

# EXPLORATION LICENCE 28904

## Airborne Geophysical Survey Results Report

### A regional magnetic signature

In the magnetic field intensity figure, the region of EL28904, as a whole is located in a high value area  $\Delta T$ ,  $\Delta T$  changes 0-1000nT. The whole region of EL28904 may have magnetite present.

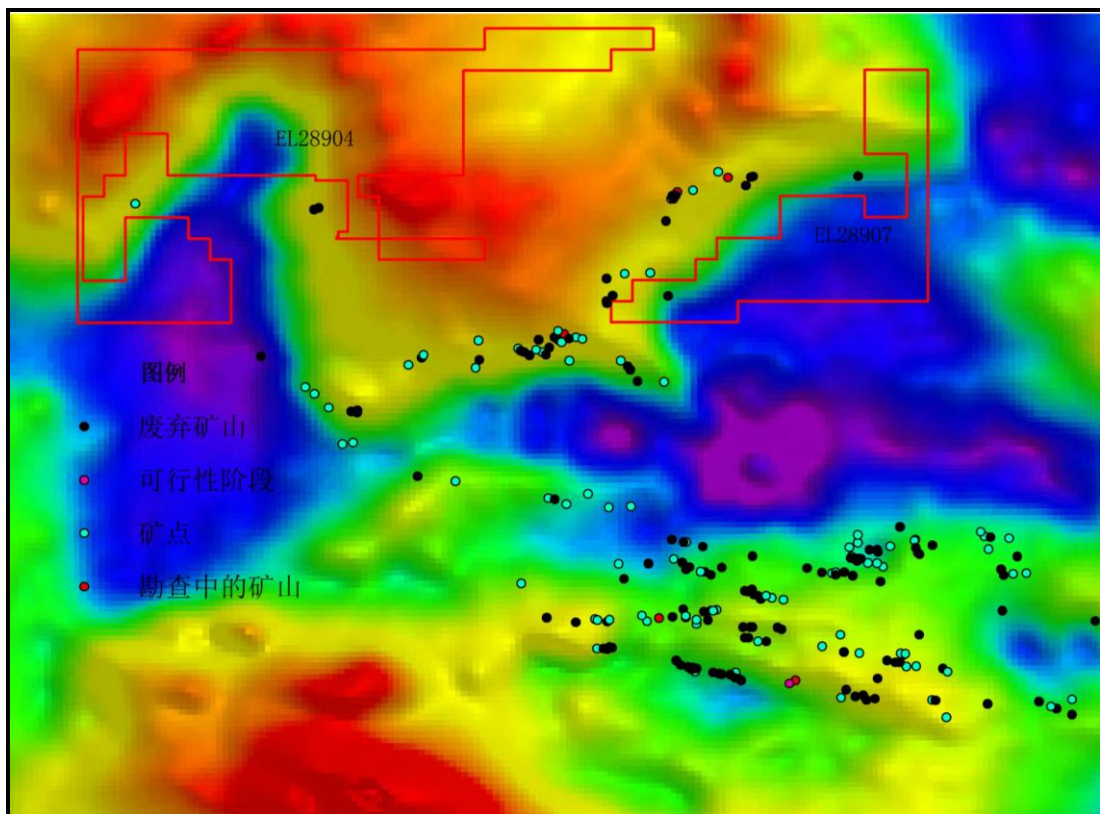
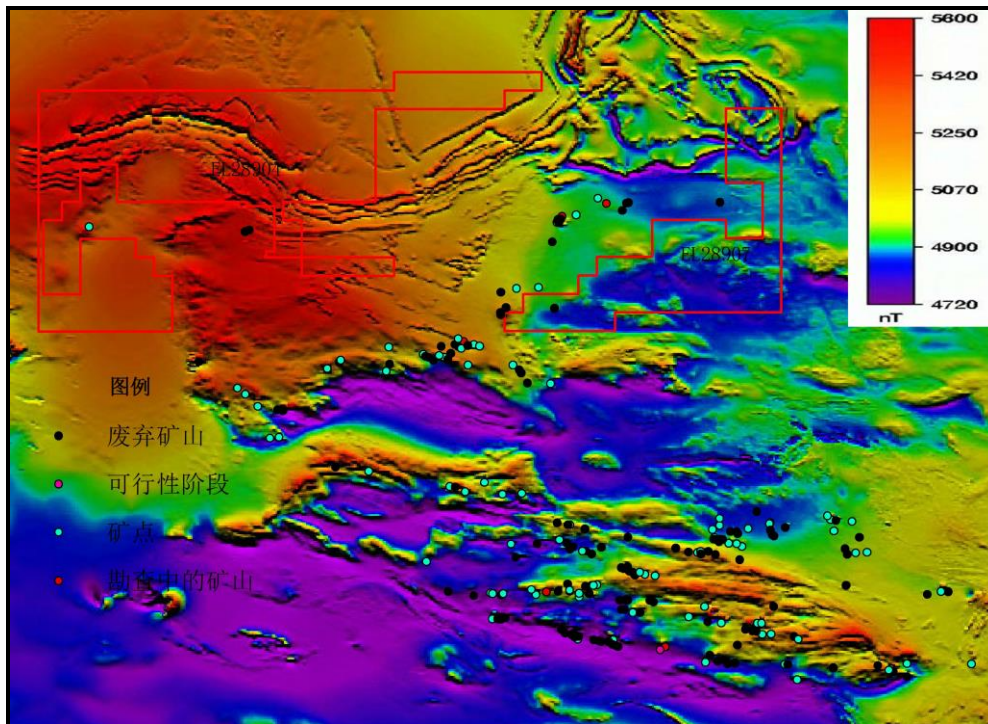


