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Rum Jungle Area (Hundred of Goyder) Geophysical Surveys, Northern Territory, 1968

by

J. E. F. Gardener

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SUMMARY

Langron (1969) made a re-assessment of geophysical survey results in the Hundred of Goyder, Rum Jungle Area, N.T., and recommended follow-up work to clarify problems which cropped up. This report describes the results of this follow-up work. All the EM and IP anomalies investigated were found to be due to carbonaceous slates, shears, faults or weathering effects. The origin of S-P anomalies is unknown.

1. INTRODUCTION

The Bureau of Mineral Resources, Geology & Geophysics (BMR) has conducted geophysical surveys in the Rum Jungle area since 1949. Langron (1969) made a re-assessment of the results of geophysical surveys in the Hundred of Goyder, and recommended follow-up work to clarify some problems which arose. This Record describes the results of this follow-up work. The letters and numbers in brackets after each area heading refer to the series of maps covering the Rum Jungle area as shown in Plate 1. This report is supplementary to Langron's report and should be read in conjunction with it.

2. GEOLOGY

Spratt (1965a) has described the general geology of the area. In the Hundred of Goyder, the sediments are mainly of Lower Proterozoic age on the western margin of the Pine Creek Geosyncline. These sediments overlie possibly Archaean granite complexes. In addition laterite remnants, probably of Tertiary age, occur.

The oldest rocks are the Batchelor Group of shelf deposits which are conformably overlain by the Goodparla Group of trough deposits. The stratigraphic order is:

Goodparla Group:

- Acacia Gap Tongue
- Golden Dyke Formation

Batchelor Group:

- Coomalie Dolomite
- Crater Formation
- Celia Dolomite
- Beestons Formation

3. METHODS

The methods used were standard methods described in the literature. They are briefly summarized here.

The Slingram (or EM Gun) method is an electromagnetic method that uses a moving source, a moving receiver, and a horizontal loop Coil spacing was 200 feet and frequency was 1760 Hz.

The Turam method is an electromagnetic method that uses a fixed source, a moving receiver, and a horizontal loop. In the surveys described here, the primary fields were produced from large rectangular loops on the ground. Frequencies used were 220 and 660 Hz.

The self-potential (S-P) surveys were made using fixed base stations; the base stations were tied to a common datum in each area surveyed.

In the induced polarization (IP) surveys measurements were made in the frequency domain. Dipole-dipole electrode geometry was used. Results plotted are apparent resistivity, frequency effect, and metal factor. Dipole length was 100 feet and frequencies used were 0.3 and 5 Hz.

Surface radiometric readings were made with Harwell type 1368A ratemeters (geiger counters).

4. RESULTS AND INTERPRETATION

Mount Fitch North (E32)

Slingram, S-P, and IP surveys were made in the Mount Fitch North area to investigate Slingram Anomaly A described by Ashley (1965, p. 7) and to follow the anomaly northwards. A surface radiometric survey was also made. The 1968 grid is on Territory Enterprises Proprietary (T.E.P.) mine grid co-ordinates; the 1963 grid is the Mount Fitch No. 1 grid.

Results are shown in Plates 2 and 3. The geology shown is by Pritchard and French (1965, Plate 1, Sheet 1) with the exception that their Beestons Formation is shown here as Crater Formation. Recent work by Miezitis (pers. comm.) shows this to be the more likely interpretation.

Anomaly A follows the Coomalie Dolomite/Crater Formation, boundary. This boundary dips west at about 45 degrees; the Slingram profiles also indicate a dip of about 45 degrees west. A change in the strike of the anomaly axis occurs between 520N and 524N. North of 520N the real-component anomaly virtually vanishes and the imaginary-component anomaly becomes much weaker, indicating that the source of the anomaly has become much less conductive. Pritchard and French (1965) infer a fault at 520N, which is evidently related to the change in the anomaly.

Anomaly A is mainly in the imaginary component and continues north from 520N as shown in Plate 2. A second anomaly about 600 feet west of Anomaly A appears at 540N and continues north.

The results of the S-P survey (Plate 2), showed no significant anomaly. However, there is a weak, ill-defined S-P trend from 500N to 520N, suggesting that a correlation exists between the Slingram and S-P results.

A geochemical survey was made in the Mount Fitch North area in 1963 but no significant anomaly was found associated with Slingram Anomaly A (Pritchard & French, 1965, Plates 3 and 4, Sheets 1).

In the area of the Mount Fitch Prospect, geochemical anomalies west of Slingram Anomaly A have been drilled and some of the holes (diamond-drill holes DG22, 23, 25, 26 and 27) penetrated Crater Formation. The geological logs of these holes (Pritchard & French, 1965, Appendix 1) show a shear along the Coomalie Dolomite/Crater Formation boundary. Some sulphide mineralization was found in the holes but insufficient to produce the Slingram anomaly. The anomaly is most likely due to conductive water in the shear.

IP surveys were made on Traverse 490N (Mount Fitch No. 1 grid) and Traverse 504N (T.E.P. mine grid). Slingram profiles are shown with the IP results (Plate 3). The Slingram anomaly on Traverse 504N is due to a narrow (50 feet wide at the most) conductor dipping west at about 45 degrees, and with its top within 50 feet below 137E. The resistivity results are consistent with this interpretation. The weak, erratic frequency-effect results may be due to minor disseminated sulphide in the Coomalie Dolomite west of the conductor.

The Slingram anomaly on Traverse 490N is due to the same conductor as on 504N. West of the anomaly the Slingram real-component profile is well above the 100% level and the resistivity profile shows low resistivity to the western limit of the IP survey (130E). These effects could be due to a conductor approximately parallel to the traverse. Pritchard and French (1965) infer a fault trending WSW from 496N. If this is a wide fault or if there are faults parallel to it, then conductive water in this fault zone could explain the effects. The weak frequency-effect anomaly is probably due to minor disseminated sulphides. The geochemical results certainly did not indicate major sulphides.

Slingram Anomaly A is interpreted as due to conductive water in an unmineralized shear.

No significant radiometric anomalies were found. The profiles (Plate 2) show an increase in radioactivity on the eastern parts of some traverses; this is due to contamination from the granite east of the grid.

Mount Fitch (E41, E42)

Langron (1969) discussed the radiometric anomalies near the Finniss River downstream from the Rum Jungle uranium treatment plant. He considered that the anomalies are most likely due to radioactive waste material from the plant but as the anomalies are close to a supposed lithological boundary within the Golden Dyke Formation he suggested that the anomalies on Traverse 410N should be checked by auger drilling.

The surface radiometric survey on Traverse 410N was repeated in 1968 and the profile obtained is shown in Plate 4. A careful note was made of the ground surface and the anomaly (107E to 114E) is definitely in a dried-up flood plain next to the Finniss River. The water has evaporated and radioactive material from the treatment plant has been left behind. This whole area, including Traverse 410N, was auger drilled in 1965 by T.E.P. and "no radiometric or geochemical anomalies were indicated" (Spratt, 1965b, p. 1). It is concluded that no further auger drilling is warranted.

Langron also recommended that the surface radiometric contour lines east and west of the Mount Fitch Prospect be closed off. The results of the radiometric work carried out for this purpose are in Plate 4.

East of the Mount Fitch Prospect, Traverses 438N and 440N were resurveyed and the traverses extended east to granite outcrop. The results show that the eastern extension of the surface radiometric anomaly at the Mount Fitch Prospect has disappeared, and that the granite in this area is radioactive.

West of the Mount Fitch Prospect, Traverses 440N, 442N, and 444N were resurveyed and extended west. No surface radiometric anomaly was found. The anomaly on the western end of Traverse 440N is on a dried flood plain of the Finniss River and is due to radioactive material from the Rum Jungle treatment plant.

Mount Burton (E52)

In 1968, S-P and IP surveys were made on Traverses 372N and 384N of the Mount Fitch No. 1 grid and extended along Traverses 370.75N and 382.75N respectively of the Mount Fitch No. 2 grid. These traverses had been included in the Slingram surveys carried out in 1963 (Ashley, 1965) and some of the conductors indicated were drilled in 1964. The drilling results and Slingram profiles were presented by Ashley (1966, Plate 13). The S-P and IP surveys were made to further examine the conductors and also to test the interpretation based on Slingram model test work.

The results are shown in Plate 5. No significant S-P anomalies were found. IP anomalies were found to be associated with the electromagnetic anomalies. The Slingram Anomalies E and F on Traverse 372N and the associated IP anomalies are due to narrow, steeply dipping conductors and can be adequately explained by the black shale containing pyrite and pyrrhotite intersected by DDH 64-3.

From the Slingram model tests (Ashley, 1966) Anomaly H on Traverse 370.75N would be interpreted as a wide conductor at a depth of 50 to 100 feet. The IP results are consistent with this interpretation. Both the Slingram and IP anomalies are explained by the massive amphibolite carrying pyrite and pyrrhotite intersected by DDH 64-4. The electric log of the hole indicated low resistivity in the amphibolite below 70 feet.

Slingram anomalies marked E and F on Traverse 384N were interpreted by Ashley (1966) as due to one wide conductor between 125E and 130E, with its upper surface about 50 feet below the surface. This interpretation is confirmed by the IP results. The pyritic black slate and pyritic amphibolite intersected by DDH 64-2 adequately account for both Slingram and IP results.

Slingram anomaly H was attributed by Ashley (1966) to pyritic amphibolite encountered in DDH 64-1. The horizontal width of the amphibolite was estimated to be about 450 feet. The IP results can be similarly explained by the pyritic amphibolite and are in reasonably good agreement with the Slingram results.

In general the 1968 work has confirmed the previous interpretation but has not added anything significant to the information on the conductors.

Langron recommended that Slingram Anomaly M in the Dolerite Ridge Extended area (Ashley, 1965, p. 8 and Plates 5 and 6) be tested by drilling. Anomaly M is due to a very strong conductor and has all the characteristics to be expected from a conducting carbonaceous slate.

The surface geology is shown as pyritic quartzite and sericitic slate of the Acacia Gap Tongue (Miezitis, 1967, Plate 6a).

Two diamond-drill holes (350 and 354) have been drilled by T.E.P. near Anomaly M. The summarized lithological log of 350 is:

0	to 358 ft	Alternating sequence of sericitic slate, black (carbonaceous) slate and quartzite.
358 ft	to 497 ft	(end of hole) black carbonaceous slate.

The summarized lithological log of 354 is:

0	to 293 ft	Interbedded quartzite and grey slate
293 ft	to 400 ft	Graphitic slate, schist, black (carbonaceous) slate and quartzite
400 ft	to 501 ft	Amphibolite, quartzite and black (carbonaceous) slate.
501 ft	to 521 ft	Tremolitic slate
521 ft	to 593 ft	(end of hole) Tremolitic limestone.

The surface geology as mapped is not an accurate reflection of the lithology found in the drill-holes. Bands of carbonaceous slate occur in the area. Slingram Anomaly M is interpreted as due to a near-surface bed of carbonaceous slate. The area was covered by a geochemical survey in 1965 and no anomalies were found (Spratt 1965b, p. 1). Further drilling does not seem to be warranted.

