Open File Envelope No. 4503

EL 923

ARDROSSAN

PROGRESS REPORTS TO LICENCE EXPIRY FOR THE PERIOD 16/11/81 TO 15/11/82

Submitted by
Poseidon Ltd
1983

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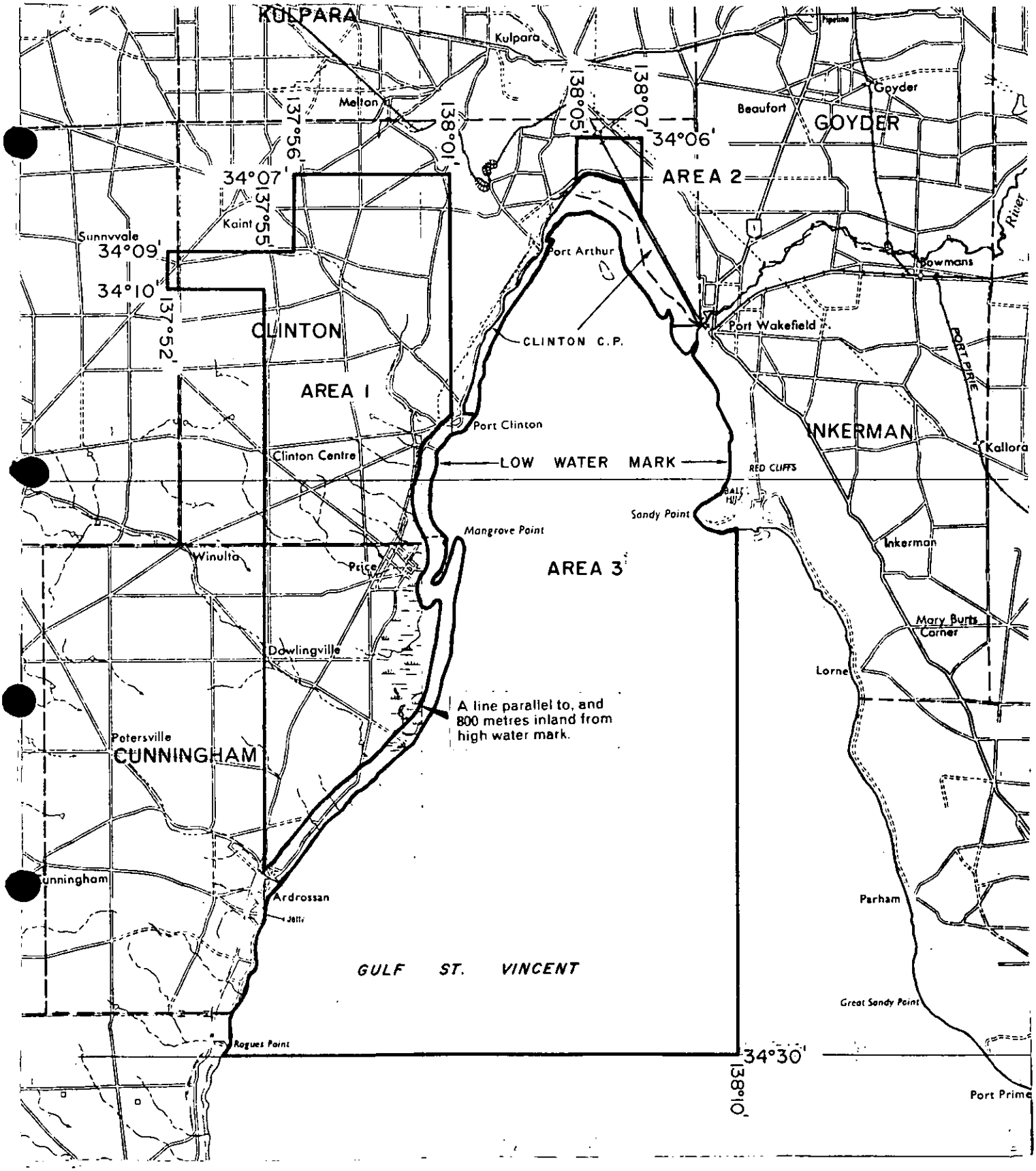
Government of South Australia
Primary Industries and Resources SA

SCHEDULE A



SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

EXPIRED

APPLICANT: POSEIDON LIMITED

DM: 186/81 AREA: 875 square kilometres

1:250000 PLANS: MAITLAND ADELAIDE

LOCALITY: ARDROSSAN AREA - Yorke Peninsula

DATE GRANTED: 16·11·81 DATE EXPIRED: 15·11·82

Reapp DM440/82

EL No: 923

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TENEMENT: E.L. 923 - Ardrossan.

TENEMENT HOLDER: Poseidon Limited.

Exploration Licence No. 923
Ardrossan, South Australia

Report for the period
16.11.81 to 16.2.82

Introduction

Exploration Licence No. 923 was granted to Poseidon Limited on 16th November, 1981 for a period of one year. Total area of the Licence is 875 square kilometres in three irregularly shaped blocks located at the northern end of the Gulf St. Vincent and over the immediately adjacent shores.

The area is considered prospective for sedimentary deposits of copper/uranium hosted in cover rocks of Late Proterozoic to Tertiary age overlying a basement known to contain widespread copper and uranium mineralization. In addition the area is in an active Tectonic setting near the Torrens Hinge Zone.

Work Completed

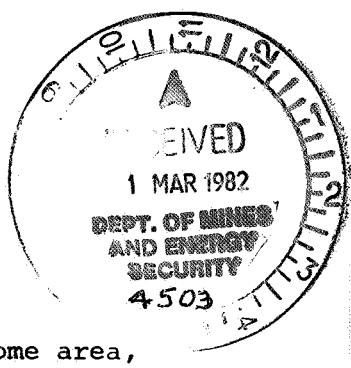
The available data related to the area has been acquired and is currently being assessed and compiled. A list of source material is presented below, and all relevant plans and sections will be forwarded when available.

Work Proposed

The available geophysical data show a number of anomalies along the eastern marginal belt of the Gawler Craton - these will be modelled, assessed and priority ranked for further work. Initial follow up will consist of electrical geophysics and possibly track etch surveying.

Expenditure

Tenure costs	$ 661
Geological services	$ 8027
Geochemistry	$ 50
Total to end of reporting period	$8738



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Poseidon Limited

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EXPLORATION LICENCE NO. 923

Ardrossan, South Australia

REPORT FOR THE PERIOD

16/2/82 TO 16/5/82

R. G. Bluck

16th June, 1982

CONTENTS

APPENDICES

ATTACHMENTS

1. INTRODUCTION

Exploration Licence No. 923 was granted to Poseidon Limited on 16th November, 1981 for a period of one year. Total area of the Licence is 875 square kilometres in three irregularly shaped blocks located at the northern end of the Gulf of St. Vincent and over the immediately adjacent shores.

The area is considered prospective for sedimentary deposits of copper/uranium hosted in cover rocks of Late Proterozoic to Tertiary age overlying a basement known to contain widespread copper and uranium mineralization. In addition the area is in an active Tectonic setting near the Torrens Hinge Zone.

2. WORK COMPLETED

An assessment of the geology of the Licence area was completed (Appendix I) and was used as the basis for a re-evaluation of the available geophysical data (Appendix II). Investigations into the Tertiary sequence were initiated and a north-south trending belt of thicker sediments identified from the drilling results of Aquitaine Australia Minerals Pty. Ltd. The data are being drafted and will be presented with the next report.

3. WORK PROPOSED

Two discrete magnetic anomalies worthy of ground follow-up have been identified and this will be carried out during the coming period. The resulting profiles will be assessed to determine if electrical geophysical surveys are warranted ahead of drilling.

Reconnaissance mapping and spectrometer surveys will be carried out over the thicker Tertiary sections.

4. EXPENDITURE

Geological Services	$4,754	
Geophysics	1,020	
Motor Vehicle	31	
Printing & Stationery	253	
Reporting	99	$6,157

APPENDIX I

INTERPRETATION

of

GEOPHYSICAL DATA

from

EXPLORATION LICENCE AREA NO. 923

South Australia

C. G. Anderson
May, 1982

1. INTRODUCTION

At the request of Poseidon Limited, an interpretation of available data has been undertaken for an area near Price, on the eastern coast of Yorke Peninsula in central South Australia. The area is held by Poseidon Limited under Exploration Licence 923, and is situated on the eastern boundary of the Gawler Craton.

Prior to this interpretation, Poseidon Limited had commissioned Mr. B. Thomson (January, 1982) to review and summarise all available geological data for E.L. 923 and results of this compilation are referred to throughout this report. Previous exploration within the Price area is largely confined to a programme conducted by Aquitaine Australia Minerals (A.A.M.) in the period from mid-1976 to 1978. In addition to regional geochemical sampling of the Cambrian carbonate sequence, A.A.M.'s programme included a detailed aeromagnetic survey and, in the later stages, detailed gravity and stratigraphic drilling to assess pre-Adelaiden "basement" structure. This report is based on A.A.M.'s magnetic and detailed gravity data, plus regional data acquired by the S.A.D.M.E. and B.M.R.

In addition to compilations of geology, aeromagnetics and Bouguer gravity at 1:50,000 scale for the Price area, aeromagnetic data and basement drilling results for the "Bute" area directly north of E.L. 923 were also available for comparative purposes (Lynch, 1977 in Thomson, 1982).

2. EXPLORATION OBJECTIVES

The following comments on possible exploration targets in the area are based on a summary of prospective lithologies presented by Thomson. The Wandearah Metasiltstone (and associated Willamulka Volcanics) is the oldest identified unit in the area and a gradational contact between this unit and older undifferentiated Precambrain is indicated by Thomson. The latter unit is host to Wallaroo-Moonta style mineralization at the Parara mine, west of Adrossan and south-west of the licence area. A.A.M.'s diamond drillholes SYM 101 and SYM 102 confirmed the presence of Wandearah Metasiltstone in an interpreted basement high in the northern part of the licence. Definition of the extent of this structure and areas within it prospective for Moonta-Wallaroo style mineralization was the major objective of the geophysical interpretation.

Unconformity surfaces near the base of the Adelaidean sedimentary sequence are prospective for mineralization in the Stuart Shelf region (i.e. Mount Gunson style mineralization) and definition of basement structures favourable for localization of similar stratiform mineralization was an additional objective.

The final objective was definition of possible structures favourable for localization of sulphide mineralization within the extensive Cambrian carbonate sequence and/or uranium mineralization within Cainozoic palaeochannels. Thomson inferred that the latter structures probably reflect earlier Cambrian basins which are commonly fault-bound (Lynch, 1977).

3. DATA QUALITY

Good quality aeromagnetic data are available from A.A.M.'s survey for most of the licence area. The survey was conducted at 70 metres altitude on east-west lines 500 metres apart. The line spacing is slightly broad for confident delineation of discrete magnetic base metal targets, but is adequate for defining structural trends and depth to magnetic basement. Gravity data were acquired by A.A.M. on road traverses in the north-western part of the licence and these data are accurate to approximately 0.1 mgals. Elsewhere in the licence area, the gravity data consist of regional S.A.D.M.E. and B.M.R. stations on a grid of approximately 7 x 7 kilometres. These data are normally accurate to approximately 0.5 mgals, but single point anomalies of any magnitude should be considered with caution. Regional aeromagnetic data are available for the area (S.A.D.M.E. MAITLAND 1:250,000 sheet) on 800 metre east-west flight lines, presented at 1:250,000 scale and 50 gamma contour intervals for the licence area.

In addition to the gravity and magnetic data, A.A.M. conducted a limited programme of Induced Polarization surveying in two areas of anomalous geochemical results from Cambrian bedrock sampling. The results of the surveys were not conclusive, in terms of the depth of penetration of the IP technique but difficulties due to resistivity over burden and cultural sources are evident.

4. PREVIOUS INVESTIGATION

As indicated above, A.A.M. conducted a reasonably comprehensive programme of geochemical sampling in the Cambrian carbonate sequence prior to investigating the possibilities of mineralization within basement. Interpretation of geophysical data (Gunn, 1976, and McInerny, 1978) was largely based on the analysis of aeromagnetic profiles using the Geometrics "Compudepth" computer package for depth determination. The "Compudepth" system is a proprietary package operated by Geometrics, which identifies vertices of magnetic sources and iteratively fits a solution to the observed curve. The degree of 'fit' for the interpreted profile gives an indication of the reliability of the interpretation and the range of interpreted depth values for each vertice is indicated in the interpreted sections (refer to Gunn, 1976, for a Compudepth output example).

A.A.M. geophysicists interpreted three magnetic horizons from the Compudepth profiles - a surficial horizon, a 'basement' horizon due to weakly magnetic Wandearah metasiltstone and Willamulka Volcanics, and an "intra-basement" horizon due to deeper-seated sources. A basement high interpreted in the Melton-Kainton area was subsequently investigated with detailed gravity traverses and confirmed by stratigraphic drillholes SYM 101 and SYM 102, which intersected Willamulka Volcanics at 186.9 and 291.3 metres respectively. Inspection of the Compudepth interpretation for the area of drilling (flight lines 140-0 to 143-0) indicates an interpreted depth of 200 to 250 metres for the area, which is in general agreement with the drilling results. Drillholes were sited to test gravity and magnetic features in addition to the Compudepth basement 'high' area and indicated areas of shallower basement to the south of SYM 102 were not tested.

Minor traces of chalcopyrite were recorded in the lower part of the Cambrian Kulpara Limestone in both holes and in the Willamulka Volcanics in SYM 102, but no further investigation of the area was undertaken, although additional drilling was recommended (Lee, 1978) to evaluate the "influence upon deposition of the Woocalla Dolomite and Whyalla Sandstone for copper/lead/zinc mineralization".

5. DISCUSSION OF CURRENT ASSESSMENT

Major features of the geophysical data and "Compudepth" interpretation are shown in the attached plan (Plan 1). The locations of some features may be slightly in error because of minor scale variations between plans and consequent registration errors. To assist in the evaluation of the "Compudepth" interpretation, Mr. J. Lee of A.A.M. was contacted and kindly supplied the original "Compudepth" interpreted profiles.

