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SUMMARY OF GEOLOGICAL AND GEOCHEMICAL INVESTIGATIONS
RUM JUNGLE AREA - 1964.

by

J.F. Ivanac

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

SUMMARY OF GEOLOGICAL AND GEOCHEMICAL INVESTIGATIONS,

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SUMMARY

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SUMMARY

During 1964 geochemical reconnaissance and geological mapping of the Rum Jungle East area and semi-detailed geological mapping and geochemical sampling of the Rum Jungle Triangle area were completed. Complete results have not been received but those available point to a copper-cobalt-zinc anomaly in the Rum Jungle Triangle and low order copper anomalies in the Rum Jungle East area. Galena and sphalerite were observed as blebs in Coomalie Dolomite in the Rum Jungle East area.

Diamond drilling to test magnetic and electromagnetic anomalies intersected only pyrrhotite-pyrite bearing amphibolite and pyritic shales.

A programme for 1965 is suggested.

INTRODUCTION

During 1964 the Bureau of Mineral Resources continued its programme of geological, geochemical and geophysical surveys in the Rum Jungle area. The work was carried out by geologists and geophysicists of the Darwin Uranium Group.

The areas examined are styled.- Rum Jungle East (Plate 1) on the eastern margin of the Rum Jungle Complex; and Rum Jungle Triangle between Giant's Reef and Mt. Fitch faults. Diamond drilling was carried out in the Mt. Fitch - Mt. Burton areas. Geophysical surveys were coordinated with geological and geochemical surveys and both used the same traverse lines which were laid out by a contract surveyor.

Auger drilling and diamond drilling contracts were both won by Atlantic Drillers, of Sydney. Auger drilling footage totalled 49,960 feet, and diamond drilling ~~1848~~ ²¹⁰⁶ feet ~~to 7.10.64.~~

Auger cuttings collected from the soil weathered rock interface are being analysed spectrographically by Australian Mineral Development Laboratories for copper, lead, zinc, cobalt, nickel and molybdenum. Auger holes were probed radiometrically, readings being taken at intervals of one foot down each hole.

GEOCHEMICAL SAMPLING/AUGER DRILLING

Rum Jungle East Area

The Rum Jungle East area extends from the Giant's Reef fault to approximately three miles south of the Batchelor Road - Stuart Highway junction. Golden Dyke Formation and Coomalie Dolomite crop out in the area.

One thousand three hundred and ninety eight holes averaging 13.6 feet deep were drilled on 200 foot centres along traverse lines spaced 2400 feet apart. The holes were probed radiometrically and slingram electromagnetic surveys were made over the same traverse lines.

The subsurface geology generally confirms the previous surface mapping but outlines it in more detail. The Golden Dyke Formation consists of medium to fine grey siltstone with minor disseminated sulphide minerals. Rare lenses of impure limestone and black carbonaceous shales were recorded. Sulphides-pyrite and possibly galena were identified in vein quartz in cuttings from a drill hole at 182N 112E. Galena and sphalerite were identified in Coomalie Dolomite at grid coordinate 31255805W and occur as isolated blebs.

Geochemical results received to date show irregular low-order anomalies centred near 456S. Copper ranges in value up to 500 p.p.m.; (preliminary statistical analysis shows that values above 80 p.p.m. could be anomalous). Lead, zinc, cobalt and nickel values show a broadly similar distribution and spread across the contact of the Coomalie Dolomite and the Golden Dyke Formation.

Radiometric probing did not reveal significant anomalous radioactivity although an area of 2 x background has been outlined between 312 and 336S. A peak of moderate intensity .060 mR.H near the contact between Golden Dyke and Coomalie Dolomite on traverse 408S is the most likely prospect. This radiometric high was recorded on a previous airborne radiometric survey. Further examination of radiometric results is in progress. Well defined electromagnetic anomalies between 328 and 432S have been discovered.

Rum Jungle Triangle

In the Rum Jungle Triangle the survey grid was laid out at 400 foot intervals with auger holes drilled on 200 foot centres. Two thousand two hundred and sixty eight holes averaging 13.6 feet deep were drilled.

Geological mapping has established in detail the Coomalie Dolomite - Golden Dyke Formation contact which trends north in the southern half of the area mapped. Golden Dyke Formation consists of black carbonaceous and chloritic shales, laminated shales, greywacke and quartz-sericite schist. Coomalie Dolomite includes coarse textured white to pink carbonate and medium to fine dark grey calcilutite with lenses of black shale. Calcilutite is speckled with pyrite in many places.

Geochemical results to date show several interesting copper, cobalt, and zinc anomalies (Plates 2 and 3) the most important extending from 162N to 198N with the long axis along 110E. Copper results range up to 1000 p.p.m., zinc up to 3000 p.p.m. and cobalt 500 p.p.m. The anomaly is 2600 feet long and approximately 400 feet wide and lies in a slight embayment in the contact between Coomalie Dolomite and Golden Dyke Formation. A narrow zinc anomaly parallels this anomaly, 800 feet to the west. A.M.D.L. have been requested to expedite analysis of the remainder of the samples. The zinc anomaly is of interest and is the first confirmed case of zinc being detected in anomalous quantities in the Hundred of Goyder. The other anomalous zones are associated with changes of strike of the Golden Dyke Formation Coomalie Dolomite Contact.

Radiometric results were disappointing and the highest value recorded was 0.124 mR/hr near the contact of Golden Dyke/Coomalie Dolomite. Four auger holes were drilled at 100 feet - N.S.E. and W. of the high value - to depths of 35 to 41 feet but the highest radiometric reading was .035 mR/hr. Further examination of the results is in progress.

DIAMOND DRILLING (Appendix 1)

A programme of 2106 feet of diamond drilling to test electromagnetic anomalies coinciding with magnetic anomalies was completed. Holes 1, 2 and 4 passed into pyrite-pyrrhotite bearing amphibolite, pyritic slate and dolomite. Hole 3 intersected pyritic slates and greywacke with minor amphibolite bands; Hole 6 intersected pyritic sediments and dolerite; Hole 7 intersected carbonaceous slates and dolerite.

The pyrite content ranges up to 20% and occurs in veinlets, blebs and disseminated particles throughout the complete length of core.

Core is being split for detailed spectrographic analysis and selected sections will be analysed for gold and silver. Mineragraphic studies of core will also be made.

Magnetic and electromagnetic anomalies appear to be accounted for by pyrrhotite and pyrite.

At Mt. Fitch D.D.H.64-5 was drilled to test a copper geochemical anomaly in the sulphide zone but was abandoned at 229 feet because of bad drilling conditions.

RECOMMENDATIONS FOR FUTURE PROGRAMME

1965

A suggested programme to be carried at Rum Jungle by the Darwin Uranium Group in 1965 is as follows :

1. Continue to compile and collate at uniform scale all existing information on the Hundred of Goyder and continue detailed geological mapping on selected sheets of the agreed grid layout.
2. Geochemical sampling to follow-up anomalies discovered during 1964 - 20,000 feet (maximum) using B.M.R. Gemco rig.

