# CONTENTS ENVELOPE 1557

TENEMENT: S.M.L. 505

TENEMENT HOLDER: Archaean Exploration Pty. Ltd.

# ARCHAEAN EXPLORATIONS PTY. LTD.

## SPECIAL MINING LEASE 505

## TARCOOLA AREA,

## S.A.

## THREE MONTHLY REPORT TO 12-2-71

By

J. E. DAVIDSON B.Sc(hons)

MINOIL SERVICES PTY. LTD.

CONTENTS

# 1. SUMMARY

An initial geological reconnaissance over S.M.L. 505 located an area of possible economic importance. Quartz reefs, discontinuous over a total strike of one mile yielded silver values of up to 21 ozs/ton and significant bismuth values. Consequently the area warrants further investigation by geochemical soil sampling and V.L.F. - E.M. surveys.

# 2. INTRODUCTION

## 2.1 LOCATION

S.M.L. 505 is situated just south-west of Tarcoola on the East-West railway line. Tarcoola, a former gold-mining township is almost 257 rail miles westerly from Port Augusta. The lease covers an area of 768 square miles, as shown on the locality plan.

Regional geologic mapping over the Tarcoola area by the South Australian Department of Mines records only the larger outcrops. Thus small exposures can only be described, being too small to depict on a 4-mile map. Poor exposure over the area is accounted for by an extensive coverage of Recent sand dunes and alluvium. Thus aerial photo interpretation shows up only the more prominent formations. In the area of sand dunes, outcrop was found to occur at the edges of the gypsum lakes.

## 2.2 ACCESS

Vehicle movement, on or off the tracks, is generally unimpeded in the N.E. portion of the lease from Tarcoola to Malbooma and southwards around the vermin-proof fence. This area is largely covered by thin alluvium but the S.W. portion is the area of Recent sand dunes. Movement off the tracks in this area is generally extremely difficult and even some parts of the track are made impassable by steep sand dunes.

# 3. PREVIOUS WORK

The area has not been held previously by any other exploration companies and no mining is being done in the area.

## 3.1 GOLD

The only officially reported mine within the lease is situated at Dark Hill (Bairstow's), about two miles south-west of Tolmers Hill (Brown 1902). Two shafts were sunk following a one foot wide quartz and ironstone gossan lode. Ore dump samples yielded up to 18 dwts. of gold/ton. Brown (op. cit.) also reports the occurrence of carbonate of bismuth and galena in the gossan lode. A similar occurrence of gold was reported by Brown from Kychering Hill (about 20 miles west of Tarcoola).

On a visit to the lakes east of Mt. Finke, Brown (1900) commented on the favourable nature of the quartz-ironstone reefs in the shales for gold (reminiscent of the Tarcoola Gold Field). Morton (1970) visiting the same location noted on the presence of small trenches cut through the quartz veins and a thin quartzite reef - obviously prospected for gold. These trenches were infilled by alluvium indicating a long period of time since anyone had last worked the area.

## 3.2 IRON

The jaspilites of the Tarcoola region have been under investigation by the South Australian Department of Mines since 1961. However, a large outcrop of metajaspilite reported by Morton (1970) was not noted by the Mines Department. Morton reported outcrop and float as occurring over an area of 500 feet x 2500 feet on a hill which rises about 50 feet above the lake level. This hill forms the west side of the central lake in the lake system east of Mt. Finke.

## 3.3 LIGNITE

A Tertiary basin containing brown lignitiferous coals is partly included at the top of the lease. Hillwood (1959) suggested that the area is a potential coal producer and that the area warrants exploratory drilling to establish reserves.

### 3.4 GYPSUM

Large gypsum deposits have been noted throughout the area in association with the salt lakes.

## 4. GEOLOGY

The area is situated on the Gawler Platform which is characterized by extensive metasedimentary series and intrusive acidics and basics.

### 4.1 METASEDIMENTS

In the system of lakes immediately east of Mt. Finke, metasediments typical of the area were encountered over the northern edge of the central lake. They consisted of interbedded shales and quartzites and a hill of meta-jaspilite on the west side of this lake. These rocks are believed to be equivalent to the Middleback Group of South Australia. Just outside the N. E. corner of the lease at Tarcoola occur the interbedded shales and quartzites in which extensive gold mining took place in the early part of this century. As at Mt. Finke, these shales are intruded by quartz-ironstone reefs which precipitate gold under favourable conditions.

### 4.2 IGNEOUS INTRUSIVES

Various granitic and/or basic intrusives were noted in various localities around the edges of the lakes east of Mt. Finke. These rocks appear in all cases to be affected by E. - W. shearing. Thin quartz reefs, sometimes accompanied by tourmaline were associated with these shears.

Just south of Pinding Rocks is a series of N.N.W. trending basic and porphyry dykes in close contact. These dykes are associated with mineralized quartz reefs. The porphyry is the Gawler Range variety, previously unreported from the area.

## 4.3 STRUCTURE

Broad structural relationships of the area are unknown due to poor outcrop and extensive sand cover. However, in the areas of outcrop visited, two general trends are apparent. In the Pinding Rocks area all the intrusives and quartz reefs appear to be controlled by a N.N.W. fracture system. On the other hand, in the Mt. Finke area the general strike of the shears, quartz reefs and intrusives is roughly E. - W..

## 5. GEOPHYSICS

The total intensity aeromagnetic map of the Kychering 4-mile sheet (which covers the major portion of the lease) delineates a major zone composed of individual elongate anomalies which trend N.E. from Mt. Finke to Dark Hill in the north east portion of the claim. This trend possibly indicates a zone of magnetic Proterozoic sediments such as jaspilites. Adjacent areas of generally low magnetic disturbance indicate and often coincide with areas of granite.

One aeromagnetic anomaly coincides with the prominent hill of metajaspilite on the west side of the central lake in the lake-system east of Mt. Finke. Other anomalies have been interpreted as being due to deeply buried sources; interpreted depths ranging from 3,600 to 30 feet below the surface.

The Childara/Gairdner radiometric survey which covered most of the lease failed to indicate any anomalous zones.

A gravity survey over the area delineated the areas of granite but failed to coincide with the major N.E. trend apparent on the aeromagnetic map.

## 6. PRESENT INVESTIGATIONS

A geological reconnaissance over S.M.L. 505 located an area of possible economic importance and investigated other interesting areas.

## 6.1 PINDING ROCKS AREA

Quartz reefs with abundant boxworks and fine, visible sulphides were located in three separate locations. The reefs are roughly five feet wide and strike intermittently in a N.N.W. direction over a total distance of just over one mile. The reefs are situated immediately south of Pinding Rocks where they are associated with dykes of Gawler Range porphyry and basic intrusives (see Fig. 1).

Semi-quantitative assays of rock samples reveal high silver and bismuth values associated with minor amounts of copper, lead and zinc (see below). Rocks samples were taken from the surface on locations $P_1$ and $P_2$ and from a shallow shaft on $P_3$. All samples gave evidence of mineralization over the total distance of one mile but the shaft samples gave much higher readings for silver and bismuth.

| Specimen | Ag | Bi (ppm) | Cu (ppm) | Pb (ppm) | Zn (ppm) |
|---|---|---|---|---|---|
| $P_1$ (surface) | 1 oz | 800 | 300 | 120 | 200 |
| $P_2$ (surface) | 1 ppm | 20 | 30 | 1,000 | 30 |
| $P_{3A}$ (shaft) | 21 ozs | 100 | 250 | 600 | 5,000 |
| $P_{3B}$ (shaft) | 10 ozs | 400 | 1,000 | 1,000 | 200 |
| $P_{3C}$ (shaft) | 7 ozs | 3,000 | 120 | 1,200 | 300 |

Surface samples should not be taken as representative of the areas concerned for leaching of the alteration products of the original silver and bismuth sulphides has taken place. On the other hand these alteration products in the samples from the shaft on location $P_3$ have not been subjected to the same degree of leaching and thus yield higher values than surface samples.

In addition to rock sampling, preliminary V.L.F. - E.M. surveys over the three areas of quartz reefs indicated the presence of significant anomalies which may be due to conductors. Fig. 2 illustrates a V.L.F. - E.M. profile across location $P_3$.

### 6.2 MT. FINKE AREA

From an extensive area of soft decomposed shales in the central lake of the lake-system east of Mt. Finke various assays of quartz-ironstone reefs failed to reveal any anomalous mineralization. No trace of gold was recorded from the reefs.

A pod of massive limonite was sampled from the same shales yielding a value of 100 p.p.m. molybdenum. This may be a significant find considering the exposures of granite in the close proximity. On the other hand, black shales have high molybdenum as part of their chemistry - possibly up to 300 p.p.m.. Further samples from the location of the find are being assayed to determine the extent of the higher molybdenum content in the area.

With reference to the iron-ore possibilities of the Tarcoola area, a small hill of massive high-grade (66.4% Fe) hematite was found one mile north of the easternmost lake of the lakes east of Mt. Finke. The outcrop occurred over an area of only 400 feet x 400 feet and this as it stands is too small to be economic. The find however is significant and indicates the possibility of further deposits of iron ore in the vicinity.

## 7. CONCLUSIONS

High silver and bismuth assays, over a strike length of one mile and the presence of V.L.F. - E.M. anomalies are extremely interesting and the area of quartz reefs definitely warrants further investigation.

The N.N.W. fracture system, with which the quartz reefs are associated, is believed to extend further to the S.E. because outcrops of Gawler Range porphyry

and associated basics were located roughly 10 miles S.E. of Pinding Rocks. In fact, 5½ miles east of location $P_2$ quartz reefs containing pyrite and assaying 1/3 oz. of silver/ton were located. It is also to be noted that Brown (1902) reported on the occurrence of carbonate of bismuth and galena from a quartz-ironstone lode at Dark Hill, just 3 miles N.N.E. of Pinding Rocks. These areas may be associated with the N.N.W. fracture system and so widen the area for further prospecting.

## 8. RECOMMENDATIONS

1. Firstly it is recommended that the area of quartz reefs south of Pinding Rocks be gridded and geochemical and geophysical surveys be carried out over the area.

2. It is suggested that geochemical soil sampling for silver, bismuth and lead (all having low mobility) be carried out over location $P_3$ in order to test the success of the method in the area.

3. Due to the apparent success of the preliminary V.L.F. - E.M. surveys over the area, it is recommended that the whole area be surveyed using this method in order to delineate the anomalies over the total strike of one mile.

4. Further geological reconnaissance is recommended in the areas of similar geology to the Pinding Rocks area in order to locate further mineralized quartz reefs.

26/2/71

J. E. Davidson,
Geologist,
Minoil Services Pty. Ltd.

## BIBLIOGRAPHY

Brown, H.Y.L. (1900) "Report on the Gold Discovery at Tarcoola". Rec.of Mines of S.A.

Brown, H.Y.L. (1902) "Tarcoola and the north-west District" Rec.of Mines of S.A.

Hillwood, E.R. (1959)"The Malbooma Coal Field" Dept. of Mines of S.A. Mining Review No. 17.

Ridgway, J.E. and Johns, R.K. "The Tarcoola Blocks Mine" Dept. of Mines of S.A. Mining Review No. 88.

Morton, W. (1970) Reconnaissance Notes Archaean Explorations Pty. Ltd.

Whitten, G. (1960) "Report on Geological Reconnaissance of the Tarcoola 4 mile sheet. Dept. of Mines, S.A. Rpt 50/162.

APPENDIX 1. MACROSCOPIC DESCRIPTIONS OF QUARTZ-REEFS SAMPLED FROM THE PINDING ROCKS AREA.

$P_1$ Leached sample of milky quartz containing traces of fine pyrite and abundant boxworks filled with reddish-brown alteration products. Sampled as float over the quartz reef.

$P_2$ Milky quartz containing an unidentified dark-grey material (5%) with a grey streak and earthy lustre. Reddish-brown boxworks also present. No trace of pyrite. Surface sample but not representative of the area. Many samples resembled those rocks present at location $P_1$.

$P_{3A}$ A shallow shaft sample of massive milky quartz containing finely disseminated patches of assorted sulphides - sometimes crystallized. Pyrite and sphalerite have been positively identified. Argentite ($Ag_2S$) may be present but is too fine grained to be accurately determined. Also abundant is a deep blue iridescent material which is believed to be an alteration product after argentite.

$P_{3B}$ Milky quartz mainly consisting of extensive boxworks and traces of pyrite. Milky quartz containing extensive boxworks and traces of fresh pyrite. Boxworks may contain white and yellow minerals - alteration products of the former sulphides. The yellow material is believed to be a carbonate of bismuth - a secondary mineral possibly after bismuthinite $Bi_2S_3$. It effervesces with HCl, is soft and has an earthy appearance.

$P_4$ Massive milky quartz specimen containing coarse clumps of a bright yellow and/or light brown material up to 4 cms in diameter. Also believed to be a carbonate of bismuth. Boxworks and traces of the earthy alteration product of ? argentite were noted.

71-45

ARCHAEAN EXPLORATIONS PTY. LTD.

# Special Mining Lease 505.
# (Pinding Rocks Prospect).

Tarcoola Area
South Australia

Three Monthly Report To 12/5/71

By

P.C. Smith B.Sc. Hons.
Minoil Services Pty. Ltd.

CONTENTS



PLAN REFERENCE

## SUMMARY

Subsequent to the pegging of a gridded base line, a semi detailed mapping programme was conducted concurrently with V.L.F. - E.M. and geochemical soil sampling surveys. The $P_3$ sample location (Davidson, 1971) was thoroughly covered with both geochemistry and V.L.F. methods. Strong V.L.F. anomalies in this area warrant further coverage by more intensive V.L.F. and magnetometer surveys.

Geochemical soil sampling proved to be of little value in the area and no further work is recommended.

# 1. INTRODUCTION

## 1.1. LOCATION

Special Mining Lease (S.M.L.) 505 is held by Archaean Explorations Pty. Ltd. and occupies an area of 768 square miles just west and south-west of Tarcoola, a small railway township 260 road miles north-west of Port Augusta. The Indian-Pacific railway line passes through the northern extremity of the S.M.L..

The most recent exploration programme covered an area just under 4 square miles situated south-south-west of Pinding Rocks which is approximately 12 road miles west-south-west of Tarcoola. (See Plan 505-4)

Geological mapping, geophysics and geochemical soil sampling surveys were conducted over areas of interest.