Figure 1- Pre-screening area Bouguer severe.



**Figure 2- Pre-screening area and external magnetic field intensity map**

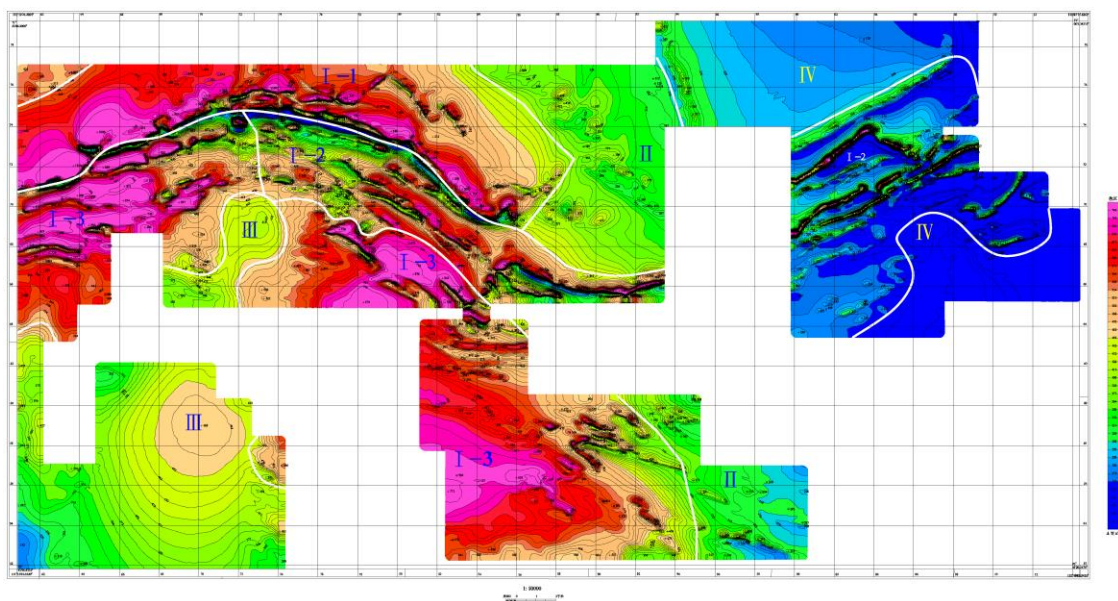
From the Bouguer gravity anomaly (Figure 1), the region gravity anomaly presents "tongue" low gravity anomaly and extends into the "arc" of high magnetic anomaly features. The region and the peripheral magnetic field intensity (Fig. 2) also shows that the gravitational field characteristics are substantially similar. Also from deposits, ore point distribution relationship with the gravitational field can be seen, the distribution of pre-check zone peripheral deposits, mines mainly in low gravity and high gravity edge band. According to domestic and foreign polymetallic ores of past experience and compared to other mine sites in the positional relationship between the Bouguer gravity anomaly and aeromagnetic anomalies, the licence's central high magnetic and gravity low possibly shows a potential for Au , Cu ore to be present.