Rum Jungle Triangle (northern section: E62, E72, E61, E71)

This area was surveyed with Slingram in 1964 along east- west traverses (Ashley, 1966). However, the strike of the beds is approximately westerly and both Ashley and Langron recommended a Slingram survey along north-south traverses to test the area adequately. In 1968, north-south traverses 400 feet apart were pegged and Slingram and S-P surveys were made. Geology and S-P and Slingram real-component contours are shown in Plate 6. One localized S-P anomaly was found in what is mapped as black slate. The negative centre is over a quartz vein which may indicate a source associated with a geological structure, especially as Dodson and Shatwell (1965, Plates 11 and 15) show no geochemical anomaly over the negative centre. The Slingram anomalies shown in Plate 6 are also in an area mapped from auger cuttings by Dodson and Shatwell as black slate. No significant geochemical anomalies occur over the Slingram anomalies, and it is improbable that they are due to base metal mineralization. Ashley (1966, Plate 9) made a magnetic survey on four north-south traverses (100E, 120E, 140E, and 164E) in this general area and found a strong magnetic anomaly trending west. This anomaly is in the northern part of the 1968 area under discussion and has maxima at 249.5N/120E and 247N/140E, close to the Slingram anomaly areas. The area is mapped as black slate and sericitic slate of the Golden Dyke Formation, with no significant geochemical anomalies (Dodson & Shatwell, 1965). The 1967 aeromagnetic survey (Browne-Cooper and Gerdes, 1970) shows this area as part of a strongly magnetically disturbed area. Existing diamond-drilling on some of these magnetic anomalies farther north (e.g. DDHs 64-1, 64-2, 64-4) has intersected amphibolite. Although only DDH 64-4 actually intersected pyrrhotitic amphibolite, a reasonable explanation for the magnetic anomalies is pyrrhotite in the amphibolite. In DDH 64-2 interbedded amphibolite and carbonaceous shale were intersected. The Slingram anomalies in the 1968 survey area under discussion could be due to carbonaceous black slate as mapped on the surface, or to amphibolite.

Browns Southwest (E62)

The geological strike in this area is roughly NNW. Part of the area had already been covered by geophysical surveys with traverses running 155° (Daly, Horvath & Tate, 1962; Douglas, 1963) and part had been covered in the 1961 Dolerite Ridge survey (Rowston, 1962). Some of these Dolerite Ridge traverses were repegged and extended in 1968, and Slingram and S-P surveys were made in the area. These traverses are at 50°, roughly at right angles to the strike of the beds.

Results are shown in Plate 7. The shear shown on the geological plan along Traverse 6S affects the Slingram and S-P contours. Traverses 6S and 8S are approximately parallel to the shear, and the Turam and Slingram anomalies found here in the earlier surveys were not detected.

The main feature of the Slingram results is the ridge of real-component values over 100% roughly coinciding with the area mapped as bioitite calcite slate. No definite Slingram anomaly was found. Variations in Slingram results are probably due to variations in lithology and weathering.

Dolerite Ridge (E62)

Langron recommended that the core of DDH 64-7 be examined for base metal content. DDH 64-7 tested Slingram Anomaly U (Ashley, 1965, p. 9 and Plates 7 and 8), and found carbonaceous slate and dolerite interbedded. Anomaly U is due to a strong conductor; as the slate in DDH 64-7 does not appear to be more carbonaceous than slate in other drill-holes, Langron suggested that the increase in conductivity may be due to an increase in base metal content. Scraped core samples from DDH 64-7 were sent to Australian Mineral Development Laboratories (AMDEL) for semi-quantitative spectrographic analysis. Results are in the Appendix; no significant anomalies were found. The summarized geophysical and geological logs (Ashley 1966, Plate 13; Prichard, 1964, Plate 6) clearly show that Anomaly U is due to a conducting carbonaceous slate with poorly conducting dolerite above and below. The dolerite was pyritic (up to 5% maximum) and the sediments up to 10%; pyrrhotite was present but subsidiary (Prichard, 1964, p. 4). No reason was found for the strength of the Slingram anomaly. One possibility is differential weathering. Hard dolerite above the slate could have protected the hanging wall of the slate from weathering, and unweathered slate may be relatively close to the surface here.

Area 55B (E72)

Turam, IP, and S-P surveys were made in part of Area 55B to investigate electromagnetic anomalies found in previous surveys (Douglas, 1963). Two Turam surveys were made, with primary field cables on opposite sides of the area surveyed.

The Turam results (Plate 8) show a central non-conductive zone with conducting zones on either side. The conducting zone on the western side is Douglas' Anomaly B. The strike of the anomaly axis corresponds better with the strike of the faults shown than with the beds, and the anomaly is interpreted as due to a fault zone. This was Douglas' (1962b, p. 3) interpretation also. The weaker conducting zone on the eastern side of the survey area is in Coomalie Dolomite. It is parallel to the western anomaly and is also probably due to a fault. The faults shown in Plate 8 are roughly parallel to the Giants Reef Fault and may well be related to it.

The anomaly at 16W/16N is part of Douglas'(1963) Anomaly 1, which is due to the fault shown on the geological plan.

The IP results (Plate 9) on Traverse 4N also show a non-conductive zone flanked by conductors. The slight frequency effects may be due to carbonaceous material or minor sulphides. The IP surveys on Traverses 6N and 8N did not cover the eastern Turam anomaly. The western Turam anomaly appears in the resistivity results. The resistivity lows at 19W/6N and 19W/8N are Douglas' Anomaly 1 again, and are due to the fault shown. The IP survey on Traverse 12W was approximately along the axis of the western Turam anomaly and was made to see if frequency-effect anomalies occur on the Turam anomaly. As can be seen, no significant frequency-effect anomaly was found, and no major sulphide zones are indicated on any of the traverses surveyed.

No S-P anomalies were found (Plate 8). Traverses 4S to 0 were also covered by an S-P survey in 1960 (Douglas, 1962b) and the values obtained in 1968 have been tied-in to the 1960 datum point. The values are all large and positive.

The results of the Turam surveys using primary field cable loops on either side of the area are similar, though the anomalies are a little better defined with the western loop.

Rum Jungle Triangle (southern section: E81, E82)

Turam, S-P, and IP surveys were made over Slingram Anomaly 1 found in 1964 (Ashley, 1966). Results and geology are shown in Plate 10.

The Turam results show that the Crater Formation is a poor conductor. An anomaly occurs on the Crater Formation/Coomalie Dolomite boundary. This is probably an inter-formational shear analogues to the shear on the Crater Formation/Coomalie Dolomite boundary in the Mount Fitch North survey area. Coomalie Dolomite is normally a poor conductor, and the Turam anomalies found in it are probably due to further shears. No geochemical anomalies occur in this area (Dodson & Shatwell, 1965, Plate 1) and the shears can be assumed to contain no significant mineralization. These shears are approximately parallel to the Giants Reef Fault about one mile to the south-east and as suggested by Langron, are probably related to it.

IP surveys were made on Traverses 126N and 136N. The results (Plate 11) confirm the Turam results. The Crater Formation is a poor conductor and the Coomalie Dolomite is a conductor in this area. The small frequency effects may be due to minor sulphides. The geological boundary on Traverse 136N (Plate 11) is taken from the geological plan in Plate 10. However, the resistivity results indicate that the boundary is about 200 feet east of its mapped position; i.e. it should be at 118E. No outcrop occurs here and the mapped boundary is from auger cutting from holes 200 feet apart on traverses 400 feet apart (Dodson & Shatwell, 1965). Traverse 136N was not auger drilled and the boundary is inferred from results on Traverses 134N and 138N and could be easily misplaced 200 feet.

No S-P anomalies were found. The contours (Plate 10) show a rough correlation with geology.

Ashley (1966) and Browne-Cooper and Gerdes (1970) show magnetic anomalies in the area of the 1968 survey. The anomalies are in the Crater Formation. No outcrops occur here, but the Crater Formation is known to contain beds of haematite boulder conglomerate which can be highly magnetic, and the anomalies are most probably due to these beds.

Power Line (E83, E93, E94)

Turam and S-P surveys were made in the southern part of the Power Line area (Douglas, 1962a) to further examine electromagnetic anomalies there.

The 1968 grid is on the T.E.P. mine grid co-ordinates as shown on compilation maps E83, E93 and E94. After the Turam survey was completed, the 1961 and 1968 geophysical results were compared and a discrepancy was found in the anomaly positions. The relative positions on the old and new grids of the telephone lines, fences, railway line and power line (dismantled between 1961 and 1968) were checked and it seems that the traverses of the old and new Grids are in the same direction but the new grid is about 200 feet south and 200 feet west (grid directions) of the old grid. This is due to an error in the compilation maps.

To avoid interference to the Overland Telephone line the Turam primary field cable loop was laid south (grid direction) of the western part of the surveyed area, and north of the eastern part of the surveyed area.

The electromagnetic anomalies in the Power Line area are part of a continuous zone of anomalies extending as far as Rum Jungle Creek (Daly, Rowstone & Douglas, 1962). The anomalies in the Castlemaine and Batchelor Laterites grids have been drilled by T.E.P.. M.J. Smith (in prep.) has made resistivity and IP measurements on the cores of many of the drill-holes and has concluded that none of the anomalies is due to sulphides. He concludes that the anomalies are due to carbonaceous slate, shears, or weathering effects.

The 1968 Power Line grid was mapped as Coomalie Dolomite in 1962-64 by Pritchard, Barrie and Jauncey (1966, Plate 5). The 1968 Turam anomalies (Plate 12) are weak and are considered to be due to weakly conducting shears or to slates interbedded within the Coomalie Dolomite.

The fence shown in Plate 12 caused ratio lows and phase difference highs, as did the railway line just north (grid direction) of Traverses 124E to 144E. No S-P anomalies were found.

Langron recommended a geochemical survey over the 1968 survey area. However, in view of the disappointing geophysical results and the discouraging radiometric, geochemical, and diamond-drilling results in the nearby Batchelor Laterites and Castlemaine areas (Miezitis, 1967, p. 75-76), it is doubtful whether a geochemical survey is justified in the Power Line area.

Batchelor Laterities Extended (E93, E94)

Langron recommended that the cores of T.E.P. diamond-drill holes 677, 685, and 691, which test electromagnetic Anomaly A in the Batchelor Laterites Area Extended (Douglas, 1964) be re-examined, and that geophysical logs of the holes be made.

The holes had collapsed, and no geophysical logs were made. However, M.J. Smith (in prep.) made resistivity and IP measurements on the core and re-examined the drill cores. He concluded that Anomaly A is due to a bed of carbonaceous slate.

IP and S-P surveys were made over Anomaly A in 1968 and the results are shown in Plate 13. No significant S-P anomaly was found. The frequency-effect pattern is probably a weathering effect. A definite zone of low resistivity occurs on Anomaly A.

5. CONCLUSIONS

As a result of a re-assessment of geophysical surveys in the Hundred of Goyder, a number of geophysical anomalies were further investigated in 1968. Many of the electromagnetic anomalies were found to be due to faults and shears, some of which are probably related to the Giants Reef Fault. Other electromagnetic anomalies were found to be due to carbonaceous shale and slate and to amphibolite; most of the shale, slate, and amphibolite is pyritic, and some is also pyrrhotitic. None of the anomalies had significant geochemical anomalies associated with them, and none are considered to be related to significant mineralization. The IP survey results confirmed the existence of the electromagnetic anomalies but did not reveal any significant mineralization. Only minor S-P anomalies of unknown origin were found.

In the Mount Fitch area, the granite east of the prospect was found to be anomalously radioactive; other anomalies were found to be due to radioactive material from the Rum Jungle treatment plant.

