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SUMMARY OF B.M.R. EXPLORATION - RUM JUNGLE AREA, 1968.

by

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SUMMARY OF B.M.R. EXPLORATION - RUM JUNGLE AREA, 1968.

SUMMARY

During 1968, auger drilling, geochemical and radiometric surveys were undertaken in the Huandot, Coomalie Creek and Manton areas, and a number of geochemical and radiometric anomalies were delineated. Follow-up surveys were undertaken in the Acacia and Coomalie Gap West areas, and a number of well-defined geochemical anomalies in the Acacia area were confirmed.

Diamond drilling comprised five holes completed in the Woodcutters area, two in the Coomalie Gap West area, and three in Area 44 Extended. Only minor disseminated base metal and radioactive mineralization was encountered in these holes. At the time of writing (October, 1968), one hole is in progress in Area 44 Extended and one in the Mount Minza area, and one is about to commence in the Acacia area. Fifteen rotary-percussion drill holes were also completed to test radiometric anomalies in the Woodcutters area and four in Area 44 Extended. None of these encountered major concentrations of radioactive mineralization.

Further testing of the Woodcutters L 5 Prospect is to be undertaken by the Electrolytic Zinc Company of Australia and Peko-Wallsend Investments Limited.

A re-examination of the Lower Proterozoic meta-sedimentary succession was undertaken in order to check the relationships between the four formations of the Batchelor Group and the contact relations between the Batchelor Group and the Rum Jungle Complex.

In the Embayment area, a compilation of existing surface and underground information has resulted in recommendations for further testing in the area between White's and Dyson's open cuts.

A preliminary examination has shown that magnesite is widespread as a major constituent in crystalline carbonate rocks of the Celia and Coomalie Dolomite formations.

Geophysical surveys during 1968 included reconnaissance surveys in the Manton area and detailed surveys in the Huandot area. A surface radiometric anomaly in the Manton area requires investigation.

A gravity survey indicated a steep dip on the western edge of the Rum Jungle Complex. Slingram and resistivity test surveys across the Complex both located fault zones with no surface expression. Slingram is the preferred method to use.

Introduction

Exploration programmes by the Bureau of Mineral Resources in the Rum Jungle area during 1968 followed the general pattern set in recent years.

The Geological staff, comprising C.E. Prichard, A. Taube, J.L. Willis and Y. Miezitis (ex Canberra), undertook auger drilling, geochemical and radiometric surveys, supervised diamond drilling and rotary-percussion drilling programmes, and carried out general geological investigations relating to the stratigraphy and structure of the Batchelor Group meta-sediments. Further progress was made with the compilation of existing geological and drilling information from the Embayment area, and an investigation of magnesite occurrences in the Celia and Coomalie Dolomite was begun.

Between May and October, about 26,000 feet of auger drilling were completed by the B.M.R. Gemco drill, mainly in the Huandot, Coomalie Creek, Acacia and Manton areas, and 1,500 samples were collected for geochemical trace element analysis. Drilling in the Manton area is still in progress at the time of writing, and is being assisted by a second Gemco drill, made available by the Mines Branch, N.T. Administration. During the period May to July, 1968, a Mayhew drill, made available by the B.M.R. Petroleum Technology Section, drilled 19 holes totalling about 3,000 feet in the Woodcutters area and Area 44 Extended.

Diamond drills made available by the Mines Branch, N.T. Administration, completed two holes in the Woodcutters area and three holes in Area 44 Extended for a total of 3,860 feet. In addition, three diamond drill holes in the Woodcutters area and two in the Coomalie Gap West area were completed under contract for a total of 2,770 feet. At the time of writing, one hole by a Mines Branch drill is in progress in Area 44 Extended; one contract drill hole is in progress in the Mount Minza area, and another is about to commence in the Acacia area.

Details of holes completed during the year or in progress at the time of writing are as follows:

	Co-ordinates	Depression	Depth (feet)
Woodcutters L 5 Anomaly			
67/10	216 S, 42 E.	75° W	1001 T.D.
Woodcutters L 2 Anomaly			
67/12	88 S, 34 E.	65° E	569 T.D.
67/13	80 S, 29.5 E	65° E	555 T.D.
68/4	90 S, 28.5 E	70°E	642 T.D.
Woodcutters L 3 Anomaly L 3 Grid			
67/15	46 E, 43 N	60° N	553 T.D.
Coomalie Gap West area.			
68/1	344 S, 21 E	60° W	472 T.D.
68/2	344 S, 25 E	50° W	624 T.D.

(Cont.)	Co-ordinates	Depression	Depth (feet)
Area 44 Extended			
67/14	196 S, 50 W	60° W	799 T.D.
68/3	212 S, 53 W	60° W	836 T.D.
68/5	240 S, 55.9 W	60° W	589 T.D.
68/6	236 S, 33 W	60° W	377 on 30/10/68
Mount Minza area, (Gould area grid).			
68/7	201 S, 444.5 E	60° E	133 on 30/10/68
Acacia area (Acacia grid).			
68/8	24 N, 1 E	50° E	About to begin.

Reconnaissance geophysical surveys were made in the Manton area, and detailed surveys in the Huandot area.

As a result of the compilation of geophysical data in the Hundred of Goyder, follow-up surveys were made in the Mount Fitch North area, Mount Burton area, Browns South-west area, Rum Jungle Triangle area, Area 55 B, Batchelor Laterites Extended and Powerline areas.

Follow-up surveys were also made in the Waterhouse No.2 and Mount Minza areas, Acacia area and Coomalie Gap West area.

A gravity survey was made to examine the western edge of the Rum Jungle Complex. Test surveys were made over the Complex to locate fault zones with no surface expression. A surface radiometric survey was also made over the Complex.

Huandot Area. (Plates 2, 3).

This area lies between Area 44 Extended and the northern part of the Coomalie Gap West area, both of which have been examined previously (Semple, 1968a). During 1968, 447 auger holes totalling 8750 feet were drilled in this area on a 400 by 200-foot spacing.

The geological units recongized in this area comprise Coomalie Dolomite, transition beds, and Golden Dyke Formation; these are continuous with those recognized in the adjoining areas to the north and south, but strike more easterly than in either of the adjoining areas.

Radiometric probing outlined a strong anomaly in the Golden Dyke Formation in the central northern part of the area. This had maximum values near the bottom of the holes (depth 28 feet) and hence was re-drilled to 50-foot depth. Probing these deeper holes showed that the anomaly drops off sharply below its maximum, which occurs at or slightly below the base of a chocolate brown soil layer generally from 18 to 22 feet below the surface. No anomalous values were recorded below 30 feet. A moderate anomaly was also encountered in the Golden Dyke Formation in the eastern part of the area, but this anomaly had its maximum value at 4 to 6 feet and did not persist in depth.

Large weak to moderate zinc anomalies occur regardless of geology over the western half of the area, and several scattered small weak lead and copper anomalies are present, but they are not considered to warrant further testing.

Slingram, S.P. and surface radiometric sueveys were made; no significant anomalies were found. Slingram results show that the Golden Dyke Formation is conductive, as was expected from the 1967 surveys in adjoining areas. The conductivity is due to carbonaceous slate.

Coomalie Creek Area. (Plates, 5, 6).

This area is underlain by Coomalie Dolomite, transition beds, and Golden Dyke Formation, including amphibolite. The beds generally strike east to east-north-east, with a change to a more northerly trend in the eastern part of the area.

Footage drilled in this area was 5250 feet, and 275 samples were taken on a 400 by 200 foot grid.

A large radiometric anomaly of moderate intensity occurs in the Golden Dyke Formation in the central southern part of the area, and may warrant some further testing by rotary-percussion drilling. Two smaller weaker radiometric anomalies occur over Coomalie Dolomite near the western boundary of the area. Only small scattered weak geochemical anomalies were outlined. The strongest lead and zinc anomalies occur at a wartime service installation and probably do not have geological significance.

Acacia Area. (Plate 7).

The 1967 auger drilling and geochemical survey of the Acacia area was on a reconnaissance spacing of 2400 by 400 feet (Semple, 1968b). Several geochemical anomalies were indicated near the western margin and in the northern part of the area, and these have been investigated by closer sampling during 1968. In the course of this follow-up survey, 6500 feet were drilled and 400 geochemical samples were collected.

Near the western margin of the area, Anomaly L 1 was confirmed as a strong lead anomaly with associated moderate anomalous zinc values. Peak values were 2700 ppm lead and 670 ppm zinc at 24 N, 4 E. Some analytical results from this area are not yet available at the time of writing.

To the north of L1, Anomaly C 2 at 72 N has been confirmed as a weak copper anomaly with associated zinc values, and L 2 at 96 N has moderate lead and weak zinc values. These anomalies may represent a single linear feature mineralized over a length of more than 7,000 feet, and if so warrant more interest than they would as separate individual anomalies. The first diamond drill hole in this area is designed to test Anomaly L 1 at 24 N, and is about to commence at the time of writing.

At Anomaly L 3 (264 N, 84 E), fifteen holes were drilled at 200 by 100-foot spacing, but only weakly anomalous lead (maximum 260 ppm) and zinc (280 ppm) were recorded.

At Anomalies L 4 and Z 1 (312-336 N, 144-154 E), thirty three holes were drilled, and recorded scattered zinc values up to 1500 ppm, but only low lead values.

Radiometric probe results were low in all areas covered by these follow-up surveys.

S.P. surveys were made over the major geochemical anomalies found in 1967 (L 1, L 2, L 3, L 4, Z 1, C 1, C 2 and Co 1). One S.P. anomaly was found about 300 feet west of L 2.

Manton Area.

This area of about four by two miles lies immediately west of Manton Dam between a high ridge of Acacia Gap Quartzite to the north and Rum Jungle Complex to the south. Outcrop is poor, but westerly striking Golden Dyke Formation and Coomalie Dolomite have been identified south of the Acacia Gap Quartzite. The section below the Dolomite is not yet clear. At the time of writing, auger drilling is in progress in this area at a reconnaissance spacing of 1200 by 200 feet on traverses running northerly. Both radiometric results and geochemical values available to date include some high values, but so far no defined anomalies are apparent.

Reconnaissance Slingram and surface radiometric surveys were made in this area on traverses 1200 feet apart, with stations 100 feet apart. No significant Slingram anomalies were found. Conductive slates in the Golden Dyke Formation can be distinguished in the profiles from other formations. However it is not possible to distinguish Coomalie Dolomite, Crater Formation and the Rum Jungle Complex from one another as they are all non-conductive.

One surface radiometric anomaly four times background was found at 244.06 N, 4 W, in ferruginous rock, possibly overlying Coomalie Dolomite.

Woodcutters Area (Plate 8).

Five diamond drill holes and fifteen rotary-percussion drill holes have been completed in this area since the last annual report. Minor radioactivity and base metal mineralization were encountered in several of these holes, but no intersections of ore-grade material were made.

L 5 lead-zinc-silver Prospect: The final hole on this prospect, DDH 67/10, was completed at a depth of 1001 feet without intersecting the main lode, although minor mineralization was passed through between 556 and 559 feet and in the vicinity of 958 and 983 feet (Crohn, Langron and Prichard, 1967).

Applications for the further exploration and possible development of this prospect were invited by the Commonwealth Government in December, 1967, and acceptance of an offer by Electrolytic Zinc Company of Australia and Peko-Wallsend Investment Limited has since been announced.

Anomaly L 2. This is a geochemical anomaly in the northern part of the Woodcutters area, with peak values of up to 4100 ppm lead, associated with anomalous zinc and minor radioactivity. There are no outcrops near the anomaly, which is thought to occur over west dipping beds low in the Golden Dyke Formation.

Three diamond drill holes (DDH 67/12, 67/13, and 68/4) have been completed on this anomaly since the last annual report. Spectro-scan analysis of weathered pyritic material between 140 and 180 feet in DDH 67/12 indicated more than 10,000 ppm lead and up to 1,500 ppm zinc. However, core recovery in this section was only of the order of ten percent. Maximum values in DDH 67/13 were 2000 ppm lead and 600 ppm zinc.

Anomaly L 3. In this area, DDH 67/15 was collared at 46 E, 43 N, (L 3 grid), depressed at 60° to the north, to test an I.P. anomaly. A carbonaceous and in part graphitic bed with metal values of 1000 ppm lead and 500 ppm zinc seems to be the source of this anomaly.

Radiometric Anomalies. Work was done during the year on the R 1, R 2, and R 4 Anomalies, and on radioactivity associated with the L 1 geochemical anomaly.

At Anomaly R 1, six rotary-percussion holes totalling 1210 feet were drilled and probed radiometrically. Results showed that the anomaly is very shallow as radioactivity decreased to normal values for the weathered zone within ten feet of the surface, and fell even lower on entering fresh rock at depths between 100 and 200 feet. In DDH 68/4 under the northern part of the anomaly, thin bands of weakly radioactive material occur at 501 feet inclined depth, and are being examined to determine the source of the radioactivity.

Four holes totalling 350 feet were drilled to test the radioactivity associated with Anomaly L 1. Drilling conditions at this locality are difficult and three of the holes were less than 100 feet deep. The fourth hole reached target depth of 200 feet. Probing showed moderate radioactivity to 90 feet, after which it decreased and fell still lower on entering fresher rock at 190 feet. Thin black bands of weakly radioactive material (maximum readings up to 0.10 mR/Hr) occur at 366 feet in DDH 67/5 under this anomaly. However, in view of the amount of rotary and diamond drilling already done at this anomaly, no further testing is considered warranted.

