COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record No. 1966/104

KALGOORLIE DETAILED AEROMAGNETIC SURVEY, Western Australia 1965

by

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CONTENTS

ILLUSTRATIONS

Note. This Record supersedes Record No. 1965/222

SUMMARY

A detailed aeromagnetic survey was made over an area extending south-south-east from Kalgoorlie. The surveyed area falls within the south-west corner of the Australian Precambrian Shield. The known rock types are basic lavas with interbedded sediments, acid lavas, pyroclastics, breccias, and erosion sediments intruded by sills of quartz-dolerite and ultra-basic rock. All these have been affected by metamorphic and metasomatic alteration, which is particularly evident in the vicinity of orebodies. In the Golden Mile, the orebodies tend to occur in the quartz-dolerite sills.

The survey area is interpreted as consisting of three sectors divided by two major faults. The north-eastern sector is small and unrelated to the other two. The eastern sector consists of the Kalgoorlie Syncline and the Kalgoorlie Anticline on the eastern limb of the Mount Hunt Anticline, transected by the Boulder Fault. The western sector consists of the western limb and the crest of the Mount Hunt Anticline, transected on the east by the Boulder Fault.

Detailed geological mapping, possibly involving auger drilling, is recommended to test the identification of the beds delineated by the magnetic results and the structural interpretation of the survey area.

1. INTRODUCTION

During the period mid-March to early June 1965, a detailed aeromagnetic survey was made by the Bureau of Mineral Resources (BMR) over an area of 150 square miles, which extended south-south-east from Kalgoorlie towards Feysville, Western Australia. The survey boundaries are shown in Plate 1. The area was selected in consultation with the Geological Survey of Western Australia and Western Mining Corporation Ltd, which holds temporary reserves in the area.

Kalgoorlie lies within the East Coolgardie Goldfield of Western Australia and is adjacent to the Golden Mile, the most important gold producing area in Australia. A major study of the Golden Mile and adjacent areas was undertaken by the Geological Survey of Western Australia and has been reported by Simpson and Gibson (1912), Feldtmann and Farquharson (1913), Honman (1914), Honman (1916), Feldtmann (1916), and Stillwell (1929). Since this study, most of the publications on the East Coolgardie Goldfield have concentrated on the structural interpretation of the Golden Mile. There is no recent description of the lithology of the region or of the metamorphic and metasomatic processes to which it has been subject.

Previous geophysical work in the survey area consisted of gravity and seismic refraction traverses reported by Urquhart (1956) and regional aeromagnetic surveys made by the BMR in 1957 (BMR, 1965a & 1965b). The northern boundary of the survey area overlaps the southern boundary of a similar detailed aeromagnetic survey made by the BMR in 1964 (Dockery & Finney, 1965). This survey was made in conjunction with New Consolidated Gold Fields (Aust.) Pty Ltd, who carried out geological mapping and auger drilling in the survey area. A geochemical analysis of the soil samples from the auger drilling is being made by officers of the BMR.

The aim of the 1965 survey was to aid geological mapping in the soil covered part of the area. It was made in conjunction with a mapping programme carried out by the geologists of Western Mining Corporation Ltd. The results of this programme and discussions with the participating geologists greatly assisted the authors in interpreting the aeromagnetic results. Geologists of the Geological Survey of Western Australia who were mapping the Kalgoorlie 1:250,000 map area during the course of the survey were also of assistance in this regard.

2. GEOLOGY

The survey area is part of the East Coolgardie Goldfield, which lies in the south-west corner of the Australian Precambrian Shield. The Precambrian Shield, which forms the greater part of the Western Australian land mass, contains the main metalliferous deposits in the State.

Regional geology (after Prider, 1948)

Archaean. The basal system in the south-west part of the Precambrian Shield is the Yilgarn-Kalgoorlie System. The best known development of the System is at Kalgoorlie, where the greenstone phase is associated with important gold deposits.

The oldest recognisable rocks, the Older Greenstone Series, are of basaltic character, probably largely submarine flows characterised by pillow structure and interbedded with pyroclastics and cherty sediments.

The rocks have been altered by metamorphism and regional metasomatism, with more intense local metasomatism in the vicinity of orebodies. The Older Greenstone Series range from the least altered, the fine-grained amphibolites, through fine-grained greenstones, to the highly carbonatised end product, the 'calc-schists'.

