COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

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RECORDS 1959/18

REPORT OF INVESTIGATION OF RADIOMETRIC ANOMALIES DISCOVERED BY AUSTER AIRCRAFT IN THE RUM JUNGLE DISTRICT NORTHERN TERRITORY

by

O.N. Warin

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SUMMARY

One hundred and three radiometric anomalies were located by an airborne survey of part of the Rum Jungle District carried out with an Auster aircraft. Of these anomalies ninety-seven are not recommended for further investigation. Six anomalies occur on ferruginous outcrops at a similar stratigraphic horizon to the main ore occurrences on the Rum Jungle field. They may be the surface expression of mineralization at depth and should be further investigated.

INTRODUCTION

This report deals with the ground investigation of radiometric anomalies located by an airborne survey in the Rum Jungle District of the Northern Territory. The survey was carried out in July 1957, by the Bureau of Mineral Resources VH/RES Auster party, under the leadership of D.E. Livingstone. The area surveyed and the anomalies located are shown on Plate 1.

Some areas surveyed by Auster were also covered by a Bureau of Mineral Resources carborne scintillograph survey. The results of the carborne survey are not discussed here, except for the inclusion of Plate 2 which is part of a radiometric contour map prepared by the carborne party. A Harwell ratemeter Type 1292A was used for ground follow-up investigations.

The field investigations and map preparations for this report were carried out by the writer and R.Bryan under the supervision of B.P. Walpole, Supervising Geologist. The assistance given to the survey by Mr.W. Thomas, Chief Geologist in the Northern Territory of Enterprise Exploration, and Mr.B. Mellor, Senior Geologist of Territory Enterprises Pty.Ltd. at Rum Jungle mine, is gratefully acknowledged.

Location and Access

The Rum Jungle district is 50 miles south of Darwin and lies within the tropical monsoon area of the Northern Territory. During the wet season, which extends from December to March, flooding and the growth of tall grass make geological work impractible except at prospects approached by all-weather roads.

The anomalies investigated during the current survey were all accessible by four-wheel drive vehicle. The area is well served by bush tracks and none of the anomalies was farther than twelve miles from the township of Batchelor.

GENERAL GEOLOGY

The Rum Jungle area lies on the north-western flank of the Pine Creek geosyncline in which sedimentation occurred during Lower Proterozoic time. The Lower Proterozoic sediments are folded and intruded by basic sills and by granite, and are unconformably overlain by Upper Proterozoic rocks.

The general geology of the area is discussed in more detail by Walpole (1958) and Malone (1958) and only a brief account based on these reports will be given here. The stratigraphy of the area and the distribution of the rock units are shown on Plate 1. Walpole (1958) considers that the Pine Creek geosyncline was developed in two main stages.

The Lower Proterozoic sediments which mark the first stage in this area are those of the Batchelor Group and the Masson Fromation (Acacia Gap Tongue) and the Golden Dyke Formation. The Batchelor Group was laid down on a narrow zone folding sharply away into a trough zone typified by the Golden Dyke Formation. Vertical movement along the shelf-trough hinge line during sedimentation is considered to have caused the Golden Dyke Formation to spread laterally westwards, probably about the time of the deposition of the Acacia Gap Tongue. Further movement resulted in the attrition of a foreland area to the west of Rum Jungle and in the initiation of the second stage marked by the development of the Noltenius and Burrell Creek Formations.

The sediments were folded and intruded by a few small basic dykes and sills and finally by granite. The granite intrusion may have played some part in the updoming of the Waterhouse and Rum Jungle domes. A long period of still-stand then ensued and was followed by deposition in Upper Proterozoic time of a thin veneer of the Depot Sandstone, most of which has been subsequently eroded away.

The Depot Sandstone in this area contains lenses of silicified calcarenite breccia intercalated with quartz sandstone and minor quartz pebble conglomerate. The breccia fragments are probably derived from the underlying and adjacent siliceous slump breccias of the Golden Dyke Formation or of the Batchelor Group. The breccia lenses do not persist for more than a few miles beyond the known outcrop of Golden Dyke or Batchelor Group slump rocks. Some confusion has arisen in the past because of the close similarity of Depot Sandstone breccias and the slump breccias. However, the Depot breccia is associated in all known outcrops with quartz sandstone. The distinction between the two breccias is thus simplified.

The deposition of the Depot Sandstone was followed by a faulting movement which resulted in the Giants Reef fault system (Plate 1). The rocks are only gently folded.

IGNEOUS ACTIVITY

Basic Intrusives

A few small basic sills are intruded into the lower members of the succession (mainly into the Golden Dyke Formation).

Granite Intrusion

Granite is exposed in two places - the Rum Jungle granite and the Waterhouse granite. Specimens taken from the Rum Jungle granite are biotite granite; some from the Waterhouse granite are

adamellite. Petrological work suggests that the two are co-magmatic and may be exposures of different parts of the same intrusion.

A narrow aureole of contact metamorphism, with very small scale development of mica, tourmaline mica, tremolite and andalusite schists suggest that the granite magma was at a low temperature when intruded. Signs of hydrothermal activity are negligible; they are restricted to some pegmatites within the mass and to quartz tourmaline veining in the immediately surrounding sediments.

Geological Setting of Mineral Occurrences

The known important mineral occurrences in the Rum Jungle area are localized by the Giants Reef fault system and at loci determined by coincidence of these fractures and the contact between carbonaceous rocks of the Golden Dyke Formation and carbonate rocks of the underlying Coomalie Dolomite.

The mineral deposits are therefore located in Lower Proterozoic sediments but are controlled by Upper Proterozoic structures. The Coomalie Dolomite is restricted to the Rum Jungle area. The present survey was designed to investigate the known and predicted extension of the contact between the Coomalie Dolomite and the Golden Dyke Formation to determine if further occurrences of uranium mineralization were located along it.

RADIOMETRIC ANOMALIES

One hundred and three radiometric anomalies were located by the VH-RES Auster party during the course of the survey. These have been numbered and their loci are shown on Plate 1. All were investigated on the ground by geological follow-up work. The anomalies recorded by the Auster party were relocated by the carborne teams in those areas where carborne gridding was carried out. No further anomalies were located by the carborne equipment.

Table 1 summarizes the anomalies, the geological setting and the action recommended in regard to them.

Table 2 deals with the anomalies in more detail.

RADIOACTIVE ANOMALIES NOT RECOMMENDED FOR FURTHER TESTING.

These anomalies fall into the six groups listed below:

1. Granite outcrops
2. Laterite
3. Siltstone Rubble
4. Conglomerate of the Crater Formation
5. Possible Siltstone Dolomite contact (The "Woodcutter Group").
6. Pre-existing workings.