Two Mayhew holes totalling 430 feet were drilled to complete testing of the R 2 Anomaly. Radioactivity in each hole decreased to normal values within ten feet of the surface. In hole M 18, at 138 S, 26 E, it remained normal to the bottom of the hole at 200 feet, but in hole M 17 at 138 S, 27 E, it rose to about twice background between 90 feet and 200 feet and then returned to normal to the bottom of the hole at 230 feet.

The Mayhew rig also drilled three holes totalling 500 feet at the R 4 Anomaly. In all three, radioactivity fell off quickly in the top ten feet and remained normal or only slightly above normal to the bottom of the hole.

All radiometric anomalies in the Woodcutters Area have now been checked by rotary drilling, and results are not considered to warrant diamond drilling.

In general, radioactivity has been found to be related both to lithology and to the weathering profile. In most drill holes, the radiometric profile shows a peak in the intensely weathered zone within a few feet of the surface, and falls off to a fairly constant level below this. Somewhat higher values are recorded in the zone of partial weathering, with another drop as the hole enters fresh rock, generally between 150 and 200 feet. In fresh rock, black shales give consistently higher readings than calci-dololutites, and a very close correlation between lithological and radiometric logs can be established in many diamond drill holes. (Taube, in prep).

Area 44 Extended. (Plates, 9, 10, 11)

Two diamond drill holes have been completed on Anomaly Pb 1, which is a strong lead anomaly with associated zinc and copper values.

DDH 67/14 at 196 S, 50 W, was drilled to 800 feet and was in weakly mineralized material for most of this depth. Lead values in scraped core samples generally exceeded 1000 ppm and reached a peak of 5000 ppm in the interval 548 to 586 feet. Copper, zinc, cobalt and nickel contents were also higher than usual; peak values were 3,000 ppm for copper and zinc, and 1000 ppm for cobalt and nickel.

DDH 68/3 at 212 S, 53 W, also had traces of mineralization visible in much of the core, but scrape analyses are not yet available.

One drill hole (DDH 68/5) has been completed on Anomaly Pb 2, again with only minor disseminated mineralization, and one hole (DDH 68/6) is in progress on Anomaly Pb 3 at the time of writing.

A limited amount of rotary-percussion drilling to test radiometric anomalies in Area 44 Extended was undertaken by the B.M.R. Mayhew drill during June and July 1968. Two holes were drilled at Anomaly R 2; one of these (M 22) had a major radiometric peak within ten feet of the surface, but dropped rapidly to normal values below this to total depth of 80 feet. The other hole (M 23) had no marked peak, but showed above- normal radiometric values to 120 feet. At least two more holes are required to complete the testing of this anomaly.

Two holes were also drilled in the northern part of Anomaly R 3. However, this is a very extensive anomaly, and the two holes drilled in it are not conclusive. About twelve more holes are required to complete the testing of this anomaly (Semple, 1968a).

Coomalie Gap West Area. (Plate 12).

Two diamond drill holes (DDH 68/1 and 68/2) were drilled to test parallel Slingram axes which at 344 S have coincident Turam, Self Potential and Induced Polarization anomalies. In each case, a belt of very carbonaceous and pyritic black slate was the source of the anomalies. Only low metal values are present in the beds (maximum 400 ppm copper, 250 ppm lead and 200 ppm zinc).

An S.P. survey was made between 400 S and 454 S in the area of known Slingram anomalies in the Golden Dyke Formation near its boundary with the Coomalie Dolomite. This environment is the same as that in the northern part of the Coomalie Gap West area, surveyed in 1967, where a large S.P. anomaly was found. The 1968 survey showed that this anomaly is not unique, and a number of large S.P. anomalies occur in the Golden Dyke Formation near its boundary with the Coomalie Dolomite. These S.P. anomalies are associated with EM anomalies which have been shown by diamond drilling to be due to beds of unmineralized carbonaceous slate. However, the S.P. anomalies occur discontinuously along these slate beds and have not been fully explained. A programme of shallow rotary drilling to test the anomaly found in 1967 in the northern part of the Coomalie Gap West area has been recommended by Gardener (1968).

Waterhouse No.2 and Mount Minza Areas.

I.P. surveys were made over the EM conductors at 447 E, 201 S, and at 448 E, 213 S, in the Mount Minza area, as recommended by Duckworth (1968b). The object was to correlate S.P. and I.P. anomalies. However, the correlation found by Duckworth was apparently fortuitous, because no correlation was found in the 1968 results.

An S.P. survey was also made in the Waterhouse No.2 area. In the near-by Mount Minza area, where the geological setting is very similar to that in Waterhouse No.2, strong S.P. and EM anomalies occur in close association. However, at Waterhouse No.2, the EM anomalies occur without the accompanying S.P. anomalies; this remains unexplained. The anomalies in both areas are associated with beds of carbonaceous shale.

One diamond drill hole is in progress in the Mount Minza area at the time of writing. This is DDH 68/7, sited at 201 S, 444.5 E (Gould area grid), to test a zone of overlapping radiometric, electromagnetic and self-potential anomalies (Duckworth, 1968a).

Celia and Milton Areas.

A number of reconnaissance auger drilling - geochemical - radiometric traverses have been planned for the "Celia Embayment area" and the Milton area south-west of the Waterhouse Granite, and it is hoped to undertake these before the completion of the 1968 field season.

Mount Fitch North. (Plate 18).

Slingram, S.P. and I.P. surveys were made in the Mount Fitch North area to investigate Slingram Anomaly A found by Ashley (1965, p.7) and to follow the anomaly north. A surface radiometric survey was also made.

The Slingram anomaly extends north to 520 N, where Pritchard and French (1965, Sheet 1, Plate 1) show a possible fault. A weak, ill-defined S.P. anomaly was found on 500 N and 504 N. A weak frequency effect anomaly was found on 490 N. No radiometric anomaly was found.

The area occupied by Slingram Anomaly A south from 502 N was covered by a geochemical survey made in 1953; no significant anomalies were found on it (Pritchard and French, 1965, Sheet 1 of Plates 3 and 4). In the area of the Mount Fitch prospect, geochemical anomalies west of the Slingram anomaly have been drilled by the Territory Enterprises Pty Limited, and some of these holes have by chance drilled into Anomaly A (diamond drill holes DG 22, 23, 25, 26 and 27). This drilling showed that there is a shear along the Coomalie Dolomite - Crater Formation contact. Conductive water in this shear is the origin of Slingram Anomaly A. The copper mineralization found in the holes is too far west of Anomaly A to be associated with it.

Mount Burton Area.

S.P. and I.P. surveys were made on traverse 372 N (123 E to 149 E) and traverse 384 N (120 E to 140 E), Mount Fitch No.1 grid, north of Mount Burton. Slingram surveys were made on these traverses in 1963 and some of the conductors found were drilled in 1964. Geophysical and drilling results were summarized by Ashley (1966, Plate 13). The 1968 surveys were made to examine whether the drilling had adequately established the source of the EM anomalies. The results indicate that the carbonaceous slates and pyrrhotitic amphibolites found in the drilling are unquestionably the sources of the EM anomalies.

Browns South-West Area.

Slingram and S.P. surveys were made in this area on traverses running east-north-east. The strike here is roughly north-north-west; previous surveys in this area were along traverses in various other directions. The area is of interest because of the known strong geochemical anomalies. No significant Slingram or S.P. anomalies were found. The Slingram results indicate that this is an area of deep weathering, so that unweathered rock is beyond the effective depth penetration of the Slingram method.

Rum Jungle Triangle.

Two areas within the 1964 Rum Jungle Triangle area were re-surveyed. The first area lies between co-ordinates 254 N and 218 N, and between 150 E and 110 E. The strike in this area is roughly east - west, parallel to the original traverses surveyed in 1964. In 1968, the traverses were pegged north - south, and Slingram and S.P. surveys were made. The only anomaly found was a localised S.P. anomaly at 244.5 N, 126 E, near a quartz outcrop. No geochemical anomalies were found in this area during the 1964 survey.

The second area lies between co-ordinates 142 N and 126 N and between 121 E and 109 E. S.P., I.P., and Turam surveys were made on traverses 200 feet apart to examine Slingram anomaly axis B found by Ashley (1966, Plate 4, Figure 1). The results show that the Coomalie Dolomite in this area is conductive, possibly due to a series of unmineralized shears, similar to the shear causing Slingram Anomaly A in the Mount Fitch North area.

Area 55 B. (Plate 19).

Turam, S.P. and I.P. surveys were made in Area 55 B to further investigate Slingram anomalies known in this area. No S.P. or I.P. anomalies were found.

Anomaly 1 is known to be due to a fault; the I.P. survey showed that there is little or no sulphide mineralization associated with the fault in this area.

A Turam anomaly is associated with Slingram Anomaly 3 and with the fault shown on the Geological Compilation, Sheet E 72. This fault and the Turam anomaly both stop at 10 N. The absence of I.P. anomalies indicates that the EM anomalies are due to conductive water in the faults, and not to sulphide mineralization.

Batchelor Laterites Extended and Power Line areas.

Part of the Batchelor Laterites Extended area was re-pegged over Turam Anomaly A (Douglas, 1964, p.4) and I.P. and S.P. surveys made. Survey results and laboratory tests of diamond drill core from this area show that the Turam anomaly is due to unmineralised carbonaceous slate.

The southern part of the Power Line area was re-pegged and Turam and S.P. surveys were made over the Slingram anomaly found by Douglas (1962, Plate 3). A weak Turam anomaly was found. Results indicate that the anomalies are due to carbonaceous slate.

Regional Surveys- Re-examination of Batchelor Group Structure and Stratigraphy.

During the year, a re-examination of the Lower Proterozoic metasedimentary succession was undertaken in order to check the relationships between the four formations of the Batchelor Group and the contact relations of the Batchelor Group to the Rum Jungle Complex ("granite").

This has confirmed that the Lower Proterozoic metasediments of the Batchelor Group overlie the Rum Jungle Complex unconformably and consist of successive clastic and carbonate formations. The complete stratigraphic succession is developed south of the Rum Jungle Complex, where four formations are present:

Batchelor Group	Coomalie Dolomite	Dolomite, calcilutite, crystalline magnesite, silicified tremolitic carbonate rock.
	Crater Formation	Quartz greywacke, greywacke, arkose, granule and pebble conglomerate, banded iron conglomerate, quartz sandstone, siltstone.
	Celia Dolomite	Dolomite (?), crystalline magnesite, silicified carbonate rock breccia, silicified and ferruginised tremolitic carbonate rock.
	Beestons Formation	Arkose, greywacke, siltstone, conglomerate, arkose conglomerate.
		unconformity.
	Rum Jungle Complex.	Coarse granite, granite gneiss, metadiorite, leucocratic granite, schist.

It has been suggested that due to structural deformation the stratigraphic sequence has been repeated within this stratigraphic column, in which case the Beestons Formation would be equivalent to the Crater Formation, and the Celia Dolomite to the Coomalie Dolomite.

However, sedimentary structures re-examined so far within the Batchelor Group have been right way up, and do not support stratigraphic repetition due to large scale isoclinal folding. Neither is there any convincing evidence to suggest that movement along strike faults may be responsible for possible stratigraphic repetition within the Batchelor Group.

The Beestons Formation and the Celia Dolomite appeae to lens out about two miles north-west of Batchelor township and again just south of Manton Dam. It is therefore suggested that the meta-sediments previously mapped as Beestons Formation and Celia Dolomite north of Mount Fitch and in the Celia Embayment are probably equivalents of the Crater Formation and the Coomalie Dolomite respectively.

Observations made during the re-examination of the contact between the Batchelor Group meta-sediments and the Rum Jungle Complex tend to confirm that the meta-sediments rest unconformably on an older granitic basement. Granite intruding schist was found at two localities near the meta-sediment - "granite" contact, but there is no conclusive evidence in the field as to whether the intruded schist is part of the Archaean basement or the Lower Proterozoic meta-sedimentary succession.

The conclusion of the re-examination is that most of the basement constituting the Rum Jungle Complex is older than the meta-sediments of the Batchelor Group. However, the possibility that, locally, small granite bodies intrude the Lower Proterozoic meta-sediments has not been entirely eliminated, and no satisfactory explanation has so far been found for the wide-spread occurrence of tourmaline within rocks of the Batchelor Group.

Geophysical Surveys over the Rum Jungle Granite Complex. (Plate 20).

These comprised gravity, magnetic, Slingram, resistivity and surface radiometric surveys.

A gravity survey was made to study the western boundary of the Complex. This complements the survey made in 1967 to study the eastern boundary, and traverse 120 N, Rum Jungle East grid, was extended from 220 W to 642 W. Stations were sited every 200 feet. Preliminary results indicate that the western edge of the Complex has a very steep dip. A magnetic survey across the western edge showed no anomaly. A gravity low east of 340 W is at present unexplained.

Slingram and resistivity test surveys were made across the Complex to locate faults with no surface expression. These are of interest as possible zones of uranium concentration. Traverse 120 S, Rum Jungle East grid, was used for the tests. The Giants Reef Fault produced Slingram and resistivity anomalies and several other similar zones were found in the Complex. Two of these zones were surveyed on a traverse 800 feet to the north (112 S). A zone at 344 W, 120 S, strikes north - south; a zone at 174 W, 120 S, either strikes east-north-east or is displaced by faulting between 112 S and 120 S.

The conclusion reached is that Slingram is the preferred method for locating faults in the Complex. Resistivity methods are useful as checkes.

A surface radiometric survey across the Complex on traverse 120 S found no significant anomalies.

Compilation of Data and recommendations for further diamond drilling in the Embayment Area. (Plates 13, 14, 15, 16).

