3. REGIONAL GEOLOGY:

Regional mapping of the Reserve was carried out at a scale of 1:12,000 and on selected areas at a scale of 1:3,000. The Mapping was accomplished by plotting the geology directly onto a series of controlled base sheets.

The stratigraphic sub-divisions established by Dunnet and Harding (1967) for the Mt. Woodcock 1 Mile Sheet has been accepted (see Table 1).

TABLE 1.

<table>
<thead>
<tr>
<th>Cambrian</th>
<th>Merrina Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>? Upper Proterozoic</td>
<td>Tomkinson Creek Beds</td>
</tr>
<tr>
<td></td>
<td>(Carraman Formation)</td>
</tr>
<tr>
<td>Lower Proterozoic - Warramunga</td>
<td>Bernborough Formation</td>
</tr>
<tr>
<td>Group</td>
<td>(Monument Beds)</td>
</tr>
</tbody>
</table>

The rocks outcropping within the Reserve form part of the Warramunga Group. The Carraman Formation has been further sub-divided (Large 1974) into a Lower, Middle and Upper Member. Large proposed the sub-division on the following lithological distinctions:

a) Lower Member -
   Consists primarily of arenaceous rocks with minor shales with an estimated thickness of 1000m.

b) Middle Member -
   Predominantly iron rich shales and siltstone with some greywackes and calc-alkaline volcanics ( ? porphyroids ). The thickness of the unit is estimated to be in the order of 2000 - 3000m. This unit acts as the host rocks to the majority of the economic mineralisation encountered in the Tennant Creek Field.

c) Upper Member -
   Comprised of greywackes and lithic wackes. The thickness has not been determined.
The lithological composition of the Carraman Formation, however, varies considerably across the Tennant Creek Field. The forementioned sub-division would be best applied to the eastern half of the field. A more generalised lithologically based sub-division is indicated in Table 2.

<table>
<thead>
<tr>
<th>Carraman Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper Member</strong></td>
</tr>
<tr>
<td>( )</td>
</tr>
<tr>
<td><strong>Middle Member</strong></td>
</tr>
<tr>
<td>( )</td>
</tr>
<tr>
<td><strong>Lower Member</strong></td>
</tr>
<tr>
<td>( )</td>
</tr>
</tbody>
</table>

**Table 2.**

- (Upper Member) (Hematite shale and Chert- Great Western Locality.
- (Middle Member) Greywacke with nodular magnetite- West Peko Locality.
- (Lower Member) Greywacke shale and hematite shale.

The rock types encountered in the Reserve consist primarily of interbedded greywackes and sandstones with minor siltstones and shales. Thin hematite shale beds (10 - 15m thick) with associated bedded ironstone bodies were recorded at the following localities:-

1. Explorer 110 Prospect.
2. Explorer 109 Prospect.
4. East and North of Explorer 92 Prospect.

The country rock adjacent to the bedded ironstone bodies is usually exhibit varying degrees of alteration viz. hematitisation and silicification. Some bleaching and quartz and/or quartz-hematite veination was observed.

Porphyroid has been recorded in water pores drilled on the
western boundary of the Reserve and in diamond drill holes at the AR2-Explorer 109 and Anomaly 4 - Explorer 92 localities (Willis 1972). Evidence of this porphyroidal unit on the surface is minimal and where it is observed it is extremely weathered. A number of outcrops of quartz feldspar porphyroid occurs in the far south-eastern corner of the Reserve.

The observed lithologies of the rocks outcropping in the Reserve are consistant with those of the Lower Middle Carraman Member. The Middle Carraman Member being divided into two by the porphyroid unit. The Upper and Lower Middle Carraman are essentially identical in composition except the Lower Middle section has a preponderance of disseminated magnetite which causes a more intense magnetic character. The Lower Middle Carraman Member is known as the "Magnetite Shale".

The Lower Carraman Member is considered to be represented by the unit of rocks outcropping in the northern section of the Reserve.

3.1. Structure:

A number of anticlines and synclines occur within the area. The wave length of the folds range from approximately 150m to 2.5km. The axes strike approximately east-west and a number plunge to the west at approximately 10-25°. The folding is generally symmetrical although an anticline in the north-west corner of the Reserve and a syncline in the north-western sector were observed to have a weak vergence to the south.

The slatey cleavage appears to fan in the anticlines with dips of 90° - 75° to the north in the southern limb, with similar dips to the south in the northern limb.

A pair of shear joints interpreted as h k 0 (vertical diagonal joints) striking approximately 030° and 150° is well developed throughout the area and appear to have controlled the emplacement of the quartz and quartz/hematite veins. Many tension joins are developed in particular b c joints which are parallel to the axial plane. The tension joints and shear joints have strongly controlled the drainage pattern within the area.
The paucity of the outcrop and the monotony of the sequence have made it difficult to discern the faulting pattern within the area. A number of minor faults striking approximately north-south were recorded which could be adequate to the a c tension joint pattern.
4. REGIONAL GEOPHYSICS:

Three aeromagnetic surveys have been conducted over the area covered by the Reserve.

1. The Bureau of Mineral Resources in 1958 carried out an aeromagnetic survey to cover all the known workings in the Tennant Creek Field.

2. In 1964 the Bureau of Mineral Resources undertook a low level survey over an elongated zone of magnetic anomalies trending east-west lying within the Reserve. The line of anomalies is known as the "Aeromagnetic Ridge".

3. A further low level survey over an area bounded by latitudes $19^\circ 37'00"$ and $19^\circ 40'00"$ with longitudes $134^\circ 12'00"$ and $134^\circ 20'00"$ was conducted by Australian Development Limited. The data from this survey was made available to Geopeko Limited in exchange for aeromagnetic survey results of a block of similar proportions lying immediately south of the aforementioned area.

A study of the aeromagnetic results has brought about the following sub-division of the area based on magnetic character.

1. A west-north-west trending zone of magnetic highs along the Burnt Shirt Line.

2. An east-west trending zone of strong magnetic gradient along the southern boundary.

3. Two east-west linear zones of highs extending westward from the south-eastern and north-eastern corners of the Reserve. The two zones of magnetic highs possibly join near the centre of the western side of the Reserve. The southern zone has been named the "Aeromagnetic Ridge".

4. A zone of relatively minor magnetic disturbance lying between these two zones of highs near the eastern end of the Reserve.
The anomalies are considered to be caused by variation in the magnetic topography and magnetite concentration of the feature known as the "Aeromagnetic Ridge".

