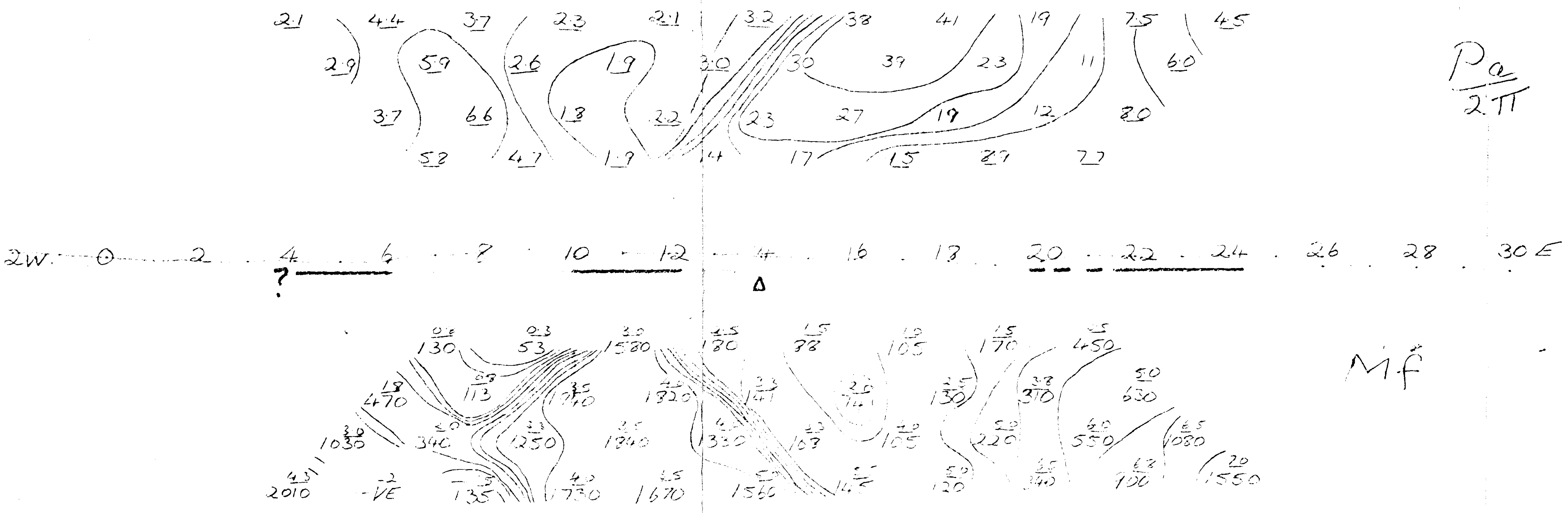


23 APR 1969

CLIENT: T.A.E.
Area: DOME ROCK
Line: 8 SOUTH
Spacing: 50 FT.
Freq: 2.5, 0.3
SINGLE FOIL
M. AUCOTT
G M
Date: 14-4-69

Interpretation: J.F. Stafford

ENV 1085 - 17



TAE
DOME ROCK
12 N
200
2.5 & 0.3 CPS
SINGLE FOIL
G MARCUS
Checked: J.F.Stafford
Date: 20 - 4 - 69
Interpretation: J.F.Stafford

ENV 1085-18

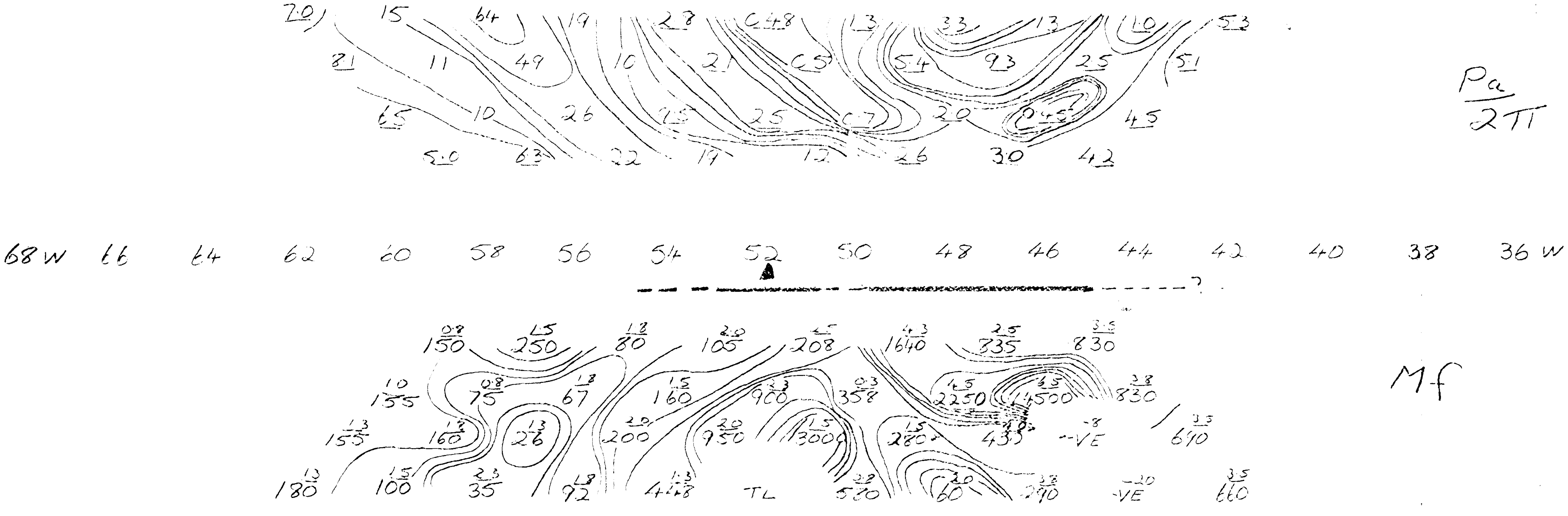
McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