Rum Jungle Triangle - close up grid on copper-cobalt-zinc anomaly and supplement by deep profile sampling to maximum depth of BMR Gemcodrill. Ten thousand feet of drilling is planned.

Rum Jungle East - Ten thousand feet auger drilling sampling supplemented by mattock samples -in residual soils- to follow up anomalous zones. The B.M.R. Gemcodrill will be used for this work also.

Reconnaissance Sampling - South of Gould Airfield and Waterhouse No. 4 prospect area, if time permits. Sample points to be located on airphotographs.

3. Diamond Drilling - (1) Emphasis is to be placed on drilling for information to assist further prospecting and will provide support for Item 2 above. In both areas studied in 1964, 2000 feet of drilling planned to test :
 - (a) geological succession beneath geochemical anomalies.
 - (b) geophysical anomalies
- (2) Area 55 (Plates 4,5,6) A minimum of 2400 feet and a maximum of 3950 feet is recommended to test targets outlined at Area 55. Appendix 2 lists the proposals in detail.

Other Suggestions

Mt. Fitch - 750 feet - one hole (112E, 136N) to test sulphide zone at right angles to strike of geochemical 1000 p.p.m. copper contour.

Follow-up Tamblyn's Shaft copper prospect - pattern airblast rotary - percussion would be suitable to check for oxidised copper ores.

Surveying

An estimate of contract survey requirements will be made as soon as the complete geochemical results have been assessed.

APPENDIX I

DIAMOND DRILL LOGS

GEOLOGICAL LOG OF DRILL HOLE

PROJECT RUM JUNGLE REMARKS
HOLE No. BMR 64-1 CO-ORDINATES R.L. GROUND
LOCATION ANGLE FROM HORIZONTAL Vertical DIRECTION

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
200' Hornblende Amphibolite minor Actinolite Pyrite 10% 214' 9" Calcite vein 2" 40° to core 244' Calcite vein 2" 40° to core 281' Hornblende Amphibolite more Actinolite than before Pyrite 10% 300' END OF HOLE 300'	Amphibolite.				100	196265	
						196266	
						196267	
						196268	
						196269	
						196270	
						196271	
						196272	
						196273	
						196274	
						196275	
						196276	
						196277	
						196278	
						196279	
						196280	
					100	196281	
						196282	
						196283	
						196284	

DRILL NO.	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE	
TYPE		LOGGED BY	
DRILLER	REFERENCES	DRAWN BY	
COMMENCED		CHECKED BY	
COMPLETED		SHEET <u>2</u> OF <u>2</u>	
		DRAWING NO.	

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *Rum Jungle*REMARKS *Testing EM & Magnetic Anomaly*HOLE No. *BMR 64-2*CO-ORDINATES *383N129.5E (Mt. Fitch No. 1 Grid)*

R.L. GROUND

LOCATION *Between Mt. Fitch & Mt. Burton*ANGLE FROM HORIZONTAL *Vertical*DIRECTION *-*

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
Core disintegrated Fragments of black shale Probably all black shale below soil.	Soil			30			
Black Slate, weathered & broken. Pyrite present from 40'	Golden Dyke Formation			60			
Black Slate closely & irregularly jointed 45°, 20°-25°, & 70° to core axis preferred directions Pyrite in very fine veinlets 2%				96			
Amphibolite. Dark fibrous hornblende, irregular close jointing. Pyrite $\approx 10\%$	Amphibolite			96			
Weathered porous dark grey ? Slate Massive f.g. Pyrite 40-50%	Golden Dyke			73			
Gradational change Pyrite decreases to $\approx 10\%$				73			
Amphibolite, massive, white calcite in flecks & veinlets. Pyrite disseminated in lenticles $\approx 5\%$	Amphibolite			90			
Amphibolite, lighter colour due to increased calcite. Pyrite $\approx 5\%$				NIL 90		113'-116' Cavity - no core	
Amphibolite, more calcitic irregular calcite veins to 1/2" thick Pyrite disseminated & in veinlets & aggregates 30-40%				85			
				98			

DRILL NO. *Sullivan*

EXPLANATION

HEAD OFFICE

TYPE

CASING IN HOLE DURING DRILLING

LOGGED BY

DRILLER *Alphonse (McCarthy)*

REFERENCES

DRAWN BY

COMMENCED

CHECKED BY

COMPLETED

SHEET *1* OF *2*

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE*

REMARKS

HOLE No. *BMR 64-2*

CO-ORDINATES

R L GROUND

LOCATION

ANGLE FROM HORIZONTAL *Vertical*

DIRECTION

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
202' <i>Amphibolite - actinolitic - weathered</i>	<i>Amphibolite</i>			90			
207' <i>Pyrite 20%.</i>				95			
211' <i>Amphibolite, calcite veins 40%.</i>							
<i>Pyrite 20%.</i>	<i>Golden Pyrite</i>			99			
<i>Black Slate, closely & irregularly jointed.</i>							
<i>Pyrite 2%.</i>							
225' <i>Argillite, sericitic, grey, hard,</i>	<i>? Coarsite Dolomite</i>					225'-226' Gradation	
226' <i>splintery fracturing.</i>				96			
<i>Pyrite 2%.</i>							
238' <i>Transition</i>	<i>Coarsite Dolomite</i>			98			
244' <i>Dolomitic Calcilutite. Hard, compact, blue-gray.</i>							
<i>Pyrite 2%.</i>							
254'6" <i>END OF HOLE 254'6"</i>							

DRILL NO.	CASING IN HOLE DURING DRILLING ☒	EXPLANATION	HEAD OFFICE	
TYPE			LOGGED BY .....	.....
DRILLER		REFERENCES	DRAWN BY .....	.....
COMMENCED			CHECKED BY .....	.....
COMPLETED			SHEET <i>2</i> OF <i>2</i>	.....
			DRAWING NO. ....	.....

GEOLOGICAL LOG OF DRILL HOLE

PROJECT RUM JUNGLE REMARKS Testing EM & Magnetic Anomaly
 HOLE No. BMR 6A-3 CO-ORDINATES 37°N 127°E (Mt. Fitch 161 GRID) R.L. GROUND
 LOCATION Between Mt. Fitch & Mt. Burton ANGLE FROM HORIZONTAL Vertical DIRECTION

DESCRIPTION OF CORE	R L	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
00' Core incohesive Fine to medium grained well rounded QUARTZ SAND Pale red-brown							
23' as above, grey							
28' mostly incohesive, rest is weathered & fragmentary dark grey SHALE Pyritic throughout.							
66' deeply weathered - often incohesive - grey, porous Schist (weathered & partly bleached Carbonaceous Shale) Pyrite throughout richly pyritic 72', 85-90', 104' Brecciated 114'6"-116'							
120' dk. grey carbonaceous Slate weathered, incohesive in part Pyritic 2% Pyrrhotite Trace							
142' Grey chloritic Greywacke irregular Quartz 20% between 144' & 148' Pyrite 2-5%							
160' Breccia; Quartz 50% & chloritic greywacke Pyrite 10-30%							
170'3" Chloritic Greywacke grading into Carbonaceous Slate Pyritic 5%							
183'6" Brecciated blk Slate & 10% Quartz Pyritic 10-20%							
190' gradational for 2' carbonaceous Slate with few irregular, indefinitely							

DRILL NO.	EXPLANATION	HEAD OFFICE
TYPE <u>Sullivan</u>	CASING IN HOLE DURING DRILLING	LOGGED BY <u>CEP</u>
DRILLER <u>Atlantic</u>	REFERENCES	DRAWN BY
COMMENCED <u>July 1964</u>		CHECKED BY
COMPLETED <u>August 1964</u>		SHEET <u>1</u> OF <u>2</u>
		DRAWING NO.