Nine anomalous areas were investigated viz. Explorer 92 Prospects; Explorer 99 Prospect; Explorer 109 Prospect, Explorer 110 Prospect; Comet Prospect; AR-5 Anomaly; North AR-8 Anomaly; AR-9 Anomaly and A-10 Anomaly. Explorers 92, 109 and 110 are situated off the "Ridge" and adjacent to the north-western porphyry. Explorer 99, Comet and AR-5 Anomaly are near the southern edge of the "Ridge". AR-10 Anomaly is near the northern edge and AR-9 Anomaly and North AR-8 appear to be part of the "Ridge" itself. The North AR-8 and AR-9 anomalies display a dispersed anomaly character which is typical of a variation in magnetic topography and concentration.
5.1.4. Geology

There is no outcrop in the immediate vicinity of the prospect. The regional geological mapping programme indicated that the prospect lies on the northern limb of an east-west trending anticline whose axis is situated approximately 200m south of the magnetic anomaly centre. The anticline is comprised of sediments of the Lower Middle Carraman Formation (see Fig. 3).

5.1.5. Geophysics

The Explorer 99 magnetic anomaly is situated on the southern edge of the "Aeromagnetic Ridge". A vertical force magnetic survey was carried out over the prospect (see Fig. 5). The results were analysed and a drill target was proposed.

5.1.6. Drilling

One diamond drill hole has been completed. Specifications are as follows:

**NAME:** Explorer 99 DDH 1

**COLLAR COORDINATES:** 1172.5mE; 1140mN.

**APPROXIMATE GEOGRAPHIC COORDINATES:** Latitude 19° 37' 40"

**LONGITUDE:** 134° 15' 43"

**BEARING:** 180° Grid; 180° Magnetic.

**TARGET:** 135m vertically below 1175mE; 1060mN.

**SUMMARY RESULTS:** No economic mineralisation was intersected. A considerable thickness of magnetic sediment was encountered (see Fig. 5).

5.1.7. Conclusion

The anomaly has been adequately tested and analysis has shown that the magnetic sediments encountered were the most likely cause of the magnetic anomaly.
5.2.4. Geology

Regional geological mapping at a scale of 1:12000 and detailed mapping at a scale of 1:3000 of the prospect has been carried out.

A hematite shale horizon containing a series of ironstone bodies within a sequence of greywacke sandstone and shale, is tightly folded into a syncline with dips in the order of 50 - 60°.

A phryry horizon lies within the southern half of the prospect but the actual position of the contact has not been ascertained.

The area to the north and east of the prospect is relatively complex structurally and the relationship between the neighbouring structural features and the syncline which lies within the prospect has not been determined (see Fig. 3).

5.2.5. Geophysics

The Explorer 109 Anomaly lies off the "Aeromagnetic Ridge" and falls within a zone of west-north-west trending magnetic highs called the Burnt Shirt Mine. The anomaly has been tested previously by diamond drilling and revealed an ironstone body. A total force magnetic survey was carried out over the prospect (see Fig. 7).

5.2.6. Conclusion

The most recent survey suggests that the body has been insufficiently tested and warrants further testing to determine its potential at depth.
5.3. EXPLORER 110 PROSPECT

5.3.1. Location

Explorer 110 Prospect is situated approximately 3.6 kms north east of Tennant Creek at the intersection of latitude 19°38'8" with longitude 134°13'15" (see Fig. 2). Access to the prospect is via a graded dirt road from a point situated approximately 1 km north of the road junction at the Government Battery on the Peko-Orlando Road.

5.3.2. Tenure

The prospect is covered by one mineral lease held by Peko Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area.</th>
<th>Name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML 676E</td>
<td>15 ha</td>
<td>Explorer 110</td>
</tr>
</tbody>
</table>

5.3.3. Grid Survey

The Explorer 109 sub-baseline was extended from 6900mE to 6300mE.

Traverses were surveyed in as follows:

<table>
<thead>
<tr>
<th>6300mE</th>
<th>from</th>
<th>11450mN to 12100mN</th>
</tr>
</thead>
<tbody>
<tr>
<td>6400mE</td>
<td>&quot;</td>
<td>11450mN to 12100mN</td>
</tr>
<tr>
<td>6450mE</td>
<td>&quot;</td>
<td>11300mN to 11800mN</td>
</tr>
<tr>
<td>6500mE</td>
<td>&quot;</td>
<td>11300mN to 12100mN</td>
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<td>11300mN to 12100mN</td>
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<td>11300mN to 12100mN</td>
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<td>&quot;</td>
<td>11300mN to 12100mN</td>
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<tr>
<td>6800mE</td>
<td>&quot;</td>
<td>11300mN to 12100mN</td>
</tr>
<tr>
<td>6850mE</td>
<td>&quot;</td>
<td>11300mN to 12100mN</td>
</tr>
</tbody>
</table>

5.3.4. Geology

Geological mapping of the prospect was carried out at a scale of 1:12000 and 1:3000.

Outcrop is present only within the southern portion of the prospect. The sequence consists of greywacke
sandstone and shale with a hematite shale horizon and is a continuation of syncline encountered at Explorer 109 (see Fig. 3).

5.3.5. Geophysics

The Explorer 110 Anomaly (B.M.R. Anomaly AR-1) lies off the "Aeromagnetic Ridge" and in the westernmost anomaly of the west-north-west trending zone of magnetic highs known as the Burnt Shirt Mine. A total force magnetic survey was carried out over the prospect (see Fig. 7).

5.3.6. Conclusions

The anomaly has not been tested by diamond drilling and analysis of the magnetic survey indicated that it has potential for approximately 1 million tonnes of ironstone at a depth in the order of 300 metres. Further evaluation is therefore warranted.
5.4. EXPLORER 114 PROSPECT (AR/C)

5.4.1. Location
Explorer 114 Prospect is situated approximately 3.5 km north-east of Peko Mine at the intersection of latitude 19°39'15" with longitude 134°18'12". Access is via a bush track from a point immediately west of the Peko Mine running in a northerly direction for 2.5 kms to the baseline of the 1969 B.M.R. Geophysical Survey thence eastward along the baseline to the prospect.