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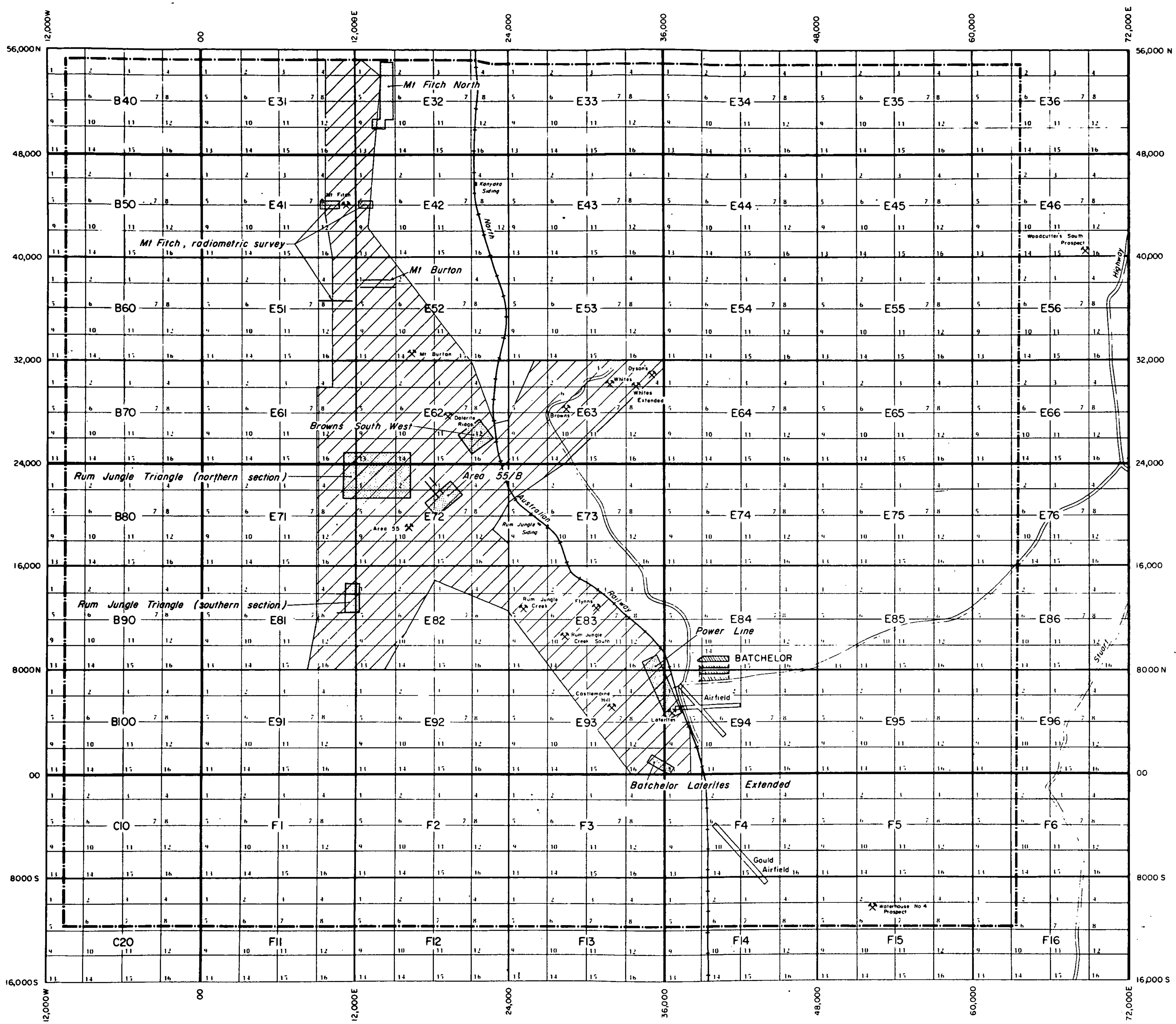
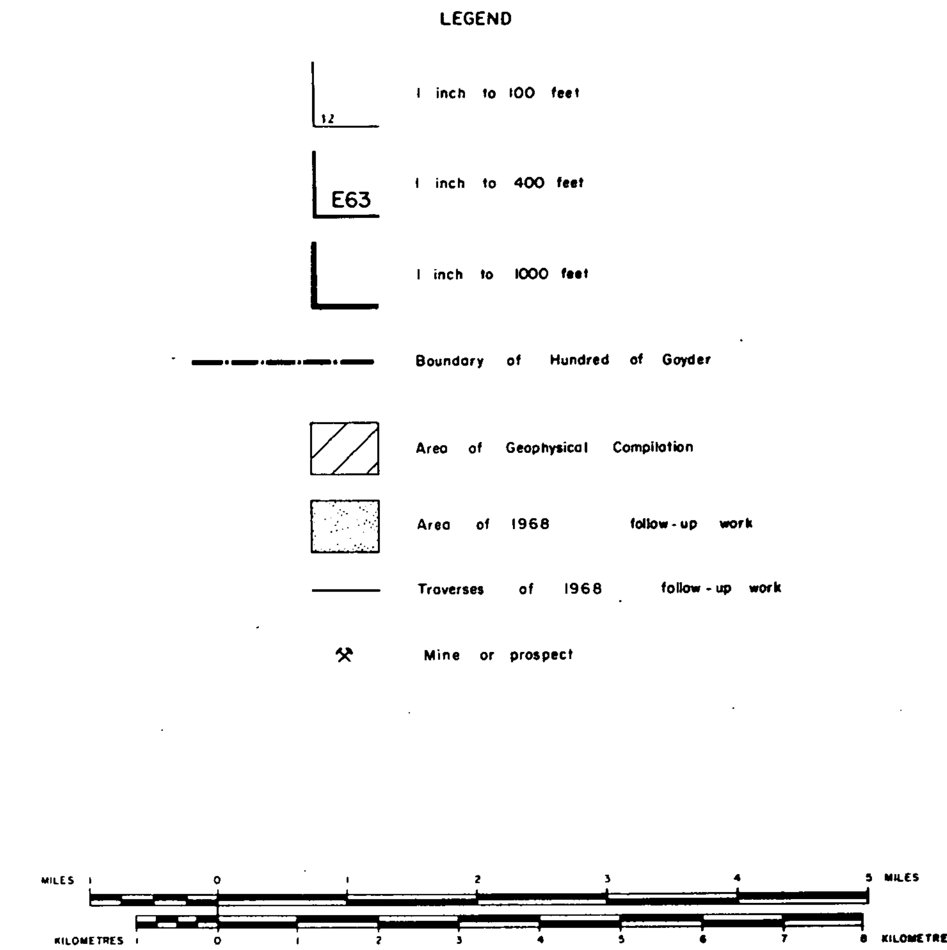
APPENDIX

ANALYSIS OF CORE FROM DDH G4-7, DOLERITE RIDGE
(From Australian Mineral Development Laboratories Report AN2380/69)

Semi-quantitative spectrographic analysis
Results in p.p.m.
X = not detected

Depth	Cu	Pb	Zn	Sn	Cd	Bi	Ag	Ga	Ge	Co	Ni	Cr	V	W	Mo	Mn	Nb	Be	Th
0 - 25'	80	8	X	3	X	1	0.6	15	X	200	150	600	400	X	X	1,500	20	1	X
25 - 50'	100	8	50	X	3	1	0.5	15	X	200	300	1,000	400	X	X	3,000	X	1	X
50 - 75'	25	8	30	X	X	1	0.2	10	X	400	300	1,000	500	X	X	3,000	X	1	X
75 - 99'	150	20	80	2	X	1	1.	20	X	500	500	1,000	800	50	X	2,000	X	X	X
99 - 122'6"	120	15	120	2	X	1	1.5	20	X	200	300	800	600	200	X	2,000	X	1	X
122'6" - 147'6"	120	30	150	2	X	1	1.5	20	X	300	300	500	600	100	X	2,000	X	1	X
147'6" - 171'9"	80	20	200	3	X	2	2.	20	2	300	600	500	800	200	5	1,000	X	4	X
171'9" - 196'	120	50	80	4	X	2	2.	30	1	200	500	500	1000	300	30	600	X	4	X
196 - 221'	120	20	600	3	10	2	1.5	10	1	150	800	400	800	150	30	800	20	5	X
221 - 244'	120	10	300	4	5	2	1.5	3	2	150	400	400	500	300	20	1,500	20	3	X
244 - 268'	150	40	1,000	4	10	3	1.5	15	1	150	600	400	500	200	15	600	X	4	X
268 - 291'	150	40	100	3	3	1	3	15	1	80	150	300	400	50	10	800	X	4	X
291 - 315'6"	120	20	100	3	3	X	2	20	1	300	150	500	500	200	X	3,000	X	1	X
315'6" - 340'6"	120	30	150	3	X	1	2	30	1	400	200	600	500	200	X	2,000	X	1	X
340'6" - 354'	120	20	120	1	X	X	1.5	10	1	300	200	600	500	100	X	2,000	X	X	X





HUNDRED OF GOYDER, RUM JUNGLE AREA

LOCALITY PLAN

(Based on D52/B0-50, D52/B7-447)