The compilation of existing surface and underground information in the Embayment Area was continued, with special emphasis on the area between the Intermediate and White's open cuts.

In the Embayment Area, the slates of the Golden Dyke Formation form a complex synclinal structure which trends at about 60° and has an over-all plunge to thesouth-west. Base metal and uranium prospects and open cuts occur along the north-western side of the syncline; from south-west to north-east they are Browns Prospect (lead, copper, zinc), Intermediate open cut (copper), White's open cut (uranium, copper, lead), and White's Extended Prospect (uranium). White's East Prospect (uranium), and Dyson's open cut (uranium), occur in subsidiary synclinal structures to the south and north-east of the main syncline.

In the slates of the syncline, within 400 feet of the surface, zoning of mineralisation is evident, resulting in a gradual transition from base metals in the south-west to uranium in the north-east.

The base metal mineralisation at Browns extends to 1,700 feet below the surface, and copper-lead mineralisation has been intersected in diamond drill holes 700 to 1,100 feet below the surface in the area between Intermediate and White's. Assuming that the zoning of mineralisation persists in depth, it is therefore possible that uranium mineralisation may occur at depth in the White's Extended and White's East - Dyson's areas.

In the White's Extended area, the slates of the Golden Dyke Formation in the core of the above-mentioned complex synclinal structure extend for about 1,600 feet north-east of White's open cut. The over-all plunge of the syncline is south-west, but its keel appears to approach the surface 400 feet north-east of White's open cut (0000 N, 3100 W, geophysical local grid), and then to plunge again to the south-west.

Diamond, rotary and churn drilling have been carried out within the slates at the north-eastern extremity of the syncline and along the northern and southern margins of the syncline. However, the slates in the axial zone of the syncline have only been tested to a vertical depth of about 440 feet, e.g., by D 851, which intersected minor uranium and copper mineralisation at a vertical depth of 350 to 400 feet.

Three diamond drill holes had originally been recommended to test the slates respectively in the western, central and eastern sections of this synclinal structure. However, discussion with Territory Enterprises Pty Limited has shown that the western part of the area will be adequately covered by a drilling programme planned by the Company to follow up the recent intersection of base metal and minor uranium mineralisation obtained in DDH 920 at a vertical depth of about 800 feet below White's open cut.

The remaining two holes, recommended to test the central and eastern parts of the area, are as follows:

DDH. "B".	30075 N (Mine grid) 33000 E	Azimuth 360° T.	Dip 70°	Length 650 ft.

The target is slates in the axial zone of the syncline, projected 500 - 600 feet below the surface.

DDH. "C".	30205 N (Mine grid) 33367 E	Azimuth 90°T	Dip 60°	Length 650 ft.

The target is the projected extension of uranium mineralisation in the slates below D 103. Depth of target is 400 - 600 feet below the surface.

In the White's East - Dyson's area, a sequence of pyritic black slate and pyritic quartzite (Acacia Gap Tongue) occurs south of the Golden Dyke Formation and forms an arcuate subsidiary syncline which has been truncated by the Giants Reef Fault to the south-east and extends through Dyson's open cut to the north-east.

Uranium mineralisation occurs below Dyson's open cut and plunges south-west towards the Giants Reef Fault zone (DDHs 307, 309, 312, 314). The mineralisation is of sporadic grade and is localised in slates close to their contact with dolomite or hematite quartzite breccia. The most south-westerly intersection occurs in DDH 314, but the slate - dolomite contact was not intersected in this hole, and the full extent of the mineralisation is not known.

One diamond drill hole is therefore proposed to test for the extension of this zone of uranium mineralisation 300 feet south-east of DDH 314.

DDH. "D".	33855 E (Mine grid) 30320 N	Azimuth 120° T.	Dip 70°	Length 900 ft.

Magnesite Occurrences. (Plate 17).

Following indications of magnesite-rich material obtained by Territory Enterprises Pty Limited during metallurgical testing in the Mount Fitch area, a sampling and testing programme was undertaken on Lower Proterozoic carbonate rocks in various parts of the Rum Jungle district. Results to date indicate that crystalline dolomite samples from surface outcrops and subsurface drill intersections, both from the Coomalie Dolomite and the Celia Dolomite, are generally magnesite-rich, whereas fine-grained calcilutite samples from the same formations do not contain magnesite as a major constituent.

X-ray diffraction studies have identified magnesite as a major constituent of outcropping carbonate rocks from the Bunyip Farm and Huandot areas, and from areas two miles east and two to three miles east-north-east of Batchelor township. Magnesite has also been identified in drill cores from the Mount Burton area (DDH 287-308 feet, and DDH 350-517 feet); the Intermediate Prospect (DDH 353-991 feet); White's (DDH 920-372 feet) and the Triangle South area (DDH 827-150 feet, and DDH 830-408 feet).

Partial chemical analyses of three of these surface samples are as follows:

Number	68071525	68071529	68071603
Locality	Huandot, 309 S, 11 W.	$1\frac{3}{4}$ m.E of Batchelor.	3 m. ENE. of Batchelor
Formation	Coomalie Dolomite	Coomalie Dolomite	Celia Dolomite
Acid soluble CaO (as $CaCO_3$)	1.11%	0.73%	0.72%
Acid soluble MgO (as $MgCO_3$)	94.5%	97.3%	88.3%
Total Fe as Fe_2O_3	1.83%	1.47%	1.46%
Total Al_2O_3	0.35%	0.40%	0.17%
Total SiO_2	0.2%	0.8%	2.4%

Other samples have been analysed for CaO and MgO only, and have given results in the range 0.49 to 1.32% $CaCO_3$ equivalent, and 78.3 to 91.9% $MgCO_3$ equivalent. Additional analyses of outcropping material from the Zeta Prospect (Castlemaine Hill area), from Area 44 Extended, and from an area five miles east-north-east of Batchelor township are in progress at the time of writing.

Insufficient information is available at the present time to assess the possible value of this magnesite-rich material as a refractory or for other chemical or industrial purposes. However, further investigations are proposed to establish the extent and homogeneity of some of the more promising occurrences, to be followed by the testing of representative material from these areas to establish its behaviour under calcining conditions and to evaluate the characteristics of the calcined product. Finally, if the results to that stage appear to warrant it, a detailed survey with further sampling and possibly some diamond drilling would be required to assess the actual tonnages and grades of individual deposits.

Woodcutters Geobotanical Survey.

Analytical results from 21 orientation samples were received during the year, and inspection of these results indicated that copper, lead, zinc and nickel gave the best promise of providing contrasting values over mineralised and unmineralised areas. Analytical determinations on the main body of samples will therefore be restricted to these four elements. At the time of writing, analytical work is in progress on 204 samples at Australian Mineral Development Laboratories, Adelaide, and on about 480 samples at the Bureau of Mineral Resources Laboratory.

United Nations and International Atomic Energy Agency Fellows.

United Nations Fellow Mr. A. Annamalai received training in geochemical prospecting with the Darwin Uranium Group between August and October 1968, and International Atomic Energy Agency Fellow Mr. C.J. Wu received training in prospecting for radioactive minerals between August and November, 1968.

PROSPOSED 1969 PROGRAMME

GEOLOGICAL

1. Auger Drilling, Geochemical and Radiometric Surveys.

   (a) Follow-up drilling, probably on 400 by 200-foot spacing, in areas of interest delineated by 1968 reconnaissance work in the Manton area.

   (b) Semi-detailed work, probably initially on lines 1,200 feet apart, in the Celia Embayment area, and in the Milton area (south-west of the Waterhouse granite).

2. Rotary - Percussion Drilling.

A programme of up to 24,000 feet of contract rotary-percussion drilling, mostly to depths of about 200 feet, is proposed for 1969. Targets will be radiometric, geophysical and geochemical anomalies, mainly in Area 44 Extended, Coomalie Gap West (Northern Section) and the Coomalie Creek area. A limited amount of drilling may also be required to complete testing of known anomalies in the Huandot, Acacia and Waterhouse areas, and a number of additional targets are expected to be delineated by the current and proposed auger drilling, geochemical and radiometric surveys on the Manton area and in the Celia and Milton areas.

3. Diamond Drilling

At the time of writing (October, 1968), one contract diamond drill hole is in progress in the Mount Minza area, and one Mines Branch diamond drill hole in Area 44 Extended, and contract diamond drilling is about to commence at the Acacia L 1 Anomaly. Additional targets are available in Area 44 Extended, the northern part of the Acacia area, at Waterhouse No.2 Anomaly, and in the eastern portion of the Embayment area. However, with the exception of the Embayment area, these are all expected to provide access difficulties after the onset of the wet season. Drilling in Area 44 Extended, and in the Mount Minza and Acacia areas will therefore be continued as long as seasonal conditions permit, and it is then proposed that the balance of the current contract be used in drilling the three holes recommended in the eastern part of the Embayment area, and in any follow-up drilling which may be warranted by the results of these three holes.

During the 1969 dry season, a further programme of up to 5,000 feet of diamond drilling is proposed to complete the testing of Area 44 Extended and the Acacia area, and to test any targets arising out of current and proposed auger drilling and rotary-percussion drilling in the Manton, Celia and Milton areas. Up to 3,000 feet of this programme may be provided by the Mines Branch drills, and the remainder by contract.

4. Other Projects

(a) Regional Mapping. A report on this work should be completed early in 1969. A limited amount of further field work may be undertaken in conjunction with proposed surveys in the Celia and Milton areas.

(b) Compilation of existing Geological, Geochemical and Radiometric Data. The compilation of these data on standard map sheets and the formulation of recommendations for follow-up investigations are now essentially complete (Miezitis, 1967), and the major effort in 1969 will be directed to the correlation with geophysical results and the preparation of a generalised account for publication.

(c) Magnesite Occurrences. Further investigation of these occurrences is expected to be undertaken in 1969.

(d) Investigation of radioactive occurrences in Crater and Beeston's Formations - possibly in conjunction with U.K.A.E.A. Subject to Cabinet approval, this project could commence in 1969 with detailed mapping and shallow testing, e.g., by radon surveys, of selected parts of these two formations.

GEOPHYSICAL

1. The compilation of geophysical data in the Hundred of Goyder will be completed with the addition of the results of the 1968 follow-up surveys. Interpretation and assessment of the data and preparation of a report will be undertaken during 1969.

2. Field work is proposed in the Celia Embayment and Milton areas. Electromagnetic surveys in the Rum Jungle area over the years have located a large number of anomalies but in general have not succeeded in detecting sulphides owing to the limited dept! penetration of the EM methods and the widespread occurrence of carbonaceous slate which is more conducting than the sulphides. Continuation of the routine coverage with Slingram surveys is therefore not recommended for the Celia and Milton areas, but EM methods (Slingram and Turam) together with IP and SP would be used to investigate any localities of particular interest.

Surface radiometric surveys will be done along the geochemical traverses in these areas. In addition investigations using gravity and seismic refraction methods are proposed in the Celia Embayment to determine the thickness of sediments overlying the Complex.

3. Electric and radiometric logging of diamond drill holes as required.

4. Radiometric Assaying. A 256-Channel gamma ray spectrometer is expected to be in operation in the Darwin laboratory early in 1969 and will be used for determination of U, Th and K concentrations in rock samples.

5. An airborne gamma ray spectrometer survey of the Rum Jungle Area using a 4-channel system in the Bureau's Aerocommander aircraft is planned for September-October, 1969. The survey is primarily intended as a test of the possibilities of the technique as an aid to exploration for radioactive minerals.

6. Co-operation in the U.K.A.E.A. investigation of the Crater and Beestons Formations, if this project is approved.

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PLATE I

DIAMOND DRILLING GEOLOGICAL AND GEOPHYSICAL SURVEYS 1968

RUM JUNGLE AREA

Reference to Australian standard 1:250,000 map series.

MILES 1 0 1 2

LEGEND

- Geochemical Surveys 1968
- Geophysical Surveys 1968
- Diamond drill holes completed since October 1967, or in progress October 1968
- Areas of rotary-percussion drilling, 1968

To accompany Record 1968/102

BASED ON D52/87-360

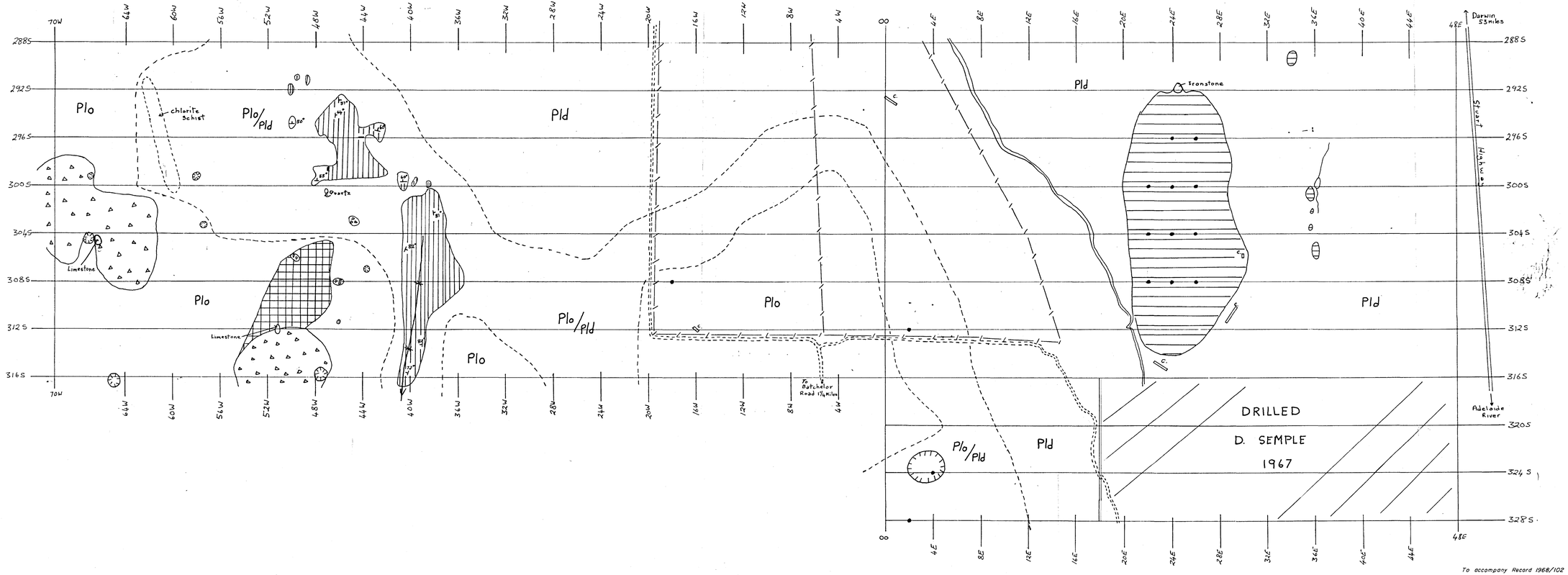


PLATE 2

REFERENCE

LOWER PROTEROZOIC

Golden Dyke Formation Pld

- Undifferentiated Shale non-outcropping
- Siliceous Lutite

Coomalie Dolomite Plo

Transition Beds Plo/Pld.