## 1.2. ACCESS

Tracks to the general area are good, however, movement off the tracks requires the use of a four wheel drive vehicle as intermittent patches of fine sand can cause bogging. The vermin-proof fence which runs north-south and a fence perpendicular to, and intersecting it just to the south-south-west of Pinding Rocks impedes vehicle movement to some extent. However, two gates, one about ½ mile west of P3 and the other immediately north-west of Pinding Rocks provide means of access to the western section of the area. It is also advisable to contact the manager of Mulgathing Station before entering the property.

## 1.3. PHYSIOGRAPHY

Topography of the area is generally flat with the only relief being intermittent areas, of outcrop of coarse rubble. Pinding Rocks, an area of granite outcrop 1½ miles south-west of Pinding Rocks and the hill on which the $P_3$ shaft is situated are the only elevated areas in the vicinity.

Vegetation is predominantly sheoak type scrub with some extensive areas of salt bush.

Soils in the area are completely devoid of A horizon development and consist of a sandy B horizon with nodular calcrete usually about 6" - 9" below the surface.

A few streams which occur in the area are of the ephemeral type with a flow direction south toward the gypsum lakes.

## 2. PREVIOUS WORK

Apart from some shallow gold diggings excavated probably at the turn of the century, a brief Mines Department reconnaissance in the late 1950's, no work of a geological nature has been done. Pinding Rocks is mentioned in S.A. Department of Mines report 50/162 p46 but no further reference is made.

Pastoral utilisation of the land (for sheep) is the only activity being conducted at present apart from the exploration being undertaken by this company.

# 3. GEOLOGY

## 3.1. GENERAL

Exposure of definite outcrop is limited to approximately three locations in the area covered by this investigation. Coarse float occurs at a number of other sites, but whether this can be assumed to indicate near surface unweathered rock directly beneath is questionable. This is borne out in the $P_3$ shaft where the excavation has revealed only angular fragments of milky quartz cemented by calcrete. As a consequence, the mapping of definite geological boundaries from surface exposure is difficult. However using the V.L.F. - E.M. geophysical tool on a closely spaced grid (100' between lines and 25' between stations) geological boundaries could be accurately placed. This intensive coverage by V.L.F. is warranted only over small areas of possible economic interest to locate drill targets. These possible economic areas would probably be defined by coincident V.L.F. and magnetometer anomalies or surface expression of mineralization.

## 3.2. ROCK TYPES

Rock types of the area are restricted to Pre-Cambrian metasediments and acid and basic intrusives of the Gawler Platform type.

Relative ages of the rocks are difficult to determine because of the paucity of outcrop but it seems that the porphyry is younger than the granitic rock types.

Evidence for this is to be seen at Pinding Rocks where the porphyry dykes have been introduced along shears in the granites. Also near the $P_3$ sample point the nature of the porphyry outcrop indicates the introduction of magma along shears within the country rock. However the inter-relation of the other rock types in both space and time is not practicable without more intensive geophysics and/or drilling.

Rock types recognised in the field include porphyritic granite, "acid and basic" porphyry, intermediate and basic intrusives, meta-quartzite, and veins of milky quartz. Petrography on 18 hand specimens revealed significant variation in the granitic, porphyritic and "basic" rock types.

The granitic rock types are made up of "true granite", granodiorite, micro adamellite, granitic aplite and granite hydrothermally altered to greisen.

Many specimens have a cataclastic texture indicative of shearing which bears out the field evidence supporting structural control for both porphyry intrusion and subsequent mineralized quartz veins. The various granitic rock types within this group possibly reflect local differentiation of the parent intrusive magma or differing degrees of absorption of the country rock. However, if the granites are of an anatectic nature the different rock types infer subtle variations in the composition of the original sediments. Data are sufficient to validate any of the above three possibilities although the author favours the last alternative.

Porphyritic rock types also, show some variation from porphyritic rhyodacite to porphyritic micro adamellite. This variation is probably due to differences in the amount of country rock absorbed by the intruded porphyry. Evidence supporting this contention is the colour change of the porphyry matrix adjacent to its contact with "basic intrusives". In proximity to the contact, the matrix is predominently grey green in colour in contrast to the pink matrix away from the contact. This is sometimes helpful in defining contacts in areas of poor outcrop.

"Basic and intermediate" intrusives occur only as areas of float usually associated with porphyritic and/or granitic rock types. Because of the fine grained nature of the rocks they have been classified in the field as basic intrusives. However, after petrographic examination "intermediate intrusive" is the correct classification. Included in the intermediate intrusives are, altered diorite, porphyritic micro diorite and altered micro monzonite.

Meta quartzite occurs only as an area of float surrounding the $P_3$ shaft - no definite outcrop was found. The rock is well indurated in hand specimen with a grey-blue colour and "pock-marked" possibly due to the weathering out of opaques (either iron oxides or sulphides). The meta-quartzite is almost certainly the metamorphosed equivalent of the quartzites of the Tarcoola Series which outcrop in the Tarcoola Hill vicinity.

The milky quartz veins are described in Section 3.4. (Mineralization). Detailed petrographic descriptions of 18 rocks collected from the area make up Appendix II.

## 3.3. STRUCTURE

When the S.M.L. was first covered by a preliminary reconnaissance survey in February/March this year, the regional strike as well as the strike of the mineralization appeared to be bearing in a north-west direction. Subsequent work however has shown the apparent strike to vary considerably over the area south-west of Pinding Rocks. Because of limited geological field data it is not yet possible to ascertain whether the strike changes are due to folding, faulting or just a contact effect between two intrusive bodies.

The examined northern part of the area (See Plan 505-5) is underlain by a large porphyritic granite body which outcrops sporadically between Pinding Rocks and the large granite outcrop (not yet mapped) in the north-west corner of the locality.

At Pinding Rocks several shears were observed which acted as planes of weakness for the intrusion of narrow (less than 2' wide) porphyry dykes. The $P_3$ shaft area also provides evidence for the introduction of the porphyry along shear planes.

It is apparent therefore, that both porphyry intrusion and mineralization are associated with shear systems. Structural control is thus considered important in evaluating the economic potential of the area.

## 3.4. MINERALIZATION

Mineralization was observed in four localities. These include the $P_1$, $P_2$ and $P_3$ sample points (Davidson, 1971) as well as shallow diggings 50' east of the 20S grid peg. In all cases the mineralization consists of small veins of milky quartz sub-outcrop in which (in some cases) visible sulphides are present. The sulphides, include pyrite, argentite?, possibly minor chalcopyrite together with various oxides and hydrated oxides of iron. Abundant boxworks also occur together with heavy limonite staining which suggests that the dominant primary sulphide was pyrite. Some specimens also display a light yellow secondary mineral thought to be an alteration product of a bismuth sulphide.

The total strike length of the discontinuous mineralization is about 1 mile and describes an arc from the $P_3$ shaft to the area of quartz veins around $P_1$.

Strong V.L.F. anomalies coincide with this arc which suggests some type of structural control for the mineralization.

Further V.L.F. and magnetometer surveys coupled with 5 to 10 percussion drill holes located in places of known mineralization are recommended in order to determine the type and probable extent of the mineralization.

The analyses of 17 rock specimens are listed in the Amdel report which makes up Appendix III. The locations of these specimens are plotted on Plans 505-5 and 505-6.

## 4. GEOCHEMISTRY

Geochemical data were collected in two ways.

1) Soil sampling to the south of and over the $P_3$ shaft together with minor sampling over the $P_2$ area.

2) Rock chip specimens of quartz veins from the localities of known mineralization.

The soil samples were collected from 72S to 52S along lines 400' apart with sample points 100' apart. Lines extended 500' both east and west of the north-south grid line. From 48S to 34S the line spacing was decreased to 200' so as to provide adequate coverage over the $P_3$ shaft area. Sample points extended from 20W of the baseline to 02E. Around the $P_2$ area 25 samples were collected which gave values of a similar order of magnitude to those from the $P_3$ area.

Samples were collected from the bottom of 9" deep holes which usually corresponded to the sub-horizon of calcrete development. Analyses of the samples were by the spectrographic technique, hence results can only be regarded as semi quantitative.

In general gold and bismuth concentrations are below the detection limits of the analytical instrument (3 p.p.m. and 1 p.p.m. respectively). Few silver values are greater than 0.1 p.p.m. (The detection limit of the technique) and the Cu, Pb and Zn values are generally low.

However, the Cu, Pb and Zn values are presented in contour form at a scale of 1" = 500'.

The Cu contour map displays only Lower and Upper Background areas, hence is of little value in delineating possible mineralization.

The Pb contour map shows two anomalous areas. A "Possibly Anomalous" area occurs at 44S, 14W while a "Probably Anomalous" area is located at 42S 04W. A higher than background silver value also occurs at the latter site. Because of the relative immobility of Pb in this environment, the above two anomalous areas could be useful in defining possible drill targets.

The Zn contour map displays a number of Possibly and Probably Anomalous areas, not all of which are significant. Because of the high mobility of Zn, the anomalous areas south and south-east of 46S are due to enrichment of Zn in alluvium by wash aways. Anomalous areas north of line 46S may or may not be significant but are too broad to define drilling targets.

One exception is an anomaly at 40S 04W which is almost coincident with an anomalous zone on the Pb contour diagram.

In summary, geochemical soil sampling in this area appears to be of marginal use as the transported overburden has diluted and/or transposed any residual anomalies. Therefore it is recommended that no further soil sampling be undertaken unless on a fine scale over limited areas.

The rock specimen geochemical results confirmed the presence of both bismuth and silver in above background concentrations within the milky quartz veins. Values range from 0.5 p.p.m. to 150 p.p.m. Ag and 3 p.p.m. to 0.1% Bi. Almost all specimens are massive milky quartz, with various degrees of boxwork development and limonite staining. Visible sulphides were observed in several specimens.

The Amdel report listing the analytical results plus specimen descriptions is presented in Appendix III.

## 5. GEOPHYSICS

Concurrently with the mapping programme and geochemical soil sampling, a very low frequency (V.L.F.) electromagnetic (E.M.) survey was conducted. The survey was run from 72S to 48N at 400' line spacings with 50' station spacings. A total of just under 100,000 line feet was covered using the pace and compass method to determine co-ordinates. Although this method was deemed suitable for a reconnaissance survey, more accurate work on known anomalies should be done using an accurately surveyed grid system.

The results in the form of unfiltered profiles (Plan 505-7) correspond well with the known geology and several anomalous areas warrant further more intensive coverage. No further V.L.F. work is considered necessary south of line 48S as both geophysics and geochemistry failed to produce any values above what is considered background.

Following the apparent success of the V.L.F. method in correlating with the known geology it is recommended that closer spaced lines be surveyed over the anomalous areas. Coupled with the more detailed work, lines north of 48N could be run in order to delineate the boundary of the apparent granite massif of which Pinding Rocks is a part. Also lines in proximity to 36N could be extended so that a western limit to the anomalies in this area could be found. It was observed when plotting the grid pegs on aerial photographs, that a slight bending in the line occurred between 32S-44S. This apparent magnetic disturbance may indicate a large ironstone body as some minor ironstone float was noted in the area. Hence a magnetometer survey may prove of value in providing some structural data as well as defining the nature of the source giving the high V.L.F. response.

Plans 505-7 and 505-8 are presented as enclosures at the back of the report. They show In-phase V.L.F. profiles and anomaly locations respectively.

## 6. CONCLUSIONS

Following an initial reconnaissance survey, semi detailed geological mapping, geochemical soil sampling and V.L.F.

geophysics programmes confirmed the presence of silver, bismuth mineralization associated with quartz veins. Discontinuous mineralization was observed over a strike length of just over one mile.

V.L.F. - E.M. anomalies coincident with known porphyry outcrop and mineralization infer structural control for mineralization as both the porphyry and quartz reefs have been introduced along shears.

Silver values of up to 5 oz/ton were obtained from quartz veins while bismuth analyses gave up to 0.1% from one sample. Most specimens however gave analyses significantly lower than the above.

## 7. RECOMMENDATIONS

1. More intensive V.L.F. surveys are recommended over the P3 area in order to delineate structure and to locate possible drill sites. The area north of 48N warrants further V.L.F. coverage so that the southerly limit of the granite massif may be established.

Because of the nature of the terrain as well as to assist future work it is suggested that an accurate grid be surveyed.

2. Limited magnetometer traverses over the anomalous areas defined by the V.L.F. survey warrant consideration. This technique could be useful in giving information as to the nature of the body giving the anomalous V.L.F. response.

3. A percussion drilling programme of 5 to 10 holes located in the areas of known mineralization would provide information as to the extent of mineralization together with information on the type of wall rock. The holes should be about 200' and depressed at about 50°.

4. No further soil geochemistry is recommended due to dilution and/or transposition of residual anomalies by transported overburden.

May 1971.

P.C. Smith
Geologist.
Minoil Services Pty. Ltd.

## REFERENCES


Davidson, J.E. (1971) — Three Monthly Report to 12.2.71. Archaean Explorations Pty. Ltd.

Whitten, G. (1960) — "Report on Geological Reconnaissance of the Tarcoola 4 mile Sheet". Dept. of Mines, S.A. Rpt. 50/162.

# APPENDIX I

## GEOCHEMICAL SOIL SAMPLE ANALYSES

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/320/0 - 4285/71

13 April 1971

The Geologist in Charge
Archaean Explorations
c/- Minoil Services Pty Ltd
105 Gouger Street
ADELAIDE SA 5000

Attention Mr T. Brice

REPORT AN4285/71

| | |
|---|---|
| YOUR REFERENCE: | Order 962 |
| MATERIAL: | Soil |
| IDENTIFICATION: | As listed |
| DATE RECEIVED: | 1/4/71 |

Enquiries quoting AN4285/71 to Officer in Charge please.