**Second, pre-investigation area aeromagnetic anomalies**

The geological characteristics of the area shows that the area comprises mainly the formation of ancient Proterozoic to Cenozoic strata of greywacke, shale, siltstone, shale containing hematite, sandstone, dolomite, and mafic volcanic rocks. Magmatic rocks are mainly granite (Pgw), diabase (PdI) and minor intrusions of Lamprophyre and a very small amount of the same period Flynn subsets volcanic formation. Quartz diorite is present in small plutons or veins. The intensity of weathering of the rock in

the local southwest area of exposed granite and granodiorite in the southwest region are scattered.

Above ground, the magnetic characteristics of the magmatic rocks in its general form should be: basic - neutral - acid intrusive rocks or contemporaneous volcanics. The area is overall positive performance magnetic field based with only local distribution strip negative magnetic fields. According to the district contours aeromagnetic  $\Delta T$  plan can be broadly divided into the magnetic field in the area the following categories:



**Figure 3 pre-screening area and external magnetic field partition map navigation**

**Complex high background magnetic field region**

According to the degree of change  $\Delta T$  magnetic field can be divided into three partitions ( I -1), ( I -2), ( I -3), the overall performance from north to south for the more complicated - complicated - more complicated magnetic field distribution, where in scores are as follows:

**(1) higher than the complexity of the background magnetic field region ( I -1)**

The measured magnetic field distribution in the north-central region, the overall performance is characterized by high magnetic field strength,  $\Delta T$  is generally 500-1000nT, aeromagnetic contour overall performance is smooth, wide and slow changes in the magnetic field, only partial contour in the northern survey area

gradient changes greatly. The main area with Pthe, Pthc formation correspond, by the geological features visible. Pthe main lithology is sub-lithic lithic sandstone, volcanic arenites; sub-feldspathic lithic sandstone, gravel arenites. Pthc major lithology is pebbly sandstone sub crumbs arenites; floor see a small amount of local conglomerate; suicide. Therefore, the area belongs to high background magnetic field changes relatively large magnetic field, which primarily reflects the magnetic signature Pthe, Pthc formation. It is noteworthy that the contact area with the magnetic field formation region Pthe southern Pthm formations vary widely, the local magnetic body may be related to iron, that is in the middle of the zone may be looking for iron ore and polymetallic ore.

### **(2) a complex background of high magnetic field region ( I -2)**

Located in the area field ( I -1) south to Pthe, Pthm strata north-south split, the overall performance of the magnetic field into a multi-banded, local oval-shaped,  $\Delta T$  field value is generally 0-800nT change, aeromagnetic contour was EW arc distribution,  $\Delta T$  gradient is large. The magnetic field and the area Pthz, Pthm, Pthv correspondence, which Pthm main lithology and sub-lithic lithic sandstone, volcanic arenites; Pthz lithology is mainly shale and siltstone; Pthv main lithology of the acidic volcanic rocks, and strong weathering of iron; therefore the preliminary judging changes in the larger region of the main magnetic field and related volcanic area, the other in the local area still saw Pdl diabase, lamprophyre like basic rock distribution, also a large magnetic field changes the area a major factor.

### **(3) higher than the complexity of the background magnetic field region ( I -3)**

Located in the area ( I -2) Southern field, located in the central area of the survey area, the overall change is similar to ( I -1), and Pnr, Pnm formation correspond, Wundirgi group (Pnw), the main lithology of cuttings and debris Asia sandstone, siltstone, shale group, a small amount of thin to medium thick layer of tuff; Brumbreu group (Pnr) major lithology is lithic sandstone and volcanic arenites, quartz-rich heavy mineral sand rock cuttings; containing sand and gravel ; felsic tuff, arenites. The area is mainly visible volcanic sedimentary rocks, the magnetic field changes should be related to the formation of the above. However, in the

southeastern region of high local visibility strip local magnetic anomalies,  $\Delta T$  larger gradient magnetic body occurrence reflects steeper, possibly iron and polymetallic ore.

