WESTMORELAND JOINT VENTURE

TENNANT CREEK AREA

AUTHORITIES TO PROSPECT 2090, 2092, 2093

REPORT ON 1970 EXPLORATION PROGRAMME

OPEN FILE

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Three Authorities to Prospect covering a total of 294 square miles in the Tennant Creek area of the Northern Territory have been subjected to exploration techniques aimed primarily at discovery of copper mineralisation, associated with magnetic bodies.

Initially the areas were covered by a detailed airborne magnetic survey from which individual magnetic anomalies were selected for detailed examination on the ground.

During 1970, a total of 24 individual magnetic anomalies were examined by ground magnetics and geological mapping. Two of these anomalies were covered by a soil geochemical survey and subsequent percussion drilling was conducted on these.

Significant mineralisation has not been encountered in either of the two anomalies drilled to date and the source of the anomalies appears to be dolerite intrusives, carrying disseminated magnetite. Recommendation is given to further examination of three anomalies which have been subject to preliminary survey, and to ground follow-up of a further four anomalies indicated by the airborne survey, but not yet examined on the ground.
2. INTRODUCTION

Three Authorities to Prospect, Numbers 2090, 2092 and 2093, located near Tennant Creek, are held by M.A.T. Exploration Pty. Ltd. (For location and access see Plate 1).

The work here described was carried out under a Joint Venture between Westmoreland Minerals Limited, M.A.T. Exploration Pty. Ltd., and Paringa Mining & Exploration Company Limited.

An airborne magnetometer survey was carried out over these areas in 1969 for M.A.T. Exploration Pty. Ltd. and formed the basis for the work described in this report.

This report covers the period April, 1970 to December, 1970 when ground investigation of areas indicated by the airborne magnetic survey was carried out.
3. CONCLUSIONS AND RECOMMENDATIONS

The magnetic anomalies investigated, were found, with one exception, to be of low intensity compared with the anomalies associated with producing mines on the field. Two magnetic anomalies resembling the one at the "Orlando" mine were further investigated.

Magnetic anomalies occurring in areas of Ashburton Sandstone were related to conformable intrusive dykes and were assessed as having a low potential for mineralisation.

Soil geochemical anomalies were related to concentrations of ironstone, carrying anomalous metal values.

Geochemical results obtained from percussion drill samples showed anomalous metal values to be associated with a quartz-hematite lens in one instance, and anomalous results are tenuously related to contact effects at a sediment-dolerite contact occurring in the weathered zone, in the other case.

Two anomalies were drilled. In each case the anomalous magnetics were related to dolerite dykes carrying minor disseminated magnetite, rather than to ironstone bodies.

Recommendation is given to ground investigation of four anomalies indicated by the airborne magnetometer survey, but not yet investigated by ground follow-up methods. Two of these anomalies lie in the south-west corner of Authority to Prospect 2090. The other two anomalies lie in Authority to Prospect 2092, one in the south-west corner and one in the north-east corner. Investigations are to use the same methods as in the previous survey.

Three magnetic anomalies are recommended for interpretation by a consulting geophysicist. These are anomalies 2093/E, 2093/F & G and 2093/D.

It is recommended that following interpretation of these anomalies, that an auger drilling programme be carried out over them and over anomalies 2090/R and 2090/G. The recommended auger drilling programme would involve 5000 feet of drilling, provision being made for inclusion into this programme of any favourable anomalies which may result from field investigation of the proposed anomalies.
4. REGIONAL GEOLOGY

4-1. GENERAL:

Pre Cambrian Warramunga Group sediments are the oldest rocks outcropping in the vicinity of Tennant Creek. The Group is composed of greywackes, siltstones, and shales which have been tightly folded about E-W trending fold axes. Individual beds are characteristically lenticular. Cross-bedding, ripple marks and graded bedding occur as primary sedimentary structures. Slump structures, mudflows and sand dykes are common, evidencing extensive post depositional mobilization of sediments.

Soda granites have intruded the Warramunga Group sediments, most notably in the centre of the field.

Quartz feldspar porphyry dykes intruding the Warramunga Group sediments are found widely distributed throughout the field. Basic intrusives and lamprophyres are less commonly found intruding Warramunga Group sediments.

Silicious sandstones and shales of the Ashburton Sandstone unconformably overly the Warramunga Group sediments, outcropping to the north as a prominent range. These sediments have been intruded conformably by basic and intermediate dykes.

4-2. TENNANT CREEK MINERALISATION:

Gold and copper mineralisation in the Tennant Creek field is found in association with ironstone bodies, in host rocks of Warramunga Group sediments.

