ANNUAL REPORT TO DEPARTMENT OF
MINES & ENERGY

Licencsee and Operator: Agip Australia Pty. Ltd.

Exploration Licence No: 3142

Standard Map Areas: Tobermory and Hay River

Period: 9.11.82-8.11.83

Date of Submission: November, 1983

Report A: Area to be retained

OPEN FILE
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1. **SUMMARY**

Following the completion of the previous year's drilling programme a further detailed study of the drill samples and core resulted in a revised interpretation of the local stratigraphy and structural elements, and their relationship to mineralization.

On the basis of the revised geological interpretation a ground geophysical survey was contracted to assist the definition of additional suitable drilling targets.

Unseasonable heavy flooding throughout the region caused undue delay in mobilising the geophysical equipment from Alice Springs to the field camp and the survey programme was subsequently cancelled.
2. **INTRODUCTION**

2.1 **Tenement Status**
E.L. 3142, with an initial area of 899 square km., was granted to Agip Australia Pty. Ltd., on 9th November, 1981.

In accordance with section 26 of the Mining Act 1980, two blocks with an aggregate area of approximately 449 square kilometres have recently been nominated for the third year's continuance of the licence. These blocks are shown on Figure 1.

2.2 **Location and Access**
The licence is located in the southern part of the Georgina Basin about 500 km ENE from Alice Springs (refer Fig. 2).

Road access is 70 km north along the sealed Stuart Highway from Alice Springs thence east on the sealed and unsealed Plenty Highway for some 370 km. Formed dirt roads of reasonable dry weather quality lead to Marqua Homestead. Access within the E.L. is by a sparse network of poor station tracks which are generally unsuitable for continuous traffic of heavy vehicles.

An airstrip suitable for light aircraft is located at Marqua Station.

2.3 **Climate, Water Supply and Vegetation**
Winters are short and mild with long hot summers when daily temperatures frequently exceed 40°C for periods of weeks. The average annual rainfall is less than 200mm, falling mainly in the summer months, but the reliability is low and droughts are frequent. Conversely, the region suffered two periods of heavy rains and flooding during the early part of 1983.
Although some water holes hold water for several months after good rains there is no permanent surface water. Underground water of poor to good quality is sporadically distributed, largely from depths below 50m. In the Boat Hill area brecciated cherts have good aquifers at 30-50m depth.

The area is lightly vegetated with plains of grass and spinifex and scattered Gidyea (Acacia Sp) with Bloodwood and Coolabah trees in water courses.
3. PREVIOUS WORK

Regional mapping was commenced by the B.M.R. during 1959-1960.


A preliminary edition of the "Adam Special" comprising 1:100,000 geological map no. 6451 and parts of 6450 and 6351 was published by the B.M.R. This considerably refined the structure and stratigraphy of areas adjacent to the present study.

During 1982 Agip carried out reconnaissance and detailed geological mapping and surface sampling followed by exploratory percussion and diamond core drilling by 15 holes into the prime zones of Pb/Zn anomalous. Results of this work have been given in detail in the previous Annual Report.
4. REGIONAL GEOLOGY

4.1 Stratigraphy
Stratigraphic units recognised in the general region of the
Tobermory and Hay River map sheets are listed in Table 1.

Within the licence area all of the units between the Arunta
Complex and the Lower Ordovician Kelly Creek Formation have
been recognised with the exception of the Tomahawk Beds.
Small mesas capped by flat-bedded Tarlton Formation are
scattered throughout the licence. As can be seen from
Table 1, several Ordovician and Silurian-Devonian units
are missing from the stratigraphic sequence between the
Kelly Creek Formation and Tarlton Formation in the licence
area.

