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EL 221

KANGAROO ISLAND

PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 25/11/1975 TO 24/8/1976

Submitted by
Preussag Australia Pty Ltd
1976

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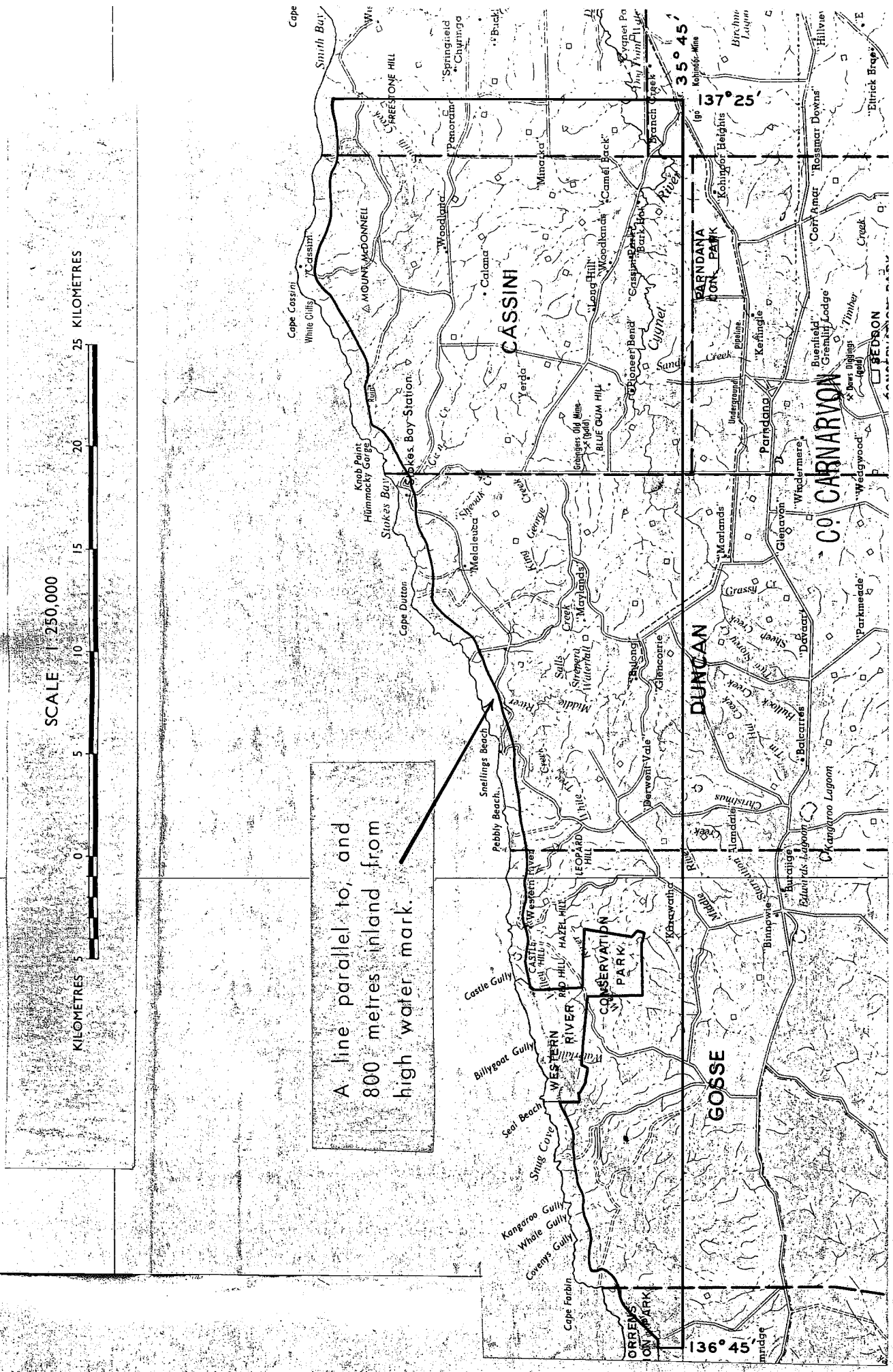
Government of South Australia
Primary Industries and Resources SA

SCHEDULE 'A'



APPLICANT : PREUSSAG AUSTRALIA PTY LTD

D.M. : 320 | 75 AREA : 576 Square Kilometres

1:250 000 PLANS : KINGSCOTE

LOCALITY : KANGAROO ISLAND

E.L. No. : 221 EXPIRY DATE : ~~24.2.76~~

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TENEMENT E.L. 221.
TENEMENT HOLDER. PREUSSAG AUSTRALIA PTY. LTD.

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PREUSSAG

Preussag Australia
Proprietary Limited

Director of Mines,
Department of Mines, South Australia,
P.O. Box 151,
EASTWOOD, S.A., 5063.

Farrer House, 6th Floor,
24-28 Collins Street,
Melbourne,
Victoria, 3000.
Australia.

Your ref. | Our ref. JHH/ec | Date 10th May, 1976.

Subject: EL 221 - Work Summary and Future Programme.

Dear Sir,

The following details summarize work to date and proposed future work by Preussag Australia Proprietary Limited on EL 221.

1. Statistical Summary.

a. Geochemistry (number of samples):

stream sediment	soil	rock chip
121	723	65

- All analyses by A.S.C. Laboratories Pty. Ltd., Unley, S.A., for Preussag Australia Pty. Ltd.

- Soil sampling carried out by Ashton Exploration, Port Elliott, S.A., and Preussag personnel.

b. Gridding: 14,800 line metres gridded on 200m x 50m basis surrounding the old Perseverance-Bonaventura mine workings.

Gridding carried out by Ashton Exploration, Port Elliott, S.A., and Preussag personnel.

c. Geology: Reconnaissance over E.L. utilizing 1:50,000 and 1:25,000 air photo coverage.

Detailed mapping of the Perseverance-Bonaventure grid (supplemented by 1:5,000 air photo coverage).

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Telephone: (03) 654 4955
654 4867
Telex: 32156

1. Statistical Summary (cont'd).

d. Geophysics: 7,000 line metres of Perseverance-Bonaventure grid covered by preliminary ground magnetic survey (total magnetic intensity).

Ground magnetic survey carried out by Ashton Exploration, Port Elliott, S.A., for Preussag Australia Pty. Ltd.

e. Petrography: 10 rock sample description by Ian R. Pontifex & Associates Pty. Ltd., Rose Park, S.A., for Preussag Australia Pty. Ltd.

f. Field Work by Preussag Personnel to Date:

1 geologist - 4 weeks.
1 field assistant - 5 weeks.

Plus two inspections of portions of the E.L. by Head Office and local office personnel - 6 man-days.

Plus contractor, P. Ashton of Ashton Exploration - 3½ weeks.

2. Results to Date.

The initial work by Preussag Australia Pty. Ltd. on EL 221 assessed the results of exploration by former explorers in the area and outlined a Pb-Zn soil anomaly around the old Perseverance-Bonaventure mine workings. Additional "infill" soil sampling and geologic mapping of the Perseverance-Bonaventura prospect have recently been completed (mid-April), together with geological reconnaissance in other areas within the E.L. All results of this recent work have not yet been received.

The soil anomaly outlined has approximate dimensions 1 km. east-west and ¼ - ½ km. north-south as determined by the 200 ppm Pb contour. The anomaly is located in a meta-sandstone-phyllite/metasiltstone sequence which is intruded by a number of thin (to ?5 metres), finely crystalline and brecciated quartz veins which appear to mark fault zones. The veins contain trace to minor amounts of galena, sphalerite, pyrite and chalcopyrite. Old, shallow workings on, or near, the veins occur in a number of localities within the gridded area.

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3. Proposed Future Work by Preussag Australia Pty. Ltd.

a. Completion of the initial phase of exploration (geology, geochemistry) on the Perseverance-Bonaventura prospect when all results are available.

b. Should work in phase (a) prove encouraging, an I.P. will be completed.

c. Should work in phase (b) prove encouraging, a two-hole diamond drilling programme will be planned.

d. Additional exploration along the Cygnet-Snelling Fault zone - should exploration/or data currently being processed prove encouraging.

4. Exploration Target.

The target sought by Preussag Australia Pty. Ltd. on the Perseverance-Bonaventure prospect is stratiform Pb-Zn(-Cu) mineralization within the phyllite/metasiltstone unit. No economic potential is assisgned to the base metal bearing quartz veins emplaced along the Cygnet-Snelling Fault Zone. This mineralization is considered to have been mobilized from the phyllite/metasiltstone unit during faulting and regional metamorphism.

Yours faithfully,
PREUSSAG AUSTRALIA PTY. LTD.

J.H. Hill,
Manager.

DUPLICATE.

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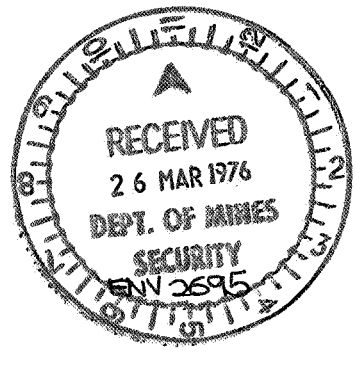
PREUSSAG AUSTRALIA PTY. LTD.

EXPLORATION LICENCE 221
KANGAROO ISLAND, SOUTH AUSTRALIA

FIRST QUARTERLY REPORT
(to 24 February 1976)

Author : A.J. Hosking
Geologist

Date : 19 March 1976



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SUMMARY

Exploration Licence (E.L.) 221 on Kangaroo Island is held by Preussag Australia Pty. Ltd. to assess its potential for stratabound (stratiform) base metal mineralization in the Cambrian Kanmantoo Group. Several old base metal workings are known although the nature and significance of this mineralization have not been fully evaluated.

The location and physiography of the E.L. are described in relation to Kangaroo Island as a whole.

The findings of previous geological work on Kangaroo Island by South Australian Department of Mines and University of Adelaide personnel are discussed, together with the results of base metal exploration programs by former company explorers. Much of the geology of Kangaroo Island is incompletely known and base metal exploration has been limited. Most previous exploration of a detailed nature has been confined to the present area of E.L. 221.

The results of exploration to date by Preussag Australia Pty. Ltd. are summarized and the company's future work program outlined. A Pb-Zn soil anomaly has been established surrounding the old Perseverance-Bonaventura workings and warrants further work. Additional reconnaissance along the Cygnet-Snelling Fault Line is planned.

INTRODUCTION

Exploration Licence (E.L.) 221 was secured by Preussag Australia Pty. Ltd. ffom the South Australian Department of Mines to investigate the potential of the Cambrian Kanmantoo Group on Kangaroo Island for ?Kuroko and Mt. Isa types of base metal mineralization. Base metal mineralization (essentially Pb-Zn and Cu) was known to occur in several localities within the area at the time of application. However, the nature and significance of this mineralization was unknown.

It was considered that an Exploration Licence would enable assessments of the known mineralized localities to be carried out and the Kanmantoo Group generally to be examined with the aim of locating stratabound (stratiform) base metal mineralization of ?volcanogenic affinities.

E.L. 221 was granted for an initial term of three months with tenure commencing on 25 November 1975. The term has subsequently been extended for an additional three months.

LOCATION AND ACCESS

E.L. 221 is located in the northern coastal region of Kangaroo Island. The E.L. is 576 square kilometres in area and is bounded by longitude 136°45', longitude 137°25', latitude 35°45', a line 800 metres inland from high water level along portion of the northern coastline and the boundaries of the Cape Torrens and Western River Conservation Parks.

Kangaroo Island is a large, settled land mass adjacent to the southern coastline of South Australia. The principal settlement on the island is Kingscote, which is approximately 120 kilometres from Adelaide by sea. The shortest direct route from the mainland to the island lies between Cape Jervis and Penneshaw across Backstairs Passage, a distance of approximately 20 kilometres. No townships lie within the area of E.L. 221. The nearest is Parndana, which is situated near the southern boundary. The island generally is elongate in shape with approximate maximum dimensions of 140 and 55 kilometres east-west and north-south respectively.

Kangaroo Island is served by daily, commercial air services between Adelaide and Kingscote. Light aircraft services also operate regularly into the townships of Penneshaw, American River and Parndana. A rollon-rolloff vessel, the M.V. "Troubridge", sails three times weekly between Adelaide and Kingscote and is the principal means of supply for the island. The E.L. is well served by a network of unsealed roads and access to most localities is relatively simple. Exceptions however are to some sections of the northern coastline which are extremely precipitous.

CLIMATE, PHYSIOGRAPHY AND LAND USE

Kangaroo Island is generally cooler in summer and warmer in winter than the mainland. Temperature variations in any season also tend to be less. Most rainfall is received in the winter months between May and September. Rainfall decreases from west to east across the island, from approximately 800mm on the west coast to 550mm at Kingscote. In all seasons, south-west winds dominate the wind system. Prolonged bad weather in winter often affects the southern coastline.

The greater part of the island is occupied by a plateau which is flat and poorly drained. The plateau is terminated by high cliffs along the northern coastline and by a belt of low-lying country along the south coast. The area held by Preussag Australia Pty. Ltd. contains both deeply incised, coastal and flat, plateau regions. Soils are mostly lateritic podsols, yellow-brown sands and sandy loams above mottled clays. Iron-stone or ferricrete gravels typify these soils. Organic and alluvial soils are found in the stream valleys along the north coast where drainage is northerly towards the sea.

In the higher rainfall portion of the island, tall eucalypts are numerous together with varied, and often dense, scrubby vegetation. Where rainfall is lower, mallee scrub forms dense growth from three to seven metres in height. Farming developments have led to the clearing of much of this vegetation but essentially untouched regions do remain.

Farming and tourist activities are the principal sources of income for the island. Wheat, barley, wool and beef are the main farm products, while Kingscote, American River and Penneshaw are the most important tourist resorts. Fishing is also of some importance. Gypsum is currently obtained from salt lakes on Dudley Peninsula and salt has also been worked. Beach sands at Nepean Bay are being worked on a small scale for their contained heavy minerals. However, only farming activities are pursued within E.L. 221.

PREVIOUS INVESTIGATIONS

Geological

Geological map coverage of the island is limited. The only published sheet (Kingscote 1:253,440) is that of Sprigg in 1954 (Ref. 15). However, the geology shown on this sheet requires extensive revision in the light of new proposals re the stratigraphy of the Cambrian Kanmantoo Group. Relatively recent mapping has been carried out by Daily and Milnes of the University of Adelaide (Refs. 6, 7) and Major and Vitols (Ref. 11) of the South Australian Department of Mines. Dudley Peninsula and the western, coastal portion of the island were mapped by these groups respectively. However, Daily and Milnes have only published the geology of the northern coastline of Dudley Peninsula to date. Thomson (Refs. 12,13) has shown generalized interpretations of the geology and structure of the island. The Barker 1:250,000 geological map sheet also contains a portion of the geology of Dudley Peninsula (Thomson and Horwitz, Ref. 14).

South Australian Department of Mines workers have generally utilized a threefold division of the Kanmantoo Group into the following formations:

Strangway Hill (base)
Inman Hill
Brukunga (top)

The Brukunga Formation has been further subdivided into the Nairne Pyrite Member (lower) and Brown Hill Greywacke Member (upper).

Daily and Milnes (Ref. 8) have erected a more comprehensive stratigraphy for the Kanmantoo Group which has been adopted by the writer.

Daily (Ref. 5) has correlated the essentially unmetamorphosed and shallow dipping Cambrian sequence on the north coast of the island near Emu Bay with units of the Kanmantoo Group.

Daily, Twidale and Milnes (Ref. 9) have assigned ?Triassic and Jurassic ages respectively for the ferricrete and flatlying basalt which are present on the island.

Mineral Exploration

Previous exploration by other companies which is directly relevent to the Preussag Exploration Licence has been carried out by:

1) Elchor Australia Pty. Ltd. - SML 252 (Ref. 10)
2) A.O.G. Minerals Pty. Ltd. - SML 688 = E.L.61 (Ref. 1)
3) Aquila Investments Corp. Ltd.
   John Liddy Associates Ltd. - SML 702 = E.L.86 (Ref. 2)

Of the three, only A.O.G. Minerals Pty. Ltd. proceeded to the stage of detailed exploration with gridding, soil sampling, geophysics (I.P.), mapping and diamond drilling (four holes). The other two companies were involved with stream sediment sampling only.

Elchor Australia Pty. Ltd. held virtually all of Kangaroo Island per S.M.L.'s 252 and 253 during the period November '68-April '70. A large part of the present area of E.L. 221 was tested by stream sediment sampling. A.O.G. Minerals Pty. Ltd. followed up stream sediment Pb-Zn anomalies which had been established by Elchor Australia Pty. Ltd. but not further investigated. Aquila Investments Corp. Ltd./John Liddy Associates Ltd. also assessed the results of Elchor's sediment sampling but follow up work was very limited.

An area of approximately 500 square kilometres within S.M.L. 252 was stream sediment sampled by Elchor Australia Pty. Ltd. and 3,219 samples collected. The -80 mesh size fraction was utilized for analysis following orientation work in the vicinity of the Western River Pb-Zn workings. Threshold and anomalous values were assigned as follows (all p.p.m.):

Metal	Threshold	Possible Anomaly 1-2 x Threshold	Probable Anomaly 2-3 x Threshold	Definite Anomaly
Cu	40	40 - 79	80 - 119	120 & >
Pb	70	70 - 139	140 - 209	210 & >
Zn	90	90 - 179	180 - 269	270 & >

This work essentially located one major zone anomalous for Pb (principally) and Zn and as well, reflected the presence of old mine workings. Following the initial survey, some check stream sediment sampling was carried out together with very limited rock sampling (11 samples). Some rock samples were collected from the major anomalous zone which was to be re-investigated later by A.O.G. Minerals Pty. Ltd. Values to 0.34% Pb, 0.11% Zn and 180ppm Cu were obtained in these samples. However, Elchor Australia Pty. Ltd. did not extend its exploration program and S.M.L. 252 was surrendered.

A.O.G. Minerals Pty. Ltd. confirmed the presence of the major Elchor anomaly while holding S.M.L. 688 (=E.L.61). The anomaly was designated the Dewrang Prospect by this company. Reconnaissance soil sampling on a random basis then gave Pb values in the range 20-1800ppm in the anomalous zone. Copper and Zn values were "not high" and generally inconclusive. An area of 2,800 metres by 800 metres was subsequently gridded and sampled at 100 metre intervals. Values in the range 30 - 3,200ppm Pb resulted. Zinc values were much lower than those of Pb and although Zn "highs" were roughly coincident with Pb "highs", no direct correlation was possible. Copper values were generally insignificant although above background values were also roughly coincident with anomalous Pb(-Zn) values. An arcuate zone approximately 1,600 metres in length by 200-300 metres in width was defined by the 250ppm Pb contour. Within this zone, three pronounced local "highs" of 2,600, 2,700 and 3,200ppm Pb occurred. The peak Cu value of 320ppm did not coincide with high Pb and Zn values (only 380 and 200ppm respectively).

Further closely spaced soil sampling (411 samples) was then carried out by A.O.G. to more accurately define the most anomalous portions of the arcuate zone. This work effectively divided the zone into a number of "spot highs, small lenses and interfingering tongues" but did not indicate definite drill targets. Twelve samples of the 411 were analysed spectro-

graphically for a selection of elements. Barium and Ti in the ranges 200 to 1,000ppm and 4,000 to +10,000ppm were the only results of note.

An east-west trending sequence of phyllites, metasiltstones and metasandstones was mapped within the A.O.G. grid. Petrographic work revealed the presence of galena as very fine inclusions within grains of goethite (after ?pyrite). Trace sphalerite, galena and chalcopyrite were also noted in the heavy mineral concentrate of one soil sample which contained 1.20% Pb and which was collected during the follow-up soil sampling.

A.O.G. Minerals Pty. Ltd. drilled four diamond drill holes after an I.P. survey had outlined a number of anomalies. Details of the drilling are summarized in the table below:

Hole no.	Declination:	Depth in metres:
1	45° S	75.13
2	44° N	88.55
3A	50° S	56.08
3B	55° S	100.10
4	52° S	79.99

Hole 1 was sited to test a combined I.P./soil anomaly (Pb 3,000ppm). Phyllite and metasandstone were the principal rock types intersected together with narrow, pyritic beds which contained very fine galena and sphalerite on joints and fractures. Carbonaceous partings also occurred in both phyllite and metasandstone. However, Pb and Zn values did not exceed 500 and 5,800ppm respectively in the sections of core which were analysed. Hole 2 was also sited on a combined I.P./soil anomaly (2,000ppm Pb) and intersected highly weathered rock with fine limonite bands after ?pyrite. Cavernous, Fe stained quartz also occurred over one 10 metre section of core. No sulphides were identified and no core was analysed. Two attempts were made to drill Hole 3 which was sited to test the Hole 2 locality below the zone of weathering. Phyllite and metasandstone were intersected with minor pyrite on joints and foliation planes. No core was analysed. Hole 4 tested a soil anomaly (3,000ppm Pb) which had no coincident I.P. anomaly.

Similar lithologies to those in Holes 1 - 3 were encountered. Sulphides occurred as pyrite on joints and foliation planes and as fine grained galena, sphalerite and pyrite in quartz filled fractures. Values to 1,000ppm Pb and 1,200ppm Zn were obtained.

Petrographic work on selected A.O.G. drill core specimens determined that very fine grained base metal sulphides occurred in marcasitic lamellae conformable with bedding and in discordant fractures and quartz veinlets. Some remobilization and concentration of trace to minor amounts of Pb, Zn, Cu sulphides which occur in narrow bands of fine grained, pyritic sediment was postulated. This process presumably took place during the low grade metamorphism which has affected the rocks.

Aquila Investment Corp. Ltd./John Liddy Associates Ltd. assessed the results of the earlier stream sediment sampling program by Elchor Australia Pty. Ltd. and outlined three anomalies within S.M.L. 702 (E.L. 86):

1) 2.5 - 3 kms. west to southwest of Western River Station . . . . Pb/Zn
2) 2 - 4 kms. west of Middle River Station . . Pb/Zn/Cu
3) 2 kms. north and NNE of Middle River Dam . . Pb/Zn

Followup work appears to have been extremely limited, however.

Several companies have explored for base metals in other parts of Kangaroo Island. ASARCO (Australia) Pty. Ltd. (Ref. 3) sought Cu-Mo mineralization in altered granitic rocks near the southern coastline and on Dudley Peninsula (S.M.L.'s 520 and 521 respectively). Beach Petroleum N.L. (Ref. 4) explored for base metal mineralization in pyritic-pyrrhotitic metasediments of both Proterozoic and Cambrian age on Dudley Peninsula (S.M.L. 628). This company utilized the recent geological findings of Daily and Milnes in its work. The sulphide-rich horizons, which are well exposed along the northern coastline to the east of Penneshaw, had earlier been extensively sampled by ASARCO Australia Pty. Ltd. A.O.G. Minerals also further investigated a small Mo anomaly which had been initially located by ASARCO within S.M.L. 520.

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Deposits of salt, gypsum, clay and heavy mineral beach sands also occur on Kangaroo Island but not within E.L. 221. Clay deposits occur in weathered granite on Dudley Peninsula and have been worked on a small scale. Gem quality chalcedony, beryl and tourmaline have been obtained from a pegmatite on Dudley Peninsula and similarly at Daws Diggings near Parndana. Only very small numbers of reasonable quality stones have been won. Heavy mineral beach sands are currently being worked on a small scale adjacent to Nepean Bay.

GEOLOGY

The table below summarizes the known stratigraphy of Kangaroo Island. On the limited information available, only Kanmantoo Group rocks are believed to be present within E.L. 221. However, the possibility that Proterozoic-Adelaidean rocks are present should not be discounted at this stage. Daily and Milnes (Ref. 6) have mapped rocks of this age on Dudley Peninsula and Proterozoic rocks are also shown by Sprigg on the Kingscote map sheet. Lower Cambrian carbonate rock types do not occur within the E.L. on knowledge to date.