## **2, simple gentle background magnetic field region ( II )**

Northeast, the overall performance of the magnetic field area is located in the survey area is a gentle change, the smaller  $\Delta T$  gradient, the area mainly Pthc pebbly sandstone arenites, reflecting Pthc major lithology is pebbly sandstone arenites and the localized magnetic plate features a small conglomerate.

## **3, a simple high background magnetic field region ( III )**

Located in the southwest of the survey area, with oval background - high background magnetic field-based, small  $\Delta T$  gradient, aeromagnetic contour flat smooth performance, the area mainly sporadic exposed adamellite, quartz diorite intrusive rocks correspond to the surface mostly tertiary strata, preliminary analysis of the magnetic field changes in this area may be mainly covered with tertiary strata under the acidic intrusive rocks related.

## **4, low gentle background magnetic field region ( IV )**

Mainly in the northeast of the survey area, the overall magnetic field changes gently. The area mainly Pts, Short Range sandstone (Pts) main lithology net quartz sandstone; feldspathic lithic sandstones and siltstones. The main lithology of the upper section is clean quartz sandstone, lithic sandstone and feldspathic sandstone. Gentle low background magnetic field of the magnetic region is mainly caused by the formation of smaller Pts.

## **5, the initial understanding of the characteristics of the magnetic field distribution**

By measuring the area aeromagnetic structure and lithologic - stratigraphic distribution of the magnetic field to give a more adequate response, several geological interfaces in this area has been fully demonstrated. Mainly Paleoproterozoic Tomkinson Creek subsets (Pt), where sedimentary rocks, volcanic rocks and volcanic rocks form a significant magnetic interface, specifically to the formation primarily Pthe, Pthc and Pthz, Pthm, Pthv boundaries, during the

formation of a significant magnetic field change ( i -1 and zone i -2); Morphet Creek group (Ptm) Short Range sandstone (Pts) group mainly reflects the gentle gradual change field ( iv ), and the corresponding magnetic field region of sedimentary strata distribution has magnetic shall It is quite; lower tertiary intrusive rocks overlying acidic main display ( iii ) magnetic feature area.

Derived from the recognition that the magnetic field distribution and its comparison with the magnetic field region of ore:

1) first is the more complex high background magnetic field region ( I -1) mainly reflects Pthe, magnetic signature Pthc formation. He and volcanic rocks, volcanic rocks of the complex background of the high magnetic field region ( I -2) in Pthz, Pthm, magnetic response Pthv formation mainly in the magnetic field changes, small changes in the former field, just shows the magnetic field changes in the local site of intense tectonic activity large (northern survey area), which is itself due to the volcanic lithology changes combined with tectonic activity such large reaction Pthz, Pthm, intense magnetic field changes Pthv strata, forming banded magnetic anomalies, the additional capital in the region Pdl etc. output at the base of the dikes, magnetic anomaly  $\Delta T$  gradient large magnetic anomaly show the reaction of iron and magnetic substance may be related to polymetallic copper and gold.

2) Simple high background magnetic field region ( III) surface is mainly exposed Tertiary strata, sporadic outcrops adamellite intrusive rocks, magnetic field and other characteristics of quartz diorite presence of an acidic reaction in this area, acidic intrusive rocks, according to tradition mineralization theory, intrusive rocks peripheral contact zone can be formed with copper - gold polymetallic deposits related magnetic anomalies, so simple background high magnetic field region ( iii) complex with high background magnetic field region ( i -2) in the contact area should be looking for multi-metal ore favorable location, such as a simple background in high magnetic field region ( iii) with gentle background simple magnetic field region ( ii ) contact area (south of the survey area) formed a local strip magnetic anomalies may be related to polymetallic iron ore related.

3) The area of low gentle background magnetic field region (IV) mainly reflects the Short Range sandstone (Pts) strata, and smaller iron polymetallic mineralization relationship.

### **Third, faults and fracture signs of magnetic anomalies inferred**

#### **(A) faults magnetic anomaly flag**

**About the fracture on the aeromagnetic data manifestation, seen from aeromagnetic  $\Delta T$  contour plan of the area, its manifestations are the following forms:**

(1) different magnetic characteristics of the partition boundaries, which generally reflects the large fracture. Both sides of the fracture characteristics of different magnetic field more than reflect differences in the nature of the substrate on both sides of the fault, may indicate different sides of the tectonic evolution of the fracture.