Client:	TAE
Area:	DOME ROCK
Line:	16N
Spread:	200 ft
Freq:	2.5 & 0.3
Electrodes:	SINGLE FOIL
Plotted by:	G. MARCUS
Checked by:	J.F. Stafford
Date:	20-4-69

Interpretation: J.F. Stafford

23 APR 1969

ENV 1085-10



28 APR 1969

TAE
DOME ROCK
24N
200'
2.5 & 0.3 cps
Spider
G MARCUS
J.F. Stafford
23-4-69

Interpretation: J.F. Stafford

ENV 1085 - 20

McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

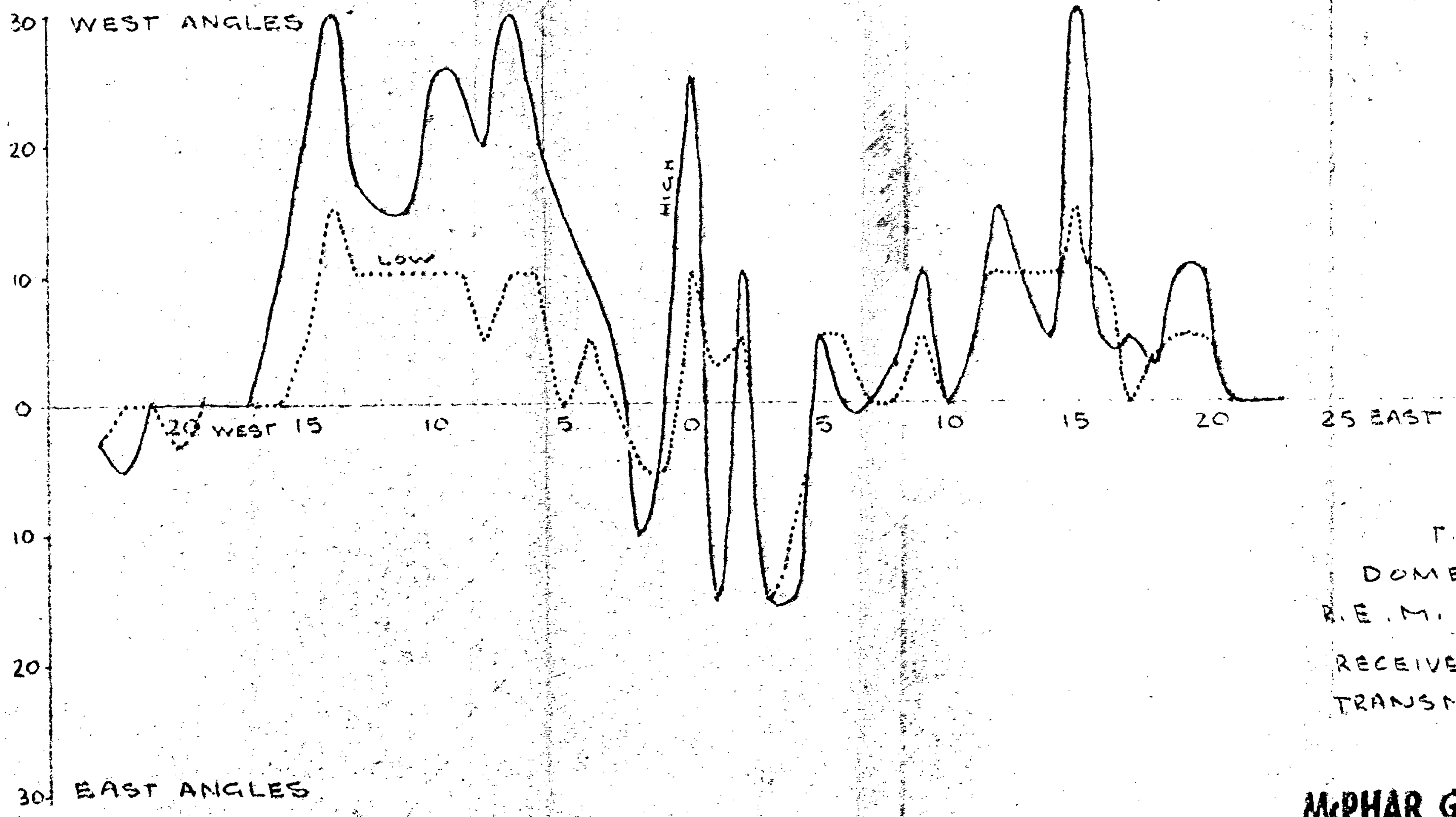
Client: TAE

Area: DOME ROCK
Line: 40N
Spread: 200'
Freq. 2.5 + 0.3 cps
Electrodes: SINGLE ALFOIL
Plotted by: M. AUCOTT + W. STACEY
Checked by: G. MARCUS
Date: 28-4-69
Interpretation: J. F. Blackford

CHECKED
INTERP.
DISTRIBUTION

ENV 1085-21

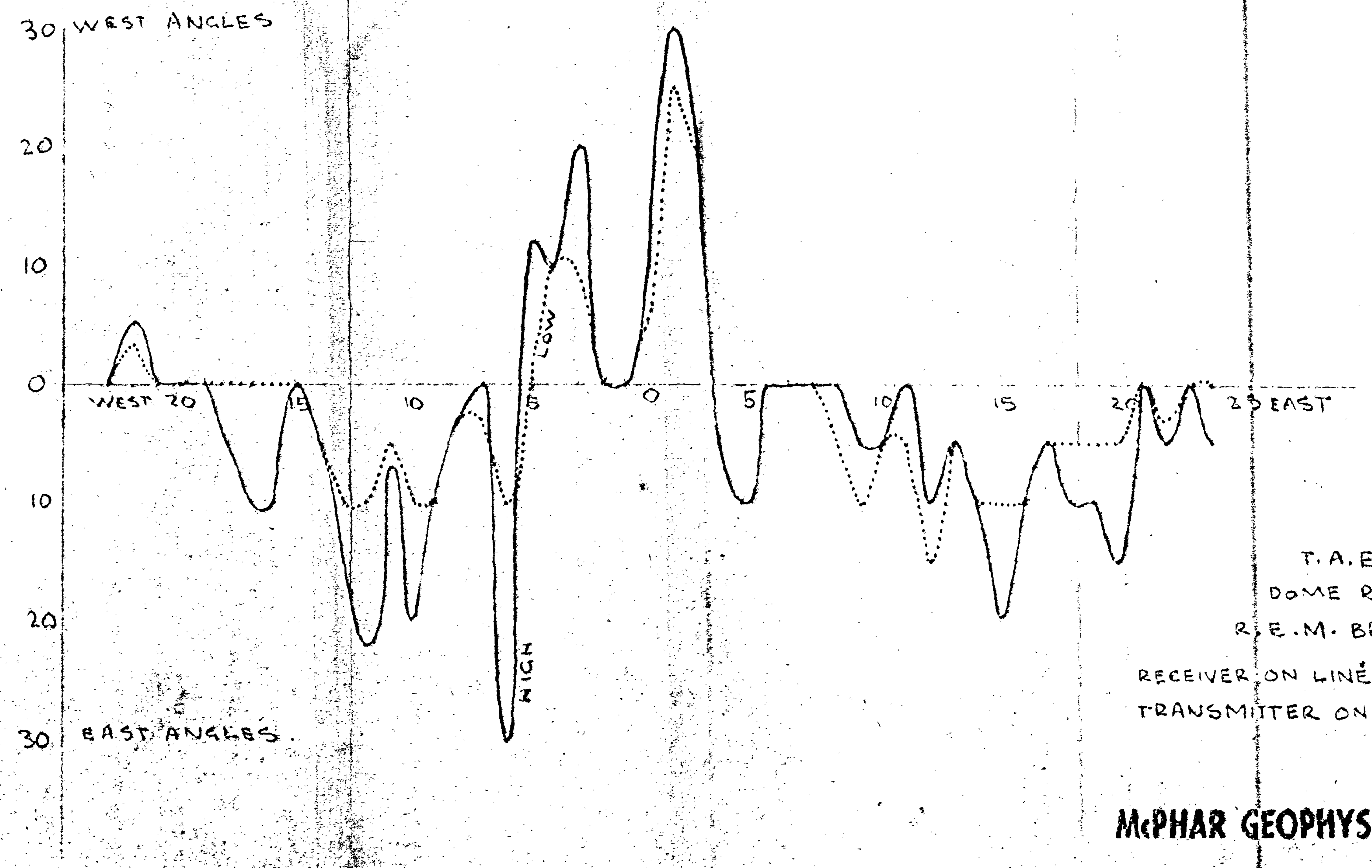
ENV 1085



T.A.E.
DOME ROCK
R.E.M. BROADSIDE
RECEIVER ON LINE 45
TRANSMITTER ON LINE 00

McPHAR GEOPHYSICS PTY. LTD.