Granite

The Auster survey was initially designed to exclude areas with granite outcrop. However, the flight lines cross the granite outcrops in some places. The Rum Jungle and Waterhouse granite outcrops commonly give counts up to three to four times background due possibly to radioactive potassium isotopes. The activity is largely due to mass effect and has no economic importance.

Laterite

Twenty-seven of the anomalies were found to be associated with laterite, in most places where the ferruginous zone of the laterite profile was exposed. They commonly show a radioactivity of 2 x background. Most of the anomalies were accentuated on the airborne scintillograph record as they occurred at the junction of laterite and non-radioactive alluvium.

Small test pits were dug at most of these anomalies - in every case the radioactivity showed a slight increase with depth, but the increase was not sufficient to warrant deep pitting.

The slight increase in radioactivity is thought to be due to a slight enrichment of thorium in the ferruginous zone of the laterite as is the case at the Brodribb and Frazer deposits which were tested by the Bureau in 1953.

No further testing at any of these anomalies is recommended.

Siltstone Rubble

One anomaly (A.82, Plate 1) is due to a thick accumulation of siltstone rubble of the Burrell Creek Formation. The whole rubble-covered area counts a little under 2 x background. Pitting failed to produce any significant rise in the radioactivity. A similar anomaly (A.81, Plate 1) occurs in rubbly outcrop of the carbonaceous siltstone of the Stapleton formation and gives a count of twice background.

No further work is recommended on either of these anomalies.

Conglomerate of the Crater Formation

Forty-one anomalies were located on outcrops of conglomerate within the Crater Formation. Twenty-six of these (A44, A45 and A47 to A70, Plate 1) fall on the east end of what has been termed the "Crater Line" (Dodd, 1953). This is an arcuate line of outcrops of the crater formation on the southern edge of the Rum Jungle granite.

Radioactivity associated with the Crater Formation has been known since 1951. The original discovery was made at the Crater Prospect (Mackay, 1953) and the area of search was subsequently extended along the strike of the formation. The "Crater Line" was thoroughly investigated by geological mapping and radiometric gridding (Dodd, 1953) and the radioactivity was found to be localized in lenticular pebble conglomerate beds near the base of the formation.

Two diamond drill holes at the Crater prospect were bored in 1952 by the Bureau of Mineral Resources. The holes were 110 feet and 154 feet deep respectively. Core recovery was 10-20% but sludge samples showed only 0.01% eU_3O_8 (Dodd, 1953).

Shallow churn drilling across the strike of the Crater formation was later undertaken by Territory Enterprises Pty. These holes had an average vertical depth of 50 feet but only two or three holes intersected pebble conglomerate showing radiometric highs.

Rio Tinto Finance and Exploration Co. Pty. drilled the conglomerate horizons in the Manton Dam Area. The results were disappointing and revealed no enrichment in radioactivity with depth (Rattigan, 1954).

Mineralogical work by W.B. Dallwitz of the Bureau of Mineral Resources quoted by Mackay, (1953) identified detrital radioactive minerals including thorite and monazite in specimens of the conglomerate. Dallwitz states that these minerals were not present in sufficient quantity to account for all the radioactivity of the specimens he examined.

Radiometric assays on samples taken from surface exposures of the conglomerate this year are of the order of 0.1% equivalent U_3O_8. Absorbtion tests (beta-gamma ratio) show thorium to be the main cause of the radioactivity.

Dodd (1953) suggested that the radioactive exposures may have been strongly leached leaving only residual radioactivity at the surface. The rocks are clearly leached to a depth at least of 100 feet: but recent tests have shown that enough thorium is present to contribute substantially to the radioactivity - possibly enough to account for it all.

Anomalies Previously Tested

Anomalies were located at existing prospects and workings. These are:

A.75 at Mt.Fitch
A.103 at the Fraser prospect
A.92 and A.93 at the Waterhouse No.2 prospect

Mount Fitch prospect has been thoroughly tested and subsequently abandoned by Territory Enterprises Pty.Ltd. The prospect is referred to again in the section on ferruginous outcrops on pages 6 and 7 of this report.

The Fraser prospect was costeaned and dismissed by the Bureau in 1953.

The Waterhouse No.2 Prospect was diamond drilled and costeaned by the B.M.R. in 1953. In 1954 United Uranium N.L. tested the surface showing of copper mineralization by a fifty-foot shaft and by further costeaning. Only weak copper and uranium mineralization was discovered and the lease was abandoned.

Possible Siltstone Dolomite contact

A group of eight anomalies (A.21 to A.27 and A.41) was located in the Woodcutter area on the east side of the Rum Jungle granite (see Plate 1).

In this area the Crater Formation crops out in a south pitching anticline immediately south of the Giant's Reef Fault. The overlying Coomalie Dolomite and the Golden Dyke Formation crop out only as scattered exposures, but presumably are folded in the same way. The anomalies therefore were considered to lie close to the possible contact between the Coomalie Dolomite and Golden Dyke Formation. Although the radioactivity at the anomalies was only 2-3 x background their spatial position suggested they should be examined in detail.

The Woodcutter area was gridded by means of a carborne scintillograph (Barlow, 1957) and a radiometric contour map compiled (Plate 2). Costeans were bulldozed on the basis of this contour map. The results were disappointing; the counts on the floor of the costeans were always lower than the surface counts (Plate 3). No mineralization was seen.

The radioactivity appears to be concentrated in a very poorly developed ferruginous capping on the rocks of the anomalous areas. This commonly only a few inches thick and when it is removed the radioactivity decreases to normal background.

The Woodcutter anomalies are therefore similar in type to the Brodribb and Frazer anomalies: but the lateritic profile is not as well developed and the radioactivity at the surface is weaker.

No further action is recommended at these anomalies.

RADIOMETRIC ANOMALIES RECOMMENDED FOR FURTHER TESTING.

Anomalies A.73, A.76, A.77, A.78, A.79 and A.80 are recommended for further investigation. They all exhibit a radioactivity of over six and in places up to twelve times background on the ground. All have a similar geological setting. They have been named as follows:

A.73 - The North Mount Fitch anomaly
A.76 - The Castlemaine Hill anomaly
A.77, A.78, A.79, A.80 - The Batchelor Gravel Pit anomalies.

The anomalies are located on ferruginous outcrops. Other outcrops of the same type occur in areas not covered by the present survey, e.g. South Mount Fitch, Embayment Area, Witchers Anomaly and Rum Jungle Creek.