In the primary zone the ironstone bodies are composed of magnetite, quartz and often pyrite and chalcopyrite occurring disseminated through, infilling fractures in, or forming lenses in the ironstone. In the oxidised zone, magnetite is altered to hematite except for a fine grained massive form which may persist unaltered to the surface. Sulphides are oxidized, and intense leaching has occurred, commonly resulting in removal of copper from the oxidized zone. These conditions may persist to depths of 150-300 feet.
The ironstone bodies are formed by intrusion, or by replacement of brecciated mudstones. In addition to the copper-gold bearing magnetite bodies, some magnetite bodies are gold-bismuth bearing. These appear restricted to ironstone bodies emplaced at the intersection of a crush or shear zone with a brecciated mudstone. The gold occurs both in the sediments, and in the ironstone body, usually as small rich ore bodies.

Porphyry intrusives have been found in close proximity to the mineralized bodies throughout the field. In certain circumstances, barren ironstone bodies occur at porphyry-sediment contacts. Magnetic anomalies, caused by the primary zone of ironstone bodies, can be used to locate the body, which can then be investigated for possible mineralisation by diamond drilling.
5. AEROMAGNETIC SURVEY

1. INTRODUCTION:

The Authorities to Prospect were covered by an airborne magnetometer survey flown by Geophysical Resources Development during the period mid-April to end of May, 1969. A total of 2600 line miles of survey were flown.

Survey specifications called for a flight altitude of 500 feet M.T.C. with nominal traverse spacings of 1/8 mile.

The instrument used was a specially modified A.S.Q. 10 fluxgate magnetometer, using sensitivity of 300 gammas full scale deflection. Altitude was recorded from a Bonzer T.R.N. 70 radar altimeter. Flight path control was obtained through use of a 35 mm positioning camera.

Final results were prepared as magnetic contour maps of the vertical magnetic field.

Consulting geophysicist P. Woyzbun & Associates carried out interpretation of the survey results. In addition, limited interpretation and advice on field methods and instruments was given by a geophysicist experienced in magnetic exploration methods in the Tennant Creek Field, and attached to the staff of Kenneth McMahon & Partners Pty. Ltd.

2. GEOPHYSICISTS INTERPRETATION:

Magnetic contour maps and all relevant magnetometer recorder charts were thoroughly inspected, and in addition to the selection of individual anomalies, an interpretation of major geophysical features was made. Interpreted features indicated on the maps were:

(1) Stratigraphic trends.
(2) Geophysical discontinuities.
(3) Zones where "the magnetic picture did not conform".

In the interpretation of aeromagnetics in the Tennant Creek field, three types of magnetic patterns are recognised.
Regional - due to large scale blocks of disseminated magnetite.

Isolated - due to relatively small bodies of dense magnetite often containing significant quantities of copper and/or gold.

Isolated - due to bodies of dense magnetite within disseminated zones.

As mineralization is reported to be controlled by shears, faults and associated breccia zones, particular attention was paid to anomalies which occurred at, or near, intersections of geophysical discontinuities.

Thirty-one magnetic anomalies were proposed for ground coverage.

Ground magnetometer surveys were recommended to be carried out along north-south lines, 400 feet apart, covering the area of the airborne magnetic anomaly.

An Askania magnetometer was recommended because of its high accuracy.
6. FIELD PROGRAMME

6-1. (a) MAGNETICS:

A total of 24 anomalies were approved for ground investigation after the airborne magnetic anomalies recommended by the consultant geophysicist were checked for -

(a) Location - to ensure that anomalies recommended lay within the Authority to Prospect areas.

(b) Tenancy - to ensure that anomalies covered by mining leases held by other operators were not investigated.

Individual anomalies were plotted onto an airphoto mosaic and initially located in the field by taking traverses, using a Sharpe Variometer. A grid, with north-south lines 400 feet apart and stations 100 feet apart was then laid to cover the area of the anomaly and a ground magnetometer survey, using an Askania Magnetometer, was carried out. Where required, station density was increased to 200 feet x 100 feet, to increase definition of the anomaly.

Raw field data was reduced and contour plans and stacked profiles were drawn up.

During the field period, it became apparent that magnetic anomalies occurring in areas of Ashburton Sandstones had a very low potential for Tennant Creek type mineralization (see Note 1, Appendix I) and work on five anomalies was suspended. An additional five anomalies occurring in areas of Warramunga Group sediments were proposed for ground follow up.