Kangaroo Island stratigraphy

Age	Rock unit	Lithology
QUATERNARY		alluvial and colluvial sand, clay and gravel; beach and dune sand; swamp and lagoon saline clay and sand; aeolianite with shell bed (Stokes Bay) and conglomerate (Kingscote) plus calcrete; marshy, saline flats near Kingscote with shell beds.
TERTIARY		
- EOCENE		bryozoal limestone
MESOZOIC		
- JURASSIC		columnar, vesicular basalt
- ?TRIASSIC		massive and pisolitic ferricrete (laterite); associated ferruginous sand, clay & gravel.
PALAEOZOIC		
- PERMIAN		glacial till; fluvioglacial clay, sand and gravel; isolated erratics.

Age		Rock unit	Lithology
- CAMBRIAN	KANMANTOO GROUP	Younger Kanmantoo Group	phyllitic and arenaceous metasediments.
	Inman Hill Sub Group	Tapanappa Formation	metasandstone and minor phyllite; some conglomerate bands; thin sulphide bands.
		Talisker Calc-Siltstone	calcareous phyllite and meta-siltstone; thin sulphide bands.
		Backstairs Passage Formation	metasandstone.
		Carrickalinga Head Formation	phyllite, metasiltstone, metasandstone.
	NORMANVILLE GROUP	Wangkonda Limestone	impure marble.
		Mount Terrible Formation	meta-arkose, metasiltstone, siliceous calc-silicate rock with pyrite/pyrrhotite.

(younger Normanville Group rocks are not present at Sprigg Inlet due to faulting)

PROTEROZOIC			
- ADELAIDEAN	MARINO GROUP		metasiltstone, andalusite schist, quartzite, gritty marble.
	STURT GROUP	Brighton Limestone	marble.
		Tapley Hill Formation	laminated metasiltstone and phyllite; some sulphide rich bands (pyrite/pyrrhotite)
		Sturt Tillite	metasiltstone, quartzite, meta-arkose, metamorphosed boulder bed (tillite); some sulphide-rich bands (pyrite/pyrrhotite).

Note: Rocks of the Sturt, Marino and Normanville Groups are mapped only on Dudley Peninsula to date.

Unmetamorphosed Cambrian rocks occur in the northern coastal region of Kangaroo Island near Point Marsden. Daily (Ref. 5) has correlated these rocks with Kanmantoo Group units.

Within E.L. 221, good outcrop is generally only located near the coastline. Large areas of ferricrete and soil obscure folded

Cambrian rocks further inland.

At the western end of the island, Kanmantoo Group rocks have been folded into a series of shallow plunging synclines and anticlines. Fold axes trend approximately northeast-southwest. Similarly oriented, large scale structures occur within the Preussag E.L..

Major normal and thrust faults have been mapped within the area. These are the Snelling-Cygnet and Cassini faults respectively. Most of the known examples of base metal mineralization are closely associated with the former structure.

Metamorphism in the Kanmantoo Group (and ?older) rocks increases from east to west across the area and reaches andalusite grade at the western end. Metamorphic grade also generally increases from north to south across Kangaroo Island and migmatites are encountered near the southern coastline. Here too, granitic rocks outcrop in several localities. Daily and Milnes (Ref. 8) consider that similar intrusive rocks on the mainland near Victor Harbour were emplaced prior to the main phase of deformation of the Kanmantoo Group sediments in the Kanmantoo Trough. Intrusion occurred at the highest known stratigraphic level of the Group (Wattaberri Sub-Group).

Large, vertical movements provided material for the developing Kanmantoo Trough in which rapid deposition occurred. Deep water conditions are not envisaged by Daily and Milnes (Ref. 8). Rather deposition appears to have kept pace with subsidence. The movements persisted throughout much of the Group's depositional history as reflected by the presence of conglomerate bands in units younger than the Tapanappa Formation. The influence of a source area to the north of Kangaroo Island (Yorke Peninsula vicinity) is shown by the presence of boulders of Proterozoic-?Carpentarian rocks (crystalline basement types) and Lower Cambrian Archaeocyatha limestone in the White Point Conglomerate. This unit is unmetamorphosed and outcrops on the northern coast of Kangaroo Island (approximately 10 kilometres NNW of Kingscote).

Orogenic movements of Cambro-Ordovician age deformed the Proterozoic and Cambrian rocks of Kangaroo Island and were

preceded (and ?accompanied) by the granitic intrusions mentioned above.

MINERALIZATION

Old mine workings within E.L. 221 are summarized below. All known base metal workings on Kangaroo Island occur within the E.L. In addition, pyritic quartz veins have been worked for their Au contents in some localities. All base metal workings are small and obviously only minor production has taken place.

Snug Cove Pb-Ag(?Zn)

Workings: ?1 shaft

Production: ?

Grade: ?

Mineralization: galena in ?quartz vein

Host rock: ?phyllite

Western River Pb-Zn-Ag

Workings: 3 groups, several shafts and pits, 2 adits, 1 open cut.

Production: ?

Grade: 50% Pb, 8 oz/ton Ag, ?Zn

Mineralization: galena plus sphalerite in E-W trending quartz vein (?fault zone).

Host rock: biotite metasiltstone

Bells Pb-Ag

Workings: 2 shallow pits (believed to be prospecting venture only)

Production: -

Grade: -

Mineralization: galena plus pyrite in veinlets

Host rock : brecciated and heavily fractured fine grained marble.

A.O.G. Pb-Zn amomaly

- no workings but 4 d.d. holes.

Minor galena plus trace sphalerite and chalcopyrite in fractured metasiltstone and phyllite; mineralization in pyritic laminae parallel to bedding and in veinlets (remobilized) - for further details see earlier.

Perseverance Pb-Zn-Cu-Ag-?Au

Workings: 1 shaft, several shallow pits

Production: ?

Grade: ?% Pb, to approx. 40% Zn, 12 dwt/ton Ag, trace Au

Mineralization: galena, sphalerite and chalcopyrite in fractures and with quartz.

Host rock: metasandstone

Bonaventura (Graingers, Blue Gum Hill) Cu-Ag-?Au

Workings: 1 shaft, several pits

Production: known 40 tons ore raised

Grade: to 10% Cu

Mineralization: chalcopyrite with quartz

Host rock: phyllite, metasiltstone.

Cygnet (Tiłkas) Au

Workings: 1 shaft, several pits

Production: ?

Grade: average 2 - 5 dwt/ton Au

Mineralization: Au with pyrite and ?arsenopyrite in quartz vein

Host rock: chloritic phyllite-metasiltstone; also gritty arkosic rock present.

Rainbows End Au

Workings: several shafts, open cuts and pits plus 1 adit

Production: ?

Grade: average 1.5 dwt/ton Au

Mineralization: Au with Fe oxides (ex-pyrite) in quartz veinlets

Host rock: brecciated quartz chlorite rock (metasiltstone,)

PREUSSAG INVESTIGATIONS

The following details summarize work to date on E.L. 221 by Preussag personnel.

Research - available information re the known geology, mineralization and previous exploration on Kangaroo Island has been researched and summarized.

Geochemistry -

a) stream sediment sampling
   - 121 samples collected
   - washed -20+80 fractions pulverized and analysed for Cu, Pb, Zn.

b) soil sampling

- 564 samples collected; includes 177 non grid-based and 387 grid-based samples (see below)
- 28 of 387 grid-based samples collected during an orientation survey to determine optimum sampling depth
- grid sampled essentially on 50 metre centres with some closer sampling as well
- samples crushed and splits of same pulverized prior to analyses for Cu, Pb, Zn

c) rock chip sampling

- 28 samples collected
- samples crushed and splits of same pulverized prior to analyses for

Cu, Pb, Zn Ag	:	28 samples
Mn	:	12 samples
Co	:	1 sample

Note : In a), b) and c) above, all analyses were carried out by A.C.S. Laboratories of Unley, South Australia.

Gridding -

- 13,000 line metres pegged prior to soil sampling (plus additional 2800 metres unpegged but soil sampled)
- grid 2.4 kilometres east-west x 1.0 kilometres north-south; 13 north-south lines with spacings of 200 metres; pegs at 50 metre intervals.
- grid surrounds the old Perseverance Pb-Zn(-Cu) and Bonaventura Cu workings (approximately 4 kilometres ESE of the Dewrang Prospect the former explorer A.O.G. Minerals Pty. Ltd.)

Geophysics -

- preliminary ground magnetic survey (total magnetic intensity) of 7000 line metres of the soil grid.

Petrography -

- four samples described by I.R. Pontifex & Associates of Rose Park, South Australia.

Geology - reconnaissance over the E.L.

Initial work by Preussag personnel on E.L. 221 consisted of stream sediment, soil (non grid-based) and rock chip sampling plus geological reconnaissance. The principal aim of this work was to evaluate the results obtained by former explorers,

to hopefully establish a stratabound nature for the known base metal mineralization and to assess the potential of the E.L. for further exploration.

The initial work led to the selection of a small area around the old Perseverance-Bonaventura mine workings for more detailed study. Gridding, soil sampling and a preliminary ground magnetic survey then followed. A Pb-Zn soil snomaly has been outlined which warrants additional work.

Map sheets have not been included in this report. The preparation of final drafts of all relevent sheets is currently in progress. These sheets plus complete tabulations of data will be included in the second quarterly report.

FUTURE PREUSSAG WORK

It is anticipated that the following activities will be carried out in the second quarter:

1) detailed mapping of the existing grid
2) infill soil sampling on the grid (100 metre line spacings) to allow closer definition of the Pb-Zn anomaly
3) additional reconnaissance along the Cygnet-Snelling Fault Line.

Any additional work would be determined by the results obtained from this program.

A.J. Hosking,
Geologist.

~~018~~
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PREUSSAG AUSTRALIA PTY. LTD.

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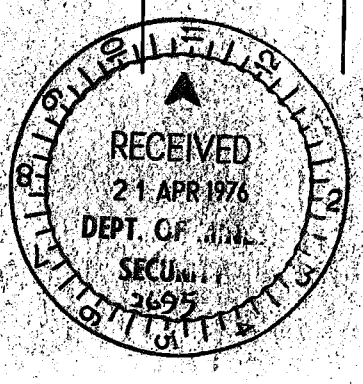
EXPLORATION LICENCE 221

Exploration Expenditure Report
for the Quarterly Period Ended

25th February, 1976.

Description	Expenditure to 25/11/75	Quarter Ended 25/2/76	Total to Date
	$	$	$
Geological Surveys:			
Payroll	540	207	747
Contractors/Consultants	65	-	65
Field and General Expenses	466	47	513
Transportation	171	63	234
Geophysical Surveys:			
Payroll	24	-	24
Contractors/Consultants	-	107	107
Field and General Expenses	-	79	79
Transportation	-	-	-
Geochemical Surveys:			
Payroll	1,118	18	1,136
Contractors/Consultants	-	966	966
Field and General Expenses	-	876	876
Transportation	-	212	212
Other Studies and Field Activities:			
Payroll	142	1,045	1,187
Contractors/Consultants	32	76	108
Field and General Expenses	4	11	15
Transportation		10	10
Drilling:			
Payroll	-	-	-
Contractors/Consultants	-	-	-
Field and General Expenses	-	-	-
Transportation	-	-	-
Licence Fees/Option Payments	-	-	-
Assays and Tests	782	1,136	1,918
Miscellany	337	207	544
Regional Office Costs	-	1,457	1,457
Head Office Costs	186	1,370	1,556
$	3,867	7,887	11,754



REPORT NO. SA/6

June, 1976

PREUSSAG AUSTRALIA PROPRIETARY LIMITED

EXPLORATION LICENCE 221
KANGAROO ISLAND
SOUTH AUSTRALIA, AUSTRALIA

SECOND QUARTERLY REPORT
TO
24TH MAY, 1976

A.J. HOSKING

PREUSSAG AUSTRALIA PROPRIETARY LIMITED
EXPLORATION LICENCE 221
KANGAROO ISLAND
SOUTH AUSTRALIA, AUSTRALIA

SECOND QUARTERLY REPORT
TO
24TH MAY, 1976

C O N T E N T S.

LIST OF MAPS.

Fig.No.	T i t l e.	Drawing No.
1	Locality Map.	A4 - 011
2	Summary of Previous Exploration by Other Companies - Sheet 3.	A1 - 132
3	- do. - - Sheet 4.	A1 - 133
4	- do. - - Sheet 5.	A1 - 134
5	- do. - - Sheet 6.	A1 - 135
6	Dewrang Prospect - Geochemical Results - ppm Lead.	A2 - 009
7	- do. - - ppm Zinc.	A2 - 010
8	- do. - - Geology and I.P. Traverses.	A2 - 008
9	Stream Sediment, Soil and Rock Chips Sample Locations and Metal Values - Sheet 1.	A1 - 136
10	- do. - - Sheet 3.	A1 - 137
11	- do. - - Sheet 4.	A1 - 138
12	- do. - - Sheet 5.	A1 - 139
13	- do. - - Sheet 6	A1 - 140
14	Perseverance - Bonaventura Prospect - Initial Preussag Stream Sediment and Soil Sample Locations and Values.	A1 - 141
15	Perseverance - Bonaventura Prospect. Grid. Geochemical Results- ppm Copper.	A1 - 082
16	- do. - - ppm Lead.	A1 - 083
17	- do. - - ppm Zinc.	A1 - 084
18	Perseverance - Bonaventura Prospect. Rock Chip Sample Locations and Values.	A1 - 142
19	Perseverance - Bonaventura Prospect. Total Magnetic Intensity Map.	A3 - 001
20	Perseverance - Bonaventura Prospect. Geology.	A1 - 143

PREUSSAG AUSTRALIA PROPRIETARY LIMITED

EXPLORATION LICENCE 221
KANGAROO ISLAND
SOUTH AUSTRALIA, AUSTRALIA

SECOND QUARTERLY REPORT
TO
24TH MAY, 1976

SUMMARY.

Exploration by Preussag has been concentrated on the Perseverance - Bonaventura prospects. Work consisted of soil and rock geochemistry, geological mapping with associated petrographic investigations, and the results are presented in this report. A geochemical Pb-Zn soil anomaly occurs in a phyllite - metasiltstone - metasandstone sequence adjacent to the Cygnet - Snelling Fault. Quartz veins carrying to minor amounts of pyrite and base metal sulphides cut the metasediments. No evidence for stratabound base metal sulphides within the finer grained metasediments has been found.

The results of initial Preussag exploration in EL.221 are contained in this report, as are details of previous, relevant exploration by other companies.

.../2

INTRODUCTION.

The location of EL.221 is shown in Fig.1.

The following activities were completed during the period:-

1. Geological mapping of the Perseverance - Bonaventura prospects at 1:5,000.

2. Infill soil sampling on the Perseverance - Bonaventura grid (160 samples).

3. Rock sampling at the Rainbow's End and Cygnet Gold Mines.

.../3

PREVIOUS INVESTIGATIONS.

The stream sediment data of Elchor Australia Pty. Ltd. has been utilized. Tabulations of this data are presented in Figs. 2 - 5. Anomalous and weakly anomalous zones for copper, lead and zinc are shown. One definite anomaly located by Elchor was later investigated by A.O.G. Minerals Pty. Ltd. (Dewrang prospect). Other, less substantial, anomalies were also outlined but not tested.

The soil geochemical data of A.O.G. Minerals Pty. Ltd. for the Dewrang prospect is summarized in Figs. 6 and 7. Diamond drill hole locations are also shown, together with anomalous I.P. zones (Fig. 8). The soil data is included for the purpose of comparison with that from the Perseverance - Bonaventura prospects.

.../4

CURRENT INVESTIGATIONS.

The following is a summary of work by Preussag Australia Pty. Ltd. within EL.221.

GEOCHEMISTRY:-

- 936 samples collected; viz.:-

  stream sediment - 127
  soil - 725
  rock chip - 84

GEOLOGY:-

- Geological reconnaissance throughout the tenement using 1:50,000 and 1:25,000 air photo coverage.

- Geological mapping at 1:5,000 over the Perseverance-Bonaventura grid.

GEOPHYSICS:-

- 7,000 line metres of the Perseverance - Bonaventura grid covered by an orientation ground magnetic survey (total magnetic intensity).

PETROGRAPHY:-

- 10 rocks have been petrographically studied.

GRIDDING:-

- 14,800 line metres pegged on a 200 metres x 50 metres grid surrounding the old Perseverance and Bonaventura workings.

GEOCHEMISTRY:-

a) Stream Sediment Sampling.

Analytical data is summarized in the Table below. The results of six (6) samples collected during initial reconnaissance are not included.

TABLE I.

STREAM SEDIMENT SAMPLING DATA.

Range of Values (ppm)	No. of Cu Values.	No. of Pb Values.	No. of Zn Values.
0 - 20	111	55	42
25 - 40	10	36	47
45 - 60	-	18	15
65 - 80	-	4	6
85 - 100	-	1	6
110 - 200	-	4	4
210 - 300	-	3	1
	121	121	121

.../5

An orientation programme was completed for -20 + 80 and -80 fractions in both anomalous and background ranges. Washed -20 +80 fractions were analyzed.

The stream sediment sampling was utilized to check the results of Elchor. Repeat sampling by Preussag failed to confirm several anomalies. Some anomalies are located within the 800 metre coastal strip which is to be protected from mining. Some re-sampling has been completed to assist in the evaluation of the Preussag data. Anomalies are mainly due to the presence of quartz veins carrying Pb-Zn sulphides.

Other anomalies reflect the presence of pyritic, black shales, similar to those found at the Dewrang and Perseverance - Bonaventura prospects. Some weakly anomalous values are due to variation of outcrop density between the northern, coastal region,where outcrop is good, and the southern, "plateau" region, where clay soil and ferricrete predominate. Elchor data should be first divided into "coastal" and "inland" populations prior to detailed stratistical treatment being attempted.

The location and metal values of all Preussag stream sediment samples are shown in Figs. 10-12.

b) Soil Sampling.*

TABLE II.

SOIL SAMPLING DATA.

Range of Values (ppm)	No. of Cu Values. Programme		No. of Pb Values. Programme		No. of Zn Values. Programme	
	1st	2nd	1st	2nd	1st	2nd
0 - 20	158	451 609	13	65	51	145
25 - 40	11	49	29	159	50	200
45 - 60	6	10	28	89	21	71
65 - 80	-	2	29	54	9	30
85 - 100	-	1	15	28	16	18
110 - 200	-	6	38	52	19	31
210 - 300	1	-	7	24	5	12
310 - 400	-	-	6	13	-	7
410 - 500	-	-	1	13	3	2
510 - 600	-	-	1	10	1	1
610 - 700	-	-	4	2	1	-
710 - 800	-	-	-	-	-	-
810 - 900	-	-	-	2	-	-
910 - 1000	-	-	-	2	-	1
1100 - 2000	-	-	4	3	-	1
2100 - 3000	-	-	-	3	-	-
3100 - 4000	-	-	-	-	-	-
4100 -	-	-	1	-	-	-
	176	519	176	519	176	519

*) The results of 28 orientation samples (H1434-H1461: see Appendix 1) from six auger hole soil profiles and two isolated samples are not included in the above tabulation. /c

Orientation sampling at the Perseverance workings indicated that lead values decreased with increasing depth in the soil profile (decrease from 400 ppm to 200 ppm illustrated by five (5) samples collected over two (2) metres from a pit near the workings). However, later sampling (H1434 - H1461) demonstrated the reverse situation; e.g., an increase from 1000 to 2000 ppm Pb over one (1) metre (also an increase from 490 to 1000 ppm Zn over this interval). Consequently, soil samples from the Perseverance-Bonaventura grid were collected using power and hand augers. Most samples were collected at depths ranging from 50-100 cms (unless sited on virtual outcrop). In most instances, weathered rock fragments were included in the samples taken from the main zone of interest within the grid.

The first soil sampling programme sought to test for extensions to east and west of the soil anomaly of the Dewrang prospect. Soil traverses were necessary because of poor outcrop. Sampling demonstrated that further work in this prospect was not warranted. However, an area surrounding the old Perseverance and Bonaventra workings warranted additional exploration.

The locations of the first programme sample lines and tabulations of metal values are shown in Map 12. The results of the first soil sampling (and stream sediment sampling) in the Perseverance-Bonaventura area are also shown in Map 14.

Grid-based soil sampling in the Perseverance-Bonaventura area has outlined a soil anomaly 750 metres east-west x 250-400 metres north-south (as defined by the 250 ppm Pb contour). Contours of Cu, Pb and Zn values are shown in Maps 15-17. The anomaly is derived from finely crystalline and brecciated quartz veins, carrying trace to minor amounts of pyrite, galena and sphalerite, and a phyllite-metasiltstone which probably contains trace to minor amounts of stratabound base metal sulphides. Float from weakly mineralized quartz veins and differential preservation of quartz fragments in soil are believed to have enhanced both and size and strength of the anomaly. Trace amounts of very fine grained chalcopyrite were detected by A.O.G. in diamond drill core of carbonaceous shale-metasiltstone from the Dewrang prospect. The general low copper values in soil samples from both the Dewrang and Perseverance-Bonaventura prospects may be due to strong leaching during the formation of ferricrete bearing soils.

c) Rock Chip Sampling.

Most rock chip samples were collected from the Perseverance-Bonaventura prospect. Analytical data is plotted in Maps 9-13 and 18.

Samples of vein quartz containing finely dispersed galena and sphalerite from the Perseverance-Bonaventura prospect confirm the values obtained in soil samples (particularly Pb).

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The only other metal values of note occur in material collected from dumps at the Rainbow's End Gold Mine (higher than average Cu values and one Au value of 15 ppm).

GEOLOGY:-

The tenement was secured to assess the potential of the Kanmantoo Group for base metal mineralization. The only potentially favourable host rock consists of dark, carbonaceous, pyritic phyllite and metasiltstone. These rocks have been intersected in diamond drill holes on the Dewrang prospect by A.O.G. Minerals Pty. Ltd. and, although not known in outcrop on the Perseverance-Bonaventura prospect, are believed to exist here also. Similar rocks extend westwards from the Dewrang prospect.

Phyllites, metasiltstones and metasandstones make up the Kanmantoo Group. Regional metamorphism is evident over wide areas, however, in the eastern portion north of the Cygnet-Snelling Fault Line, the rocks are virtually unmetamorphosed and weakly folded.

Mapping and soil sampling of the Perseverance-Bonaventura prospect was completed at 1:5,000 (Map 20).

Examination of diamond drill core from the Dewrang prospect confirmed the presence of cross-cutting and conformable pyrite bands. However, galena was not positively identified while coarse-grained sphalerite was only detected in irregular quartz veinlets and on fracture planes.

GEOPHYSICS:-

A ground magnetic survey (total magnetic intensity, Map 19) was completed over the Perseverance-Bonaventura prospect to determine whether slightly magnetic ferricrete would eliminate magnetics as a tool. The uncorrected data shows some correlation with soil anomalies.

PETROGRAPHY:-

The location of dump material containing lead and zinc sulphides at the Perseverance workings resulted in the investigation of the Perseverance-Bonaventura area by the Company. This material (H1312: see Appendix 2) was initially described as a "volcanic breccia". However, subsequent petrographic work did not confirm this.

Later petrographic work also confirmed possible metasomatic alteration (quartz-tourmaline) at both Perseverance-Bonaventura prospect and the Rainbow's End Gold Mine.

Ten samples have been petrographically described (Appendix 2).

.../8

CONCLUSIONS.

Investigations indicate little potential for economic base metal sulphide mineralization.

.../9

RECOMMENDATION.

It is recommended that no further investigations are justified and the tenement be surrendered.

.../10

PREUSSAG AUSTRALIA PTY. LTD.