5.1 Regional Trends

The local gravity highs outlined in Plan 1, occur in a regional north-south oriented feature which is evident in the 1:1,000,000 state maps of Bouguer gravity. Major north-south linear features are evident in the regional aeromagnetic data and coincide with the inferred margins of the gravity high. Major north-easterly trending linear features are also evident in the magnetic data for the Price area.

The north-north-east trending "Ardrossan Thrust Zone" and the north-south oriented Yararoo Fault are major features within the licence area. The former thrust fault system parallels the dominant linear trend in the detailed aeromagnetic data while the latter normal fault occurs near the eastern margin of the regional north-south gravity feature. A significant change in magnetic character is evident north-north-west of Port Clinton, immediately west of the intersection of these two major features.

5.2 Depth to "Basement"

The A.A.M. interpretation of the Compudepth profiles indicates three main areas of shallow basement within the regional north-south gravity high (Plan 1). Inspection of the available Compudepth profiles* suggests that, while there is some indication of a shallow magnetic interface in each area, there is considerable latitude in both the assignment of depth determination to particular magnetic horizons and also the depth variation for individual determinations. The expression of basement relief due to Willamulka Volcanics in the area of drillhole SYM 101, (Flight lines 140 - 142) is quite subtle and the magnetic relief due to the area of shallow basement inferred from Compudepth and the detailed gravity data is not evident in the magnetic contour data.

The two northern areas of interpreted basement 'highs' conincide with local gravity highs within the regional high, but the southern-most area occurs on the western edge of the regional feature in an area where the gravity field is influenced by the low density Arthurton granite.

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* The Compudepth technique was not applied to all aeromagnetic survey flight lines - the lines available for interpretation are: 116, 119, 124, 132-159 (incl.), 163, 167, 169, 176, 177, 181, 185, 188 and Tie Lines 2001, 2002.

5.3 Magnetic Relief - Qualitative Features

Within the tenement area, magnetic relief is generally low and dominated by the north-north-west oriented gradient due to the "Orontes" magnetic feature in St. Vincent's Gulf (Thomson, 1982 - Sections 1-10). Immediately west of the tenement area, negative anomalies in excess of 500 gammas magnitude are associated with intrusions of the Arthurton Granite. Areas of near-surface pre-Adelaidean crystalline basement are evident as areas of moderate (200-400 gammas) relief in the central-western portion of the survey area and a major magnetic feature which may be associated with the Willamulka Volcanics has been partially defined in the north-western portion of the survey.

As indicated above, a zone of increased magnetic relief occurs north-west of the intersection of the Yararoo Fault and the Arthurton Thrust Zone and from the amplitude and form of anomalies, this would be consistent with an area of near surface basement comparable to sub-outcrop areas of crystalline basement further west.

In the western half of the survey area, magnetic relief is strongly influenced by a series of north-easterly trending linear features.

5.4 Prospective Features

Five prospective areas have been delineated from qualitative appraisal of the geophysical data and are indicated in Plan 1. The areas include possible basement base-metal targets, Cambrian carbonate areas and one possible Tertiary channel target for uranium mineralization.

5.4.1 Area M1

The area designated as "M1" on Plan 1 includes two magnetic features, which are not well-defined in the magnetic contour data, near the south-eastern corner of the northern local gravity high. Magnetic profiles from flight lines 147, 148 and 149 indicate a local magnetic high (centred on fiducial no. 2972950, line 148-0) which has not been incorporated in the Compudepth interpretation, but is obviously due to a near-surface (<100 metres) moderately magnetic (amplitude on line 148-0 is approximately 50 gammas) source. The anomaly halfwidth is approximately 100 metres.

5.4.2 Area M2

The "M2" magnetic anomaly is the major feature within the magnetic zone near the Yararoo Fault/Ardrossan Thrust zone intersection. The anomaly occurs adjacent to an interpreted basement high and in the centre of the regional gravity high. Local gravity relief in the vicinity of M2 is not defined by existing gravity stations.

Examination of the Compudepth profiles for flight lines 157, 158 and 159 suggests that evidence for the basement high west of M2 is not conclusive. Low amplitude anomalies on lines 157 and 159 are comparable with features in the area of drillholes SYM 101, 102, but similar features are apparent in the profiles east of M2 - i.e. they may arise from surficial sources rather than basement.

5.4.3 Areas G1 and G2

G1 and G2 are similar local gravity highs on the western edge of the Ardrossan Thrust zone. Both anomalies occur in areas of thick Cambrian carbonate sequences as indicated by Thomson (Sections 8 and 9 respectively). A compudepth basement high is inferred immediately west of G1, but examination of the interpretation for flight line 169 again indicates considerable latitude in the depth determinations. Profiles for lines 185 and 188 in the area of G2 both indicate a near surface anomaly possibly related to the Ardrossan thrust faulting.

5.4.4 Tertiary Palaeochannel

A northwest trending Tertiary channel is indicated in the regional gravity data on the western margin of the licence area. Although the gravity feature is only defined by two points, the indicated margins of the structure coincide with linear magnetic trends in the detailed survey data. A.A.M.'s drillholes SYP 827 and 828 (Thomsonm, 1982) failed to penetrate to the Cambrian in this area and the geophysical data indicate a possible thickening of the post-Cambrian sediments in the area north-west of these drillholes.

5.4.5 Kimberlite Target

During the course of the interpretation, one low amplitude, near-surface anomaly characteristic of an intrusive 'pipe' source was detected in the magnetic profile for flight line 167-0, fiducial 2899270. The approximate location of the anomaly is included on Plan 1, but the survey photo-mosaics should be checked if ground recovery of the feature is intended. The mosaics should be held by S.A.D.M.E.

6. RECOMMENDATIONS

The area "M1" is considered as a priority target area, on the indication that the local magnetic anomaly is consistent with a narrow, stratabound concentration of sulphides, including magnetic pyrrhotite. Alternatively, the magnetic relief may be due to near-surface Willamulka Volcanics, in which case the gravity data would indicate a large area of near-surface basement, with the established presence of lower Adelaidean sediments (SYM 102). It is recommended that ground magnetic traverses be established along A.A.M.'s geochemical traverse, between holes SYP 800 and SYP 805 and two parallel traverses 400 metres north and south of this, to locate the magnetic feature. Vertical electrical soundings should be considered at DH SYM 101 and SYM 102 to establish the feasibility of this technique in identifying depth to basement in prospective areas. Drilling to establish the source of the M1 magnetic anomaly and the presence of the interpreted basement high should be considered. If the latter structure is confirmed, then test IP surveys should be considered to evaluate the potential of the basement and Adelaidean sediments.

Area M2 is of lower priority, as no specific target is apparent in available data. If the electric sounding technique is successful, sounding and geochemical sampling should be considered for an east-west traverse along the fence-line at (approximately) 6211000 n N, centred at 775000 n E. If shallow basement and/or anomalous geochemistry is indicated, IP surveys may be justified.

Areas G1 and G2 are similar features which should be investigated with detailed gravity traverses (250 metre stations) and geochemical sampling of the Cambrian carbonate sequence. The magnetic feature on the western edge of G2 may be a discrete drilling target - magnetic traverses from A.A.M. drillhole SYP 855 due west to the licence boundary and then 400 metres north and south of this line are recommended. Electric soundings to confirm the interpreted basement high west of G1 should also be considered.

Finally, additional gravity traverses are necessary to define the north-east trending gravity low, interpreted as a possible Tertiary palaeochannel. These should be oriented in a north-west, south-west attitude, between regional gravity stations 75E3.0322 and .2811 and values should be tied to regional data levels.

7. CONCLUSIONS

Although one discrete magnetic target (M1) has been defined, the main application for existing geophysical data (i.e. gravity and magnetics) in this area is the indirect location of areas amenable to further exploration (i.e. shallow basement, fault structures, etc.). To effectively investigate areas of inferred shallow basement and/or Cambrian carbonates for base metal accumulations, more direct techniques (geochemical and geophysical) must be considered, since it cannot be assumed that these accumulations will have any direct magnetic response or detectable gravity expression.

Subsequent to location and quantitative interpretation, drill testing of anomaly M1 is recommended and the confirmation of inferred basement highs by drilling or reliable resistivity profiling would upgrade the potential of the area. On structural grounds, the magnetic zone between M1 and M2 appears to be more interesting than the northern areas of the regional gravity high.

References

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McInerney, P., 1978 : Interpretation of Magnetic and Gravity Data, Melton-Kainton Area E.L. 314 (Price).

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Thomson, B.P., 1982 : Review of Geology of Poseidon Limited, E.L. Area No. 923 South Australia.

APPENDIX II

REVIEW OF GEOLOGY

of

EXPLORATION LICENCE AREA NO. 923

South Australia

B. P. Thomson

INTRODUCTION

The writer was requested by Poseidon Limited to review available mapping and drilling data in the licence region and compile it on 1:50,000 scale maps and cross sections.

Exploration licence no. 923 covers a total of 875 square kilometres and comprises three areas in the Yorke Peninsula-St. Vincent Gulf region, (Figure 1). The western area straddles the eastern marginal belt of the Gawler Craton that extends to the north to include the Wallaroo-Moonta copper mining district, Mt. Gunson copper deposits and Olympic Dam (Roxby Downs copper-uranium deposit). The remaining two licence areas to the east are located within the Torrens Hinge Zone that forms the western margin of the Adelaide Geosyncline. Both areas are entirely covered by Cainozoic deposits of the St. Vincent Basin.

DATA COMPILATION

The scattered geological data and sparseness of deep stratigraphic drillholes has required study to be extended beyond the EL923 boundaries. Only two diamond drillholes SYM 101 and 102, exist in the licence area. The source of much of the data is given in the attached list of references. The eastern licence area has required a thorough study of S.A.D.M.E. borehole records. E.T.S.A. management kindly permitted the writer to study a geological report and lithological logs of current drillholes within the Trust's exploration licence area adjoining EL923. A 1:50,000 scale pre-Cainozoic basement contour plan of the northern St. Vincent Basin, (Figure 2) was prepared.

Compilation of pre-Cainozoic geological maps (Figures 3 and 4) next followed. A modern 1:50,000 scale Australian Map Grid base map had been prepared largely covering sheets Kainton, Wakefield, Inkerman and Ardrossan. The geology of the Wakefield 1 mile sheet (Horwitz, 1961) was relocated to fit the new 1:50,000 base map.

Interpreted pre-Cainozoic geological mapping by Aquitaine Australia Minerals Pty. Ltd. (Lee, 1975 - 1978) was incorporated with only minor modification. Peripheral areas were compiled from Lynch (1977), Hoatson (1980) and Thomson (1980). All of the major boreholes were linked by thirteen cross sections, (Figures 5, 6 and 7). Compilation sheets at 1:250,000 scale showing contours of interpreted depths to magnetic basement were provided by R. Gerdes. These were part of his contribution to the S.A.D.M.E. 1981 1:1,000,000 scale magnetic basement map. Magnetic basement profiles were next constructed for the cross section and were particularly valuable in the Gulf St. Vincent region where other data were lacking. The general form of the cross sections agreed with the results of Sprigg and Stackler (1965) and Stuart and Von Sanden (1972) from southern Gulf St. Vincent.

Cross sections in the area west of Gulf St. Vincent have been drawn to favour largely pre-Cainozoic block-faulting and rely mainly on the fault pattern derived from aeromagnetic data by Aquitaine Australia Minerals Pty. Ltd. geophysicists. Study of drillhole date in the western part of

the St. Vincent Basin does not show sedimentation to be controlled by Cainozoic faulting.

NOTES ON PROSPECTIVE FEATURES OF STRATIGRAPHIC ROCK UNITS

Pre-Adelaidean basement rocks

1. Undifferentiated Precambrian

This unit includes amphibolite metamorphic grade schists, gneisses and basic intrusives. In the inlier west of Ardrossan, the unit is host for the Wallaroo type Parara Mine copper deposit. In Sections 8 and 9 the unit appears to be very close to the level of the Gerdes magnetic basement profile.

2. Wandearah Metasiltstone

Metasomatized metasiltstone was intersected in SYP 602 (Section 6) and SYM 600/102 (Sections 4 and 10). Less altered metasiltstone occurs in SYM 101 (Sections 3 and 10). Metasomatic minerals include scapolite, hematite, tourmaline, quartz carbonate veining with traces of chalcopyrite. Metamorphism varies from low amphibolite to green schist grade. The lithology is identical to that intersected in company and S.A.D.M.E. drillholes further north on Yorke Peninsula (Thomson, 1973, Parker and Thomson, 1977 and Parker, 1981). In these areas the unit is associated with acid and intermediate Willamulka Volcanics and amphibolitic intrusives. The age of the metasiltstone is believed to exceed 1600 Ma.

The drillhole intersection of the unit on Sections 3, 4, 6 and 10 are consistently above the magnetic profile of Lee (1978a) which possibly represents either interlayered Willamulka Volcanics or a rise in metamorphic grade. The Lees profile appears to occur at a slightly higher level in the section than the Gerdes profile. There does not appear to be convincing evidence that in this region the undifferentiated Precambrian and Wandearah metasiltstone are separated by an unconformity. They may have a gradational relationship and both could be host rocks for Wallaroo-Moonta copper or related base metal mineralization.

3. Arthurton Granite and younger (?) pegmatites

The granite has a minimum age of ca. 1500 Ma. The pegmatites are probably 1400 to 1450 Ma. (Webb, 1978). This last event probably dates the relatively low temperature Wallaroo-Moonta copper mineralization when the craton had consolidated and entered a final phase of fracturing and cooling.

Adelaidean sediments

1. Aldgate Sandstone

This is the oldest Adelaidean unit yet recognized west of the hinge zone in this region. A fuller Burra Group sequence and the older Beda Volcanics and Backy Point Beds are probably present to the east in the hinge zone. The only cored drillhole intersection was in SYM 600/102, the core and the few shallow rotary drilling intersection sampled were unmineralized.

2. Sturt Tillite

This unit has not been recognized in outcrop and was intersected in SYM 600/102 and SYM 101. Core was not sampled. Some pyrite and

traces of chalcopyrite are reported in logs.