5.4.2. Tenure
Two mineral leases have been applied for the Peko Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area.</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explorer 114 No. 1</td>
<td>15 ha</td>
<td>Under application</td>
</tr>
<tr>
<td>Explorer 114 No. 2</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

5.4.3. Grid Survey
The grid point 20E; 0 on the Bureau of Mineral Resources 1969 Geophysical grid was established as a datum (10000mE, 10000mN). A baseline was constructed on a bearing of 090° magnetic from 100000mE; 10000mE; 10000mN to 15600mE; 10000mN.
Traverses were surveyed in as follows:

<table>
<thead>
<tr>
<th>15100mE</th>
<th>From 10000mN to 10700mN</th>
</tr>
</thead>
<tbody>
<tr>
<td>15200mE</td>
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<td>15300mE</td>
<td>&quot;</td>
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<tr>
<td>15400mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15500mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15600mE</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

5.4.4. Geology
There is no outcrop within the prospect. Regional geological mapping at a scale of 1:100,000 has been...
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New Comet Reserve 298 (Aero-
magnetic Ridge ), Tennant
Creek, Northern Territory
GEOPEKO LIMITED

CENTRAL AUSTRALIA

ANNUAL AND FINAL REPORT

ON

THE COMET AUTHORITY (MINING RESERVE NO. 298)

Compiled by: O. Abdel Rehman

TENNANT CREEK, N.T.

AUGUST, 1974
ANNUAL & FINAL REPORT ON COMET AUTHORITY
(MINING RESERVE NO. 298)

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Fig. 8 Explorer 114 Prospect - Geomagnetic Total Force Profiles & Contours
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Fig. 10 Comet Prospect - Geomagnetic Total Force Profiles.
Fig. 11 AR-8 North Anomaly - Total Force Profiles.

APPENDICES

Appendix 1 Geological Log - Explorer 99 DDH 1
Appendix 2 Plan & Profile - Explorer 99 DDH 1
1. **INTRODUCTION:**

Authorisation under Section 147 B of the Mining Ordinance 1939-1972, to explore Mining Reserve No. 298 was granted to Peko Mines Limited on 14th June, 1973. The reserve covers an area of 46.6 sq. kms (18 sq. mls), in the New Comet area which is situated 10 kms east-south-east of Tennant Creek (Fig. 1 and 2). Access to the Reserve is via a bitumen road from Tennant Creek to the Peko Mine of Peko Mines Limited. Several dirt roads transect the Reserve, providing adequate access to the entire area (Fig. 2).

This report covers exploration activities conducted by Geopeko Limited for the twelve months ending 14th June, 1974 and it is submitted as the Final Report on the Reserve to comply with Section 4 (lodging of Statutory reporting under Section 380 of the Mining Ordinance 1939-1972), of the Authorisation Contract between Peko Mines Limited and the Commonwealth of Australia.

Aeromagnetic surveys of an area embracing the Reserve were conducted by the Bureau of Mineral Resources in 1958 and 1964. A number of anomalies delineated by the aeromagnetic survey were further investigated by ground magnetic surveys and diamond drilling. This work was carried out by the Department of Northern Territory Mines Branch (Willis, 1972).

Regional geological mapping was carried out at a scale of 1:12,000 and at a scale of 1:3,000 on selected prospects and areas of special interest. Nine anomalies or magnetic features were investigated by ground magnetic surveys viz. Explorers 99 Prospect; Explorers 109 Prospect; Explorer 110 Prospect; Explorer 114 Prospect; AR-5 Anomaly; Ar-9 Anomaly; Comet Prospect; Ar-8 North Magnetic Feature and magnetic feature north of DW-1 Anomaly and AR-7 Anomaly. Explorer 99 Prospect was further evaluated by diamond drilling.
2. **TENURE:**

A schedule of mining tenements lying wholly or partially within the Reserve is as follows:

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>NAME</th>
<th>LESSEE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML 567E</td>
<td>Explorer 92 No 1</td>
<td>Peko Mines Ltd</td>
<td></td>
</tr>
<tr>
<td>ML 568E</td>
<td></td>
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<td>ML 569E</td>
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<td>ML 570E</td>
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<td>ML 668E</td>
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<td></td>
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<tr>
<td>ML 676E</td>
<td></td>
<td></td>
<td>&quot;Under Application&quot;</td>
</tr>
<tr>
<td>ML 26E</td>
<td>Peko Mine</td>
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</tr>
<tr>
<td>ML 40E</td>
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<td>WSWR 26E</td>
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<tr>
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<td>N/A</td>
<td></td>
<td>&quot;Subterranean Water Right&quot;</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambrian</td>
</tr>
<tr>
<td>? Upper Proterozoic</td>
</tr>
<tr>
<td>( Carraman Formation</td>
</tr>
<tr>
<td>Lower Proterozoic - Warramunga( Bernborough Formation Group ( Monument Beds</td>
</tr>
</tbody>
</table>

The rocks outcropping within the Reserve form part of the Warramunga Group. The Carraman Formation has been further sub-divided (Large 1974) into a Lower, Middle and Upper Member. Large proposed the sub-division on the following lithological distinctions:

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<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carraman Formation</td>
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<tr>
<td>Upper Member</td>
</tr>
<tr>
<td>Middle Member</td>
</tr>
<tr>
<td>Lower Member</td>
</tr>
<tr>
<td>Great Western Localities.</td>
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<tr>
<td>Porphyriod-Peko, Ivanhoe and</td>
</tr>
<tr>
<td>Greywacke shale and hematite</td>
</tr>
<tr>
<td>Greywacke shale, hematite</td>
</tr>
<tr>
<td>Greywacke shale and hematite</td>
</tr>
<tr>
<td>Hematite shale and Chert-</td>
</tr>
<tr>
<td>Great Western Locality.</td>
</tr>
<tr>
<td>Greywacke with nodular</td>
</tr>
<tr>
<td>magnetite- West Peko Locality</td>
</tr>
<tr>
<td>Greywacke, shale and hematite</td>
</tr>
<tr>
<td>shale.</td>
</tr>
<tr>
<td>shale and &quot;magnetite shale&quot;.</td>
</tr>
</tbody>
</table>

The rock types encountered in the Reserve consist primarily of interbedded greywackes and sandstones with minor siltstones and shales. Thin hematite shale beds (10 - 15m thick) with associated bedded ironstone bodies were recorded at the following localities:

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2. Explorer 109 Prospect.
4. East and North of Explorer 92 Prospect.

The country rock adjacent to the bedded ironstone bodies is usually exhibit varying degrees of alteration viz. hematitisation and silicification. Some bleaching and quartz and/or quartz-hematite veination was observed.

Porphyroid has been recorded in water bores drilled on the
western boundary of the Reserve and in diamond drill holes at the AK2-Explorer 109 and Anomaly 4 - Explorer 92 localities (Willis 1972). Evidence of this porphyroidal unit on the surface is minimal and where it is observed it is extremely weathered. A number of outcrops of quartz feldspar porphyroid occurs in the far south-eastern corner of the Reserve.

The observed lithologies of the rocks outcropping in the Reserve are consistent with those of the Lower Middle Carraman Member. The Middle Carraman Member being divided into two by the porphyroid unit. The Upper and Lower Middle Carraman are essentially identical in composition except the Lower Middle section has a preponderance of disseminated magnetite which causes a more intense magnetic character. The Lower Middle Carraman Member is known as the "Magnetite Shale".