EXPLORATION LICENCE 221

Exploration Expenditure Report for the Quarterly Period Ended

25th May, 1976

Description	Expenditure to 25/2/76	Quarter Ended 25/5/76	Total to Date
	$	$	$
Geological Surveys:			
Payroll	747	2,114	2,861
Contractors/Consultants	65	325	390
Field and General Expenses	513	465	978
Transportation	234	-	234
Geophysical Surveys:			
Payroll	24	-	24
Contractors/Consultants	107	-	107
Field and General Expenses	79	-	79
Transportation	-	-	-
Geochemical Surveys:			
Payroll	1,136	361	1,497
Contractors/Consultants	966	215	1,181
Field and General Expenses	876	27	903
Transportation	212	-	212
Other Studies and Field Activities:			
Payroll	1,187	(215)	972
Contractors/Consultants	108	-	108
Field and General Expenses	15	4	19
Transportation	10	16	26
Drilling:			
Payroll			
Contractors/Consultants			
Field and General Expenses			
Transportation			
Licence Fees/Option Payments	-	8	8
Assays and Tests	1,918	-	1,918
Miscellany	544	386	930
Regional Office Costs	1,457	(77)	1,380
Head Office Costs	1,556	352	1,908
	11,754	3,981	15,735

Hevrieu Peninsula, Kangaroo Island 039

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TELEX: AA82623

ANALYTICAL RESULTS

Let 2

Samples from: E.B.C.
Area:
Samples of: SOILS, ROCKS & SEDIMENTS.
Preparation: SIEVED, DRIED, CRUSHED & PULVERISED Sheet No.: 1
Batch No.: A 814 Date: 12-3-75

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

	Sample Description	Cu ppm	Pb ppm	Zn ppm			
H 42	-80 Mesh	10	30	45	✓		
43		10	30	65	✓		
44		10	40	85	✓		
45		✓10	✓90	✓300	✓		
46		10	100	140	✓		
47		15	60	80	✓		
48		15	90	90	✓		
52	Dawrang	30	110	90	✓	s:sed.	
56	"	5	170	10	✓	"	
60	"	10	180	130	✓	"	
61	"	5	110	100	✓	"	
63	"	5	210	100	✓	"	
65	Bells Pb/Ag (W of Dawrang)	15	60	40	✓	"	
80		5	30	20	✓		
81		<2	30	35	✓		
82		15	30	30	✓		
E 83	-80 Mesh	15	30	25	✓		
H 62	Dawrang	5	290	140	✓	Soil	
53	"	20	200	620	✓	rk	micac. metasandstone
54	"	100	450	300	✓	rk	dark carbonaceous phyllite
55	"	75	660	250	✓	rk.	fract'd ferruginous qtz in phyllite
57	"	75	410	320	✓	rk	fract'd qtz in phyllite
58	"	80	730	230	✓	rk	ferrug'd metasiltstone
59	"	15	70	70	✓	rk	sericitic metasiltstone
64	"	✓110	✓1000	✓120	✓	rk.	ferrug'd phyllite
66	Bells Pb/Ag (W of Dawrang)	5	500	50	✓	rk.	f.gr. marble + calcite vein with py, galena
67	Kohinoor Au ☆	10	40	120	✓	rk.	lam'td chlorite, metasandstone
68	" "	5	20	65	✓	rk	fract'd ferruginous metasandstone
69	Rainbows End Au ☆	360	30	90	✓	rk	ferrug'd phyllite with limonite ex pyrite
70	" " "	780	30	50	✓	rk	dark fract'd chlorite metasiltstone
71	Cygnet Au ☆	140	370	20	✓	rk	silic'd metasandstone + pyrite
72	" "	180	230	25	✓	rk	fract'd qtz - limonite (empty) rock
73	" "	70	150	20	✓	rk	silic'd breccia? metasiltstone + pyrite
74	Perseverance Pb-Zn ☆	✓ 25	✓>10000	✓>10000	✓	rk.	fract'd? quartzite + galena, sphalerite
75	" "	✓8400	✓9400	✓>10000	✓	rk	vein qtz. + galena, sphalerite, chalcopyrite
76	SW of Holes Bay Stn	30	100	180	✓	rk	weathd. metasandstone
77	Western River Pb-Zn ☆	500	5800	120	✓	rk	vein qtz + galena
78	" " "	20	540	2400	✓	rk	kaolinized metasiltstone
79	" " "	20	410	130	✓	rk	hematite metasiltstone
84		5	20	55	✓		
85		10	100	520	✓		
86		65	90	30	✓		
87		55	60	100	✓		
88		10	100	35	✓		
89		70	40	50	✓		
90		25	50	35	✓		
91		15	50	25	✓		
H 92		20	70	40			

Note: Only samples in range H52 - H79 applicable to E.L. 221

AL METHODS: Cu Pb Zn by AAS following hot conc. HClO4 leach for 1 hour of 0.25 g sample.

TION: E.B.C. - Grange-K.B.M.
A.J. Hosking-Marino-C.A.

Signed .....

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

Kangaroo Island

U. 040

ADELAIDE SYDNEY

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ANALYTICAL RESULTS

Samples from: PRUSSIAN (AUST) PTY LTD.,

Area:

Samples of: SEDIMENTS & SOILS.

Preparation: SIEVED & PULVERISED AS REQUIRED.

Batch No.: A 929

Lot 9

Sheet No.: 1.

Date: 27.8.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu ppm	Pb ppm	Zn ppm				
H. 1003(S)-20+00	30	50	85	Samples (selected)	from of	H 1003 stream	- H1202 sediment.
-00	5	40	20				
1026 -20+00	15	100	45				
-00	5	60	25				
1035 -20+00	5	60	15				
-00	<2	20	10				
1062 -20+00	25	40	35				
-00	10	60	30				
1069 -20+00	15	60	30				
-00	10	40	10				
1071 -20+00	10	20	40				
-00	5	60	30				
1072 -20+00	25	20	45				
-00	<2	20	10				
1076 -20+00	<2	<20	10				
-00	<2	30	10				
1080 -20+00	15	<20	20				
-00	<2	30	10				
1083 -20+00	5	200	85				
-00	<2	60	70				
1084 -20+00	10	260	100				
-00	5	140	65				
1085 -20+00	10	240	120				
-00	5	120	90				
1086 -20+00	5	200	100				
-00	5	100	60				
1201 -20+00	5	60	40				
-00	5	40	25				
1202 -20+00	5	60	40	- Please see page 2 for result of sample No. 1036 of this prefix- omitted in error.			
H.1202(N) -00	5	40	20				
H.1009	45	60	50				
10	45	60	95	Samples	in range	H 1009 -	H1025
1	30	70	45	of	soil -	initial	traverses.
2	50	60	70				
3	25	40	95				
4	5	70	35				
5	5	100	20				
6	<2	80	35				
7	<2	80	35				
8	<2	60	20				
9	10	30	35				
20	<2	80	20				
1	10	30	25				
2	<2	60	20				
3	<2	40	10				
4	<2	40	45				
H.1021	5	40	30				
H.1091	5	160	90	soil		initial	traverses.
H.1092	<2	100	470	soil			

TICAL METHODS:

Signed: [signature]

Kangaroo Island

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD., **Lot 9**

Area:

Samples of: SEDIMENTS & SOILS

Preparation: SIEVED & PULVERISED AS REQUIRED. Sheet No.: 2.

Batch No.: A 929. Date: 27.3.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1093	5	150	[illegible]	Samples of	in range soil. –	H1093 initial	– H1108 traverses
4	5	120	240				
5	<2	100	220				
6	10	140	130				
7	<2	200	110				
8	<2	60	150				
9	5	45	45				
1100	10	200	30				
1	5	80	20				
2	5	120	50				
3	2	160	40				
4	5	100	30				
5	<2	160	20				
6	<2	140	30				
7	<2	110	50				
1108	10	80	25				
1221	20	400	120	Samples of	in range soil –	H1221 initial	– H1225 traverses
1222	15	280	150				
1223	50	240	130				
1224	10	240	95				
H. 1225	20	200	90				
H. 1036(W)-20+80	15	40	10	stream	sediment		
H. 1036(W) -80	<2	20	5	"	"		
*H. 1036-20+80	15	40	15				
*H. 1201 -80	10	40	20				
*H. 1018	10	100	15				
*H. 1023	<2	70	15				
*H. 1100	15	180	95				
*H. 1221	20	420	120				

* Denotes repeat and check analysis.

…CAL METHODS: Cu,Pb,Zn by AAS following hot conc. HClO$_4$ leach for 1 hour of 0.25g sample.

…TION: PREUSSAG (AUST) PTY LTD-MELBOURNE
MR. A. HOSKING.

Signed ....

Kangaroo Island

0: 042

ADELAIDE SYDNEY

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 3
UNLEY, S.A. 5061
PHONE: 272 2412
TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG PTY LTD., Lot 10

Area:

Samples of: SOILS, SEDIMENTS, CHIPS.

Preparation: SIEVED - 80 Mesh as required.
Pulverised as required.

Sheet No.: 1.

Batch No.: A 938

Date: 27.8.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1003 - 80 Mesh	10	30	25	All	samples	in	range
26	5	30	20	H 1003	- H1086	+ H 1201	, H1202
35	5	30	15	of	stream	sediment	
36	<2	20	10				
68	10	90	40				
69	5	40	20				
71	10	40	40				
72	15	40	60				
76	<2	20	10				
80	<2	<20	10				
83	10	120	80				
84	5	240	80				
85	5	120	80				
1086	5	140	65				
1201	<2	20	25				
H. 1202 - 80 Mesh	<2	60	40				
H. 1109	5	100	15	All	samples	from	H1109
10	5	90	20	onwards	of	soil.	(to
1	5	60	15	H1145)	- initial	traverses	
2	5	60	15				
3	10	40	15				
4	<2	20	5				
5	<2	40	5				
6	5	40	15				
7	5	40	15				
8	5	40	10				
9	5	50	10				
20	10	220	35				
1	20	80	65				
2	15	660	180				
3	20	340	130				
4	15	620	50				
5	15	400	220				
6	25	140	100				
7	30	150	150				
8	25	70	90				
9	15	30	60				
30	25	60	190				
1	15	40	120				
2	15	50	75				
3	20	80	75				
4	20	120	90				
5	45	640	60				
6	20	100	70				
7	25	30	90				
8	10	130	65				
9	5	80	15				
40	5	90	10				
H.1141	5	60	20				

AL METHODS:

TION:

Signed.....

Kangaroo Island

043

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ANALYTICAL RESULTS

Samples from: PREUSSAG PTY LTD., Lot 10

Area:

Samples of: SOILS, SEDIMENTS, CHIPS.

Preparation: PULVERISED & SIEVED AS REQUIRED. Sheet No.: 2.

Batch No.: A 938. Date: 27.8.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1142	5	60	15	Samples	in	range	H 1142 –
3	5	70	15	H 1145	of	soil.	– Initial
4	5	80	15	traverses			
H. 1145	10	80	20				
* H. 1076	<2	20	10				
* H. 1117	5	40	15				
* H. 1135	40	620	45				
* H. 1144	5	70	20				

* Denotes Repeat and check analysis.

CAL METHODS: Cu,Pb,Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

NATA

TION: PREUSSAG (AUST) PTY LTD. MELBOURNE
NR. A. HOSKING.

Signed .....

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044

ADELAIDE SYDNEY

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ANALYTICAL RESULTS

Samples from: BREUSSAG (AUST) PTY LTD., Lot 11.
Area:
Samples of: SCOTS & CHIPS.
Preparation: CRUSHED & PULVERISED.
Batch No.: A 944.
Sheet No.: 1.
Date: 28.8.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Zppm	Snppm				
K- 1146	10	120	40	All	samples	this	page
7	10	120	40	of	soil.	- initial	traverses
8	10	140	30				
9	10	120	30				
50	10	80	25				
1	10	120	30				
2	5	240	40				
3	10	140	20				
4	10	60	20				
5	5	35	25				
6	5	40	20				
7	5	60	30				
8	<2	120	25				
9	5	40	25				
60	<2	60	20				
1	<2	80	35				
2	5	140	20				
3	10	90	30				
4	10	90	30				
5	5	100	35				
6	15	160	50				
7	30	80	60				
8	45	90	100				
9	20	80	30				
70	25	50	45				
1	35	50	30				
2	10	20	15				
3	10	60	25				
4	5	80	30				
5	15	140	45				
6	5	40	20				
7	5	40	15				
8	5	80	35				
9	15	100	35				
80	5	120	15				
1	5	60	15				
2	5	50	15				
3	10	80	20				
4	5	50	10				
5	5	70	20				
6	5	50	15				
7	10	150	30				
8	15	380	450				
9	10	120	100				
90	5	460	95				
1	10	180	35				
2	5	380	80				
3	10	1600	20				
H - 1194	5	60	10				

ICAL METHODS:

UTION:

Signed.....

Kangaroo Island

C 045

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ANALYTICAL RESULTS

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Samples from: FREUSSAG (AUST) PTY LTD., Lot 11

Area:

Samples of: SOILS & CHIPS.

Preparation: CRUSHED & PULVERISED

Sheet No.: 2.

Batch No.: A 94[illegible]

Date: 20.3.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
E. 1195	10	170	25	All	samples	this	page
6	5	80	15	of	soil.	– initial	traverses
7	5	110	15				
8	5	140	25				
E. 1190	5	40	10				
* E. 1156	10	40	20				
* E. 1164	10	30	15				
* E. 1173	5	50	30				
* E. 1187	15	180	35				

* Don't repeat and check elsewhere.

TICAL METHODS: Cu, Pb, Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

BUTION: FREUSSAG (AUST) PTY., MELBOURNE
MR. A. ROSKING.

Signed .....

Kangaroo Island

046

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ANALYTICAL RESULTS

Samples from: ISSOSAO (AUST) PTY LTD., Lot 12

Area:

Samples of: SOILS. CAMES.

Preparation: CRUSHED & PULVERISED.

Sheet No.: 1.

Batch No.: A 954.

Date: 2.9.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu ppm	Pb ppm	Zn ppm	
H. 1203	5	80	120	All samples this page
4	10	100	60	of soil - initial traverses
5	10	90	40	
6	10	60	30	
7	15	90	35	
8	10	150	130	
9	5	1200	580	
10	10	240	270	
1	5	700	230	
2	10	520	140	
3	5	140	55	
4	5	180	35	
5	5	180	100	
6	10	240	55	
7	10	400	40	
8	15	1500	55	
9	40	1100	180	
1220	240	4500	640	
1249	<2	80	20	
50	5	70	25	
1	<2	20	30	
2	5	60	65	
3	5	30	55	
4	5	30	35	
5	<2	20	60	
6	<2	30	85	
7	<2	20	30	
8	5	50	30	
9	<2	20	15	
60	<2	20	60	
1	<2	30	30	
2	<2	20	25	
3	<2	40	30	
4	<2	20	35	
5	2	20	140	
6	5	40	120	
7	5	20	110	
8	5	40	20	
9	5	60	30	
70	5	30	40	
1	20	20	40	
2	5	60	30	
3	10	120	95	
4	10	110	190	
H .1275	5	50	130	
*H .1211	5	600	280	* Denotes repeat and check analysis.
*H .1249	5	80	20	
*H .1258	5	50	20	
*H .1260	<2	30	30	

CAL METHODS: Cu, Pb, Zn by AAS following hot conc. $HClO_4$ leach of 0.25g sample for 1 hour.

UTION: ISSOSAO (AUST) PTY LTD-MELBOURNE
MR. A. HOSKING.

Signed .....

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047

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ANALYTICAL RESULTS

Lot 13

Samples from: [illegible] (AUST) PTY LTD.,

Area:

Samples of: ROCKS.

Preparation: [illegible]

Sheet No.: 1.

Batch No.: A 961.

Date: [illegible].75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description		Cuppm	Pbppm	Znppm	Agppm			
H.- 1074	N of Middle River dam	20	40	35	<2	o/c : dark phyllite, ? carbonaceous		
1075	" " " " "	40	20	35	<2	o/c : " " " + voids ex? py		
1087	Dowrang	50	110	200	<2	fl. : massive hematite / limonite		
1088	"	25	740	560	<2	o/c, black phyllite, ? carbonaceous, limonite ex py		
1089	"	25	660	540	<2	o/c : black phyllite + qtz veinlet.		
1090	"	15	60	440	<2	o/c : m.gr. chloritic metasandstone		
1238	N of Salls Creek	15	80	55	<2	o/c : dark, chloritic metasiltstone		
1239	Cartys Au ⚒	75	530	70	<2	on dump : vuggy qtz vein + py & limonite		
1242	Snug Cove Pb ⚒	15	109	50	<2	on dump : biotite schist + qtz-limonite veinlets		
1274	SW of Stokes Bay Stn	10	40	45	<2	o/c : dark, chloritic metasiltstone + limonite ex py		
1305	Salls Creek	10	60	30	<2	o/c : dark phyllite c̄ limonite ex py.		
1309	" "	20	70	25	<2	o/c : " " " " " "		
1310	Rainbows End Au ⚒	100	40	50	<2	on dump : dark, f.gr, silic^d., chloritic rk		
H.- 1311	Cygnet Au ⚒	20	40	25	<2	o/c : m.gr. sandstone, well banded.		
* H.- 1088		20	300	250	<2			
* H.- 1239		75	540	75	<2			

* DENOTES REPEAT AND CHECK ANALYSIS.

[ANALY]TICAL METHODS: Cu.Pb.Zn.Ag by AA, following hot conc. HCl leach and HCl/HNO$_3$ leach in latter stages of 0.25g sample.

[DISTRI]BUTION: [illegible] (AUST) PTY LTD-NELSON [illegible] A. [illegible].

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD., Lot 14

Area:

Samples of: SIEVED FRACTIONS -20+80 PULVERISED.

Preparation: PULVERISED.

Batch No.: A 966.

Sheet No.: 1

Date: 15.9.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1001	<5	45	30	All	results	this	page
2	<5	50	30	of	stream	sediments	
4	<5	<20	30				
5	<5	<20	10				
6	<5	<20	10				
7	<5	<20	10				
1008	5	<20	15				
1027	10	<20	30				
8	<5	<20	10				
9	5	20	70				
30	15	<20	30				
1	<5	<20	30				
2	<5	<20	30				
3	<5	<20	30				
1034	<5	<20	15				
1037	<5	<20	15				
8	<5	<20	15				
9	15	<20	30				
40	10	<20	30				
1	<5	<20	25				
2	10	30	40				
3	15	30	40				
4	5	50	55				
5	10	50	40				
6	5	20	30				
7	5	<20	15				
8	<5	<20	30				
9	<5	<20	20				
50	25	35	50				
1	10	<20	25				
2	<5	25	35				
3	5	20	35				
4	<5	<20	10				
5	<5	<20	20				
6	<5	20	15				
7	<5	25	30				
8	15	35	25				
9	5	20	40				
60	10	30	35				
1	10	25	30				
2	5	25	50				
3	<5	25	30				
4	10	35	40				
5	<5	<20	20				
6	<5	25	15				
106 7	<5	20	15				
H.1070	<5	20	15				

CAL METHODS:

UTION:

NATA

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Kangaroo Island

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TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD., Lot 14

Area:

Samples of: SIEVED FRACTIONS -20+80 - PULVERISED

Preparation: PULVERISED.

Batch No.: A966.

Sheet No.: 2.

Date: 15.9.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 1073	<5	35	20
7	<5	25	5
8	<5	<20	5
9	<5	30	10
81	<5	<20	10
1082	<5	<20	10
1200	5	<20	10
1226	15	<20	50
7	10	25	30
8	15	25	50
9	15	25	50
30	5	20	25
1	5	20	25
2	40	<20	15
3	5	20	15
4	15	20	30
5	5	20	20
6	15	20	20
1237	5	20	20
* 1232	35	<20	15
* 1039	15	20	25
* 1061	10	20	25
* 1233	10	20	25

All results of this page stream sediments

* DENOTES REPEAT AND CHECK ANALYSIS.

ICAL METHODS: Cu,Pb,Zn by AAS following hot conc $HClO_4$ leach for 1 hour of 0.25g sample.

UTION: PREUSSAG (AUST) P/1 - MELBOURNE
Mr. A. Hosking.

Signed .....

Kangaroo Island

ADELAIDE SYDNEY

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TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD., Lot 15

Area:

Samples of: SEDIMENTS. -20+80 FRACTIONS.

Preparation: PULVERISED.

Batch No.: A 974.

Sheet No.: 1.

Date: 18.9.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1240	15	60	100	All	samples	this	page
1	10	40	70	of	stream	sediments	
2	10	60	120				
3	15	40	45				
4	10	60	70				
5	15	60	65				
6	25	100	90				
1247	25	60	80				
1277	10	50	35				
8	10	60	50				
9	5	300	30				
80	10	40	20				
1	10	80	20				
2	15	40	55				
3	10	40	50				
4	10	30	40				
5	5	20	35				
6	10	30	40				
7	10	40	30				
8	30	60	65				
9	25	140	170				
90	25	60	85				
1	15	20	45				
2	10	60	20				
3	10	40	25				
4	5	40	20				
5	15	40	50				
6	20	40	45				
7	20	40	40				
8	5	40	40				
9	5	20	15				
1300	5	20	20				
1	5	20	30				
2	10	60	120				
3	5	80	15				
4	15	20	40				
5	5	20	20				
6	5	20	20				
H.1307	5	80	250				
* H.1277	15	60	40				
* H.1290	20	60	75				
* H.1302	15	60	130				

* DENOTES REPEAT AND CHECK ANALYSIS.

TICAL METHODS: Cu, Pb, Zn by AAS following hot conc $HClO_4$ leach for 1 hour of 0.25g sample.

PREUSSAG (AUST) PTY LTD - MELBOURNE
Mr. A. HOSKING.

UTION:

Signed.....

Kangaroo Island

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. K.I. 18.12.75.

hot 29

Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED.
Batch No.: A 1183.

Sheet No.: 1.
Date: 24.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm	
H. 1516	30	30	45	All samples this page of soil —
7	30	30	40	p/B grid
8	25	30	55	
9	15	40	20	
20	30	40	20	
1	15	30	30	
2	10	30	10	
3	20	40	25	
4	180	30	50	
5	30	40	80	
6	15	20	15	
7	35	60	50	
8	30	70	50	
9	20	70	60	
30	5	20	50	
1	5	20	15	
2	<2	20	20	
3	<2	30	25	
4	5	60	10	
5	<2	30	10	
6	10	40	30	
7	5	50	10	
8	5	30	5	
9	5	30	10	
40	<2	20	5	
1	15	40	20	
2	5	<20	40	
3	15	50	15	
4	5	40	20	
5	20	30	20	
6	15	30	15	
7	<2	80	10	
1548	5	40	10	
1570	15	70	10	
1	<2	30	5	
2	5	40	5	
3	5	40	15	
4	10	30	10	
5	10	20	5	
6	5	40	5	
7	5	40	5	
8	20	80	15	
9	10	40	15	
1580	15	40	15	
1	30	30	<2	
2	5	20	20	
3	35	30	25	
4	15	40	130	
H.1585	15	30	65	

TICAL METHODS:

UTION:

Signed .....

Kangaroo Island

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. K.I. 18.12.75.

lot 29

Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED.

Sheet No.: 2.
Batch No.: A 1183.
Date: 24.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1586	40	100	45	All	samples	this page	of soil
7	45	130	70	P/B	grid		
8	30	180	30				
9	10	290	30				
90	15	290	110				
1	5	70	90				
2	5	90	70				
3	10	100	55				
4	10	150	65				
5	10	200	40				
6	10	50	35				
7	15	120	20				
8	5	190	55				
9	15	80	50				
1600	5	70	90				
1	15	110	45				
2	20	370	50				
3	20	1000	350				
4	10	..80	170				
5	10	100	140				
6	5	300	50				
7	10	1100	450				
8	5	80	5				
9	10	70	25				
10	5	90	15				
1	20	80	45				
2	5	20	30				
3	20	180	120				
4	20	80	50				
5	10	70	30				
6	5	110	120				
7	10	70	85				
8	<2	200	90				
9	10	30	15				
20	10	480	360				
1	5	320	240				
2	10	120	280				
3	20	200	230				
4	30	300	210				
5	35	300	110				
6	25	450	70				
7	40	500	50				
8	180	260	90				
9	100	120	100				
30	25	580	30				
1	10	30	5				
2	10	30	20				
3	15	30	40				
H.1634	5	140	70				

ANALYTICAL METHODS:

TION:

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PHONE: 272 2412
TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. K.J. 18.12.75. Lot 29
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED.
Batch No.: A 1183.