3. Farina Subgroup

The transgressive base of this unit on the craton is frequently a locus for mineralization. In the western licence area it has not been adequately sampled by the small number of rotary holes in which it is believed to occur. The unit forms an extensive basement to the St. Vincent Basin (Cockshell, et. al. 1978) and a leached clay-rich palaeosal is developed within it immediately below the Cainozoic unconformity. A thick section of the Subgroup was intersected in the Port Wakefield Railway Water Bore and may be comprised largely of Tapley Hill Formation.

4. Willochra Subgroup and Wilpena Group

These rocks occur only east of the Yararoo Fault which here forms the western boundary of the Torrens Hinge Zone. To date they have not been shown to be prospective.

Cambrian Rocks

Aquitaine Australia Minerals Pty. Ltd. made a thorough investigation of the Lower Cambrian sequence in the western licence area for stratiform Cu, Pb, Zn mineralization, (Lee, 1975 - 1978). Results are comparable with those in the Adelaide Geosyncline. Rotary drillhole SYM 600 (Section 4) is characteristic. It tested the Winulta-Formation-Kulpara Dolomite transition from sandy clastic to carbonate facies. The Cu, Pb, Zn analyses increased gradually upwards from the basal unconformity at 198m into the Kulpara Dolomite where maximum enrichment of copper occurred between 86m and 84m. Analyses were low between 84m and the Tertiary unconformity at 51m. Hoatson, (1980), reported a cobalt anomaly near Melton in a Fe-Mn rich layer formed on the Tertiary unconformity with the Kulpara Dolomite.

Permian Rocks

No Permian rocks have been identified within the licence area.

Cainozoic Sequences

A careful study of the Cainozoic detail presented on the cross sections shows a widespread development of the Eocene 'Tc' unit which comprises the Clinton Coal Measures and equivalents to the west. Lithological and gamma-neutron logs of SYM 600 (Section 4), SYP 600 (Section 8), SYP 601 (Section 7) in the licence area indicate that this unit is much more extensive within the western licence area than was formerly believed. Sand and silt filled paleochannels probably follow the trends of the Cambrian basins. Stuart, (1970), showed that near Ardrossan stream transport was from the west-north-west. The geological setting of the licence area is analogous with that of Lake Frome area with economic uranium channel deposits, (Brunt, 1978).

CONCLUSION

1. A possible target area for prospective crystalline basement is indicated in the vicinity of the Section 6 - Section 10 intersection.

2. The area extending eastwards from the western licence boundary to the vicinity of the Ardrossan Thrust Zone deserves investigation for uranium channel deposits.

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CONSULTING GEOLOGIST

POSEIDON LIMITED

E.L. 923 SOUTH AUSTRALIA

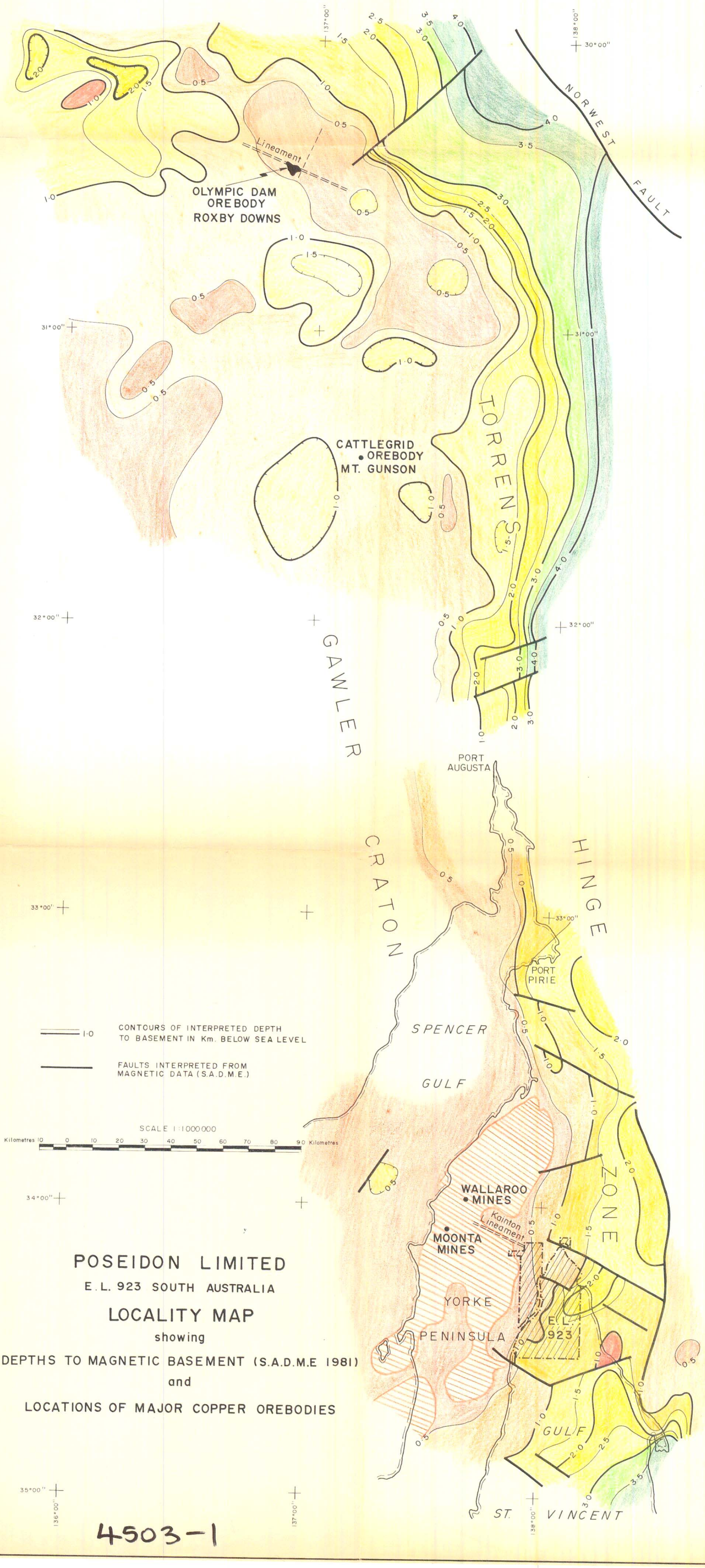
LOCALITY MAP

showing

DEPTHS TO MAGNETIC BASEMENT (S.A.D.M.E 1981)

and

LOCATIONS OF MAJOR COPPER OREBODIES



4503-1

GEOLOGICAL LEGEND

CAINOZOIC

- Cz — Undifferentiated Tertiary and Quarternary Units.

PERMIAN

- Pj — Cape Jervis Beds : till and glaciomarine sediments.

CAMBRIAN

- € — Undifferentiated Cambrian sediments
- €pb — Parara Limestone : dark grey facies
- €pa — Parara Limestone : light grey shallow water silty facies.
- €kc — Kulpara Formation : shallow seawards intertidal limestone facies
- €kb — Kulpara Formation : very shallow intertidal dolomite facies
- €w — Winulta Formation : transgressive sandstone, dolomite upwards.

WILPENA GROUP (Pw)

- Pwa — ABC Range Quartzite : (Simmens Quartzite and Corraberra Sandstone equivalents of Tent Hill Formation)
- Pwb — Brachina Formation : (includes Tregolana Shale equivalent)
- Pws — Seacliff Sandstone :

BURRA GROUP (Pb) / WILLOUNDRA FACIES (Pbw) / ELATINA FACIES (Pbe)

- Phr — Reynella Siltstone
- Phw — Wilmington Formation and Etina Limestone
- Pha — Angepena Formation
- Pfb — Brighton Limestone
- Pft — Tapley Hill Formation
- Pfw — Woocalla Dolomite
- Ps — Sturtian tillite : (subsurface only)
- Pba — Aldgate Sandstone : (Rhynie Sandstone, Emeroo Quartzite Equivalents)

PRE-ADELAIDEAN

- P-wm — Metasomatised Wandearah Metasiltstone
- Pao — Arthurton Granite : (isotopic age ≥ 1500 Ma, associated with pegmatites and granite porphyry 1400–1450 Ma)
- P-w — Wandearah Metasiltstone : (in places with acid and intermediate Willamulka volcanics.)
- pC — Undifferentiated biotite–muscovite–chlorite schist, felsic gneiss, amphibolite and quartz–K feldspar–muscovite–tourmaline pegmatite.

- Observed Fault
- Inferred Fault (unclassified)
- Normal Fault
- Thrust Fault
- Observed Unconformity
- Inferred Unconformity
- Outcrop Boundary
- Inferred Geological Boundary
- 35 — Bedding Dip and Strike
- SECTION 9 — Cross section Line
- Exploration Area held by Poseidon Ltd.

BOREHOLE DATA

- Borehole confined to Cainozoic sediments
- Borehole within and bottoming in basement
- Borehole with major Cambrian and Precambrian basement intersection
- Coal boreholes drilled by E.T.S.A.
- Coal boreholes drilled by S.A. Govt
- SYK, SYM, SYP, SYD — Geochemical sample boreholes drilled by Aquitaine Minerals Australia Pty. Ltd.

E.L. 923 Area 1

E.L. 923 Area 2

E.L. 923 Area 3

YARAROO FAULT

ARDROSSAN THRUST ZONE

YORKE PENINSULA

GULF ST. VINCENT

CLINTON CONSERVATION PARK

SCALE 1:50000

Metres 1000 0 1000 2000 3000 4000 Metres

Wallaroo 6430-III	Alford 6430-II	Lochiel 6530-III	Blyth 6530-II
Moonta 6429-IV	SHEET 1 Koolunga 6429-III	Wakefield 6529-IV	Balaklava 6529-I
SHEET 2 Maitland 6429-II & PT6329-II	Ardrossan 6429-II	Inkerman 6529-III	Dublin 6529-II
Curramulka 6428-IV & PT6328-I	Port Julia 6428-I		Vincent 6528-I

INDEX TO ADJOINING SHEETS AND SHEET INDEX

Compiled by B. P. Thomson, 1981

POSEIDON LIMITED

E.L. 923 SOUTH AUSTRALIA

INTERPRETED PRE-CAINOZOIC GEOLOGICAL MAP

SHEET 1

Scale 1:50000 Drawn: INTO Drafting

4503-2

GEOLOGICAL LEGEND

CAINOZOIC

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PERMIAN

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CAMBRIAN

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WILPENA GROUP (Pw-)

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- Pwb — Brachina Formation : (includes Tregolana Shale equivalent) "
- Pws — Seacliff Sandstone :

ADELAIDEAN — UMBERATANA GROUP (Pf-) — WILLOUNGA EMBAYMENT FACIES

- Phr — Reynella Siltstone
- Phw — Wilmington Formation and Etina Limestone
- Pha — Angepena Formation
- Pfb — Brighton Limestone
- Pft — Tapley Hill Formation
- Pfw — Woocalla Dolomite
- Ps — Sturtian tillite : (subsurface only)

ADELAIDEAN — BURRA GROUP

- Pba — Aldgate Sandstone : (Rhynie Sandstone, Emeroo Quartzite Equivalents.)

PRE-ADELAIDEAN

- P-wm — Metasomatised Wandearah Metasiltstone
- Pea — Arthurton Granite : (isotopic age ? 1500 Ma, associated with pegmatites and granite porphyry? 1400–1450 Ma)
- P-w — Wandearah Metasiltstone : (in places with acid and intermediate Willamulka volcanics)
- p€ — Undifferentiated biotite–muscovite–chlorite schist, felsic gneiss, amphibolite and quartz–K feldspar–muscovite–tourmaline pegmatite.

- Observed Fault
- Inferred Fault (unclassified)
- Normal Fault
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- c.1 — Coal boreholes drilled by S.A. Govt.
- SYK, SYM, SYP, SYQ — Geochemical sample boreholes drilled by Aquitaine Minerals Australia Pty. Ltd.

E.L. 923
Area 1

E.L. 923
Area 3

SECTION 8

SECTION 9

ARDROSSAN THRUST ZONE

YORKE PENINSULA

GULF ST. VINCENT

DEPARTMENT OF DEFENCE FIRING RANGE
Unauthorised Entry Prohibited

Crowell's Pit 15m. in Eocene Sand

Borehole 137 CL152 €1

Inkerman Bore CL156 P+€

V181

Silo site boreholes

B.H.P. Diamond Drillholes

Parara Mine

Compiled by B.P Thomson, 1981

SCALE 1:50000

Metres 1000 0 1000 2000 3000 4000 Metres

Wallaroo 6430-III	Alford 6430-II	Lochiel 6530-III	Blyth 6530-II
Moonta 6429-IV	SHEET 1 Kainton 6429-I	Wakefield 6529-IV	Balaklava 6529-I
Maitland 6429-III & PT6329-IV	SHEET 2 Ardrossan 6428-II	Inkerman 6528-III	Dublin 6529-II
Curramulka 6428-IV & PT6328-I	Port Julia 6428-I		Vincent 6528-I

INDEX TO ADJOINING SHEETS AND SHEET INDEX

POSEIDON LIMITED

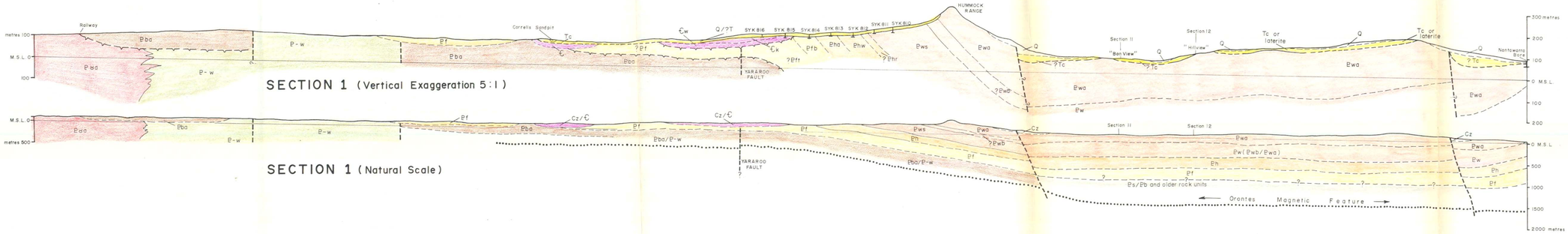
E.L. 923 SOUTH AUSTRALIA

INTERPRETED PRE-CAINOZOIC GEOLOGICAL MAP

SHEET 2

Scale 1:50000 — Drawn: INTO Drafting

4503-3



GEOLOGICAL LEGEND

CAINOZOIC — UNDIFFERENTIATED(Q)

- Qph — Pleistocene Hindmarsh Clay and younger sediments.
- Tp — Oligocene – Miocene marine Port Willunga Formation Melton Limestone
- Tr — Late Eocene – Oligocene largely marine Rogue Formation
- Tc — Middle – Late Eocene non-marine Clinton Coal Measures

PERMIAN

- Pj — Cape Jervis Beds : till and glaciomarine sediments.

