BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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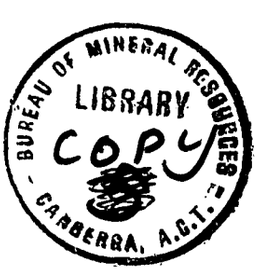
RUM JUNGLE AREA - 1965 - SUMMARY OF ACTIVITIES

by

C.E. Prichard and J.F. Ivanac



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SUMMARY

During 1965 exploration for uranium-bearing deposits continued in the Hundred of Goyder and surrounds. Compilation and synthesis of information obtained since the discovery of Rum Jungle was continued to assist future exploration programmes.

The radiometric anomaly at Coomalie Gap West was outlined in more detail and is associated with a succession from west to east of Coomalie Dolomite, Golden Dyke Formation and amphibolite. The anomaly is 3 X background and is fringed to the north, east and south by low-order lead and copper geochemical anomalies. The area is one of extensive electromagnetic anomalies which may be related to the pyritic-graphitic slate common in the area. Diamond drilling - the first of four holes commenced on 30th September and to date has intersected pyritic graphitic slates.

The high-order lead anomaly at Woodcutters Area was confirmed by atomic absorption analysis and will be tested by diamond drilling. The lead anomaly is associated with gossanous slate, pyritic quartzite and chert which are folded into a tight anticline. The possibility of testing a cerussite-bearing gossan south of the lead anomaly will be evaluated when further geochemical results are received.

At Gould Area reconnaissance geochemistry and geophysics outlined a moderately anomalous area between Mount Minza and Waterhouse No.2 Prospect. All analytical results have not yet been received. However, the reconnaissance prospecting technique used has elimiated three quarters of the Gould area.

Two experimental auger drilling/geochemical sampling traverses were run across Celia Dolomite about three miles east of Batchelor.

A tentative programme for 1966 is submitted.

INTRODUCTION

During 1965 geologists and geophysicists of the Darwin Uranium Group continued exploration for uranium and sssociated base metals in the Rum Jungle area.

Two portions of the Rum Jungle East Area - Coomalie Gap West and Woodcutters - which had been investigated by reconnaissance survey in 1964, received more detailed attention and the previous 2,400 feet x 400 feet grid was closed to 400 feet by 200 feet. Contract diamond drilling was commenced at Coomalie Gap West to obtain basic information on geochemical and geophysical anomalies prior to planning a more intensive testing programme, if results warrant it.

An area south of Batchelor Township, known as Gould area, was prospected by reconnaissance survey and geochemical samples were collected from a 2400 x 400 foot grid and electromagnetic surveys carried out along the same traverses.

Auger drilling was done chiefly by the B.M.R. Gemcodrill which drilled 22,000 feet; in addition almost 500 feet was drilled by C.R.A.E. Gemcodrill.

In areas covered by transported soil, samples of auger cuttings were taken from the bottom of the hole close to the soil - weathered rock interface; in areas covered by outcrop or by residual soils, mattock samples were collected below the humus horizon.

Samples were analysed by the Australian Mineral Development Laboratories. Gould area samples were analysed for copper, lead, nickel, cobalt, vanadium and phosphorous using semi-quantitative optical emission spectrography. Accuracy of results is quoted by Amdel as ± 50 per cent.

Samples from Coomalie Gap West and Woodcutters were analysed by atomic absorption spectrophotometry for copper and lead; accuracy is stated by Amdel as ± 5% and it was considered that this accuracy was needed for the delineation of anomalies prior to diamond drilling.

All stations were measured and all auger holes were probed radiometrically.

COOMALIE GAP WEST AREA

The Coomalie Gap West area lies in the southern portion of the Rum Jungle East area and extends from grid co-ordinates 380 south to 456 south. In 1964, geochemical, radiometric and electromagnetic anomalies were outlined during reconnaissance surveys. In 1965 the grid spacing was reduced from 2,400 feet to 400 feet and detailed follow-up work completed. The geochemical, radiometric and electromagnetic anomalies were outlined in more detail and were found to be broadly coincident.