Spectrographic Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

jw

Semi-Quantitative Spectrographic Analysis

033

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 4285/71

Results in ppm unless otherwise stated. Detection limits in brackets.

| Sample No | Bi (1) | Ag (0·1) | Cu (0·5) | Pb (1) | Zn (20) | Au (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 65 S 01E | x | 0·1 | 3 | 5 | 30 | x | | | | |
| 02E | x | 0·1 | 20 | 2 | 40 | x | | | | |
| 03E | x | 0·1 | 8 | 3 | 30 | x | | | | |
| 04E | x | 0·1 | 8 | 8 | 30 | x | | | | |
| 05E | x | 0·1 | 8 | 5 | 20 | x | | | | |
| 00 | x | 0·1 | 15 | 5 | 30 | x | | | | |
| 01W | x | 0·1 | 8 | 3 | 40 | x | | | | |
| 02W | x | 0·1 | 8 | 5 | 20 | x | | | | |
| 03W | x | 0·1 | 10 | 8 | 20 | x | | | | |
| 04W | x | 0·1 | 10 | 5 | 30 | x | | | | |
| W | x | 0·1 | 10 | 10 | 30 | x | | | | |
| 15 00 | x | 0·1 | 8 | 10 | 30 | x | | | | |
| 35 00 | x | 0·1 | 8 | 3 | 20 | x | | | | |
| 45 00 | x | 0·1 | 8 | 3 | 20 | x | | | | |
| 55 01E | x | 0·1 | 8 | 3 | 40 | x | | | | |
| 02E | x | 0·1 | 5 | 2 | 30 | x | | | | |
| 03E | x | 0·1 | 8 | 8 | 20 | x | | | | |
| 04E | x | 0·1 | 10 | 8 | 40 | x | | | | |
| 05E | x | 0·1 | 10 | 2 | 30 | x | | | | |
| 00 | x | 0·1 | 5 | 2 | 20 | x | | | | |
| 01W | x | 0·1 | 10 | 8 | 40 | x | | | | |
| 02W | x | 0·1 | 10 | 5 | 30 | x | | | | |
| 03W | x | 0·1 | 15 | 5 | 30 | x | | | | |
| 04W | x | 0·1 | 10 | 3 | 30 | x | | | | |
| 05W | x | 0·1 | 10 | 8 | 30 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

Semi-Quantitative Spectrographic Analysis -034

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 4285/71

Results in ppm unless otherwise stated. Detection limits in brackets.

| ample No | Bi (1) | Ag (0·1) | Cu (0·5) | Pb (1) | Zn (20) | Au (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IS 00 | x | 0·1 | 10 | 5 | 30 | x | | | | |
| 2S 00 | x | 0·1 | 10 | 8 | 30 | x | | | | |
| 3S 00 | x | 0·5 | 8 | 5 | 20 | x | | | | |
| 4S 01E | x | 0·1 | 8 | 3 | 30 | x | | | | |
| 02E | x | 0·1 | 10 | 3 | 30 | x | | | | |
| 03E | x | 0·1 | 10 | 5 | 20 | x | | | | |
| 04E | x | 0·1 | 8 | 8 | 20 | x | | | | |
| 05E | x | 0·1 | 10 | 8 | 20 | x | | | | |
| 00 | x | 0·1 | 8 | 8 | 20 | x | | | | |
| 01W | x | 0·1 | 10 | 8 | 30 | x | | | | |
| 02W | x | 0·1 | 8 | 15 | 20 | x | | | | |
| 03W | x | 0·1 | 8 | 5 | 30 | x | | | | |
| 04W | x | 0·1 | 8 | 5 | 30 | x | | | | |
| 05W | x | 0·1 | 10 | 5 | 20 | x | | | | |
| S 00 | x | 0·1 | 10 | 5 | 20 | x | | | | |
| S 00 | x | 0·1 | 10 | 8 | 30 | x | | | | |
| S 00 | x | 0·1 | 10 | 2 | 20 | x | | | | |
| S 01E | x | 0·1 | 10 | 10 | 20 | x | | | | |
| 02E | x | 0·1 | 10 | 3 | 20 | x | | | | |
| 03E | x | 0·1 | 8 | 2 | 30 | x | | | | |
| 04E | x | 0·1 | 10 | 5 | 30 | x | | | | |
| 05E | x | 0·1 | 8 | 3 | 20 | x | | | | |
| 00 | x | 0·1 | 10 | 5 | 40 | x | | | | |
| 01W | x | 0·1 | 10 | 5 | 30 | x | | | | |
| 02W | x | 0·2 | 10 | 8 | 60 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

Semi-Quantitative Spectrographic Analysis

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 4285/71

Results in ppm unless otherwise stated. Detection limits in brackets.

| Sample No. | Bi (1) | Ag (0·1) | Cu (0·5) | Pb (1) | Zn (20) | Au (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 8S 03W | x | 0·1 | 8 | 8 | 60 | x | | | | |
| 04W | x | 0·1 | 10 | 8 | 30 | x | | | | |
| 05W | x | 0·1 | 10 | 8 | 20 | x | | | | |
| 9S 00 | x | 0·1 | 8 | 10 | 20 | x | | | | |
| 0S 00 | x | 0·1 | 8 | 10 | 30 | x | | | | |
| 1S 00 | x | 0·1 | 10 | 5 | 60 | x | | | | |
| 2S 01E | x | 0·1 | 5 | 3 | 20 | x | | | | |
| 02E | x | 0·1 | 10 | 10 | 30 | x | | | | |
| 03E | x | 0·1 | 10 | 3 | 40 | x | | | | |
| 04E | x | 0·1 | 10 | 3 | 30 | x | | | | |
| 05E | x | 0·1 | 8 | 3 | 40 | x | | | | |
| 00 | x | 0·1 | 10 | 3 | 60 | x | | | | |
| 01W | x | 0·1 | 8 | 5 | 20 | x | | | | |
| 02W | x | 0·1 | 8 | 5 | 30 | x | | | | |
| 03W | x | 0·1 | 10 | 5 | 30 | x | | | | |
| 04W | x | 0·1 | 8 | 5 | 20 | x | | | | |
| 05W | x | 0·1 | 8 | 8 | 20 | x | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| A2 | (67 x 6) = | 402 | | | | | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/320/0 - 4500/71

27 April 1971

The Geologist in Charge
Archaean Explorations
c/- Minoil Services Pty Ltd
105 Gouger Street
ADELAIDE SA 5000

Attention Mr T. Brice

REPORT AN4500/71

| | |
|---|---|
| YOUR REFERENCE: | Order 983 A/c Pinding Rocks |
| MATERIAL: | Soil |
| IDENTIFICATION: | As listed |
| DATE RECEIVED: | 15/4/71 |

Enquiries quoting AN4500/71 to Officer in Charge please.

Spectrographic Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for D.K. Rowley
for F.R. Hartley
Director

jw

JOB 7500/71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH ..... 1 .....

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 555 00 | > 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 2 | 545 00 | > 3 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 3 | 535 00 | > 3 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 4 | 525 00 | > 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 5 | 01W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 6 | 02W | > 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 7 | 03W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 8 | 04W | > 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 9 | 05W | > 5 | < 3 | < 30 | | | X | 0.1 | X | | | | |
| 10 | 01E | > 8 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 11 | 02E | < 5 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 12 | 03E | > 3 | < 5 | < 40 | | | X | 0.1 | X | | | | |
| 13 | 04E | > 8 | < 8 | < 60 | | | X | 0.1 | X | | | | |
| 14 | 05E | > 15 | < 8 | < 60 | | | X | 0.1 | X | | | | |
| 15 | 48500 | > 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 16 | 01W | < 10 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 17 | 02W | > 8 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 18 | 03W | < 10 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 19 | 04W | < 8 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 20 | 05W | > 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

-037

AMDEL ANALYTICAL SERVICE

JOB 5992/71 — Semi-Quantitative Spectrographic Analysis Scheme A2 — BATCH ... 7 .....

Form 23 — Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48S 06W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 2 | 07W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 3 | 08W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 4 | 09W | < 3 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 5 | 10W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 6 | 11W | < 3 | < 10 | < 30 | | | X | 0.1 | X | | | | |
| 7 | 12W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 8 | 13W | < 5 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 9 | 14W | < 3 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 10 | 15W | < 3 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 11 | 16W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 12 | 17W | < 3 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 13 | 18W | < 8 | 5 | < 20 | | | X | 0.1 | X | | | | |
| 14 | 19W | < 5 | 5 | < 20 | | | X | 0.1 | X | | | | |
| 15 | 20W | < 3 | 5 | < 30 | | | X | 0.1 | X | | | | |
| 16 | 21W | < 5 | < 3 | < 30 | | | X | 0.1 | X | | | | |
| 17 | 01E | < 8 | 5 | < 30 | | | X | 0.1 | X | | | | |
| 18 | 02E | < 10 | 5 | < 30 | | | X | 0.1 | X | | | | |
| 19 | 47S 00 | < 8 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 20 | 46S 00 | < 8 | < 8 | < 20 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

038

JOB 1500/71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH 3

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (50) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46501W | < 10 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 2 | 02W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 3 | 03W | < 8 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 4 | 04W | < 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 5 | 05W | < 8 | < 10 | < 30 | | | X | 0.1 | X | | | | |
| 6 | 06W | < 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 7 | 07W | < 3 | < 2 | < 20 | | | X | 0.1 | X | | | | |
| 8 | 08W | < 5 | < 3 | < 30 | | | X | 0.1 | X | | | | |
| 9 | 09W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 10 | 10W | < 8 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 11 | 11W | < 5 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 12 | 12W | < 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 13 | 13W | < 5 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 14 | 14W | < 3 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 15 | 15W | < 3 | < 3 | < 20 | | | X | 0.1 | X | | | | |
| 16 | 16W | < 8 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 17 | 17W | < 10 | < 15 | < 20 | | | X | 0.1 | X | | | | |
| 18 | 18W | < 10 | < 15 | < 20 | | | X | 0.1 | X | | | | |
| 19 | 19W | < 15 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 20 | 20W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

- 039 -

JOB 4500/71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH 4

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46S01E | < 10 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 2 | 02E | < 3 | < 3 | < 20 | | | X | 0.1 | X | | | | |
| 3 | 45S00 | < 5 | < 3 | < 20 | | | X | 0.1 | X | | | | |
| 4 | 44S01W | < 5 | < 3 | < 20 | | | X | 0.1 | X | | | | |
| 5 | 02W | < 10 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 6 | 03W | < 10 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 7 | 04W | < 8 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 8 | 05W | < 8 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 9 | 06W | < 5 | < 5 | < 20 | | | X | 0.1 | X | | | | |
| 10 | 07W | < 8 | < 10 | < 20 | | | X | 0.2 | X | | | | |
| 11 | 08W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 12 | 09W | < 60 | < 15 | < 20 | | | X | 0.1 | X | | | | |
| 13 | 10W | < 10 | < 12 | < 20 | | | X | 0.1 | X | | | | |
| 14 | 11W | < 8 | < 10 | < 40 | | | X | 0.1 | X | | | | |
| 15 | 12W | < 8 | < 10 | < 30 | | | X | 0.1 | X | | | | |
| 16 | 13W | < 10 | < 15 | < 30 | | | X | 0.1 | X | | | | |
| 17 | 14W | < 8 | < 20 | < 30 | | | X | 0.1 | X | | | | |
| 18 | 15W | < 15 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 19 | 16W | < 8 | < 15 | < 20 | | | X | 0.1 | X | | | | |
| 20 | 17W | < 5 | < 3 | < 20 | | | X | 0.2 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

040

Job 5.00.71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH 5

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 44S 18W | < 5 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 2 | 19W | < 5 | < 8 | < 20 | | | X | 0.2 | X | | | | |
| 3 | 20W | < 5 | < 8 | < 30 | | | X | 0.1 | X | | | | |
| 4 | 21W | 5 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 5 | 00 | 10 | < 10 | < 20 | | | X | 0.1 | X | | | | |
| 6 | 01E | < 8 | < 8 | < 20 | | | X | 0.2 | X | | | | |
| 7 | 02E | < 5 | < 10 | < 30 | | | X | 0.1 | X | | | | |
| 8 | 43S 00 | < 10 | < 15 | < 30 | | | X | 0.1 | X | | | | |
| 9 | 42S 00 | < 15 | < 20 | < 30 | | | X | 0.1 | X | | | | |
| 10 | 01W | < 15 | < 20 | < 20 | | | X | 0.2 | X | | | | |
| 11 | 02W | < 10 | < 20 | < 30 | | | X | 0.1 | X | | | | |
| 12 | 03W | < 15 | < 30 | < 20 | | | X | 0.1 | X | | | | |
| 13 | 04W | < 10 | < 5 | < 30 | | | X | 0.1 | X | | | | |
| 14 | 05W | < 10 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 15 | 06W | < 10 | < 8 | < 20 | | | 1 | 0.1 | X | | | | |
| 16 | 07W | < 10 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 17 | 08W | < 5 | < 5 | < X | | | X | 0.1 | X | | | | |
| 18 | 09W | < 8 | < 8 | < 40 | | | X | 0.1 | X | | | | |
| 19 | 10W | < 8 | < 8 | < 20 | | | X | 0.1 | X | | | | |
| 20 | 11W | < 10 | < 5 | < 30 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

041

JOB 1500/71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spec[illegible]ographic Analysis Scheme A2

BATCH ..[illegible]:.....:

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42S12W | 5 | 5 | 20 | | | x | 0·1 | x | | | | |
| 2 | 13W | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 3 | 14W | 10 | 8 | 40 | | | x | 0·1 | x | | | | |
| 4 | 15W | 10 | 5 | 30 | | | x | 0·1 | x | | | | |
| 5 | 16W | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 6 | 17W | 10 | 5 | 20 | | | x | 0·1 | x | | | | |
| 7 | 18W | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 8 | 19W | 8 | 8 | 20 | | | x | 0·1 | x | | | | |
| 9 | 20W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 10 | 01E | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 11 | 02E | 8 | 5 | 20 | | | x | 0·1 | x | | | | |
| 12 | 41S00 | 8 | 3 | 20 | | | x | 0·1 | x | | | | |
| 13 | 40S00 | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 14 | 01W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 15 | 02W | 10 | 8 | x | | | x | 0·1 | x | | | | |
| 16 | 03W | 10 | 8 | 40 | | | x | 0·1 | x | | | | |
| 17 | 04W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 18 | 05W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 19 | 06W | 8 | 8 | 20 | | | x | 0·1 | x | | | | |
| 20 | 07W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

042

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

Results in ppm unless otherwise stated. Detection limits in brackets.