(2) magnetic anomaly dislocation line, which is another form of fracture, it showed more along the fault occurred on both sides of the substrate lateral displacement, shear strike-slip fault is one of its main manifestations.

Gradient zone

(3) magnetic anomalies, it is often a different nature, different boundary depth of the magnetic body, vertical movement of the main fracture or horizontal displacement of the fracture can be expressed in such a little abnormal, and in addition, also showed that the anomalies along the fault is generally not magnetic igneous emplacement.

(4) with a linear magnetic anomaly, which is another important type of fault is displayed, it is the main manifestation of the magnetic anomaly fracture zone. More performance for the following forms:

① linear positive magnetic anomaly zone and the positive and negative changes in magnetic anomaly zone;

② linear negative magnetic anomaly zone, it indicates that the fault activity occurred near the rock magnetic reduced;

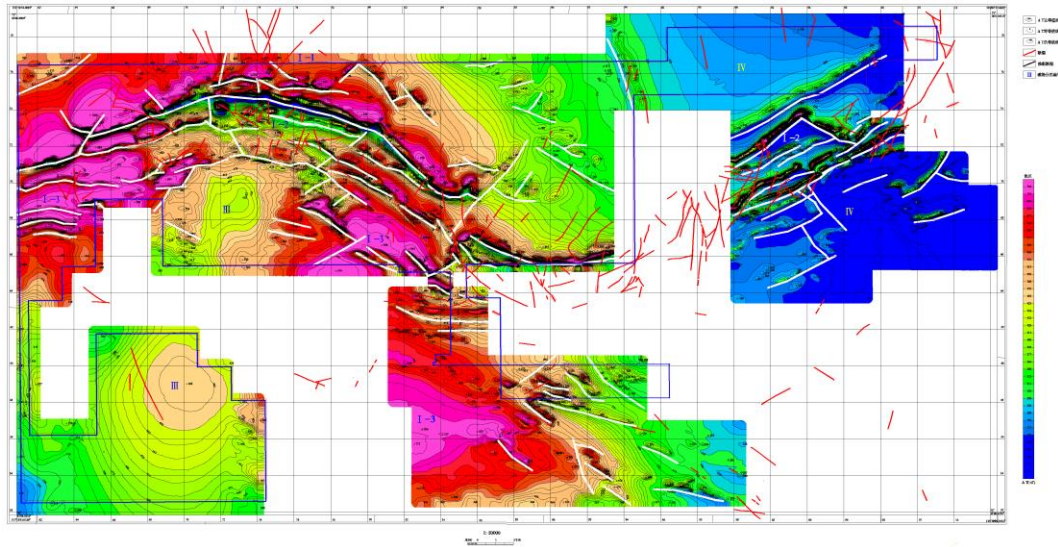
③ magnetic anomaly was beaded with distribution of this phenomenon

shows that the main fracture along the magnetic intrusive and more distributed.

It is noted that in the actual process of interpretation discovered exposed bedrock geological data and the delineation of faults in the main aeromagnetic circled faults do not always coincide, this situation there are several possibilities, one geological data mainly reflecting faults near to the superficial portion of the position, and aeromagnetic data is an integral of the subsurface position, precisely delineated in deep position fracture; the other is fracture characteristic aeromagnetic data reflects based on geological body under the premise of having magnetism, if the location of the fracture through geological non-magnetic, even if there are geological faulting, lifting or horizontal displacement is not significant magnetic anomalies, although it belongs to the rare situation, but really wild the existence of this phenomenon; based on the above two main reasons, the faults exposed surface area delineated faults and aeromagnetic data and other geophysical data is not fully consistent with the delineation is realistic.

In addition, the magnetic anomaly is deep underground, a comprehensive reflection of the shallow geological, tectonic phenomena, linear gradient zone boundary or faults are not absolutely reflect the need to magnetic data of multiple solutions comprehensive analysis of the concept of specific geological structure phenomenon, the main emphasis of the fracture interpretation of aeromagnetic interpretation of the results of a leading role.





#### 4 pre-screening area and peripheral aeromagnetic maps infer fracture

##### (B) The fault structure outlined

Regional points based exhibition bout faults, the faults in this area by D1 (1790-1835Ma) and D2 (1840-1860Ma) F1 and F2 two regions formed during the deformation of two conjugate faults affect mainly tectonic line direction is north North west to north east, mainly in the north-central.