The radiometric anomaly ranged up to 0.070 mR/hr and is about three times background along a length 800 feet. It occurs in calcareous clay, - a weathered equivalent of the Golden Dyke Formation.

The geochemical anomalies are shown by copper and lead concentrations they are irregularly shaped and lie in areas fringing in part, the 0.030 mR/hr radiometric contour. Several anomalies ≥ 100 p.p.m. Cu and 100 p.p.m. Pb were discovered.

Electromagnetic anomalies, - Turam and Slingram - indicate a broadly anomalous zone with several peaks.

On the 30th September the first of a minimum of four diamond drill holes was commenced. It is collared at 412S 28E, and is depressed at 50 degrees to the west; it is designed to obtain stratigraphic information and test the radiometric anomaly. To date the drill has reached a depth of 123 feet; below soil cover, the rest is a black graphitic slate with scattered blebs - up to one-eighth inch diameter - of carbonate and pyrite. The hole is planned for a total depth of 500 feet.

The three remaining holes are planned to obtain stratigraphic information and test geochemical and electromagnetic anomalies. It is proposed to drill each hole to a maximum depth of 500 feet.

Completion of this programme by the end of 1965 will depend largely on seasonal conditions. Drill sites are situated in alluvium and excessive rain will make access impossible.

WOODCUTTERS AREA

A northerly trend of high geochemical values had been indicated in the north-central part of Rum Jungle East Area by the 1964 survey. This trend, termed Woodcutters Area, was gridded at a traverse spacing of 400 feet and geochemical and geophysical surveys were made along these traverses in 1965. Field work was completed in October; however, most analytical results are not yet available and this compilation and appreciation of other results is still in progress (Plate 4.)

The electromagnetic survey indicated several moderate conductors only. The geochemical analyses received to date confirm the lead anomaly obtained in the 1964 survey at 120S 36E and show that it extends to a maximum of 800 feet north and 400 feet south. Only lead is anomalous. Maximum values of 10,000 p.p.m. (optical emission spectrograph) and 1600 p.p.m. (atomic absorption) occur. The anomaly is associated with a south plunging anticlinal nose of pyritic quartzite, gossanous shale and chert Diamond drilling to test at depth is proposed because of the high lead values. Two holes 500 feet long are planned initially and future drilling programmes will depend on the results.

A shear zone up to ten feet wide, silicified and gossanous in part, occurs between 200S and 210S along traverse 40E. Cerussite was found near its southern end and a surface sample contained 1750 p.p.m. lead and 34 p.p.m. copper. Results of other samples have not yet been received. No Slingram geophysical anomaly occurs over the shear. This area will be studied further when the rest of the geochemical results are received to see if diamond drilling is warranted.

Generally only background radioactivity was recorded in the Woodcutters Area. Slightly higher values were noted at Woodcutters and Woodcutters South anomalies and a few scattered holes showed slightly high values. However, none of these warrant further investigation.

GOULD AREA

The Gould Area extends from about two miles south of Batchelor for about six miles to the south. It consists mostly of Coomalie Dolomite and Golden Dyke Formation, but includes some Noltenius formation in the south-eastern portion. Amphibolite is common.

Auger drilling along traverses at 2,400 foot spacing was carried out and electromagnetic surveys chiefly slingram) were made along the same traverses. Surface and subsurface (auger hole) radio activity was recorded.

The geophysical survey located strong conductors west of Mount Minza and subsequently this area was surveyed at closer spacing (indicated in Plate 4); the Turam electromagnetic method was also used in this area.

Mattock samples were collected from areas of outcrop and residual soil and agger drill samples collected from soil-covered areas. The extra traverses west of Mount Minza were also sampled. Fieldwork was completed in October, but analytical results have not yet been received for all samples. Compilation and evaluation of results is still in progress.

Results received so far indicate irregular moderate metal values west of an parallel to the ridge north of Mount Minza. Moderate copper and cobalt values also occur. West of Mount Minza, following the geological trends to Waterhouse No.2 Prospect, Slingram surveys have indicated moderate to good conductors in the same general localities. When the rest of the analyses are received and plotted some correlations may be apparent.