GEOLOGICAL LOG OF DRILL HOLE

PROJECT RUM JUNGLE REMARKS.....
 HOLE No. BMR. 64-3 CO-ORDINATES..... R.L. GROUND.....
 LOCATION..... ANGLE FROM HORIZONTAL Vertical DIRECTION.....

200

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
bounded Quartz blebs Pyrite 5-10 % ? Chalcopyrite Trace				100			
217' dark grey Slate with scattered Quartz blebs Calcareous in part Pyrite 10-15 % Amphibolite 231'6"-232' 3" coarse Calcite 245' Pyrrhotite 1" 240'6" 1/2" 241'				100			
246' pale grey Amphibolite 246'6" Chloritic GW & blk Slate				100			
252' black Slate Pyrrhotite + Pyrite 5 % Calcareous in part				100			
265'6" Amphibolite, Calcareous from 266'6" 269' Pyrrhotite + Pyrite 5-20 % Schistose dk grey Siltstone Py 1-2 %				100			
272'6" Crinoidal Limestone 277'6" Pr + Py 2 % Siltstone Pr + Py 1-2 %	C O M M A L E D O L O M I T E			100			
283' Crinoidal Limestone Pr + Py Trace				100			
290'6" END OF HOLE				100			

DRILL NO.	EXPLANATION CASING IN HOLE DURING DRILLING	HEAD OFFICE	
TYPE		LOGGED BY	DRAWN BY
DRILLER	REFERENCES	CHECKED BY	
COMMENCED		SHEET <u>2</u> OF <u>2</u>	
COMPLETED		DRAWING NO.	

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE* REMARKS *To test EM & Magnetic Anomaly*
HOLE No. *BMR 64-4* CO-ORDINATES *370 75'N 143 50'E (Mt. Fitch No. 2 Grid)* R.L. GROUND
LOCATION *Between Mt. Fitch & Mt. Burton* ANGLE FROM HORIZONTAL *Vertical* DIRECTION

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT OF CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
Red clayey Soil							
15'				60			
Yellow SUBSOIL							
28'							
Grey sandy incohesive WEATHERED ROCK (? Amphibolite)				60			
48'							
Grey weathered AMPHIBOLITE core very broken				75			
56'6"							
Hard pale grey (? Actinolitic) AMPHIBOLITE disseminated sulphide Pr > Py 5-15 %				90			
78'							
Dark grey (? Hornblende) AMPHIBOLITE flecked with Calcite (to 15 %) Calcareous throughout Pr >> Py 10-25 % disseminated & in irregular aggregates. Pr aggregates often associated with calcite				98			
151'							
Pr vein 3"							
154'							
Pale blue-grey & white AMPHIBOLITE - LIMESTONE Pr >> Py 10-15 %				100			
174'							
Gradational Pr >> Py 10-20 %				100			
195'							
Calcareous AMPHIBOLITE				100			

DRILL NO.	EXPLANATION	HEAD OFFICE	
TYPE		LOGGED BY .....	.....
DRILLER <i>Atlantic</i>	REFERENCES <i>20'-1"</i>	DRAWN BY .....	.....
COMMENCED		CHECKED BY .....	.....
COMPLETED <i>Aug. 1964</i>	<i>Pr Pyrrhotite</i> <i>Py Pyrite</i>	SHEET <i>1</i> OF <i>2</i>	.....
		DRAWING NO. ....	.....

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE* REMARKS
HOLE No. *BMR 64-4* CO-ORDINATES *370.75N 143.50E (Mt. Fitch No 2 Grid)* R.L. GROUND
LOCATION *Between Mt. Fitch & Mt. Burton* ANGLE FROM HORIZONTAL *Vertical* DIRECTION

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
<i>Calcareous AMPHIBOLITE</i> <i>Pr >> Py 10-20%</i>				100			
<i>233'</i> <i>Calcareous AMPHIBOLITE & irregular CALCITE</i> <i>(237'-240' & 246'-251' 50% Calcite)</i> <i>Pr aggregates in calcite</i> <i>Pr >> Py 10-20%</i>				100			
<i>253'</i> <i>Dark grey calcareous AMPHIBOLITE</i> <i>Pr >> Py 10-20%</i>				100			
<i>311'</i> <i>Paler grey calcareous AMPHIBOLITE</i> <i>Pr >> Py 10-20%</i>				100			
<i>324'9"</i> <i>END OF HOLE</i>							

DRILL NO.	EXPLANATION	HEAD OFFICE	
TYPE		LOGGED BY .....	.....
DRILLER	REFERENCES	DRAWN BY .....	.....
COMMENCED		CHECKED BY .....	.....
COMPLETED		SHEET <i>2</i> OF <i>2</i>	.....
		DRAWING NO. ....	.....

GEOLOGICAL LOG OF DRILL HOLE

PROJECT. *RUM JUNGLE* REMARKS. *Testing Geochemical (Cu) Anomaly*
 HOLE No. *BMR 64-5* CO-ORDINATES *432N 116.50.E (Mt. Fitch No. 1 GRD)* GROUND
 LOCATION *NEAR MT. FITCH* ANGLE FROM HORIZONTAL *70°* DIRECTION *145 (N-25)*

DESCRIPTION OF CORE

R.L.

DEPTH

CASING

SIZE OF

LOG

LIFT
OF
CORE
RE
COVERY
%

SAMPLES

REMARKS

ASSAYS

Incohesive sandy SOIL
with well rounded quartz grains
to 160'

170

Hard white tremolitic
DOLOMITE MARBLE
Final 9" yellow-brown
limonitic

100

174'9"

CAVITY

182' Broken, weathered, pale grey
SANDY TREMOLITE SCHIST

66

185' 12" of DOLOMITE MARBLE
then weathered broken
MARBLE & TREMOLITE SCHIST

189'

92

CAVITY

196' RUBBLE tremolitic & silicified
198' schist & quartz fragments

88

CAVITY.

205'

QUARTZ RUBBLE

207'

88

CAVITY

219'

Fragmentary & broken.
Quartz fragments,
silicified & weathered
sericitic SCHIST

91

229'

END OF HOLE.

DRILL NO.
TYPE *SULLIVAN*

CASING IN HOLE DURING DRILLING

TIME

EXPLANATION

HEAD OFFICE

CHILLER *ATLANTIC*

10' = 1"

REFERENCES

LOGGED BY

CSP

DRAWN BY

CEP

CHECKED BY

SHEET *1* OF *1*

DRAWING NO.

