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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD No. 1967/20

DALY RIVER DETAILED AEROMAGNETIC SURVEY, NORTHERN TERRITORY 1966

by

E.P. SHELLEY

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SUMMARY

During September 1966, the Bureau of Mineral Resources made a detailed aeromagnetic survey over 55 square miles of the Daly River Mineral Field in the Northern Territory. The area is located on the north side of the Daly River about 90 miles south-south-west of Darwin. The aims of the survey were to determine the source and extent of the copper mineralisation and generally to assist geological mapping in areas of alluvial cover.

Many magnetic anomalies were quantitatively analysed and the depths, dimensions, attitudes, and compositions of the bodies causing them are discussed in relation to the geological structure of the area.

No anomalies can be directly correlated with the main mining localities, but anomalies occur over Warrs Mine and the Knowles Farm area. A prominent magnetic lineation occurs between the mining localities and it is thought to be due to a dolerite body which may be the source of the mineralisation. The magnetic contour pattern delineates an anticlinal structure plunging to the south in the south-west of the area. The source of the lineations is thought to be a series of basic intrusives folded with the sediments.

1. INTRODUCTION

A detailed aeromagnetic survey was made over the Daly River Mineral Field, Northern Territory, during September 1966. The survey area (Plate 1) is about 90 miles south-south-west of Darwin on the north side of the Daly River.

Copper ore was discovered at Daly River in 1884. Various mines (Plate 1) were worked spasmodically in the following years and in 1904 the South Australian Government erected a reverberatory furnace near the Daly River copper mine. Mining continued on a small scale until 1911. Except for small amounts of work in 1914 and 1918, no mining has been done since 1911.

The Daly River Mine was the largest in the area and produced about 6000 tons of ore averaging 20% copper. Less than 1000 tons were produced from the rest of the field, about 500 tons of this coming from the Wheal Danks group of mines. Only secondary ore was mined.

Deposits of silver-lead ore are known in the area but they have not been mined.

In 1957, Enterprise Exploration Co. Pty Ltd drilled to 350 ft below the open cut of the Daly River Mine (Patterson, 1959). Traces of mineralisation were encountered.

In 1959, four self-potential traverses were made across the Daly River Mine (Daly & Langron, 1963). The profiles were disturbed owing to surface effects, the dry ground necessitating the watering of the electrodes. The profiles showed no anomalies that could be used as a basis for interpretation.

A reconnaissance electromagnetic survey using the Slingram method was made over the five main mining localities of the area in 1964 (Ashley, 1965). These were the Daly River, Warrs, Wallaby, Wheal Danks, and Empire mines. No relation was found between the electromagnetic readings and the copper workings although a prominent anomaly was recorded to the east of the Daly River Mine. The estimated width of the body causing the anomaly is 150 ft and a change in trend may indicate faulting. Some large anomalies were also recorded near Warrs Mine.

A traverse across the Wallaby copper mine with a vertical magnetometer detected a magnetic anomaly of 150 gammas amplitude about 200 ft east of the mine.

2. GEOLOGY

The earliest geological investigations in the region, between Katherine and Darwin, resulted mainly from the discovery of mineral deposits. Systematic mapping commenced in 1913 but the work was seriously handicapped by lack of adequate topographic base maps. Between 1935 and 1939, the Aerial, Geological and Geophysical Survey of Northern Australia mapped several of the mines and mining fields with the aid of air photographs. The following geological information was derived from later work by Noakes (1947, 1949, 1953), Sullivan (1953), and Malone (1962).

Regional geology

The Daly River Mineral Field lies on the western side of the Pine Creek Geosyncline between a major NNE-trending fault (the Giants Reef Fault) and the outcropping Litchfield Granite.

The Pine Creek Geosyncline contains predominantly sedimentary rocks laid down on an Archaean basement, the sediments ranging in age from Lower Proterozoic to Middle Cambrian. Dolerite sills intruded the Lower Proterozoic sequence and were folded with the sediments. These sills generally conform to the structure but are locally transgressive. Intrusion of granite into the Lower Proterozoic sediments was extensive both within the main trough of the Pine Creek Geosyncline and near the north and north-west margins.

There are two groups of faults. The first group trends north-west to north, parallel to the axis of the geosyncline and is prominent in the Pine Creek region. The second group trends north to north-east and includes the Giants Reef Fault. Several of these faults displace the Upper Proterozoic sediments and they may displace the Middle Cambrian sediments. In the north-west of the Pine Creek Geosyncline, the fold axes are parallel to the Giants Reef Fault.