- Black Calcilutite
- Crystalline Dolomite
- Undifferentiated Quartz Sand. non-outcropping
- Quartzite
- Quartz-Ironstone Breccia.

- Outcrop Boundary
- Non-outcropping Boundary
- Strike and Dip of Beds
- Mattock Sample
- Synclinal Trough
- Vehicle Track
- Sink hole
- Costean
- Stream

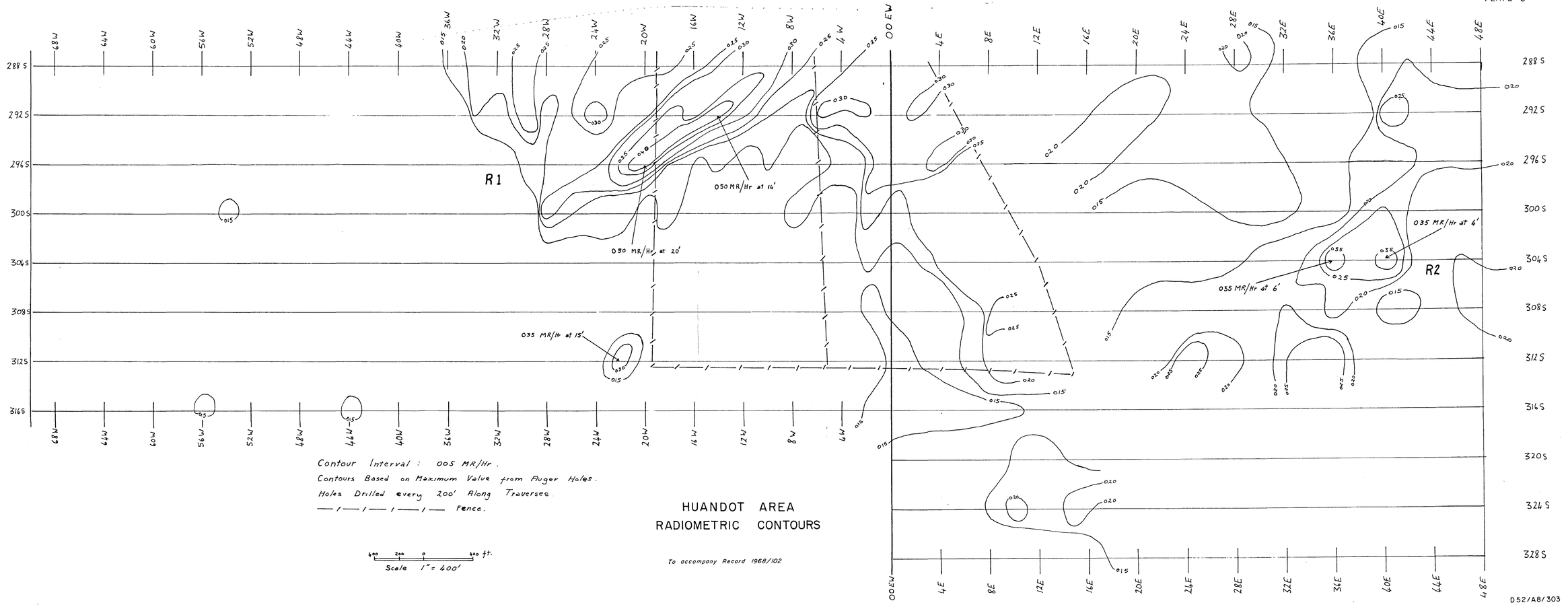
GEOLOGY
HUANDOT AREA
Rum Jungle East. N.T.

Scale 1" = 400'

To accompany Record 1968/102

D52/A8/302

PLATE 3



Contour Interval : 005 MR/Hr.
Contours Based on Maximum Value from Auger Holes.
Holes Drilled every 200' Along Traverses
—— / —— / —— / —— Fence.

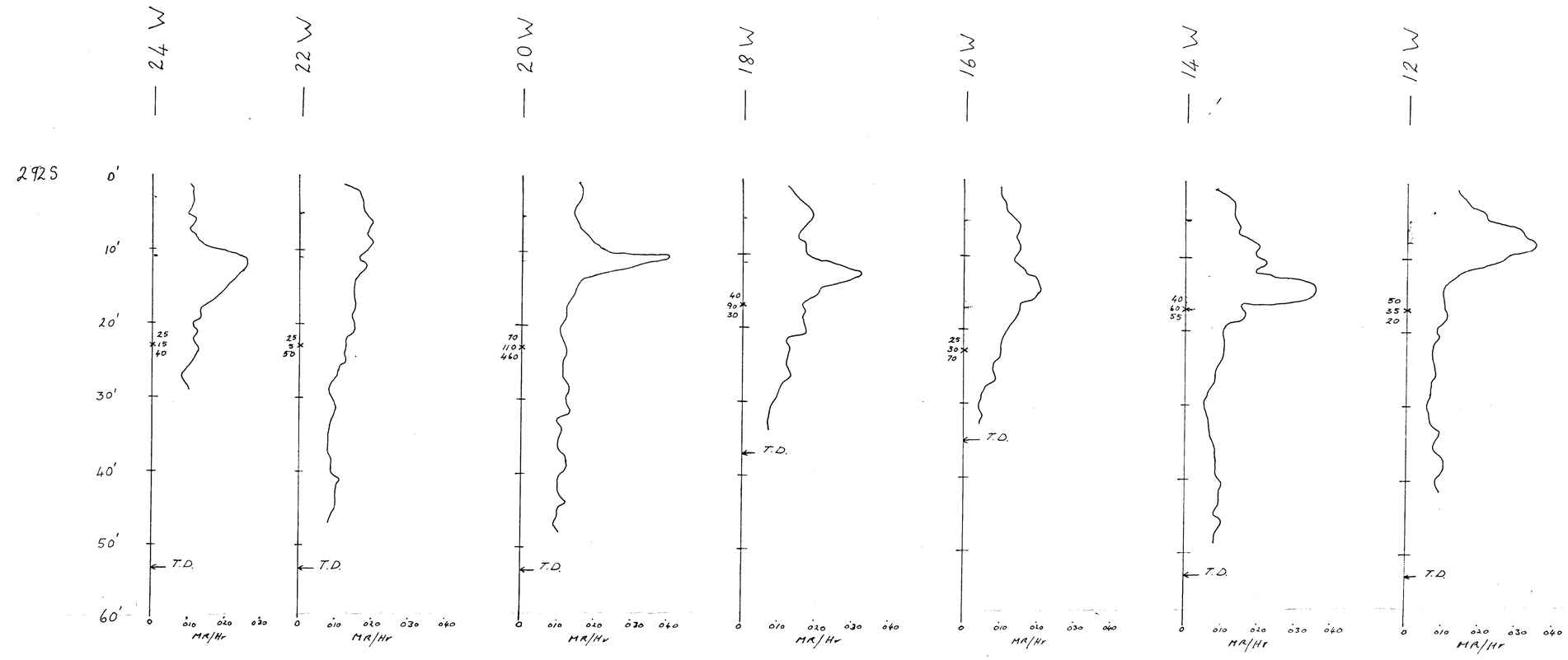
Scale 1" = 400'

HUANDOT AREA
RADIOMETRIC CONTOURS

To accompany Record 1968/102

D52/A8/303

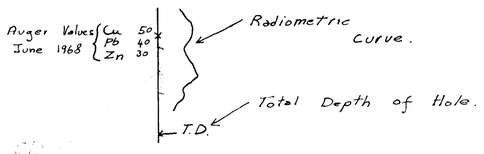
PLATE 4



ANOMALY R1

HUANDOT AREA

AUGER DRILLING SEPT. 1968

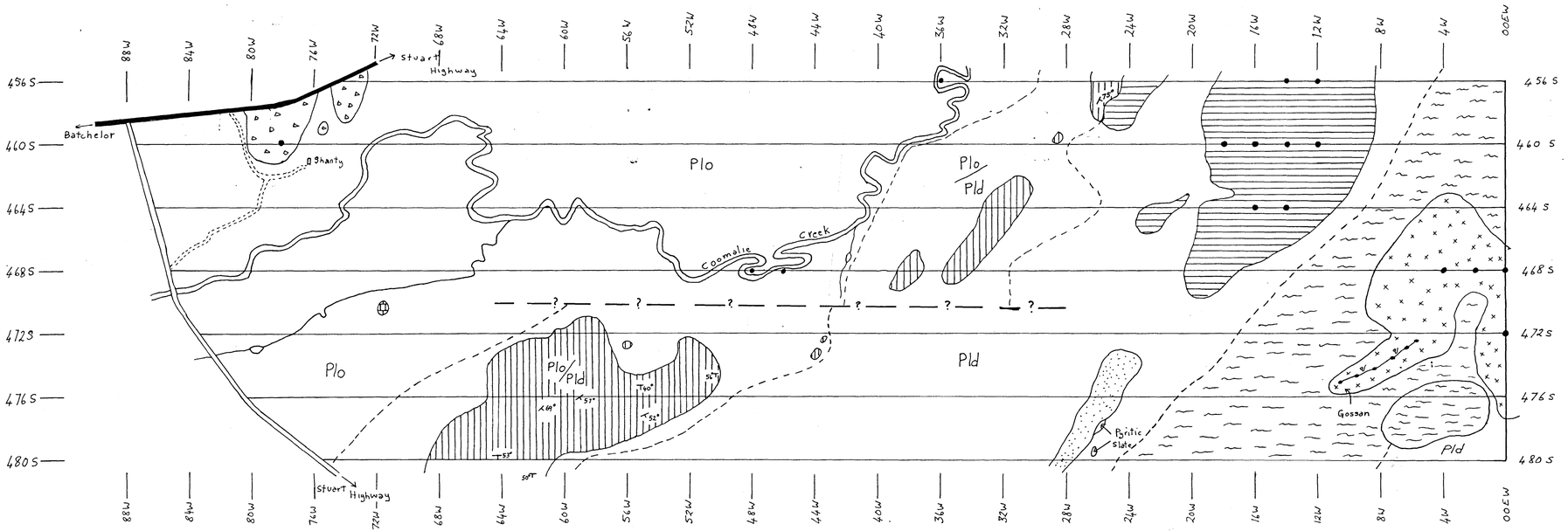


To accompany Record 1968/102

D52/A8/304

PLATE 5

COOMALIE CREEK AREA
GEOLOGY



To accompany Record 1968/102

REFERENCE

LOWER PROTEROZOIC

Golden Dyke Formation Pld

- Undifferentiated Shale (Non-Outcropping).
- Amphibolite.
- Siliceous Lutite.
- Quartzite.
- Quartz Ironstone.

Coomalie Dolomite Plo

Transition Beds Plo/Pld

- Undifferentiated (Non-Outcropping).
- Black Calcilutite.
- Crystalline Dolomite.
- Quartz Lateritic – Ironstone Breccia.