BATCH

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10S08W | 8 | 10 | 20 | | | X | 0.1 | X | | | | |
| 2 | 09W | 8 | 10 | 20 | | | X | 0.1 | X | | | | |
| 3 | 10W | 8 | 10 | 30 | | | X | 0.1 | X | | | | |
| 4 | 11W | 8 | 10 | 30 | | | X | 0.1 | X | | | | |
| 5 | 12W | 8 | 5 | 20 | | | X | 0.3 | X | | | | |
| 6 | 13W | 8 | 8 | 20 | | | X | 0.1 | X | | | | |
| 7 | 14W | 8 | 10 | 20 | | | X | 0.1 | X | | | | |
| 8 | 15W | 15 | 15 | 40 | | | X | 0.3 | X | | | | |
| 9 | 16W | 10 | 8 | 20 | | | X | 0.1 | X | | | | |
| 10 | 17W | 10 | 10 | 30 | | | X | 0.1 | X | | | | |
| 11 | 18W | 5 | 10 | 20 | | | X | 0.1 | X | | | | |
| 12 | 19W | 5 | 8 | 20 | | | X | 0.1 | X | | | | |
| 13 | 20W | 8 | 10 | 30 | | | X | 0.1 | X | | | | |
| 14 | 01E | 10 | 8 | 30 | | | X | 0.1 | X | | | | |
| 15 | 02E | 10 | 8 | 30 | | | X | 0.1 | X | | | | |
| 16 | 39S00 | 10 | 10 | 30 | | | X | 0.1 | X | | | | |
| 17 | 38S00 | 10 | 8 | 30 | | | X | 0.1 | X | | | | |
| 18 | 01W | 8 | 10 | 20 | | | X | 0.1 | X | | | | |
| 19 | 02W | 8 | 3 | 20 | | | X | 0.1 | X | | | | |
| 20 | 03W | 8 | 5 | 20 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

-043

JOB 4509/71

AMDEL ANALYTICAL SERVICE

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 38S04W | 15 | 10 | 20 | | | X | 0.1 | X | | | | |
| 2 | 05W | 10 | 3 | 20 | | | X | 0.1 | X | | | | |
| 3 | 06W | 10 | 3 | 20 | | | X | 0.1 | X | | | | |
| 4 | 07W | 15 | 8 | 20 | | | X | 0.1 | X | | | | |
| 5 | 08W | 8 | 3 | 30 | | | X | 0.1 | X | | | | |
| 6 | 09W | 10 | 5 | 30 | | | X | 0.1 | X | | | | |
| 7 | 10W | 10 | 3 | 30 | | | X | 0.1 | X | | | | |
| 8 | 11W | 15 | 8 | 20 | | | X | 0.1 | X | | | | |
| 9 | 12W | 10 | 3 | 20 | | | X | 0.1 | X | | | | |
| 10 | 13W | 10 | 8 | 20 | | | X | 0.1 | X | | | | |
| 11 | 14W | 10 | 5 | 20 | | | X | 0.1 | X | | | | |
| 12 | 15W | 10 | 5 | 20 | | | X | 0.1 | X | | | | |
| 13 | 16W | 10 | 10 | 20 | | | X | 0.1 | X | | | | |
| 14 | 17W | 10 | 5 | 30 | | | X | 0.1 | X | | | | |
| 15 | 18W | 10 | 5 | 30 | | | X | 0.1 | X | | | | |
| 16 | 19W | 10 | 5 | 20 | | | X | 0.1 | X | | | | |
| 17 | 20W | 10 | 5 | 20 | | | X | 0.1 | X | | | | |
| 18 | 01E | 10 | 8 | 20 | | | X | 0.1 | X | | | | |
| 19 | 02E | 10 | 3 | 20 | | | X | 0.1 | X | | | | |
| 20 | 37S00 | 10 | 5 | 20 | | | X | 0.1 | X | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

044

ABDEL ANALYTICAL SERVICE

JOB 1500/71 — Semi-Quantitative Spectrographic Analysis Scheme A2 — BATCH ...

Form 23 — Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36500 | 15 | 10 | 20 | | | x | 0·1 | x | | | | |
| 2 | 01W | 10 | 3 | 20 | | | x | 0·1 | x | | | | |
| 3 | 02W | 8 | 3 | 30 | | | x | 0·1 | x | | | | |
| 4 | 03W | 5 | 3 | 30 | | | x | 0·1 | x | | | | |
| 5 | 04W | 8 | 5 | 30 | | | x | 0·1 | x | | | | |
| 6 | 05W | 8 | 5 | 30 | | | x | 0·1 | x | | | | |
| 7 | 06W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 8 | 07W | 10 | 5 | 30 | | | x | 0·1 | x | | | | |
| 9 | 08W | 8 | 5 | 20 | | | x | 0·1 | x | | | | |
| 10 | 09W | 3 | 5 | x | | | x | 0·1 | x | | | | |
| 11 | 10W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 12 | 11W | 10 | 10 | 20 | | | x | 0·1 | x | | | | |
| 13 | 12W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 14 | 13W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 15 | 14W | 10 | 10 | 40 | | | x | 0·1 | x | | | | |
| 16 | 15W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 17 | 16W | 8 | 10 | 40 | | | x | 0·1 | x | | | | |
| 18 | 17W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 19 | 18W | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 20 | 19W | 5 | 8 | 30 | | | x | 0·1 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

AMDEL ANALYTICAL SERVICE

JOB 4509/71 — Semi-Quantitative Spectrographic Analysis Scheme A2 — BATCH 9

Form 23 — Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36S20W | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 2 | 01E | 10 | 10 | 20 | | | x | 0·1 | x | | | | |
| 3 | 02E | 5 | 5 | 20 | | | x | 0·1 | x | | | | |
| 4 | 35S00 | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 5 | 34S00 | 8 | 3 | 20 | | | x | 0·1 | x | | | | |
| 6 | 01W | 10 | 5 | 30 | | | x | 0·1 | x | | | | |
| 7 | 02aW | 5 | 3 | 20 | | | x | 0·1 | x | | | | |
| 8 | 02bW | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 9 | 03W | 5 | 3 | 30 | | | x | 0·1 | x | | | | |
| 10 | 04W | 5 | 3 | 20 | | | x | 0·1 | x | | | | |
| 11 | 05W | 8 | 5 | 30 | | | x | 0·1 | x | | | | |
| 12 | 06W | 8 | 5 | 20 | | | x | 0·1 | x | | | | |
| 13 | 07W | 5 | 5 | 20 | | | x | 0·1 | x | | | | |
| 14 | 08W | 5 | 8 | 30 | | | x | 0·1 | x | | | | |
| 15 | 09W | 8 | 10 | 20 | | | x | 0·1 | x | | | | |
| 16 | 10W | 8 | 8 | 20 | | | x | 0·1 | x | | | | |
| 17 | 11W | 5 | 10 | 30 | | | x | 0·1 | x | | | | |
| 18 | 12W | 5 | 5 | 30 | | | x | 0·1 | x | | | | |
| 19 | 13W | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 20 | 14W | 8 | 8 | 20 | | | x | 0·1 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

940

ABBE ANALYTICAL SERVICE

JOB 4590/71

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 34-15W | 5 | 3 | 40 | | | x | 0·1 | x | | | | |
| 2 | 16W | 5 | 5 | 30 | | | x | 0·1 | x | | | | |
| 3 | 17W | 5 | 8 | 30 | | | x | 0·1 | x | | | | |
| 4 | 18W | 8 | 8 | 40 | | | x | 0·1 | x | | | | |
| 5 | 19W | 3 | 1 | 20 | | | x | 0·1 | x | | | | |
| 6 | 20W | 5 | 8 | 30 | | | x | 0·1 | x | | | | |
| 7 | 01E | 8 | 8 | 20 | | | x | 0·1 | x | | | | |
| 8 | 33S00 | 8 | 3 | 20 | | | x | 0·1 | x | | | | |
| 9 | 32S00 | 8 | 5 | 20 | | | x | 0·1 | x | | | | |
| 10 | 00 01W | 3 | 10 | 30 | | | x | 0·1 | x | | | | |
| 11 | 02W | 10 | 15 | 20 | | | x | 0·1 | x | | | | |
| 12 | 03W | 15 | 15 | 30 | | | x | 0·1 | x | | | | |
| 13 | 04W | 10 | 8 | 20 | | | x | 0·1 | x | | | | |
| 14 | 05W | 10 | 8 | 30 | | | x | 0·1 | x | | | | |
| 15 | 06W | 8 | 3 | 20 | | | x | 0·1 | x | | | | |
| 16 | 00 | 8 | 1 | 20 | | | x | 0·1 | x | | | | |
| 17 | 01E | 3 | 8 | 20 | | | x | 0·1 | x | | | | |
| 18 | 02E | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 19 | 03E | 5 | 5 | 40 | | | x | 0·1 | x | | | | |
| 20 | 04E | 5 | 3 | 20 | | | x | 0·1 | x | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

047

JOB 1500/71

AMDEL ANALYTICAL SERVICE

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH 2

Form 23

Results in ppm unless otherwise stated. Detection limits in brackets.

| | Sample No. | Cu (0.5) | Pb (1) | Zn (20) | Sn (1) | Cd (3) | Bi (1) | Ag (0.1) | Au (3) | Ga (1) | Ge (1) | As (50) | Sb (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 00 05E | 5 | 10 | 30 | | | x | 0·1 | x | | | | |
| 2 | 01N 00 | 5 | 5 | 20 | | | x | 0·1 | x | | | | |
| 3 | 02N 00 | 8 | 5 | 30 | | | x | 0·1 | x | | | | |
| 4 | 01W | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 5 | 02W | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 6 | 03W | 5 | 8 | 30 | | | x | 0·1 | x | | | | |
| 7 | 04W | 5 | 15 | 40 | | | x | 0·1 | x | | | | |
| 8 | 01E | 5 | 8 | 30 | | | x | 0·1 | x | | | | |
| 9 | 02E | 8 | 8 | 30 | | | x | 0·1 | x | | | | |
| 10 | 03E | 5 | 8 | 20 | | | x | 0·1 | x | | | | |
| 11 | 04E | 8 | 8 | 40 | | | x | 0·1 | x | | | | |
| 12 | 05E | 8 | 8 | 30 | | | x | 0·1 | x | | | | |
| 13 | 01S 00 | 8 | 8 | 20 | | | x | 0·1 | x | | | | |
| 14 | 02S 00 | 5 | 5 | 30 | | | x | 0·1 | x | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | * 34S 02E WAS NOT RECEIVED BUT HAD 2 SAMPLES FOR 34S 02W. THESE HAVE | | | | | | | | | | | | |
| 19 | BEEN RECORDED AS (a) AND (b) | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

870-048

AE 2234 x 6J = 1404

# APPENDIX II

## PETROGRAPHIC DESCRIPTIONS

## List of Petrographic Specimens with Classifications

| Specimen No. | Classification |
|---|---|
| PR15B | Altered and recrystallised granodiorite. |
| PR4 | Sheared granite. |
| PR9A | Granite |
| PR7 | Micro adamellite. |
| PR17 | Porphyritic granite aplite. |
| PR16B | Porphyritic rhyodacite |
| PR2C | Metamorphosed porphyritic micro diorite. |
| PR5 | Altered diorite. |
| PR3 | Micro adamellite (weakly porphyritic) |
| 20S005E/A | Partly greisenised granite. |
| PR18 | Altered porphyritic micro monzonite. |
| PR16A | Porphyritic micrographic granite. |

(Cont'd)

List of Petrographic Specimens with Classifications

| Specimen No. | Classification |
|---|---|
| PR2B | Porphyritic micro granite. |
| 34S05W/A | Granodioritic crystal accumulate. |
| PR9B | Porphyritic micro adamellite |
| PR9C | Micro adamellite - micro granite. |
| 34S05W/B | Porphyritic micro diorite. |
| PR10B | Greisen |

OFR 157-052

231 MAGILL ROAD
MAYLANDS, S.A. 5069
Telephone . . . 63 5659
After Hours . . . 31 3019

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

10th May 1971.

The Senior Geologist,
Minoil Services,
105 Gouger Street,
ADELAIDE, S.A. 5000.

REPORT CMS 71/4/26

YOUR REFERENCE: Order No. 986 of 16th April 1971.

DATE RECEIVED: 16th April 1971.

SAMPLE NOS: PR 15B, PR 4, PR 9A, PR 7, PR 17, PR 16B, PR 2C, PR 5, PR 3, 20S 005E/A, PR 18, PR 16A, PR 2B, 34S 05W/A, PR 9B, PR 9C, 34S 05W/B, PR 10B.

SUBMITTED BY: Senior Geologist.

WORK REQUESTED: Petrology

for

H.W. Fander, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 053

Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 15B |
| Weakly altered and recrystallised granodiorite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 15B

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 5485

a. Hand Specimen:

A coarse-grained acid igneous rock.

b. Microscopic:

The rock is a medium to coarse-grained granodiorite in composition which has undergone minor recrystallisation as well as alteration. The plagioclase feldspar (albite) occurs as medium-grained stumpy laths rarely reaching 1 mm in length. This mineral forms 50-60% of the rock. The other major component is quartz which forms 20-30% of the rock. The quartz occurs in irregular medium to coarse-grained crystals which, during weak recrystallisation, has replaced (irregularly) sodic rims of the plagioclase crystals and this sodic albite has recrystallised as medium grained aggregates with sharp, clear twinning (sometimes chessboard twinning). Some of this alkaline feldspar has recrystallised on the minor (<10%) coarse-grained alkaline potash feldspars. The potash feldspar grains are clouded with hematitic iron oxides of secondary origin and primary plagioclases contain myriads of very fine-grained muscovite flakes (alteration). Other minor medium-grained flakes of muscovite (up to 0.5 mm) of secondary origin are present and traces of hydrothermal rutile and fluorite are present.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 4 |
| Sheared granite |

Job No. CMS 71/4/26 Date Received: 16/4/17

Reference O/N 986

Sample No. PR 4

Nature of Sample: Hand Specimen

**DESCRIPTION** **SECTION No.** 5486

a. Hand Specimen:

Pale buff-pink, sheared (?)granitic rock.

b. Microscopic:

This rock is a cataclastically deformed granite probably from a fault zone. Staining tests for potash feldspar indicate a predominance of this mineral over plagioclase, and quartz too. The relic textures clearly indicate primary grainsizes greater than 1 mm but the now schistose rock consists of elongate strained and recrystallised quartz and feldspars. Much of the material has been granulated to sizes less than 0.05 mm. The potash feldspar is microcline and the plagioclase is probably oligoclase-albite although no twinning was observed to aid confirmation of this. Fine muscovite flakes in the plagioclase are alteration products but recrystallised fine to medium-grained muscovite and biotite throughout the rock (2-3%) are products of metamorphism. Accessory apatite and opaques are also present.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 055

Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 9A |
| Granite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 9A

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5487

a. Hand Specimen:

A coarse-grained, pink granite.

b. Microscopic:

In thin section potash feldspar (40%) dominates over plagioclase feldspar (15-20%) and quartz is also plentiful (40%). Minor biotite and occasional opaques are the only other primary constituents. All potash feldspar crystals in this coarse-grained granite (average grainsize 2 mm) are clouded with kaolinite alteration and invariably exhibit exsolution textures (perthite). Minor kaolinitic clouding and traces of sericite alteration have affected the sodic plagioclase ($An_{10}$) crystals present.