These localities are shown on Plate 1.

The outcrops commonly consist of massive or botryoidal limonite or hematite and have the characteristics of a dipping bed. In a few places they contain gossanous material, in others angular quartz grains occur in the massive limonite matrix. In some cases sandy ferruginous material shows traces of what may be relict bedding - for example one band may be sandy, a succeeding one not.

At one locality in the Embayment Area a railway cutting has exposed surface ferruginous outcrops as two clearly defined beds dipping to the south. The soil mantle between the ferruginous beds here is more than six feet deep.

Most of the outcrops are radioactive - the intensity being normally greater than six times background while counts of twelve times background are not uncommon.

Copper stainings occur in a ferruginous outcrop, immediately east of South Mount Fitch (Plate 5). The significance of this will be discussed later.

The outcrops all appear to occur close to the Coomalie Dolomite, Golden Dyke Formation contact. They are not laterites and are considered to be similar in type to the Brocks Creek type gossans described by Sullivan and Iten (1952). These are ferruginous cappings on gossans developed on pyritic rocks and are common in the area of outcrop of the Golden Dyke Formation on the Katherine-Darwin region. They are also widely developed on similar rocks in the South Alligator area. In all cases they indicate the presence of pyrite in the underlying beds ans can be used in most places as stratigraphic markers. In the outcrops under discussion leach products of uranium may have become bound up in the lattice

of the iron minerals in the gossan during the process of its formation: but it is not known whether the radioactive component represents concentration or impoverishment of the original uranium content. This feature can best be tested by drilling.

The importance of the radioactive ferruginous outcrops lies in their recognition as markers of a stratigraphic horizon or horizons containing uranium.

At "Flynn's Homestead" (Plates No.1 and No.4) a radiometric anomaly is centred on a ferruginous outcrop. The material at the surface is of ore grade. Churn drilling through the centre of the anomaly passed quickly into barren ground. The radiometric anomaly is probably not due to a body vertically beneath the surface anomaly. Close examination of the outcrop suggested a synclinal structure pitching west south west at 25°. This pitch is also indicated by exposures of the Crater Formation in railway cuttings to the north of the ferruginous outcrop. On this interpretation the area beneath which the down dip continuation of the outcrop could be expected is in the direction of pitch (area shown shaded on Plate 4).

At the "South Mount Fitch" locality (see Plates No.1 and No.5) a prospecting shaft has been sunk a few feet to the east of a ferruginous outcrop; but since the outcrop is dipping to the west the shaft did not test for its continuation. The shaft was sunk vertically in rock containing small amount of copper staining. Apparently it passed very quickly into dolomite and was discontinued. In this particular case geophysical work (Langron 1956) shows self potential and electro magnetic anomalies which may be associated with a body representing the down dip extension of the ferruginous outcrops.

A little to the east of the main Mount Fitch costeans (which exposed a little secondary copper and uranium mineralization) is a small ferruginous outcrop in deep alluvial soil. A radiometric anomaly is centred on this outcrop and has been tested by a prospecting shaft, a deep costean and two vertical drill holes. The testing was again vertical and the possible down dip extension of the outcrop has not been examined.

A large ferruginous outcrop to the north of Mount Fitch (marked "North Mount Fitch", Plate 1 and Plate 5) is the centre of another radiometric anomaly (A.73). The ferruginous outcrops are not amenable to bulldozed costeaning and the only testing so far has been a short shallow costean which had to stop before the outcrop was reached.

Radiometric anomalies are also located in ferruginous outcrops at the Batchelor gravel pits (Plate 5). Anomalies A79, A80 are located on a ferruginous outcrop trending 320° on the East edge of the gravel pits. Here the dip appears to be steeply to the East. The radiometric picture at this prospect is very confused due to the large number of tumbled and bulldozed boulders. The structural picture is not clear and more mapping is needed but the outcrops on which anomalies A.79 and A.80 are located should be further investigated.

RECOMMENDATIONS

The following recommendations are offered for consideration.

1. Rum Jungle Creek Prospect

Two extensions of the present programme are recommended in order to test for the possible continuity of ore beneath the Castlemaine Hill Breccia (Plate No.7).

(a) Deepening of churn drill hole CD186.
(b) A vertical diamond drill 300 feet deep collared 50 feet north of CD186.

2. Flynn's Homestead Anomalies

Two churn drills, one 100 feet and the other 300 feet from the collar of CD279 to the southwest of CD279 along a bearing 250°. (See Plate 4).

3. Batchelor Gravel Pit Anomalies

Testing of the ferruginous outcrop along which anomalies A79 and A80 are located (see Plate 6).

Three churn drill holes 100 feet apart in a line along a bearing of 320 degrees. The hole furthest north to be located 25 feet to the east of the ferruginous outcrop.

4. The Castlemaine Hill Anomaly

The dip of the ferruginous outcrop is not yet established at this anomaly (see Plate 6).

(a) A 100 foot costean along a bearing of 340° to give better exposures of the bed.

(b) A churn drill 50 feet to the north of the ferruginous outcrop along a bearing of 340°.

(c) A churn drill 50 feet to the south of the ferruginous outcrop along a bearing of 340° if the first is unsuccessful.

5. Mount Fitch.

(a) At the northern ferruginous outcrop to test the down dip extension of the surface exposure:

Three churn drill holes in a line along a bearing of 320° with 100 feet between the holes - the churn drill furthest north to be located 25 feet to the east of the ferruginous outcrop.

(b) At the southern ferruginous outcrop:

An inclined diamond drill hole from the west to test the down dip extension of the surface exposure at a depth of 100 feet or more - to be collared opposite the existing prospecting shaft.

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TABLE No.1.

Auster Anomalies - Rum Jungle Area - 1957

Summary Table

Number of Anomalies located by Auster VH/RES = 105.

Geological Setting	Number of Anomalies	Count (x background) (Harewell 1292A ratemeter)	Action Recommended
Granite outcrops	15	2 to 3	No further action.
Exposures of laterite	27	6	" "
Siltstone Rubble	2	2	" "
Outcrops of conglomerate (crater formation)	41	6	" "
Workings, or already costeaned	4	-	" "
Ferruginous outcrops	6	Up to 12	Costeaning, drilling recommended.
The "Woodcutter" Group	8	2 to 3	Costeaning completed, no further action.

5 areas of higher radioactivity (B1 - B5) are caused by laterite.