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE* REMARKS *Testing EM Anomaly*
 HOLE No. *BMR 64-6* CO-ORDINATES *318N 133E (Mt Fitch No. 1 Grid)* A.L. GROUND
 LOCATION *West of Mt. BURTON across Finnis River* ANGLE FROM HORIZONTAL *55°* DIRECTION *87°M*

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
Soil on ALLUVIUM incohesive sand.							
60' Banded SLATE & SCHIST Very broken 65'- bedding 45° to core				750			
82'-83' Quartz Vein			Py 1%			60'-122' Dip 80° West	
94' - bedding 45° to core				86			
108' - bedding 50° to core							
109'6"-110'6" Quartz vein Py 3%							
118'-118'9" Quartz vein Py 5%							
122' DOLERITE			Py 1-2% Pr 5%				
				88			
157'6" SHEAR 10° to core DOLERITE & BLACK SLATE			Py 1-2% Pr 5%	75			
162'6" BLACK SLATE bedding 45°±10° to core			Py 1-5%			Dip about 80° West	
				75			
185'-185'6" irregular Quartz Py 1%			188'-188'6" Py + 2% Ch 10%				
188'6" DOLERITE			Py + Pr 1-5%	95			

DRILL NO.	EXPLANATION	HEAD OFFICE
TYPE <i>SULLIVAN</i>	CASING IN HOLE DURING DRILLING <i>H</i> <i>Regional Strike N Dip West</i>	LOGGED BY <i>CEP</i>
DRILLER <i>ATLANTIC</i>	REFERENCES <i>20' = 1"</i>	DRAWN BY <i>CEP</i>
COMMENCED	<i>Py Pyrite</i>	CHECKED BY
COMPLETED	<i>Pr Pyrrhotite</i>	SHEET <i>1</i> of <i>2</i>
	<i>Ch Chalcopyrite</i>	DRAWING NO.

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE*REMARKS *Testing EM Anomaly*HOLE No. *BMR 64-6*CO-ORDINATES *318N 133E (Mt. Fitch No. 1 Grid)*

R.L. GROUND

LOCATION

ANGLE FROM HORIZONTAL *55°*DIRECTION *87° (Mag)*

200'

DESCRIPTION OF CORE	R.L. CASING	DEPTH SIZE OF CORE	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
<i>BLACK SLATE</i> <i>Part brecciated with</i> <i>inclusions of Quartz & other</i> <i>chert.</i> <i>215' - bedding approx 45° to core</i> <i>228' - 228'4" - Quartz vein</i> <i>Py + Pr 5%</i>			<i>Py 10%</i> <i>Pr Tr.</i>			<i>Dip about 80° W.</i>	
<i>236'</i> <i>CALCULUTITE</i> <i>most calcareous, some</i> <i>dolomitic.</i> <i>242' - 242'4" Quartz + 20% black</i> <i>SLATE Py 2% Pr Trace</i> <i>245' bedding 45° to core</i> <i>261' bedding 60°-70° to core</i>			<i>Py Tr.</i>	<i>95</i>		<i>245' Dip 80° W.</i> <i>261' Dip 55°-65° W.</i>	
<i>278' - 1" Quartz</i> <i>278'</i> <i>BLACK SLATE</i>			<i>Pr > Py</i> <i>5-10%</i>	<i>100</i>			
<i>285'</i> <i>287'</i> <i>TRANSITION</i> <i>CALCULUTITE</i> <i>most calcareous to 296'</i> <i>dolomitic 296' - 318'</i> <i>295' bedding 45° to core</i> <i>311'6" - 312' Quartz Py + Pr 5%</i>			<i>Py + Pr</i> <i>5%</i>	<i>95</i>		<i>Dip 80° West.</i>	
<i>318'</i> <i>BLACK SLATE</i> <i>321' bedding 65° to core</i> <i>327' - 328' Quartz Pr 5% Py 1%</i>			<i>Py 2%</i>	<i>100</i>		<i>Dip 60° West.</i>	
<i>328'</i> <i>CALCULUTITE</i> <i>Calcareous & dolomitic</i>			<i>Pr > Py</i> <i>5%</i>	<i>100</i>			
<i>338'</i> <i>BLACK SLATE</i> <i>341' & 350' bedding 70° to core</i>			<i>Pr 7%</i> <i>Py 3%</i>	<i>99</i>		<i>Dip 55° West.</i>	
<i>354'</i> <i>END OF HOLE.</i>							

DRILL NO.

TYPE

DRILLER

COMMENCED

COMPLETED

EXPLANATION

CASING IN HOLE DURING DRILLING

REFERENCES

HEAD OFFICE

LOGGED BY

DRAWN BY

CHECKED BY

SHEET

OF

DRAWING NO.

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE AREA* REMARKS *Testing E.M. Anomaly*
 HOLE No. *BMR 64-7* CO-ORDINATES *66N16BW (Dolerite Ridge Grid)* R.L. GROUND
 LOCATION *Dolerite Ridge North* ANGLE FROM HORIZONTAL *55°* DIRECTION *50(M)*

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RECOVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
<i>Friable, fine, sandy ALLUVIUM</i>							
<i>water worn Quartz pebbles at base</i>							
<i>68' DOLERITE</i>							
<i>weathered at top</i>							
<i>75'-82' open joint along core</i>							
<i>86'-88' compound shear along core; Quartz, Py 3%</i>							
<i>96'-102' joint along core with CaCO₃</i>							
<i>131'-133' 1/4" compound shear Quartz, chlorite, trace Py</i>							
<i>Py & subsidiary Pr disseminated & on joints in dolerite 5%</i>							
<i>150'6" Dolerite SCHIST, minor inclusion carb. slate Py 5-20% Pr 1-5%</i>							
<i>157' Black SLATE 75%</i>							
<i>Medium grained silty GREYWACKE 25%</i>							
<i>Irregular contacts, slumping, micro-braccia.</i>							
<i>Bedding variable about 70° to core</i>							
<i>Py 2-5%</i>							
<i>Pr Trace</i>							
<i>195' Black SLATE</i>							

DRILL NO.
 TYPE *SULLIVAN*

CASING IN HOLE DURING DRILLING

EXPLANATION

HEAD OFFICE

LOGGED BY *CEP*DRAWN BY *CEP*

CHECKED BY

SHEET *1* OF *2*

DRAWING NO.