I.F. Scott. M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 056 Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 7 |
| Microadamellite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 7

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5488

a. Hand Specimen:

A medium-grained, pink aplite with minor pegmatitic segregations.

b. Microscopic:

This is a medium-grained aplite in which only very rare examples of crystals greater than 1 mm across are present. Staining tests for potash feldspar show that this mineral is of similar abundance to the plagioclase i.e. the rock is a microadamellite.
Cloudy kaolinitic alteration accompanied by traces of sericite are especially evident in the sodic plagioclase crystals.
The potash feldspar is microcline and in the coarse-grained pegmatitic segregation the potash feldspar is perthitic and intergrown with coarse-grained quartz.
Accessory primary biotite and opaques are present and traces of muscovite were also observed.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 057 Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 17 |
| Porphyritic granite aplite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 17

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5489

a. Hand Specimen:

A pink, medium-grained, aplitic rock.

b. Microscopic:

Staining tests show that potash feldspar far outweighs the sodic plagioclase content.
Quartz forms nearly 30% of the rock and the overall composition is therefore granitic.
The rock is texturally unusual. What appear to be phenocrysts (2-5%) of quartz (3-4 mm) and potash feldspar (1-2 mm) are present in a medium-grained granular groundmass with a very large range of grainsizes (0.05 mm to 0.5 mm).
Because intergranular textures are definitely not typically igneous it is thought that the rock has undergone partial granulation and recrystallisation, but no directional textures have resulted.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 058 Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 16B |
| Porphyritic rhyodacite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 16B

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5490

a. Hand Specimen:

A brown coloured quartz-feldspar porphyry. Phenocrysts form nearly 50% of the rock.

b. Microscopic:

Phenocrysts of quartz (1-3 mm), plagioclase feldspar (2-4 mm), and potash feldspar as well as minor biotite and (?)pyroxene are present in a devitrified quartzo-feldspathic (potash) glassy groundmass. Staining tests for potash feldspar clearly indicate a predominance of this mineral in the groundmass but less than half of the feldspar phenocrysts are potassic. The staining tests also show that very little of the groundmass is quartz and that plagioclase feldspar is the other important microcrystalline component occurring interstitially to potash feldspar spherulites.

These spherulitic structures have commonly nucleated on phenocrysts suggesting a process of devitrification of an original alkaline glassy matrix. The rare biotite phenocrysts (0.5 mm) are unaltered but the minor pyroxene has been almost completely pseudomorphed by opaques and (?)clay minerals. Incipient biotite flakes have developed around these opaque alteration products and also as random crystals throughout the potassic areas of the groundmass.

The quartz content of the rock barely reaches 10%, most of which occurs as phenocrysts.

Kaolinitic clouding has affected most of the feldspar phenocrysts.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 059 Date: 7th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 2C |
| Metamorphosed porphyritic microdiorite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 2C

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5491

a. Hand Specimen:

A dark green-grey, medium-grained (?)igneous rock.

b. Microscopic:

This rock represents a recrystallised (metamorphosed) porphyritic microdiorite in which rare relict phenocrysts of calcic andesine ($An_{45-50}$) are present in an essentially medium-grained groundmass (average 0.4 mm).

The whole rock has been severely actinolitised and this mineral occurs as fine to coarse aggregates throughout the rock (50% of the rock). Biotite aggregates (1.5 mm across) form 5-7% of the rock and occur randomly distributed throughout.

The medium-grained biotite flakes (<0.2 mm) are sometimes chloritised and invariably associated with accessory fine rutile. 2-3% of sericite alteration is common to all feldspathic areas.

Any possible mafic phenocrysts have been transformed to actinolite-biotite aggregates.

I.F. Scott, M.Sc.

060

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 7th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 5 |
| Altered diorite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 5

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5492

a. Hand Specimen:

Dark grey-green, coarse-grained (?)amphibolite.

b. Microscopic:

A coarse-grained equivalent of PR 2C.
In this rock calcic andesine feldspars are intergrown with coarse-grained actinolite crystals and aggregates (recrystallised mafic minerals) and accessory primary quartz.
Intense alteration of feldspars has taken place in some areas (sericitisation) and it is thought that most of the actinolitic amphibole has in fact been recrystallised or possibly formed by uralitisation of pyroxenes. Minor amphibole needles have recrystallised in feldspar grains and traces of zoisite-clinozoisite alteration accompanies the sericitisation of these same feldspars. Biotite is absent (cf PR 2C) but accessory epidote chlorite and sphene are present as alteration products in the mafic areas.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 7th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 3 |
| Microadamellite (weakly porphyritic) |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 3

Nature of Sample: Hand Specimen

**DESCRIPTION** **SECTION No.** 5493

a. Hand Specimen:

A pink aplite.

b. Microscopic:

This medium-grained acid igneous rock is adamellitic in composition with a potash feldspar content just greater than the plagioclase portion, the latter being equivalent to the quartz.
Accessory primary biotite is also present.
Plagioclase feldspars are invariably clouded with kaolinitic alteration and in a minor number of cases flakes of muscovite have also developed as secondary minerals. Other very minor examples of muscovite appear to replace biotite.
Rare phenocrysts of plagioclase are also present. Grainsizes of groundmass quartz and feldspar average 0.5 mm. The plagioclase has a composition near $An_{10}$ and the potash feldspar exhibits cross-hatched twinning typical of microcline.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 18 |
| Altered porphyritic micromonzonite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 18

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 5495

a. Hand Specimen:

A very dark grey, feldspar porphyry.

b. Microscopic:

Phenocrysts of plagioclase feldspar are present in a quartzo-feldspathic groundmass. In fact the quartz content of the groundmass is very low (<2%) and the potash feldspar content, as shown by staining methods, is equal to or greater than plagioclase i.e. the rock is a porphyritic micromonzonite, the groundmass having an average grainsize of 0.2 mm.

Rare biotite phenocrysts are also present and perhaps other mafic phenocrysts were also. The latter have been completely replaced by various combinations of epidote-quartz-actinolite and biotite. These alteration products, especially epidote and actinolite are very common (+10%) in fine to medium grained aggregates throughout the groundmass, in veins (epidote) and replacing feldspars (weakly) and mafic phenocrysts (completely). The alteration is compositionally not unlike that seen in PR 20.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 063 Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| 20 S 005 E/A |
| Partly greisenised granite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. 20 S 005 E/A

Nature of Sample: Hand Specimen

**DESCRIPTION** **SECTION No.** 5494

a. Hand Specimen:

Coarse-grained pink granite.

b. Microscopic:

This is a very coarse-grained biotite granite which has been partly altered by early stages of greisenisation.
Minor biotite is partly or completely pseudomorphed by muscovite. Muscovite aggregates (often radiating), accompanied by accessory fluorite and colloform banded lussatite (fibrous opal), replace plagioclase crystals almost completely. Traces of opaques have altered to leucoxene or rutile.
Microcline is the coarse-grained potash feldspar which predominates over the greisenised plagioclase in this rock. It is relatively unaltered but has been fractured by deformation which has also caused straining and recrystallisation of some of the quartz areas.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 16A |
| Porphyritic micrographic-granite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 16A

Nature of Sample: Hand Specimen

DESCRIPTION SECTION No. 5496

a. Hand Specimen:

A pink, feldspar porphyry containing some phenocryst greater than 5 mm in length.

b. Microscopic:

Phenocrysts of plagioclase and potash feldspar as well as quartz and biotite (40% of the rock in all) are enveloped in a medium-grained groundmass of micro-graphically intergrown quartz, potash feldspar and minor plagioclase.

Plagioclase phenocrysts are intensely altered and iron stained. Clay-sericite cores are present in all plagioclase phenocrysts. Groundmass potash feldspar and phenocrysts are clouded with reddish kaolinitic alteration also.

Minor opaques are altered to (?)sphene and this alteration product is also present in biotite phenocrysts. Randomly oriented incipient biotite slithers (as in PR 16B) are present throughout the groundmass in minor amounts.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 065 Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 2B |
| Porphyritic microgranite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 2B

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 5497

a. Hand Specimen:

Another dark pink-grey feldspar porphyry.

b. Microscopic:

This rock is also a porphyritic microgranite.
The phenocrysts consist of albite-oligoclase (dominant), potash feldspar, minor quartz and (?)mafics. Although plagioclase is a more important phenocryst component it is almost absent in the groundmass where spherulitic potash feldspar is abundant.
The outer margins of individual spherulites (0.1 mm) are semi-micrographically intergrown with quartz. The overall composition is therefore granitic although the quartz content is close to the lower boundary (grading into syenitic). A number of mafic phenocrysts have been completely altered and pseudomorphed by chlorite (dark green), opaques, sphene and secondary biotite. The green biotite occurs as haloes around the pseudomorphed (?)pyroxene phenocrysts and in places it has been chloritised also. Thin slithers of biotite are also scattered throughout the groundmass (as in PR 16A,B).

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 066 Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| 34S 05W/A |
| Granodioritic crystal accumulate (weakly greisenised) |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference C/N 986

Sample No. 34S 05W/A

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 5498

a. Hand Specimen:

A pink, coarse-grained granitic rock.

b. Microscopic:

Staining tests indicate that less than 20% of the feldspar in this rock is potassic in composition. Coarse-grained plagioclase feldspar accounts for 60% of the rock and quartz another 25%. The quartz also occurs as occasional very large crystals (5 mm plus) and, together with the coarse plagioclase, these minerals appear to represent a phenocryst accumulate. Less than 25% of the rock can be considered as interstitial material and it is here that most of the potash feldspar has segregated. In these areas the potash feldspar is graphically intergrown with quartz and minor small crystals (<0.75 mm) of plagioclase are also present. Only very rare examples of coarse potash feldspar were determined by staining techniques.

Minor greisenisation (development of bunches of muscovite) has affected the rock especially in the interstitial areas (5% muscovite in all). Clouding of plagioclases by fine sericite is also a common phenomenon.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 9B |
| Porphyritic microadamellite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 9B

Nature of Sample: Hand Specimen

DESCRIPTION SECTION No. 5499

a. Hand Specimen:

A pink aplite with black "spots" of biotite.

b. Microscopic:

Staining tests on this porphyritic micro-admellite indicate that the potash feldspar is dominant (50%) but not by as great a proportion necessary for a microgranite classification.
Only very rare crystals of quartz and potash feldspar are large enough (>1.5 mm) to be called phenocrysts. Average grainsizes in the rock are approximately 0.5 mm.
The groundmass texture is typically aplitic in which quartz and feldspar are irregular in shape but generally equidimensional and "sugary". Biotite is a minor primary component (1-2%) associated with traces of opaques.
Most of the feldspars are weakly clouded with kaolinitic alteration and traces of sericite.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD. 068 Date: 10th May 1971.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 9C |
| Microadamellite-microgranite |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 9C

Nature of Sample: Hand Specimen

DESCRIPTION SECTION No. 5500

a. Hand Specimen:

Similar to PR 9B.

b. Microscopic:

As for PR 9B except this specimen is slightly richer in potash feldspar (approaching microgranitic composition). The texture is typically aplitic but portion of the sample contains a coarse-grained "pegmatitic" segregation. The minerals in this coarse-grained portion are quartz perthitic potash feldspar and minor albite ($An_{10}$). Biotite is again a minor (<3%) primary component. Apart from the usual kaolinitic clouding of feldspar weathering fractures contain opaline silica linings.

I.F. Scott, M.Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

069

Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| 34S 05W/B |
| Porphyritic microdiorite (approaching granodiorite) |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. B4S 05W/B

Nature of Sample: Hand specimen

**DESCRIPTION** **SECTION No.** 5501

a. Hand Specimen:

A grey-pink, medium to coarse-grained intermediate rock.

b. Microscopic:

This rock could be described as a porphyritic microdiorite because the larger mafic crystals are sufficiently coarser-grained than the average groundmass grainsize (0.6 mm). Hornblende phenocrysts reach dimensions of 2.5 mm but the numerous diopside crystals vary in size from less than 0.5 mm to aggregates coarser than 1.5 mm. Biotite (mostly chloritised) also occurs as an important mafic constituent (7-10%) but grainsizes never reach 1 mm. Total mafics form 40-50% of the rock and pyroxenes are more important than hornblende and biotite together. Opaques also form 2-3% of the primary constituents and are weakly magnetic in hand specimen. The quartzo-feldspathic constituents occurring interstitially to mafics consist of plagioclase laths of remarkable even length (0.6 mm average) and interstitial quartz (7-10%) and minor potash feldspar (checked by staining). The latter two sometimes exhibit graphic intergrowths.

Plagioclase alteration consists of kaolinitic clouding and weak sericitisation.

Minor epidote accompanies chlorite replacing biotite.

I.F. Scott, M.Sc.

U70

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date: 10th May 1971

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

| IDENTIFICATION |
| --- |
| PR 10B |
| Greisen |

Job No. CMS 71/4/26 Date Received: 16/4/71

Reference O/N 986

Sample No. PR 10B

Nature of Sample: Hand specimen

DESCRIPTION SECTION No. 5502

a. Hand Specimen:

A coarse-grained, grey-pink quartz-muscovite rock.

b. Microscopic:

A typical coarse-grained greisen consisting almost solely of quartz and muscovite.
The primary rock was probably granitic and relict traces of potash feldspar as well as relict textures of muscovitised biotite are still evident (traces of rutile are present in the latter).
The muscovite occurs as fine to coarse-grained aggregates (average grainsize 0.2 mm) and quartz which forms the other major constituent is commonly stained with sutured grain boundaries. Muscovite and quartz are present in approximately equal proportions in this rock.

I.F. Scott, M.Sc.