CAMBRIAN

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- Pwb — Brachina Formation : (includes Tregolana Shale equivalent)
- Pws — Seacliff Sandstone :

ADELAIDEAN — UMBERATANA GROUP — WILLOUGHBY FORMATION (Ph) — TAPLEY HILL FORMATION (Pf)

- Phr — Reynella Siltstone
- Phw — Wilmington Formation and Etina Limestone
- Pha — Angepena Formation
- Pfb — Brighton Limestone
- Pft — Tapley Hill Formation
- Pfw — Woocalla Dolomite
- Ps — Sturtian tillite : (subsurface only)

ADELAIDEAN — BOOLEROO CENTRE (Pba)

- Pba — Aldgate Sandstone : (Rhynie Sandstone, Emeroo Quartzite Equivalents)

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- P-wm — Metasomatised Wandearah Metasiltstone
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- pC — Undifferentiated biotite – muscovite – chlorite schist, felsic gneiss, amphibolite and quartz – K feldspar – muscovite – tourmaline pegmatite.

GEOLOGICAL CONTACT

- UNCONFORMITY (NOT USED ON NATURAL SCALE AND BASE OF TERTIARY)
- BASE OF TERTIARY ESTABLISHED BY DRILLING
- INFERRED CONTACT
- UNCERTAIN

FAULTS

- UNSPECIFIED / THRUST OR REVERSE FAULT } MAINLY BASED ON INTERPRETATION OF MAGNETIC DATA AFTER AQUITAINE AUST. PTY. LTD
- UNSPECIFIED / THRUST OR REVERSE FAULT } INFERRED BY B. THOMSON
- MAGNETIC BASEMENT FAULT AFTER R. GERDES (S.A.D.M.E.)

AEROMAGNETIC BASEMENT PROFILES

- AFTER R. GERDES (S.A.D.M.E.)
- AFTER J. LEE (AQUITAINE MINERALS AUST. PTY. LTD.)
- AFTER P. Mc INERNEY (AQUITAINE MINERALS AUST. PTY. LTD.)
- "ACID" FEATURE (AQUITAINE MINERALS AUST. PTY. LTD.)

SCALE 1 50000

Kilometres 1000 500 0 1 2 3 4 5 Kilometres

VERTICAL SCALE AS SHOWN

Drawn by INTO Drafting

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E.L. 923

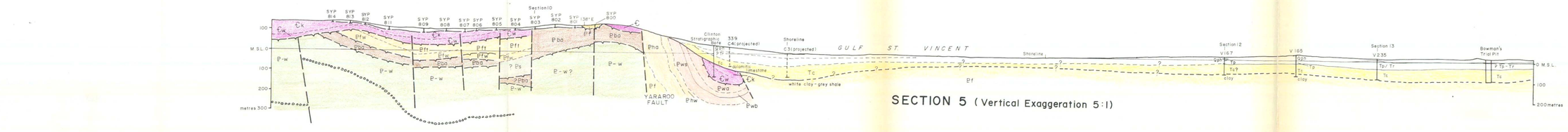
GEOLOGICAL CROSS-SECTION

SECTIONS 1 – 4

Scale : 1 : 50 000 | Sheet 1

Compiled by : B. Thomson, 1982

4503-4



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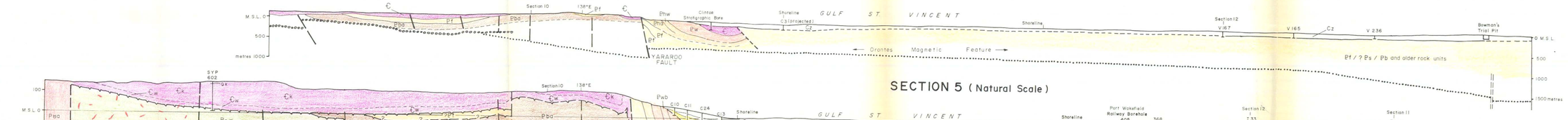

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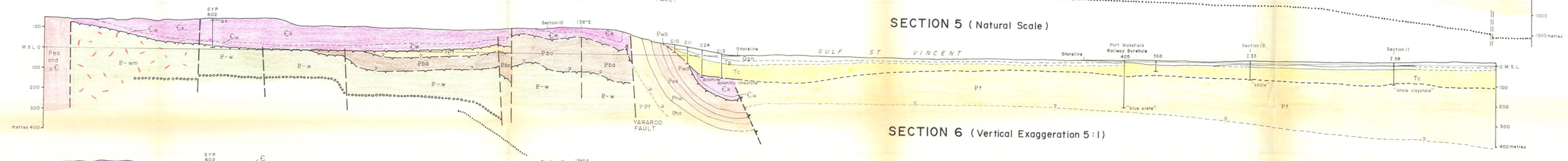

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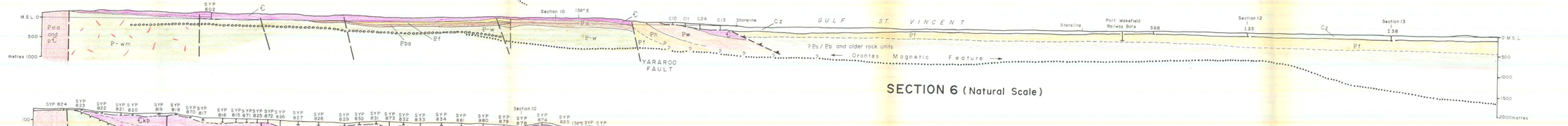

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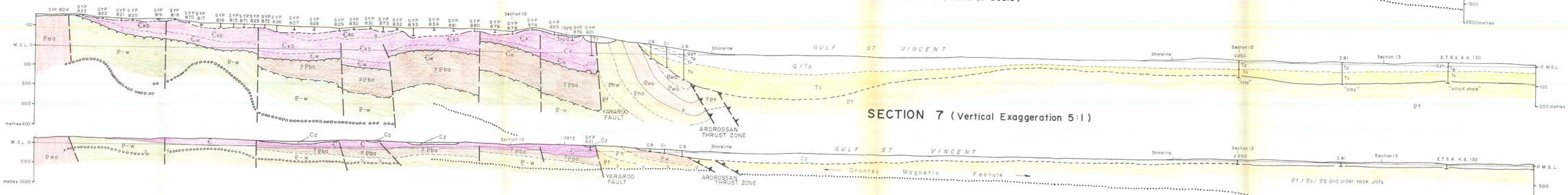

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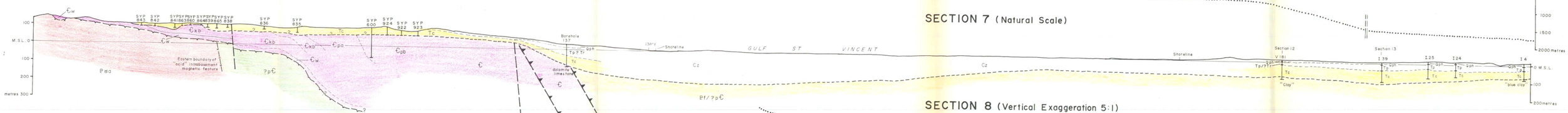
SECTION 7 (Natural Scale)



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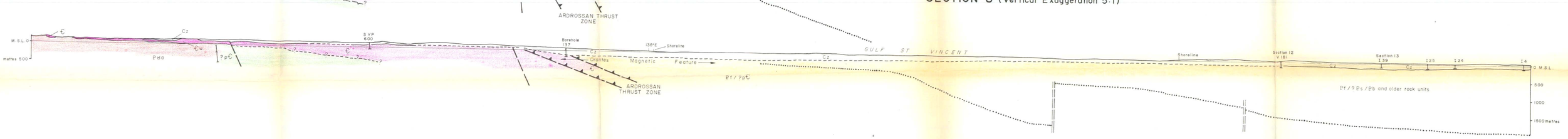

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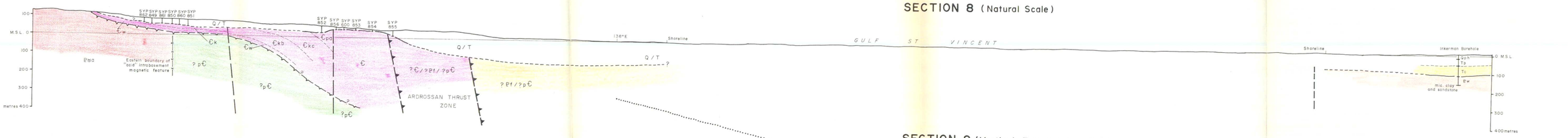

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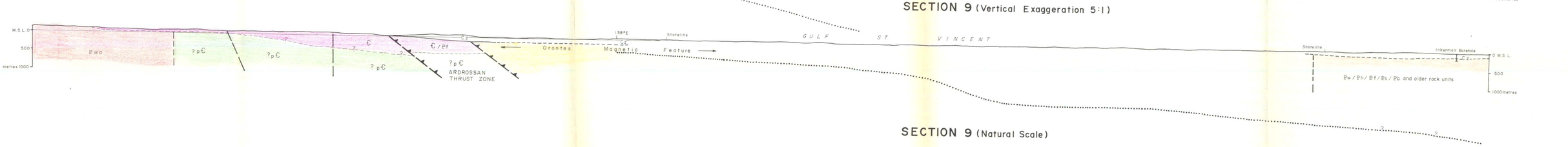


SECTION 9 (Natural Scale)

Note: See Sheet 1 for Geological Legend and References.

Drawn by INTO Drafting

POSEIDON LIMITED

E.L. 923

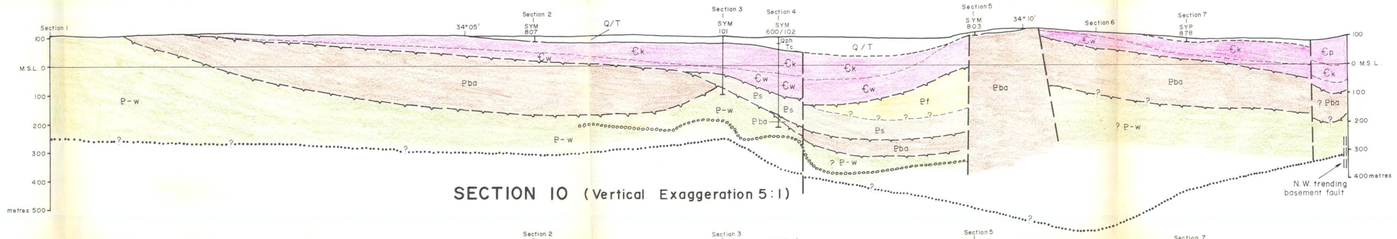
GEOLOGICAL CROSS-SECTION

SECTIONS 5 – 9

Scale : 1:50 000

Compiled by : B. Thomson, 1982

Sheet 2



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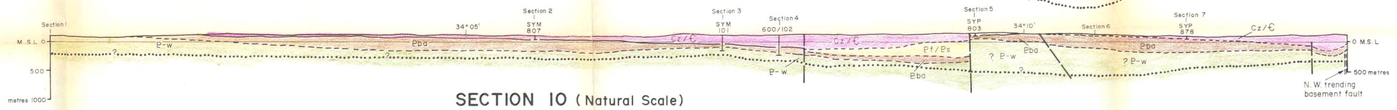

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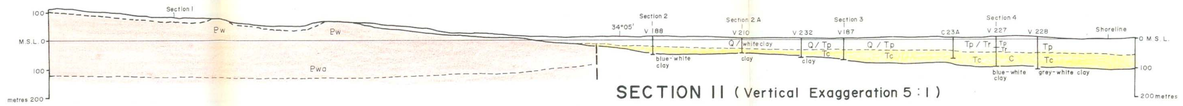

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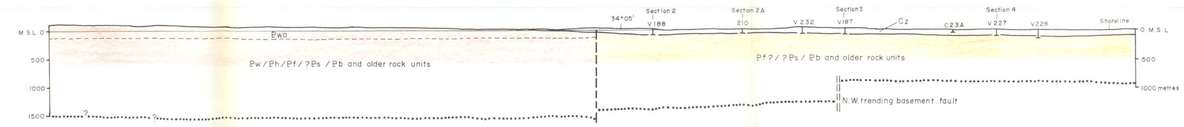

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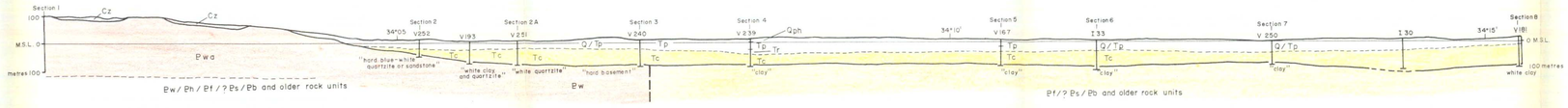

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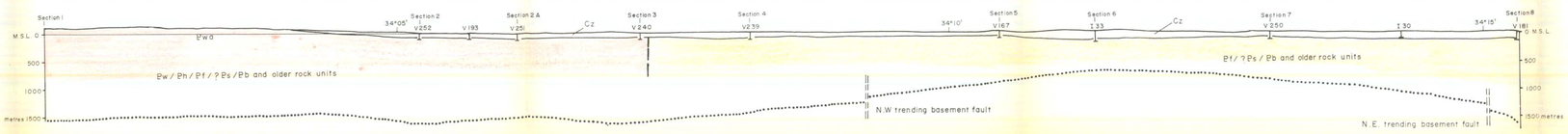
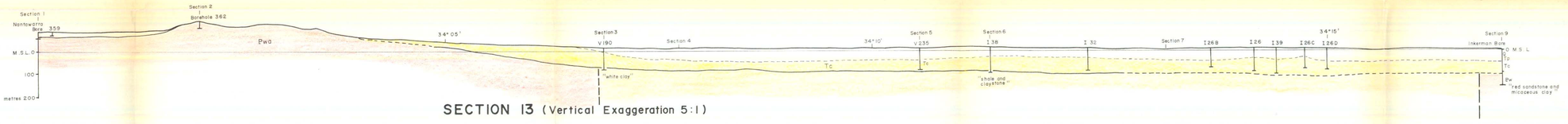
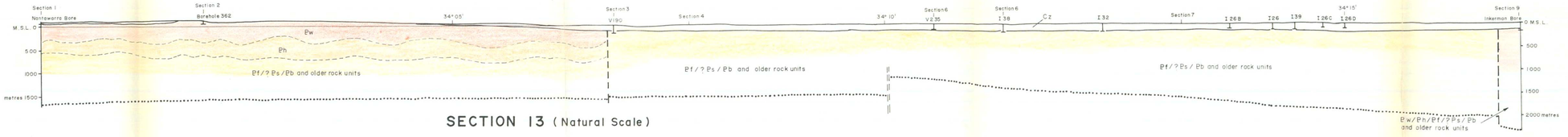


SECTION 12 (Natural Scale)



SECTION 13 (Vertical Exaggeration 5:1)



SECTION 13 (Natural Scale)

Note: See Sheet 1 for Geological Legend and References.