The succeeding period of the Yilgarn-Kalgoorlie System is represented by rocks of an extrusive type but of entirely different character. These are the Black Flag Beds and the Yildarlgoorda Sequence. They are dominantly acid (rhyolitic and dacitic) lavas with a more extensive development of flow breccias and pyroclastics interbedded with erosion sediments, and are largely terrestrial deposits.

The following period of the Yilgarn-Kalgoorlie System was one of quiescence during which the Kundana Sequence, a suite of erosion sediments that do not exhibit an igneous phase, were laid down.

The final stage in the Yilgarn-Kalgoorlie System is represented by the Young Greenstone Series, and was a hypabyssal phase of basic magma intrusion. The Younger Greenstones are intrusive into all older formations and form the country rock for nearly all the important auriferous lodes at Kalgoorlie. As with the Older Greenstones, they have undergone considerable alteration by metamorphism and regional and local metasomatism. The magma giving rise to these intrusions appears to have been extensively differentiated and three main phases can be recognised :

(1) Ultrabasic phase. Serpentinites, hornblendites, and various metasomatised products of peridotites and pyroxenites.

(2) Basic phase. Various low-grade metamorphic products of dolerite and quartz-dolerite.

(3) Intermediate to acid phase. Hornblende and albite porphyries.

The greater part of the southern half of Western Australia is made up of granitic rocks enclosing comparatively narrow north-west trending strips of Yilgarn-Kalgoorlie System rocks. The area consists largely of a folded complex of Archaean metamorphic rocks which have been extensively granitised to yield various gneisses and which have later been intruded by granite stocks. There were two distinct periods of granite emplacement. The Older Granite Period is now represented by granitic gneiss. The Younger Granite Period was one of dyke and stock intrusions, accompanied by the emplacement of end-phase quartz-feldspar porphyries, granitic porphyries, aplites, pegmatites, and quartz veins.

The structure of the Yilgarn-Kalgoorlie System shows that the main (isoclinal) folding was along a north-west axis. Cross-folding along an east-west axis is superimposed in this structure. This tectonic pattern might have controlled the localisation and grade of metamorphism and the degree of granitisation.

Proterozoic. In the southern half of Western Australia a suite of dykes has been mapped which intrudes all the above-mentioned formations. They are known as the Dundas Dyke Suite which is possibly of Lower Proterozoic age. They are vertical or steeply dipping, have an east-north-east strike and are classified as gabbro, norite, or pyroxenite.

Geology of the survey area (Plate 2)

The geology of the area to the east of Kalgoorlie and Boulder is known in some detail because of the numerous mine workings along the Golden Mile.

The lithologic succession (Woodall, 1965) is as follows -

Rock unit	Approximate thickness (feet)	Lithology
Black Flag Beds	10,000	Tuff, acid to intermediate lavas and agglomerate, sandstone, shale, slate and quartzite.
Golden Mile Dolerite	1000 to 2500	Sill of meta-quartz-dolerite and meta-quartz-gabbro with minor more-basic sections.
Paringa Basalt	1000 to 3000	Meta-basaltic lavas (in part pillow lavas) and minor interbedded slates.
Williamstown Dolerite	500 to 1000	Sill of meta-dolerite and meta-gabbro transitional to meta-quartz-dolerite near top and hornblendite near base.
Kapai Slate	10	Graphitic slate.
Devon Consols Basalt	200 to 500	Meta-basaltic lavas, typically pillow lavas.
Hannan's Lake Serpentinite	1000 to 3000	Massive fine-grained serpentinite (altered peridotites).

The basalts, which are equivalent to the Older Greenstone Series are fine-grained flows that have been chloritised and carbonatised by strong metasomatism. The Paringa Basalt contains numerous bands of pillow lavas and exhibits some mineralisation. The dolerites and the serpentinite are the equivalents of the Younger Greenstone Series. The Williamstown Dolerite is a fine-grained amphibolitic rock that shows marked differentiation between a lower ultrabasic phase and an upper acidic phase. This differentiation supports the view that the dolerites are probably sills.