Geology of the survey area

Sedimentary rocks in the area are of Lower Proterozoic age and crop out as prominent ridges trending NNE (Plate 2). The Burrell Creek Formation consists of up to 8000 ft of greywacke and greywacke-siltstone with lenses of calcareous greywacke. The formation is locally metamorphosed to andalusite, tourmaline, and mica schists. The Noltenius Formation, which occurs further to the east, consists of quartz-greywacke, quartz-sandstone, and siltstone, the latter being locally metamorphosed to andalusite and mica schists. It also contains lenses of boulder and pebble conglomerates. The Noltenius Formation represents a coarse-grained facies of the Burrell Creek Formation.

The strike of the sedimentary rocks is about 010°, swinging around to 050° in some parts, and the strata dip between 20° and 90° to the east. The beds in which the mineralisation occurs dip at between 60° and 90° to the east.

The main structural feature in the survey area is the Giants Reef Fault, which strikes NNE along the eastern boundary of the area. A number of minor faults have been mapped in both the Burrell Creek and Noltenius Formations, striking between 020° and 040°.

To the north-west of Wheal Danks North there are scattered outcrops of a fine to medium-grained dolerite, and in the north-west corner of the survey area are outcrops of the Litchfield Complex, which consists of a medium-grained granodiorite with garnetiferous granite.

Large parts of the survey area, particularly in the north and west, are covered by alluvium.

Mineralisation

Copper was the most important mineral mined at Daly River, although minor amounts of gold and silver were recovered from the copper ore. Deposits of silver-lead are also known in the area.

The copper deposits occur as lodes in steeply dipping quartz-filled shears in slates of the Burrell Creek Formation. The workings include the Daly River Mine, which was the chief producer, Wheal Danks, Warrs, Wallaby, and Empire mines, and some scattered costeans and trial holes. Only oxidised ore was mined, the main minerals being malachite, azurite, and chalcocite. Some primary sulphides, chalcopyrite, and some arsenopyrite are present in the dumps, which suggests that primary sulphide bodies may exist at depth. Magnetite and haematite are associated with the copper lodes of the Wallaby Mine.

Silver-lead mineralisation occurs in the Wallaby Mine area and the Knowles Farm area, but no mining has taken place. The mineralisation consists of cerussite, anglesite, mimetite, pyromorphite, and sulphides in quartz lodes.

Hossfeld (1937) considers that the mineralisation is related to the granite intrusions about 30 miles south of Daly River.

3. RESULTS AND INTERPRETATION

The aeromagnetic data are presented in Plate 2 as a contour map of total magnetic intensity at a scale of 1:17,500 and with a contour interval of 10 gammas. Corrections have been made for the diurnal variation of the total field but the Earth's regional magnetic gradient has not been removed. The intensity values shown are relative to an arbitrarily chosen datum.

The magnetic pattern consists of a series of sub-linear anomalies trending SSW in the central part of the survey area and swinging around to trend NNW in the south-west, indicating a fold structure. The eastern part of the area is generally magnetically uniform with several isolated anomalies. The trends have been delineated in Plate 3, which also shows the interpreted faults and which indicates the individual anomalies that have been analysed quantitatively. The results of the analyses are given in Table 1 and the interpretation methods used are described in Appendix 2.

The SSW-trending anomalies reflect the regional geological strike and are parallel to the Giants Reef Fault, which runs along the eastern boundary of the survey area. Apart from this, however, there is little direct correlation between the magnetic data and the mapped geology.

The trends in the north-west of the area (Plate 3) are possibly due to the Precambrian dolerites, but over most of the area mapped as dolerite anomalies are either very weak or absent. The maximum amplitude of these anomalies is only 80 gammas. This may be due to either the dolerite having a very low magnetic mineral content or the resultant of the induced and remanent magnetic fields being approximately zero. It is also possible that errors occurred in the geological mapping. Unfortunately it was not possible to collect samples of the dolerite for remanence and susceptibility measurements.

Anomalies 1 to 4, 6, 9, and 12 are those thought to be caused by dolerite bodies. Calculations of susceptibility from the anomalies gave a mean value of 1.33×10^{-3} c.g.s. This is equivalent to a magnetic mineral content of the rock of 0.5% magnetite or 4.5% ilmenite.