Field mapping over anomalies was carried out along traverse lines 400 feet apart.

Anomalies were selected for additional work on the basis of the results of the magnetic surveys (see Note 11, Appendix I) and geology.
6-1. (B) GEOCHEMISTRY:

On anomalies 2090/O and 2090/S the presence of hematite rubble and outcrop associated with the magnetic anomaly suggested favourable conditions for Tennant Creek mineralisation.

As field mapping indicated that residual soil conditions prevailed over the main areas of interest on these anomalies, a geochemical soil sampling survey was conducted.

Samples were taken at a depth of 6 inches, sized to -80 mesh B.S.S. and submitted to Sampay Exploration Services for trace element analysis for copper, lead and bismuth by atomic absorption.

ANOMALY 2090/O:

The geochemical sampling on the anomaly was conducted at a sampling density of 400 ft. by 100 ft. and involved 476 samples.

Results of analysis for bismuth were mostly below the limit of detection of the method. Measureable values were distributed as an irregular halo around the magnetic anomaly.

A copper anomaly having threshold values of 25 ppm, above a background of 5 ppm has peak value of 58 ppm at 16E/8S. The geochemical anomaly is East-West trending, centred over 85 and extends from 8E to 28E as a narrow linear anomaly.

A lead anomaly is centred over lines 12E and 16E as a broad subrounded anomaly approximately 500 ft. wide. Anomalous values are greater than 35 ppm and background values are 10 ppm. A peak value of 450 ppm occurs at 12E/98 with associated copper values of 50 ppm.

The copper anomaly is centred approximately 500 ft. south of the peak of the magnetic anomaly and its trend parallels the trend of the magnetic anomaly. The lead anomaly also lies to the south of the peak of the magnetic anomaly coincident in part with the copper anomaly.

ANOMALY 2090/S:

The geochemical sampling on this anomaly was conducted at a sampling density of 400 ft. by 50 ft. and involved 222 samples.

As in anomaly 2090/O, bismuth values were mostly below the limit of detection with measurable values distributed as an irregular halo around the magnetic anomaly.
A copper anomaly of greater than 45 ppm with background values of 5 ppm had a peak value of 90 ppm at 8W/0.5S. The geochemical anomaly in copper was elliptical in shape, approximately 200 ft. by 400 ft. and was centred 200 ft. south of the peak of the magnetic anomaly.

A lead anomaly of greater than 40 ppm with background values of 10 ppm has peak values of 150 ppm at 1.0S/12W and 1.5S/12W. The anomaly is approximately 400 ft. wide and is centred on BL on lines 12W and 8W coincident with the peak of the magnetic anomaly.

In evaluating geochemical distribution patterns, reference was made to P.W. Crohn (Eighth Commonwealth Mining and Metallurgical Congress 1965) who reports that very low regional background geochemical values for copper prevail and anomalous concentrations of as little as 50 ppm may be significant.

6-1 (c) SELECTION OF DRILLING TARGETS:

Interpretation of the magnetic anomalies considered to be of interest did not delineate a localized source for the anomaly, but rather a broad source that represented a vague target for diamond drilling.

The anomalous geochemical pattern also was broad, and in general, geological information was lacking.

A drilling programme was planned, involving drilling along lines in order to gain geological information, to investigate the source, at depth, of the geochemical soil anomaly, and to investigate the nature of the source of the magnetic anomaly.

Consequently, lines were selected that pass through the centres of magnetic and soil geochemical anomalies in the two anomalies selected for drilling.

The lines selected for drilling in two locations passed through the centres of magnetic and soil geochemical anomalies.

6-1 (d) INTERPRETATION OF GROUND MAGNETICS:

Field data from selected anomalies was forwarded to Mr. T. Johnson for interpretation and advice. Additional field data was requested over the lines selected for interpretation and when this had been obtained the following interpretations were given:
Parameters determined by Interpretation.

Anomaly 2090/0          Line 16E
Interpreted Width      =  800 ft.
  "                       " Depth  =  200 ft.
  "                       " Apex   =  8.25S
  "                       " Dip     =  60° North

Interpretation is based on the assumption that the anomaly is represented by a series of thin dykes and assuming no remanence.

Anomaly 2090/S          Line 12W
Interpreted Width      = Thin (less than 140 ft.)
  "                       " Depth  =  140 ft.
  "                       " Apex   =  0.4S
  "                       " Dip     =  87° North.

Interpretation is based on the assumption that the anomaly is represented by a series of thin dykes and assuming no remanence.