# APPENDIX III
# ROCK SPECIMEN ANALYSES

## List of Specimens with Macroscopic Descriptions

| Specimen No. | Description |
|---|---|
| PR1A | Quartz feldspar rock with an unidentified green coloured mineral. |
| 38S15W/B | Milky quartz with limonite and bismuth carbonate staining. Dump sample from diggings. |
| 38S15W/C | Milky quartz with iron staining plus unidentified light green mineral. Dump sample from diggings. |
| PR2D | Ironstone - float specimen. |
| 38S15W/A | Milky quartz with visible sulphides numerous boxworks and limonite staining. Dump sample from diggings. |
| PR13 | From shallow diggings. Milky quartz with high iron content. |
| PR21 | Milky quartz - minor altered iron oxides - from outcropping quartz reef. |
| PR19 | Milky quartz with opaques (magnetite ?) limonite - some evidence of shearing Unidentified green mineral plus boxworks. |

## List of Specimens with Macroscopic Descriptions

| Specimen No. | Description |
|---|---|
| 20S005E/D | Porphyritic rock - dark red brown feldspar grains. Dump specimen from shallow diggings. |
| PR10B | quartz-epidote rock with unidentified magenta coloured mineral associated with quartz vein. |
| PR10A | Milky quartz with visible sulphides and iron oxides. From shallow diggings. |
| PR20 | Similar to PR21. |
| PR12 | Similar to PR13. |
| PR11 | Milky quartz with magenta coloured mineral, iron oxides and possible yellow bismuth carbonate. |
| 20S005E/C | Heavy ironstone type rock - unidentified dark mineral also purple-brown oxidation product. Dump Specimen from shallow diggings. |
| 20S005E/B | Milky quartz with limonitic box-works-pyrite (?) Also cubic black mineral (1% iron oxide). Yellow staining - bismuth carbonate. Dump specimen from shallow diggings. |

## List of Specimens with Macroscopic Descriptions

| Specimen No. | Description |
|---|---|
| PR1B | Altered porphyritic rock - possibly mineralised. Float specimen from shallow diggings. |

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/320/0 - 4542/71

28 April 1971

The Geologist in Charge
Archaean Explorations
c/- Minoil Services Pty Ltd
105 Gouger Street
ADELAIDE SA 5000

Attention Mr T. Brice

REPORT AN4542/71

| | |
|---|---|
| YOUR REFERENCE: | Order 988 |
| MATERIAL: | Rock chip and float samples |
| IDENTIFICATION: | As listed - Finding Rocks Prospect |
| DATE RECEIVED: | 16/4/71 |

Enquiries quoting AN4542/71 to Officer in Charge please.

Spectrographic Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

per D. K. Rowley

for F.R. Hartley
Director

jw

Semi-Quantitative Spectrographic Analysis

076

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 4542/71

Results in ppm unless otherwise stated. Detection limits in brackets.

| mple No | Au (3) | Ag (0·1) | Bi (1) | Cu (0·5) | Zn (20) | Pb (1) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| R1A | x | 3·0 | 25 | 8 | x | 120 | | | | |
| S15W/B | x | 80 | 500 | 20 | 20 | 150 | | | | |
| S15W/C | x | 20 | 30 | 250 | 20 | 1,000 | | | | |
| R2D | x | 0·5 | 3 | 10 | 20 | 100 | | | | |
| S15W/A | x | 150 | 500 | 80 | 100 | 1,500 | | | | |
| PR13 | x | 40 | 30 | 25 | 40 | 600 | | | | |
| PR21 | x | 15 | 20 | 20 | 60 | 200 | | | | |
| PR19 | x | 60 | 1,000 | 300 | 800 | 400 | | | | |
| OS 05E/D | x | 20 | 15 | 20 | 200 | 2,000 | 20S 005E ON PAPERWORK | | | |
| R10B | x | 2·0 | 3 | 8 | x | 150 | | | | |
| 0A | 3 | 5·0 | 3 | 30 | x | 350 | | | | |
| PR20 | 3 | 5·0 | 20 | 30 | 40 | 100 | | | | |
| PR12 | 3 | 30 | 200 | 250 | 2,000 | 3,000 | | | | |
| PR11 | 3 | 30 | 150 | 100 | 1,500 | 3,000 | | | | |
| 20S 005E/C | x | 20 | 80 | 300 | 800 | >10,000 | | | | |
| 20S 005E/E | - LISTED - NOT RECEIVED | | | | | | | | | |
| 20S 005E/B | x | 150 | 80 | 200 | 250 | 3,000 | RECEIVED - NOT LISTED | | | |
| PR18 | x | 3·0 | 20 | 20 | 60 | 400 | | | | |
| | | | | | | | | | | |
| | Note: 20S 005E/E should read 20S 005/B. | | | | | | | | | |
| | 20S 005E should be 20S 005E/D on Application Sheet | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 0. A2 | [17 x 6] = | 102 | | | | | | | | |
| | | | | | | | | | | |

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

LEASE BOUNDARY

134° 25'

30° 39'

134° 30'

30° 43'

Bulga Well

Tarcoola Hill

TARCOOLA

Pinding Well

Quarry

Claysons Well

PINDING ROCKS

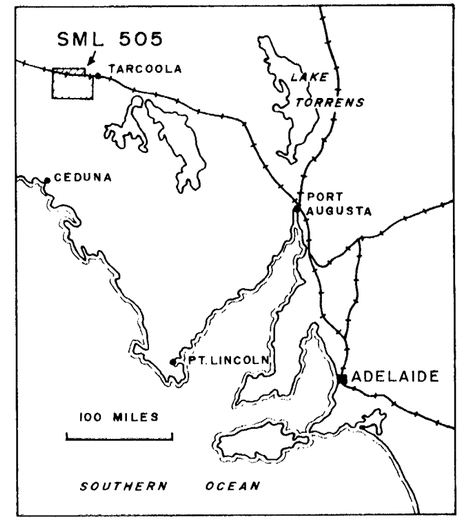
Pipeline

Hierns Well

GYPSUM LAKES

LEASE BOUNDARY

N




LEGEND

- Road with grid
- Track
- Railway line
- Fence
- Gate
- Well
- Tank
- Mine
- Lake
- Hill
- Area discussed in report

SCALE

MILES 2 1 0 2 4 6 MILES

KILOMETRES 2 1 0 2 4 6 KILOMETRES



ARCHAEAN EXPLORATIONS PTY. LTD.

SML 505 – TARCOOLA AREA

PINDING ROCKS PROSPECT

# LOCALITY PLAN

ENV 1557-1

| | | |
|---|---|---|
| GEOLOGIST: P.C. SMITH | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD ADELAIDE S.A |
| DATE MAY 1971 | | |

134°25'

30°39'

R.S.

"Malbooma O.S."

TRANS - AUSTRALIAN RAILWAY

Bulga Well

Kychering Rocks

TOLMERS HILL

30°43'

DARK HILL

TARCOOLA

PINDING WELL

Claysons Well

Pipeline

Dam

Pinding Rocks

Hiern's Well

GYPSUM LAKES

GYPSUM LAKES

MT FINKE

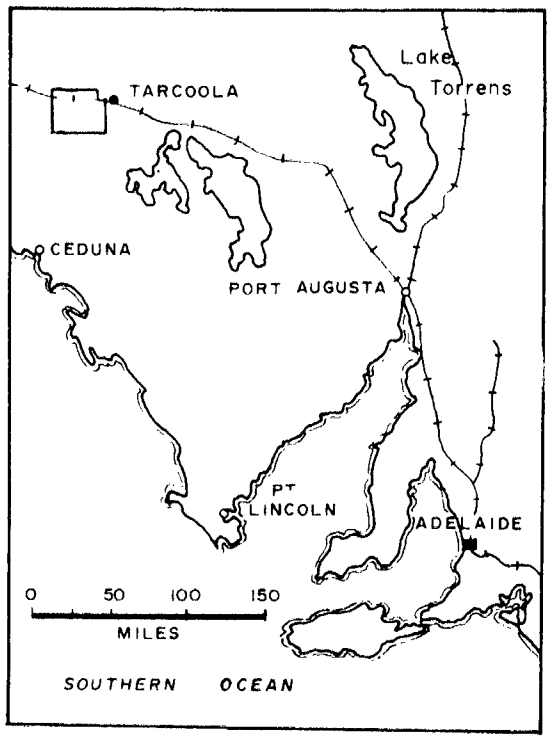
LITTLE MT FINKE

HEARTBREAK

133°57'

31°00'

134°30'




SCALE

4 3 2 1 0 4 8

MILES



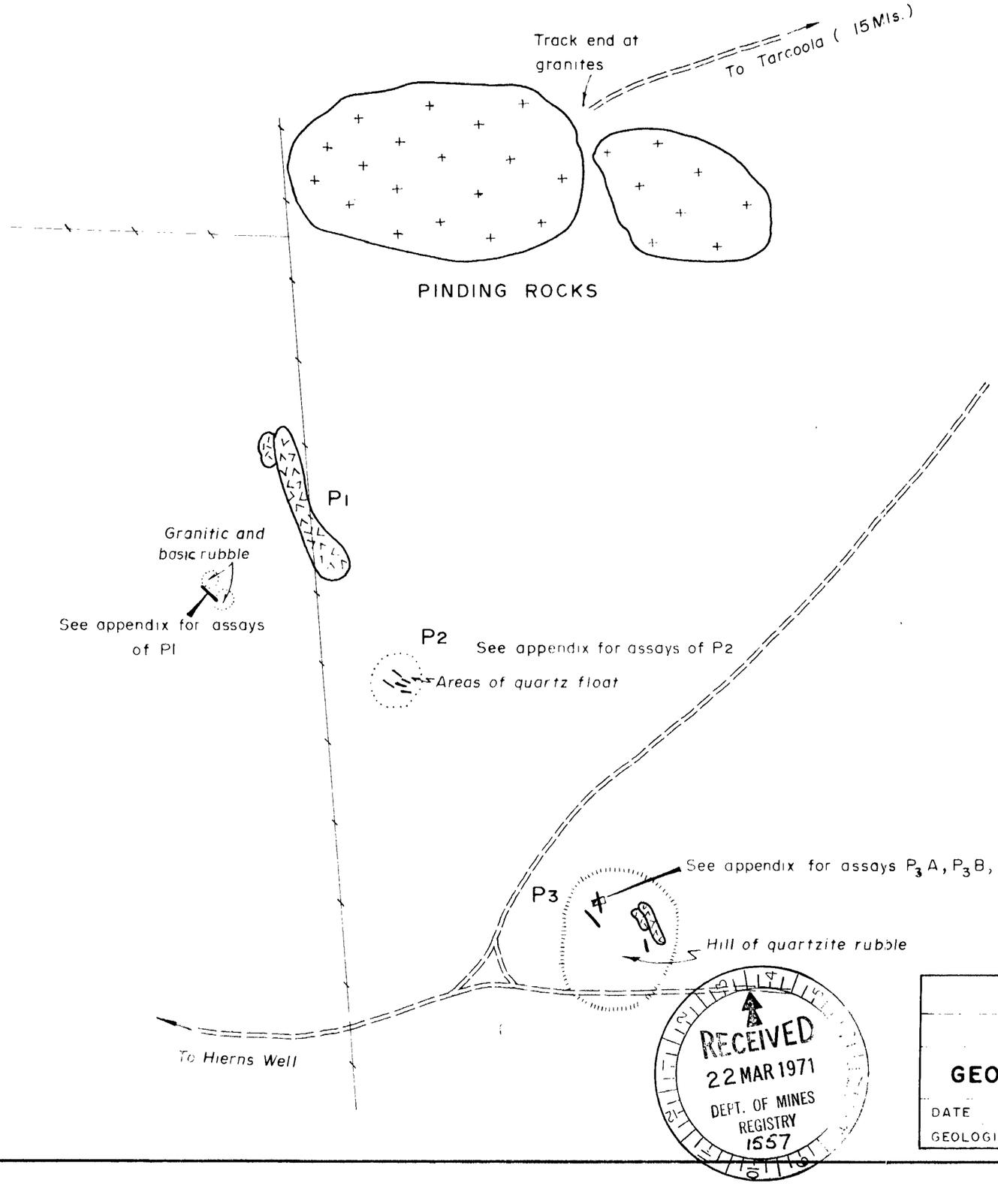
ARCHEAN EXPLORATIONS PTY. LTD.

S.M.L. 505 MT FINKE AREA

# LOCALITY PLAN

ENV 1557-2

| | | |
|---|---|---|
| DATE: FEBRUARY '71 | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD |
| GEOLOGIST: J.E. DAVIDSON | | ADELAIDE S.A. |




## LEGEND

- ALLUVIUM
- QUARTZ REEF
- BASIC INTRUSIVES
- GAWLER RANGE PORPHYRY
- GRANITE
- SHAFT ( 3' Deep )
- VEHICLE TRACK
- FENCE