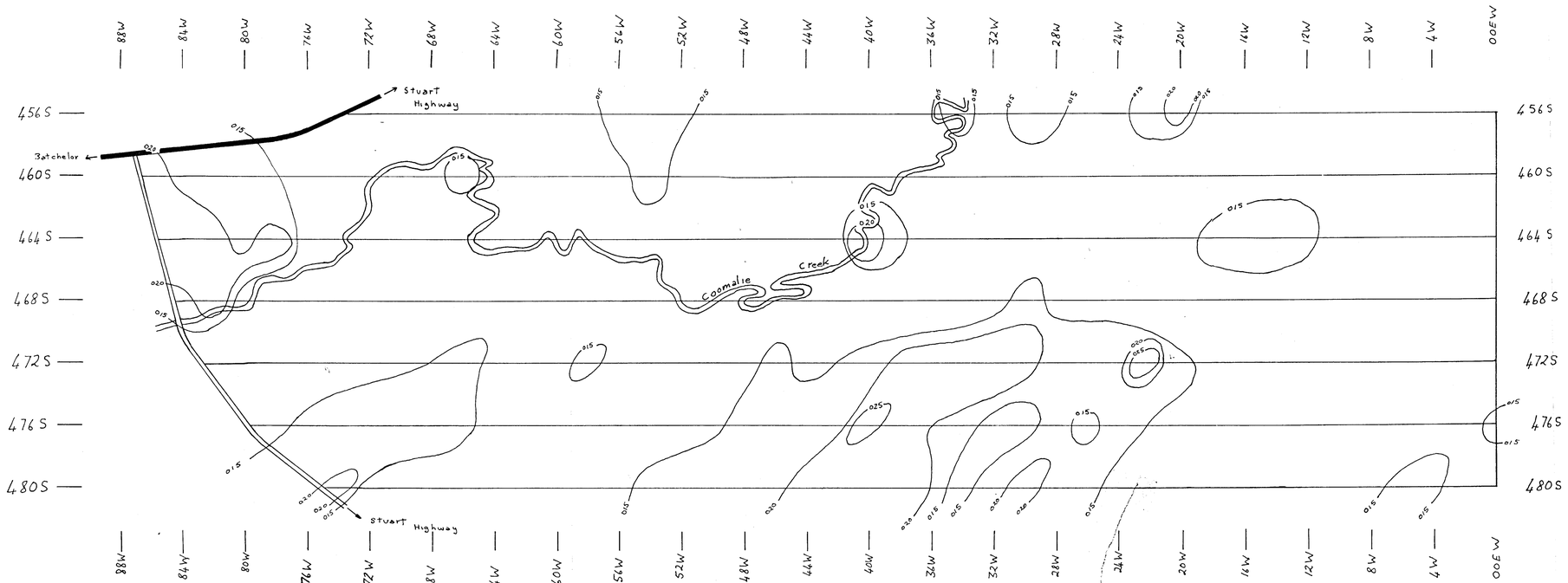
- Outcrop Boundary
- Non-Outcropping Boundary
- Strike and Dip of Beds
- Mattock Sample
- Inferred Fault
- Vehicle Track
- Highway
- Creek
- Dry Watercourse and Billabong
- Quartz Reef
- Formed Road

400 200 0 400'

Scale 1" = 400'

D 52/A8/305

PLATE 6



COOMALIE CREEK AREA
RADIOMETRIC CONTOURS

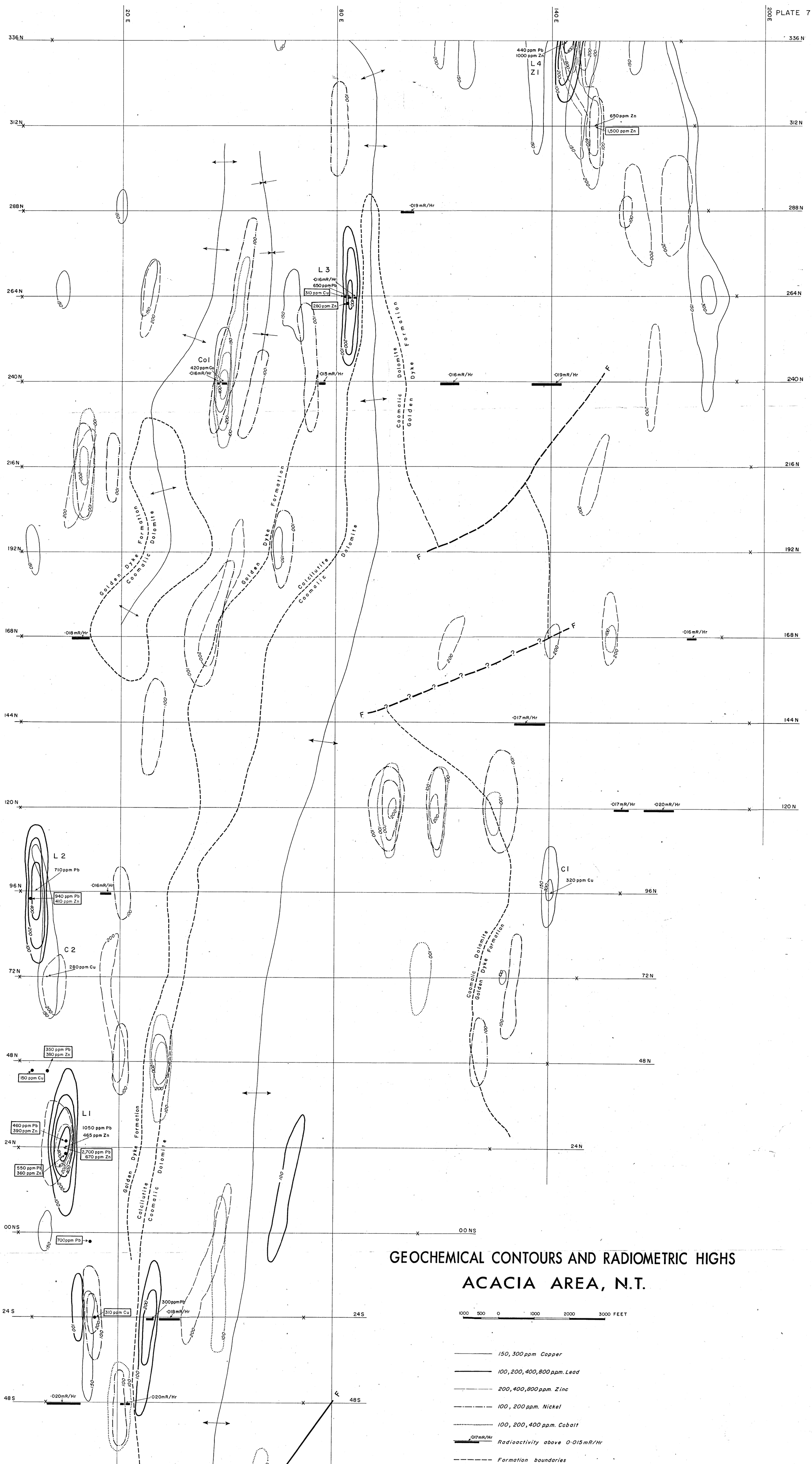
REFERENCE

Contour Interval : 005 MR/Hr.
Contours Based on Maximum Values from Auger Holes.
Holes Drilled Every 200' Along Traverses

400 200 0 400 ft.
Scale 1" = 400'

To accompany Record 1968/102

D52/A8/306



GEOCHEMICAL CONTOURS AND RADIOMETRIC HIGHS
ACACIA AREA, N.T.

1000 500 0 1000 2000 3000 FEET

- 150, 300 ppm Copper
- 100, 200, 400, 800 p.p.m. Lead
- 200, 400, 800 p.p.m. Zinc
- 100, 200 p.p.m. Nickel
- 100, 200, 400 p.p.m. Cobalt
- ·017 mR/Hr — Radioactivity above 0·015 mR/Hr
- Formation boundaries
- Established fault, position accurate
- Established fault, position approximate
- Probable fault, concealed
- Anticlinal crest
- Synclinal trough
- X — Limits of auger drilling
- 2700 ppm Pb / 670 ppm Zn → Peak values of 1968 Follow-up Surveys

To accompany Record 1968/102

D 52/A8/257

Plate 8

WOODCUTTERS AREA

GEOLOGY, ELECTROMAGNETIC AXES, GEOCHEMICAL ANOMALIES AND RADIOMETRIC CONTOURS

Reference

LOWER PROTEROZOIC
Golden Dyke Formation — Pld

- Laterite
- Black shale
- Amphibolite and chloritic schist
- Pyritic quartzitic sandstone
- Siltstone
- Limestone
- Lithological boundary
- Outcrop boundary
- Fault : broken line position approximate
- q — Quartz vein
- Gossan
- Dip and strike of bedding
- c — Costean
- Vehicle track
- Slingram anomaly axis (1965)
- Turam anomaly axis (1964)
- —800— Lead contours at 100, 200, 400 p.p.m. } Auger samples
- ---150--- Copper contours at 150, 300 p.p.m
- ····025····· Radiometric contours at 025, 030 mR/hr (Maximum values in auger holes)
- 66/7 — Diamond drill hole
- Rotary-percussion drill hole
- L5 Area

SCALE
400 0 400 800 1200 FEET

To accompany Record 1968/102

D52/A/72

88W 84W 80W 76W 72W 68W 64W 60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0 4E 8E 12E

172S 176S 180S 184S 188S 192S 196S 200S 204S 208S 212S 216S 220S 224S 228S 232S 236S 240S 244S 248S 252S 256 260S 264S 268S 272S 276S 280S 284S. 288S.

AREA 44 Pb1

2700 ppm.
5900 ppm.
5900 ppm.
(10.000 ppm) 3600 ppm.
60° 67/14
2500 ppm.
2500 ppm.
60° 68/13

AREA 44 Pb2

2400 ppm.
1600 ppm.
60° 68/6
1500 ppm.
60° 68/5

AREA 44 Pb3

1900 ppm.
1200 ppm.

100 200 400 800 1600 3200

Diamond Drill Hole

LEAD CONTOURS - AREA 44 EXTENDED

RUM JUNGLE EAST GRID N.T.

scale 1" = 400'0"

To accompany Record 1968/102

PLATE 9

D52/A8/250

THIS PLATE ADJOINS PLATE 9, SHEET 2 OF SHATWELL 1965. (B.M.R. RECORD 1965/).

88W. 84W. 80W. 76W. 72W. 68W. 64W. 60W. 56W. 52W. 48W. 44W. 40W. 36W. 32W. 28W. 24W. 20W. 16W. 12W. 8W. 4W. 0 4E. 8E. 12E. 16E.

1685. 1725 1765. 1805. 1845 1885. 1925. 1965. 2005. 2045. 2085 2125. 2165 2205. 2245. 2285 2325 2365. 2405. 2445. 2485. 2525. 2565. 2605. 2645. 2685. 2725 2765. 2805 2845. 2885.

.024 - MR/Hr at 4'0"

.022 MR/Hr. at 7'0"

.023 MR/Hr. at 6'0"

.025 MR/Hr at 19'0"

.026 MR/Hr. at 4'0"

.040 MR/Hr at 6'0"

.042 MR/Hr at 7'0"

.042 MR/Hr at 8'0"

.025 MR/Hr at 2'0"

.027 MR/Hr at 9'0"

R1

R2

R3

R4

R5

AREA 44

HUANDOT NORTH

HUANDOT

Approximate boundary of hundred of Goyder

Contour Interval: .005 MR/Hr.
Contours based on maximum value from Auger holes.
Holes drilled every 200' along traverses
Fence /—/—/—/—/
Costean C

⊗ Rotary - percussion drill hole

AREA 44 EXTENDED RADIOMETRIC CONTOURS

scale. 1" = 400 Feet.
400 0 400 ft.

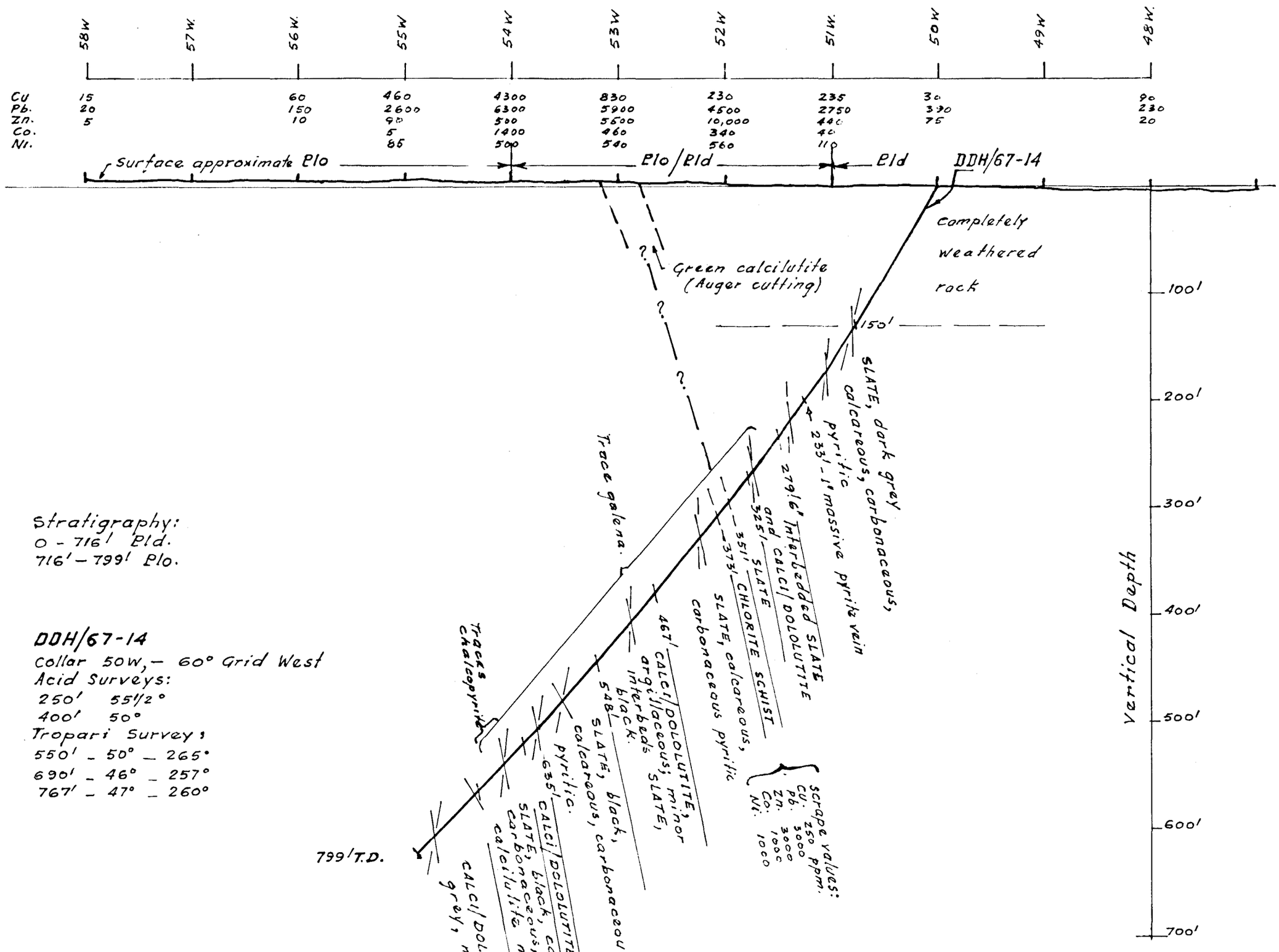
To accompany Record 1968/102

PLATE 10

D52/A8/254

Plate 11.