TABLE 1

RESULTS OF ANALYSES OF MAGNETIC ANOMALIES

Anomaly number	Depth to top of body (ft below ground level)	Thickness (ft)	Dip	Susceptibility (x 10^{-3} c.g.s.)
1	200	850	80°NW	0.86
2	150	400	Vertical	1.74
3	50	550	70°SE	1.04
4	100	300	80°SE	0.96
5	150	200	20°SW	5.69
6	0	300	40°SE	1.38
7	200	700	40°SW	1.55
8	800	500	40°SE	16.50
9	350	1100	70°SE	1.77
10	0			
11	250			
12	0	300	30°SW	1.57
13	0			
14	250	550		
15	0	300	40°SE	3.44
16	0	600	50°SE	2.52
17	250	500	50°E	1.31
18	0	800	70°SE	1.38
19	0			
20	0	250	20°SW	2.50
21	200	700	70°SE	
22	50			
23	0			
24	50	350	40°SE	4.26
25	0			
26	100	400	50°SW	1.30
27	0	300	40°SE	5.05
28	0	50	10°S	12.80
29	250	150	20°S	14.30
30	1100			

Analysis of anomalies 1 to 4 (Table 1) indicates that this magnetic lineation is due to a long tabular body about 550 ft thick and dipping steeply to the east. Its top surface is about 100 ft below the ground surface.

It is not possible to delineate the extent of the Litchfield Granite in the north-west corner of the survey area as no contact effect between the granite and the sediments was detected. However, because such a small part of the boundary between them was included in the area surveyed, it should not be thought that there is no detectable contact effect at all. Quite prominent anomalies are associated with granite intrusions of the same age as the Litchfield Complex elsewhere in the Pine Creek Geosyncline (Milsom & Finney, 1965; Tipper & Finney, 1966; Goodeve, 1966). As these latter anomalies are often related to metalliferous deposits, further detailed aeromagnetic surveying should be done to the north-west of the present area with a view to determining the relation between the granite and the Lower Proterozoic sediments.

No anomalies can be directly correlated with the two main lines of mines, i.e. the Daly River/Wheal Danks line and the Empire/Wallaby line. A magnetic trend with anomalies ~~ranging in~~ amplitude from 90 to 180 gammas strikes NNE between the two lines of mines. Analysis of Anomaly 17, 500 yards WNW of the Empire Mine, indicates a source 100 ft below the surface, 500 ft wide, dipping 50°E, and with a susceptibility of 1.31×10^{-3} c.g.s. The dip is in good agreement with those of the mapped outcrops of Burrell Creek Formation to the east and west, indicating that the source is apparently conformable with the sedimentary sequence, and is probably a dolerite sill. If this is so it is possible that the mineralisation is related to the dolerite, and that copper-bearing solutions have made their way into shears in the siltstones of the Burrell Creek Formation.

No aeromagnetic anomaly was recorded in the vicinity of the Wallaby Mine, where a ground magnetic traverse detected an anomaly of 150 gammas (Ashley, 1965). The ground anomaly had a half-width of only 80 ft and so is probably too small to be detected at an altitude of 250 ft.

An anomaly of 100 gammas (No. 11) was recorded over Warrs Mine. The workings of this mine are spread over 500 ft along the strike but it is not known whether the lodes continue over the whole of this distance (Hossfeld, 1937). The magnetic contour pattern of the anomaly suggests that the source is of finite depth extent. The body was assumed to be approximately spherical in shape and the interpretation method of Daly (1957) was applied, this yielding a depth to the top of the body of 250 ft and a radius of 250 ft. Several quite large Slingram anomalies were detected over this mine but their relationship to the mineralisation is obscure (Ashley, 1965).

Small unexploited deposits of silver-lead ore are known near Knowles Farm, about 1.4 miles south-west of the Daly River Mine. These deposits occur in two small areas of slate and quartz rubble about 2000 ft apart in a north-south direction (Hossfeld, 1937). It has not been possible to ascertain the exact position of the deposits but they are in the vicinity of Anomaly 24. This anomaly is one of a group along a strong NNE-trending lineation and occurs near the intersection of the lineation with an interpreted NE-trending fault. It is not possible to say whether or not the anomaly is due to the mineralisation, as very little information is known about the mineralogy of the deposits. However, as the intersection of faults with bedding are often favourable locations for ore deposition, ground geophysical work in this area is recommended.