The Lower Carraman Member is considered to be represented by the unit of rocks outcropping in the northern section of the Reserve.

3.1. Structure:

A number of anticlines and synclines occur within the area. The wave length of the folds range from approximately 150m to 2.5km. The axes strike approximately east-west and a number plunge to the west at approximately 10-25°. The folding is generally symmetrical although an anticline in the north-west corner of the Reserve and a syncline in the north-western sector were observed to have a weak vergence to the south.

The slatey cleavage appears to fan in the anticlines with dips of 90° - 75° to the north in the southern limb, with similar dips to the south in the northern limb.

A pair of shear joints interpreted as h k 0 (vertical diagonal joints) striking approximately 030° and 150° is well developed throughout the area and appear to have controlled the emplacement of the quartz and quartz/hematite veins. Many tension joints are developed in particular b c joints which are parallel to the axial plane. The tension joints and shear joints have strongly controlled the drainage pattern within the area.
The paucity of the outcrop and the monotony of the sequence have made it difficult to discern the faulting pattern within the area. A number of minor faults striking approximately north-south were recorded which could be adequately to the a c tension joint pattern.
4. **REGIONAL GEOPHYSICS:**

Three aeromagnetic surveys have been conducted over the area covered by the Reserve.

1. The Bureau of Mineral Resources in 1958 carried out an aeromagnetic survey to cover all the known workings in the Tennant Creek Field.

2. In 1964 the Bureau of Mineral Resources undertook a low level survey over an elongated zone of magnetic anomalies trending east-west lying within the Reserve. The line of anomalies is known as the "Aeromagnetic Ridge".

3. A further low level survey over an area bounded by latitudes 19° 37'00" and 19°40'00" with longitudes 134°12'00" and 134°20'00" was conducted by Australian Development Limited. The data from this survey was made available to Geopeco Limited in exchange for aeromagnetic survey results of a block of similar proportions lying immediately south of the aforementioned area.

A study of the aeromagnetic results has brought about the following sub-division of the area based on magnetic character.

1. A west-north-west trending zone of magnetic highs along the Burnt Shirt Line.

2. An east-west trending zone of strong magnetic gradient along the southern boundary.

3. Two east-west linear zones of highs extending westward from the south-eastern and north-eastern corners of the Reserve. The two zones of magnetic highs possibly join near the centre of the western side of the Reserve. The southern zone has been named the "Aeromagnetic Ridge".

4. A zone of relatively minor magnetic disturbance lying between these two zones of highs near the eastern end of the Reserve.
The anomalies are considered to be caused by variation in the magnetic topography and magnetite concentration of the feature known as the "Aeromagnetic Ridge".

Nine anomalous areas were investigated viz. Explorer 92 Prospects; Explorer 99 Prospect; Explorer 109 Prospect, Explorer 110 Prospect; Comet Prospect; AR-5 Anomaly; North AR-8 Anomaly; AR-9 Anomaly and A-10 Anomaly. Explorers 92, 109 and 110 are situated off the "Ridge" and adjacent to the north-western porphyry. Explorer 99, Comet and AR-5 Anomaly are near the southern edge of the "Ridge". AR-10 Anomaly is near the northern edge and AR-9 Anomaly and North AR-8 appear to be part of the "Ridge" itself. The North AR-8 and AR-9 anomalies display a dispersed anomaly character which is typical of a variation in magnetic topography and concentration.
5. PROSPECT EVALUATION:

5.1. Explorer 99 Prospect:

5.1.1. Location

Explorer 99 Prospect is situated approximately 6.5km east of Tennant Creek at the intersection of latitude 19°39'06" with longitude 134°15'8" (see fig. 2). Access is via a bush track north-east from the bitumen road from Tennant Creek to Peko Mine at a point 4 km east of the road junction at the Government Battery.

5.1.2. Tenure

The prospect is covered by four mineral leases held by Peko Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML 610E</td>
<td>16 ha</td>
<td>Explorer 99 No. 1</td>
</tr>
<tr>
<td>ML 611E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML 612E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML 613E</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.1.3. Grid Survey

The grid point 20E; 22S on the Bureau of Mineral Resources 1969 Geophysical Grid was established as a datum (1000mE; 1000mN). A baseline of 090° magnetic from 900mE to 1350mE.

Cross traverses were surveyed in as follows:-

<table>
<thead>
<tr>
<th>900mE from 900mN to 1350mN</th>
</tr>
</thead>
<tbody>
<tr>
<td>950mE &quot; 900mN &quot; 1350mN</td>
</tr>
<tr>
<td>1000mE &quot; 900mN &quot; 1350mN</td>
</tr>
<tr>
<td>1050mE &quot; 900mN &quot; 1350mN</td>
</tr>
<tr>
<td>1100mE &quot; 900mN &quot; 1350mN</td>
</tr>
<tr>
<td>1150mE &quot; 700mN &quot; 1350mN</td>
</tr>
<tr>
<td>1200mE &quot; 700mN &quot; 1350mN</td>
</tr>
<tr>
<td>1250mE &quot; 700mN &quot; 1350mN</td>
</tr>
<tr>
<td>1300mE &quot; 900mN &quot; 900mN</td>
</tr>
<tr>
<td>1350mE &quot; 900mN &quot; 900mN</td>
</tr>
</tbody>
</table>
5.1.4. Geology

There is no outcrop in the immediate vicinity of the prospect. The regional geological mapping programme indicated that the prospect lies on the northern limb of an east-west trending anticline whose axis is situated approximately 200m south of the magnetic anomaly centre. The anticline is comprised of sediments of the Lower Middle Carraman Formation (see Fig. 3).

5.1.5. Geophysics

The Explorer 99 magnetic anomaly is situated on the southern edge of the "Aeromagnetic Ridge". A vertical force magnetic survey was carried out over the prospect (see Fig. 5). The results were analysed and a drill target was proposed.

5.1.6. Drilling

One diamond drill hole has been completed. Specifications are as follows:

NAME: Explorer 99 DDH 1

COLLAR COORDINATES: 1172.5mE; 1140mN.

APPROXIMATE GEOGRAPHIC COORDINATES: Latitude 19° 37' 40"  Longitude 134° 15' 43"

BEARING: 180° Grid; 180° Magnetic.

TARGET: 135m vertically below 1175mE; 1060mN.

SUMMARY RESULTS: No economic mineralisation was intersected. A considerable thickness of magnetic sediment was encountered (see Fig. 6).