	58W	57W	56W	55W	54W	53W	52W	51W	50W	49W	48W
Cu	15		60	460	4300	830	230	235	30		90
Pb.	20		150	2600	6300	5900	4500	2750	390		230
Zn.	5		10	90	500	5600	10,000	440	75		20
Co.				5	1400	460	340	40			
Ni.				65	500	540	560	110			



Stratigraphy:
0 - 716' Pld.
716' - 799' Plo.

DDH/67-14
Collar 50W, - 60° Grid West
Acid Surveys:
250' 55½°
400' 50°
Tropari Survey:
550' - 50° - 265°
690' - 46° - 257°
767' - 47° - 260°

REFERENCE:
Pld. Golden Dyke Formation
Plo. Coomalie Dolomite
// Bedding
/ Cleavage.

SECTION 196S.

RUM JUNGLE EAST GRID

D.D.H./67-14

AREA 44 EXTENDED

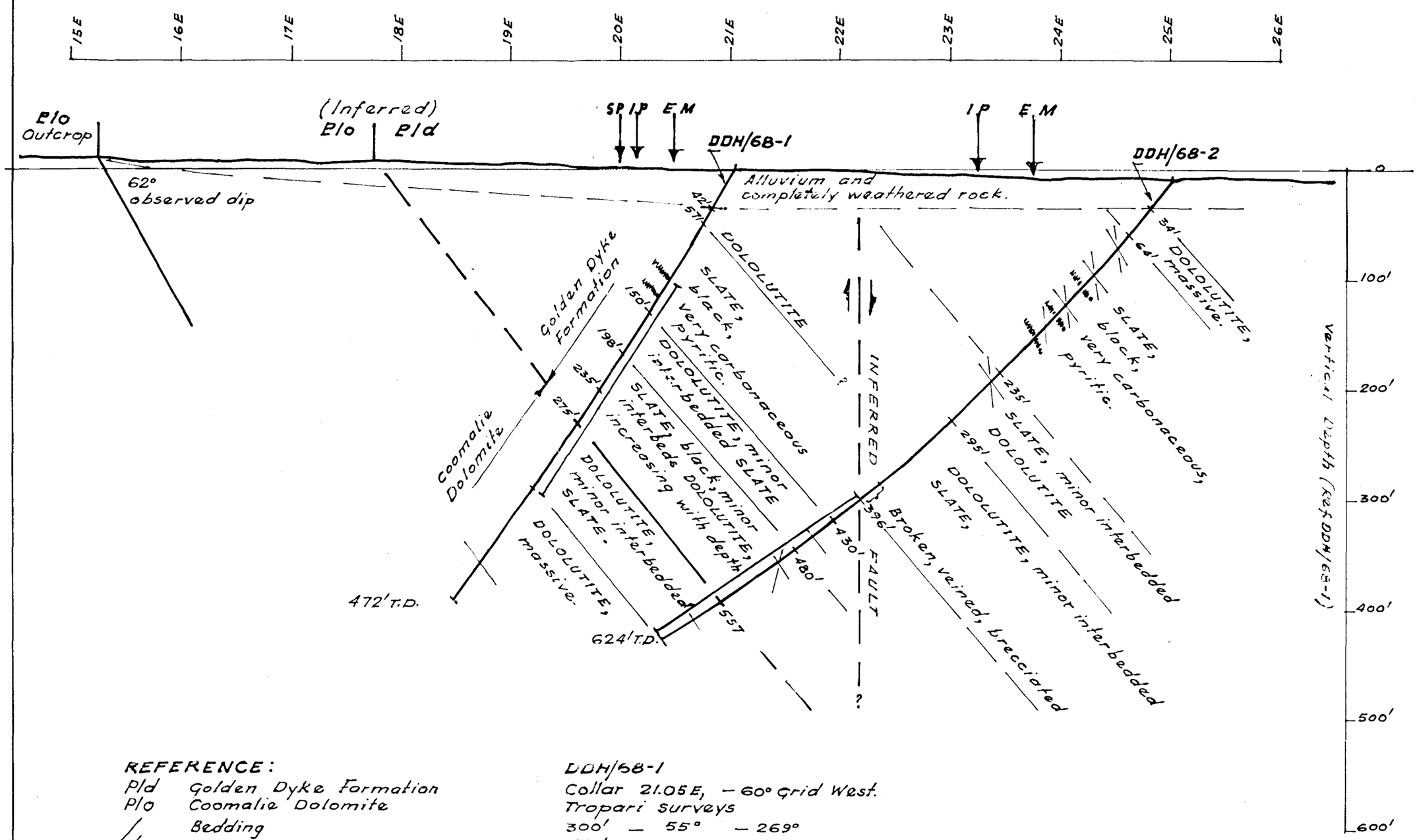
Anomaly Pb 1

Scale 1" = 100'

Surface geology after Semple (1967)

B.M.R. Darwin, 17.5.68.

Plate 12.



REFERENCE:

- P1d Golden Dyke Formation
- P1o Coomalie Dolomite
- Bedding
- Cleavage
- Centre of Geophysical Anomaly
- Breccia, shearing
- Geophysical correlations (Resistivity logs).

DDH/68-1
Collar 21.05E, −60° Grid West.
Tropari Surveys
300' — 55° — 269°
450' — 55° — 277°

DDH/68-2
Collar 25E, −50° Grid West
Tropari Surveys
250' — 44° — 268°
450' — 39° — 269°
600' — 34° — 272°

NOTE: Bedding and cleavage not depicted in DDH/68-1; their mutual relationship in this hole suggests a slightly more complicated structure than is shown.

SECTION 344S.

RUM JUNGLE EAST GRID

COOMALIE GAP WEST (NORTHERN SEC.)

DDH/68-1 & DDH/68-2

scale 1" = 100'

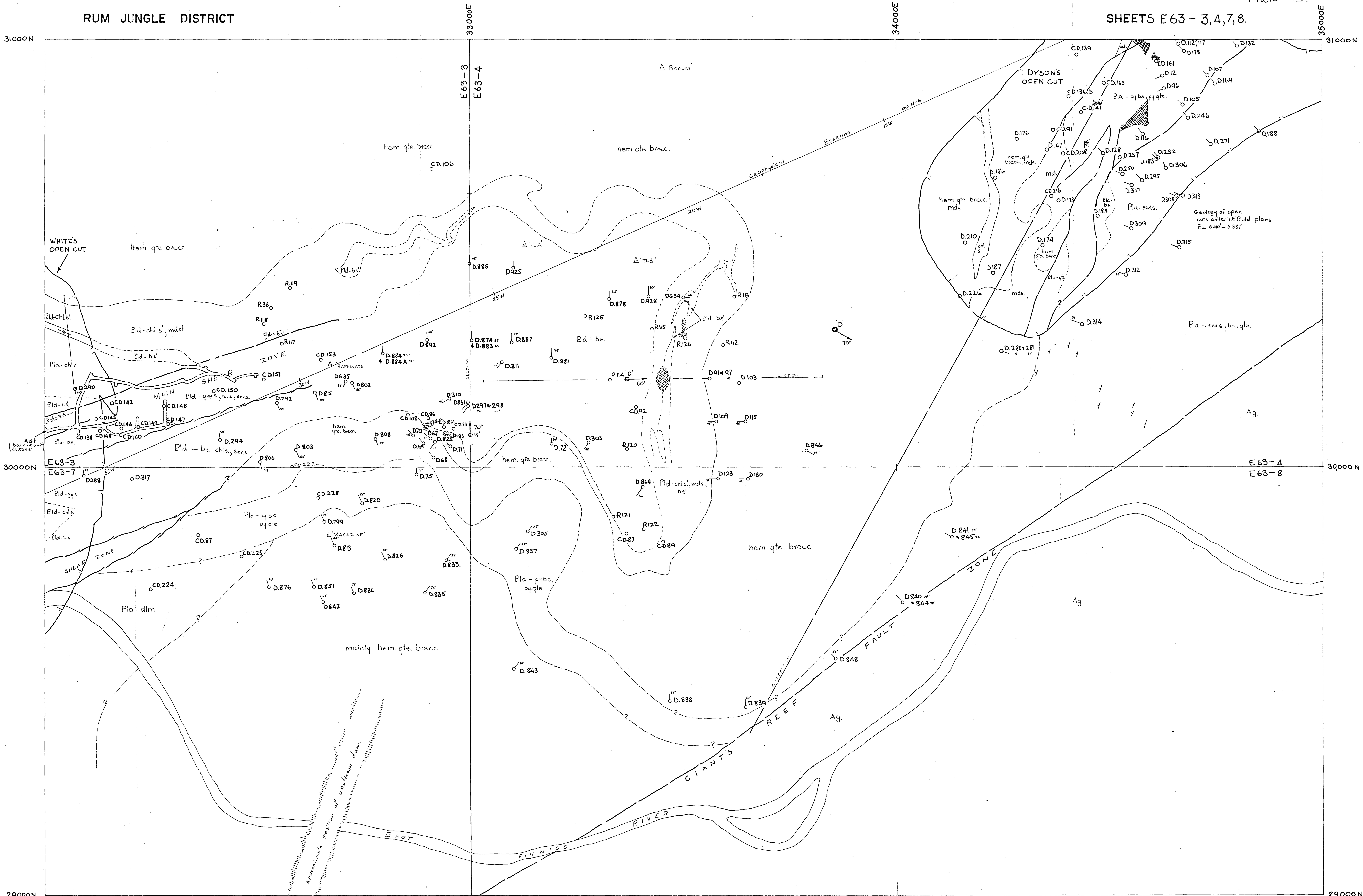
Surface geology after semple (1967).

B. M. R. Darwin, May 1968

Plate 13.

RUM JUNGLE DISTRICT

SHEETS E63 – 3,4,7,8.



2 LOWER PROTEROZOIC	hem. qte. brecc.	— hematite quartzite breccia (include hematite dolomite breccia; hematite, chlorite and talc mudstone; hematite siltstone and sandstone.)

LOWER PROTEROZOIC

GOODPARLA GROUP

GOLDEN DYKE FORMATION

Pld 'black slate sequence.' — b.s. – black carbonaceous and/or graphitic slate; grp.s – graphitic schist, slate; gy.s. – grey slate (include grey sericitic and talcose slate, grey hematite slate.); ser.s. – sericitic slate; tc.s – talcose slate; chl.s. – chloritic slate.

mudstone sequence. — b.s' – black slate, blocky and often cherty; chl.s' – chloritic slate (include augen slate); mds. – green chloritic, red hematitic, and talcose mudstone.

MASSON FORMATION – A[illegible]IA GAP TONGUE

Pla — b.s. – black carbonaceous and/or graphitic slate, often pyritic; py. qte. – pyritic quartzite; ser. s. – sericitic slate.

BATCHELOR GROUP

COOMALIE DOLOMITE

Plo — dlm – dolomite; undifferentiated – dolomite, hematite mudstone, dolomitic sandstone.

ARCHAEAN

RUM JUNGLE COMPLEX

Ag

SCALE 100 0 100 200 300 Feet.