DRILLER *ATLANTIC**20" = 1"*

REFERENCES

COMMENCED

Py Pyrite

COMPLETED

Pr Pyrrhotite

GEOLOGICAL LOG OF DRILL HOLE

PROJECT *RUM JUNGLE AREA* REMARKS *Testing EM Anomaly*
 HOLE NO. *BMR 64-7* CO-ORDINATES *66N 168W (Dolerite Ridge Grid)* R.L. GROUND
 LOCATION *Dolerite Ridge North* ANGLE FROM HORIZONTAL *55°* DIRECTION *50°M*

DESCRIPTION OF CORE	R.L.	DEPTH	LOG	LIFT & CORE RE COVERY %	SAMPLES	REMARKS	ASSAYS
	CASING	SIZE OF CORE					
200' <i>Black SLATE</i> <i>Py 2-5%</i>				97			
230' <i>Black SLATE with Quartz blebs (? ex chart) & slumping. Limestone (CaCO₃) 255'-256' & 252'-254'. Py 5-10%. Pr Trace to 3%. Bedding variable about 70° to core.</i>				97			
280' <i>Schistose sediments with Quartz blebs. ? Altered dolomitic siltstone Py > Pr 5-10% 1' Limestone at base</i>				95			
291' <i>DOLERITE</i> <i>Py 2-5%</i>				100			
354' <i>END OF HOLE.</i>							

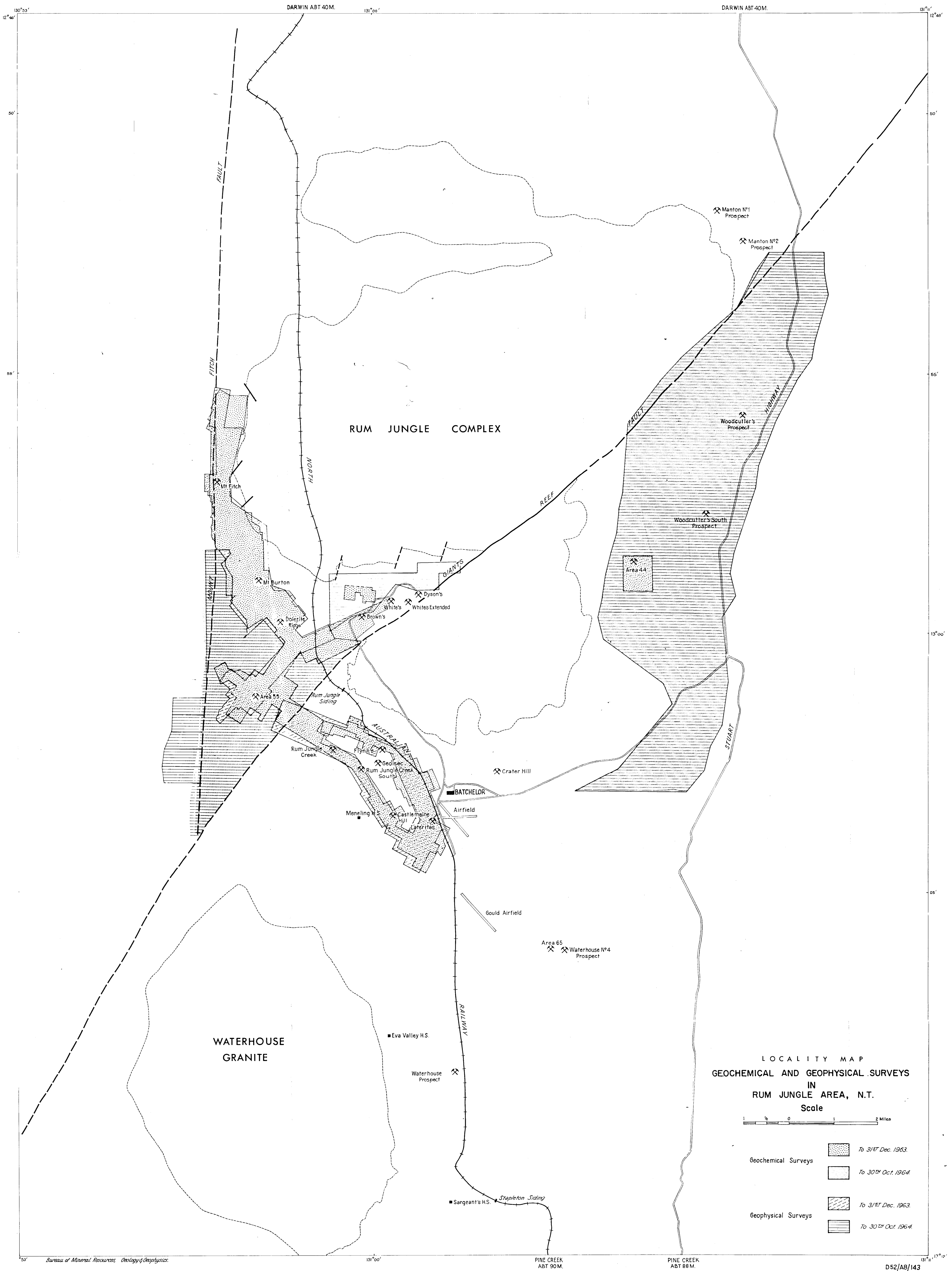
DRILL NO.	EXPLANATION CASING IN HOLE DURING DRILLING <i>H</i>	HEAD OFFICE	
TYPE		LOGGED BY <i>CEP</i>	DRAWN BY <i>CEP</i>
DRILLER	REFERENCES	CHECKED BY	
COMMENCED		SHEET	OF
COMPLETED		DRAWING NO.	