5.1.7. Conclusion

The anomaly has been adequately tested and analysis has shown that the magnetic sediments encountered were the most likely cause of the magnetic anomaly.
5.2. EXPLORER 109 PROSPECT

5.2.1. Location

Explorer 109 Prospect is situated approximately 4 km north-east of Tennant Creek at the intersection of latitude 19°38'14" with longitude 134°13'31" (see Fig. 2). Access is via a graded dirt road from the bitumen road from Peko Mine to Orlando Mine at a point 1 km north of the road junction at the Government Battery.

5.2.2. Tenure

The prospect is covered by two mineral leases held by Peko Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area.</th>
<th>Name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML 667E</td>
<td>15 ha</td>
<td>Explorer 109 East</td>
</tr>
<tr>
<td>ML 668E</td>
<td>&quot;</td>
<td>West</td>
</tr>
</tbody>
</table>

5.2.3. Grid Survey

The point 20E; 00N on the Bureau of Mineral Resources 1969 Geophysical Grid was established as a datum (10,000mE; 1000mN). A baseline was surveyed in from 10000mE 10000mN to 7100mE; 10000mN.

A traverse was surveyed in from 7100mE; 10000mN to 7100mE; 11450mN.

A sub-baseline was surveyed in from 6900mE; 11450mN to 7500mE; 11450mN.

Traverses were surveyed in as follows:

- 6900mE from 11300mN to 12000mN
- 6950mE " 11300mN " 12000mN
- 7000mE " 11300mN " 12000mN
- 7050mE " 11300mN " 12000mN
- 7100mE " 11300mN " 12000mN
- 7150mE " 11300mN " 12000mN
- 7200mE " 11300mN " 12000mN
- 7250mE " 11300mN " 12000mN
- 7350mE " 11300mN " 12000mN
- 7500mE " 11300mN " 12000mN
5.2.4. Geology

Regional geological mapping at a scale of 1:12000 and detailed mapping at a scale of 1:3000 of the prospect has been carried out.

A hematite shale horizon containing a series of ironstone bodies within a sequence of greywacke sandstone and shale, is tightly folded into a syncline with dips in the order of 50 - 60°.

A prophyry horizon lies within the southern half of the prospect but the actual position of the contact has not been ascertained.

The area to the north and east of the prospect is relatively complex structurally and the relationship between the neighbouring structural features and the syncline which lies within the prospect has not been determined (see Fig. 3).

5.2.5. Geophysics

The Explorer 109 Anomaly lies off the "Aeromagnetic Ridge" and falls within a zone of west-north-west trending magnetic highs called the Burnt Shirt Mine. The anomaly has been tested previously by diamond drilling and revealed an ironstone body. A total force magnetic survey was carried out over the prospect (see Fig. 7).

5.2.6. Conclusion

The most recent survey suggests that the body has been insufficiently tested and warrants further testing to determine its potential at depth.
5.3. **EXPLORER 110 PROSPECT**

5.3.1. **Location**

Explorer 110 Prospect is situated approximately 3.6 kms north east of Tennant Creek at the intersection of latitude 19°38'8" with longitude 134°13'15" (see Fig. 2). Access to the prospect is via a graded dirt road from a point situated approximately 1 km north of the road junction at the Government Battery on the Peko-Orlando Road.

5.3.2. **Tenure**

The prospect is covered by one mineral lease held by Peko Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area</th>
<th>Name</th>
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<tr>
<td>ML 676E</td>
<td>15 ha</td>
<td>Explorer 110</td>
</tr>
</tbody>
</table>

5.3.3. **Grid Survey**

The Explorer 109 sub-baseline was extended from 6900mE to 6300mE.

Traverses were surveyed in as follows:-

<table>
<thead>
<tr>
<th>6300mE</th>
<th>from</th>
<th>11450mN</th>
<th>to</th>
<th>12100mN</th>
</tr>
</thead>
<tbody>
<tr>
<td>6400mE</td>
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<td>&quot;</td>
<td>11300mN</td>
<td>&quot;</td>
<td>11800mN</td>
</tr>
<tr>
<td>6500mE</td>
<td>&quot;</td>
<td>11300mN</td>
<td>&quot;</td>
<td>12100mN</td>
</tr>
<tr>
<td>6550mE</td>
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<tr>
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<tr>
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<tr>
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<td>11300mN</td>
<td>&quot;</td>
<td>12100mN</td>
</tr>
</tbody>
</table>

5.3.4. **Geology**

Geological mapping of the prospect was carried out at a scale of 1:12000 and 1:3000.

Outcrop is present only within the southern portion of the prospect. The sequence consists of greywacke
sandstone and shale with a hematite shale horizon and is a continuation of syncline encountered at Explorer 109 (see Fig. 3).

5.3.5. Geophysics

The Explorer 110 Anomaly (B.M.R. Anomaly AR-1) lies off the "Aeromagnetic Ridge" and in the westernmost anomaly of the west-north-west trending zone of magnetic highs known as the Burnt Shirt Mine. A total force magnetic survey was carried out over the prospect (see Fig. 7).

5.3.6. Conclusions

The anomaly has not been tested by diamond drilling and analysis of the magnetic survey indicated that it has potential for approximately 1 million tonnes of ironstone at a depth in the order of 300 metres. Further evaluation is therefore warranted.
5.4. **EXPLORER 114 PROSPECT**

5.4.1. **Location**

Explorer 114 Prospect is situated approximately 3.5 km north-east of Pekon Mine at the intersection of latitude 19°39'15" with longitude 134°18'12". Access is via a bush track from a point immediately west of the Pekon Mine running in a northerly direction for 2.5 kms to the baseline of the 1969 B.M.R. Geophysical Survey thence eastward along the baseline to the prospect.

5.4.2. **Tenure**

Two mineral leases have been applied for the Pekon Mines Limited.

<table>
<thead>
<tr>
<th>No.</th>
<th>Area.</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explorer 114 No. 1</td>
<td>15 ha</td>
<td>Under application</td>
</tr>
<tr>
<td>Explorer 114 No. 2</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

5.4.3. **Grid Survey**

The grid point 20E; 0 on the Bureau of Mineral Resources 1969 Geophysical grid was established as a datum (10000mE; 10000mN). A baseline was constructed on a bearing of 090° magnetic from 100000mE; 10000mE; 10000mN to 15600mE; 10000mN.