ENV 1085 - 22

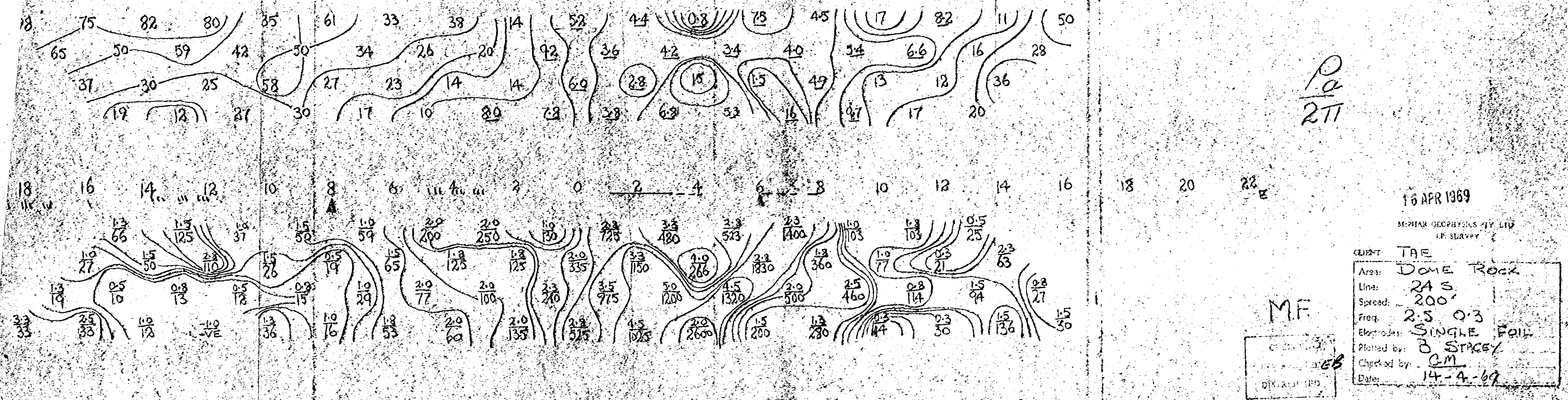


T. A. E
DOME ROCK
R. E. M. BROADSIDE
RECEIVER ON LINE 4N,
TRANSMITTER ON LINE OO

McPHAR GEOPHYSICS PTY. LTD

ENV 1085 – 23


31 MAR 1969
80 N
Client T.A.E.
Area DOME ROCK
Line 4 WEST
Spread 200 FT.
2·5 , 0·3
Electrodes SINGLE FOIL
M R AYLOTT
26-3-69
Interpretation: J.F. Stafford
M.F.
$\frac{Pa}{2\pi}$
ENV 1085 - 24



ρa / 2π
16 APR 1969
McPHAR GEOPHYSICS PTY. LTD
I.P. SURVEY
CLIENT TAE
Area: DOME ROCK
Line: 24 S
Spread: 200'
Freq. 2.5 0.3
Electrodes: SINGLE FOIL
Plotted by: B STACEY
Checked by: GM
Date: 14-4-69
MF

ENV 1085 - 25

4N
24 MAR 1969
I.P. SURVEY
CLIENT: T.A.E
Area: Dome Rock
Line: 4N
Spread: 200
Freq: 2.5 0.3
Electrodes: Single foil
Checked by: J.F. Stafford
Date: 20-3-69
Interpreted by: J.F. Stafford
4N
40W 38 36 34 32 30 28 26 24 22 20 18
10 8 6 4 2 0 2 4 6 8 10 12 14 16E
M.F.
CHECKED
DISTRIBUTED
ENV 1085-26

16 APR 1959

CLIENT: T.A.E.

Area: DOME ROCK

Line: 4N

Spread: 100'