Analysis of Anomaly 24 indicates that the source is within 50 ft of the surface, is 350 ft thick, dips 40° to the south-east, and has a susceptibility of 4.26×10^{-3} c.g.s. This susceptibility value suggests a basic to ultrabasic rock type.

The swinging around of the major trends from SSW to NNW in the south-west of the survey area is interpreted as evidence of folding. Analyses of Anomalies 16, 18, 20, 21, and 23 to 29 (Table 1) yielded a distribution of dip directions which indicates that the fold structure is anticlinal. The anticlinal axis plunges between south and SSW, this being in agreement with the regional trend of this part of the Pine Creek Geosyncline (Malone, 1962).

The average depth to the sources of these anomalies is less than 50 ft and calculated thicknesses range from 50 to 800 ft, there being no preferred distribution. The average susceptibility of all the sources, except for Anomalies 28 and 29, is 2.84×10^{-3} c.g.s., indicating a basic rock type with a magnetic mineral content equivalent to 1.1% magnetite or 9.6% ilmenite. The sources of Anomalies 28 and 29 have an average susceptibility of 13.5×10^{-3} c.g.s. This value is probably too high, but even so, the source rocks appear to be extremely ultrabasic.

With the exception of Anomaly 27, these anomalies occur mainly in areas of alluvium. Anomaly 27 and other parts of the lineations occur over an area mapped as Burrell Creek Formation. This consists of greywacke and siltstone-greywacke and could not of itself contain the sources of the anomalies. It is suggested that the sources are a series of three, or perhaps four, doleritic sills within the sedimentary sequence. These would appear to be of different composition from the dolerites proposed in the north-west of the survey area because of the marked difference in the amplitudes of the respective anomalies.

Two trends have been delineated in the eastern half of the survey area. One runs from north-east of the Wallaby Mine to west of Warrs Mine and the other is in the north-east corner of the area. The first follows the regional trend and the anomaly sources are at or near the surface. None of the anomalies along this lineation was of suitable shape for detailed analysis but it is thought that the source body is similar to that ascribed to the magnetic lineation between the two lines of mines.

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The lineation in the north-east corner of the area trends north for a short distance before swinging around to the north-west. Only one anomaly, Anomaly 5, was suitable for detailed interpretation. The analysis showed that the source, assumed tabular, is about 200 ft thick and dips at a shallow angle to the south-west. The top surface of the body is at a depth of approximately 150 ft. The magnetic susceptibility of the source was calculated to be 5.69×10^{-3} c.g.s. suggesting a body of basic or ultrabasic material. Rocks outcropping in the area are greywacke, sandstone, and siltstone of the Noltenius Formation.

The eastern half of the survey area contains a number of isolated anomalies. Several of these are quite intense with amplitudes ranging up to 750 gammas. Anomaly 7 appears to be caused by a tabular body, about 700 ft thick, and dipping to the south-west at 40°. It is approximately 200 ft below the surface and has a susceptibility of 1.55×10^{-3} c.g.s. The body is possibly a block of doleritic rock. Anomaly 8 has a disturbed magnetic pattern with a maximum amplitude of 600 gammas, and is probably due to a rather complex body. The depth to the source was calculated to be approximately 800 ft. The susceptibility is 16.50×10^{-3} c.g.s. suggesting a mass of very ultrabasic material. Anomalies 13, 19, and 22 have sources at or near the surface and occur over areas mapped as Burrell Creek and Noltenius Formations. Anomaly 13 possibly has a similar source to that of Anomaly 8 but the nature of the other two is not clear.

Anomaly 30, in the south-east corner of the survey area, has an amplitude of 600 gammas and is located between mapped outcrops of Burrell Creek and Noltenius Formations. It is closely related to an interpreted east-trending fault. A calculation on the southern flank of the anomaly gives a depth to the body of 1100 ft. The anomaly probably has as its source the upthrown side of a faulted ultrabasic rock mass originally at a much greater depth. The broad anomaly located some 600 yards north-west of Anomaly 30 possibly represents the downthrow side, as a rough depth calculation on it gives a value of several thousands of feet.

Fifteen possible faults have been interpreted in the area (Plate 3). These strike between 040° and 110° and so have similar trends to others previously mapped in the area. With the exception of the fault to the west of the Knowles Farm deposits, there is no apparent relation between the faults and the known mineralisation.