To accompany Record No. 1971/22

D52/B7-447-1

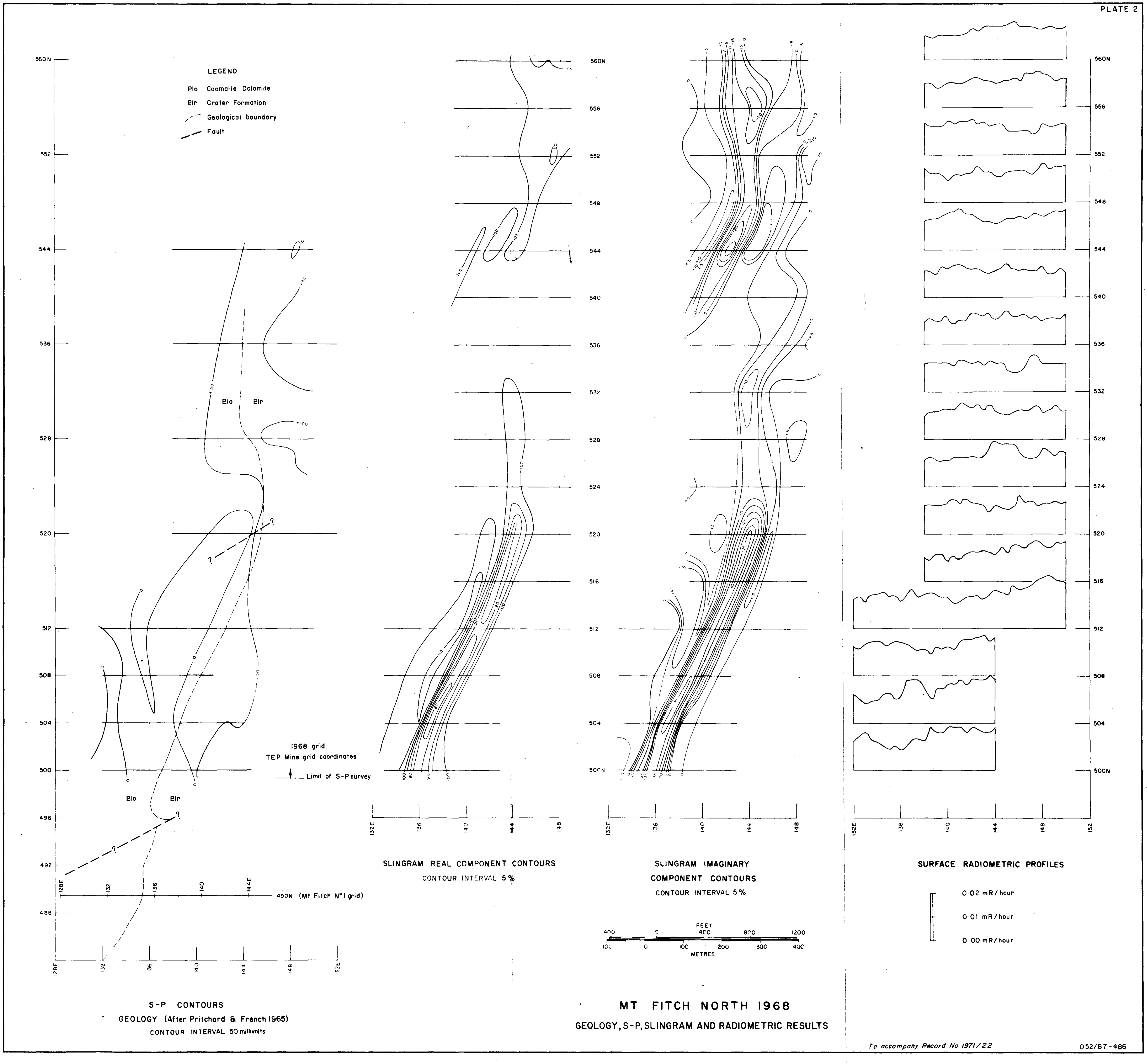
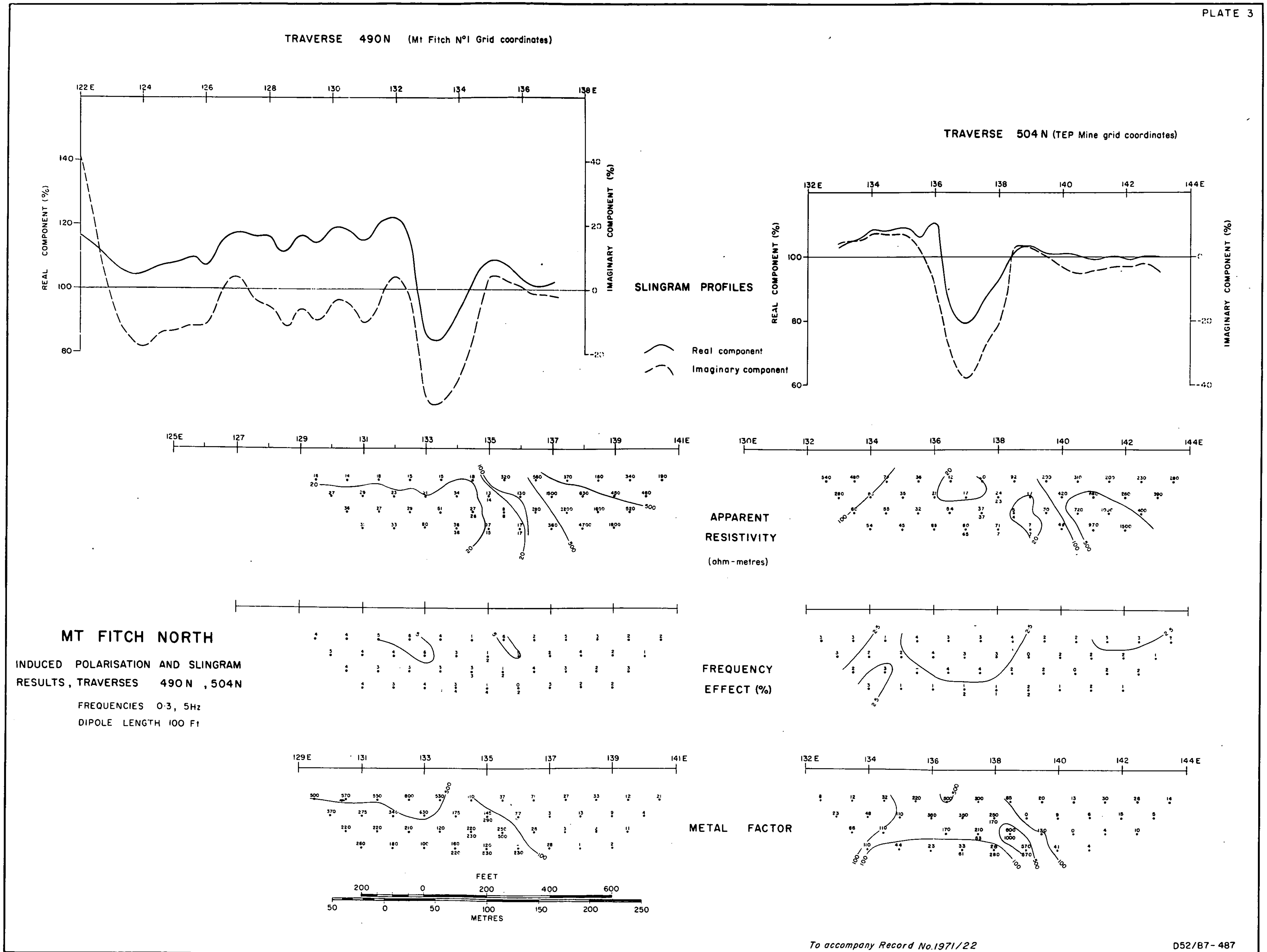


PLATE 2
LEGEND
Ꞓlo Coomalie Dolomite
Ꞓlr Crater Formation
Geological boundary
Fault
1968 grid
TEP Mine grid coordinates
Limit of S-P survey
490N (Mt Fitch Nº1 grid)
S-P CONTOURS
GEOLOGY (After Pritchard & French 1965)
CONTOUR INTERVAL 50 millivolts
SLINGRAM REAL COMPONENT CONTOURS
CONTOUR INTERVAL 5%
SLINGRAM IMAGINARY COMPONENT CONTOURS
CONTOUR INTERVAL 5%
FEET
METRES
SURFACE RADIOMETRIC PROFILES
0·02 mR/hour
0·01 mR/hour
0·00 mR/hour
MT FITCH NORTH 1968
GEOLOGY, S-P, SLINGRAM AND RADIOMETRIC RESULTS
To accompany Record No 1971/22
D52/B7-486



MT FITCH NORTH

INDUCED POLARISATION AND SLINGRAM RESULTS, TRAVERSES 490N, 504N

FREQUENCIES 0·3, 5Hz

DIPOLE LENGTH 100 Ft

To accompany Record No.1971/22

D52/B7-487

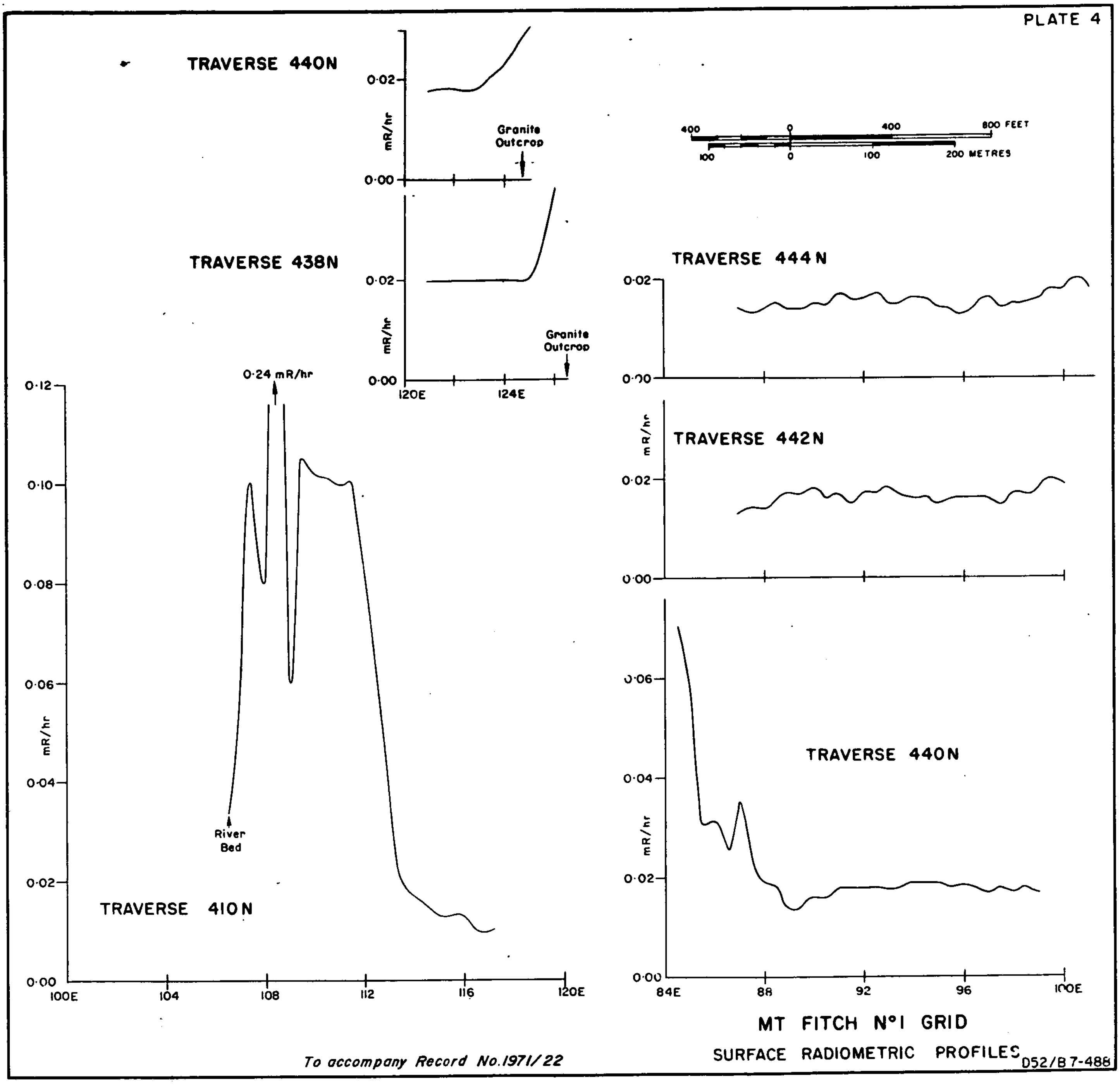


PLATE 4
TRAVERSE 440N
TRAVERSE 438N
TRAVERSE 444 N
TRAVERSE 442 N
TRAVERSE 440 N
TRAVERSE 410 N
Granite Outcrop
Granite Outcrop
0·24 mR/hr
River Bed
mR/hr
400 0 400 800 FEET
100 0 100 200 METRES
0·00
0·02
0·04
0·06
0·08
0·10
0·12
100E
104
108
112
116
120E
124E
84E
88
92
96
100E
MT FITCH N°1 GRID
SURFACE RADIOMETRIC PROFILES
To accompany Record No. 1971/22
D52/B7-488