Lithologies recognised in E.L. 3142 in 1982 were as follows:-

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qa</td>
<td>Soil and alluvium often with a veneer or a mixture of red wind blown loess.</td>
</tr>
<tr>
<td>Qs</td>
<td>Recent scree</td>
</tr>
<tr>
<td>-Em</td>
<td>Limestone dark grey and very fine grained. Thin bedded with common small brachiopods (Lingula sp) unconformably on:-</td>
</tr>
<tr>
<td>-Emb</td>
<td>Black to whitish grey chert with limonitic patches - correlated with the Hay River Beds. Where drilled at Boat Hill usually strongly brecciated at depth.</td>
</tr>
<tr>
<td>Psg</td>
<td>Poorly outcropping red and green fissile shale. Intersected in several drill holes at Boat Hill where it has been subdivided (sections and drill logs only) into:</td>
</tr>
<tr>
<td>Psg₁</td>
<td>Black carbonaceous mudstone, foetid sulphurous and kerosene odours.</td>
</tr>
<tr>
<td>Psg₂</td>
<td>Interbedded chert, clay; pyritic, usually mylonitic.</td>
</tr>
<tr>
<td>Psg₃</td>
<td>Limey shales and siltstones sometimes carbonaceous, and or pyritic with fossiliferous bands.</td>
</tr>
<tr>
<td>Age</td>
<td>Rock Unit</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Quaternary</td>
<td>Austral Downs Limestone</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cretaceous</td>
<td>Longsight Sandstone</td>
</tr>
<tr>
<td>Triassic</td>
<td>Tarlton Formation</td>
</tr>
<tr>
<td>Silurian-Devonian</td>
<td>Cravens Peak Beds</td>
</tr>
<tr>
<td></td>
<td>Mithaka Formation</td>
</tr>
<tr>
<td></td>
<td>Carlo Sandstone</td>
</tr>
<tr>
<td>Middle Ordovician</td>
<td>Nora Formation</td>
</tr>
<tr>
<td>Lower Ordovician</td>
<td>Coolibah Formation</td>
</tr>
<tr>
<td></td>
<td>Kelly Creek Formation</td>
</tr>
<tr>
<td></td>
<td>Ninmaroo Formation</td>
</tr>
<tr>
<td></td>
<td>Tomahawk Beds</td>
</tr>
<tr>
<td>Upper Cambrian</td>
<td>Arrinthrunga Formation</td>
</tr>
<tr>
<td>Middle Cambrian</td>
<td>Marqua Beds</td>
</tr>
<tr>
<td></td>
<td>Grant Bluff Formation</td>
</tr>
<tr>
<td></td>
<td>Field River Beds</td>
</tr>
<tr>
<td></td>
<td>Un-named</td>
</tr>
<tr>
<td></td>
<td>Arunta Complex</td>
</tr>
</tbody>
</table>
The Psg units were correlated with the Red Heart Dolomite and Adam Shale.

Pts A flaggy sandstone and siltstone, ripple marked, parting lineation, well sorted, often manganese stained in outcrop. Correlated with Grant Bluff Formation.

Ptd Laminated black and green shale, polymictic texture with erratics of granite, dolomite and metamorphics together with thin graded bedded calcareous sands and lenses of laminated dolomite. Correlated with the Yardida Tillite.

Pta Massive bedded arkose with scattered rounded vein quartz and rare dolomite and granite pebbles. Seen in core to be mainly greywacke and mudflow deposit - a lateral facies equivalent of, and interbedded with:

Ptp Polymictite conglomerate, matrix supported, arkosic and shaley matrix; limey and dolomitic towards the top.

Pta & Ptp are correlated with the Gnallan-A-Gea Arkose and rest apparently conformably on (probably in part interfingered with):

Pdt Diamictite, cobbles or dolomite in a dolomitic mud matrix with an arkosic component, grading laterally, with rapid thining, into thin micaceous turbidites of dolimitic sandstone and siltstone - towards the base this is interbedded with:

Pdd Yellow brown and pink dolomite with algal features including columnar stromatolites, silicified in part.

Pdc Is a zone within and near the top of the Pdd sequence which weathers to give yellow and brown cherts often anomalous in zinc, lead and silver. In drill core the unit Pdd also contains calcareous grey shales. This unit
is correlated with the Wonadinna Dolomite.

Granite-course grained leucocratic granite and granite pegmatites.
Mt. Smith Metamorphics - various gneissic rocks.

4.2 Structure
The basement edge and basin zones are very complicated structurally.

Large, complex fault zones strike broadly parallel to (and in places form), the basin edge. The B.M.R. on the "Adam Special" map sheet have interpreted these as low angle thrusts and klippen.

At Boat Hill there is a monoclinal fold, with the axis north of the Precambrian - Cambrian boundary, where vertical dips occur in Marqua Beds and Arrinhrunga Formation. The Precambrian-Cambrian unconformity itself is close to the axis of a bedding fault, and sigmoidal folds are developed on cross structures. These elements strongly suggest a major transcurrent fault zone.

The deformation events were essentially completed by the time of deposition of the Kelly Creek Formation in the Lower Ordovician as only minor deformation of this unit occurs.
5. **EXPLORATION ACTIVITIES**

5.1 **Geological Revision**

5.1.1 **Stratigraphy**

Following the completion of the 1982 exploration programme it was apparent that there was some uncertainty as to the relationships and correlations of some of the units at the Boat Hill prospect.