TABLE No.2

Auster Anomalies - Rum Jungle Area - 1957

Index of Anomalies

No. of Anomaly.	Geological Setting.	Count (x background) (Harwell 1292A ratemeter)	Action Recommended.
A1, A2	Conglomerate, Crater Fomn.	5	None
A3, A4	Laterite	2	"
A5, A6	Granite outcrops	3	"
A7	Conglomerate, Crater Fmn.	5	"
A8 to A16	Granite outcrops	3	"
A17 to A20	Conglomerate, Crater Formn.	5	"
A21 to A27	The "Woodcutter" group	2 to 3	Investigated by geological mapping, radiometric gridding & costeaning. No further action recommended.
A28 to A32	Laterite	2	None
A33, 34, 35.	Conglomerate, Crater Formn.	5	"
A37	Granite outcrops	3	"
A38 to A40	Laterite	2	"
A41	"Woodcutter" South anomaly	2 to 3	Investigated by geological mapping, radiometric gridding & costeaning. No further action recommended.
A42, A43	Laterite	2	None
A44, A45, A47-A70.	Conglomerate, Crater Formation.	5	"
A46	Laterite	2	"
A71	Granite outcrop	3	"
A72	Laterite	2	"
A73	Ferruginous outcrop	6	Further investigation.
A74	Mt. Fitch workings	-	None
A75	Granite outcrop	3	"
A76-A80	Ferruginous outcrop	6 to 9	Further investigation.
A81, A82	Siltstone rubble	2	None
A83 - A86	Conglomerate, Crater Formn.	5	None
A88 - A91	Laterite	2	"
A92 - A93	Waterhouse prospect	4	No further action recommended.
A94	Conglomerate, Crater Formn.	5	None
A95	Laterite	2	"
A96	Granite outcrop	3	"
A97, A98-A102, A104, A105.	Laterite	2	"
A103	Fraser prospect	2 to 3	"
			"

Numbers refer to Plate 1.

PLATE 1.

GENERALIZED GEOLOGICAL MAP
RUM JUNGLE DISTRICT
NORTHERN TERRITORY

Showing the position of radiometric anomalies detected by Auster Aircraft.

SCALE OF MILES

1 0 1 2 3 4

Reference

- A5 — Radiometric anomalies.
- B5 — Areas of higher radioactivity.

UPPER PROTEROZOIC

Depot Creek Sandstone	Pu	Quartz sandstone, breccia.

LOWER PROTEROZOIC

Noltenius Formation	Pln	Quartz greywacke, conglomerate, siltstone.
Burrell Creek Formation	Plb	Siltstone, greywacke.
Stapleton Formation	Pls	Arkose, greywacke.
Golden Dyke Formation	Pld	Carbonaceous siltstone, dolomitic marl, breccia.
Acacia Gap Lens	Pla	Quartz sandstone, quartz greywacke.
Coomalie Dolomite	Plo	Silicified algal dolomite, breccia, and calcilutite.
Crater Formation	Plr	Greywacke, pebble conglomerate, siltstone, slumped carbonaceous pyritic siltstone, with dolomite lenses & nodules.
Celia Creek Dolomite	Pll	Silicified algal dolomite.
Beeston's Creek Formation	Ple	Ankose, greywacke, conglomerate, siltstone, quartz sandstone.

Igneous Intrusives

- Dolerite sills.
- Granite.
- Ferruginous outcrop.

- Established geological boundary – position approximate.
- Strike and dip of strata.
- Strike and plunge of fold.
- Established geological fault — position accurate.
- Established geological fault position approximate.

- (Au) Gold.
- (Cu) Copper.
- (Pb) Lead.
- (Th) Thorium.
- (U) Uranium.

- Mine.
- Road.
- Vehicle tracks.
- Railway.
- Homestead.

Bureau of Mineral Resources, Geology and Geophysics. February, 1959.

NT 47-41 F.J.R.

PLATE 2.

SKETCH MAP
GEOLOGY AND RADIOMETRIC CONTOURS
WOODCUTTER ANOMALIES
(AUSTER ANOMALIES A 21-27)

Radiometric contours by B.Barlow using Carborne Scintillograph with a traverse interval of 200 feet.

Scale

500 0 500 1000 1500 2000 2500 FEET

Reference

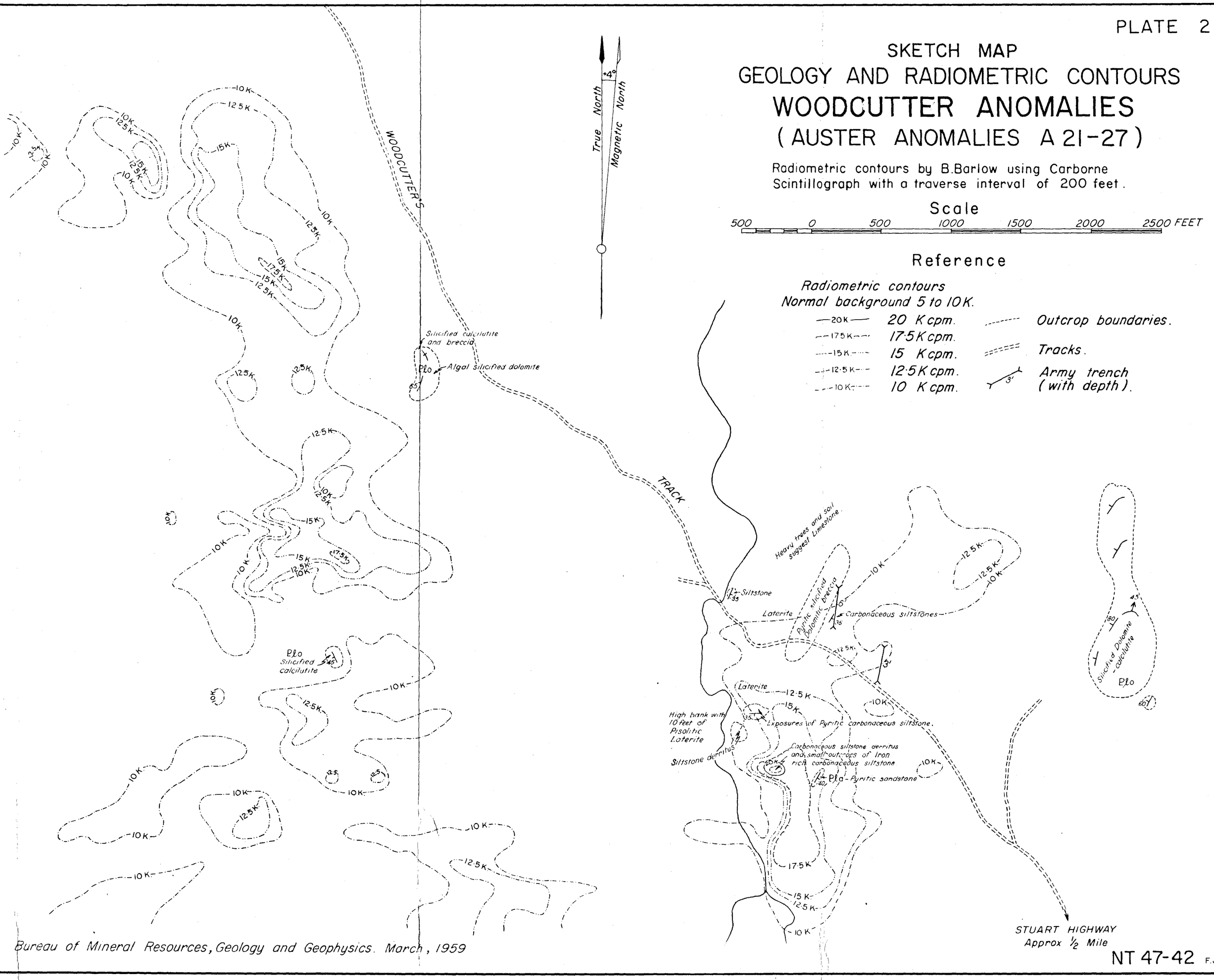
Radiometric contours
Normal background 5 to 10K.