SCALE

20 10 0 20 40

CHAINS

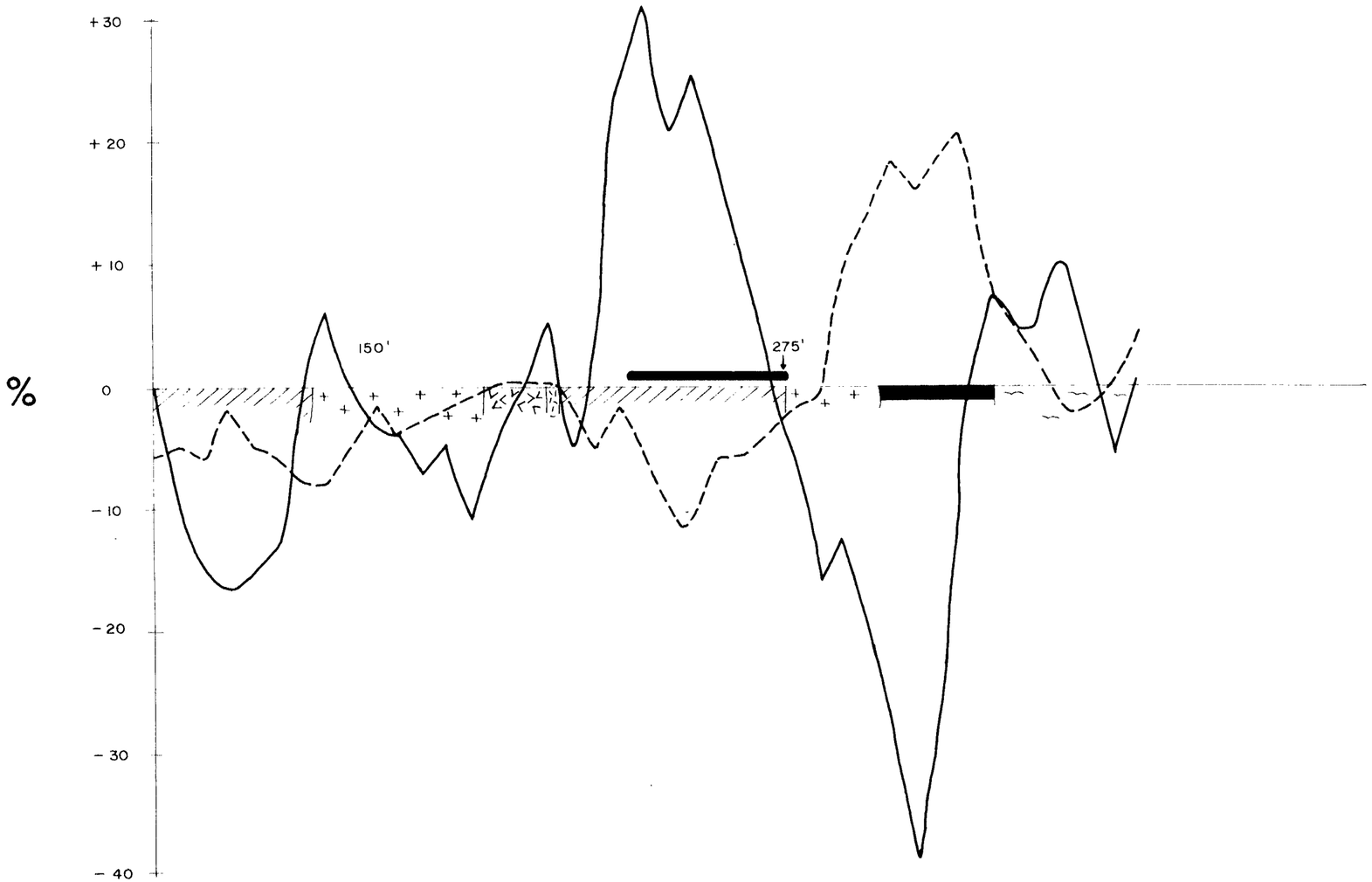


ARCHAEAN EXPLORATIONS PTY. LTD

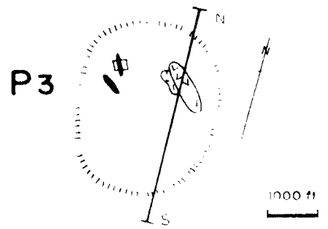
S.M.L. 505 MT FINKE AREA ENV. 1557-3

# GEOLOGICAL SKETCH MAP – PINDING ROCKS PROSPECT

| | | |
|---|---|---|
| DATE FEB '71<br>GEOLOGIST J E DAVIDSON | SOUTH AUSTRALIA | MINOIL SERVICES PTY LTD<br>ADELAIDE S A |




REFERENCE




LEGEND

- ALLUVIUM
- QUARTZ & LIMONITE ( both with boxworks )
- GAWLER RANGE PORPHYRY
- BASIC INTRUSIVES
- RED GRANITES AND/OR GNEISS
- QUARTZITE

IN PHASE RESULTS

OUT OF PHASE RESULTS

CONDUCTOR POSITION 150' Approx depth to top of conductor assuming a tabular body

SCALE

250' 0 250' 500'

FEET



Env 1557

ARCHAEAN EXPLORATIONS PTY. LTD.

S.M.L. 505 MT FINKE AREA

# V.L.F. - E.M. PROFILE ACROSS P3

## PINDING ROCK PROSPECT ENV. 1557-4

| | | |
|---|---|---|
| DATE: FEB '71 | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD. ADELAIDE S.A. |
| GEOLOGIST: J E DAVIDSON | | |

To Tarcoola
( approx 11 miles )

Microgranite vein

Zenolith

Zenoliths of basic schists in porphyritic granite

Microgranite vein

PINDING ROCKS

Porphyry

N

.72N

.68N

.64N

To Claysons Well
( approx 15 miles )

Alluvium

Porphyritic granite

Area of porphyritic granite float

Porphyritic granite

.60N

Porphyritic granite

Calcrete Float

.56N

Alluvium

Alluvium

.52N

PR9a c

Porphyritic granite with micro adamellite vein

PR9b

Porphyritic micro adamellite

.48N

Porphyritic granite with basic zenoliths

.44N

.40N

Porphyritic granite aplite

PR17

.36N

.32N

Alluvium

Alluvium

.28N

Kunkar Float

Areas of porphyritic rhyodacite and porphyritic micro-graphic granite float

.24N

Calcrete Float

Alluvium

.20N

Calcrete Float

PR16

Porphyry and anatectic granite

Float of fine grained basic igneous intrusives

PR14

Area of recrystallised granodiorite float

PR21 PR20 PR18

16N

PR19 < Ag 60 Bi 1000

PR 20 < Ag 5 Bi 20

PR 21 < Ag 15 Bi 20

Area of porphyritic micro monzonite float

.12N

Area of quartz and granitic rubble

PR15

Calcrete Float

Micro adamellite float

PR7

.08

Alluvium

.04N

PR6

.00

.02S

Areas of granitic, greisen and limonite stained quartz float

PR10

PR11 x

PR12 x

x PR13

Minor greisen outcrop

.04S

.08S

PR11 < Ag 30 Bi 150

PR12 < Ag 30 Bi 200

PR13 < Ag 40 Bi 30

.12S

.16S

Calcrete and micro porphyry float

Alluvium

.08W

.10W

.12W

.14W

.16W

.18W

.20W

.22W

.24W

Alluvium

Alluvium

.16S

20S 005E

.20S

.24S

.28S

.32S

.36S

.40S

.44S

.48S

.52S

.56S

.60S

.64S

.68S

.72S

To Tarcoola
( approx 11.5 miles )

Alluvium

PENCE

PROOF

VERMIN

Alluvium

For Bi and Ag analyses values of rock specimens in $P_3$ area see plan 505-6

Alluvium

Alluvium

348 05W

White qtz float

PR5

PR4

Quartzite and quartz float

Basic scree

PR3

Coarse quartz float

Quartzite float

Quartzite and quartz float

Shaft

$P_3$

365 18W

PR2

Qtz vein

Qtz vein

Quartzite float

Qtz

Qtz vein

Quartzite and calcrete float

Qtz vein

PR1

Alluvium

To Hiems Well
( approx 3 miles )

Qtz veins

Coarse iron stained granular quartz

Quartzite, quartz and calcrete float

Alluvium

## LEGEND

PORPHYRITIC ROCK TYPES (porph rhyodacite, porph microdiorite etc.)

BASIC AND INTERMEDIATE INTRUSIVES (porphyritic micro-monzonite etc.)

GRANITE AND RELATED ROCK TYPES (porphyritic granite, granodiorite, micro-adamellite and granite aplite)

NB QUARTZITE FLOAT WAS OBSERVED IN THE $P_3$ VICINITY BUT NO DEFINITE OUTCROP WAS FOUND

Qtz QUARTZ REEF

DEFINITE GEOLOGICAL BOUNDARY

LIMIT TO AREA OF ROCK FLOAT

SHEAR

PR13 ROCK CHIP SPECIMEN (no analysis or petrography)

GEOCHEMICAL SOIL SAMPLE LOCATION

ROCK SPECIMEN LOCATION (Ag, Bi values in p.p.m.)

PETROGRAPHIC SPECIMEN LOCATION

SHALLOW DIGGINGS

32 S GRID PEG AND COORDINATE

GATE

FENCE

TRACK

SCALE

FEET 500 0 500 1000 1500 2000 FEET

METRES 200 0 200 400 600 METRES

SCALE IN METRES

200 0 200 1000 1200 5000 5200

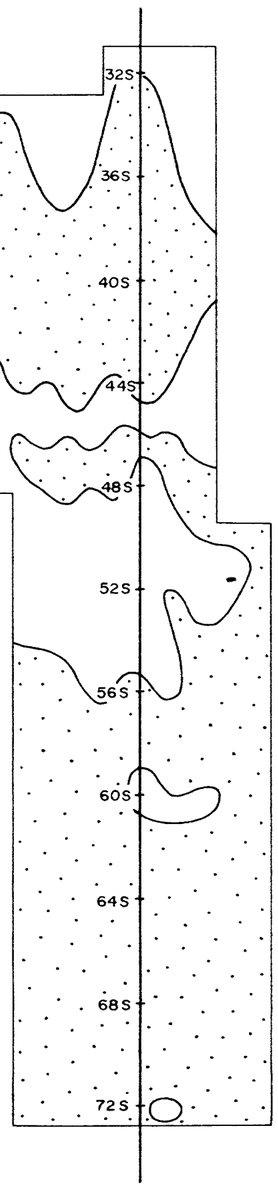
SCALE IN FEET

ENV. 1557 - 5

| | | |
|---|---|---|
| ARCHAEAN EXPLORATIONS PTY. LTD. | | |
| SML 505 – TARCOOLA AREA | | |
| PINDING ROCKS PROSPECT<br>GEOLOGICAL PLAN SHOWING GEOCHEMICAL LOCATIONS AND ANALYSES | | |
| GEOLOGIST P.C. SMITH | SOUTH AUSTRALIA | MINOIL SERVICES PTY LTD ADELAIDE S.A |
| DATE MAY 1971 | | |

505-5

## COPPER CONTOUR DIAGRAM

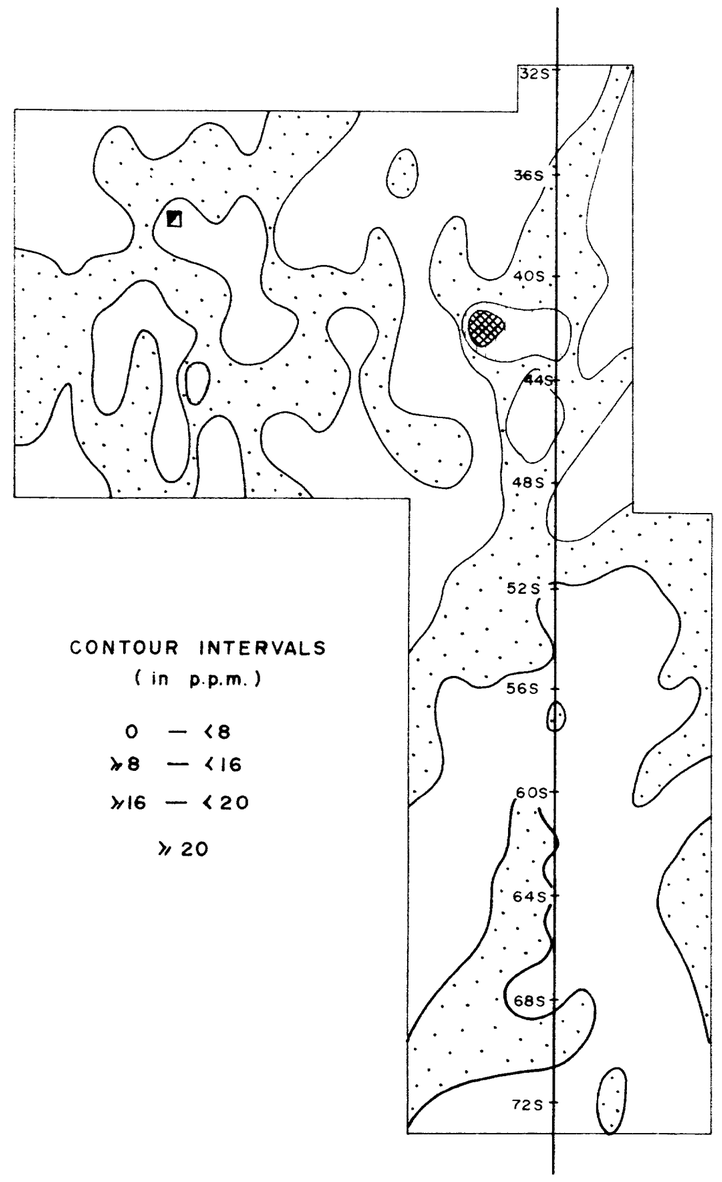



CONTOUR INTERVALS
( in p.p.m.)

0 — < 8

» 8 — < 16

## LEAD CONTOUR DIAGRAM




CONTOUR INTERVALS
( in p.p.m.)

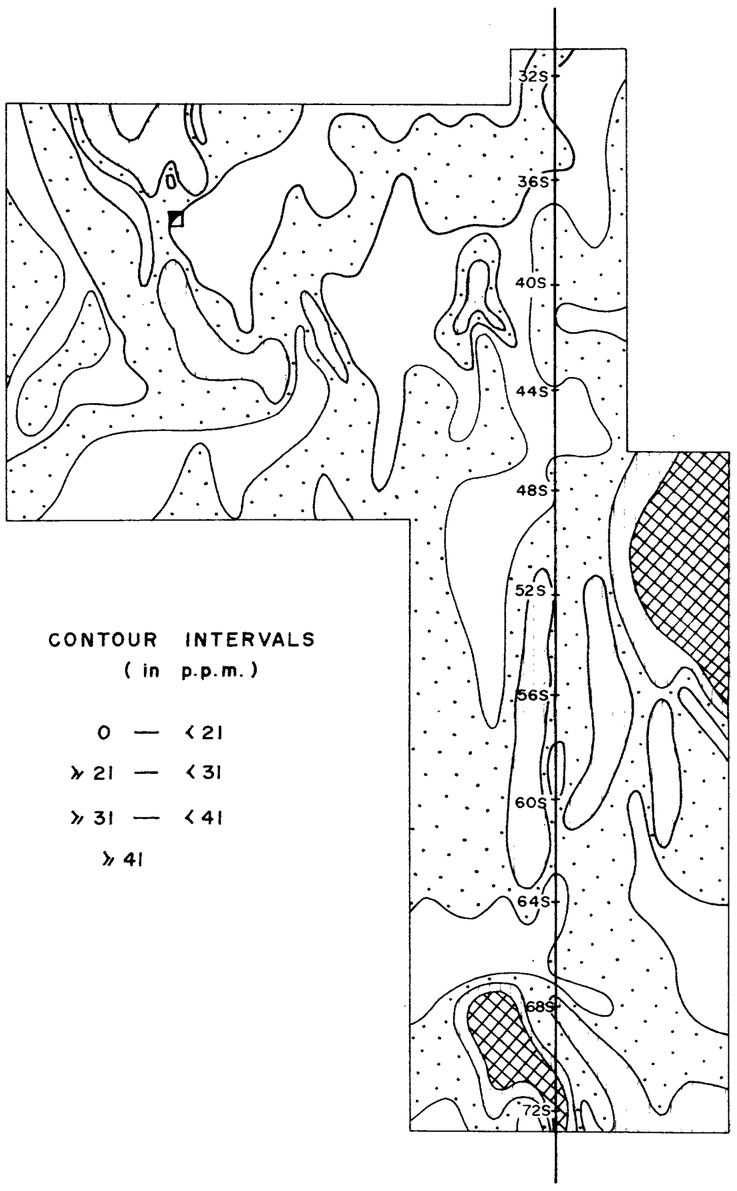
0 — < 8

» 8 — < 16

» 16 — < 20

» 20

## ZINC CONTOUR DIAGRAM




CONTOUR INTERVALS
( in p.p.m.)