The Golden Mile Dolerite, which varies in composition from place to place, is the main gold-bearing rock. It was originally amphibolitic, but low-grade metamorphism has caused extensive chloritisation of the pyroxenes and amphiboles and saussuritisation of the feldspars, after which metasomatism has caused widespread carbonatisation. The Hannan's Lake Serpentinite is an ultrabasic rock that was probably formed by the alteration of a peridotite.

Porphyries have been observed in the Kalgoorlie region. They possibly belong to the Younger Granite Period.

The geology of the survey area west and south of Kalgoorlie is not so well known as the Golden Mile Region. South of the Golden Mile the Williamstown Dolerite lenses out, but the Kapai Slate continues to be a good marker horizon as far south as Feysville. At Feysville the chloritic phase and the amphibolitic phase of the Golden Mile Dolerite cannot be mapped separately, and the Paringa Basalt cannot be distinguished from the Devon Consols Basalt.

In the western half of the area there are outcrops of serpentinite, basalt, dolerite, and sedimentary rocks. The relationship of these to the rock sequence in the Golden Mile is not certain.

Structure. The most important structural features in the survey area are the north-north-west lineated folding, and the associated strike faults. The folding is isoclinal and very tight, especially in the Golden Mile area, drag folds are common and there is thickening in the crests and troughs and thinning on the flanks. Changes of plunge from the north to the south of the area are possibly associated with cross-folding.

The major strike faults in the area are the Golden Mile Fault, the Boulder Fault, and the Mount Hunt Fault. Movement on these faults is predominantly vertical. A system of strike-slip cross-faults, which dip north-west at angles between 65° and 90°, has also modified the structure.

In the Golden Mile region a shear-fracture system complementary to, and limited by, the cross-faulting appears to influence the detail of ore distribution. It is best developed in the dolerite but is apparently dissipated on entering the basalts.

Mineralisation. There are two types of gold mineralisation in the survey area :

(a) Sulphide-bearing lode formations associated with extensive silica-carbonate metasomatism of the country rock. The deposits are pyritic replacements along steeply dipping shears and fractures and carry both free gold and gold tellurides. The pyrite contains finely disseminated gold. This type of mineralisation occurs in the Golden Mile.

(b) Gold-quartz mineralisation which is free of tellurides. The associated pyrite is usually coarser in grain and contains little gold. It occurs either as replacement type lodes along shears or as stockworks of quartz veins. It is of minor importance in comparison with the gold-telluride mineralisation and has been exploited only at the north end of the field (Hannan's North and Mount Charlotte mines).

Gold-telluride and gold-quartz mineralisation occurs only in chloritised host rocks, which are usually carbonatised adjacent to the lode or vein. The width of carbonatisation may vary from a few inches to several feet.

3. RESULTS

The interpretation shown in Plate 3 is based on a study of the magnetic profiles, thus some features discussed in this section are not readily apparent on the contour map (Plate 2). The points of inflection

on the profiles were used to delineate the boundaries of the beds causing the magnetic anomalies. The identification of the rock types in the respective beds was based on the known geology, the magnitude of the anomalies caused by the bed, and some photogeological interpretation. Finally, a structural pattern was envisaged to fit the interpreted configuration of the beds and rock types.

The survey area is divided into three sectors by two major faults (Plate 3). One of these, the Boulder Fault, is well known; the other is inferred from the magnetic results. The name Parkeston Fault is proposed for it, after the nearby railway marshalling yards. The small triangular sector to the north and east of the Parkeston Fault is relatively unimportant and appears not to be directly related to the other two. The eastern sector (south of the Parkeston Fault and east of the Boulder Fault) contains the economically important Golden Mile. It is probably related structurally to the western sector (west of the Boulder Fault).

The regional setting of the survey area can be determined from the aeromagnetic maps of the Kalgoorlie, Kurnalpi, and Widgemooltha 1:250,000 map areas (BMR 1965a, 1965b, & 1965c). Parts of these maps have been combined to show the regional magnetic contours in the vicinity of the survey area (Plate 1). The Parkeston Fault is a major, though not prominent, feature extending from five miles south of Golden Ridge mine on a strike of 322° for a distance of 40 miles to the vicinity of Credo mine, west of Paddington. Two near-parallel lineations of magnetic anomalies near Kalgoorlie extend over a distance of 40 miles on a south-south-east strike. The eastern lineation can be traced southward from a point about two miles north of Kalgoorlie, and the western lineation can be similarly traced from a point about seven miles north-west of Kalgoorlie. Near Kalgoorlie, the anomalies can be attributed to greenstone rocks, so that it seems reasonable to attribute the lineations of anomalies to greenstone over their entire length, in which case they are almost certainly part of a single structural feature. This may be an anticline with greenstone beds in each limb or it may be a syncline contained between two anticlines, in which case the greenstone beds occur along the axial planes of the anticlines. The results of this survey have not produced any evidence of such a syncline, but further geological mapping is needed to resolve this issue.