- —20K— 20 K cpm.
- --17.5K-- 17·5K cpm.
- ---15K--- 15 K cpm.
- -+-12·5K- 12·5K cpm.
- ---10K--- 10 K cpm.

Outcrop boundaries.

Tracks.

Army trench (with depth).



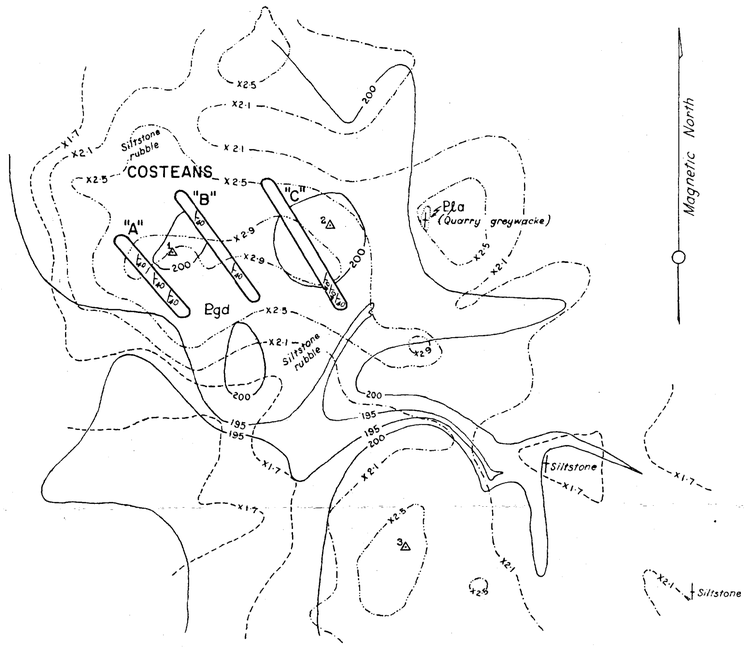
Bureau of Mineral Resources, Geology and Geophysics. March, 1959

NT 47-42 F.J.R.

GEOLOGICAL SKETCH MAP AND SECTIONS OF COSTEANS

WOODCUTTER ANOMALIES

(AUSTER ANOMALIES A 21-27)



Bureau of Mineral Resources, Geology & Geophysics March, 1959

GEOLOGICAL SKETCH MAP
SHOWING FERRUGINOUS OUTCROPS
NEAR
FLYNNS HOMESTEAD
RUM JUNGLE AREA, N.T.

PLATE 4.

SCALE IN FEET

400 200 0 400 800 1200

3° 45'
True North
Magnetic North

Reference

UPPER PROTEROZOIC

TOLMER GROUP
Depot Creek Sandstone — Pμ — *Sedimentary breccia. Sandstone.*

LOWER PROTEROZOIC

Golden Dyke Formation — Pld — *Carbonaceous & pyritic siltstone, dolomitic siltstone, slump breccia.*

BATCHELOR GROUP
Coomalie Dolomite — Plo — *Algal reef dolomite, dolomitic siltstone, and breccia.*

Crater Formation — Plr — *Quartz greywacke, siltstone. Lenses of pebble conglomerate*

Ferruginous outcrop.

CD 279 *Churn Drill hole.*

Established geological boundary — position approximate

Inferred geological boundary.

Inferred fault.

25 *Strike and dip of strata.*

15 *Strike and plunge of fold.*

Established anticlinal crest — position approximate.

NORTH AUSTRALIAN RAILWAY

To White's Mine

Plr

Plo

Pld

Pμ

Geological information from Railway cuttings

Silicified dolomite

To Rum Jungle Creek Prospect

Proposed Churn Drills

CD 279

Silicified dolomite, slump breccia.