Detailed microscopic examination in early 1983 of the previous percussion drill samples and diamond drill core indicates that the Boat Hill prospect sequence correlates fairly well with the established B.M.R. sequence for the region.

Figure 3 summarises the current stratigraphic nomenclature for the Boat Hill area and it's revised relationship to the established B.M.R. sequence of units. The main areas of revision to the sequence described in the 1982 Annual Report are at the level of the Yardida Fillite (Ptp) and the units Cmb, Psg1, Psg2 and Psg3.

a) **Yardida Tillite (Ptp) and Gnallan-A-Gea Arkose (Pta)**

The Yardida Tillite where exposed at the base of Boat Hill and where intersected in drill hole M7P consists of green and black siltstone and shale with dropstones of granitoids, quartzite and dolomite.

The Yardida-A-Gea Arkose, in outcrop and drill holes consists of medium to very coarse grained pebbly arkose. Pebbles consist of granitoids, quartzite and minor dolomite.

The Yardida Tillite (Ptp) has in some areas been thrust over, or into contact with, the Gnallan-A-Gea Arkose (Pta) and this confined with poor outcrop has led to the erroneous assumption that the units Ptp and Pta are facies equivalents (see schematic diagram Fig. 6). It was therefore assumed that the Yardida Tillite as mapped by the B.M.R. does not occur in the Boat Hill area.
<table>
<thead>
<tr>
<th>UNIT</th>
<th>LITHOLOGY</th>
<th>MINERALIZATION</th>
<th>EONOGENESIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ninmahoo Formation</td>
<td>Limestone, dolomite, eustromene, dolostone, algal dolostone</td>
<td>Pb,Zn,Ag</td>
<td>Lower Ordovician</td>
</tr>
<tr>
<td>Arrinthunga Formation</td>
<td>Calcilutite, calcilamnite, unnamed</td>
<td></td>
<td>Upper Cambrian</td>
</tr>
<tr>
<td>Marqua Beds</td>
<td>Carbonaceous calcilutite and shale</td>
<td></td>
<td>Middle Cambrian</td>
</tr>
<tr>
<td>Hay River Formation</td>
<td>Siltstone, shale, chalk dolomite calcilamnite, calcilamnite, calcareous siltstone</td>
<td>Pb,Zn,Ag</td>
<td>Lower Cambrian</td>
</tr>
<tr>
<td>Red Heart Dolomite</td>
<td>Dolomulite, unnamed, dolomite, sandstone, siltstone and shale.</td>
<td>Zn,Pb,Ag</td>
<td></td>
</tr>
<tr>
<td>Adam Shale</td>
<td>Green-grey and white siltstone, shale, minor sandstone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grant Bluff Formation</td>
<td>Thin bedded sandstones, siltstone and shale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gnallan-Agera Arrosite</td>
<td>Pegmatite arkose, feldspar, sandstone, minor siltstone and shale</td>
<td></td>
<td>ADELAIDEAN</td>
</tr>
<tr>
<td>Wonnadinna Dolomite</td>
<td>Yellow brown, grey and red brown dolomite and dolomite, feldspar, sandstone, siltstone and shale.</td>
<td>Zn,Ag,Pb</td>
<td></td>
</tr>
<tr>
<td>Black Stump Arrosite</td>
<td>Arkose (pegmatite), siltstone and shale, not definitely recognised at boat hill.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yardina Tillite</td>
<td>Laminated shale (brown) minor dolomite lenses, dropstones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diamicite (unnamed)</td>
<td>Diamicite, shale, siltstone, sandstone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Double granite</td>
<td>Cherty dolomite, sandstone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Smith Metamorphics</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MARQUA E.1. 3/42
BOAT HILL

B.M.R. UNITS - S.W. GEOROGIA BASIN.
M.R. WATER - 1980 AND
J.H. SHERARD AND E.C. DAVY 1976

FIGURE 3
An example of the above occurs on plan 3142/13 (1982 Annual Report), where unit Ptp (Yardida Tillite) has been thrust over the Wonnadinna Dolomite and at the eastern end of the plan, in the vicinity of drill holes M1P and M3P, into contact with unit Pta (Gnallan-A-Gea Arkose).