Drawn by: INTO Drafting

POSEIDON LIMITED

E.L. 923

GEOLOGICAL CROSS-SECTION

SECTIONS 10 – 13

Scale 1:50 000

Compiled by: B. Thomson, 1982

Sheet 3

4503-6

138°00'00" 225000mE 230000mE 138°05'00" 235000mE 138°10'00" 240000mE 245000mE 138°15'00"

34°00'00" 6230000mN 6225000mN 34°05'00" 6220000mN 34°10'00" 6215000mN 34°15'00" 6205000mN

SYK816 (15m) SYK815 (18m) SYK14 (15m) SYK813 (8m) SYK812 14m SYK811 (14m) 328 (24m) SYK810 (15m)

SYK803 (23m) SYK802 (9m) SYK800 (13m) SYK803 (30m) SYK817 (8m) SYK819 (18m) SYK820 (5m)

South Hummocks

SECTION 1

Hillview Farm

Nantawarra Bore 359 (18m) 360 (17m)

362

SECTION 11

SECTION 2

SYK823 (17m) SYK822 (7m) SYK821 (4m)

S A D M E Kulpara 1

S A D M E Kulpara 2 BHP 344

V188 V252

V210 SECTION 2A V205

E.L. 923 Area 2

V133 V251 V241

SECTION 12

V232 V187 V209 Wakefield Co Bore V206 V240 V189 V190

SECTION 3

SYM629 (6m) SYM628 (4m) SYM627 (3m)

C22

E.L. 923 Area 1

C21 C20 C21A V186

SECTION 4

SYM622 (15m) SYM623 (5m) 337 V230 V227 V228 V185 V229 V239

Clinton Conservation Park

E.L. 923 Area 3

V190

SECTION 13

C3 C4 Clinton Strat 1

SYP 800 (2m)

SECTION 5

C13 C16 C17 C18 C19 C10 C11 C14 C24 C7 C20 C8 C9 C6 C5

V167 V165 V235 Bowman Trial Pit (ETSA)

SECTION 6

SYP 875 SYP 601 SYP877

Port Wakefield Railway Water Bore 368

I 33 I 38

GULF

SECTION 7

C12

I 32 I 34 ETSA KA-30 I 31 I5 I4

V250 I41 I26B I30 I28 I27 I26 I25 I24 I23 I39 I26C I26

SECTION 10

SECTION 8

V181

Department of Defence Firing Range

Inkerman Bore

SECTION 9

ST VINCENT

Compiled by B P Thomson, 1981

GEOLOGICAL REFERENCE

- QUATERNARY COVER SEDIMENTS AND SOILS
- TERTIARY SANDS AND LATERITE OUTCROPS
- CAMBRIAN AND PRECAMBRIAN BASEMENT OUTCROPS
- MAPPED FAULT
- INFERRED FAULT
- 0 / 10 BASEMENT CONTOURS IN 10 METRE INTERVAL AT AND BELOW MEAN SEA LEVEL CONTOURS ARE BROKEN WHERE INFERRED

BOREHOLE DATA

- o BOREHOLE CONFINED TO CAINOZOIC SEDIMENTS
- • BOREHOLE WITHIN AND BOTTOMING IN BASEMENT
- ◉ BOREHOLE WITH MAJOR CAMBRIAN AND PRECAMBRIAN BASEMENT INTERSECTIONS

NOTE THICKNESS OF CAINOZOIC COVER IS SHOWN IN BRACKETS FOR BOREHOLES INTERSECTING BASEMENT ABOVE M S L

- v COAL BOREHOLES DRILLED BY E T S A
- c, I COAL BOREHOLES DRILLED BY S A GOVT
- SYK, SYM, SYP GEOCHEMICAL SAMPLE BOREHOLES DRILLED BY AQUITAINE MINERALS AUSTRALIA PTY. LTD

CONSERVATION PARK AND FIRING RANGE PROHIBITED AREAS

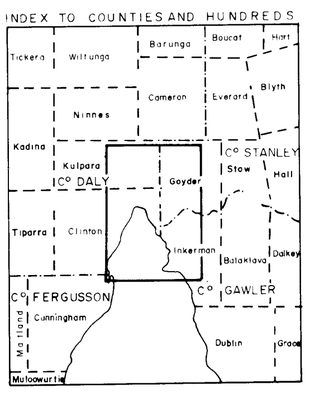
EXPLORATION AREAS HELD BY POSEIDON LIMITED

SECTION 9 CROSS SECTION LINE

SCALE 1 50000

Metres 1000 0 1000 2000 3000 4000 Metres

INDEX TO COUNTIES AND HUNDREDS



INDEX TO AJOINING SHEETS

ALFORD 6430 - II	LOCHIEL 6530 - III	BLYTH 6530 - II
KAINTON 6429 - I	WAKEFIELD 6529 - IV	BALAKLAVA 6529 - I
ARDROSSAN 6429-II	INKERMAN 6529 - III	DUBLIN 6529-II

POSEIDON LIMITED

E.L. 923 NORTHERN GULF ST VINCENT REGION

BASEMENT CONTOUR MAP

SCALE 1:50 000 Drawn : INTO Drafting

4503-7

137°50'

138°10'

Railway

E.L. 923 Area 1

E.L. 923 Area 2

SYM 101

SYM 102

KAINTON

M1

M2

G1

G2

SYP 602

SYP 601

SYP 600

SYD 600

BH 137

NEGATIVE GRAVITY RESIDUAL

YARAROO FAULT

ARDROSSAN THRUST ZONE

AEROMAGNETIC SURVEY BOUNDARY

GULF ST VINCENT

Port Clinton

PRICE

LEGEND

- GRAVITY HIGH
- INTRABASEMENT MAGNETIC SOURCE
- "BASEMENT" HIGH Stratigraphic horizon interpreted by Aquitaine using Compudepth Profiles.
- FAULT (mapped)
- FAULT (inferred)
- THRUST
- SYP 601 — MAJOR DRILLHOLE (after THOMSON)
- POSSIBLE KIMBERLITE TARGET

POSEIDON LIMITED

E.L. 923 SOUTH AUSTRALIA

MAJOR GEOPHYSICAL FEATURES

REVISION			
	Geologist C. ANDERSON	Scale 1:50 000	Plan N°
	Drawn N. Bowden	Date MAY 82	1
	Sheet Index	Drawing N°	

4503-8

Poseidon Limited
Incorporated in South Australia

106 Hutt Street,
Adelaide, 5000,
South Australia.
Phone (08) 223 7438
Telex 82486

Telegraphic and
Cable Address
Poseidon, Adelaide
South Australia.

EXPLORATION LICENCE NUMBER 923

Ardrossan, South Australia

held by Poseidon Limited

QUARTERLY REPORT

FOR THE PERIOD ENDED

16TH AUGUST, 1982

R. G. Bluck
29th October, 1982

CONTENTS

1. SUMMARY

1.1 Tenure

Exploration Licence number 923 was granted to Poseidon Limited on 16th November, 1981 for a period of one year. Total area of the Licence is 875 square kilometres in three irregularly shaped blocks located at the northern end of the Gulf of St. Vincent and over the immediately adjacent shores.

1.2 Exploration Objectives

The area is considered prospective for sedimentary deposits of copper/uranium hosted in cover rocks of Late Proterozoic to Tertiary age overlying a basement known to contain widespread copper and uranium mineralization. In addition the area is in an active Tectonic setting near the Torrens Hinge Zone.

Work completed to date has identified an intra-basement magnetic anomaly below a thin cover of Adelaidean rocks, and an area of thicker Tertiary sediments which may represent a paleodrainage.

1.3 Methodology

Both the intrabasement magnetic anomaly and potential palaeochannel were identified by a re-evaluation of existing records. Follow up ground surveys have been completed to confirm or support the original data.

2. RESULTS

2.1 Geology

(See Plate 1.)

2.1.1 Pre-Adelaidean

Thomson (1982) inferred the existence of extensive areas of Wandearah Metasiltstone (metasomatised in part) to the north-west of the Licence, and Aquitaine drill hole SYP602 immediately west of the area bottomed in equivalent rocks. The results of the ground spectrometer survey show a distinct potassium/uranium response over the Metasiltstone sub-crop areas. Arthurton Granite has been mapped west of the area, and undifferentiated schists and geissis crop out to the immediate south-west.

027

2. RESULTS (continued)

2.1 Geology (continued)

2.1.2 Adelaidean

Thomson (1982) inferred the presence of various Adelaidean sedimentary units along the eastern and western margins of the northern part of the Licence. Outcrop is very poor and no hard supporting data ~~is~~ available.

2.1.3 Cambrian

Various calcareous and clastic Cambrian units are inferred to cover the majority of the Licence area. Outcrop is generally poor though the Aquitaine RAB drilling provided some data to confirm the extent of the units. The phosphate occurrences in the escarpments north-north-west of Port Clinton have not been re-evaluated.

2.1.4 Tertiary

A compilation of the Aquitaine RAB drilling results indicates an area of thickened Tertiary sedimentation, defined by the +20m isopach on Plate 2, running north to south along the western margin of the Licence. Only three holes (SYM600, SYP600, SYP601) were drilled and logged through the entire Tertiary section which consists of:

mixed sands, sandy clays and silts	+20m
sands and grits	17m to 28m
clayey silts and sands, lignitic in part	8m to 15m

Exposures at Crowell's Quarry in the south-east of the Licence area within the top (?) unit, indicate sediment transparent ? from the north and north-west towards the east-south-east (Stuart, 1970). If a Tertiary paleochannel does exist in the area it is likely that it debouched to the sea between Price and Dowlingville rather than continuing south across the elevated (?) Ardrossan hinterland.

2. RESULTS (continued)

2.2 Mineralization Models

The exploration models being applied in the area are:

- intrabasement mineralization, particularly along the major structures at unconformity surfaces near the base of the Adelaidean;
- mineralization within the sands of the Tertiary paleochannel. The areas of radiometrically anomalous Wandearah Metasiltstone and phosphatic Cambrian limestones up drainage in the northern portions of the Licence are a potential source of mobile uranium, while the organic rich basal unit of the Tertiary sequence constitutes a favourable depositional site.

2.3 Geophysics

2.3.1 Magnetics

A re-interpretation of the available geophysical data (Anderson 1982, appended to Poseidon Limited's quarterly Report on the Exploration Licence for the period 16th February to 16th May, 1982) located a local magnetic anomaly worthy of ground follow up (area M1), and a low amplitude, near surface, anomaly of a possible "kimberlite pipe" style.

Ground reconnaissance confirmed the M1 anomaly, hereafter referred to as the Whirrahill anomaly, and a systematic ground survey was carried out to define the feature - survey details and data are presented on Plate 3. Quantitative interpretation of the data (Anderson 1982, Appendix 1) indicated a depth to source of 30m to 35m and a maximum depth extent of 200m; the source is considered to most likely be magnetic pyrrhotite.

The low amplitude, near surface, anomaly was found to correlate with a high tension power pylon.

2.3.2 Spectrometry

A broad spaced spectrometer survey was carried out within the Licence area to indicate the extent of the Tertiary channel sequence, and to check for anomalous responses within its confines - the survey details and data are presented on Plates 4, 5 and 6.

2. RESULTS (continued)

2.3 Geophysics (continued)

2.3.2 Spectrometry (continued)

The contoured results of the potassium channel results show high count rates (in excess of 4 cps and up to 6.12 cps) associated with the Wandearah Metasiltstones to the north-west of the Licence, and with part of the mapped phosphatic Cambrian sequence north of Port Clinton. This latter feature has counts of up to 6.97 cps and may be a composite of units including Wandearah Metasiltstones.