Traverses were surveyed in as follows:

<table>
<thead>
<tr>
<th>15100mE</th>
<th>From 10000mN to 10700mN</th>
</tr>
</thead>
<tbody>
<tr>
<td>15200mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15300mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15400mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15500mE</td>
<td>&quot;</td>
</tr>
<tr>
<td>15600mE</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

5.4.4. **Geology**

There is no outcrop within the prospect. Regional geological mapping at a scale of 1:12000 has been
carried out on the limited exposures in the immediate vicinity of the prospect. Geological interpretation places the prospect within the greywacke, sandstone and shale sequence of the Middle Member of the Carraman Formation. A major anticline axis striking approximately east-west lies to the south of the prospect similarly striking synclinal axis lies to the north of the prospect (see Fig. 3).

5.4.5. Geophysics

The Explorer 114 Anomaly (B.M.R. Anomaly AR-10) lies on the northern edge of the "Aeromagnetic Ridge". The anomaly was covered by a total force magnetic survey (see Fig. 8).

5.4.6. Conclusions

Analysis of the geophysical results indicates that the anomaly potentially represents and ironstone body of the magnitude of approximately 1 million tonnes. A drill target has been determined at 300m. The anomaly therefore has not been tested and warrants further evaluation.
5.5. AR-5 AEROMAGNETIC ANOMALY

5.5.1. Location

The AR-5 Aeromagnetic Anomaly is situated approximately 4.4 kms east-south-east of Tennant Creek at the intersection of latitude 19°39'15" with longitude 134°13'45". Access is via the Tennant Creek-Peko Mine road to a point approximately 1 km past the Government Battery road junction. The prospect lies immediately to the north of the road.

5.5.2. Tenure

There is no mining tenement held over the prospect.

5.5.3. Grid Survey

The point 20E; 00N on the Bureau of Mineral Resources 1969 Geophysical Survey was established as a datum (10000mE; 10000mN). A baseline has been surveyed from 10000mE; 10000mN to 7100mE; 10000N (see Section 5.2.3.).

A traverse was surveyed in 7500mE from 9300mN to 10000mN. A sub-baseline was surveyed in on 9500mN from 7500mE to 8200mE.

Traverses were surveyed in as follows:-

7500mE from 9250mN to 9800mN
7700mE " 9250mN " 9800mN
7800mE " 9250mN " 9800mN
7900mE " 9250mN " 9800mN
8000mE " 9200mN " 9800mN
8100mE " 9200mN " 9800mN

5.5.4. Geology

With the exception of a small hill in the southwestern portion of the prospect the area is devoid of outcrop. A regional geological mapping programme indicated that the prospect lies on the southern limb of an east-west striking anticline whose axis is situated approximately 100 metres north of the prospect.
A major fault is situated immediately to the west of the prospect and is observed in the western tip of the hill in the south-west of the prospect to offset the sequence.

5.5.5. Geophysics

The AR-5 Aeromagnetic Anomaly lies near the southern edge of the "Aeromagnetic Ridge". The prospect has been covered by a vertical force magnetometer survey (see Fig. 9).

5.5.6. Conclusions

The result from the geophysical survey are inconclusive and it is considered that the anomaly is the northern portion of a much broader anomaly lying further to the south. Further extensions to the south would be required to investigate the anomaly fully.
5.6. AR-9 AEROMAGNETIC ANOMALY

5.6.1. Location

The AR-9 Aeromagnetic Anomaly is situated approximately 3 kms north-east of Peko Mine at the intersection of latitude 19°39'30" with longitude 134°18'07". Access is via a bush track from a point immediately to the west of Peko Mine running in a northerly direction for 2.5 kms to the 1969 B.M.R. Geophysical Survey baseline thence eastward along the baseline to the prospect.

5.6.2. Tenure.

There is no mining tenement held on the prospect.

5.6.3. Grid Survey.

The point 20E; 00N on the Bureau of Mineral Resources 1969 Geophysical Grid was established as a datum (10000mE; 10000mN). A baseline was surveyed in from 10000mE; 10000mN to 15600mE; 10000mN.

Traverses were surveyed in as follows:--
14800mE from 9700mN to 10000mN
14900mE " 9700mN " 10000mN
15000mE " 9700mN " 10000mN
15100mE " 9700mN " 10000mN

5.6.4. Geology

The prospect is completely devoid of outcrop. Regional geological mapping has been carried out and the prospect has been interpreted as lying within a syncline which is striking east-west and is comprised of a sequence of greywacke, sandstone and shale of the Middle Carraman Member.

5.6.5. Geophysics

The AR-9 Aeromagnetic Anomaly appears to be part of the "Aeromagnetic Ridge". The prospect was surveyed by a total force magnetometer survey.
5.6.6. Conclusions.

The prospect was drilled by the N.T. Mines Branch (Willis 1972) and the hole encountered disseminated magnetite in sediments. The hole adequately tested the anomaly and no further work is warranted.
5.7. COMET PROSPECT

5.7.1. Location

The Comet Prospect is situated approximately 1.4 kms north of Peko Mine at the intersection of latitude 19°39'40" with longitude 134°16'50". Access is via a bush track from a point immediately west of Peko Mine and running in a northerly direction for 1 km to the prospect.

5.7.2. Tenure

No mining tenement are held over the prospect.

5.7.3. Grid Survey.

The point 20E; 00N on the Bureau of Mineral Resources 1969 Geophysical Survey was established as a datum (10000mE; 10000mN). A baseline was surveyed from 10000mE; 10000mN to 15600mE; to establish a sub-baseline on 8800mN from 13100mE to 13,500mE traverse 3100mE was surveyed in from 8600mN to 10000mN. Traverses were surveyed in as follows:-

13150mE from 8600mN to 9100mN
13200mE " 8600mN " 9100mN
13225mE " 8600mN " 9100mN
13250mE " 8600mN " 9100mN
13275mE " 8600mN " 9100mN
13300mE " 8600mN " 9100mN
13325mE " 8600mN " 9100mN
13350mE " 8600mN " 9100mN
13400mE " 8600mN " 9100mN
13450mE " 8600mN " 9100mN
13500mE " 8600mN " 9100mN

5.7.4. Geology

A low outcrop of indurated greywacke and shale dipping to the south at 40-50° is present at the prospect. A mineralised horizon lies on the northern edge of the outcrop and dips at 85° to
the south. Further outcrops of greywacke and shale lies to the north-east and north-west of the prospect. The dips of these outcrops are similar but the greywackes tend to be coarser. The prospect lies in the southern limb of an anticline whose axis strikes east west and is situated approximately 1500 metres north of the prospect.

5.7.5. Geophysics

The Comet Prospect lies on the southern edge of the "Aeromagnetic Ridge". A total force magnetometer survey was conducted over the prospect (see Fig. 10).