The Parkeston Fault is delineated on the magnetic contour map (Plate 2) by a dominant trend of low magnetic field values. It is assumed that the fault plane has been intruded by a reversely magnetised dyke. In the south-west corner of the Australian Precambrian Shield, reversely magnetised dykes are common. The results of the regional aeromagnetic surveys show that there is a suite of reversely magnetised dykes that parallel the east-north-east trending Dundas Dyke Suite. No outcrops of these reversely magnetised dykes are known, so their lithology is in doubt. A similar situation exists with the dyke intruding the Parkeston Fault. A small outcrop of an acid intrusive rock has been discovered in the approximate position of the dyke but its relationship to the magnetic anomaly is uncertain.

In the 1964 survey area (Dockery & Finney, 1965) and the 1965 survey area, the Parkeston Fault has an overall strike of 323°. An exception to this occurs where the Fault is adjacent to the greenstone beds north-north-east of Kalgoorlie, where the strike is 315°. Another exception occurs south-east of grid reference 543X/355Y, where the strike is 306°. This may be indicative of a change in structure or lithology of the country rock. It is not possible to estimate the dip of the dyke intruding the fault plane because the direction of its remanent magnetisation is not known.

A slight displacement of the fault plane at 377X/953Y is associated with a positive magnetic anomaly, which may be due to a small intrusive body. The positive anomaly at 541X/338Y is probably of similar origin.

The Boulder Fault has no expression as a magnetic anomaly on the contour map. It is known west of the Golden Mile from geological mapping, but its position under the Kalgoorlie townsite is uncertain. From a study of the apparent discontinuities in magnetic trends it is suggested in the interpretation map (Plate 3) that the Boulder Fault meets the Parkeston Fault at 377X/951Y. If this is so, the seimcircular structure contained by the grid reference lines 250X, 400X, 900Y, and 1000Y is part of the western sector previously mentioned. Another possibility is that the Boulder Fault diverges westwards, passing through 300X/865Y and 250X/1025Y. If this is so, the semicircular structure is part of the Kalgoorlie Syncline-Anticline structure in the eastern sector.

West and south of Hannan's Lake, the position of the Boulder Fault has been modified from that shown on the geological map (Plate 2) to retain the continuity of some of the beds delineated by the magnetic results.

North-eastern sector

Apart from an outcrop of meta-gabbro near the Parkeston Fault (Plate 3), little is known of the geology of the north-eastern sector. The remainder of the beds give rise to anomalies of about 10 to 30 gammas in amplitude and this is typical of a sedimentary sequence in which changes in deposition have caused some beds to have a slightly greater magnetic susceptibility than the remainder.

The faulting shown in this sector was inferred from the discontinuity of strike of some of the beds as revealed by a study of the magnetic field profiles. The strike of the faults was derived from a study of the aerial photographs of the area.

The sector is probably a minor part of an anticlinal structural block which extends north-north-west from Golden Ridge to beyond latitude 30°S and which is apparent on the regional aeromagnetic maps (BMR 1965a & 1965b). Part of this anticlinal structure is shown in Plate 1 as a semicircular lineation of anomalies passing through Broad Arrow, Paddington, Arrow Lake, Harper's Lagoon, and Gordon mine, which represent a greenstone sequence within the structural block.

Eastern sector

This sector contains the bulk of the known geology, which is easily correlated with the magnetic results. Unfortunately a large part of the known geology is on the Golden Mile, which is an area where low-level flying is prohibited.