In the rest of the Gould Area metal values are generally low, though some scattered higher metal values are recorded over amphibolite.

Phosphorous generally ranges from 100 to 200 p.p.m. and high values are restricted to a short section of the most southerly traverse, where a maximum of 1600 p.p.m. is recorded. This is adjacent to the Stapleton North Phosphate Anomaly previously investigated by Pritchard.

Radiometric results are generally higher in ferruginous and lateritic areas and in the area west of Mount Minza. These are not considered anomalous. The only anomalies recorded were at previously known prospects, e.g. Waterhouse Nos. 2, 3, and 4, and the Crater Formation. Waterhouse No.4 is in a ferruginized area and is NOT considered indicative of mineralization. Waterhouse No.3 is on outcropping siltstone of the Noltenius Formation and hence this area was not auger drilled. No indication of mineralization was found and the anomaly is probably due to absence of soil cover on the slightly radioactive siltstone. Waterhouse No. 2 Prospect has previously been examined and diamond drilled. The radioactivity in the Crater Formation is considered due to thorium and was not investigated further.

A broad aeromagnetic anomaly in the northern part of the area is clearly associated with magnetite-rich amphibolite recovered in auger cuttings.

CELIA DOLOMITE

Two experimental auger drilling/geochemical sampling traverses were run across Celia Dolomite at a point approximately three miles west of the Batchelor Road-Stuart Highway junction. Traverses were 3200 and 3400 feet long respectively and holes were at 400 foot intervals to average depth of 11 feet.

The rocks consisted of typical Celia Dolomite with outcrops of muscovite gneiss in the central part of the traverse line. Analysis of cuttings should provide some data on the trace element content of the Celia Dolomite in this area.

COMPILATION OF DATA

Compilation of geological, geochemical and geophysical data was commenced towards the end of 1965 when staff became available. The area being studied (Plate 1) comprises Dysons, Whites, Browns, and Area 55 to Rum Jungle Creek. This is the most intensely mineralised portion of the Hundred of Goyder and warrants detailed study, particularly in the compilation of systematic long and cross sections to evaluate the possibilities in depth near Whites, Dysons and Rum Jungle Creek South uranium deposits.

STAFF

The Drawin Uranium Group were understaffed during the year due to difficulty of recruiting a suitable geologist. The vacancy should be filled in the coming year.

Mr. Sheahan, Gemcodriller, resigned in October 1965 and a replacement is being sought.

PROPOSED 1966 PROGRAMME

The proposed 1966 programme is as follows:

1). Compilation of Data. Continue compilation, synthesis and analysis of all available geological, geochemical and geophysical data in the Hundred of Goyder; the work is planned in the following stages :-

(a) Dysons Area 55 - Rum Jungle Creek South triangle as outlined on Plate I; includes standard 400 ft to 1 inch sheets numbers E, 53, 54, 62, 63, 64, 72, 73, 82, and 83. The most important mineral deposits in the Hundred of Goyder are found in this area; it contains the bulk of drill hole information and has been the target for numerous geological surveys. In conjunction with this compilation, systematic cross- and long sections will be prepared to assist in evaluating the data and to highlight any potential metalliferous deposits.

(b) Mt. Fitch North Dolerite Ridge (to join on to the Rum Jungle area); after completion of (a).

(c) Rum Jungle Creek South to Waterhouse area; after completion of (a) and (b).

(d) Other areas for which suitable data are available, to complete the compilation; after completion of (a) (b) and (c).

The vast quantity of information available, - over 800 diamond drill holes, 300 percussion drill holes, and four sixdrawer cabinets with plans, - suggests that with present staff and no other commitments it will take at least all of 1966 to complete 1(a).