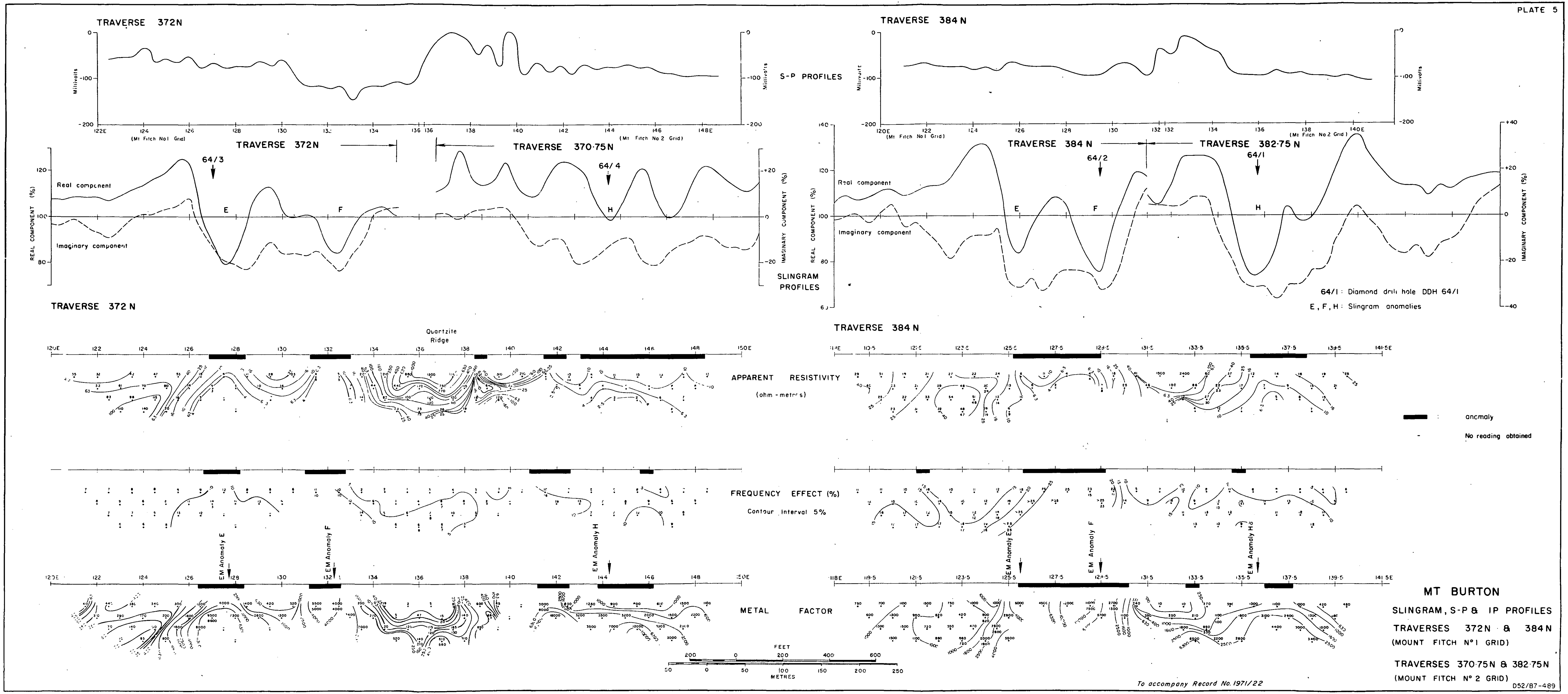
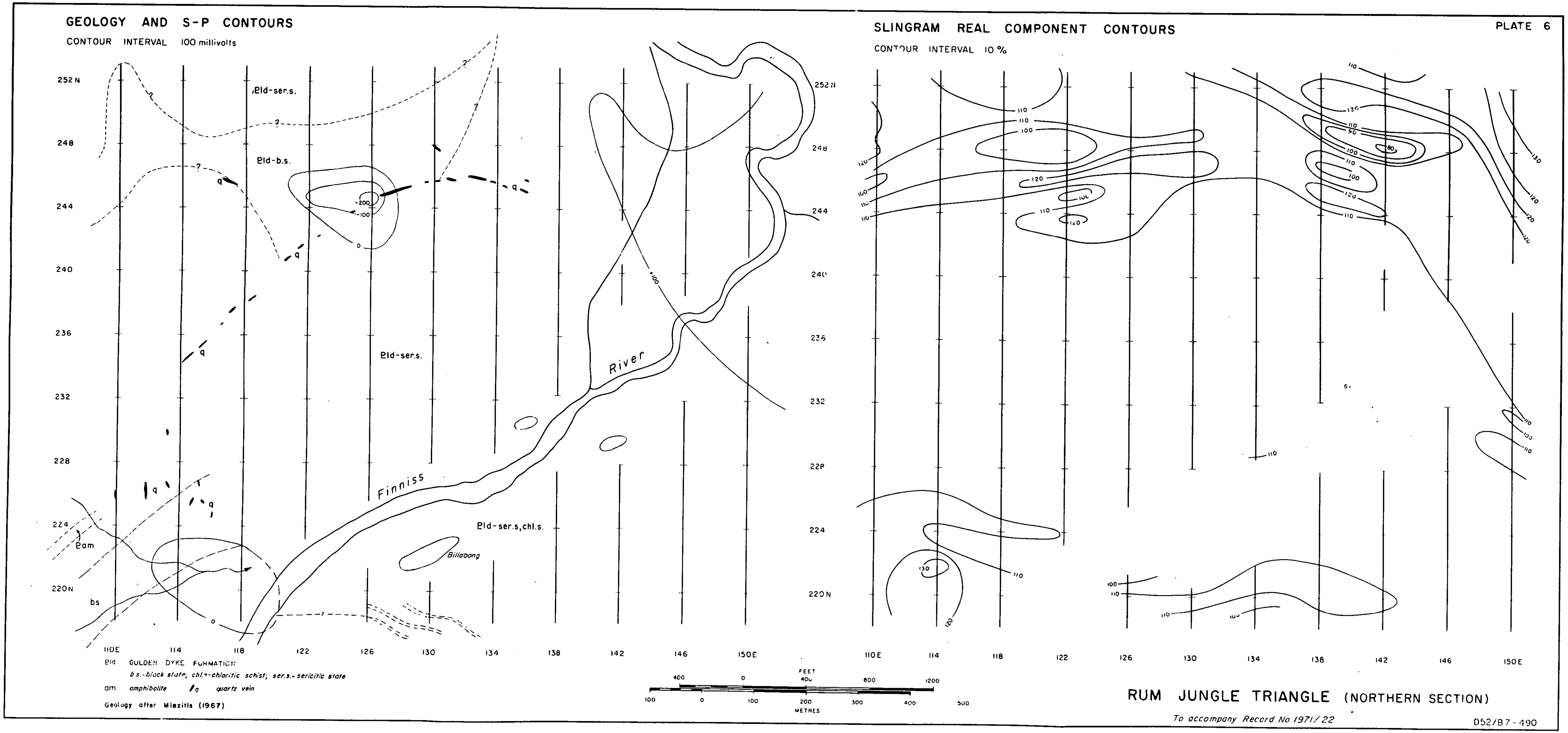
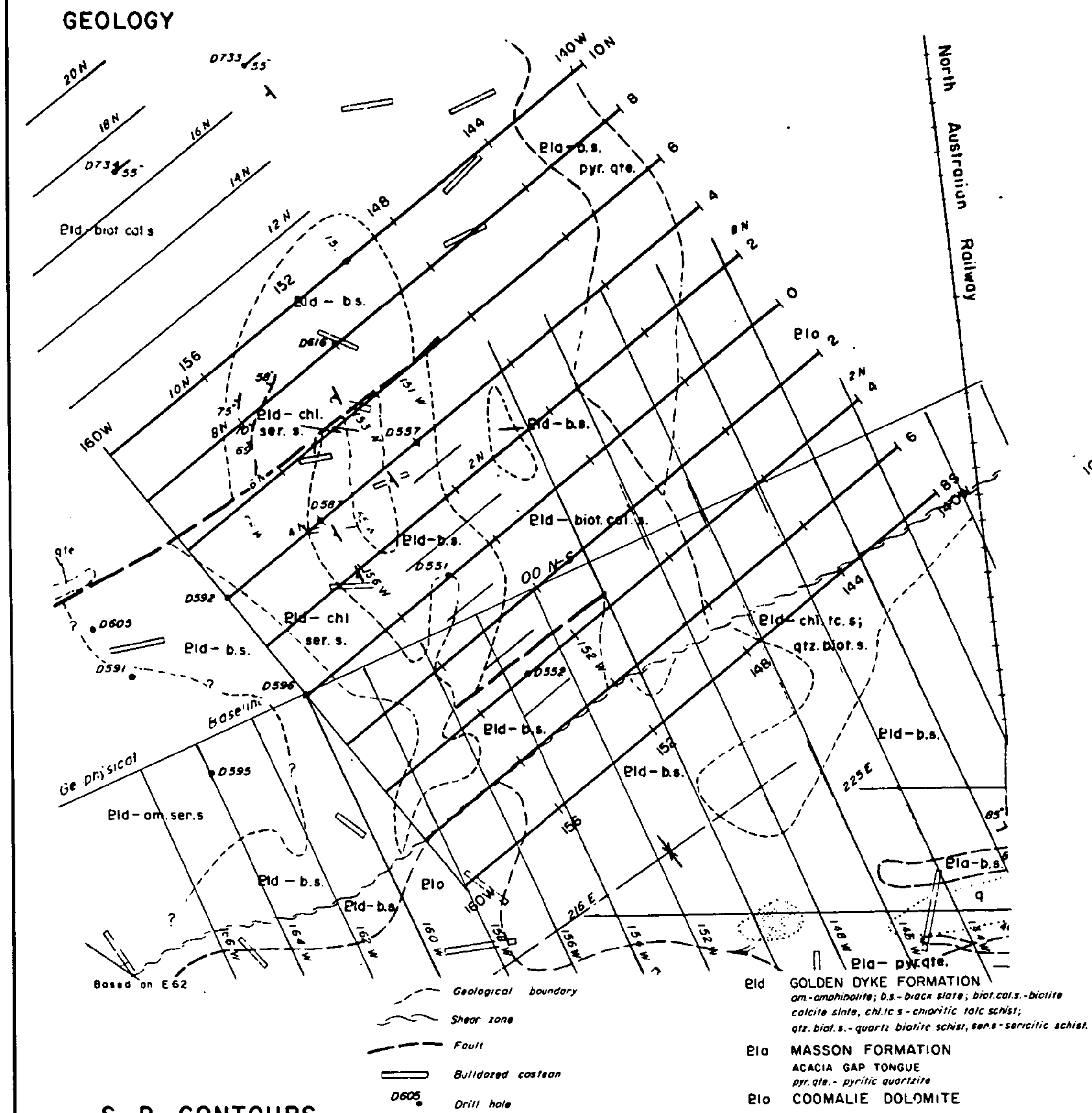
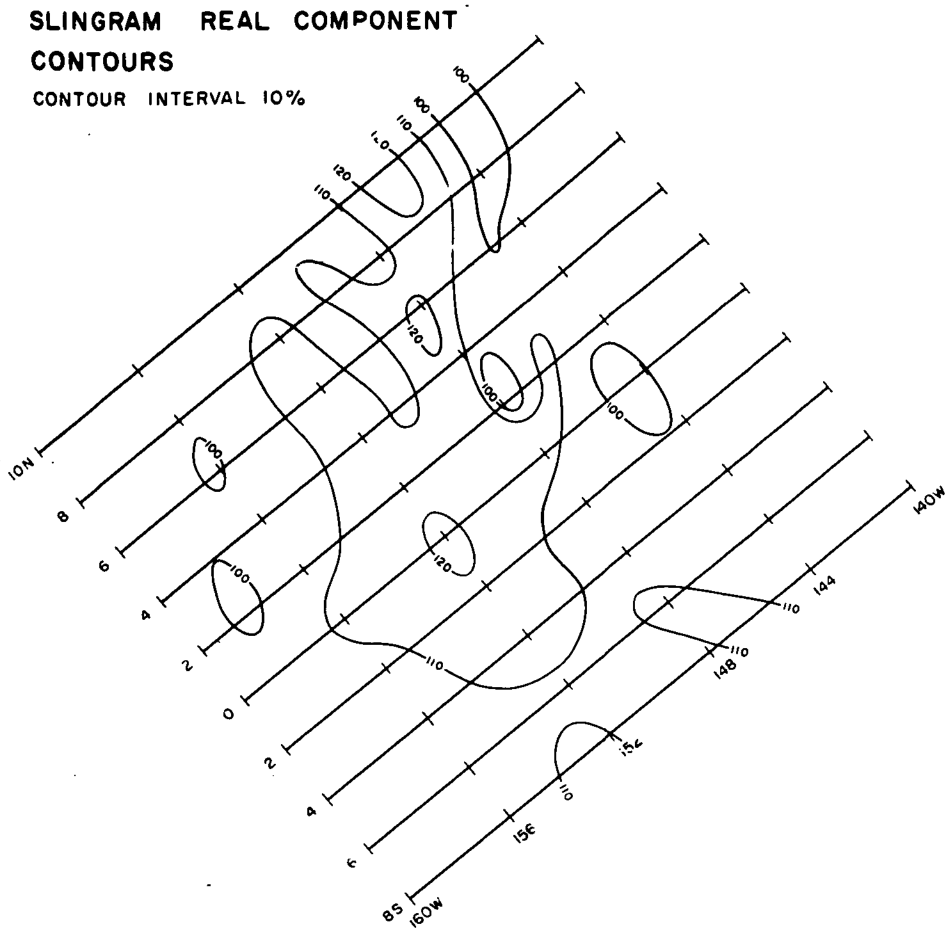
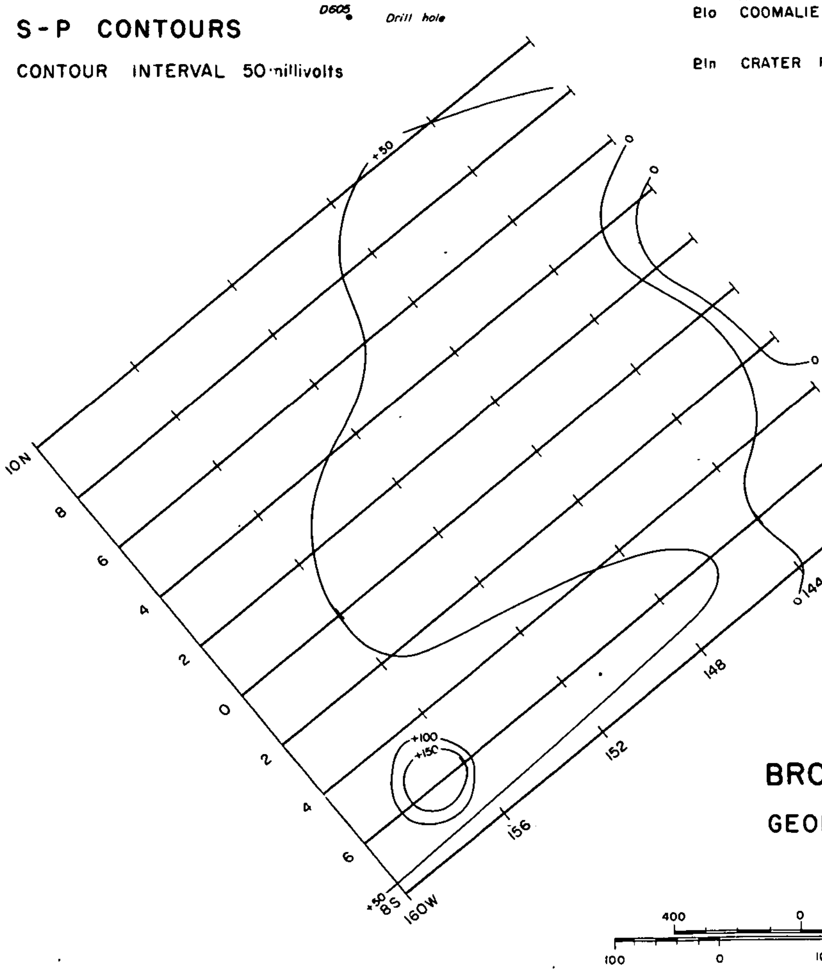