The trends of the beds shown on the interpretation map (Plate 3) suggest that the structure of the eastern sector consists of the Kalgoorlie Syncline and the Kalgoorlie Anticline on the east limb of a major anticline (the Mount Hunt Anticline) which has been transected by the Boulder Fault (Plate 3). These features have a north-north-west strike with a northerly plunge between Feysville and Hannan's Lake, and again east and north-east of Kalgoorlie. On the Golden Mile the plunge is south; consequently, there must be a synclinal cross-fold somewhere between the Golden Mile and Hannan's Lake.

At 371X/882Y and 359X/868Y, there are large amplitude magnetic anomalies corresponding to the mapped outcrops of Hannan's Lake Serpentinite and Golden Mile Dolerite, respectively. South and east of the Golden Mile, tailings dams give rise to large amplitude magnetic anomalies, which confuse the magnetic pattern from the underlying rock. However, the mapped Williamstown Dolerite at 385X/558Y (Plate 2) and the Golden Mile Dolerite at 402X/568Y and 402X/527Y was delineated. The continuation south-south-east of these beds cannot be delineated owing to a large amplitude anomaly arising from the adjacent Hannan's Lake Serpentinite. Further south-south-east between the 460Y and 385Y reference lines, two beds of meta-gabbro or meta-quartz-dolerite are delineated by the magnetic results, as the adjacent Hannan's Lake Serpentinite does not cause so large a magnetic disturbance.

There is a marked variation in the amplitude of the anomaly caused by the bed of Hannan's Lake Serpentinite. Also, the boundaries of the bed as indicated by the magnetic results do not agree with those indicated by the geological mapping. At 368X/437Y, the amplitude of the anomaly due to the Hannan's Lake Serpentinite is at a minimum, and this occurs over a section of the bed that is known from the geological mapping to be highly carbonatised. Thus, parts of the Hannan's Lake Serpentinite that exhibit a relatively low magnetic field are represented (Plate 3) as 'altered ultra-basic rock' on the assumption that they have been highly carbonatised. Presumably this carbonatisation has been associated with faulting and shearing. For example, the section from 361X/467Y to 350X/379Y is assumed to be a large shear zone associated with the movement of the Boulder Fault. On the magnetic evidence, the Hannan's Lake Serpentinite terminates abruptly at the 350Y reference line. If this is so, a different rock type further south is indicated. Alternatively, the Hannan's Lake Serpentinite continues south as shown in Plate 2, but is highly carbonatised. Both of these propositions imply extensive faulting in this area.

East of Hannan's Lake, an area that gives rise to moderate amplitude magnetic anomalies has been interpreted as the reappearance of the Kalgoorlie Anticline structure. The beds delineated from the magnetic profiles have been assigned to the meta-gabbro or meta-quartz-dolerite rock type, and are probably equivalent to the Williamstown and Golden Mile Dolerites, with interbedded meta-lavas equivalent to the Paringa and Devon Consols Basalts. The two faults proposed in the interpretation of this area account for the discontinuities in the trends delineated by the magnetic profiles.

The southernmost quarter of the eastern sector is known from geological mapping to consist of porphyry, serpentinite, and some meta-lava. Because of this, most of the beds have been interpreted as consisting of ultrabasic or altered ultrabasic rock. The interpretation of this quarter was based on the proposition that if the Kalgoorlie Syncline-Anticline structure has a north plunge east and south-east of Hannan's Lake, the southern quarter was once very deep with respect to the original structure. Accordingly, hydrothermal conditions would have caused the sediments, most of the lavas, and any quartz-dolerite to be altered to the so-called porphyries. Some of the lavas and the ultrabasic rock would have resisted this alteration and thus give rise to the large amplitude magnetic anomalies. The moderate and low amplitude anomalies are due to altered ultrabasic rock, and the other rocks are of uniform magnetic susceptibility, as a result of the extensive metasomatic alteration.

Western sector

The geological knowledge of the western sector is limited to detailed information of the rock types and structure at Mount Hunt. In the remainder of the western sector, the geology shown in Plate 2 must be regarded as purely tentative. There is evidence that the Mount

Hunt structure is an anticline, namely the Mount Hunt Anticline, and in this interpretation it is considered to be one of the main structural features of the survey area. The western sector is interpreted as consisting of the western limb and the crest of the north-plunging Mount Hunt Anticline, which is transected on the east by the Boulder Fault. Evidence for this interpretation is the fact that the bed extending from 268X/263Y to 246X/600Y (Plate 3) has similar magnetic characteristics to the bed extending from 324X/580Y to 280X/730Y. As these are on opposite sides of the known Mount Hunt Anticline structure, they are probably the one bed repeated by the anticlinal fold. This bed is interpreted as meta-gabbro or meta-quartz-dolerite. The blocks at 272X/655Y, 263X/690Y, and 254X/725Y are considered to be of the same rock type and part of the same bed. If this is so, the crest of the Mount Hunt Anticline is a complex structure rather than a simple fold.