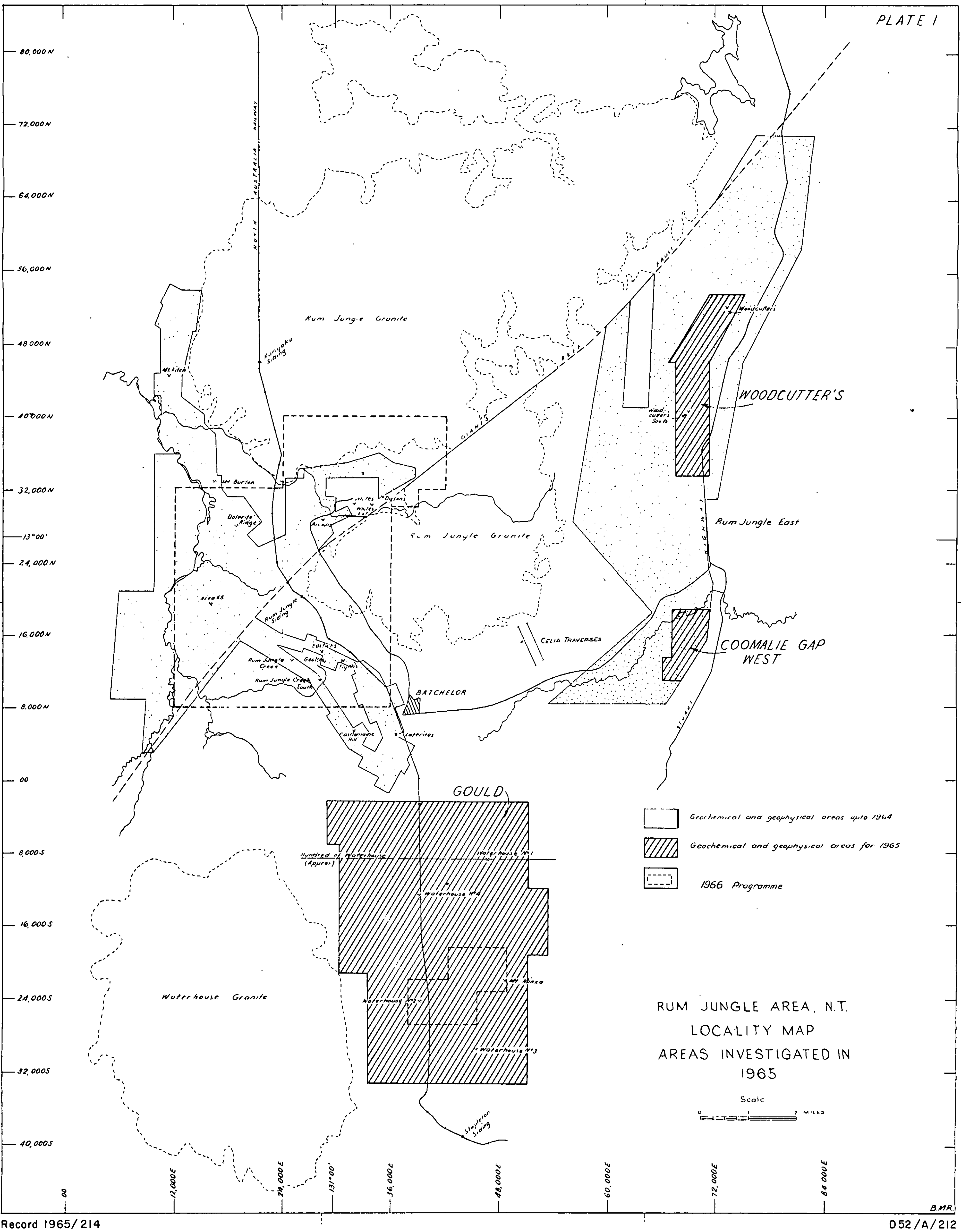
2. Geochemistry, Geology, Geophysics: Follow-up auger drilling and detailed geophysical and geological mapping in the Mt. Minza - Waterhouse No. 2 area to outline in more detail anomalies discovered in 1965 and test Waterhouse No. 2 in more detail.

Surveying Required:-	60 miles of 400 by 50 foot grid; to close up 2400 x 400 grid laid out in 1965.
Auger Drilling:-	Estimated 30,000 feet; holes at 100 foot intervals drilled to an average depth of 20 feet.
Drill:-	B.M.R. Gemcodrill.