b) Unit Pts (1982 Annual Report)
Unit Pts was previously assigned to the Grant Bluff Formation but is here considered to be in some outcrops a fine grained interbed of the Gnallan-A-Gea Arkose and in others a sandstone lens within the Wonnadinna dolomite which contains numerous terrigenous intercalations.

c) Unit Psg (Psg1, Psg2 and Psg3)
Unit Psg is generally restricted to the easternmost portion of the area and crops out as an interbedded reddish-brown, fine grained, thin laminated sandstone and siltstone with associated gypsum. At depth, where intersected in drill hole M2P (Fig. 4) the unit consists of very pyritic, green-grey sandstone and interbedded carbonaceous shale and siltstone. At present it is not possible to assign the unit to any of the B.M.R. stratigraphy with confidence but its stratigraphic position suggests a correlation with either the Adam Shale (Lower Cambrian) or Grant Bluff Formation (Uppermost Proterozoic). Occurrence of the unit Psg within the area appears to have been restricted by the unconformity at the base of the Hay River Formation.

Subdivisions of Psg into Psg1, Psg2 and Psg3 were only recognised in drill holes. It is here considered that these subdivisions be abandoned as they do not appear to be an intergral part of Psg.

i) Black carbonaceous shales and interbedded chert from internal 40-49.2 in drill hole M13Pd (Fig. 5) have been dated from fossil evidence as uppermost Lower Cambrian or lowermost Middle Cambrian (Ordian). This interval was previously assigned
to Cmb or Hay River Formation. The Hay River Formation is the only unit described in the area by the B.M.R. as having numerous interbeds of chert and it can therefore be assumed that intervals with abundant chert intersected in the drill holes belong to this formation.

ii) Interval 59.2-71.4 in M13PD (Fig. 5), described as a chert breccia and assigned to Psg2 is not a chert but brecciated and partly silicified dolomite (dololutite and dolarenite). This dolomite is identical in appearance to the Wonnadinna Dolomite.

iii) Interval 81.6-106.5 in M13PD, described as a carbonaceous mudstone and assigned to Psg3, is a carbonaceous Calcilutite and best assigned to the Marqua Beds (Cm).

5.1.2 Structure
Figure 6 is a schematic diagram of the structural elements of the Boat Hill area.

The southern margin of the Georgina Basin is bounded by the Toomba Fault system, a series of low angle reverse faults in which the Carpentarian metamorphics and Adelaidean sediments have been thrust north-eastwards over the Cambrian sediments. The Boat Hill area lies within this fault system. Refer to the Tobermorey 1:250,000 sheet and the Toko 1:100,000 sheet.

Inter drill hole and outcrop correlation suggests that a series of east-west-trending reverse faults occur through the area (Fig 5). Fold axes and the strike of the units generally parallel the fault trend. The dip of the fault planes is southerly and the Adelaidean sediments have been thrust northwards over the Middle Cambrian Marqua beds. Intense brecciation is associated with the faulting.
FIGURE 5

Agip Australia Pty Ltd.
E.L. 3142 MARQUA,
SECTION THROUGH M9P AND M3PD
GEOLOGICAL INTERPRETATION

Scale: 1:10000
Geologist: D.G.M.
Date: March 1983
Drawn By: D.G.M.

CHERT
SHALE AND Siltstone
AMPHIBIC AND KEATOSILIC SPIN PEBBLES
CALCILUTITE
DOLOLUTITE
DOLARENITE
SANDY DOLARENITE
DOLOMITE PEBBLES
F - - F FAULT
UNECONFORMITY
TREND
CARBONACEOUS
MARQUA BEDS
HAY RIVER FORMATION
RED HEARTY DOLomite
GRANT BLUFF FORMATION?
GNALLAN-A-GEA MKOHE
WONNADINNA DOLomite
YARDINGA TILLITE

ASSAY GRADE Zn
501 - 1000 ppm
1001 - 2000 ppm
2001 - 0-997
>1.07

F

M3PD
M9P

1146EON
SCHEMATIC DIAGRAM OF STRUCTURAL ELEMENTS OF THE BOAT HILL AREA

MARQUA BEDS

HAY RIVER FORMATION

RED HEART DOLOMITE

GRANT BLUFF FORMATION?

GHALLAN-A-GEA ARKOSE

WONNADINNA DOLOMITE

YARDINA TILLITE

FIGURE 6
A series of N.E.-trending block faults transect the major structural trend (Fig. 6).