Area for testing

CD 280

Hut

Sandstone and breccia rubble

CD 281

Dense Jungle

Silicified dolomite breccia

Flynn's Homestead

To Batchelor

Fence

Rubble of sandstone and breccia

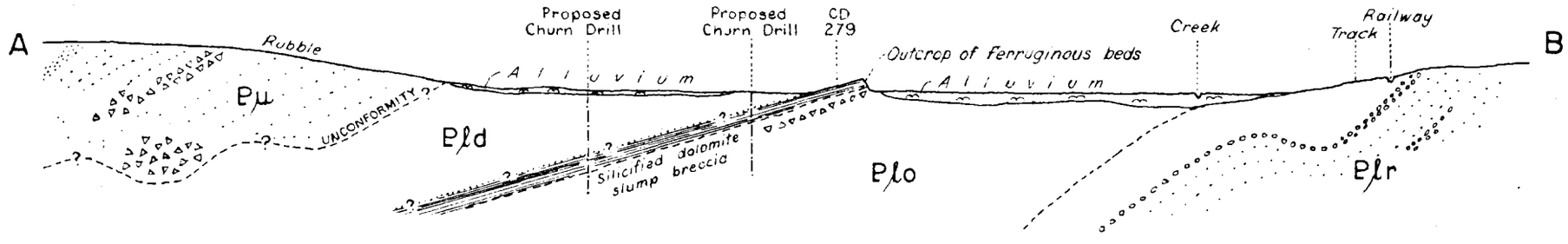
Laterite

Silicified dolomite

A

B

DIAGRAMMATIC SECTION A–B

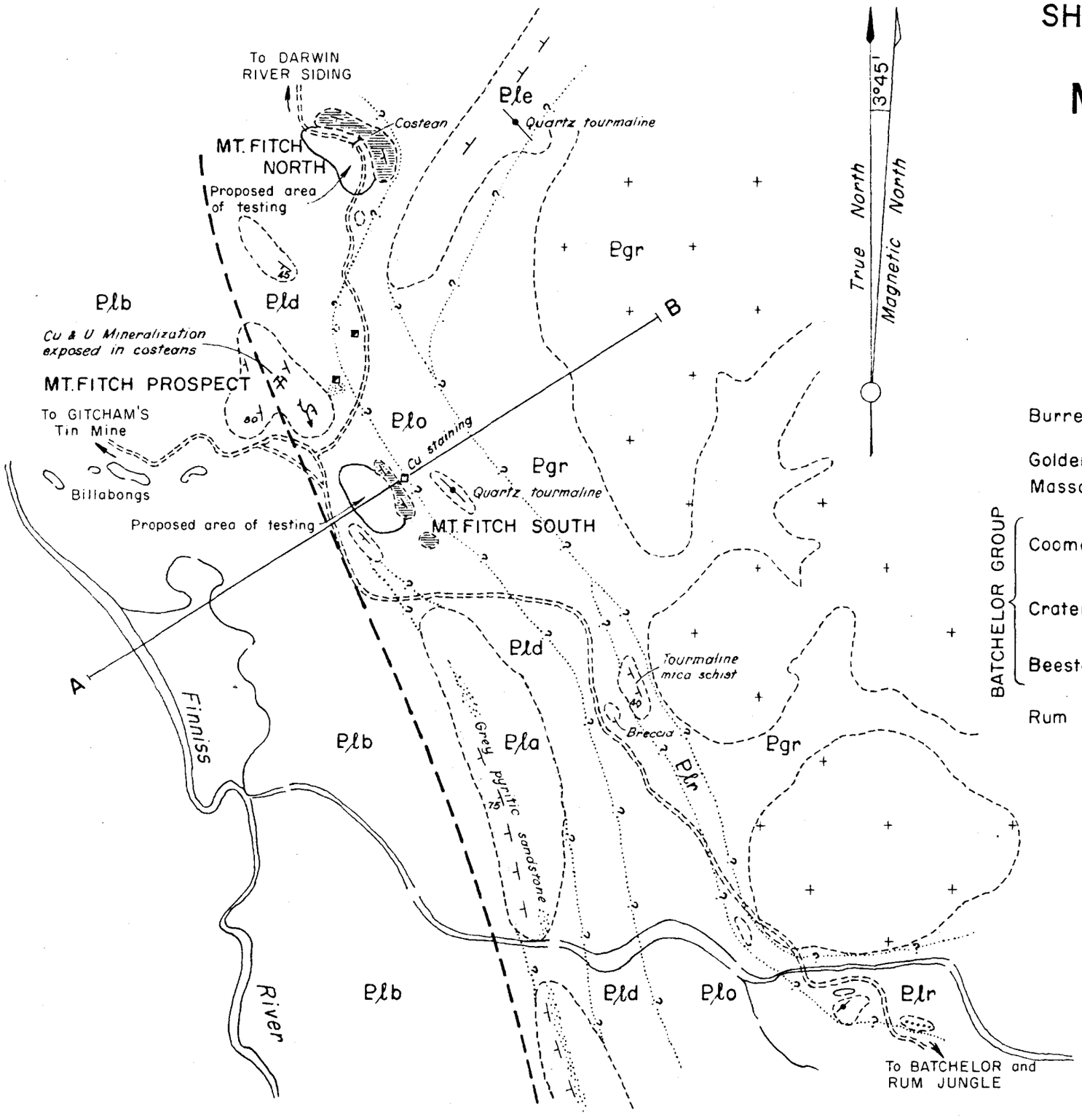


Bureau of Mineral Resources, Geology and Geophysics. March, 1959.

NT 47-44

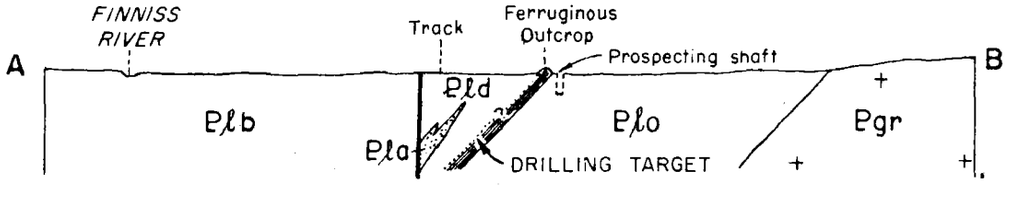
FJR

GEOLOGICAL SKETCH MAP
SHOWING FERRUGINOUS OUTCROPS
NEAR
MT. FITCH PROSPECT
RUM JUNGLE AREA, N.T.



DIAGRAMMATIC SECTION A–B

HORIZONTAL SCALE : 1200 Feet to 1 Inch.
VERTICAL SCALE : Dips correct, shaft depth exaggerated.



Reference

LOWER PROTEROZOIC

Burrell Creek Formation	Plb	*Siltstone, greywacke siltstone*
Golden Dyke Formation	Pld	*Carbonaceous & pyritic siltstone, dolomitic siltstone, slump breccia.*
Masson Formation	Pla	*Pyritic sandstone, siltstone.*
BATCHELOR GROUP: Coomalie Dolomite	Plo	*Algal dolomite, dolomitic breccia, and siltstone.*
BATCHELOR GROUP: Crater Formation	Plr	*Tourmaline mica schist, mica schist. Basal slumped carbonaceous pyritic siltstone, with dolomite lenses & nodules.*
BATCHELOR GROUP: Beeston's Creek Formation	Ple	*Quartz greywacke and quartz pebble conglomerate.*
Rum Jungle Granite	Pgr	

- *Ferruginous outcrop.*
- *Quartz vein.*
- *Established geological boundary—position approximate.*
- *Inferred geological boundary.*
- *Established fault, position approx.*
- *Mine.*
- *Shaft — accessable.*
- *Shaft — inaccessable.*
- *Vehicle track.*