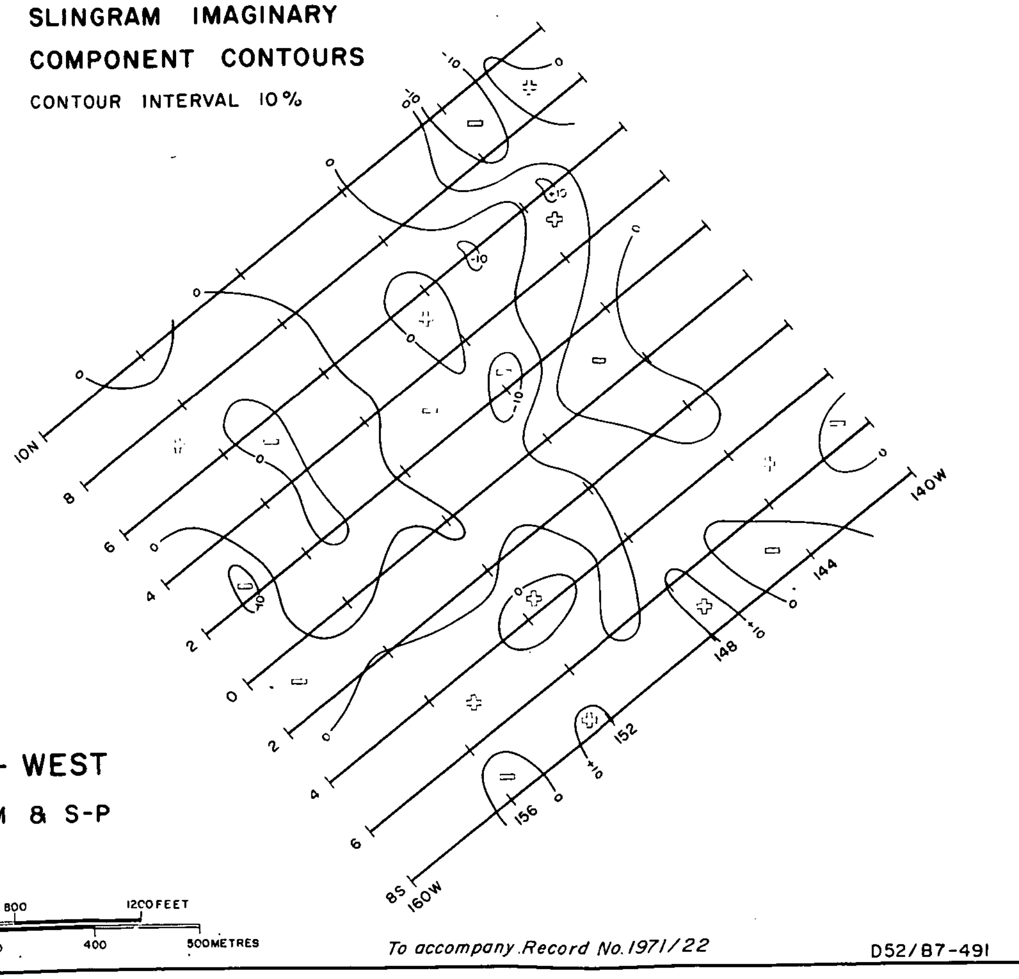
PLATE 5
TRAVERSE 372N
TRAVERSE 384 N
S-P PROFILES
Millivolts
(Mt Fitch No 1 Grid)
(Mt Fitch No 2 Grid)
TRAVERSE 372N
TRAVERSE 370·75N
TRAVERSE 384 N
TRAVERSE 382·75 N
64/3
64/4
64/2
64/1
Real component
Imaginary component
REAL COMPONENT (%)
IMAGINARY COMPONENT (%)
SLINGRAM PROFILES
64/1: Diamond drill hole DDH 64/1
E, F, H: Slingram anomalies
Quartzite Ridge
APPARENT RESISTIVITY
(ohm - metres)
anomaly
No reading obtained
FREQUENCY EFFECT (%)
Contour Interval 5%
E M Anomaly E
E M Anomaly F
E M Anomaly H
METAL FACTOR
FEET
METRES
To accompany Record No. 1971/22
MT BURTON
SLINGRAM, S-P & IP PROFILES
TRAVERSES 372N & 384N
(MOUNT FITCH Nº1 GRID)
TRAVERSES 370·75N & 382·75N
(MOUNT FITCH Nº 2 GRID)
D52/B7-489


GEOLOGY AND S-P CONTOURS
CONTOUR INTERVAL 100 millivolts
SLINGRAM REAL COMPONENT CONTOURS
CONTOUR INTERVAL 10 %
PLATE 6
Eld-ser.s.
Eld-b.s.
Eld-ser.s.
Eld-ser.s, chl.s.
Finniss River
Billabong
am
bs
Eld GOLDEN DYKE FORMATION
b.s.-black slate; chl.s.-chloritic schist; ser.s.-sericitic slate
am amphibolite
q quartz vein
Geology after Miezitis (1967)
FEET
METRES
RUM JUNGLE TRIANGLE (NORTHERN SECTION)
To accompany Record No 1971/22
D52/B7-490