5.7.6. Conclusions

The Northern Territory Mines Branch drilled two diamond drill holes at the Comet Prospect. These holes encountered barren ironstone. Analysis of the results from the total force magnetic survey indicated that the body could be vastly different at depth. The prospect is therefore not fully tested and warrants further investigation.
5.8. AR-8 NORTH AEROMAGNETIC ANOMALY

5.8.1. Location

The AR-8 North Aeromagnetic Anomaly is situated 3 kms north-north-east of Peko Mines and the intersection of latitude 19°39'05" with longitude 134°17'32". Access is via a bush track from a point immediately to the west of Peko Mine running in a northerly direction for 2.5 kms to the B.M.R. 1969 Geophysical Survey baseline thence eastward along the baseline to the prospect.

5.8.2. Tenure.

There is no mining tenement held on the prospect.

5.8.3. Grid Surveys

The point 20E; 00W on the Bureau of Mineral Resources 1969 Geophysical Survey Grid was established as a datum point (10000mE; 10000mN). A baseline was surveyed in from 10000mE; 10000mN to 15600mE; 10000mN.

Traverses were surveyed in as follows:-

- 13700mE from 10000mN to 10800mN
- 13800mE " 10000mN " 10800mN
- 13900mE " 10000mN " 10800mN
- 14000mE " 10000mN " 10300mN
- 14100mE " 10000mN " 10300mN
- 14250mE " 10000mN " 10300mN
- 14300mE " 10000mN " 10300mN

5.8.5. Geophysics

The AR-8 North Aeromagnetic Anomaly is considered to form part of the "Aeromagnetic Ridge". The anomaly displays a dispersed character which is typical of variation in the magnetic topography and concentration. The prospect was covered by a total force magnetometer survey (see Fig 11).

5.8.6. Conclusions

The anomaly is very similar to AR-9 anomaly which
was tested by diamond drilling by the Northern Territory Mines Branch. The diamond drill hole encountered disseminated magnetite in sediments and this is likely to be the case in this anomaly.

The results from the total force surveys support this consensus. No further testing is warranted.
5.9. DW-1 NORTH AND AR-7 AEROMAGNETIC ANOMALIES

5.9.1. Location

The two anomalies are situated approximately 3 kms north-north-west of Peko Mine at the intersection of latitude 19°39'00" with longitude 134°16'13". Access is via a bush track from a point immediately west of Peko Mine running in a northerly direction for 2.5 kms to the 1969 B.M.R. Geophysical Survey baseline. The prospect lies adjacent to the road, north from the baseline.

5.9.2. Tenure

There is no mining tenements held on the prospect.

5.9.3. Grid Survey

No grid was surveyed in.

5.9.4. Geology

The area is devoid of outcrop. Regional geological mapping of outcrops to the north of the prospect which dip steeply to the north suggest that the area lies within a syncline which strikes approximately east-west. The area is considered to be underlain by a sequence of greywackes, sandstones and shales of the Middle Carraman Member.

5.9.5. Geophysics

A number of reconnaissance magnetic traverses were conducted over the area using the vehicle magnetometer-navigator.

5.9.6. Conclusions

The results from the reconnaissance magnetic traverses did not indicate any anomalies which warranted any further investigations.
6. EXPENDITURE

The total expenditure on Mining Reserve 298 for the 12 months ending June 14th 1974 was $39,274.81.

Details of expenditure were as follows:-

<table>
<thead>
<tr>
<th>Activity</th>
<th>$</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Field Surveying</td>
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</tr>
<tr>
<td>Leasing</td>
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<tr>
<td>Geological Services</td>
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<td>Computer Services</td>
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<tr>
<td>Project Travel</td>
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<tr>
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<td><strong>TOTAL</strong></td>
<td><strong>$ 39274.81</strong></td>
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The dissection of expenditure detailed above was done according to the following points:-

a. Expenditure is costed directly, the exception being administration cost and unallocated field expenses.

b. Administration costs are proportioned on the basis of the payroll costs for the project to the total payroll.

c. Unallocated field expenses consist of the following field overheads which are spread on the same basis as the administration costs:

Field Messing
Vehicle Operating
Field Supplies
Workshop Supplies
Depreciation - Field Plant
7. BIBLIOGRAPHY

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Geology of the Mt. Woodcock 1 Mile Sheet, Tennant Creek, N.T.

Sediments of the Warramunga Geosyncline, in Syntaphral Tectonics and Diagenesis: "Symposium" (S.W. Carey Convenor).

ELLISTON J.N., 1968
Retextured Sediments, in Intern. Geol. Cong. 23rd. Rept. Session, Prague, 8, 85-104

ELLISTON J.N., 1969
The Genesis of some Epigenetic Type Ore Deposits, Cas. Mineral. Geol., 14, 129-139

LARGE R.R., 1974

WILLIS J.L., 1972
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PROSPECT/MINE: EXPLORER 99

Log of Hole: DHI No. 1

Location: 5 miles east of Tennant Creek (Explorer 99 Grid)

Purpose of Hole: To test the Explorer 99 magnetic anomaly

Proposed By: R.L. Richardson  Date: 11.6.73
Proposed Target: 1175  E: 1060, N: -135m  R.L.
Hole Planned By: B. Nakar  Date: -  Checked: J. Ackland
Hole Approved By: B.T. Williams
Hole Logged By: H. Reyner and T. Wright (students 1973-74)

Collar Co-Ordinates:

Proposed: 1172.5  E: 1110  N: -  R.L.
Surveyed: 1172.5  E: 1110  N: -  R.L.  Surveyed by: B. Nakar  Date: 11.6.73
Actual: -  E: -  N: -  R.L.  Picked up by: -  Date: -

Collar Bearing:

Proposed: 180°  Grid: 180°  Magnetic:
Surveyed: 180°  Grid: 180°  Magnetic:
Actual: -  Grid: -  Magnetic:

Collar Inclination:

Proposed: -65°
Surveyed: -65°  Surveyed in By: B. Nakar
Actual: -  Picked up by: -

Target Depth: 158 m.
Proposed Final Depth: 200 m.
Actual Final Depth: 177 m.  Hole Terminated By: B.T. Williams

Reason for Termination: The hole intersected massive magnetic sediment, which is thought, to have caused the Explorer 99 anomaly

Drilling: Date Commenced: 6.6.73  Date Completed: 12.7.73
Drilled By: Geopeko Drilling (N. Julie)

Wedges Placed At: -
Remarks: -

Economic Summary Result: No economic mineralization was intersected.
**EXPLORER 99 DMH 1**

**SURVEYS**

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</table>
by R. Rawson and S. Wright.

Only 20cm Recovery
Highly cleaved and weathered clayey silt.