The bed extending from 279X/530Y to 293X/210Y has been identified as porphyry from a known occurrence of porphyry at approximately 279X/530Y.

Further west, the magnetic profiles indicate a bed of meta-gabbro or meta-quartz-dolerite extending south-south-east from 213X/710Y. This bed is known locally as the Abattoirs Greenstone. The semicircular structure between 281X/928Y and 359X/928Y is considered to be the northern extension of the Abattoirs Greenstone in the crest of the Mount Hunt Anticline. This proposition is tentative because of the lack of information over the Kalgoorlie townsite.

A bed of meta-gabbro or meta-quartz-dolerite has been interpreted between 169X/997Y and 165X/580Y; it has been intruded by ultrabasic rock south of 165X/580Y. North of 190X/920Y, a similar intrusion was detected in the 1964 survey area.

Along the western boundary of the survey area, beds of 'porphyry' have been delineated. (They were detected further north along strike in the 1964 survey area). The beds are considered to be equivalent to the acid flows, possibly andesite, of the Black Flag Beds or Yindarlgoorda Sequence described by Prider (1948). They are not considered to be of the same rock type as the porphyry occurring adjacent to the axial plane of the Mount Hunt Anticline or in the south-east corner of the survey area.

The faults shown in the western sector are proposed on the evidence of discontinuities in beds or variations in anomaly amplitude along a bed. The strikes of the faults were derived from a study of aerial photographs. The unidentified rock outlined at 129X/600Y is considered to be an intrusion along one of these fault planes.

4. CONCLUSIONS

The identification of rock types suggested in this record should be tested by geological mapping. Possibly auger drilling would be necessary to identify the soil covered beds which have been delineated by the magnetic results. The interpretation has been hampered by the lack of information on dips and facings of these beds, and this information should be determined in any follow-up geological work. It is important to determine the structure and identification of the rocks under the Kalgoorlie townsite to discover whether these fit the proposed structural pattern.

No indication of mineralisation can be deduced from the magnetic results, as no satisfactory theory of ore genesis has been proposed for the area; however, the results should be reconsidered in the light of any future theory. In this respect, variations in the amplitude of magnetic anomalies along any particular bed might be an indication of the amount of local metasomatic alteration. This could be useful in locating mineralisation if its relationship with metasomatic alteration can be determined.

If a useful correlation regarding gold mineralisation can be determined between the geochemical and aeromagnetic surveys in the 1964 survey area, then the 1965 results should be studied to select areas for further geochemical work. The area to the east of Hannan's Lake should be a good prospect. This area appears to be the southern extension of the Golden Mile structure and should be worthwhile investigating for gold mineralisation.

5. REFERENCES

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APPENDIX

Operational details

Survey specifications

Detector altitude	:	270 feet above ground level north of an east-west line through 350X/500Y 250 feet above ground level south of an east-west line through 350X/550Y
Line spacing	:	One-tenth of a mile between adjacent flight lines
Line direction	:	East-west
Recorder sensitivity	:	1st recorder - 20 gammas per inch 2nd recorder - 2,000 gammas per inch
Diurnal correction	:	Applied correction rounded off to the nearest gamma
Area surveyed	:	152 square miles (including overlap)
Flight-line miles	:	1432 miles

Equipment

implies that a point-source would be represented as having a finite width. Thus the width of narrow bodies have been overestimated on the interpretation diagram (Plate 3).