Freq: 2.5 0.3

SINGLE FOIL

B STACEY

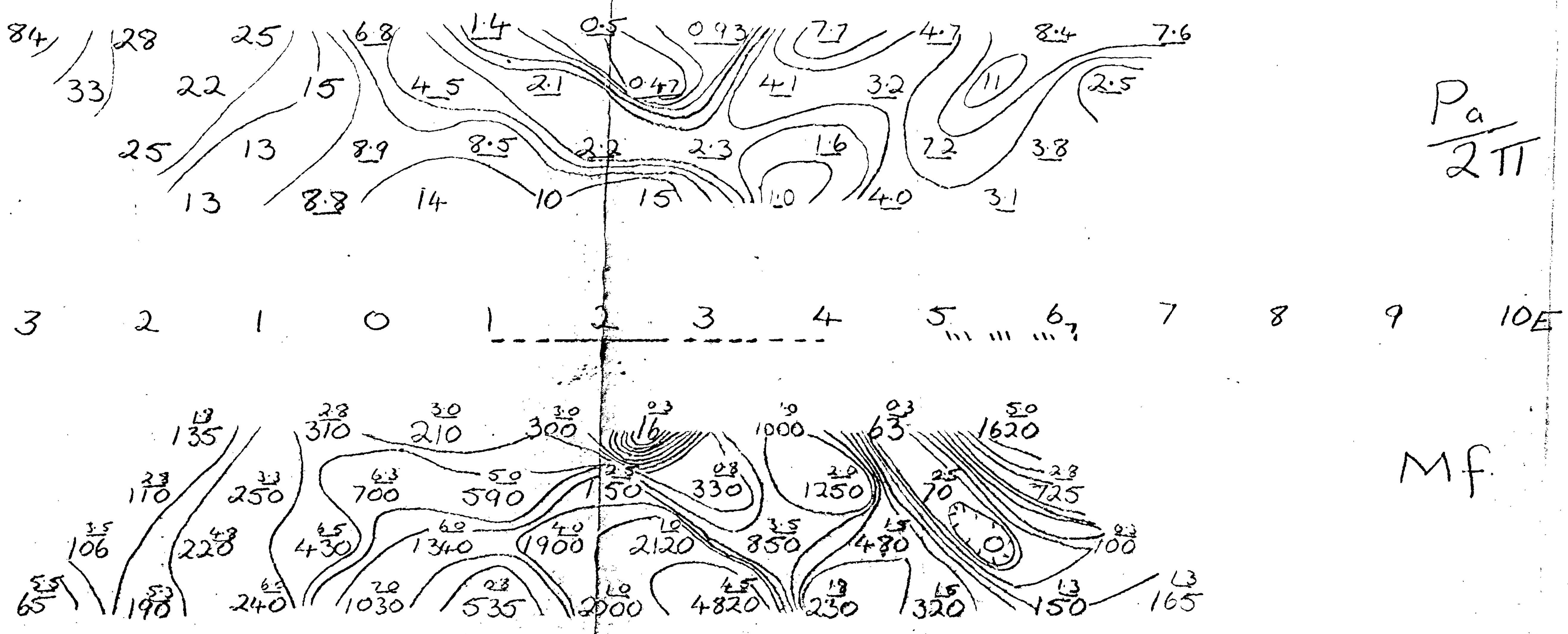
G M

M.F.

ENV 1085-27


40W 38 36 34 32 30 28 26 24 22 20 18
12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 East
Pa/2π
M.F.
Client: TAE
Area: Dome Rock
Line: 8N
Spread: 200'
Freq: 2.5 + 0.3 cps
Electrodes:
Plotted by: Gael Healey
Checked by:
Date: 20-3-69