5.1.3 Mineralization
Anomalous lead, zinc and silver values (up to 1.2% Zn and 6 ppm Ag) have been detected in drill and surface rock chip samples from four units in the Boat Hill area; the Wonnadinna dolomite, Red Heart Dolomite, Hay River Formation and the Arrinhrunga Formation. Anomalism extends for 10 km along the southern margin of the basin.

Results of rock chip geochemistry and analysis of drill cuttings are listed in the 1982 Annual Report.

a) Stratigraphic and Lithological Controls
As mentioned above, anomalous base metal values are restricted to four stratigraphic intervals.

The Wonnadinna Dolomite is enriched in base metals within close proximity to the unconformity at the top of the unit and it appears to be more so in dolarenites with little or no terrigenous component. The dolomite is generally vuggy and exhibits chalcedonic silicification at the unconformity. Petrological study indicates that sphalerite is associated with the chalcedonic silicification.

The Red Heart Dolomite was intersected in one drill hole (M2P, Fig. 4) and exhibited minor anomalism within a fossiliferous dolarenite.

The basal cherts and interbedded shales of the Hay River Formation are anomalous in Pb, Zn and Ag wherever intersected in drilling. The unit is more enriched in lead than the Wonnadinna Dolomite and the highest base metal values occur where the unit has been brecciated.
The Arrinthrunga Formation has not been tested by drilling but anomalous values occur within the formation at the eastern end of the prospect in close proximity to the Toomba Fault zone.

b) Structural Control
The Hay River Formation and the Wonnadinna Dolomite are brecciated where cut by the thrust faults and it appears that the highest base metal values occur in these areas. This is demonstrated in figure 5 (M9P and M13PD) where values increase towards the fault zone. The brecciated zone appears to be 10 to 15 m in thickness and sulphide veining occurs within it in M13PD within the Wonnadinna Dolomite.

5.2 Ground Geophysics
During the early part of April, 1983 a contract was signed with Solo Geophysics, Adelaide, for a total of 10 days I.P. survey with associated back-up detailed gravity surveys where warranted. In addition, a Scintrex MP2 Proton Precession Magnetometer and MBS2 Magnetic Base Station were hired to enable detailed magnetic surveys over possible areas of interest delineated by the electrical survey.

The survey was designed to test approximately 18 km of strike length along the unconformity between the Adelaidean units and the Middle Cambrian Marqua Beds, westwards from the Boat Hill prospect, by a sequence of 15 survey lines 500m to 1,000m long. Some of the survey lines were also positioned to cross the major thrust fault zones (e.g. Craigie Fault and Marqua Monocline) as well as lesser faults predicted by the re-interpreted geology. At least one additional line was proposed to test across known faults in the vicinity of the Desert Syncline in the southward extension of the licence.
Mr. D. Eaton, Chief Geophysicist, Agip Canada Ltd., was available to assist in the design and interpretation of the surveys.

Unfortunately, unseasonably heavy flooding caused considerable delay in mobilising the geophysical equipment to the field camp from Alice Springs and the survey was, in consequence, cancelled at the end of the month.
6. **EXPENDITURE**

Expenditure in respect of exploration work for E.L. 3142 in the 12 months from November, 1982 to October, 1983, was as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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<tr>
<td>Labour</td>
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</tr>
<tr>
<td>Purchases</td>
<td>996</td>
</tr>
<tr>
<td>Services -</td>
<td></td>
</tr>
<tr>
<td>Geophysics</td>
<td>3,042</td>
</tr>
<tr>
<td>Analyses</td>
<td>413</td>
</tr>
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<td>Other</td>
<td>3,594</td>
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<tr>
<td>Miscellaneous</td>
<td>1,157</td>
</tr>
<tr>
<td>Alice Springs Office</td>
<td>15,611</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$52,661</strong></td>
</tr>
</tbody>
</table>
7. PROPOSED EXPLORATION PROGRAMME

It is proposed to reinstate the geophysical survey programme with follow-up percussion/diamond drilling of selected targets, if warranted.