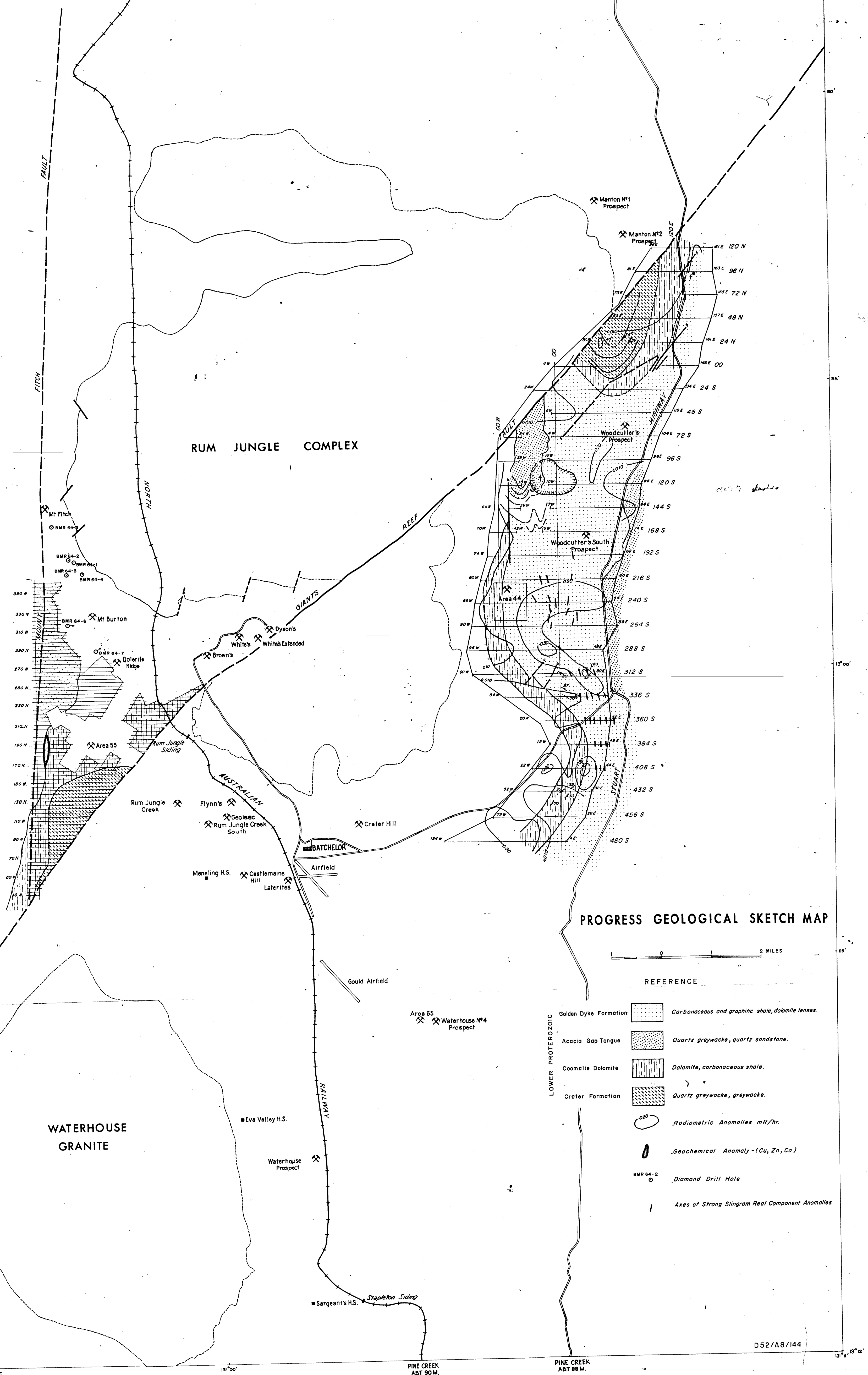
DRILLING RECOMMENDED AT AREA 55*

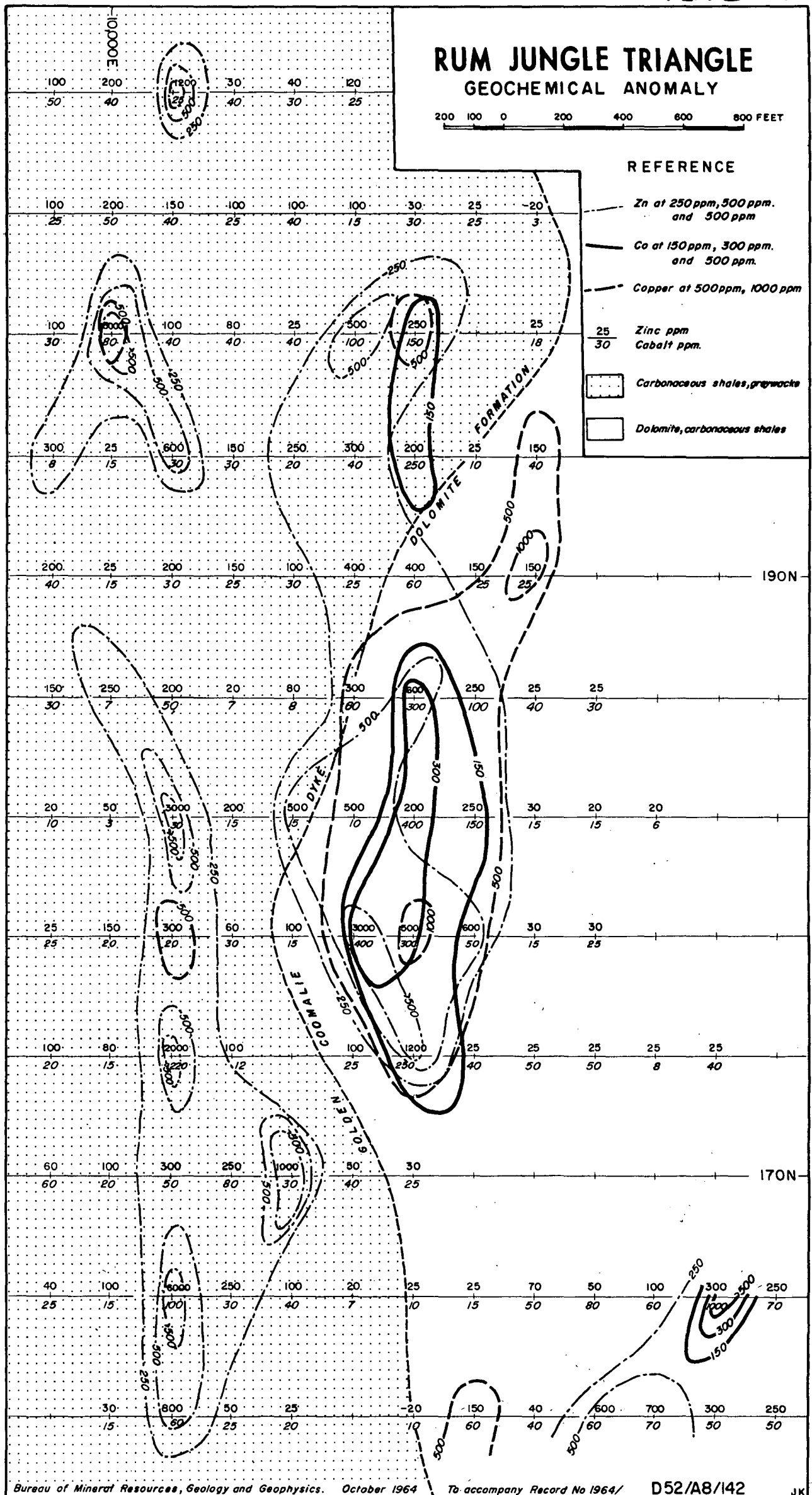
APPENDIX II.

Hole	Co-ordinates		Depth (Feet).	Priority	Comments.
	Easting	Northing			
A	1330W	200S	350	1	(1) To test the most intense electromagnetic anomaly, almost down the plunge of lineation 2 from the peak of the geochemical copper anomaly at 1200W, 400S.
B.	1440W	445S	600	2	(1) To test the suspected extension of the mineralization in the syncline between anticlines 1 and 2 within the electromagnetic anomaly downplunge from the geochemical anomaly. (2) To be continued into limestone even if lead mineralization is encountered in the upper part of the chlorite-schist unit.
C.	1440W	610S	850'	3	(1) To test the suspected extension of the mineralization within the electromagnetic anomaly. (2) To test the downplunge extension of any mineralization intersected in DDE or DDF.
D.	1440W	900S	550'	3	(1) To test the extension of the mineralization within the electromagnetic anomaly downplunge from the peak of the lead anomaly. (2) To test the suspected shear zone on the southern limb of anticline 2.
E.	1100W	500S	550'	1	(1) To test the inferred mineralised shear zone downplunge from the peak of the copper ore-body in the vicinity of the 10' of 1.4% copper encountered in DDA 3. (2) To test the Coomalie Dolomite near the shear zone.
F.	1100W	645S	500	2	(1) Follow up from DDE. (2) To test the inferred mineralised shear zone. (3) To probe for an extension of the inferred major shear zone intersected in DD701 and DD708.
G.	550W	300S	350	1	(1) To test the tail of the geochemical anomaly. (2) To test the extension of the suspected mineralised shear zone. (3) To probe for muscovite schist and examine its contact with the overlying limestone.
H.	657W	900S	200	4	(1) To examine the number ² geophysical anomaly. (See section XX ¹).