Anomaly 2090/S          Line 8E
Interpreted Location of centre beneath 6.3N
Interpreted Depth 430 ft. to centre.

Interpretation: The anomaly is represented as having a spherical source. If there is any suggestion of dip, it would be steeply to the south. Interpretation was carried out by a method of curve fitting. (See Note III - Appendix 1).
6-2 INDIVIDUAL ANOMALIES:

ANOMALY 2090/0

The airborne magnetic anomaly was resolved into two ground magnetic anomalies, an eastern anomaly 2000 ft. long by 800 ft. wide, having peak magnetic relief of 350 gammas, and a western anomaly which is arcuate, 3000 ft. long and up to 1500 ft. wide with localized peaks. Peak magnetic relief is 550 gammas.

Warramunga Group arenites, argillites and silicious argillites outcrop in three areas but correlation between outcrops was not possible. The magnetic anomaly lies on the north side of a west plunging anticline. The anticline is complicated by a number of cross faults. Hematite and jasper rubble is common in the area of the magnetic anomalies. Small outcrops of hematitic jasper outcrop marginal to this area of the magnetic anomaly.

A weak soil geochemical anomaly in lead and copper occurs 300 ft. south of the peak of the magnetic anomaly.

Drilling revealed two magnetite-bearing dolerite dykes to which the magnetic anomaly has been related.

Analysis of drill hole samples show anomalous copper and lead values near sediment-dolerite contacts, but no economic mineralisation was intersected.

ANOMALY 2090/S

A weak airborne magnetic anomaly subjected to ground investigation revealed a circular magnetic anomaly 1200 ft. in diameter with peak magnetic relief of 550 gammas. To the west of this feature a linear magnetic anomaly 1600 ft. long by 800 ft. wide with peak magnetic relief of 550 gammas was found.

The circular magnetic anomaly is located near the crest of a fold in vertically dipping sediments.

Sub-outcropping Warramunga Group argillites and arenites are widely distributed.

Hematite-quartz rubble is distributed over an area coincident with the peak of the western part of the magnetic anomaly. Outcropping highly weathered and in part lateritized dolerite, occurs marginal to the area of anomalous magnetics, reflecting the contour shape of the anomaly.
A weak soil geochemical anomaly in lead and copper occurs over the peak of the western part of the magnetic anomaly, coinciding with the area of hematite-quartz rubble.

Drilling revealed a steep dipping magnetite-bearing dolerite dyke, to which the magnetic anomaly was related. A narrow quartz-hematite zone, outcropping at the surface, was intersected at depth, giving the highest geochemical values encountered in the drilling programme.

ANOMALY 2090/G

A sub-circular magnetic anomaly approximately 1000 ft. in diameter with peak magnetic relief of 250 gammas was found. The area is covered with bulldust and some lateritic rubble, but Warramunga Group arenites outcrop immediately south of the anomaly.

ANOMALY 2090/R

This anomaly has two semi-elliptic magnetic anomalies each 1000 ft. by 800 ft., separated by 1000 ft. Peak magnetic relief is 250 gammas. The area has a thick cover of bulldust, which is in places underlain by laterites. Warramunga Group arenites outcrop to the north of the area.

ANOMALY 2090/Q

Very similar to anomaly 2090R but peak magnetic relief is 60 gammas. Warramunga Group argillites and arenites outcrop to the south and east of the anomaly.

ANOMALY 2090/P

Only magnetic "noise" (one or two station, high or low readings) was encountered. Further work was suspended on completion of the ground magnetic survey.

ANOMALIES 2090/H and 1

The magnetic anomaly is 3600 ft. long, open each end and with no suggestion of closure. Profiles from line to line are similar in shape, width and in maximum magnetic relief of approximately 800 gammas.
Prominently outcropping Ashburton Sandstone and silicified sandstones are common. Laterites, thought to be derived from igneous intrusives are distributed near the sides of an alluvium-covered valley floor, over which the peak of the magnetic anomaly was found.

ANOMALY 2090/A

Only a limited ground magnetic survey was carried out. The magnetic anomaly is linear, open at each end and approximately 800 ft. wide. The ground magnetic survey covered 1600 ft. of the anomaly along its length. Peak magnetic relief was 400 gammas. The anomaly occurs in an area of outcropping Ashburton Sandstone, silicified sandstones and gravels, intruded by narrow microsyenite dykes, which have in places been weathered to a ferruginous laterite.