Graywacke and siltstone
Only in lens.
Graywacke is graded. Siltstone shows ripple marks, flame structures. Manganese occurred on bedding planes.
Rock predominantly graywacke and consists of clear quartz, red jasper and rock fragments.
41 - 42m Bedding approx. 4° to core axis.
Cleavage " " 30° " "
Core oxidised, buff coloured in most places.
Graywacke younging down the hole

Fine Graywacke
Same as above. Bedding very slight angle to core, (almost 0°)

45.5 - 47.5m

Graywacke and siltstone
Bedding of the older siltstone and graywacke shows load casts and related flame structures.
Bedding again very shallow, younging down the hole.

47.5 - 51m

Bedded Siltstone
Predominantly siltstone with 30cm of graywacke.
Siltstone is oxidised, clayey; buff coloured.
Load casts dominant.
Manganese in joint planes.
Bedding at approx. 50.5m approx. 2° to core axis.
Cleavage " " 50.5m " 30° " "

51 - 56m

Graywacke and siltstone
Load casts present in siltstone, indicate younging up the hole, core still oxidised, buff.
Graywacke varies from fine to medium.

Bedding at approx. 54.5m reads approx. 6°
Cleavage at 53.2m " 60°
Oxidized zone ends at about 56m.
Any further in joints only.

56 - 58m

Greywacke and Siltstone
Bedding is shallow approx. 15° at 57.5m.
Greywacke is magnetite rich, sediment is
attracted to magnet when powdered.
Cleavage approx. 30° at 57m.

58 - 60m

Magnetite rich Greywacke and Siltstone
The siltstone is not noticeably magnetic.
At approx. 59.5m bedding between fine and
medium greywacke indicated by load casts
and grain size reading 6°, very slight to
core axis.
At approx. 61m bedding in silt, broken
giving mould and cast of current ripple marks.
At approx. 63m cleavage in siltstone 30°
to core axis, also at same position there is
a grain size change with sharp boundary at 30°
to axis. This anomaly to bedding readings
on either side, suggest a small fault.

66 - 73.8m

Between 66 and 66.5m siltstone penetrates
into overlying greywacke. This possibly a
large load cast, smaller casts are evident
on side; this indicates that beds are the
right way up.
At 69.8m (approx) other side of postulated
fault (?) again an abrupt grain size change.
Quartz also infills the trace here.
Bedding subparallel to axis for length of
this tray (i.e. to 73.8m), approx. 5° at 71m.
At 66.5m quartz veins 45° and 135° to axis.
Greywacke is magnetic due to disseminated
magnetite, but silt is not.
Geological Log, Continued.

73.8 - 81m

Fine - Medium Magnetite Greywacke
At approx 76m Bedding between fine and coarser greywacke 15° to core.
At approx. 78m Cleavage 45°
Lead structures and slump type patterns are evident. Some beds give a fold typical of pre-consolidation deformation. Because of this, accurate bedding here is hard to obtain. 80m change in core size.

81 - 83m
Magnetite rich Siltstone.
No obvious Bedding.
Cleavage approx. 90m 45° to core axis.
Drilling marks on this soft fine grained rock makes grain size comparisons very difficult.
Very uniform, no change in rock type.

92 - 102.3m
Magnetite Silt and Greywacke.
Siltstone is minor, but also magnetic.
Bedding at approx. 92.3m was recorded as 12° to core. No structures present.
At approx. 92m Bedding plane between greywacke and siltstone.
Well developed lead casts indicate greywacke to be the younger rock, and this extends down the hole, hence overturned bedding at this point.
At approx. 100m Cleavage 55°
" " 99m Bedding disrupted but obtain reading 15° to core

102.5 - 113.7m
Very fine - Medium Greywacke (Mg. rich).
The fine greywacke is siltstone.
Magnetite disseminated throughout whole core.
Bedding at approx. 104m reading 20°
Micro structures (ripples and casts?)
Bedding at 103m reading 25°
On the former reading the magnetite seems to p parallel bedding.
Cleavage at approx. 111m reading 55° in silty fraction.
113.7 - 124.65m

Very fine - medium Greywacke (i.e., rich)
best bedding probably occurs as fine laminations,
which are obscured by drilling.
Bedding observed at approx. 122.4m reading 25°.
At approx. 115m a structure trending 40°
to axis occurs. These resemble small
current ripples (asymmetrical). They show
bedding to be overturned. The core has
broken along the bedding plane, iron oxide
has penetrated the plane also.
At approx. 122m bedding between fine and
medium grained greywacke 30° to axis.
Also at approx. 122.5m cleavage 55°.
Fine crenulation evident on surface as well.
At same position is slip plane at 30° to
axis (possibly along bedding) quartz filled.

124.65 - 133.5m

At approx. 125m bedding with load casts
showing bedding to still be overturned,
reads 24°. Cleavage 56°.
From approx. 127 - 130m numerous veins with
vughs consisting of calcite and minor
fluorite (purple colour, cleavage octahedral,
and crystals isometric). There is also
chlorite and a granular olive green mineral
present.
At approx. 133m Bedding 40° to axis.
" " 133.5m Cleavage 60° to axis.

135.5 - 146m

At 136m reading on bedding 35°.
At 138m bedding opposite to before. Now
reads 25°. Structures indicate bed now
upright. Silt below coarser greywacke, this
only small bed 14cm thick.
At approx. 144.8m again bed overturned,
reading 25°. Calcite and fluorite in fine
veins trending 45° at approx. 137m.
Cleavage 60° at 145m and 138m.
EXPLORER 99 DDH1

GEOLOGICAL LOG. CONTINUED.

146  -  156.2m  
At approx. 149.2m bedding 30°, younging down hole.
At approx. 150.3m bedding 35°.
Graded beds still young down hole.
At approx. 150m cleavage 60°.
Pyrite blobs on joint plane at about 151m.

156.2  -  167.8m 
Bedding at 156.6m reads 35°.
Graded beds at approx. 156.8m indicate younging down hole.
At approx. 166m reading 40° to core.
Load structures, still overturned.
Cleavage 80° at 165 and 158m.
At 164.5m vein of calcite and chlorite on slickensides.

167.7m  -  177m 
At 167.7m bedding 40°
At 174.5m bedding 40°
Cleavage at 169.5m 70°
Cleavage at 176m 85°
At 180.3 large vein of calcite with chlorite(?)
At 183.5m quartz vein.

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Geophysical Surveys.

DRAWN L.J.D. Farrar DATE July 1973
AREA Tennant Creek N.T.
PROSPECT EXPLORER 109
PLAN SHOWS DDH14 Magnetic susceptibility hystogram.
Report No.

Plate 14.
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Plan No

Tennant Creek N.T.

AR-15

Fig. 9