Sheet No.: 3.
Date: 24.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H.- 1635	10	50	35	All	samples	this page	of soil -
H.- 1663	5	40	40	P/B	grid.		
4	5	40	30				
5	15	70	60				
6	5	60	30				
7	5	30	60				
8	10	30	20				
9	5	40	10				
70	10	40	5				
1	10	30	30				
2	<2	20	15				
3	5	210	5				
4	20	170	30				
H. -1675	15	510	60				
Repeat and Check							
H.- 1523	20	40	30				
1588	30	180	30				
1607	10	1100	440				
H.- 1630	15	590	30				

ANALYTICAL METHODS: Cu, Pb, Zn by AAS following hot conc $HClO_4$ leach for 1 hour of 0.25g sample.

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MR. A.J. HOSKING.

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054

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. (K.I. 18.12.75.)
Samples of: ROCK CHIPS & 1 SOIL.
Preparation: CRUSHED & PULVERISED AS REQUIRED. (O/N 30)
Batch No.: A 1182.

Lot 30

Sheet No.: 1.
Date: 19.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu ppm	Pb ppm	Zn ppm	Mn ppm	Co ppm	Ag ppm	
Ferr.-Bonan. gniid A.- 1	2400	160	230	130		5	rk ferr^se qtz+py
" " 2	2900	240	210	120	2400	<5	rk " " +Co wh
" " 3	800	30	130	710		<5	rk chlorite+malach.
" " 4	80	30	110	440		<5	rk gingilite
" " 5	110	660	80	50		5	rk ferrug. qtz
" " 6	260	>10000	170	50		5	rk ferrug. gritty gal.
" " 7	100	4300	90	30		<5	soil
" " 8	830	2900	120	40		100	rk ferrug. qtz
" " 9	110	4200	190	50		10	rk " "
" " 10	640	7800	1900	980		5	rk gossan
" " 11	140	2000	1400	190		<5	rk "
" " 12	350	1900	1900	520		<5	rk "
" " A.-13	15	60	40	25		<5	rk weathd matass.
Repeat and Check							
A.- 6	250	>10000	160	50		5	
A.-12	360	1900	1900	530		<5	

ANALYTICAL METHODS: Cu, Pb, Zn, Mn, Co by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.
Ag by AAS following HCl leach and HCl/HNO_3 leach in latter stages of 0.25g sample.

TION: PREUSSAG (AUST) PTY LTD.
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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A.
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED.
Batch No.: A 1157

Lot 32

Sheet No.: 1.
Date: 9.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 1434	20	1000	490
5	15	1400	600
6	25	1500	660
7	20	1900	1000
8	45	2000	1800
9	5	170	70
40	10	180	70
1	10	180	75
2	10	250	85
3	10	330	90
4	10	90	30
5	5	80	30
6	10	80	30
7	5	70	30
8	5	80	25
9	<2	100	25
50	10	70	30
1	<2	70	40
2	10	80	30
3	5	60	30
4	5	120	35
5	<2	110	40
6	5	130	30
7	5	140	25
8	10	140	35
9	5	100	25
60	10	100	25
H. 1461	5	120	30

All samples this page of soil (CH 1434 - H 1461 P/B grid orientation)

Repeat and Check

H. 1440	10	180	65
H. 1450	10	70	30
H. 1460	10	90	25

ANALYTICAL METHODS:
Cu, Pb, Zn by AAS following hot conc, $HClO_4$ leach for 1 hour of 0.25g sample.

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ANALYTICAL RESULTS

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Lot 33

Samples from: PREUSSAC (AUST) PTY LTD.,
Area: S.A.
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED.
Batch No.: A 1173.

Sheet No.: 1.
Date: 16.12.75.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H.- 1462	10	90	65	All P/B	samples grid	this page	of soil-
3	5	90	35				
4	10	140	50				
5	5	70	15				
6	[illegible]	100	20				
7	20	100	25				
8	<2	90	25				
9	5	110	20				
70	<2	100	15				
1	10	80	20				
2	<2	60	15				
3	10	100	20				
4	<2	90	10				
5	<2	70	20				
6	15	70	50				
7	5	60	30				
8	10	120	20				
9	5	80	20				
80	20	80	25				
1	<2	120	30				
H.-1482	10	120	20				
Repeat and Check							
H.- 1471	10	80	20				
H.- 1481	<2	120	30				

ANALYTICAL METHODS: Cu.Pb.Zn by AAS following hot conc. HClO₄ leach for 1 hour of 0.25g sample.

ON: PREUSSAC (AUST) PTY LTD.
MR. A.J. HOCKING.

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CHEMICAL ANALYSES

McPHAR

057

Lot 34

298474[illegible]

Batch No. : A1184

Date :

Samples From :

Sheet No. :

Area :

Wt. of Sample :

Sample Attack : fuming HClO4

Vessels, e.g. Open Top Tube (OTT), Screw Cap Tube (SCT), Fusion Tube (FT), Beaker (B) :

Assay (A)/Geochem (G) :

Type of Sample :

Standard Samples :

Recheck.   P|B   grind

	Sample No.	Vessel No.		Cu		Pb		Zn			
				Abs.	ppm	Abs.	ppm	Abs.	ppm	Abs.	ppm
1	H - 1433				40		420		560		
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
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	STANDARD SOLUTIONS										

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.

Area: S.A.

Lot 34

Samples of: SOILS.

Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED

Sheet No.: 1.

Batch No.: A 1184.

Date: 5.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1483	40	400	540	All	samples	this page	of soil –
4	35	50	50				
5	20	60	30	P/B	grid		
6	20	30	50				
7	30	20	45				
8	20	60	25				
9	45	40	50				
90	10	50	25				
1	20	50	60				
2	10	20	25				
3	55	30	25				
4	120	30	25				
5	25	50	35				
6	35	20	90				
7	15	40	40				
8	10	40	30				
9	10	20	30				
1500	20	20	30				
1	10	30	35				
2	10	20	20				
3	10	20	10				
4	5	40	15				
5	5	30	20				
6	10	60	220				
7	5	<20	45				
8	5	30	50				
9	15	50	70				
10	10	50	80				
1	10	60	55				
2	10	40	45				
3	15	50	60				
4	5	30	50				
1515	10	40	120				
1549	5	30	20				
50	10	<20	20				
1	5	<20	15				
2	10	70	25				
3	5	30	55				
4	10	30	25				
5	10	60	35				
6	10	<20	30				
7	10	40	30				
8	10	100	30				
9	10	160	35				
60	5	60	30				
1	5	80	40				
2	5	20	30				
3	10	40	70				
H.1564	15	30	60				

ALYTICAL METHODS:

TION:

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. hot 34
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED. Sheet No.: 2.
Batch No.: A 1184. Date: 5.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1565	20	120	70	All	samples	this page	of soil
6	25	30	80	P/B	grid		
7	30	30	100				
8	70	40	90				
H. 1569	15	30	35				
Repeat and Check							
H. 1490	10	50	25				
1510	10	50	80				
1555	10	60	35				
H. 1564	15	30	55				

ANALYTICAL METHODS: Cu,Pb,Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

PREUSSAG (AUST) PTY LTD.
ATTENTION: MR. A.J. HOSKING.

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.

Area:

hot 35

Samples of: SOILS & ROCK CHIPS.

Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED. Sheet No.: 1.

Batch No.: A 1185. Date: 6.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1636	15	40	250	All	samples	this page	of soil -
7	5	40	130				
8	20	30	60	P18	grid		
9	10	40	65				
40	15	40	50				
1	5	40	40				
2	10	60	40				
3	5	1200	45				
4	5	120	40				
5	15	150	40				
6	5	80	30				
7	15	230	45				
8	5	240	40				
9	5	220	100				
50	15	250	100				
1	5	330	90				
2	35	580	330				
3	15	100	110				
4	10	40	35				
5	5	50	45				
6	5	60	25				
7	5	90	90				
8	15	160	180				
9	5	70	30				
60	5	120	60				
1	<2	40	45				
1662	5	80	35				
1676	20	320	310				
7	15	330	150				
8	15	220	230				
9	5	210	90				
80	10	160	250				
1	5	90	20				
2	5	540	50				
3	<2	90	35				
4	5	60	25				
5	5	80	20				
6	5	50	25				
7	5	70	40				
8	5	40	30				
9	<2	40	30				
90	5	50	25				
1	10	40	30				
2	5	70	30				
3	5	50	15				
4	10	30	30				
5	5	20	20				
6	5	40	25				
H.1697	<2	30	20				

CAL METHODS:

TION:

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) SERVICES PTY LTD.

Area: Lot 35

Samples of: SOILS & ROCK CHIPS.

Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED. Sheet No.: 2.

Batch No.: A 1185. Date: 6.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 1698	5	30	25
9	10	60	35
1700	5	50	30
1	5	40	30
2	10	70	35
3	5	20	40
4	5	60	65
5	5	180	350
6	40	80	120
7	15	120	80
8	10	30	30
9	<2	40	25
10	10	40	35
1	10	880	1100
2	5	250	90
3	5	200	60
4	5	80	40
5	<2	60	30
H.1716	5	40	20
Repeat and Check			
H.1650	15	250	110
H.1689	<2	40	30
H.1700	5	40	30
H.1710	10	40	35

All samples this page of soil - P/B grid

CAL METHODS:

Cu,Pb,Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

PREUSSAG (AUST) PTY LTD.

JTION: MR. A.J. HOSKING

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A.
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED.
Batch No.: A 1187.

Lot 36

Sheet No.: 1.
Date: 7.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1717	30	40	40	All	samples	this page	of soil —
8	20	40	30				
9	5	60	50	P/B	grid		
20	10	40	40				
1	10	40	30				
2	5	80	60				
3	<2	40	70				
4	5	60	50				
5	5	30	10				
6	5	30	25				
7	15	40	30				
8	15	20	20				
9	5	30	20				
30	35	20	35				
1	10	30	40				
2	10	40	30				
3	5	60	30				
4	10	80	45				
5	5	40	10				
6	5	40	15				
7	5	40	40				
8	5	60	30				
9	5	60	35				
40	5	50	40				
1	10	50	40				
2	5	40	40				
3	10	40	35				
4	5	40	25				
5	5	40	40				
6	10	40	30				
7	10	60	20				
8	15	70	40				
9	10	60	20				
50	10	50	25				
1	5	40	30				
2	<2	20	20				
3	5	40	20				
4	<2	30	15				
5	5	40	15				
6	<2	40	45				
7	5	110	25				
8	5	30	30				
9	5	60	25				
60	5	40	20				
1	5	40	10				
2	5	40	20				
3	5	40	20				
4	<2	40	25				
H.1765	<2	40	25				

L METHODS:

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD. Lot 36

Area: S.A.

Samples of: SOILS.

Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED. Sheet No.: 2.

Batch No.: A 1187. Date: 7.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm				
H. 1766	5	60	30	All	samples	this page	of soil -
7	10	40	60	P/B	grid.		
8	5	50	50				
9	10	60	50				
70	10	60	70				
1	5	70	60				
2	10	40	35				
3	10	20	30				
4	5	60	25				
5	10	60	20				
6	5	60	15				
7	5	50	20				
8	10	70	30				
9	10	40	20				
80	5	50	30				
1	10	50	20				
2	<2	40	10				
3	<2	20	30				
4	<2	30	25				
5	5	70	20				
6	5	50	25				
7	5	80	25				
8	5	80	30				
9	<2	70	25				
90	<2	50	20				
1	<2	20	15				
2	5	40	30				
3	5	60	20				
4	5	80	30				
5	5	60	10				
6	5	60	20				
7	5	60	45				
8	5	40	20				
9	5	60	20				
1800	5	50	40				
1	5	40	20				
2	5	40	20				
3	5	40	20				
4	5	40	15				
5	5	40	25				
6	5	20	20				
7	5	20	10				
8	5	40	20				
9	<2	50	20				
10	<2	30	10				
1	10	50	20				
2	5	20	15				
3	5	40	30				
H.1814	<2	60	20				

CAL METHODS:

UTION:

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PHONE: 272 2412
TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. Lot 36
Samples of: SOILS.
Preparation: DRIED, CRUSHED & PULVERISED AS REQUIRED. Sheet No.: 3.
Batch No.: A 1187 Date: 7.1.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 1815	10	50	70
6	5	70	30
7	5	60	50
8	5	60	40
9	5	30	30
H. 1820	5	60	30
Repeat and Check			
H. 1734	10	80	40
H. 1762	5	40	15
H. 1784	<2	30	20
H. 1808	5	40	15

All samples this page of soil - p/B grid

AL METHODS: Cu, Pb, Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

PREUSSAG (AUST) PTY LTD.
TION: MR. A.J. HOSKING.

Signed .....

Rangaroo Island

ADELAIDE SYDNEY

065

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ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: S.A. 17/2/76.
Samples of: ROCK CHIPS.
Preparation: CRUSHED & PULVERISED.
Batch No.: A 1251.

Lot 44

Sheet No.: 1.
Date: 25.2.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm	Agppm	Auppb	
Pers-Bonav. grid H. 1821	450	1640	610	3		rk ferrug'd metasilst.
" " 2	310	1760	500	<2		rk as for H1821 + ? Fe ox
" " 3	110	180	170	<2		rk q'tz - limonite vein rk.
" " 4	4900	560	140	14		rk q'tz - limonite (orgy) rk
" " 5	110	3000	130	4	85	rk fine ore breccia q'tz
" " 6	100	200	110	<2		rk ferrug'd metasilst + q'tz
" " H. 1827	190	460	820	4		rk q'tz limonite vein rk.
Repeat and Check						
H. 1824	4700	560	140	15		

ICAL METHODS: Cu, Pb, Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample. Ag by AAS following HCl/HNO_3 leach for 1 hour of 0.25g sample. Au by Special low level CRA/AAS.

JTION: PREUSSAG (AUST) PTY LTD. (2)
C/O MR. A. J. HOSKING.

Signed.....

ADELAIDE SYDNEY

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TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: K.I. 10/4/76/ Lot 57

Samples of: SOIL ~~& ROCK CHIP~~.

Preparation: DRIED, CRUSHED & PULVERISED. Sheet No.: 1.

Batch No.: A 1378. Date: 14.4.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm	
H. 2474	15	50	25	All samples this page of soil
5	20	40	20	(additional samples surrounding
6	10	40	35	site of H 2483)
7	15	30	35	
8	10	30	25	
9	25	60	40	- P18 grid
80	10	60	20	
1	10	50	20	
2	10	40	20	
3	10	60	15	
4	10	60	20	
5	5	40	15	
6	10	60	20	
7	10	30	15	
8	50	60	25	
H. 2489	30	50	20	
Repeat and Check				
H. 2478	10	30	20	
H. 2486	10	60	20	

CAL METHODS: Cu, Pb, Zn by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

TION: PREUSSAG (AUST) PTY LTD.
ATTN. MR. A. HOSKING(2)

Signed .....

ADELAIDE SYDNEY

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 3
UNLEY, S.A. 5061
PHONE: 272 2412
TELEX: AA82623

:067

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.
Area: K.I. 22.4.76.
Samples of: SOIL & ROCK CHIPS.
Preparation: DRIED, DISCED & PULVERISED AS REQ'D.
Batch No.: A 1404. (O/N 61)

Lot 61

Sheet No.: 1.
Date: 5.5.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 2795	10	<20	25
6	130	80	35
7	45	20	95
8	20	80	95
9	40	30	75
800	65	90	70
1	20	100	40
2	10	180	40
3	15	110	45
4	10	460	190
119E 5	20	60	35
6	10	40	30
7	10	<20	30
8	45	20	40
9	15	<20	40
900	10	60	45
1	25	420	160
2	10	60	160
3	10	<20	30
4	15	<20	45
5	5	20	30
6	15	130	180
7	10	90	110
8	10	160	240
9	10	360	220
118E 1000	10	140	160
1	20	260	70
2	10	70	30
3	15	280	40
4	20	70	30
5	20	110	60
6	10	80	30
7	10	160	40
8	10	860	360
9	10	640	60
1100	10	280	35
1	30	1000	160
2	25	1260	50
117E 3	15	540	160
4	10	60	55
5	10	20	45
6	15	100	120
7	10	460	260
8	15	320	85
9	15	160	110
1200	10	90	35
1	35	120	140
2	5	30	20
116E H. 2843	10	100	20

All samples this page of soil - P|B grid.

CAL METHODS:

TION:

Signed.....

NATA

ADELAIDE SYDNEY

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 3
UNLEY, S.A. 5061
PHONE: 272 2412
TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PRTY LTD.
Area: K.I. 22.4.76.
Samples of: SOILS & ROCK CHIPS.
Preparation: DRIED, DISCED & PULVERISED AS REQ°D. Sheet No.: 2.
Batch No.: A 1404. Date: 5.5.76.

Lot 61

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu ppm	Pb ppm	Zn ppm				
H. 2844	10	30	35	All	samples	this	page
5	15	340	65				
6	130	110	110	P/B	grid.		
116E 7	50	440	80				
8	40	170	60				
9	15	100	30				
50	10	90	15				
1	35	110	20				
2	10	120	30				
3	5	70	20				
4	10	180	15				
5	5	20	30				
6	10	20	30				
7	5	260	75				
8	30	2100	980				
9	60	2200	400				
60	20	500	200				
1	10	340	80				
2	15	280	70				
115E 3	55	540	180				
4	55	380	60				
5	30	500	50				
6	15	440	35				
7	10	300	25				
8	40	500	50				
9	10	660	35				
70	15	540	35				
1	10	340	45				
2	15	2700	40				
3	5	20	15				
4	10	<20	15				
5	10	<20	20				
6	10	70	35				
7	10	130	110				
114E 8	10	40	20				
9	15	70	20				
80	10	560	30				
1	5	220	20				
2	10	80	25				
3	5	<20	15				
4	5	20	30				
5	5	50	30				
113E 6	10	160	35				
7	40	40	20				
8	25	<20	30				
9	10	520	240				
90	20	420	500				
1	20	300	120				
2	10	130	80				
H. 2893	10	110	55				

AL METHODS:

ON:

Signed.....

ADELAIDE SYDNEY

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 3
UNLEY, S.A. 5061
PHONE: 272 2412
TELEX: AA82623

069

ANALYTICAL RESULTS

Lot 61

Samples from: PREUSSAG (AUST) PTY LTD.
Area: K.I. 22.4.76.
Samples of: SOIL & ROCK CHIPS.
Preparation: DRIED, DISECED & PULVERISED AS REQ'D
Sheet No.: 3.
Batch No.: A 1404.
Date: 5.5.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm
H. 2894	10	90	40
5	25	100	40
6	20	120	30
113E 7	10	300	30
8	30	40	20
9	10	30	20
900	35	30	35
1	15	30	25
2	35	30	30
3	20	60	35
112E 4	10	70	50
5	15	20	20
6	10	<20	15
7	20	<20	25
8	20	60	30
9	10	30	20
10	20	20	25
1	15	40	25
2	10	50	25
3	15	80	35
111E 4	40	30	75
5	15	20	140
6	10	40	50
7	10	50	35
8	10	20	30
9	10	<20	20
20	10	<20	25
1	25	20	30
2	15	20	25
3	10	20	20
4	10	50	45
110E 5	10	160	20
6	40	240	65
7	120	30	30
8	15	20	30
9	20	440	120
30	20	400	40
1	15	560	30
109E 2	10	150	20
3	15	40	25
4	25	<20	20
5	10	50	35
6	15	20	25
7	5	30	25
H. 2938	5	<20	10
Repeat and Check			
H. 2886	5	80	30

All samples p/e grid lines page of soil-

Repeat and Check

	Cuppm	Pbppm	Znppm
H.2862	10	260	65
H.2883	5	<20	15

ICAL METHODS: Cu,Pb,Zn, by AAS following hot conc. $HClO_4$ leach for 1 hour of 0.25g sample.

NATA

PREUSSAG (AUST) PTY LTD.
UTION: MELBOURNE (1). MR. A. HOSKING
(2).

Signed.....

ADELAIDE SYDNEY

A.C.S. Laboratories Pty. Ltd.
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TELEX: AA82623

ANALYTICAL RESULTS

Lot 62

Samples from: PREUSSAG (AUST) PTY LTD.
Area: K.I. 4.5.76.
Samples of: ROCKS.
Preparation: CRUSHED & PULVERISED.
Sheet No.: 1.
Batch No.: A 1425 (O/N 62)
Date: 11.5.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cuppm	Pbppm	Znppm	Agppm	Auppb	
Middle River dam H. 2490	15	20	110	<2		rk dark, carbonac. phyllite
" " " 1	15	<20	95	<2		rk. banded biotite metasst
Rainbows End Au ⚒ 2	35	<20	30	<2	380	rk. strongly fract^d chlorite siltst
" " 3	3900	140	50	2	>500	rk as for H2492
" " 4	360	<20	35	<2	430	rk " "
new (E of) Cygnet Au ⚒ 5	40	<20	35	<2		rk. banded biotite metasst
Cygnet Au ⚒ 6	15	20	50	<2	<20	rk. chloritic metasiltst
" " " 7	130	140	20	2	>500	rk. fine x^ne brecc^td qtz + limonite
" " " 8	880	80	25	4	>500	rk. as for H2497 + pyrite
" " " 9	1100	530	10	6	>500	rk. as for H2497,98 + > pyrite
Pers/Bonav. grid 500	300	20	30	<2		rk. brecc^td limonitic qtz.
" " 1	40	<20	130	2		rk. dark, lamt^d biotite metasiltst
" " 2	35	<20	220	<2		rk as for H2501 but non lamt^d
" " 3	40	<20	110	<2		rk. dark silty phyllite
" " 4	20	<20	90	<2		rk. dark, chloritic phyllite
" " 5	25	160	20	<2		rk. fine x^ne brecc^td qtz + limonite
" " 6	10	<20	25	<2		rk. dark f.gr qtz-tourmaline rock
" " 7	15	<20	25	<2		rk fold^d fract^d feldsp. metass.
" " 8	5	20	40	4		rk m.-c.gr " "
" " 9	5	50	50	2		rk ferrug^d f.gr. metasiltst.
" " 10	15	60	120	2		rk as for H2509 + > Fe oxides
" " 1	720	1600	35	<2	130	rk. fine x^ne brecc^td qtz + pyr.gal.
" " 2	30	1000	220	9		rk as for H2511 but no sulphides
" " 3	140	7300	190	3	30	rk. limonitic qtz.
" " 4	240	4400	300	2	<20	rk brecc^td ferrug.^d metasandst.
" " 5	20	90	90	<2		rk silty phyllite
" " 6	85	80	60	<2		rk. phyllite + qtz-limonite
" " 2517	20	20	45	<2	<20	rk vein qtz + Mn oxides.
W of Dewrang H. 2519	60	40	65	<2		rk. dark, carbonac. fold^ed phyllite

Repeat and Check

	Cuppm	Pbppm	Znppm	Agppm	Auppb
H. 2500	290	20	30	<2	
H. 2514	250	4400	310	2	<20

[ANALYTIC]AL METHODS: Cu,Pb,Zn by AAS following hot conc. $HClO_4$ [leac]h for 1 hour of 0.25g sample. Ag by AAS following HCl leach [&] HCl/HNO_3 leach in latter stages of 0.25g sample. Au by [speci]al low level CRA/AAS method. (Values >500ppb - results by Fire Assay to follow.)

[DISTRIBU]TION: PREUSSAG PTY LTD-MELBOURNE, (1)
MRA.J. HOSKING (2)

Signed. [signature]

NATA

Kangaroo Island

071

ADELAIDE SYDNEY

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TELEX: AA82623

ANALYTICAL RESULTS

Samples from: PREUSSAG (AUST) PTY LTD.

Lot 62

Area:

Samples of:

Preparation:

Sheet No.: 1.

Batch No.: A 1425 (SUPPLEMENT).