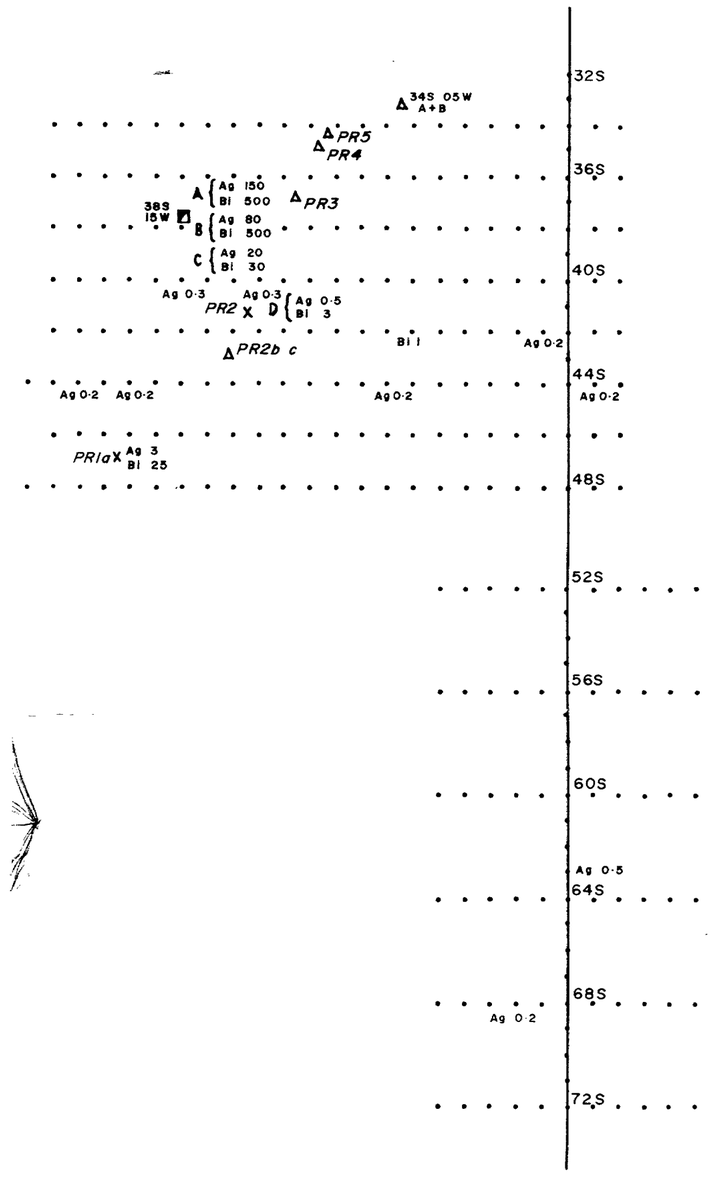
0 — < 21

» 21 — < 31

» 31 — < 41

» 41

## GEOCHEMICAL GRID WITH ROCK SPECIMEN LOCATIONS AND ANALYSES RESULTS (IN P.P.M.)




## LEGEND

- PROBABLY ANOMALOUS
- POSSIBLY ANOMALOUS
- UPPER BACKGROUND
- LOWER BACKGROUND
- SHAFT
- Ag / Bi — SOIL SAMPLE LOCATION — {Ag > 0·1 p.p.m. / Bi > detection limit
- PR3 x Ag / Bi / Au — GEOCHEMICAL SPECIMEN LOCATION (Analysis values in p.p.m.)
- Δ — PETROGRAPHIC SPECIMEN LOCATION

## SCALE

FEET 500 0 500 1000 1500 2000 FEET

METRES 200 100 0 200 400 600 METRES

CONTOUR INTERVAL STATISTICALLY DETERMINED USING THE FOLLOWING RELATIONSHIPS

LOWER BACKGROUND 0 — < MEDIAN VALUE

UPPER BACKGROUND » MEDIAN — < $\bar{x}$ + 2$\sigma$

POSSIBLY ANOMALOUS » $\bar{x}$ + 2$\sigma$ — < $\bar{x}$ + 3$\sigma$

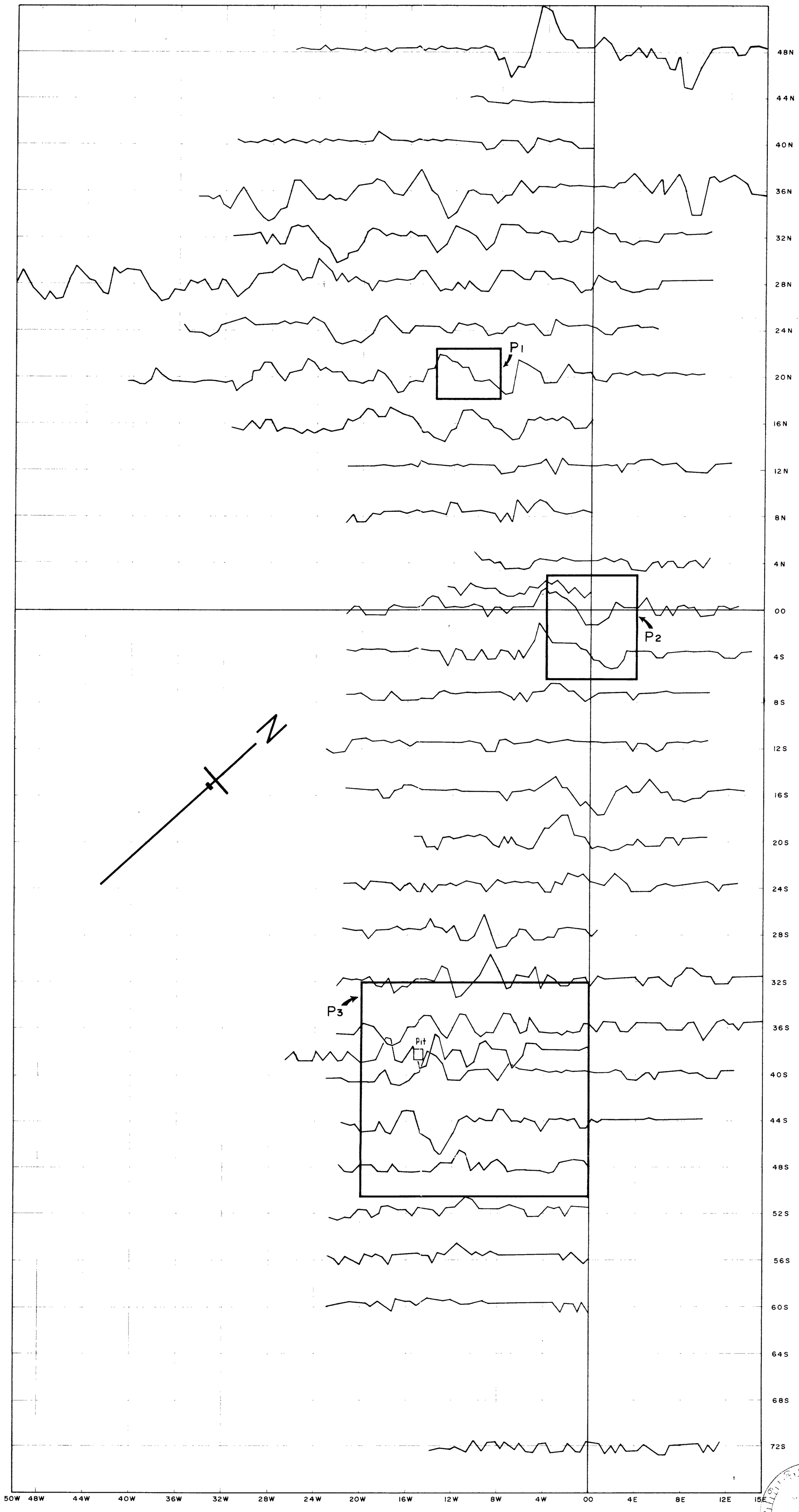
PROBABLY ANOMALOUS » $\bar{x}$ + 3$\sigma$

$\bar{x}$ = MEAN VALUE

$\sigma$ = STANDARD DEVIATION



| ARCHAEAN EXPLORATIONS PTY. LTD. | | |
|---|---|---|
| SML 505 — TARCOOLA AREA | | |
| PINDING ROCKS PROSPECT<br>CONTOUR DIAGRAMS OF Cu, Pb, Zn<br>ANOMALOUS Ag, Bi VALUES<br>AND ROCK SPECIMEN LOCATIONS | | |
| GEOLOGIST: P.C. SMITH<br>DATE: MAY 1971 | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD.<br>ADELAIDE S.A. |




SCALE

500 0 500 1000 1500 2000

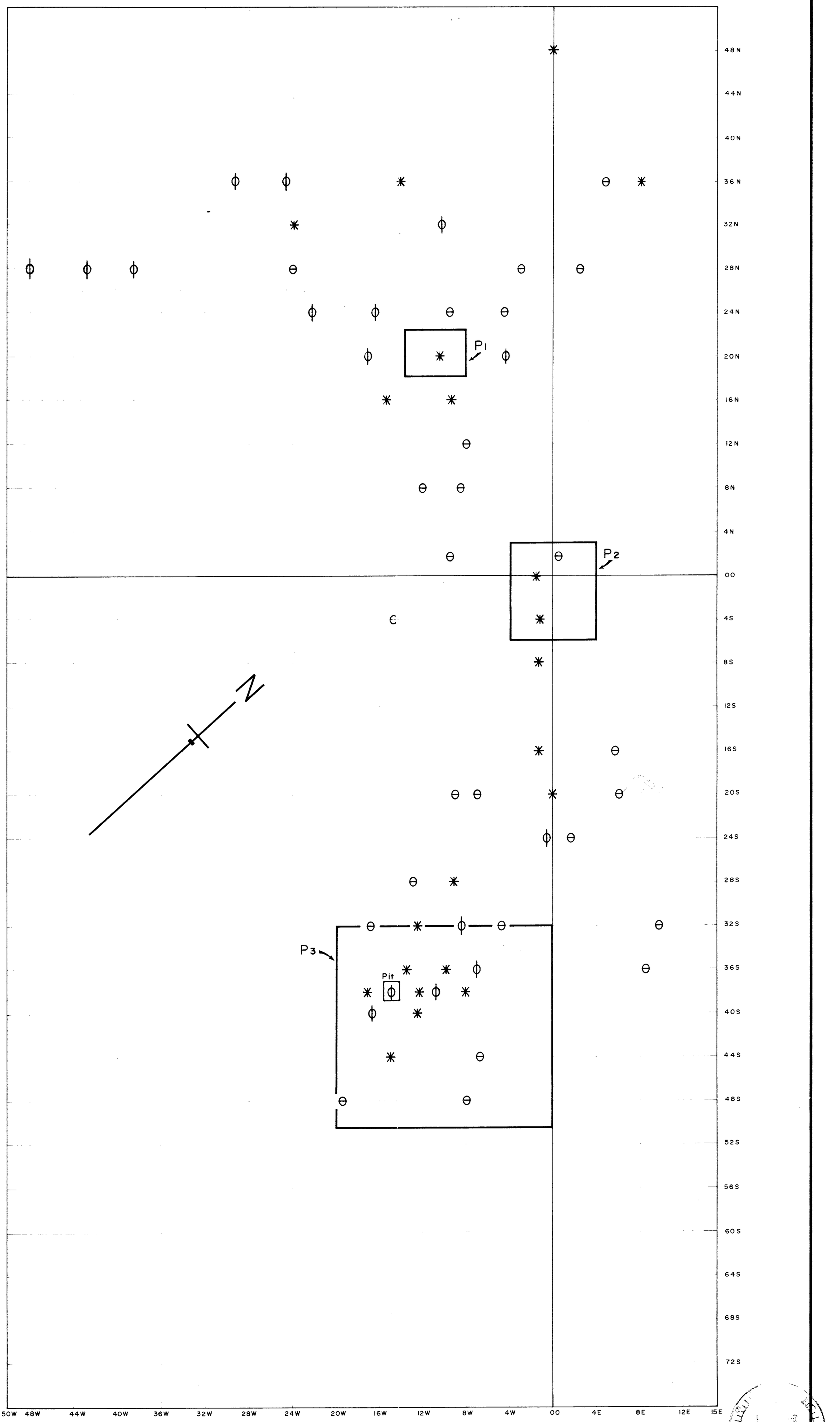
FEET

Component Scale: 1"= 62·5 units



ENV. 1557-7

| | | |
|---|---|---|
| ARCHEAN EXPLORATIONS PTY. LTD. | | |
| SML 505 — TARCOOLA AREA | | |
| PINDING ROCKS PROSPECT<br>VLF ELECTROMAGNETIC IN-PHASE PROFILES<br>(400'X 50') GRID | | |
| GEOPHYSICIST : I.D. WHITELEY<br>DATE: APRIL 1971 | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD.<br>ADELAIDE S.A. |




## VLF ELECTROMAGNETIC ANOMALIES CODE

- ✱ Very Strongly Anomalous
- ϕ Anomalous
- ϴ Slightly Anomalous

Anomalies determined from VLF Electromagnetic Profiles

Grid Scale: 1" = 270'

Component Scale: 1" = 13·3 units

SCALE

500 0 500 1000 1500 2000

FEET



| | | |
|---|---|---|
| ARCHEAN EXPLORATIONS PTY. LTD. | | |
| SML 505 — TARCOOLA AREA | | |
| PINDING ROCKS PROSPECT ENV. 1557-8 | | |
| VLF ELECTROMAGNETIC ANOMALIES | | |
| GEOPHYSICIST: I.D. WHITELEY | SOUTH AUSTRALIA | MINOIL SERVICES PTY. LTD. |
| DATE: APRIL 1971 | | ADELAIDE S.A. |