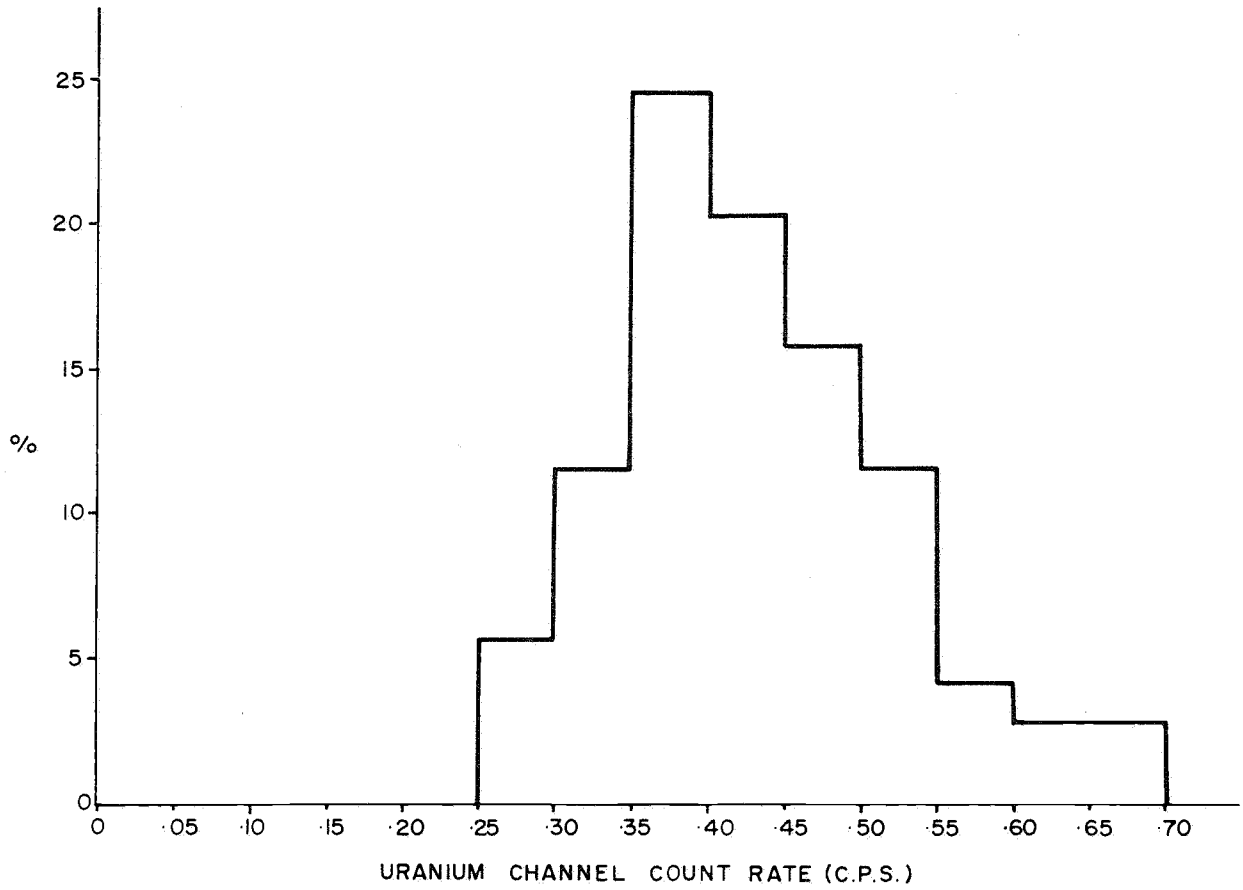
Along the western boundary of the Licence in the vicinity of Clinton Centre, potassium channel count rates in excess of 4.0 cps were obtained over areas mapped as Cambrian limestones. It is considered likely that only a thin and discontinuous remnant of limestones is present over sub-cropping Arthurton Granite.

A strong high potassium channel count rate feature runs north-west to south-east through Dowlingville in an area of mapped sub-cropping Cambrian limestones.

The contoured pattern of thorium count rates (Plate 5) is generally similar to the potassium results and is considered to reflect similar rock type effects. In both spectrometer channels the Tertiary channel sequence generally correlates with lower count rate areas.

In the contoured pattern of uranium count rates (Plate 6) both the area of Wandearah Metasiltsones and phosphatic Cambrian limestone complex show as highs, however, the Dowlingville feature is not recognisable.

A statistical analysis of uranium channel readings from stations within the +20m Tertiary sequence isopach is presented in Figure 1. The distribution is slightly skewed with a pronounced high count tail: the population has an arithmetic mean value of .44 cps and standard deviation of .09 cps. Stations in excess of mean plus two standard deviations are taken as anomalous, i.e. greater than .62 cps. All the anomalous stations (four in all) are grouped along the western boundary of the Licence south of Clinton Centre. Repeat surveying in the area reproduced the individual station readings, though additional sites between the original stations varied widely between 0.40 cps and 0.60 cps.



n = 69

$\bar{x}$ = 43·7

σ = 9·2

Range 0·26 to 0·67 c.p.s.

POSEIDON LIMITED		
E.L. 923 ARDROSSAN		
URANIUM CHANNEL SPECTROMETRY FOR STATIONS WITHIN THE +20m TERTIARY SEQUENCE ISOPACH		
Geologist: R. BLUCK	Scale:	Fig.N°. 1
Drawn: N. Bowden	Date: Oct '82	
Sheet Index: 1-53-12	Drg. N°	
Revision:		

2. RESULTS (continued)

2.4 Discussion

The Wirrahill anomaly occurs in an area with an interpreted cover of Adelaidean Aldgate Sandstone; outcrop is non-existent and the interpretation cannot be confirmed. As the feature appears to have a discrete and consistent depth below surface, and a finite depth extent, it is considered possible that the source is an accumulation of magnetic material within the basement rocks at and below the basal Adelaidean unconformity.

The extent of the Tertiary channel sequence has been reasonably well outlined by the Aquitaine RAB drilling and the spectrometer contours. Statistically anomalous uranium channel features are present within the channel confines south of Clinton Centre, and adjacent to Aquitaine drillhole SYP600 which recorded gamma count rates of four times background over the basal 10m of the Tertiary section.

3. PROPOSED EXPLORATION

A programme of open hole drilling will be carried out to investigate the source of the Wirrahill anomaly, and to examine the Tertiary sedimentary section in the vicinity of the uranium channel spectrometer anomalies.

4. EXPENDITURE

Expenditure on the Exploration Licence area for the period 17th May to 16th August, 1982, was as follows:

Tenure	$ 50
Geology	1,394
Geophysics	4,690
Maps, Printing & Stationery	302
Motor Vehicle Expenses	15
Field Supplies	21
Reporting	207
	$6,679

5. REFERENCES

Anderson, C. G. 1982 - Drill testing of Wirrahill Magnetic anomaly, EL 923, S.A., Memorandum to Poseidon Limited

Stuart, W. J. 1970 - The Cainozoic Stratigraphy of the eastern coastal area of Yorke Peninsula, S.A., Trans. R. Soc. S. Aust. (1970), Vol. 94.

Thomson, B. P. 1982 - Review of geology of Poseidon Limited's E.L. 923, S.A.

R. G. Bluck,
Chief Geology.

RGB:hjd.

29th October, 1982

A P P E N D I X 1

Drill Testing
of
Wirrahill Magnetic Anomaly
E.L. 923, S.A.

Memorandum from C. G. Anderson

C.G. ANDERSON
Consulting Geophysicist

Unit 2,
237 Glen Osmond Road,
FREWVILLE. S.A.
5063

Telephone (08) 79 8424
(After hours) 42 9137

034

7th September, 1982

Poseidon Ltd.
106 Hutt Street
ADELAIDE. S.A. 5000

Memorandum to: R.G. Bluck

Re: Drill-testing of "Wirrahill" magnetic anomaly - E.L. 923 South Australia

Quantitative interpretation of ground magnetic data from lines 2200N and 2400N on the Wirrahill grid are attached (figures 1 and 2 respectively). From qualitative assessment of the ground data, the area between (approximately) 2100N and 2500N appears to be most favourable for drill-testing of the magnetic anomaly because

a) the magnetic amplitude peaks in this region (300 gammas on 2400N), indicating maximum thickness/minimum depth for the source body.
b) the anomaly is more complex in the area north of 2500N, and therefore a more difficult drilling target.
c) south of 2100N, there is a marked decrease in amplitude, probably related to an increased depth to the source.

The quantitative modelling indicates that the amplitude variations between 2200 and 2400N can be accounted for by variation in thickness and depth-extent of the magnetic source, with a fixed susceptibility of 0.0045 cgs units. Depth-to-source in both profiles is between 30 and 35 metres below ground level. The following comments are relevant to drill-site location:

a) Although the indicated dip in both interpreted profiles is vertical, there is an indication of a slight easterly dip, particularly in the data for 2400N.
b) The interpreted thickness of the target body is a function of magnetic susceptibility - i.e. only the thickness-susceptibility product can be reliably determined. The susceptibility value used (.0045) is compatible with magnetic pyrrhotite as the source rock.
c) Because of the effects of new-surface magnetic "noise", the accuracy of the determined depth values is probably of the order of 15-20%.

...2...

The shallow depth of the magnetic material in this area is somewhat unexpected. However, the magnitude of the anomaly on line 2400N, plus the extended strike length and linearity of the anomaly, reduce the likelihood of the source being detrital accumulations of magnetite, and the anomaly is considered to be a legitimate massive sulphide (i.e. pyrrhotite) target. Recommended drill-site locations and total depths are indicated in figures 1 and 2, taking into account the three factors above - i.e. possible dip, thickness variation and error in depth estimates. Total drilling depth of 200 metres is indicated.

C.G. ANDERSON

GEOLOGICAL LEGEND

CAINOZOIC		Cz	Undifferentiated Tertiary and Quarternary Units
PERMIAN		Pj [30]	Cape Jervis Beds : till and glaciomarine sediments.
CAMBRIAN		€ [22]	Undifferentiated Cambrian sediments
		€pb	Parara Limestone dark grey facies
		€pa	Parara Limestone : light grey shallow water silty facies.
		€kc	Kulpara Formation : shallow seawards infratidal limestone facies
		€kb	Kulpara Formation : very shallow intertidal dolomite facies
		€w	Winulta Formation : transgressive sandstone, dolomite upwards.
ADELAIDEAN	WILPENA GROUP (Pw)	Pwa [3]	ABC Range Quartzite : (Simmens Quartzite and Corraberra Sandstone equivalents of Tent Hill Formation)
		Pwb	Brachina Formation : (includes Tregolana Shale equivalent)
		Pws	Seacliff Sandstone :
	UMBERATANA GROUP / PARNKLA GROUP (Pr) / WILLOCHRA SUBGROUP (Pu)	Phr [60]	Reynella Siltstone
		Phw	Wilmington Formation and Etina Limestone
		Pha	Angepena Formation
		Pfb [58]	Brighton Limestone
		Pft	Tapley Hill Formation
		Pfw	Woocalla Dolomite
		Ps [70]	Sturtian tillite : (subsurface only)
	BURRA GROUP (Pb)	Pba [61]	Aldgate Sandstone : (Rhynie Sandstone, Emeroo Quartzite Equivalents.)
PRE-ADELAIDEAN		P-wm [51+15]	Metasomatised Wandearah Metasiltstone
		Pεa [15]	Arthurton Granite : (isotopic age ≯1500Ma, associated with pegmatites and granite porphyry ≯1400-1450 Ma)
		P-w [51]	Wandearah Metasiltstone : (in places with acid and intermediate Willamulka volcanics)
		pC [49]	Undifferentiated biotite – muscovite – chlorite schist, felsic gneiss, amphibolite and quartz – K feldspar – muscovite – tourmaline pegmatite.

- Observed Fault
- Inferred Fault (unclassified)
- Normal Fault
- Thrust Fault
- Observed Unconformity
- Inferred Unconformity
- Outcrop Boundary
- Inferred Geological Boundary
- 35 Bedding Dip and Strike

LEGEND

- Sealed Road
- Unsealed Road
- Vehicular Track
- Railway
- Building
- Power Transmission Line
- 14 Spot Height
- 50 Contour
- Conservation Park Boundary
- Lease Boundary

SCALE 1:50000

Km 1000 0 1 2 3 4 5 6 Km

4503-9

POSEIDON LIMITED

E.L. 923 ARDROSSAN, S.A.

INTERPRETED PRE-CAINOZOIC GEOLOGICAL MAP

REVISION			
	Geologist: B. THOMSON	Scale: 1:50000	Plate N°
	Drawn: N. Bowden	Date: June 1982	1
	Sheet Index:	Drawing N°	

62 26 000mN

34°05'

62 20

34°10'

6210

34°15'

62 00

34°20'

6190

34°25'

759000mE

760

137°50'

137°55'

770

138°00'

225000mE

PORT ARTHUR

Wallaroo - Hanley Bridge Railway (1.60m gauge)

(salt)

PORT CLINTON

GULF

ST VINCENT

CLINTON CENTRE

DOWLINGVILLE

PRICE

SALT EVAPORATION PANS

SEDIMENT TRANSPORT DIRECTION

ARDROSSAN

Macs Beach

Tiddy Widdy Beach

Youngs Beach

130m Isopach of Tertiary and Quarternary Cover

+20m Isopach of Tertiary and Quarternary Cover

100m

50m

GEOLOGICAL LEGEND

- Aquitaine drill hole with thickness of younger cover.
- Basement Outcrop
- Proterozoic Outcrop
- Thrust Fault

LEGEND

- Sealed Road
- Unsealed Road
- Vehicular Track
- Railway
- Building
- Power Transmission Line
- Spot Height
- Contour
- Conservation Park Boundary
- Lease Boundary

SCALE 1:50000

Km 1000 0 1 2 3 4 5 6 Km

4503-10

POSEIDON LIMITED

E.L. 923 ARDROSSAN, S.A.

TERTIARY AND QUARTERNARY COVER

REVISION			
	Geologist: R. BLUCK	Scale: 1:50000	Plate N°
	Drawn: N. Bowden	Date: June 1982	2
	Sheet Index:	Drawing N°	

NOTE

INSTRUMENT USED WAS A BARRINGER GM 122
MINI PROTON MAGNETOMETER, WITH A SENSITIVITY
OF ±1nT
DATA CORRECTED FOR DIURNAL DRIFT.