Date: 13.5.76.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Au g.m.t.						
2493	15.0						
2497	1.0						
2498	3.0						
2499	1.3						

CAL METHODS: Au by Fire Assay.

TION:

Signed ....

NATA

K. Island.

072

Ian R. Pontifex & Associates

MINERALOGY — PETROLOGY
GEOLOGY
SECTION PREPARATION

50 MARY STREET, UNLEY
SOUTH AUST. 5061
TEL. 272 2856. A.H. 31 3816

MINERALOGICAL REPORT NO. 1823

19th September, 1975.

TO: Mr. A.J. Hosking,
Preussag Australia Pty. Ltd.,
c/- 78 Jervois Tce.,
MARINO, SA, 5049

YOUR REFERENCE: Your letter dated 1/9/75

MATERIAL: Rock sample

IDENTIFICATION: H 1312

WORK REQUESTED: Petrographic - mineragraphic description

SAMPLES & SECTIONS: Returned to above address by post

IAN R. PONTIFEX & ASSOCIATES

Submittal No 1.

H 1312 Volcanic breccia of sericitic potash felspar crystal tuff and epithermal quartz; mineralised in interfragmental areas with sphalerite subordinate quartz accessory galena and pyrite.

This rock has a gross, fairly coarse breccia texture, composed mainly of a random, loosely packed aggregate of angular potassic fragments up to 20mm across (highlighted by staining). The subordinate interfragmental areas are occupied mainly by sphalerite (15-20%) and quartz (7-10%).

The potassic domains consist of a fairly well sorted, but massive detrital aggregate of generally subangular grains of potash felspar, average grain size 0.3mm. These are fairly loosely packed with a very fine intergranular matrix which is extremely difficult to identify but appears to consist of clay-sericite, chlorite and chloritic clays with minor extremely fine potash felspar, quartz and plagioclase. The coarse potash felspar grains are clouded by minor clay-sericite alteration. This aggregate is interpreted to be a volcanic lastic sediment almost certainly of direct volcanic derivation (i.e. a potash felspar crystal tuff).

Minor irregular patches grading imperceptibly into the potash felspar aggregate consist of fine quartz mosaic made up largely of incipient euhedral (prismatic) quartz crystals, and is characteristic of massive quartz mineralisation of epithermal or volcanogenic origin.

H 1312 contd.

The patchy nature of these quartz aggregates suggests an overall breccia, rather than tuff suggested above.

Irregular and apparently interfragmental areas between these potash and lesser quartzose domains are occupied by coarse aggregates of sphalerite, intimately mixed with lesser, quite coarse, stressed vein quartz, and accessory sphalerite are scattered through the felsic and finer quartzose host rock.

In polished section accessory very fine galena (1%) and pyrite (1%) are seen sporadically distributed in fairly close association with sphalerite, less commonly as independent grains in the host rock.

The objective petrographic evidence indicates that this is a mineralised potassic-siliceous tuff-breccia with all components probably having a common origin. More specifically it is a breccia of sericitised and weakly chloritised potash felspar crystal tuff and volcanogenic quartz aggregate, mineralised in interfragmental areas.

Ian R. Pontifex & Associates

MINERALOGY — PETROLOGY
GEOLOGY
SECTION PREPARATION

50 MARY STREET, UNLEY
SOUTH AUST. 5061
TEL. 272 2856. A.H. 31 3816

MINERALOGICAL REPORT NO. 1840

10th October, 1975

TO:	Mr. A.J. Hosking, Preussag Australia Pty. Ltd., c/- 78 Jervois Terrace, MARINO, S.A. 5049
YOUR REFERENCE:	Your letter dated 29/9/75
MATERIAL:	Rock samples
IDENTIFICATION:	H619, H626a (H619 NOT APPLICABLE)
WORK REQUESTED:	Petrographic and mineragraphic examination.
SAMPLES & SECTIONS:	To be returned to you

IAN R. PONTIFEX & ASSOCIATES

[redacted]

H626a Kangaroo Island

Schmittal Nos. 2 & 3.

H626a: breccia of meta arkose (of "granitic" origin); epithermal quartz-sphalerite-galena mineralisation throughout interfragmental areas

This rock has a gross breccia texture, composed of a loosely packed aggregate of angular fragments commonly measuring up to 10 x 30 mm, with quartz sulphide mineralisation throughout interfragmental areas.

The fragments consist of an essentially micro-granoblastic ("quartzitic") aggregate of essential quartz and potash felspar grains, average grain size 0.15 mm. Minor sericite and lesser fine chlorite occurs along inter-granular boundaries throughout the aggregate. Accessory detrital zircon, muscovite and tourmaline are present.

The brecciated rock is interpreted to be a meta-arkose derived from a "granitic" terrane. There is no positive evidence of volcanic contribution to the original sediment, although some relict rounding in occasional quartz grains, which barely survive the metamorphic textural modification, may be original phenocrysts.

Areas between fragments are occupied mainly by vein quartz, composed of randomly interlocking fine subhedral to euhedral crystals, characteristic of epithermal mineralisation. This quartz penetrates the fragments to varying degrees, confusing their composition and texture.

Irregular patches of honey colored sphalerite up to 10 mm across, with closely associated, subordinate patches of galena are sporadically distributed through the vein quartz, and rarely form veinlets on their own. Trace minute grains of pyrite occur independently, but commonly in the vicinity of the main sulphides.

Ian R. Pontifex & Associates

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

MINERALOGICAL REPORT NO. 1852

7th November, 1975

TO: Mr. A.J. Hosking,
Preussag Australia Pty. Ltd.,
78 Jervois Terrace,
MARINO, S.A. 5049

YOUR REFERENCE: Your letter dated 9/10/75

MATERIAL: Rock samples

IDENTIFICATION: ~~H 957a and b~~ NOT APPLICABLE
H 626b and c

WORK REQUESTED: Petrographic description

SAMPLES & SECTIONS: To be returned to you

IAN R. PONTIFEX & ASSOCIATES

[redacted]

H626 b,c K-Island (Perseverance)

[redacted]

Submittals 4 & 5

H 626 b : metamorphically recrystallised and brecciated potassic arkose; veins of quartz galena and trace sphalerite

This is a massive, brecciated but otherwise fairly homogeneous fine "quartzitic" rock with random veins of mainly galena, and some drusy quartz along fractures.

In thin section the domains between fused and/or mineralised fractures are seen to have an irregular, but generally fairly homogeneous microgranoblastic texture, average grain size about 0.2 mm. They consist of essential quartz and potash felspar with minor to subordinate plagioclase (albite). The quartz and microcline in particular, show evidence of stress and grain boundary re-crystallisation to form the present texture. These various components have a very even distribution, essentially as independent grains throughout the aggregate -- a feature highlighted by examining the yellow stained potash felspar in the offcut block.

Trace fine muscovite and chlorite are scattered. The interfragmental areas are occupied mainly by micro crystalline vein quartz of characteristic epithermal texture, and this tends to permeate the fragments bounding the fractures, contributing to the silicification and fusion to the aggregate (in addition to the recrystallisation). Galena and lesser sphalerite occurs in some veins.

..../

626 b contd.

The rock is interpreted to be a metamorphically recrystallised felsic (arkosic) sediment of "granitic" composition. The fracturing is tectonic and superimposed, although conceivably occurred during metamorphism. The mineralisation is later and may represent a final phase of tectonic reconstitution; its source is not known.

The rock is essentially the same as H626a described in report 1840 although it contains considerably more plagioclase. In retrospect there seems no positive evidence to indicate that this rock has a volcanogenic history, as suggested for sample H1312 (report 1823) from the same locality. Almost certainly the sediment derived from an acid igneous source, and closer consideration of the mineral assemblage, including the apparently largely microcline composition of the potash felspar, notably in H626 and H626c, suggests a plutonic rather than volcanic source.

H 626 c : massive, fine grained, arkose, fairly extensive intergranular clays after detrital felspar

This is a massive, homogeneous, fine grained meta arkose with a similar essential mineralogical composition to H626 b. However it is more friable and shows negligible evidence of brecciation and/or associated silicification; i.e. it is far less texturally modified than samples 626 (b), or 626, or 1312.

The essential detrital aggregate consists of potash felspar and quartz in about equal abundance, minor plagioclase (?20%), and accessory detrital muscovite flakes, minute detrital opaque iron oxide grains and trace detrital tourmaline. About 1/3 of the potash felspar is microcline.

These components have a random but very uniform distribution, average grain size about 0.2 mm. What is now intergranular clays (30%), ± fine sericite appears to be mainly derived from former detrital felspar grains, but why some felspars are extensively altered in this way and others virtually unaltered is not clear.

The alteration is conceivably due to weathering. This rock is a non-brecciated and virtually unmineralised equivalent of 1312, 626 and 626 b (although a small patch of galena occurs on the exposed surface). It is a homogeneous well sorted arkosic sediment which as discussed for H626 b is probably of granitic derivation. Certainly there are no diagnostic features of a volcanic origin.

Submittal No. 14

Ian R. Pontifex & Associates Pty. Ltd.

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

Kangaroo Island

MINERALOGICAL REPORT NO. 1958

19th May 1976

TO:	Mr. A.J. Hosking, Preussag (Aust) Pty. Ltd., 78 Jervois Terrace, MARINO S.A. 5049
YOUR REFERENCE:	Your letter of 27/4/76 Submittal no. 14
MATERIAL:	Rock samples (6)
IDENTIFICATION:	H2494 to 2518 (various nos.)
WORK REQUESTED:	Petrographic descriptions
SAMPLES & SECTIONS:	Held for your collection

I R Pontifex

PONTIFEX & ASSOCIATES PTY. LTD.

H2494: muscovite-quartz schistose hornfels (meta-sediment); minor apparently metasomatic quartz-biotite ± accessory tourmaline; trace ?pyrite pseudomorphs

This rock has a combined schistose to hornfels metamorphic texture. It consists of a sheared-out, stressed microgranoblastic mass of quartz with abundant, variably continuous foliae and attenuated network of fine muscovite (25-30%). Lesser greenish-brown biotite (7-10%) is more randomly distributed commonly in clumps along roughly cross cutting fractures. Accessory fine tourmaline grains and small clumps of these more or less accompany this biotite. Poorly defined, discontinuous (introduced) quartz "veins" accompany some biotite; this is also largely discordant but locally occurs along the "schistosity" merging with the quartz hornfels mosaic. Relatively finer and coarser bands can be identified in the quartz mosaic, and almost certainly reflect original bedding; minor patches of recrystallised quartz appear to represent original quartzose clasts or coarse grains. There is no positive evidence of original volcaniclastic components however.

The rock is interpreted to be a muscovite quartz schistose hornfels, formed by extensive recrystallisation of an argillaceous quartz silt to fine quartz sandstone. The biotite tourmaline and vein quartz domains appear to be introduced conceivably by metasomatic agencies.

Trace limonite replicas after a group of several ?pyrite crystals are present.

H2495: medium grained, thin bedded arkose with essential muscovite-sericite matrix; characterised by intercalated heavy mineral layers of hematite, lesser tourmaline, monazite, zircon

This is a fairly homogeneous, thin bedded, medium grained sandstone, characterised by abundant laminae and/or fine layers of detrital heavy minerals. The non heavy mineral layers consist of a loosely packed aggregate of subangular quartz and an almost equal abundance of plagioclase grains, average and fairly consistent size 0.2 mm. This aggregate has an essential matrix of fine muscovite and/or sericite mixed with silt size quartz and felspar. This is probably an essentially metamorphic matrix, although the generaly randomness of the micas indicates lack of shearing stress, and suggests the possibility of some hydrothermal alteration.

The heavy mineral grains have a similar size to the quartz and felspar, and a similar micaceous matrix. They consist mainly of corroded-looking (opaque) hematite grains, variety martite, which formed by oxidation of former magnetite. However monazite, zircon tourmaline, form about 20% of the total heavy minerals, and trace apatite rutile and ? xenotime are also present.

The rock is essentially a micaceous arkose with abundant heavy mineral bands, the mineral assemblage suggests a provenance of a high-level granitic terrane, charged with pegmatitic domains. Conceivably potash felspar from such an area has given rise to the muscovite-sericite matrix.

H2504: plagioclase sericite chlorite quartz shale, somewhat indurated, several carbonate potash felspar veinlets;
(metamorphosed argillaceous siltstone)

This is a homogeneous, very fine grained rock with a clearly defined cleavage coincidental with original bedding. It consists of a tightly packed aggregate of quartz and minor plagioclase grains of silt to fine sand size, with a more or less intergranular matrix of chlorite, sericite and ultra fine quartz.

The matrix components occur in fine shredded streaks to form the cleavage; they represent metamorphically recrystallised argillaceous material.

Accessory fine tourmaline, extremely fine, clouded, secondary titania minerals, and trace spots of indigenous carbonate are scattered. Several veinlets of carbonate ± subordinate potash felspar cut the rock. These appear to have been introduced from an external source.

There is no evidence of volcaniclastic components.

H2506: lineated quartz-tourmaline "hornfels"

The mineralogy of this rock is quite simple, it consists entirely of quartz and tourmaline in approximately equal abundance. The quartz has a fairly homogeneous granuloblastic texture (polygonal mosaic), average size 0.2 mm.

Tourmaline is scattered in discontinuous layers and attenuated network, as ragged aggregates of crystals up to 0.5 mm. The tourmaline is variably very dark green (near opaque) to pleochroic from biscuit color to dark grey-green. Rare bluish green zones occur in some crystals.

Objectively the genesis of such a rock is difficult to determine but three possibilities are suggested:-

1. A sheared and recrystallised mass of boron-silica metasomatic mineralisation, which may result from complete tourmalinisation of slates and pelitic hornfelses, or possibly complete autometasomatism of a parent granite.

2. A recrystallised sediment composed of quartz and tourmaline, conceivably locally derived from a ?pegmatitic domain of this composition (unlikely).

3. A volcanic exhalative deposit.

It is noted that facies of similar composition are reported from Rosebery (Tasmania) but I do not know its relationship to volcanics in that area. Also I have heard of quartz tourmaline lenses in pyritic chert of probable volcanic origin.

H2508: medium grained thin bedded (potash felspar) arkose with minor sericitic matrix; minor heavy mineral bands of mainly hematite

Macroscopically this is similar to H2495, although with lesser heavy mineral layers; petrographically (and in the stained off-cut) it is differentiated by virtue of lesser intergranular matrix, and by essential potash felspar, rather than predominantly plagioclase in H2495.

The rock consists of a fairly tightly packed, well sorted aggregate, of subangular, detrital, grains of essential quartz, potash felspar and minor plagioclase. Average grain size is 0.3 mm. This aggregate has a sericitic intergranular matrix which varies from 5-7% in some layers to 20% in others.

The bedding is locally warped and/or buckled; this is a primary sedimentary feature and in the section examined it is well displayed by a single heavy mineral layer, and by several less continuous laminae in which heavy minerals are relatively less abundant.

The heavy mineral grains are mainly hematite (variety martite), accessory tourmaline and zircon, trace ?monazite and apatite.

It may be hypothesised that this rock represents the same arkose facies as H2495, and that the sericite "matrix" in H2495 is the hydrothermally altered equivalent of its essential contained potash felspar.

H2518: fine, sericitic quartzo-felspathic schist (moderately sheared and recrystallised argillaceous arkose); incipient potash-silica metasomatism; trace disseminated pyrite

This rock consists largely of a loosely packed aggregate of angular to subrounded grains of quartz potash felspar and plagioclase, average and fairly consistent size 0.2 mm. This aggregate has a metamorphically recrystallised matrix of sericite mixed with extremely fine quartz. The sericite defines a fine foliation within the matrix which is oblique to the fine bedding laminations of the coarser grains.

Accessory detrital tourmaline, clouded titaniferous grains and rare detrital ?hematite form very incipient heavy mineral layers.

Poorly defined veinlets of vein quartz and potash felspar locally follow the cleavage, and bedding, and are also at random to these directions. These are interpreted to represent very incipient potash-silica metasomatism of external origin.

Very fine (0.15 mm) grains of pyrite (1-2%) are present; these have no specific or mutually exclusive mode of occurrence, however they do not appear to be detrital, and they do tend to occur adjacent to the introduced potash-silica material. Thus they may be tentatively interpreted to have a related metasomatic origin.

There is no evidence of definite volcaniclastic components; the arkosic character and heavy minerals indicate a related facies to most other rocks in the suite.

088

PREUSSAG AUSTRALIA PTY. LTD.

EXPLORATION LICENCE 221

~~Exploration Expenditure Report for the Quarterly Period Ended~~

12 Months to 30th June, 1976

Description	Expenditure to	Quarter Ended	Total to Date
	$	$	$
Geological Surveys:			
Payroll			3,626
Contractors/Consultants			390
Field and General Expenses			1,027
Transportation			330
Geophysical Surveys:			
Payroll			24
Contractors/Consultants			107
Field and General Expenses			79
Transportation			-
Geochemical Surveys:			
Payroll			1,497
Contractors/Consultants			1,181
Field and General Expenses			906
Transportation			2,121
Other Studies and Field Activities:			
Payroll			972
Contractors/Consultants			810
Field and General Expenses			19
Transportation			26
Drilling:			
Payroll			
Contractors/Consultants			
Field and General Expenses			
Transportation			
Licence Fees/Option Payments			8
Assays and Tests			2,505
Miscellany			1,036
Regional Office Costs			1,593
Head Office Costs			1,975
			17,621

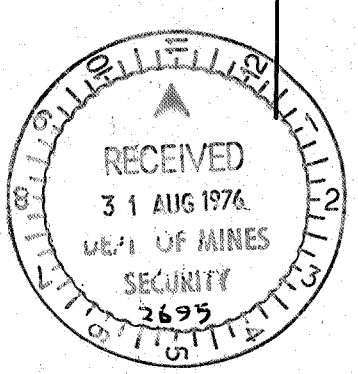


FIG.2

656000 mE

672000 mE

6052000 mN.

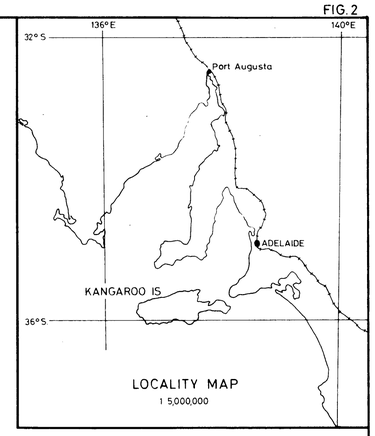
35° 40' S.

35° 45' S.

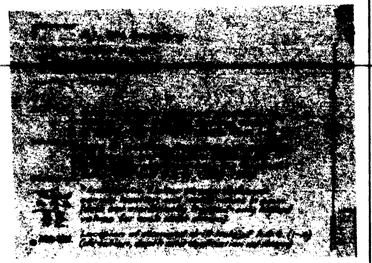
6040000 mN.

136° 45' E.

136° 50' E.



LOCALITY MAP
1 5,000,000



CAPE TORRENS CONSERVATION PARK

DE MOLE RIVER

WESTERN RIVER CONSERVATION PARK

Whale Gully Cu45

Cu30

Cu15 Zn110

Pb 70 Zn 100

Cu15 Pb80 Zn100

Cu30 Pb 140 Zn150

Zn80

Snug Cove Creek

Wreck Gully

Kangaroo Gully Cu25

Cowens Gully

Cu25

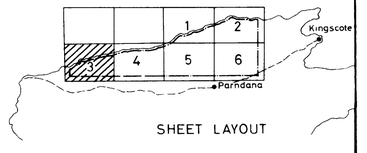
SHEET A.

ELCHOR-SHEET A.
Metal value distinctions - 459 stream sediment samples.

value ppm Cu.	no. of Cu. values.
45	1
40	1
35	-
30	2
25	4
20	8
15	29
10	117
5	174
2	74
-2	49
	459

value ppm Pb.	no. of Pb values
450	1
370	1
230	1
140	1
120	1
70	1
60	1
50	1
35	8
30	13
25	15
20	70
-2	347
	459

value ppm Zn.	no. of Zn values
330	1
190	1
150	1
140	1
110	1
100	3
90	1
80	1
75	1
70	2
60	7
55	5
50	12
45	16
40	29
35	22
30	34
25	61
20	60
15	95
10	64
5	47
2	4
	459



SHEET LAYOUT

KILOMETRES
0 1 2 3
1 25,000

ENV. 2695I-1

FIG.2

PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND-S.A.
SUMMARY OF PREVIOUS EXPLORATION BY OTHER COMPANIES

Prepared	Drawn	Date	
A.J.N.	A.S.C.	June 1976	A1 - 132

LOCALITY MAP
1:5,000,000

- E.L. 221 Boundary.
- Major road.
- Minor road.
- Creeks.
- Area of stream sediment sampling by Elchor Aust. Pty. Ltd. during tenure of S.M.L. 250 [illegible]
- Area of gridding, mapping, soil sampling, [illegible] and diamond drilling by A.O.G. [illegible] during tenure of [illegible] (1972-1973)
- Anomalous Elchor stream sediment sample location and metal values in p.p.m. (data not statistically treated - only highest values for each sheet shown)
- Location of diamond drill hole of A.O.G. (1-4) (direction, depth and declination not shown)

ELCHOR - SHEET B.

Metal value distribution - 1248 stream sediment samples.*

** minor discrepancy in Cu. Pb. Zn totals - tabulated from copy of map sheet - Env. 1058 Vol. T-8 (Open File Report of S. Aust. Dept. of Mines)*

value ppm Cu.	no. of Cu values.	value ppm Pb.	no. of Pb values	value ppm Zn	no. of Zn values.
50	1	340	1	190	1
45	1	240	1	160	1
40	2	190	1	150	2
35	4	140	1	140	1
30	26	110	3	120	1
25	79	100	4	110	2
20	174	90	-	100	3
15	234	85	-	95	3
10	319	80	3	90	6
5	247	75	1	85	5
2	109	70	3	80	12
-2	52	65	1	75	6
	1248	60	2	70	14
		55	1	65	18
		50	10	60	41
		45	4	55	31
		40	21	50	93
		35	11	45	77
		30	54	40	114
		25	30	35	114
		20	248	30	126
		-20	850	25	96
			1250	20	131
				15	112
				10	165
				5	69
				-5	1
					1245

SHEET LAYOUT

Topographical data taken from enlargements of 1:50,000 Sheet Dept. of Lands maps of [illegible] Cove [illegible], Stokes Bay [illegible]-II, Cassini [illegible]-I.

ENV. 2695 I - 2

FIG. 3.

PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND - S.A.
SUMMARY OF PREVIOUS EXPLORATION
BY OTHER COMPANIES

Prepared	Drawn	Date	
A.J.H.	A.S.C.	June 1976.	**A1** - 133

FIG. 4

688000 mE

704000 mE

6052000 mN

6040000 mN

35°40'S

35°45'S

137°05'E

137°10'E

137°15'E

LAGOON FLAT

Goat Hill Creek

McPhersons Creek

King George Creek

Amen Corner

BLUE GUM HILL

MIDDLE RIVER DAM

MIDDLE RIVER

CYGNET RIVER

SHEET B.

SHEET C.

SHEET D.

AOG-DD1

AOG-DD2

AOG-DD3

AOG-DD4

[redacted]

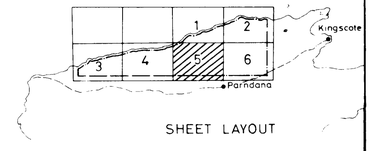
LOCALITY MAP
1:5,000,000

Port Augusta
ADELAIDE
KANGAROO IS
136°E
140°E
35°S

ELCHOR - SHEET C.

