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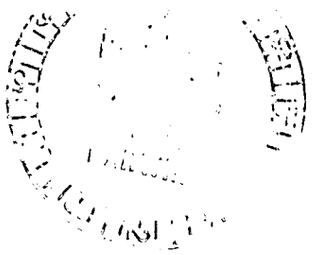
COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS



RECORD No. 1962/104

POWER LINE AREA GEOPHYSICAL SURVEY

NEAR RUM JUNGLE, NORTHERN TERRITORY 1960

by

A. Douglas

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ILLUSTRATIONS

SUMMARY

Radiometric and electromagnetic surveys were carried out over the Power Line area as part of the Bureau of Mineral Resources' 1961 programme of uranium prospecting in the Rum Jungle district.

The radiometric surveys outlined several anomalies, but the significance of these is not clear.

The only electromagnetic anomalies of note were outlined along the southern portion of the eastern edge of the area. These anomalies probably indicate a conducting bed that constitutes part of a continuous conducting-zone extending as far as Rum Jungle Creek South. The conductivity of this zone could be due to sulphide mineralisation. As uranium is often associated with sulphides in the Rum Jungle district, it is recommended that the electromagnetic anomalies be tested by drilling.

1. INTRODUCTION

The Power Line area extends northwards for 9000 ft from the Batchelor/Meneling Station road over flat ground between Batchelor township in the east and a quartz breccia ridge in the west. Access to the area is by the Batchelor/Rum Jungle Siding road and a rough track that follows the Batchelor/Rum Jungle Creek South (RJCS) power line.

The Power Line area is a section of a larger survey area which extends from the RJCS orebody around the southern margin of a prominent quartzite breccia ridge to the Rum Jungle Laterites. Along the margin of the ridge, airborne surveys have located several radiometric anomalies that could indicate economic uranium deposits. Electromagnetic and radiometric surveys were carried out during June and July 1961 in an attempt to locate any such deposits.

Daly (1962) has given an adequate description of the applicability, principles, and limitations of the geophysical methods used and has discussed the main results for the entire survey area from RJCS to the Rum Jungle Laterites. A more detailed discussion of the Power Line area is given below.

2. OPERATIONS

The relation of the geophysical grid for the Power Line area to the grids for adjacent areas and to the Hundred of Goyder co-ordinates is shown by Daly (1962, Plate 2). A 9000-ft baseline, true bearing 336° 30', was surveyed across the area, and traverses ranging in length up to 4800 ft were pegged at right angles to this baseline. The usual spacing between traverses was 200 ft, although over parts of the area a 400-ft traverse spacing was used. The traverses themselves were pegged at 50-ft intervals.

The whole of the area was investigated with the electromagnetic and radiometric methods. The Turam electromagnetic method was used in the vicinity of the power line and the Slingram method over the remainder of the area.

3. DISCUSSION AND INTERPRETATION OF RESULTS

Radiometric results

The radiometric results (Plate 2) show several anomalies superimposed on a general background of 0.015 mr/hr. Most of these anomalies are of low intensity and small areal extent, and are not considered to be significant in the search for uranium orebodies.

There are, however, three radioactive anomalies of considerable extent which warrant further discussion. Two of these anomalies occur at the southern limit of the area; one centred on 142E/3900N, the other extending south-west from 138E/3000N. The third anomaly lies between 62E and 74E at about 1600N.

The anomaly that extends south-west from 138E/3000N is part of a larger anomaly that continues into the Batchelor Laterites area. This anomaly appears to be associated with lateritic gravel, and has been discussed more fully by Rowston (1962). There is no evidence to suggest that there is a uranium orebody associated with this anomaly.

The anomaly centred at 142E/3900N occurs over a gravelled road. This gravel was probably obtained from nearby gravel pits, which themselves show high radioactivity. Thus the anomaly centred on 142E/3900N can probably be attributed to radioactive material within the road metal, rather than to material in situ, and can be disregarded.