CONTOUR INTERVAL 25nT

ROAD

ROAD

CROP PADDOCK
NO ACCESS

CROP PADDOCK
NO ACCESS

3000 N

2900 N

2800 N

2700 N

2600 N

2500 N

2400 N

2300 N

2200 N

2100 N

2000 N

1900 N

1800 N

1700 N

1600 N

1500 N

1400 N

1310 N

1500 E

1400 E

1300 E

1200 E

1100 E

1000 E

900 E

58730

58775

58800

58825

58850

58875

58900

58750

58700

58600

60000

SCALE 1 2500

metres 20 0 20 40 60 80 100 120 140 160 180 200 metres

POSEIDON LIMITED

E.L. 923 SOUTH AUSTRALIA

GROUND MAGNETICS (TOTAL FIELD)

WIRRAHILL ANOMALY

4503-11

REVISION			
	Geologist: R BLUCK	Scale: 1:2500	Plate N° 3
	Drawn: N Bowden	Date: July '82	
	Sheet Index: 1-53-12	Drawing N°	

62 26 000mN

34°05'

34°10'

34°15'

34°20'

34°25'

6220

6210

6200

6190

137°50'

137°55'

138°00'

759000mE

760

770

225000mE

PORT ARTHUR

PORT CLINTON

CLINTON CENTRE

DOWLINGVILLE

ARDROSSAN

Tiddy Widdy Beach

Youngs Beach

Macs Beach

GULF ST. VINCENT

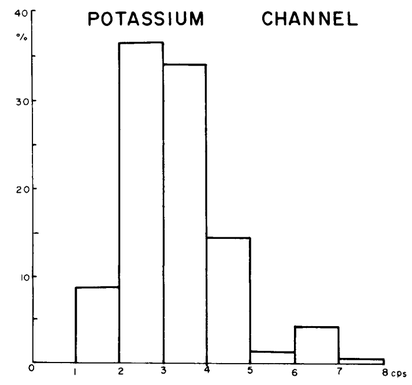
SALT EVAPORATION PANS

Wallaroo-Hannahs Bridge Railway (Disused)

Instrument Scintrex GAD6 with CS-3 probe (348cc)
Probe placed in shallow pit, 5 min. integration,
readout Crompton stripped.

	n	x̄	σ	% var.
STATIONS READING < 5cps	148	3·2	0·9	28

POTASSIUM CHANNEL



LEGEND

- Sealed Road
- Unsealed Road
- Vehicular Track
- Railway
- Building
- Power Transmission Line
- Spot Height
- Contour
- Conservation Park Boundary
- Lease Boundary

SCALE 1:50000

Km 1000 0 1 2 3 4 5 6 Km

4503-12

POSEIDON LIMITED

E.L. 923 ARDROSSAN, S.A.

POTASSIUM CHANNEL GROUND SPECTROMETRY

REVISION				
		Geologist: R BLUCK	Scale: 1:50 000	Plate N°
		Drawn: N. Bowden	Date: July 1982	4
		Sheet Index: 1-53-12	Drawing N°	

Instrument Scintrex GAD6 with CS-3 probe (348 cc).
Probe placed in shallow pit, 5 min. integration,
readout Crompton stripped.

LEGEND

- Sealed Road
- Unsealed Road
- Vehicular Track
- Railway
- Building
- Power Transmission Line
- Spot Height
- Contour
- Conservation Park Boundary
- Lease Boundary

SCALE 1:50000

Km 1000 0 1 2 3 4 5 6 Km

4503-13

POSEIDON LIMITED

E.L. 923 ARDROSSAN, S.A.

THORIUM CHANNEL GROUND SPECTROMETRY

REVISION			
	Geologist: R. BLUCK	Scale: 1:50 000	Plate No. 5
	Drawn: N. Bowden	Date: July 1982	
	Sheet Index: 1-53-12	Drawing No.	

GULF ST. VINCENT

PORT ARTHUR

PORT CLINTON

PRICE

SALT EVAPORATION PANS

CLINTON CENTRE

DOWLINGVILLE

ARDROSSAN

Tiddy Widdy Beach

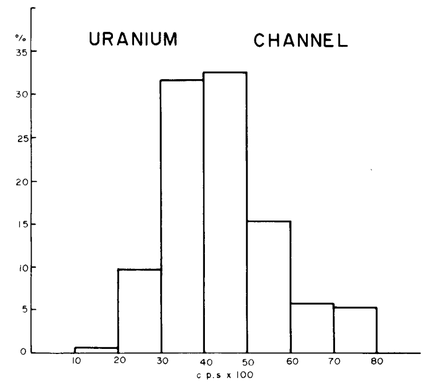
Youngs Beach

Macs Beach

Port Augusta-Hadley Bridge Railway (1.60m gauge)

Instrument Scintrex GAD6 with CS-3 probe (348cc).
Probe placed in shallow pit, 5 min. integration,
readout Crompton stripped

	n	$\bar{x}$	G	% var.
TOTAL POPULATION	158	44·6	12·3	27
POPULATION ‹·5 cps	113	38·5	6·9	18
POPULATION ›·5 cps	100	51·3	10·0	19



LEGEND

- Sealed Road
- Unsealed Road
- Vehicular Track
- Railway
- Building
- Power Transmission Line
- Spot Height
- Contour
- Conservation Park Boundary
- Lease Boundary

SCALE 1:50000

Km 1000 0 1 2 3 4 5 6 Km

4503-14

POSEIDON LIMITED

E.L. 923 ARDROSSAN, S.A.

URANIUM CHANNEL GROUND SPECTROMETRY

REVISION				
		Geologist: R. BLUCK	Scale: 1:50 000	Plate No.
		Drawn: N Bowden	Date: July 1982	6
		Sheet Index: 1-53-12	Drawing No.	

Poseidon Limited
Incorporated in South Australia

106 Hutt Street,
Adelaide, 5000,
South Australia.
Phone (08) 223 7438
Telex 82486

Telegraphic and
Cable Address
Poseidon, Adelaide
South Australia.

EXPLORATION LICENCE NUMBER 923

Ardrossan, South Australia

held by Poseidon Limited

QUARTERLY REPORT

FOR THE PERIOD ENDED

16TH NOVEMBER, 1982

R.G. Bluck
27th January, 1983

CONTENTS

1. SUMMARY

1.1 Tenure

Exploration Licence number 923 was granted to Poseidon Limited on 16th November, 1981 for a period of one year. Total area of the Licence is 875 square kilometres in three irregularly shaped blocks located at the northern end of the Gulf of St. Vincent and over the immediately adjacent shores.

The Exploration Licence expired on 16th November, 1982 and Poseidon Limited has applied for a further Exploration Licence over the same area. The Exploration Licence Application number is DME 440/82.

1.2 Exploration Objectives

The area is considered prospective for sedimentary deposits of copper/uranium hosted in cover rocks of Late Proterozoic to Tertiary age overlying a basement known to contain widespread copper and uranium mineralization. In addition the area is in an active Tectonic setting near the Torrens Hinge Zone.

Work completed to date has identified an intrabasement magnetic anomaly below a thin cover of Adelaidean rocks, and an area of thicker Tertiary sediments which may represent a palaeodrainage.

1.3 Methodology

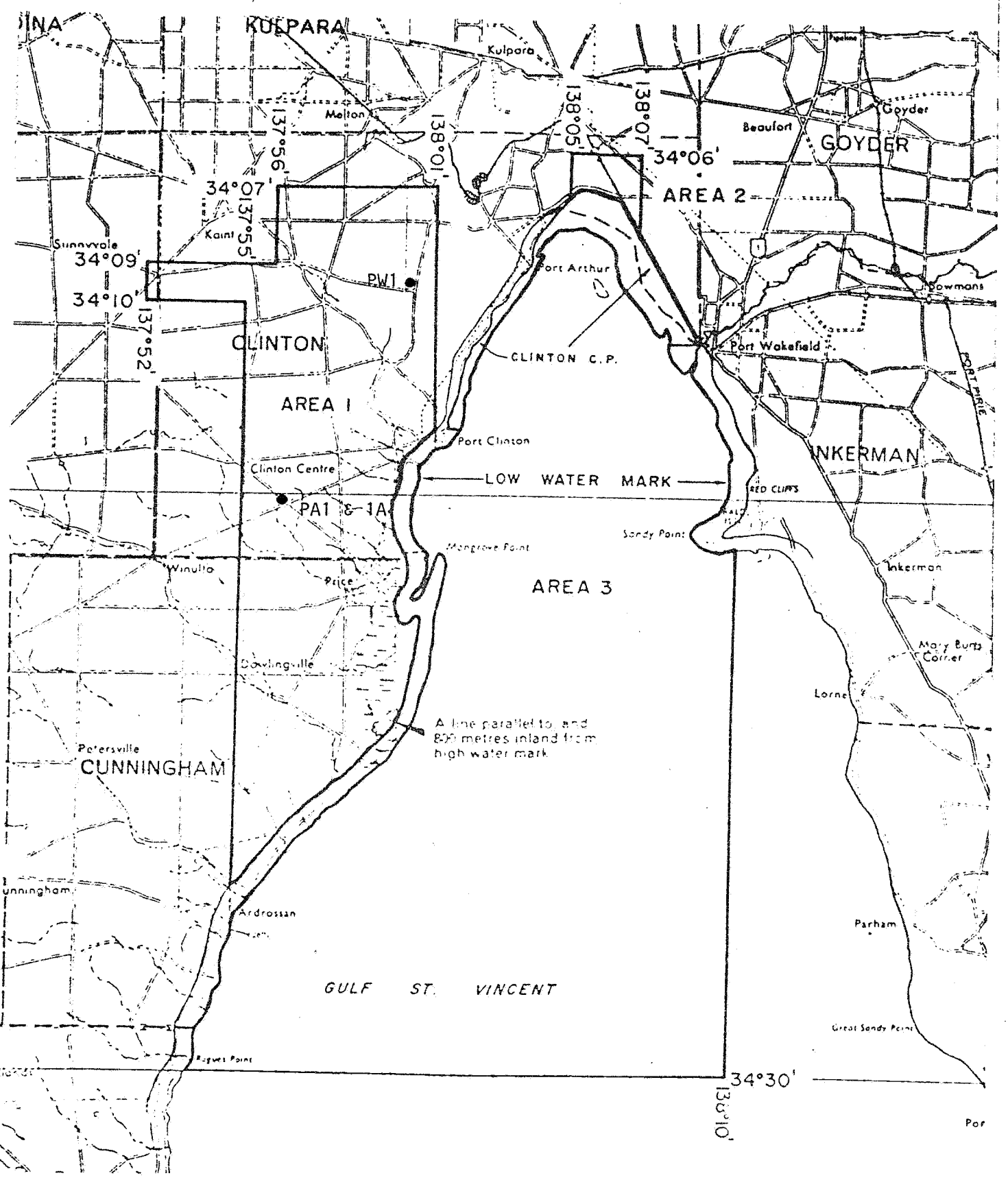
Both an intrabasement magnetic anomaly and a potential palaeochannel were identified by a re-evaluation of existing records. Follow up ground surveys have been completed to confirm or support the original data.

During the present quarter open hole drilling located an amphibolite body below the magnetic anomaly. Drilling of the palaeochannel was unsuccessful due to a shallow thick unit of unconsolidated sands. Re-drilling is to be attempted with a reverse circulation rig.

2. RESULTS

The results of the geological and geophysical appraisals have been reported previously (Quarterly Report for the Period ended 16th August, 1982).

FIGURE 1



SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

Drill hole location map

AREA OF EXPLORATION LICENCE 923 AND LOCATION OF DRILL HOLES PW-1 AND PA-1 AND 1A

2.1 Drilling

2.1.1 Wirrahill Anomaly

This magnetic feature, located 8 kilometres north-north-west of Port Clinton, was interpreted as resulting from a discrete source some 30 to 35 metres below surface with a possible depth extent of 200 metres. The feature was described in an attachment to the Quarterly Report for the Period ended 16th May, 1982.

The feature was investigated during October, 1982 by drillhole PW1 which was hammer drilled from surface to total depth of 84 metres.

Chip logging identified a massive amphibolite containing trace to 5% magnetite between 39 metres and total depth at 84 metres. This unit is considered to adequately account for the observed magnetic response. A slightly pyritic and carbonated zone with an associated low order gamma response was logged between 76 and 81 metres: samples are currently being assayed and the results will be reported separately.

Plots of the hole profile, the down hole log, and a descriptive geological log, are attached to this report as Appendix I.

2.1.2 Palaeochannel

A reconnaissance drilling programme was planned to examine the area of the possible Tertiary palaeochannel along the western margin of the Exploration Licence area. The first hole of the programme was collared on the cross roads 6 kilometres north-west of Price, and 500 metres south-east of Aquitaine drillhole SYP 600. This hole, PA1 and a re-drill PA1A, was abandoned at 17 metres after encountering free running sands from 11 metres onwards. The programme is to be re-attempted with a reverse circulation rig.

The down hole log, and a descriptive geological log, are attahced to this report as Appendix II.

3. PROPOSED EXPLORATION

The area of the interpreted palaeochannel will be further investigated with a reconnaissance drilling programme using a reverse circulation rig.

4. EXPENDITURE

4.1 For the Quarter Ended 16th November, 1982

Expenditure for the period 16th August to 16th November, 1982 was:

Geology	$ 2,625
Geophysics	1,038
Drilling	3,407
Printing, Stationery and Maps	85
Telephone and Postage	1
Field Supplies	51
Motor Vehicle Expenses	275
Accommodation and Meals	218
Tenure	215
Legal	145
Reporting	537
	$ 8,607

4.2 For the Term of the Exploration Licence

Quarter ended -

16th February, 1982	$ 8,738
16th May, 1982	6,157
16th August, 1982	6,679
16th November, 1982	8,607
	$30,181

Manager.

R.G. Bluck
Chief Geologist

27th January, 1983.