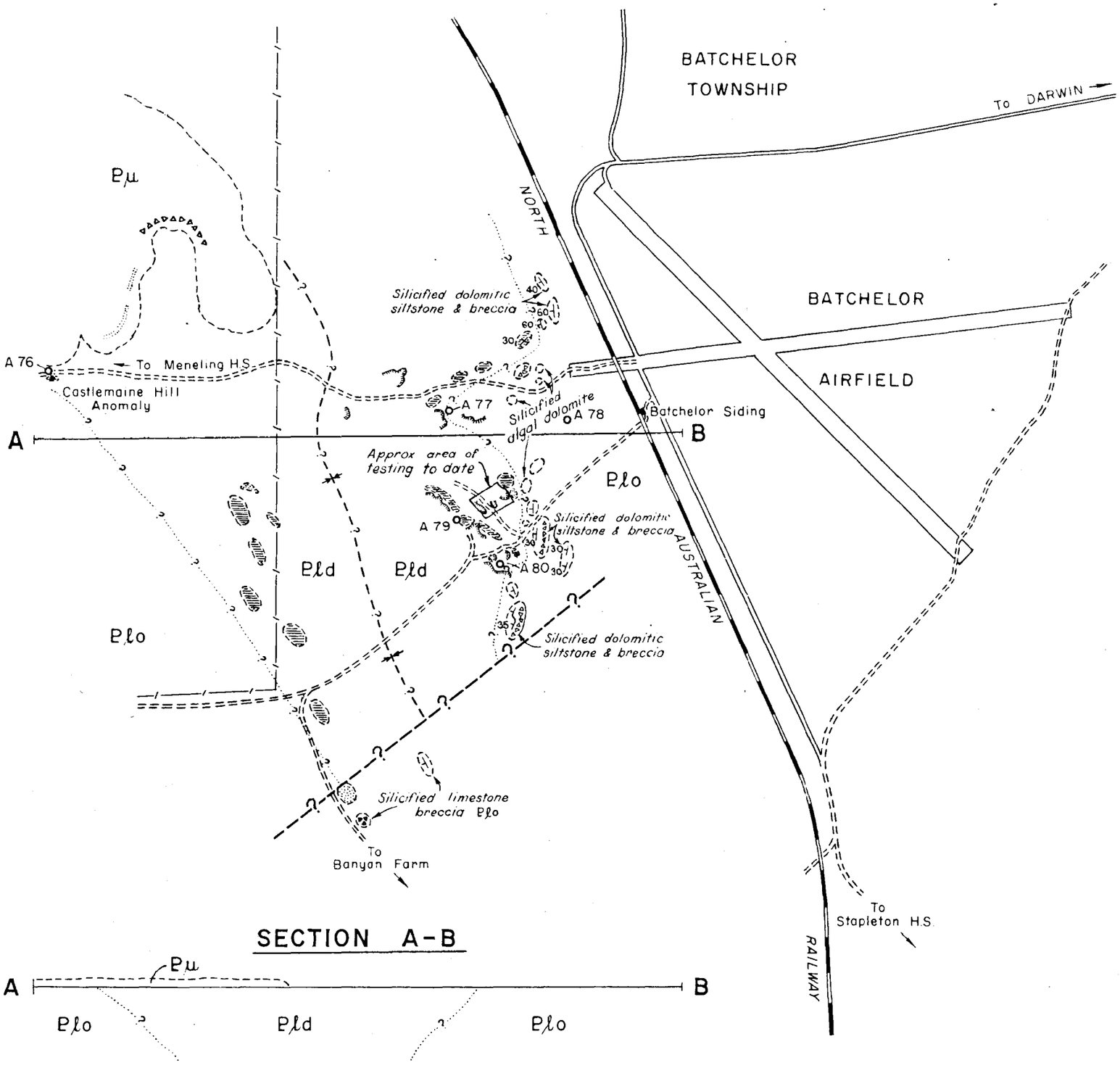
SCALE IN FEET

1200 600 0 1200 2400 3600

Bureau of Mineral Resources, Geology and Geophysics. January, 1959.

NT 47-45 F.J.R.

GEOLOGICAL SKETCH MAP SHOWING FERRUGINOUS OUTCROPS NEAR BATCHELOR GRAVEL PITS RUM JUNGLE AREA, N.T.



SECTION A-B

Reference

UPPER PROTEROZOIC

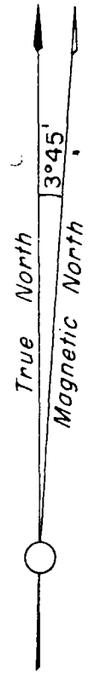
TOLMER GROUP
Depot Creek Sandstone — Pμ — *Sandstone. Sedimentary breccia.*

LOWER PROTEROZOIC

Golden Dyke Formation — Pld — *Carbonaceous pyritic siltstone, dolomitic siltstone, slump breccia.*

BATCHELOR GROUP
Coomalie Dolomite — Plo — *Algal reef dolomite, dolomitic siltstone, and breccia.*

- *Ferruginous outcrop.*
- *Laterite.*
- *Gravel pit.*
- A80 *Position and reference number of Auster Radiometric Anomalies.*
- *Established geological boundary — position approximate.*
- *Inferred geological boundary.*
- *Inferred synclinal trough.*
- *Probable fault.*
- *Strike and dip of strata.*
- *Road.*
- *Vehicle track.*
- *Railway line.*
- *Fence.*



SCALE IN FEET

1200 600 0 1200 2400 3600

Bureau of Mineral Resources, Geology and Geophysics. December, 1958.