4. CONCLUSIONS AND RECOMMENDATIONS

The proposal that the more prominent anomalies in the survey area are associated with doleritic or ultrabasic rocks is purely speculative. The argument is based mainly on the fact that the dolerite is known to occur as interbedded sills in the area and also that the values of susceptibility calculated from the anomalies lie in the range of values for dolerites recorded by Birch, Schairer, and Spicer (1942) and Heiland (1946). The degree of reliability is, of course, higher in the case of the linear anomalies than in the case of the isolated anomalies, as the latter have quite complex magnetic patterns.

This survey indicates the need for detailed geological remapping of the Daly River Mineral Field. This is especially necessary where strong near-surface anomalies occur over regions of sedimentary rocks. Detailed mapping and drilling of the Warrs Mine and Knowles Farm localities is recommended. An auger drilling programme would be very helpful in identifying the sources of the strong magnetic lineations in the areas of alluvial cover, particularly the south-west. Modification of the interpretation might be necessary when this information is available.

Further detailed aeromagnetic surveying is recommended to the south and south-west of the present area to delineate the extent of the fold structure, and also to the north-west to determine the relation between the sediments and the Litchfield Complex.

5. REFERENCES

ASHLEY, J. 1965 A reconnaissance geophysical survey over the Daly River Mineral Field, NT 1964. Bur. Min. Resour. Aust. Rec. 1965/219.

BIRCH, F., SCHAIRER, J.F., & SPICER, H.C. (eds.) 1942 Handbook of physical constants. Geol. Soc. Amer. Special Papers 36.

DALY, J. 1957 Magnetic prospecting at Tennant Creek, NT 1935-37. Bur. Min. Resour. Aust. Bull. 44.

DALY, J. and LANGRON, W.J. 1963 Darwin/Katherine region geophysical reconnaissance surveys, NT 1959. Bur. Min. Resour. Aust. Rec. 1963/28.

GAY, S. Parker, Jr. 1963 Standard curves for interpretation of magnetic anomalies over long tabular bodies. Geophysics 28, 161-200.

GOODEVE, P.E. 1966 Darwin/Pine Creek contract aeromagnetic survey, NT 1963. Bur. Min. Resour. Aust. Rec. 1966/101.

HEILAND, C.A. 1946 GEOPHYSICAL EXPLORATION. New York, Prentice-Hall, Inc.

HENDERSON, R.G. and ZIETZ, I. 1948 Analysis of total magnetic intensity anomalies produced by point and line sources. Geophysics 13, 428-436.

HOSSFELD, P.S. 1937 The Daly River copper and silver-lead area, Daly River District. Aer. Geol. Geophys. Surv. N.Aust., N.T. Rept. 19.

1938 The Wallaby silver-lead lode, Daly River District. Ibid., 32.

MALONE, E.J. 1962 Explanatory Notes, Pine Creek, NT. Bur. Min. Resour. Aust. 1:250,000 Geological Series, Sheet D/52-8.

MILSOM, J.S. and FINNEY, W.A. 1965 Mount Bundey detailed aeromagnetic survey, NT 1964. Bur. Min. Resour. Aust. Rec. 1965/61.

MOO, J.K.C. 1965 Analytical aeromagnetic interpretation. The inclined prism. Geophys. Prosp. 13 (2), 203-224.

NOAKES, L.C. 1947 The geology and mineral resources of the northern portion of the Northern Territory. Bur. Min. Resour. Aust. Rec. 1947/40.

1949 A geological reconnaissance of the Katherine/Darwin Region, Northern Territory. Bur. Min. Resourc. Aust. Bull. 16.

	1953	The structure of the Northern Territory with relation to mineralisation. In "Geology of Australian Ore Deposits." Aust. Inst. Min. Metall. 284-296.
PATTERSON, G.W.	1959	Diamond drill investigation, Daly River Copper Mine, Northern Territory. Conzinc Pty Ltd Explor. Div. Ref. 18.
PETERS. L.J.	1949	The direct approach to magnetic interpretation and its practical application. Geophysics 14, 290-320.
SULLIVAN, C.J.	1953	The Katherine/Darwin metalliferous province. 5th Emp. Min. Metall. Cong. 1, 297-304.
TIPPER, D.B. and FINNEY, W.A.	1966	Mount Masson detailed aeromagnetic survey, Northern Territory 1965. Bur. Min. Resour. Aust. Rec. 1966/91.
VACQUIER, V., STEENLAND, N.C., HENDERSON, R.G., & ZIETZ, I.	1951	Interpretation of aeromagnetic maps. Geol. Soc. Amer. Mem. 47.