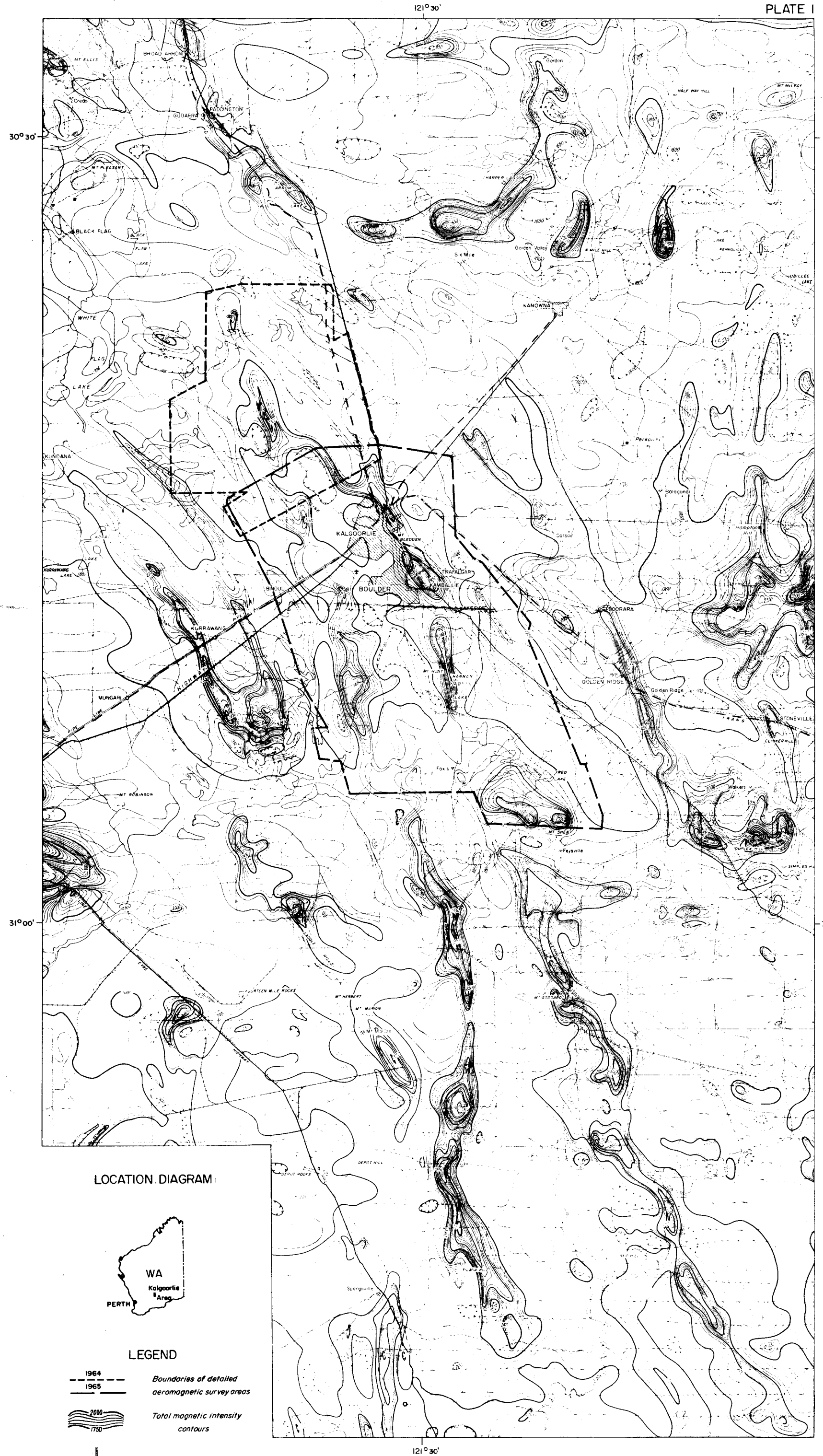
No samples of rocks were collected during the survey; consequently, no measurements were made of either the magnetic susceptibility or the remanent magnetisation of rocks occurring within the survey area.

Personnel

Personnel engaged in the survey were -

BMR	:	B. A. Dockery, E. P. Shelley, A. S. Scherl, W. R. D. Buckley, J. Boyd, A. E. Busuttil.
T.A.A.	:	First Officers G. B. Litchfield and J. Lord.

PLATE I



LOCATION DIAGRAM

LEGEND

1964 — 1965 — *Boundaries of detailed aeromagnetic survey areas*

2000 — 1750 — *Total magnetic intensity contours*

0°20'

True North — Magnetic North

DETAILED AEROMAGNETIC SURVEY, KALGOORLIE WA, 1965.