ENV 1085 - 28



10 APR 1969

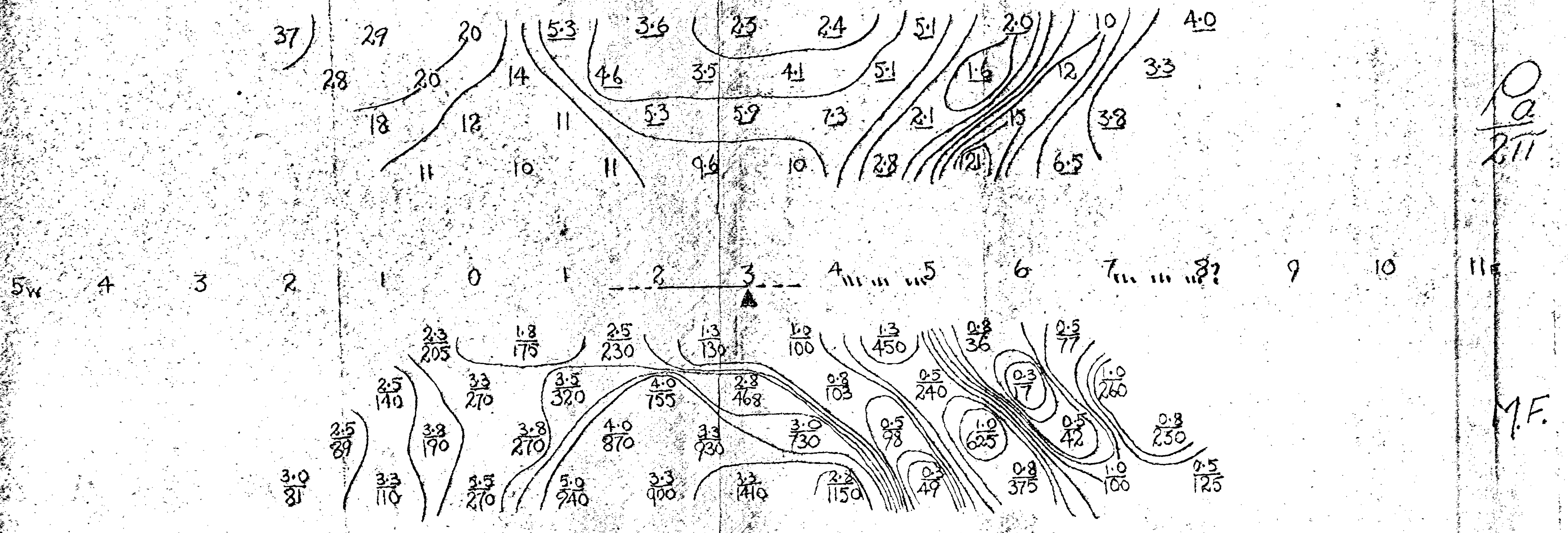
McPHAR GEOPHYSICS PTY. LTD
I.P. SURVEY

CLIENT: TAE

Area: DOME ROCK
Line: 8N
Spread: 100 ft
Freq.: 2.5 & 0.3 cps
SINGLE FAIL
Plotted: G. MARCUS
Checked: G. HEALEY

CHECKED
INTERPRETED GB

ENV 1085-29



16 APR 1959

McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

CLIENT:	T.A.E
Area:	DOME ROCK
Line:	12 N
Spread:	100'
Freq.	2.5 0.3
Electrodes:	SINGLE FOIL
Plotted by:	B STACEY
Checked by:	G MARCUS
Date:	

ENV 1085 - 30

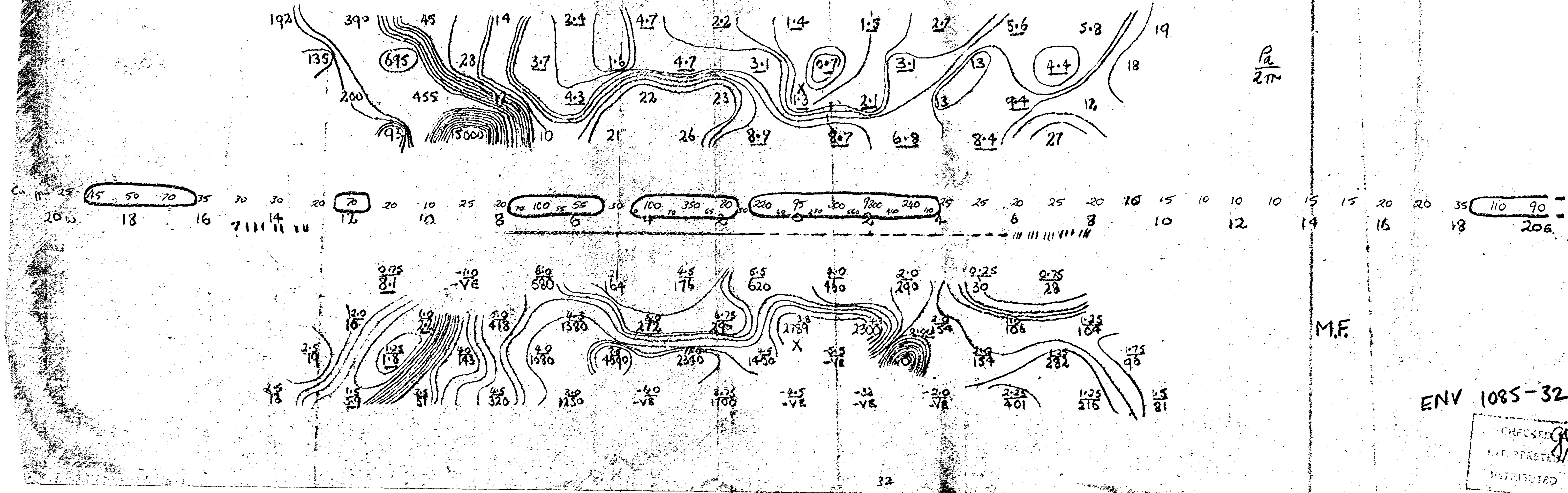
28 MAR 1969

McPHAR GEOPHYSICS PTY LTD
I.P. SURVEY

Client: TRE
Area: Dome Rock
Line: 12N
Spacing: 200
Freq: 2.5 + 0.3 cps
Array: Single
Plotted by: Gael Healey
Checked by: Charmaine Cliffe
Date: 28-3-69

CHECKED
INTERPRETED

ENV 1085 - 31



20 MAR 1969

McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

CLIENT T.A.E.