APPENDIX 1

OPERATIONAL DETAILS

Staff

E.P. Shelley	:	Party leader
W.R.D. Buckley	:	Drafting officer
B.M. Tregellas	:	Geophysical assistant
G. Sauerberg	:	Geophysical assistant
First Officer J. Lord	:	Pilot (T.A.A.)

Equipment

Aircraft	:	Cessna 180, VH-GEO
Magnetometers	:	BMR MNS-1 proton precession type with towed bird detector, output to two Moseley Autograf Recorders
	:	BMR MFD-3 fluxgate magnetic storm detector, ground installation, output to Esterline-Angus Recorder
Power/timer unit	:	BMR CTP-1
Radio altimeter	:	RT-7/APN-1
Vertical camera	:	Modified Vinten, 35-mm, single frame, with 186° 'fish-eye' lens.

Survey Specifications

Detector altitude	:	Nominal 250 ft above ground level
Line orientation	:	East-west
Line spacing	:	Tenth of a mile
Navigation	:	Aerial photographs
Record sensitivities	:	MNS-1, 100 and 10,000 gammas f.s.d. MFD-3, 200 gammas f.s.d.
Cycling time	:	Approximately 0.75 second

Survey Timetable

Arrived Batchelor	:	3rd September
Commenced flying	:	12th September
Completed flying	:	18th September
Returned to Tennant Creek	:	20th September
Completed survey	:	8th October

Diurnal Correction

A correction for the diurnal variation of the Earth's field was determined by flying a pre-selected baseline at the beginning and end of each flight. The baseline was chosen for its ease of precise reflying and relatively flat magnetic field. Each baseline was compared with a reference profile, and the diurnal correction was applied by assuming that the variation was linear throughout the flight.

APPENDIX 2

METHODS OF QUANTITATIVE ANALYSIS

Thirty anomalies were analysed by quantitative methods. Those selected were relatively free from contamination by neighbouring anomalies and were of a suitable shape for the application of the method used. The anomaly profile was constructed from the contour map along a line at right angles to the trend of the contours. In some cases smoothing was necessary.

Preliminary depth determinations were made on all thirty anomalies by use of the half-maximum-slope method of Peters (1949). A factor of 1.6 was used. On many of the anomalies, the interpretation method of Moo (1965) was applied in order to obtain a more reliable factor than the value of 1.6. In most cases the factor obtained was greater than 1.6, thus yielding a shallower depth than that obtained by Peters' method.