100 ft to 1 inch

Uranium mineralization

Formation boundary

Lithological boundary

Fault

Shear zone

Axis of syncline

(Where location of boundaries, folds and faults is approximate line is broken; where inferred, queried)

strike and dip of bedding.

strike and dip of cleavage, schistosity

D.881 TEP Ltd diamond drill hole showing direction and depression where hole is inclined

D.G.34 B.M.R diamond drill hole

R.114 TEP Ltd rotary drill hole

CD.86 TEP Ltd churn drill hole

open cut perimeter

Δ Trig. station

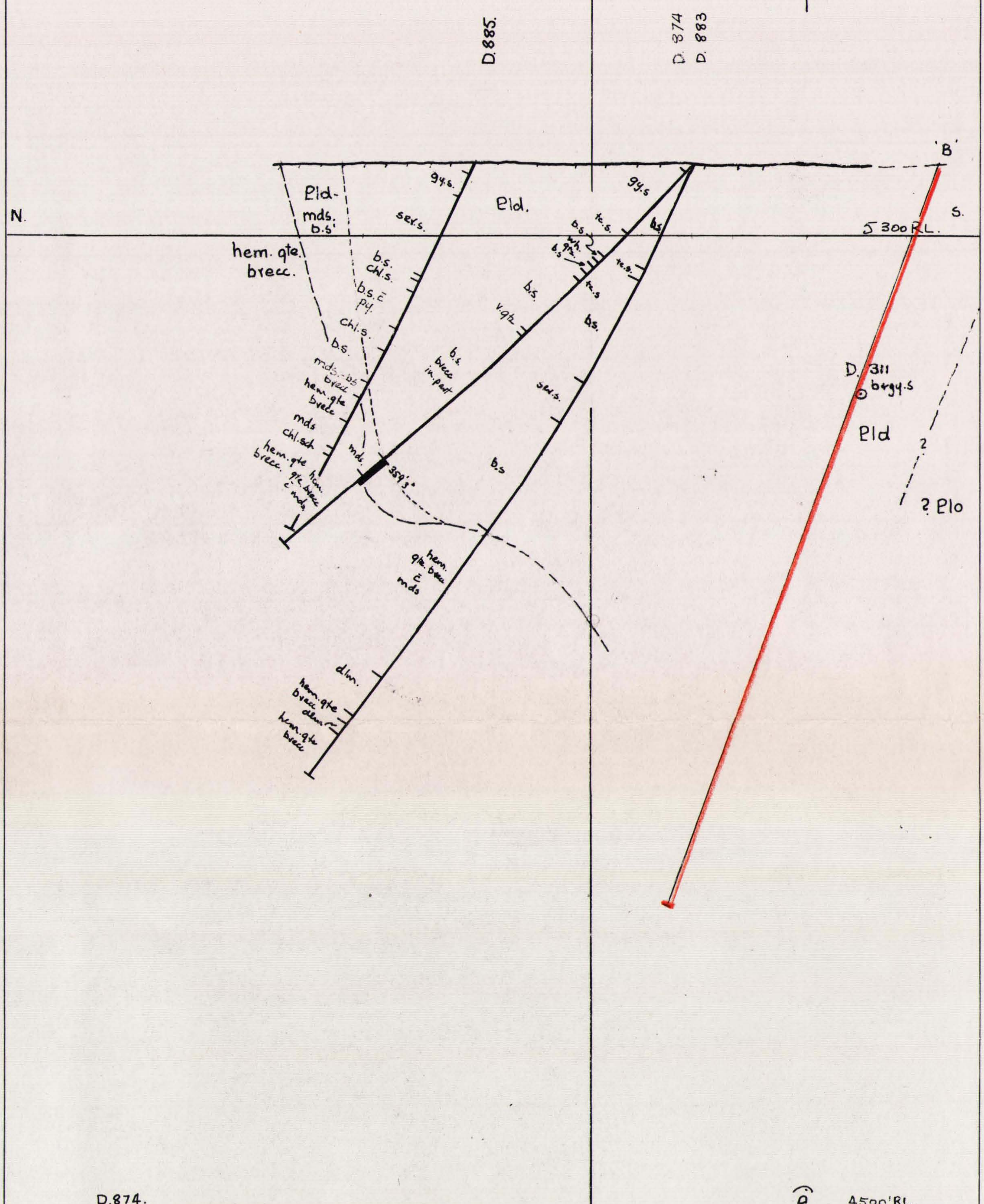
SHEET 63: 1 2 3 4 / 5 6 7 8 / 9 10 11 12 / 13 14 15 16

MAJOR GRID: T.E.P. mine grid, North 359°58'00" True.

Drawn by L. Kerec.

Bureau of Mineral Resources, Geology and Geophysics.

Plate 14.



D.874.

From	To	U_3O_8 lbs/ton
359'-3"	362'-3"	0.47
362·3	365·3	5.53
365·3	369·0	104·60
369·0	372·0	60·25
372·0	375·0	4·52
375·0	378·0	0·25.

WHITE'S EXTENDED.

SCALE
1 inch = 100 feet.

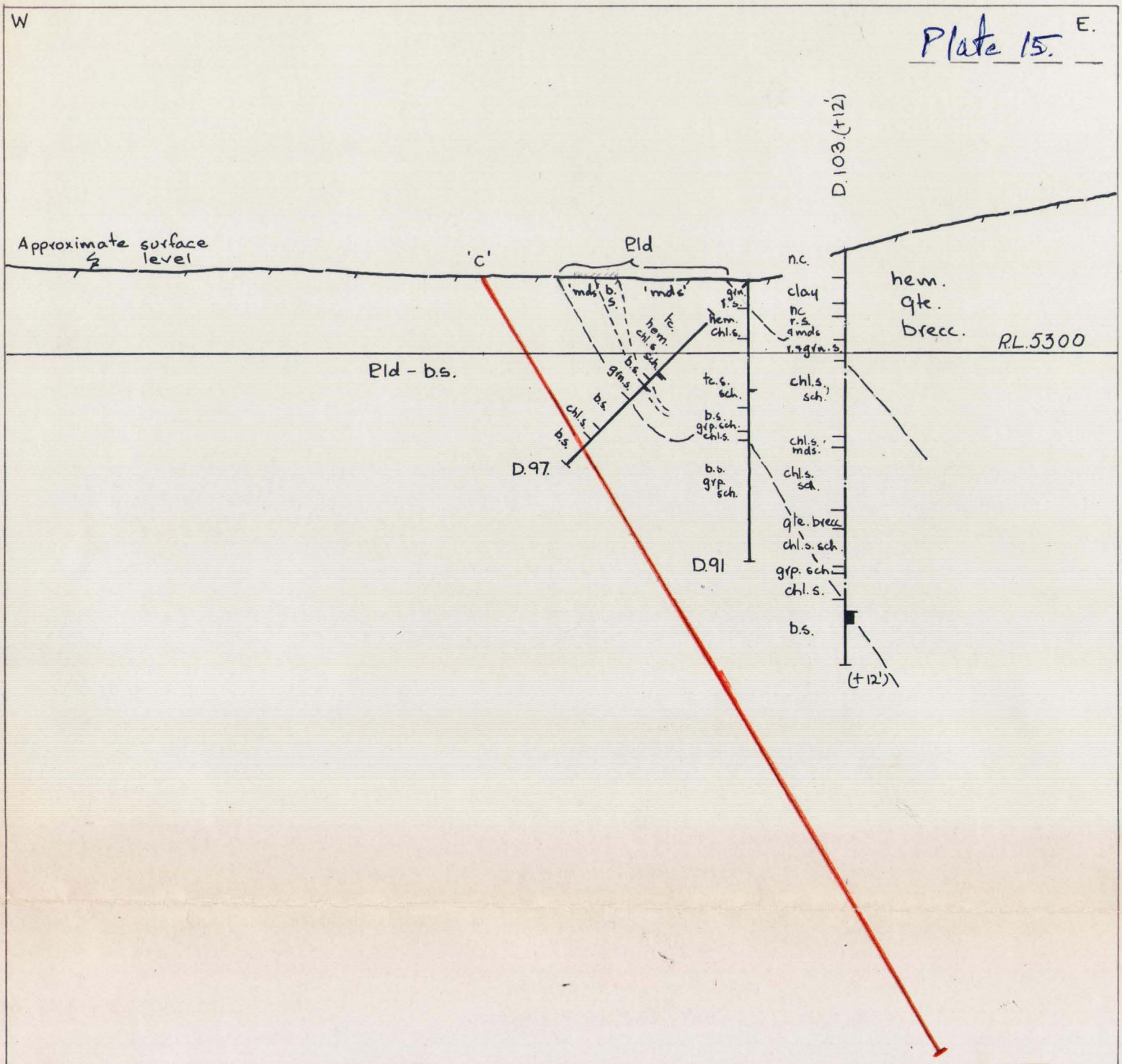
CO-ORDINATES
N 30380] MINE
E 33000] GRID
N0000] LOCAL
W2560] GRID.

BEARING OF SECTION 360° T.

DEPRESSION

BUREAU OF MINERAL RESOURCES, JUNE 1968.

Plate 15.



D.91

From	To	U_3O_8 lbs/ton
43	75·5	max. 0·5
75·5	78·0	0·7
78·0	79·5	1·3
79·5	82·0	0·1
82·0	94·0	max. 0·6

D.103

From	To	U_3O_8 lbs/ton
258'	262'	0·1
262	266	2·1
266	269·5	1·6
269·5	289·5	0·4

D.97.

From	To	U_3O_8 lbs/ton
74'	92'	max. 0·4
92	92·5	0·8
92·5	93	1·5
93	94	2·2 (chem 0·7)
94	99	0·3
106	107	1·7 (chem 0·7)
107	108	0·4.

WHITE'S EXTENDED	SCALE 1 inch = 100 feet.
CO-ORDINATES N 30208 E 33560 MINE GRID.	BEARING OF SECTION 90°T.
	DEPRESSION

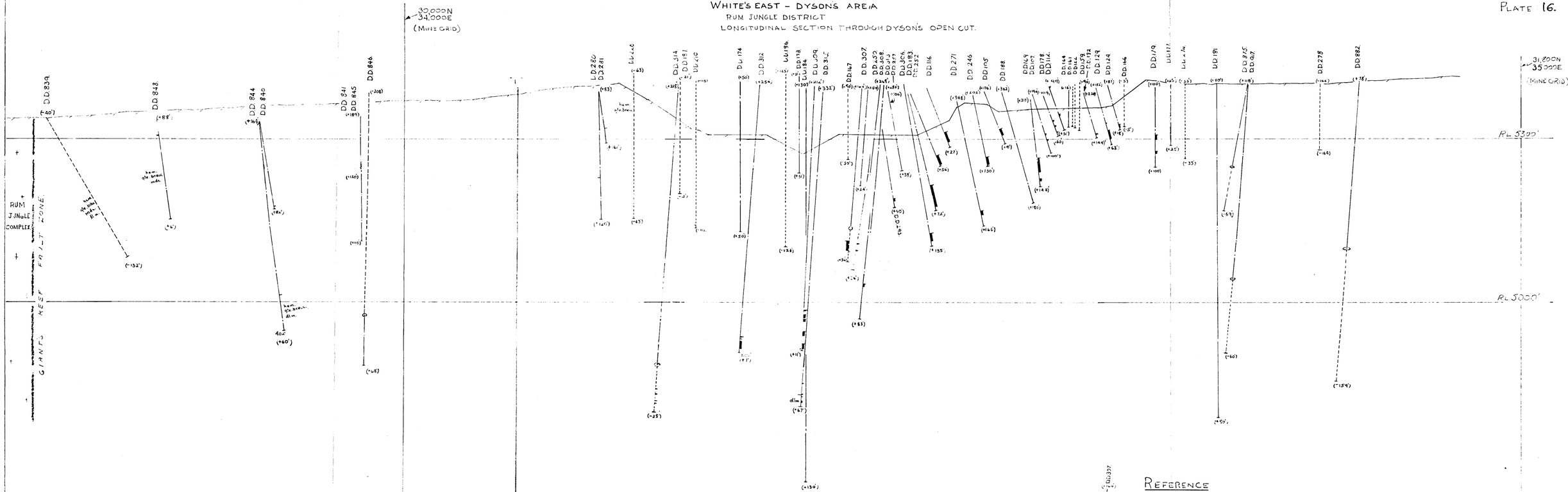
BUREAU OF MINERAL RESOURCES, JUNE 1968.

PLATE 16.

WHITE'S EAST – DYSON'S AREA

RUM JUNGLE DISTRICT

LONGITUDINAL SECTION THROUGH DYSON'S OPEN CUT.



REFERENCE

Projected diamond drill holes to DD330' showing U_3O_8 mineralization

(-164) collar of hole 164' in front (southeast) of plane of section

(-36') end of hole 36' behind (north-west) of plane of section.

diamond drill hole in front of plane of section

diamond drill hole behind plane of section.

diamond drill hole intersecting uranium mineralization ≥ 1.0 lb U_3O_8/ton.

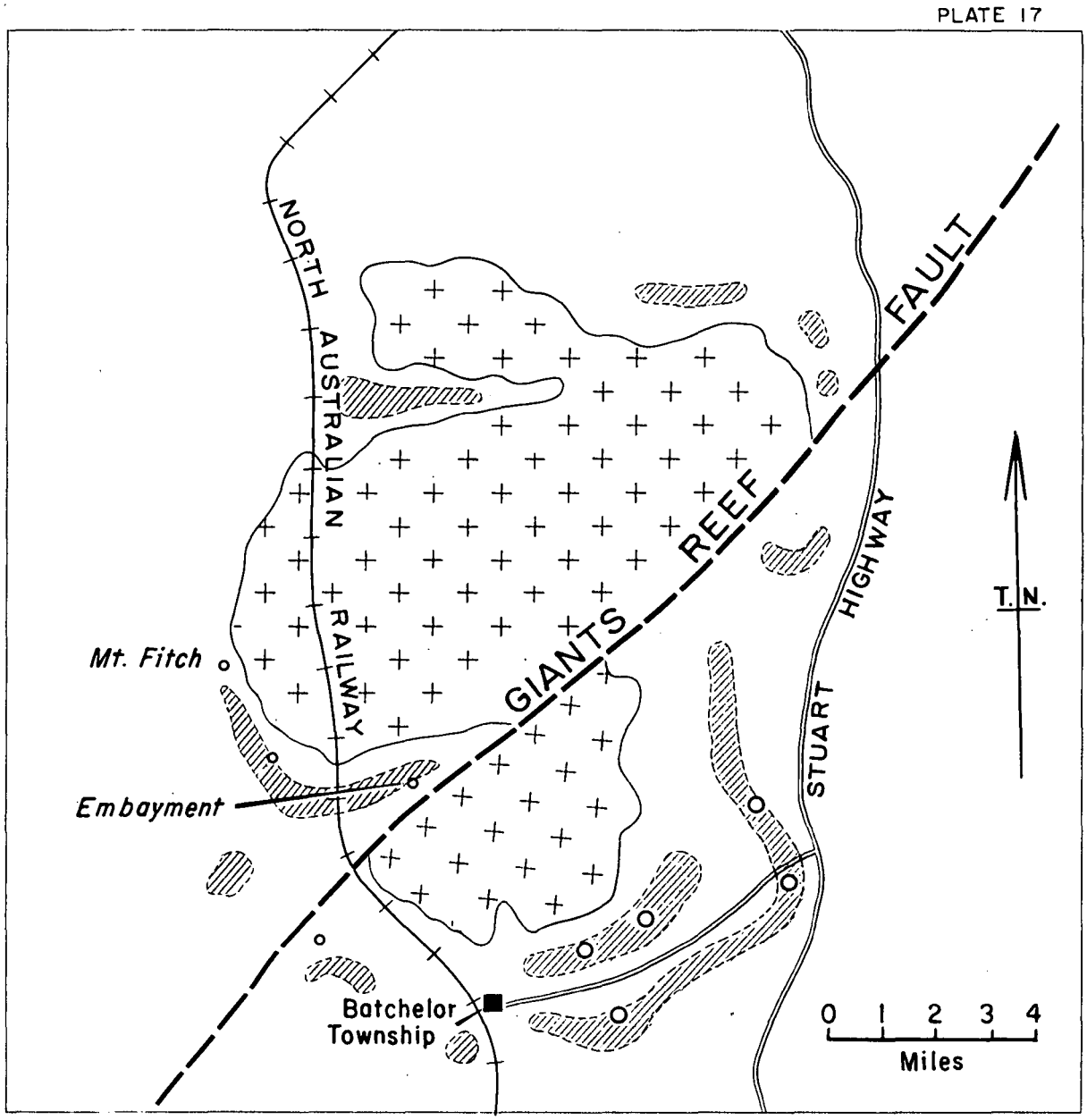
SCALE.