The area by the spread direction of the fracture is mainly divided into NEE, NWW, EW trending faults, Moreover, north east, north west, north-south and north-south near the like. From the known fault rupture and inference, the region obvious faults distributed between Pthe and Pthm formation in magnetic signature was significantly negative magnetic anomaly with a gradient greater reaction fracture cutting deeper, negative magnetic anomaly zone It runs through the northern part of the survey area, its large-scale reaction. In Pthe northern and southern Pthm foregoing inferred faults parallel distributed plurality of NWW, NEE arc fault may break its earlier times, only on a smaller scale. North West region, NEE fault intersects the north-east or north-west fault of their active time was significantly higher than the North West, NEE fault to be late, for the performance of the magnetic field on the formation of the North West, North East zonal local magnetic field cutting, while breaking the junction to form complex magnetic field or local anomaly.

Fourth, inference and interpretation of aeromagnetic anomalies and measurement

Areas  $\Delta T$  flat surface contour maps show large positive magnetic field, and the local change is clear, therefore directly  $\Delta T$  plane contour map of magnetic anomalies delineated area, a total of 17 laps a significant magnetic anomaly, which mainly local anomaly concentrated in the tenements of the western, eastern distributed only C17 anomalies (Fig. 5), each anomaly interpreted to infer shown in Table 1.

### 5 pre-screening area west aeromagnetic anomaly map

#### Pre-screening area aeromagnetic anomalies interpreted to infer Summary

Exception number	Size (Length × width) km <sup>2</sup>	Geological background	Anomaly	Inference and interpretation
C1	(11×2.5) km <sup>2</sup>	Located Path stratigraphic distribution	NEE strip, local distortion is NNW faults cutting, $\Delta T$ peak 1056nT	Mainly Pthe strata containing magnetic volcanic rocks caused
C2	(3.0×0.5) km <sup>2</sup>	Located Pdl distribution	Long axis like EW distribution, $\Delta T$ peak 475nT	Mainly Pdl diabase, lamprophyre cause.
C3	(6×0.3) km <sup>2</sup>	Located Path stratigraphic distribution	EW strip, $\Delta T$ peak 762nT	Mainly Pthe strata containing magnetic volcanic rocks caused
C4	(5×1) km <sup>2</sup>	Located Pthc stratigraphic distribution, mainly pebbly sandstone sub crumbs arenites; floor see a small amount of local conglomerate	NW intermittent strip, two reaction NW partial exception, during which there is speculation NW trending fault segmentation, $\Delta T$ peak 653nT	Surface exposed Pthc and Tertiary strata, mostly sedimentary rocks, can not form a significant magnetic anomalies, the anomalies and high strength, abnormal

				reaction occurrence steeper magnetic presence, presumably with the iron ore-related polymetallic .
C5	(10×2) km <sup>2</sup>	Located Path stratigraphic distribution	NWW peak 856nT to strip, ΔT	And C1 with similar characteristics, mainly Pthe strata containing magnetic volcanic rocks caused
C6	(6×2) km <sup>2</sup>	Located Pur stratigraphic distribution, mainly lithology: conglomerate and sandstone	Oval, messy low and magnetic anomalies, ΔT peak 414nT	Pur Conglomerate Formation of secondary iron caused.
C7	(3×1) km <sup>2</sup>	Located Pur stratigraphic distribution, mainly lithology: conglomerate and sandstone	Oval, messy low and magnetic anomalies, ΔT peak 470nT	Pur Conglomerate Formation of secondary iron caused.
C8	(9×1) km <sup>2</sup>	Located Path stratigraphic distribution	NEE peak 989nT to strip, ΔT	And C1 with similar characteristics, mainly Pthe strata containing magnetic volcanic rocks caused
C9	(5.5×2) km <sup>2</sup>	Located Pdl distribution	Oval-shaped, EW distribution, ΔT peak 588nT	Mainly Pdl diabase, lamprophyre cause.
C10	(12×4) km <sup>2</sup>	Located Pthm, Pnr distribution	EW strip, ΔT peak 934nT	Mainly containing magnetic