Area:	DOME ROCK
Line:	12S
Spread:	200'
Freq.	2.5 - 0.3
Electrodes:	SINGLE DIPOLE
Plotted by:	
Checked by:	
Date:	17-3-69

ENV 1085-32

CHECKED
INTERPRETED
DISTRIBUTED

Interpreted by J.F. Stafford

31 MAR 1969

McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

Client: T.A.E.

Area: DOME ROCK
Line: 12 S
Spread: 200'
Freq.: 2.5 + 0.3 C.P.S.
SINGLE.
CHARMAYNE CLIFFE
GAEL HEALEY
Date: 31-3-69.

ENV 1085 -33

CHECKED
INTERPRETED
DISTRIBUTE

24 MAR 1969

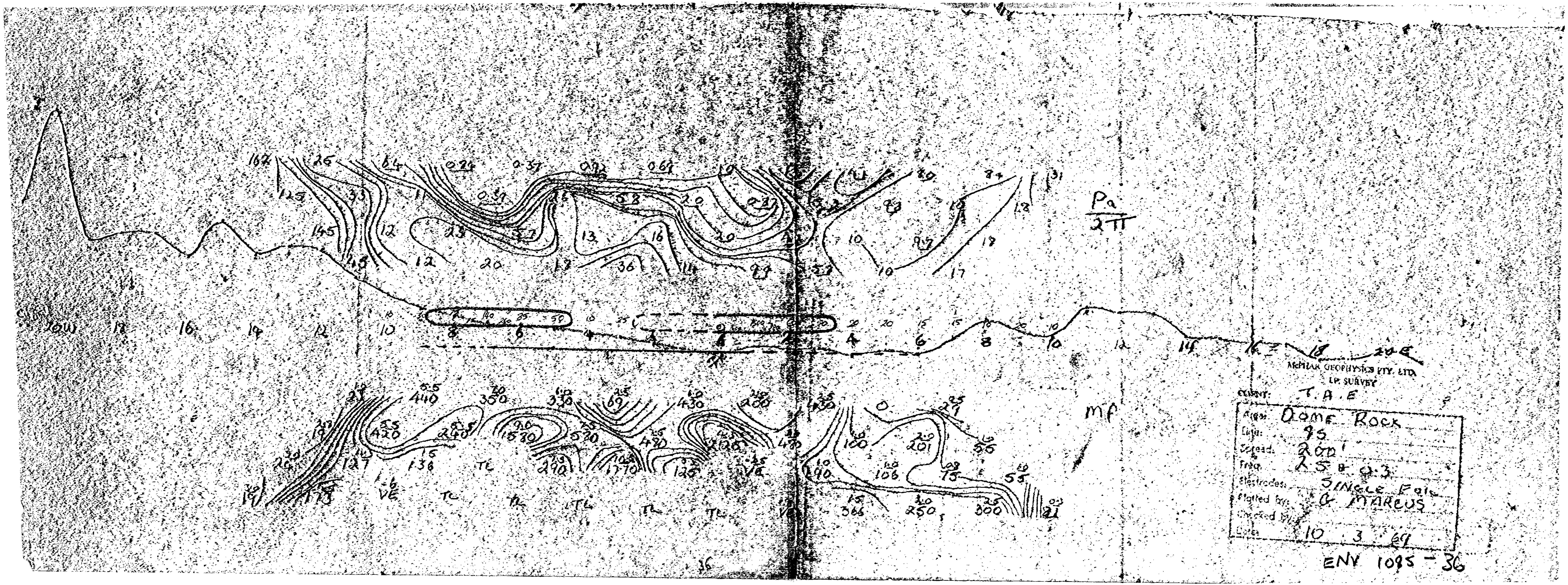
MCPHAR GEOPHYSICS PTY. LTD
I.P. SURVEY

Client: TAE
Area: DOME ROCK
Line: 45
Spread: 200 ft
Freq.: 2.5 & 0.3
Electrodes: SINGLE FOIL
Plotted by: G. MARCUS
Checked by: J.F. Stafford
Date: 21-3-69

Interpretation: J.F. Stafford

ENV 1085-34


Pa
2π
Mf
16W
16E
18 MAR 1969
McPHAR GEOPHYSICS PTY. LTD
I.P. SURVEY
CLIENT: T.A.E.
Area: DOME ROCK
Line: 8S
Spread: 100'
Freq. 2.5 • 0.3
Electrodes: SINGLE ALFOIL
Plotted by: G. MARCOSI
Checked by: J.F. Stafford
Date: 14-5-69
CHECKED
INTERPRETED
DISTRIBUTED
Interpretation: J. Stafford
ENV 1085-35