However, in the current economic climate the Company is not in a position to justify the full expenditure of the above programme in this area and accordingly will be seeking a suitable partner with an interest in exploration for Mississippi-Valley type and/or stratabound lead, zinc, silver mineralization.
8. PROPOSED EXPENDITURE

A minimum expenditure of $10,000 is proposed for the above programme.
<table>
<thead>
<tr>
<th>UNIT</th>
<th>LITHOLOGY</th>
<th>MINERALIZATION</th>
<th>CHRONOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>εOn</td>
<td>LIMESTONE, DOLOMITE, CRISTAMINE, BOUNDSTONE</td>
<td>Pb, Zn, Ag</td>
<td>LOWER ORDOVICIAN</td>
</tr>
<tr>
<td>Cva</td>
<td>CALCULITE, CALCITE, DUMARITE, KENSTONE, SANDSTONE</td>
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<td>UPPER CAMBRIAN</td>
</tr>
<tr>
<td>Em</td>
<td>CARBONATE, CALCULITE AND SHALE.</td>
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<td>MIDDLE CAMBRIAN</td>
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<td>Emf</td>
<td>SANDSTONE, SHALE, GROT, DOLOMITE, CURCUITE, CALCAIRE, SILTSTONE</td>
<td>Pb, Zn, Ag</td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>Ed</td>
<td>DOLOUTITE, DOLOMENITE, DOLOMITE, SANDSTONE, SILESTONE AND SHALE.</td>
<td>Zn, Pb, Ag</td>
<td>LOWER CAMBRIAN</td>
</tr>
<tr>
<td>Eds</td>
<td>GREEN GRAY AND BLACK SILTSTONE, SHALE, MINER, SANDSTONE</td>
<td></td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>Psog</td>
<td>THIN DEERED SANDSTONE, SILTSTONE AND SHALE.</td>
<td></td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>Psq</td>
<td>FEBULY ARKOSE, FELDSPATHIC SANDSTONE MINER BILSTONE AND SHALE.</td>
<td>Zn, Ag, Pb</td>
<td>ADELAIDEAN</td>
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<tr>
<td>Etd</td>
<td>YELLOW BROWN, GREEN AND RED BROWN DOLOMITE AND DOLOMITE, FELDSPATHIC SANDSTONE, SILESTONE AND SHALE.</td>
<td>Zn, Ag, Pb</td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>Ptd</td>
<td>ARKOSE (FEBULY), SILTSTONE AND SHALE. NOT DEFINITELY RECOGNISED AT BOAT HILL.</td>
<td>Zn, Ag, Pb</td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>Ptd</td>
<td>LAMINATED SHALE (BLACK) MINOR DOLOMITE LENSES. DROPSTONES.</td>
<td>Zn, Ag, Pb</td>
<td>CAMBRIAN</td>
</tr>
<tr>
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<td>DIAMICTITE, SHALE, SILTSTONE, SANDSTONE.</td>
<td></td>
<td>CARPENTARIAN</td>
</tr>
<tr>
<td>Pt</td>
<td>CHERRY DOLOMITE, SANDSTONE.</td>
<td></td>
<td>CARPENTARIAN</td>
</tr>
<tr>
<td>Pcm</td>
<td>MOUNT DRUIDE GRANITE 1640, 1646 MY.</td>
<td></td>
<td>CARPENTARIAN</td>
</tr>
<tr>
<td>Pcm</td>
<td>MOUNT SMITH METAMORPHS</td>
<td></td>
<td>CARPENTARIAN</td>
</tr>
<tr>
<td>MARQUA E.K. 3/42</td>
<td>B.M.R. UNITS - S.W. GEORGIA BAY.</td>
<td></td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>BOAT HILL</td>
<td>M.R. WATER - 1980 AND</td>
<td></td>
<td>CAMBRIAN</td>
</tr>
<tr>
<td>F.T. M. SHEPHERD ND E.G. DUNC 1976</td>
<td></td>
<td></td>
<td>CAMBRIAN</td>
</tr>
</tbody>
</table>

FIGURE 3
FIGURE 5

Agip Australia Pty Ltd.
E.L. 3142 MARQUA
SECTION THROUGH M9P M9M3PH
GEOLOGICAL INTERPRETATION

Scale: 1:1000
Date: March 1983
Drawn By: D.G.M.

CHERT
SHALE AND Siltstone
ARKOSE AND QUADRSPATHIC SANDSTONE
CALCILUTITE
DOLOLUTITE
DOLARENITE
SANDY DOLARENITE
DOLOMITE PEBBLES

F---F FAULT
---UNCONFORMITY
---TREND
CARYGENOUS
MARQUA BEDS

HAY RIVER FORMATION
RED HEARTY DOLOMITE

GRANT BLUFF FORMATION?

ASSAY GRADE Zn
501 - 1000 ppm
1001 - 2000 ppm
2001 - 0.99%
>1.0%

GNALLAN-A-GEE NAHUSE
WINNADINNA DOLOMITE
YANDIDA TILLITE