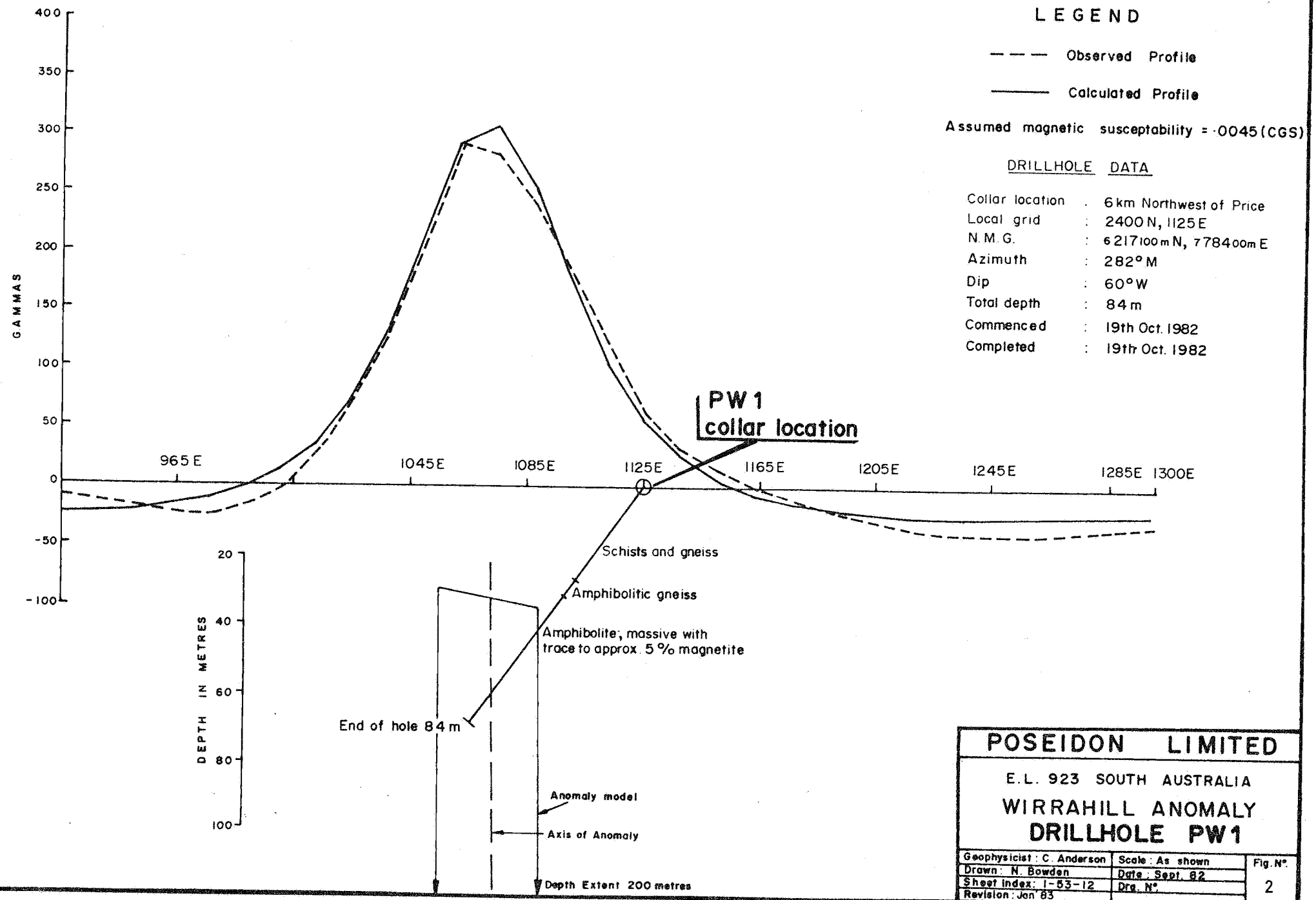
APPENDIX I

WIRRAHILL ANOMALY, DRILLHOLE PW-1

Drillhole cross section (Figure 2)

Geological log

Geophysical log



POSEIDON LIMITED		
E.L. 923 SOUTH AUSTRALIA		
WIRRAHILL ANOMALY		
DRILLHOLE PW1		
Geophysicist: C. Anderson	Scale: As shown	Fig. N°
Drawn: N. Bowden	Date: Sept. 82	2
Sheet Index: 1-53-12	Drg. N°	
Revision: Jan 83		

Poseidon Limited

OPEN HOLE DRILLING
Field Log

PROPERTY NAME : Ardrossan
DRILL HOLE NO.: PW 1

Lat. & N	: 6217100mN	*Long. E*	: 778400mE
Azimuth	: 282 M	*Dip*	60°W
Commenced	: 19/10/82	*Completed*:	19/10/82
Total Depth	: 84 metres		
Geologist	: R.G. Bluck		
Operator	: Northbridge Drilling Schram 64 series		

Hole size: Collar 6½" cased PVC to 4 m; hole 5½" hammer.

Comments : Hole logged by Geoscience - gamma only.

From	*To*	*Log*	*Lithology and comments*
0	1m		Cream to brown mottled kunkar and clay
	2m		Red brown clay and minor cream kunkar
	3m		Co dominant red clay and dark grey to black schist
	4m		"
	5m		"
	6m		Dark grey to red brown schists, tr clay
	7m		"
	8m		"
	9m		"
	10m		"
	11m		Dark grey brown, tr red, schists
	12m		"
	13m		Dark grey green to black, fine to med. grained mafic, minor schist
	14m		"
	15m		Dark grey green to black mafic schist
	16m		"
	17m		" massive in part
	18m		"
	19m		Dark grey to olive green, fine to med. grd. mafic, minor schist
	20m		"
	21m		"
	22m		"
	23m		"
	24m		"
	25m		"
	26m		"
	27m		"
	28m		"
	29m		"
	30m		Co-dominant mafic as above and red brown gneiss
	31m		"
	32m		Dark grey green fine to medium grained mafic
	33m		"
	34m		"

From	To	Log	Lithology and comments
34	35m		Dark grey green, f. to med. grd. mafic rock, tr. magnetite
	36m		"
	37m		as above, minor micaceous phases
	38m		" tr. to minor
	39m		Dark grey green f. to med. grd. mafic rock, tr to minor magnetite
	40m		"
	41m		" tr calcite, tr magnetite
	42m		"
	43m		"
	44m		"
	45m		"
	46m		Dark grey green f. to med. grd. mafic rock, tr to minor magnetite
	47m		Dark grey green f. to med. grd. mafic, minor red jasper, minor
			magnetite
	48m		"
	49m		"
	50m		"
	51m		"
	52m		"
	53m		Dark grey f. to med. grd. mafic, tr. calcite, tr. to minor
			magnetite
	54m		As above with red brown schist
	55m		Dark grey f. to med. grd. mafic, tr. calcite and schist, tr. -
			minor magnetite
	56m		" tr. magnetite
	57m		"
	58m		" slight tr. magnetite
	59m		" "
	60m		Dark gray-green, f. to med. grd. mafic, slight tr. magnetite
	61m		" tr. calcite, slight tr. magnetite
	62m		Grey-green f. to med. grd. mafic, slight tr. magnetite
	63m		" , no magnetite
	64m		" , tr. magnetite
	65m		" , tr. calcite, tr. magnetite
	66m		" " "
	67m		Dark grey-green, f. to med. grd. mafic, tr. to minor magnetite
	68m		" ,minor calcite, minor magnetite
	69m		" " "
	70m		" , tr. calcite "
	71m		" , " , tr. magnetite
	72m		" " "
	73m		" , tr. magnetite
	74m		" "

From	*To*	*Log*	*Lithology and comments*
74	75m		Dark grey-green, f. to med. grd. mafic, tr magnetite
	76m		Dark grey-green, f. to med. grd. mafic, tr magnetite
	77m		Dark grey, f. grd. siliceious rock, tr magnetite, tr pyrite
	78m		Dark grey, g. grd. silic. rock, slight tr magnetite, tr pyrite
	79m		Grey f. grd. silic. rock, tr calcite
	80m		"
	81m		"
	82m		Dark grey f. grd. mafic, tr to minor magnetite
	83m		"
	84m		"
			END OF HOLE - 84 METRES

4503-15

GEOSCIENCE
ASSOCIATES (AUSTRALIA) pty LTD
P.O. Box 239
Kilkenny, S.A. 5009
Phone: 268 2066

HOLE# PW1

LOGGING DATA

DATE 19-10-82

LOCATION		HOLE NUMBER: TW 1	CLIENT: POSEIDON LTD
State: South Australia		Collar elev. metres	Claim:
Area: Androsan		Depth drilled: 84m metres	Owned by:
Project:		CASING DATA / HOLE DATA	Operated by:
Prospect:		Wall size in. / Dia 6" from 0 to 12	Unit Operator: HART
Lat: ° ' "	Long ° ' "	Dia. (inside) 6" in. / Dias 5½ from 12 to 84	Unit No. AL 8 Office Adelaide
GAMMA RAY		Cased from 0 to 12 metres / Dia. from to	ELECTRIC
	INITIAL RUN / 2 / 3 / 4	Cored hole ☐ / Non-cored hole ☒	1 / 2 / 3 / 4
Logged depth (m)	82.4	Sampled Interval / Type	Logged depth No fluid in hole
Range (Full scale) (cps)	50	1m / Dry	Resist. scale (ohms)
Time constant (sec.)	1% ST Dev	INTERPRETATION DATA	S.P. scale (mV)
Paper speed cm/min	1	Probe No. / Standard / (cps) K factor	Paper speed (cm/min)
Logging speed m/min (feet)	6	NG06 / 1.26E-5	Logging speed (ft/min)
Probe No.	NG06	REMARKS	Probe size
Size (dia.) mm	40	Fluid Level No Fluid in hole metres	Bias
Crystal	5x5 No1	Hole Drilled at 60° angle.	CALIPER
Standard (cps)			Logged depth
Dead time μ sec.	6	μ sec.	Scale in. / cm.
Amp. Gain (dB/Oct)	150		Paper Speed
Ratemeter No.			Logging speed
Bore hole medium			Arm Length in.
Mud density			Max. D.of. in.
Digital readout m.	0.1		
Time base (secs)	1		
Upper Disc.			
Lower Disc.			

Hole # TW 1

19-10-82

Gamma Scale (cps)

82.6m

Gamma Scale (cps)

TD - 83.6m

GEOSCIENCE
LOGGING DATA
GAMMA RAY
Run 1 2 3 4
Logged depth 82.4m
Range (Full scale) 50 cps
Time constant 1% ST Dev
Paper speed 1 cm/min
Logging speed 6 m/min
Probe No. NG06
Size (dia.) 40 mm
Crystal 5x5 No1
Standard (cps)
Dead time 6 μ sec.
Amp. Gain 150 (dB/Oct)
Ratemeter No.
Bore hole medium
Mud density
Digital readout 0.1 m.
Time base 1 (secs)
Upper Disc.
Lower Disc.
ELECTRIC
Logged depth No fluid in hole
Resist. scale (ohms)
S.P. scale (mV)
Paper speed (cm/min)
Logging speed (ft/min)
Probe size
Bias
CALIPER
Logged depth
Scale in. / cm.
Paper Speed
Logging speed
Arm Length in.
Max. D.of. in.
LOCATION
State: South Australia
Area: Androsan
Project:
Prospect:
Lat: ° ' " Long ° ' "
HOLE NUMBER: TW 1
Collar elev. metres
Depth drilled: 84m metres
CASING DATA HOLE DATA
Wall size in. Dia 6" from 0 to 12
Dia. (inside) 6" in. Dias 5½ from 12 to 84
Cased from 0 to 12 metres Dia. from to
Cored hole ☐ Non-cored hole ☒
Sampled Interval 1m Type Dry
INTERPRETATION DATA
Probe No. NG06 Standard (cps) K factor 1.26E-5
REMARKS
Fluid Level No Fluid in hole metres
Hole Drilled at 60° angle.
CLIENT: POSEIDON LTD
Claim:
Owned by:
Operated by:
Unit Operator: HART
Unit No. AL 8 Office Adelaide
Hole # TW 1
DATE 19-10-82 T.D. 83.6

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APPENDIX II

PALAEOCHANNEL INVESTIGATIONS, DRILLHOLES PA-1 AND PA-1A

Geological log

Geophysical log

Poseidon Limited

OPEN HOLE DRILLING
Field Log

PROPERTY NAME : Ardrossan
DRILL HOLE NO.: PA 1 and PA 1A

Lat. S N. : 6206450mN *Long. E* : 769900mE
Azimuth : - *Dip* : 90°
Commenced : 20/10/82 *Completed*: 20/10/82
Total Depth : 17 metres
Geologist : R. G. Bluck
Operator : Northbridge Drilling
Schram 64 series

Hole size: Hole 1, collar 6½" cased PVC to 12 metres, 5½" hammer nominal
Hole 1A, 5 & 5/8 blade to TD, not cased
Comments : Hole 1 drilled with high injection water, 1A low injection water, both abandoned in caving sands. Logged by Geoscience, gamma only.

From	*To*	*Log*	*Lithology and comments*
0	1m		Red to cream clays with kunkar
	2m		"
	3m		Red to brown clays and silt
	4m		"
	5m		"
	6m		" with trace fine sand
	7m		Red brown clayey silts and fine sand
	8m		Pale grey to cream silt and minor fine sandy silt
	9m		"
	10m		"
	11m		Grey med. to course quartose and lithic sand, minor silty matrix
	12m		Grey to brown med. to granular sand
	13m		Red to brown med. 10 c. grd. sand, trace clay
	14m		Slurry of sand and clay; cream coloured
	15m		Grey to white fine grained sand
	16m		"
	17m		"
			HOLE ABANDONED

4503-16

P.O. Box 239
Kilkenny, S.A. 5009
Phone: 268 2898

LOGGING DATA

DATE 20-10-82

LOCATION

State: South Australia
Area: Andrasan
Project:
Prospect:
Lat: o ' " Long o ' "

HOLE NUMBER: PA-1A
Collar elev. metres
Depth drilled: 17 metres

CASING DATA / HOLE DATA

Wall size uncased in. | Dia. 5⅝ from 0 to 17
Dia. (inside) in. | Dia. from to
Cased from to mtrs | Dia. from to
Cored hole ☐ | Non-cored hole ☒

Sampled Interval: 1m | Type:

CLIENT: POSEIDON LTD
Claim:
Owned by:
Operated by:
Unit Operator: HART
Unit No. AL 8 Office: Adelaide

GAMMA RAY

	INITIAL RUN	2	3	4
Logged depth (M)	12·6			
Range (Full scale) cps	50			
Time constant (Sec.)	4% St Dev			
Paper speed cm/m	1			
Logging speed m/min	6			
Bkgnd count (cps)	4			
Probe No.	NG 06			
Size (dia.) mm	40			
Crystal	½x½ NaI			
Standard (cps)				
Dead time	6			4 sec.
Amp. Gain (disc)	150			
Ratemeter No.				
Bore hole medium				
Mud density				
Digital readout m.	0·1			
Time base (sec)	1			
Upper Disc.				
Lower Disc.				

INTERPRETATION DATA

Probe No.	Standard (cps)	K factor
NG 06		1·26E-5

REMARKS

Fluid Level No fluid in hole metres

ELECTRIC

	1	2	3	4
Logged depth	No fluid in hole			
Resist. scale Ω/di				
S.P. scale m.v.				
Paper speed cm/m				
Logging speed m/min				
Probe size				
Bias				

CALIPER

Logged depth				
Scale	in./in. det.			
Paper Speed				
Logging speed				
Arm Length	in.			
Max. Def.	in.