* From "Area 55, Rum Jungle, N.T. by P.W. Pritchard.



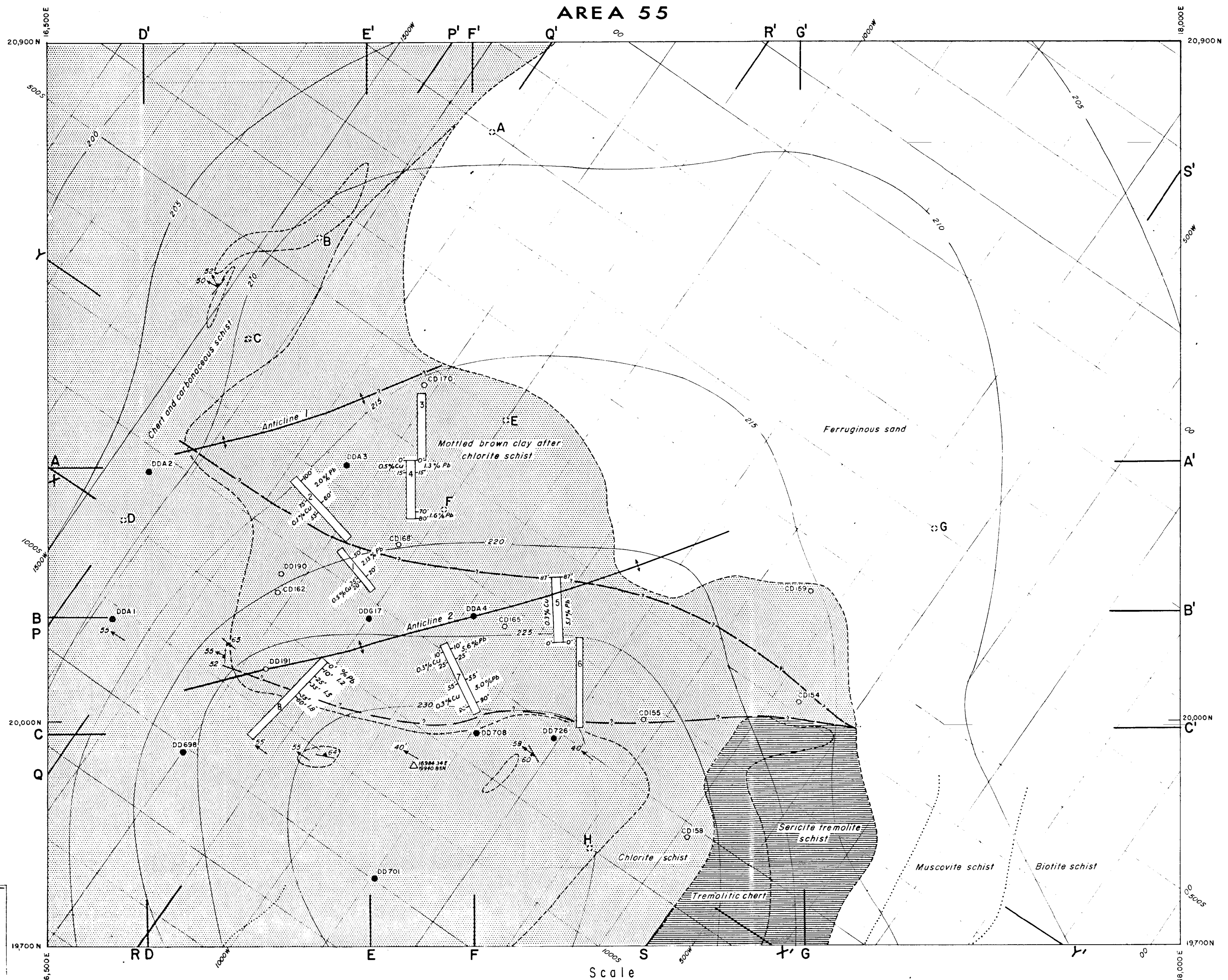




RUM JUNGLE SURVEY, 1963

PLATE 4
GEOLOGY

AREA 55



QUATERNARY

Ferruginous sand

LOWER PROTEROZOIC

Golden Dyke Formation

Coomalie Dolomite

Geological boundary

Geological boundary concealed

Attitude of foliation

Plunge of lineation

Inferred shear zone

Anticline axis

Topographic contour

Costean No. 1

Lands Department Trig. Station

Diamond drill hole

Churn drill hole

Proposed diamond drill hole

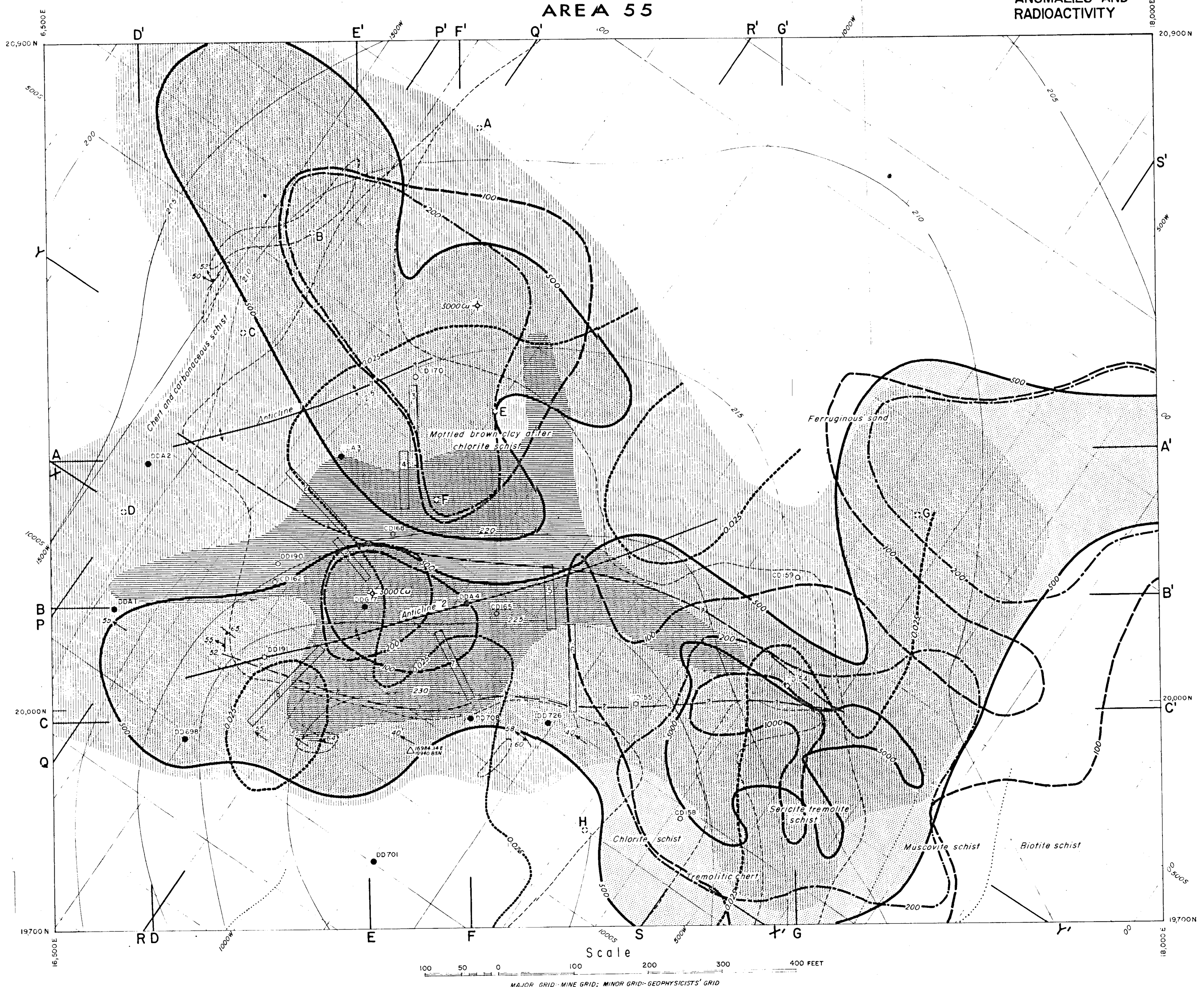
Section line

RUM JUNGLE SURVEY, 1963

AREA 55

PLATE 5

GEOCHEMICAL
ANOMALIES AND
RADIOACTIVITY



QUATERNARY

Ferruginous sand

LOWER PROTEROZOIC

Golden Dyke Formation

Coomalie Dolomite

Geological boundary

Geological boundary concealed

Attitude of foliation

Plunge of lineation

Inferred shear zone

Anticline axis

Topographic contour

Costean No. 1

Lands Department Trig. Station

Diamond drill hole

Churn drill hole

Proposed diamond drill hole

Section line

ISOCHEMICAL LINES FROM BULK WEATHERED ROCK SAMPLES