				acidic, acidic volcanic cause,
C11	(4×4) km <sup>2</sup>	Located Pnr stratigraphic distribution of local distribution Pgw adamellite	Nearly oval shape, local anomaly was NWW, ΔT peak 683nT mainly containing magnetic acidic, acidic volcanic cause,	Iron ore and polymetallic speculate about.
C12	(2.5×0.3) km <sup>2</sup>	Located Pdl distribution	NWW zonal distribution, ΔT peak 664nT	Mainly Pdl diabase, lamprophyre cause.
C13	(8×1.5) km <sup>2</sup>	Located Ptz distribution	NWW zonal distribution, ΔT peak 734nT	Mainly containing magnetic acidic, acidic volcanic caused anomaly gradient is large, presumably with the iron polymetallic deposits related.
C14	(8×0.5) km <sup>2</sup>	Located Ptz, Pthv distribution	NWW zonal distribution, ΔT peak 790nT	Similar and C13 mainly containing magnetic acidic, acidic volcanic caused anomaly gradient is large, presumably with the iron polymetallic deposits related.
C15	面积约 6km <sup>2</sup>	Located Pgw, Pdp distribution area, area	Complex strip local anomaly, NW	Presumably caused by iron

		scattered Pgw intrusive rocks.	distribution anomaly gradient changes greatly, suggesting the region is more complex structure, $\Delta T$ peak 689nT	polymetallic ore
C16	An area of about 65km <sup>2</sup>	Located in Tertiary strata distribution area, area scattered Pgw intrusive rocks.	Oval-shaped, $\Delta T$ sleek contours, $\Delta T$ peak 469nT, general 200-400nT.	Presumably adamellite intrusive rocks quartzite caused.
C17	(9x0.3) km <sup>2</sup>	Located Pthw distribution	Banded, North East distribution $\Delta T$ peak 380nT, belong to low and localized magnetic field anomalies	Presumably caused by strong weathering of volcanic rocks.

#### V. inferred mineralization favorable areas

According to regional mineral materials, the known iron ore and polymetallic mineralization in this area slightly different geological conditions, in particular:

(1) all known and Au-Cu-Bi deposit, have an important bearing on the presence of iron oxide forming Paleoproterozoic Warramunga group of low metamorphic greywacke, sandy mudstone and shale. But this area belongs to the Warramunga formation. Upper part of the newer formations, and in the area of basic Paleoproterozoic strata of low metamorphic greywacke, sandy shale and mudstone and acid-based acidic volcanic rocks, as the difference between the known mine stratigraphic distribution.

(2) most of the ore body by tectonic constraints, with the underlying strata unconformable, steep. Footwall magnetite  $\pm$  hematite - quartz - chlorite reticular veins up through massive magnetite - chlorite iron ore, has been extended to the topmost and external wall rocks. High-grade gold ore is usually located at the bottom of the body, while copper and bismuth usually appear complex structure zone. Some orebodies into zonal distribution. The main ingredients are minerals magnetite and / or hematite - quartz - chlorite mica  $\pm$   $\pm$  carbonate. Massive structure. Magnetic

survey data interpretation found in this area are well developed structure, and with the known ore belt constructed in the same area, mostly in the area dip 40-60 °, occurrence steep tectonic activity mineralization favorable. (3) flight from the magnetic field, gravity field visible, more known mine located gravity low to high gravity take over the conversion, since iron ore and Au-Cu-Bi deposit is closely linked, so the gravitational field of the transformation zone close magnetic anomaly should be an indirect marker area iron ore prospecting of polymetallic.

The overall magnetic field (4) is located within the area of positive magnetic field range, but the local magnetic field change significantly, especially in the larger magnetic anomaly edge portion of the cloth-like reaction magnetic body produce steeper magnetic anomalies may be related to polymetallic iron ore related.

According to geological conditions contrast with the known ore in this area, the initial circle the favorable prospecting area 5, corresponding magnetic anomaly is: C2, C4, C11, C13, C14, C15 ,. Wherein C13, C14 belong to a favorable metallogenic anomaly.

(5) back to check constituency mainly Paleoproterozoic acidic, acidic volcanic rock, and the higher the total area of airborne radioactive stable phase together.

It should be noted that the delineation of mineralization favorable areas are mainly based on the results of aeromagnetic measurements by regional mineral data shows that deposits in the area found very little known in the region compared with each other no ore magnetic data, and therefore find delineation mine is still favorable area should be further determined on the basis of the geological Tacha.

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