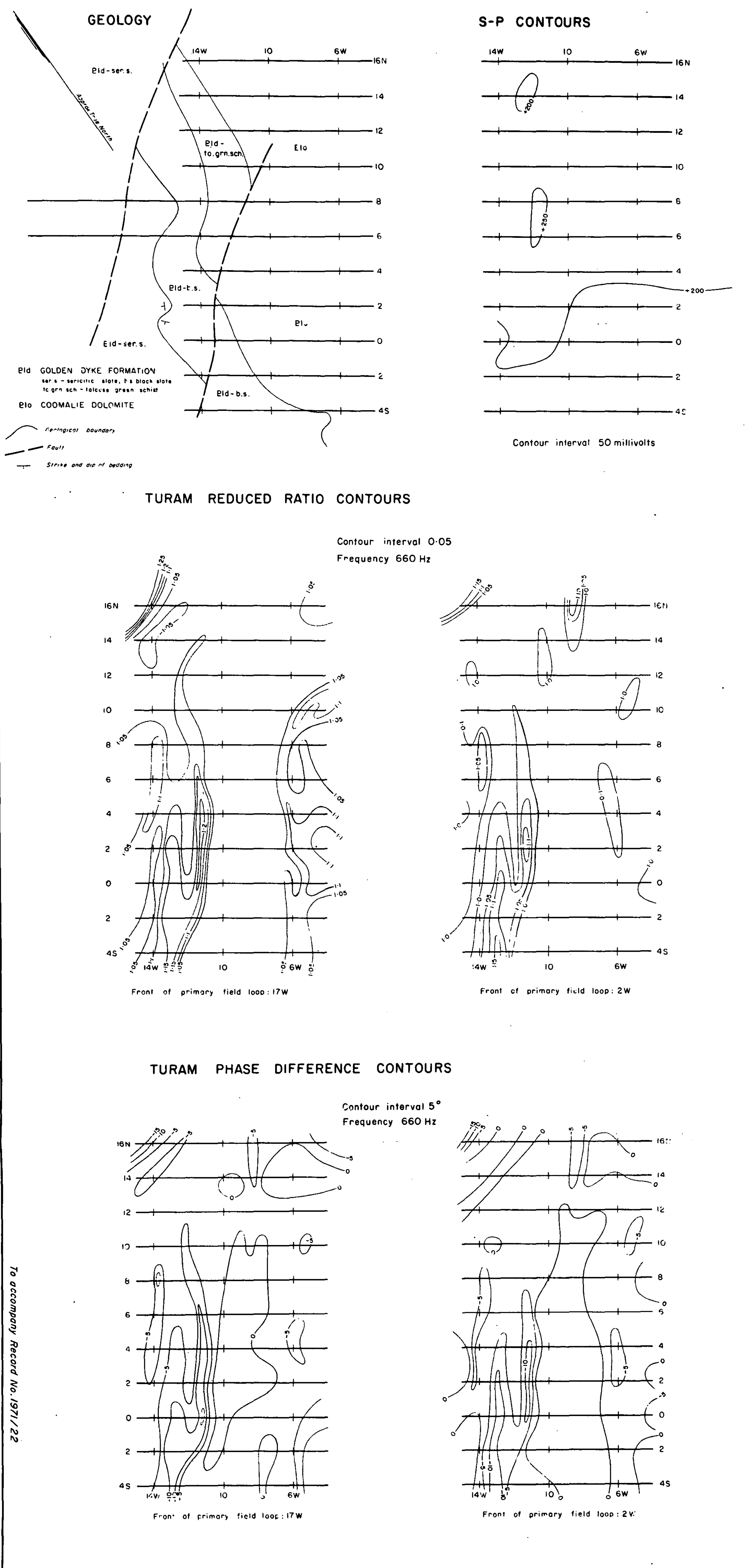
BROWNS SOUTH - WEST
GEOLOGY, SLINGRAM & S-P CONTOURS

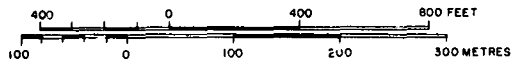
400 0 400 800 1200 FEET
100 0 100 200 300 400 500 METRES

To accompany Record No. 1971/22

D52/B7-491

BINDING





AREA 55B

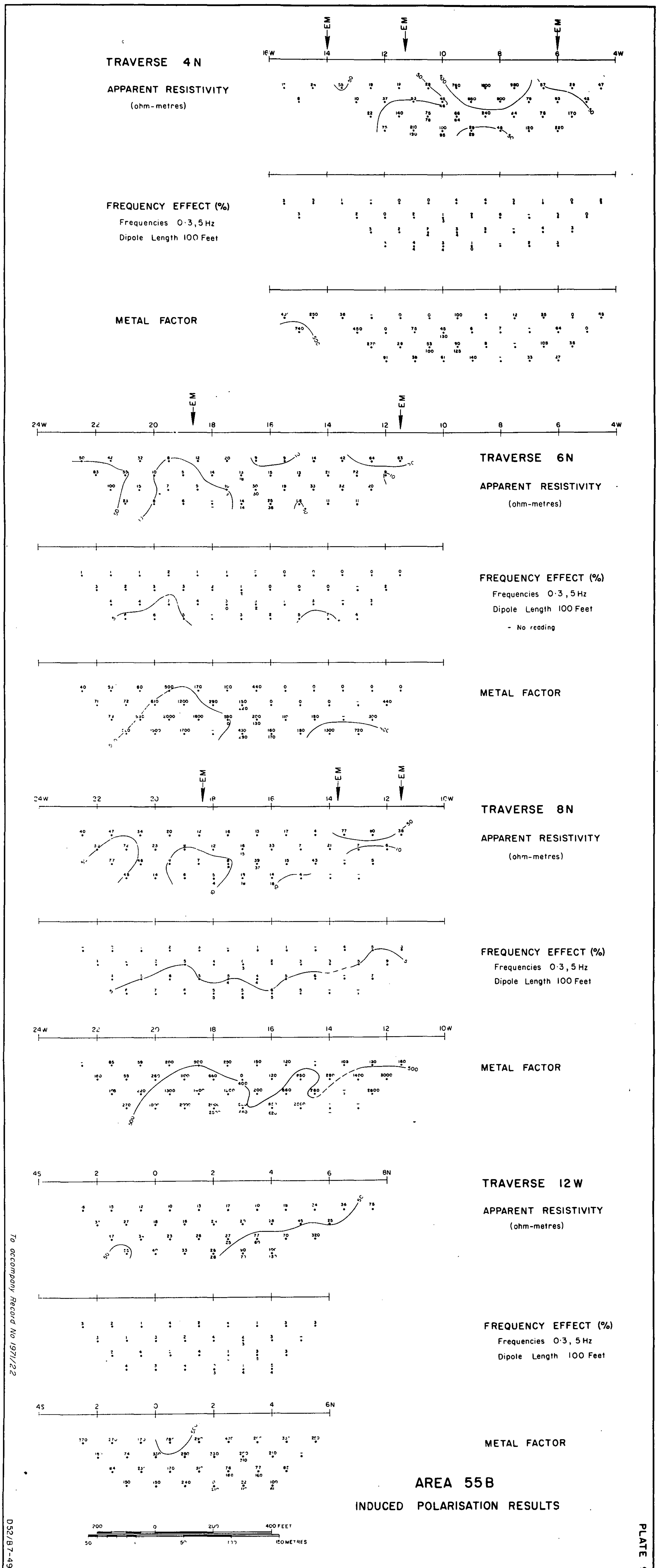
GEOLOGY, TURAM AND S-P CONTOURS

PLATE 8

To accompany Record No. 1971/22

D52/B7-492

DINDING



To accompany Record No 1971/22

AREA 55B

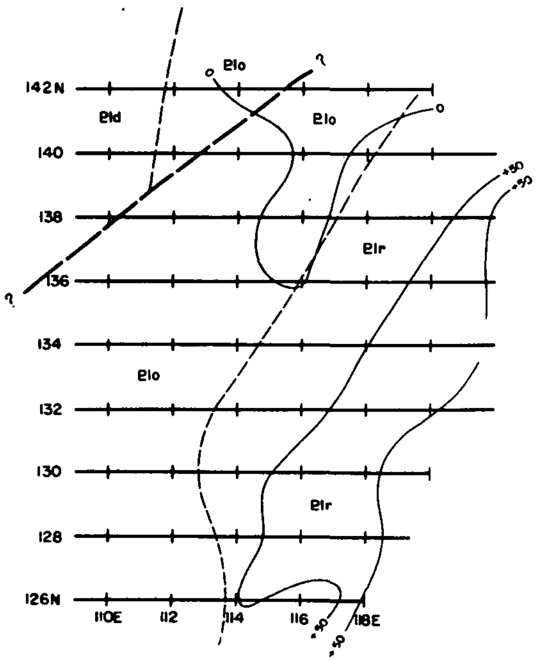
INDUCED POLARISATION RESULTS

D52/B7-493

PLATE 9

RINDING AA

GEOLOGY AND S-P CONTOURS



Ꞓld GOLDEN DYKE FORMATION
Ꞓlo COOMALIE DOLOMITE
Ꞓlr CRATER FORMATION

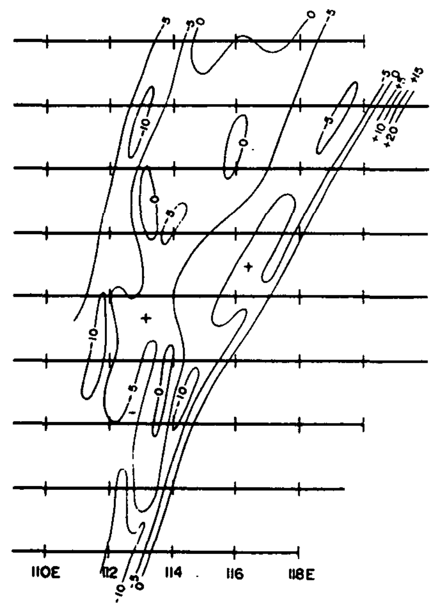
Contour interval 50 millivolts

Fault

Geological boundary

Geology after Mieziiis (1967)