Metal value distribution - 542 stream sediment samples.

value ppm Cu.	no. of Cu. values	value ppm Pb.	no of Pb. values	value ppm Zn.	no of Zn. values
60	1	520	1	300	1
40	1	450	1	220	1
35	4	220	1	200	2
30	5	210	1	170	1
25	15	180	1	140	1
20	30	160	1	110	3
15	46	140	3	90	3
10	91	120	2	80	5
5	179	100	3	75	2
2	99	90	-	70	2
-2	71	85	1	60	9
	542	80	4	50	13
		70	2	45	8
		60	10	40	24
		50	4	35	15
		40	13	30	44
		30	13	25	38
		20	38	20	60
		-20	443	15	53
			542	10	112
				5	117
				2	26
					542



SHEET LAYOUT

KILOMETRES
0 1 2 3
1:25,000

ENV. 2695I-3

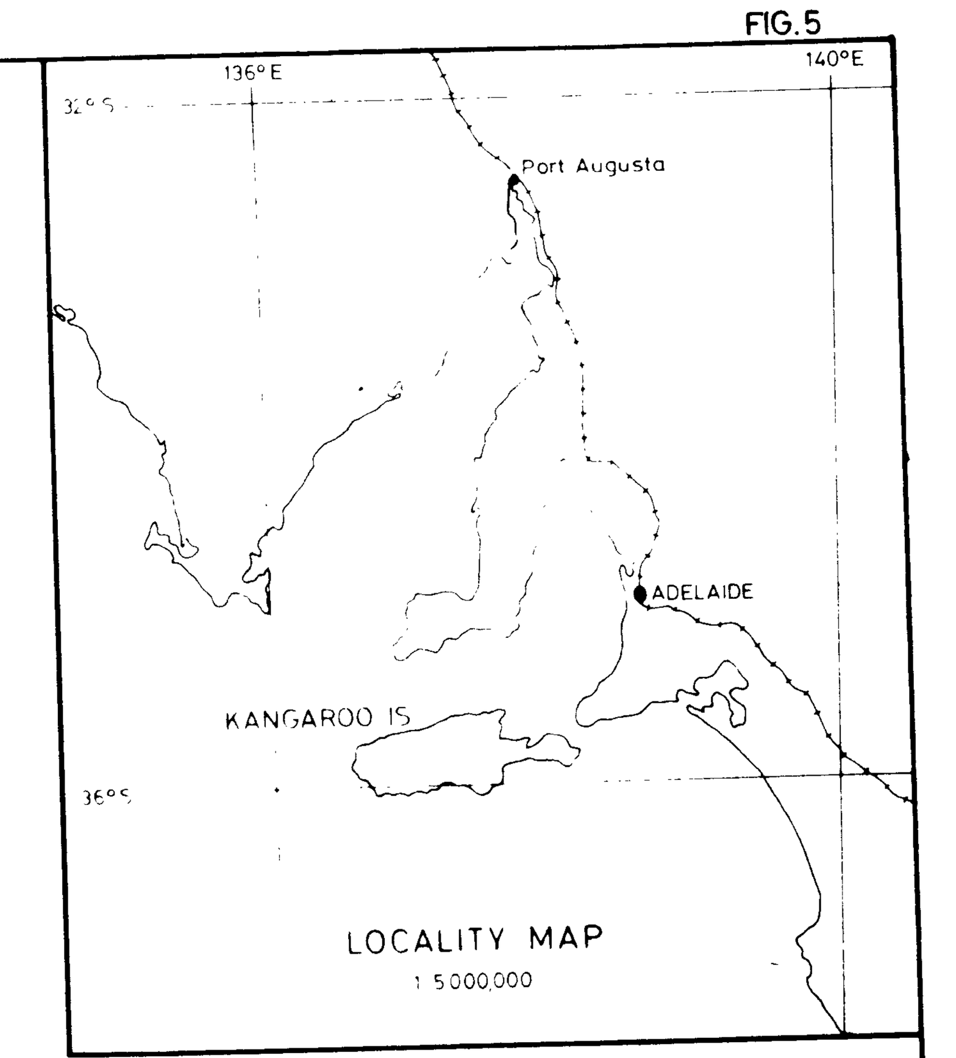
FIG. 4

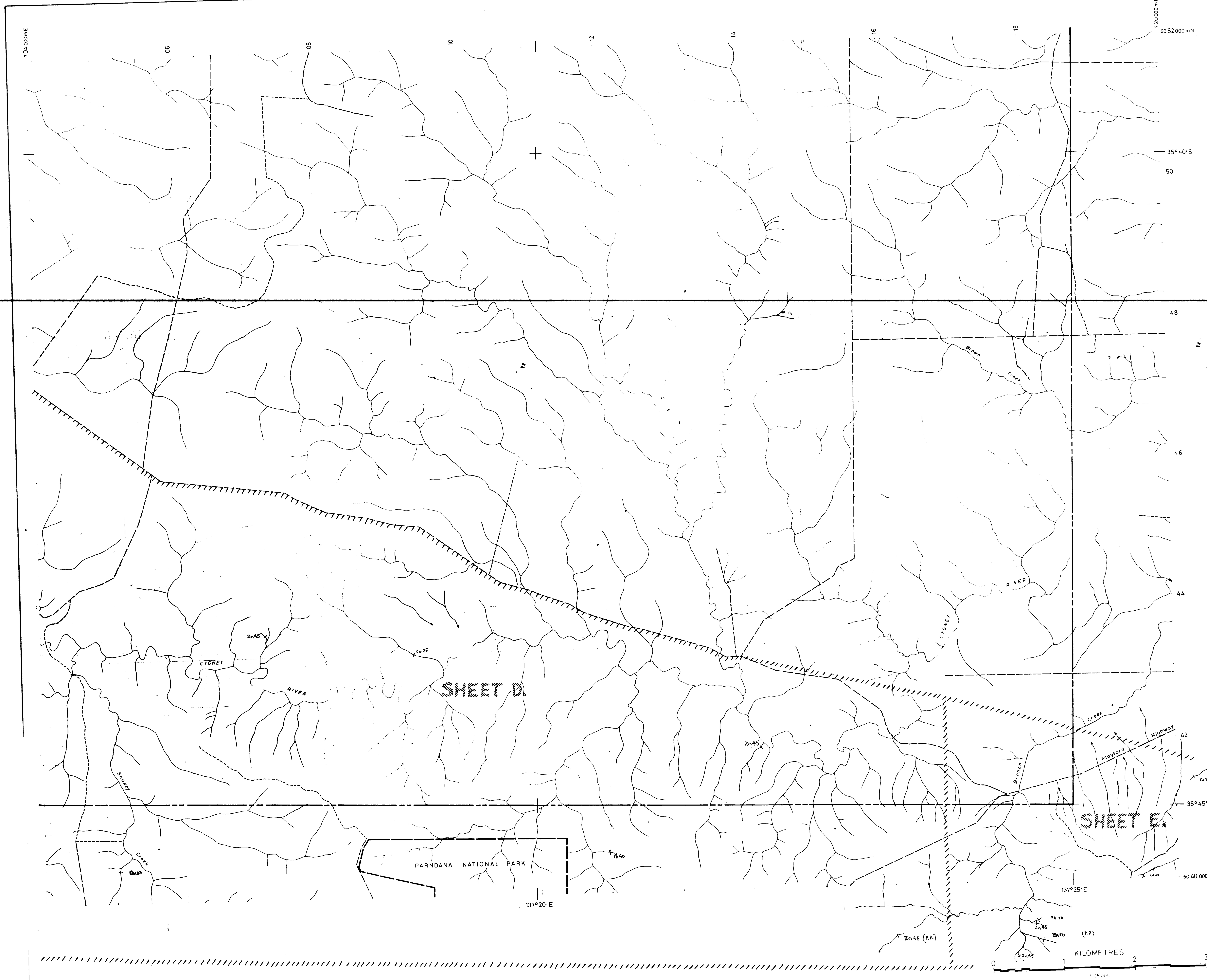
PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND-S.A.
SUMMARY OF PREVIOUS EXPLORATION BY OTHER COMPANIES

Prepared A.J.H.	Drawn A.S.C.	Date June 1976	A1 - 134

[redacted]

FIG. 5





[redacted]

ELCHOR - SHEET D

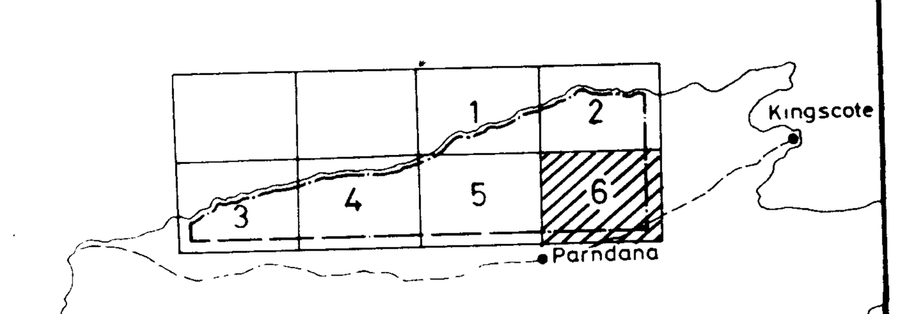
Metal value distribution - 811 stream sediment Samples.

value ppm Cu.	no. of Cu. values.	value ppm Pb.	no. of Pb. values	value ppm Zn.	no. of Zn. values
35	1	80	1	100	1
30	-	70	-	90	1
25	1	60	2	45	4
20	-	50	1	40	6
15	12	40	2	35	4
10	100	30	8	30	14
5	420	25	3	25	24
2	226	20	21	20	99
-2	51	-20	773	15	141
	811		811	10	331
				5	175
				2	11
					811

ELCHOR - SHEET E.

Metal value distribution - 169 stream sediment samples.

value ppm Cu.	no. of Cu. values	value ppm Pb.	no. of Pb. values	value ppm Zn.	no. of Zn. values.
20	2	30	1	50	1
10	6	20	3	45	2
5	57	-20	165	40	2
2	100		169	35	4
-2	4			30	3
	169			25	8
				20	16
				15	38
				10	66
				5	25
				-5	4
					169



SHEET LAYOUT

ENV. 2695 I - 4

FIG. 5

PREUSSAG AUSTRALIA PTY. LTD.

E.L.221 KANGAROO ISLAND - S.A.

SUMMARY OF PREVIOUS EXPLORATION BY OTHER COMPANIES

Prepared	Drawn	Date	
A.J.H	A.S.C.	June 1976	A1 - 135

[redacted]

FIG·6

EW. 2695 I - 5

FIG. 6

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND-S.A.
DEWRANG PROSPECT
GEOCHEMICAL RESULTS pp.m.LEAD

Prepared:	Drawn:	Date:	A2-009
A. J. H.	A.S.C.	June 1976	

METRES 0 100 200 300 400

1:5,000

< 500 p.p.m. Lead.
500 - 1000
1000 - 2000
2000 - 4000
> 4000 p.p.m.

Geochemical data compiled from A.O.G. Minerals Pty. Ltd, Dewrang Prospect I.P. and Resistivity Survey map sheet, in S. Aust. Dept. of Mines Open File Report 2304.

175 • 101,500 Samples p.p.m. zinc, lead
(on -30 mesh per c.m. soil
fraction analysis by A.A.S.

2500 m E.
3000 m E.
3500 m E.
4000 m E.
4500 m E.
4500 m N.
5000 m N.
5500 m N.

FIG. 7

5500 m N.

5000m N.

4500 m N.

4500 m E.

4000 m E.

3500 m E.

3000 m E.

2500 m E.

175 • 10,580 Samples p.p.m. zinc, lead
(on -30 mesh per c.m. soil
fraction analysis by A.A.S.)

Geochemical data compiled from A.O.G. Minerals Pty. Ltd.
Dewrang Prospect, I.P and Resistivity Survey map sheet,
in S. Aust. Dept. of Mines Open File Report 2304

< 100 p.p.m. Zinc.
100 - 250
250 - 500
500 - 1000
> 1000 p.p.m.

METRES 0 100 200 300 400
1:5,000

ENV. 2695 I - 6

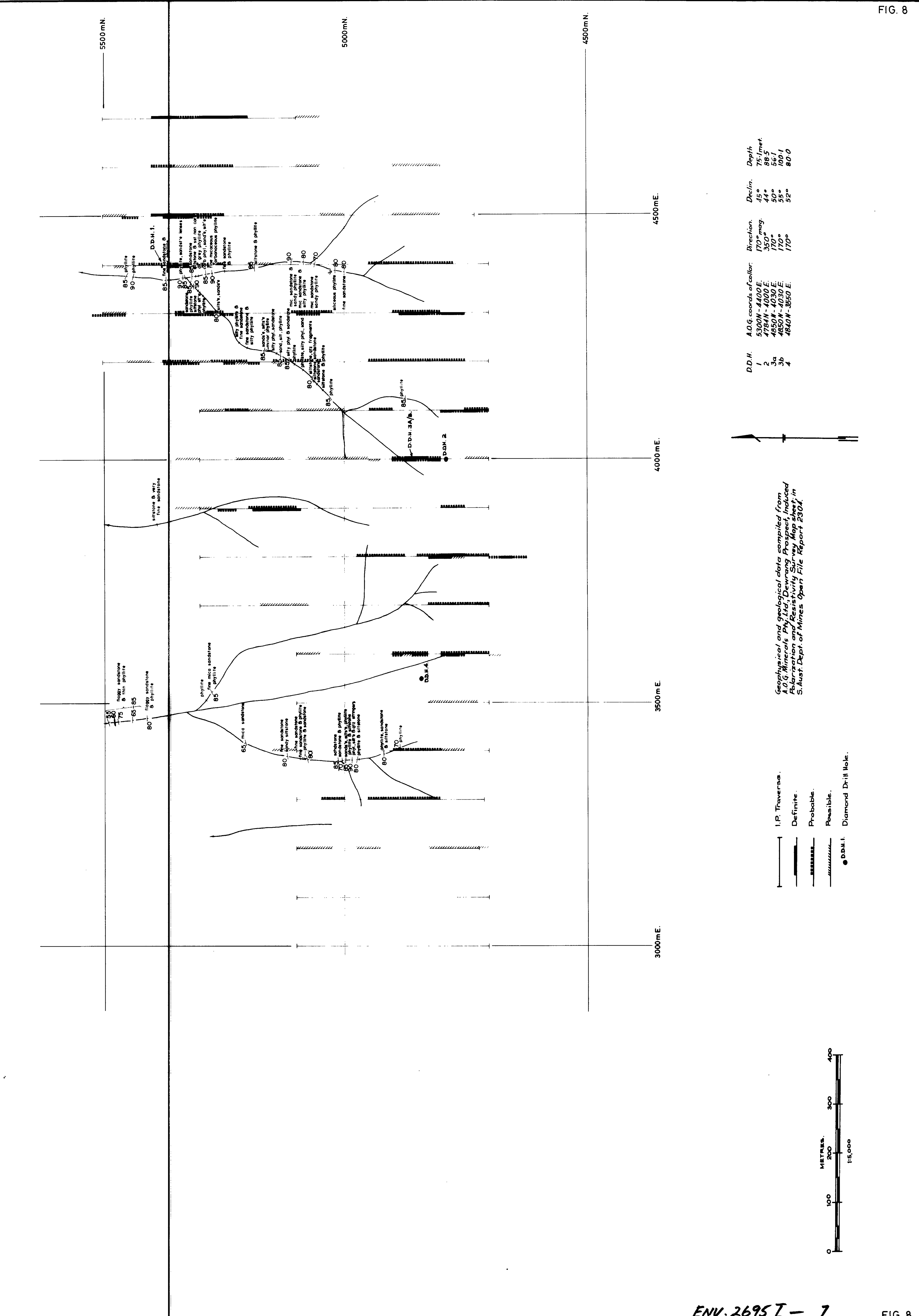
FIG. 7

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND - S.A.
DEWRANG PROSPECT
GEOCHEMICAL RESULTS p.p.m. ZINC

Prepared:	Drawn:	Date:	
A.J.H.	A.S.C.	June 1976	A2-010

FIG. 8



5500 mN.
5000 mN.
4500 mN.
4500 mE.
4000 mE.
3500 mE.
3000 mE.
D.D.H. 1
D.D.H. 3A/B.
D.D.H. 2
D.D.H. 4
D.D.H. | A.O.G. coords of collar. | Direction. | Declin. | Depth
1 | 5300N-4400E. | 170° mag. | 45° | 75.1 met.
2 | 4784N-4000E. | 350° | 44° | 88.5
3a | 4850N-4030E. | 170° | 50° | 56.1
3b | 4850N-4030E. | 170° | 55° | 100.1
4 | 4840N-3550E. | 170° | 52° | 80.0
Geophysical and geological data compiled from A.O.G. Minerals Pty. Ltd., Dewrang Prospect, Induced Polarization and Resistivity Survey Map sheet, in S.Aust. Dept. of Mines Open File Report 2304.
I.P. Traverse.
Definite.
Probable.
Possible.
Diamond Drill Hole.
METRES
0
100
200
300
400
1:5,000

ENV. 2695 I – 7

FIG. 8

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND-S.A.

DEWRANG PROSPECT

GEOLOGY AND I.P. TRAVERSES

Prepared:	Drawn:	Date:	
A.J.H.	A.S.C.	June 1976	A2-008

FIG. 9

688000 mE.

704000 mE.

6064000 mN.

6062000 mN.

6060000 mN.

6058000 mN.

6056000 mN.

6054000 mN.

6052000 mN.

90 92 94 96 98 00 02

35°35'S.

137°05'E. 137°10'E. 137°15'E.

Hummocky Gorge

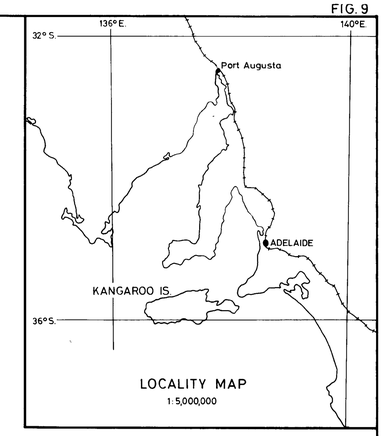
Stokes Bay Creek

Gum Creek

Sheak Creek

Sandy Creek

Spring Water Creek



LOCALITY MAP
1:5,000,000

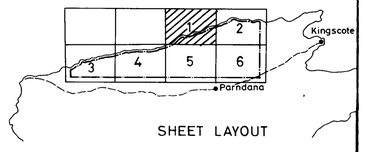
LEGEND.

Boundary of E.L. 221.

Major roads.

Track.

Creeks.



SHEET LAYOUT

KILOMETRES
0 1 2 3
1:25,000

ENV 2695 I – 8

FIG. 9

PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND-S.A.
STREAM SEDIMENT, SOIL AND ROCK CHIP SAMPLE LOCATIONS AND METAL VALUES

Prepared:	Drawn:	Date:	
A.J.H.	A.S.C.	June 1976	A1 – 136

FIG. 10

656000 mE

58 60 62 64 66 68 70

672000 mE

6052000 mN

35° 40' S

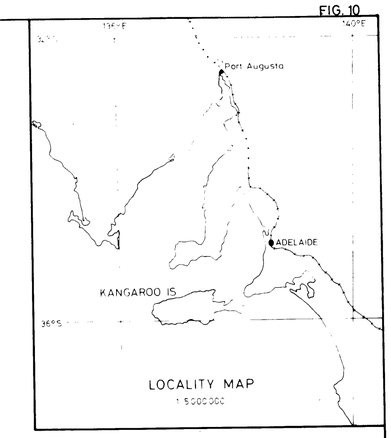
50 48 46 44 42

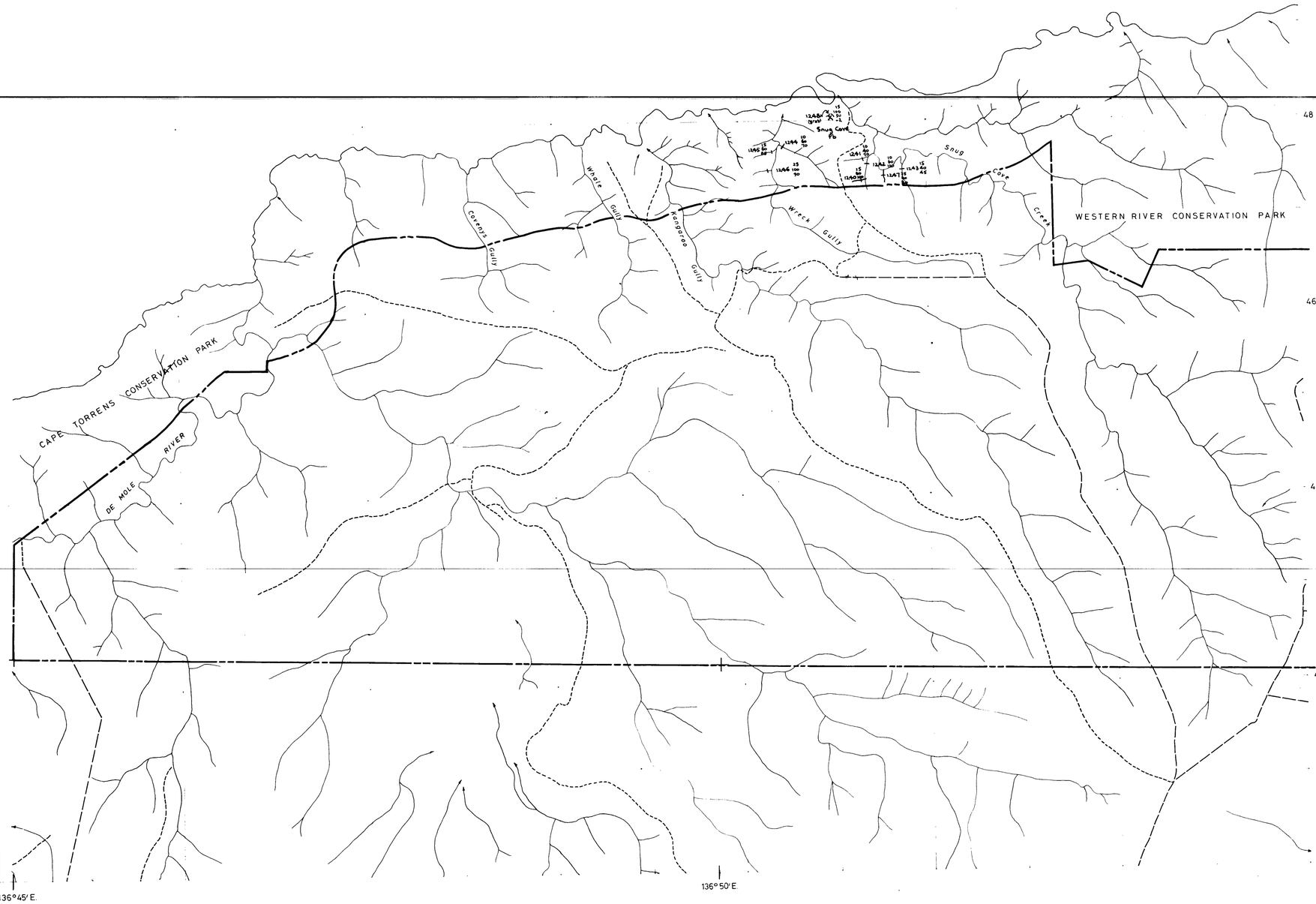
35° 45' S.

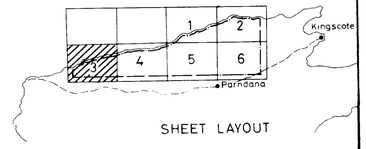
60 40000 mN.

136° 45' E.

136° 50' E.