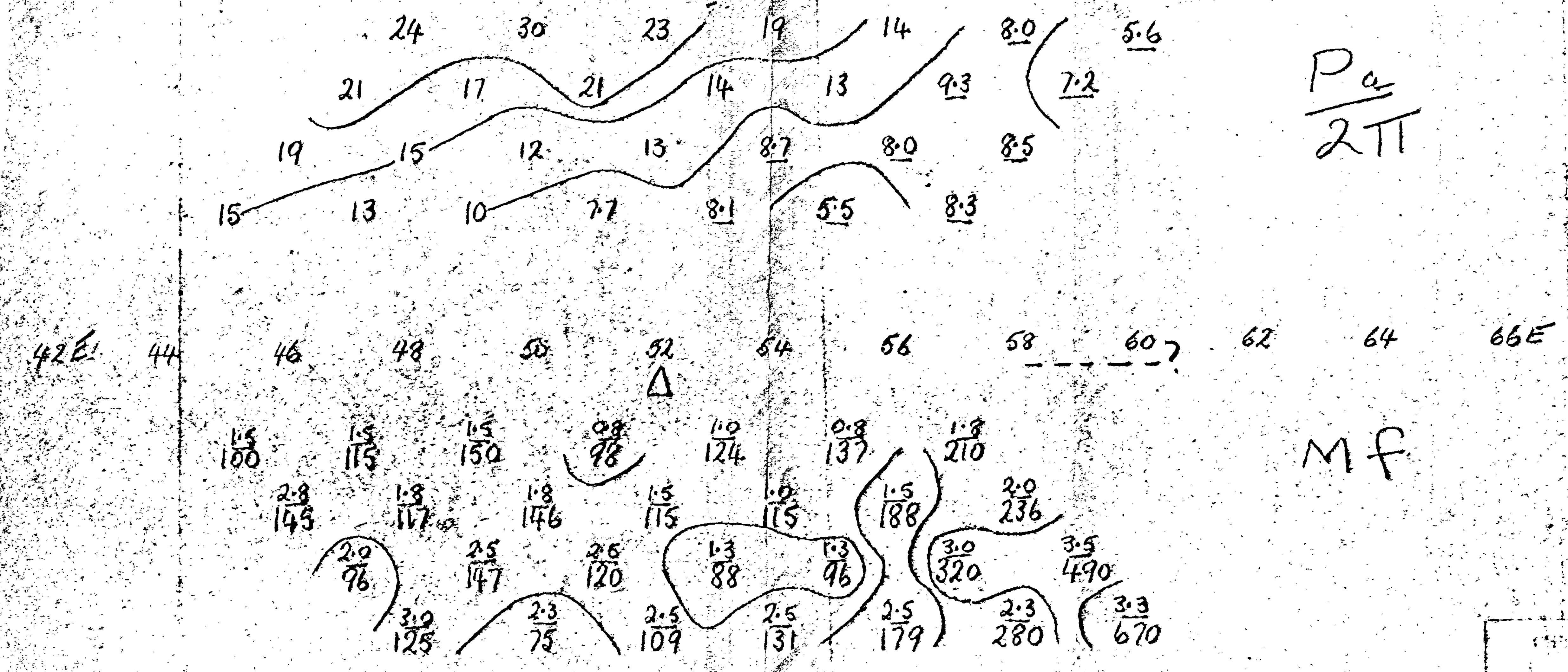

Pa
2π
MF
IP SURVEY
CLIENT: T.A.E
Area: DOME ROCK
Line: 9S
Spread: 200'
Freq: 2.5 & 0.3
Electrodes: SINGLE PAIR
Plotted by: G. MARCUS
Checked by:
Date: 10 3 69
ENY 1085 - 36

$\frac{P_a}{2\pi}$
MF
34W 32 30 28 26 24 22 20 18
12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 E
13 MAR 1989
McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY
Client: T.A.E
Area: Dome Rock
Line: 45
Spread: 200'
Freq: 2.5 & 0.3
Electrodes: Single Foil
Plotted by: G. Marcus
Checked by:
Date: 10.3.69
37
ENV 1085 - 37

18 MAR 1969
McPHAR CHEMEXES PTY LTD
I.P. SURVEY

CLIENT: TAE
Area: Dome Rock
Line: 8S
Interval: 300 ft
Freq.: 2.5 & 0.3
Electrodes: Single Foil
Plotted by: G Marcus
Checked by:
Date:

ENV 1085 - 38



16 APR 1969

McPHAR GEOPHYSICS PTY. LTD.
I.P. SURVEY

CLIENT: T.A.E.

Area: DOME ROCK
Line: 00
Spread: 200 FT.
Freq. 2.5, 0.3;
Electrodes: SINGLE FOIL
Plotted by: M.R. AUCOTT
Checked by: G.M.
Date: 9-4-69

ENV 1085-39

End of Lease
Pa / 2π
2 APR 1969
52E
M.F.
CLIENT T.A.E.
DOME ROCK
00
200'
2.5 + 0.3 CPS
SINGLE FOIL
GREG MARCUS
Charmayne Clitt
2-1-69
CHECKED
INTERPRETED
DISTRIBUTED
ENV 1085-40