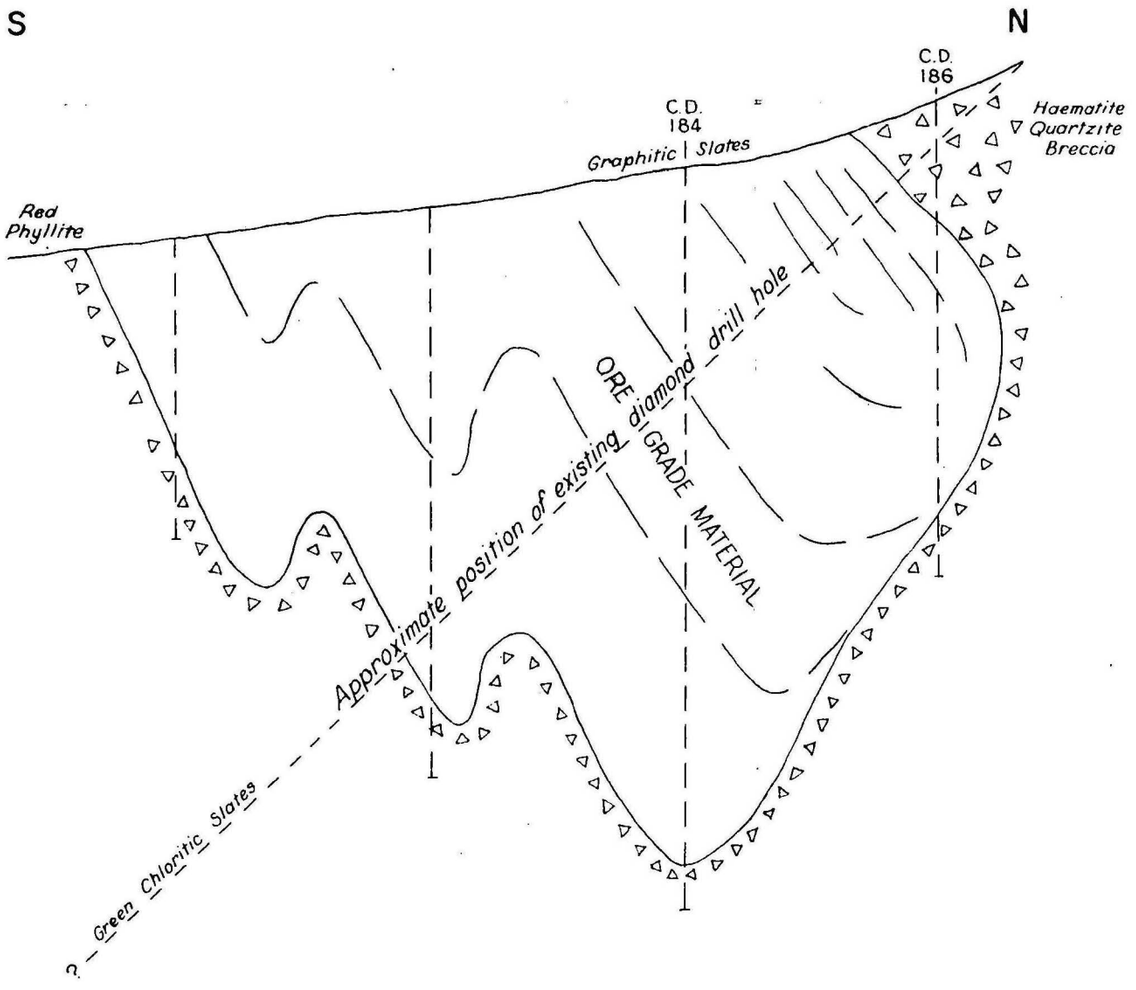
NT 47-46 F.J.R.

RUM JUNGLE CREEK PROSPECT

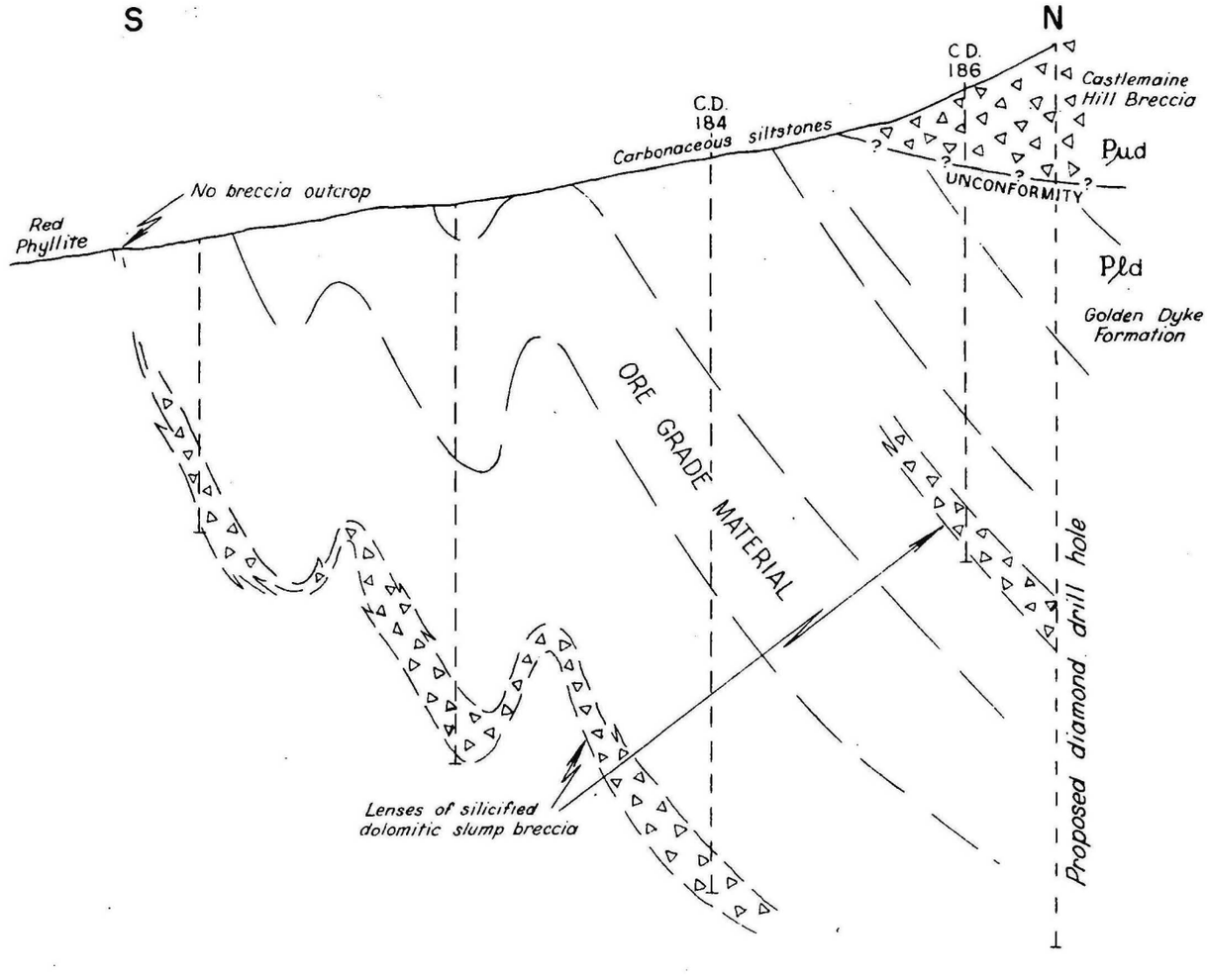
PLATE 7.

Not to Scale

PRESENT INTERPRETATION OF SECTION



ALTERNATIVE SECTION



Bureau of Mineral Resources, Geology & Geophysics. March, 1959.

NT 47-47 F.J.R.