SHEET LAYOUT

KILOMETRES
0 1 2 3
1:25,000

ENV. 2695 I-9

FIG. 10

PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND-S.A.
STREAM SEDIMENT, SOIL AND ROCK CHIP
SAMPLE LOCATIONS AND METAL VALUES

Projected	Drawn	Date	
A.J.H.	A.S.C.	June 1976	A1 - 137

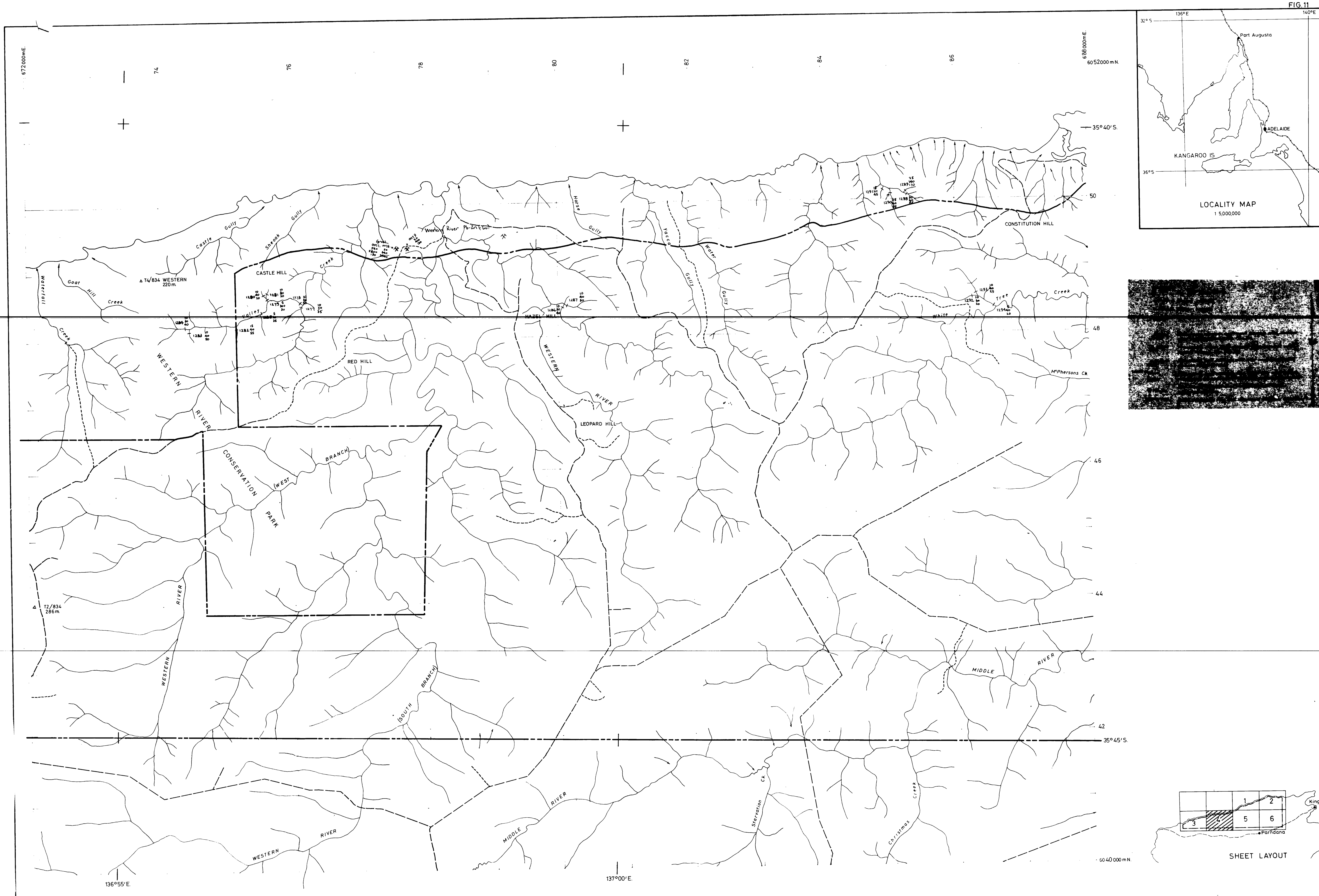


FIG.11
LOCALITY MAP
1:5,000,000
Port Augusta
ADELAIDE
KANGAROO IS.
CONSTITUTION HILL
CASTLE HILL
HAZEL HILL
RED HILL
LEOPARD HILL
WESTERN RIVER
CONSERVATION PARK
WEST BRANCH
SOUTH BRANCH
MIDDLE RIVER
Castle Gully
Sheoak Gully
Horse Gully
Yacca Gully
Water Gully
Goat Hill Creek
Waterfall Creek
Valley Creek
White Tree Creek
McPhersons Ck
Starvation Ck
Christmas Creek
T4/834 WESTERN 220m.
T2/834 286m
35°40'S.
35°45'S.
136°55'E.
137°00'E.
672000mE.
688000mE.
6052000mN.
6040000mN.
SHEET LAYOUT
Kingscote
Parndana

[redacted]

ENV. 2695 I - 10

FIG.11

KILOMETRES

0 1 2 3

1:25,000

PREUSSAG AUSTRALIA PTY. LTD.

E.L.221 KANGAROO ISLAND-S.A.

STREAM SEDIMENT, SOIL AND ROCK CHIP SAMPLE LOCATIONS AND METAL VALUES

Prepared	Drawn	Date	
A.J.H.	A.S.C.	June 1976	A1-138

FIG. 14

[redacted]

former AOG Dewrang prospect

		Cu	Pb	Zn	Ag
0052	(+)	20	110	80	
0053	(x)	20	200	620	
0054	(x)	100	450	300	
0055	(x)	75	660	240	
0056	(+)	5	170	100	
0057	(x)	75	410	320	
0058	(x)	85	780	230	
0059	(x)	15	70	70	
0060	(+)	10	180	130	
0061	(+)	5	110	100	
0062	(o)	5	290	140	
0063	(+)	5	200	180	
0064	(x)	110	1000	100	
1087	(x)	50	110	280	-2
1088	(x)	25	780	580	-2
1089	(x)	85	660	540	-2
1090	(x)	15	60	480	-2

Soil Line 10

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1260	-2	20	60
1261	-2	20	30
1262	-2	20	25
1263	-2	40	30
1264	-2	20	35
1265	-2	20	140
1266	5	40	120
1267	5	20	110
1268	5	40	20
1269	5	60	30
1270	5	30	40
1271	20	20	40
1272	5	60	30
1273	10	120	95
1274	10	110	190
1275	5	50	150

Soil Line 6

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1172	10	20	15
1173	10	60	25
1174	5	80	30
1175	15	140	45
1176	5	40	20
1177	5	40	15
plus 1178	5	80	35
plus 1179	15	100	35
plus 0066 (x)	5	500	50

Soil Line 1

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1009	45	60	50
1010	45	60	95
1011	50	70	45
1012	50	80	70
1013	25	40	55
1014	5	70	35
1015	5	100	20
1016	-2	80	35
1017	-2	80	35
1018	-2	60	20
1019	10	30	35
1020	-2	80	20
1021	10	30	25
1022	-2	60	20
1023	-2	40	10
1024	5	40	45
1025	5	40	50

Soil Line 5

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1162	5	140	20
1163	10	90	30
1164	10	90	20
1165	5	100	95
1166	15	160	50
1167	30	80	60
1168	45	80	100
1169	20	80	30
1170	25	50	45
1171	35	50	30

Soil Line 9

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1249	-2	80	20
1250	5	70	25
1251	-2	20	30
1252	5	80	65
1253	5	30	55
1254	5	30	25
1255	-2	20	80
1256	-2	30	85
1257	-2	20	30
1258	5	50	30
1259	-2	20	15

Soil Line 3

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1119	5	50	10
1120	10	220	35
1121	20	80	65
1122	15	660	180
1123	20	340	130
1124	15	620	50
1125	15	400	220
1126	25	140	100
1127	30	150	150
1128	25	70	90
1129	15	20	60
1130	25	60	190
1131	15	40	120
1132	15	50	75
1133	20	80	75
1134	20	120	90
1135	45	640	60
1136	20	100	70
1137	25	30	90
1138	10	130	65

Soil Line 2

Sample No.	Cu	Pb	Zn	Sample No.	Cu	Pb	Zn
	Metal Values (ppm)						
1091	5	160	90				
1092	-2	100	470				
1093	5	100	440				
1094	5	120	240				
1095	-2	100	230				
1096	10	140	130				
1097	-2	200	110				
1098	-2	60	150				
1099	5	40	45				
1100	10	200	30				
1101	5	80	20				
1102	5	120	50				
1103	2	160	40	1111	5	60	15
1104	5	100	30	1112	5	60	15
1105	-2	160	20	1113	10	40	15
1106	-2	140	30	1114	-2	20	5
1107	-2	110	30	1115	-2	40	5
1108	10	80	25	1116	5	40	15
1109	5	100	15	1117	5	40	15
1110	5	90	20	1118	5	40	10

Soil Line 4 (N portion)

Sample No.	Cu	Pb	Zn
	Metal Values (ppm)		
1139	5	80	15
1140	5	90	10
1141	5	60	20
1142	5	60	15
1143	5	70	15
1144	5	80	15
1145	10	80	20
1146	10	120	40
1147	10	120	40

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FIG. 12

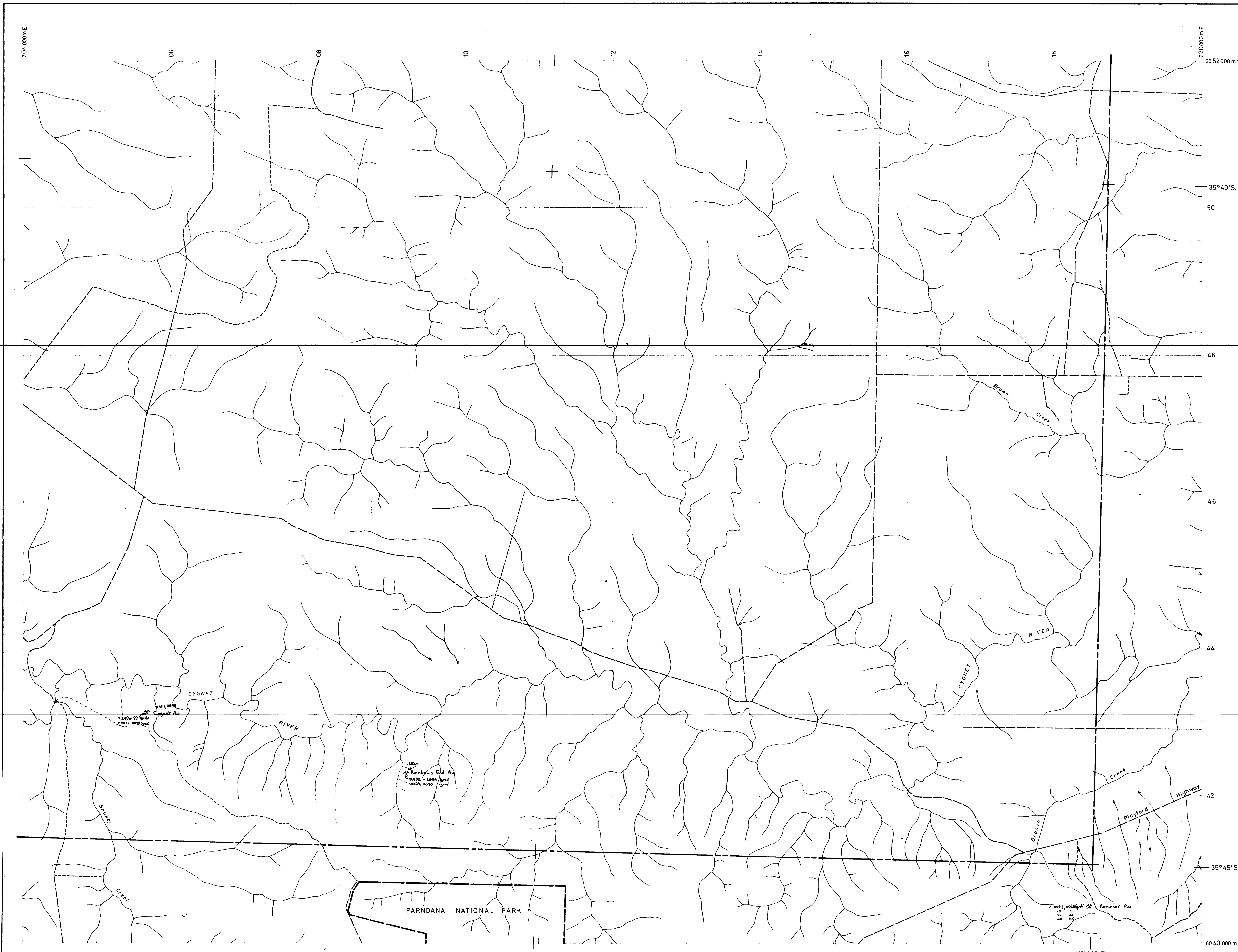
PREUSSAG AUSTRALIA PTY. LTD.

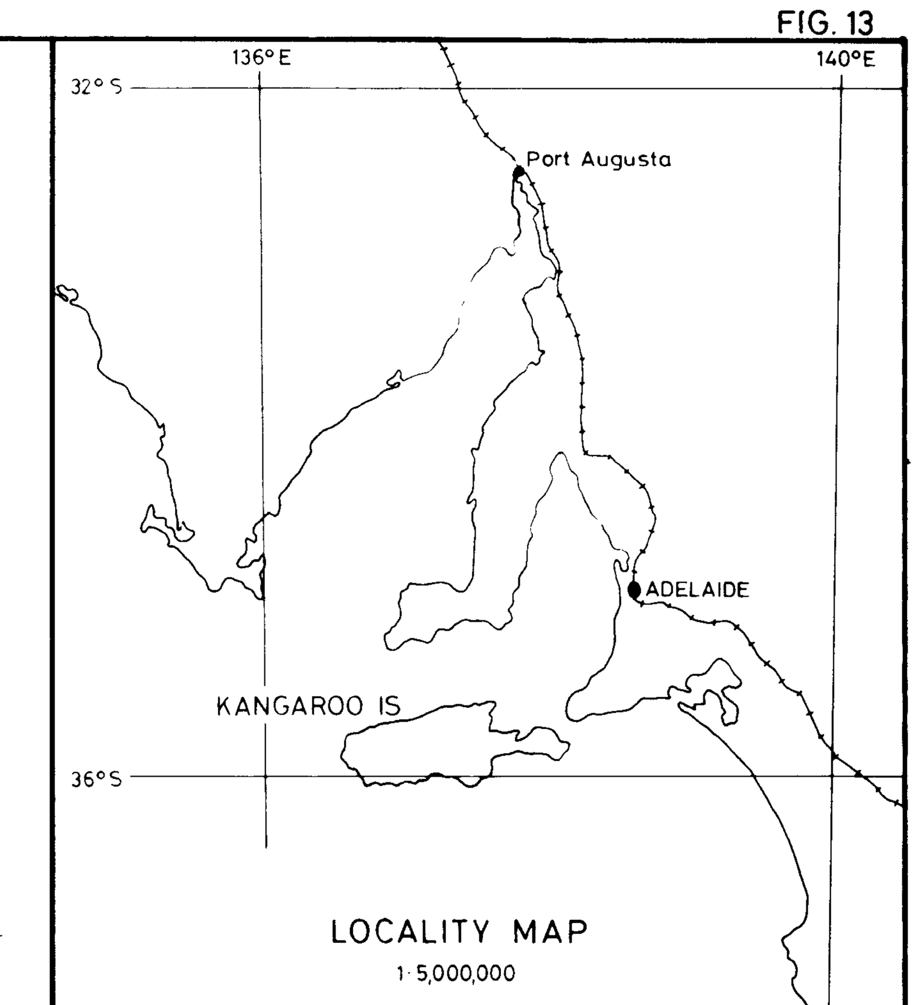
E.L.221 KANGAROO ISLAND - S.A.

STREAM SEDIMENT, SOIL AND ROCK CHIP SAMPLE LOCATIONS AND METAL VALUES

Prepared	Drawn	Date	
A.J.H.	A.S.C	June 1976	A1 - 139

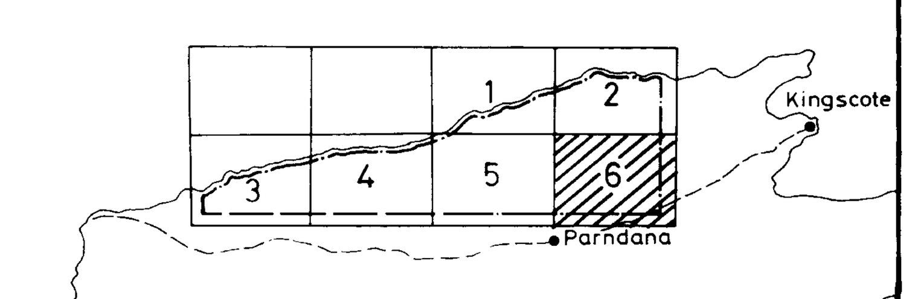
FIG. 13





LOCALITY MAP
1:5,000,000

[redacted]



SHEET LAYOUT

Cygnet Au

Sample No.	Metal Values (ppm) Cu	Pb	Zn	Ag	Au
1311	20	40	25	-2	
also P → 2495	40	-20	35	-2	
2496	15	20	50	-2	-0.02
2497	130	140	20	2	1.0
2498	880	80	25	4	3.0
2499	1100	580	10	6	1.3
0071	140	370	20		
0072	140	230	25		
0073	70	140	20		

Rainbows End Au

Sample No.	Metal Values (ppm) Cu	Pb	Zn	Ag	Au
1310	400	40	35	-2	
2492	35	-20	30	-2	0.38
2493	3900	140	50	2	15.0
also P → 2494	360	-20	35	-2	0.43
0069	380	30	90		
0070	780	30	50		

[redacted]

ENV. 2695 I — 12

FIG. 13

KILOMETRES
0 1 2 3
1:25,000

PREUSSAG AUSTRALIA PTY. LTD.
E.L.221 KANGAROO ISLAND - S.A.
STREAM SEDIMENT, SOIL AND ROCK CHIP SAMPLE LOCATIONS AND METAL VALUES

Prepared	Drawn	Date	
A.J.H.	A.S.C.	June 1976	A1-140


LEGEND:
Unsealed road.
Track or fire break.
Fence.
'Dewrang' (Kelly) Homestead and owner's name.
Drainage course.
Old mine working, adit or shaft.
pit Old, small pit
costean Costean.
100 N. 100 E. Selected Preussag grid points.
1102 5,20,20 Stream sediment sample locations and metal values, p.p.m Cu. Pb. Zn.
1107 o 10,20,10 Soil sample location and metal values p.p.m. Cu. Pb. Zn.
Map base taken from 1:5000 enlargement (approx.) of air photo Svy 1764, No 011 (1975) South Aust Dept. of Lands.
'Dewrang' (Kelly)
(Smith)
Perseverance Pb-Zn(-Cu)
Bonaventura Co.
LINE 8A
LINE 8B
LINE 7 1180-1199
LINE 4 S. PORTION 1148-1161
METRES
0 100 200 300 400 500
1:5,000
ENV. 2695 I - 13
FIG. 14
PREUSSAG AUSTRALIA PTY. LTD.
E.L. 221 KANGAROO ISLAND - S.A.
PERSEVERANCE-BONAVENTURA PROSPECT
INITIAL PREUSSAG STREAM SEDIMENT & SOIL SAMPLE LOCATIONS PLUS VALUES
Prepared: A.J.H./P.R.
Drawn: A.S.C.
Date: June 1976
A1 - 141

110000 m N

10000 m N

9000 m N

10000 m E

11000 m E

12000 m E

LEGEND:

Copper lead zinc ppm
Sample number

0-20 p.p.m.
20-40 possibly slightly anomalous
40-80 slightly anomalous
80-160 moderately anomalous
>160 p.p.m strongly anomalous.

METRES 0 100 200 300 400 500 METRES
1" 5000

2695 I-14

FIG 15

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND - S.A.

GEOCHEMICAL RESULTS - P.P.M.
COPPER, LEAD, ZINC

PERSEVERANCE - BONAVENTURA PROSPECT GRID

Prepared:	Drawn:	Date:	
A J H	Cartotech	April 1976	A1-082

11000 m N

10000 m N

9000 m N

10000 m E

11000 m E

12000 m E

LEGEND:

- 0-100 ppm
- 100-250 possibly slightly anomalous
- 250-500 slightly anomalous
- 500-1000 moderately anomalous
- >1000 ppm strongly anomalous.

Copper, lead zinc, ppm
Sample number

METRES 0 100 200 300 400 500 METRES

1:5000

2695 I-15

FIG. 16

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND - S.A.

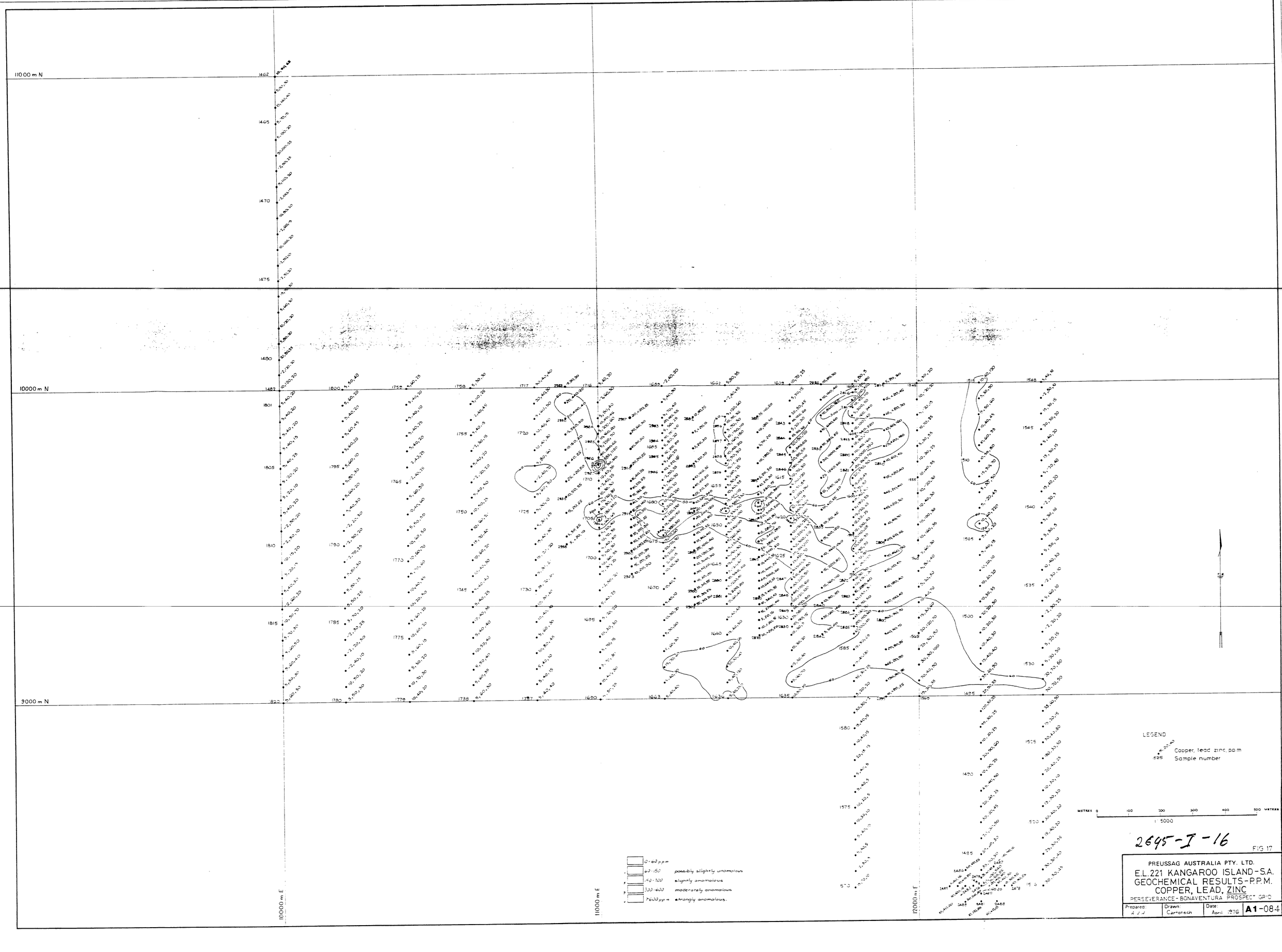
GEOCHEMICAL RESULTS - P.P.M.