3. Diamond Drilling: Targets to be selected from Coomalie Gap West, Mt. Minza - Waterhouse and Woodcutters, Cerussite-bearing gossan.

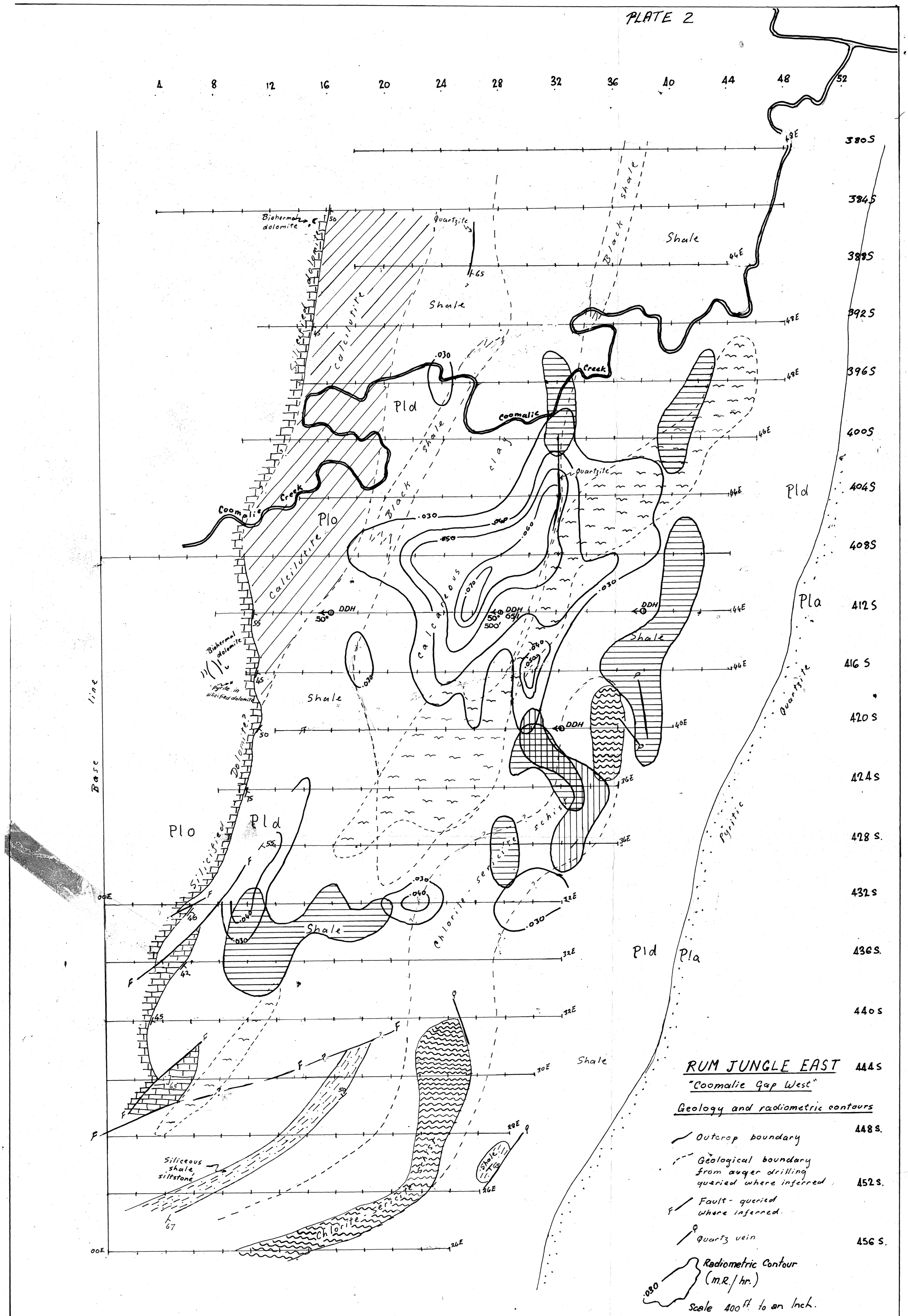
4. Records: (a) Complete records on 1965 investigations.