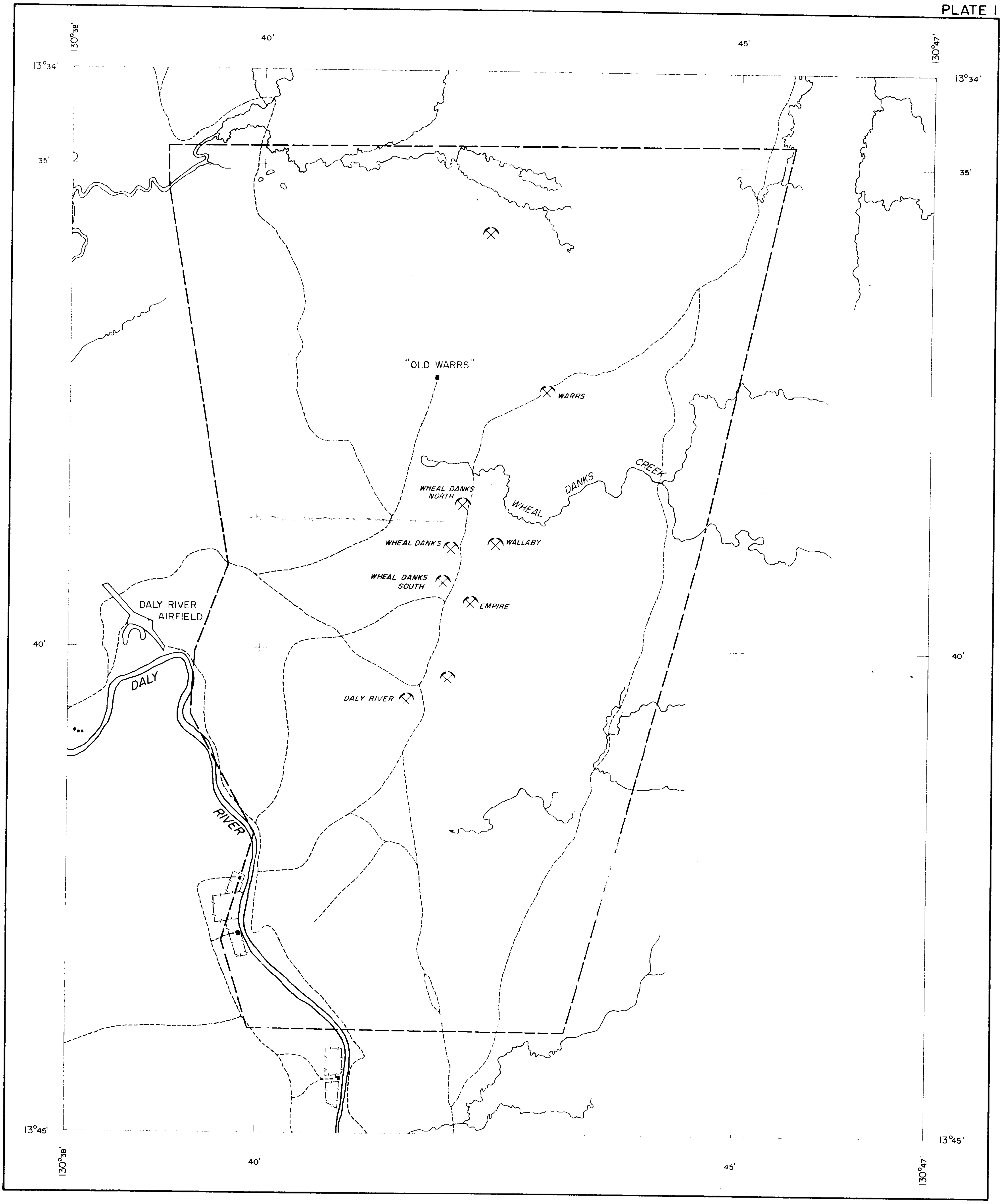
The 'curve-fitting' technique of Gay (1963) was applied to the anomalies that had simple forms. This method assumes that the source of the anomaly is tabular with large strike-extent. The trend of the contours indicated that this was quite a reasonable assumption and hence the method was thought to be more reliable for depth estimation. This method also yields values for the thickness, dip, and magnetic susceptibility of the body.

In most cases the depths recorded in Table 1 are averages of those obtained from the various interpretation methods. Values of depth and thickness have been taken to the nearest 50 ft and dips to the nearest 10°.

Anomaly 11 is thought to be caused by a body of roughly spherical shape and its analysis was carried out by using the method of Daly (1957). In a few cases the 'point-source' method of Henderson and Zietz (1948) and the standard aeromagnetic maps of Vacquier, Steenland, Henderson, and Zietz (1951) were applied.

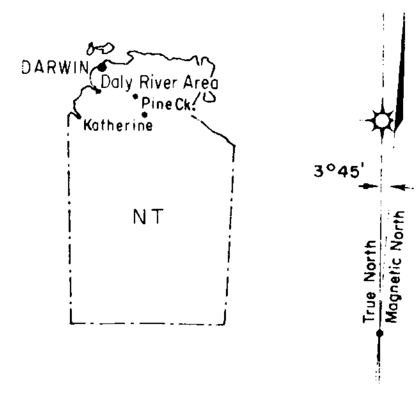
Susceptibility values obtained by Gay's method were compared with those recorded for certain rock and mineral types by Birch, Schairer, and Spicer (1942) and Heiland (1946).

PLATE I

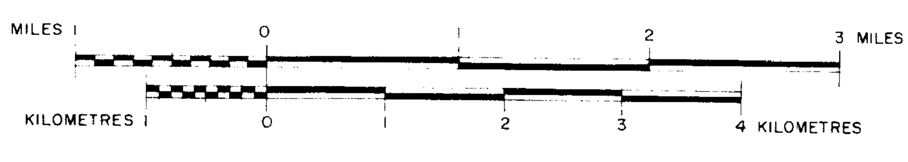


DETAILED AEROMAGNETIC SURVEY, DALY RIVER NT, 1966.