LOCALITY MAP

AND

REGIONAL MAGNETIC CONTOURS

MILES 4 0 4 8 12 16 20 24 MILES

KILOMETRES 4 0 4 8 12 16 20 24 28 32 36 KILOMETRES

MAGNETIC CONTOUR INTERVAL 50 GAMMAS

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics.

H51/B1-50

TO ACCOMPANY RECORD No. 1966/104

H51/B1-50

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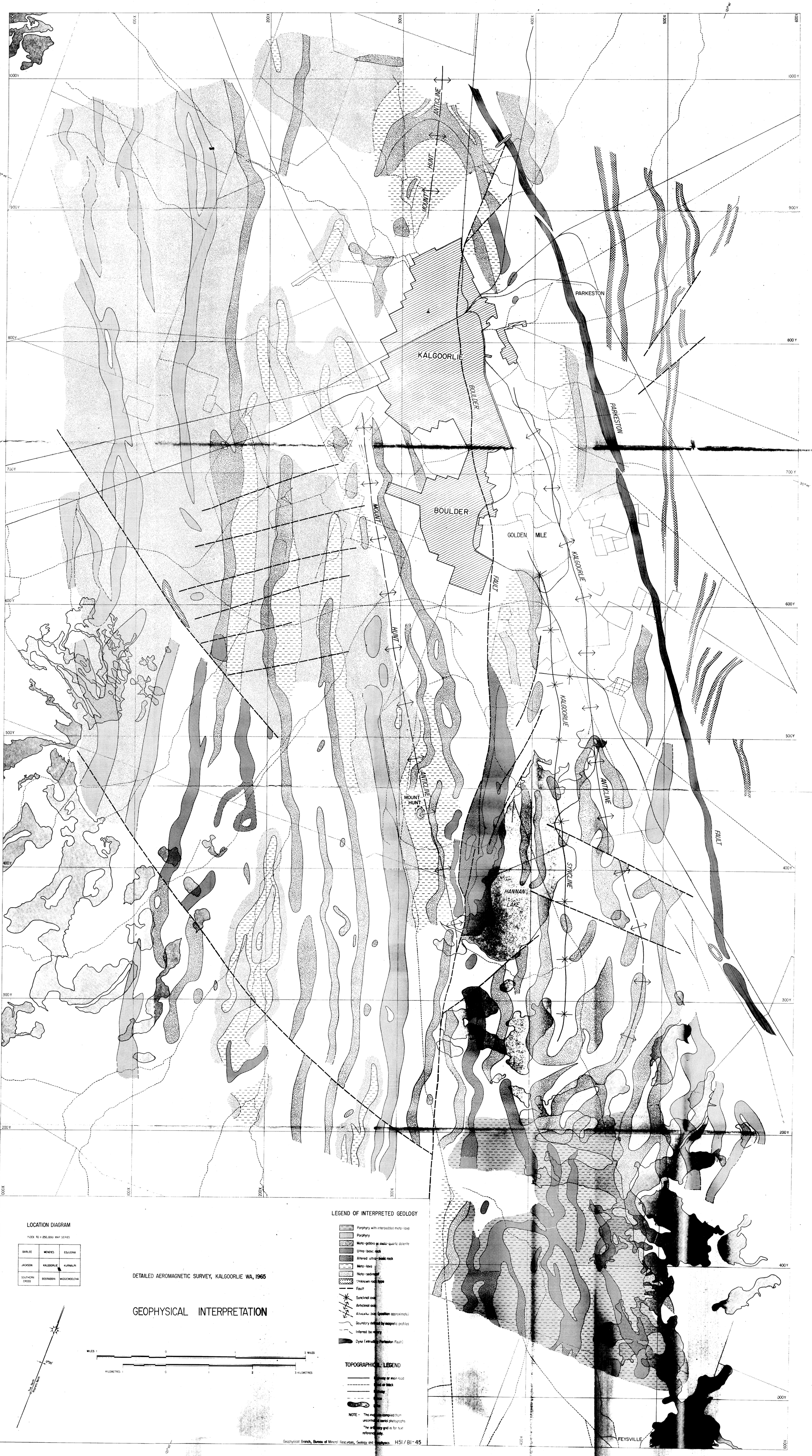

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