The third major anomaly is unusual in that part of it extends over quartzite breccia. Known radioactive deposits in the Rum Jungle district are normally restricted to rocks that underlie the quartzite breccia. No explanation of this unusual feature can be given, and the significance of this anomaly as a whole is not clear.

Electromagnetic results

The only electromagnetic anomalies of any interest are those that extend from Traverse 142E to Traverse 100E between 4200N and 3200N (Plates 3 and 4). These anomalies probably indicate a conducting bed that constitutes part of a continuous conducting-zone extending as far as RJCS. Daly (1962) has discussed the significance of this conducting-zone.

Between Traverses 100E and 78E several elongate low-intensity Turam anomalies were outlined. These could be ascribed to a series of shear zones, but as yet there is no geological evidence to support this.

The area between 78E and 52E is devoid of anomalies.

4. CONCLUSIONS AND RECOMMENDATIONS

Only the electromagnetic anomaly between Traverses 142E and 100E seems to warrant further investigation. Drill holes to a vertical depth of 160 ft are recommended at the following points:

142 E, 3825N
136 E, 3800N
120 E, 3650N
109 E, 3450N

5. REFERENCES

DALY, J. 1962 Rum Jungle district, Northern Territory, introductory report on geophysical surveys 1960-61 Bur. Min. Resour. Aust. Record 1962/27.

ROWSTON, D.L. 1962 Batchelor Laterites area geophysical survey, Northern Territory 1961. Bur. Min. Resour. Aust. Record 1962/103.