COPPER, LEAD, ZINC

PERSEVERANCE - BONAVENTURA PROSPECT GRID

Prepared:	Drawn:	Date:	
A.J.W.	Cartotech	April 1976	A1-083

FIG.17



2695-I-16

FIG 17

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND - S.A.

GEOCHEMICAL RESULTS - P.P.M.

COPPER, LEAD, ZINC

PERSEVERANCE - BONAVENTURA PROSPECT GRID

Prepared:	Drawn:	Date:	
A.J.H.	Cartotech	April 1976	A1-084

LEGEND:

——— Unsealed road.

- - - - - - - - Track or fire break.

——/——— Fence.

'Dewrang' (Kelly) Homestead and owners name.

——→——— Drainage course.

⚒ Old mine working, adit or shaft.

□ pit Old, small pit.

⌀ costean Costean.

100 N 100 E Selected Preussag grid points.

X 2501 Zn 850 Pb 200 Cu 100 Ag 5 Au 0·05 Pt 50 (Cobalt where indicated) Rock chip sample location, number and metal values, (T1) : Float, (M) petrographic sample.

Map base taken from 1:5000 enlargement (approx.) of air photo Svy 1764, No 011 (1975) South Aust Dept of Lands.

'Dewrang' (Kelly)

100N 100E.

100N 104E.

100N 108E.

50N 114E.

100N 120E.

100N 122 E.

100N 124E.

Spit 2509 Zn 1200 Pb 600 Cu 150 Ag 1

2510 (grab) Zn 1200 Pb 600 Cu 150 Ag 1

2508(M) Zn 1400 Pb 450 Cu 100 Ag 1

grab samples from dump
(M)26 a. -0·05, 15·0, 4·8, 8, -, -
(M)26 b not analysed
(T)1312 0·01, 0·75, 12·0, 4, -, -
(M)2518 not analysed (in adit)

Cu, Pb, Zn in %

Mine

Perseverance Pb-Zn(-Cu)

adit

pits

30m (infilled) costean

Shafts (M)2200 (grab)

Creek

In Perseverance shafts
A 10 - 640, 7800, 1500, 5, -, 980
A 11 - 140, 2000, 1400, -, 5, -, 150
A 12 - 350, 1900, 1900, -, 5, -, 320

35 N 114 E

2514 (grab) Zn 2400 Pb 450 Cu 300 Ag 1 0·05

1826 Zn 50 Pb 170 Cu 110 Ag 1

1827 (grab) Zn 190 Pb 460 Cu 200 Ag 1

1828(T) Zn 2800 Pb 840 Cu 650 Ag 1 Au 0·05

1829(T) Zn 1700 Pb 450 Cu 150 Ag 1

2501 (T) Zn 850 Pb 200 Cu 100 Ag 5 Au 0·05 Pt 50

2502 Zn 40 Pb 120 Cu 220 Ag 1

2503 Zn 600 Pb 320 Cu 140 Ag 1

2504 (T) Zn 1200 Pb 300 Cu 140 Ag 1

Bonaventura Cu

1824(T) Zn 4300 Pb 1400 Cu 1900 Ag 1 Au 0·05 Pt 50

Shaft

1825 (grab) Zn 2400 Pb 450 Cu 300 Ag 1 0·05

2505 (T) Zn 1400 Pb 300 Cu 110 Ag 1

2512 (T) Zn 1200 Pb 300 Cu 120 Ag 1

2513 (grab) Zn 1300 Pb 750 Cu 190 Ag 1 0·03

A9 (grab) Zn 110 Pb 4800 Cu 50 Ag 20

3 pits

A8 (grab) Au, Pt, Pd, Rh, Ag, Cu, Ni, Co 820, 1790, 170, 5, -, 60 820, 2800, 150, 100, -, 40

A8 Zn 3000 Pb 60 Cu 60 Ag 1 0·085

A5 (T) Zn 110 Pb 60 Cu 50 Ag 1 50

Zn 2300 Pb 1100 Cu 1000 Ag 1 0·05

Zn 1400 Pb 1100 Cu 1000 Ag 1 0·05

Pit 2516 (grab) Zn 2400 Pb 1100 Cu 1000 Ag 1 0·05

Pit 2517 (grab) Zn 2800 Pb 850 Cu 450 Ag 1 0·02

2515 Zn 1700 Pb 750 Cu 1100 Ag 1 0·05

2516 Zn 2800 Pb 1100 Cu 1000 Ag 1 0·05

Assays at Bonaventura Cu

A1 (grab) 2400, 150, 230, 5, -, 130 Cobalt 8400

A2 (-) 2500, 240, 210, -, -, 120

A3 (-) 800, 50, 130, -, 5, -, 710

A4 (-) 80, 30, 110, -, 5, -, 440

2506 (T) Zn 1200 Pb 300 Cu 140 Ag 1

2507 Zn 1200 Pb 300 Cu 140 Ag 1

30N 100E.

30N 106E.

Z (Smith)

92 N 124E.

91 N 122E.

90 N 124E.

84 N 118 E

84 N 122 E

2695-17

METRES 0 100 200 300 400 500 1:5000

FIG. 18

PREUSSAG AUSTRALIA PTY. LTD.

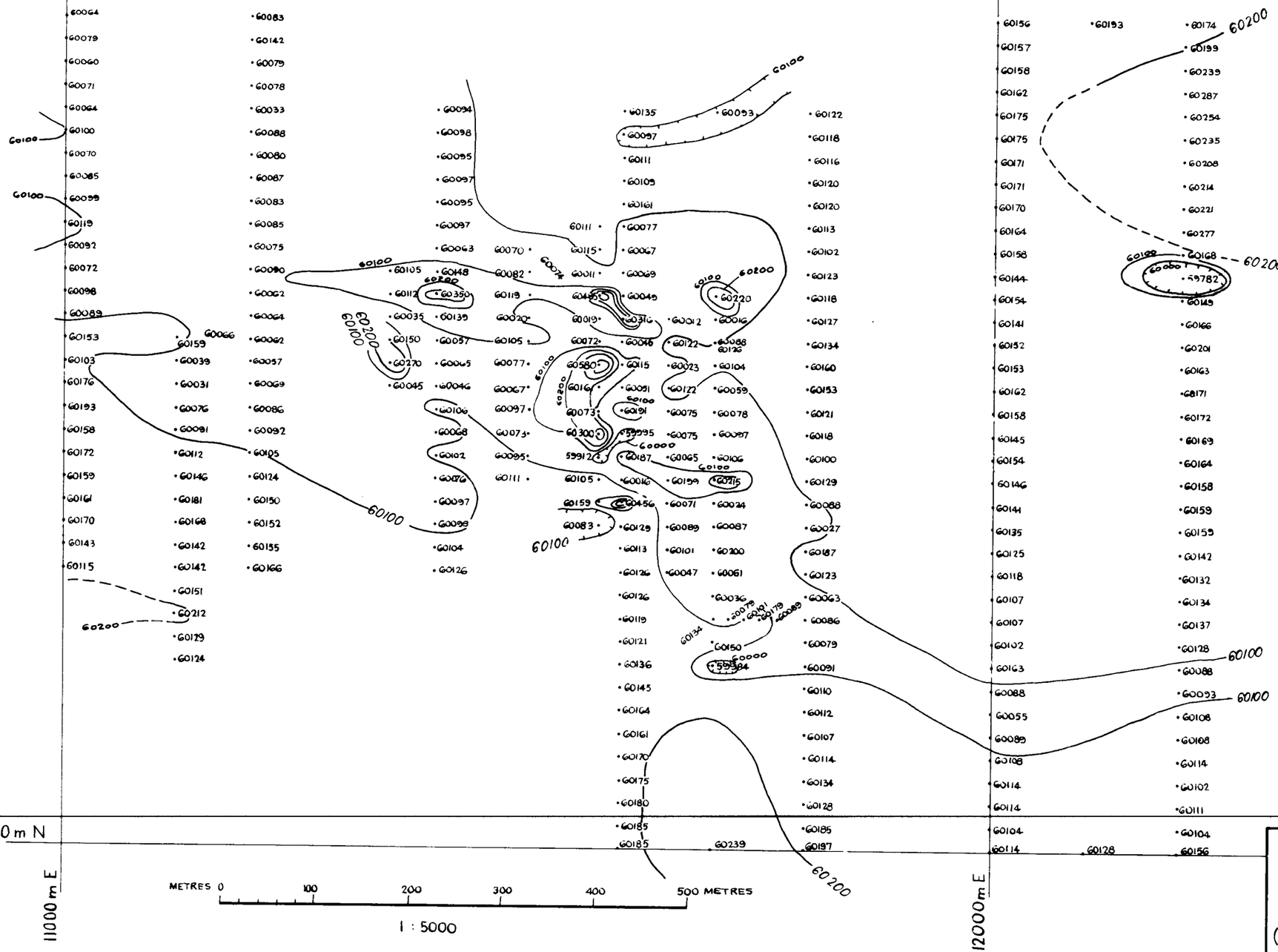
E.L 221 KANGAROO ISLAND - S.A.

PERSEVERANCE-BONAVENTURA PROSPECT

ROCK CHIP SAMPLE LOCATIONS AND METAL VALUES

Prepared:	Drawn:	Date:	A1 - 142
A.J.H	A.S.C.	June 1976	

10000 m N



ENV. 2695 I – 18

FIG. 19

PREUSSAG AUSTRALIA PTY. LTD.

E.L.221 KANGAROO ISLAND - S.A.

TOTAL MAGNETIC INTENSITY MAP

(RECONNAISSANCE SURVEY ONLY - VALUES UNCORRECTED)

Prepared by:	Drawn by:	Date:	
A. J. H.	A.S.C.	APRIL 76	A3 - 001

FIG 20

Note: Map sheet compiled from 1:5000 enlargements (approx.) of aerial photographs Survey Flight Run 088 Dec 1975 South East Dept of Lands (1975) Limited control on ground only

- Unsealed road.
- Track or fire trail.
- Homestead and owners name
- Fence
- Drainage.
- Dam.
- Selected Preussag Grid Point.

- Strike and dip of bedding
- Strike and dip of cleavage
- Vertical cleavage
- Strike and dip of foliation
- Vertical foliation
- Plunge of minor fold axis
- Strike and dip of vein
- Old mine working (shaft or adit) and mineralisation (galena, sphalerite, chalcopyrite, pyrite)
- Old shallow pit

Ferruginous soil (ferricrete type) cover in west and south portions of area, particularly white sandy soil in drainages white quartz float

- fer — Ferricrete, ferruginous conglomerate.
- mets-mss — Laminated metasiltstone and fine to medium grained feldspathic, sericitic metasandstone
- mets-phy — Interbedded metasiltstone and phyllite, finely laminated for most part, part carbonaceous
- mss — Feldspathic metasandstone, generally massive, medium to coarse grained.
- q — Vein quartz, finely crystalline and brecciated

Dunrang Well

ENV. 2695-I-19 FIG 20

PREUSSAG AUSTRALIA PTY. LTD.
E.L. 221 KANGAROO ISLAND - S.A.
PERSEVERANCE - BONAVENTURA PROSPECT
GEOLOGY

Prepared	Drawn	Date	
A.J.M	A.S.C.	July 1976	A1 - 143

10 CENTIMETRES ON ORIGINAL DRAWING

089

PREUSSAG

Preussag Australia
Proprietary Limited

The Director of Mines,
Department of Mines,
Box 151,
EASTWOOD,
South Australia 5063

Farrer House, 6th Floor,
24-28 Collins Street,
Melbourne,
Victoria, 3000.
Australia.

Your ref. Our ref. JHH/sjc Date 5th October, 1976.

Subject: EL 221 - KANGAROO ISLAND

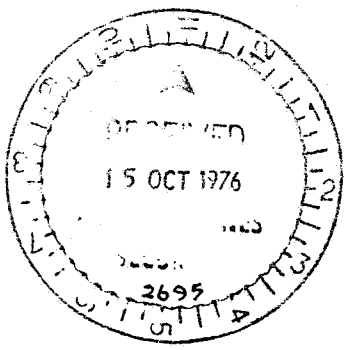
Preussag Australia Pty. Ltd. wish to surrender Exploration Licence 221 - Kangaroo Island.

The tenement is due to expire on 24th November, 1976, and since the date of grant 24/11/75 the Company has expended $18,325 on exploration.

A combined final and third quarterly report is in preparation.

Yours faithfully,
PREUSSAG AUSTRALIA PTY.LTD.

J.H. Hill
Manager.



Telephone: (03) 654 4955
654 4867
Telex: 32156

DUPLICATE.

~~087~~
090

SA

SEPTEMBER, 1976.

PREUSSAG AUSTRALIA PROPRIETARY LIMITED

EXPLORATION LICENCE 221

KANGAROO ISLAND

SOUTH AUSTRALIA - AUSTRALIA

THIRD QUARTERLY AND FINAL REPORT

TO

24 AUGUST 1976

A.J. HOSKING

PREUSSAG AUSTRALIA PROPRIETARY LIMITED

EXPLORATION LICENCE 221

KANGAROO ISLAND

SOUTH AUSTRALIA - AUSTRALIA

THIRD QUARTERLY AND FINAL REPORT

TO

24 AUGUST 1976

C O N T E N T S

PREUSSAG AUSTRALIA PROPRIETARY LIMITED
EXPLORATION LICENCE 221
KANGAROO ISLAND
SOUTH AUSTRALIA - AUSTRALIA
THIRD QUARTERLY AND FINAL REPORT
TO
24 AUGUST 1976

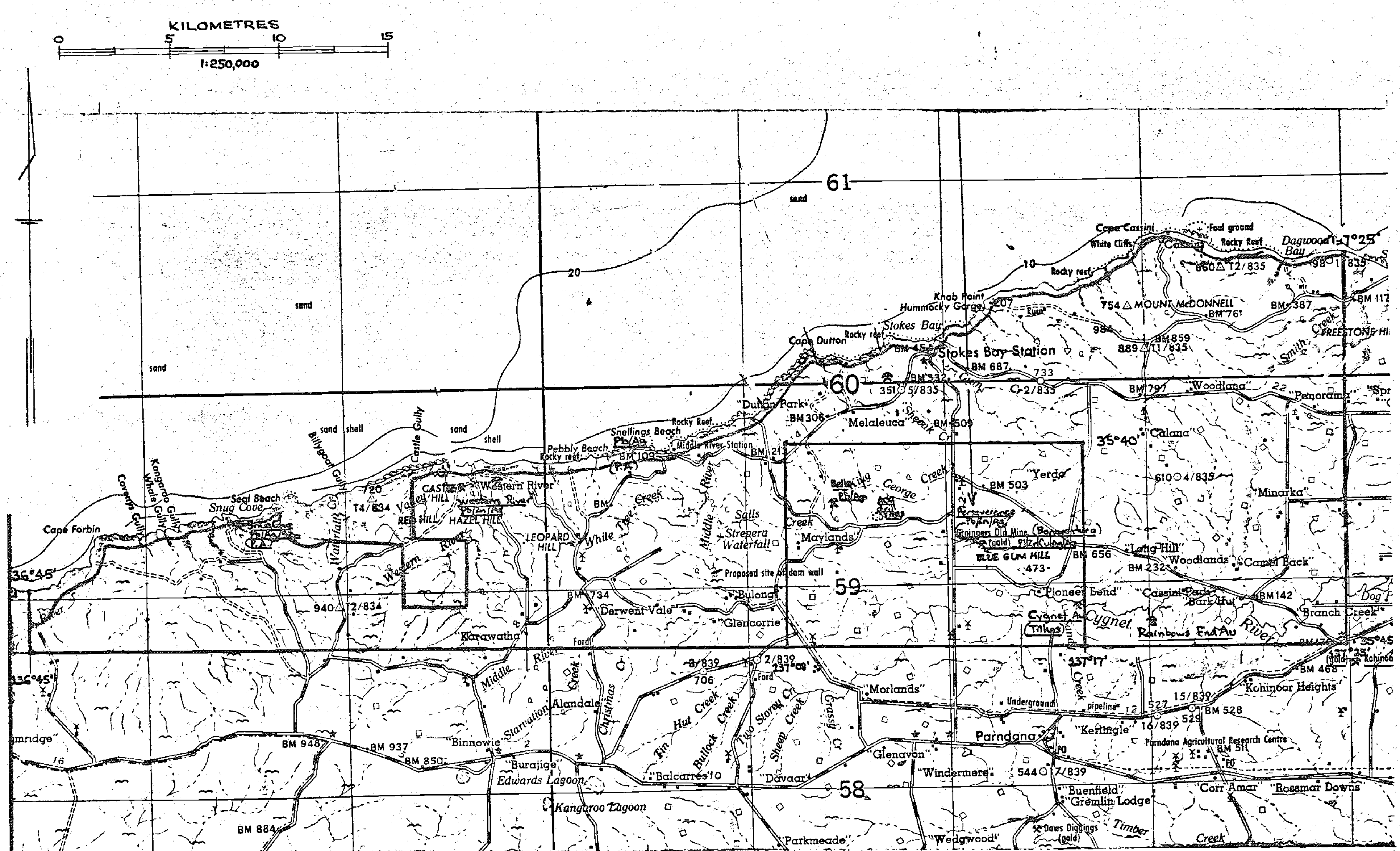
SUMMARY

Exploration Licence 221 was acquired in order to prospect for stratabound base metal mineralization in the Lower Cambrian Kanmantoo Group.

Work completed included stream sediment, soil and rock chip sampling, geological mapping and petrographic studies. The exploration results over the Perseverance-Bonaventura prospect indicated there is no potential for economic base metal sulphide deposits.

RECOMMENDATIONS

It is recommended the tenement be surrendered.



Prepared: J.H.H.

Drawn: [illegible]

PREUSSAG AUSTRALIA PTY. LTD.

E.L. 221 KANGAROO ISLAND — S.A.

LOCATION MAP

Date: APRIL 76

A4-011

PREUSSAG AUSTRALIA PROPRIETARY LIMITED

EXPLORATION LICENCE 221

KANGAROO ISLAND

SOUTH AUSTRALIA - AUSTRALIA

THIRD QUARTERLY AND FINAL REPORT

TO

24 AUGUST 1976

INTRODUCTION

This report discusses exploration programmes completed in previous quarters. The first two quarterly reports summarize the work of former explorers and of Preussag.

The location of Exploration Licence 221 is shown in Figure 1. No fieldwork was completed during the period.

CURRENT INVESTIGATION

The tenement was secured to assess the potential of the Lower Cambrian Kanmantoo Group for volcanogenic base metal mineralization. A number of old workings (lead-zinc, copper and gold) were known to exist at the time of application, however, little recent information on the geology of the area was available and exploration was mainly concerned with establishing whether volcanics were present in the mineralized localities. Initially, stream sediment, soil and rock chip sampling, geological mapping and petrography were utilized to check the results of previous explorers and to obtain relevant information. Arising from this first phase, an area surrounding the Perseverance-Bonaventura Mines was

.../2

selected for further work.

Soil and rock sampling, geologic mapping and a ground magnetic survey was completed in the Perseverance-Bonaventura area. Poor outcrop and extensive cover made investigations difficult. Orientation soil sampling failed to definitely establish the behaviour of metals in soil, ferruginous clay and pisolitic ferricrete cover. Sampling was subsequently completed in the weathered C-horizon between 0.5 and 1.5 metres using power and hand augers.

Diamond drill core from the Dewrang prospect of former explorer A.O.G. Minerals Pty. Ltd., was examined. This prospect is situated approximately four kilometres WNW of the Perseverance-Bonaventura prospect.

RESULTS

Soil sampling has outlined an anomally for both lead and zinc (broadly coincident) surrounding the Perseverance and Bonaventura Mines with approximate dimensions of 750 metres east-west by 250-400 metres north-south, as defined by the 250ppm Pb isorad. A number of "spot highs" occur within the anomaly with maximum values of 2700 ppm Pb and 980 ppm Zn.

Mapping in the Perseverance-Bonaventura area shows the presence of a phyllite-metasiltstone metasandstone sequence cut by finely crystalline (low temperature), transversly faulted, brecciated pyritic quartz veins associated with the major Cygnet-Snelling Fault Zone. The Perseverance (Pb-Zn-Cu) and Bonaventura (Cu) mine workings are located on the veins. The soil anomaly is partly derived from the veins and associated mine workings and partly from

.../3

the finer grained metasediments (? concealed veins).

Some correlation between the Perseverance-Bonaventura soil anomaly and ground magnetic "highs" has been noted.

Initial petrographic work describing volcanic breccias was not substantiated during later investigations and this downgraded the potential of the area.

Cross cutting and concordant pyrite occur within the carbonaceous phyllite and metasiltstone in diamond drill core from the Dewrang prospect. Sparse sphalerite and ?galena lie in fractures and foliation planes.

CONCLUSIONS

Trace to minor, cross-cutting, base metal (Pb-Zn-Cu) mineralization occurs on the Perseverance-Bonaventura and Dewrang prospects. The mineralization is believed to occur in the Talisker Calc-siltstone of Daily & Milnes (ref. 1) due to the presence of thin, carbonaceous, pyritic phyllites and metasiltstones in the Dewrang diamond drill core and of a thin marble band along strike and to the west of the Dewrang sequence.

The sulphides may have been remobilized from carbonaceous shales during diagenesis and regional metamorphism. Remobilized sulphides have been described by George (Ref. 3) in the Nairne Pyrite Member which is equated by Daily and Milnes (ref. 2) with the Talisker Calc-siltstone.

The possibility that the mineralization is metasomatic and related to Ordovician granitic

intrusives must also be considered. Quartz feldspar veinlets occur in the Perseverance Mine adit and quartz-tourmaline hornfels float has been observed near the workings. Ordovician granites crop out to the south of the tenement near the southern coastline of Kangaroo Island where tourmaline bearing rocks are known. Tourmaline metasomatism has also been described from the Rainbows End Gold Mine located on the Cygnet-Snelling Fault, as are the Perseverance-Bonaventura and Dewrang prospects. Volcanics have not been recognized in the tenement.

.../5

REFERENCES

1. Daily, B & Milnes, A.R. (1971) - Stratigraphic notes on Lower Cambrian fossiliferous metasediments between Campbell Creek and Tunkalilla Beach in the type section of the Kanmantoo Group. Fleurieu Peninsula, South Australia, Trans. R. Soc. S.Aust. 95(4), 199-214.

2. Daily, B. & Milnes, A.R. (1972) - Revision of the stratigraphic nomenclature of the Cambrian Kanmantoo Group, South Australia. J. Geol. Soc. Aust. 19 (2), 197-202.

3. George, R.J. (1969) - Sulphide vein formation during metamorphism of the Nairne sulphide deposit. Proc. Aust. Inst. Min. Metall, m 230, 9-18.

PREUSSAG AUSTRALIA PTY. LTD.

EXPLORATION LICENCE 221

Exploration Expenditure Report for the Quarterly Period Ended

25th August, 1976

Description	Expenditure to 25/5/76	Quarter Ended 28/8/76	Total to Date
	$	$	$
Geological Surveys:			
Payroll	2,861	1,005	3,866
Contractors/Consultants	390	-	390
Field and General Expenses	978	78	1,056
Transportation	234	140	374
Geophysical Surveys:			
Payroll	24	-	24
Contractors/Consultants	107	-	107
Field and General Expenses	79	-	79
Transportation	-	-	-
Geochemical Surveys:			
Payroll	1,497	-	1,497
Contractors/Consultants	1,181	-	1,181
Field and General Expenses	903	3	906
Transportation	212	-	212
Other Studies and Field Activities:			
Payroll	972	-	972
Contractors/Consultants	108	-	108
Field and General Expenses	19	-	19
Transportation	26	-	26
Drilling:			
Payroll			
Contractors/Consultants			
Field and General Expenses			
Transportation			
Licence Fees/Option Payments	8	-	8
Assays and Tests	1,918	587	2,505
Miscellany	930	209	1,139
Regional Office Costs	1,380	357	1,737
Head Office Costs	1,908	211	2,119
	15,735	2,590	18,325