ANOMALIES 2090/B, C & D

There are three magnetic anomalies, two of which are linear, the third is an area of magnetic noise. The two linear anomalies are 1600 ft. and 2000 ft. long, 800 ft. wide and having peak magnetic relief of 1000 gammas.

The anomalies occur in an area of Ashburton Sandstone, sandstones and conglomerates intruded in places by narrow microsyenite dykes which have in places been weathered to ferruginous laterites.

ANOMALIES 2090/J & K

Two linear magnetic anomalies occur, on 2000 ft. long the other 1600 ft. long. Both magnetic anomalies are open at each end, 800 ft. wide and with peak magnetic relief of 400 gammas. Outcropping Ashburton Sandstone, sandstones and gravels occur, but only minor laterites have developed.

ANOMALY 2092/D

The magnetic anomaly is a broad, linear anomaly 4800 ft. long by 2400 ft. wide with peak magnetic relief of 250 gammas. There is no exposure of Warramunga Group sediments over the anomaly area, but shales of this group outcrop north of the anomaly.
ANOMALY 2093/D

The magnetic anomaly is approximately 1400 ft. long by 1000 ft. wide. The anomaly is very intense at its peak and measuring was beyond the capacity of the instrument. However it occurs over a prominent outcrop of fine grained compact ironstone, and although no magnetic samples were found, it is thought that magnetite occurs near the surface and is responsible for the intensity of the anomaly. Five ironstone lenses outcrop on the area, which is otherwise covered by argillite scree and soil.

This anomaly has been diamond drilled previously by an unknown operator. There are no records of prior tenancy in Mines Branch records, and information concerning the results of drilling are not available.

ANOMALY 2093/E

Three magnetic anomalies were outlined by the ground magnetic survey. An eastern and a central magnetic anomaly are sub-rounded, approximately 800 ft. in diameter, having peak magnetic relief of 300 gammas. The western magnetic anomaly is elliptical, approximately 1500 ft. long and 1200 ft. wide with peak magnetic relief of 800 gammas. The magnetic low associated with this feature lies to the north, rather than to the south. The area is mostly covered by bulldust but Warramunga Group arenites and argillite are exposed in the area of the magnetic anomaly near a prominent outcrop of quartz feldspar porphyry.

ANOMALIES 2093/F and G

Two magnetic anomalies were outlined. The east anomaly is broad, elliptical 2800 ft. long by 1800 ft. wide with peak magnetic relief of 350 gammas. The west anomaly is a long narrow linear feature, marginal to which is an elliptical magnetic anomaly approximately 900 ft. long by 600 ft. wide, having peak magnetic relief of 450 gammas. The area is covered by bulldust, except for the extreme western part, where Warramunga Group arenites outcrop, and common quartz-tourmaline rubble, indicative of nearby granite is found.

ANOMALY 2093/H

This is a very narrow linear magnetic anomaly, with maximum magnetic relief of 100 gammas occurring along a granite-sediment contact.
ANOMALIES 2093/I and J

Two broad, linear magnetic anomalies occur, side by side. Both anomalies are 1600 ft. wide in excess of 4600 ft. long, and have peak magnetic relief of 350 gammas. The trend of the anomaly parallels the strike of silicified sandstones, arenites, and minor argillites, that outcrop over the area. In the north part of the area, outcropping granite and mica schists are exposed in stream beds.

ANOMALY 2093/J

A magnetic anomaly in the west part of the area was made up of alternating high and low values occurring in a linear zone, trending northeast-southwest with peak magnetic relief of 450 gammas.

A magnetic anomaly in the east part of the area is a broad, very irregular feature having peak magnetic relief of 250 gammas.

The area is mostly covered by bulldust, but Warramunga Group arenites outcrop in the extreme northwest corner.

ANOMALY 2093/K

A magnetic anomaly having an irregular semi-elliptical shape 1600 ft. long by 100 ft. wide, with peak magnetic relief of 200 gammas.

No outcrop occurred over the magnetic anomaly, but granite outcrops to the east, and Warramunga Group silicified argillites and a quartz feldspar porphyry outcrop to the west of the magnetic anomaly.
6-3 DRILLING:

A total of 3507.5 feet of down hole rotary percussion drilling was carried out on the two anomalies selected as being most promising. Percussion drilling was used as it was considered that the information obtained would be sufficient to delineate a target for subsequent diamond drilling.

A Halco 625 drill was used. Samples were collected continuously over 5 ft. sampling intervals, using an improvised but efficient collector. The hole was blown at each sample collection point. Samples were logged and a sample for assay was obtained by repeated splitting. Samples from selected parts of the holes were submitted to Sampey Exploration Services for analysis for copper, lead and zinc using an atomic absorption spectroscopy method. Geological sections were drawn up, incorporating assay results into the section.