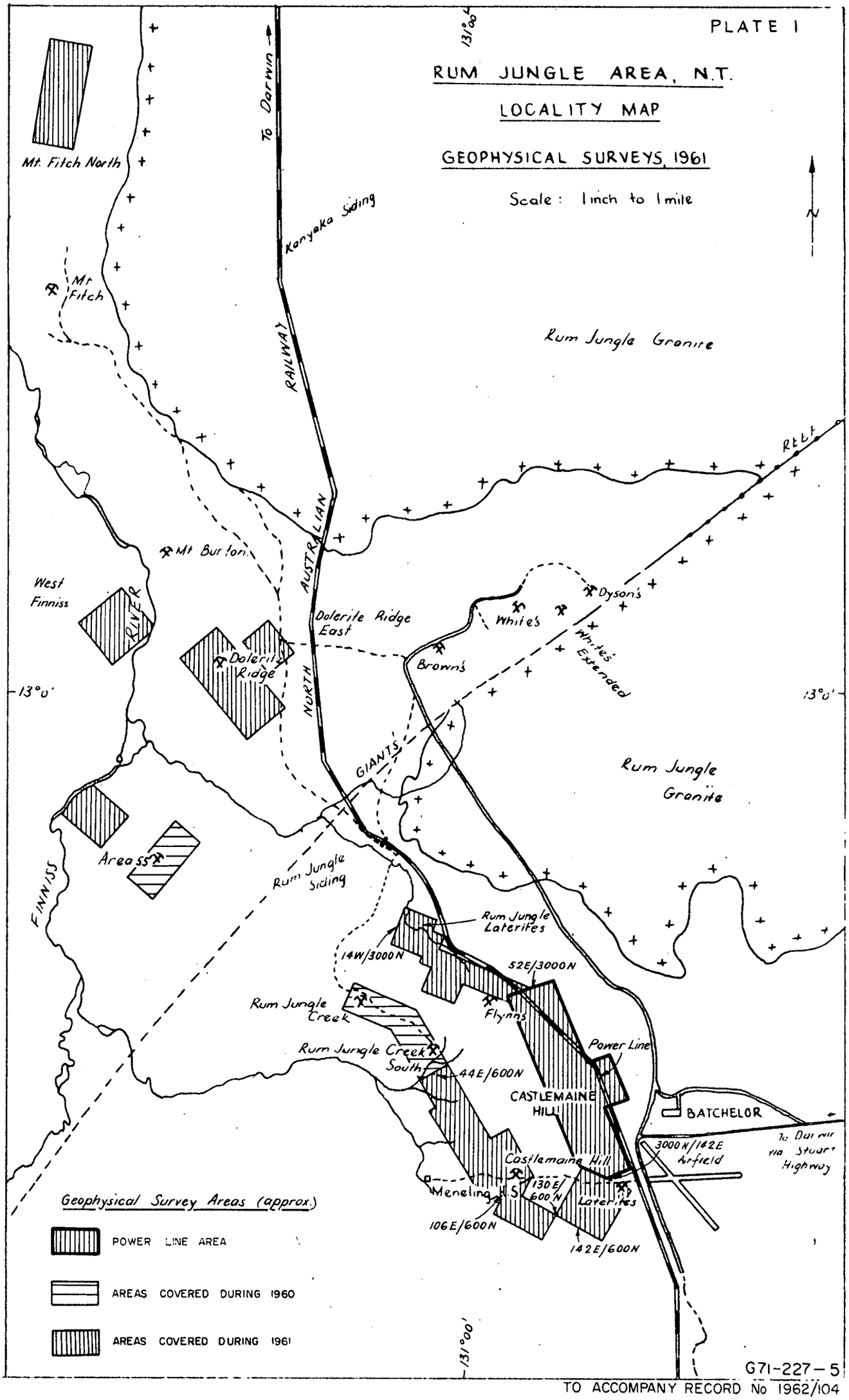
PLATE 1

RUM JUNGLE AREA, N.T.

LOCALITY MAP

GEOPHYSICAL SURVEYS, 1961