(b) Compile volume of data for each 400 foot area as described in 1(a).



80,000 N
72,000 N
64,000 N
56,000 N
48,000 N
40,000 N
32,000 N
13°00'
24,000 N
16,000 N
8,000 N
00
8,000 S
16,000 S
24,000 S
32,000 S
40,000 S
00
12,000 E
24,000 E
131°00'
36,000 E
48,000 E
60,000 E
72,000 E
84,000 E
NORTH AUSTRALIA RAILWAY
Rum Jungle Granite
Kunyaku Siding
Mt. Fitch
Mt. Burton
Dolerite Ridge
Area 55
Rum Jungle Siding
Rum Jungle Creek
Rum Jungle Creek South
Geolsey
Castlemaine Hill
Laterites
BATCHELOR
Dysons
Whites
Browns
Rum Jungle Granite
CELIA TRAVERSES
GIANTS REEF FAULT
WOODCUTTER'S
Woodcutters
Rum Jungle East
STUART HIGHWAY
COOMALIE GAP WEST
GOULD
Hundred of Waterhouse (Approx)
Waterhouse No. 1
Waterhouse No. 4
Mt. Minza
Waterhouse No. 3
Waterhouse Granite
Stapleton Siding
Geochemical and geophysical areas up to 1964
Geochemical and geophysical areas for 1965
1966 Programme
RUM JUNGLE AREA, N.T.
LOCALITY MAP
AREAS INVESTIGATED IN
1965
Scale
2 MILES
B.M.R.

PLATE 2



RUM JUNGLE EAST

"Coomalie Gap West"

Geology and radiometric contours

- Outcrop boundary
- Geological boundary from auger drilling queried where inferred
- F — Fault - queried where inferred.
- Q — Quartz vein
- .030 — Radiometric Contour (M.R./hr.)

Scale 400 ft. to an Inch.

400 200 0 400 800 1200

Feet

Copper >100ppm

Lead >100ppm

DDH Diamond Drill Hole.

ALLUVIUM

LOWER PROTEROZOIC

- Pla — ACACIA GAP TONGUE — Pyritic quartzite
- Pld — GOLDEN DYKE FORMATION — Shale, siltstone, chlorite-sericite schist
- Plo — COOMALIE DOLOMITE — Silicified dolomite, calcilutite, biohermal dolomite