TURAM PHASE DIFFERENCE CONTOURS

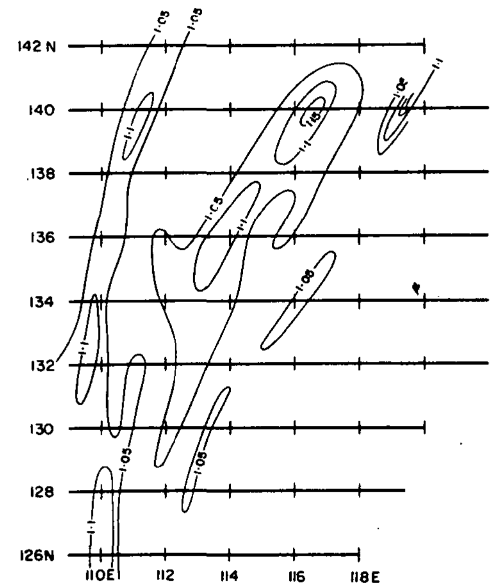


Contour Interval 5°

Front of loop : 109E

Frequency 660 Hz

TURAM RATIO CONTOURS



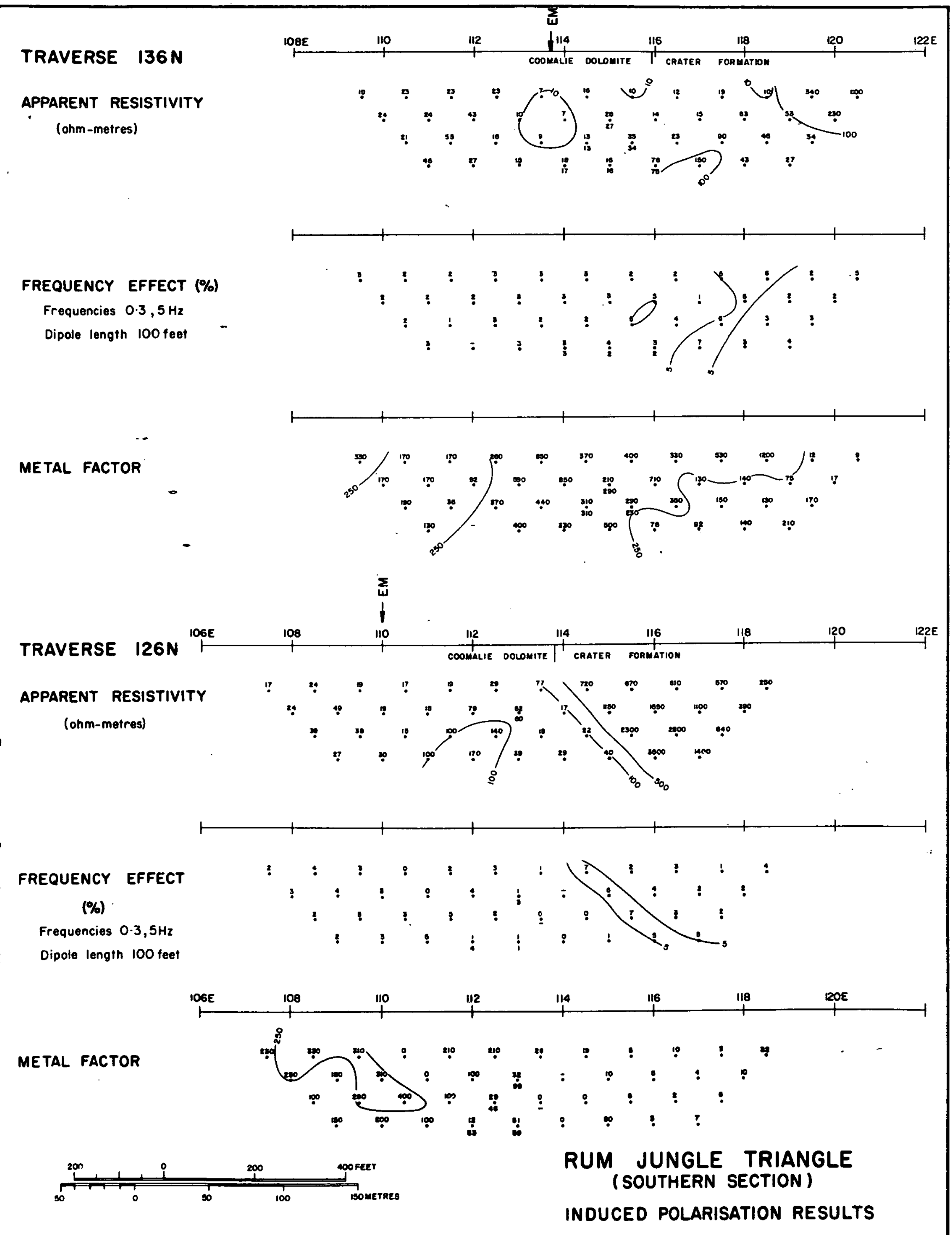
Contour interval 0·05

RUM JUNGLE TRIANGLE
(SOUTHERN SECTION)
1968

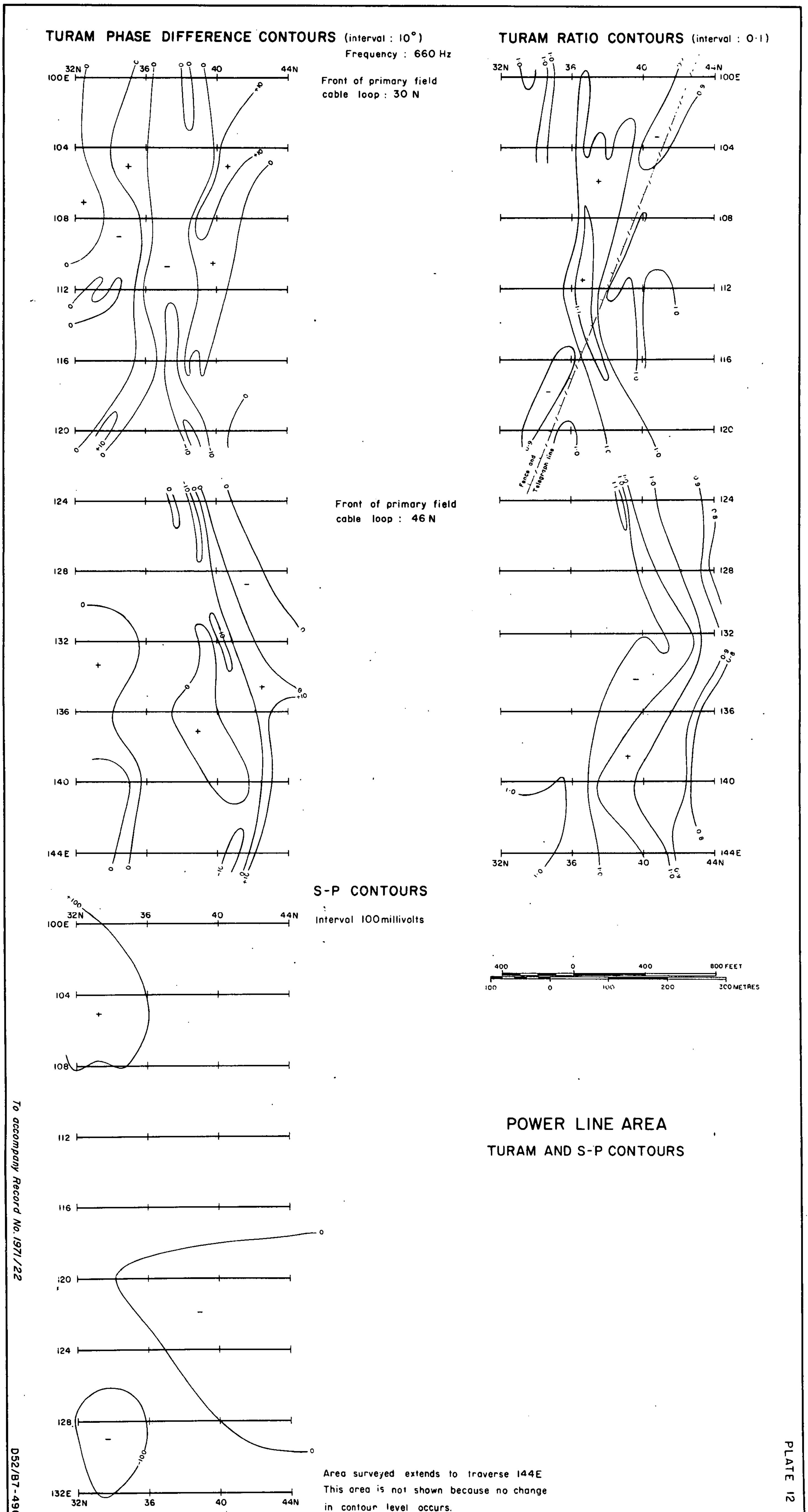
D52/B 7-494

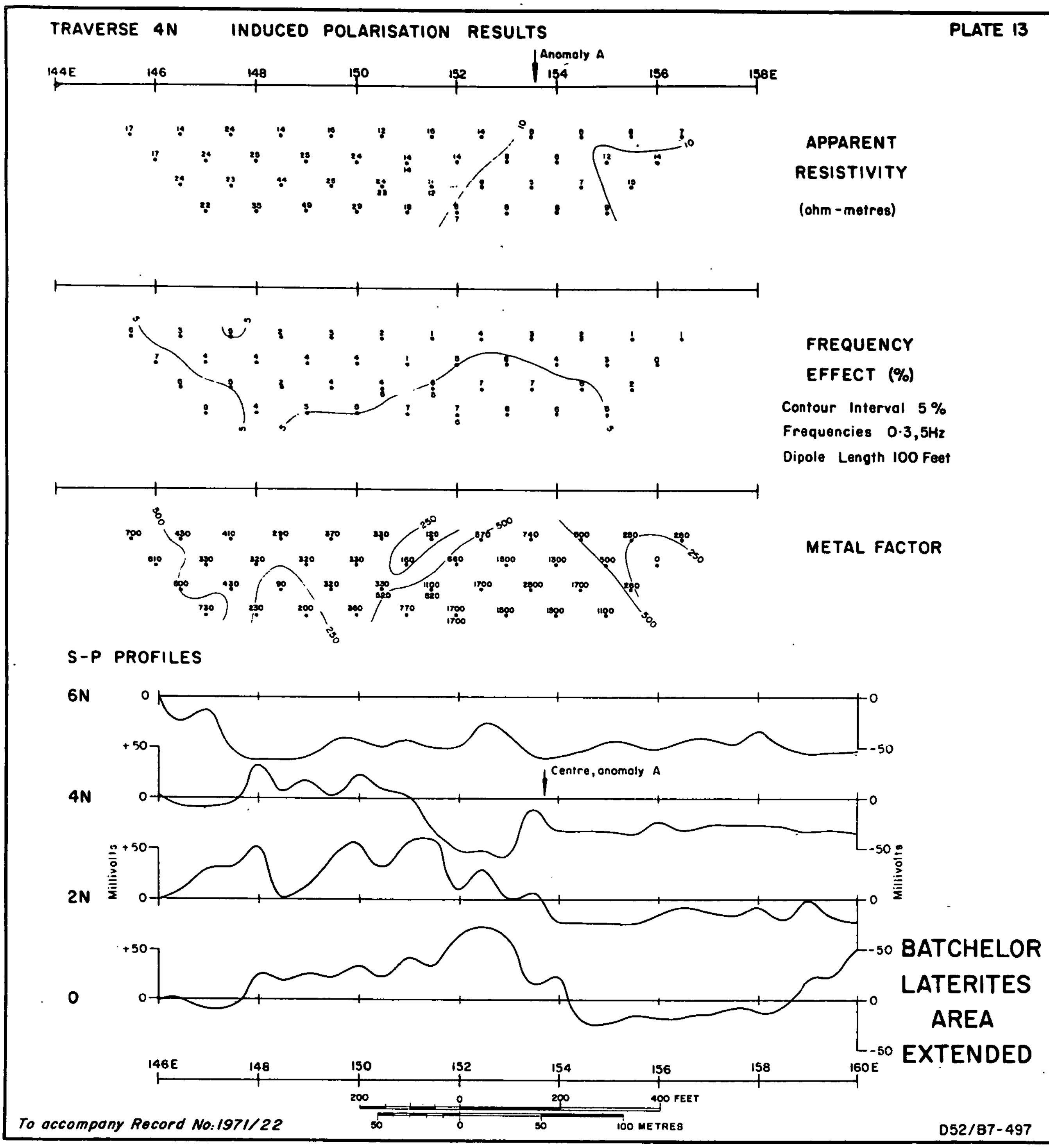
PLATE 10

To accompany Record No. 1971/22



To accompany Record No. 1971/22


TURAM PHASE DIFFERENCE CONTOURS (interval : 10°)
Frequency : 660 Hz
Front of primary field cable loop : 30 N
Front of primary field cable loop : 46 N
TURAM RATIO CONTOURS (interval : 0·1)
Fence and Telegraph line
S-P CONTOURS
Interval 100 millivolts
400 0 400 800 FEET
100 0 100 200 300 METRES
POWER LINE AREA
TURAM AND S-P CONTOURS
Area surveyed extends to traverse 144E
This area is not shown because no change in contour level occurs.
To accompany Record No. 1971/22
D52/B7-496
PLATE 12


TRAVERSE 4N
INDUCED POLARISATION RESULTS
PLATE 13
Anomaly A
144E
146
148
150
152
154
156
158E
APPARENT
RESISTIVITY
(ohm - metres)
FREQUENCY
EFFECT (%)
Contour Interval 5 %
Frequencies 0·3,5Hz
Dipole Length 100 Feet
METAL FACTOR
S-P PROFILES
6N
4N
2N
0
Centre, anomaly A
Millivolts
146E
148
150
152
154
156
158
160E
200
0
200
400 FEET
50
0
50
100 METRES
BATCHELOR
LATERITES
AREA
EXTENDED
To accompany Record No: 1971/22
D52/B7-497