Scale: 1 inch to 1 mile



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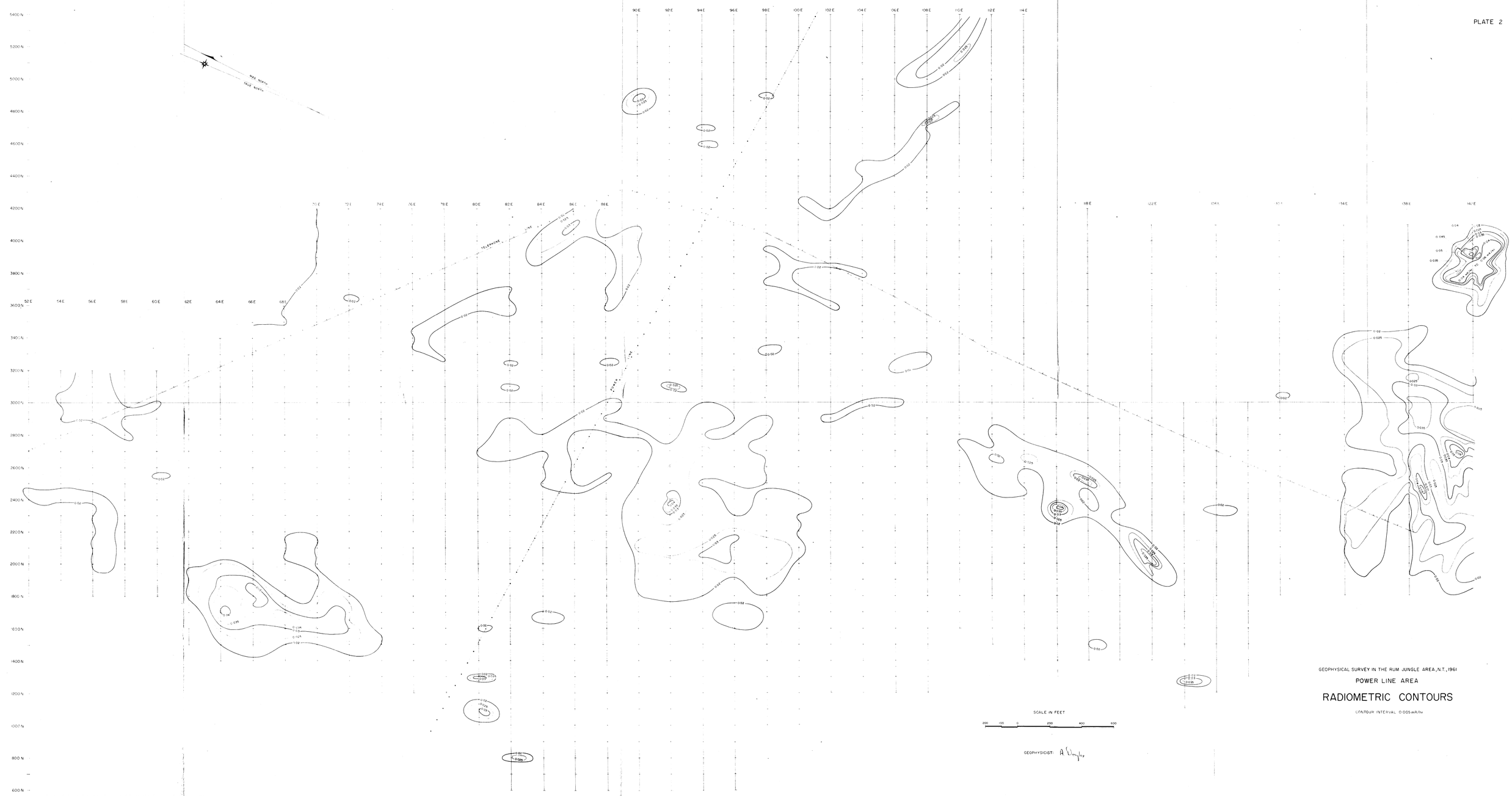
Power Line Area