Lead, 700 to 5000 parts per million

Lead, more than 5000 parts per million

Copper, 500 parts per million

Copper, 5000 parts per million

Copper, isolated assay of 5000 parts per million

Cobalt, 100 and 1000 parts per million

Nickel, 200 parts per million

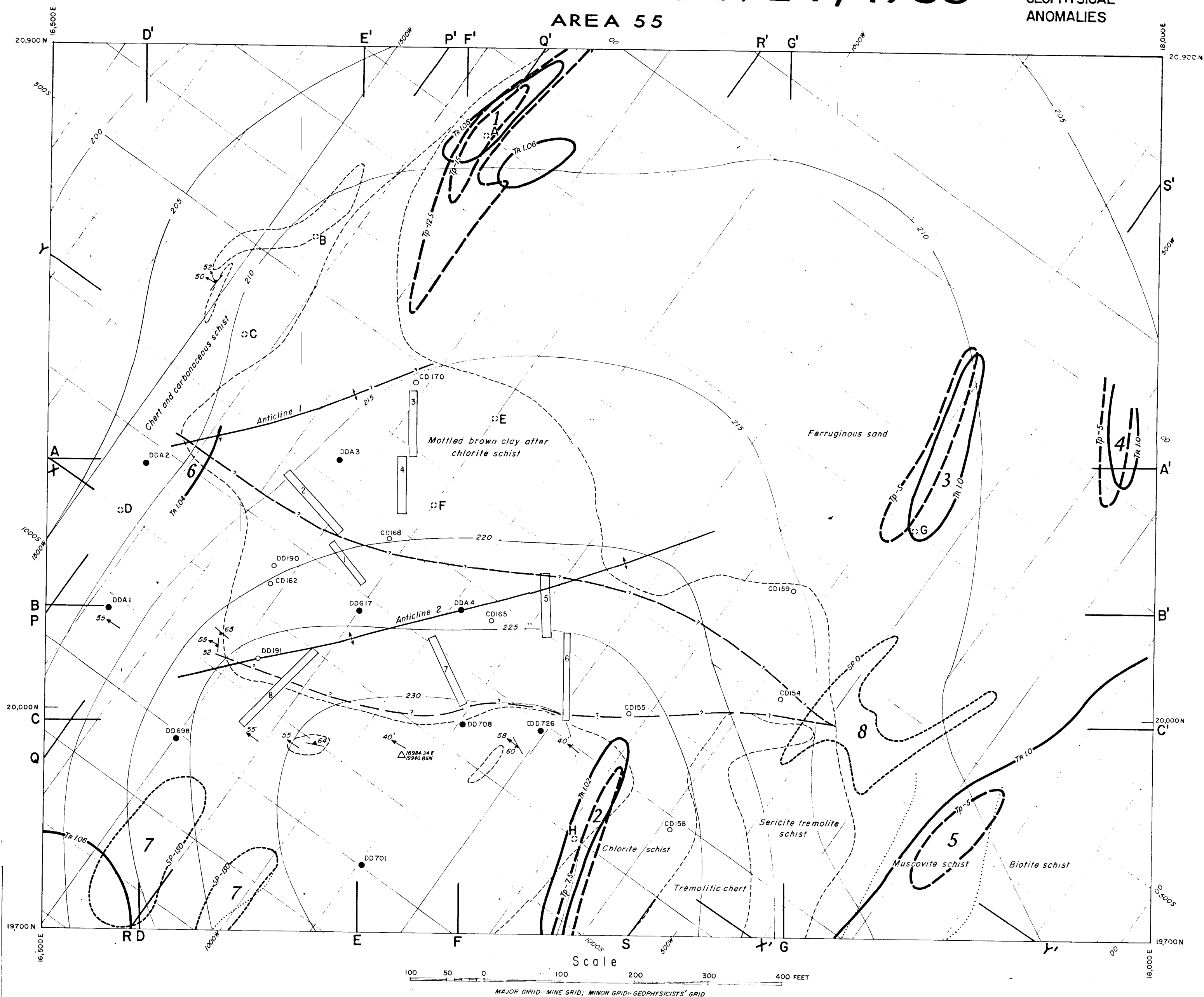
SUBSURFACE RADIOMETRIC CONTOURS BASED ON THE MAXIMUM READING IN AUGER DRILL HOLES BELOW THE "A" SOIL HORIZON

0.025 is equivalent to 0.064 mR/Hr

RUM JUNGLE SURVEY, 1963

AREA 55

PLATE 6
GEOPHYSICAL
ANOMALIES



QUATERNARY

Ferruginous sand

LOWER PROTEROZOIC

Golden Dyke Formation

Coomalie Dolomite

Geological boundary
Geological boundary concealed
Attitude of foliation
Plunge of lineation
Inferred shear zone
Anticline axis

Topographic contour
Costean Nr.1
Lands Department Trig. Station
Diamond drill hole
Churn drill hole
Proposed diamond drill hole
Section line

SELECTED GEOPHYSICAL CONTOURS (Data as of 1962)

Turam ratio contours (102, 104, 106)
Turam phase contours (-5, -7.5, -12.5, -15 degrees)
Self potential contours (0 and -150 millivolts)

3 Anomaly number