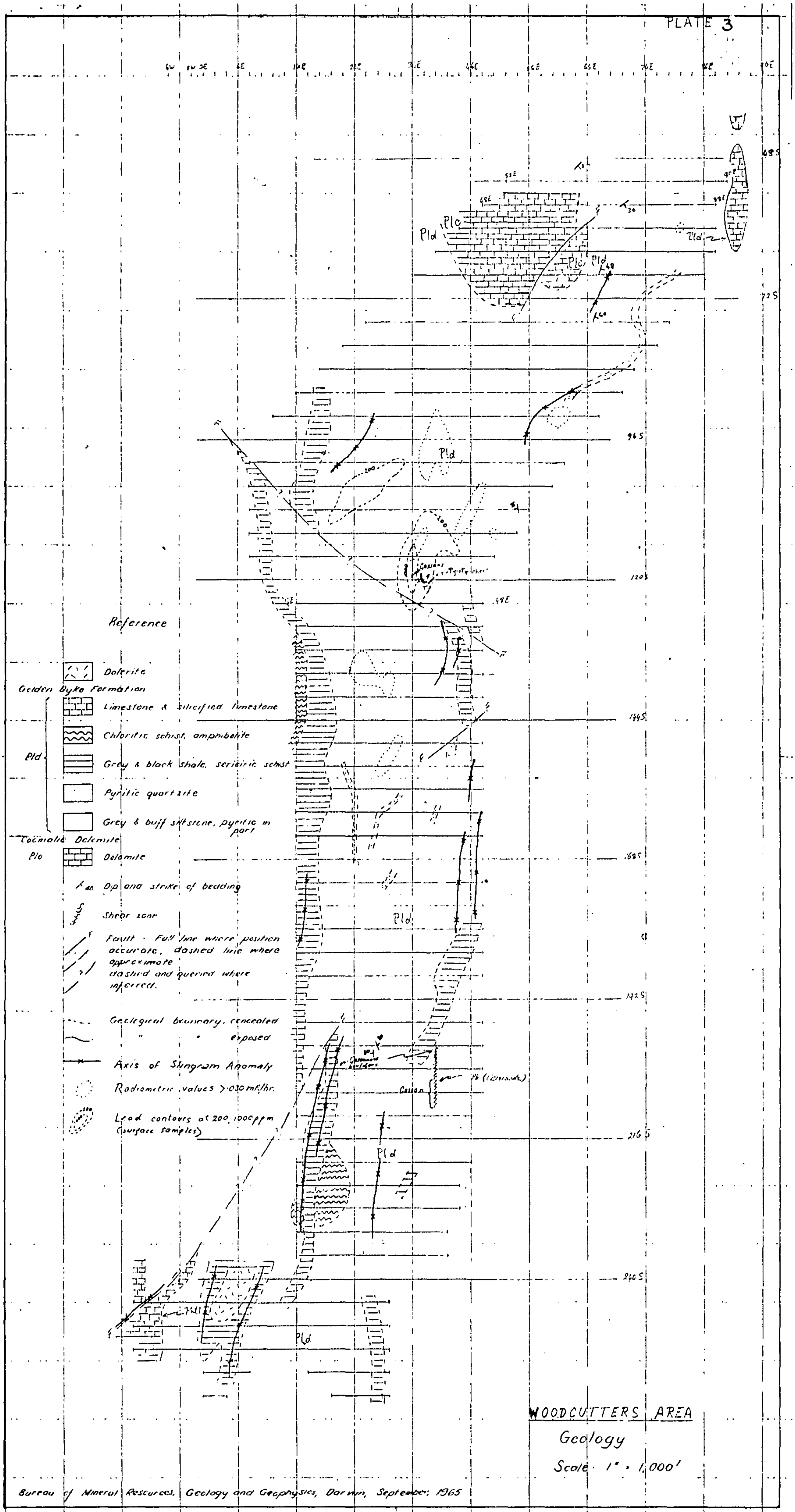
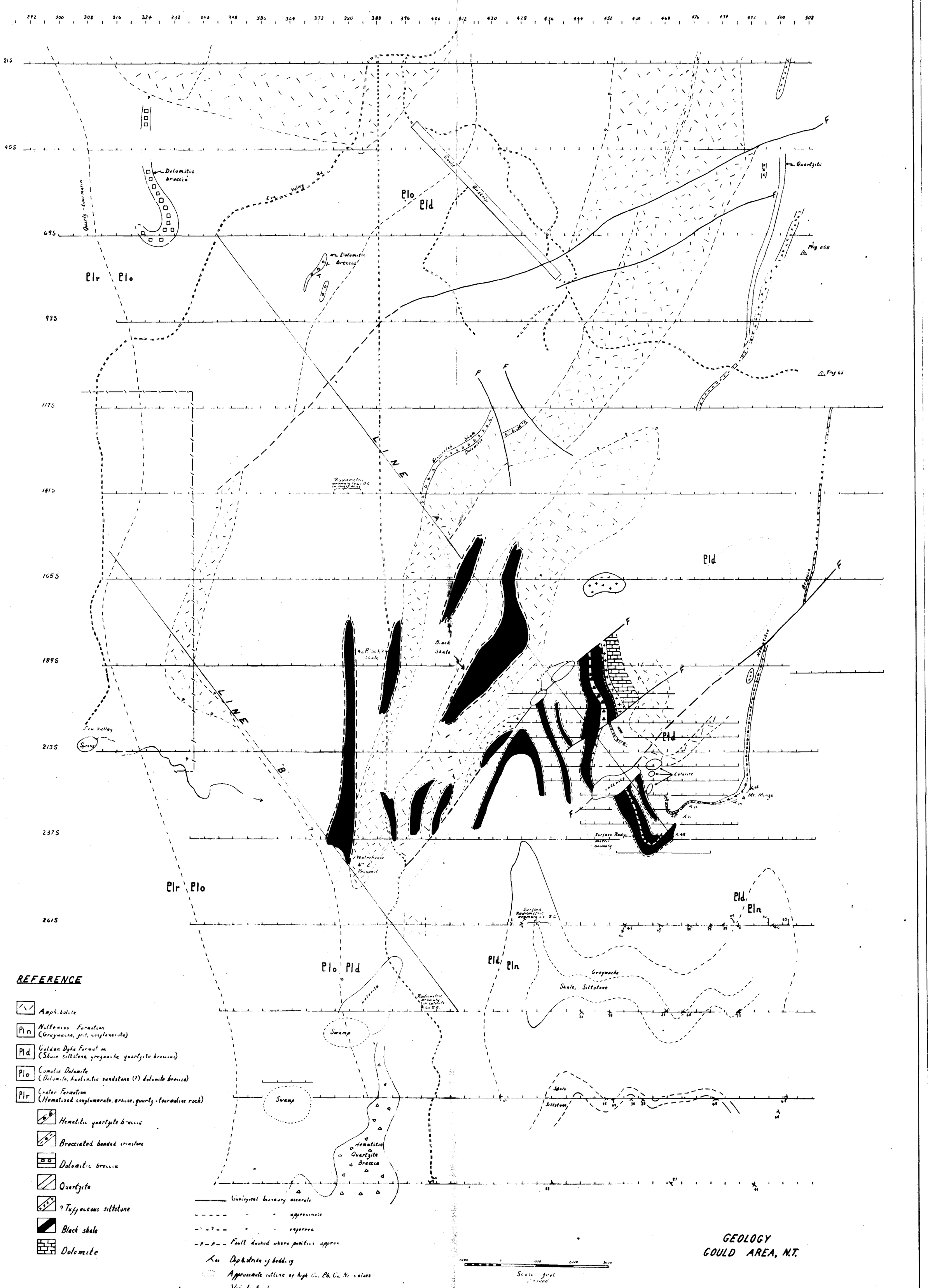