PLATE 2



GEOPHYSICIST: A Dingley

GEOPHYSICAL SURVEY IN THE RUM JUNGLE AREA, N.T., 1961

POWER LINE AREA

RADIOMETRIC CONTOURS

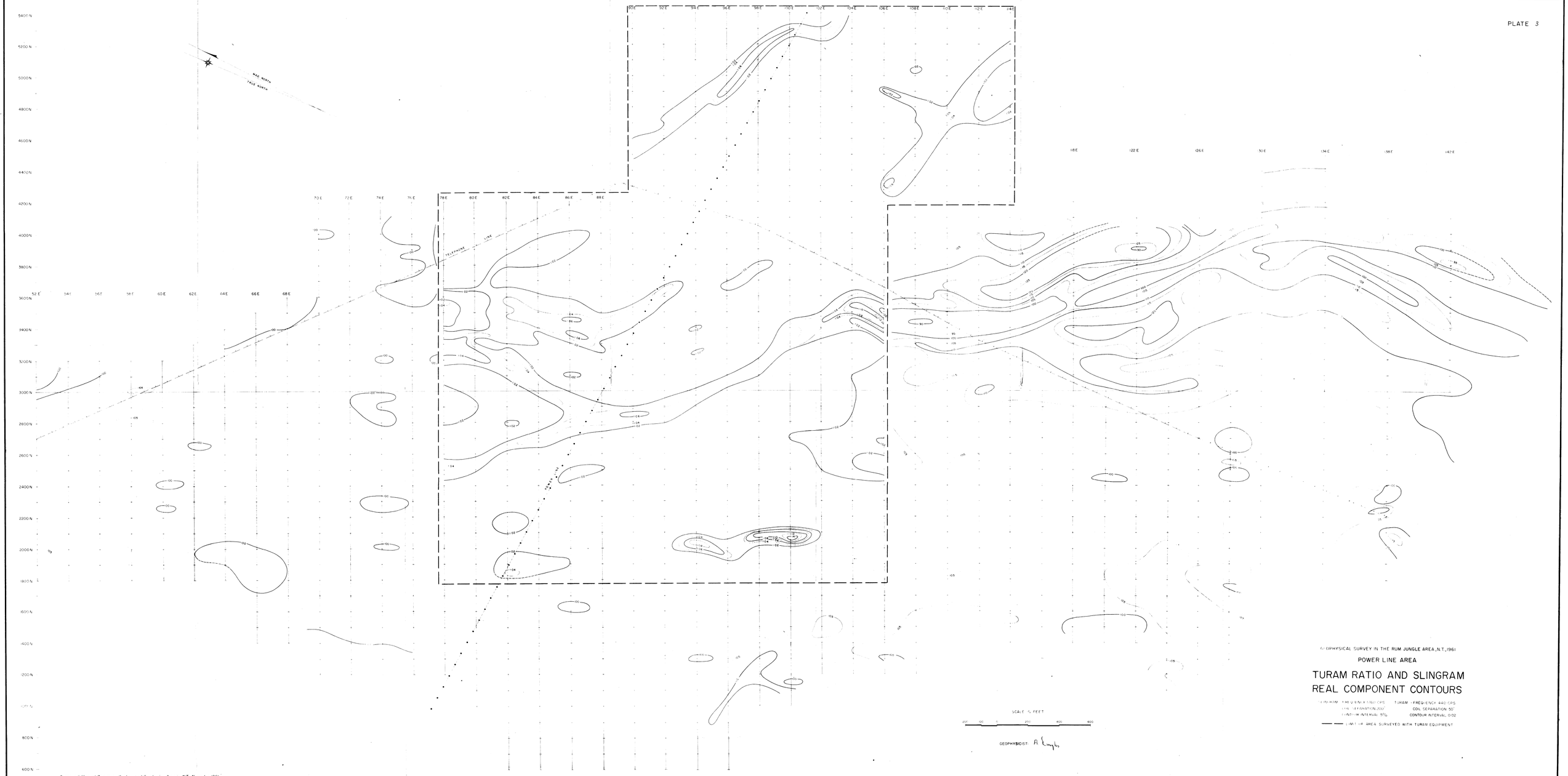
CONTOUR INTERVAL 0.005 mR/hr

Bureau of Mineral Resources, Geology and Geophysics, Darwin, N.T., November 1961

G71-250

TO ACCOMPANY RECORD No 1962/104 5100 GP

PLATE 3



SCALE - FEET

GEOPHYSICIST: A Langley

GEOPHYSICAL SURVEY IN THE RUM JUNGLE AREA, N.T., 1961

POWER LINE AREA

TURAM RATIO AND SLINGRAM REAL COMPONENT CONTOURS

SLINGRAM FREQUENCY 1440 CPS — TURAM FREQUENCY 440 CPS
LINE SEPARATION 200' — COIL SEPARATION 50'
CONTOUR INTERVAL 5% — CONTOUR INTERVAL 0.02
—— LIMIT OF AREA SURVEYED WITH TURAM EQUIPMENT