100 50 0 100 200 300 400 500

100 feet to 1 inch.

EXTRACT FOR MINERAL RESOURCES MAY 1968.

PLATE 17



Magnesite Occurrences, Rum Jungle Area, as known October 1968

+ + *Rum Jungle Granite Complex*

Major areas containing surface exposures of Celia and Coomalie Dolomite

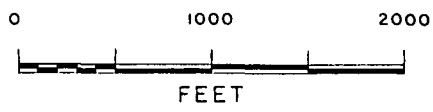
o *Locality at which magnesite has been detected in outcropping material*

o *Locality at which magnesite has been detected in diamond drill core*

To accompany Record 1968/102

D52/A8/300

MT FITCH NORTH
GEOPHYSICAL SURVEY
1968



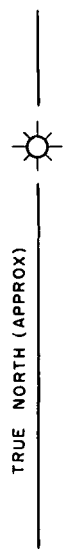
Plo Coomalie Dolomite

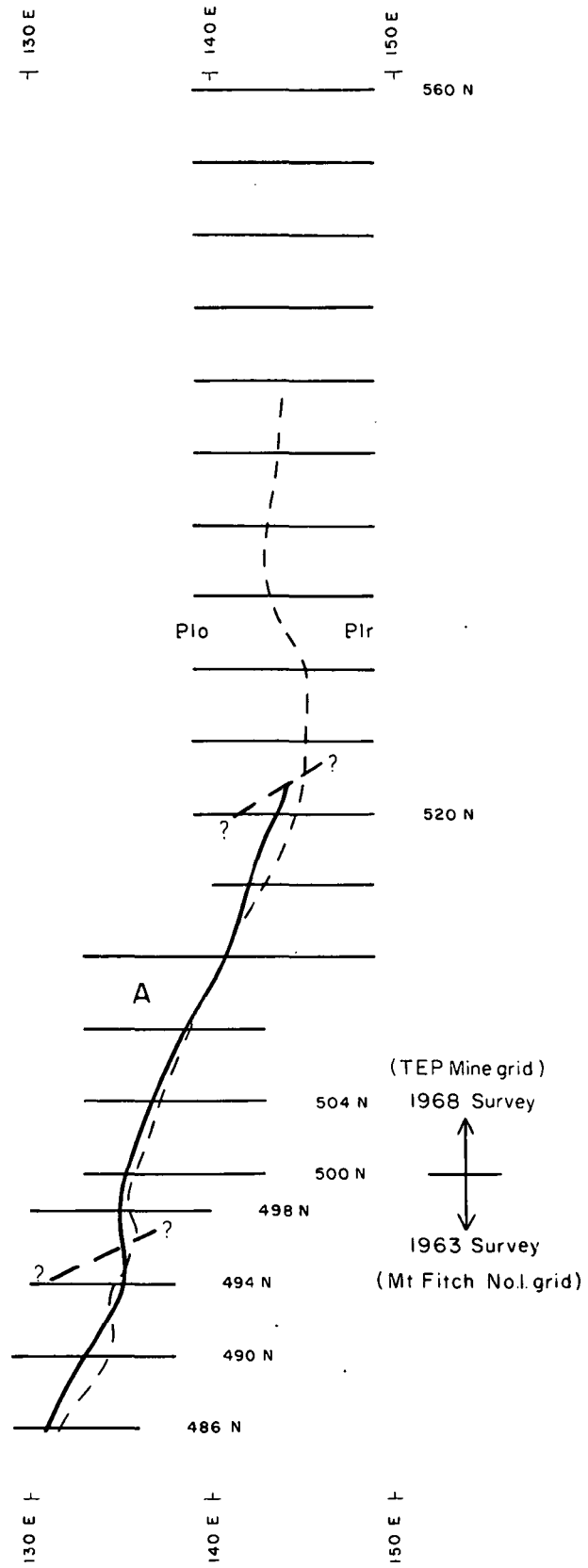
Plr Crater Formation

Fault ?

Geological boundary

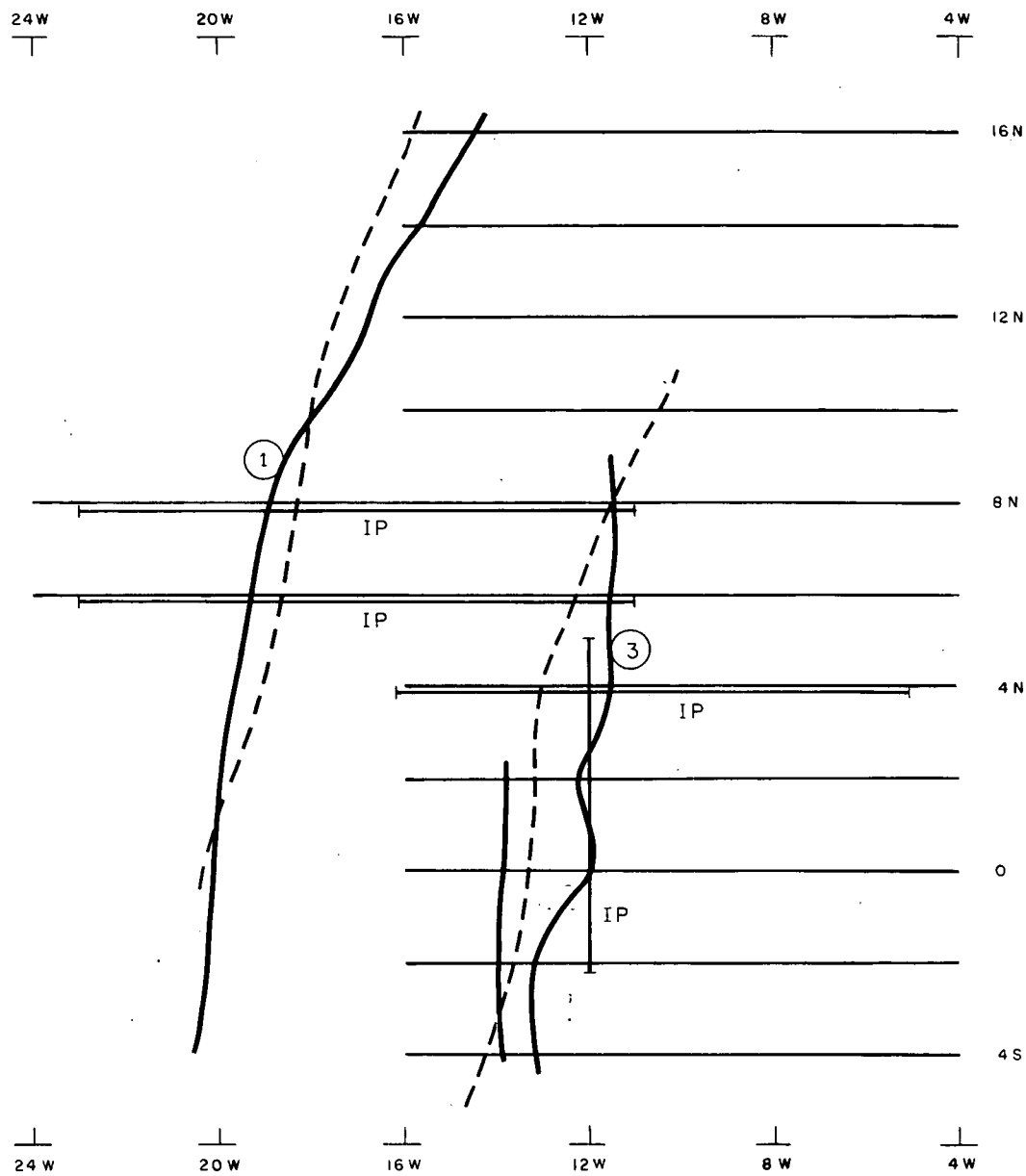
Slingram axis





D52/B7—444

PLATE 19



AREA 55B

GEOPHYSICAL SURVEY 1968

Fault

3 EM axis

IP Traverse surveyed with IP

0 400 800

FEET

TRUE NORTH (APPROX)

D52/B7—446

GRAVITY SURVEY 1968

TRAVERSE 120 S RUM JUNGLE EAST GRID

Datum: BM51, Stuart Highway

Density used: 2·6 g/cm^3

4000 0 4000 8000

FEET

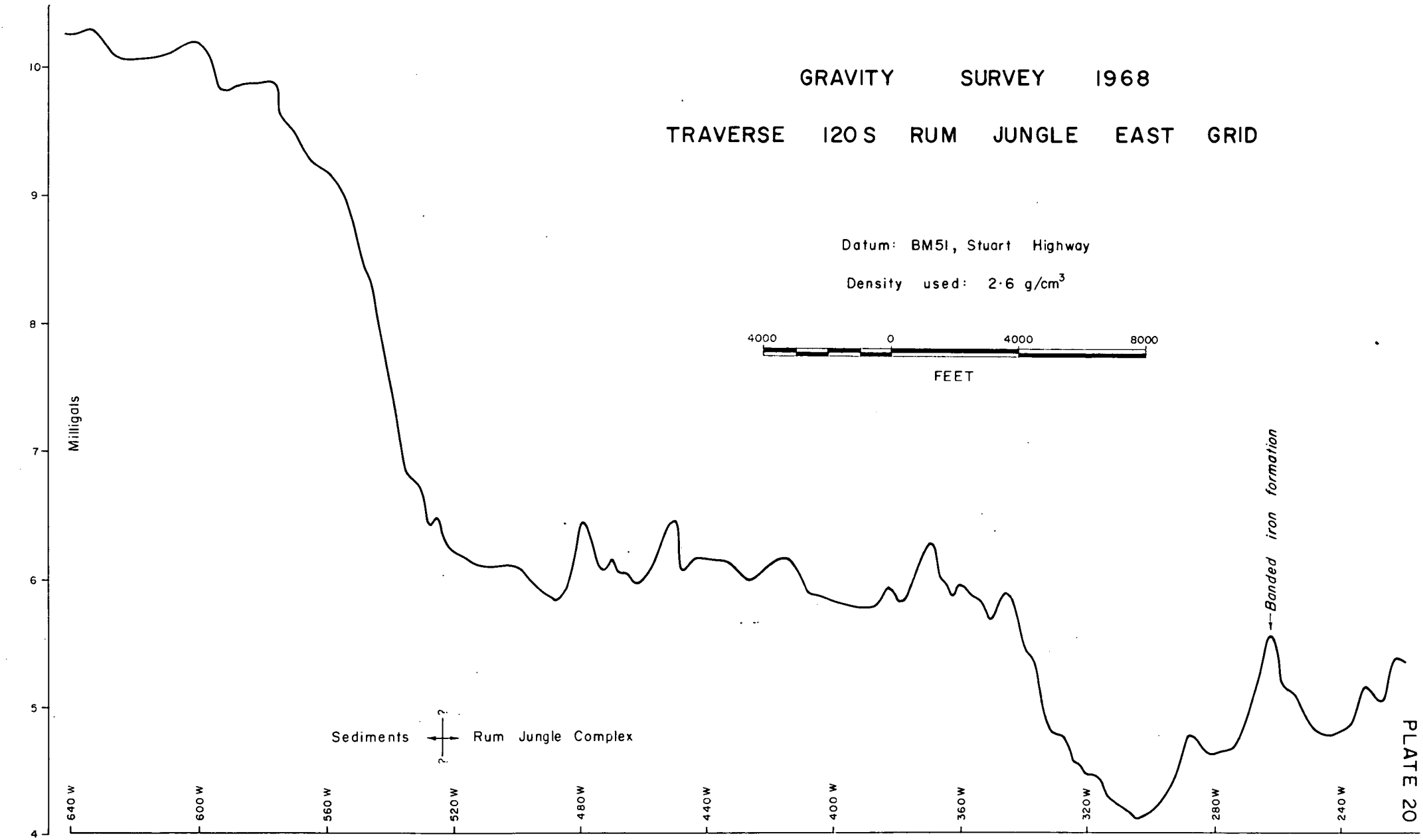


PLATE 20

D52/B7-445