PLATE 3
Reference
Dolerite
Golden Dyke Formation
Limestone & silicified limestone
Chloritic schist, amphibolite
Pld
Grey & black shale, sericitic schist
Pyritic quartzite
Grey & buff siltstone, pyritic in part
Coomalie Dolomite
Plo
Dolomite
Dip and strike of bedding
Shear zone
Fault - Full line where position accurate, dashed line where approximate dashed and queried where inferred.
Geological boundary, concealed
" " exposed
Axis of Slingram Anomaly
Radiometric values > 0.30 mR/hr.
Lead contours at 200, 1000 ppm (surface samples)
Pld
Plo
Costean
WOODCUTTERS AREA
Geology
Scale 1" = 1,000'
Bureau of Mineral Resources, Geology and Geophysics, Darwin, September, 1965

PLATE 4



REFERENCE

- Amphibolite
- Pln — Nullenous Formation (Greywacke, grit, conglomerate)
- Pld — Golden Dyke Formation (Shale siltstone, greywacke, quartzite breccias)
- Plo — Comalie Dolomite (Dolomite, kaolinitic sandstone (?) dolomite breccia)
- Plr — Crater Formation (Hematised conglomerate, arkose, quartz - tourmaline rock)
- Hematitic quartzite breccia
- Brecciated banded ironstone
- Dolomitic breccia
- Quartzite
- ? Tuffaceous siltstone
- Black shale
- Dolomite

- Geological boundary accurate
- " " approximate
- " " inferred
- Fault dashed where position approx
- Dip & strike of bedding
- Approximate outline of high Cu, Pb, Zn, Ni values
- Vehicle track

GEOLOGY GOULD AREA, N.T.

Bureau of Mineral Resources, Geology and Geophysics, Darwin, October 1965