LOCATION DIAGRAM



LOCALITY MAP



TOPOGRAPHICAL LEGEND

ROAD OR TRACK

RIVER OR CREEK

FENCE

HOMESTEAD OR HUT

MINE

BOUNDARY OF SURVEY AREA

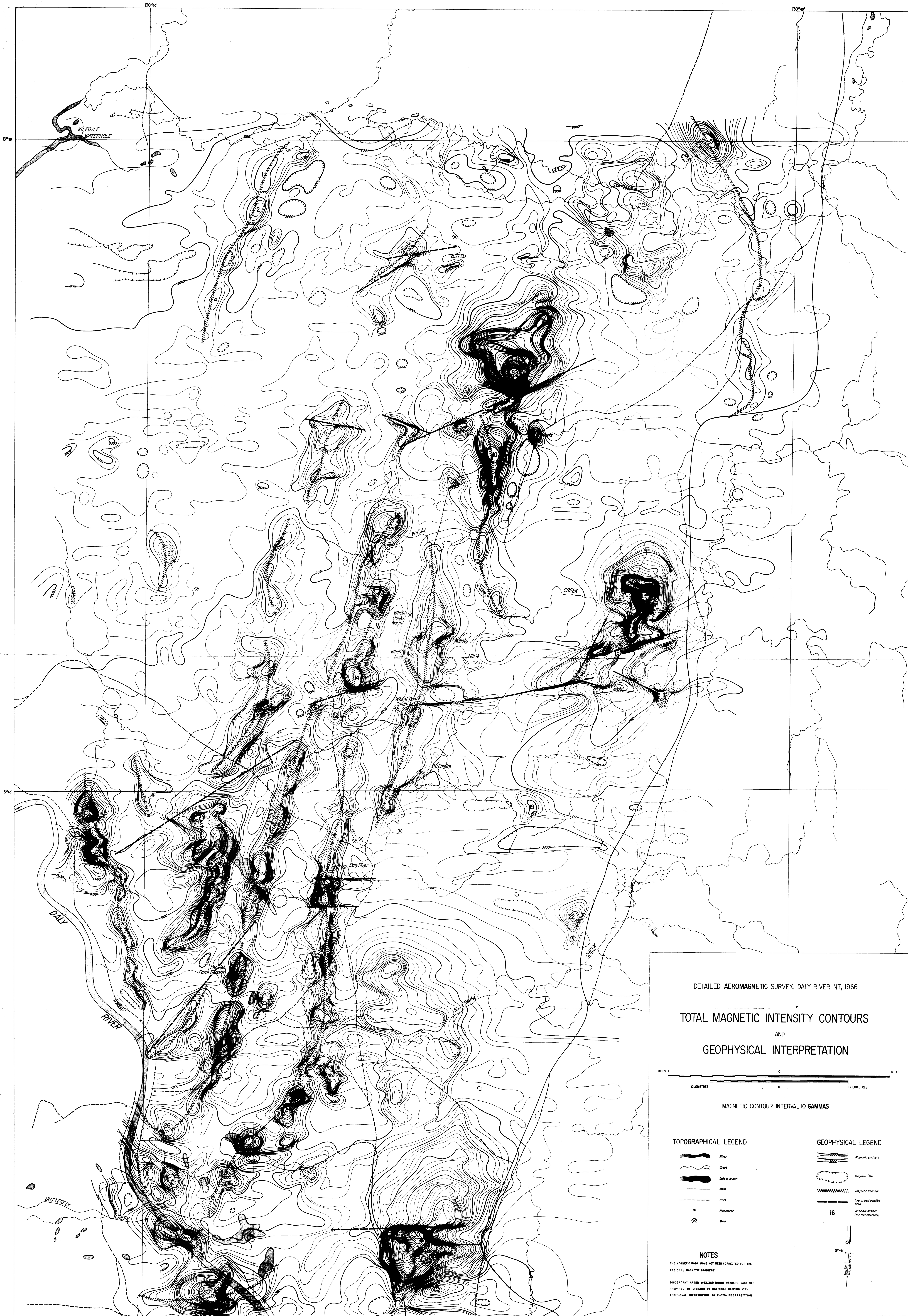
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. D52/B1-39

TO ACCOMPANY RECORD No. 1967/20

PLATE 2

TO ACCOMPANY RECORD No. 1967/20

BASED ON D52/B0-33, D52/B0-34, D52/B1-43



TO ACCOMPANY RECORD No. 1967/20

BASED ON D52/BI-33, D52/BI-43, D52/BI-45, D52/BI-46