ANOMALY 2090/0:

Six holes along 16E at stations 9S, 8S, 7S, 6S, 5S and 2S were drilled, inclined 70° to the south to intersect an interpreted source of the magnetic anomaly, dipping 60° to the north.

Two magnetite-bearing dolerite dykes, dipping at approximately 60° north, intruding Warramunga Group arenites and argillites were intersected during drilling.

The dolerite dykes are considered to be the source of the magnetic anomaly. Intense weathering occurs to a depth of approximately 200 ft. The dolerite is weathered to orange and yellow clays near the surface, ranging to fresh dolerite at approximately 250 ft. Magnetite is absent in the weathered part of the dolerite and it appears at varying depths in different holes.

Minor concentrations of hematite were found in sediments near contact zones. Localised silicification of argillites with associated minor disseminated hematite was observed in one hole, collared at 16E/2S.
No economic grades of mineralisation were encountered. The best values were found in hole #4 collared at 16E/6S and were 2600 ppm Cu, 100 ppm Pb, and 120 ppm Zn for the interval 15 feet - 20 feet and 150 ppm Cu, 3400 ppm Pb, and 300 ppm Zn for the interval 55 feet - 60 feet.

These samples came from near a sediment-dolerite contact. High copper values were found in the sediments near this contact and high lead values and associated lower copper values occurred in the weathered dolerite.

ANOMALY 2090/S

Six holes were drilled along line 12W at stations 2N, 1N BL and 1S inclined at 70° to the south, to intersect an interpreted source of the magnetic anomaly dipping nearly vertically to the north. These holes did not define the attitude of the body, and two shallow holes at 0.75S and 1.5S inclined at 70° to the north were put in to investigate the south contact.

One hole on line 8E at station 7.4N inclined at 70° to the south was drilled to investigate the source of the magnetic anomaly centred on that line.

A magnetite bearing dolerite dyke, dipping at approximately 75° south, intruding Warramunga Group argillites and arenites was encountered. The magnetic anomaly is thought to arise from this dolerite dyke.

Intense weathering occurs to a depth of approximately 200 ft. The dolerite ranges from a red and white mottled clay near the surface to fresh dolerite at approximately 280 ft. Magnetite appears at approximately 160 ft. - above this it is altered to hematite. Sediments in the contact zone contain minor hematite. A narrow quartz-hematite zone occurring in the dolerite was intersected in the interval 95-100 ft. Assay results of 8500 ppm lead with associated values of 320 ppm copper and 300 ppm zinc over this section were the best recorded on this anomaly.
## 7. COST ESTIMATE

Costs are based on a field party comprising one geologist and two field assistants operating for three months.

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APPENDIX 1

NOTES ON FIELD PROCEDURES

NOTE 1:

After field investigation of anomalies lying in areas of the Ashburton Sandstones, work on 5 anomalies was suspended for the following reasons:

1. No economic mineralisation of the Tennant Creek Type is recorded in this lithologic group.

2. Airborne magnetic anomalies are generally long, linear features. Airphoto interpretation indicates stratigraphic control of anomalies and suggests that isolated anomalies result from fault displacements.

3. Field mapping indicates that in many cases anomalies can be related to intrusive dykes and/or possible beds rich in detrital magnetite.

NOTE 2:

Information for selection of favourable anomalies was obtained from B.M.R. Bulletin 44: "Magnetic Prospecting at Tennant Creek".

Anomalies were classified as:

1. Minor anomalies having violently disturbed readings, usually quite erratic, related to magnetic material at shallow depth.

2. Regular anomalies of considerable extent.

3. Broad regular anomalies showing small variations over a large area, due to regional effects of little interest.

Type 2 anomalies were subjected to a simple and approximate depth determination. Then, (using information from B.M.R. Bulletin 44), the size of the body was calculated.

Using this treatment, the anomalies were found to represent very small bodies by comparison with other mineralised bodies in the field. Two anomalies were selected because of similarity with the ground magnetics over the Orlando Mine.
NOTE 3:

The interpretations which fitted an infinite dyke interpretation well, were related to magnetite bearing igneous intrusives.

The ironstone bodies have finite dimensions and appear to give rise to anomalies fitting an interpretation assuming a spherical source.

Consequently, anomalies giving good fit to an infinite dyke interpretation should be awarded low priority for Tennant Creek type mineralisation.