Bureau of Mineral Resources, Geology and Geophysics, Darwin, N.T., November 1961

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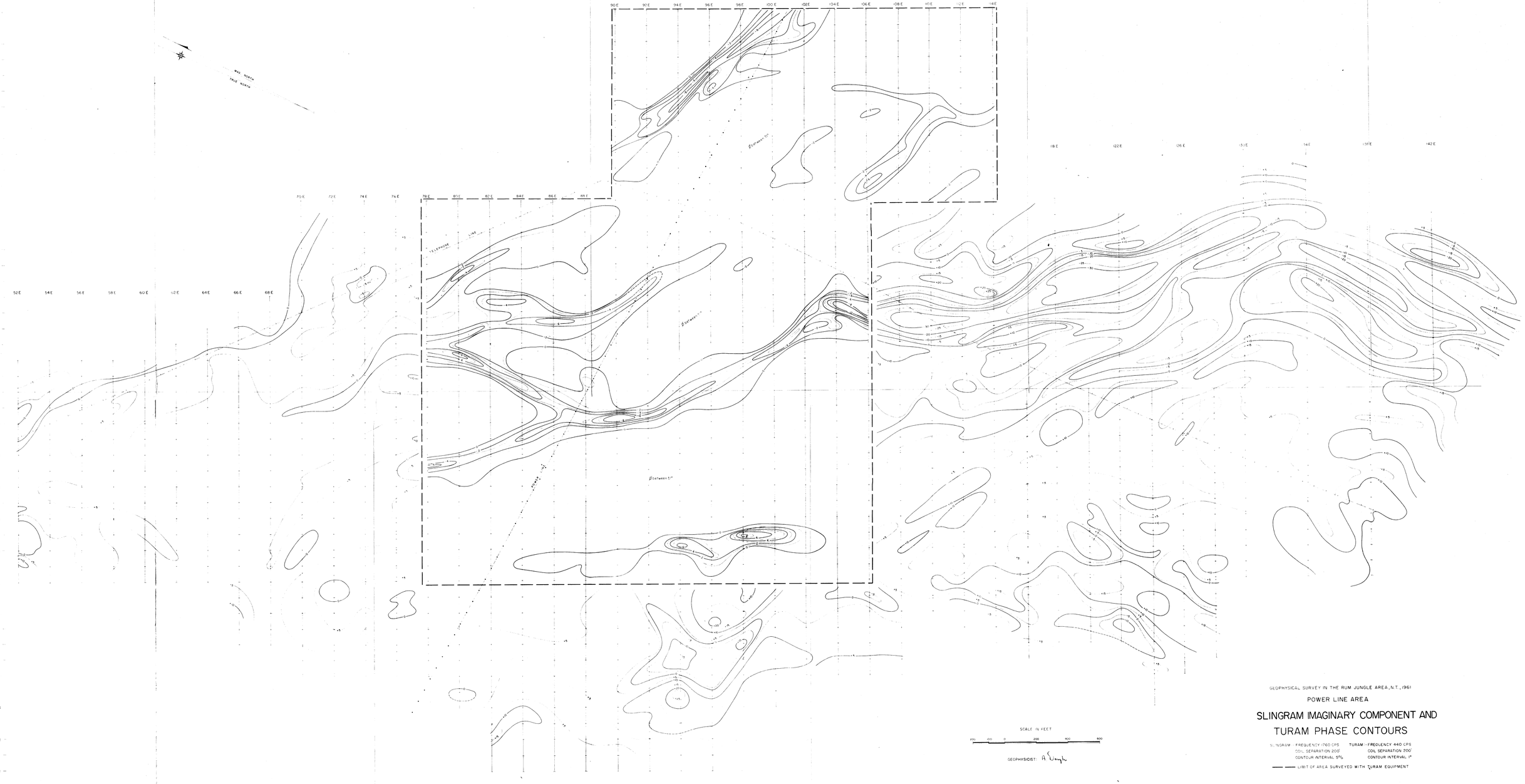
TO ACCOMPANY RECORD No 1962/71 IN 3/108 GP

PLATE 4



GEOPHYSICAL SURVEY IN THE RUM JUNGLE AREA, N.T., 1961

POWER LINE AREA

SLINGRAM IMAGINARY COMPONENT AND TURAM PHASE CONTOURS

SLINGRAM - FREQUENCY 1760 CPS
COIL SEPARATION 200'
CONTOUR INTERVAL 5%

TURAM - FREQUENCY 440 CPS
COIL SEPARATION 200'
CONTOUR INTERVAL 1°

—— LIMIT OF AREA SURVEYED WITH TURAM EQUIPMENT

SCALE IN FEET

200 100 0 200 400 600

GEOPHYSICIST: A. Keogh

Bureau of Mineral Resources, Geology and Geophysics, Darwin, N.T. November 1961

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TO ACCOMPANY RECORD No. 1962/104 5109 - UP